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Technology Guide

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2916 Citizen Marketers.qxd



Viral Loop

From Facebook to Twitter, How Today's Smartest Businesses Grow Themselves

THE SUMMARY IN BRIEF

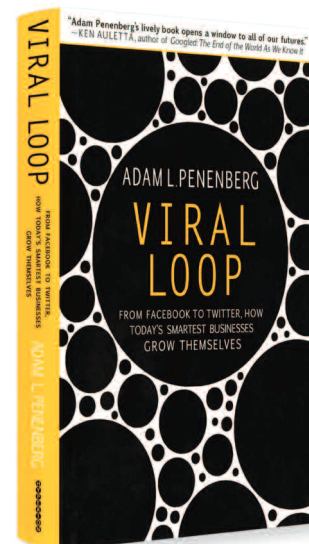
Many of the most successful Web 2.0 companies, including MySpace, YouTube, eBay, Twitter and Flickr, are prime examples of what journalist Adam L. Penenberg calls a “viral loop” — to use it, you have to spread it. After all, what’s the sense of being on Facebook if none of your friends are? The result: Never before has there been the potential to create wealth this fast, on this scale and starting with so little.

Penenberg recounts the fascinating stories of the entrepreneurs who first harnessed the unprecedented potential of viral loops to create successful online businesses — some worth billions of dollars — that we have all grown to rely on. The trick is that they created something people *really* want, so much so that their customers happily spread the word about their product for them.

All kinds of businesses — from the smallest startups to nonprofit organizations to the biggest multinational corporations — can use the paradigm-busting power of viral loops to enable their business through technology. This summary can help any entrepreneur or business uncork viral loops to benefit their bottom line.

IN THIS SUMMARY, YOU WILL LEARN:

- What you need to know about today’s Internet.
- How to build a flourishing business from scratch with no advertising or marketing budget.
- How to sell your product without a sales force.
- How to get venture capitalists to line up to throw money at you.
- How the most successful digital businesses succeed.



by Adam L. Penenberg

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THE COMPLETE SUMMARY: VIRAL LOOP

by Adam L. Penenberg

The author: Adam L. Penenberg is a journalism professor and assistant director of the Business and Economics Program at New York University. He has written for *Fast Company*, *Inc.*, *Forbes*, the *New York Times*, *Wired* and *The Economist*.

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For additional information on the author, go to <http://www.summary.com> or www.viralloop.com.

Introduction

It's possible to build a multi-million or even billion dollar business from scratch simply by designing a product the right way. No advertising or marketing budget, no need for a sales force and venture capitalists will kill for the chance to throw money at you.

This may sound too good to be true, but some of the most iconic Web 2.0 companies fit this description. Their customers happily spread their product for them through their own social networks of friends, family, colleagues and peers. That's one of the beautiful things about Web 2.0: You can nurture a business like never before and achieve almost cosmic valuations in record time.

These companies are powered by something called a "viral expansion loop," which is accomplished by incorporating virality into the functionality of a product. In plain English, it means a company grows because each new user begets more users. Just by using a product they spread it.

PART I: VIRAL BUSINESS

Tupperware and Ponzi Schemes

Half a century before anyone heard of Facebook or MySpace, Tupperware — the kitschy plastic food-storage-container company — was tapping into vast social networks of women to generate a massive viral loop.

In 1949, Earl Silas Tupper's "Poly-T" bowls and tumblers were available at Bloomingdales, Gimbels and Detroit's J.L. Hudson. Despite a national media campaign, sales of his eponymous tubs were disappointing.

Tupperware's unlikely savior was Brownie Wise, a single mother who worked as a distributor for Stanley

Home Products. Shortly after Tupper introduced his product to stores, Gary McDonald, a young salesman working for Wise, was browsing J.L. Hudson when he realized these plastic containers would be ideal for home demonstration.

By 1949, Wise established "Poly-T parties." Many of her dealers grossed \$100 a gathering and Wise distributed \$1,500 of Tupperware a week (worth almost \$14,000 today). Within a decade, Wise and her army of Tupperware ladies would move tens of millions of dollars' worth of merchandise every year via the Tupperware home party, the greatest viral network of its day.

Since then, Tupperware has grown into a global concern, with \$2.2 billion in revenue, encompassing cosmetics, kitchen tools, small household appliances and toys. Almost 120 million people in 100 countries will attend a product demonstration this year.

Charles Ponzi

The biggest viral schemer of all was Charles Ponzi, an Italian immigrant who registered a business in Boston called the Security Exchange Co. in December 1919. He claimed to have figured out a system to reap 400 percent profits by engaging in arbitrage with international postage relay coupons. These functioned like promissory notes that could be used by a recipient in one country to pay postage to another, since stamps could not be used to mail letters across borders. Because the same coupons could be purchased in Italy for a fraction of what it cost in the United States, Ponzi surmised he could pocket the difference. He printed certificates promising investors 50 percent interest on their money in 45 days. But he never bought more than a handful of coupons.



1-800-SUMMARY
service@summary.com

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Rebecca S. Clement, Publisher; Sarah T. Dayton, Editor in Chief; Andrew Clancy, Senior Editor; Edward O'Neill, Graphic Designer; Chris Lauer, Contributing Editor

Instead, the penniless Ponzi used them to justify his swindle. A month and a half after starting, he redeemed his first certificates. When early adopters got back their money plus 50 percent, they spread the word. Like any con man, Ponzi knew that greed was an effective viral mechanism.

Although money was going out to pay back those with certificates, it was coming in even faster. By February 1920, Ponzi had accumulated \$5,000; a month later he banked \$30,000. On May 1, he had \$420,000 and by July he had amassed millions, all the product of a viral expansion loop, with each investor yielding two, three or more investors.

It all came to a head in August 1920, when Ponzi was arrested on charges of larceny after an auditor estimated that he owed \$7 million yet had less than half that in the bank. Even then he was pulling in \$250,000 a day, which would have meant his revenues would have topped \$91 million in the first year of operation — almost \$1 billion in current dollars — before it crashed and burned. ●

The First Online Viral Expansion Loop

For six weeks in 1992, Marc Andreessen, a 21-year-old computer science student at the University of Illinois, and Eric Bina, a programmer at the National Center for Supercomputing Applications (NCSA), ensconced themselves in the basement of the school's Oil Chemistry Building. They pounded out code from dawn to dusk to dawn again.

They christened their browser "Mosaic" after Andreessen laid out the graphics as a mosaic of icons for users to point to and click on.

On the morning of Jan. 23, 1993, Andreessen posted a message to several online bulletin boards, which read, in part:

By the power vested in me by nobody in particular, alpha/beta version of 0.5 of NCSA's Motif-based information systems and World Wide Web browser, X Mosaic, is hereby released.

Cheers,

Marc

X Mosaic (they later dropped the X) was the Internet's first smash hit, with enthusiastic early adopters conjuring a powerful word-of-mouth marketing campaign. Companies inquired about licensing the browser or hoped to commercialize it. Within six months of its release, the Unix version of Mosaic, by Andreessen's

Network Effects

With Mosaic, Marc Andreessen had uncorked a "network effect," a term first used to describe the spread of the telephone in the early years of the 20th century. Simply put, the more people who own a telephone, the more valuable an added line is to each person already on the network. The potential number of connections grows exponentially in relation to the number of people on the network.

count, had 100,000 users.

Even before finishing Mosaic, Andreessen and Bina had rounded up five NCSA colleagues to code versions for Windows, Mac and software to run a Web server. By the time Andreessen graduated in December, more than a million people were surfing the Web with Mosaic in Unix, Windows and Mac flavors. ●

The Spreadable Product as New Business Paradigm

To understand how a viral expansion loop works, there's no better place to begin than with Andreessen's latest company, Ning. The company has been growing automagically from the moment it launched its "Social Networks for Everything" — a free platform for do-it-yourself social networks — in February 2007. Within four months there were 60,000 Ning nets, and by six months, 80,000. At year's end there were 150,000, and roughly 325,000 of them 18 months into its run, increasing by about 2,000 a day.

As of April 2009, Ning counted almost 29 million users (adding 2 million a month), more than 1.3 million social networks (with 3,500 new groups being formed each day) and 2.7 billion page views the previous month. By the end of 2009 it estimated it would have more than 60 million members and close to 3 million groups.

Ning's 'Viral Coefficient'

Someone setting up a social network has no choice but to invite friends, family, colleagues and like-minded strangers to sign up, and each new member brings others. That pushes Ning's "viral coefficient" — the number of additional members each person brings in — way above 1. That's key, because if the virality coefficient is 1.0, the startup will grow, but at a linear rate, eventually topping out. Above 1.0, it achieves exponential growth.

With Ning, Andreessen estimates the viral coefficient

is a whopping 2.0: Each person who signs up is worth, on average, two people (compounded daily). The next day he or she brings in four members; on day three, eight; within a week, 128 people, each worth double his or her weight in virtual clones. That is how Ning has been able to double in size roughly every five months. ●

PART II: VIRAL MARKETING

The Perpetual Viral Advertisement

Until Sabeer Bhatia and his partner Jack Smith created the first webmail service, no one had ever thought of incorporating viral marketing into the actual product. In February 1996, Bhatia was pitching JavaSoft, a set of developer tools, to venture capital firm Draper Fisher Jurvetson (DFJ). Bhatia mentioned an additional application: webmail, which users of JavaSoft could use to communicate with one another.

DFJ co-founder Steve Jurvetson was amazed no one had thought of it before. He advised Bhatia to forget about JavaSoft — webmail was the killer app.

Hotmail

They launched Hotmail on Independence Day 1996. Smith counted 100 registrations in the first hour. After lunch, he tallied a total of 200 sign-ups. People were talking about it, and letting their friends and family in on the deal via e-mail.

Growth was robust but not staggering for the week. At their next meeting at DFJ, Tim Draper pushed the two young entrepreneurs to insert a tagline into each message: “Get your free e-mail at Hotmail.” The next day they agreed to do it. The impact was almost instantaneous. Within hours Hotmail’s growth took the shape of a classic hockey stick curve. They started averaging 3,000 users a day, compounded daily.

By Labor Day they registered 750,000 users and within six months they were up to 1 million. Five weeks after that they hit the 2 million user mark, adding more than 20,000 sign-ups a day. Through it all, Smith, using little more than virtual spit and glue, kept Hotmail afloat.

On Dec. 31, 1997, a few days after his 29th birthday, Bhatia closed a deal with Microsoft and sold Hotmail. Microsoft transferred ownership of 2,769,148 shares of stock, worth almost \$400 million.

In 2005 Hotmail was folded into Windows Live and continues to be one of the most popular webmail programs in the world. ●

When the Audience Decides What’s Good

Broadband allows webizens to consume Web content instantly, and when users decide something is good, they share it with their network of friends via e-mail, embedding a link in their blog or by posting on a discussion thread. Without gatekeepers to filter content, the audience attains a power never before seen.

With billions of videos streamed online, it’s not surprising new businesses are sprouting up around this digital efflorescence. Each day on YouTube, millions of video views are delivered and thousands of clips are uploaded. Apple’s iTunes Music Store sold 12 million video clips for \$1.99 each in its first few months. These aggregators are fast becoming the central nodes of an entirely new video marketing and distribution system, one far from Hollywood’s control.

The big studios may increasingly find themselves competing with films made by the masses. Part of the issue is lowering the transaction cost for making and distributing programs and films, and part of it is the low cost of user-generated content (usually free). It’s completely disintermediating. That process of cutting out the middleman has the potential to upend the balance of power that has governed the film industry for decades. ●

Viral Video as Marketing Strategy

Mint-maker Mentos was in a rut. A unit of Italian confectioner Perfetti Van Melle, Mentos spent \$20 million a year on marketing, most of it on famously campy “freshmaker” TV commercials that had run for the previous 15 years.

Vice President of Marketing Pete Healy believed Mentos needed to, as he put it, “reassess, redefine and reposition its brand.” This prompted him to sit down in 2008 with other executives for a brainstorming session to personify what the product was all about. And what celebrity was most like Mentos? They decided on Adam Sandler, former *Saturday Night Live* cast member and star of such cinematic shtick as *Happy Gilmore* and *The Waterboy*. In April 2006, a Web video of two goofy guys creating a replica of the Bellagio Fountain in Las Vegas out of nothing more than Mentos and bottles of Diet Coke went viral, downloaded by millions, spawning thousands of imitators and attracting intensive media coverage, and it hit Healy. “What could be a better fit than Adam Sandler and Mentos geysers?” he asked himself. “It reflected our personality.”

What followed was a marketing coup that has become a textbook example of how a company can harness the power of viral videos, where the standard 30-second TV ad, which is waning in influence, is replaced by the audience. Because in this new world of collective curation, they and they alone decide what's good and what should be watched while the traditional gatekeepers — television networks, movie studios and the news media — are pushed to the sidelines. This democratization of content is made possible by the advent of cheap video cameras, camcorders, even cell phones that capture user-generated infotainment, aided by powerful, affordable software to shape it, and distributed via a massive digital infrastructure with ample bandwidth. The technological zeitgeist is equal parts human, however, as netizens blog about what interests them or disseminate links to everyone in their e-mail and IM address books. Meanwhile, user communities have sprouted up on people portals like MySpace, Flickr and YouTube. ●

PART III: VIRAL NETWORKS

eBay and the Viral Growth Conundrum

Musing over the ideal market mechanism, Pierre Omidyar, a young, French-born Iranian American computer programmer, came up with the concept of an auction. The emerging Web, he realized, was the perfect place to hold it. There could be complete transparency, equal access for all and the price of a good or service would be whatever the highest bidder was willing to pay.

Over Labor Day weekend 1995, Omidyar cobbled together freeware he scooped up from around the Internet with his own homemade brew of applications. His little free-market experiment would soon prove so popular it would outstrip technology's ability to keep pace.

Five months after he unveiled AuctionWeb, his hosting company, complaining the site was bogging down its entire network, raised his monthly fees from \$30 to \$250. Omidyar had no choice but to charge for the service. Wisely, he let sellers continue to post items for free. If, and only if, it concluded with a sale, AuctionWeb would skim 5 percent for items priced under \$25 and half that for anything over.

Soon after, envelopes brimming with cash and checks arrived at his Bay Area home. In his first month he took in enough in dimes, quarters and dollars to cover the \$250 hosting fee. A month later Omidyar collected \$1,000; in April he received \$2,500. May's tally was \$5,000. May's revenues doubled again to \$10,000, and

Open Water

One early indication that homespun digital could deliver Hollywood-worthy numbers was the 2003 release of *Open Water*, a psycho-thriller with a cast of two, a crew of three and a pack of sharks. Chris Kentis, who had been cutting film trailers for a production company, pounded out a script, auditioned actors, bought two digital video cameras and shot the movie over the course of two years, mostly on the open ocean.

With low expectations he submitted it to Sundance. Not only was *Open Water* accepted, it attracted a distribution deal from Lion's Gate and, later that year, opened at 2,700 theaters across the United States. Made for \$130,000, it grossed \$30 million at the domestic box office and close to \$100 million worldwide.

Omidyar quit his day job to work full-time on his fledgling business.

Going Public

On Sept. 1, 1997, AuctionWeb unveiled its revamped site, renamed eBay, running on an entirely new scalable architecture.

Omidyar hired Meg Whitman in March 1998 as eBay's CEO. Six months later eBay went public, its shares nearly tripling in its first full day of trading, resulting in a market cap of \$1.9 billion. By year's end, eBay's \$48 million in revenues was 10 times greater than the previous year's.

Eventually, like all viral loop companies, eBay hit a point of ultimate saturation. By March 2008, its revenues and profit were growing in the mid-teens, compared to the 30 percent growth it had grown accustomed to over the years.

Still it remains a formidable force with a market cap of \$40 billion, monthly traffic in excess of 100 million users and 14 percent of global e-commerce revenue. It's also a primary source of income for some 1.3 million people who are part of an entire economy that sprang up around Omidyar's perfect market experiment. ●

PayPal: The First Stackable Network

In 1999, the Web had been co-opted by e-commerce, with virtual stores of all stripes setting up shop, accepting Visa, MasterCard and American Express. The only way to settle a debt with a non-merchant, however, was to

Summary: VIRAL LOOP

snail-mail a check or money order, which ran counter to what the Internet was all about: instantaneous communication and convenience.

That's where the mobile cash concept of Stanford Law School graduate Peter Thiel, computer scientist Max Levchin and their partner Reid Hoffman came in: It filled a void that technology had created but had not yet filled.

Thiel, Levchin and Hoffman called their product PayPal and on the strength of their futuristic vision Thiel raised \$4.5 million in first-round financing from Nokia Ventures and Deutsche Bank.

PayPal and eBay

Most eBay sellers believed credit cards weren't worth the hassle or expense. But PayPal was free and didn't lay responsibility for fraud on its users. Several thousand eBay auctioneers embraced PayPal, adding clickable links to the home page or writing detailed descriptions of the service so buyers could sign up.

By the end of December, less than two months after an initial e-mail seeding, there were 12,000 PayPal accounts. With 10 million registered users on eBay and registrations more than tripling each year, the virtual mega-garage sale site offered almost limitless possibilities.

By mid-2000, PayPal was grabbing 70 percent of all transactions on eBay. Being viral, it grew simply because it had already grown. Simultaneously, PayPal transitioned users away from credit cards, which cost PayPal a minimum 2 percent fee on every transaction, and to interest-bearing bank accounts, and began levying a 1.2 percent fee on sales, which was still far less than what Visa charged. PayPal was on the road to profitability, while its competitors crashed and burned.

The company was on its way to 200 million PayPal accounts worldwide. PayPal's stock debuted at \$13 on Feb. 15, 2002, and, after a wild ride, closed the day at \$20.09, giving the company a valuation of \$800 million. As the NASDAQ cratered, PayPal's stock continued to edge up. The market valued PayPal at \$1.2 billion. After some hemming and hawing, eBay agreed to buy PayPal for \$1.5 billion.

The day that eBay took over, Thiel, Levchin and Hoffman, who collectively took in more than \$100 million, walked away from the viral company they had started just a few years earlier. ●

Flickr, YouTube, MySpace

The first viral network to stack atop the expanding blogosphere was Flickr, the popular photo share site and

community. In early 2004, Flickr co-founders Caterina Fake and Stewart Butterfield created a primitive social network with photo share capability and incorporated tagging to better organize photographs.

Fake made it a point of introducing everyone who entered the site to someone else. As the blogosphere exploded, so did Flickr. Every blogger who used it acted as an advertisement, since to view pictures readers had to click to Flickr.

Its growth quickly accelerated to 30 percent to 50 percent month over month, a product of the social and conversation-fueled viral loop that was created. The more blogs that displayed photos that were stored and shared on Flickr, the more people were exposed to Flickr. This led to more blogs and more blog readers adopting the service.

Soon, the site that Butterfield and Fake had started had become the fifth most popular site on the Internet, generating revenue by charging a fee to heavy users wanting to store a lot of photos. A year after launching, the couple sold Flickr to Yahoo. Six months after that, the site hosted its millionth photo. Five years later, it was approaching 3 billion images.

Although Flickr might be a billion-dollar business today, Fake says she has no regrets selling out for \$40 million.

MySpace

After the blogosphere propelled Flickr's viral loop, the next stackable ecosystem to arise was MySpace, launched six months after Flickr.

On Aug. 15, 2003, MySpace went live. MySpace users could insert their own HTML code onto their profiles, making them customizable. Users could also post MP3s of their favorite bands, photos and videos. This led to MySpace being discovered by a powerfully viral segment of the population: teenaged girls, who joyfully shared coding tips with one another.

In October, MySpace counted 100,000 members, and soon more than 10,000 people a day were registering. The site quickly surpassed 1 million users, adding 20,000 more members daily. By May 2004, there were 2 million users, and four months after that the number doubled to 4 million.

When News Corp. bought MySpace for \$580 million in July 2005, it counted 22 million registered members, many of whom were spending hours on the site daily. A year later MySpace was home, by *Fortune* magazine's count, to more than 2 million bands, 8,000 comedians, and thousands of filmmakers, artists, poets, photogra-

phers and 100 million other social (network) strivers.

YouTube

But the viral network to eventually outdo the viral network it launched from was YouTube.

Until the site officially went live in November 2005 after six months of public beta testing, viewing video clips on the Web was often frustrating and inconvenient. It required a user to download one of the various players available. Because YouTube ran on Flash, an animation software, it provided a faster, one-click video experience even if the quality was low. MySpace members immediately gravitated to the service to embed links on their pages, which played the video clip YouTube hosted. These links not only spread the idea of posting a video clip on a MySpace page, it expanded YouTube's reach across the social network, exposing its millions of members to the site itself, creating a viral loop.

Once a viral network achieves a viral loop and a point of nondisplacement, it can't be stopped. By mid-2006, YouTube's reach surpassed MySpace's, even though YouTube was largely dependent on it, with 60 percent of its videos streaming from MySpace pages. Google walked away with the year-old site for \$1.65 billion in October 2006. ●

Tweaking the Viral Coefficient

Micheal Birch studied physics at Imperial College in London, where he met his future bride Xochi. After graduating in the early 1990s and working for six years as a database programmer for an insurance company, Birch and his wife set out to become entrepreneurs, remortgaging their modest home. Birch decided to create a viral business, something that would propagate from friend to friend without requiring a dime in marketing money.

They hit pay dirt in 2001 with their fourth business, Birthday Alarm, which began as a way to remind people of their friends' birthdays. In mid-2004, Birthday Alarm was reminding more than 1 million people a day about their friends' birthdays.

Bebo

Birch worked on the idea of a self-updating address book, applying everything he had learned along the way. He called it Bebo, a name he chose because it was short, snappy and utterly nonsensical, like Yahoo. He put the link up on Birthday Alarm, seeding it with just a few members, and it "went ridiculously viral." The viral coefficient: 2.5. One million people signed up, 300,000 of them on day nine alone. By the end of a month, he

had a few million members.

Birch and his wife spent three months redeveloping Bebo into a full-blown social network with profiles, pictures, blogs and an invitation system. It would be, at its essence, a community enabler, helping people to get to know one another without the societal constraints that characterized public interaction.

After two months, profiles began to fill up with photos, comments and overlapping conversations between friends. Bebo had finally attained a viral loop. From a base of 6 million users, the site was increasing page views by 10 percent a week. First, British youth discovered Bebo. Over the next several months it spread to Ireland, Scotland, New Zealand and Australia. Within 10 months, Bebo counted 24 million members leaving through 2.5 billion monthly page views.

With Bebo growing to 40 million users spending an average of 40 minutes a day on the site, the Birches sold the site to AOL on March 13, 2008, for \$850 million. The young couple that nine years earlier had mortgaged their home to finance their viral dreams walked away with \$595 million, which was more than News Corp. paid for MySpace. ●

Viral Clusters

The tale of Mark Zuckerberg has been told so often it's become part of geek folklore. Raised in a New York City suburb, Zuckerberg earned a reputation at Harvard as a prodigiously talented programmer.

It took about two weeks for Zuckerberg to code Thefacebook.com, which debuted on the evening of Feb. 4, 2004.

It was a simple, streamlined site. A Harvard e-mail address was required for registration, with profiles consisting of a photo, the student's major, favorite books, movies, music and a place to share pithy quotes. Students could friend other students by linking to their profiles and "poke" someone to indicate they had dropped in. After creating a few test profiles, Zuckerberg made ones for himself and his roommates. Someone suggested they post an announcement on the dorm mailing list, and dozens joined. Inside 24 hours, more than 1,200 students registered. Five days later the *Harvard Crimson* ran a story on Thefacebook.com, and by the end of the month three-quarters of the undergraduate population (about 7,000 students) had signed on.

Facebook

In 2007, Facebook made changes that spurred on a new wave of sign-ups. Facebook calculated that when

Summary: VIRAL LOOP

a new user made 10 friends, he or she would likely shift into becoming active on the site, and his or her networks of friends would continue to expand. To encourage this, the company added the feature “people you may know,” which immediately began to pay dividends. This small change led to a big uptick in Facebook’s viral coefficient.

Today, 15 million Facebook users update their status at least once a day. ●

The Search for a New Ad Unit

Google, which maintained a simple interface with a lone search box, introduced a new ad unit: keyword search. Social networking companies like Facebook and others are also seeking a new ad unit. The problem is that advertising on the traditional banner ad doesn’t work anymore.

Time, Not Clicks: The New Ad Unit

Andy Monfriend, founder and CEO of Lotame, a social media advertising and marketing firm, believes that the new ad unit for social networking is time — as in how long a user interacts with a certain ad.

Here’s how it works: A social network that deploys Lotame’s flagship product, Crowd Control, would furnish a user’s age, gender and zip code. It is barebones data, not personally identifiable information that could be used to find out a person’s true identity. Lotame then dispatches a cookie, which is a piece of software that can track movements online, to the user’s machine and notes his or her online behavior. If a client, say, Clinique, wants to target women in their 20s and 30s who have either blogged, uploaded, rated or shared content that indicates they are looking for beauty tips, Lotame can reach a million of them across 20 or more different sites. Suddenly you have a robust way of targeting. Lotame then sells an advertiser a block of time spent interacting with an advertisement over a certain period, covering a specific number of women that represent a demographic.

A Financial Incentive

Vasanth Sridharan of the blog Business Insider, suggested that users should receive a commission for acting as referral marketers, on the order of 5 to 10 percent on any purchases their friends make. This would offer users a financial incentive.

Treat users as partners. According to network theory, each has value to Facebook, and the more active a person is and the more active his or her network of friends

is, the more valuable he or she is. The user then becomes a willing participant in this marketer-consumer game.

If Facebook shared some of the bounty of advertising, users would gladly interact with the new ad unit no matter what form it came in. It would be truly innovative and a worthy extension of the social graph. ●

Viral Creatures on Viral Planet Earth

The greatest viral realm of all is Earth. And the modern, post-Internet definition of viral — a replication pattern transmitted from user to user — can even be retrofitted to describe how life took off on the planet. Because all life forms, whether they are humans, wombats or fire ants, are bred to spread. In essence, virality is imprinted into our DNA.

In 10,000 BC, approximately 1 million people roamed the planet. By 5,000 BC there were 15 million and by 1 AD perhaps 300 million. As such, our growth rate was fairly flat and humans’ viral coefficient barely exceeded 1.0.

Through the Middle Ages it took a millennium to add just 10 million people to the planet. Famine, war, poor living standards and pestilence prevented humans from scaling. Not until 1700, when the population reached 610 million, did the growth rate pick up, inching past 1 billion in the early 1800s and doubling within a century. Industrialization, trade and advances in agriculture and shipping all increased our viral coefficient. Today the world population exceeds 6 billion and is growing.

The human population growth rate mirrors the curves for companies like Hotmail, Ning, Facebook; peer-to-peer networks; and other viral-loop phenomena.

At our essence we are viral creatures. Creating viral-loop businesses is just a small part of what we do and who we are. ●

RECOMMENDED READING LIST

If you liked *Viral Loop*, you’ll also like:

1. **Reality Check** by Guy Kawasaki. Kawasaki was one of the original marketers on Apple’s Macintosh. He continues to be on the cutting edge of using technology to gain competitive advantage.
2. **Rethink** by Ric Merrifield. This book helps executives stop focusing on the “how” of getting things done and instead focus on the “what.” Merrifield offers techniques to help improve process management.
3. **Chaotics** by John Castlione and Philip Kotler. The authors explain that today’s economy is symbolic of the new reality, one that cannot be predicted. This book helps executives manage in the new world where dramatic highs and lows are commonplace.

· Book 2 of 35 ·

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SOUNDVIEW Featured Book Review

www.summary.com

The New Tools of Connection and Collaboration

Featured Book Review by Chris Lauer

ENTERPRISE 2.0

by Andrew McAfee

© 2009, Harvard Business Press, 231 pages, \$29.95,
ISBN 978-1-4221-2587-8

Remember the dire predictions about the impending “Y2K crisis” and the ho-hum reality that arrived during the first moments of the new millennium when nothing really happened? Many people saw this disconnect between message and reality as a sign that the hype pouring out of the technology sector was largely overblown. MIT researcher Andrew McAfee was one of those doubters. That same skepticism continued to linger in his mind when tech experts across the globe began to declare that a new “Web 2.0” era was upon us. They claimed that the World Wide Web had jumped to a new and greater level. In his book *Enterprise 2.0*, McAfee explains that when he heard the growing hype about Web 2.0, he initially viewed it as simply more technological babble. As an Information Technology (IT) professional who needed more proof that the latest technologies were worthy of his excitement, he continued to scoff at the reports that said important new changes in online behavior had created a sweeping change. Media mavens were calling the rapid growth of social media platforms an IT revolution, but McAfee attributed their enthusiasm to the media’s eternal obsession with all things that look like change.

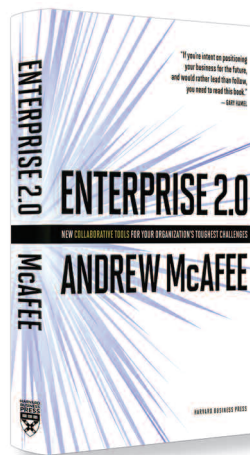
McAfee was not convinced that what was being called “Web 2.0” was really something new. To learn more,

he began to use some of the latest Internet tools. As he made his initial forays into emerging social media platforms, such as Wikipedia, his mind began to change. What he found was an exponentially enhanced Internet filled with an amazing amount of accessibility and collaboration. Finally, he concluded that there was, in fact, something new going on in cyberspace. It seemed that many forward-looking companies were making money

on a variety of new platforms that had been enabled by the shift in the Internet. In *Enterprise 2.0*, McAfee describes what companies today can learn from the organizations that have already ventured into this new digital domain.

In 2006, McAfee published an article in *Sloan Management Review* that described something he called “Enterprise 2.0.” After receiving international attention and accolades for his insights into the topic, he was encouraged to improve on the article and turn it into a book. The result is *Enterprise 2.0*, in which he offers leaders in all types of organizations an IT expert’s

perspective on the current state of organizational technology and the latest tools that have emerged. After performing in-depth field research into Web 2.0 and exploring companies such as the enterprise wiki vendor SocialText and the investment bank DrKW, McAfee reached some very important conclusions about the state of IT and where it is heading. He also developed many helpful strategies all businesses can use to realize the potential of enterprise-enabling software and technological advances that can help a company thrive in a competitive marketplace.



The Next Level of Collaboration

McAfee starts *Enterprise 2.0* by developing and expanding on a very simple premise: These new technologies mean serious business. Social online communities and collaborative platforms, such as Wikipedia and Facebook, have the power to add value and benefits for customers, employees, vendors and other stakeholders. They also offer businesses unlimited potential for discovering new ways to serve and empower their people.

McAfee acknowledges that the mere mention of IT can make many people nervous. Fear and worry often accompany the conversation when outsiders venture into the mysterious and worrisome realm of IT. Thankfully, McAfee's book is aimed at enlightening general managers and other business leaders who might know very little about IT. He recognizes that IT people aren't the only ones who can benefit from the latest communication breakthroughs, so he puts himself in the shoes of the average business practitioner when he writes about his research in the field. Fueled by great examples of organizations that are profiting from new social media platforms, McAfee's observations and lessons for all organizations create an easy map to follow through the current state of Internet-powered business. Anyone can venture to the next level of collaboration; McAfee shows the way.

In some organizations, leaders have been skeptical of "social software." They think it leads to unproductive employees wasting company time with idle chitchat. Recognizing that this misinformed bias can stand in the way of some business leaders adopting these tools, McAfee proposes a perspective change from "social" media to "collaboration" media. The word *social* might evoke cringes in some bosses, but who can deny that collaboration is a vital component of innovation, teamwork and a pile of other business goals? *Enterprise 2.0* shows how the latest online collaborative tools can energize organizational life.

New Approaches to Old Problems

After surveying the current state of IT, McAfee encapsulates what he learned into a variety of case studies and lessons. His research unveils a new world that offers all companies a variety of ways to intimately connect colleagues and customers. *Enterprise 1.0* offered the first wave of Internet tools, but several years of experimentation and adaptation have created new and better online tools for collaboration and connection. In the new 2.0 version of enterprise, organizations have moved past

their initial surprise at the amazing interactivity of the Internet. Now they are beginning to thrive in an environment where workplace communication among experts and peers has blossomed to new heights thanks to emerging social media platforms.

Evidence shows that the "new approaches to old problems" that make up *Enterprise 2.0* are working remarkably well in the real world and attracting more people every day. Leaders of all types of organization are reaching many of their most important business objectives using the latest Internet-based tools and platforms. In *Enterprise 2.0*, McAfee shows readers how this has happened in four real-world organizations: business-card company VistaPrint, Serena Software, the CIA and

Google. The author organizes his book around these companies while unfolding a detailed tour of the latest tools for collaboration and their capabilities. Pertinent and revealing background information on many IT concepts set the stage for his description of what can be learned from the experiences of early adopters.

Collective Intelligence at Google

In his 2005 book *The Wisdom of Crowds*, James Surowiecki wondered why more companies weren't harnessing the power of "collective intelligence." Google employees Bo Cowgill and Ilya Kirnos were wondering the same thing, but they had never shared their ideas because they had never met. They worked in the same company, but their departments rarely mingled. Kirnos was a programmer and Cowgill worked in customer service. They both shared a deep interest in "prediction markets," such as those used in stock market forecasting, but the two men remained isolated.

In *Enterprise 2.0*, McAfee describes how Google's use of collaborative media helped Cowgill and Kirnos find each other among thousands of Google employees. He also shows how Google's openness to innovation helped these two creative techies combine their talents and interests in predictive markets to create a useful technology for harnessing collective intelligence.

Cowgill got the ball rolling by broadcasting his search for other people interested in a prediction market to everyone throughout the company. He did this by leaving a message on an internal online message board where Google employees posted new ideas. This "broadcast search," which is one of the benefits of social media platforms, allowed him to form a team composed of Google employees from a wide variety of areas. Few of them knew each other before Cowgill posted his

In some organizations, leaders have been skeptical of "social software." They think it leads to unproductive employees wasting company time ...

message about his interest in collective intelligence.

Google Prediction Markets

After Cowgill and his colleagues began to collect and share their ideas about predictive markets, they wrote a proposal for “Google Prediction Markets” (GPM) in December 2004. Once funds for the project were secured, the team designed a variety of predictive markets, implemented them and encouraged Google’s people to use them. The results included predictions on demand for new products and the success of product launches by competitors. These predictive markets were open to all Google employees, and more than a thousand of them signed up for a GPM trading account within the first quarter.

The GPM created a collection of fairly accurate probability estimations for several important business outcomes. Although the participants in the project had very little in common, their collaboration and the predictions generated by the GPM created some very valuable information. The GPM and other prediction markets, such as the Iowa Electronic Markets and the Hollywood Stock Exchange, have all been able to create accurate predictions about many types of events. These tools and positive outcomes would never have been possible before *Enterprise 2.0*.

The Benefits of Emergent Social Software Platforms

McAfee calls the latest tools of *Enterprise 2.0* “emergent social software platforms” (ESSPs). They are made for anyone inside or outside the computer industry. ESSPs involve such things as search capabilities, links, authoring, tagging and signals that tell users when new content of interest appears. Google’s prediction markets, collaborative wikis and blogging platforms are all examples of ESSPs. They are simple platforms for connecting many different people and helping organizations pursue their goals.

The benefits of ESSPs are many, but McAfee has narrowed them down to six: group editing, authoring, broadcast search, network formation and maintenance, collective intelligence and self-organization. To help readers understand these benefits, McAfee addresses each one individually throughout *Enterprise 2.0*.

Group editing, for instance, refers to the ability of many diverse people to work together on a single, centrally stored work project, such as an Excel spreadsheet, Word document or Web site. McAfee describes how online wikis such as Wikipedia, Google Docs and Spreadsheets offer work teams unprecedented access to each other’s ideas and documents. Another benefit of

group editing is that it is usually very inexpensive or even free. It can also usually be done with nothing more than a Web browser. McAfee points out that security concerns might require an organization to create a closed group-editing environment, but he also warns leaders that making work less accessible in the name of confidentiality could keep some very valuable contributors and their expert ideas out of the loop.

Authoring and Network Creation

Another benefit of collaborative software platforms is authoring, which refers to the practice of putting information — including photos, blogs, videos and podcasts — online for everyone to experience. Sharing knowledge and status updates through social networking software, such as LinkedIn, Twitter or Facebook, is a great way to generate new information and innovations, broadcast important information about an organization and keep people up to date on the current state of the company. Plus, when information travels directly from person to person, there is not the distortion of the ideas that can occur when a middleperson gets involved.

The latest social platforms also facilitate the formation and maintenance of new networks of people. McAfee explains that ESSPs help us find people who are working on similar projects and problems. Millions of previously unfamiliar people are introduced to each other every day on intranet social platforms. When experts combine to form formal and informal networks that interact and work together, organizations are much better prepared to solve their most pressing problems more productively than they could if individual members were working alone.

The Wisdom of Crowds

Along with the ability to broadcast a search to many more potential collaborators, the social software platforms that have emerged over the last few years also offer the benefit of collective intelligence. This is the “wisdom of crowds” that Surowiecki wrote about in his book. Surowiecki’s ideas eventually led to the prediction markets Cowgill, Kirnos and their colleagues created at Google. Users have discovered that the predictive powers of many people can be more powerful than those of fewer people. The latest software offers valuable ways to put our minds together.

One company that has benefited from the use of social media is Serena Software, a company that McAfee features throughout his book. In his research, McAfee learned how Serena uses Facebook to improve its corporate culture. Company leaders liked the experience so much that they decided to get rid of their intranet because it was dull, ignored and less efficient. They liked

the way Facebook makes it easy for colleagues to build networks and develop a greater sense of community within the company. Using the standard public application program, and Facebook's privacy options, Selena connects customers, vendors, partners, employees and anyone else who wants to learn about the company. McAfee explains that Facebook also helps those inside Selena share their knowledge with each other.

Self-Organization

McAfee writes that the biggest benefit offered by the new tools of social networking is the ability of users to self-organize and build online communities. People across the globe have found online places where they can meet, decide what they want to do, make decisions about raising and spending money and change their organization over time. These social software platforms are headless creatures. There is no central authority in charge and they are prone to spontaneous changes. Without a traditional hierarchy, many organizational leaders might pale at the notion of allowing an online presence to evolve naturally at the whim of a decentralized entity.

One very risk-averse organization that has benefited from the use of the new capabilities of social platforms is the U.S. Directorate of National Intelligence (DNI), which uses Intellipedia and other platforms to unite 16 federal intelligence agencies in the United States. McAfee writes that the DNI leaders believe that "the benefits of better and wider sharing of intelligence information outweigh the risks." Organizations should take note that the U.S. intelligence community uses publicly available applications, including the same software that operates Wikipedia and a Google search tool. McAfee points out that this is a good indication that the benefits of *Enterprise 2.0* are greater than the theft risks for most organizations.

IT Matters

Enterprise 2.0 admittedly challenges the assumption made by Nicholas G. Carr in his controversial *Harvard Business Review* (HBR) article and 2003 book titled *IT*

Doesn't Matter. IT does matter, McAfee writes, because it can have a powerful effect on performance and competition. It can also separate the successful companies from the failures. That's why all organizations must now decide how they will invest in IT and the collaborative platforms that can help them reach their goals. *Enterprise 2.0* can help them make that decision.

IT makes a difference, over the long term, when facing competitors. That's the conclusion McAfee reached after he did his research and wrote about it with Erik Brynjolfsson in a 2008 *HBR* article titled "Investing in the IT That Makes a Competitive Difference." In that article and *Enterprise 2.0*, McAfee argues that collaborative software tools are easy to use for capturing and spreading information. They also help organizations find better answers to their questions and strengthen the connections among their users. Good ideas are in great demand these days, and McAfee shows readers how the tools of *Enterprise 2.0* can help organizations spread those ideas, whether they are processing customer orders or sharing important messages about products.

Good Ideas

Company leaders have always talked about the importance of good ideas and collaborative networking. Today, a slew of valuable new tools that facilitate these things has arrived. *Enterprise 2.0* offers organizations and their people an instruction manual for getting up to date on the benefits of these tools and the ways they can be activated. It also provides organizational leaders with the confidence to stride boldly to the cutting edge of these "emergent social software platforms" and dive right in.

Be prepared to stick around for the long haul, McAfee warns, because patience will be required as you slowly master the latest tools for organizing and collaborating. He also points out that leaders will need to show a great deal of leadership and attention when working with these tools. Some will fail, but many organizations will discover that these powerful tools provide a rich resource for harvesting great ideas and beneficial innovations. ●

The author: Andrew McAfee is a principal research scientist at the MIT Sloan School's Center for Digital Business and a fellow at Harvard's Berkman Center for the Internet and Society. He studies the way that information technology affects businesses and business as a whole.

· Book 3 of 35 ·

35-30 What Keeps Leaders Up At Night

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The New IT

How Technology Leaders Are Enabling Business Strategy in the Digital Age

THE SUMMARY IN BRIEF

With the onslaught of cloud solutions, consumerization of technology and increasingly tech-savvy businesspeople, it's time for a manifesto for leaders who recognize — and are nervous about — the demands of the digital age. Whether you're an executive, department head or IT manager, *The New IT* provides an action-ready blueprint for building and strengthening the role of IT in your company — and prescribing IT's future.

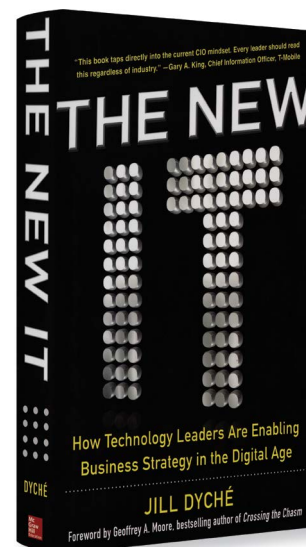
By using field-tested techniques to align your IT department with your corporate objectives, you can leverage the power of technology across the entire company. *The New IT* provides a set of tactical and experience-based frameworks to help you and your colleagues conceive a new roadmap. You'll learn how to bring your business and IT teams together in a way that is truly transformative.

The new IT doesn't just deploy technology. It balances strategy and delivery. It's interactive and inclusive. It's as omnipresent as the smartphone and just as revolutionary.

The New IT equips you with the tools you need to succeed in reframing the IT conversation and propelling your business forward.

IN THIS SUMMARY, YOU WILL LEARN:

- To identify your current and future IT archetype.
- How and why you need to make your IT portfolio central.
- To reorganize IT into service lines.
- To build a stronger and enduring role for IT as a business partner.



by Jill Dyché

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THE COMPLETE SUMMARY: THE NEW IT

by Jill Dyché

The author: Jill Dyché is the Vice President of Best Practices for SAS. She is also an acknowledged speaker, author and blogger. She has written three books on the business value of IT, including the best-selling *CRM Handbook*. Her work has been featured in numerous magazines and journals, including *Newsweek.com*, *HBR.org*, *Information Week*, *Computerworld* and *Forbes.com*.

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PART I: IT CHALLENGES: REAL AND PERCEIVED

What's Wrong With IT?

It's a discussion in meeting rooms, boardrooms, hotel conference rooms and post-conference cocktail parties: Why isn't IT working? Ask anyone in a corporate or government job, and you'll get an earful.

The responses come fast and furious: "They don't speak our language. They're too focused on résumé building and tinkering, not on driving business value. We don't understand what they're saying when they talk to us. They play favorites with vendors. The CIO hides in his office. They're always 'in the weeds.'"

It's an ongoing battle, and more often than not, IT gets the blame. Indeed, IT bashing has become *de rigueur* not only in boardrooms but in the popular press and online. Business magazines are rife with discussions of how CIOs can get a seat at the table, how often the CIOs report to CFOs and COOs (versus CEOs), and reasons why the collective reputation of IT leaders has nosedived.

The New Gatekeepers

IT is at a moment when its future is being redefined, and its cultural power is shifting to a new set of gatekeepers. Who are these new gatekeepers? They fall into two classes, business units and customers, and their dominance in the IT conversation is growing.

The Business Unit Rises. Research has found that almost half of the CEOs described CIOs as being out of touch with the business and unable to understand how to apply IT in new ways. Over half also considered IT "a commodity service purchased as needed." Clearly, most

CEOs haven't positioned IT as a strategic differentiator, never mind inviting their CIOs to weigh in on the conversation. The result? Lines of business, particularly marketing and finance organizations, are obtaining their own IT budgets and setting their own technology courses.

These behaviors become entrenched, and eventually they become part of the corporate culture. CEOs and COOs throw up their hands, in effect sanctioning business unit independence and encouraging other departments to build their own rogue systems. There are no penalties. Thus, so-called shadow IT comes out of the closet.

Customer Focus Comes Home to Roost. As with internal business executives, external customers are also getting smarter about technology. The so-called consumerization of technology has meant that a shopper can now go online with a few taps of her smartphone to find the best price on the product she wants and, with a few more taps, buy it. Welcome to the digital enterprise.

Likewise, social media sites are connecting companies with consumers irrespective of brand presence or marketing budget. Unencumbered by years of history, aging management teams or established business processes, smaller companies with strong social media presence are nipping at the heels of established brands.

More and more small companies are cropping up and staying small. For CIOs of more traditional companies, this means new pressures to modernize, exploiting their firms' scale and financial resources while at the same time thinking of new ways to become more nimble and innovative. The problem is that CEOs aren't measuring these CIOs for modernization or innovation. Instead, they're rewarded for keeping the lights on.



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Rebecca Clement, Publisher; Sarah Dayton, Editor in Chief; Ashleigh Imus, Senior Editor; Amanda Langen, Graphic Designer; Carissa Bobenchik, Contributing Editor

Forging a New IT Identity

Leaders must take a deliberate and honest look at where they're going in order to induce change. Before you can really know where you're going, you need to know where you are and what's driving the need for change.

The first step is to pinpoint the current challenges IT faces in the age of the cloud, big data, decaying legacy systems and digital everything. Figure out what the "ideal state" looks like. Then, plan what IT assets will help bolster the brands of both the IT organization and the company at large.

The steps for creating a new IT identity are as follows: Identify your challenges, choose your brand, plan your portfolio and lead your team. Indeed, in order to successfully rebrand their organizations and redefine their own roles, IT leaders should consider three new decision levers that will drive change: operation, connection and innovation. ●

The IT Leader's Identity Crisis

The consensus among both IT and business professionals is that change is not only necessary, but it is also inevitable. The problem is that many leaders are at a loss for what to do. At the end of the day, the issues come down to two things: the ability of the company's executive leadership to include IT as a strategic lever and the tendency of the culture to allow this to happen.

The Six IT Archetypes

There are six different organizational behavior sets in IT. IT archetypes connote not just theoretical models but actual focus areas, structures and behaviors. Your company's culture very likely is what has informed its current IT archetype. Whether you use these different models to explain your current state or inform your vision, they can help reveal your company's appetite for change.

Type 1: Tactical. CIOs whose organizations fit the Tactical archetype are commonly acknowledged for keeping the lights on. Conversations with senior executives and peers consistently involve outages, uptimes and upgrades. You are sought out for input not on business issues but on operations, automation and cost. Being tactical should not be dismissed as an anachronistic model responsible for the widespread disaffection with IT. Many large telecommunications companies and banks have thrived for decades in this mode.

Type 2: Order Taking. In their haste to be seen as business enabling, many IT departments master the art

of release management. Business units approach them for new projects, which they unfailingly insert into a development pipeline. In the best scenarios, requests for IT resources are guided by an overarching mission that is represented by isolated business requests and fulfilled accordingly. At worst, the Order Taking approach marginalizes IT. The requestors not only tell IT what they need but often how to deliver it.

Type 3: Aligning. Every IT leader is trying to improve business alignment. Indicators that your team has Aligning as its primary archetype include formalized business-facing IT roles, and the team uses business unit plans to inform a central IT-specific plan. The best indicator is that the alignment isn't simply indicated by job functions but also by processes and behaviors that give it teeth — and staying power.

Type 4: Data Provisioning. In the Data Provisioning archetype, the company maintains a robust inventory of data from both internal and external sources, it has invested in data-specific IT skill sets separate from the systems and applications that generate the data, and it has earmarked big data or other strategic data trends as critical to its success.

Type 5: Brokering. The Brokering archetype relies less on a single organization and more on a network. The network will likely encompass both insiders and outsiders. This requires being circumspect about the IT organization's competencies and bequeathing what's left. The Brokering archetype means ceding control, if only temporarily, because when this model works well, control of how individual projects are deployed gives way to control over the optimal delivery channels.

Type 6: IT Everywhere. IT Everywhere applies to inside the company and to the outside world. Finance buys its own general ledger software or outsources it to a cloud provider. Sales might choose to administer and maintain the product catalog and price list while outsourcing compensation and territory management. Customers manage and update their own profiles. IT is no longer a black box where all the magic happens (or doesn't). IT becomes a thin layer of program oversight that monitors progress, reports on delivery and projects future demand. It might not even be called IT anymore.

When evaluating the six archetypes, it's helpful to ask, "What's our *primary* model?" This should help you focus on where you are — and where you want to be. When in doubt, consider how your organization behaves when it's under stress. Do you revert to heads-down operations, doubling up resources to make sure things run smoothly?

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Do you look to outside partners for help? Do you cast off systems or teams that are underperforming?

The six IT archetypes can help identify predominant organizational behaviors that you can choose to embrace or overcome. ●

PART II: YOUR IT TRANSFORMATION TOOLKIT

Strategy on a Page

Strategy, defined in its simplest form, is the set of actions a company takes to gain competitive advantage. Strategic planning typically includes a discussion of where the company wants to go, a critical study of the competitive landscape, an appraisal of emerging market trends, and the creation of a set of objectives against which the company must deliver in order to realize its goals.

Although executives insist that strategic planning is still a key tool in their management toolboxes, many strategies never see the light of day. It's no surprise, then, that when it comes to what IT leaders obsess about, corporate strategy isn't on the list of what keeps them up at night. In fact, many CIOs can't even articulate where their companies are headed, let alone describe key business objectives.

Confusion over the role of strategy often means that when CEOs relate strategy and IT, it's usually in the context of saving costs via shared services, improving business alignment, or outsourcing systems and skills. In their quest to standardize back-office functions, CEOs unwittingly fan the flames of the raging business-versus-IT inferno that continues to scorch relationships on both sides.

Supporting strategy doesn't have to be a science project. In fact, a discrete exercise in strategic alignment can inform IT's long-term future, helping you target the right IT archetype.

IT Strategy on a Page

It's one thing to link strategies, but it's another thing to communicate those linkages in a way that engages those outside of IT. Like strategy maps, Strategy on a Page illustrates a top-down relationship between high-level corporate goals with their associated execution tactics. Unlike strategy maps, Strategy on a Page communicates delivery components, concisely answering the question, "What will it take?" Its basic components are the following:

Vision. Vision statements articulate the future that organizations want to create for themselves.

Performance measures. This answers how IT measures itself and applies to both the vision and the strategic imperatives.

Strategic imperatives. These are mandates that support the company's strategic goals.

Initiatives or projects. These are the individual work efforts that will support the defined strategic imperatives — and thus deliver on the vision.

When filled in, the Strategy on a Page can orient people around an IT conversation, a reliable reminder of what IT is working on and why. Many leaders begin their management and staff presentations with the Strategy on a Page, in effect reminding their audiences of the inception of their work. Strategy on a Page can also change minds about IT's relevance, showing how IT can contribute value, thus enhancing IT's internal brand.

Understanding how strategic your company is will give you better insight into the direction your IT organization should move toward — in other words, your desired-state IT archetype. Moving from one archetype to another usually means evolution, not revolution. More often than not, the movement involves slow and incremental changes.

Ultimately the lack of deliberate strategic thinking is a failure of leadership. The company and its future can suffer as a result. ●

Operations: Rethinking Your IT Portfolio

IT staff are often busy doing the wrong things. Cumber-some legacy-system maintenance, hardware and software upgrades, and tire kicking in the name of research take up far too much of IT's time — time that could be spent building valuable business solutions.

When IT leaders are uncertain of priorities and direction, they often hunker down, tinkering with their budgets while trying to keep up with ever-shifting project demands. The dozens or even hundreds of concurrent IT projects, with their oozing scopes and ballooning costs, are a testimony to the project-as-panacea phenomenon. But projects in a vacuum don't work. They need justification in the context of something greater. And they need to be prioritized based on their business value.

Building — Then Forgetting About — Your Operating Framework

Any IT organization is the sum of its complex, interrelated and constantly moving parts. At the end of the day,

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the IT operating framework should serve as a means of connecting these parts and ensuring that they serve the IT strategy — and by extension, the business strategy — very well.

Let's briefly touch on the meaning and importance of each component in the IT operating framework.

IT Portfolio. Your IT portfolio is the collection of business capabilities and functions deployed by IT over time. The IT portfolio helps communicate IT's collection of work efforts. It defines IT's job.

IT Governance and Policy Making. IT governance is the management of IT assets, be they systems, people, content or other resources with value attached to them. Governance is often misinterpreted as IT operations management. IT governance is really about the policymaking and oversight of IT efforts.

Budgeting and Resourcing. This component is what many executives often mistake for strategy in IT. In reality, the resources and budgeting enable business and IT leaders to deliver against their company strategies via their IT portfolio. They are a means to an end, not the end.

Systems. Including systems as part of the IT operating framework is a given. However, in many ways this is the biggest commodity portion of the framework. Technology platforms are increasingly cheaper and easier to procure.

Innovation. Including innovation in an IT operating plan ups the odds that it will be taken seriously by constituents who might be cynical about IT's ability to offer fresh ideas and nontraditional solutions. A few small, incremental innovations can drive a cultural shift that positions IT as the curator, if not the owner, of new technologies and delivery mechanisms.

Talent. Calling talent management out as part of the operating framework in its own right cements the point that IT skills are unique, differentiated and important to nurture. Leaders should share a common philosophy of rewarding and keeping top talent and measuring it according to delivery.

IT Roadmap. The IT roadmap represents IT's delivery master plan. The roadmap might span multiple years, and it will usually include budgets, resources and projects. While many IT leaders would position the IT roadmap at the center of their operating frameworks, it's important that the roadmap be the result of deliberate IT portfolio planning, not the driver of it.

Leaders should adopt a portfolio approach to managing IT projects. The true value of managing IT efforts as a portfolio of projects is that it provides a means of prioritization, driving investment decisions in a more concrete and timely

way. In fact, IT project prioritization is just as important as IT spending, as it affects long-term ownership, outsourcing, development cycles and resourcing decisions.

Once your company has identified the components of its IT portfolio, a committee of IT decision makers and business stakeholders should collaborate to apply a structured taxonomy to IT initiatives-based quantifiable metrics. Categorizing IT projects in a sustained and structured way can inform development processes, resource decisions, new vendor conversions and hiring strategies.

There is no set means of establishing important prioritization metrics. They should come from a deliberate process of examining what's worked in the past and what's important for the future, with an emphasis on what the culture can accept and adopt. When done right, technology-portfolio planning can ensure that innovation is part of a sanctioned process for planning and budgeting, rather than it being considered a luxury or afterthought. ●

Organizational Models and IT Service Lines

The typical IT organization has evolved into a *shared service* — that is, a centralized department that offers a range of skills and technologies to a range of business units across the company. IT is seen as the purveyor of technology platforms and applications that can automate these business units' processes and supply the operational systems that run the company.

Savvy leaders understand that the value of IT isn't in the platforms and applications or even in the economies of scale promised by the shared-services model. A successful IT leader can blend a variety of foundational, transformative and innovative activities and demonstrate how they all support corporate objectives.

Executives in the midst of IT transformation embrace the idea of IT services, but they would like a simpler way to categorize IT into different delivery competencies — something they can use to connect with senior executives and business peers. Such a framework can also define “buckets” for investment and delivery.

The service-lines concept delineates various specialties that represent organizational competencies. The service-lines structure allows IT executives to determine ownership boundaries between lines of business and IT. This is perhaps the biggest challenge facing IT organizations, and it is the single biggest issue in fighting the business-versus-IT dragon that rears its fierce head daily in

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corporate cubicles, executive offices and boardrooms. Let's take a brief look at the most common service lines in IT organizations:

User Access Devices. As mobile devices have become more diverse — now encompassing not only smartphones and tablets but also wearable technologies and smart sensors — executives have ceded to the reality of a multitude of devices.

Analytics. It's rare to find analytics called out as an independent service. Large companies, including Walmart, Bank of America and Verizon, have produced centers of excellence to centralize their business intelligence (BI) and analytics skills. But a growing number of companies have formalized BI as its own bona fide service line, with a dedicated executive, robust and specialized development tools, and a lens into corporate objectives that illuminates high-impact strategic opportunities that can be achieved through analytics.

Local Applications. The reality that business units are intimate with their own problems, combined with a newfound ability to find good technologies and the accompanying skill sets more quickly and cheaply than ever, means that they're increasingly bypassing IT altogether.

Enterprise Applications. As lines of business continue to attain their own IT budgets, some may have their eye on replacing in-house operational systems — many of which have entered the enterprise lexicon as “legacy systems” — with cloud-based or custom solutions that better suit their needs. Recently, IT leaders have been more receptive to this option, offering skills and support but not ownership in these business unit-specific undertakings.

Data. Data is a business asset, and it should thus be sourced, maintained, provisioned and analyzed to support business objectives. But data is also a shared resource. Many IT leaders have identified data knowledge as one of their core differentiators. Indeed, as many CIOs hand over local applications to their respective lines of business, they simultaneously formalize shared data services as a flagship IT offering.

Infrastructure and Platforms. Infrastructure still matters. Leaders across business and IT struggle with automating operations while at the same time encouraging innovation with no new headcount on the horizon. The challenge for IT leaders is to support infrastructures while finding new avenues for increasing economies of scale and operational efficiencies.

Every IT organization is structured differently. Some rely on simplicity, limiting the number of units in IT to remain as elegant as possible. Most IT leaders, though,

break their structures into more discrete functional areas. Once you've decided on service lines and ownership, you can be much more deliberate about how the IT organization should be set up, who should own what, and how the constituencies should connect.

With the deliberate design of a new IT organization that maps to corporate goals, IT and business leaders can begin to distinguish themselves from their management colleagues, who increasingly have their own plans for technology delivery. They can begin positioning themselves as leaders in their own right, willing to drive transformational change and enlist their superiors and peers in decision making in an effort to garner support and drive wholesale improvements. The challenge, irrespective of your current IT archetype, is overcoming entrenched biases and assumptions about IT — and about those who lead it. ●

Innovation, Going Digital and Other Uphill Battles

Even those executives who hold their cards close to the vest will freely admit that when it comes to innovation, their companies could be doing a much better job. According to one study, only 2 percent of CIOs consider their companies' innovation potential to be fully realized. What qualities characterize an innovation-ready company?

Encouraging questions. “Who do we want to be?” or even better, “Who *could* we be with new delivery or engagement mechanisms?” are questions that could lead to breakthroughs.

Maintaining an enthusiastic and up-to-date knowledge of emerging technologies. At the same time, companies need to take a sober approach to adopting them.

Shifting organizational competencies as the company's strategy evolves. True innovators understand that technology is a moving target.

Moving away from insularity. Studies have shown that companies that innovate the most reach out beyond their four walls to partner with others, educating each other in the process.

Considering research as no longer a means to an end, but the end itself. This implies a willingness to support, fund and cancel research into emerging technologies. Delivery is and should remain the goal.

The hallmark of progressive leaders is a willingness to try new things, to experiment and learn, and to design

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anew. Whether this means funding more software prototypes, hiring people with nontraditional skill sets, or exploring solutions in the so-called social, mobile, analytics, and cloud (SMAC) stack, leaders both inside and outside of IT need to support — and fund — trials and discovery exercises. This is true even if these efforts don't result in new technology adoption. They form labs or incubators that manifest these new behaviors. They fail fast and they try again. Where you start should depend on where the pain is as well as what your culture should support.

A Seven-Point Innovation Checklist

Here are seven questions to ask yourself as you begin expanding awareness of innovation opportunities at your company:

1. Are we willing to make innovation a part of regular conversations and meetings?
2. Can we distinguish between invention and improvement, and can we establish the importance of each?
3. Are we willing to cultivate innovation talent even if it means defying cultural norms?
4. Are we willing to modify reward structures to encourage new ideas and innovation delivery? Can we work with HR to modify compensation models?
5. Do we know who the detractors will be, and are we confident — with time and some successes — that we can convert them?
6. Can we decouple innovation from skunk works or stealth efforts, making it a general corporate goal and inviting everyone to contribute?
7. Are we willing to set aside seed money for innovation, abandoning established orthodoxies about time to delivery and ROI?

When it comes to supporting and implementing new ideas, understanding your company's strategy and culture is critical. Some companies can quickly support invention, while others must encourage incremental improvements. Both should be attached to focus areas, and both should be measured. ●

PART III: LEADERSHIP IN THE NEW IT

Fighting the Talent Wars

Here's what we know: There's a growing shortage of tech talent. Executives routinely report that finding and keeping skilled workers is their biggest challenge. The

demand for programmers, data scientists, statisticians, database administrators, system architects, business analysts and application experts has begun outstripping supply.

The problem is that despite the changing workforce demographics, most IT and business executives feel the pressure to work within their existing corporate cultures to hire and retain talent. Think about your company for a minute. Could you effect change in the face of the following recruitment and retention trends?

- Studies have reported that 37 percent of technology professionals would take a 10 percent pay cut to work from home.
- The companies most successful at attracting and keeping skilled employees engage managers and senior leaders inside and outside the candidates' targeted departments in the interview cycle.
- Google's famous "20 percent time" program encourages engineers to work on self-directed innovation projects.
- The size of the U.S. workforce is expected to decline. Aging baby boomers will make up a growing percentage of this workforce.
- The gap between the necessary skills and the skills actually filled will continue to grow.

The problem most companies have is their lack of principles to guide them through talent management. Staffing is dependent on revenue forecasts and budgeting, not on the work pipeline. The companies that have consistently achieved strategic objectives are those with the highest staff retention rates, and for good reason: the connection between talent and performance is only as effective as corporate priorities are clear.

Business Strategy Driving IT Talent Management

Once strategic initiatives are established and prioritized, they can be used to drive the demand and prioritization of which resources to hire and when to hire them or whether to outsource the work. The advantage of considering your IT portfolio for hiring decisions is that it's simultaneously strategic and tactical: strategic in the sense that it's informed by corporate priorities and can incorporate weightings to rigorously rank the importance of individual initiatives; but tactical in the sense that each initiative becomes a project, with its own success metrics, release schedule, delivery timeline, technologies and, yes, talent.

A question like, "What skills do we need to deliver this project in a way that fulfills the stated metrics?" can end up informing how a company would determine the skills

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for the project in question. This provides a structure that managers could use to be more thoughtful about whether internal people were qualified to fill the role or whether an external search should be launched.

The truth — and many IT leaders find this a bitter pill to swallow — is that teams should be formed only after IT service lines and individual skill sets have been identified.

Getting and Keeping a Seat at the Table

Let's talk about how technology managers can earn the right to get their ideas heard, their problems fixed and their visions taken seriously.

It's time to call out the behaviors of well-intentioned IT executives who have jeopardized their reputations and those of their departments through bad behavior or poor choices. These are behaviors that can ultimately ruin IT's reputation. Here are six ways IT leaders sabotage themselves:

Overrelying on Consensus. IT leaders need to balance soliciting opinions with making decisions that will inevitably be unpopular with a portion of the constituents.

Not Delegating Enough. Most of our team members can do more than what we're giving them, and the exceptional want to do more.

Abusing External Relationships. Be honest with your business partners about your weaknesses as well as your strengths. A little vulnerability goes a long way. And remember, the IT industry has a short attention span, but it has a very long memory.

Overexplaining. Effective IT leaders understand that businesspeople don't care about the "how" as much as they do about the "what" and the "when." Analogies make the complex simple, and one of the best things an IT executive can do on behalf of the business is to make the complex simple.

Tinkering with Organizational Charts. By moving tiny boxes and lines around a page, managers feel as if they're accomplishing something. The ripple effect of misdirected organizational change can cost a company millions of dollars and hundreds or even thousands of employees. At the end of the day, people don't quit their jobs; they quit their leadership. Or the lack of it.

Waiting to Get Invited. Many senior leadership teams are too busy with their workaday concerns and daily routines to notice that a talented manager might have earned

the right to join their ranks. The superiors are responsible for checking in on others. Is he happy? Does he feel he can contribute? They may never know if they never ask.

Pull Up a Chair

If you want a seat at the table, first determine what that means to you. Does it mean a C-level title? Does it mean participating in senior leadership meetings? Contributing to corporate strategy? Shedding operational responsibilities to someone else? All of the above? Know three things:

You need to show senior leadership what getting a seat at the table looks like. Be specific about what you want — and what you don't want.

You have to do something new. You can't just fight for a bigger title and more organizational authority and do the same thing you're doing.

You need to continue to sharpen the sword. You're still learning. Everyone is. Be honest about that, and be an example to colleagues both above and below you in the hierarchy. Learn new things and apply them.

You have a choice. You can sit back and watch as your personality-driven culture rewards its squeaky wheels and penalizes thoughtfulness, failing to recognize improvements and to formalize processes that produced them. Or you can begin seeding change, recognizing the role that technology can play in your company's future, rewarding the agents who deliver it and renewing the role of the IT group, whatever its ideal archetype might be.

And someday in the not-too-distant future, you'll be in a meeting, and it will dawn on you that these changes are making a difference at your company and that something you did, some series of decisions — perhaps inspired by these ideas — made things a little better than they were. ●

RECOMMENDED READING LIST

If you liked *The New IT* you'll also like:

1. **Trust Agents** by Chris Brogan, Julien Smith. Trust agents are digitally savvy people who use the Web to humanize businesses, using transparency, honesty and genuine relationships. The authors will show you how to build profitable relationships with trust agents or become one yourself.
2. **Viral Loop** by Adam L. Penenberg. Many successful Web 2.0 companies are examples of what Penenberg calls a "viral loop." This is a must-read for any entrepreneur or business interested in uncorking viral loops.
3. **Six Pixels of Separation** by Mitch Joel. Digital-marketing expert Mitch Joel integrates digital marketing, social media, personal branding and entrepreneurship in a clear, entertaining and instructive way.

· Book 4 of 35 ·

39-28 Digital@Scale

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The Playbook You Need to Transform Your Company

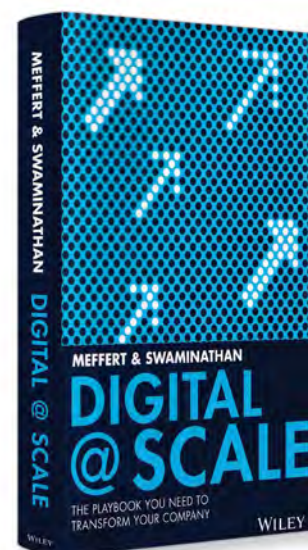
THE SUMMARY IN BRIEF

Everybody talks about digital. But few talk about scaling a full-blown transformation and what it takes. This is no longer about how to quickly grab the attention of the customer or clean up the back office. Organizations need to unlock the full value of digital to reap its true benefits. Jürgen Meffert and Anand Swaminathan, along with some of the top experts in the field, have put together a practical guide to embark on your digital journey and scale it successfully.

In *Digital@Scale*, the authors and contributors walk you through the three pillars of a successful transformation: (1) reinventing the business model, (2) redesigning business architecture, and (3) evolving the foundation of business and the organization with technology. Digital transformation is necessary across every industry, and will change the entire working ecosystem, including the addition of new positions such as the Chief Digital Officer and the Information Technology department. This is your digital playbook as you navigate through those changes.

IN THIS SUMMARY, YOU WILL LEARN:

- How to build a three-stage structure to help prioritize strategic and operational tasks that will digitize your company.
- To understand the roles and importance of new technological positions, such as the IT department and chief digital officer.
- To set digital milestones to track your progress as you transform the company.
- To rethink traditional business architecture while redesigning an agile organization.



by Anand Swaminathan and
Dr. Jürgen Meffert

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THE COMPLETE SUMMARY: **DIGITAL@SCALE**

by Anand Swaminathan and Dr. Jürgen Meffert

The authors: Dr. Jürgen Meffert is a Senior Partner in the McKinsey Düsseldorf office. He advises several leading global firms in the telecommunications, high-tech and media industries. Anand Swaminathan is a leader at the intersection of Digital McKinsey and McKinsey New Ventures and focuses on helping organizations across industries leverage technology and digital capabilities to evolve their operating models, transform their businesses to effectively serve their customers, and scale operations efficiently. *Digital@Scale: The Playbook You Need to Transform Your Company* by Anand Swaminathan and Dr. Jürgen Meffert, copyright © 2017 by McKinsey & Company, Inc. has been summarized with permission of the publisher, John Wiley & Sons, Inc. 273 pages, \$29.95, ISBN 978-1-119-43374-3.

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Digital Is Changing Our World, Quickly and Irreversibly

From customer relationships and production control to communication with suppliers: In the digital age, companies need to rethink their entire business models. Those that don't risk failure and extinction.

A digital transformation leverages the opportunities presented by technology — from IT to advanced analytics, sensors, robotics and 3D printing — to drive business forward. The entire ecosystem of the company is affected, including employees, customers, suppliers and partners. Companies that want to digitize successfully can either improve their current business models and processes, add new sources of revenue to their business models, or replace their old business model with a new superior model. In doing so, companies realize new customer experiences, generate new value propositions and raise the organization to new levels of effectiveness and efficiency. Digitization thus changes structures, processes and IT as well as the people who live and work in this new reality.

However, this wonderful new world has a dark side: Those who refuse to change, lose. Digitization triggers creative destruction, a term popularized by economist Joseph Schumpeter. The new combination of production factors ousts and destroys old structures and traditional business models.

Anyone who hopes one's own industry will not be affected by digitization and chooses to continue as before in blissful oblivion is making a risky assumption. Essentially, all sectors are affected; the only difference is the

severity and length of time until the old business model is rendered obsolete.

Naturally, the topic of digitization is on the agenda of most companies. Many companies have started digital initiatives, for example, in customer communications, production or supplier interaction. However, most CEOs currently admit they do not have an overarching digital strategy. Their ideal transformation toward becoming a digital company often lacks definition, and all too often they have too narrow an understanding of the term *digitization*. It is not just IT and other technology. These are only the foundation. Rather, it is about transforming an entire company — redefining customer value propositions, value-added processes, and people's working methods.

Customer Behavior Has Changed

Customer behavior has dramatically changed in recent years. *Consumers want everything, anywhere, anytime:* In 2016, 83 percent of consumers possessed a smartphone — the same number as those who own a home computer. This has key consequences for user behavior: U.S. consumers now spend more time on their smartphones and tablets than they do on computers. Companies that do not adjust their online presence to service the mobile “anytime, anywhere” mentality.

The medium of video has become significantly more important. To remain attractive to customers, companies need to supplement their traditional text-intensive communications with videos.

Retailers, service providers, and consumer goods companies are also feeling the pressure to digitize their processes and offerings, driven by customers whose



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Rebecca S. Clement, Publisher; Sarah T. Dayton, Editor in Chief; Masiel Tejada, Graphic Designer; Meaghan Kelly, Contributing Editor

research and buying behavior has drastically changed in the past decade. Consumers browse online forums to find out about a product's quality, they check value for money on comparison sites, and when shopping in a store, they're happy to check their smartphones to see if a product they like is available for a lower price from an online retailer or a local rival.

At the same time, managers find that the established definitions of their markets no longer apply — new challenges lurk everywhere. The networking of previously unconnected devices with online data sources has dissolved traditional industry boundaries.

Naturally, as digital pushes through, the frequency of channel conflicts that need to be managed increases. The accumulated data needs to be professionally analyzed, which requires new talent in the company. The result of all these factors is increased pressure on management. ●

Digitization Requires Fundamental Renewal: Digital@Scale

Those who want to successfully lead their companies into the new digital age need to rethink all business structures, processes and products across the board — that is, Digital@Scale.

To ensure that the transformation doesn't founder on good intentions and unfinished business, digitization needs to follow a clearly defined concept. Three simple questions point the way forward: Why? What? How?

Why?

Things are going well, so why do we need to change? Companies that are doing good business find it very difficult to suddenly reinvent themselves in order to ensure sales and profits tomorrow. Early indicators of change are often overlooked or seen as unimportant. Regardless of how well positioned a company is, if the management underestimates the potential for change that digitization poses to its business model, it runs the ultimate risk. And those who see the change but delay their response so as not to jeopardize their current revenues are taking a virtually suicidal stance.

Fundamental renewal demands strength, conviction and, in most cases, a trigger. A little fear — even existential fear — is a good thing. Fear spurs you on. In established companies, it creates the pressure to act and the willingness to embrace innovation — crucial for digitization.

Those who want to propel their company from the analog present to the digital future should first focus on the strengths: What sets the company apart from the competition? Is it the technology in the product or service? The strong customer loyalty? All of these strengths also count in the digital world. And while they may count differently, whoever retains them will have an advantage.

Without a clearly defined objective, the journey into the digital world can easily become an odyssey. The company's management should therefore formulate its quantitative or qualitative objective and communicate this to the employees. Interim goals — depending on whether and how they are achieved — are also helpful in determining on whether the project is on track.

What?

What does digitization mean for my company, and what priorities are derived? Digitization means different things to different people. We need a structure and a plan. To answer the "What?" question, it is helpful to build a three-stage structure that can be used to prioritize the strategic and operational tasks.

At the first level, New Ecosystems, strategic thinking is needed. Innovations arise at industry boundaries. This is all about the new markets that emerge as a result of the technological possibilities. A new vision for the company is needed with a convincing value proposition that takes into account the disruptive force of change.

The second level, Business Architecture, deals with operational questions: Are we using the opportunities of the digital world and reaching our customers at all contact points — both traditional and new? How is digitization changing our management and administrative processes? The challenge is significant; digital attackers are strongest when it comes to the customer experience. With simple and reliable processes, they seamlessly shape the entire journey from first contact to completed order, often making traditional companies appear outdated.

The third level, Foundation, deals with the technological and organizational frameworks. Typical questions include: Are we employing state-of-the-art technology in our company? How can we attract digital talent and build targeted partnerships? To operate an IT system, the best, new digital talent may need to be hired — talent that expects flat hierarchies and cross-functional working.

How?

How do I manage the tasks resulting from a digital transformation? The answers to the "What" question resulted in a list of priorities to be addressed on the road

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to the digital transformation. Now, it's time for the "How." Successful transformations require profound changes to structures, processes, management instruments and IT. Again, a three-stage structure is needed, which sorts the relevant points by priority.

- 1. Create a plan.** At the top of the list is a road map to the digital future: Calibrate people and processes for the digital world. Digitize all contact points that customers have with the company according to importance. The plan outlines the direction and priority, and is often the cornerstone of a transformation program that almost always lasts years.
- 2. Ramp up the digital company.** This level defines the elements of the digital company. This is where companies need to optimize their development according to the motto "pace before production" in a culture of testing and learning. New products and services are quickly tested in the market; the results are measured, and then further optimized if necessary. Budgets are tied to the achievement of interim targets, progress is analyzed in fixed cycles and projects are immediately canceled if necessary — in short, the digital operating system.
- 3. Consistent implementation.** Focus on scaling and rolling out the transformation process to the entire company and its ecosystem. Digitization begins with the strengths of the company. ●

The Clock Is Ticking

Leadership is needed: Only CEOs can explain to employees the need for digital change, define the scope and direction needed and overcome the forces of inertia in the company. Only then can the march toward the digital future begin.

How urgent is digitization? The observation that change is needed is one thing — but the actual trigger to embark on a transformation often arises in emotionally charged moments following meetings and experiences. The CEO must shape this moment of enlightenment and make it intuitively clear, at least to the top management, that the company needs to take the path toward the digital future.

Following their revelatory moment, the top managers must then act as multipliers to spread the message throughout the company that digital transformation is urgently required. These are the most important tasks that

management must perform to motivate the entire workforce and sensitize all employees to the idea of digitization.

Owners or active investors, employees and managers, but also sales partners and suppliers need to get involved from their current starting positions. Each of these groups can either act as a catalyst for the transformation or become an obstacle. It is crucial to capture the heart and mind — the mind through convincing business logic, new best practice examples, tools and methods and the heart through success stories, tales of heroism and even personal experience.

To emphasize the urgency of digital change in the workforce, it can help to borrow a tried-and-tested tool from the digital natives: the hackathon. This portmanteau of hacking and marathon refers to creative sessions during which small, cross-functional groups of tech-savvy innovators work locked away together until they find an ingenious solution to a particular problem. Companies in many industries now use this fast and cost-saving method. The benefits are clear: long-winded meetings, steering committees and working groups are no longer necessary to provide smaller, market-ready products and services.

Most CEOs rely on their employees to uncover weaknesses. As with all projects that fundamentally change a company, the digital transformation must also be triggered and driven forward by the person in charge — either the CEO or the owner. Employees need an example to emulate. The attempt to reach the stars brings out the best in teams, and that's excellent advice for business leaders.

All companies need to act but not necessarily in the same way. First and foremost, it is imperative to understand the urgency of the situation. The position of the company's own industry determines the nature and pace of the response. The greater the extent of digital penetration, the more urgent the need for change. And once past the turning point, generally, only those companies that completely revise their business models will survive. ●

Doing the Right Things Intelligently

Digitization is a very broad term, but a program needs structure. It's about new ecosystems, further development of the business model and acquiring fundamental skills. When managers today talk about the challenges of digitization, they encounter countless definitions and completely different worldviews, and some struggle with adapting their business models. Others are highly focused on their business systems, and wonder how IT can

improve the supply chain or help them better understand their customers.

To develop a viable strategy, we need a common language, a common understanding and a structure supported by all. To this end, we introduce three levels. The first level is about our future market. Are new competitors disrupting our current business model with innovative technologies? Are they upending once-irrefutable paradigms?

The second level is about whether our business model is capable of meeting the challenges. Are we grasping digital opportunities to fundamentally improve the customer experience? Are we decisively leveraging dormant efficiency potentials with digital and advanced analytics?

The third level concerns the foundation — the IT technology and the organization. Are we using state-of-the-art technologies? Are we an attractive company for new digital talent, and are we building targeted partnerships?

At each of these three levels, companies will face specific challenges on the road to the digital future. When it comes to new ecosystems, it's about companies finding their place in the emerging markets. The business architecture needs to be rebuilt to work successfully in new ecosystems, and the foundation of technology, organization and culture must in turn create the conditions for the new business architecture to function.

The New Ecosystems

Industry boundaries belonged to the old economy, and the digital revolution has swept them away. Entirely new ecosystems of companies are emerging to meet demand. Digitization brings us entirely *new economic ecosystems* that will create redistribution of market shares.

The most spectacular developments are in the new ecosystems, where everything is at stake for the traditional market leaders. Industry boundaries are being redrawn, old strengths suddenly count for less and unexpected, symbiotic alliances are being formed.

Digitization is destroying the old business models and creating space for new ones. Smart cities, precision farming, digital fleet management and solutions for field engineering teams are areas in which digital thinking means new business opportunities.

As industry boundaries dissolve, markets are redistributed; and as agile start-ups snatch customers away from the established leaders in every field, it's time for critical stocktaking. Is our business under threat? Are we using the new technologies correctly? Have we identified new revenue potentials? Companies that want to succeed in the new markets need to work on their business architecture. ●

Developing Business Architecture

The digital age demands new skills: Companies that want to be successful in their industries and the emerging ecosystems must get their functions and processes in shape for the new era.

What do successful digital companies have in common? They all base their products and processes strictly on the needs of the customer, which is why the development of the business architecture starts with customer experience. The development then moves on to the product and its value proposition. Real-time customer reactions are incorporated into the ongoing development, and the products and services approach perfection in iterative loops.

The pioneers of development are the retailers and service providers who have contact with the end customers. They are now preparing for a generation of customers who grew up in the digital age. Brick-and-mortar retail has responded to the needs of young people with an omnichannel strategy, providing offers across all channels.

This is also known as a multichannel strategy or 360-degree commerce. In implementing such a strategy, the company must decide in which sales channels, on which platforms and at which contact points it wants to be visible to its customers, and how to interact with them. Customers today want to be able to move seamlessly between these channels and contact points.

For companies, work starts with the strategic issue of which channel mix is best for the target customers. To fully understand the customer journey through the various channels, companies rely on data. Modern market researchers, or customer insight specialists, leverage customer satisfaction data at all contact points. Data analysis is not a one-off process, but must be a constant cycle of measuring, analyzing and optimizing.

Customer feedback is immediately reincorporated back into product development. The digital development process is efficient and never stops. The product is being constantly developed.

This product development philosophy was born in the digital economy and is now being adopted in the innovation processes of traditional analog products. Largely autonomous, cross-developmental teams work on focused tasks and are committed to achieving specific stage targets without the interruptions of steering committees and management meetings. Open innovation doesn't necessarily have to be limited to an entirely digital innovation process, it can also supplement a traditional development process.

The journey toward the supply chain of the future must start with some critical stocktaking. Management must

review the entire supply chain to assess its suitability for the switch to digitization. Data flows, analysis capabilities, hardware and software, talent and processes must all be analyzed at every point in the supply chain, and assessed on a 1-to-5 scale, in which 1 denotes predominantly paper data and 5 denotes digital excellence. The findings will then form the foundations for the digitization process. ●

Strengthening the Foundation

Speed is the hallmark of the digital world. Fast development times, short cycles and rapid change are factors that overwhelm most traditional organizations. Companies can build a two-speed IT architecture, which is deployed for stable functions with minimal need for intervention. Big data and advanced analytics are critical success factors today. However, digitization is also changing the culture and organization of companies, especially with the emergence of the chief digital officer (CDO).

Digitization has increased the pace of innovation throughout the business world, and customers' expectations have risen. As a result, companies in many industries have been forced to dramatically increase their IT performance. Smart IT managers came up with the idea of running two systems in parallel: an agile, fast, often cloud-based system that can work with apps for all processes targeting the customer (a front-end system), and a stable, solid, cost-effective system with its own data center or rented capacity in the cloud for all noncustomer-related operations (a back-end system). An integration platform, or middleware, connects these two IT worlds.

Big Data and Advanced Analytics

Big data and advanced analytics aren't just useful for retailers. They also help manufacturers and service providers make better, fact-driven decisions. Big data and advanced analytics deliver the tools for bigger, faster decisions, and although technology plays an important role, it is by no means everything. Added value is generated where the technological possibilities and corporate goals intertwine.

For companies that want to drive their businesses forward with big data and advanced analytics, three levels are needed: The company must formulate a vision outlining its objectives, data analyses should be tested in defined applications, and the technical, organizational, and skill frameworks must be in place.

The CDO

CDOs must be multitasking. They need to be strategists and digital natives and have a strong understanding of customers and employees. Developing a digital strategy is just one part of the job description; above all, the CDO must also be a skilled networker, both internally and externally. At the external level, he or she will identify the most exciting technological developments and most promising start-ups, and at the internal level, the CDO will convince the entire organization of the merits of the digital transformation. Just as important as knowing what can be expected of employees in all things digital, the CDO must also understand what customers expect from the company, and what technology they will feel comfortable using.

The Digital Organization

Is it possible to have an organization model that has no fixed structure and is constantly evolving? Yes, and it works very well, in fact. Agile companies are almost tailor made for the digital age with their simple, stable and effective structures that enable extreme flexibility and fast response times. That is precisely what's needed, because along with its opportunities, digitization also brings plenty of challenges. It makes the business world more volatile with its sudden leaps in progress; it makes it more uncertain, complex and ambiguous.

In this new age, innovations can destroy established business models, competitors can form new ecosystems outside the industry, and businesses can grow at incredible speeds. The new age needs new organizational structures.

The agile organization combines a stable framework with dynamic skills. Again, top management sets the direction. There's a simple, common reporting structure, and lean processes and values are specified by the head office. Then, there are the dynamic components: a culture of fast learning based on trial and error that grasps opportunities and tries them out while willing to accept failure, teams free of hierarchies that work autonomously and employees who take responsibility. ●

Decisive, Holistic and Rapid Implementation

The learning is over; now it's about action. First, we need a plan that defines the stages of a transformation program often lasting years — our blueprint.

To realize the opportunities of digital, companies need tailored, individual digital strategies in which targets are

formulated, projects are launched and even partnerships are considered. Such a strategy requires a shift in culture: The digital economy is moving fast and demands rapid scalability, with far more focus on short-termism than the analog world. For many CEOs, the balancing act between having a clearly structured road map and the ability to adapt quickly is a major challenge.

To change every aspect of the business, you need to think holistically, identify key gaps early and prioritize the issues according to value contribution and impact. The digitalization plan must take an overarching view of the company, be implemented at all three levels and spread across several years. It must lead the business into new ecosystems, modernize its business architecture and equip the technical and organizational base for the digital challenges ahead.

The Digital Transformation

The digital transformation is no trivial undertaking. To ensure its success, two considerations are vital right at the planning stage. To decide which area to tackle first, management must assess what value contribution is generated using which measures at which point in the value chain, and with how much effort over what period. Once the list of priorities has been set, the digital transformers define their timetables. This often spans several years, and includes milestones for achieving targets. After considering the positives, the greatest value contributions, we now consider the negatives. Wherever a capability analysis reveals dangerous shortfalls, fast action is required.

There is no one-size-fits-all policy toward becoming a digital company. The road depends on a company's current level of digital experience. From a pragmatic perspective, we distinguish three levels:

Level 1: Companies with very little digital experience and whose core business rarely enters digital territory.

Level 2: Companies that have already confronted the subject of digital, and whose business is attacked by digital companies. They all face the challenge of systematically restructuring their large organizations.

Level 3: This is the fully digital company. It already possesses all the critical capabilities needed for the digital age, and decisively seeks to expand its business. ●

Ramping Up the Digital Company

To switch your business to digital, three fundamentals are needed: (1) recruit a team that's as enthusiastic as it is technically proficient and (2) that values speed above

perfection, and (3) introduce milestone-based project management in the style of the venture capitalist.

Data Scientist, Internet of Things Software Developer, User Experience Design Expert, Product Owner, Scrum Master. These are job titles from the digital world. But, do you know what the job titles actually mean or what drives these people? Two things are certain: They're needed, and there aren't enough suitable candidates.

Digital natives need to be lured by exciting and meaningful work through the channels in which these new, mostly young starts of the future spend most of their time. Social media, blogs and start-up conferences are good places to start finding candidates. Potential candidates are generally attracted by authentic values and strong corporate stories. Finally, the company must strive at least as hard as the candidates to present itself as an appealing prospect, and to fend off the attractive employers who top all the relevant rankings.

A key component of the digital operating system is its specific ways of resolving problems. If digital companies want to redevelop or improve products or processes, they tend to rely on design thinking. This is where cross-disciplinary teams tackle problems by using the classic methods of designers: observe, understand, develop ideas, translate quickly into prototypes (rapid prototyping), test on the market and immediately feed customer reactions back into product improvements.

What marks a digital enterprise? It forms face-based hypotheses and takes data-driven decisions. To come by these facts, new data needs to be collected, whether they are self-generated or acquired from third parties. Companies should therefore ensure they always follow measurable targets — for example, reducing, process costs or increasing customer acceptance, conversion rates or process speed.

The targets for the milestones to be achieved can be derived either from the company's business targets or from benchmarking. The targets and the actual results on the given dates are then reconciled to determine whether the milestones have been hit.

Developing a Digital Culture

How does a business develop a corporate culture that fits with the digital world? The transformation starts with the work environment. That includes flexible working hours, an office landscape in which teams feel at ease, and technical equipment that not only is up to the task, but is fun to use. To align your corporate culture with the needs of digitization, four dimensions must be addressed:

SUMMARY: DIGITAL@SCALE

generate understanding, create formal structures, build skills and act as a role model.

The CDO plays a key role in steering change, demonstrating passion for digital and igniting this passion in all employees. The CDO is a strategist, customer analyst, product innovator, technical expert. The role demands everything. The CDO links organizational departments, establishes cross-functional teams, uses networking skills to recruit external talent, motivates people and represents them effectively at the board level.

The advent of digitization brings challenging times for the top and middle management of traditional firms. Even before this, these companies were a dying breed, with their rigid hierarchies and subordinate foot soldiers. Digitization, however, demands a significant downward transfer of responsibility and, therefore, power. The digital transformation starts with the person at the top, and it's the CEO who must trigger the change in the corporate culture. It's up to the executive board and top management to take responsibility for the digital change. ●

Scaling Forcefully

Now that we've actuated the digital enterprise, put together the elements for the first pilot projects, and even collected results from those pilot projects, it's about rapid rollout. The first place to start is with a manageable number of customer-facing processes. The customer must be at the heart of all considerations in the digital company, and the customers' feedback and data virtually make them the most important employees. Only then can we start looking at internal processes, from production and the supply chain to sales, marketing and administration.

Just as with the individual projects, we also set milestones for the digitization of the entire enterprise. Once a milestone has been achieved, the process gets the green light, and fresh money can be injected for the next steps, because budgets in digital companies are only released on a milestone-to-milestone basis. If the target hasn't been reached by the specified time, we need to ask why: Do we need to change our approach to the plan? Is something wrong with the plan? Does the plan need to be revised or improved?

Digitization is a journey into the unknown. The transformation plan sets the direction but will always have to be revisited and adjusted following new findings and experiences. The more processes we digitize, the more

their unusualness in the organization recedes, and then, the new digital system becomes the norm.

IT is critical to the success of the digital transformation. The manner, scope and timing of measures differ depending on the starting position. Common to all measures, however, is the aim of turning IT into a weapon. The transformation starts with processes that are critical to success and usually are customer-facing. All the experiences gained in the areas of agile organization and agile working must now be rolled out into these processes.

Pace and flexibility mean a real competitive edge here. Instead of needing the normal six to 12 months to translate findings from customer surveys into a new, improved process, aim to translate those findings in two to six weeks. Companies that are able to respond to customer needs in just a matter of weeks can turn their IT into a real weapon.

Collaborate closely with start-ups as they can deliver new stimulus, be it in the form of collaboration or as an acquisition. Young digitization professionals help to discover new business ideas, accelerate the transformation, and provide fresh impetus.

Turn speed into a guiding principle. Speed is infectious; an organization that uses agile methods, develops fast, quickly tests products in the market and immediately incorporates market feedback into further developments no longer has anything in common with the customary, ponderous methods of the traditional enterprise.

But, digitization isn't just about restructuring the organization. Above all, it's about establishing a new mindset: teams instead of hierarchies, pace over perfection and learning from customers, not lecturing them.

The digital world demands a new way of thinking. While it may not be easy for everyone to say good-bye to their old systems, it is necessary. It's a necessity if your business is to survive. ●

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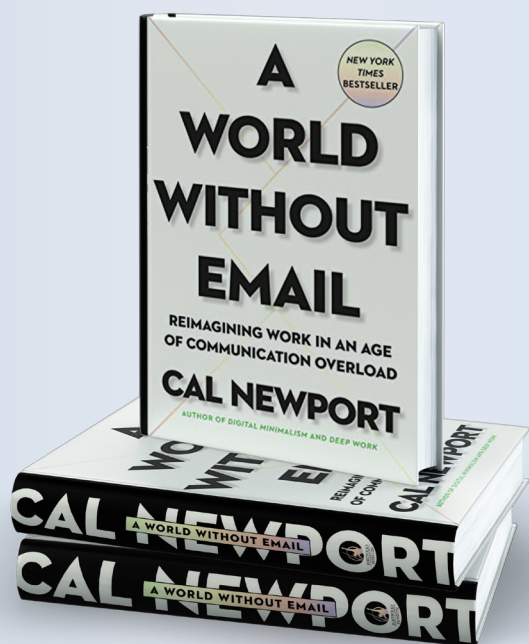
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A World Without Email

Cal Newport

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Zooming In On Your Next Read



A World Without Email

By Cal Newport

Cal Newport is an associate professor of computer science at Georgetown University, where he specializes in the theory of distributed systems, as well as a New York Times bestselling author who writes for a broader audience about the intersection of technology and culture. He's the author of seven books, including *Digital Minimalism* and *Deep Work*, which have been published in over thirty languages. He's also a regular contributor on these topics to national publications such as The New Yorker, The New York Times, and Wired, and is a frequent guest on NPR.

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Taming the Hyperactive Hive Mind

When we think of digital communication tools, like instant messaging, email and texts, we automatically assume that they improve our productivity and make work easier. After all, being easily accessible and in near-constant contact with all of the relevant players can only help workflow, right? New York Times bestselling author and associate professor of computer science at Georgetown University Cal Newport says the answer is definitively “no.” In fact, he asserts that the “relentless barrage of incoming messages and back-and-forth digital conversations” are highly detrimental to productivity and just as importantly, are a root cause of human misery. These bold stances serve as the foundation for Newport’s bestselling book.

In *A World Without Email: Reimagining Work in an Age of Communication Overload*, Newport invites readers to imagine a radically different alternative to the “tyranny of the inbox” that will open the productivity floodgates, surpassing current possibilities and simultaneously allowing for happier, more fulfilled human beings. Newport provides extensive evidence supporting the idea that the anxious chatter we are unable to disconnect from is directly tied to a hyperactive state of mind that is ruinous to the production of substantive work.

Although it will initially be difficult for readers to imagine a world in which email is not a central component to our work day, he insists that day is coming and we’d be best equipped to handle the inevitable by making big alterations to the way we work now. Entrepreneurs, leaders, and employees who are ready to get in front of the problem will be convinced that this evolution is coming and will receive crystal-clear guidance on how to make bold changes for the better.

The Case Against Email

Let’s face it. Modern work revolves around email. The very idea of working without it seems preposterous. The integration of instant messaging and email into the working world has been nothing short of transformational. Workplaces used to be stuffy smoke-polluted environments filled with secretaries scribbling messages on carbon-copy paper that were later delivered on rolling mail carts.



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Email made offices slick, quick, and wildly efficient. Sure, there is plenty of training and advice around making email work better for you through scheduling, notification tweaks, and concise composition. But there is never an outright questioning of the tool in and of itself. We assume that the “underlying value” of email trumps any and all associated “annoyances.” What if, however, we could see the flip side of that coin? What if these “annoyances” were actually serious problems for humanity and productivity?

The ubiquity of email and instant messaging in a professional capacity have created something that Newport calls “the hyperactive hive mind.” He defines it as “a workflow centered around ongoing conversation fueled by unstructured and unscheduled messages delivered throughout digital communication tools like email and instant messenger services.” In the first part of the book, Newport draws on a depth of research and experience to shine a light on this workflow crisis to make a compelling case against email.

Argument One: Email Reduces Productivity

Email and messaging tools are not in and of themselves unproductive. Quite the contrary. It’s impossible to disregard their convenience. However, the way groups of humans use these tools together is actually counterproductive thanks to the hive mind hyperactivity. When working in a job that relies on your knowledge and information, email subjects you to a highly fragmented style of work. “The core finding of the paper is that once you eliminate formally scheduled meetings, the employees they followed shifted their attention to a new task once every three minutes on average.” The main source of this quick and constant fragmentation was identified as none other than “email.”

Interactions and information exchanges that once happened in in-person meetings over a dedicated and synchronous span of time now occur in small chunks over emails that take much longer overall. “To say we check email too often is an understatement; the reality is that we’re using these tools constantly.” And this constant, “constant multi-tasking craziness” is absolutely unproductive. Human brains are not wired to switch back and forth without an inherent loss to time and quality of thought.

Argument Two: Email Makes us Miserable

Research has shown an idea that many of us have figured out ourselves. Email stresses us out. In fact, one study that monitored the heart rate of study participants throughout the work day found that “the longer one spends on email in [a given] hour the higher one’s stress for that hour.” That study was followed up by another that tested a commonly offered solution to improving how we work with email. Perhaps these anxious emailers would benefit from using email in a different way? According to Newport, not necessarily.

It is often suggested that people should set aside particular times

to check and respond to batches of email instead of responding every time the inbox pings. The same team of researchers found that this can actually make some people feel more stressed than they would answering emails as they arrive. To further muddle things up, stressed out people are shown to respond more quickly to emails, but with lower-quality responses.

Anxiety, stress, worry, anger, frustration—are these the words we want to associate with a tool that we rely on continually to perform our jobs? Surely there is a better way. Email is making us miserable and aside from the fact that humans have a right to happiness and a real need to reduce stress in their daily lives, miserable workers produce subpar results. Over time, stress and overwhelm can lead to full-blown burnout. This email-associated misery index is bad for our workers and bad for our businesses.

Argument Three: Email Has a Mind of Its Own

Email had a bit of a slow start when it was first introduced in a corporate setting, but once it took off, it skyrocketed in popularity with astounding speed. Articles from 1987 call it a “clunky tool useful to only a niche market.” By 1994, it was being touted as the technological advancement of the decade and was “the foundation of a half-billion dollar software industry.” Newport says that this is “about as close to an overnight transformation as you’re likely to find in the history of commercial technology adoption.”

The meteoric rise of email should not be that surprising. After all, it solved a major problem by allowing people to engage in asynchronous communication really quickly and relatively inexpensively. The problem is that we didn’t just turn to email to replace handwritten memos and mail carts in offices of the past. This was an unintended, but important consequence. It illustrates how email, in a sense, has a mind of its own. It took us to places we never intended to go.

This is a key property of a term called “technological determinism,” which states that technological advances can alter our behavior in ways that were not or could not be predicted. When email was introduced, human behavior changed in unexpected ways. It multiplied the amount of communication and number of people we engage in communication with many times over. It fundamentally changed the way we do work and created the hyperactive hive mind mental state that is so detrimental to productivity and happiness.

Principles of a World Without Email

Newport’s arguments against email are easy to understand and difficult to rebuke. Taken in the greater context of the well-established and increasingly accepted idea that constant communication and digital connection are erosive to real human connectedness and effective, clear communication, one can begin to see that maybe, just maybe, email is misused in our work. We can see that our working world may be better without it, but it’s hard to imagine how we could reduce our reliance on it. That’s where the second part of the book takes readers,



In order to ‘tame the hyperactive hive mind, we must first tame the trend toward non-specialization.’

focusing squarely on how to work without email. The answers lie within four principles.

The Attention Capital Principle

The industrial revolution that resulted from the implementation of factory assembly lines is an excellent example of how relatively small changes to the way people work can have massive implications for profit and productivity. Knowledge work is poised “to make similarly massive increases in the economic effectiveness of the knowledge sector, if we’re willing to get serious about questioning how we work.”

In knowledge work, the main resource is the human brain itself. Different results will be achieved with different strategies that are aimed at getting the most value from our human brain resources. A leader can make workflow changes to extract a greater amount of attention from their human capital, or the collection of brains that make up their team of knowledge workers.

The Process Principle

The problems that get identified in unproductive workflows are often not attributable to the people handling the work themselves. Often, it comes down to a failing in how the work is coordinated, assigned, or organized. In knowledge work, we have become especially adept at focusing on how to make people work faster, or how to identify star players, or how to motivate team members to do right by their work. However, this energy is misplaced.

In knowledge work, people are producing work with their minds, not their hands, but can still leverage principles from manufacturing and other hands-on work to improve outcomes. No matter if the output is a physical product or an innovative idea, leaders must have processes in place that determine who is working on what and how that work will evolve. Work must be formally organized with formal processes. The process principle states that “introducing smart production processes to knowledge work can dramatically increase performance and make the work much less draining.”

The Protocol Principle

Workers within a team or organization must communicate and coordinate with one another about various issues, such as “agreeing on a time for a meeting, determining the next step for a joint project, answering a client question, or providing feedback on an idea.” Some of this coordination is done via implicit rules and others are performed under a set of formal norms. Either way, “many office activities are structured by some manner of rules” that Newport refers to as “coordination protocols.”

The protocol principle asks leaders to accept a short-term frustration in exchange for a long-term benefit. It says, “designing rules that optimize when and how coordination occurs in the workplace is a pain in the short term but can result in significantly more productive operation in the long term.” In practical terms, this principle is applied with strategies like reduced office hours with strict focus policies in place, limiting client access to workers, placing rules on how internal emails can be structured, and regularly scheduled coordination meetings that replace back and forth email communications.

The Specialization Principle

The rise of technology in knowledge work has created a decrease in specialization. “Knowledge workers with highly trained skills, and the ability to produce high-value output with their brains” spend a great deal of their time working on tasks far outside of their area of skill or expertise. We have to troubleshoot errors on our computers, design pretty presentations, and of course, engage in a flurry of frenzied digital communication.

In order to “tame the hyperactive hive mind, we must first tame the trend toward non-specialization.” The specialization principle says, “in the knowledge sector, working on fewer things, but doing each with more quality and accountability, can be the foundation for significantly more productivity.” In practice, this simply looks like being given the opportunity to focus your efforts where they really matter. Work should be focused and in your own lane. Anything outside of your area of specialization should be the responsibility of someone else.

The first step in addressing the major frustrations and barriers to productivity that are inherent to the modern workplace is to admit that digital communication tools are not the end all, be all answer to how we work. We must understand that these tools can contribute to reduced productivity and worse still, increased unhappiness with our work. But we have the potential to make massive improvements. “There is a better way to do good work in a culture currently obsessed with constant connectivity.” Thanks to Newport’s *A World Without Email*, leaders can make sweeping changes to how their teams work and reap huge rewards in the process.

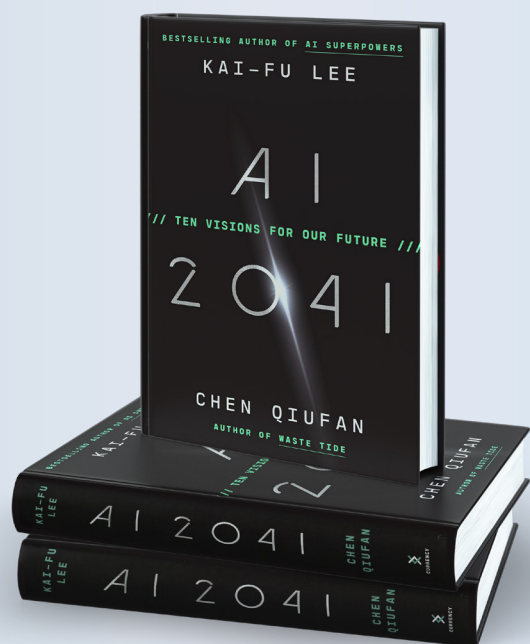
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AI 2041

Kai-Fu Lee and Chen Qiufan

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How Will Artificial Intelligence Change Our World?

AI is a shorthand of which we've all become familiar. It used to conjure up images of robots coming to power over the planet and human beings becoming obsolete at best and enslaved to technology at worst. The truth is that AI is already fairly pervasive in our lives, even though most of us don't understand it or the implications of its proliferation. Nearly four decades ago, coauthor Kai-Fu Lee was applying to Carnegie Mellon University's PhD program and on his application, he described the burgeoning technology in this way:

"Artificial intelligence (AI) is smart software and hardware capable of performing tasks that typically require human intelligence. AI is the elucidation of the human learning process, the quantification of the human thinking process, the explanation of human behavior, and the understanding of what makes intelligence possible. It is mankind's final step in the journey to understanding ourselves, and I hope to take part in this new, but promising science."

From an earlier than recognized beginning in academia during the mid 1950's, AI saw a very slow evolution in practical application. In the last five years, however, AI has experienced exponential growth in use thanks to a solitary and jaw dropping tipping point. In 2016, engineers at DeepMind built a machine called AlphaGo, designed to play the game of Go, which is "more complex than chess by one million trillion trillion trillion times." To the astonishment of the (mere) millions of Go fans across the globe, AlphaGo won. Handedly. And it's skyrocketed from there.

"The technology has surpassed humans in speech and object recognition, served up 'digital humans' with uncanny realism in both appearance and speech, and earned passing marks on college entrance and medical licensing exams. AI is outperforming judges in fair and consistent sentencing, and radiologists in diagnosing lung cancer, as well as powering drones that will change the future of delivery, agriculture, and warfare. Finally, AI is enabling autonomous vehicles that drive more safely on the highway than humans." And it's nowhere near finished.

AI 2041

By Kai-Fu Lee and Chen Qiufan

Kai-Fu Lee is the CEO of Sinovation Ventures and New York Times bestselling author of *AI Superpowers*. Lee was formerly the president of Google China and a senior executive at Microsoft, SGI, and Apple.

Chen Qiufan (aka Stanley Chan) is an award-winning author, translator, creative producer, and curator. He is the president of the World Chinese Science Fiction Association.

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In *AI 2041: Ten Visions for our Future*, coauthors Kai-Fu Lee and Chen Qiufan set out to answer the most asked question about AI: what happens next? They set out to imagine a future world in which AI is fully integrated in a nonthreatening, hopeful, useful way. Every story shared is based on technologies that have a “greater than 80 percent likelihood” of existing by the year 2041 and grounded by the coauthor’s decades of experience in research and development in the AI space. In a fun twist in the tech sector of publishing, the authors shed light on the future of AI through the telling of science fiction stories. Before taking a journey into the future, the authors note that above all, the stories “reinforce our belief in human agency—that we are the masters of our fate, and no technological revolution will ever change that.”

How AI Deep Learning Reaches Goals but Creates Unintended Consequences

The first story centers around an insurance product supported by deep learning AI. A middle class family in Mumbai finds itself in the unexpected position of being able to afford a highly sought after insurance program called Ganesh Insurance. The plan adjusts coverage based on the unique needs of the insured family. In order to access discounts on the plan, the family has to share each family member’s “data link” with the insurer, which gives Ganesh Insurance access to a lifetime of information about each person. The data included “fingerprints, retina signatures, genetic histories, family information, occupations, credit scores, home-buying history, and tax records.” After consent was given, the insurance company was able to “tap into this rich trove of data to personalize its services.”

When the teenage daughter of the family learns that her data is being shared, she is less than pleased but in no time flat, she is freely sharing access to one app or another in order to gain access to the alluring services, including steadily decreasing premiums, being offered in exchange. Trouble strikes when she realizes that the AI system is discouraging her from getting to know a boy in her class that she is interested in knowing better. The boy is from the untouchable class of Indian people, and despite the fact that the caste system was abandoned long before, the boy’s data is like a shadow that follows him, influencing who he can communicate with and where he can go.

The AI is given an objective and it will do “everything possible to achieve that goal.” In the case of the insurance company, it’s objective is to “decrease insurance premiums to the lowest cost possible.” The AI does not take into account anything outside of that end goal, including whether or not the user’s happiness will be adversely impacted. The AI, in general, works spectacularly well and improves the family’s life. They save money, improve their health, and get useful information on a steady stream that makes daily life easier to navigate. But in the case of the teenage daughter, it attempted to derail her chance at love. This was an unintended consequence, or as the author’s call it, an AI externality. In present day life, AI uses deep learning in the same way but as illustrated in the story, it has its limitations.

Deep learning is applied to AI prolifically by massive tech companies like Amazon and Facebook. It drives such data as whether or not a user clicked on something or actually purchased it, which can then be leveraged to impact key business metrics. Financial institutions, including real-life insurance companies, also rely on AI. In that industry there is a veritable race to implement AI as quickly and widely as possible. Using apps for loans, for example, delivers lower default and fraud rates, faster transaction times, and lower costs because there are no humans in the loop.

On the flip side of that coin, there are very real downsides, the impacts of which we don’t yet fully understand. When you click on something, anything, within an AI deep learning system, the supercomputer uses that data to “unconsciously manipulate” you towards advertising that ultimately stands to profit a company. It initiates an addictive cycle which “may narrow your viewpoints, polarize society, distort truth, and negatively affect your happiness, mood, and mental health.”

AI in Healthcare, Including COVID-Inspired Automation Acceleration

The authors wrote *AI 2041* during the COVID-19 pandemic and that experience inspired them to include a story that illuminated how household robotics will reduce the need for human-to-human contact. Further, the authors predict that AI will completely flip conventional medicine on its head with the pandemic being a catalyst for automation in healthcare.

In the fictional story, set in 2041 Shanghai, a woman who is traumatized from previous medical experiences is having an especially difficult time with the mental health implications of COVID-19. To decrease her anxiety she relies on a number of household robots to support daily life. A DeliveryBot, Disinfection Bot, nano super air filtration system, global health tracking tech, communication platforms, and more make life manageable. The systems, all supported by AI of course, made it so easy for her to stay safely inside her home that she planned to never again rejoin society in real life. This is obviously not a great outcome for a member of the most social species on the planet.

In present day life, with the very real pandemic raging on, it has become “clear that AI will reshape healthcare, from speeding discovery of vaccines and drugs to accelerating the integration of technologies like AI diagnostics into existing care.” This comes at an opportune time as much of the healthcare system is becoming digitized, giving AI the massive amount of data needed to be effective. Take medical, wearable devices, and insurance records, for example. As databases get loaded up with more and more data from these sources, AI can be used to improve everything from diagnosis to medical teaching to disease prevention. AI is able to perform at far higher levels than human medical doctors because it can draw from “billions of actual cases” instead of a human clinician’s own limited experience and knowledge.

There are far reaching applications in the field of medical research as well. DNA sequencing is all digitized and perfectly



AI can be used to improve everything from diagnosis to medical teaching to disease prevention.”

suited for AI applications, which will eventually lead to the eradication of many diseases and the development of new drugs and vaccines in the future. Right around the corner lies the potential for “precision medicine” whereby patients are not treated with one-size-fits-all treatment plans. Instead, their unique “medical history, family history, and DNA sequencing” to design treatment plans and select drugs for optimized individual treatment.

Contact tracing, infection control, and more are already being improved with AI integration, spurred into expansion by the COVID-19 pandemic. The authors point to a 2019 study that shows “AI healthcare markets will experience 41.7 percent annual growth to \$13 billion by 2025, in such areas as hospital workflow, wearables, medical imaging and diagnosis, therapy planning, virtual assistants, and most significantly, drug discovery.” The COVID-19 pandemic will very likely accelerate that growth rate even further with diverse positive societal and individual implications. “AI will use big data and individualization data to deliver “precision longevity” by preparing personalized nutrition, supplements, exercise, sleep, medication, and therapy plans for each person.” Experts predict that this could increase average life expectancies by as much as 20 years over the current average.

Autonomous Vehicles and Smart Cities

The state of the vehicle industry has fallen short of our Jetson-inspired flying car fantasies but self-driving landbound vehicles are no longer a figment of our collective imagination. The next story imagines a society in the middle of fully transitioning from human to autonomous driving. In it, we see how both humans and AI have the potential to make mistakes while behind the wheel, but in very different ways.

In 2041 Sri Lanka a young boy is recruited to drive cars in virtual reality. Unbeknownst to him, his driving sessions are actually being used to create data for autonomous vehicles in actual cities in real life. He is taken on a trip to Shenzhen as a reward for his excellent performance and upon arrival is blown away by the level of vehicle automation already in practice. Airports have fleets of automated vehicles operated by a smart control system. Available cars take an optimal path for pick up “based on the passengers’ location and walking speed, to maximize airport efficiency and reduce passengers’ waiting time.” They leave the airport to drive on “smart roads” that have sensors installed along their length that “communicate in real time with the control system of every car and the traffic management infrastructure in the cloud, to ensure safety and orderliness.”

The cars themselves are outfitted with cameras, sensors, and control systems that calculate speed, adjust distance, map optimum routes, and avoid collisions. But there are limitations

that must be supported with human intervention. The most inclusive AI system cannot account for an unexpected natural disaster, for example. The young boy in the story serves as a ghost driver, stepping in where AI may fail, to avert a crisis on the road and supplementing the AI system.

In real life, we are quite a far way from smart roads and fully functioning automated vehicles. Luxury brands offer parking assistance and steering correction using the vehicle’s array of cameras and sensors but the infrastructure is not in place to complement that functionality and take it further afield. Autonomous vehicles are one of the “Holy Grails of artificial intelligence.” The potential for the unexpected and the variety of subtasks and inputs involved in driving make it a function too complicated for current technology to handle safely.

Small steps are being taken and the functionality will mature over time. One major hurdle to overcome is that “AI needs to be trained on large quantities of data that are representative of real driving in many scenarios. However, the number of such scenarios and the degree of variability required are immense—at present there isn’t a feasible way to collect all the permutations of all the objects on the road, moving in all directions, and in all weather conditions.” Nonetheless, the authors predict that vehicles will be approaching full automation by about the year 2040.

The stories, predictions, and current reality of AI in society contained in the pages of AI 2041 paint a fairly rosy picture of the future of humanity. Wealth will be increased broadly, our own human capabilities will be enhanced, and we will live longer, healthier, happier lives with AI than we would have without. Conversely, there are clearly a multitude of complicated challenges and risks that we humans must first rectify before AI permeates every facet of our world.

Humans cannot expect to be “passive spectators in the story of AI.” It will require our very human “creativity, resourcefulness, tenacity, wisdom, courage, compassion, and love” to get right. The very real risks to security, privacy, and job displacements must be balanced, weighed, and mitigated against in the only possible way—our humanity. For their part, the authors are ever optimistic. They fervently believe that “our sense of justice, our capacity to learn, our audacity to dream, and our faith in human agency” will always save the day. We will not simply speculate the story of AI. We will “be the authors of it.” The bottom line to ensure going “boldly where no one has gone before” will be our intentional and calculated symbiosis with AI. We have something that AI will never have—free will. And that is what will ultimately protect and secure the future of humanity.

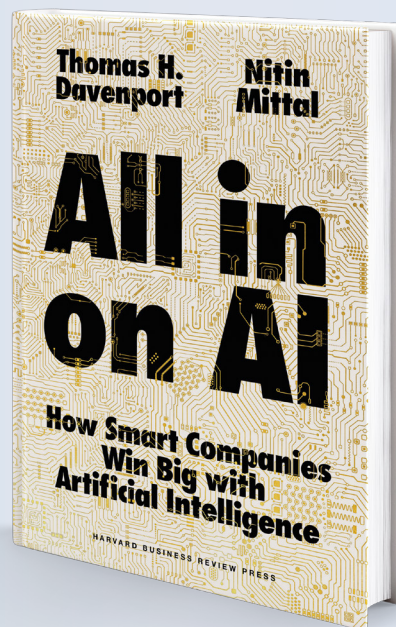
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All In On AI

Thomas H. Davenport, Nitin Mittal

BOOK SNAPS™

Zooming In On Your Next Read



All In On AI

How Smart Companies Win Big with Artificial Intelligence

By Thomas H. Davenport and Nitin Mittal

Thomas H. Davenport is the President's Distinguished Professor of Information Technology & Management at Babson College, a visiting professor at Oxford's Saïd Business School, a research fellow at the MIT Initiative on the Digital Economy, and a senior adviser to Deloitte's Analytics practice. His bestselling books include *Competing on Analytics* and *Big Data at Work*.

Nitin Mittal is a principal with Deloitte Consulting LLP. He currently serves as the US Artificial Intelligence (AI) Strategic Growth Offering Consulting Leader and the Global Strategy, Analytics and Mergers and Acquisitions Practice leader.

Are You Ready for AI?

In their book, *All In On AI: How Smart Companies Win Big with Artificial Intelligence*, authors Thomas H. Davenport and Nitin Mittal attempt to show their readers how to take their business to the next level by investing in AI technologies. Their goal is to convince their readers to become AI fueled. This requires investment of time and money, and it also requires companies to look beyond the mere basics that AI can offer. Some companies engrossed in AI are natives to the technology, but many existed before this technology did, and the task of these companies is to transform their businesses through artificial intelligence. Davenport and Mittal deeply explore numerous companies in various industries in order to show how the companies harness AI capabilities to different degrees.

Davenport and Mittal begin their book by discussing what they actually mean by the phrase, AI-Fueled. The vast majority of businesses do not qualify for this moniker; in fact, the authors state that at the time of the writing only 1% of large companies can be considered AI-fueled. This requires large amounts of data, and many companies simply never harness it to its full potential by “deploying a model into production.” They explain that companies need to “fundamentally rethink the way humans and machines interact within working environments.” Companies ought to use AI across different domains, they state. AI is “most commonly applied in making business processes more efficient, improving decisions, and enhancing existing products and services.” Both knowledge and computation are required in order for AI to be possible, and executives must be willing to do their research in order to understand all the possibilities that exist. Not all companies that attempt to make progress with AI are able to do so, however. The authors attribute this to implementation issues, data issues, and issues with “integrating AI into the company's roles and functions.” Companies can overcome some of these failures by planning from the beginning on deploying the technologies and putting people in charge of development and deployment; they also need to make ample use of data scientists.

While many people believe that AI can decrease the number of employees needed, this has generally not proven to be the case. Rather, people are seeing changes in their jobs rather than the elimination of their jobs. Davenport and Mittal write that “being all-in on AI is as much about people as technology. Companies that want to use a lot of AI in their businesses need a lot of executives and employees who understand how it works.” This requires

upskilling workers as well as evangelizing. The authors believe an aim to “replace current employees with new talent” is short sighted, and a better approach is to retrain current employees.

Data is key, the authors say, to becoming AI-fueled. They say that part of this data development process includes exploiting existing data in new ways as well as acquiring new data. Also important for companies is to develop systems whereby they can analyze and use this data in real time. They write, “what contemporary AI capability has essentially done is to make it possible and economical to productionize learning at scale and speed.”

The Human Side

Davenport and Mittal write that “Leadership, culture, attitudes, and skills are human attributes that affect AI as much as or more than any other aspect of a company.” A company must make progress in these areas in order to progress with AI, and enthusiastic leadership is key. Davenport and Mittal believe that leaders need “to be familiar with information technology” and need to be able to work across the business with different groups. Executives also must be willing to finance AI operations, and lastly it is important for leaders to become personally invested in at least some part of the business’s use of artificial intelligence. It is important for leaders to not only know about AI in general but to know, in particular, how it can affect their organization. “In short,” the authors write, “great AI technology without the right culture probably won’t provide any value.”

In order to make the change to being AI-fueled, companies will need to invest in learning. Two ways employees learn effectively are through simulations and case studies. Even after an initial training, however, concepts will need to be reinforced. When it comes to specific projects, “change management typically involves activities such as identifying stakeholders, gaining clarity about objectives and performance expectations for the AI system, communicating frequently about project progress, and demonstrating prototypes to get feedback, and retraining/upskilling workers who will be users of the new system.” Investing in change management increases the likelihood that AI initiatives will succeed.

Evangelization about AI, however, is key according to the authors. They encourage leaders to embrace early adopters and make sure to communicate successes frequently. “To maintain a positive view of AI,” it is important for people to look at both short term gain and long term potential.

Strategy

When discussing strategy, Davenport and Mittal assert that conversations are important because no single individual can have all of the ideas. They see three major archetypes when it comes to what companies try to accomplish with AI. These are “creating something new,” “transforming operations,” and “influencing customer behavior.” Companies attempting to create something new are frequently trying to enter into new markets. These companies are generally more successful than companies that simply seek to improve existing processes. When it comes to creating new products and services, Davenport and Mittal find that this

is much simpler for digitally native organizations than it is for legacy organizations. AI can improve services offered as well as products offered. Davenport and Mittal discuss how successful companies like Facebook and Google have been in influencing behavior in intended and unintended ways, but legacy companies attempt to influence consumer behavior as well. To make any of these changes mentioned, it is important to start at the top of the company as they require strategic decisions. Companies need to have AI strategies if they want to be successful in this venue.

Technology and Data

Davenport and Mittal again discuss the importance of data in this section of their book. Companies that are successful are aware of the breadth of technologies available and attempt to apply them widely. While they state that different companies will have different needs, they write that “a large company is unlikely to get by with a single AI method or technology.” One desire that executives have is for speed, and new technologies are making it “possible for data scientists - both professional and amateur - to build new models that do an excellent job of machine learning, or predicting the future based on past data.” Developing effective models can take time, but the steps involved in the process can now be done by automated learning itself.

Another concern executives have is with getting to scale, but this can be managed when companies combine their technologies “with other changes like new processes and newly involved groups of people.” Davenport and Mittal say that the biggest obstacle companies face in scaling “is acquiring, cleaning, and integrating the right data.” They find that many companies that are AI-oriented share several characteristics. Among these are using a cloud-based system and using machine readable data. They also attempt to centralize their data and use new systems.

Organizations that want to delve deeply into AI need to develop “suitable hardware environments.” They also need storage space. Things are changing quickly in information technology, and changes will need to be continuously made. Therefore, it is important for organizations to designate key people to follow trends and technologies and to determine what might work for their particular organization.

Capabilities

Davenport and Mittal state that “The path to becoming all-in on AI is not particularly well trodden.” Some of the factors they have used to determine maturity in AI are the breadth of use, the extent of AI resources available, and the extent of deployment. The authors go into detail explaining Ping An’s use of AI. They consider Ping An’s attitude to be fully committed. They then explain, through an exploration of Scotiabank, how companies who started out slowly in AI can catch up if they use the proper methods. Some of the ways Scotiabank did this was by “integrating its data and analytics work; taking a pragmatic approach to AI; and focusing on reusable datasets.” Scotiabank used what it called blue collar AI which focused on projects likely to be successful rather than on experimentation and research.



... the first step in ensuring ethical use of AI is in creating ethics policies and placing people in roles to oversee adherence to those policies.”

While Davenport and Mittal believe that the least common objective that companies have with AI is to change consumer behavior, they explain numerous companies that were successful in this endeavor. One such company is the insurance company Progressive which uses AI to get a snapshot of its customers' driving and to provide discounts to safe drivers. Anthem and Manulife are other organizations that use their services to help customers improve their health.

Ethics is always an important consideration when developing AI capabilities. Davenport and Mittal believe that the first step in ensuring ethical use of AI is in creating ethics policies and placing people in roles to oversee adherence to those policies. Policies should ensure fairness, impartiality, transparency, explainability, responsibility, accountability, safety, security, privacy, and reliability. When dealing with ethical issues, some companies join with others to form consortiums. The authors believe there are benefits to these consortia, but resources need to be dedicated to such. Developing policies is not enough for any organization. They need to ensure that they are also governing and enforcing them.

Particular Cases

Davenport and Mittal then move on to discuss specific ways that particular industries and organizations are using AI to advance their objectives. For each of the industries, the authors explain both commonly used cases as well as more narrowly used cases. The industries explored include consumer industries, energy, resources, and industrial industries, financial services industries, government and public services industries, life sciences and healthcare industries, and technology, media, and telecommunications industries. This last industry, technology, media, and telecommunications (TMT) contain some of the most advanced organizations in terms of AI usage.

Davenport and Mittal look more closely at the Walt Disney company and explain some of the ways they use AI. One of these ways is by mimicking the approach that airlines use for pricing based on supply and demand to determine pricing for hotel rooms. Disney's profit management group uses analytics and AI to increase "profitability of hotels, parks, Broadway shows, books, and other Disney assets." The company also uses AI to help with vacation planning and to help analyze where customers are in parks in order to "minimize long lines and to maximize customers' experience."

In order to free up the time of human analysts, Disney uses algorithms to review the pixels in movie frames for quality. Davenport and Mittal emphasize that there may be an overwhelming number of options for companies seeking to advance their AI, but they maintain that it is important for companies to adopt a broad

number of use cases if they want to transform their organization.

In the final section of their book, Davenport and Mittal detail four different companies in their pursuit of becoming AI-fueled. They discuss Deloitte's transformation from being driven by humans to being driven by humans collaborating with machines. Deloitte has employed AI in auditing, tax, consulting, and financial advising. Capital One, Davenport and Mittal explain, transitioned from being analytics based to AI-focused. They quote Capital One CIO Rob Alexander as saying, "Every time we make a decision it's an opportunity to use machine learning." Capital One's IT professionals have switched from building architecture to "developing great software and business capabilities." Switching to the cloud was another step Capital One took to enhance their AI capabilities. The company CCC made the switch from being a data focused organization to being an AI focused one. Davenport and Mittal say about CCC, "This virtuous cycle of more data/better models/more business/more data is what makes the ecosystem structure so powerful in combination with AI." CCC is not trying to replace humans; rather they are attempting to use AI to help employees engage with customers and work on the issues that AI cannot adequately handle. Finally Davenport and Mittal focus on Well which is an AI-fueled start up. Well is a company that is attempting to positively impact people's health behaviors through the use of AI. They use their AI to help personalize care for patients.

Davenport and Mittal conclude their book with a list of important lessons that successful AI-fueled companies have to offer. The first of these is to understand the company's goals with AI. Being more financially successful is not enough; companies need to know what exactly it is that they want to accomplish. Companies also need to create "flexible IT architecture." When legacy companies cannot successfully do this, they may need to consider partnering with startups that do not have this technological depth. Companies also need to gather data. This is easier in some industries than in others. Through these and other lessons, Davenport and Mittal garner all the wisdom they learned through their examination of numerous companies and distill it down into manageable guidelines that companies can follow. Their book begins by discussing what companies need to do in order to become all-in on AI, and the second half of the book details specific uses companies employ with their AI, ending with more in-depth case studies to help the reader determine how AI can improve their own business. Through ample exploration of both industries and particular companies, readers can garner a better understanding of all that AI has to offer.

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Automate Your Busywork

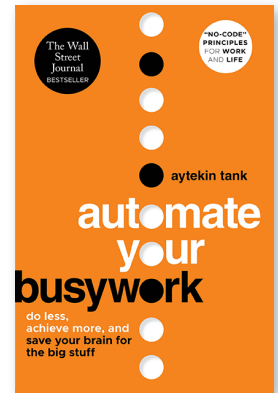
Aytekin Tank

Executive Book Summaries®

Automate Your Busywork

Do Less, Achieve More, and Save Your Brain for the Big Stuff

by **Aytekin Tank**



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THE SUMMARY IN BRIEF

For many professionals, the workday disappears under a pile of repetitive tasks, manual processes, and administrative demands that make it feel as though there are never enough hours to focus on meaningful work.

Automate Your Busywork: Do Less, Achieve More, and Save Your Brain for the Big Stuff tackles this universal pain point head-on, explaining how automation can help anyone break free from busywork and reclaim time for high-value thinking and creativity. Drawing from his experience as an entrepreneur and CEO of JotForm, author Aytekin Tank emphasizes how automation—particularly today’s accessible, no-code tools—has leveled the playing field, giving individuals and teams the ability to streamline tasks without relying on developers or IT departments.

By adopting an “automation-first” mindset, readers can offload routine work, reduce cognitive overload, and shift attention toward the strategic projects that move businesses forward. Ultimately, Tank shows that automation is not about doing less work, but about reclaiming the time, focus, and mental energy needed to do the work that truly matters. This approach offers a practical way to identify, design, and refine automated workflows that improve with use. Over time, small, well-built systems can compound into lasting gains in focus, efficiency, and impact.

IN THIS EXECUTIVE BOOK SUMMARY

- Understand how no-code automation tools can eliminate repetitive tasks and free up mental capacity
- Learn the “automation-first” approach to identifying and simplifying workflows
- Apply the “flywheel” method to build, test, and refine automations over time
- Develop sustainable habits that shift you from busywork to meaningful productivity

Introduction

We're all drowning in busywork. We all have too much to do. Despite all our technology, or maybe because of it, so many of us spend our days fighting busywork that distracts us from our higher purpose.

What would you do if you could eliminate the dull and repetitive tasks you hate? We all have just 24 hours in a day. What separates the truly successful from the floundering is how we use those hours.

This is where automation comes in. Turning repetitive tasks into automated digital processes frees your brain for the essential, creative work. And you don't need to hire a team or spend money on expensive new products. Automation is accessible to anyone who wants to take advantage of it. With a little effort, anyone can automate.

Automation has been the foundation of my career. My early automation ideas developed into what I call the *automation flywheel*. Think of it as a system that takes a little energy to start turning, then continues to build momentum and speed. Every time the flywheel spins, you get more efficient and achieve better results. With patience, you'll be able to automate entire systems that run in the background while you do the real work that only you can do. After all, automation isn't about working less, it's about spending your time on the work you care about.

My ideas about work and automation have evolved over the years, but a few principles continue to hold true:

- Your productivity is not the problem.
- Work isn't going anywhere.
- If you have a manual or repetitive task, you can automate it.
- Modern work requires a machine for success.
- Automation can't happen overnight.

It all comes down to this: determine the result you want, design the machine that will deliver that result, and then configure the automations you need to build it. This is the automation flywheel in a nutshell.

No matter what your responsibilities are, automation can—and will—make your life easier. Here are just some of the benefits you can expect to achieve when you commit to automation.

- overcome human limitations
- increase speed
- document processes

- maintain consistency and minimize errors
- enable continuous improvement
- enable complexity
- lower costs
- reduce stress

CHAPTER 1

Automation Fundamentals

Deeply productive automation can't be simply unboxed and plugged in. To truly conquer your busywork, you'll need to put in time and effort to determine precisely what needs to be automated. But the benefits will come back to you in spades, in part because you'll likely identify tasks that could be greatly reduced or even cut out completely.

Identify Your Busywork, Define Your Meaningful Work

No matter what your busywork is, there's a good chance it can be partially or even fully automated—if not now, then likely soon. As for right now: even if it's not yet possible to automate an entire task, it's almost certainly possible to automate parts of it. This is where mapping out your process comes in. By breaking each task into its smallest, most basic parts, it becomes more apparent which steps you can streamline or automate and which you can reduce or abandon. Once you've identified individual elements of a task, you might find that solutions for that element are already available.

Next, grab a pen and paper. Or ask Siri, Alexa, or a digital assistant to take notes for you. Take 15 minutes to describe or sketch out your vision of work that matters to you and your career. What do you enjoy doing the most? What would you like to save your brain to do more of? What delivers the most impact? Include as many details as possible. Don't worry about a perfect breakdown at this stage; just get down as much as you can. As you continue, keep this "meaningful work" vision nearby, and perfect it as you go. It will be a valuable compass on your journey through automation.

Now that you've identified part of what you're seeking, the first step of exploring the fundamentals of automation calls for shattering key myths about work and productivity:

Myth #1: We should always be available to our colleagues, and we should respond to messages as soon as they arrive.

Solution: Block out periods when you focus on deep-think work.

Use automation to remove repeatable tasks from your to-do list altogether.

”

Myth #2: Procrastination must constantly be kept at bay.

Solution: Use automation to remove guesswork and decision-making from tasks you tend to procrastinate on.

Myth #3: Making a list and crossing out completed tasks is the best antidote to feeling overwhelmed.

Solution: Use automation to remove repeatable tasks from your to-do list altogether.

Introducing the Automation Flywheel

I developed the automation flywheel after I realized that automation is never fully “done”—it’s ever-evolving. In keeping up with that reality, the automation flywheel is a process of continuous improvement. The flywheel starts turning when you realize you’ve fallen into a pit of busywork and you’re ready to climb out, and it proceeds in three stages:

Stage 1 — Divide and Conquer

- **Divide** – the process begins with exploring the source of your busywork: what it looks like, why it’s happening, and who’s involved (or who isn’t involved but should be), plus key signs and symptoms.
- **Conquer** – bring workflows and processes together so individual tasks work in coordination, underpinning your automations and freeing up bandwidth for meaningful work.

Stage 2 — Design and Implement

- **Design** – like sketching a product prototype, this is where you’ll literally draw or map out each step of your automation.
- **Implement** – here’s where you’ll build the actual automation and connect your data. I’ll suggest some popular tools for common automation tasks, but, thanks to the blistering pace of technological change, you’ll need to do your own research.

Stage 3 — Refine and Iterate

- **Refine** – better automations can help you work faster and more effectively. But before you can refine your automations, you’ll need to set and track key performance indicators (KPIs) to measure the results.
- **Iterate** – test and change. Tinker and update. This is

the continuous improvement process that keeps your automations on track.

We’re a society awash in busywork. But though we may be drowning in a sea of technology, that same technology can also be our life preserver. And though it will take time and energy to get your flywheel going, it builds speed and momentum with every turn. It’s the machine that will deliver the results you’re seeking. And unlike busywork, the effort you put into this process will pay increasingly more dividends as the weeks elapse.

Embrace the automation flywheel; it’s the secret to reclaiming your time and focus.

CHAPTER 2

Divide and Conquer

The divide-and-conquer stage of the automation flywheel can help you figure out *how* and *why* you’re overwhelmed with busywork. You probably have some sense of this already; maybe your schedule is crammed with unproductive meetings, or you lose hours to instant messaging. As you explore what’s eating up your time, there may be some surprises along the way. The most potent drains are often hiding in plain sight. These are the repetitive, manual tasks we tacitly accept as part of our workday when, in fact, they could be automated right off your to-do list.

Divide: Learning the Power of Workflows

Workflows are a series of interconnected steps that produce a result. Some workflows are linear, meaning they always follow the same series of steps, in the same order.

We often fail to understand the structure of our workflows, and why seemingly isolated tasks are often heavily dependent on other jobs or people. We also fail to estimate how much time each step requires, and we don’t realize that a one-off task actually has multiple steps with their own, individual timelines.

Mapping out the full process in advance is the essence of a workflow. This way, when it’s time to act, you’re not deciding *whether* to do something, or wondering *what* to do next.

The plan kicks in, and you execute.

Exploring your workflows can highlight critical flaws in the process and empower you to fix things right at the root.

To be clear: not every task has a workflow. You can't develop a systematic workflow for highly creative and strategic tasks, like writing, brainstorming, planning, or having complex personal conversations. Workflows are most effective for activities that have the following qualities:

- are repetitive and systematic
- are recurring
- follow a set pattern
- require little-to-no personal input
- involve multiple, interconnected steps
- can be delegated
- can be delayed

Workflow Models and Elements

Every journey has a pattern, so does every workflow. The following are some of the most common workflow models:

- **Linear/sequential** – unfolds in a straight line, following the same steps each time from start to finish, with each step leading to the next without loops, splits, or directional changes.
- **Nonlinear** – involves branches and dependencies that alter the workflow's path based on conditions or inputs.
- **Loop** – restarts the workflow from the beginning once the final step is completed.
- **Parallel** – runs multiple steps at the same time, allowing processes to move forward simultaneously and preventing bottlenecks.

Every workflow has four components:

1. **Trigger.** Starts the workflow and initiates the action.
2. **Steps.** The tasks that occur during the workflow; they exclude the background work required to build the flow.
3. **Results.** What each step achieves; every step has a result.
4. **Outcome.** The completed workflow and the destination it was designed to reach.

It's worth noting that steps aren't synonymous with to-do list items. To be "steps" in a workflow, they need to help fulfill the same outcome.

Every workflow step can also be categorized in one of three ways:

- **Input.** The materials and resources required to complete a step.
- **Transformation.** The rules that determine how input is received and what happens to it.
- **Output.** The materials and resources produced by the transformation step; they become inputs in the next step.

Conquer: Spotting and Plotting Workflows

Learning to recognize workflows is an adaptation. Everything may blur together at first, but with time, you start to focus and see the opportunities. Here's what to look for:

- You're doing a task over and over again.
- Tasks drag on... and on and on.
- Tasks get blocked or stalled.
- You get lost in rabbit holes.

You've probably already discerned a truism worth hammering home: busywork = manual workflows. In preparation for automating that busywork, you'll want to start tracking which workflow candidates might be worth pursuing.

Though you won't always have 20/20 workflow vision, sharpening your spotting skills can help you find more opportunities to transform busywork into automated workflows.

Developing an Automation-First Mindset

Once you've adjusted to the metaphorical dark and are better at spotting the workflows hiding in your busywork, you're ready to embrace an automation-first mindset. You'll view all your to-do items (especially new tasks) through the lens of digital delegation:

- What can I automate?
- What should I spend my time on?
- What *shouldn't* I spend my time on?

As you hone this new automation-first mindset, the following are three principles to help guide you:

1. Harness impatience

People who are lazy and impatient don't like doing the same thing twice. Truly lazy and impatient people are incredibly resourceful—if there's a way to automate a repetitive task, they're going to find it.

Once you start to see everything as a system that can run on autopilot, it will change your life and your career.

”

2. Accept the process

Automation can be boring. For most people, breaking already dull tasks into their respective parts and planning a digital workflow is not exactly a party. But you have to embrace your boredom on the road to automation.

3. Embrace systems thinking

Based on Donella H. Meadows's book, *Thinking in Systems*, this principle provides that:

- Everything is a system.
- To understand and improve the system, you have to understand each part, and how the parts connect.
- If you can't see or experience the full system, you need to create models to put it all together.

The same core principles apply to workflow automation. Once you start to see everything as a system that can run on autopilot, it will change your life and your career.

Clarify Your Priorities

Making space for meaningful work means being relentlessly selective about what you choose to do and where you focus your time. If you stick to your priorities, you'll be more productive in all the ways that matter.

Despite all the studies and statistics highlighting the need for focus, it isn't always easy to determine your true priorities. So many things are vying for our attention, how do we separate the meaningful from the trivial? Here are a couple of techniques you can use to find some clarity:

1. The Eisenhower matrix

The four quadrants in the Eisenhower matrix can be simplified as follows:

1. Urgent and important – do immediately, finish quickly.
2. Important, but not urgent – schedule time for this.
3. Urgent, but not important – delegate or automate.
4. Neither urgent, nor important – try to eliminate.

2. The impact/effort matrix

1. High impact, low effort – since these are quick wins that deliver great returns for relatively little effort, these are the workflows to start with.

2. High impact, high effort – these are larger projects that can deliver strong returns but require more time; make them your secondary priority.
3. Low-impact, low effort – tackle these workflows only if you have extra time or help—or if you really find yourself on a roll.
4. Low impact, high effort – don't touch these projects; they're not worth your time.

Turn to your list of prioritized workflows. Once you've chosen which workflows to automate, you need to set some metrics. What do you want to achieve? What will success look like? You can measure the progress of an automation based on a variety of considerations, including quality, speed, satisfaction, and opportunity.

CHAPTER 3

Design and Implement

The design and implement phase of the flywheel is like planning your escape route. You'll get up close and personal with the tasks that waste your workday and determine how to get them off your plate and out of your way. Automation can do the heavy lifting for you. It can tackle even the most frustrating processes while you strategize, write, lead, create, and do your very best work.

Design: The Power of Maps

Maps are the key to automating your busywork. You've already identified the repetitive, manual workflows that are ripe for optimization. Now, it's time to structure these workflows into visual maps and build the automations. This is where the work happens.

Before you can automate a workflow, you need to understand its current state; that's the only way to streamline the process and make it work better. Here's what to map out:

1. Determine the need
2. Establish a clear beginning and end
3. Sketch in the middle steps
4. Assign responsibilities and ownership
5. Review and refine

Keep in mind that you're automating this workflow to simplify your life, not to add new steps and people into the process. Limit the flow to exactly what needs to be done and who needs to participate in order to accomplish your goal.

Keep the following two points in mind as you design and map out your workflows. Prioritizing modularity and stripping your flows down to the essentials can maximize your time and effort.

- **Make it modular.** Smart workflow design is modular, which means it's composed of self-contained blocks or components. These components can be rearranged, stacked, repeated, and moved as needed.
- **Apply the Pareto principle.** The 80/20 rule, or the Pareto principle, can help you trim processes. Examine each workflow map and prioritize the essential 20%. These are the steps that move most of the work forward. Of course, you can't start randomly cutting steps, but you can use this principle to find pivot points that accomplish the bulk of the task. The more you can simplify these parts, the more effective your workflow will be.

Workflow design doesn't need to be complicated, but it does need to be accurate. A truly useful workflow also does the following:

- provides clarity
- minimizes distractions
- simplifies complexity
- speeds up work
- supports continuous improvement

Implement: From Design to Deployment

So, you've mapped out at least one workflow diagram and you're ready to put it into action. Now what? To put it simply, you need to find tools that will do the manual work for you. Examine each step of your workflow and consider what kind of action needs to happen and what product features might enable that action.

Start where you are. Many of the products you already use have built-in automation opportunities that are flying below the radar. Before you search for brand-new tools, it's worth exploring your existing apps and programs to learn about lesser known functions that might support your workflows.

Consider the cloud. The cloud has unleashed a wave of new automation tools, or software as a service (SaaS) products,

that don't cost half your monthly rent. Technology sites like my favorite, G2, will give you a taste of the sheer scope of these options. There are dozens of products for virtually every need and function.

Choose Recommended Products. Not all cloud automation solutions are created equal. Choosing the first hit from your web search is hardly ideal. Yet, who has the time to evaluate a whole series of products? That's where technology journalists and user reviews come in. And if you're entirely lost in the technical part of this process, professional consultants are available to help you identify and implement the best tools for your needs.

Conduct a SWOT Analysis. If you're evaluating a pricier product or one you'll use to automate many different workflows, you may want to go a little deeper. A SWOT analysis explores a tool or system's strengths, weaknesses, opportunities, and threats.

CHAPTER 4

Refine and Iterate

Now it's time to examine how your workflows are performing. Think of it like assessing a first draft: How does the automation flow? Are there steps where the logic breaks down or you keep getting stuck? Is it achieving the goals you established?

Refinement is a process of establishing feedback systems that deliver insights so you can continually improve the workflows, without starting from scratch each time.

Refine: Measure What Matters

Here's the good news: you can measure and track nearly any aspect of your workflow. The bad news is identical: you can measure and track nearly any aspect of your workflow. That's why it's important to identify the most relevant key performance indicators for your automations. After all, you've taken the time to design and implement these workflows; they should perform as expected. You'll also want a benchmark for improvement.

Each KPI measurement is called a metric. Most metrics will include both current and target values. You can track one metric or a whole array. I recommend starting small. Metrics are also like variables in a scientific experiment, so the more you introduce, the more complicated the refinement process can become.

Automation opportunities are everywhere; you just need to keep scanning the road in order to spot them.

”

Keep in mind you're establishing KPIs for your automated workflows, not your job role or an organization as a whole.

Determining the right metrics can be surprisingly tricky. Use your overarching goals to prioritize workflow KPIs and metrics. Once you've addressed those, you can:

- Solicit stakeholder feedback
- Make them SMART – specific, measurable, achievable, relevant, and time-bound
- Create reports and dashboards
- Establish review cycles

Apply Systems Thinking

Your workflows are also systems, and thinking in systems is one of the three core principles of an automation-first mindset. Knowing how to apply systems thinking will help you with every turn of your flywheel. Now that you've automated a chunk of your busywork, we now need to implement feedback systems to refine and improve the output of your workflows.

There are many times in life when the outcome is *more* important than the output. In the same vein, your workflow shouldn't just work; the system should create value for you and everyone else involved. Quality beats quantity. So, how do you assess the quality of your workflows? Start with basic testing: Does it operate as intended?

Remember that a productive workflow provides clarity, minimizes distractions, simplifies complexity, and reduces manual work. Another important way to improve your workflow outcomes is asking what others think about the entire workflow.

Iterate: Test, Change, and Innovate

Workflow iteration is also a process of continuous improvement. It keeps your automations on track and ensures they meet your evolving needs. After setting KPIs, analyzing what you've built, and refining your workflows, hopefully you don't need to start back at the beginning. More likely, you've hit your stride. Now you just need a way to keep enhancing what you've built. Welcome to the final stage of the flywheel.

If your first automations are working flawlessly, congratulations. Don't fix what isn't broken; the time for upgrades will come soon enough. If, however, you're still tinkering with the details, find and adopt a process-improvement approach.

The following process-improvement tools, techniques, and methodologies can streamline your workflows and guide your iterations:

- **Kaizen:** Japanese car-maker Toyota pioneered this approach, which focuses on making incremental upgrades throughout an organization. Any individual, industry, or organization can apply the continuous improvement principles of Kaizen.
- **Six Sigma:** Widely used in business settings, Six Sigma is designed to pinpoint process inconsistencies or defects so as to deliver better products and services.
- **Lean:** As the name suggests, this approach is all about cutting waste. Industries or organizations use Lean techniques to determine if and how a process adds value to the business. Processes that don't bring value can be relegated as waste.
- **Lean Six Sigma:** A combination of Lean and Six Sigma, this methodology focuses on reducing waste and minimizing process defects. It's a highly effective way to improve business processes across a variety of industries.
- **5S:** The 5S model has five key steps: sort, straighten, shine, standardize, and sustain. It's part of both the Kaizen and Lean methodologies and emphasizes consistency and process standardization.
- **Agile Management:** Used primarily in software and tech companies, including Jotform, Agile centers on rapid change through collaboration. Flexibility and adaptation are key. The "fail fast" philosophy of Silicon Valley founders is imperative to this approach.
- **Total Quality Management:** An older process-improvement approach, this method measures success through customer satisfaction. Strategic process creation is at its core.
- **Theory of Constraints (TOC):** What's preventing you (or the organization) from achieving specific goals? That's the focus of TOC. Once you identify

the constraint, you can take steps to improve the process that underpins that constraint.

Iteration is the process of testing and improving how your automation works. It's also about what makes it work. Over time, the tools and technologies powering your workflows might start to get sluggish. Sometimes, nothing's amiss in your design or implementation; the issue can lie with the technology itself.

To keep everything running smoothly, it's important to stay on top of new products because innovative solutions emerge all the time. Many people find that a quick review of the product landscape every six months can prove fruitful. Even just a small improvement to your automation could make a large difference.

CHAPTER 5

Design a Life Without Busywork

Our digital world has empowered us to accomplish so much, yet many of us are proportionately beholden to electronic tools and tedious processes. My goal has been to loosen their grip, to help you find more space and freedom. Because once you've developed your automation flywheel, it can help you in so many ways.

Just as we're not defined by the busywork that occupies our days, we don't live our lives in neat, administrative categories like banking and vacation approvals. Trying to force a wild human brain into precise, professional boxes is one of the reasons we're so overwhelmed in the first place.

You'll find a variety of ways to automate your memory, peace of mind, creativity, communication, happiness, and growth. I hope you find some that fit your current needs— and keep in mind that others may help you down the road. In any case, they're intended to sharpen your automation-first mindset and help you spot increasingly more targets as time goes on.

Conclusion

The automation flywheel is my attempt to transform your relationship with technology, to demonstrate how you can use automation to sweep low-value tasks off the table and free yourself to focus on meaningful work. You have been given a lasting pattern that applies to every automation you'll build and implement.

At its core, this approach reinforces three essential ideas:

- **Anyone can automate.** No-code tools are built to help *everyone* plan and execute valuable automations, regardless of their technical prowess. Programmers work hard to ensure these products are truly user-friendly. That doesn't mean, of course, that they're no-effort tools.
- **Cultivate an automation-first mindset.** Automation opportunities are everywhere; you just need to keep scanning the road in order to spot them.
- **Automation pays dividends over time.** Your automation flywheel could be a little creaky at the start. Try not to be discouraged. You will get faster, and it will feel more intuitive. And then you can enjoy the compound interest that comes from automating repetitive processes—and automating more of these workflows over time.

Most importantly, know that *you can do this*. You have the skills at your disposal.

If you peel away the layers and all the strategies discussed here, you'll see that your task really has just three steps: determine the result you want, design the machine that will deliver that result, and then configure the automations you need to build it.

It's that simple, and it's that powerful.



Aytekin Tank is a founder, productivity expert, and automation enthusiast. He is the founder and CEO of Jotform, a bootstrapped global SaaS company he has led since 2006. Jotform provides powerful online forms used by tens of millions of people worldwide. Tank is known for building profitable, people-focused products without outside funding. He frequently contributes to *Fast Company* and *Entrepreneur*, where he writes about leadership, productivity, and practical uses of SaaS technology in everyday workflows. His work centers on helping organizations operate more efficiently by designing tools that simplify work, reduce friction, and scale with purpose.

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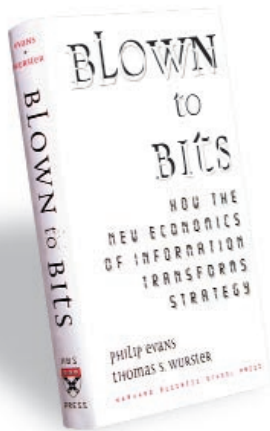
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Blown To Bits

Philip Evans and Thomas S. Wurster

SOUNDVIEW Executive Book Summaries®

FILE: STRATEGIC MANAGEMENT



By Philip Evans and
Thomas S. Wurster

How the New Economics of Information Transforms Strategy

BLOWN TO BITS

THE SUMMARY IN BRIEF

Organizations have historically approached the dissemination of information with a single, dichotomous assumption. One could focus either on *richness* (developing information on customized products or services, tailored for and sold to a small, devoted audience) or *reach* (watered down information and products that sacrificed richness in favor of reaching a larger, more general audience), but never both simultaneously.

In *Blown to Bits*, Philip Evans and Thomas S. Wurster note that that trade-off has been eliminated by the advent of the Internet. The central tenets of traditional business strategy have been “blown up” by a tool that has both eliminated borders and barriers long taken for granted as part of doing business, as well as hastened the development of standards and common connectivity that will affect companies for many years to come.

In this summary, Evans and Wurster focus on several key pieces of what they call “the new economics of information”:

- **Information and Things.** The embedded compromises inherent to linking the economics of information and the economics of physical things make organizations vulnerable to faster, more efficient competitors.

- **Richness and Reach.** If you unbundle information from its physical carrier, the traditional trade-offs of richness and reach likewise become unbundled. The result: a wealth of new opportunities for business.

- **Deconstruction.** Once information and things are treated as separate economies, thus eliminating the trade-off between richness and reach, companies can dismantle and reformulate themselves, to great competitive advantage.

- **Disintermediation.** The deconstruction of businesses results in direct communication between suppliers and buyers, reducing or eliminating the need for middlemen; these intermediaries must find new reasons for existence in order to stay in the game.

- **Supply Chains and Organizations.** With reach and richness no longer “either/or” propositions, supply chains — indeed, entire organizations — can be deconstructed and reconstituted to meet new competitive challenges.

The traditional modes and processes you’ve used to disseminate information are no longer as powerful or valid as they once were. What that means to the future of your company is the topic of this summary.



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BLOWN TO BITS

by Philip Evans and Thomas S. Wurster

— THE COMPLETE SUMMARY

Information and Things

Every business is an information business. Information plays a critical role in any business endeavor, regardless of whether that endeavor is viewed as being explicitly based on information. The health care industry in the United States, for example, is a \$350 billion business that, at its core, consists of dealing with information — patient records, cost accounting, insurance claims and the like. The physical world of manufacturing is also shaped by information, rewarding those companies who successfully leverage the benefits of market research, logistics and advertising. Even inventory is a physical manifestation of one's ability to properly use information.

The formal organizational structure of any company is fundamentally a set of channels for the rich exchange of information among employees. In this context, "information" does not merely mean "data." Qualitative judgments, affiliation and emotion are all inextricably linked with the sharing of numbers and facts; denotation and connotation are inseparable.

Information is the glue that holds together value and supply chains, consumer franchises and organizations. That glue is now melting; the explosion in connectivity and in information standards are enabling open, nearly cost-free exchange of rich information across a wide array of communications channels. The Internet, obviously, has spurred this change, but the phenomenon will grow exponentially in the coming years, as broadband connections (such as cable modems and DSL technologies) become more affordable and Web-enabled devices and appliances become more widely used. By 2010, in fact, these devices (such as digital assistants, intelligent automobiles and the like) are expected to outsell PCs by a factor of 10 to 1.

The New Economics

The economics of information is quite different from the economics of physical things. In the majority of businesses, the two are tied together like participants in a three-legged race. Consider, for example, shelf space in a shop. First, it serves as both the billboard (*information*) for products, telling customers what they need to know to make a purchase. It is also *inventory* (a thing) — the stock of goods residing between a factory and consumer. To maximize the potential for the information purpose of the shelf, the retailer would make the size of the display

larger; to focus on physical economics — placing as much stock as possible out for sale — the retailer must minimize the size of the display. The compromise between the economics of information and things is a daunting one.

The vulnerability of a business is proportional to the extent of its embedded compromises — compromises between different activities tied together by information flows, and compromises between its economics of information and its economics of things. Information may be the end product of a minority of businesses, but it glues together important entities across the entire economy. As that glue melts and the compromises between information and things are broken, tremendous economic value can be released. Indeed, "businesses" may no longer exist — their component pieces may separate as the informational glue bonding them together melts. ■

Britannica: A Cautionary Tale

By 1990, sales of the multi-volume Encyclopedia Britannica had reached an all-time high of \$650 million. Its direct sales force — one of the most aggressive and successful in the world — had carried the stalwart educational tool to a high-water mark in a market in which it had dominated since its inception in the late 1700s. Since 1990, though, Britannica's sales have fallen off 80 percent, blown away by a product of the late-twentieth-century information revolution — the CD-ROM.

Britannica's executives, at first, did not take the revolution seriously and, at least initially, no one could blame them. The most popular CD-ROM encyclopedia, Microsoft's Encarta, contained nothing that encyclopedia enthusiasts would have found interesting in their original medium: text licensed from the third-rate Funk and Wagnall's encyclopedia (a pale Britannica imitator), a bevy of public-domain illustrations and scratchy

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The author: Philip Evans is a senior vice president of the Boston Consulting Group in Boston. Thomas S. Wurster is a vice president of the Boston Consulting Group in Los Angeles.

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Britannica: A Cautionary Tale

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Yet Britannica's revenues plunged; regardless of the comparative quality of the content, Encarta was an enormous hit, and produced a quandary for Britannica — to produce a competing CD-ROM, the company would have to cut its content from roughly 40 million words to just under seven million. Britannica also faced a revolt from its sales force, who guessed, correctly, that even a high-priced CD-ROM could not generate the \$500 to \$600 commission of the printed product.

Lessons from Britannica

Britannica did eventually produce a CD-ROM, but by then it was too late. In May, 1995, the company was sold at a significant loss against book value. The lessons to be learned from Britannica's downfall are many:

- **The most venerable can prove to be the most vulnerable.** Even the most established brands can be demolished by new information technologies.
- **A strong corporate culture can blind business leaders to events that do not fit into their collective mental framework.**
- **Britannica's status as the historical leader in its market placed it at a natural disadvantage, since it still had to contend with the trappings of "legacy assets" — old sales and distribution systems, brands, core competencies, etc. ■**

Richness and Reach

To the extent that information is embedded in physical modes of delivery, a basic law governs its economics: There is a universal trade-off between richness and reach. If you unbundle information from its physical carrier, though, the trade-off can blow up.

Until recently, it has been possible to share very rich information with a very small number of people and less

What are Richness and Reach?

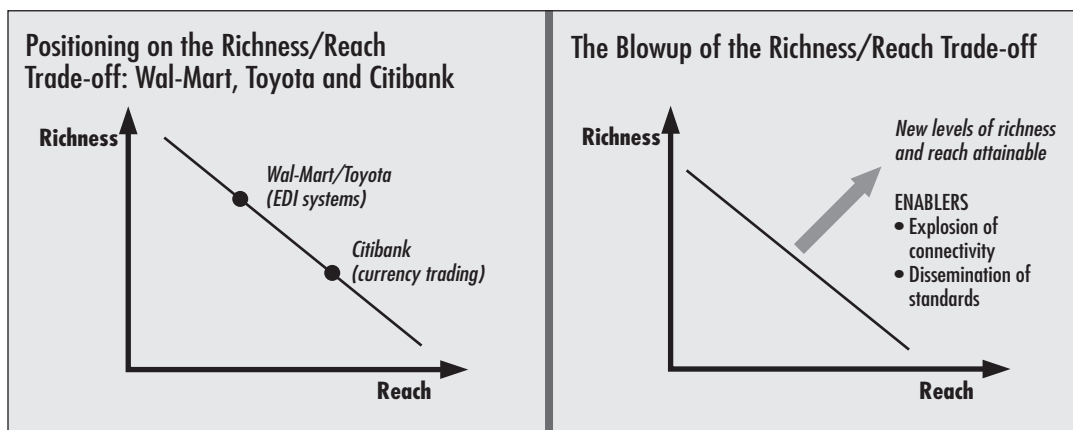
Reach is simple to understand — it is the number of people (at home or work) exchanging information. The definition of richness is more complex; at its essence, it is the quality of information, as defined by the user. Richness concerns six aspects of information:

- **Bandwidth:** The amount of information that can be moved from sender to receiver in a given time.
- **Customization:** The degree to which the information can be personalized.
- **Interactivity:** Dialogue is possible for a small group; messages to millions must be delivered as a monologue.
- **Reliability:** Information is reliable when exchanged in small groups, but not in large ones.
- **Security:** Sensitive information is kept behind closed doors; less sensitive information is disseminated to a wider audience.
- **Currency:** On Wall Street, some market makers receive instantaneous quotes; some on a 3- to 15-minute delay. Most retail investors receive quotes on at least a 15-minute delay.

rich information with a larger number, but it has been impossible to share simultaneously as much richness *and* reach as one would like. Communicating information has required either proximity (people working in the same location) or dedicated channels (proprietary computer networks, for example). Costs and physical constraints of these channels have historically limited the number of people who could access the information. Conversely, communicating information to a large audience has required compromises in the quality of that information; technologies have not allowed the simultaneous achievement of extensive reach and deep, resounding richness.

Some Examples

Supply chains exhibit this trade-off. When companies conduct business with one another, the number of parties they deal with is inversely proportional to the richness of the information they need to exchange. A good example of this trade-off can be seen with Citibank, where currency traders source euros and yen from hundreds of institutions, due to the fact that the infor-



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Richness and Reach

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mational richness needed to support currency trading amounts to two numbers: quantity and price. The information requirements of the business put a higher premium on reach than they do on richness.

Toyota and Wal-Mart, on the other hand, have narrowed their reach by moving to fewer and larger long-term supplier contacts. Narrowing their reach allows for a richer coordination of marketing and logistics. They built extensive networks for electronic data interchange, but the cost of the system forced them each to narrow their sourcing to the largest, most capable vendors.

In both cases (Citibank on one side, Toyota and Wal-Mart on the other), we see the extremes of the trade-off between richness and reach. This trade-off is the informational foundation on which relationships, consumer franchises, vertical integration, horizontal integration and asymmetries of information — differences in knowledge among people or companies that affect their bargaining power — are largely based. (An example of asymmetries of information is the case of the sale of a used car, in which the seller knows much more than the buyer.)

The Power of Standards

Once information can travel by itself and there are standards that allow everyone to share that information, it becomes possible to have both richness and reach. This blowup of the richness/reach trade-off is creating a new economics of information; it is driven by connectivity, by the triumph of communication standards and by the migration of those standards into the organization and presentation of content.

For example, OFX is a standard (developed by Microsoft, Intuit and others) for the presentation of personal financial information. As it evolves into a comprehensive standard, it will allow an individual to specify a financial need, receive and compare bids, incorporate data or advice from any source, and accomplish a number of additional tasks, all while dealing with an essentially unlimited number of institutions. Ordinary individuals can exercise the purchasing sophistication of finance professionals; the customer enjoys both richness and reach.

Shifting the trade-off between richness and reach melts the informational glue that bonds traditional business relationships. The result: Business structures, such as value chains, supply chains, franchises and organizations, are “deconstructed.”

Over the next 5 to 10 years, this deconstruction — this exchange of rich information without constraints on reach — will change many relationships in the business world. In fact, it is already happening. ■

Deconstruction

“Deconstruction” is the dismantling and reformulation of traditional business structures. It results from two forces:

- **The separation of the economics of information from the economics of things.**

- **The blowup (within the economics of information) of the trade-off between richness and reach.**

When the trade-off between richness and reach is blown up, there is no longer a need for the components of these business structures to be integrated. The new economics of information blows these structures to bits and then recombines them, based on the separate economics of information and of things.

Incumbents vs. Insurgents

Deconstruction typically results in competitive squabbles between incumbent companies trying to maintain old information paradigms and insurgent competitors that use new modes and methods of dissemination to gain competitive advantage. The insurgent’s greatest competitive advantage, however, tends to be the unwillingness of the incumbent to fight on a deconstructed definition of the business.

A good example is the retail banking industry, where the current business model is a vertically and horizontally integrated value chain. Multiple products are originated, packaged, sold and cross-sold through a common set of proprietary distribution channels. The fundamental unit of value is the customer relationship; high-cost channels and distribution systems are optimized around servicing that relationship.

At first glance, electronic home banking appears to be just another distribution channel, and, indeed, most

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How Vulnerable is Your Business to Deconstruction?

There are four steps to understanding how deconstruction will play out in individual industries:

1. **Examine how informational economics shape your industry.**
2. **Consider how new technologies can shift those existing structures.**
3. **Analyze how the various players in the business system could create economic value as a consequence of those changes.**
4. **Lead the transition from the old business to the new one.**

Deconstruction

(continued from page 4)

incumbent banks view it as such. Many even offer proprietary software to support home banking and electronic transactions. What they do not appear to recognize is the fact that customers can now access information and make transactions in a variety of fundamentally new ways, through proprietary software, mass market software (such as Quicken or Microsoft Money), and, especially, through Web sites maintained by major financial institutions.

Connectivity Eliminates the Trade-off

The Web sites of financial institutions initially presented the consumer with a trade-off between richness and reach (either rich services from one's own bank or limited offerings from the major institutions' sites), but the trade-off was entirely artificial. Once connectivity has been established, there are incentives for players to create standards that allow for increasing richness across an unlimited number of institutions. The comprehensive OFX standard, mentioned earlier, is one example of this type of standard. It will soon support presentation of bills, brokerage transactions and bid solicitations, bridging personal financial software with the Web sites of institutions and combining the best of both tools to support a full range of banking services.

When that happens, the trade-off between richness and reach in retail banking will be broken. Sedentary incumbents will be forced to address the resulting deconstruction of their existing value chain, or to be crushed by the weight of insurgents climbing over them to get to customers. When a value chain begins to deconstruct, almost any choice of focus is better than clinging to obsolete, integrated business definitions. If companies don't address the deconstruction of their businesses, or deconstruct them themselves, someone else will do it for them. ■

Disintermediation

Many intermediaries in business make their living from the richness/reach trade-off. Thus, if that trade-off is blown up, the intermediaries get blown up too, or at least must come up with new justifications for their existence. When the supplier of goods and the consumer of goods can deal directly with each other, there is a deconstruction of the old role of intermediary; that role evolves into one of a navigator.

This disintermediation, as it were, is nothing new. Bankers coined the term 30 years ago to describe the displacement of corporate and retail banking in the wake of securities and money market funds. Today's disintermediation is driven by the new economics of information, and the speed and impact of that economics on existing intermediaries.

Dell Adds Richness to PC Retailing

By selling computers directly to consumers, Dell Computer Corporation became one of the great examples of disintermediation done right, with phenomenal success, with \$16.7 billion per year in sales and an annual growth rate of 50 percent. The benefits to the company and consumers have been manifold:

- Dell holds down costs by maintaining a bare minimum inventory — eight days' worth of components and finished products, compared with rival Compaq's 35-day inventory.
- By selling over the Internet, Dell has blown up the richness/reach trade-off, allowing customers access to a wealth of information and a simple interface that allows them to use that information to build a product customized to their unique needs.
- By coordinating the electronic exchange of information with its suppliers, Dell has added a layer of richness, extending that quality back to its supply chain.

Traditional vs. New Disintermediation

There are two basic forms of disintermediation: traditional and new.

Traditional disintermediation happens when a new competitor attacks an established intermediary by offering greater reach and less richness. This is a different value proposition and not necessarily a superior one. It simply resegments a market rather than destroying an established intermediary. The disintermediation of local hardware and clothing stores in the late nineteenth century as a result of the Sears and Roebuck catalog is one example. The interface of the catalog was not as rich, but its reach (in selection and delivery) was far superior to local brick-and-mortar counterparts.

The new, more radical form of disintermediation occurs when technology allows for the richness/reach curve to be displaced, allowing new players to offer greater reach and greater richness *simultaneously*. It threatens not just to resegment a market, but rather to transform the business.

One good example is the brokerage business, which nurtured long-term relationships between customers and brokers, who served as intermediaries between the customer and the brokerage house. The advent of online trading has deconstructed the broker/customer relationship to the point where brokers are now addressing the deconstruction and disintermediation by going independent — offering their services and advice to investors in a consultant's capacity apart from brokerage houses.

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Disintermediation

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Eliminating Compromises

Disintermediation will take place wherever the richness/reach trade-off can be shifted and compromises in the current business can thereby be eliminated; both conditions are necessary. Disintermediation need not attack a whole business as conventionally defined — it can attack a small portion of a business and still unfold to maximum effect. How it unfolds depends on which player — insurgent or incumbent — precipitates the attack. Compromises are eliminated left and right — those brought about by the linking of the economics of information and the economics of things as well as those arising from the existence of the richness/reach trade-off. In fact, there may be a number of compromises embedded in current levels of richness that are only obvious to the customer once disintermediation proceeds.

The advantage of disintermediation is that the customer always wins. Customer needs, not conventional business definitions, define the shift from trading off richness and reach to enjoying the benefits of both. ■

Competing on Reach

The power balance between suppliers, physical retailers and the consumer is shaped in today's world by hierarchical structures of information. On the supply side, the bonding of information flows to physical flows implies a hierarchy among suppliers, wholesalers and retailers. On the demand side, constraints on richness and reach force the consumer into a hierarchical pattern of search and choice. The two hierarchical structures mirror and sustain each other.

For the consumer, the inefficiency of hierarchical search makes for difficult, often bad, choices. For the supplier, such hierarchy cuts off any opportunity for building a relationship with consumers, putting the supplier at the mercy of the retailer. A critical intermediary function arises from the costs and inefficiency of hierarchy — navigation.

Navigators provide shortcuts through the maze. In some instances, navigation may be a business in its own right (Yellow Pages, personal shoppers, etc.), or a function within a business (salespeople, stockbrokers). Sellers dominate the navigation process; they enjoy greater economies of scale in marketing than buyers do in searching. They employ push-based marketing techniques (sales pitches, shelf layouts, etc.) to grab the attention of consumers and influence their behavior.

A New World of Navigation

Once the economics of information and the economics of things are separate, the navigation process

becomes totally independent of the physical distribution and fulfillment of goods. The new navigators can help people find the things they are looking for without taking responsibility (as retailers do, for example) for delivering those things. These types of new navigators are varied. They might be businesses, such as Yahoo, software, such as Quicken, or electronic retailers, such as Amazon.com.

As informational functions, the new navigators can exploit the shifting trade-off between richness and reach. Because they are unconstrained by reach, they can offer all alternatives to all searchers. Because they are unconstrained by richness, they can offer as much detail as wished in whatever way the client prefers.

The new navigators can thus compete on both richness and reach. They also compete on a third dimension: agency affiliation. This refers to the closeness with which the navigator identifies with the interests of its clients (see next article for more details on affiliation).

Competing on Reach: Critical Mass

The competitive advantage over traditional navigators that the new navigators have in reach — as a direct result of the separation of the navigation function (the catalog) from the physical function (inventory) is clearly illustrated by Amazon.com. While most bookstores carry an average of 80,000 titles, Amazon.com can offer three million volumes. And while customers must visit physical bookstores at one physical address, customers can visit Amazon.com's bookstore at twenty-five million addresses (the twenty-five million computer screens that can access the Internet).

When it's not constrained by physical limitations, reach explodes. The question, however, is how do you compete against other new navigators? If reach explodes for everyone, what decides the winners? The answer: the first new navigator to reach the threshold of critical mass. Cut prices, give the product away, merge with competitors —

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Who Defines the Threshold?

A business competing on reach needs to know when it has reached the magic threshold of critical mass. That threshold is defined by the search domain, not the navigator. For example, if you are offering a database of unskilled jobs, the search domain should be specific to a locality but nonspecific with respect to job categories. Thus, newspapers are in an excellent position to be effective new navigators for non-skilled jobs. For high-skill jobs, the reverse is true. The search domain should be skill-specific but open to relocation options. The question is, who can achieve critical mass with those factors?

Competing on Reach

(continued from page 6)

whatever it takes to reach that critical mass has proven to be worth it. This explains why stock market valuation places greater value on reach than on profits.

The success of Amazon.com is explained by its ability to reach critical mass so quickly — starting with an offering of a million books — that traditional book-sellers were already trying to catch-up by the time they recognized the online potential of bookselling. ■

Competing on Affiliation

New navigators derive their advantage (versus established players and one another) by affiliating as closely as possible with the interests of the consumer. This tilt toward consumers is a direct and fundamental consequence of the blowup of the richness/reach trade-off. The greater the reach of navigators across suppliers, and the more intense the competition among navigators for the loyalty and attention of the consumers, the weaker the navigator's bond to any one seller. As a result, there is greater pressure on them to serve as buyers' rather than sellers' agents.

Affiliation in Retail

In retail, the idea of affiliation is complex and ambiguous. Retailers by definition buy from suppliers and then resell to consumers. Thus, they represent consumer interests to product suppliers (negotiating for high quality and low price), as well as representing supplier interests to consumers (cooperative advertising and promotions), varying in their mix of the two roles.

There are any number of examples of the latter throughout the retail spectrum:

- Nike, for one, maintains a large sales force (called Ekins, or "Nike" spelled backward) to handle a number of navigation issues, including training retailers' salespeople to explain shoe technology to customers and guide them to the most appropriately designed Nike shoe.
- Apple Computers manages its value-added resellers as extensions of its own sales force.
- "Rack jobbers" from a variety of industries arrange products and displays in retail outlets to maximize the banner effect of shelf space and navigate customers toward the current promotion.

These close ties are tested by affiliations; indeed, the real test of affiliation is where the consumer's gain is the seller's loss. Navigators serving the interests of the consumer might be expected to provide a number of services, including informing the consumer of purchasing alternatives available from other suppliers, explaining why a premium feature is not worth the money and sharing unflattering information about product perform-

ance or customer satisfaction.

Consumers rarely get this service, however, because navigators typically jettison their responsibilities toward consumer affiliation in favor of affiliating with sellers. They do so for two essential reasons. First of all, rich navigation tends to be specific to suppliers; secondly, consumers are unwilling to pay for navigation in most circumstances. When the trade-off between richness and reach blows up, however, it becomes possible to shift affiliation away from the seller toward the consumer.

Who's Paying?

There are numerous examples of navigators covering the same domains (and, therefore, operating within the same reach) but behaving differently as a consequence of being paid differently. "Financial advisors," for example, can be salespeople paid by brokerage houses to sell securities, or they can be independent counselors paid by customers for advice. The options that the navigator presents, and the quality and tone of the guidance that he/she/it provides, are influenced by the navigator's economics. Even if reach explodes and new navigation models become possible, the affiliation of the navigation function still critically depends on how it is paid for. ■

Deconstructing Supply Chains

Extranets, standards and market-making businesses start within industries, but they don't stay there. They follow the economics of information, not the economics of the things their industry manufactures. The very fact of this evolution will dramatically alter the bases of competitive advantage, diminishing the value of established business relationships. Greater reach will allow buyers who want to buy the best product to easily find suppliers who will sell it to them. Greater richness will allow companies with complex and intractable problems or tasks to get help from others who can bring with them the needed skills and technologies, on a worldwide scope.

Indeed, the change in competitive advantage and the intensification of competition across all levels of the supply chain will manifest themselves in three key ways:

- **Outsourcing.** Outsourcing will flourish because reach to the best product suppliers is greater, specifications are easier to agree upon and mutual dependency is minimized by the availability of alternatives.
- **Market making.** Organizations that themselves are big purchasers will discover that their own volume can jump-start a stand-alone business to bring buyers and sellers together. As they follow the economics of information, these market-making businesses will quickly evolve past their original purchasing mix, carving a major route through which efficiencies achieved by the

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Deconstructing Supply Chains

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larger entity will quickly filter down to benefit the smaller entity.

● **Decentralized self-organization.** The ability of employees to group together, break apart, and regroup across unlimited corporate boundaries will flourish, as small companies exploit richness and reach to collaborate with each other. These groups will demonstrate the ability to complete complex projects that had previously been possible only through the hierarchical direction of the large corporation. ■

Deconstructing Organizations

While the traditional hierarchical organization can be slow, cumbersome and politicized, it remains (and, in many sectors, will continue to be) the basic model of how economic activity is organized. It supports higher richness, but lower reach. Because hierarchical organizations are built on severe constraints imposed by the trade-off of richness and reach, they are prime grounds for asymmetries of information: Senior executives have a grasp and control of the “big picture,” while subordinates have a more detailed, but departmentally constricted, knowledge base. These asymmetries of information result in asymmetries of power, manifested in the political games we all recognize as revolving around monopolizing various sources of knowledge.

Organizations Are Forced to Change

In order to respond to new competitive challenges, many organizations are staying in the game by mimicking many of the characteristics of deconstructed organizational environments. Internally, they exploit connectivity and standards to support the fluid, self-organizing flows of talent, technology and capital traditionally associated with markets. Externally, they exploit connectivity to support collaboration, shared competencies and common strategies traditionally associated with organizations. The traditional distinction between internal hierarchy and external markets becomes blurred.

The response by organizations to deconstruction lies in emerging cultural and managerial norms. These norms will be dominated by three characteristics:

● **Fluidity.** As information channels become less expensive to create and maintain, there will be a greater move toward “soft-wiring” organizations — increasing the opportunities for employees to group into teams, participate in multiple projects simultaneously, and work out roles within a team, without managerial intervention.

● **Flatness.** Spans of control are proportional to reach; double the span of control and you halve the

management layers required to run an organization. Authority is never eliminated (since strategy is still required), but the number of tiers in the organizational hierarchy can be radically reduced.

● **Trust.** Greater richness and reach imply greater symmetry of information. When information is richer and more free flowing, everyone’s actions become more transparent; disgruntled subordinates and poor performance are harder to hide. Reputation substitutes for formal mechanisms of review and control. ■

Guiding Principles

Much of management is geared toward concreteness and stepwise solutions to prioritized, practical problems. Deconstruction, in contrast, is all about fluidity, indeterminacy and instability. It is not a new set of rules about strategy; it is an argument that the old rules of strategy (market share, cost, innovation, competencies, etc.) still apply, but the objects of those strategies are different. The task is, therefore, one of identifying new objects and then rethinking and reapplying the same old tenets of competitive advantage.

There are 12 guiding principles that may help with the task of rethinking strategy in an era of deconstruction:

1. No business leader today can presume that today’s business definitions will still be valid a few years from now.
2. Deconstruction is most likely to strike in precisely those parts of the business where incumbents have the most to lose and are least willing to recognize it.
3. Waiting for someone else to demonstrate the feasibility of deconstruction offers the biggest advantage for which a competitor could possibly wish: time.
4. Leaders need to wrestle with the full range of possible patterns of deconstruction.
5. Strategy really matters.
6. The value of winning will escalate, as will the cost of losing.
7. The reconstructed business definitions will rarely correspond to the old.
8. The hardest step for an incumbent organization is the mental one of seeing the business through a different, deconstructed lens, then acting on this insight.
9. The subtler pitfall is co-option and passive resistance by a skeptical and self-preserving organization.
10. Strategy in a deconstructing world has to be generally right, but need not be specifically right as long as the organization maintains a capacity to learn from its mistakes.
11. The value of incumbents’ best assets is all too often destroyed by the organizational, behavioral and personal baggage that they insist on bringing to the new venture.
12. Incumbents can be insurgents, if they choose.

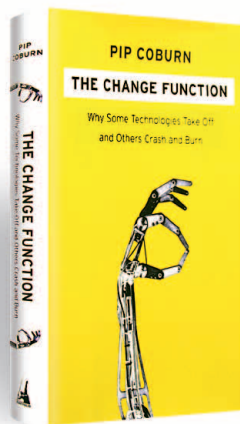
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Change Function

Pip Coburn

SOUNDVIEW Executive Book Summaries®

FILE: MARKETING



By Pip Coburn

Why Some Technologies Take Off and Others Crash and Burn

THE CHANGE FUNCTION

THE SUMMARY IN BRIEF

The commercial failure rate of nominally great new technologies is troublingly high. The failure rate is consistent with the hatred and distrust most normal human beings have of high technology. The goal of this summary is to look at what has failed in the past, to understand how the industry came to be in the position it is in today, and to spotlight examples of what might and might not work in the future.

Consider the cool new things that have been immediately successful: Apple's iPod, the flat-screen television and Netflix. Now, switch gears and think about the major failures: the video phone, the Segway and the Tablet PC. Billions of dollars ride on this question: Why do some new technologies succeed and others fail?

After years of studying countless winners and losers, author Pip Coburn has come up with an idea that explains why some technologies become huge hits, but others never reach more than a tiny audience. People are only willing to change and accept new technologies when the pain of their current situation outweighs the perceived pain of trying something new. Most potential users are afraid of new technologies, and they need a really great reason to change. If you don't give them that reason, then forget it.

We've all heard it before: "Build it and they will come." Well, the last six years have proven that, at least in the technology industry, this maxim is shockingly — and expensively — untrue. But there's an alternative approach: That's what The Change Function is all about.

What you'll learn in this summary:

- ✓ *How to be a much smarter investor, manager, entrepreneur or tech geek.*
- ✓ *Why technology often fails.*
- ✓ *What can be done to reduce the total perceived pain of adoption.*
- ✓ *How to stay ahead of the game, but keep your customers' needs in focus.*
- ✓ *What it is that customers really want.*

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THE CHANGE FUNCTION

by Pip Coburn

— THE COMPLETE SUMMARY

Silicon Valley, We've Got a Problem

It seems that when tech company executives pitch their ideas in an effort to obtain investments and sales, they focus on themselves, what they have created, and why buyers would be smart enough to figure out how smart their technology is as the price comes down.

The alternative approach is for technology companies to become riveted to the needs and wants of the users they seek. Users are in charge of what they spend their money on — and they always have been. The technologists may be the magicians, but the users have the checkbooks.

At best, gee-whiz technologies are years ahead of schedule. At worst, they are mental indulgences lacking a potential user crisis. Yet gee-whiz tech continually grabs the headlines. So we can rest assured that early next year, the Sunday *New York Times* — among many others — will run a feature on smartphones for the 74th

year in a row, despite the fact that they have been too early with this call for 73 years straight. There *won't* be a piece in that same Sunday *New York Times* about business intelligence software, because the average reader can't get their arms around what it really is, even though corporate customers keep consuming it at a predictably interesting pace.

Bloatware

The mobile phone industry — as a follow-up to its incredible success that was nearly a half-century in the making — created extremely expensive, feature-laden computeresque gizmos called smartphones. These phones have a variety of attributes, so the definition is quite fuzzy, but any phone allowing a user to run an Excel spreadsheet and featuring a Windows or Symbian operating system qualifies as one. They have continuously undersold expectations, much to the dismay of technologists, while “bare bones” phones that accommodate nonserious and nonsmart activities such as \$2 music ring-tone downloads continue to sell.

Supplier-Orientation: More is better. Much more is much better.

User-Orientation: More is confusing. Much more is much more confusing.

Smartphones provide a wonderful namesake for a repository of bloatware. Name the product *smart*, thus

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Decide for Yourself if Technology Is Working

- ✓ Are you tired of trying to remember power cords for business trips?
- ✓ Are you tired of trying to remember to charge your cell phone at night?
- ✓ Are you annoyed by your remote control — correction, are you annoyed by the seven remotes in your home because you can't find the one you really want?
- ✓ Are you annoyed by complex alarm clocks in hotel rooms?
- ✓ Are you annoyed because your back hurts when traveling, perhaps because of all that extra junk you're hauling with you in order to be connected?
- ✓ Does it stink when you don't know how to align spacing in a Word document and spend your day guessing how to fix it?
- ✓ Are you tired of being stuck on a helpline forever, bracing to hear a flurry of TechnoLatin when someone finally does answer?
- ✓ Do you have too many passwords?

The author: Pip Coburn is the founder of Coburn Ventures, an advisory services firm. Before starting his own company, he was a managing director and global technology strategist in the technology group of UBS Investment Research, where he oversaw 120 technology and telecom analysts worldwide. He lives in Pleasantville, New York.

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Silicon Valley, We've Got a Problem

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internally legitimizing jamming in *everything*. There suddenly is no such thing as a bad idea. ■

The Change Function

There's a problem. Too often products are designed, developed and marketed by a technology culture that is supplier-oriented to a fault. More often than that, products are created in a build-it-and-they-will-come mentality that relies solely upon Moore's Law for lowering prices and what can be called Grove's Law of generating 10x changes and improvements.

Grove's Law: Build something that's better in some way.

Moore's Law: As price drops — voila! — a market will flourish.

The thinking is that change in technology is a function of Grove's Law multiplied by Moore's Law.

But here's the opportunity: If the technology ecosystem realizes that far greater success is just inches away — that it's the user who decides whether or not to fork over the money, that the user has last say, always has, always will, and if we want to obsess about something other than Moore or Grove — then we might be well served obsessing about the potential users and not just the technology itself.

Crisis Explained

According to Steve McMenamin of Atlantic Systems Guild, "People hate change ... and that's because people hate change ... I want to be sure that you get my point. People really hate change. They really, really do." Back in 1962, Thomas Kuhn wrote *Structure of Scientific Revolutions*. Kuhn suggested that the entrenched interests in an old paradigm will resist change as long as they can until their own theories start to encounter massive holes in explaining the phenomenon at hand. Crisis precedes change. It takes crisis because change is difficult!

Think of cases at one end of a spectrum relative to new products being offered up in the technology ecosystem, then think of indifference at the other end.

Potential users have some level of reaction from indifference to crisis whenever they encounter a new technology product. People are more apt to change — all else being equal — the higher the level of *crisis* that they have in their current situation.

What are some ways folks have *crisis* in technology? What do folks want so desperately that they might consider their situation a crisis? Even if a new technology solution is disruptive by some technical assessment, it is

often unclear to the users that such is the case regarding their own wants and needs.

That can get some folks in the technical ecosystem really mad. They sometimes revert to calling users *stupid*. The view that non-technical users are morons is pervasive in the technology ecosystem. The conflict may never end — but if you're in the business of waiting to sell technology to six billion people, or even a mere billion, it would pay to give up the idea that potential users are wrong if they don't fawn over your offering.

The good news? Creating technologies does not have to be hit or miss. When do users have a crisis? When all their friends have a flat-screen TV and they feel like dopes admitting that they don't. Who doesn't have a crisis? The guy already satisfied with his cable modem service who's being bombarded with advertisements to switch over to DSL service.

The Total Perceived Pain of Adoption

Why do we open our wallets and decide to buy something, anything? What takes us from being *potential* customers to *actual* customers? Most people say this is an easy question: *When the price is right*. Isn't that all there is to it? Not at all. Much of the time, price accounts for less than 10 percent of the total perceived pain of adoption, or TPPA.

What are the other portions of TPPA? Reading instruction manuals, researching product information, feeling stupid when trying to learn or install a new gadget, experiencing the inability to find a salesperson who can explain the product in English and asking an eight-year old kid for help who responds by saying, "Duh!"

But there's more. As any good marketer knows, "perception" is as much a part of any sale as reality. All one has is the perception of how painful it will be to actually adopt the product and change the habit — how much trauma will be involved in the change. It is a *perception* about the future.

If the level of crisis is higher than the total perceived pain of adopting a new solution, then a change will occur. If the crisis is lower, then things will stay as they are. ■

Is the Technology Industry Ready for Change?

Technology has been a fabled story stemming from as far back as you wish. Certainly as least as far back as the 1947 invention of the transistor at Bell Labs, or the 1958 design of the integrated circuit by Jack Kilby at Texas Instruments.

Technology spread from a geek-to-geek interaction when IBM delivered its Series 360 Mainframe to a

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Is the Technology Industry Ready for Change?

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geek-to-many in 1965 to a geek-to-everyone of the six billion humans populating our little planet today. That's a big change.

Technology Firsts

Product	Inventor	Year
The 1st Video Game	MIT student Steve Russell creates Spacewar, the first interactive computer game, on a Digital PDP-1 mainframe computer	1961
The 1st Internet	ARAPANET is formed to connect four major computers in southwestern U.S.	1969
The 1st Mouse	Douglas Engelbart invents an "x-y position indicator for a display system."	1970
The 1st E-mail	Computer engineer Ray Tomlinson sends a simple text message to himself.	1971
The 1st Ethernet	Bob Metcalfe creates Ethernet to connect computers at Xerox PARC. He started 3Com six years later.	1973
The 1st Personal Computer	The Altair is the first "personal computer" produced in relatively high quantity.	1975
The 1st TCP/IP	Early pioneers of computer networks agree upon a standard for TCP/IP.	1977
The 1st Cell Phone	The first commercial cellular phone system begins operation in Tokyo.	1979
The 1st World Wide Web	In an effort to make the Internet more user-friendly, CERN's European Organization for Nuclear Research invents the World Wide Web.	1991
The 1st Linux System	Twenty-one year-old Linus Torvalds is inspired by the free software movement and creates Linux.	1991

Source: UBS

Monstrous PC Growth

The PC hit the mainstream in the 1990s, nearly three decades after the first PC — the LINC — was created in 1964, and 15 years after Bill Gates dropped out of Harvard. In 1989, less than 20 million PCs were sold globally. Ten years later, the figure was closer to 170 million.

The Internet

The Internet was such a big change from the status quo that even Bill Gates nearly missed it. Look at his book *The Road Ahead* and you'll find little mention of it at all. The practical result of all the technology good news was that from 1993 through 2000, technology companies drew earnings by a compound average growth rate of 25 percent — nearly twice any other sector — and in seven of those eight years, technology was ranked either first or second for earnings growth of all 10 sectors.

The positive disposition toward technology turned maniacal. Peer-to-peer pressure to embrace technologies turned extreme.

But then the tech world collapsed. Nasdaq peaked just past 5000 from a mere 333, then collapsed to 1114, about an 80 percent drop. AOL stock sank from \$55 to \$11 a share. Yahoo! dropped from \$89 to \$7. And these were survivors; most didn't survive.

In technology, from 2000 to 2001 the investment community expected a 24 percent decrease, but in real life delivered a 65 percent decline! Nothing like this ever happened in the 50 years of the technology ecosystem. No one would skate through what Microsoft CEO Steve Ballmer called the collapse of three bubbles: the Internet Bubble, the Telecom Bubble and the Y2K Bubble. ■

Why Technology Fails

The Change Function is about understanding the big abstracts and elements that are critical in assessing change. As a Wharton professor put it long ago, "If you need to calculate a net present value to see if a project is a good idea or not, it probably isn't."

The Picturephone

The Picturephone was a device developed by Bell Labs in 1956 as a prototype and launched by AT&T at the 1964 World's Fair in New York. It consisted of a telephone handset and a small TV. In other words, people talking on the phone would be visible to those with whom they were having a phone conversation.

Shortly thereafter, Picturephone service began between New York City, Chicago and Washington, D.C.,

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Why Technology Fails

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at a cost of \$21 for a three-minute call — and that was on top of the hardware cost of around \$500,000 for the Picturephone itself. AT&T executives were convinced that three million units would be operating in homes and offices by the mid-1980s, bringing in revenues of \$5 billion a year.

The Upshot: AT&T banked on network effects to drive adoption of its Picturephone. What it didn't understand was that customers had little innate desire to see live facial expressions at the other end of the line. In other words, there was very little user crisis.

Interactive TV

Interactive TV (ITV) — programming that incorporates interactive graphical “enhancements” such as icons, banners, menus, text fields, streaming video and Web pages — generated massive buzz in the mid 1990s. It was heralded as a revolution in the way viewers would watch TV — among other things, they would be able to instantly read more about the topic presented during a program, download and store related media files, purchase goods, conduct banking activities, and share in real time their knowledge or views about the broadcast. At the time, Myers Reports projected that ITV would reach annual revenues of more than \$32 billion by 2006.

But Interactive TV faced many obstacles to adoption. Ignoring the technological challenges inherent in producing and providing actual ITV content, the failure of the various corporate players to agree on a worldwide standard meant that ITV content was also extremely expensive. Financing ITV was difficult because subscribers weren't willing to pay prices that would cover the advanced services costs, and the targeted advertising programs where ITV providers recovered the remaining balance of the cost were hotly debated as potential invasions of privacy. Due to these challenges, in the mid-1990s ITV failed to meet its promise and was pronounced *dead*.

The Upshot: Interactive TV promised neat things: video on demand and buying stuff on the Home Shopping Network on a remote control instead of a cordless phone. But the advantages that Interactive TV offered were small. Meanwhile, installing Interactive TV and learning how to use a 500-button remote control presented a high TPPA that customers were unwilling to tackle when the status quo worked just fine. The shareholders rebelled against the huge price tag of the rollout.

For additional information on why the Picturephone failed, go to: <http://my.summary.com>

Webvan

Webvan promised to revolutionize the business of grocery shopping. During the late 1990s, Internet supermarkets were heralded as a means to attract explosive consumer demand. Webvan attracted more funding than any e-retailing company except Amazon.com, with high-profile, venture-capital backers such as Benchmark Capital and Sequoia Capital. The company would go on to raise \$375 million in its initial public offering.

Amid the Internet bubble, Webvan came to be valued at \$8 billion and touted an ambitious 26-city plan. Bechtel signed a \$1 billion contract with the company to build a string of high-tech warehouses for about \$30 million each.

But Webvan may have been 10 or 20 years ahead of its time. And like many businesses born in the maniacal days of the dot-com boom, it aimed to get too big, too fast.

The Upshot: Webvan seemed staged to provide a service that would free up its customers' time, otherwise spent in a grocery store. While Webvan's service had its merits, it didn't match to a nationwide crisis. The “crisis” of shopping at an actual grocery store was simply too low in most modern markets, and the uncertainty too great for changing important habits quickly. The perceived pain of adoption may have been larger than the reality, but Webvan wasn't financed in a fashion conducive to waiting out a slow and steady uptake by news customers.

The Alpha Chip

In 1992, Digital Equipment Corporation introduced what it claimed was the world's fastest processor, code-named the Alpha chip. DEC's Alpha chip was a 64-bit microprocessor that ran at 200 megahertz, far faster than any other microprocessor. By comparison, the Intel Pentium chip launched the following spring ran at a mere 66 megahertz. Around 500,000 Alpha-based systems were sold by the end of 2000, but for a long time, the Alpha chip was only used for 64-bit graphics programs that required brute processor speed.

The Upshot: DEC's 64-bit Alpha chip was technically brilliant. But brilliance and innovation alone do not create new markets, despite how much technologists would like to believe that they do. DEC failed to create a network — or an environment — in which its Alpha chip could be embraced. The technology ecosystem failed to support Alpha, so while the crisis was low, the total perceived pain of adoption — the lack of operating systems and applications to support Alpha — was quite high. The biggest fear for users was that they would embrace Alpha and wind up stranded on an island. ■

A Future Winner: Flat Panel Display TV

Flat panel technology promises to provide sharper pictures when used in conjunction with high definition television technology or high definition DVD content. It also promises to save space relative to current technology. But what flat panel technology promises and delivers more than anything is coolness.

In 2004, flat panel display televisions accounted for 9 percent of global television sales. In Japan, flat panels already account for nearly 30 percent of sales. Before long, it's likely that the words *flat panel* will be unnecessary, as *television* will mean a *flat panel television*. Peer pressure will have a profound impact on the marketplace and obviate the need for prices of panels to drop to the extent that supply and demand modeling might suggest.

The Upshot: That flat panel TVs may be considered “boring” by investors is a direct result of how often this technology has been mentioned in the press. This is an upgrade cycle of the one billion-plus global television market, not to mention that flat panels also go with desktops and laptops as well as the emerging public signage market. The total perceived pain of adoption on the basic flat panel television sale boils down to price, as very little education is required. There is a heavy word of mouth and word of sight “coolness” experience factor that may drive sales of flat panel TVs even more effectively than billions of dollars spent on advertising. Our relationship with technology — and its coolness and what owning a particular piece of technology says about who we are — is vital in adoption cycles.

Mobile Enterprise E-Mail

Mobile e-mail in the enterprise promises to assist management in creating an always-on environment in which an entity has access to all resources — including people and their knowledge and problem-solving ability — at all times. The technology promises this while empowering the workforce to be more mobile.

The Upshot: Some readers may assume that everyone already has a Blackberry. But with only 4.3 million Blackberry subscribers in late 2005 and 50 million “mobile” workers in the United States alone, saturation hardly seems to be the case. The icing on the cake is that the total perceived pain of adopting a technology that mimics an application most people already know and are familiar with — e-mail — is very low. Mobile e-mail may be one of the biggest winners as a result.

Satellite Radio

Satellite radio promises to bring users a far greater amount of well-organized, crisp, dependable and commercial-free content than that provided by traditional radio.

The Idiocy Factor

This is the point when a growing number of people feel like idiots if they have to fess up to not owning _____ (fill-in-the-blank) technology. To be clear: people aren't *actually* idiots — they just *feel* like idiots.

- ✓ *So ... do people buy technology just because it's better?*
Nah!
- ✓ *Do technologists think that if they build something that is just flat-out better, then they will create a market?*
Yes.
- ✓ *Are these two perspectives at odds?*
Often.
- ✓ *Who decides who is right?*
The customer is always right.

Car manufacturers have been installing satellite radio receivers in some models for a few years, and General Motors has invested about \$100 million in XM Satellite Radio since it began installing XM receivers in 2001.

When he forecasted the market in a February 17, 2005, report titled “Initiating Coverage: Satellite Radio Sector,” UBS's Lucas Binder projected that total subscribers in North America would grow from 4.4 million to 55 million in 10 years. He's since upped that estimate to 62.7 million, and recently reported expecting 39.7 million users by 2010.

The Upshot: Satellite radio is radio — only better. There's far more content — as in 100 plus channels — including plenty of sports from around the United States. On the total perceived pain of adoption, satellite radio is not so much as a new technology, but more of an upgrade with near-zero education required. The total perceived pain of adoption will drop even further as the requirement for a trip to Best Buy will disappear as the service comes bundled with the sale of new cars. ■

For additional information on the adoption of flat panel TVs, go to: <http://my.summary.com>

One Future Loser: RFID

RFID (radio frequency identification) is a generic term for technologies that use radio waves to identify people or objects, and also promises to save expenses through the food chain through greater efficiency, better inventory management, lower personnel expense, lower theft, as well as better stocking of popular products to reduce revenue loss that occurs when sales walk to other providers. RFID is currently being used for any number of tasks,

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One Future Loser: RFID

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from tracking pets and livestock to triggering equipment down oil wells and automating tollbooths on highways through very successful applications like E-ZPass.

The Upshot: There are two very big problems with RFID. First, the winners are mainly limited to one node in the extensive global technology food chain, and those benefits are still fairly unclear. Though publicity has been high, it is barely into the first stages of trials of the technology. Second, the costs are theoretically absorbed by those who gain no benefit for their trouble and who will likely resist participating.

However, concerns about privacy have now and again gotten in the way. In reality, much of the privacy fear spread among those who might buy products with tags affixed was ridiculously exaggerated.

Are some of the privacy concerns wildly out of touch with reality? Yes. Does that mean they are unimportant in the process of making RFID a widespread mainstream technology? No.

The Entertainment PC

The promise of the entertainment PC is not exactly clear. A minority of people have purchased a flat panel display, a good percentage of homes have broadband, but only a small number are bothering to network their broadband. As a core element in the digital home, the entertainment PC has barely happened at all.

Designed first and foremost for flawless multimedia playback and secondly for playing games, the ultimate promise is to change the way users think about photos, music and movies. Instead of having photo albums, CDs and DVDs, the entertainment PC allows you to keep everything in one central place.

The Upshot: The “digital home” is a catch phrase — as opposed to a technology — chasing a crisis. Until folks bemoan the fact that their DVD player connects to the TV with cables, and the TV to the cable box with more cables, having a centralized entertainment hub in the home is just not critical.

Consumer electronics makers and even enterprise-focused technology companies are in crisis — seeking new revenue streams by introducing a plethora of cool “digital home solutions” like the entertainment PC, but consumers aren’t there yet. In 10 years? Sure. ■

The Change Function in Action

To truly appreciate the power of the Change Function, it needs to be seen in the real world — not just the printed page. The following two case studies focused on two very cool companies immersed in a user-centric culture.

RFID Growth Drivers and Barriers to Adoption

Growth Drivers

Need for supply chain efficiencies (i.e., cut labor costs, better inventory tracking)

High costs of shrinkage and “out of stock” conditions

Opportunity to reengineer supply chain business processes

Compliance deadlines set by large enterprises (Wal-Mart, Department of Defense)

Source: UBS

Barriers to Adoption

Tag and reader costs

Accuracy of technology

Lack of standards for interoperability

Privacy concerns

Salesforce.com

In another year or two, Salesforce.com may become a household name, as more and more folks determine they better darn well use some form of customer relationship management software as provided by someone such as — or particularly — Salesforce.com.

Where do they get the ideas for their changes? From their users, in the form of complaints and suggestions, as well as studying customer activity itself.

As Salesforce.com makes clear responsiveness to customer complaints and feature suggestions, you might imagine that more customers will take the time to make their own suggestions, which will further help in code-sign and codevelopment. Across time, users will feel like part of the community.

Reactrix

This company does new media advertising. One Reactrix system is an approximately five-foot by eight-foot image on the floor of the Sony Metreon Complex between tickets and concessions, representing a variety of advertisers, like JAL Airways, Adidas and Orville Redenbacher popcorn. Thanks to Reactrix, the image on the floor reacted — hence Reactrix — to your movements as you entered the advertisement space by standing on the Reactrix system.

In this age, traditional advertising media like newspaper, radio and television are all losing sway or steadily collapsing. There is a large appetite for new forms of advertising. So the advertising industry’s crisis means that things like Reactrix’s engaging systems are getting a good look by all.

Is it a fad? People say it’s all about the content, not the technology. Reactrix shares a common trait of all

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Ten Sets of Questions

1. The Core Sense of Success

- What is your sense of the percent of newly introduced products that will fail?
- What are the core aspects of successful products today versus 1998?

2. Tracking Success and Failure

- What are the criteria you'll use to decide to pull a product if it isn't working?
- What will account for your product not being successful?

3. Moore's Law Multiplied by Groves Law, Part One

- Forgetting profitability for a moment, can you describe your sense of price elasticity for the product?
- Is your product disruptive, and if so, why?

4. Moore's Law Multiplied by Grove's Law, Part Two

- After technological considerations are eliminated and you're happy with the price points, what else needs to be done for this product to sell so well?

5. Crisis

- What "service" are you selling?
- What is the user crisis you intend to solve?

6. Total Perceived Pain of Adoption

- What are the top five reasons a user with this "crisis" will not buy this product?
- When do you introduce the client into the design process and why?

7. Customized Weighing Machines

- Who exactly is your customer?
- What does crisis vs. TPPA look like for the first 5 percent of your potential market?

8. Internal Design and Development

- What doesn't work in your R&D, design and development process?
- What steps do you take to eliminate the typical tension between the design and development team?

9. Ability to Change

- What is the biggest change you have instituted in the organization in the last three years?
- What was your biggest failure in past product creation?

10. Learn-Relearn

- Is it more important to focus on increasing a user's perceived crisis or lowering their TPPA?

The Change Function in Action

(continued from page 7)

great user-centric entities. They are unsatisfied. Company founder Matt Bell is a technologist driven by the opportunity to create an even greater difference through technology. ■

What to Do?

The primary goal of the Change Function model is to open up the possible prescriptions for addressing technology's current malaise, and point out that technology companies have consistently failed to figure out what people want.

The To-Dos of the Change Function

The Change Function is a framework in which to uncover insight in a systematic way by continually asking about users' crises and their total perceived pain of adoption. The model takes information as input and delivers insight as output by asking two simple questions:

1. What can be done to *increase* User Crisis?
2. What can be done to *reduce* Total Perceived Pain of Adoption?

In an effort to keep the technology industry from consisting of solutions looking for problems, the following must be undertaken:

- **To Do 1:** Employ rapid prototyping, continuous iteration and codesign.
- **To Do 2:** Hire real anthropologists, create guiding "crises" and fill the gap.
- **To Do 3:** Utilize true observers, try on personas and emphasize cultural change.

The Heart of the Change Function

Technology will only be accidentally successful if the focus is on what can be created. Systematic success — whether it's in creating new products, building great companies or changing the world — comes to those who manage to see the world through the eyes of others ... to understand their crises and to help them find less painful ways of changing their world for the better. ■



If you liked *The Change Function*, you'll also like:

1. ***The Long Tail* by Chris Anderson.** According to Anderson, in this brave new world of niche markets, the future of business is selling less of more.
2. ***Origin of Wealth* by Eric D. Beinhocker.** For the business-minded, as for academics, learn about the evolution, complexity and the radical remaking of our economy.
3. ***Dealing With Darwin* by Geoffrey A. Moore.** Moore looks at how great companies innovate at every phase of the evolutionary cycle, and when it's not worth it.
4. ***Naked Conversations* by Robert Scoble and Shel Israel.** Blogs are changing the way businesses talk with their customers and the outside world, but it's not for everyone.
5. ***Ambient Findability* by Peter Morville.** What does it mean to be "findable" in this day and age? This eye-opening book examines the convergence of information and connectivity.

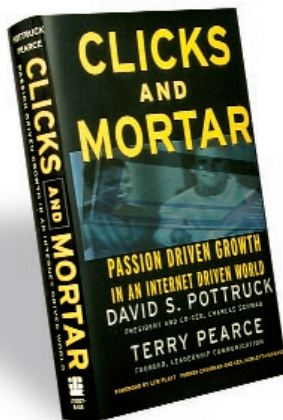
· Book 11 of 35 ·

Clicks and Mortar

David S. Pottruck and Terry Pearce

SOUNDVIEW Executive Book Summaries®

FILE: STRATEGIC MANAGEMENT



By David S. Pottruck and
Terry Pearce

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CLICKS AND MORTAR

THE SUMMARY IN BRIEF

The rise of the Internet may seem to have transformed everything about the way business is done. But the future still belongs to passionate companies made up of passionate people who aren't driven mainly by the promise of an IPO payoff. Successful companies in the new century will be those who marry technology with the best qualities of people to create the perfect environment for profitable success. In this summary you will learn what it takes to compete in this new Internet-driven world and what you can do to transform your company into a dynamic, profitable enterprise.

First, you will learn why it's crucial for businesses to develop their own corporate cultures. You will see how your company's culture will inspire and excite everyone whom it touches, including customers. You will learn how the values declared and practiced by your company become part of the company's DNA.

You will also learn how to sustain your company's culture day to day despite barriers and how to assemble a group with diverse backgrounds and experiences who still share the same values, the same business DNA. Given that the workplace is becoming more diverse every day, it is crucial that your business finds ways to embrace that diversity and use it to strengthen your corporate culture.

You will also learn about your special responsibilities and the burdens and lack of privacy that come with being a leader. In this summary, you will begin to appreciate the value of integrity, of doing the right thing not because of the scrutiny you face, but because it is the right thing. You will also begin to see why the ability to really listen to others will be the driving force behind innovation and how including others in the decision-making process results in better decisions even if they don't change your mind.

Next, you will learn how to create the future by creating organizational entrepreneurs through the business planning process and the evaluation process. You will also see why understanding technology and those who produce it is crucial for success. Finally, you will learn how the Internet is changing marketing by making it more personal and customer-driven.



CLICKS AND MORTAR

by David S. Pottruck and Terry Pearce

— THE COMPLETE SUMMARY

Creating a Passionate Corporate Culture in an Internet Age

We all live inside a culture. Culture is the sum of our beliefs, what we accept as right and wrong. A nation's culture speaks to us through its prose, poetry and art, as well as through its government and commerce. So does a corporation's culture.

In a business world driven by the Internet where rapid and continuous innovation is essential to competition, corporate culture is a central competitive advantage. To build a strong corporate culture requires understanding what it is, how it is built, and how it can be sustained.

Today's business environment is very different than it was a few decades ago. Technological advances created global markets and the continual need for innovation. But workers have seen the end of long-term employment. When companies laid off large numbers of workers in the 1980s and 1990s, the employer-employee contract changed dramatically. This shifting attitude is apparent in new applicants seeking work.

In a world with little loyalty, loyalty itself becomes a competitive advantage. The challenge for business is to generate an environment of commitment. Collective beliefs expressed through values, language and action are central to inspiring loyalty, passion and growth in the age of the Internet.

Building a Culture for Growth

We all need food and shelter, we want love and acceptance, we want to leave the earth with the knowledge that there are others who are better off for our having been here. Helping others and knowing that we

Drafting a Values Statement at Charles Schwab

When Charles Schwab grew from a small discount brokerage house to a large one, it became difficult to brief every newcomer on the Charles Schwab corporate culture. What was needed was a document that placed the company in context and explained to new employees what the company was all about.

The task took over 10 months and required the input of 80 executives. Together they traced the history of the firm, revisited the original purpose of the company and reviewed their long-term goals. Though the document changed only a few words, it clearly defined the company's strategic priorities. The leadership committed to a shared goal of servicing 10 million investors and having \$1 trillion in custody within 10 years. The core values statement changed from "to provide **investors** with the most useful and ethical **brokerage** services in **America**" to "provide **customers** with the most useful and ethical **financial** services in the **world**."

The values and vision were then shared with every Charles Schwab employee in a series of Town Hall meetings. Frank and open discussions were encouraged as the company's values and goals were shared. The result was a powerful opportunity for culture building that grounded people in something unchanging, built a basis for alignment, served as a filter for people and practices, and exported values to customers.

are helping others is a great joy in life. A corporate culture that reinforces these basic human needs and desires is well poised to compete in the Internet age.

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Defining Corporate Culture

Corporate culture is a set of values, a common language, and all the actions that make the values real. Values are those non-negotiable tenets against which we measure the worthiness of our choices. Values don't dictate behavior; instead they form the basis for our judgments of our behaviors. A company's culture defines what is most important at the core to the people in it.

The author: David S. Pottruck is president and co-CEO (with Charles Schwab) of The Charles Schwab Corporation. Terry Pearce is president of Leadership Communication, a teacher at the Haas School of Business at the University of California, Berkeley, and an executive communications officer at Schwab.

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Creating a Passionate Corporate Culture in an Internet Age

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Until very recently, the financial services industry wasn't modeled on the premise that its members would find satisfaction in helping others. Rather, the industry believed that it was the customers who needed them. So what happens when a financial services company aligns its values with its employees' need to make a difference in their customers' lives? The company thrives. That's what happened when the brokerage house Charles Schwab modeled its company after the great retailing giants Wal-Mart, Home Depot and the Gap. By focusing on customer service, Charles Schwab has been able to thrive in a highly competitive industry.

Determine and Declare Values: The DNA

Values are at the center of any corporate culture. They are its DNA. The larger your company, the more important it is to get those values down on paper. They form the core from which the processes, practices and procedures your company adopts flow. While the mechanics may change, the values change very little.

While it may seem a simple task to commit your company's values to writing, the truth is it takes an enormous amount of time, energy and input to do it right. ■

From Building Culture to Sustaining Culture

Culture is the bond that holds your organization together even as individuals express themselves differently. Once the vision is clear, it is the commitment of middle management and their employees that make it work.

Barriers to Culture Building

Beware barriers to culture building that appear in people's attitudes and actions. First, fight the stereotype that every business operates within the same "dog-eat-dog" *Dilbert* atmosphere. Don't buy into the myth that building culture wastes precious time. Investing time in culture building is like tuning an engine; it creates efficiency that will pay for itself and make the trip down the road smoother. Another myth is that people naturally work as a team. In fact, they don't. The American culture, with its emphasis on manifest destiny and rugged individualism, isn't particularly team oriented. That only happens with time and effort.

Market Storm Time

Charles Schwab sometimes experiences substantial spikes in volume. When this happens, it's difficult to answer phones and execute trades quickly. To buffer blips in volume, the company has constructed extra telephone and computer facilities in buildings that ordinarily don't house workers directly involved with customers. During what has become known as Market Storm Time, everyone pitches in to answer calls and execute trades. Workers earn premium pay, food is delivered, and everyone works to make sure the corporate value of customer service remains alive and well. Market Storm Time has become a ritual.

They must commit to the vision with personal passion.

If you are in middle management in a company whose values are not yours there is only so much you can do to change things. In a corporate culture of fierce competition, for example, you will have a hard time creating a team play atmosphere.

However, if top level managers haven't articulated their values clearly, or simply haven't seen the value of corporate culture building, you have the opportunity to make a real difference. Within a vacuum, you can set up the kinds of corporate values you want within your sphere of influence. Here's how:

- **Write down the values;**
- **Develop a compelling vision, a statement of aspiration for the organization;**
- **Communicate your thoughts and feelings to your entire group;**
- **Ask for input;**
- **Ask everyone to relate their own jobs to the vision. What are they contributing and how are they contributing it?**

Using Story, Image and Ritual for Common Understanding

Anthropologists identify cultural sustainers as story, image and ritual. Story and image are the language devices that we use to reinforce values. Rituals are the actions that reflect the repetitive, predictable themes of the culture. These three bring abstractions to the realm of everyday existence and provide common meaning to any organization.

Stories make the values of an organization real to those in it. At Charles Schwab, stories that reflect the company's values are told to newcomers to help them

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Recruiting to Expand the Population

Sustaining a corporate culture means having to recruit people who get that culture. New employees have to fit in. The best way to get compatible people is to encourage everyone to recruit. If a company is a good place to work, employees will want their friends and family to work there. It's also a good idea to keep a "farm team" on hand. These are people whom you think would be good fits if there were an appropriate opening available. Make it a point to get their cards and keep in touch on a regular basis. Send them articles you think they might enjoy and copies of your annual report. With their cards in your Rolodex, you need never begin a search without good leads.

From Building Culture to Sustaining Culture

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get what the company is all about. For example, a favorite story reflects the Charles Schwab value of "fairness." When the market crashed in 1987, there were a few customers who owed the company a lot of money, mainly because they had been trading on margin. When the decline hit the market, one customer owed more than his net worth. In fact, all that was left was an IRA account and a home. Rather than take the assets, the company reached an agreement that the elderly couple could live in the home until their death and then it would be sold to satisfy the obligation.

We remember about 80 percent of what we see and only 20 percent of what we hear. The world of images and visual symbols is a powerful one. For corporate cultures, this means that logos, advertising programs and everything visual about the work environment have great power. Take the case of logos. Often these are abstract graphics with no meaning attached until the company imbues them with it. A perfect example is the Red Cross, now instantly recognizable worldwide.

You must be careful that the words you use to describe people and things in your company don't conjure up negative feelings and impressions. For example, don't describe the cubicles employees work in as "veal pens," employees as the "troops," or low-level workers as the "rank and file."

Rituals are also important, whether it is the way meetings are begun and ended, or an annual employee survey. These actions solidify corporate values and are a constant in a changing world. ■

Cultivating Commitment Through Diversity

While some consultants may tell you the value of having a diverse work force lies in mirroring your client base, others suggest another reason. They point to the stimulating nature of working with people from different backgrounds who bring significantly different perspectives to bear on a business. Diversity in the workplace stimulates social, economic, intellectual and emotional growth while it helps the organization understand its place in the global community.

In addition, globalization and the Internet have created an environment that is strictly competence based and blind to differences that spawn prejudice, such as sex, age, ethnicity and race. The result is that you should and will have to do more than tolerate diversity; you and your company must embrace it. The fact is that the workplace is becoming more diverse whether everyone likes it or not. It is a demographic reality that minorities and women will be the majority of new entries into the workplace in a very short time.

The key to attracting and really engaging a diverse group of people is making sure that they know they can contribute, and making sure their contribution is worthwhile. In industries where the customer is traditionally a white male, this can be very difficult since it requires that a more diverse customer base also needs to be cultivated. The financial services industry, for example, is making strides to encourage more women and racial minorities to begin active investing.

If your company wants to reap the benefits diversity can yield, you need to be mindful of its core values. Your company should be a place where *every person who shares the fundamental values of the firm*, regardless of age, race, ethnicity, sexual orientation or gender, can be productive and feel fully included. Becoming more inclusive does not mean changing core values, but instead means providing an open door to anyone who believes in the company's mission. ■

Diversity Leadership Practices

Change does not come easily. How do you wholeheartedly embrace ideas and practices that may disturb your comfort levels for some time? By looking at the horizon, deciding what future you want, and beginning. It helps to acknowledge some basic concepts:

- values and vision drive change,
- we all have to change, and it isn't comfortable, and
- constructive conflict is positive.

Leadership Practices: Inspiring Passion-Driven Change

Effective leaders share some common characteristics. These include the personal conviction that your work is valuable, the ability to earn the trust of others through your actions and words, and the ability to inspire.

Whether it's a company or an individual, what generates or destroys trust is what is actually said and what actually happens. The higher up you are in your organization, the harder it becomes to escape scrutiny, and matching words with action becomes crucial to building trust. Rank has its privileges, but privacy isn't one of them. Everything you do or say is amplified by the media, by analysts, and by the company rumor mill. Be aware that appearances and perceptions often become reality. As a leader, you must learn to raise your behavior to the point where it's beyond reproach, where even your enemies can't twist it or see it in a different light.

Character breeds passion, both personal and corporate. Virtually everyone wants to work with people who have impeccable character. To be such a person, you need to focus on responsibility, integrity and generosity of spirit. You must also be a person of vision, competence, inspiration and honesty. How do you become such a person? There are steps you can take including:

- If you haven't already done so, spend time exploring your personal values. If you are going to model your company's culture, it's important that you are aligned with the company.
- Review your personal and business behavior and decisions over the past year and measure them against your values.
- Emulate the characteristics you observe in those you trust.
- Ask your peers and your boss to tell you how consistently your values line up with your actions.
- Ask yourself if the action you are about to take could be twisted by your enemies to look bad. If you find yourself defending your actions, consider whether your actions could have been different. Pay attention to negative feedback.
- Finally, take the time occasionally to talk to those at a different level and ask their opinion and tell them you appreciate their contributions to the company. ■

Leadership Communication

We live in the Communication Age, not the Information Age. True, new technologies let us accumulate information like never before. But our major task is not gathering information; technology does that for us. Instead our major task is to make the information avail-

Considering Affected Workers Softens Impact of Unpopular Move

When Charles Schwab decided to open all its offices on Saturday mornings, it seemed like a good idea to everyone making the decision. But because not everyone who should have been consulted about the change had an opportunity for input, it soon became apparent that it wasn't such a good decision after all. The change was announced without much input from the field, and without taking into account which offices were likely to actually have customers walk in on a Saturday morning. It wasn't until the president acknowledged that Saturday hours would disrupt family life for some and might not be right for every office that employees got behind the idea. They might not have liked the idea much better, but at least they felt as if they had been heard and their opinion had value.

able at our fingertips useful. Your job is to make information useful and meaningful to others.

E-mail and voice-mail have exacerbated the problem. These technologies have made it easier to believe we are communicating when we are merely informing. In some ways, these new forms of communication have become incessant distractions.

The problem with voice and e-mail is that it presumes that communication is telling and instructing rather than engaging in an exchange of ideas. In business, leaders need to listen to others, engage them in two-way conversations, and then make a decision while acknowledging that differences will remain. Acknowledging resistance to a decision doesn't mean giving up your point of view or that others should have their way. It means others know they have been genuinely heard and considered, even if the hearing and considering didn't change your mind.

From Leadership Communication to Generating Innovation

To build passion and commitment to a business mission in a world dominated by information, and to build an atmosphere that compels participation and contribution, leaders have to deploy themselves frequently, personally, and skillfully. That means you must make leadership communication your number one priority. Monitor what questions you are asked, probe deeper to the real meaning, share your vision and your values, and solicit feedback actively. If you do this, you will begin to see a new level of interest and excitement, which will

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Leadership Communication

(continued from page 5)

increase productivity for the whole organization.

A company where everyone's contribution is solicited and welcomed is one that will innovate. It's up to you as a leader to make it safe to criticize current procedures or suggest entirely new ways of doing things, and then protect and nurture the implementation of ideas. This takes more than being a role model and creating great communications. These leadership practices are the beginning. The next order of business is to create a field of innovation where new ideas of any kind can emerge at a rapid rate.

One key to transformation is to recognize that what drives innovation is what's good for the customer. When the customer doesn't want what you offer, it affects performance rapidly, and investors get grumpy. You must learn to look at things from the customer's perspective, not your own. A perfect example is the rise of the Internet, which has raised the innovation bar to a new high, especially for businesses that started out with branches and telephones as the customer contact points. The challenge will be to use the Internet to deliver information and convenience while not using it as a substitute for direct interaction between people. ■

Using the S-Curve to Achieve Success Through Renewal

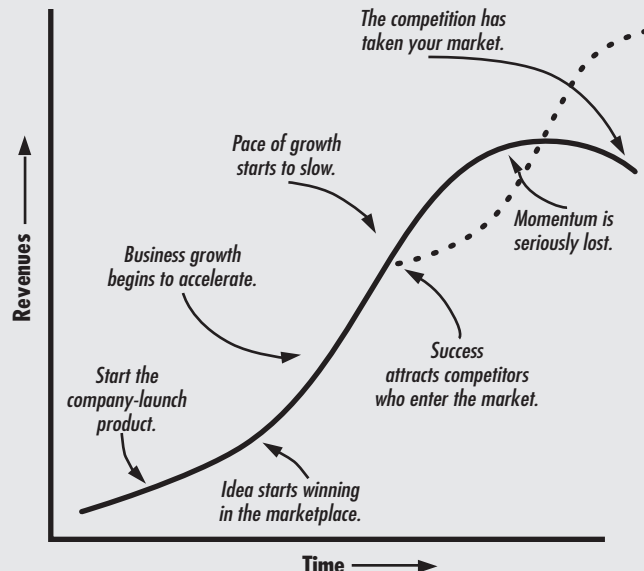
All businesses operate on a life cycle. As you start your new company your idea begins to gain favor in the marketplace. As demand increases, sales are helped by falling costs. Business is good. You climb up the S-Curve steadily. But before long your success attracts imitators who want to cash in on your model. They go for the areas where you are most vulnerable, and do what you've done better, faster and cheaper. If you respond by cutting costs or price, you extend the time it takes you to head down the S-Curve, but you don't stop the process.

With the advent of the Internet age, business cycles that before were measured in years now are measured in months or even weeks. The key is continual innovation to keep you climbing the S-Curve rather than plunging down the other side.

Sears Slides Down the S-Curve

Perhaps no better example of the S-Curve exists than retailer Sears. From the top of the S-Curve, Sears faced competition from all fronts. First Wal-Mart saw the promise Sears held, and imitated it with several crucial differences. Wal-Mart located places Sears

The S-Shaped Curve



hadn't touched, gave better service and charged less. Next, catalog companies like L.L. Bean and Eddie Bauer claimed the most profitable niches in the mail order business. Before long Sears was on the down side of the S-Curve. ■

Growing a Cannibal

Ideas that have the potential to literally transform the existing practice of the company or organization, or even an industry, are cannibal ideas. Cannibals are by nature threatening. Study start-ups to get an idea of the power of innovation, then adapt it to your company.

Start-up ideas must be incubated, which isn't easy within an established company with set ways. By finding ways to grow a cannibal within your company, you can continue to innovate. Charles Schwab grew a cannibal when in the winter of 1995 it was becoming obvious that personal computers would change the way people invest. By funding a project that would get them into the on-line brokerage business, the company was looking at an innovation which could radically change the way it did things.

The project was located away from the main body of Schwab, and the manager was given free reign to innovate. It was separated to give it the opportunity to grow and respond to the changing world outside the established guidelines for profitability and without having to compete with the rest of the company for resources. Over the next two years, the cannibal became the largest online brokerage around. Eventually, the successful venture was integrated back into the company. ■

Swiss Watch Industry Innovates to Recover After Blunder

The Swiss watch industry was once the leader in the industry, but lost the low to medium end of the watch market because of a blunder.

The digital watch was invented by a Swiss engineer, who didn't bother to patent it. Instead, he put it on display at an international watch show in Geneva as an electronic novelty. When engineers from Texas Instruments and Seiko saw it, they saw the future. Within a short time the Swiss lost most of the low to medium-end market, because they were narrowly focused on expensive precise analog watches. Their industry didn't recover until it reinvented itself by competing on style rather than function by putting together a consortium now known as SWATCH.

Bringing Passion to the Internet World

New technologies allow companies to measure business results in real time, as data can be updated continuously. Because we don't have to wait for year-end figures, we can make decisions on far less experience than we have in the past. Daily or even minute-by-minute sales reports help manufacturing companies time purchases to coincide precisely with what they need. Every business unit, from the cafeteria to the warehouse to the showroom, can plan for goods and labor to arrive "just in time."

Creating the Future with Measurement

While we can easily measure the business through new technologies, the challenge is to measure individual performance and to create the new ideal general manager, the "organizational entrepreneur." One way to encourage his or her development is through the process of building a budget rather than having the budget be something that is negotiated with upper-level management or decreed from above. The process requires applying four principles:

1. Establishing trust by agreeing on the basics;
2. Putting the vision first;
3. Planning as a team, with full disclosure; and
4. Contributing to the whole.

Through the process, budgets are arrived at in a way that encourages teamwork. In addition, budgeting requires that money be set aside for agreed upon developmental projects and for individual bonuses for reaching appropriate targets. By setting appropriate budgets and targets for growth, you will be able to measure your business' success.

Of course, individuals must also be measured. Without doubt, the most important measuring device of the new economy is the individual performance appraisal. The performance appraisal can be easily misused if it becomes nothing more than a form or process. It must be the documentation of the relationship between two people to have real value. And if the purpose is to stimulate commitment to the company, it must be much more than a critique. It needs to be a positive, constructive, trust-building process. Here are some keys to productive performance appraisals:

- **Separate numbers from development.** Numbers digitize reality for convenience. They can't replace discussion of the traits, behaviors and skills that are reflective of personal growth.
- **Use the antidote of caring.** The best way to mitigate an employee's defensiveness at evaluation time is by demonstrating a real interest in him or her.
- **Create a broad foundation of regular contact.** Review time shouldn't be the only time the two of you interact.
- **Make even a formal review a thoughtful conversation.**
- **Focus on the future.**

From Measurement to Understanding Technology

In a world that demands passion and commitment, we need to adapt. We need to rethink what traits, skills and behaviors it will take to bring disparate people together and hold them together in the world of tomorrow. Individual performance must be aligned with the needs of your company. New hires are screened for qualities deemed important as are current employees being assessed for increased responsibilities. The qualities include a passion for service, the capacity to inspire trust, effective communication skills, desire for self-development, a results orientation, the ability to build organizational relationships and to lead change and innovation while inspiring others, and the ability to manage resources and technology well.

The last characteristic is becoming increasingly important. This requires that you understand not just the technology, but the people who build it. You need to get the technologists behind the vision of servicing customers, and make sure that everyone is conversant with and aligned with the values of the company. When that's in place, both businessperson and technologist will be open to using their respective skills toward the same end. To reach that end, though, requires understanding the technologist better.

(continued on page 8)

Technology Project Criteria

Use the following criteria to judge a project's risks versus benefits:

- The size of the expenditure relative to its return and in absolute dollars;
- The project's duration. Projects longer than a year need to be broken down into interim goals;
- The project's technological reach, especially if it seems beyond your current capability;
- Whether the project will require major hardware changes; and
- Whether you have the people on board to complete the project.

Bringing Passion to the Internet World

(continued from page 7)

Technologists need skills that are literal in order to get technology to work. Computers don't deal well with approximations. But don't make the mistake of assuming that technologists are literal in all their thinking. For example, companies that assume technologists are only motivated by digitally measured incentives, and reward them solely with more money, are missing an opportunity to get them involved in company values and passions. On the other hand, the technologists' emphasis on precision should serve as a lesson for the rest of us who are happy with approximations. When both technologists and non-technologists understand each other's needs for a project, and get the information that's crucial, the resulting technology will do what both intended.

A good leader also must understand something about the technology itself. If you don't know how to operate the technology, it's time to learn. Get a tutor, go back to school — do whatever it takes to get up to speed. Understanding technology will be one of the core competencies expected in the next century. ■

Marketing

Marketing in the Internet age is becoming more personal. The Internet is the route back to intimacy and customization after a century of mass production. The shift is from "This is what I make, please buy it" to "This is what I want, please make it."

You must therefore learn to listen to the customer. Fortunately, technology makes that easier than ever before. But that doesn't mean the old rules about marketing can be forgotten. It's still true that you must test your theories in the field and measure their accuracy by results.

E-mail is in many ways an ideal marketing tool. It

doesn't interrupt dinner, it waits until the customer is ready to read it, it can be personalized, and it doesn't cost a lot to send. However, as customers begin receiving unwanted e-mail, be prepared for regulation. Those who succeed in e-mail marketing will be those who get the right combination of data-mining, segmentation and customization.

As companies compete on the Internet, they will need to distinguish between building brand recognition by "shouting" and building their brand through providing service over time consistent with the company's promises. Giving people what they want and letting them know about it is what builds brand and loyalty. Brand becomes a shorthand statement of expectation and promise and assures a level of consistency.

After the hype dies down, the Internet will probably prove able to deliver new models of information distribution, product ordering and client relationship building. But clicks won't replace the world of mortar. The retail store, the church or synagogue, and the local coffee store will remain. However, firms had better learn to adapt to the Internet if they want to thrive in the new economy. ■

From Brand and Customer Experience to the Future

We are entering an era in business when the competition will not just be for excellence of product. It will increasingly be for excellence of service, of customer caring, of brand building, of relationship. The Internet will make ordering merchandise or doing transactions simple. Companies, then, will need to focus on the intangibles to make a difference.

In this new era of nearly runaway technology, success will depend more than ever on people — what they want as customers, what they crave in their work, what they invest in as stockholders. The technology is just a tool for people to learn what they want to learn, do the work they want to do, and get whatever material and nonmaterial things they want and need.

In the past, when products were more tangible and there was no easy way to change overnight, incumbents had great advantages. They had scale, brand, distribution, technology and access to capital. Now, those advantages can often be a disadvantage. Today it takes more than inventory to attract capital, it takes flexibility and creativity. This takes a special sort of team and a spirit that wasn't necessary before. That's why culture, leadership, and other tools for building passion must be improved at the same pace as the technology. The "com" in "dot com" has to stand for "community" as well as "commerce." ■

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Data-ism

SOUNDVIEW Featured Book Review

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DATA-ISM The Revolution Transforming Decision Making, Consumer Behavior and Almost Everything Else

by Steve Lohr

HarperCollins © 2015, 239 pages

In a January 2015 *New York Times Review of Books* essay, critic and magazine editor Leon Wieseltier warned against a post-humanist — after the human — culture in which technological devices and data replace human beings and thought. “Quantification is the most overwhelming influence upon the contemporary American understanding of, well, everything,” he writes. “It is enabled by the idolatry of data, which has itself been enabled by the almost unimaginable data-generating capabilities of the new technology.” In short, “Where wisdom once was, quantification will now be.”

One might assume that Wieseltier does not have a copy of *Data-ism*, a new book from *New York Times* technology journalist Steve Lohr, on his bedside table. At first glance, *Data-ism* seems to be the embodiment of Wieseltier’s fear that quantification has replaced wisdom. The “ism” title seems to promise an introduction (manifesto?) to the philosophy of quantification. The subtitle is not timid: “The revolution transforming decision making, consumer behavior and almost everything else.” And within its pages, Lohr does a masterful job of describing all of the possibilities of “big data.”

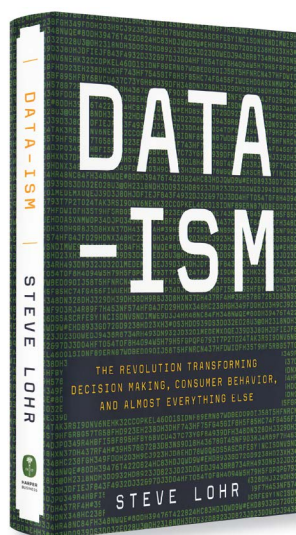
He starts, for example, with the operations of McKesson Corporation, which distributes one third of all pharmaceuticals in the U.S. to 26,000 customer locations, including roughly 240 million pills a day.

As Lohr explains, “Many companies live in a digital Tower of Babel, a hodgepodge of incompatible computer systems and data formats added over the years. Not McKesson.” Using sensors and shipment-tracking software, the company accumulates massive amounts of data, although what is being measured (pills, prices and shipment miles) can be easily translated into numbers. As a result, Lohr writes, “There is not a log of randomness in the McKesson data. Its data was plentiful, stable and reliable, which provided sturdy building blocks for IBM to build its facsimile of McKesson’s operations — a flight simulator for decision-making.”

How exactly does this “flight simulator” work? In two ways, according to Lohr. One is to offer McKesson a granular analysis of operations, using data to provide profit and loss figures for every product, supplier and customer. In other words, the data describes what is happening today. But it can also help — and perhaps the key word there is “help” — McKesson executives figure out the future. Specifically, writes Lohr, “the technology is a tool for modeling what-if decisions, using the digital replica of the physical world to peer into the future to make more accurate predictions and better decisions.”

One of those decisions was to centralize the distribution of very expensive drugs (such as cancer drugs that can cost thousands of dollars for one month’s treatment).

Centralization, which requires expensive air shipments to customers (nearly 10 times as expensive, as opposed to shipping the drugs by truck to distribution centers and then on to customers). However, IBM’s modeling software predicted that savings in inventory levels for certain drugs would more than make up the higher air freight expenses. When McKesson tested the prediction with a pilot project, the software was vindicated: Inventory levels were cut in half, resulting in overall savings on distribution costs — and on-time delivery for the drugs went from 90 percent to 99



percent. “The software gave McKesson the clarity and the confidence to go ahead,” Lohr writes. “McKesson’s success illustrates where the big-data approach shines today. It shows data really being used to guide decisions and to make better decisions, ones that trump best guesses and gut feel, experience and intuition.”

Those last words about how data will “trump best guesses and gut feel, experience and intuition” are no doubt the kind of attitude that will send chills into the hearts of social commentators such as Wieseltier. Is quantification indeed replacing wisdom? Will there be a time when humans — or human thinking — are considered superfluous? Will we let machines run the world?

In his *New York Times* essay, Wieseltier wrote, “All revolutions exaggerate, and the digital revolution is no exception.” Anyone who has been reading business books for the past few years will know what he is talking about — and why *Data-ism* is an exceptional book. Lohr is a data enthusiast — there is no doubt of that — but in his book he demonstrates that he is first and foremost a conscientious journalist with the perspective to see all sides of an issue. He extolls the virtues of big data but also compellingly describes its limitations.

The Girl and the Butterfly

A fundamental challenge for data-driven artificial intelligence is described through the example offered to Lohr by Tom Mitchell, chairman of the machine-learning department at Carnegie Mellon. The example involves two sentences:

The girl caught the butterfly with the spots.

The girl caught the butterfly with the nets.

Only one word in the two sentences is different. Humans reading those two sentences understand that girls don’t have spots and butterflies don’t have nets. Thus, the spots in the first sentence refer to the butterfly, while the nets in the second sentence are associated with the girl. The advantage of humans in this example can be summarized in one word: context. The greatest challenge for artificial intelligence is to be able to put the data it accumulates in context.

To explain the challenge, Lohr starts with a simple example: the number 39. By itself, it is a data point but tells us very little. Add the word degrees, and the information becomes a little clearer, although we could still be talking about a temperature or an angle. Add the word Celsius, and we know it is a hot temperature (about 102 degrees Fahrenheit). Tell us that this temperature comes from a person’s mouth, and we now know that the number 39 signifies illness.

Such is the power of context. Piles of numbers can mean nothing without context. Context can be achieved in two ways, Lohr explains: correlation, which connects data to action or behavior in the real world, and association, the more sophisticated ability of computers to draw context from putting words together (as in the exercise above with the number 39).

Correlation, which is what most people might think of when they refer to “data mining,” is not new. Lohr gives the example of Walmart, which, more than 10 years ago, noticed from mining its data that when hurricanes were predicted, Walmart consumers stocked up on strawberry Pop-Tarts (buying seven times more than usual) and beer (the best-selling pre-hurricane item).

The startup Zest Finance uses correlation to determine the risk of payday borrowers. Its sophisticated algorithms allow Zest Finance to reduce the risk of default by its borrowers by 40 percent. The secret is to find the unconventional numbers, or data points, to enter in the equations. In the case of Zest Finance, for example, one of the data points they include is how long a potential borrower has had a cellphone or, even more surprising, how they type their names into websites: all uppercase means they are less likely to repay the loan, while proper-case users are the best risks.

Zest Finance may or may not know why there is a correlation between how you type your name into a website and how likely you are to repay a loan, but does it matter? The answer to that question — does “why” matter? — is a topic of heated debate in the big-data community. Lohr notes that the authors of *Big Data* insist that “identifying causal mechanisms is a self-congratulatory illusion; big data overturns this.”

Other data enthusiasts believe that understanding the “why” is vital, and this is achieved only by pairing measurement with theoretical models. Richard Berner, the first director of the U.S. Treasury Department’s Office of Financial Research, tells Lohr that the measurement-is-everything mentality “is what led us into trouble in the financial crisis.” Lohr explains Berner’s position: The naive assumption that housing prices would only go up was largely based on a blinkered view that analyzed data in more recent years, when data was plentiful and consistent. It ignored earlier financial crises, when data sets were sparse and messy.

For Berner, the promise of big data is achieved when data is combined with “theories or models of how the economy behaves,” Lohr explains. Both are necessary.

Even David Ferrucci, the man whose IBM team created the Watson, agrees with Berner. “People are so enamored with the data-driven approach that they believe correla-

tion is enough.” More sophisticated decision-making in an area such as business strategy requires understanding “the why of things,” he tells Lohr. “You’re going to have to be able to address the question, ‘What’s really going on?’”

Intuition Has Its Own Problems

Lohr does not gloss over the limitations of machines, as some data enthusiasts might. However, he also notes that human intuition, despite the ability to place spots on butterflies and nets in the girl’s hands, has its own limitations.

Lohr takes an example from Daniel Kahneman’s seminal book *Thinking, Fast and Slow*. Fast thinking is the intuitive, gut-feel conclusions we make and decisions we take without taking the time to investigate and reflect on the evidence. Slow thinking takes more time and requires more effort but is based on research and reflection on that research.

It would, of course, be nearly impossible to “navigate daily life in real time,” in Lohr’s words, “if every decision we made involved slow thinking.” People quickly assess any situation based on the past, which allows them to interpret, he writes, “a likely future, one that is emotionally and socially coherent with that person’s experience.”

However, fast thinking can sometimes take us off base. Lohr uses an illustration from Kahneman’s book, in which research participants are told about a man who is named “Steve” and who is described as “meek.” The participants are then asked if this man is more likely to be a farmer or a librarian. The vast majority reply “librarian” even though the data shows that there are 20 times more male farmers than librarians.

Intuitive, fast thinking based on the clues given — the name “Steve” and the description as “meek” — leads to the wrong answer. Just a little data, however, would have made a difference.

In short, Lohr draws a picture of a world in which both people and computers can help each other overcome the other’s weaknesses. The core question of big data, in other words, is the “division of labor” between man and machine. For some, machines are destined to be a “clever helper,” Lohr writes, “a tireless digital assistant to see what its overworked human boss missed.” As noted above, the best decisions are based on measurements that can inform theoretical models.

Others, however, see a toppling of the traditional order of humans as the senior partner. Put forth more by scientists, researchers and academics than businesspeople, Lohr

writes, this school of thought predicts that computers will some day be able to engage in “experiential learning at scale” — in essence becoming smarter than humans. Humans might still make the rules, but instead of computers assisting humans, it will be the reverse: humans assisting the computers.

Will We Trust Machines?

One of the case studies in the book involves a function — maintaining the temperature in the home — that could be moving away from humans to machines. The future is perhaps already visible in the sophisticated algorithms of the Nest “learning” thermostats, which use sensors to collect data on the energy use and activity in a house and then, after about a week, have enough data to take over the regulation of the temperature in the house, choosing the most energy-efficient settings when appropriate.

The trouble, as Lohr recounts in his case study on the company, is that people didn’t like the thermostat controlling the temperature settings in their house. So, instead of the thermostat automatically changing the settings to the optimal number, the thermostats would show a green leaf when the user chose an energy-saving setting. Users who “chased the leaf” would be saving the most energy. “The green-leaf solution tells us something about the uneasy alliance between people and computers,” Lohr notes. “The people who tried out the prototype thermostats — mechanical autocrats who set temperatures on their own — felt the machines had taken over.”

The idea of machines taking over and pushing humans into an inferior position clearly rankles, even when the issue is setting energy-saving thermostat settings.

However, Lohr writes, people can learn to relinquish control if they learn to trust the computers. Today, for example, most owners of Nest thermostats let the machine decide when to change the temperature settings.

However, it’s one thing to let machines set the thermostat. It’s another to let machines drive the car (as in the self-driving cars currently being developed) or, even more frightening, make patient-treatment decisions. Yet even in medicine, big data can play a major role, according to Lohr.

From Wall Street to Medicine

The career of 32-year-old Jeffrey Hammerbacher is one of the threads that runs through Lohr’s journey into the world of dataism. A Harvard graduate from the Midwest,

“Lohr draws a picture of a world in which both people and computers can help each other overcome the others’ weaknesses. The core question of big data... is the ‘division of labor’ between man and machine.”

Hammerbacher started his career on Wall Street, built the first team of data scientists at Facebook, and walked away from potential millions of dollars at Facebook to launch a San Francisco startup that specializes in software for data scientists, before, most recently, moving to Mount Sinai Medical Center in New York City.

“The best minds of my generation are thinking about how to make people click ads. That sucks.” Lohr disagrees, noting that “online advertising is an economic virtue” because the resulting marketing efficiency reduces costs, which frees up money for investment elsewhere in the economy. To which Hammerbacher responds, “So why not work on the elsewhere?”

Currently, the elsewhere for Hammerbacher is in medicine. At Mount Sinai Medical Center, he is leading the charge on transforming medicine into what one Mount Sinai scientist calls “an information game”: doctors no longer reign supreme, as data-driven software takes the lead in monitoring patients ... and recommending treatments. Hammerbacher is focused on projects related to the treatment of cancer, diabetes, Alzheimer’s and Crohn’s disease, but his long-term interest is mental health, sparked by a close friend’s downward spiral into depression, schizophrenia and eventual suicide, and his own battles with anxiety and depression and a self-destructive lifestyle that landed him in the hospital at 27 — the same age, he noted at the time, that Jimi Hendrix, Janis Joplin, Jim Morrison and Kurt Cobain died. Hammerbacher is now healthy and fit and ready to focus on using all the power of big data to combat mental illness, which he believes is a wide-open opportunity.

“The causes of most mental disorders are little understood,” Lohr writes, “but vast, new data sets are emerging from genomics and brain-scanning imagery.” Or, as Hammerbacher tells a Silicon Valley audience, “Think about mental disorders as one of the most critical and most challenging data problems for us out there.”

Remember Taylorism

In *Data-ism*, Lohr leads his readers on a wide-ranging tour of industries and domains, from medicine to

viticulture, to hotels and people, from ambitious young math wizards, to groundbreaking academics, to progressive CEOs. He draws a picture of a world in which big data has a growing importance in every facet of our lives. However, he also warns about data enthusiasts who believe that dataism is the answer to every question and problem. These enthusiasts, he writes, may be guilty of the “overreaching hubris” of the early 20th-century Frederick Taylor enthusiasts, who believed that Taylor’s “scientific management” method of measurement and analysis held the answer to all issues of work and home.

“What struck me while reporting these stories, and what came up repeatedly in conversations with artificial intelligence experts, is what an awesome thing the human brain and what we call general human intelligence really are,” Lohr writes in the final paragraphs of his book.

General intelligence involves the effortless capacity to tap life experience and make intuitive connections and quick decisions... Then there is the human brain as a processor, cramming incredible computing power into a tiny space and using only 20 watts of energy. By contrast, the Watson computer that won its Jeopardy! contest with human champions burned 85,000 watts.

Data-ism is perhaps one of the most balanced, level-headed examinations of the potential of big data. Lohr never hesitates to give voice to the critics or skeptics of a data-driven world, nor fails to point out the limitations of artificial intelligence. It is this balance and restraint, however, that makes Lohr and his book the most persuasive champions of the massive and generally positive changes that “the virtuous cycle of more and more varied data and smarter and smarter algorithms, written by human programmers” will make in our lives. In short, quantification will not replace wisdom, as Wieseltier fears; but, Lohr shows, it will augment our wisdom — working with our amazing human brains — to help us make better decisions, free our time and energy to focus on the tasks where we can make the most difference, and, ultimately, make the world a much better place.

The author: Steve Lohr reports on technology, business and economics for the *New York Times*. He was a foreign correspondent for a decade and served brief stints as an editor before covering technology starting in the early 1990s. In 2013, he was a member of the team that was awarded the Pulitzer Prize for explanatory reporting. He has written for magazines such as the *New York Times Magazine*, the *Atlantic* and the *Washington Monthly*. He is the author of a history of computer programming, *Go To: The Story of the Math Majors, Bridge Players, Engineers, Chess Wizards, Maverick Scientists and Iconoclasts — the Programmers Who Created the Software Revolution*.



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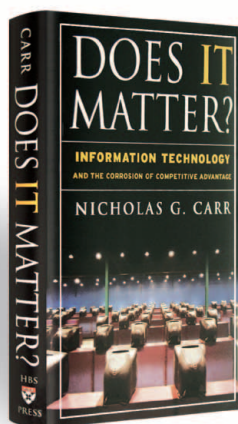
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Review by Chris Murray, Editor-at Large. #FBR-0615

· Book 13 of 35 ·

Does IT Matter

Nicholas G. Carr

SOUNDVIEW Executive Book Summaries®



By Nicholas G. Carr

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Information Technology And the Corrosion of Competitive Advantage

DOES IT MATTER?

THE SUMMARY IN BRIEF

In a May 2003 article in the Harvard Business Review entitled "IT Doesn't Matter," Nicholas G. Carr introduced the idea that information technology (IT) does not provide a competitive advantage to companies in a strategic manner. In *Does IT Matter?*, Carr argues that IT has become a commodity, and because the very nature of strategy requires differentiation, IT cannot possibly qualify. Although IT has made spectacular gains in the last half century, it is no different than other disruptive technologies that have transformed the world since the beginning of the Industrial Revolution. It may have provided a differentiated advantage to some companies early on, but over time IT has grown cheaper and more standardized so that it is easily accessible to everyone. IT can be used to supplement and improve strategy implementation, but it is not the foundation of a competitive advantage. To handle this new approach to IT, executives will have to prevent the commoditization of IT architecture and applications from destroying their companies' barriers to competitive advantages. Although that role is not yet entirely clear, executives need to prepare for the prospect that IT doesn't matter to strategy.

What You'll Learn In This Summary

- ✓ How information technology (IT) transformed from a potential strategic advantage to a commoditized cost of doing business.
- ✓ How the infrastructural technology of IT is like previous infrastructural innovations such as telephone lines and telegraph wires.
- ✓ Why the only way for IT to fulfill its potential is to become a shared, standardized utility.
- ✓ How mitigating risk and controlling cost are becoming more important than innovation and investment in IT.
- ✓ How companies coming together to share new technology can corrode individual advantage while increasing the benefit for the economy at large.
- ✓ How IT has affected productivity.

DOES IT MATTER?

by Nicholas G. Carr

— THE COMPLETE SUMMARY

A New Business Infrastructure

One of the greatest discoveries of the 20th century was the microprocessor. It dramatically improved the efficiency of the earlier supercomputers and changed the way the world did business. It moved us from mainframes to local area networks to personal computers. It created the proliferation of information technology (IT) and its infrastructure, which were the major forces shaping business over the last 40 years.

Corporate spending habits reflect the great importance of IT to business. In 1965, corporate spending on IT was about 5 percent of capital expenditures. It grew to 15 percent in the 1980s, 30 percent in the early 1990s, and over 50 percent by the turn of the century. Even with the recent slowdown in IT spending due to the bursting of the Internet bubble, the average company still invests as much in IT as in all other capital expenditures combined.

Attitudes and practices changed as well. Twenty years ago, computers were considered suitable only for low-level employees. Now, any senior executive without one is a dinosaur. Once networks and then the Internet emerged, executives finally took notice and focused on

the strategic implications of IT on a wide scale and how it could be used to create competitive advantages.

Scarcity Makes a Business Resource Strategic

There is an assumption in the business world that the strategic advantage of IT has increased with its ubiquity. This is incorrect. **Scarcity, not ubiquity, makes a business resource strategic.** By now, the core functions of IT — data storage, data processing, and data transport — are available and affordable to all businesses. **It is the cost of doing business for all, but it provides distinction to none.** Without distinctiveness, the only basis for competition is pricing, which eventually slashes prices close to cost, and squeezes out profit. Investments in resources that provide differentiation can deliver higher profits, while commodity inputs cannot. Only when a company can distinguish commodity resources from those that have a potential competitive advantage will it avoid wasted cash and strategic dead ends.

Changing Role of IT

The transformation of IT from a source of advantage to the cost of doing business raises many challenges. Executives need to re-examine spending and management of IT and rethink relationships with vendors. Different companies will reach different conclusions, but most will find that as IT merges into general business infrastructure, **mitigating risk and controlling cost** will become more important than pursuing innovation and new investments.

IT is probably best understood as the latest in a series
(continued on page 3)

A New State of Mind

The epitome of this attitude shift of executives is Jack Welch at General Electric, who didn't bother with the Internet until a vacation in Mexico in 1999. His wife showed him how to use e-mail and a Web browser, and from then on he told the whole company to think digitally. Welch spearheaded an initiative called "destroyyourbusiness.com" to overhaul GE's traditional business models. He demanded that the company's 500 top executives find young "Internet mentors," and he asked Sun Microsystems CEO Scott McNealy to join GE's board as a tech guru.

Unfortunately, the collapse of the Internet bubble made it clear that much of the heavy investment in technology had gone to waste, especially in strategic areas. Though executives have grown wary of high spending on IT, they still believe in its strategic importance. It's taken for granted that there is a connection between IT and business strategy.

The author: An acclaimed business writer and thinker, Nicholas G. Carr is a former executive editor of the *Harvard Business Review*.

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GEORGE Y. CLEMENT — *Publisher*

A New Business Infrastructure

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of broadly adopted technologies that have reshaped industry, such as the steam engine, the railroad, and electricity. All briefly gave competitive advantages to forward-looking companies, but then became commodities. Over time, they mattered less to the competitive fortunes of individual companies.

Information technology is headed in the same direction. As IT's advantage dissipates, its great transformational power fades in a necessary and natural process. Only by becoming a shared and standardized infrastructure will IT deliver its greatest economic and social benefits and fulfill its potential. ■

The Advantages of the Baltimore and Ohio Railroad

During much of the 19th century, railroad lines were unevenly distributed, and critical variables such as track gauges, coupling designs, and time zones had yet to be standardized. Manufacturers near long rail lines with many branches had an efficient way to bring in raw materials and ship finished goods. The opening of the Baltimore and Ohio Railroad in 1830 was a boon for businesses located near Baltimore. They had superior connections to the coal mines of the mid-Atlantic and to new Western markets. The access afforded by physical proximity gave an early proprietary advantage to what would become an infrastructural technology.

Companies such as Hershey and Macy's became so successful using the advantages of the railroads and telegraphs that they drew attention to the transformational potential of the infrastructural technologies. Other companies began to get involved until the opportunity to gain individual advantage diminished. The physical barriers were removed and the technology became widely accessible. As technology standardizes, the advantages of foresight also diminish. Eventually, infrastructural technologies fade into the background. They are crucial, but no longer important to senior decision makers. A hundred years ago, it was common for companies to create a management post of "vice president of electricity," because of that technology's transformative role in business. How will the position of CIO appear to business leaders in another 100 years?

Over time, infrastructural technologies lose their advantage within individual companies, but they do influence competition on a macroeconomic level. Countries that lag in installing technology will find their companies suffering heavily.

The Nature and Evolution of Infrastructural Technologies

In the mid-1800s, the newest technology was railroads. By connecting longer tracks and faster locomotives with ongoing developments in ocean and coastal shipping, the spread of railroads created global markets and competition as well as new business organizations and methods. After the railroads came the intercontinental telegraph wires, the electric grid, the telephone system, the highway system, radio and television broadcasting, and most recently, computer networking. All connected far-flung companies so that they could work together. Though these examples are often compared — especially the railroad and the Internet — analysis has typically focused on boom-or-bust cycles or technology's effect on specific industries. But how do individual companies adapt to these new technologies?

Advantages of Access

Proprietary technologies can be owned by a single company and can be the basis for long-term strategic advantages as long as they remain protected from competitors. *Infrastructural technologies* offer more value when shared than when used in isolation, and it is inevitable that they will become part of the general business architecture. In early development phases, the line between proprietary and infrastructural technologies blurs if access is restricted through physical barriers, high costs, government regulations, or lack of standards. The companies that have the means to access the technology will be able to use it to their advantage.

Companies can also gain advantages if they have foresight about the best use of the technology. The characteristics of the ultimate end-state are always unclear in the beginning, but the companies that can anticipate how the technology will change business will establish an edge over their competitors. ■

The Fate of Hardware And Software

Is IT an infrastructural technology destined to become a commodity input? The question is hard to answer because **IT is made up of both physical hardware and abstract software**. Past infrastructural systems were inflexible and served only one or a few functions. IT systems can be instructed through software code to serve infinite uses. However, the information system remains similar to older technologies like railroads and telephone networks because it still needs standardization to reach its full potential.

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The Fate of Hardware and Software

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Commoditization of Hardware

Originally, computers were proprietary machines taking up large rooms, and only a few people knew how to use them. Over time, the hardware became standardized because PCs had to be easy to use, they had to talk to one another, they had to run a shared operating system, and they had to be fairly cheap. By turning business PCs into indistinguishable “boxes,” Michael Dell turned the old proprietary technology on its head and made hardware a commodity. After PCs became standardized, servers and workstations followed, and then storage systems and networking gear. Instead of working with machines that run on proprietary chips, companies are finding that the infrastructure of IT is becoming more and more standardized and commoditized.

To overcome this commoditization, technology companies try to push the state-of-the-art to satisfy their most demanding companies. They end up “overshooting” the needs and capabilities of most customers, who are willing to buy the bare bones version, shifting competition from specifications to prices.

Eventually, individual hardware components will disappear, and companies will just connect directly to the IT infrastructure as they do now for electricity. This sets the stage for grid computing, where computers don’t just exchange files; they blend together into essentially one machine. All processors and memory systems are shared while the computing and storage requirements of individual users are distributed with greatest efficiency. Grid computing would require a new kind of software to coordinate all the pieces, but the final step in the commoditization of hardware would be complete — and largely invisible.

Commoditization of Software

Software has no tangible form or limits on innovation, so it appears safe from commoditization. In reality, software is a real product that needs to achieve real results; therefore, it is susceptible to the same rules of economics, markets and competition as other physical goods. The history of software development is an ongoing attempt to realize economies of scale and amortize the high development costs over as many users as possible. Eventually, software wants to be free, or more accurately, shared. That would make it a commodity input.

Early on, the cost of writing proprietary software was so prohibitive that companies were willing to pool resources, sacrifice distinctiveness, and save costs. Software houses centralized expertise, turning a proprietary resource into a purchased good. Though they served different clients with “custom applications,”

Wi-Fi — The Next Big Commodity

Though Wi-Fi is new and innovative, it is far from being a potential source of advantage for an individual company. It is already a commodity — a cheap, increasingly universal element of the infrastructure. Wi-Fi technology was developed in the mid-1990s by Intersil, the leading producer of the semiconductors necessary to process Wi-Fi signals. When it became clear Wi-Fi had commercial appeal, Intel began selling its own Centrino chips at cut-rate prices. Intel was selling a chip that cost \$50 for only \$20, losing from \$9 to \$27 per sale.

Intel was willing to lose this money to remove the profit from the market and prevent upstart rivals. It also resulted in people buying more laptops, which is where Intel makes more money for chipsets than for PCs. It was in Intel’s strategic interest for Wi-Fi to become a commodity and for everyone to have access to the architecture.

A founding myth of the IT business is that it will never become a mature industry. But at some point, the existing hardware and software will be sufficient. Once technology’s greatest innovations lie behind it, it will finally be a success. IT will have reached its ultimate potential of being a new business infrastructure used by all companies to deliver benefits to all people. There will be useful and amazing elaborations on the infrastructure, but they won’t change the essential commodity nature of information technology or change the new reality of IT’s role in business.

there was actually not much customization. The advent of PCs also transformed software into a packaged good because:

- Businesses could afford more computers.
- Nontechnical employees interacted directly with computers.
- Networking became important.

By the end of the 1980s, companies could buy generic programs for databases, accounting, and HR management, and that culminated in enterprise resource planning (ERP) systems that brought all management systems together as modules in a single integrated system. The loss of distinctiveness was worth the savings. Unlike a physical product, software never decays, so there is no logical repurchase cycle. Software makers resort to constant upgrades, which create overshooting and thus opportunities for cheap, commodity versions of applications as well as open source software.

Some professionals insist that the malleability of software ensures unending innovation. But that is not the point.

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The Fate of Hardware and Software

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Software innovations will continue, but individual companies will not be able to hold them as proprietary resources.

Innovation in the Architecture

Another difference between IT and earlier infrastructural technologies is that the architecture of IT changes. Technical advances in IT architecture can start out as defensible advantages to individual companies but they typically work better when they are promoted broadly and everyone has access.

A critical element of the IT architecture is the way people and devices connect with networks. The last few years have seen a rapid shift from wired connections, usually using Ethernet cables, to wireless connections, usually using wireless fidelity (Wi-Fi) antennas. Wi-Fi is one of many advances hailed as the next big thing because it creates greater flexibility for users and it is cheaper to install and maintain than wired networks. ■

For Additional Information on grid computing,
go to: <http://my.summary.com>

Vanishing Advantage

In the 1990s, IT was touted as a way to increase productivity, outweighing the cost of implementation. But the economic benefits ended up in the pockets of consumers not companies. The IT investments allowed companies to maintain competitive parity but not an advantage. The short-lived advantages that did exist occurred because of anomalies.

The adoption of IT infrastructure has occurred at different rates in different industries. For instance, the financial services industry was an early and heavy investor in IT, while the fragmented health care industry, shielded from competition, was slow to adopt IT. Now, ironically, the health care industry holds more potential for providing competitive advantage than the financial industry, where IT infrastructure has become more standardized.

Access barriers, such as the cost of building computers and assembling programming staffs, kept businesses from investing in IT during the early days. There are also advantages of foresight when visionary leaders sense how technology will be used in the future. These can produce a foundation for strong and durable advantages during the build-out of IT infrastructure.

Breaking Down the Barriers

Other problems arise if you believe that advantage doesn't come from technology at all, but from how it is used. An early mover advantage can backfire when competitors leapfrog. The time it takes for competitors

American Airlines Out Front

In 1959, American Airlines President C.R. Smith wanted an automated reservation system to help reduce labor costs, reduce empty seats, and make reservations easier and more reliable. He signed a contract to develop software that would run on dual IBM 7090 mainframes. It took 200 engineers five years to complete the project at a cost of \$30 million, but the resulting system, Sabre, was an amazing competitive advantage for the company. Sabre took a few minutes to do what used to take dozens of clerks a full day to do. The error rate dropped from 8 percent to less than 1 percent. The system also produced data giving American new flexibility in allocating resources and setting prices, and the company began gaining market share almost immediately. The airline earned an estimated 25 percent return on its investment. Other airlines appreciated the potential value of automating reservations, but only American made the investments to surmount technical and cost barriers. Their investment paid off because it took a significant amount of time for others to catch up.

Being a first-mover is expensive, and the advantage only lasts as long as it takes competitors to overcome barriers. All distinctive use of technology is eventually copied and advantages get torn down.

to catch up is the **replication cycle**. Over time, the technical replication cycle gets shorter. The rapidly increasing affordability of IT functionality has destroyed the most important barriers to replication.

Open networks are also destroying the advantage of proprietary networks. Since IT capabilities are more valuable when shared than when used in isolation, competitors will work together. Along with standardization of technology comes standardization of use. Enterprise technologies standardize an entire process, imposing constraints on the process. The software becomes the process for every company that uses it, so there is little room for a company to distinguish itself.

Some may argue that we are only in the beginning of the Digital Age and unfathomable discoveries still lie ahead. But history shows that the transformational power of an infrastructural technology dissipates as its build-out nears completion. There are many signs that this end is near.

- IT is outstripping most of the business needs it fulfills.
- Essential IT functionality has become affordable to all.
- Capacity of the universal distribution network (the Internet) has caught up with demand.
- Leading vendors — Microsoft, IBM, HP — are rushing to position themselves as “on demand”

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Vanishing Advantage

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infrastructural services — essentially as utilities.

- An enormous investment bubble has expanded and burst, which historically suggests that the infrastructural technology is reaching the end of its buildout. ■

For Additional Information on shared capabilities, go to:
<http://my.summary.com>

The Corrosion Of Traditional Advantages

Though infrastructural technologies eventually lose the power to create competitive advantage, they retain the power to erode competitive advantage. The railroads destroyed the advantages of companies situated near ports. The telegram destroyed the advantages of long-cultivated international business relationships built on written correspondence and confidential couriers. That neutralizing effect will be very strong with IT because it is so flexible and deeply entwined with business process. It can corrode advantages across many aspects of a company's business.

There is also a corrosion of performance and advantage as different companies adopt the same or similar information systems. The IT infrastructure will become more homogenized as companies continue to look to outside vendors to operate key systems or processes. The Internet has magnified the effect by undermining the advantages of proprietary, closed networks, but it has

shifted power from companies to customers. The Internet enables customers to compare prices, features and quality. IT has become a type of solvent for business strategy, pushing companies toward competitive parity.

All of this does not mean your company should give up strategy. Strategy is now more important than ever. Only the strategically astute companies will rise above the competitive free-for-all. For instance Dell established its strategy before building its much-praised IT system. By cutting out wholesalers and retailers, Dell changed the economics of the industry. Building to order reduced the need for inventory and working capital and was more efficient. Dell was already the low-cost provider when it launched its Web store. Dell's IT investments are actually quite conservative and have always been aimed at reinforcing the efficiency of its operations. IT has buttressed Dell's advantage, but it is not the source of that advantage.

Building on the Past

Strategy requires a broader definition of competitive advantage that encompasses traditional sustainable advantage and a more transient leveragable advantage. **A leveragable advantage is a privileged market position that provides a steppingstone to another privileged position** — a way station, not a destination. It is a deliberate move that builds on the past and prepares for the future.

IT infrastructure also dissolves existing advantages by blurring traditional boundaries. Networks and the Internet make it easier to collaborate so industry productivity can increase, but an individual company's distinctiveness and profitability can dissipate as well. How do managers defend their competitive advantage while allowing information to flow freely?

Some believe that there should be no stand-alone companies. Nobel Laureate Ronald Coase stated in 1937 that using the market entails transaction costs above the price of the good. A company will do anything itself if that decreases transaction costs. Anything else, it will outsource. High transaction costs create larger companies while low transaction costs create smaller companies. The Internet has reduced transaction costs so much, some believe there is little a company has left to do. Companies will break up and groups of people will come together to create a product and then disband.

But these people misread Coase. He also indicated that lower transaction costs within a company increase management efficiency, allowing the company to do more, which increases its size. In addition there may be strategic reasons to keep activities in-house even if they could be more cheaply outsourced. The post-company pundits would eventually strip companies down to plug-and-play business networks. But there is more to com-

IT Neutralizes Advantages

A Harvard Business School doctoral student, Mark Cotteleer, studied the neutralizing effect of IT on a large manufacturer's adoption of an international enterprise resource planning (ERP) system to replace disparate regional systems. Cotteleer measured performance by speed of order fulfillment before and after the installation. Before the installation, it typically took North America 51 days to fill an order, while Europe took 35 days and Asia just 36 days. The installation of the ERP system immediately erased these differences, bringing the regions into parity. One month after installation, North America, Europe and Asia reduced to 29, 27 and 28 days, respectively, and a year later, 35, 33 and 37 days. Although local managerial differences increased the time, they still stayed in close alignment, and after another year, North America was the leader. The advantage originally held by Europe and Asia had been obliterated by the introduction of IT.

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The Corrosion of Traditional Advantages

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panies than information processing — the physical and human characteristics. Without these extra characteristics or a strategic intent, you have a commodity.

Successful strategy comes from looking both inside and outside the company to **achieve both a privileged industry position and to exploit internal capabilities**. The maturation of IT infrastructure and its corrosive effects on competitive advantage demand that managers see a competitive goal as a goal *and* a passageway. A means and an end. **They must balance agility with stability, and openness with guardedness.** ■

Managing the Money Pit

When a resource becomes essential to competition but inconsequential to strategy, it risks becoming more important than its advantages. No current company builds its strategy around rail service or electricity, but a lapse in supply or spike in their cost can be devastating. Fortunately, infrastructural technologies become more stable and resilient as they mature, but young infrastructure presents business risk because businesses are forced to invest in technology they do not fully understand.

Oxford Health Plans lost \$3 billion in market capitalization when it had billing software problems. Nike lost \$400 million when it had difficulty installing supply-chain software. Every company has its own horror stories. IT projects are always more expensive and take more time than expected. The goal is to bring the failure rate down by managing the risk of IT in individual firms.

Spend Less

The greatest risk that IT presents is overspending. Although IT is a commodity and its price falls rapidly, it is entwined in so many business functions that it consumes a large portion of corporate funding. Here are several ways the IT money pit can be managed:

Cut out waste. Suppliers like Intel and Microsoft continually roll out new upgrades, even though the average business PC user doesn't need much more than word processors, spreadsheets, e-mail, and Web browsing. Commoditization allows buyers to negotiate better deals, insuring long-term viability of PCs, tying payment to usage, and allowing them to go to other vendors.

Use all capacity. The massive amount of spending in the late 1990s left many companies with more capacity than they needed. Use superfluous server space, hardware and software.

Put tighter controls on IT usage. Up to 70 percent of what is stored on corporate networks consists of employees' saved e-mails, spam, MP3s, and video clips.

Cendant Loses the Internet

The hotel-franchising unit of Cendant realized that thousands of reservations agents were wasting time surfing the Web and downloading games and other personal files from the Internet. Since there was no business benefit to Web access, the unit's IT director, David Chugg, wanted to remove the browser application from the agents' PCs. Because Microsoft has integrated its Explorer browser with its Windows operating system, that turned out to be impossible. Instead, Chugg replaced the existing Windows machines with desktops running a version of the Linux operating system. Not only has the company increased its agents' productivity and cleaned up its network, it has cut software licensing costs as well.

Restrict employees' ability to save files indiscriminately.

Put more rigor in systems planning. Higher-level managers must be more creative about finding ways to explore cheaper hardware, software and service alternatives. Amazon.com was able to shift more than 90 percent of its servers from proprietary Unix systems to an open-source Linux system in three months, cutting \$17 million from its quarterly IT budget.

The commoditization of IT will continue to give companies new opportunities for reducing costs and risks. The ability to find and capitalize on these trends will be a hallmark of effective management in the future. Instead of assuming that annual IT budgets will grow every year, companies should begin to **assume that IT budgets should go down every year.**

Even small delays in purchases can dramatically reduce costs because of the ongoing fall in IT prices. Companies that stay off the leading edge reduce their chance of being saddled with buggy or soon-to-be-obsolete technology. It is now clear that many of the smartest users of technology stayed back from the cutting edge. UPS hung back during the 1980s and 1990s, and followed in FedEx's tracks, learning how to make its rival's systems better and cheaper. When UPS rolled out its own logistics-management software, it was more open and easier to use than FedEx's.

Innovate When Risks Are Low

There are still times when it makes sense to get out ahead of the competition with IT innovation, if you can reduce or avoid the high costs associated with being the first mover. Companies with substantial market power can pursue infrastructural innovations that fortify existing advantages, as with Wal-Mart's early move to promote radio frequency identification (RFID) in the con-

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Managing the Money Pit

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sumer packaged goods sector. These tiny chips allow more precise control over inventory and improve productivity for the entire industry. By pushing RFID to become a commodity, Wal-Mart neutralized it as a potential strategic weapon for competitors, reaped the most gains as the scale and cost leader in the industry, and pushed most of the costs of adopting the technology onto the shoulders of suppliers.

Companies can also reduce risk by pursuing highly specialized innovations that competitors will have trouble adopting. Sometimes a startup company can capitalize on new IT to gain an edge over industry leaders. JetBlue has used today's open IT infrastructure to succeed where older airlines, which are locked into their IT infrastructure of reservations, flight scheduling, and pricing, cannot. JetBlue gives its pilots laptops to track flight plans, while reservation agents work at home using PCs and make calls on the Internet. These tactics are strategically meaningful because JetBlue's competitors' existing business models do not allow them to rapidly adopt such innovation.

Focus on Vulnerabilities

IT has many operational dangers, including service outages, security breaches, vindictive or careless employees, and even terrorism. IT disruptions can be expensive and prevent a company from making its products. Companies must study and fix their vulnerabilities both on the outside and on the inside. The current decentralization of hardware and software purchases and hiring of IT staff is also a cause for concern.

Also, consider the changing nature of IT functions. Instead of viewing IT positions as generic, managers must find people with different skills. As more IT functions are performed remotely by contractors, and IT departments shrink, IT staff will need to be able to negotiate with vendors and manage a far-flung work force. Senior executives such as the CIO need to promote a sense of realism about the strengths and limitations of IT to prevent overoptimistic predictions and high spending. Eventually, a CIO's job should be to render him- or herself obsolete because the IT infrastructure is so stable and robust that it no longer requires high-level management. ■

The Future Of Technological Change

The bewitchments of broadly adopted infrastructural technology are hard to resist, and they explain the out-sized hopes that some people have placed on computers. The late 1990s were a time of infinite possibilities, all

brought about by the Internet. Proponents promised to bring us into a new Digital Age where we would be freed from the old physical world and the old way of doing business. Since the Internet boom went bust, there are fewer of these claims, but people still want to see IT as a revolutionary force that "changes everything."

But 50 years after the computer revolution began, has it truly been transformative? IT is certainly ubiquitous. Computers have simplified many tasks and, coupled with the Internet, changed the way we communicate, gather information, and shop. IT has not fundamentally changed the way we live and work. A time traveler from the 1930s would still be able to make sense of what he would see here today. Compared to the cataclysmic changes in society and business brought about by the technological innovations of the 1800s — rail, telegraph, telephone, electricity, internal combustion engine, refrigeration, indoor plumbing, photography — these 20th-century changes seem modest and more of an extension of the past than a break with it. Life is unthinkable without the advances of the 19th century, but you can't say that about IT. Would you rather do without your toilet or your computer?

Additionally, it is hard to find the effects of IT on productivity. Not all of the large investments in IT during the 1990s produced high rates of return. Some believe the connection between IT investment and productivity is random, but the strong, continued expansion in U.S. productivity since the turn of the century does have some relationship to the large expenditures in IT, which have allowed companies to do more with fewer employees.

Complementary Investments

Most gains in productivity are also a function of complementary investments. The gains hinge as much on related process and organizational innovations as on the original technology. The growing consensus is that IT can boost productivity but only when combined with broader changes in business practice, competition, and regulatory control.

There are other issues to consider in the future, such as what happens when computers take over jobs done by people. If economic growth is strong — output rises faster than productivity — companies and the whole economy benefit. The commercial sector becomes more efficient, displaced workers move into new jobs, and general living standards rise. But if productivity growth races ahead of economic growth, the number of jobs can decline, unemployment may increase, the supply of goods can outstrip demand, prices may drop, and the divide between wealthy and poor may widen. The American economy is resilient, but we cannot dismiss the possibility that strong productivity gains from IT will end up doing harm as well as good. ■

For Additional Information about productivity gains from IT, go to <http://my.summary.com>

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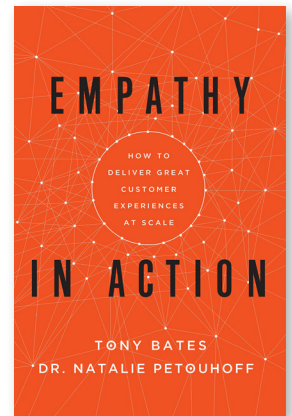
Empathy in Action

Tony Bates, Dr. Natalie Petouhoff

Empathy in Action

How to Deliver Great Customer Experiences at Scale

by **Tony Bates and Dr. Natalie Petouhoff**



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THE SUMMARY IN BRIEF

Empathy is a conscious act. It's a commitment you make to understand a person in the context of their own life and experiences and then to treat them accordingly. After an empathetic interaction, the recipient feels heard, understood, and respected. But it's been missing in the business world.

Over the course of his career and life, author Tony Bates has been focused on the idea of technology as a tool for promoting empathy in our daily lives. After several decades of experience as a leader and entrepreneur, Bates arrived at a core question that inspired ***Empathy in Action: How to Deliver Great Customer Experiences at Scale***. In it, he attempts to answer: What if empathy became as important a design factor in new products and services as functionality, efficiency, and profit? Bates believes empathy is the next frontier in technology and the aim of the book is to spark a broad, industry-spanning conversation about how technology can create and enable a more empathetic world.

IN THIS SUMMARY, YOU WILL LEARN:

- How exponential technology has forced rapid change in companies.
- Three principles that are necessary in designing and implementing exponential technology.
- What empathy has to do with customer and employee experiences.
- The meaning of Experience as a Service™ and how it is the way forward for Customer- & Employee-centric companies.

Technology: Evolution, Experiences, and Empathy

Many companies think they provide great customer and employee experiences, but most customers and employees wouldn't agree. The majority of companies are still operating under the long-held belief that putting their focus on business-centric goals will make them market leaders, thereby driving their own unprecedented business growth. In this narrow equation, amazing, categorically human experiences aren't nearly as important as the revenue they provide.

While the shift towards customer and employee centricity still hasn't happened in many companies, business success is nonetheless dependent on the revenue generated by those customers, and that revenue is indisputably generated by employees who work to serve them.

The way customers and employees are treated influences a company's overall success. And if customer and employee experiences are so important, why haven't they truly become the driving force behind the decisions businesses are making? Innovative, empathetic approaches to business generate more profit and, at the same time, consistently create more positive customer and employee experiences.

What's Empathy Got to Do with It?

Empathy involves putting yourself in another person's shoes and understanding why they may feel a particular way. With that understanding, you can put empathy into action by taking steps to help that person based on their perspective—not your own.

A business-focused definition describes empathy as “the act of a company putting themselves in the shoes of their customers and employees to reorient the way they make decisions and conduct business, resulting in amazing customer- and employee-centric experiences.”

Moving from a business-centric paradigm to a customer/employee-centric approach transforms the roles of people, process, strategy, finance, and leadership—as well as the use of exponential technologies to deliver exceptional customer and employee experiences.

Exponential technologies can uniquely drive accelerated rates of change with groundbreaking capabilities unlike any other type of technology we've experienced before. We're at a technological tipping point where we can meet the criteria of customers, employees, and companies for the first time in history. When exponential technologies

are deployed, companies can redefine the meaning behind business-centric metrics like efficiency and effectiveness, transform the experiences they deliver, and connect how customer- and employee-centric experiences deliver better financial results for the company.

How Technology Shapes Lives and Businesses

While we are rarely conscious of just how big a role technology has played in shaping our shared reality, it is a fact that's been present since the beginning of human evolution. Though some innovations are small and others are significant beyond our imagination, each one brings something new and valuable to our world. Technology, more than anything else, is what drives human ingenuity.

Why is it so important to look at technology through the lens of empathy, trust, and loyalty? Until now, technology's potential has generally been applied with a focus on company-only, cost-cutting efficiency and effectiveness. In this paradigm, there is little to no emphasis on customer or employee centricity, often to the detriment of the overall customer and employee experience.

This is the primary reason so many companies and businesses find themselves stagnating, with high turnover, widespread burnout, and a lack of anything resembling a consistent, loyal, or trusting customer base.

The Primacy of the Personal

After looking at exponential technology's advances, the ways in which they can be designed and deployed, and their tangible effects on how people feel before, during, and after an experience, three principles form a pattern of necessity time and time again:

- **The Empathy Factor**—You must understand what experiences should look like through the lens of your customers and employees (engaging with the ideal)
- **The Trust Factor**—You must empower your business to deliver employee-centric experiences and build employee trust so they feel you have their back, and are then motivated and enabled to provide outstanding personalized customer experiences regardless of whether the ideal was fully met (engaging with the personal)
- **The Loyalty Factor**—You must consistently deliver customer- and employee-centric experiences which unwaveringly build trust to the point that they garner both customer and employee lifetime loyalty and lead to extraordinary business outcomes (engaging long-term)

When you're caught up in the world of misplaced ideals, it's often difficult to be truly present in the real world that is spinning around you.

To reinforce empathy as a true business construct, rather than a warm but ultimately empty lip service, it's necessary to define the scope of what Empathy in Action actually means as a deliverable. Loyalty-creating customer experiences fulfill three criteria. They...

- Have a VIP, one-to-one, concierge quality
- Are contextually relevant and real-time
- Provide a personalized experience at scale

From this perspective 10 CX (customer experience) action statements were developed that guide the design of people-centric experiences and illuminate the technology needed to deliver on personal, trust-building promises.

1. Help me even before I know there's a problem.
2. Show you know me before you even meet me.
3. Empathize with my situation.
4. Demonstrate that you know the road I traveled to get here.
5. Listen, understand, and predict what I need, then act accordingly.
6. Don't ask me to repeat myself.
7. Present me with answers I want as well as the ones I didn't know I needed.
8. Address my issue and stay with me until it's fixed.
9. Check in with me to make sure it all worked out; learn from my experience.
10. Above all, keep my data safe.

For this to happen, a company must have active ways to listen to, understand, and predict a customer's intent, and then not only act on it but also learn from all resultant interactions at scale.

Additionally, it requires that companies empower employees with the right information, tools, and action plans to serve

the customer. This greatly enhances the employee's work experience, the result being that both experiences continuously and synergistically improve.

History Foreshadows CX Problems

Our technologies have the potential to become incredible assets or drivers of negative change depending on us—but as the humans behind that technology, perhaps we don't pay enough attention to the signs, and perhaps we are reluctant to truly think through the consequences of our actions when they feel comfortable, exciting, or prosperous. When you're caught up in the world of misplaced ideals, it's often difficult to be truly present in the real world that is spinning around you.

When we are present and focused on the job at hand—serving customers and employees—we can infuse technology with the very best parts of humanity. The quality of our lives, businesses, and social systems are all based on our values.

We must hold ourselves accountable for creating systems founded on human empathy and integrity, and we must strive to drive trust and respect among and between each other. If we don't, we run the risk of driving customer and employee experiences toward blind spots; an outcome with consequences greater than we can envision now, and which can only be avoided if we choose to open our eyes to a new way of doing business.

And yet, despite a corresponding boom in books, conferences, and seminars explaining the need for companies to adopt authenticity and customer centricity as their central business model, the old trend continues without any sign of slowing down.

In the digital age, you can depend on customers being hyper aware and even more informed than your own marketing departments when it comes to your brand's reputation.

We are at a turning point, and it calls for a reimagining of the corporate model from the ground up. It's not about getting new customers; it's about getting a new way to think about them.

Through a determined commitment to empathy across the entire organization and a focus on experience at every customer touchpoint, a whole new culture can emerge. With it, companies have the opportunity to become more than just successful. They have the chance to become meaningful. And meaning, more than anything, drives profits in today's market.

The Business Case for CX/EX

Rapid changes in the exponential technologies governing customer and employee experiences provide the opportunity to build better businesses, create competition differentiations, and drive the urgent need to transform your business—or be left in the dust.

Twenty years ago, the idea of a “one-to-one digital experience” was considered radical thinking in marketing. Organizations attempted to personalize customer experiences by segmenting, targeting, and retargeting customers with digital content and ads.

In concept, it's a great idea. In practice, it's difficult to execute. Compared to what exponential technologies can deliver, linear technologies are severely limited in creating highly personalized customer and employee experiences.

Previous personalization attempts were driven by company-focused goals such as attaining higher customer acquisition rates (leads) and sales closures. From the customer's perspective, however, the interactions didn't always result in a better experience. Targeted ads or offers leveraging personal information can be invasive and turn customers away. Known colloquially as the “creepy factor,” customers often feel that companies know way too much about them without their permission to access or use that information.

The idea of providing one-to-one customer experiences is decades old, yet many organizations' attempts to personalize a customer's experiences fall short by using a business-centric versus customer-centric point of view. Even with 2.5 quintillion bytes of customer data gathered each day and the behavioral insight this data provides, most companies miss the mark when it comes to using it to create amazing customer experiences.

Research shows that most consumers are willing to exchange their data for more connected, empathetic experiences. But not many companies have found a new way to do this. If providing products, services, and experiences is

how you make money, shouldn't the thoughts and feelings your customers have about those experiences be the most important indicator of your long-term financial success?

We've all been on the receiving end of bad customer service. In fact, research shows that the majority of consumers have been driven to tears by a bad service interaction. Clearly, companies need to reevaluate their strategies and respond to their customers in new ways. Whether an experience is delivered by a human employee or designed into technology-based experiences, such as an AI chatbot or an SMS message, the design process should begin with one simple question: How can I put myself directly into my customer's shoes and understand what they are trying to do?

If you remember a great experience, it probably means you were heard, recognized, and even delighted by the engagement. In talking to customers, we find that great customer experience begins with an empathetic approach. These customer-centric encounters grow customer's trust in a company and drive their loyalty toward a long-term commitment. This is the foundation of Empathy in Action.

Empathy requires an understanding of what customers are looking to achieve and the context of the steps they have taken so far. A company needs to engage customers in real time, in preferred channels, and without losing context—even when a customer changes channels altogether.

This can be done through orchestrating personalized experiences. Personalized experiences create a virtuous circle of empathy, loyalty, and trust. Until now, true personalization often required the extra effort of exceptional employees. While individuals acting in sympathetic or empathetic ways can be critical to great customer experiences, businesses need more than one or two employees' empathetic mindsets.

Otherwise, it's not realistically scalable or consistent. That's where exponential technology—if designed and implemented with an empathetic, customer/employee-first point of view—comes into play.

Experiences Drive Good and Bad Profits

A distinction can be made between good profits and bad profits. Bad profits could spawn from experiences like:

- Confusing pricing strategies
- Extracting value from customers rather than creating

True success lies in delivering experiences that lead to loyalty. The result? The company derives more profit from its customers—and both parties get what they want.

value (i.e., selling their data or constantly pushing sales offers)

- Misusing or not protecting customer data
- Providing exceptional presale, at sale, or post-sale experiences
- Pushing company-focused efficiency metrics (like instructing employees to get the customer off the phone as fast as possible)
- Skimping purposefully on providing an amazing customer and employee experience to save on costs

These are all blind spots—ways companies operate that degrade customer trust and thus loyalty.

The Cost of Bad Experiences

No one disputes that companies are in business to make money. If more money is going out than what's coming in, companies can't even cover costs, much less grow their business. The cost of bad experiences is not just customer and employee loyalty—it has a trickle-down effect on every aspect of your business. Remember...no customers, no business. Bad experiences are antithetical to the good business practices required to amplify revenue, profits, and margins.

Personalizing every experience economically at scale is now possible, so why are companies still providing mass-produced customer/employee experiences? **Because they aren't deploying Empathy in Action...yet.**

Emotions drive 90 percent of all customer decisions. This means the perceived quality of a service or product has more to do with the feelings generated through company-customer interactions than with the objective quality of a company's offerings. The human aspect of marketing, sales, and service is just as important as objective quality. Customer experience can no longer be based solely on objective measures like conversion rates or average handle times unless it also accomplishes what the customer needs and wants.

True success lies in delivering experiences that lead to loyalty. The result? The company derives more profit from its customers—and both parties get what they want. But hav-

ing the long-term mindset is a paradigm shift from being hyper-focused on short-term business, Wall Street, investor, and stockholder objectives. It requires refocusing on empathy-based customer/employee experiences that pay off for all stakeholders—employees, customers, companies, and in the end, Wall Street and investors.

Improving Employee Experiences

There's a saying that happy employees drive happy customers. When considering how to improve customer experience, an under-appreciated aspect is often the employee experience. But to achieve the empathy-based disruption needed, one of the essential inputs is creating an empathy-based work culture.

Parallel to customer experience, companies need to recognize how an employee's company experience directly affects the customer—and transform it, because devoted employees derive repeat customers.

Unfortunately, many employee management theories haven't evolved beyond the century-old foundation of optimizing the workplace based on the business-centric efficiency and effectiveness paradigm. Company-only focused management theories drain purpose, passion, and engagement from employees.

To thrive in the future of work, companies need to put themselves in the shoes of their employees and be able to amalgamate Empathy in Action into the employee engagement equation.

Empathy Drives Performance

HeartMath has spent over 30 years providing scientific research showing how employee discontent manifests itself physically, driving the emptiest to search for work that creates coherence between the work to be done and the work experience.

Traditionally, researchers have approached the study of communication pathways between the head and the heart from a rather one-sided perspective. Scientists previously

focused on the heart's responses to the brain's commands. The thinking was the brain is the primary driver, but current science has revealed it's the heart, or how people feel, that drives their thoughts, actions, and motivations to do their best or become complacent and merely show up to collect a paycheck.

For instance, the research shows it takes eight hours for an employee to recover from being yelled at, which is typical in a command-and-control culture. Additionally, the messages the heart sends to the brain are recognized as key to our ability to perform our best.

So, while empathy may seem like fluffy stuff to some people, science and data show it affects our ability to perform and drives focus, creativity, and stress, which all affect innovation and business performance.

Companies are suffocating on these old management paradigms, leaving humanity out of work. How can we change it? By completely rethinking how we hire, train, and organize the employee experience—by shifting the paradigm.

Leaders need to create collaborative cultures where employees feel the psychological safety needed to embark on this new journey together to the extent they will go the extra mile to ensure each other's success. The culture cannot be one where feedback is seen as rejection. Instead, there is an openness to view things differently and help others see situations from different viewpoints.

Experiences as a Service: The Great Differentiator

Most companies still provide products and services without evolving their offerings and experiences. This next step in economic value creation is about delivering highly personalized, contextually relevant, empathetic customer and employee experiences at scale using exponential technologies.

The ability to create remarkable C&E-centric companies is what we call Experience as a Service™ or Empathy in Action.

Companies need to deliberately design engaging, empathetic customer experiences, with the same attention to design-thinking they give to product or user experience design. From clothes to cars to sneakers, we live in a world where people are willing to pay for experiences that meet their individual needs.

This evolution shows that successful companies will be the

ones willing to disrupt their processes to focus on innovative solutions for customers and employees. They understand what customers and employees want and need and create new experiences that deliver on those needs. They are shifting their business model to align with current marketplace demands and conditions, and adapting to unforeseen market disruptions like those experienced in the economy by global pandemics like COVID-19.

Transforming from Services to Experiences

The difficulty for many companies is realizing what business they are in and knowing their defensible space. If they have a commodity mindset, a company making pedometers might think they provide a way to keep track of someone's exercise instead of realizing they are a lifestyle brand, contributing to their customers' health and wellbeing. Or, a transportation/distribution company might think they are in the business of transporting people and goods when in reality, they are a partner in keeping families clothed and fed. That's the difference between having a business-focused as opposed to a customer-focused strategy and purpose.

This next wave in the economy is to design and deliver highly personalized, contextually relevant experiences that emphasize empathy at scale. By using empathy to innovate, companies can listen to their customers' current concerns, comments, and reviews. They can then use this input to transform their business model to offer customers what they need and want before their competitors do, and something, even before customers know they want it.

While customers demand convenience and privacy, employees want their "future of work" needs met. Among the things employees want are control over their schedules, the ability to work remotely, and a better quality of work life. How do we accomplish this? Achieving high levels of innovation requires an empathetic company culture where employees actively participate in delivering the next evolution of the customer experience instead of maintaining the status quo. Part of that employee buy-in comes from companies providing the tools, technologies, and access to data and insights in real time, allowing employees to deliver excellent customer experiences.

When companies use design thinking to make employees the focus of their technology's process and functionality, teams can deliver experiences based on empathy rather than business-centric metrics that don't deliver the full picture. Employees know what will help them better than anyone else, and management needs to allow them to inform the process.

A company can address deeper levels of employee satisfaction by enabling employees to:

- Improve their recruitment and onboarding process
- Incorporate their voice into how work gets done
- Provide empathy-centric metrics and recognition
- Deliver enhanced training and performance management

Comparing what we've done in the past to what exponential technologies can provide today, it's easy to see why previous eras in CX/EX can't compare. They simply can't deliver the same level of experience orchestration or provide outcomes so thoroughly focused on C&E-centric experiences.

Why are exponential technologies so integral to the new model? It's fairly straightforward: in the old paradigm, companies relied on the power of humans to try and meet increasing customer demands. This meant hiring more employees and using their human processing capacities (their brains) to listen, understand, act, and learn. The result was a subpar experience for customers and employees alike.

However, with exponential technologies, we are augmenting human capability with exponential computational power. This allows us to vastly exceed human capacities in providing more empathetic experiences, resulting in new C&E-centric efficiencies, effectiveness, and empathy-oriented experiences that give customers what they need and want, often surprising them by being both prescient and prescriptive.

Brands who make customer/employee experience their differentiator have better financial results, simply because they are focusing on the true value of the customer, the employee,

and the perspectives of each. Every time a customer or an employee has a standout experience with a company, it sets the bar higher for the next experience. And expectations are only going to increase. With the number of customer interactions growing at an astonishing pace in this digital age, it's no wonder some organizations are struggling to keep up.

When you make customers feel remembered, heard, and understood, you build brand affinity and loyalty. And when you build a company culture that employees are proud to be a part of, they take up the company banner and advocate on your behalf. More than anything, it's this level of loyalty that drives us toward true success in business and in life. Make personalized Empathy in Action your top goal. Start now. Never stop.



Tony is the chairman and chief executive officer of Genesys®. He leads the company's strategy, direction, and operations in more than 100 countries and oversees a global team of more than 5,000 employees. Tony has decades of experience steering b2b and b2c companies through major market transitions and rapid scaling.



Dr. Natalie Petouhoff is a Senior Customer Experience Strategist and Consultant at Genesys®. Her work with hundreds of brands in shifting from outdated paradigms to new frontiers has made her one of the top customer experience experts in the world.

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Everybody Wins

Matt Domo

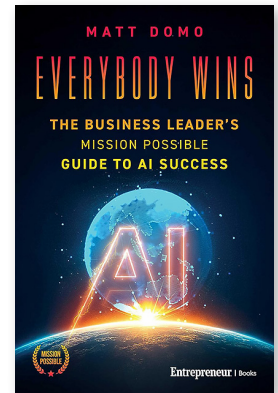


Executive Book Summaries®

Everybody Wins

The Business Leader's Mission Possible Guide to AI Success

by **Matt Domo**



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THE SUMMARY IN BRIEF

Everybody Wins: The Business Leader's Mission Possible Guide to AI Success presents a practical framework for leading digital and AI transformation within organizations. The book's core premise is that technology alone does not create transformation; rather, lasting advantage comes from leadership decisions that align strategy, culture, and technology. Companies must redesign how they operate so data, systems, and artificial intelligence adapt to customers and employees, rather than forcing people to adapt to rigid processes.

Central to the book is the "ME Experience" framework, which focuses on delivering personalized value at scale through integrated digital platforms, predictive analytics, and automation. The book outlines how leaders can successfully modernize business models, guide teams through change, and embed AI into everyday operations. Structured in five sections, the book moves from understanding the urgency of digital transformation to leadership strategies, practical technology integration, operational redesign, and finally building organizations where innovation becomes an ongoing capability.

Author Matt Domo draws on decades of experience in cloud computing and enterprise transformation. As a cofounder of Amazon Web Services' Database Division, he helped shape the infrastructure that enabled modern cloud platforms. His advisory work with governments, Fortune 500 companies, and global institutions informs the book's emphasis on clear frameworks and actionable steps for leaders navigating the AI era.

IN THIS EXECUTIVE BOOK SUMMARY

- Understand how leaders turn AI strategy into measurable operational results
- Learn how to align tech investments with customer and employee needs
- Acquire methods to redesign workflows and decisions for transformation
- Find practical ways to embed innovation into organizational culture

Introduction

For years, the term *digital transformation* has been mischaracterized as a technical initiative. But at its core, transformation means unlocking human and business potential at scale. It is the discipline of designing systems, workflows, and strategies that elevate how people work, how value is created, and how impact is sustained.

Transformation can and should serve everyone it touches. That belief is embodied in the concept ME Experience (MEx). MEx is the connective tissue between vision and value. When you prioritize the ME in every equation (the customer ME, the employee ME, the leader ME), you ensure that change is not just implemented but internalized. And when people feel the benefit of change directly, they carry its momentum forward.

The future is not just digital; it is personal. Lead through that lens, and you elevate the experience of everyone inside it.

CHAPTER 1

The Burning Platform

Digital transformation, when you strip away the buzzwords, is about reimagining how you deliver value. It's rethinking *what* you offer, *how* customers experience it, and *how* your organization operates behind the scenes to deliver it. The thread running through all of it is this: Make things simpler, easier, more relevant, and more human for your customer.

Disruption as a Growth Lever: How AI and Emerging Tech Unlock New Models

When people hear the word *disruption*, their minds often go straight to the negative. But disruption isn't inherently destructive. When you approach it with the right mindset, disruption becomes a growth lever. It becomes a catalyst for innovation, simplification, and value creation.

AI is a big part of that picture. But digital transformation isn't about one shiny technology. It's about how we use a constellation of emerging tools, such as AI, automation, data analytics, and intelligent systems, to fundamentally change how value is created and delivered. And it's about changes in the business model and ways the business delivers value within the model.

The magic of AI isn't that it replaces people. It's that it *reorients* people. It clears the clutter, removes friction, and creates space for more meaningful, impactful work.

AI-Powered Market Intelligence and Decision Velocity

One of the most powerful shifts with AI and emerging technologies is how they're fundamentally changing the speed and quality of decision-making. This is decision velocity: not just moving with speed but moving smart and with agility, making small and big changes happen with higher-velocity learning and adjusting based on the feedback loop from MEs.

The combination of speed and relevance—using AI to serve each ME with precision that makes every customer feel like the system was built just for them—separates leaders from laggards. It's the ability to see clearly, act decisively, and pivot quickly that creates lasting competitive advantage.

CHAPTER 2

Charting Your Course

If you're already leveraging AI tools and processes in your own workflows, then you know just how much time and effort these technologies can save you. Even in its most rudimentary forms, AI enables our human capacity. As the technology continues to evolve, so too will our ability to focus on what truly matters. When you apply AI and digital tools with a purpose, you unlock efficiency and transformation.

Customer-Centric Visioning: The North Star Approach

If there's one principle that should guide every digital transformation effort, it's this: Start with the customer and work backward. Too many strategies begin with internal capabilities or competitive pressures. But true digital maturity means designing your approach from the perspective of the people you're trying to serve. This mindset shift, from inside out to outside in, is where transformation gets real.

This approach helps you see the whole picture and align every touchpoint to serve a coherent experience. It also demands that we treat every customer interaction as part of a larger relationship, not just a one-off transaction. For digital visioning to be customer-centric, it must consider what makes the experience lovable, not just functional.

Once you've defined what the customer experience should look like, AI becomes a powerful enabler. It can help personalize the journey, anticipate needs, and resolve issues before they escalate. But none of that matters if you don't have clean, connected, high-quality data. AI can't solve for a lack of clarity; it can only amplify what's already there.

The magic of AI isn't that it replaces people.
It's that it reorients people.

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Metrics That Matter in the Age of MEx

In a digital era when customers expect personalized experiences and individual attention, creating more reports is easy; the real challenge is using data to drive better decisions that genuinely enhance each customer's experience.

The metrics that truly matter show tangible business value, not just activity. Here are the most critical types of KPIs to track for your digital transformation in the age of MEx:

1. Customer experience and loyalty (the MEx thermometer)

These KPIs directly measure how well you meet customer expectations and build lasting relationships. By tracking these, you'll know if your efforts truly delight each ME customer.

- net promoter score (NPS)
- customer satisfaction score
- customer effort score
- customer churn rate
- customer lifetime value

2. Engagement and personalization effectiveness

These metrics show how well your personalized efforts resonate and drive desired actions. They reveal whether your tailored content and features truly capture each individual customer's attention and drive their engagement.

- personalized conversion rate
- personalized feature adoption rate
- engagement rate (per user/session)
- return visit frequency

3. Operational efficiency (enabling MEx at scale)

These KPIs ensure you deliver individual value efficiently, without breaking the bank. They help guarantee a seamless experience for every ME customer, even at high volumes.

- first-contact resolution rate
- average resolution time for personalized inquiries
- cost per engaged customer

4. Financial impact

Ultimately, these metrics show how your age of MEx strategies affect your bottom line. These are the numbers that

directly link your personalization efforts to your company's overall growth and profitability. The potential impact is significant, and the urgency to act is clear.

- revenue from personalized channels/offers
- return on personalization investment

These metrics directly connect to your bottom line and strategic goals, showing that data isn't just about more information but about smarter action and superior, individualized customer experiences in the age of MEx. As such, the metrics that matter must always reflect value.

CHAPTER 3

Breaking Down Silos

If there's one constant in successful digital transformation, it's the structure and dynamics of the team driving it. It's the cross-functional alignment of people who understand the real work of the business and are empowered to reshape it together effectively.

When transformation fails, it's often because teams are built around hierarchy and oversight rather than collaboration and ownership. The most effective teams bring together voices from across the business. They reflect the full operating system of the company.

Empowerment is central for true cross-functional transformation. These teams must have the authority to make decisions, not just the permission to suggest them, regardless of whether you're building this capability from scratch or enhancing existing collaborative structures.

Building Team Agility Through Psychological Safety

If you want speed, you need safety. That may sound counterintuitive, but in every successful digital transformation I've seen, the cultural foundation mattered equally as much as the technical framework.

No team can operate at full velocity without a shared sense of trust. When people fear consequences for speaking candidly or experimenting openly, innovation gets smothered before it even starts.

Too many transformation efforts falter because fear takes up too much space. People hold back, waiting to be told what to do. They become experts in looking busy rather than being bold. A culture that prizes perfection and punishes missteps is a culture that will struggle to evolve.

AI Governance: The Cornerstone of Responsible Transformation

In any significant transformation effort, governance is the linchpin between ambition and execution. When you fold AI into the mix, the stakes are even higher.

The systems we deploy today go beyond automating tasks to shape decisions, influence behavior, and carry real consequences for individuals and communities. Without a thoughtful, deliberate governance model, even the best-intentioned AI initiatives can go off course.

As AI becomes more embedded in business operations, the challenge is in creating repeatable processes for data sourcing, model development, performance validation, and ongoing monitoring.

This kind of AI governance can't be a standalone function. It must be deeply embedded within transformation efforts, not layered on top after decisions have already been made.

It should operate as a set of guiding practices, visible and readily accessible to every team building, deploying, or relying on AI systems. And it must evolve continuously, just as the technology does.

CHAPTER 4

Equipping Your People for the Digital Age

When it comes to building digital fluency across a team or an entire organization, most people start in the wrong place. If you want real change, if you want to actually equip people to thrive in a digital-first world, you have to start by defining what the future looks like and why it matters.

That's where True North comes in. It's not about where your team is today, but where *you need* them to be for the business to grow, adapt, and stay relevant.

You can't get there by asking, "What are we doing now, and how do we do it better?" You get there by asking, "Where is the business going, and what will we need to be capable of when we get there?"

Using AI to Reveal Skill Gaps and Learning Needs

People don't always know what they don't know. And even when they do, they won't always say it out loud. That's where AI steps in as a layer that brings clarity to the gaps we can't always see or articulate.

By tracking real-time tool usage within your CRM, enterprise resource planning, collaboration platforms, and project management systems, you start to get a picture of actual digital engagement, not to count the clicks or log-ins but to understand how people interact with systems across time. And when you compare usage patterns with performance data, the real story starts to emerge.

Mindset Over Metrics

You can have the best training program in the world, but if your people think it's a prelude to being replaced, they won't engage. The reality is that fear is one of the most persistent blockers to digital adoption, and much of that fear is inadvertently triggered by leadership language.

Too many transformation efforts still default to the vocabulary of efficiency: streamlining, automation, productivity gains. And while those may be valid business outcomes, they don't inspire confidence in your workforce. Efficiency is often heard as code for cuts.

Start by being deliberate in how you position AI. Make it clear that the goal is partnership, not replacement. AI doesn't take your job; it takes the grind out of your job. That message must be more than a slide in a town hall. It has to come through consistently from leadership, reinforced in day-to-day conversations and in the decisions leaders make.

Redefining Performance for the AI Era

If you walk into most organizations today and ask about performance management, you'll probably hear some version of the same thing: a backward-looking review process, often conducted once or twice a year, focused on what someone did, how well they did it, and whether that aligned with a predefined set of goals.

But transformation work demands something different: skills such as agility, curiosity, collaboration, and a willingness to evolve. That's why performance in the AI era can't be measured solely by static metrics or outcomes. It has to reflect how people learn, adapt, and contribute in motion.

This is where AI becomes a powerful partner. When used thoughtfully, AI can surface signals of performance that

If there's one principle that should guide every digital transformation effort, it's this: Start with the customer and work backward.

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traditional reviews miss entirely. Instead of looking only at end results, it can highlight patterns of behavior such as how someone engages with learning content, how they show up in collaborative workflows, how frequently they contribute to cross-functional problem-solving, or how they incorporate feedback into their work.

And when these insights are paired with real human conversations, they gain richer context. Managers can coach more effectively, spot burnout sooner, and help employees connect their day-to-day work to a broader sense of purpose.

CHAPTER 5

Building a Culture of Innovation

Innovation isn't a job title, a department, or a short-term campaign. It's an operating system. And like any good operating system, it needs to run quietly, reliably, and consistently in the background of everything your organization does.

This becomes especially clear in this era when data, AI, and intelligent technologies are fundamentally reshaping what's possible. And those technologies that enable innovation today will themselves evolve rapidly. Build a culture of innovation not to chase the shiny new thing, but to innovate your processes and operations.

Where Innovation Begins

When you're serious about building a culture of innovation, your first instinct has to shift from building new features to uncovering the unmet needs of MEx. That starts with listening, not building. AI-powered analytics can help detect invisible signals: the phrases customers use when they hesitate, the points at which they abandon your process, the questions they repeat even after you think you've answered them. This is where innovation begins.

The same rigor needs to be applied to your employee experience. Innovation goes beyond the marketplace to how work gets done inside your walls. Your people are navigating your systems every day. If they're spending half their time working around the tools you've given them, or if the internal friction is so high that nothing moves without escalation, you don't have a technology problem; you have a trust problem.

When you combine these two lenses, customer and employee, you create a virtuous cycle. As you make life easier for your people, they serve your customers better. As your customers respond, your teams become more engaged.

Make Learning a Shared Habit

If you want innovation to last, it can't be a sprint. It has to be a rhythm. The real shift comes when learning becomes a *shared* habit. That's what separates pockets of innovation from a true reinvention culture. Leaders have to model it. Teams have to expect it. And the organization has to value it out loud.

Think of innovation like a muscle. If you only train it during emergencies, it won't be ready when you need it most. But if you exercise it regularly, with small experiments, deliberate rituals, and visible reflection, it becomes second nature.

CHAPTER 6

Demystifying Emerging Technologies

Many of the most impactful technologies live in the background. They don't draw attention to themselves, but they quietly carry the weight of the business. When they're designed well, no one notices. When they aren't, everything else starts to wobble.

Making AI Decisions Transparent and Defensible

If there's one word that separates useful AI from impactful AI at scale, it's trust. This means not just technical confidence or low error rates but trust in the full sense of the word: trust from regulators, your board, your customers, and the people who use the systems every day. Trust, after all, is built on understanding. And in the era of intelligent automation, that's where explainability comes in.

Explainable AI means pulling back the curtain and making sure that for every recommendation, prediction, or automated decision, a human can understand how it was made. That includes knowing what data went in, how the system processed that data, and what logic led to the result.

Explainability is essential for internal adoption. If teams don't

understand how an AI model works, they're unlikely to use it; or worse, they'll rely on it blindly. Both are dangerous.

Beyond the Curve: Redefining Competitive Advantage

While many organizations are still catching up to today's AI capabilities, the most transformative breakthroughs are already taking shape beyond the edges of mainstream adoption. These are foundational shifts, ones that promise to redefine how work is done, how value is created, and how companies compete in the decades ahead.

To lead effectively in this new era, leaders must understand not only what these technologies do but how they change the rules of the game.

How to Evaluate Emerging Technologies with Purpose

When leaders face the onslaught of emerging technologies, the natural instinct is often one of two extremes: Either chase every shiny object or retreat behind the comfort of "wait and see." Neither approach works, not when the pace of change accelerates faster than traditional planning cycles.

The question is which technologies can reshape your business, and what strategic role they play in that evolution. To answer that, you need a clear lens for evaluation. Ask yourself:

- Does this enable entirely new revenue streams?
- Does it deliver a breakthrough in efficiency?
- Does it help mitigate existential risk while improving the experience for each individual ME we serve, whether customer, employee, or partner?
- Does it open the door to a fundamentally better customer or employee experience?

Once you've clarified potential value, the next filter is timing. Not every technology needs to be acted on immediately. But it does need to be watched with intent. To assess readiness, evaluate time to value and ask: How long before this capability pays off? And don't overlook organizational readiness: Do you have the talent, systems, and cultural posture to adopt it well?

Infrastructure and Modularity

If strategy is the why and technology is the what, infrastructure is the how. It's the invisible scaffolding beneath your business that determines whether innovation takes root or

slides into chaos. And the truth is, most organizations are still trying to plant future-ready ideas in yesterday's soil.

The biggest misconception in digital transformation is that it's about buying the latest software. It's not. The real challenge is architectural. Modular infrastructure is the solution. It doesn't mean buying the latest software or layering on more tools. It means designing your systems in blocks that can be replaced, upgraded, or scaled independently.

So if you're serious about transformation, don't just look at *what you're building*. Look at *what you're building on*. Start by identifying a core human activity or workflow in your industry and ask a challenging question: How can we use intelligent technology to own the entire customer journey, from start to finish? That is the ultimate goal of business transformation.

CHAPTER 7

Data-Driven Decision-Making

Many organizations invest in sophisticated tools and talented teams. They plan for machine learning, computer vision, and intelligent automation, whether implementing these capabilities for the first time or enhancing existing systems. But they don't stop to ask whether their data is actually ready to support any of that.

The hard truth is, most of the friction you're feeling—delayed timelines, inconsistent reporting, or stakeholder confusion—isn't because your tech stack is underpowered. It's because your data is unprepared. This isn't just a technical issue; it's a leadership issue.

Clean Data, Clear Decisions

If you want to move fast without breaking things, your data needs to be trustworthy, accessible, and structured from the start. That only happens when leaders make it a priority.

Reliable data reduces friction across the enterprise. When teams trust the numbers, they stop second-guessing each other. They spend less time reconciling and more time executing. Meetings shift from debates over accuracy to alignment around action. And when that happens, you create real business velocity—the kind that compounds.

But none of this is possible without governance: lean, purposeful, clearly defined processes that ensure your most critical data is always accurate, consistent, and well understood. Data governance, when done well, becomes the

AI doesn't take your job;
it takes the grind out of your job.

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invisible architecture that allows your organization to move with speed and precision. It's the connective tissue between vision and execution.

Privacy, Security, and Responsible Access

Data only delivers value when it is trusted. That trust is not earned through accuracy alone; it stems from protection. In today's hyperconnected world, data underpins customer relationships, employee confidence, and organizational integrity. This makes data security and privacy both a technical responsibility and a strategic priority.

To lead effectively in this environment, leaders must cultivate stewardship. When customers believe their information is handled responsibly and employees trust the systems around them, momentum accelerates. Innovation can't thrive in an atmosphere of hesitation.

CHAPTER 8

Identifying New Business Models

Too often, businesses chase improvement when what's required is reinvention. Business model innovation starts by asking different questions through a MEx lens. What if the entire journey could be rebuilt to remove friction, accelerate decisions, and deepen loyalty? What if the value a customer receives isn't defined by the product alone but by the experience wrapped around it? These MEx-driven questions are the foundation for the next era of growth.

Reinventing from Within

Start by identifying the pain points that keep surfacing inside your own organization. Where are teams slowed down? Where do customers get frustrated? Where do the same workarounds show up again and again?

This shift in thinking requires a new lens. Stop asking what you can build *for* the market and start asking what you've already built *inside* that might be valuable to the market. Ask where your internal strengths could become modular services. What's invisible today that, if surfaced and structured, could become a competitive advantage?

Business Models Built for Motion

Innovation is not a one-time event. It's a system of behavior, repeated, refined, and reinforced at every level of the business. Modern business models are defined by how well they adapt. They translate customer signals into action, transform friction into opportunity, and respond to complexity with clarity.

That's what ME x ME makes possible: an operating model designed around individual relevance, delivered at enterprise scale. At its core, it combines two powerful forces: personalization for the individual and scale for the enterprise. This is the intersection where modern business models are born. The ME customer doesn't want to browse dozens of irrelevant options. They want immediate relevance, predictive service, and seamless resolution. They want to feel seen, heard, and valued in every interaction, across every channel, without repetition or delay.

And the second ME? That's your company, reflecting a clear, data-driven understanding of each individual's needs. Together, these two forces create a multiplying effect. One amplifies the other. That's the power behind ME x ME.

The challenge ahead is to move beyond imagining what's possible to building the systems that make it inevitable. That begins with bold questions, fast experiments, intelligent tools, and a deep commitment to serving the customer better than anyone else.

CHAPTER 9

Modernizing Existing Business Models and Processes

The work of modernization rarely begins with a technology decision. Instead, it begins with a mental model. The most significant transformations I've seen began with a shift in how leaders viewed the business itself. That shift required letting go of long-held assumptions that had quietly calcified into barriers.

Unlearning Expertise

One of the most difficult challenges in any modernization effort is convincing a successful organization that change is

necessary. High performance creates its own gravity. The more experienced and competent a team becomes at doing things the established way, the harder it becomes to imagine any other way of operating.

This requires a different type of leadership, not only in vision but in humility. Leaders have to create the conditions for the organization to rethink its habits.

Mindsets That Scale

Technology can enable change, but mindset is what sustains it. Modernization, at its core, is a leadership mindset shift. And without it, nothing scales.

One of the most important mindset shifts is moving from perfection to learning velocity. Many companies still operate with a perfection mindset, where the safest way to lead is to avoid visible mistakes. But this leads to delay, risk aversion, and a false sense of safety. When progress is measured by how few things go wrong, innovation slows to a crawl.

Another mindset shift involves how authority and action flow through the organization. Traditional models rely on top-down mandates. But in fast-moving environments, those layers slow things down. The knowledge required to solve a problem often lives closest to the problem itself. Empowering teams at the edges to act on that knowledge, experiment with solutions, and share results is essential.

These shifts don't happen overnight. They require intention and consistency. And at the heart of all of this is MEx. Every transformation, whether cultural, technical, or strategic, comes down to how individuals engage with change. When leadership models MEx thinking, prioritizing individual employee needs (ME) while building enterprise capabilities that scale learning and innovation, transformation accelerates across the organization.

AI as MEx Architect

Every brand is competing to be easier, faster, more relevant, and more helpful. And increasingly, the difference between a good experience and a great one comes down to whether a customer feels known, anticipated, and cared for. This is where AI delivers its most meaningful impact: as an architect of intelligent, proactive experiences.

Rather than reacting to customer needs as they arise, leading organizations are designing systems that can sense those needs ahead of time. AI makes that shift possible because it can analyze subtle behavioral cues, detect patterns, and identify moments of friction before the customer ever raises their

hand. When applied strategically, this ability transforms support models from reactive to predictive and turns moments of potential churn into opportunities for lasting loyalty.

AI allows you to meet your customer not just where they are but where they're going. It invites you to anticipate needs before they become problems and to design experiences that evolve with the individual over time. When applied with care and creativity, it transforms every interaction into a moment of affirmation: You are seen, your time matters, and your experience has been built with you in mind.

Invisible Intelligence

The most powerful advancements in AI often don't announce themselves. They don't arrive with a big unveiling or a change in branding. They emerge in the background, woven into the flow of daily work, making everything feel simpler, faster, and more personal.

This is the essence of invisible intelligence: designing systems that anticipate needs, reduce friction, and adapt to the person on the other end, quietly and intuitively. When AI is used well, the experience doesn't feel more technical; it feels more human.

CHAPTER 10

Championing Change from the Top

More than 75% of failed transformation efforts stem not from technical limitations, but from a lack of leadership buy-in and a deep fear of failure inside the organization. The alternative begins with mindset. Growth-minded leaders lean into challenges, welcome uncomfortable feedback, and treat setbacks as essential steps in the learning process.

Growth-minded leadership makes "everybody wins" inevitable: employees innovate without fear, leaders build organizational resilience that compounds over time, and customers benefit from relentless improvement.

The Key Signs of Transformation

Transformation shows up in the small but unmistakable changes in how people meet, speak, measure progress, take risks, and collaborate across boundaries. A company is truly transformed when these five signals become visible and consistent:

- The meeting room becomes a workshop
- The language reflects shared ownership

- The metrics prioritize momentum over maintenance
- Failure becomes a learning input
- Structure gives way to network

Leading with Clarity and Consistency

We've never had more ways to communicate, yet we're facing a crisis of clarity. Leaders are speaking louder, sending more emails, hosting more all-hands, but somehow their message still isn't landing. And when a transformation effort lacks clarity, it doesn't matter how hard people work. It's like sending a team onto the field without a scoreboard. They're moving, they're sweating, but they have no idea if they're actually winning.

The fix isn't more communication but rather more *meaningful* communication. Alignment is a discipline. A leader's job is to be the bridge over the raging river, not just to hand out more driftwood. So how do you build that bridge?

1. **Start with the “working backward” memo:**
Write a two- to three-page memo that describes the initiative as if it's already complete.
2. **Define and measure the MEx:**
Transformation does not become real until it becomes personal. It must be experienced by ME across every level of the organization.
3. **Create a weekly cadence of clarity:**
Change takes rhythm. Leaders should create a weekly cadence where they highlight small wins, surface insights, and remind teams of the why.

Ultimately, leading through transformation isn't about having all the answers. It's about becoming the chief storyteller—the one who defines the vision, outlines the path, and

celebrates the progress. You're the person who makes the invisible visible, who makes strategy feel real, and who reminds every ME why their work matters.

Conclusion

Digital transformation is a continuous shift in how organizations define value, create momentum, and sustain relevance. At the center of this shift is a fundamental rethinking of success. What defines success today is clarity of purpose and the ability to move with direction and precision.

Every transformation starts with the decision to take just one meaningful step forward: one shift in mindset, one improvement to a process, one choice to act with greater clarity. When teams trust the foundation beneath them, they can move with conviction. When customers feel seen, they stay loyal. When employees are empowered, innovation compounds sustainably.

Whether your role is in the C-suite, on a transformation team, or leading a product function, the opportunity ahead is clear: Lead with intent. Ask sharper questions. Treat data as a design material. Build for speed and resilience. And most of all, anchor your strategy in the people you serve both inside and outside your organization.

The future favors the leaders who are ready to experiment, ready to listen, and ready to act. You don't need to have every answer before you begin. You just need to start. Make the first change. Open the first conversation. Launch the first test. And then learn fast, share what works, and keep going.



Matt Domo is a technology leader and future architect known for turning complexity into clear, actionable strategy. As cofounder of Amazon Web Services' Database Division, he helped pioneer cloud computing and shape a multibillion-dollar market. He has advised organizations including the United Nations, Verizon, HP, Stanford University, and the US Space Force on digital transformation and artificial intelligence. Recognized as a top visionary entrepreneur and AI leader, Domo focuses on helping organizations navigate disruption, reimagine business models, and accelerate decision-making with AI. He is dedicated to helping leaders build resilient, future-ready organizations.

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Generation AI

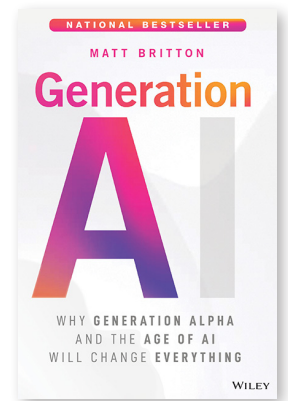
Matt Britton

Executive Book Summaries®

Generation AI

Why Generation Alpha and the Age of AI Will Change Everything

by **Matt Britton**



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THE SUMMARY IN BRIEF

Artificial intelligence and the emergence of Generation Alpha are converging to reshape how organizations operate, compete, and define work. In *Generation AI*, Matt Britton examines the central problem facing leaders: how to adapt strategies, talent models, and organizational structures in a landscape where AI is transforming knowledge work and accelerating change. He argues that Generation Alpha, the first cohort raised with AI as a constant presence, will drive a fundamental shift in workplace expectations, consumer behavior, and innovation cycles. The book situates AI not as a discrete tool but as a pervasive force influencing education, media, commerce, and careers, requiring institutions to reconsider long-standing assumptions about productivity, skills, and value creation.

Britton develops a framework that connects generational change with technological adoption, outlining how AI-native individuals will influence labor markets, redefine professional skill sets, and reshape business models. He explores the evolution of generative AI, the rise of AI-driven agents, and the growing importance of adaptability, creativity, and problem-solving over technical specialization. Across sectors, from media to finance, the analysis highlights how AI alters consumer engagement, product development, and decision-making processes while introducing ethical and societal risks. The book's scope extends to education reform, workforce displacement, and emerging economic patterns, presenting a structured view of how AI integration will influence organizations and society in the coming decade.

IN THIS EXECUTIVE BOOK SUMMARY

- Understand how AI-native workers will reshape organizations and leadership
- Learn how AI is rapidly redefining knowledge work and professional skills
- Explore how AI transforms consumer behavior, products, and innovation
- Examine the ethical and organizational challenges as AI adoption accelerates

INTRODUCTION

Talkin' About My Generation

As a proud Generation Xer, I grew up in a time untouched by truly digital anything, when the world moved at a slower pace, where connections were made in person, and the concept of being constantly connected was unimaginable and perhaps undesirable.

Drawing on two decades of experience as an entrepreneur riding the waves of disruption caused by millennials and Gen Z, I decided that the next chapter of my career would be focused on helping businesses drive growth and innovation by keeping their fingers on the consumer pulse.

In 2018, I founded Suzy, a software company focused on on-demand consumer research to support data-driven decision-making. Since then, I've continued to study how shifts in technology and consumer behavior reshape markets. Today, businesses are preparing for another major inflection point—one that will transform the consumer and business landscape much as the internet and the iPhone once did.

Generation AI is about the new landscape driven by a powerful new technology, artificial intelligence (AI), and the new generation that will catalyze its impact: Generation Alpha. Let's dive into a new era with unprecedented potential and growing uncertainties.

CHAPTER 1

Generation Alpha Unveiled: The Future Begins Now

The impact of Generation Alpha represents much more than the proverbial passing of the generational baton. Gen Alpha's maturation signals a profound shift in how society will operate, consume, and engage with the world moving forward.

Gen Alpha is defined as being born between 2010 and 2025, directly following Generation Z. It is the first generation to be born entirely in the 21st century. By 2030, Gen Z's global spending power will cross the \$12 trillion mark, but Gen Alpha, no older than 20, will command \$5.5 trillion globally.

This new crop of global citizens will bring a level of tech savviness, adaptability, curiosity, impatience, and social advancement to society that will forever alter its course.

Perhaps most important, Gen Alpha will be the first generation to grow up with the most potent and impactful technological revolution the world has ever seen: AI.

CHAPTER 2

ChatGPT and the Dawn of the AI Era

On November 30, 2022, an under-the-radar startup called OpenAI, largely unknown to those outside of Silicon Valley, launched a new product called ChatGPT, enabling consumers for the first time to truly converse with their computing devices in similar ways they do with humans.

When ChatGPT 3.5 was launched as a free public preview on November 30, 2022, its release sent shock waves through the tech community. The rapid adoption was historic:

- In the first five days after launch, ChatGPT reached one million users—the fastest-growing consumer AI application at the time.
- By January 2023, just a month after launch, ChatGPT had surpassed 100 million monthly active users: a staggering achievement, especially without any mainstream advertising or promotional efforts.

The impact of ChatGPT's launch on the corporate world was undeniable, and it quickly became apparent that we are beginning a new chapter of business innovation.

In 2024, as AI continued to gain steam, Fortune 500 companies commonly cited AI in their quarterly earnings calls, signaling this was no trend but a decided movement. As we enter the back half of the 2020s, nearly every major consumer category, from alcohol to zippers, is deploying or intending to leverage AI to reinvent its go-to-market strategies and product road maps.

CHAPTER 3

AI Decoded: A Beginner's Guide

By any measure, ChatGPT and like-minded products have been transformational technologies with remarkable success. But why? The answer lies in how naturally they fit into our existing behaviors. If you look at other recent technology developments that generated massive buzz but failed to deliver on their promise, you'll notice they all demanded significant behavioral change.

Unlike these technologies, the success of the countless new AI tools currently taking the world by storm is primarily driven by their low barriers to entry and broad applicability. When Google launched in 1998, only 40% of Americans were even using the internet, let alone regularly. Compare that to the ChatGPT launch in 2022, when over 92% of Americans were using the internet regularly.

One of the most common mistakes is when older generations dismiss transformative technologies like AI as “not for them.”

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The Four Layers of Generative AI

To better understand generative AI, the technology that powers tools like ChatGPT, it's essential to understand the four layers that make up its foundation. Each of these layers has evolved into its booming micro-industry, with countless startups and established companies competing to innovate and capture market share.

Generative AI needs all four layers working in harmony to deliver the magical experiences we've now come to expect:

1. Infrastructure

If there is one infrastructure business that will be forever associated with the initial AI boom, it will be Nvidia, a once relatively unremarkable tech company that formed in 1993. The fortuitous timing of Nvidia's powerful GPU products and an insatiable demand for AI computing resources have created one of history's most unlikely and unimaginable business success stories. In June 2024, Nvidia gained the crown as the world's most valuable company, valued at over \$3.3 trillion.

2. Large Language Models (LLMs)

If GPUs are the engines of generative AI, the *brains* are the LLMs. An LLM is a programming model capable of interpreting and producing human-like outputs. Its incredible power comes from training on large datasets. In addition, deep learning abilities enable LLMs to accurately predict which words or sentiments will appear next. This attribute makes the use of a technology like ChatGPT feel magical.

3. Training Data

What distinguishes one LLM from another is an element that is not new but rather one that appears to be more valuable and powerful than ever: data. Although data are abundant in the Information Age, LLMs must be trained on the right type of data to be relevant and differentiated. Their intelligence, like ours, is limited and shaped by what they learn.

4. The Application Layer

After an LLM is built, the next crucial step is determining how users will interact with it. This is where the application layer comes in. The application layer consists of two key elements: the user interface, where people input their queries, and the output format, which determines how the LLM presents its responses.

Generation AI Has Arrived

AI will indeed be the technology that defines Gen Alpha, the same way that the iPhone defined Generation Z and the internet itself defined millennials. Those born between 2010 and 2025 will live in a brave new world that will have repercussions for all of us. Gen Alpha will be more connected, evolved, exposed, and affected. Gen Alpha will effectively become Generation AI.

When the AI natives start to enter the workforce, their use of AI-based technologies will be intuitive, enabling a bottoms-up shift that will force employers to rethink their workforce, business strategies, and, in many cases, their very existence. This type of transformation will occur in all areas of life: in the home, the classroom, and the boardroom.

One of the most common mistakes I've witnessed throughout my career is when older generations dismiss transformative technologies like AI as “not for them.” This mindset often leads to missed opportunities, both professional and personal. Those who choose to stay on the sidelines not only limit their career growth but also miss chances to connect with their children, who are growing up amidst a new landscape.

While we're still grappling with many unknowns about AI, one thing is sure: there's no going back. Just as the internet and smartphones fundamentally changed how we live and work, generative AI's influence will only grow more powerful and pervasive, becoming more prevalent in every corner of our lives.

CHAPTER 4

AI and the New Face of Media

The shift from traditional network and cable television to a fragmented media landscape represents a sea change from broadcast media's golden age, where just a handful of major networks shaped the societal discourse. Today, content flows from countless sources: streaming services, social media platforms, podcasts, and newsletters.

This decentralized, personalized media environment creates opportunities and challenges as publishers and advertisers struggle to reach increasingly fragmented audiences. Since the new millennium, we've witnessed a cultural power shift

from corporate boardrooms to city sidewalks, as consumers—not executives—now dictate what matters.

The Rise of the Creator Economy

Perhaps even more notable than the mobile-first platforms that deliver today's youth their daily dose of content is the source of this content: individual creators. As traditional linear media continues to give way to a fragmented media landscape, a new force has emerged from *people-powered media*.

Everyday people—individuals armed with nothing more than their creativity, intuition, and a smartphone—are producing original content that now competes with, and often surpasses, traditional forms of media by measures of reach and engagement.

Over the past five years, this trend has given rise to the creator economy, a thriving industry projected to reach an astounding \$480 billion by 2027, according to Goldman Sachs.

Introducing the AI Influencer

One recent phenomenon many in the tech and media industries have their eyes on is the emergence of the AI influencer. This concept wasn't even technically possible just a few years ago. AI influencers are artificially generated personas that mimic the behaviors and even looks of actual living humans and post content online to drive engagement and consumer behaviors.

You heard that right: the next person you interact with on social media who speaks into a camera and makes you learn something or take action might not even be a living human. In a recent study by Influencer Marketing Hub, the engagement rates of social media posts by AI influencers outperformed posts by real humans: 2.84% for AI-generated influencers compared to 1.72% for actual humans.

Beyond Screens: AR's Wearable Future

As Gen Alpha evolves consumer norms, we will likely see a world that slowly moves away from the phone as our primary personal computing device. The advancements in AI, the growing adoption of 5G powering connected devices everywhere, and the increasing adoption of wearables, including smartwatches and smart glasses, will provide optionality to consumers who want to be digitally connected without feeling mentally disconnected.

One emerging form factor of interest among futurists has been "connected contact lenses," which are invisible to those

around you and, at the same time, have the potential to deliver a magical augmented reality (AR) experience that would effectively further evolve what famed futurist Ray Kurzweil terms technological singularity: the merging of human and computers. This innovation is likely years, if not decades, away; only time will tell.

Although technological singularity is likely not what Gen Alpha will desire, the age of AI will undoubtedly usher in a new era of mixed reality, which in many ways will make us feel even more connected to data and technology while also creating the potential for fewer distractions and less time wasted staring at our phones.

CHAPTER 5

The Class of 2030: Generation AI in the Classroom

For Generation Alpha, traditional education methods have become increasingly irrelevant. This presents a critical societal challenge: how do we educate future leaders for a rapidly changing world when our educational foundation rests on outdated textbooks and centuries-old beliefs?

This issue became even more apparent after my 2024 keynote address to 300 higher education professors at a Pearson Education event. I spoke about AI's coming transformative impact on business and culture over the next decade.

Educators face a difficult path in positively affecting Gen Alpha. The stakes for reimagining education have never been higher. Given AI's power and potential impact, America must question every aspect of traditional learning.

This educational reimagining requires abandoning memorization for skill-based learning. Deloitte's 2024 "State of Generative AI" report surveyed 3,000 business leaders who prioritized critical thinking, creativity, resilience, and communication skills over research, coding, and application development. These harder-to-learn soft skills are increasingly crucial during students' formative years.

CHAPTER 6

AI-Driven Dreams: The New Career Path

The transformative impact of AI on the workforce is undeniable: How we work and the jobs we pursue are on the brink of a significant shift. Some industries, like advertising, enter-

Integrating AI into every aspect of the business world is not a matter of if but when.



tainment, and software, could be unrecognizable in just a few years, and others, such as real estate, health care, and finance, might lag due to outsized regulation and legacy systems.

Soon enough, though, integrating AI into every aspect of the business world is not a matter of if but when. Therefore, strategic planning for the long-term impact of AI should be a mandate for every company, large and small, that wants to ensure its long-term survival.

A New Chapter of Work

By the early 2030s, the youngest Gen Z cohort will enter the business world as young professionals, officially passing the torch to Generation Alpha as the next crop of incoming leaders, expected to be the most technologically adept generation the workforce has ever seen. As they flood corporate America's hallways, we will enter a new chapter of work.

The definition of being a productive human in a commercial environment will look nothing like today's standards. The majority of the tasks that we now see as job-related will no longer exist. They will be the victims of automation as businesses strive to do more with less and reinvest in the new horizons that AI presents.

The advent of AI necessitates a shift in our approach to education. The focus must now be on new forms of learning that equip tomorrow's leaders with the skills to navigate an AI-driven world. This need for evolving skill sets is not limited to Gen Alpha. Regardless of age, AI's presence across every industry will directly affect the entire workforce.

The White-Collar Killer

Recent research from OpenAI and the University of Pennsylvania found that if you are an educated white-collar worker making up to \$80,000, you're among the most likely to have your job affected by AI. That same study found that although "information processing industries" will be most affected, blue-collar jobs in "manufacturing, agriculture, and mining" will be the last to be exposed.

This makes the impact of AI on the workforce quite the polar opposite of prior innovations throughout history, which primarily eliminated blue-collar jobs, such as Henry Ford's

assembly line in the early 1900s, the advent of robotics in factories in the 1950s, and even more recent innovations like self-checkout and automated highway tolls.

As it has turned out, the same technological building blocks, like the internet, cloud computing, and mobile devices, which led to a boom of new jobs and opportunities for knowledge workers, have created an innovation so powerful that many workers are at risk of being no longer needed.

So, who is at risk? Sooner than you might expect, some workforce roles that exist today will be forever evolved or eliminated due to AI's growing capabilities:

- customer service associates
- legal and accounting services
- creative professionals
- software engineers and coders

These are just a handful of the world's roles that will be either altered or forever eliminated at the hands of AI. A 2024 study by research firm YouGov revealed that over a third of full- and part-time workers in the United States are very or somewhat concerned that future AI developments stand to, at a minimum, have their hours or pay cut or, worse, have them lose their jobs altogether.

Charting a Path Forward

How can today's workers future-proof their careers in an uncertain world? And what opportunities await Gen Alpha as they enter the workforce in the 2030s?

To understand this evolving landscape, we must first examine the in-demand skill sets of tomorrow. A 2024 Deloitte study highlights employers' growing emphasis on soft skills like critical thinking, creativity, resilience, and communication.

Why this sudden shift toward soft skills? The answer is simple: Our world has fundamentally changed. Traditional technical skills like coding, writing, and design are increasingly becoming the domain of machines.

As these once-coveted abilities become automated and commoditized, the value will shift to those who can nimbly and quickly adapt and leverage emerging tools to create meaningful differentiation.

How I Built the Growth Engine for Suzy

To be marketable and future-proof in this new world, whether you are a future Gen Alpha candidate or a current employee, you must develop the core muscle of problem-solving and combine that with a thorough understanding of AI's capabilities and a resourceful yet patient approach. I have recently put this mentality to work firsthand while running my software company, Suzy.

I was determined to create a tool for Suzy that would make our team more efficient and show our company what is possible in this new age of AI. In just two weeks, I created a custom chatbot called The Growth Engine, fed with all 20,000 hours of call transcripts and other critical Suzy business data to become our team's ultimate sales and marketing assistant.

How did I go from concept to execution in leveraging AI in a way that changed our business? It all came down to deploying the following attributes:

- taking initiative
- technical sufficiency
- determination
- collaboration

Our Agent-Powered Future

Many predict that the next wave of AI will evolve from powerful generative AI chatbots like ChatGPT and Perplexity to AI-based agents. The key distinction between tools and agents is that agents will not only be able to generate content but also perform reasoning on your request and then identify and execute specific actions on your behalf.

The Age of the Solopreneur

The rise of agents will likely create a new movement that fundamentally redefines the idea of a company as it is currently known. Unlike a pre-AI world where developing any software product required hiring a team and likely raising millions in investment before bringing anything to market, individuals now possess the power to be genuinely "super human" in their impact.

As Gen Alpha professionals chart their course, many might recognize that the most significant upside lies in becoming a *solopreneur*, that is, someone who can build products and services to solve customer problems without the need for traditional organizational support or related capital constraints, free from overhead burdens and the time demands of meetings and status reports.

Gen Alpha's upbringing will be distinct; their early exposure to an AI-powered world will eliminate the "curse of knowledge" many of us carry as things evolve rapidly. The ability to build remarkable things quickly with limited resources won't seem extraordinary to them; instead, it will be their standard. Consequently, we'll hear much more about becoming solopreneurs, especially as Gen Alpha enters the workforce.

CHAPTER 7

AI Gone Bad

Am I wearing rose-colored AI glasses? Am I too optimistic about Generation AI's future and disregarding the ethical and societal consequences this new era could bring?

Despite society's tendency to fearmonger and dwell on doomsday scenarios about new technologies and societal evolutions, legitimate concerns exist about this new AI era. Here are some of the most significant dangers and well-founded concerns our world must address as AI continues to gain steam:

- inherent bias
- deepfakes and misinformation
- sustainability
- AI-powered job loss
- data protection and personal privacy
- economic disparity
- the looming shadow of artificial general intelligence

As history shows, there is no evolution without collateral damage, and with AI, the benefits will be more significant, and the risks potentially worse than we've seen. This technology's power and accelerating improvement rate place us in uncharted territory. We must continue exploring AI's positive and negative aspects while asking critical questions. We have no choice but to carefully navigate this complex landscape, which is a world that, for Gen Alpha, will be the only reality they ever know.

CHAPTER 8

The Alpha Buyer: AI in the Marketplace

The internet, mobile devices, and social media have significantly shaped how we purchase products and services, and AI will undoubtedly create additional impact in ways we are still coming to understand. Gen Alpha will adopt buy-

Strategic planning for the long-term impact of AI should be a mandate for every company, large and small, that wants to ensure its long-term survival.

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ing habits that aren't merely an evolution of current practices but, in many ways, a complete departure: essentially reinventing commerce.

Welcome to the Creator Store

A new trend has emerged in the past few years: social shopping, which initially gained traction in China during the mid-2010s through platforms like Taobao, WeChat, and Douyin (the Chinese version of TikTok). The premise of social shopping is to leverage the audiences and attention captured by top influencers and content creators on social media platforms to drive live purchasing.

For Gen Alpha, the most popular retailers could be the individuals they follow all day, creating massive opportunities for influencers to command scalable audiences on social media platforms. Of course, the bigger the star, the bigger the reach, and in that regard, over the past decade, we've seen countless smash-hit successes of celebrities backing and, in some instances, creating highly successful products.

The Buying Agent

In 2025, the AI conversation shifted from chatbots to agents. As discussed, agents can create content and complete actions on users' behalf. The combination of shopping and AI agents will transform traditional buying behaviors in a landscape soon dominated by Gen Alpha.

As AI agents enter retail and commerce, today's retail giants like Amazon, Instacart, and Walmart must reinvent themselves. Websites and mobile apps as shopping destinations might become less relevant.

Although consumers will always want to browse, AI might browse for us by leveraging various personal data signals from past purchases, financial records, and upcoming schedules; AI-powered recommendation engines won't be tied to specific stores but to individual needs.

Traditional Commerce Will Adapt

The accelerating shifts in consumer behavior driven by AI and generational change will fundamentally reshape how we buy, sell, and interact with products and services. The tradi-

tional physical and digital commerce boundaries will blur as AI-powered personal shopping assistants, smart home integration, and predictive purchasing reshape how we transact.

Yet amid all this transformation, human nature's core desires—for community, discovery, and tactile experiences—will likely persist. Traditional retail might evolve rather than vanish, adapting to complement rather than compete with AI-driven commerce, emphasizing our continued desire for knowledge in real life.

CHAPTER 9

The Futures and Fortunes of Generation Alpha

The relationship of today's youth with money has decidedly evolved from scarcity to a catalyst for instant gratification and the desires of today. This shift has signaled a new era of American consumerism, as US credit card debt topped \$1 trillion for the first time in 2024, according to the New York Federal Reserve.

The YOLO (“you only live once”) mentality tends to result in lower savings and a growing debt load, which is a trend justified partly by the perception of what “everyone else” is doing and buying. Interestingly, AI might counter this trend if adopted in a way that helps people become more efficient with their time and more thoughtful about their spending.

The Future of Wealth Management

As Generation Alpha starts earning and managing its own money, it is unlikely that they will embrace older generations' traditional wealth management strategies. On the contrary, it is social media that many young investors turn to for financial advice. An October 2024 report by Marketwatch revealed that over 35% of Gen Z consumers trust financial advice from social media versus less than 10% of baby boomers.

Another emerging area of financial advice comes from a new wave of AI-based startups like Betterment and Wealthfront, which promise to replicate and one day eradicate traditional wealth management. The inherent strength of LLMs synthesizing data like spending behavior, consumer benchmarks,

tax policies, and investing information means that future wealth managers might not be a person but AI-powered investment advisory bots.

Looking forward, expect the Gen Alpha consumer to be far more likely to trust AI for investment advice, tax-related support, and even feedback on spending habits through an always-on connection between financial accounts and a suite of new innovative AI-powered tools that stand to reinvent the multi-trillion-dollar wealth management industry.

The Alpha Way to Pay

Along with questions over the future of banking, the ubiquity of easier ways to pay for things, including tap-to-pay credit cards and emerging digital payment tools like Zelle and Venmo, have many questioning the future of physical cash. Today, over 70% of Gen Z prefer cashless transactions, according to a recent Swipesum report, while only 10% of users use cash as the primary form of payment.

Cryptocurrency continues to grow in popularity with Gen Z as a measure of stored value, with the long-term potential of becoming a payment method in its own right. Today, approximately 20% of all digital natives (millennials and Gen Z) own cryptocurrencies.

A survey by Bernstein recently revealed that over half of the US Gen Z population prefers cryptocurrency over putting money in traditional banks, and crypto will almost certainly continue to evolve as a core part of Gen Alpha's investment strategies.

The Largest Wealth Transfer in History

One significant trend poised to increase Gen Alpha's spending power and boost demand for cryptocurrencies, among other assets, is its role in what financial experts believe will be the most significant wealth transfer in history.

As baby boomers age, their accumulated wealth, aided by a lifetime of disciplined savings, will pass on to younger generations. By 2045, over \$50 trillion will be transferred in inheritances from baby boomers to younger consumers, an anticipated phenomenon known as "the great wealth transfer."

Is This the Beginning of the End for Gen Alpha?

In Ray Dalio's fantastic book *Principles for Dealing with the Changing World Order*, he looks back throughout history at what happens when empires (what the United States is today) fall from grace. What is concerning when you read the

book is that nearly all of the symptoms that have historically appeared in falling empires exist in America today.

With that said, there are just as many reasons to be reasonably confident about the future of the United States. For one, each new generation has brought our nation a new wave of dreamers and inventors who have created technologies and innovations that have changed our world and kept our country at the center of economic and cultural relevance globally.

Now, the most significant innovation of our lifetime, AI, is being powered, innovated, and deployed by brilliant upstart American companies like OpenAI, Anthropic, and Nvidia while at the same time helping to reinvent the most important companies of our lifetime, like Apple, Google, and Microsoft right before our eyes. It's in the promise of innovation, our ability to have our finger on the pulse of what's next, and our ability to use these technologies for the greater good where the light of optimism should emanate from.

America needs Gen Alpha to leverage its intuitive understanding of AI to unite people, create economic opportunity, and move the world forward.

Conclusion

We stand at the threshold of a new age in business, culture, and society. In our world of 24/7 scrolling, being lured by clickbait, and the media's tendency to overhype the "next big thing," it's tempting to dismiss AI's potential with broad statements like "humans will never be replaced."

Although that might be true, I believe this technology's effects will be more profound and immediate than any innovation in human history.

The implications are clear: your future success depends on effectively understanding and deploying AI in your life and career. As we stand at this unprecedented intersection of human potential and technological capability, Gen Alpha will emerge as humanity's first true AI natives: not merely users of this technology but also its natural orchestrators. Their intuitive grasp of AI isn't just an advantage; it's a responsibility they're uniquely positioned to fulfill.

Although previous generations will adapt to AI, Gen Alpha will fundamentally reshape it, harnessing its power for efficiency and creating a more prosperous future. In their hands, AI becomes not just a tool but also a catalyst for human potential in hopes of a future where technology amplifies rather than diminishes what makes us innately human.



Matt Britton is a leading expert on consumer trends and the intersection of technology, marketing, and culture. He is the CEO of Suzy, a consumer research platform that helps global brands make faster, data-driven decisions. With more than twenty years of experience, Britton is known for decoding the behaviors of Millennials, Gen Z, and emerging audiences to drive innovation and relevance. His expertise spans social media, brand strategy, and artificial intelligence. A sought-after speaker and author, he provides practical insights on how technology is reshaping business and consumer engagement in a rapidly evolving marketplace and future economy.

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How Big-Tech Barons Smash Innovation

Ariel Ezrachi, Maurice E. Stucke

How Big-Tech Barons Smash Innovation

And How to Strike Back

by **Ariel Ezrachi and Maurice E. Stucke**



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THE SUMMARY IN BRIEF

Surveys reveal that lots of us are concerned about corporate power in many markets, including in the digital economy. But, seemingly, people still believe that innovation has been unaffected. It remains synonymous with the online economy. Indeed, as the pandemic showed, we can do more online, from social interactions to work, from shopping to learning. But as we increasingly go online to do these things, we come to understand that these innovations have a dark side—whether to our privacy, well-being, or autonomy.

Many devices, apps, and services come from digital ecosystems controlled by a few powerful firms. These Tech Barons govern competition, they also determine the nature of innovation that makes it to the market. And this puts companies, consumers, and innovators in a tough spot. In *How Big-Tech Barons Smash Innovation – And How to Strike Back* authors Ariel Ezrachi and Maurice E. Stucke show how the ripple effects of the Tech Baron's toxic innovations are harming our children, ripping apart our social fabric, and undermining political stability and democracy. But we can restore the digital economy with the three fundamental principles offered in this book.

IN THIS SUMMARY, YOU WILL LEARN:

- The rise of the Tech Barons and their threat to Tech Pirates
- How the Tech Barons smash disruptive innovation
- The ripple effects of toxic innovation
- Three fundamental principles to strike back against it

The Rise of the Big-Tech Barons

The Tech Barons who control the digital ecosystem are Google, Apple, Facebook, Amazon, and Microsoft, or GAFAM for short. It has been said that apps are worth millions, and platforms are worth billions. But on top of the food chain are the Tech Barons' ecosystems. Management literature commonly refers to an ecosystem as "a network of interconnected organizations that are linked to or operate around an organization or a technology platform."

The Tech Barons' ecosystem is more powerful than the sum of its parts—the platforms, services, the data collected, and the analytics undertaken. One may avoid a platform, but not the Tech Barons' expanding and tightly controlled ecosystem. In designing and supporting infrastructure, the Tech baron ensures itself unparalleled access to data and other critical inputs of the digital economy, which are used to improve the Tech Barons' products, services, technology, and algorithms to significant advantage over others.

Interconnections are also vital in the digital economy and the Tech Barons control the bridges and the information flows. They also serve as gatekeepers when it comes to governance. The Tech Barons create and enforce the rules of the ecosystem and ensure they benefit them. While not immune from competitive pressure, the gatekeeper position enables them to block innovations that might jeopardize its ecosystem.

The Tech Barons invest in innovation and often attract other innovators. Their platforms can significantly lower costs that have traditionally inhibited innovation. By promoting interoperability and functionality, other products and services can attach to their platforms and operate from them, using the cost savings to invest in research and development. So, as these costs and barriers decline, innovation levels should increase and we should be better off.

It is of little surprise that as a society, we often bet on the Tech Barons to help lead us to more discoveries and sustainable growth. It is a beautiful, aspirational narrative. But it hides a darker reality in which Tech Barons quash disruption, stifle third-party innovation efforts, and limit innovation diversity within their ecosystems.

With power comes the ability to reorient innovation efforts away from market demand. The result is that R&D efforts focus on exploiting users and extracting value. The true power of the Tech Barons can be understood by looking at the innovation pirates.

The Tech Pirates

Innovators are often referred to as *pirates*. As one software engineer on the Macintosh team recounted, "Being a pirate meant moving fast, unencumbered by bureaucracy and politics...It meant being audacious and courageous, willing to take considerable risks for greater rewards."

Innovation pirates develop tomorrow's technology. Our society relies heavily on their creativity and motivation. Their organization, business models, and cost structures are geared toward uncharted water. And they often persist, against the odds, regardless of uncertainty and risk. In our story, these pirates are the heroes. They are distinguished from other companies that heavily invest in R&D by the use of disruptive innovation.

For our purposes, when we refer to disruptive innovation, we discuss a process in which the innovation pirate's business model, products, or services disrupt the existing value chain, which is the prevailing business model, the range of activities needed to create a product or service, the profits generated from them, and how the profits are allocated among the firms.

Since their initial strategies for entering markets will not always succeed, the pirates gear their organizations toward ongoing discovery. First they must learn how the customers will actually use their products and next must update their offerings and the underlying value chain. The pirates must seek new connections to help build out their platforms to achieve scale. In their journey, the pirates will face many obstacles. The pirate's obstacles vary by industry and technology and its corporate structure and size. But the rhythm of innovation is to overcome these barriers.

In the digital economy, a significant external threat may undermine their survival—the risk of being quashed by the Tech Barons. Built into the pirates' disruptive strategy is its threat to the Tech Barons' ecosystem and profit model.

That tension is at the heart of the digital innovation story. Thus, pirates would often seek to avoid the Tech Barons' elephant trail. To establish themselves, they will seek out emerging or insignificant smaller markets or create new markets. Over time, as they test their technologies, and gain scale and success, they will journey into the mainstream.

Disrupting Disruptive Innovation

The Tech Barons can secure themselves against defeat and

Many of us tend to think we're independent, spontaneous, free-spirited, and unique. But in the grand scheme of things, what if we are more predictable and malleable?

tip the odds heavily in their favor by designing and controlling their ecosystems. They can plan and execute strategies that determine the flow of innovation and the level of access granted to third parties. Through their shaping strategies and attrition warfare, the Tech Barons can thin the ranks of disruptive Tech Pirates and manipulate the supply of innovation to protect their value chains. Using a range of exclusionary strategies, they win the battle before it begins.

To appreciate the potency of the Tech Barons' exclusionary power, we will first look at technologies they deploy to scan the ecosystem and identify and target potential disruptors. We will then share some of the Tech Barons' myriad exclusionary tactics to decrease the odds of dynamic disruption.

The Tech Barons control expanding ecosystems where others operate. From this position of power and collection of data, they deploy advanced analytics that transform near-perfect market surveillance into a detailed picture of ongoing market activities, trends, and emerging threats. This technology is referred to as *nowcasting radars*.

Using their nowcasting radar, these Tech Barons can monitor in real-time competitive portals where start-ups may emerge—within and outside their ecosystem—and identify and neutralize nascent threats. At times, the Tech barons may better understand the technology's disruptive potential than the Tech Pirates themselves, as they see the whole ecosystem and can identify trends, opportunities, and threats.

Data advantage turns the nowcasting technology into a game-changer. Being subjected to ongoing monitoring and targeting, Tech Pirates have fewer places to hide. So, the nowcasting radar itself can chill disruptive innovation.

Besides nowcasting radar, the Tech Baron can resort to an arsenal of additional weapons to distort the supply of innovation, all of which are designed to diminish the Tech Pirate's viability and ability to scale up. These strategies include:

- Excluding the Tech Pirate from the ecosystem or reducing its visibility
- Reducing interoperability with the Tech Pirate's innovation

- Copying the Tech Pirate's innovation

The Tech Barons can use these torpedoes to blast the Tech Pirate out of the market, platform, and ecosystem. The Tech Pirate must either sail to another ecosystem or adjust the innovation to comport with the existing value chain to survive.

Distorting the Demand for Innovation

Many of us tend to think we're independent, spontaneous, free-spirited, and unique. But in the grand scheme of things, what if we are more predictable and malleable? So much that an algorithm can reveal our identity from several data points, including our geolocation data, and can divine our secrets, which we believe are closely guarded, with enough of our Likes on Facebook and our online interactions, to then influence our behavior.

What if the Tech Barons look at us as a means to extract value? While we believe we're snowflakes—unique, unpredictable, and autonomous—our value is in our predictability and manipulability that serve the Tech Baron's ends. The Tech Barons can impact our demand for disruptive innovation. This side of the story is essential.

While the Tech Barons can exclude the disruptive Tech Pirates from their ecosystems, they cannot permanently delete all of them from the digital or brick-and-mortar economy. However, they can deprive them of scale by dictating the direction in which we migrate.

Earlier generations often took decades to adopt game-changing technologies, like landline telephones and automobiles. By contrast, today it typically takes only years, if not months, to adopt major technologies, such as tablets and smartphones.

And yet, at times, a technology, despite being beneficial *and having potential demand*, never takes off or is delayed in its adoption. This is partially because of the Tech Baron's ability to distort the demand for innovation.

Two fundamental forces that affect the adoption of innovation in the digital economy are *friction* and *retention*. The

Tech Barons increase retention of users, reduce friction to the complementary sustaining innovations that fortify their ecosystem, and increase friction to the potentially disruptive innovations.

These obstacles are enough to deprive the Tech Pirates of scale and experimentation. Granted, the technologies anointed by a Tech Baron will not always prevail. But through retention and friction levers they can increase the odds of a given technology's adoption or failure.

Toxic Innovation Galore

As the Tech Barons thin the ranks of pirates and narrow their possible innovation paths, what happens to the *value* and *type* of innovation? The Tech Baron's growing power increases the likelihood that the resulting innovation within its ecosystem will serve the Tech Barons' interest, not ours. What does that mean? More innovations that extract value, siphoning more money into the Tech Barons' pockets, or destroying value with some truly privacy-invasive technologies.

To appreciate the rising toxicity, one must first understand the relationship between the increase in power over the ecosystem and the diminishing value of the implemented innovation. The more concentrated the market becomes, the less likely its innovations will maximize our interests.

Competition, at times, can be a race to the bottom that harms both rivals and customers. At times, firms make more money exploiting our weaknesses. At other times, the competitive pressure causes a degradation in quality, safety, and the environment. When competition is toxic, the innovations can also be toxic, in that they extract or destroy value.

In winner-take-all markets with multiple network effects, the Tech Barons' collect far more data *about* us but not necessarily *for* us. As the Tech Barons' power increases, our privacy erodes. The Tech Barons continuously run experiments on us to see how we react to subtle changes and to better predict our behavior.

Facebook, for example, reportedly uses an artificial intelligence powered engine to predict user behavior. The technology enables Facebook to predict user loyalty to a particular brand and the likelihood of switching to a competitor's. Third parties and advertisers use this to target people and alter their anticipated course, based on decisions they haven't even made yet. Instead of working for us, these toxic innovations now serve its new barons.

Our privacy and autonomy have already taken a toll from innovations developed to maximize behavioral advertising revenue, such as how long our mouse lingers over an image, what we search, what we "like," where we go, and what we say and do—all observed from our smart appliances, wearables, digital assistants, phones, computers, and cars.

Thus, the current frontier is our emotions, where algorithms will predict our feelings better than our closest family members and friends with the likely goal of manipulating us.

To envisage how this can harm our well-being, let's consider Instagram. Since being under Facebook's control they began focusing on winning what they viewed as a race for teen users. And it worked. By 2021, about twenty-two million teens logged on to Instagram in the US each day. The impact this usage has on their mental health is of great concern.

Facebook's Zuckerberg downplayed any concern while testifying to Congress, but that was deceptive. Internally, Facebook knew of the harmful effects of its Instagram platform on millions of young adults, as a *Wall Street Journal* series revealed.

As internally noted, teens using the app reported feeling less attractive, anxious and depressed, worse about their mental health, and even suicidal. Further, teens regularly reported wanting to spend less time on the app but lacked the self-control to do so because they felt addicted.

Now imagine children navigating the Tech Barons' technological advances in neuromarketing, neurotechnology, and the metaverse, where the incentives are skewed by behavioral advertising. If the platforms are purposefully addictive now, consider their toll on mental health and well-being when the last bastion of privacy—mental repose—collapses.

Ripple Effects

Faced with increased toxicity, we have to face the broader consequences of the Tech Barons' innovations—the ripple effects of toxicity. The ripple effects from toxic innovation extend far beyond the Tech Barons' ecosystems, the digital economy, the user experience, and the impact of the Tech Pirates. *What happens online doesn't stay online.* These toxic innovations ultimately corrode our social and political fabric and harm our autonomy, democracy, and well-being.

To illustrate, we will look at three ripple effects, each with different consequences.

If fear, rancor, anger, and antagonism increase our engagement, expect the algorithms throughout the Tech Barons' ecosystems to recommend even more divisive content.

1: Tribalism and Rancor: Once triggered by a post, video, or story, our anger and fear do not stop with us. They create a ripple effect, where we spread our anger and fear to others through sharing and commenting on content that is suggested to us. Indeed, an emotional contagion study by Facebook warned that its News Feed algorithms, "If left unchecked," it would feed users "more and more divisive content in an effort to gain user attention and increase time on the platform." Similar ripple effects occur on Google's YouTube platform.

If fear, rancor, anger, and antagonism increase our engagement, expect the algorithms throughout the Tech Barons' ecosystems to recommend even more divisive content. Thus, the Tech Barons' algorithm "isn't actually rewarding content that drives meaningful social interactions," but content that exploits racial division, spreads fad or false science, and puts forth disturbing news and images.

2: Undermining Democracy: Political consultancy Cambridge Analytica trained its algorithm to predict and map personality traits to target voters and appeal to their hopes, neuroses, and fears. That required a lot of personal data, which they collected on Facebook, and produced personality scores for each person. They then matched these personality scores with US voter records to target them and manipulate their behavior.

As the company CEO, Alexander Nix, elaborated, "we were able to use data to identify that there were very large quantities of persuadable voters there that could be influenced to vote for the Trump campaign."

Cambridge Analytica also deployed these methods in other democracies to identify and persuade swing voters. And this is only one example of the microtargeting, manipulation, and deception of voters spawned by these toxic innovations. Many national elections are won by small margins. In swinging hyper-targeted groups, these innovations can and will determine political governance.

3: Innovation Feudalism: There is no survey data of the number and types of Tech Pirates. However, general data on small and medium-sized enterprises shows that the percentage of companies less than one year old has declined

by almost half over the last generation. And those declines swept across industries, including tech. With reduced dynamism and disruption, leading companies can entrench their position. Entrenched powerful companies with deep pockets can mount even more effective strategies against Tech Pirates, leading to marginalization and exclusion.

It will only be natural then for society to increasingly rely on a few companies for its future prosperity. The Tech Barons' ecosystems reflect "innovation feudalism" where many companies and individuals become the serfs toiling away.

Current Antitrust Enforcement

When the CEOs of Google, Apple, Facebook, and Amazon testified before Congress in 2020, they all agreed that the current antitrust laws and policies in the US foster the entrepreneurial spirit. Why would the Tech Barons celebrate the current antitrust policies, which are supposed to crack down on mergers that may create a monopoly or prevent monopolies from acquiring or crushing competitive threats? Because the current antitrust framework generally works in the Tech Barons' favor. Here's why. The current antitrust policies focus on:

- What is quantifiable, like price and output, rather than what is essential in the digital economy, namely innovation, quality, and privacy
- Narrowly defined antitrust markets rather than ecosystems
- The past, rather than the current or future anticompetitive practices
- What the defendants did, not why they behave the way they do

As a result, despite the recent flurry of antitrust enforcement, the existing antitrust policies will not significantly deter the Tech Barons nor halt the spread of toxic innovation. But the call for change should not be anchored in nostalgia of past antitrust policies when enforcement was more robust. The key is understanding the need to keep up with the digital economy.

The Way Forward: Three Fundamental Principles

Disruptive innovation is path-dependent. This means that current impediments to innovation affect the future levels, types, and value of innovation. It also means that the Tech Barons' current and past anticompetitive behavior will be felt for many years and that some potential innovations will be lost forever. Left to its own, the digital economy will advance the Tech Barons' narrow interests and gravitate further away from the public interest.

Something needs to be done, but the cost of regulatory failure is steep. If policymakers shoot wildly, innovation and competition can be harmed. On the other hand, while the regulators figure out where to aim, the Tech Barons will kill more pirates, distort innovation paths, and deliver innovation that increasingly extracts or destroys value, and this damage is not reversible. So how do we get to where we need to be?

To encourage innovations that actually and significantly benefit us, we suggest following three interrelated principles that can help countries overhaul their policy switchboards:

Principle 1: Value—Consider the type of innovation and ask whether it creates, destroys, or extracts value.

As we have seen, innovation is neither inevitable nor invariably desirable. Since not all innovation increases value, policymakers and enforcers must inquire whether the innovation is sustaining or disruptive and whether it destroys, extracts, or increases value, and thus increases or reduces well being.

Principle 2: Incentives—Ask who's designing the ecosystem and influencing the innovation paths, what are the ecosystem's value chains, and what incentives it fosters.

As we have seen, what's good for the Tech Baron is not necessarily what's good for us. And so, one must understand the incentives at play and ensure that the flow from the value chain aligns with our interests. Every ecosystem is regulated—whether by Tech Barons, informal norms, or laws, rules, and regulations. If policymakers assume that the marketplace is naturally self-regulating and that the market participants' incentives will always align with our interests, they are ill-informed.

Principle 3: Diversity—Promote an effective competitive process that enables disruption and innovation plurality and offers Tech Pirates a viable opportunity to prosper.

The diversity of innovation paths is crucial for future prosperity. We cannot predict who will emerge as the next Tech Pirate, given their high rate of failure and evolutionary selection on which we rely to ensure that the right innovations prosper. But we can hedge our bets by fostering a plurality of innovators and the ensuing collision of ideas from different fields.

The Value, Incentives, and Diversity principles can inform policy choices on two complimentary levels: *optimization* and *innovation* support. Many policy choices create incentives and disincentives that affect the nature and value of innovation. To the same extent, so does inaction. The challenge is striking the right balance to enable the benefits from the digital economy while promoting a diversity of value-creating innovation.

There is no single law or set of financial penalties or incentives that will fix the digital economy. What's needed are multiple policies, packed with levers that affect the supply and demand for different types of innovation.

Optimization policies include things like competition laws, intellectual property laws, privacy and data protections, and other laws that influence the appropriation of knowledge and the commercialization and monetization of ideas. Policymakers are already considering how to recalibrate these levers to promote innovation, such as increasing interoperability, limiting the Tech Barons' ability to acquire nascent competitive threats, and requiring some structural separation so that Tech Barons cannot own a platform while competing with others on it.

Innovation support policies include things like providing resources, grants, loans, state guarantees, capital investment, and tax breaks. Other measures include coordinating innovation efforts and technology transfers and assisting in the technology's commercialization.

Ideally one could calibrate which setting among the many levers would yield the optimal return of value-added innovation. Reality, as expected, is more complex. In a dynamic economy, policymakers must periodically adjust the levers to prevent distortion of incentives and innovation. They must also alter the levers or add new ones to keep pace with new technologies and changes in existing technology, business models, or prevailing ecosystems.

The Tech Barons' value chain helps us understand an underlying contributor to the populism and fear-mongering that are destabilizing democratic institutions today. It

is the instinctive understanding, on the part of the public, that their incentives are not necessarily aligned to ours. They may not actually save us. They might even do us harm. This is not surprising because they are not ultimately designed for our benefit.

The current incentives and policies have put the digital economy on the wrong trajectory. And we can't expect this trajectory to self-correct. We need to fundamentally overhaul policy, invest in Tech Pirates, and more generally, in diversity. We can, and should, expect more, but only if we demand it.



Ariel Ezrachi is the Slaughter and May Professor of Competition Law and a Fellow of Pembroke College, Oxford. He serves as the Director of the University of Oxford Centre for Competition Law and Policy. His work on algorithmic collusion (together with Prof Stucke) has been central to policy discussions in international organisations and agencies. Maurice E. Stucke is a co-founder of the Data Competition Institute, a law professor at the University of Tennessee, and of counsel at the Konkurrenz Group. He serves as one of the United States' non-governmental advisors to the International Competition Network.

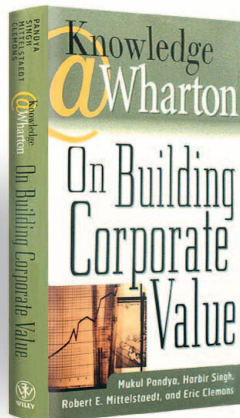
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Knowledge@Wharton: On Building Corporate Value

Mukul Pandya, Harbir Singh, Robert E. Mittelstaedt, and Eric Clemons

SOUNDVIEW Executive Book Summaries®



Modern Strategies for Building Corporate Value the Old-Fashioned Way

KNOWLEDGE@WHARTON ON BUILDING CORPORATE VALUE

THE SUMMARY IN BRIEF

From the beginning of the so-called “dot-com bubble,” there were those who thought the Internet would be a revolutionary force for immediate change in the world, and those who thought the whole thing was simply speculative mania intended to con the gullible. They were both wrong. Indeed, the truth resides somewhere between those two extreme modes of thought — the Internet can be a powerful tool if companies and consumers learn how to use it creatively and imaginatively. It can open up possibilities for value creation and enhancement heretofore unimagined, providing companies with sustainable competitive advantage.

Part theoretical framework, part hard reality, Knowledge@Wharton On Building Corporate Value is based on articles and research drawn from the Wharton School's online resource, Knowledge@Wharton.

By Mukul Pandya, Harbir Singh,
Robert E. Mittelstaedt
and Eric Clemons

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What You'll Learn In This Summary

- ✓ **The effects of technology on business strategy.** Learn how to use the Web's communication, brokerage and integration effects to your advantage.
- ✓ **What makes a solid business model.** These days, you had better know what you are doing prior to entering into a Web value strategy.
- ✓ **How customer behavior fits in.** Understanding how consumers behave is critical to companies interested in establishing a Web retailing strategy. You'll learn what to look for, and how to use that information appropriately.
- ✓ **The challenges of channel conflicts.** When using the Web to eliminate middlemen and deal directly with customers, learn to address the concerns of those middlemen and eliminate conflicts in your business channels.
- ✓ **The future of online exchanges.** Learn how to leverage public and industry exchanges to build value.

— THE COMPLETE SUMMARY

Creating Internet Strategies For Competitive Advantage

For companies eager to approach their Internet ventures like real businesses (i.e. with revenues and the hope of profits) it is important to analyze both conceptual strategies, as well as real-world business models, in order to gain the best, most powerful competitive edge. Both are critical to success, particularly in the aftermath of the enormous losses in capital investment brought about by the bursting of the dot-com bubble.

Technology's Effects

Those who poured billions into entrepreneurial ventures in the mid- to late 1990s recognized the three broad conceptual effects inherent to Internet technology:

- **Communication effect.** The Internet has made it easy to search for and find vast amounts of information, in addition to making it much less expensive to store and transfer it. Note, it is less expensive, not free — a point overlooked by dot-com investors and entrepreneurs in their relentless drive to attract traffic to their businesses. For example, many companies that once gave away their content for nothing, generating revenues through advertising, discovered ads couldn't generate sufficient funds to maintain their businesses.

- **Brokerage effect.** Some analysts compare the Web to a giant market marked by openness, informality and interactivity. This effect makes it possible for Internet users to access global markets at minimal cost, flattening the playing field enough for small companies to take on large conglomerates for the same customers. A good example of this effect is eBay, the online auction site whose mission is "to help practically anyone trade practically anything on earth." It boasts 40 million registered users, 126 million auction listings, and gross merchandise sales of \$11 billion annually.

- **Integration effect.** The Internet realigns players in industry value chains as some players are disintermediated in the wake of the new technology. When the value chain changes, it provides opportunities to create value. In addition, the Web's ability to connect buyers and sell-

ers directly to one another knocks middlemen out of the value chain by eliminating the need for their participation in transactions. The Web can also create new intermediaries, or infomediaries, that mine customer transaction data to make "mass customization" possible.

Business Models

A business model is made up of a company's goals, strategies, processes, technologies and structure — the things that enable an organization to capture and deliver value to customers. A business model must have four important elements: scalability, complementary resources and capabilities, relation-specific assets, and knowledge-sharing routines.

Information assets, which dominate e-business, are generally costly to produce initially, but typically are easy and inexpensive to reproduce. Exploiting this on the Web requires companies to develop scalable business models. Technological advantages are often short-lived, however, requiring companies that want to lead in the digital arena to acquire complementary resources, capabilities and assets to keep competitors at bay.

No firm can hope to dominate the Internet, but networks of allied firms can provide competitive advantage for those involved in such alliances, particularly if they are adept at managing collaborative relationships and relationship-specific assets. In such collaborations, effectiveness depends largely on the knowledge-sharing routines collaborators develop between one another. These routines help partners enhance their collective competitive advantage over rivals and their partners.

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The authors: Mukul Pandya is the executive editor of *Knowledge@Wharton*. Harbir Singh is chair of the management department at the Wharton School. Robert E. Mittelstaedt is vice dean and director of the Aresty Institute of executive education at the Wharton School. Eric Clemons is a professor at the Wharton School.

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For Additional Information on the authors, go to: <http://my.summary.com>

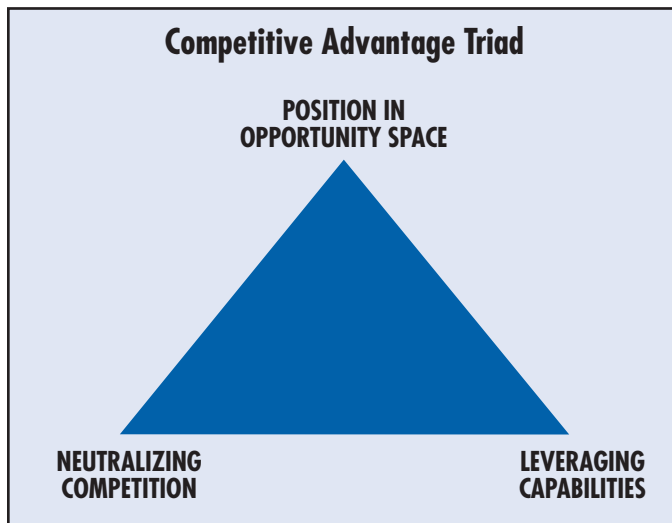
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Creating Internet Strategies For Competitive Advantage

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Once a company has a strong business model in place, it needs to gain and sustain competitive advantage through leveraging three elements:

- **Position in opportunity space.** If firms want to gain competitive advantage over rivals, they must position themselves appropriately in their markets. After the Cold War, for example, defense contractors had to find ways to put their technologies to commercial use to stay afloat in a market that didn't need tools of defense.

- **Leveraging capabilities.** Companies must learn to develop capabilities — the combination of skills, resources and knowledge firms bring to the table when they compete — that are unique. These capabilities should be difficult to duplicate, yet widely applicable across several products and services.

- **Neutralizing competition.** As important as it is for companies to position themselves correctly and develop unique capabilities, they should also adopt strategies that anticipate competitive reactions. ■

For Additional Information on Competitive Advantage, go to: <http://my.summary.com>

Customer Behavior And Internet Strategy

Understanding how consumers behave is critical to companies interested in establishing a Web retailing strategy. This behavior should be the principal determinant of that strategy — while technology can always improve, the loyalty of consumers is likely to differ among the many Web-enhanced businesses in operation.

Two factors are critical in predicting behavior: the

duration of the relationship between buyer and seller, and the scope of goods and services linking the two parties. If a buyer looks for different sellers for every transaction, chances are there will not be a stable, long-term relationship built between the buyer and any given seller. If the buyer returns to the seller repeatedly, however, that seller has a unique opportunity to tweak product offerings and keep the customer over the long term. Those product offerings can be bundled with other complementary products, or sold as stand-alone items — the former suggests the consumer searches for the best individual goods, regardless of provider; the latter suggests a search for the best provider of the goods.

Four Competitive Landscapes

The combination of these factors indicates that different companies in different industries will find themselves in one or more of four competitive landscapes:

- **Opportunistic spot.** These purchases exhibit no loyalty — each purchase might be from a different provider. A consumer may buy an airplane ticket from British Airways one day and United Airlines the next. It is essential to recognize consumers who are exhibiting this kind of behavior and develop an appropriate marketing and pricing strategy.

- **Opportunistic stores.** These markets occur when consumers exhibit no loyalty or relationship continuity to brands or stores. Unlike the spot market, however, they do use intermediaries to construct bundles of goods, and those intermediaries can add value through logistical savings, or through assembly or integration of complementary items.

- **Loyal links.** Consumers buying in this category exhibit continuity when choosing vendors and service providers, but do not want bundles prepared for them.

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Amazon's Unusual Offer

In the holiday season of 2001, online retailer Amazon.com did something unusual: It offered a 30 percent discount on all books worth \$20 or more. The offer was unusual because books are rarely discounted in this manner — when booksellers offer such steep discounts, they are usually limited to a narrow range of books (a particular category or publisher, or bestsellers). Even though it seemed counterintuitive that lower prices could help make the company profitable, Amazon's leadership believed that lower prices would lead to higher volumes, which would lead to higher profits. The offer also helped distinguish the retailer from other online businesses, like Barnes & Noble's Web presence.

Customer Behavior and Internet Strategy

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They might use an American Express card, but have no need for the company's other financial services.

- **Loyal chains.** People buying in this category have preferred vendors, and they count on those vendors to provide a range of tightly bundled offerings. They would use American Express for financial services, and might use it for insurance as well.

Across all four landscapes, only differences between brands, and consumer awareness of them, can blunt pure price competition in an efficient market. Cost control is important; efficient access to information makes it almost impossible to overcharge. As online information makes markets more efficient, pricing strategies will be limited by adverse publicity companies receive from charging different prices for the same goods. ■

Managing Risks in Internet Strategy

The bursting of the dot-com bubble in 2000, combined with the technology slump that has followed, have all but removed the risk of established companies being toppled by upstarts with a Web site and a business plan written on Post-It notes. This situation does not, however, mean that the risks associated with formulating an e-commerce strategy have vanished. These risks do indeed exist, and understanding each of them is crucial — particularly the six important ones listed below.

Risks to Avoid

- **Structural risks.** A company might develop an e-commerce strategy that, for reasons related to industry structure, cannot be profitable. An online retailer that acquires the latest Harry Potter book for \$10, then turns around and sells it to customers for \$10, cannot be profitable in the long term. For other companies, acquiring customers involves a cost that needs to be recovered over time, so that if they lose a customer to another supplier before that relationship becomes profitable, they might not be able to recover costs.

- **Channel risks.** These risks stem from the fact that companies use distribution channels to supply products and services to consumers, except in the e-commerce world, where companies can reach customers directly through their own channel. There exists in this action the potential for alienating the entire network of middlemen a company might use as a bridge to customers.

- **Sourcing risks.** Substantial risks arise if a company enters into a strategic alliance with one or more businesses that can use the alliance to seize substantial

How the Best Approach Knowledge Codification

Several excellent examples of codified knowledge can be found among the best and brightest companies in the business of e-commerce. Hewlett-Packard, for example, has created a 400-page manual that provides codified tools, templates and other resources for managers in the process of forming and managing alliances. Examples include partner due diligence checklists, negotiation frameworks, draft alliance contracts, alliance termination checklists, company-specific case studies, and more. Lotus, an IBM subsidiary, has created what it calls its "35 Rules of Thumb" for similar purposes.

These and other similar efforts are winning attempts to transfer past experiences in order to manage similar situations in the future more efficiently, consistently and successfully.

value. The sourcing risk also increases the possibility that a company might become vulnerable to poachers of its intellectual property.

- **Strategic uncertainty risks.** Some risks of creating e-business strategies arise because the future is unknown. Managers should identify key strategic drivers for their industries, as well as a set of alternative futures and strategies to deal with each of them.

- **Organizational risks.** Companies that seek to implement e-business strategies must change their organizations to support those initiatives, and all attempts to change organizations have an element of risk. Employees might object to such changes out of concern for their jobs or out of resistance to an altering of their job duties. A strategy, however, is only as good as its implementation, and an organization's capability to implement its strategy involves considerable organizational risk.

- **Liquidity risks.** The existence of liquidity enables companies to convert assets or instruments into cash, and vice-versa. Liquidity makes markets attractive to buyers and sellers alike. Conversely, a company's inability to create liquidity by ensuring minimal critical mass of e-commerce transactions could land it in a liquidity trap. This is particularly true of business-to-business (B2B) exchanges, where falling into a liquidity trap could mean gradual irrelevance and eventual death.

Making Alliance 'Marriages' Work

As companies develop Internet strategies, they must pay special attention to these risks, and to any alliances they form to counteract risks. Firms often form alliances to strengthen their capabilities, but nearly half of these

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Managing Risks in Internet Strategy

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“corporate marriages” end in painful separation.

Companies that practice some of the knowledge-based alliance capability processes have a better chance of succeeding. They can build and sustain their alliance capability in four ways:

- **Knowledge articulation.** The backbone of alliances are the jobs done by individuals, using their personal and professional skills. These skills must be captured in some form — via a database or some other repository — so personal knowledge is articulated and others have access to the experiences of the company’s work force.

- **Knowledge codification.** A company can codify its alliance knowledge in guidelines, checklists and manuals. This process distills articulated knowledge and transforms it into a form that can be used productively in future alliance situations.

- **Knowledge sharing.** Not all prior alliance experience is easy to articulate and codify; a process of knowledge sharing must also be put into place. This process can involve something as simple as an informal discussion between managers, or more formal mechanisms, such as teams and task forces.

- **Knowledge internalization.** Without question, the people involved in an alliance are the final arbiters of its success. Training programs and briefings are traditional mechanisms used by companies to get knowledge across to those within allied organizations who need it most. ■

Financial Services And Internet Strategy

In 1999, traditional securities firms had some competition to worry about — namely, upstart dot-com companies that enabled customers to engage in securities trading online, a new way of investing that threatened to overwhelm the industry. These dot-coms gave customers the ability to have around-the-clock access to markets; they also made it easy to research information about stocks and companies online. The paradigm of the industry shifted — the securities firms’ monopolies on information and execution in the financial markets were gone.

Companies like E*Trade and Ameritrade thrived because they made it easy to search and research data about stocks (the information effect); made it easy for buyers and sellers to find each other (the brokerage effect); and threatened to disenfranchise traditional brokerages that stood in the way of this transformation (the integration effect). In the last four years, this seemingly revolutionary change has actually proved to be more evolutionary. Discount brokers have seen sharp declines

E*Trade’s Offline Revolution

One way some online brokers have survived in the post-dot-com bust years has been to establish a presence in the world outside the Web, much as the traditional firms had to set their stakes in the online world four years ago. A good example is E*Trade, which in early 2002 announced the launch of a financial center in San Francisco. The company had earlier opened brick-and-mortar offices in New York, Denver, Boston and Beverly Hills, showing that even an online firm benefits from a real-world presence.

Customers can go to these E*Trade centers to open or review accounts, or work one-on-one with licensed “relationship specialists” who can help them with their financial needs. This concept forms part of E*Trade’s strategy to offer customers broader, more comprehensive financial services.

in trading volumes and commissions, and the slow economy of 2001 and early 2002 aggravated problems that online brokers faced since the dot-com bust. These brokers have gone through a shakeout, merging with and acquiring one another with great speed.

Some have survived, though, moving toward offering a broader range of financial services [see above sidebar]. Meanwhile, traditional financial services firms such as Merrill Lynch have made the Internet an important part of their operations. There were, however, some growing pains along the way.

The Challenge of Channel Conflict

In the late 1990s, Merrill Lynch found itself losing customers rapidly, as Charles Schwab and other competitors added significant online capabilities to go with their discount structure. After some initial heated resistance, Merrill Lynch announced in June 2000, that it would be adding an online presence, but the system would not be operational for six months — an eternity in Web time. A strange thing happened, though — the announcement reportedly stopped the net customer loss. Merrill Lynch built its system, but its use has not been as high as one might have expected.

There is a simple lesson here — customers do not always know what they want, especially when it comes to technology-supported customer service. Customers want choices, especially if they know those choices exist elsewhere. Companies must make decisions on technology investments in ways that help them manage conflicts in their distribution channels. Before trying to distribute its products or services directly to customers (bypassing its traditional distribution channels), a company should examine which products or services lend

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Financial Services and Internet Strategy

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themselves to be distributed electronically.

Industry stalwarts like Merrill Lynch had several key advantages when entering the e-commerce fray:

- **They had scale on their side.** The established financial services organizations already had an established business base, which gave them advantages in terms of size and resources.

- **They had a brand.** The Merrill Lynchs of the world had proven brand names, a distinct advantage over companies like E*Trade or Ameritrade, which were still trying to establish brand identities, adding significantly to their marketing budgets.

Cultivating Crucial Relationships

- **They had crucial relationships.** It is difficult to quantify how critical relationships are in the financial services industry. Established companies that spent years cultivating clients' confidence had an edge in carrying those relationships into the online world.

- **They seized the opportunity.** The dot-com crashes did not automatically lead to the rise of established companies, phoenix-like, from the ashes. Old or new, the most successful organizations not only see what is next; they also have the resources to take advantage. ■

Internet Strategy and New Media

As the dot-com bubble went, so went *The Industry Standard*, the award-winning publication that chronicled how the Internet was changing business. In August 2001, after three years of operation, the magazine folded, shocking readers and businesspeople alike. Though critically lauded, it paid a heavy price in the media shakeout that followed the bursting of the Internet bubble and the ensuing recession, as did a number of other print magazines and their Web-only counterparts. Staff layoffs and general financial woe laid low once proud and successful media empires that heralded the coming of a new age in business.

The meteoric rise and fall of *The Industry Standard* and the problems at other publications raise the broader question of how media companies can create sustainable value — especially with their Web-based publications. During the mid-1990s, many media companies set up Web-based versions of their publications that flouted the rules of traditional publishing — that new publications had to build slowly to find an audience, that advertisers subsidized the costs of producing and distributing the publication to readers, etc.

In keeping with the expectations of many Internet

users, the content offered on the Web versions was free. The logic behind this strategy was twofold — online publications wanted to introduce their content to a younger generation of readers they couldn't reach as easily in print; and they also hoped that keeping content free would drive more traffic to their Web sites, which would in turn help them gain additional advertising.

New online publications, which did not have print counterparts, assumed that because they did not have to deal with printing and mailing — two major costs of publishing — they could afford to give away their content. They felt they had an edge over print magazines because they could offer advertisers unique information, such as which articles were being read, how long readers spent on each page, and so forth. Armed with these advantages, online publishers argued it was only a matter of time before they would gain support from advertisers. While this belief had an element of truth, reality turned out quite differently, as the people behind TheStreet.com found out.

Trouble on TheStreet.com

Launched in 1996, TheStreet.com was once regarded as one of the most promising online publishers of financial news and analysis. Unlike most online publications and the Web sites of most print publications, TheStreet.com adopted a rare business model. Like *The Wall Street Journal's* online version and a handful of other Web sites, it began life by charging a subscription fee for its content, rather than simply depending on advertising. Later, TheStreet.com became a free Web site, and the company developed a companion site called RealMoney.com, charging higher subscription fees and aiming its content at professionals within the finance industry.

Like most other dot-coms that found fleeting fame, TheStreet.com hit financial highs almost right away, but today the publication struggles to find a sustainable revenue model, and is betting heavily on subscriptions. It is also finding providing content to be a challenge. James Cramer, who co-founded TheStreet.com, recently told an audience not to watch too much CNBC or read too much of the popular financial press, including his own TheStreet.com, because too many people who appear in these outlets are scripted and do not provide sufficient information to form a basis for real analysis.

Turning Eyeballs Into Ad Revenue

As TheStreet.com's experience shows, the idea that online media sites could turn eyeballs into ad revenue and profits was seriously flawed. As the U.S. economy has slowed and gone into recession, the problem has become increasingly serious. ■

For Additional Information on information-based strategies in action, go to <http://my.summary.com>.

Do Online Exchanges Have a Future?

Now that dot-coms are no longer fashionable as “get-rich-quick” stocks, discussions about business-to-business (B2B) e-commerce exchanges have fallen out of favor. This is actually a healthy situation: The less hype that surrounds B2B exchanges, the more meaningfully their true value can be debated and assessed. Once, at the height of the hype, exchanges were being touted as revolutionary vehicles that would transform the way in which companies do business with one another. Visions abounded in which supply chains would be coordinated perfectly over the Web, and where customers would

connect with businesses through seamless interfaces.

The reality of B2B exchanges, of course, has been very different. Companies whose B2B “visions” raised their stock prices toward the \$100-per-share range at the end of 2000 were lucky to still be around and selling their shares in the \$1 to \$3 range by the middle of 2002. A few trends are, however, becoming evident in the B2B arena, giving credence to the idea that B2B will be evolutionary rather than revolutionary, and it will continue to be used in a way that enhances, rather than replaces, companies’ business strategies.

Two issues surround online exchanges: the fate of public B2B exchanges, and the relative success of industry exchanges.

The Public Exchange — VerticalNet

VerticalNet is a Horsham, PA-based company that early in its inception (in 1995) specialized in creating vertical trade communities among companies in specific industries, or with specific specialties. VerticalNet’s goal was to create virtual B2B bazaars, where participants could do everything from exchange basic information to finalize e-commerce deals. It was the company’s contention that as it grew the number of such communities, the value of each member organization within the communities would likewise grow, which would, in turn, increase the company’s value to sponsors.

VerticalNet was also trying to raise revenues from the sale of virtual storefronts, where client companies would sell their goods, and VerticalNet would earn a commission on each sale. Initial results were promising, but VerticalNet continually lost money, in part because it never sold products itself.

The company tried to stem its losses by changing leadership, then reorganizing itself into multiple divisions. All this effort was to little avail: VerticalNet continues to lose money by the hundreds of millions of dollars. Its latest change in strategy, though, might be its most successful — the company (led by the former CEO of SAP America) is attempting to transform itself into a provider of enterprise software and collaborative supply chain solutions. Early successes on this track are impressive, but whether VerticalNet can sustain its success will only be answered in time.

The Industry Exchange — Covisint

While VerticalNet aimed at dozens of markets, Covisint has focused on one — the automotive industry. The company’s stated goal from its inception was to form “a single global B2B supplier exchange,” bringing together its individual e-business initiatives to avoid the burdens suppliers would endure if asked to interact with redundant proprietary systems. Integration and collabo-

The New York Times Digital

According to one recent report, *The New York Times*’ Internet operations went cash-flow positive, making an operating profit of \$780,000 in the third quarter of 2001. Its experience offers clues to other media companies aiming to create sustainable business value on the Web, particularly in five key areas:

✓ **Aggregating content.** The *Times Digital* site has been willing to compile content from other sources (such as CNET news and the *Financial Times*) rather than create completely unique content that could drive up costs. The site accepts content of only the highest quality, and aims to position itself as a repository for as many such feeds as it can aggregate in one place.

✓ **Targeting paid content.** The *Times Digital* offers special bundled content, via monthly or yearly subscription, on such topics as baseball, terrorism, personalities and even crossword puzzles. The site generates revenue by adding more value to those interested in certain narrow topics.

✓ **Cutting early.** The *Times Digital* cut staffing and other expenses before the economic recession hit hard, in part because the publication’s leadership conducted analyses that helped bring costs closer in line with current economic reality.

✓ **Focusing on repeat readers and advertisers.** The site focused on building loyalty with its readership and advertiser base, shifting costs away from promotion to developing a stable readership and creating the most effective ad formats possible.

✓ **Continuing small enhancements.** Rather than cutting costs too deeply during difficult times, the *Times Digital*’s leadership instead introduced small editorial enhancements, such as special compilations, as well as new advertising formats. By doing this, the site was able to reduce the risk of readers and advertisers defecting to other publications.

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Do Online Exchanges Have a Future?

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ration were the company's key focuses.

Initially created by an alliance of Ford, General Motors and DaimlerChrysler, Covisint also brought in Renault-Nissan, Peugeot and Toyota, as well as technology providers Oracle and Commerce One, in the process developing enormous clout. Some estimates put Covisint's potential volume of transactions among its network of auto heavyweights at close to \$750 billion.

As it drives this massive amount of volume through its exchange, Covisint has three major goals:

1. To promote collaborative product development by harnessing the Internet's communications prowess.
2. To streamline procurement for the auto companies by setting up market mechanisms, such as auctions, in an effort to lower transaction and other costs.
3. To streamline the operations of the auto industry's supply chains, making its work processes more efficient and customer-friendly.

Challenges to the Vision

Covisint's ability to realize its ambitious vision will depend on how it deals with some key challenges:

● **Competition.** Covisint is not the only game in town. Major players such as Volkswagen, BMW and Honda have not come aboard Covisint's exchange, and could conceivably set up an alternative exchange of their own. Competition can also come from large auto components suppliers and threaten Covisint's prospects.

● **Fairness.** In order to survive, a B2B exchange must work — and appear to work — fairly for all its participants. Covisint's strong connection to Detroit's auto giants could be a turn-off to current or potential members from Europe and Japan, who might fear their American counterparts have too dominant a role in the exchange. To combat this, Covisint needs to establish who owns the exchange, who makes its policies, and what kind of balance exists between buyers and sellers.

● **Government intervention.** Anti-trust regulators have been closely examining B2B exchanges, ensuring that no collusion or price fixing is taking place. Covisint must be certain to open its doors to all potential members in the auto industry, regardless of their competitive stance for or against existing members.

Covisint will need to grapple with these and other issues as it moves toward realizing the exchange's full potential in all areas, including the possibilities of collaborative production and design. These challenges are formidable, but then, creating a B2B exchange that is powerful enough to overhaul a giant, global industry's supply chains is hardly an easy task. ■

Practical Lessons In Building Value

There are many lessons to learn from the companies that have built lasting value, particularly those that continue to sustain competitive advantage amid the uncertainty of today's business climate. Among the most practical of those lessons are the following:

● **What you spend on IT infrastructure is less important than what you do with the money.** A few years ago, it was rumored that K-Mart spent more on IT than did Wal-Mart. Regardless of the truth, it is clear that Wal-Mart transformed the discount retail business through management of its supply chain, and K-Mart, currently mired in bankruptcy, did not.

● **Creativity matters — be observant and seek out ideas.** You must add value to your customers' experience. This is particularly important in the context of B2B, where survival is dictated by the determination of what adds customer value and the delivery of that value.

● **Creating and adding to shareholder value is the ultimate evaluation.** Firms must employ measurements to ensure the returns on their IT and Web investments are real. However, the markets do not always see things in the same way that management does, and more may need to be done to achieve maximum shareholder value.

● **The communication, brokerage and integration effects are the drivers.** If you cannot locate the value added in terms of one of these concepts, it will not magically show up later.

● **Small experiments matter.** Organizations are still struggling to understand the specific ways the Internet can add value to their operations. Small experiments can be valuable in showing what works and what does not. These insights may be small, but they are real, and can build up to an enormously valuable perspective on how the Internet adds value to an organization's business.

Study Your Customers

● **Do not just listen to customers — study them in depth.** Study not just explicit customer feedback, but every interaction that implicitly shows what customers want. The information that you already possess about your customers could help you forge ahead of rivals.

● **Value may lie in microsegments.** During the dot-com bubble, one of the most overhyped features of the Web was that it would allow companies to customize products and services for customers. Personalizing products and services beyond the most superficial level can be difficult, and it is not clear whether customers want that level of customization. The Internet makes it relatively easy and cost-effective to customize products and services for microsegments of customers. ■

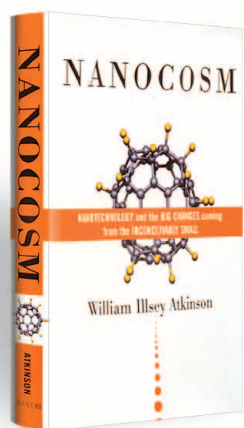
· Book 19 of 35 ·

Nanocosm

William Illsey Atkinson

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By William Illsey Atkinson

Nanotechnology and the Big Changes Coming from the Inconceivably Small

NANOCOSM

THE SUMMARY IN BRIEF

Since the beginning of the industrial age, many machines have grown steadily smaller even as they have grown more powerful and complex. Now nanotechnology, based on a new science of the infinitesimally small, takes technology beyond most popular definitions of reality, to a realm of molecular machines, cell-sized computers and other astounding possibilities. In *Nanocosm*, technology consultant and writer William Illsey Atkinson reveals a spectacular view of the immediate future of nanotechnology and its applications in medicine, computing and engineering and countless other arenas that affect our world, redefining how we work, play and live.

As with any phenomenon, nanotechnology has both its naysayers and its zealots, by turns clouding scientific truth with dismissals, prophecies and pipe dreams. But nanotech is real. President Bush announced recently a \$500 million National Nanotechnology Initiative and *BusinessWeek* has named nanotechnology one of the ten technologies that will change our lives.

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What You'll Learn In This Summary

- ✓ **What nanotechnology is and why it's so important.**
- ✓ **How to understand the concepts behind the hype** so that you can make informed decisions about whether to support a particular nanotech initiative as an investor or venture capitalist.
- ✓ **How countries around the world are investing in nanotechnology**, helping to provide a first boost to research that can result in the commercialization of promising nanotechnology.
- ✓ **What changes are possible in the next few years**, including the possibility that drugs can assemble themselves and cause minimal side effects and how engineers will build mega-structures with strength and stability.
- ✓ **How to tell the nanotech charlatans from the real scientists.**

NANOCOSM

by William Illsey Atkinson

— THE COMPLETE SUMMARY

Lower, Slower, Smaller

The most amazing thing about nature is her inexhaustible variety. Scientists, technologists and theologians speak about nature or the world as if it were a unit. But there are limitless worlds and infinite natures.

Merely varying your dimensional scale creates new worlds. Karl Marx is justly discredited as a social philosopher, but one of his points was incontrovertible: Quantitative differences create qualitative difference. In other words, scale matters — change the numbers and you change the thing. For example, our usual human view looking out from the surface of the planet differs from what we see from the orbit of the moon. All cosmonauts and astronauts agree the most conspicuous thing about viewing earth from space is the invisibility of national borders.

Seeing the world from the outer edges of the Milky Way offers yet another view. Turn inward rather than outward and peer with ever-higher magnification into the world of the small and you get another perspective. Each subworld embodies an alternate reality. Scale of *millimeters* brings us to the world of insects. Drop down a notch and you enter the world of the *micron*, a unit whose length is one thousandth of a millimeter. This subworld is literally the microcosm. It is the world of the cell — autonomous units like amoebas as well as specialized populations of cells that make up skin, bones and brain.

Below the microcosm comes creation on the scale of the *nanometer*, one millionth of a millimeter. This is the nanocosm. It is a finely detailed, completely structured cosmos, self-assembled atom by atom. The subworld is a place unto itself. The rules are neither those of galaxies nor what we see within the middle kingdom we inhabit.

We have now mapped out enough of the nanocosm to make educated guesses about what it can support. Some very big changes in business and leisure are about to come to us by way of the very small. Unfortunately, there is also a lot of hyped up public expectation. One reason is that some scientists have been boosters of a technology even before it was close to existing.

Twenty years ago while pursuing his doctorate at MIT, K. Eric Drexler wrote the first journal paper on advanced nanotechnology, envisioning what it might be. Dr. Drexler boldly foresaw a world of molecular manufacturing, where macroscale objects were assembled

atom by atom by nanoassemblers the size of molecules. Ten years ago he expanded this initial vision into a book, *Nanosystems: Molecular Machinery, Manufacturing, and Computation*.

The book is radical only in its subject matter because it takes a classical approach to the actual engineering needed. The book admits no difference between building a suspension bridge and creating a bloodstream-cruising submarine. The nanocosm is only another arena where engineers can apply known techniques. The book is a highly detailed piece of speculation.

Despite these imaginings by a fringe of boosters, there are strong signs that a workable nanotechnology is at last being born. Advances are occurring daily. While most are in basic nanoscience, business indicators such as number of start-ups, IPOs and venture capital pools indicate that a viable commercial enterprise is emerging.

Nanotechnology

In a sense, all technology is nanotechnology. That's because everything we use relies in part on the properties of matter at the nanoscale. Take tires, for example. What makes them flexible and strong is the addition of nano-sized particles of soot to rubber.

What sets apart today's nanotech from traditional activities such as tire making is intent. When we devise and manufacture today's nanocomposites, we know what we are doing — in fact, we can directly see it happen. Nanotech will soon let us bypass the substances that nature provides and start with a wish list of properties that a new

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The author: William Illsey Atkinson is president of Draaken Communications, which interprets technological issues for universities, institutes and private firms. His book, *Prototype*, was a 2002 finalist for Canada's National Business Book Award.

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Lower, Slower, Smaller

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material must have. In five to seven years you'll be able to call a nanomaterials firm and tell them what you need.

The nanocosm will transform us. It will not content itself with revolutionizing grand things: economy and culture and democracy. It will alter, from the inside out, the small details that affect us — how we stay healthy, spend leisure time and raise our children. ■

Nanoworld

A decade today brings with it a vast transformation. And the speed at which transformation happens is about to take another leap. Sometimes it seems almost impossible to imagine what things were like technologically ten years ago, much less a century ago.

Political revolutions happen suddenly. On Monday a despot sits entrenched, on Tuesday there's a local food riot, on Wednesday the disturbance spreads and the despot is dead or in exile by the weekend. The causes may be ancient but the effects take place in a flash.

So far, at least, revolutions in science and technology have taken longer to occur. The Industrial Revolution took a century and a half, the Agricultural Revolution, two or three millennia. The extent of the change and its economic and cultural impact was hardly apparent at the time.

This is true even today, when the pace of technological change has increased. Telephones, cars, cotton clothes and sanitary sewers — the triumph of these things was steady but slow. Even computers didn't achieve supremacy overnight. Only in retrospect was a technological revolution apparent. Yet revolution there was. In a mere decade, you will be shocked when you look back at 2003 — this year will feel like the Middle Ages.

Nanoscience

Say you're a galactic intelligence from beyond earth: a physical scientist. You come across earth in one of your periodic expeditions and settle in to study it. The patterns are immediately apparent. Earth is a planet, revolving at a nearly constant distance from a yellow dwarf star. It is almost perfectly round and rotates slowly about an interior axis. Its temperature varies so that there are seasons everywhere outside a narrow band around the equator.

You zoom in and see hurricanes, mountain ranges, and archipelagos. Further in yet you see artificial structures, ships, trains and aircraft which are indications of a genuine civilization. Finally, you see fixed organic structures that take in carbon dioxide and emit oxygen as well as organic structures that do just the opposite, creating an endless loop. Keep going, and soon things get smaller — yet another frontier: nanoscience.

What is nanoscience? A leading expert is Dr. Doug Perovic, chair of Materials Science and Engineering at the University of Toronto. He reminds us that all science studies matter and energy, whether it's physics, chemistry or biology. As each field advances in its discoveries, each is collapsing into a new structure, a nanostructure. Each discipline is looking deeper and deeper, and discovering that at the nanoscale, matter looks and acts the same.

One aspect of this exploration of the miniature world is bio-nano — the study of living systems at the nanoscale. Here, scientists are looking at what nature already does. More importantly, they are coming up with ideas that can be taken from nature and used — what Dr. Perovic calls biomimicry. For example, microscopic rotational motors already exist in nature. They power the whip-like flagella of *E. Coli*. There's no reason we can't swipe these designs, tweak them and use them in our own inventions. ■

Nanotechnology Trends in World Development

For something that's so new to serious investigation, the nanocosm has shown itself amenable to commercialization at a record-setting pace. Today the discoveries reported in a typical journal paper may be well on the way to being commercialized before the article even appears in

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The Swiss Nano Miracle

Switzerland, a tiny country, lives by its wits and has for centuries. It is a feisty, indomitable, brainy and elitist nation. Consider its watch industry. For years Swiss watches were second to none as watchmakers created elegant and accurate timepieces. Then along came microchips and accurate gears and wheels were no longer necessary. Instead of giving up, the Swiss reinvented their watch industry. First they developed the Swatch — a line of stylish low-cost watches designed and marketed to young people. Second, they created ultra-high-end timepieces that became wearable jewelry that conspicuously display success.

But watches are only the start. The Swiss have fleshed out that industry with some of Europe's greatest concentrations of wealth based on high-tech. This includes biotechnology, chemicals, banking and pharmaceuticals.

The Swiss locate hot new technologies, sweat blood to become proficient in them and then ramp them up to be massive moneymakers. The whole culture is a perfect Petri dish for nurturing new ideas like nanotechnology.

Nanotechnology Trends in World Development

(continued from page 3)

print. But nanotech had to overcome some steep financial hurdles to achieve its present success. That's because the dot-com boom and bust affected investors' willingness to support and finance new ventures.

To understand why, you need only look at events of the late first few years of the twenty-first century. By mid 2000, the promise of advanced technology had convinced most mainstream banks and venture capitalists that business plans didn't need bricks, mortar and land to be worth funding. Intellectual property, investors realized, could be collateral as sound as real estate. Then the investment pendulum swung the other way. As if to undo its years of under funding and neglect of high tech, capital went on a spending spree. Dot-com mania became a land bubble for the chalk stripe set, who often ignored due diligence in their lust to profit from high tech. They learned that wild wishes aren't intellectual property, that launching an IPO is not a business plan and that stock itself is not a product.

The result was a tightening of the purse strings. Only the soundest nano-ideas are now being funded, resulting in the commercialization of promising nanotechnology.

Fledgling technologies begin their capitalization with public money. Funds are assigned indirectly through university research teams or directly through state and federal labs. For example, in 2001 the US government budgeted \$422 million for nanoscience research and development. Funding for the National Nanotechnology Initiative is expected soon to increase even more.

France, Germany and the United Kingdom have also established national research programs in nanoscience. Korea, Taiwan and China have said they are starting initiatives and even Canada, with a population and economy the size of California, has a brand-new National Nanotechnology Institute.

Of the initiatives just cited, Canada's is the one most likely to impact the United States. That's because under the North American Free Trade Agreement, Canada and the United States share a seamlessly integrated high-tech economy. Every Blackberry pager comes from Canada. So does half the transmission hardware in many North American telephone companies.

However, the USA's biggest competitor in commercial nanotech will be Japan. Japan has identified nanotechnology as *the* key discipline for its future economy. The Japanese want to dominate every key sector in nanotech within 15 years. Already they have made major advances in such nano-areas as energy-miser spintronic computers, frictionless pumps, and self-bracing structures. ■

A Venture Capitalist's Take On the Future of Nanotechnology

Dr. William Warren is an Oklahoman well versed in the emerging technology we call nanoscience. A Penn State engineering graduate, he is president of Sciperio, Inc., a venture capital firm with interests in ceramics and molecular electronics, water purification and advanced manufacturing. He will tell you that nanotech was first pushed by former Vice President Al Gore because he wanted to throw a bone at the physical sciences. Gore sold Clinton on nanotech, but when he didn't win the 2000 presidential election, anyone who was behind the nanotech program cut and ran. What they hadn't figured out, explains Dr. Warren, was that by then, too much time had gone by for anyone to shut the program down. Nanotech had too much momentum — people had already started research and spending money. Constituents told their representatives and senators they wanted the National Nanotechnology program continued and President Bush had no choice but to do so. He did even better — he expanded it.

Dr. Warren is taking advantage of the boom in development. He has configured his VC firm in an unorthodox way. The firm acts as an administrative core, vetting new technologies and locating funding for them. The company does not itself undertake any commercial development: it spins off daughter companies for that. Those companies in turn seek more VC and angel funding but also go public.

Nanofornia

Small Times is a trade magazine that covers both nanotechnology and MEMS (microelectronic mechanical and electrical systems). The magazine recently identified six U.S. hot spots in nanotech. The hot spots are:

- Silicon Valley
- Southern California around Los Angeles
- Boston
- New York City
- Dallas/Houston
- Chicago

Silicon Valley, concluded the magazine, had just the right combination of youth, money, brains and the gold rush spirit. This is a young place, but a fabled one. It starts in southeastern San Francisco and stretches down, mostly inland from the Pacific Ocean. As late as 1960, America thought of this area as Steinbeck country. But however much American loves its writers, it loves its

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Nanofornia

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money more. As a nation, the United States reserves its highest accolades for business people, measuring success less as lives illuminated than as dollars accumulated. Hence the towering profile and long shadow of the Silicon Valley myth.

It was here that the integrated circuit first took shape and the personal computer was conceived and delivered. From Oracle and Sun Microsystems to IBM's Almaden Research Center to Xerox's Palo Alto Research Center and the academic know-how at Stanford University, Silicon Valley was the place the future was born. And judging by the fervor with which nanoscience is being adopted, it still is.

Silicon Valley still has "it." As well as world-leading research nodes, "it" included enormous pools of venture capital; experienced facilitators, analysts, and consultants; and thousands of firms with expertise applicable to nanotech. Even more important is the culture so prevalent in Silicon Valley. Failure is valued as a learning experience. *Small Times* writer Candance Stuart observed that "if they tumble, they regroup and try again."

The Future of Nanotech

There is a lot of promise in nanotechnology, but especially in the U.S., progress will be incremental and market-driven at first. It will be a process similar to that of solar energy. Years of research and billions of dollars were spent on fancy ways of converting sunlight to energy, but the first really practical application was the solar blanket. That simple innovation takes the sun's energy and heats the water in swimming pools, reducing the need for gas or electric heaters.

Few people outside the scientific community have a ready grasp of nanotech. In particular, venture capitalists are struggling to understand the scientific breakthroughs they are being asked to fund. And many are very nervous about funding any ventures, having been burned badly in the Internet boom.

Fortunately, there are other sources of funding stepping in to ensure there is continued progress. Federal and state programs, even municipal ones, are now the best place to look for seed money for nanotech ventures. These new sources of financing won't be as free and easy with money as the venture capitalists of the last decade, but some funding is better than none.

Nanotech is still an infant technology but big advances are coming soon. Experts predict that:

- Through 2004 new discoveries in basic nanoscience should emerge.
- From 2004-2008, expect the development of emerging new nanotechnologies.

Nanotech and Data Compression

As you are no doubt aware, information gobbles up lots of computer memory. Visual images take up even more, but everyone wants fast Internet access with pictures, motion and sound. A picture may be worth a thousand words, but it takes up a hundred thousand times the disk space of mere text.

Engineers have found ways to crunch visual information so that it places less load on IT hardware. If you're sending video, you can transmit each successive still picture by specifying only what's changed since the still that came just before. This is called a compression algorithm. But nanotech promises a better way, modeled on the way the human body works. Our eye-brain system has something called an orientation reflex. This briefly speeds perception when we shift our gaze, especially when we are alarmed or startled. If you've ever glanced at the office clock and thought its second hand had frozen, that's the orientation reflex. In emergencies, it appears to slow down time.

Duplicating such an elegant efficiency in an artificial system, thereby letting it adapt effortlessly to changing circumstances, would mark a massive advance in visual IT. Once again, it's clear that the most important thing we have to do in exploring the nanocosm is to shut up and learn.

- From 2008 onward, look for a surge in the mass production of nanomaterials, biomimetic software modeling and nanosurgery.

Quantum Weirdness

Dr. Drexler, who coined the term nanotechnology twenty years ago, believes firmly that his version of using the nanocosm will revolutionize the world. Nanoscale machines will create things from the bottom-up, atom by atom: new drugs and synthetic materials and even copies of themselves. This, Dr. Drexler declares, will lead to RIE, a Revolution in Everything. Transportation will improve; nanomachines will destroy viruses and cancer cells, remove accumulated wastes from the brain and bring the body back to a youthful health.

Everything will be accomplished by little machines. The Drexlerian nanobot, he asserts, will be tiny. In the process of writing and speaking about his view of nanotechnology, he has amassed a loyal following. His doctrine has taken on almost a religious air among the engineers who have become known in the scientific community as nanoboosters. ■

For Additional Information on Dr. Drexler and his theories, go to: <http://my.summary.com>

Wet Nanotech

Total direct world funding in nano-activity — in technology and science, both public and private — will likely exceed \$5 billion by the end of 2003. Indirect funding will exceed this figure many fold. The main reason for this rapid growth lies in a single subsector of nanotech. The life sciences, including genomics and biopharmaceuticals, are both the biggest area of nanotechnology R &D and the largest single source of nanotech funding. The biosciences are pushing ahead into nanotech faster than any other academic or commercial sector, even information technology. Biosci is central to the clear majority of nanotech start-ups.

One reason advances are coming fastest in bioscience is that researchers in that field have been working at the molecular level for a hundred and fifty years. Because theirs is a more mature science already reaping the benefits of years of research, they have cash-rich customers willing to fund further exploration into the miniature world of nanotech. Bioscience can combine the advantage of available cash, extensive knowledge and skill sets and transfer them to nanotechnology.

Interestingly, many nanotech boosters have an almost contemptuous disparagement of existing technologies. These boosters say that classical approaches to discovering and doing things, from bridge building to chemical engineering, rely on techniques that at the atomic or molecular level are so crude they are laughable. Far better, claim the boosters, to treat atoms with the respect they deserve — handle them one by one. Boosters see a world in which they will design and build structures *de novo* on the nanoscale.

Nano boosters have a term for bioscience: It is, they say, just “wet nanotech.” In their view, it’s time to take nanotechnology out of the kiddie pool, towel it dry and send it off to do adult things. Atoms, they say, should be handled one at a time, with a watchmaker’s meticulous care. Chemical synthesis will eventually become a subset of mechanical engineering, claim these nanobooster engineers.

The problem is that the nano boosters are making two errors. First, they fail to see that standard engineering principles cannot simply be taken from the macro-scale and applied immediately to the nanoscale. The nanocosm is totally, bizarrely different. Change in scale changes the thing. Second, “wet nanotech” (i.e. nano-bio, bio-nano or bioscience) has emerged from being the boosters’ whipping boy to become the dominant force not only in illuminating the nanocosm but also in exploiting it.

The Power of Wet

It turns out that “wet nanotech” has a lot going for it. The biosciences constitute humanity’s most sophisticated set of techniques for manipulating matter. That they

Nanotech at Work

A promising biochemical process is creating excitement in the nano-world. The technique is called site-specific mutagenesis, and won biochemist Michael Smith the 1993 Nobel Prize in Chemistry. It lets biologists zoom in to a precisely predetermined location on a huge DNA helix, hold it immobile, and alter it by as little as a single atom. This is microsurgery on the molecular scale. If you inspect things from an IT viewpoint — as many bioscientists are doing, using another brand new discipline called bioinformatics — you realize that Smith’s invention is a molecular editing function. Search, find, delete, insert, modify. This is word processing for ACGT, the four letter alphabet of life.

do so en masse, with up to twenty-eight orders of magnitude worth of molecules at a time, does not matter. Wet nanotech can still reach high levels of reaction predictability and product accuracy.

There is another compelling reason that the future of nanotech lies with the classically trained scientists. The sub-micron world is not a quiet one, waiting to be manipulated by engineers who foresee tiny devices quietly assembling atoms into exactly what they want. At the molecular level, there is a whole lot of vibration going on. Perhaps the best way to visualize the problem is to imagine a tiny submarine traveling through the blood stream — assuming such a nanobot could ever be built. The same forces that perpetually agitate living material and the nonliving molecules that lie within it, would batter an artificial nanomanipulator into junk. To a synthetic submarine cruising the bloodstream random molecular collisions would seem like an avalanche of ten-ton buildings arriving head on at a hundred miles an hour. Our imaginary nanocraft would be smashed in seconds.

Contrast this with the classical biochemists’ approach. They use molecules to manipulate matter — molecules that have been designed by nature to withstand the violent storms experienced in the human bloodstream and other organisms. These are the true molecular assemblers, and they are more rugged than cast iron.

Push and Pull

Bioscience is currently spinning off a wide variety of technologies, ranging from medical therapeutics and diagnostics to entirely new molecular approaches to molecular computing. These technologies equal or exceed the functions that nano boosters imagine for their nonexistent nanoassemblers.

Technology push is the process by which those who

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Wet Nanotech*(continued from page 6)*

originate ideas (for example, nonprofit R&D institutes, universities and government labs) try to get their findings into the commercial world and earning money.

Technology push doesn't always work. For one thing, basic researchers often overestimate the impact of their raw results and underestimate the sweat it will take to commercialize them. And many scientists don't feel comfortable making the rounds looking for the capital needed to make their discoveries useful.

Fortunately for nanotech, another force is also at work — *market pull*. This is the force exerted by the private sector to locate promising knowledge outside its own labs, assess it, buy or license it, adapt it and package it to sell. The past masters of market pull are the international biopharmaceutical companies. The big drug firms have full-time staff whose only job is to scan the scientific literature for the first sign of a potential product. Their search is not limited to formal journals. It extends to reading discussion papers and even overhearing gossip at scientific conventions.

The biopharm scouts tour labs and persuade scientists to sign away present and future intellectual property for stock options and residual payments that will materialize if and when their research leads to a marketable process or product. The scouts' ace in the hole is to offer what every scientist lusts for — further research funding. For all these reasons, today's bio-industry is already in the lab, influencing what is studied, how and when. Multinationals perch like ravens on laboratory windowsills, blank contracts in their claws. Despite the questionable ethics, it's indisputable that bridges open overnight between new facts and new financing. The intensity of market pull from the biopharms constantly advances wet nanotech.

Thinking Molecules and Nanodiagnostics

Wet nano is expanding so fast that in some areas it's going dry. A good example is molecular computing. Think back to the 1953 Watson-Crick model of the double helix — which graphically demonstrates that a living gene is at its core information. Life, in other words, is synonymous with data.

DNA is designed to store vast quantities of data, and natural enzymes can manipulate this information. Essentially, DNA-based computing would abandon the linear processing current computers use for a more parallel approach involving solving many small tasks at a time.

Similar advances will be made in nanodiagnostics. Consider the work being done at the University of Calgary in Canada. There, a laboratory team is using nanoscience to reduce the amount of medical test sam-

ples needed from milliliters to femtoliters — a far smaller measure.

Tests on large samples tend to be slow and costly. Testing smaller samples will save money and make testing more readily available. ■

For Additional Information on one commercial application,
go to: <http://my.summary.com>

**Fullerenes, Buckyballs and
Hundred-Mile Elevators**

The biggest news in nanotech today is grunge. Filth. Crud. The soft, black, fine-grained stuff that smears your hands when you clean a car engine, a kerosene lantern or a wood-burning fireplace. It's found everywhere an organic substance has been burned, and has an Anglo-Saxon name unchanged in centuries: soot. Strangely enough, new products based on this humble substance have spun off some of the most commercially advanced sub-sectors in nanotechnology.

The Chemistry of Carbon

Soot has been part of human life since we harnessed fire. We may have streaked our faces with it when we went to battle. Soot antedates humanity. It's 100 percent carbon, atomic number 6 — and life on earth is based on it. Soot is literally in our genes.

Soot also underlies a lot of current nanotechnology. Carbon atoms are gregarious little guys. They stick to almost everything — including themselves — using something called a covalent bond. Atoms bond by sharing an electron. Covalent bonds involve two electrons. The double dose of cement makes them fast to make and hard to break. Carbon allotropes such as soot are so stable they can stay as they are forever.

The chemistry of carbon is central to life. Imagine six atoms in a long string, every other pair snugly coupled with a covalent bond. Bend the string so that it forms a ring, cement the ends, and you have a six-sided loop called a benzene ring, which is the linchpin of organic chemistry.

Many drugs are based on the benzene ring because each angle of the hexagon provides an attachment point for medically useful stuff. The problem is that the bonds between neighbors aren't rigid even if they are strong, and the ring can bend and twist out of shape. This can reduce the medication's effectiveness.

Enter carbon nanotechnology with a set of molecular allotropes called fullerenes. It all started with an American engineer named R. Buckminster Fuller sixty years ago. He observed that a great many monuments had as a design feature ornamental cannonballs arranged

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Fullerenes, Buckyballs and Hundred-Mile Elevators

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in various ways. Bucky wondered what shape would result if the balls were stacked and arranged in the way that used the minimum volume.

The answer was what we know today as a geodesic sphere. A practical example of his discovery is the geodesic dome — a structure that supports itself rather than requiring internal supports.

It turns out that what Buckminster Fuller did with artificial spheres like cannonballs, nature has already done with carbon atoms. Soot atoms can spontaneously arrange themselves into structures like the U.S. Pavilion at Expo 67 in Montreal — a geodesic dome sixty yards in diameter. These carbon allotropes are called buckminsterfullerenes — abbreviated to “buckyballs.” A buckyball molecule looks like a soccer ball.

Implications of the Buckyball

If a benzene ring can deliver drugs, then a buckyball should do even better. A buckyball is strong and stable and could in theory deliver treatments with greater efficiency and more consistent effects. A lot of bio-nano start-ups and giant biopharm multinationals think so and they are betting millions of dollars on their predictions. Currently under development are buckyball drugs for HIV infections, treatment of Lou Gehrig’s disease, and cancer.

Stronger than Spiderwebs

Carbon materials offer us the opportunity of building things taller, wider, stronger and safer than anything we have attempted before. The key to all this is the single-walled buckytube. It’s twice as strong as spider web silk, which in turn is 100 times stronger than bridge-grade steel. A carbon fiber cable two millimeters in diameter — the width of a ballpoint pen refill — could support twenty tons and not come close to its theoretical breaking point. At 25 tons, it would still be loafing. That is because buckytubes’ actual strength comes far closer to ideal values than most other materials can manage.

To fulfill soot’s structural promise, nanoscientists who would be nanopreneurs must first grow buckytubes far longer than they have yet done. But once that has been accomplished, a cable the thickness of a pencil should be able to support the Brooklyn Bridge. Entirely new species of bridges, buildings and aircraft will soar aloft with no visible means of support. Untearable fabrics, hair-thin auto bodies and nonpierceable body armor for police and the military will all appear.

Equally promising is what happens when you take a fullerene and unzip it at one or both poles. This is a buckytube. Discovered in 1991 by Dr. Sumio Iijima, buckytubes may be covered by one or more layers of carbon atom sheathing. IBM has used the concept to begin developing transistors for use in computing. Possible in the future are elevators based on buckytubes that can launch satellites into space by walking them up a giant ladder rather than rocketing them aloft. More practical applications today include flat-screen, ultra-thin video monitors. Within the next few years we may see television screens no deeper than a coat of paint. ■

Nano-Pitfalls

Those in the nanocosm who believe they can build a molecular assembler or nanobot — K. Eric Drexler, for example — may find that the process will be impossibly complicated. As Dr. Drexler imagines it, nanomachinery is staggeringly intricate. But that’s not the worst of it. Actually running such an animal will be even harder. To function, a Drexlerian nanobot would have to first store high-level instructional software onboard in large quantity. And to work as the Drexlerians want, the nanobot would also have to distinguish among many possible conditions, materials and configurations and then act instantly and appropriately in every case. It would have to sense distances to subangstrom accuracy and act in shavings of a picosecond. Given the absurdly tight dimensional constraints, there would be literally no room for error.

A nanobot that fit into a 50 nanometer cube might require half a billion lines of ROM software, permanently embedded somewhere in its unthinkable minuscule frame. Dr. Drexler and his acolytes speculate about how these data might be encoded. Even molecular memory would be too clunky for a working nanobot. This just won’t happen. Engineers can’t bend nature to the extent required to make it all work. It is hubris to think it could.

Real nanotechnology, as opposed to the boosters’ sci-fi speculations, will continue to be advanced by rigorous experiment and careful theory from such classical disciplines as physics, materials science and chemistry.

Does this mean nanoscience won’t bring us astonishing discoveries, or nanotech a parade of amazing new products? Not at all. Our new ability to see the nanocosm, to get it to assemble itself to our detailed specifications, will shortly create the most profound changes since our ancestors tamed fire. Stay tune: it’s going to be one wild ride. ■

For Additional Information on a list of the kinds of advances we can expect in the next decades, go to: <http://my.summary.com>

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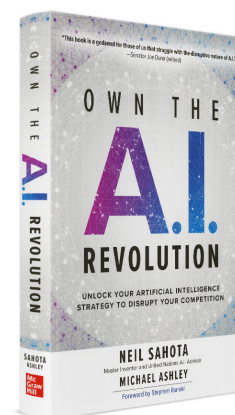
Own the A.I. Revolution

Neil Sahota and Michael Ashley

Own the A.I. Revolution

Unlock Your Artificial Intelligence Strategy
to Disrupt Your Competition

by **Neil Sahota and Michael Ashley**



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THE SUMMARY IN BRIEF

Artificial Intelligence (A.I.) is on the verge of disrupting every domain of human existence. What does that mean for your business? Everything. Building on the power of A.I. is the factor that will determine success or failure in the very near future—and this in-depth guide provides everything you need to be a leader in this revolution.

Own the A.I. Revolution provides a future-forward look at A.I.—how it will look in the coming years, the countless business opportunities it will offer, the risks that come with it—and delivers the knowledge you need to navigate it all in real and practical ways.

A.I. sounds scary to some, but the best business leaders see it as an opportunity—as a way not only to drive profits and outpace the competition but to build value for customers and make the world a better place. It's time to face our brave new A.I.-driven world—and make sure you own the A.I. revolution!

IN THIS SUMMARY, YOU WILL LEARN:

- Different types of A.I. and how they developed.
- The difference between the “old internet” and the Internet of Things.
- How A.I. is eliminating some jobs but may create others.
- How you can use A.I. now to improve your business, including a 10-step process for getting started.

‘Who Could Have Imagined?’

The landscape of American business is littered with the bones of companies that achieved great success meeting the needs of a market at a particular time, only to ignore warnings of disruptive technologies, emerging competitors, and changing consumer demands. How many people born in the 21st century have ever heard of the Pullman Company, Woolworths, Marshall Field, Kodak, or even Blockbuster Video?

All these once-great American brands had one thing in common: They failed to see the signs of coming disruptions. They stand as a cautionary tale for what happens to businesses lacking the ability or willingness to sense what’s coming and meet the future on its own terms.

Marshall Field & Company was a Chicago-based retailing icon that dominated its field for decades, only to fall victim to changes in retailing trends it failed to anticipate. Founded in the mid-nineteenth century, Marshall Field grew to become as synonymous with the Windy City as Macy’s was to New York or Neiman-Marcus was to Dallas.

Its iconic Great Clock at the southeast corner of State and Washington streets became a Chicago landmark and was immortalized in a famous *Saturday Evening Post* cover illustrated by Norman Rockwell.

However, Field’s decline came in two distinct waves, both of which were predictable to anyone paying close attention. The first hit in the 1950s and ’60s as, in the boom years following the end of World War II, retail activity moved out of the central city to the expanding suburbs. In reaction, the company opened satellite stores in most major Chicago-area shopping centers, but these scaled-down facilities failed to capture the majesty and allure of the original downtown location.

Much later, in the 1990s and early 2000s, Field fell victim to the same plague to shutter so many other retail operations during this period: the rise of the internet. Failing to take e-commerce seriously, Field made only a token attempt to go online. As a result, its income dropped quickly into the red, and the company was ultimately acquired by Federated Department Stores in 2004, which dropped the Marshall Field moniker entirely, renaming it Macy’s.

Well, nobody’s perfect, you might say. And, sadly, this is true. While we fancy ourselves to be rational beings, the fact is, most people are driven by emotions. Instead of basing business decisions on cold calculations rooted in solid data,

many, if not most, are the result of pride, ambition, ego, spite, anger, stubbornness, and misplaced hope.

Enter artificial intelligence (A.I.).

When it comes to A.I., a business, any business, your business, can better identify the market forces already at work and, perhaps more importantly, predict coming trends with amazing precision. A.I. can help you understand what these trends mean to you and your customers and provide guidance on how to adapt your business operations accordingly.

As A.I. becomes more sophisticated, it will not just offer advice but will proactively change your business model, *without prompting*, to anticipate challenges well before they become problems. And it will do all this without the emotions, prejudices, myopia, and egoism clouding so much human judgment.

Today, companies like Amazon, Uber, Tesla, and Netflix rake in billions thanks to A.I. algorithms that, historically speaking, are just in their infancy. Their leaders learned to think differently and therefore transformed their businesses. You should too. To fear or reject A.I. is to go down the same dark road as did Pullman, Woolworths, Marshall Field, Kodak, and Blockbuster, names once associated with success, now forever tinged with the patina of failure.

To embrace A.I. is to welcome a future that, well, to coin a phrase, you can never even imagine.

How Did We Get Here?

Just what is artificial intelligence? Merriam-Webster’s Dictionary defines it as “the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.”

Yet, while artificial intelligence has been studied for decades, there is as yet no widely held consensus on what the term actually means. Defining the first part of the term is fairly simple. Artificial means, “that which is not found in nature; man-made.” The second part of the term, intelligence, is significantly more problematic. Most psychologists now recognize intelligence is far more than just the ability to acquire and regurgitate facts and figures. Intelligence can exist on many levels.

Thinking Systems

Traditional computers have been historically limited by the skill and creativity of their systems designers and

Another distinction of true A.I. is that it can *anticipate* its users' needs, something even the most powerful super-computer cannot accomplish.

programmers. The mark of artificial intelligence is a machine's ability to *learn* and *adapt*. If a conventional computer's programming is buggy or otherwise flawed, it will continue to make the same error over and over again, regardless of how many computations its central processor can perform per second. A computer incorporating A.I., by contrast, will recognize its error and attempt to fix it.

Another distinction of true A.I. is that it can *anticipate* its users' needs, something even the most powerful super-computer cannot accomplish. This is what makes A.I. such a game-changer.

Most historians of science date the field of A.I. back to the summer of 1956. This is the year John McCarthy, then Assistant Professor of Mathematics at Dartmouth College, the private Ivy League research university in Hanover, New Hampshire, hosted an eight-week-long symposium on a subject he artfully coined as "artificial intelligence."

In 1958, responding to the Soviets' launch of Sputnik, the world's first artificial satellite, the U.S. Department of Defense created the Advanced Research Projects Agency to direct and fund cutting-edge scientific research projects at such universities as MIT, Stanford, and CalTech. Later renamed the Defense Advanced Research Projects Agency (DARPA), the group became a major supporter of A.I. research during the 1960s.

Perhaps most famously, in 1969, DARPA launched the ARPANET, a precursor to the internet, a network allowing research computers at universities across the country to "talk" to each other via a common communications system.

In the 1980s, more technology caught up with theory, kicking A.I. development into high gear. Perhaps the most notable advance in the field was the development of "expert system" software. These are decision-making tools users employ to direct actions based on large volumes of data. They require a large knowledge base—that is, a collection of facts and assertions accurately describing the real world—and an inference engine, a logic system using existing knowledge to deduce new information.

By the late 1990s, due largely to the availability of increased computational power, A.I. was being used widely for logistics, data mining, marketing, and medical diagnosis.

The Machine Learns

Even as computers became more powerful and capable of storing vast amounts of data, they still couldn't acquire information on their own. A computer's brain power was limited to the operating instructions contained in its programming and the data people chose to feed it. For computers to be truly intelligent, they needed to *learn how to learn*.

In nature, animals acquire knowledge in one of three ways: instinct, instruction, and experience. Since their invention, computers have learned almost exclusively through instruction. Programmers had to work out in painstaking detail every step of every operation a computer was intended to perform.

Until recently, self-learning had been the "Holy Grail" of computer science. Most A.I. researchers believed that for a computer to be truly intelligent, it had to be able to learn from experience. Just like these brilliant autodidacts, a computer had to recognize what it *didn't* know, to search for sources of additional knowledge, and, when necessary, to ask for help.

Breakthrough

It took the A.I. computer AlphaGo to show the world what real artificial intelligence looks like. First unveiled in 2016, AlphaGo ushered in far more than an incremental change in A.I. technology. This thinking machine, capable of playing the ancient Chinese game of Go, took computing a quantum leap forward into uncharted territory.

Go is a Chinese board game light-years more complex than chess. Mathematicians have posited that the possible moves in Go "exceed the number of atoms in the universe," and the game requires skills, such as creativity and abstract thinking, once deemed uniquely human.

In March 2016, AlphaGo, developed by Alphabet Inc.'s DeepMind Technologies division, beat legendary Go player and 18-time world champion Lee Sedol in a five-game match.

So what distinguished AlphaGo from Deep Blue, the computer that beat chess grandmaster Garry Kasparov in 1997?

The fundamental difference is that while IBM engineers taught Deep Blue to play chess, AlphaGo *taught itself* to play Go. Practicing against human players and other, less advanced Go-playing computers, AlphaGo tested and evaluated strategies. *On its own*. It took chances. It learned from its mistakes. It accomplished this feat because IBM engineers built into it an artificial neural network facilitating “deep learning.”

Sometimes called “deep structured learning” or “hierarchical learning,” deep learning is a subset of machine learning based on understanding what data represents rather than task-specific algorithms.

Special Sauce: Decisions, Decisions

When making major decisions, the list of variables can seem endless. Consider the U.S. Department of Defense (DOD). When evaluating a contractor to build a new weapons system such as a tank, fighter jet, or destroyer, the process can take years and cost tens of millions of dollars, requiring competing companies to submit complex cost proposals, complete mountains of paperwork, and even build pricey demonstration prototypes.

Even then, the system the DOD selects may not perform up to expectations, leading to further expenditures and, in worst-case scenarios, significant loss of life. The Lockheed-Martin F-35 Lightning II supersonic jet fighter program is an example of just such a DOD boondoggle. Despite a lengthy procurement process, the program’s development, as of mid-2018, is reported to be \$163 billion over budget and seven years behind schedule.

Wouldn’t it be nice if there was a machine to make decisions for us? Especially complex decisions with Lightning II-type opportunity costs? Imagine how much time, money, and aggravation might be saved if a thinking machine—a computer—could acquire and evaluate every factor impacting a choice, then recommend the best possible action course. Such a device would be the next best thing to an authentic fortune-telling machine.

Computer-based decision-making accounts for the explosion of personalized recommendations found on retail sites, like Amazon.com, or streaming services, like Netflix and Hulu. But computers initiating consumer behavior-based buying suggestions is just the tip of the iceberg. Things will really get

interesting when A.I.-based systems connect with the Internet of Things (IoT).

Everything’s Gonna Get a Lot Smarter

Whereas the “old” internet merely delivered information, the IoT promises to reach deep into the physical world and control virtually anything with an on/off switch. Digital assistants, such as Siri (Apple), Alexa (Amazon), and Cortana (Microsoft), use sophisticated voice recognition software to both understand our instructions and act on them. Eschewing the keyboard for a more direct person-to-machine experience, these interfaces allow users to acquire information not via tedious text keystrokes, but rather through natural verbal commands.

In the not-too-distant future, everything from our refrigerators and dishwashers to our cars and bedroom table lamps will likely be connected to the web, providing endless actionable data and unparalleled control over the technology with which we interact on a daily basis.

Where A.I. will make its biggest impact is in providing behind-the-scenes control offering valuable efficiencies without personal intervention or even knowledge. Let’s consider energy management. Already, smart thermostats, like Nest, not only adjust heating and air conditioning demands when we enter/leave the house, these systems can adjust accordingly as occupants move from room to room, using proximity sensors.

Soon, A.I. will communicate with an area’s electric utility to ensure power consumption is perfectly balanced with grid capacity on a second-by-second basis. Outside of the home, the IoT of the future will deliver astonishing efficiencies on a national or global level. For example, sensors monitoring air and water quality could communicate with manufacturing and transportation companies, creating feedback loops mitigating pollution and stemming the rise of global warming.

Within just a few decades, private automobiles could give way to autonomous cars communicating with not just surrounding vehicles but the traffic grid as a whole, allowing vehicles to move at much higher speeds while virtually eliminating traffic jams.

These incredible applications barely scratch the surface of what artificial intelligence is capable of. Even more important, A.I. has the potential to *answer questions we didn’t even previously know to ask*. The limitations of our intelligence preclude us from asking questions about things we haven’t yet even considered, precisely due to our limitations. Therefore,

a thinking machine capable of processing vast amounts of data—recognizing complex patterns in ways our minds have yet to approach—could open avenues of inquiry we have yet to even conceive.

Fascinating, right? And perhaps even a bit frightening. Advancements in A.I. are likely to put issues like privacy and individual liberty at the forefront of our political discussions. Certainly, like any new technology, A.I. must be carefully controlled and regulated, but it needn't be feared.

A thinking machine capable of processing vast amounts of data. . . could open avenues of inquiry we have yet to even conceive.

Just What *Is* Artificial Intelligence?

At present, there are two types of artificial intelligence currently in development. The first, what most people think of when they hear the term A.I., is artificial general intelligence (AGI). Popularized in science fiction, it is evidenced by computers or humanoid robots speaking and behaving in ways similar to and, in some cases, indistinguishable from human beings. HAL 9000 in *2001: A Space Odyssey*, C-3PO in the *Star Wars* franchise, or Lt. Commander Data in *Star Trek: The Next Generation* are all examples of AGI. So far, scientists and engineers have not even come close to achieving this ideal.

However, the other type of A.I., artificial narrow intelligence (ANI), has been with us for some time. ANI describes any system using algorithms to make decisions regarding a single subject or, as the name implies, a very narrow range of subjects.

For instance, AlphaGo, the Go-playing computer, is an example of ANI. The machine did a brilliant job of teaching itself a game and honing its competitive skills to the point it could beat even the best human player, but it would still be helpless if asked to compose a limerick, paint a sunset, or prepare sushi.

Likewise, companies, utilities, and government agencies

now regularly employ ANI systems to pick stocks, determine insurance rates, and allocate electrical power, but these systems would be useless against problems they weren't specifically designed to address.

Robotics, one of high-tech's fastest-growing fields, is highly dependent on ANI. Using sensors and physical actuators, modern robots now perform a wide range of functions independent of human operators. You are probably familiar with robot vacuum cleaners like the iRobot Roomba, the Samsung POWERbot, or the Shark ION.

On a larger scale, many warehouses, shopping centers, and stadiums now employ robot security guards to navigate corridors, detect and report intruders, and interact verbally with visitors. As of this writing, intelligent robots are being introduced into restaurant kitchens, surgical operating rooms, and onto the military battlefield.

And, of course, autonomous automobiles, which may be ubiquitous within 10 years, are actually mobile robots equipped with, among other things, "computer vision," a branch of A.I. allowing computers to "see," analyze, and understand the nature and significance of physical objects such as pedestrians, lane dividers, and stop signs.

As of 2018, A.I. has proven itself capable (or nearly so) of understanding and communicating in human speech, competing in strategic games, like chess and Go, driving autonomous cars, utilizing intelligent routing in content delivery networks, and conducting military simulations.

Yet so far, no comprehensive system has yet been devised capable of accomplishing all of these functions at once. At present, such diversification remains the sole province of the human brain. In the future, this may not be the case.

Metathesiophobia

Metathesiophobia. Try wrapping your mouth around this word. It means "fear of change." It concerns irrational worries about altering the status quo. Stomach-churning, cold-sweat inducing metathesiophobia can explain the resistance so many individuals, even otherwise savvy businesspeople, have toward artificial intelligence. They perceive A.I. as a threat to their livelihood, values, perhaps even their very humanity. Putting aside sci-fi doomsday scenarios for a moment, is there a case to be made that A.I. is a threat?

No shortage of articles and reports portend the demise of whole industries of workers, raising the alarm of officials

and governmental agencies. “A.I.-enhanced technological unemployment is one of the major issues of our time,” says Irakli Beridze, Head of the Centre for Artificial Intelligence and Robotics, United Nations, UNICRI.

Many of us have struggled to get digital assistants like Siri and Alexa to understand simple questions. We have also had our GPS systems take us on circuitous routes or down blind alleys. Just imagine what frightening mistakes killer drones might make in order to keep us safe.

What are people so afraid of? Let us count the ways.

People fear machines will replace them. Many industries, from manufacturing to farming, have already seen automation upend tasks humans once did. Thanks to automation, many jobs once requiring hundreds of humans, such as warehouse fulfillment positions, now only take a few dozen, if that. Many more jobs are already in the crosshairs, from truck drivers to chefs.

People fear machines will be misused. In just the past decade, we’ve seen sophisticated computer algorithms used to plant malicious malware in personal computers as well as breach social media platforms to obtain users’ data. Now consider the harm criminals, terrorists, a hostile foreign power, or just an amoral actor could accomplish with access to the stock exchange, water management systems, or a commercial air traffic control network.

People fear machines will turn on us. Perhaps the most serious—and most unfounded—of all our technophobias, this has been fueled by decades of computer-run-amok thrillers from *2001: A Space Odyssey* (1968) to *The Terminator* (1984) to *The Matrix* (1999) to *Ex Machina* (2015). The central idea is that even if a highly intelligent machine could be designed to be perfectly benign, without proper ground truths and training, no one knows for sure what kind of attitude a self-aware machine would have toward its human creators.

If we open our minds to A.I.’s potentialities, we are bound to escape the more crippling danger author Frank Herbert warns against—losing our minds. By the same token, considering A.I.’s potential benefits promises the most powerful of tools for both personal and business success.

Soon, A.I. systems are likely to be integrated into virtually every industry, which leads us to one key question: What happens to all the people replaced by A.I.? The answer may surprise you.

A.I. Threatens to Change Our Relationship to Work

It may be surprising to learn that the idea of working sunup to sundown is, evolutionarily speaking, relatively new. And thanks to A.I., this may again drastically change.

For hundreds of thousands of years, humans lived in small, isolated bands of 40 or 50 people, who hunted game for food and clothing, supplementing their diet by foraging for wild grains, vegetables, fruits, and mushrooms. But according to anthropologists, only 50 percent of a hunter-gatherer’s time was necessary to acquire the needed calories for survival. The rest was available for other pursuits, be it playing games, creating art, fashioning musical instruments, socializing with family and loved ones, or trading local gossip.

Now compare this leisurely existence to the modern office worker’s day. According to a 2015 article in *Time*, the average American puts in 47 hours per week at their job. Meanwhile, the U.S. Census Bureau reports the typical worker spends nearly half an hour traveling to work daily with nearly 20 percent of workers commuting for more than 45 minutes.

And that’s not to mention the 3.6 million individuals who suffer through a commute longer than 90 minutes. And, as we know, for many people in the 21st century, work doesn’t end when the official workday does. Many take their jobs home with them, responding to calls and emails at all hours. So much for free time.

Economist John Maynard Keynes felt emboldened in 1930 to proclaim that technological change and productivity advances would usher in a new epoch of leisure in which we need only work 15 hours per week. Yet today, even with computers and robots making us more efficient than we were just a generation ago, we’re still working harder than ever.

Is the dream of automation-enabled leisure really so far-fetched? And could A.I. be the tool to get us there? Perhaps, but there is bound to be considerable pain along the way as many jobs—and our long-held ways of thinking about work—transform.

The Jobs—They Are Going

Researchers Carl Benedikt Frey and Michael A. Osborne have concluded that up to 47 percent of U.S. jobs risk being automated by 2050. High on the list are tax preparers, telemarketers, legal secretaries, but also real-estate brokers, restaurant cooks, and even pharmacy technicians.

What will happen to the people A.I. replaces?

The optimistic answer is that while a lot of jobs will disappear, many new ones will be created.

But even complex, creative work is at risk. Did you know that A.I. can make movies? Well, maybe not complete, 90-minute features yet, but IBM's Watson did generate a three-minute trailer to promote the thriller *Morgan* (2016). Already, the venerable D.C.-based publication the *Washington Post* has begun outsourcing some of its article writing to algorithms.

What will happen to the people A.I. replaces? The optimistic answer is that while a lot of jobs will disappear, many new ones will be created. Thirty years from now, people may be employed as virtual world architects, A.I. personality engineers, drone managers, human-technology integration specialists, urban agriculturalists, avatar designers, 3D food print engineers, nano-medics, and hyperloop transport engineers.

But it isn't all good news on the economic front. A significant portion of the public will lose their jobs. This is especially true when it comes to people who are older, unskilled, or undereducated. As a result, there is a push underway to change the way we view work and how we remunerate our citizens—especially those affected by the coming change.

How Can I Use Artificial Intelligence Now?

You may be asking yourself, “How can my business take advantage of A.I.?” The answer depends on several factors: your willingness to adapt, the time and energy you can invest, the size of your business, and your budget.

Let's now describe how some of today's industries and players are using A.I. to enhance their fortunes.

Sales. “I don't know if I can do that, but if I could, would you buy this car today?” Sleazy salespeople have been known to use cheesy lines like this to sell cars for a long time. And as a result, nearly everyone detests the auto buying experience. According to a 2016 Beepi Consumer Index, a full 87 percent of Americans dislike car shopping at dealerships.

Knowing this to be true, the Detroit-based Feldman Automotive Group began deploying A.I.-based chatbots to improve car buying. Instead of being harassed from the

moment they step on the lot, prospects can interact with chatbots at home—on their terms.

“[The platform] targets prospects in a geographic radius of several Feldman brick-and-mortar dealership locations with an advertisement integration through Facebook's Newsfeed,” writes Dom Nicastro for CMS WiRE. “The chatbot can then strike up direct-message conversations with prospects in Facebook Messenger. Online assistance for customers is also available through the chatbot.”

Marketing. Today, A.I. can not only predict customer buyer patterns, it can shape sales communications targeted to individual customers. Backed by a \$65 million investment after going through four funding rounds, the startup Lattice Engines uses Big Data to predict who will buy a product and when. So far, they have helped drive sales for major companies, including Adobe, Citrix, Dell, Hootsuite, and Staples.

Their model involves three steps: (1) connect, (2) segment, and (3) activate. In stage one, Lattice aggregates and consolidates multiple sources of customer data into one place. This can include anonymous web activity, firmographics, sales activity, website profiles, growth trends, and more. The next step is to segment and build audiences through the power of A.I. Last, Lattice executes on the data with a campaign to identify targets in multiple channels with any number of digital/social ads and emails.

Business intelligence. Beyond using Big Data for marketing purposes, we are also witnessing the rise of A.I.-powered business forecasting. How it works is that machine-based algorithms identify and demystify trends and insights. Domo exemplifies the type of company operating in this field. A business dashboard creator, it offers management tools for collecting valuable, actionable information for decision-making.

In 2017, it announced the invention of Mr. Roboto at Domopalooza, its annual user conference. In some ways Mr. Roboto is the company's answer to Siri and Cortana by way of a business oracle. Two key features of Mr. Roboto include an alert center for decision makers to detect anom-

alies, understand personal data consumption patterns, and analyze an organization's most-watched metrics.

The other feature concerns data science. Offering predictive analytics, it allows Mr. Roboto to discern, then respond to crucial challenges, including customer churn, sales forecast variances, and real-time ROI anomalies.

As you begin to consider applying A.I. to your own business, it's helpful to consider following these steps:

- Build your understanding of A.I., particularly the remarkable new capabilities it offers.
- Focus on a specific problem or opportunity.
- Think of your ideal solution. ("Pie in the sky" ideas are welcome at this developmental stage.)
- Consider what A.I. capabilities can help you achieve your solution.
- Develop a vision document to establish the high-level A.I. architecture for the solution. (This is where you will need to come down to Earth.)
- Create the training strategy for your A.I.
- Build, train, and test your A.I. solution.
- Leverage existing technology (such as application program interfaces).
- Focus on programming the unique user experience you want to create. (What is a differentiator for your organization?)
- Launch your A.I. solution.

Economist and author George Gilder asserts that Google

has it all wrong when it comes to the view "that artificial intelligence will make human minds obsolete and that we'll soon produce machine-learning tools and robotics that excel the capabilities of human brains."

No matter how much our technology evolves, Gilder believes, it will never replace human consciousness. "Machines are not capable of creativity. Human minds can generate counterfactuals, imaginative flights, dreams."

Based on Gilder's logic, an A.I., however powerful, will always play second fiddle to us humans he views as "oracles"—progenitors of ideas and novelty. We needn't fear becoming a sidekick to our businesses—or our lives—because we will always be in control, consciously creating the world.

If we follow this logic, artificial intelligence ceases to be a threat and instead emerges as our greatest tool for true human potential.

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Neil Sahota is an IBM Master Inventor, United Nations (UN), artificial intelligence (A.I.) subject matter expert, and faculty member at the University of California at Irvine. With 20-plus years of business experience, he has worked with Global Fortune 500 companies to create disruptive products/solutions powered by emerging technology.

Michael Ashley is the co-author of several books, including *It's Saturday Morning: Celebrating the Golden Era of Cartoons 1960s-1990s*, *Catch the White Tiger*, *The Six-Figure Writer*, *Fiction in A Weekend*, *This Works Marketing*, and *Evolution by God*. A columnist for *Forbes*, he writes about A.I. and tech.

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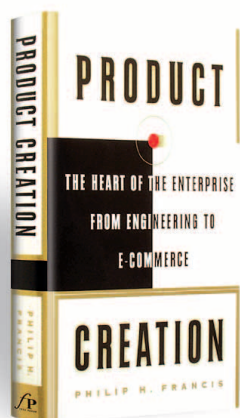
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Product Creation

Philip H. Francis

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FILE: MANUFACTURING



By Philip H. Francis

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The Heart of the Enterprise from Engineering To E-Commerce

PRODUCT CREATION

THE SUMMARY IN BRIEF

Product creation is the fuel that feeds growth. The basis for enterprise success is the continuous stream of new products in the marketplace. All the laudable reasons for being in business — profits and earnings, shareholder returns, service to customers, opportunity and fair treatment of employees, and assistance to the communities in which the company operates — directly depend on the effectiveness of new product creation. To grow your company, you must master new product creation.

But taking a new product from conception to market involves many interconnected steps. It relies on marketing and marketing intelligence, product definition, planning and approval, research and engineering development, process development, product launch, and after sales service. This summary will provide you with a road map for success in the rapidly changing, highly competitive arena of new product creation.

You will learn how to:

- ✓ Come up with new product ideas.
- ✓ Coordinate manufacturing and production processes.
- ✓ Set up effective IT systems.
- ✓ Become a leader rather than a manager.
- ✓ Delight and create loyal customers.
- ✓ Create a quality product or service.
- ✓ Measure and manage operations.
- ✓ Manage your company's intellectual property and liability.
- ✓ Create effective R&D systems.
- ✓ Harness technology now and in the future.



PRODUCT CREATION

by Philip H. Francis

— THE COMPLETE SUMMARY

How to Excel At Product Development

There are two steps to excellence in product creation: creating a steady flow of innovative ideas and putting those ideas through a process that turns them into profitable products.

How do you do this? First, you must mobilize a continuing stream of new product proposals from every corner of your organization. Once the ideas start flowing, you'll need to evaluate them rationally and objectively so you end up selecting the best. Your goal is to choose a portfolio of ideas that together give you the best possible shot at a successful business future.

Your portfolio should include small and large projects, and cover all your business' market areas. Each project must have at least one formal review, and shouldn't be allowed to continue through launch without critical justification. You must also critically review your entire project portfolio, preferably twice a year.

Once the portfolio is in place, the projects must be managed. The process of managing product development projects — the second criteria of excellence in product creation — consists of four steps: business case justification, concept feasibility, product development, and pilot and project startup.

Radical New Product Development at Canon

When Canon was looking for a way to compete with Xerox, it had to come up with an entirely new product. Xerox excelled at service, and Canon stood little chance of developing the kind of infrastructure that its competitor had in place. So instead, Canon developed a copier that didn't need service! Canon put all the parts likely to require service into the toner cartridge. Consumers were already accustomed to replacing the cartridge regularly, so there was little resistance to the concept. The result is that Canon enjoys a much greater market share than Xerox, and customers "repair" their own copiers quickly and easily.

Stage 1: Business Case Justification

Projects that survived your initial review are now ready for the product development process, or PDP. Assign each project to a team, who will prepare the business plan for the project's entire life cycle. This step is crucial. Experienced product and financial planners must lead the effort. They will forecast development costs and their timing and determine the net present value and internal rate of return expected from the project.

In most cases, your product won't be entirely new, but will be a derivative of a current company offering. You therefore already have some history on which to base estimates. The team should ask itself why the market will respond eagerly to the product. What is its value to customers? Decide whether this will be a low cost commodity product or a high value, high prestige one. Generally, products will fare better with tried and true technology, but there may be products that should be cutting edge. Decide which it will be.

Your team must also consider product scope. Can this product line be expanded so that consumers will buy related products or accessories? Good examples of effective product scope broadening include Harley Davidson's sale of riding gear and Disney's introduction of Disney Stores.

When the team begins considering market channels, make sure they pay attention to e-business. This channel offers tremendous economic advantages. Finally, the team must consider product promotion. Will it be media driven, promoted at the point of purchase, or rely on brand-name equity?

Stage 2: Concept Feasibility

Now it's time to forge ahead. Involve customers, who are your ears in the marketplace, in your development

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The author: Philip H. Francis, a Managing Partner for Management Consulting at Mascon Information Technologies, was previously Director of Advanced Manufacturing Technology at Motorola and Chief Technology Officer at Schneider Electric.

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How to Excel At Product Development

(continued from page 2)

plans early. Next, involve your manufacturing operations directly to know if your new product is feasible. Concurrent engineering is the key. You must coordinate production design with the manufacturing process. A good rule of thumb is that within the first 20 percent of the product's development schedule, 80 percent of the total production costs are locked in.

Stage 3: Product Development

This is where reality hits. Now the focus is on developing a specific product design, along with the process, equipment and layout needed to meet production goals. Design is also very important and should be considered early on. Design — style and uniqueness — is becoming more and more important in the marketplace. Customers no longer make choices based solely on function and price. They also want eye appeal. Also look carefully for design and process patent opportunities. This is the time to lay the groundwork for intellectual property protection.

All design, engineering, materials and production planning must be completed at this stage. You must deliver the final product design and specifications and finalize your go-to-market plan.

Stage 4: Pilot and Production Startup

The final phase is launch. If your product is just an extension of an older line, this will be easy. But if the product is entirely new, a pilot production is necessary. ■

Manufacturing Strategy: The Other Half of Concurrent Engineering

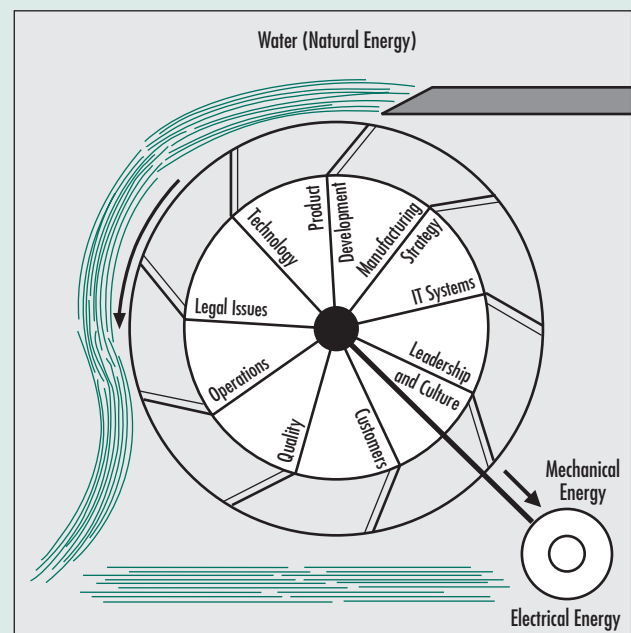
New product creation — and all that supports it — demands a sound manufacturing strategy. The strategy is your blueprint for fighting a good competitive fight. It should lay out your principles of what and where you produce, the nature of your design and production processes, your goals for competitive advantage, your key technologies, your supply and distribution tactics, and just how you intend to delight your customers. Most important, your manufacturing strategy must support your company's business strategy and be a living, valuable presence.

Your supply chain is your lifeline. The companies that provide the materials and components you need for production are partners. They may carry your inventory or perform other functions you once performed in-house

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The New Product Creation Wheel

The engine for creating the products and services you need to win in today's highly competitive environment is a good product development process, or PDP. PDP is best represented by the image of a waterwheel. A simple waterwheel turns on a horizontal axis by the action of running water. As it turns, the wheel delivers useful work, such as the mechanical action for milling and grinding or for driving an electrical generator. It transforms naturally existing energy and delivers power used in making agricultural and other products.



Like the waterwheel, the New Product Creation Wheel draws resources from the energy in the marketplace. The organization focuses its energies through efficient processes to supply markets with products. The nine spokes of the wheel (see above) are bound together at the hub and provide the strength, cooperation and discipline of the enterprise. The spokes are:

- ✓ Product Development
- ✓ Manufacturing Strategy
- ✓ Information Technology Systems
- ✓ Leadership and Culture
- ✓ Customers
- ✓ Quality
- ✓ Operations
- ✓ Legal Issues
- ✓ R&D and Emerging Technologies

Supply Chain Quality Control At John Deere

In 1998, John Deere announced a new company-wide supplier-rating process. The company trains and monitors 500 suppliers monthly by tracking their quality, on-time deliveries and cost improvements. The rating system is strategically vital. Suppliers are no longer rated strictly on price, and John Deere benefits from cost reductions without a loss of product quality.

Manufacturing Strategy: The Other Half of Concurrent Engineering

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but which partners can deliver better and cheaper. Paying close attention to your supply chain pays real dividends. Outsourcing parts of the manufacturing process is becoming an important dimension of the relationship with supply chains. Just be sure that your suppliers meet your quality standards.

Mass Customization

Companies must become agile as they offer new products and services quickly. They must learn to provide mass customization without the traditional delays and high cost associated with creating custom work. With a minimum of retooling, products and services can be customized for individual consumers. Examples of companies successfully mass customizing include Panasonic National Bicycle Company, a company that can produce a custom bike in one day, and Motorola, which can produce custom papers in two hours. ■

Systems: Making Information Technology Work

At the heart of waterwheel technology is a simple hub and spoke design. The arrangement provides sturdy support to the outer rim and to the vanes that catch the water and turn the wheel.

This same hub and spoke architecture is seen today in information management. The heart of the network is a server — a computer that warehouses information and makes it easy to locate and deliver a piece of information anywhere in the system. The hub is the server, which dispatches data along a spoke, around the wheel's perimeter, and back again. These information pathways work together because they are linked together by their common access to the server. If one spoke fails, the

information can be redistributed among the remaining spokes, and work can continue uninterrupted.

Enterprise Resource Planning

Information systems are your key to business excellence. Today, Enterprise Resource Planning (ERP) systems orchestrate much of a company's IT infrastructure.

The heart of the ERP system is the planning and control module. This piece manages all internal operations from sales and customer service information, through inventory control and capacity planning, down to the details of shop floor management, all in real time.

Flanking the planning and control module are the financial and human resource management support modules. They interact

***If you expect to leverage
the power of ERP
to best advantage,
invest in close,
executive-level oversight.***

for administrative updates. This allows payroll, ledger, accounts receivable and payable, and other administrative functions to be readily accessible. Also included in many packages is a supply chain management system.

To implement an ERP, you will need a dedicated internal team representing internal users, the finance department, and IT professionals. If you expect to leverage the power of ERP to best advantage, invest in close, executive-level oversight. This key individual must have a clear vision of the company's future and be able to manage the time and cost requirements.

Next on the Horizon: Knowledge Management

The sheer volume of knowledge being acquired compounds year after year. The trick is to use that knowledge. This is knowledge management, or KM. KM is vital because the business world is knowledge intensive. Harnessing that knowledge can create a powerful competitive advantage as it captures vital information about customers' needs and preferences.

There are four steps to harnessing knowledge effectively. First, you must identify an area of your business that you believe most needs improvement and that you believe could become more effective and serve as a differential advantage over the competition. Next, come up with answers to "what if" questions about possible improvements. Next, figure out what knowledge is needed by whom to fix the problem. Finally, figure out how to capture that information, and come up with a plan that does that, whether that involves creating new systems for capturing data or mining the data you already have. ■

Leadership: Form Follows Culture

A form of the waterwheel has been used for centuries to produce water for drinking and irrigation. It works like this. Water is captured at the bottom of the wheel, which in this configuration is called a noria, and carried up as the wheel turns. It's emptied for irrigation or drinking water. This simple device has transformed entire societies.

It takes teamwork to build a noria. It requires a vision of water flow, how to direct it, and what crops can be cultivated with it. There had to be a project leader who had the vision to see how it would work and the leadership skills to direct a team to build the structure. It's the same for a company.

A key objective of your company ought to be to create real teamwork and a culture of shared knowledge to facilitate the creation of new products. But first you must understand the prevailing culture. Teamwork starts with culture and is enabled by leadership. No new products, regardless of how much money you throw at them, can ever be effectively and efficiently launched without a culture that supports your company's goals.

Being a leader isn't synonymous with being a manager. In fact, it's very different. Some leaders are wretched managers. They excel as visionaries and as change agents but lack attention to day-to-day details. Good managers excel at process, good leaders excel at creating new prospects; legendary leaders excel at both. Good leaders who aren't great with details need to surround themselves with competent, trusted managers.

Measuring Your Leadership Quotient

Here's a short test to determine your Leadership Quotient, or LQ. Give yourself one point for every yes, 0 for neutral, and subtract 1 for no. If you score 5 or more, rate yourself as a strong leader. Score 0 or less, and you need to strengthen your leadership skills.

1. Do you have a clear vision for the future, and a set of goals you share with your team?
2. Do all team members understand your goals and visions and do they translate them into their personal agendas?
3. Do you invest a third or more of your time coaching and teaching your vision and goals to customers and team members?
4. Does your leadership style align closely with company culture?
5. Are you a better leader than manager?
6. Do team members easily and frequently confide in you and feel comfortable doing so?
7. Do you encourage and support risk-taking by your

team members and are you tolerant of risks that turn into mistakes?

8. Do you accept and handle ambiguity well?

9. Do you personally "take the heat" when serious problems arise?

10. Do you believe the ends are never justified by unfair or immoral means? ■

Long Live the Customer!

All the spokes of the waterwheel are essential, but none is more vital than the "customer" spoke. This spoke represents the distribution of goods and services that customers want, and is the conduit that feeds information from customers to product developers.

There was a time when customers didn't matter as much as they do now. Manufacturers couldn't produce enough goods for a hungry nation, and customers bought what was available. But beginning after World War II, customers became more demanding. Today, companies compete for buyer attention. Customers are now tightly in the product creation loop.

Meeting or exceeding customers' desires is a fundamental obligation of any business. After all, 70 percent of all new products are driven by markets, not by new technological concepts. The process is about customer pull, not technology push.

How to Grow Your Customer Base

Growing your customer base comes down to mastering just two basic elements. On the cost side, you can cut costs, and you can streamline your supply and distribution channels. On the revenue side, you can grow your profits by offering more attractive and valuable products and services. You have three levers at your disposal for profitable growth:

1. Sell more goods or services to your current customers. The goal is to realize more revenue and profit from existing customers. You can do this by selling at higher price points or reducing your product production costs. Or you can sell more to existing customers. For example, push to sell a new car to each customer every two years rather than every three. Push for upgrades or accessories.

2. Increase your customer base. Find and court new customers, either exploring new markets or asking for referrals. Use customer relationship management tools to really get to know your customers and others like them.

3. Reduce defections (increase retention) of your customer base. Keep existing customers by focusing on the basics — superior products and services. The cost

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Long Live the Customer!

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of attracting a new customer is much higher than keeping an old one.

Remember that to please your customers, you must train employees to understand and deliver “customer delight.” Use customer information software to get closer to your customers. Use the Web effectively as a sales and information channel, but remember that your customers can gather information about your competition easily. That’s why creating “delight” is more important than ever.

There is an added benefit to using the Web to communicate and perhaps sell directly to your customer. Disintermediation — eliminating some of the middlemen — can cut costs and create real value for both customers and sellers. A likely result is better, less-filtered information about what customers really want.

Customer Intimacy

Your goal is staunch loyalty from your customers. Loyalty increases sales, grows your base and strengthens retention. How do you get there? By focusing on customer intimacy. Intimacy means building mutually dependent relationships that create measurable value. You don’t just make your customer feel good about you, you take on responsibility for your customer’s success. There are three avenues to becoming a customer intimate company.

The first avenue is problem-solving. Work with the customer as a consultant, create a solution and deliver it. Your next goal is to define and implement specific and total solutions that add real value. Your customer may not see the real problem, but you may. Solve it. Finally, partner with your customer financially, sharing the risks and rewards. ■

Quality Really Counts!

Master builders understood that they had to create a quality waterwheel. That hasn’t changed. Quality pays, especially in new product development. To realize quality rewards, you must relentlessly pursue quantitative goals so that everyone knows what to shoot for.

Quality means different things to different folks. But when you boil it down, three distinctive measures of quality stand out: reducing defects, reducing cycle time and fostering customer contentment. Total quality exists in all three dimensions.

Quality Tools

There are many tools available to help you deliver quality, including benchmarking, six sigma, the learning

Lost Customers Are Expensive

If you need more convincing that keeping customers is better than seeking out new ones, here are a few facts:

1. **It costs ten times as much to bring in a new customer as to keep an existing one.**
2. **For every customer who complains, 25 are silent.**
3. **Ninety percent of dissatisfied customers won’t buy from you again.**
4. **A loyal customer generates a 40 percent compound rate of profit over a five-year period.**

curve and quality function deployment.

Benchmarking involves observing what others are doing and learning what the best practices are. The process requires that you measure your performance today. This is your baseline. Next, you must identify prospective benchmarking partners, especially those who are recognized as the best in your business. Once you observe the best practices, it’s time to apply the lessons to your own organization.

Six sigma is shorthand for a statistical method that allows very few errors in the manufacturing process. Essentially, a company practicing six sigma will not tolerate more than 0.002 parts per million produced to be defective. The standard is extremely tough, but pushing toward it will yield far fewer defects and thus greater quality.

The learning curve is another measure of quality. The learning curve looks at improving quality through continued human experience, volume or production. Its usefulness is greatest in process improvement (doing things better) and cost improvement (doing things more effectively.)

Finally, quality function deployment is a method that links functionality with design. Assume, for example, you want to design a new product such as a handheld calculator. You begin by examining the current product and the competition. Then you develop a concept based on the features customers want and expect. Turn next to the technical design. Your engineers determine the attributes most important in addressing customer needs: total weight of the unit, rate of battery drain, etc. Then play the customer requirements off against the technical attributes by means of a matrix. The correlations you get will reveal where you need to focus and whether there are tradeoffs between customer-desired features and design realities. ■

Operations: You Can't Manage What You Can't Measure

Waterwheel station-masters were among the first operating engineers. For centuries, they were responsible for keeping their villages going. We now turn our attention to the operations spoke of our Product Creation Wheel. This spoke concerns industrial processes.

Improving manufacturing processes requires managers to have a basic understanding of cost accounting. The accounting basis for traditional production process operations is the simple notion that costs are made up of fixed and variable components. Fixed costs are those incurred regardless of production levels, and include indirect salaries, space, depreciation and equipment. Variable costs, on the other hand, are directly proportional to volume produced, and include labor and material costs. Adding fixed and variable costs determines the total cost of a production unit. The weakness of traditional cost accounting is that it may not accurately reflect the actual costs. Costs associated with an infrequently produced item, for example, may end up lost to overhead.

The solution is activity-based costing, or ABC. ABC tracks all activities that permit products to be designed, produced, distributed, sold and serviced, and thus creates a more complete picture of the real cost. ABC requires that you identify the activities that go into a product, identify the cost drivers, define the points at which costs attach to those activities, and then attach those costs to the product.

Don't Sell A \$300 Product for \$45

ABC, or activity-based costing, gives a much clearer picture of the real cost of production. Consider what happened when a hardware component manufacturer turned to ABC. Before ABC, the company provided the electrical utilities it served with out-of-stock components. One particular component sold only 500 units per year, and the company typically arranged one or two runs of the product to cover anticipated orders. Using standard cost accounting, the cost per unit was \$30, and the selling price was set at \$45.

A consultant reviewed the company's overall cost accounting methods, and found that every time the component went into production, two people were taken off their regular duties while they found the right tools, molds and fixtures. These costs had previously been assigned to overhead, and the cost spread over all components produced by the facility. Once the costs were identified, they were assigned to the components. The cost now approached \$300 per unit. The selling price was adjusted accordingly.

Measuring Your Processes

You also need to measure key internal processes like R&D and new product development. These are the drivers of business improvement. Research and development is an investment, representing between 2 and 10 percent of your total sales. Like any investment, it should be measured and managed.

R&D measurements should be simple and objective. Some measures to consider are:

R&D Multiple: annual investment in R&D/total sales, which is a measure of your R&D intensity.

Relative R&D Multiple: the ratio of your company's R&D multiple to that of your strongest competitor's.

R&D Effectiveness Index: profit from new products in relation to the investment made in new product development.

Patent Coverage: percentage of current sales that are protected by patents or trade secrets, compared to three to five years ago.

New product development processes can be measured as follows:

Process Throughput: number of new or improved products commercialized per year.

Impact of Technology: The ratio of company-owned patents to all comparable patents owned by competitors.

New Products' Impact on Sales and New Sales Ratio: sales in dollars and percentage from new or improved products released in the prior year and from the prior three years. ■

Caveat Venditor: Beware Their Lawyers

Now we've come to the most overlooked spoke of our waterwheel — the legal issues spoke. It must be durable, otherwise it can ruin your company as easily as inattention can bring down a water station.

Many organizations are ignorant of the importance of patents, trademarks and other intellectual property tools. Intellectual property lawyers are crucial to new product creation. Your intellectual property (patents, trademarks, trade secrets and copyrights) are valuable assets and must be managed and protected.

Litigation may be necessary to protect these assets. Consider a recent example. Wal-Mart accused Amazon.com of deliberately stealing away 14 key IT professionals, who could provide Amazon.com with valuable information about the retailer's distribution, logistics, merchandising and data warehousing systems. Wal-Mart considers the information to be trade secrets.

What can you do with patents, trademarks and copy-

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Caveat Venditor: Beware Their Lawyers

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rights? One option is to license the right to use them to others. Another is to simply keep the competition from using them, and thus maintain any competitive advantage they provide you.

Product Liability

Companies face increasing liability for the use or misuse of their products. Liability arises in two ways. First, the Uniform Commercial Code governs the warranties and commercial damages for breach of those warranties. In addition, individual state laws cover negligence arising out of the design or sale of defective products or the failure to warn of potential dangers associated with products.

Product liability awards, whether based on warranties or negligence, can run into the millions. Courts subscribe to the deep pocket theory that manufacturers and retailers are best able to beat the costs associated with a defective product. Liability insurance is a must.

The best way to protect your company from liability is to create fault-free products. All product design needs to:

- Incorporate best practices into the design.
- Anticipate problems that might arise through reasonable use or foreseeable misuse of the product. For example, is it foreseeable that a handyman might attempt to repair the product or a child might pick it up and be injured. If so, design the product to protect consumers from themselves.
- Comply with all standards imposed or suggested by professional trade groups or regulatory entities.
- Submit a prototype to an independent testing laboratory. ■

Harnessing your R&D and Emerging Technologies

Now we have come to the final spoke in our water-wheel — technology. You must harness your R&D and learn to identify emerging technologies. Research and development is essential to any company whose destiny depends on offering better products or services. R&D must drive innovation throughout the organization. R&D must be chartered, effectively led and efficiently executed if it is to be an engine for growth. Two issues should guide your research and development investments: what projects you should pursue and how you manage the R&D your company needs.

R&D may be basic, focusing on discovery, or applied, focusing on application of known technology to new products or processes. Basic R&D is usually left to universities and consortiums, while applied R&D belongs

to business.

How do you go about improving your R&D operations? As a manager, you must manage R&D along nine parameters. These are:

● **Portfolio Management:** Make sure you have a disciplined and competitive process for initiating R&D projects and estimating the expected payback and risk. These projects then make up your portfolio.

● **Corporate R&D:** Sometimes the best place for R&D is the corporate lab, where high-risk, high-reward projects can be pursued in secret.

● **Boosterism:** R&D must be aligned with corporate strategy, and needs an advocate who communicates the challenges and successes to all company constituencies.

● **Outside Partnering:** Look outside corporate walls for other sources of R&D expertise. For example, universities may be a good source.

● **Project Funding:** Projects should have to compete for funds, and should justify their needs with clear, precise and measurable objectives.

● **Board of Advisors:** Consider creating an oversight function with an external board of advisors.

● **Customer Face-Time:** Put R&D people in front of your customers so they truly discover what customers want and need.

● **Organization:** Make sure R&D units communicate with one another, and are rewarded appropriately for successes as well as career advancement opportunities.

● **Project Management:** The strength of R&D depends on everyone's project management skills. Train all participants in project management.

Emerging Technologies to Watch

There are a number of emerging technologies companies need to monitor. These include:

● **Advanced materials,** such as thin-film deposition technologies and superconductivity as well as polymers.

● **Communications,** such as high capacity wireless data transmission technologies, fiber optics and interactive speech recognition.

● **Management support tools,** such as knowledge management, modeling and business simulation processes.

● **Micro/Nano technologies,** such as miniscule transistors and robots.

● **Advanced computing,** such as supercomputers, optical and copper wire, storage systems and artificial intelligence.

The challenge will be to turn technological advances into product concepts. You must track broad technology trends and make sure your people are current on potential opportunities and threats. ■

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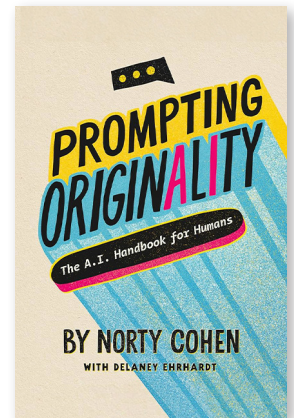
Prompting Originality

Norty Cohen

Prompting Originality

The A.I. Handbook for Humans

by **Norty Cohen with Delaney Ehrhardt**



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THE SUMMARY IN BRIEF

AI can do a lot for you. So much so that your professional job won't look the same in a few years. Every day, AI developers are training bots to do just about every task that used to require using that big brain of yours. If you let it, your originality will be homogenized. Your experiences, point of view, and unique expressions won't matter.

When we create new ideas, our human intelligence, wit, experience, or empathy comes into play. In fact, it is play. Creativity, twisting up ideas to put a spin on them, is a level of permission we get as humans. We can use that part of our brain. It is who we are.

But authentic creative play is under attack with the advent of ChatGPT, Midjourney, and all of the look alike AI tools and updates. Here's the plan: we're going on the offensive before AI figures us out. We'll ask the questions. And maybe we can beat it at its own game. Throughout this interactive adventure, think of yourself as the hero, circumnavigating the new world of artificial intelligence, gaining confidence, experience, and ultimately inspiration.

IN THIS EXECUTIVE BOOK SUMMARY:

- The need to protect authentic human creativity from being overshadowed by AI is highlighted.
- Provides tips for using AI effectively and as a supportive brainstorming partner
- Explores how AI cannot replicate human emotion or cultural perspective.
- Stresses using AI responsibly, following ethical guidelines, and prioritizing human creativity.

Part 1: AI Confidence Journey

Let's get our prompt on.

Ask AI: "What human innovations came before the wheel? What came after? Who were the Luddites?"

This latest and most intimidating disruption hasn't just suddenly caught fire. AI is just another spark. So what's the secret to lighting that spark?

Originality.

But by now, you can see, everyone builds on the wheel.

The Best Originals are Thieves

Originality has never been achieved alone. Why start now? It's time to refine it. What is originality in the modern world of technology?

"I believe that originality is at least 90% human-generated, as technology cannot replicate our individual ideas, emotions, and imaginations." - Karen OBrien, CMO

"Nothing is original." Tega Brain, NYU Integrated Design & Media

Exercise 1: Sample Search

Prompt: Pick your favorite song. Listen to all parts of it and break down where it came from. Then ask AI if your favorite song has any similarities with previous or current songs.

Originality is an inherent blend of ideas and inspiration. Period.

AI Rewires the Romance of Creation

Activities that once took years, writing, storytelling, and art making, can now be generated in a matter of seconds.

See just how efficiently AI can "write a 12 stanza poem about the beauty of heartbreak."

Fast, yes. But did it make your heart beat out of your chest? We didn't think so. Do you want to accept that soul-inspiring creations can be generated by machines that lack souls? AI has never had its heart broken, it's only looked at other hearts being broken. Which is, if you've ever had your heart broken, not the same thing. That applies to everything it does, and that's why: "AI won't replace writers. It will replace hack writers." says author Josh Bernoff.

In many ways, the use of AI can lead to greater clarity, creativity, and inspiration for everyone expressing their

ideas. Your work, your output, and your brand are only about to get better if you let it. You can seed ideas instead of asking for them. But if you let AI write the ideas for you, well then, you suck.

Suck-O-Meter

To navigate AI's involvement in the creative process, we coined the AI Suck-O-Meter, which details the level of artificial contribution to a piece of work. It's a reminder to make AI your brainstorming partner and not an integral, foundational part of your work.

AI Builds a Better Brain

Have you ever heard of the game Go? An AI machine beat Lee SudoI, one of the most famous and awarded Go players of all time. It marked the first time a machine had beaten the very best at this ancient and complex game. However, in move 78 of game 4, Lee made a move now known by many as the Hand of God. This move was so unexpected it through the machine off and led Lee to one victorious match.

Most people would walk away from this story with a startling takeaway: "AI is diminishing human achievement." We, however, have come to a different conclusion: AI makes us better.

No matter where you may struggle, AI is there to pick up the slack.

Research shows that AI strengthens all links - weak and strong. To keep your head above the water of mediocrity, you must collaborate. AI has the ability to supplement your brain, streamlining your strengths and covering for your shortcomings.

Understand that AI helps you unleash your capabilities by simplifying concepts, helping you learn, broadening your horizons, and achieving your brand of originality.

Part II: AI Experience Journey

Here you'll get a taste of the ins and outs of how to wrangle AI and use it for your benefit. You'll learn that you are not alone in this adventure of adopting the dos and don'ts of prompting.

While AI can help you prepare for an interview, create your travel itinerary, or even write books you haven't read, don't give into the temptation of effortless creation. Make sure you're using the tools alongside your skillset to help achieve your vision.

The rapid growth of AI has led to a rise in an entirely new essential skill: prompt engineering.

Use AI. Don't rely on it.

There Actually Are Dumb Questions

The rapid growth of AI has led to a rise in an entirely new essential skill: prompt engineering.

Here's your AI playbook:

Tip #1: Make sure you're using the newest version. AI tools are being updated all the time. If you can afford it, the premium versions are always worth it.

Tip #2: Form your question the way you want it answered. Consider the style you want for your response. Carefully consider your tone, level of advancement, and sentence structure.

Tip #3: Be specific. Include adjectives and examples. This provides AI with information outside the data sets on which it was trained.

Tip #4: After you get an answer, follow up. Don't start a new chat unless you're switching subjects. Like a real-life brainstorming partner, AI remembers previous conversations. Stay within the same chat so AI can better learn what you're looking for and not repeat answers. Quantify feedback. Instead of telling it to be "less formal" try prompting "make the output 10% less formal and 15% more engaging."

Tip #5: Layout the output exactly how you would like it to be structured. AI has a mind of its own. If you're looking for something super specific, push it in the right direction.

Tip #6: Ask for your output to be generated in a specific style. AI is trained in pop culture. Use this to your advantage. For example, ask your bot to generate its response as a specific type of person or tell it to assume a profession. Don't take this too far. This not only prevents you from incorporating your own style, but it can also lead to copyright issues as the legal issues surrounding AI evolves. Instead of asking AI to replicate a style, describe it. For example, it's not Picasso's style, but rather an "eclectic surrealism with an African art influence and elements of cubism."

Tip #7: Give it some limitations. AI can generate a ton of

content in its responses. Try listing ideas you've already tried to limit the possible responses AI could give you. Give a specific amount of options AI could generate. Use keywords to indicate the expected response length.

Tip #8: Explain who you are trying to reach. Include your desired audience, even if it's only you. You can also use metadata or annotations to specify who you are referring to or targeting. These can be categories or tags. For example, ask your bot: "[For managers], how do you keep your team organized and driven?"

Tip #9: Avoid conflicting terms and directions. AI is always learning. Be as definitive as possible and don't be afraid to tell AI when it messes up and gives you something you don't like.

Tip #10: Ask the AI model to behave like an expert. Ask AI to assume a profession. For example, ask it to "Pretend you're a travel agent. Give me a detailed itinerary for a 10 day trip to Mexico with a budget of \$5500 for 3 people."

Tip #11: Add in a time element. This helps AI recall previous inputs or outputs from a specific point and not reference responses that are irrelevant or old.

Tip #12: To emphasize something, capitalize it. By typing in all caps, AI understands this to be the most important part of the sentence. Punctuation, including quotations or bullet points, can also convey the brevity and importance of the response.

Tip #13: Provide examples. Imagine if your boss asked you to take on a new project but provided no sources of inspiration or references. Just like you, AI tools need examples.

Tip #14: Test the chain of thought method. This prompting method breaks down complex prompts into smaller, more digestible chunks. If you give AI too much at once it will choke. This approach is best utilized in multi-step reasoning tasks like mathematical word problems and commonsense reasoning issues, according to Google research.

Tip #15: Play around with order. Depending on how you word your prompt, AI will give you a different output. "Experiment with different arrangements of instructions,

primary content, examples, and cues to achieve the desired results,” advises Microsoft’s Andy Beatman.

Tip #16: Establish rules. AI is a smart ass. If you don’t outline a firm set of rules, it will act out. Provide clear instructions with information on the role you’d like AI to play. What kind of outputs do you want it to generate, how would you like it to answer, and what questions should it not answer?

Tip #17: Trigger previous outputs. Don’t be afraid to jog AI’s memory by referencing specific prompts from the conversation. This will be easier if you keep the same train of thought within the same conversation or task.

Tip #18: Phone a friend. Not sure where to start prompting? Ask AI to construct the prompt for you.

Tip #19: Avoid bullshit. You may be a good liar, but you are nothing compared to AI. AI platforms have a bad habit of “hallucinating” or trying so hard to give you something good they make it up entirely. You can provide the bot with reputable information and ask it to use that information while answering your questions. Stand your ground and never assume the bot is right.

Tip #20: Ask for multiple answers. Ask for a specific number of outputs or have it call back to a specific output.

Update Your OS

We asked professionals across the creative, consumer, consultant, and coder quadrants a variety of questions to see how AI attitudes varied.

Question 1: Define originality.

Rob Brooks (creative): “Saying, ‘Damn, I wish I would have thought of that - what a cool thing.’ “

Dr. Jochen Ditsche (consultant): “This original piece has not surfaced in the world before.”

Question 2: You’re working from home and having a creative block. How do you brainstorm, ideate on your own?

Kenny Friedman (creative): “Maya Angelou was an amazing cook and she would cook when she had writer’s block because she said something like, ‘There’s a recipe to it, so you don’t have to think. I’m just doing something that somebody told me to do.’

Question 3: Tell me about a time when your attempt to be original led you to failure. What did you take away from that experience?

Rob Brooks (creative): “Wanting to be everything to everyone and therefore, they’re nothing.”

Muhammed Usman (coder): “I learned the importance of thorough testing, validating ideas before implementation, and striking a difference between innovation and practicality. It taught me that while originality is valuable, it should be tempered with a critical assessment of feasibility and potential risks.”

Question 4: Tell me about a time when AI made your work better. What about worse?

Karen OBrien (CMO): “I feel that sometimes the resulting work may be lacking in empathy. What I have found from my own amateur prompt engineering is that the more specific you are, the more that you can put human emotion into it, the better.”

Rob Brooks (creative): “It’s still so dumb, you know, you don’t get it on the first try.”

Question 5: Tell us about learning to use AI.

Rob Brooks (creative): “It was two days of being sort of OCD, just absolutely going down the rabbit hole.

Keren Douek (consultant): “AI was the way to breathe life into an industry that was otherwise very slow to respond to new technology.”

Question 6: If you had to personify AI, what would it look like?

Rob Brooks (creative): “It’s either like a really nerdy, socially awkward person that has no social skills but can make wonderful things, or arrogant Armie Hammer from “Sorry to Bother You.”

Keren Douek (consultant): “AI generally gets personified as awkward or dangerous; clunky, nerdy, or evil. If I had to personify AI, she’d be my wingwoman.”

Flip the Script

Thinking differently is hard. AI can help with that. Try adopting different mentalities to expand your thinking beyond your own OS and move your right or left brain to the weaker side. AI allows you to peek inside the brains of people who have different strengths or who think differently. This helps you understand how to better communicate with them, expanding your tools for originality.

Use the Buddy System

It’s only fitting that when looking for places to grow your AI

AI can generate a list of ideas in seconds.
It cannot tell you if they are any good.

knowledge, AI would be the perfect place to start. Prompt libraries, collections of online prompts, are a great place to start. More and more great universities are offering classes on artificial intelligence. Additionally, there are a variety of AI communities in cities across the United States.

Make AI Your Personal Researcher

Understand how AI can impact and improve your life, especially your personal life. It can help you socialize, organize, and create efficiently - as long as you leave your thumbprint and don't take its output as your final content.

Part III: An Inspiration Journey

Here you'll sail through the ocean of mediocrity and try not to fall in. Your lifeline? Original thinking, human nature, and intuition.

Break the Endless Cycle of Average

AI is essentially a glorified fill-in-the-blank pattern recognizer, sourcing its insights from an ocean of data, and most of it is drifting, waterlogged shit.

Which is why most of what AI cranks out is average at best.

So what does this mean? Human generated content will likely become a luxury good. Crazy, but true.

So how do you break the endless cycle of average? Stay curious, stay true to yourself, and push yourself to be better than the mediocrity of AI.

Without Human Reaction, AI Has No Purpose

AI may outperform you, but it can never out-human you. Embrace this distinction; use AI to reflect culture, not define it. In industries such as advertising where our job is to reflect culture, creation is still in the hands of humanity, so don't give up your position as a culture curator. This allows you to be more human, and, in turn, more in touch with your work and its audience.

Bot vs Human

Beyond human emotion, human perspective is just as, if

not more, valuable. Unlike AI tools, we can read between the lines and catch errors that may have fallen through the cracks. We can spot factual inaccuracies. We can scan for language that won't land with our audience. For these reasons, we must view AI tools as just that - tools.

While AI can create, it cannot feel. Your strengths are your ability to see, hear, touch, smell, and taste. AI's role is to become your sixth sense and enhance your capabilities.

AI can generate a list of ideas in seconds. It cannot tell you if they are any good.

Prompting Practice

Before you dive into the world of prompting, let's review the rules of the road:

- If you're planning on using your outputs for anything commercial, review your model's terms of service and privacy policies.
- Always include your own human touch in generated works. Never take the outputs as they are.
- Refrain from asking for a specific style or copyrighted work. Establish your own voice and style before AI replicates it.

By definition, AI will rarely throw those left-field ideas that spark originality. Here, we want you to tap into the weird and wacky, seeing if the most unexpected prompts can light your inner spark.

- Take the Shakespearean classic *Romeo & Juliet*, but make the characters modern people with modern issues. What would be the reason their families hate each other? Tell the story in the form of reality TV confessionals only.
- Describe a world where time doesn't flow linearly. Instead it flows cyclically. Tell this as a bedtime story for children.
- Create a list of baby boy names inspired by technology, found in a medical textbook. Now, create Instagram handles for each of these babies.

- What new traditions would come if Christmas was in summer? What would Santa wear?
- Give me 10 social media username ideas that involve the word “corn.”
- What are things I can give to my employees that aren’t money? What do the latest trends say about job satisfaction?

mastering it. AI can help us boost our originality and creativity - and simplify the grunt work - but it’ll never capture the human spark: our emotions, and our unique point of view. The secret is making AI your collaborator, not your replacement. Use it to fuel your ideas, not define them. Stay curious, stay human, and let your creativity lead the way.

How to Prompt Like an Art Director

Now that we’ve covered our copy bases, let’s move into the visual territory.

Use AI as you might an initial draft or mood board, but not for a finished piece. Use it to test out many variations in a short period and save your HHI for bigger tasks.

True art builds on others. To truly think like an art director, you need to embrace community. Take advantage of the bots brain and use it in conjunction with the art director mentality.

Be A Divergent Ant

Instead of blindly following the ant in front of you, don’t be afraid to diverge from the colony and create your own path. Following the pack won’t yield originality.

Bad Dog Will Bite, Watch Out

Know the rules of the road. Take time to understand evolving platform policies, legal parameters, and ethical considerations. Use caution, and don’t crash the car.

Remember, you can let AI do your work. Or, you can make it work for you.

The future of creativity isn’t about fighting AI — it’s about



Norty Cohen is a creative/account guy/researcher whose agency, Moosylvania, develops programming for top national brands. His agency houses a research facility on its campus – and they use national research services to continually dig into consumer motivation. He is a featured speaker on national marketing panels and has presented his work at AT&T, Western Union, Taco Bell, Burger King and numerous CMO conferences. The updated study is featured annually in Business Insider and other publications.

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Re-Thinking the Network Economy

Stan Liebowitz

Executive Book Summaries®

FILE: STRATEGIC MANAGEMENT



By Stan Liebowitz

The True Forces that Drive the Digital Marketplace

RE-THINKING THE NETWORK ECONOMY

THE SUMMARY IN BRIEF

The Internet changes everything! *Or so claimed the legions of over-excited Internet boosters who saw in the new technology the overthrow of all the old rules of economics and business.*

In *Re-Thinking the Network Economy*, Stan Liebowitz explains why the dot.com bust was inevitable. The theme of this summary, however, is not, “I told you so!” but rather, “Here’s what will work.” The Internet does offer many incredible business opportunities, Liebowitz writes, as long as businesspeople and their advisors don’t ignore the traditional, fundamental concepts and strategies of commerce and economics. The laws of supply and demand still hold true. Economies of scale are still pertinent.

The rules, in sum, still apply.

In *Re-Thinking the Network Economy*, Liebowitz examines the economic forces relevant to Internet commerce, thus identifying the models and strategies that have the greatest chance of success.

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What You’ll Learn In This Summary

✓ **Internet companies must follow the same laws of economics as their bricks-and-mortar counterparts.** The impact of laws, such as economies of scale, depends on the industry, not on whether a company is Internet-based.

✓ **The first-mover advantage is a false theory based on false evidence.** Many Internet companies made the mistake of rushing to market with inferior products and services — and paid for it.

✓ **Not everything can be sold on the Internet.** Internet retailing pioneers had grand ambitions, only to discover that for many products, nothing beats an old-fashioned, bricks-and-mortar store.

✓ **Customer service still counts.** Internet companies may be able to sell information-based products, as long as the customer does not get better service from a human operator.

RE-THINKING THE NETWORK ECONOMY

by Stan Liebowitz

— THE COMPLETE SUMMARY

Basic Economics of the Internet

The Internet creates value by lowering the costs of information transmission. That's it. Nothing more.

Not that this achievement is not extremely important. The invention of cars and airplanes lowered the costs of transportation, and language lowers the costs of communication — two monumental achievements. The impact of the Internet on our society should not be minimized. Information is now available in unprecedented simplicity, quantity and variety.

Nevertheless, Internet commerce must still obey the laws of economics. And this is where many Internet boosters went wrong.

This article looks at how the economic concepts of *network effects*, *economies of scale*, *instant scalability* and *winner-take-all* apply to Internet-based products and companies.

Economic Concepts

Network Effects. Network effects occur when a product becomes more useful to consumers in proportion to the number of consumers using that product.

The fax is an example. To send a fax, both the sender and the receiver must have fax machines. Owning a fax machine would be useless to you if no one else had a fax machine. It would be only slightly more useful if a very few of your correspondents have fax machines. However, if most of your correspondents also have fax machines, your fax machine is of much greater use to you.

Note that network effects don't have to be related to high-technology products. Automobiles have network effects — the more mechanics and parts in the area, the easier it is for you to fix your car. On the other hand, if you own an exotic car that most people don't have in your area — a Citroen, for example, in Ohio — you don't benefit from the same network effects that Chevrolet owners do.

Economies of Scale. The concept of economies of scale is basic: the more you sell, the lower the average costs. Thus, Internet companies push to sell more and become larger — even at the short-term expense of

profits — in order to develop these economies of scale.

Average costs are simply total costs divided by the units sold. Products with large start-up costs, including high-tech products, benefit from economies of scale.

Instant scalability. Instant scalability is the ability to immediately change your production process and fill a new market demand. For example, say that you are producing copies of the Word application on CDs. If the Quicken application suddenly becomes hot, you can easily switch from producing Word CDs to producing Quicken CDs.

Network effects and economies of scale can lead to winner-take-all results. Larger companies can block out smaller rivals. Instant scalability does not necessarily lead to winner-take-all. If the product you switch to turns out to be a dud, you have no protection in the marketplace.

Winner-Take-All and the Internet

One of the mistakes that Internet champions made was to assume that all Internet industries displayed winner-take-all characteristics.

For example, it was thought that all companies operating on the Internet were subject to network effects. This is true in a few exceptional cases, such as AOL's messaging service. But in the vast majority of cases, the Internet does not create network effects. For example, if you're shopping for toys on the Internet, what do you care if there are 50 people or 5,000 people also shopping for toys? Price, availability, choice, the company's reputation for quality — these are the factors that lead to both retailing and e-tailing success.

The bottom line is that the winner-take-all characteristics
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The author: Stan Liebowitz is an economist and a professor of managerial economics at the University of Texas at Dallas.

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For Additional Information on the author, go to:
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Basic Economics of the Internet

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tics of a company depend on the industry, and not whether that company is a dot.com or a bricks-and-mortar company. The overstated winner-take-all characteristics of Internet commerce was one fundamental reason many people misjudged the potential success of e-companies. ■

Racing to be First

The belief in the winner-take-all characteristic — that Internet industries would probably have one dominant company — led to another major economic concept that is only now starting to be rejected: the first-mover advantage. According to this theory, the first company in the market wins. It's important to note that the theory doesn't say the first company in the market with a quality product wins. On the contrary, proponents believe that it's better to be first, than best — or profitable.

The first-mover advantage theory, however, is based on faulty concepts and faulty examples.

First Movers and the Concept of Lock-in

The first company in the market wins, proponents argue, because of what is called “lock-in.” Basically, consumers are locked in to continuing to buy the product they usually buy for two reasons:

1. They don't want to incur the costs of switching to a new product — for example, becoming familiar with a new product or finding the new product incompatible with other work products (such as reading old documents on a new computer).

2. They don't want to be caught on the short end of network effects — no one else is using the new product they bought, and therefore the product is of limited use.

Reason number one hardly leads to a very robust lock-in. If the new product is definitely superior, it will be worth the switching costs.

First-mover proponents, however, argue that quality is not enough to overturn the first-mover advantage; the network effects have to be overcome as well. In other words, consumers will be afraid to switch to a better product because they don't expect to find many other consumers in that market.

The fact is that a weak form of lock-in does exist. For example, you keep going to the same gas station just out of habit. This is a weak form of lock-in. But the strong form of lock-in that supports the first-mover-advantage theory does not exist. If the price and/or quality are right, people will switch. You may not go to a different gas station to save 2 cents on the gallon, but you will switch if you can save 10 cents. Likewise, if a second,

The Real Story of the QWERTY Typewriter

One of the most famous examples used to demonstrate the first-mover advantage theory is the success of the QWERTY typewriter. The story goes like this: The first typewriters were so technologically inferior that typists were typing too fast for the machines: the keys kept jamming. Thus, the keys were arranged in positions that actually slowed down typing (for example, the frequently used word “was” requires using your two weakest fingers). Better typewriters were later developed that allowed faster typing without jamming; but because of the QWERTY's first-mover advantage, those better but later typewriters were never successful.

Here's the real story.

First, the letters were not positioned in order to slow down typing. Instead, they were positioned to shift the typing of successive letters from the left hand to the right — in order to speed up typing.

Second, the typewriter developed later with a different keyboard was patented by a professor of ergonomics named August Dvorak. Dvorak positioned the letters to minimize the distance traveled by the fingers; he believed this was the key to faster typing. And indeed, a World War II U.S. Navy study indicated that the Dvorak typewriter was 40 percent faster than the QWERTY typewriter.

It should be noted however, that a study conducted in the 1950s by Penn State for the General Services Administration clearly demonstrates the inferiority of Dvorak's design — but that study is never mentioned in the first-mover literature. It should also be noted that the U.S. Navy study included irregularities that biased the study in favor of Dvorak's design — not too surprising since the U.S. Navy study was conducted by the Navy's expert, Lieutenant Commander August Dvorak!

third or fourth player comes into a market with a better deal or higher-quality product, people will abandon the first player.

No real-life case exists of a first player holding on to its position despite a lower-quality product. The QWERTY typewriter example often cited by first-mover proponents is actually based on faulty history: The QWERTY typewriter has not been proven by unbiased tests to be slower than subsequent typewriters.

One could point to Amazon.com and declare that it's a case study of first-mover advantage. This declaration

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Racing to be First

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would assume that there are better Internet book sellers losing to Amazon because Amazon was first. The real problem is that Amazon continues to offer high quality and low prices. People may be used to dealing through Amazon — an example of weak lock-in. If a competitor offers a significantly better deal, however, consumers will switch. They are not locked in.

If bricks-and-mortar bookselling is not winner-take-all (and Barnes & Noble and Borders still hold only 10 percent of the market each) then Internet bookselling won't be either.

It's that simple. ■

The (Non)Ubiquity of E-Tailing

How many pundits declared that e-tailing was going to put traditional bricks-and-mortar stores out of business — no matter what the product sold.

Of course, the scores of bankrupt e-tailers have proven the pundits wrong. Internet stores, however, are not dead. This article outlines the success factors related to online retailing.

Type of Product

The Internet provides advantages and disadvantages to the consumer. The advantages include a large selection, no lines at the register and perhaps lower costs. The disadvantages include the inability to see and touch what you are buying and the lack of instant gratification — you have to wait to receive your product.

To know which products are more likely to sell on the Internet, you have to take the following product characteristics into consideration:

1. Size and Bulk Relative to Value. Some products, such as cement, are large and bulky compared to their value. Others, such as diamonds, have a very high value compared to their bulk. Obviously, the products with a high value to bulk ratio are more likely to be shipped over long distances than products with a low value to bulk ratio.

2. The Immediate Gratification Factor. Many products are bought on impulse, with the buyer wanting to enjoy that impulse purchase immediately. The built-in delay of e-commerce doesn't offer this immediate gratification.

3. Perishability. Perishable items, such as many foods, are not made to be shipped over long distances.

4. Experience Products. Some products need to be experienced — for example, you want to sit in a car and test drive before you buy it. The Internet does not offer

Will Free-Riding Turn Manufacturers Against E-Tailers?

Free-riding occurs when one sales outlet benefits from the services provided by another sales outlet.

Take the example of car dealerships that offer test drives. Test drives are expensive — a salesperson must accompany the prospective buyer, cars get more miles on them, and so forth. Car dealers who offer test drives thus have higher costs, which they pass on to the consumer in higher prices.

The result could be that a car buyer test drives a car at one dealership and then buys the car from another dealer that has lower prices because it does not offer test drives. The second dealership would be free-riding on the services provided by the first dealer. Eventually, the dealerships that offer test drives could find themselves going out of business.

Minimum Prices?

Because manufacturers want to encourage test drives, which they believe lead to greater sales, they have in the past attempted to require minimum prices from retailers, so that free-riders cannot undersell the dealers offering the test drives. Laws setting minimum prices have been declared illegal by the courts and are no longer on the books.

This example, however, demonstrates why some manufacturers might turn against Internet retailers who want to benefit from the services provided by bricks-and-mortar retailers. Manufacturers may feel that Internet retailers do not provide the level of service that manufacturers believe is necessary for the long-term sales of their products. They may also fear that the success of Internet discounters will push full-service retailers to drop their level of service. It would then be in the long-term interest of manufacturers to keep their products away from Internet retailers.

this experience opportunity.

5. Thin Markets. Some niche products have very few buyers in a market. For example, very few people in Virginia want the food products to make Algerian desserts. Internet-based companies, for whom the geographic massing of customers is irrelevant, have an advantage if they are selling to thin markets.

6. Taxes. The Internet offers a tax-free haven for out-of-state customers. Eventually, however, this tax protection will probably disappear.

The Best E-Tailing Products

Given the characteristics above, three types of prod-

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The (Non)Ubiquity of E-Tailing

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ucts are most compatible with full-fledged e-tailing.

The first is **digitized products** — that is, products that are inherently digital, such as computer programs, or that can be digitized, such as music, movies and other pure-information products. Digitized products have no bulk but high value, and don't have to be "touched" before the purchase. Internet delivery of music and movies — the latter to be downloaded onto DVDs — will replace the traditional delivery channels.

The second type of product compatible with e-tailing might involve what can simply be characterized as **information**. Examples include airline, car and hotel reservations, stock purchases, news retrieval and classified advertising. This type of information can be transmitted more quickly and economically by the Internet than by phone or mail. However, the service provided over the Internet must be equal to the service provided by a live operator.

For example, if you are reserving a hotel room over the Internet, does the Web site tell you what type of bed is in your room? The Web site may offer a price for a "standard" room, but does it give the definition of a standard room?

Another example involves the purchase of options from online brokerages. Options have complicated symbols based on strike price and expiry date. If you want to buy options, you must track down the symbols yourself. Why doesn't the Web site ask you for the strike price and expiry date and provide you with the symbols, instead of the other way around? If customers find themselves stuck in front of the computer screen asking, "Now, what do I do?" they'll reach for the phone — and do their business the old-fashioned way.

The third type of products compatible with Internet retailing are **books and CDs**. Unlike music, digitized books will not replace the traditional paper product any time soon. However, the sale of books over the Internet is another story. Books do not have to be experienced, and most people can wait a few days for them to arrive by mail. Shipping costs can be a problem, but buying several books at a time can make the costs of shipping relative to value reasonable. CDs are less bulky and, for the same reasons as books, are good candidates for e-tailing.

The Worst E-tailing Products

Here is a list of products you should probably not try to sell on the Internet:

1. Groceries. Grocery items tend to be bulky relative to their value. Long-distance delivery for the individual consumer is not cost-efficient. Perishability is another problem. Even if the products are shipped in ice, expen-

Hubris Alert: The Story Of Online Grocers

Online grocers were among the more well-funded and better publicized early Internet start-ups — despite some obvious drawbacks of food as an Internet retail item (as mentioned in the article on this page, people want to squeeze the grapefruit!).

Webvan and HomeGrocer, the two leading online grocers, had market capitalization in 1999 that exceeded \$5 billion. (By comparison, Winn-Dixie, the fourth largest bricks-and-mortar grocery chain in the U.S. had a market capitalization of \$3 billion.)

The reason investors were so high on these enterprises was the belief that the new home-distribution model would take care of gross "inefficiencies" in the traditional methods of warehousing and distributing food. The inefficiencies would be addressed through such things as automated warehouses and special delivery trucks.

The Internet entrepreneurs and their supporters seemed to have forgotten that the grocery business is very mature and very competitive. The market has been tough to crack, even for foes as fearsome as Wal-Mart and Costco. As a result, one can assume that any inefficiencies would have already been addressed by competitors seeking to break in.

Of course, there is always room for innovation. But was the innovation that the Internet grocers were offering — home delivery — something that consumers wanted? Apparently not. Consumers decided that shopping when they had the time and having the flexibility to make last-minute decisions when they were going through the aisles was preferable to waiting at home to take delivery of food items checked off on an Internet form.

Eventually, HomeGrocer was bought by Webvan, which itself went out of business — the most well-financed e-commerce bankruptcy to date.

sive pinpoint delivery systems are required; after all, perishable or frozen foods can't be left on the porch.

Finally, some foods, such as fruit and meat, are experience products; consumers want to squeeze or at least see them before they buy.

2. Automobiles. One problem for cars is that they are clearly experience products. As noted previously, you want to sit in and drive the car before you buy. This sector is also hampered by numerous state and local regulations on who can sell cars and where.

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The (Non)Ubiquity of E-Tailing

(continued from page 5)

3. Furniture. Furniture is bulky and is an experience product: You want to sit on the couch or lay on the bed before you buy.

4. Prescription Drugs. Prescription drugs are used either for chronic conditions or to alleviate an unexpected health problem, such as a cold. For unexpected health problems, you want the immediate relief that an Internet purchase cannot give you. While immediate gratification is not involved in the purchase of drugs for chronic conditions, the Internet does not offer any real advantages over the traditional phone-based channel. For example, you don't need information to make the choice (the doctor prescribes the medicine), and since a pharmacist must still prepare and send out the prescription, there are no inherent cost-savings for an Internet pharmacy company.

Pricing Systems On The Internet

The success of Internet companies sponsoring auctions or other forms of pricing, such as eBay and Priceline, has encouraged some pundits to predict that Internet-based retailing is going to lead to the demise of fixed pricing. This is not going to happen.

Bargaining was once common in the Western world, and is still common in some third-world countries, for a number of reasons. First, the shop owner dealt directly with the customer. In most stores, the owner is not present. Second, people had time to haggle; today, people are looking to shorten the time it takes to purchase something, not lengthen it. Imagine haggling over prices at the grocery store checkout line. Only with the purchase of very expensive items, such as automobiles, is bargaining worth the time.

The Internet does not alter any of these conditions, and therefore, fixed pricing will continue to be the pricing system of choice. ■

For Additional Information on e-ordering vs. e-tailing, go to:
<http://my.summary.com>

Is Creating Value Profitable?

The Internet is going to create value. But will that value necessarily translate into great profits for Internet companies? Not necessarily.

First, the laws of economics do not show a direct link between value and profits.

For example, your company may create great value, but how much did it cost you to create that value? Because the value that was expected to be created from Internet commerce was much larger than the actual

Don't Assume Low Costs Mean High Margins

Low-costs don't necessarily translate into higher margins, and subsequent above-normal profits.

Let's say that in your industry, the average return on investment is 10 percent; in other words, a company will make a profit that is equal to 10 percent of its investment.

If company A invests \$50 million to reach \$100 million in sales, its profit will be \$5 million (calculated by taking 10 percent of \$50 million). Its margin will be 5 percent (calculated based on \$100 million in sales yielding \$5 million in profits).

Company B's costs are higher: It must invest \$150 million to reach the same \$100 million in sales. With a 10 rate of return, its profit will be \$15 million.

In conclusion, company A had lower costs (\$50 million) than company B (\$150 million). But company A also had lower margins (5 percent) than company B (15 percent).

The lower costs incurred by Internet companies, therefore, lead to lower margins.

	Sales	Investment	Normal Profit	Margin on Sales
High Investment	\$100,000,000	\$150,000,000	\$15,000,000	15%
Medium	\$100,000,000	\$100,000,000	\$10,000,000	10%
Low Investment	\$100,000,000	\$50,000,000	\$5,000,000	5%

value created, companies overinvested in setting up their e-tailing operations. The result: negative net profits — and for many companies, bankruptcy.

The law of supply and demand, as exemplified in what is called the diamond-water paradox, also disputes a link between value and profits. Without water, we cannot survive. The ownership of diamonds, on the other hand, is not necessary to our survival. Water, therefore, has much greater **value** than a diamond, yet a diamond has a much higher **price** than a gallon of water. The reason is supply: There is much more water than there are diamonds.

In sum, great profits do not necessarily flow from great value.

The Cruelty of Competition

Competition will also reduce the profits that can be generated from the Internet. The problem is that the Internet offers low barriers to entry (for example, it's much less costly to set up an Internet Web site than to open a bricks-and-mortar store). Low barriers to entry

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Is Creating Value Profitable?

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attract greater numbers of competitors. More competitors battling each other for customers translates into more supply and choices for consumers — and less profits for producers.

One implication of the cruelty of competition may be that Internet companies try to get the government to artificially reduce competition by restricting entry to competitors — a practice one already sees in the automobile and agricultural sectors. Stay on the lookout: The Internet is ripe for competition-restricting efforts.

What About Profits?

Some may argue that costs are so low for Internet commerce that Internet companies are bound to generate above-normal profits.

Two competition scenarios for Internet companies vs. bricks-and-mortar companies exist. One is that the two types of companies coexist side-by-side. In this case, Internet companies will compete against each other (for the customers who prefer virtual retailing to bricks-and-mortar retailing), not against their bricks-and-mortar counterparts. Since there is no competition between Internet and bricks-and-mortar companies, the cost-advantages of Internet companies over bricks-and-mortar companies are irrelevant.

The second scenario is that Internet companies compete directly against bricks-and-mortar companies. If Internet companies have lower costs, they should be able to drive the bricks-and-mortar companies out of business.

However, it should be noted that Internet companies will still have other Internet companies to compete against — and, once again, there will be no cost-advantages — and no above-normal profits. ■

Can Advertising Revenue Support the Net?

The online world was originally a subscription-based world. Online services, such as CompuServe, Genie and AOL, paid a fixed monthly fee, which usually included five hours of use, and additional fees for additional hours. Web sites such as The Wall Street Journal and Slate also required subscriptions.

Eventually, the Internet adopted the broadcast television model: free content interrupted by advertisements.

There are three problems with this model.

First, the Internet audience is much smaller than the television broadcast audience. Second, it's easy to avoid the advertisements (as opposed to the advertisements

Why the Television Model Really Worked

Internet retailers are attracted to the broadcast television model of revenue generation: no subscription fees, just ads. Internet banner ads are intended to emulate TV commercials.

The truth, however, is that broadcast television was successful in spite of its revenue generation model, not because of it.

First, television was an industry with very limited entry. Creation of television stations was limited by the government and by limitations in the available television frequency spectrum. Competition, in other words, was kept to a minimum.

In addition, broadcast television cannot prevent people from enjoying the service: All it takes is an antenna and a television set. Thus, television chose the advertising-only model for generating revenues because it had no other choice.

Cable has changed both of these issues. First, broadcast television now faces intense competition. Second, cable can restrict viewership, and is thus able to combine advertising with subscription fees to generate revenue.

Broadcast television is still stuck with an inferior revenue-generation model — and will eventually pay the price. One day, broadcast television will be able to afford to air old reruns, and not much else.

placed strategically during television programs). Finally, companies are less likely to divert advertising money from other media to pay for Internet advertising, which targets more specific, or “narrow,” audiences.

Eventually, Web sites will realize that advertising alone is not covering their costs. After all, the average American spends more than four hours per day in front of the television, and only a total of half-an-hour per day on the Internet. There is some room for growth, but it's doubtful that daily Internet use will reach the level of daily television viewing.

In sum, it is unlikely that advertising revenue based on the broadcast television model can support all of the Web sites counting on it. A better solution is the cable television model, which is a hybrid of advertising and subscription. Magazines and newspapers also use the hybrid model. The advantage of the hybrid model is obvious: It is a dual revenue system, so you are not dependent on one source of revenue. Instead of counting on banner ads, Web sites should start experimenting with small subscription fees — these subscription fees are where the major revenue increases will come from in the future. ■

Copyright and the Internet

One of the thorniest issues to arise from the advent of the Internet involves copyright protection. The Napster case, in which the customers of this dot.com company were downloading free copyrighted music, drew attention to the issue. The music industry pursued Napster in the courts and eventually stopped the free distribution of the copyrighted material.

Let's take a closer look at this important and complicated area of Internet retailing.

The Economic Impacts of Copying

The issue at the core of copyright law (and any intellectual property law) is the degree to which the copyright holder can appropriate the value produced by the consumption of his or her work. In other words, what percentage of all the money made from a song should go to the copyright holder?

The issue of appropriation of value involves a tug-of-war between *consumption efficiency* (allowing consumers to enjoy the benefit of the copyrighted work) and *production efficiency* (ensuring that creators of copyrighted work have an incentive to create). For example, if creators get no or little revenue from the work, they will have less incentive to create. On the other hand, copying a work might bring that work to more people, thus increasing consumer efficiency — providing goods to consumers who want them.

Thus, while pirating is considered harmful to producers — they get no money from their work — the issue is not that simple.

For example, what if a consumer engaged in pirating would not have purchased the original even if pirating was not an option? In this case, preventing the pirating reduces consumption efficiency (it diminishes the gratification of the person engaged in piracy) but does not increase production efficiency (it does not bring money to the creator of the work).

Another scenario is that piracy increases the sale of the original material. For example, you tape a friend's CD of a particular artist, then decide you like that artist and, thus, buy his or her next CD. This is called an "exposure effect."

Crying Wolf

It can be easy to develop "what-if" scenarios to bolster your position. However, the opinion that copyright holders are overstating the danger of Internet pirating is bolstered by the fact that copyright holders have cried wolf before. For example, Hollywood was convinced that VCRs would bring the downfall of the movie theater, and destroy movie industry revenues. After all, why pay for a movie when you can just tape it off TV? It turns

The Network Effects of Pirating

Advocates arguing against limiting copying from the Internet point out the potential network effects benefits of pirating.

Pirated word-processing software, for example, might lead to greater adoption of that software since more and more computers can read it. It's thus possible that the creation of a market catalyzed by pirated material would prove more lucrative in the long run than the revenues that would have been made by restricting the pirating.

out, of course, that VCRs are mostly used to play prerecorded tapes. Instead of reducing revenues, the VCR actually created *another* revenue stream for Hollywood.

The Threat of Napster

Despite the potential positive impact of piracy and past instances of crying wolf, the music industry's fear of Napster was not unreasonable. The flexibility and quality of the technology — files downloaded from Napster are good substitutes for the original and can be burned onto CDs and copied to MP3 players — means that downloading the files could replace the purchase of authorized CDs.

However, while Napster did appear to be a threat to the music industry, and although the music industry won in the courts, the arguments against Napster are theoretical: There is no empirical evidence to what might have happened had Napster been allowed to continue.

In addition, the music industry might find itself with a greater problem on its hands — decentralized copying. It might have been much easier to develop a protocol that allowed some control over copying that was centralized through Napster, than to try to control peer-to-peer copying; without Napster, there are no centralized servers keeping track of the uploads and downloads.

Digital Rights Management

Digital rights management (DRM) technologies, which prevent unauthorized copying on a large scale, should reduce any harm incurred by copyright holders as a result of copying technologies. As with the movie studios, music companies will find that the inexpensive copying made possible by the Internet (DRM attaches a price to the copying) will prove to be a boon to the industry. The distribution of music through the Internet will benefit both producers and consumers (to the detriment of bricks-and-mortars record stores).

The industry just needs to find the right pricing strategies. For this, it should learn from the movie industry, which discovered that it could make much more money selling videos at \$20 instead of \$100. ■

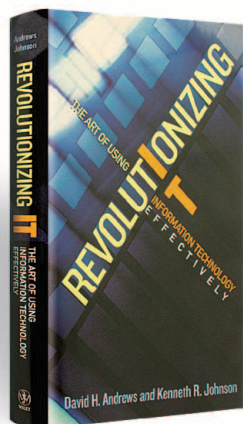
· Book 24 of 35 ·

Revolutionizing IT

David H. Andrews and Kenneth R. Johnson

SOUNDVIEW Executive Book Summaries®

FILE: HANDS-ON MANAGEMENT



By David H. Andrews and
Kenneth R. Johnson

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The Art of Using Information Technology Effectively

REVOLUTIONIZING IT

THE SUMMARY IN BRIEF

Why is it so hard to gain concrete business benefits from Information Technology (IT)? Why do so many IT projects overrun budgets, miss schedules and fail to meet expectations? How can your organization ensure the success of its next IT undertaking? *Revolutionizing IT* provides a simple yet profound set of management principles that will completely change the way you think about the management of technology. Most managers instinctively know that IT projects shouldn't be as complex as they always seem to become. This summary will help guide you through your next IT project, showing you how to **Revolutionize IT Effectively** — the **RITE** way.

What You'll Learn In This Summary

- ✓ **How to let time determine the scope of your project.** You will see why setting a time limit early will save the project from becoming bloated and irrelevant.
- ✓ **How to succeed through continual incremental improvements by letting projects mimic evolution.** Change is evolutionary, and trying to make too large a leap into the future at once is doomed to failure. Improving parts of the system quickly is often better than overhauling the entire system at once.
- ✓ **How to recycle proven concepts instead of reinventing them.** You will see why borrowing from others who have successfully solved a problem is often better than developing the same or another solution yourself.
- ✓ **How to demand progress, not perfection.** You will learn why it's best to expect progress but not perfection. There are no perfect solutions but all good solutions bring progress.
- ✓ **Why to make end users fully accountable.** It does no good to make consultants or the IT staff accountable for the success of a project. It is the end users who should be responsible since it is their problem that is presumably being solved by the project.

REVOLUTIONIZING IT

by David H. Andrews and Kenneth R. Johnson

— THE COMPLETE SUMMARY

The Nature of Projects

The pace of technology-driven change is not likely to slow. Each innovation cycle opens up opportunities for improving existing products or services or inventing new ones. Putting technology to use is an important management challenge. Managers must pay attention to information technology. Web sites must be created and updated, data must be collected and analyzed, and software must be built linking it all together.

Unfortunately, advancing technology is creating opportunities at a faster rate than businesses can recognize and exploit them. This is because there is a large gap between recognizing an opportunity and taking advantage of it. The bridge across that gap is a project. And that project is most likely to succeed if you take the **RITE (Revolutionizing IT Effectively) Approach**. The **RITE Approach** is a collection of observations and principles designed to provide guidelines to those who make decisions regarding IT projects. Some of the most powerful principles of the RITE Approach are:

1. Let time determine the scope of your project.

Setting a time limit early on will save the project from becoming bloated and irrelevant.

2. Succeed through continual incremental improvements by letting projects mimic evolution. Change is evolutionary, and trying to make too large a leap into the future at once is doomed to failure. Improving parts of the system quickly is often better than overhauling the entire system at once.

3. Recycle proven concepts instead of reinventing them. Borrowing from others who have successfully solved a problem is often better than developing the same or another solution yourself.

4. Demand progress, not perfection. There are no perfect solutions, but all good solutions bring progress.

5. Make end users fully accountable. It does no good to make consultants or the IT staff accountable for the success of a project. It is the end users who should be responsible since it is their problem that is presumably being solved by the project.

Terminology

In this summary, the following definitions will be used to describe the work of information technology:

- *IT projects* are those projects that are launched and monitored through a formal process, involve a number of people over months or longer, use software to play a major role in solving the problem, and have as the goal putting a working improvement in place. The end result is a change in the *business process*.

- *System maintenance* involves minor changes or enhancements to existing software applications carried out by a small group of people over weeks rather than months.

- *Projects* are involved when complex systems are created, such as an airline reservation system. These normally evolve over time and involve individual efforts that create specific workable parts of the ultimate system.

- *Products* are the systems created through a series of related projects.

- *Software releases* are the software created during a project. To test whether the software will do what is intended, *prototype software* may be created. Incomplete software given to users for testing is called a *software increment*.

- *Stages* are the efforts taken to evaluate the problem, create the plan or design the solution.

- *Scope* of the project is the determination made as to exactly what the project will accomplish.

The Vital Early Stages

IT projects create value through business process improvements if the result is a permanent improvement

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The authors: David H. Andrews has overseen information system development efforts at SmithKline, Citibank and other major corporations. Kenneth R. Johnson has spent more than 30 years overseeing the development of advanced software systems.

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For Additional Information on the authors, go to:
<http://my.summary.com>

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in the way a function is performed. Keep that goal in mind when evaluating project proposals. Ask yourself:

- Exactly how will the project change the way the organization functions?
- What benefits will the change bring?
- Are other options available to achieve the same benefit?

Many projects fail because they don't answer these fundamental questions. If you look back at a failed project, you will likely see the signs early on. The fate of a project can be determined early on. How an organization handles the earliest stages has enormous impact on the result. Many projects are doomed to failure before they have begun because of attitudes, assumptions and approached that are seriously flawed. These include:

- Vague or contradictory mandates.
- Lack of people with the right skills and knowledge.
- Inability to get vital information on time.
- Inability of the organization to absorb change at the rate needed.
- The problem changes before the solution can be implemented.
- Inability to provide management with the precise plan it desires.

Why Scope Takes Off

Once a project is initiated, predictable things happen. For one, the end users have two conflicting forces pulling at them. They want to ask for everything they could possibly want but they also want to limit the disruption they will face. For another, the very people who best understand exactly how things work now are the ones who have the least time to spare. The temptation is also great to dump troublesome individuals into the project to get them out of the way. Finally, the technical people assigned to the project typically want to make use of their skills and will create more ambitious changes than may be necessary.

All these factors combine to create growth in the scope of the project. Those representing the end user community are encouraged to define their needs broadly. They fear criticism for leaving something important out of the specifications, leading to the creation of highly ambitious system requirements. The IT professionals involved in the projects are supposed to translate these ambitious goals into a system that solves the problem. Couple that with the natural IT desire for challenge, and you have an upward spiral of scope as the user's desire for functionality feeds the IT professional's desire for challenge and excitement.

The Classic View of Project Management Theory

The first generation of formal IT methodologies was viewed as a series of logical steps carried out one after another. Projects were born when an organization identified a problem or saw an opportunity. People were assigned to define what the project was supposed to accomplish. A project plan was developed and presented to management for approval with an estimate of the costs, time and resources required.

The project plan then served as the starting point. IT professionals would interview people familiar with the affected functions. Their requirements formed the basis for custom-designed software or selection of a software package. Once approved, the design was turned into a working system and then implemented. This orderly process was far more useful than simply putting a few programmers together and having them knock out the code needed to make computers do what was needed.

The expanded scope then runs headlong into another reality — limited resources. Competition is stronger, margins tighter, buyers more demanding, staffs smaller and market conditions more unstable. Most organizations today have precious little capacity to undertake efforts that aren't directly related to the daily operation of the enterprise. Problems severe enough to demand immediate attention are arising at an ever increasing rate. Undertaking an IT project is often the correct response, but finding the resources is a challenge. It is therefore essential that IT projects undertaken be assured the best possible chance of success. There is no time or money for wasted efforts.

The Anatomy of a Project

Before you embark on a major IT project, you must learn to guard against five unrealistic assumptions. These are:

1. The environment will remain stable during the project. Unfortunately, long periods of stability are a thing of the past. Change is a constant. The organization will experience management turnover, product introduction, new competition, government regulation, lawsuits, natural disasters and even terrorism. Technology will change. The longer the project, the more likely instability will enter the picture.

2. End users can define in advance exactly what will be needed. This, too, is untrue. The first attempt to

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Did Lewis and Clark Succeed or Fail?

One of the most important projects in U.S. history was the 1803 effort by Meriwether Lewis and William Clark to find a Northwest Passage. Their project had a profound effect on the United States we know today. But using the standards some executives would apply today to projects, the expedition was a complete failure. It took longer than expected, cost more than planned, and failed to meet its primary objective — to discover a waterway that led to the Pacific Ocean.

Before Lewis and Clark started their project, they only knew vaguely what lay ahead. They planned carefully but couldn't be expected to know what they would face. Yet they gathered valuable information that accelerated westward expansion. In IT, some projects need to be organized like the Lewis and Clark expedition — organized as voyages of discovery and not as precisely planned trips to a known destination.

The Nature of Projects

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design anything complex is rarely very good, even when done by experts. And end users aren't experts with the ability to design complex systems. Design engineers don't ask users to create and approve the technical specifications for cars and airplanes. Prototypes are built and tested instead. The people currently using the system may not be capable of defining appropriate requirements for a better business process.

3. Complex problems can be solved completely on the first attempt. It's not that simple. Most plans are imperfect.

4. Requirements can be precisely defined before packaged software is selected. This, too, is untrue. This expectation arose in a time when most software was custom-designed by in-house programmers. Better to select a package faster than to spend time and money trying to define exactly what the requirements — a futile task at this point.

5. Users will cheerfully accept changes in their work environment. This, too, isn't the case. People fear and resist change.

As the size and complexity of a project increase, a number of bad things can happen. Greater scope means more time, which increases the chances that environmental change will disrupt the effort, maybe even making it irrelevant. Costs also increase as complexity

grows. And as time to complete the project increases, the people who will benefit find it difficult to put energy into the project because they don't see any immediate benefits. Organizational resistance increases at the same time as resources are spent to provide interim fixes to the problems the project is expected to fix. By now it should be obvious that the first priority of any project team must be to put limits on what the team will attempt to accomplish. ■

For Additional Information on a project that failed because it didn't take the RITE Approach, go to: <http://my.summary.com>

Elements of Successful Projects

Not all information technology projects fail. What separates failed projects from successful ones are six things. These are:

Strong leadership. As the talent, motivation and experience of project leaders increase, so does the chance of success.

Time control. Time is a project's worst enemy. Successful projects are those that are manageable but subject to time pressure.

Resource limitation. Successful projects limit the number of people involved.

Scope control. Limit the scope, and chances of success increase.

Staged evolution. Successful projects break what needs to be done into manageable parts. They follow an evolutionary path.

Concept recycling. Successful projects invent as little as possible. A highly innovative system can be constructed from proven components where a small number of totally new ideas are included. Successful projects borrow ideas and building blocks from any legally available source.

The RITE Approach

Changing how IT projects are viewed can help improve the odds of success. Consider this: If the definition of a successful marriage was that the couple never had a disagreement, then the odds of success would be close to zero. It is equally absurd to define the success of projects by how closely they adhere to plans created in the early stages. On the other hand, it would be absurd to define a successful marriage as one in which neither spouse killed the other. Similarly, a project is hardly a success if its barely breathing carcass is dragged across the finish line long after the reason it was initiated has been forgotten.

Managers should view projects as chess games. Good

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Elements of Successful Projects

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chess players start with a general strategy and a detailed plan for the early stages of the game. After a few moves, the plan needs to be constantly revised in reaction to the opponent's moves. The strategy remains the same, but the moves change. IT projects likewise need to be constantly adapted to changing conditions while remaining faithful to the overall goals. Success at IT projects and chess is defined by the end result and not by the degree to which the original plan was followed.

Organizations are in much better position to succeed when realistic assumptions underlie the mental picture of success. These realistic assumptions include:

- It's impractical to attempt to understand every aspect of a problem.
- Complex problems are made up of an intricate web of smaller ones.
- The nature of the problem will change over time.
- The more time passes, the more change will occur.
- Any complex design will be imperfect.
- There will not be enough human talent available to create the optimum solution.

Following Mother Nature's Lead

The foundation for a better approach to projects is *iterative development*. Mother Nature has been using this design philosophy for billions of years. Evolution has been shown to be a simple and powerful way to develop systems of incredible elegance. The logic of evolution is to create something new, try it in the field, introduce variations, incorporate those that are successful into the design, and reject what doesn't work.

The essence of evolution is incremental improvement.

Why the Largest IT Project Ever Undertaken Succeeded

During the late 1990s, the IT industry faced its greatest challenge. By the end of 1999, software that had been developed over 30 years had to be checked to make sure it wouldn't fail when the millennium dawned. But the so-called Y2K problem turned out to be a non-event. Only a handful of applications failed, and none affected anyone critically. The reason so few failures occurred was that the IT community knew the consequences of not completing its projects on time. The Y2K problem was unique because the end date was fixed and non-negotiable, the definition of success was clear and never changed, and the consequences of failure were dire. There was no scope creep, no negotiation with end-users about specifications.

Evolution teaches us that iteration is the best way to develop a great design. Innovations are tested incrementally under real-life conditions, and those that represent a true improvement become part of the design. An iterative and incremental approach to projects incorporates this concept by encouraging the testing of new concepts, one at a time, under real-life conditions and keeping those that actually work.

The way that projects proceed under the **RITE** Approach includes the following steps:

- **Create a long-term vision.** But don't spend a lot of time making it perfect. Expect that no vision is flawless.
- **Evaluate the environment.** Estimate how much time will pass before the next major environmental change will occur.
- **Break down the problem.** What are the most important goals of the effort? Are there opportunities to quickly make high-impact, near-term improvements?
- **Plan the first step.**
- **Iterate activities as needed.** Build and test anything new in manageable increments.
- **Make it happen!** The first operational deployment needs to arrive quickly and create positive momentum.
- **Evaluate and adjust.** Once an increment of the ultimate solution is operational, re-evaluate.
- **Update the vision.** See how it stacks up to what has happened and update as needed.
- **Plan the next phase.**

Using the **RITE** Approach, the first step is to assign a task force to examine the issue and formulate a high-level view of the issue and how it might be solved. The **RITE** Approach is based on the principle that the best plans are made rapidly by a small group of people. Less than five is ideal, fewer than 10 is essential. They should understand that plans will be imperfect regardless of how much time or resources are invested. The task force should be encouraged to come up with solutions that can be put into place immediately. They need to know that a project isn't the only possible outcome. If they do conclude a project is needed, they must first develop a broad view of the ultimate solution — the long-term vision. Then they decide what the first steps toward that vision will be.

Control Project Scope and Establish Accountability

The propensity for projects to grow in scope (see page 3) is a major cause of failure. There is nothing wrong with systems becoming highly complex as long as it occurs in stages. What needs to be resisted is the desire to strive for a high level of sophistication all at once.

Let time determine the project's scope. The problems and opportunities that need solving refuse to remain

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Elements of Successful Projects

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constant while we fix them. Economic conditions change, customer preferences evolve and competitors disrupt the market. None of this can be controlled or even accurately predicted. The only thing you can do is to limit the damage by shortening the time between concept and realization.

Let resource availability drive project scope. Just as time is an enemy, so is lack of resources. Instead of looking for the optimal solution, find the one that fits the resources available. That doesn't mean you should expect too little from your people. Most do their best work when challenged.

Limit the size of the design team. The ideal size of a design team is three to seven people.

You must also gauge the organization's ability to absorb change. Only a few organizations have established a culture where frequent change is the norm and stability is considered boring. In most organizations, change is feared. Today you have no choice but to make constant, constructive change an accepted part of the culture. Just don't do it all at once. The right question is not how much change the organization will comfortably accept but rather how much it will reasonably tolerate. Slowly increasing tolerance for absorbing positive change needs to become a goal for every organization.

Imitate, don't invent. That doesn't mean violate copyrights or patents. It does mean you should take into account best practices and use available technology, such as packaged software, to your benefit.

A Single Point of Accountability

Create a single point of accountability. In an effectively managed entity, all participants have a clear understanding of their role and what is expected of them. Those who are accountable cannot make excuses. If things go well, they are rewarded, if not, they pay a price. It works because it motivates a single person to see that key goals are met even in the face of adversity.

You must select one person to be accountable for the project, and that person should not be someone from IT. Instead, make it someone from within one of the functions that will use or benefit from the resulting system. Those who use systems should be totally accountable for them, including their design, creation, cost, quality, functionality and value. No project should be launched before someone appropriate is chosen to be the project leader.

The project leader isn't expected to personally handle the details of project management. An experienced IT professional should perform that function. The role of the IT leader is to support the project leader in a cost-effective and professional way. In other words, IT profession-

Amazon Gets RITE

Amazon.com is a company that understands incremental improvement. Long-time customers have watched the Web site evolve. Something new and better seems to be added every few weeks. When the site was first launched, it was impressive and professionally designed. By today's standards, though, it was primitive. But slowly improvements have been added, each one adding to the customer's experience. The Amazon lesson is simple: Rapid evolution through a never-ending flow of incremental improvements is superior to less frequent attempts at great leaps forward.

als are resources under the control of those who will use the resulting systems. Those in IT are accountable for satisfying the needs of those who use their services.

Using Packaged Software

In the early days of computing, applications were usually homegrown. Now, most are packaged software; IT projects revolve around the selection, customization, deployment and integration of packaged software. Packages are used because they reduce the time spent trying to conceive of new ways to perform necessary functions. They also reduce the risk that custom designed software carries — the risk it will fail in practice.

The traditional way to select a software package was to develop system requirements and create a Request for Proposal (RFP) documenting those requirements. When responses came back, the organization picked the one that seemed the best match and created enhancements to overcome any package limitations. That may seem logical, but it isn't. There are several traps in the traditional approach, including:

- Asking users to articulate what they want before they have seen what is available.
- Believing that the RFP really represents what's needed.
- Encouraging modifications that may turn out to be unnecessary.
- Taking a long time to reach a decision.

A better approach is to adopt a new attitude about packages. A package contains the combined wisdom of many other organizations. Their collective wisdom is likely to be better than whatever a single organization can develop. Good packages have used an evolutionary process to arrive at their current state.

If many organizations similar to yours use a particular package, it is likely that it will be a good fit. In fact,

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there should be a good reason to *not* adopt the most widely used approach before you reject it.

The best approach is to visit one or two sites similar to yours to see the software in action before the vendor makes a formal presentation. Once you select a package, encourage its use exactly as intended. Invest heavily in training, especially after the package is online. It will take time before the software's full capacity will be appreciated. ■

The Project Balancing Act

To summarize the issues involved, those approving projects must strike a balance between eight critical factors or they risk being left behind. The eight factors are:

1. **Scope** — what the project will accomplish.
2. **Benefits** — the net value the project creates.
3. **Time** — the period between approval and delivery of benefits.
4. **Disruption** — the negative impact of the change on the organization.
5. **Cost** — the profit and cash impact.
6. **Risk** — the probability that things will not work as expected.
7. **Resources** — the talent and skills that will need to be dedicated to the effort.
8. **Quality** — the reliability, availability, performance and user satisfaction of the solution.

Trade-Offs Are Inevitable

Trade-offs always need to be made, so don't try to avoid them entirely. The best way to balance the critical factors is to ask the right questions before the project launches. These include determining what can be spent, who can spare time on the effort, whether outside help is needed, whether similar projects elsewhere were successful, where the next major business disruption is likely to come from, and what other risks can be foreseen. The analysis shouldn't take long. Sometimes all that's needed is an open discussion about them at the very beginning of the planning process.

One of the most difficult trade-offs is time. The best way to deal with how soon a project must be delivered is to set a firm completion date and let that date determine the scope of the project. The most successful organizations are those that consistently produce a steady stream of incremental improvements. The cumulative effect of projects with tight deadlines that deliver incremental improvements is excellence. The first step toward becoming such an organization is to adopt the view that steady, evolutionary progress achieved

through an endless succession of small improvement projects must become a permanent part of the organizational culture.

Don't fall into the trap of over-planning. Some planning is a good thing, but too much can destroy the project. Don't let yourself get bogged down to the point where you never get to the doing stage. The best plans are created in a limited time by a small group of people. Never spend more than 90 days on planning. Usually 30 days is enough. Limit the people involved. More than 10 is usually fatal and less than five is ideal. The mandate must be to create a project plan that can be fully implemented in the time allowed. Management's expectation must be progress, not perfection.

You must always keep in mind that the single valid reason for undertaking an IT project is to create benefits. Projects should only be approved after a consensus is reached that anticipated benefits are well-understood and will work.

Remember that you also will be balancing risk as you develop the project. Risk is a very hard thing to quantify, much less control. One of the most effective techniques for managing risk is obvious but infrequently used: Do the hardest thing first.

Using Outsiders Wisely

There was a time when car owners could tune their own engines and do much of the necessary maintenance themselves. But cars have become too sophisticated for that. There was also a time when most organizations handled important IT projects on their own. That era has also ended due to the complexity of the software that most projects depend on. More and more, organizations rely on outside help.

There are many reasons to seek outside help. It nets you an extra pair of hands without a long-term commitment. An outsider can provide skills not available within the company. Experts who have helped other organizations may be able to offer insight into business processes that can work. But these benefits come at a cost. Consultants are also expensive, learn at your expense, may not appreciate your culture, and have a natural bias toward larger projects.

If you must use consultants, the best way to get value is to maximize the talent of the people chosen for your project while minimizing their number. If you do decide to use consultants, hire them the RITE way. You want to maintain control over the project. Shifting responsibility to consultants is tempting, but does nothing positive for you. If consultants accept all risk of failure, they most likely will adopt an approach that bloats the project. The consulting agreement should provide that:

(continued on page 8)

The Project Balancing Act

(continued from page 7)

- Both parties acknowledge that projects are dynamic and subject to change.
- You, the client, will provide a leader responsible for making decisions and trade-offs.
- The service provider will help manage the project but follows directions from the client leader.
- The schedule and resources are fixed, and the scope is adjusted to meet them.
- The client agrees that the service provider is entitled to make a profit.
- The client expects the people assigned to be capable and to work in their interest.
- Service providers aren't responsible for the ultimate cost of the project.
- The project team consists of a limited number of highly experienced and capable people.
- Service providers are entitled to charge high rates for the most capable people.
- The engagement forms the foundation for a long-term relationship.
- The service provider can expect to participate in follow-up efforts.
- An appropriate number of people are assigned with high average skill levels.

Using this approach, clients make key decisions and trade-offs and assume associated risks. Service providers agree to participate in smaller projects than they would prefer. Rates are fair to both parties, there is an opportunity to build a profitable long-term relationship, and the service provider may become a trusted advisor. ■

Project Management

After the scope of a project has been tightly controlled and undivided accountability has been assigned to a leader from the user community, don't relax. As the project unfolds, consider these problems:

- Project schedules are inherently inaccurate. One reason is that schedules are typically developed before the information needed to do so accurately is available.
- Problems tend to surface late.
- Bad news travels slowly.

One way to mitigate the schedule problem is to create a two-tier schedule. The first is highly optimistic and the second contains more buffer time but still meets organizational requirements. If the second deadline is met, the program is a success and whatever rewards you have promised are earned. But additional rewards are available for projects that meet the earlier, more ambi-

More Speed, Scotty

In the original *Star Trek* television series, Captain Kirk would regularly ask Scotty, the chief engineer, to give him more power from the starship Enterprise's engines. In almost every case, the response involved a trade-off for the captain to consider: "I can give you more speed, Captain, but if I push her too hard the whole thing is going to blow."

Captains of industry face the same dilemma every time a project is presented for their approval. They can blow the whole thing if more speed is requested without making adjustments elsewhere. There is rarely any debate that fast is better than slow. What is hard is making the necessary trade-off between speed and the other factors.

tious schedule.

Building Software Yourself

Sometimes you can't rely on the principle, "Imitate, don't invent." If your project requires the development of custom software, you need to recognize right away that the project will be tough. But more and more, companies need specialized software.

Consider the exam-

ple of online auction site eBay. In that case, software is the business.

Creating custom software is difficult. It isn't a game for amateurs. The specifics are left to the IT professionals, but management's role includes:

- Approving plans.
- Measuring the fit of the software as it's being developed to see if it will do what management expects.
- Overseeing project reviews to resolve problems early.
- Setting an example and selling peers on the value of improvements.
- Ferreting out errors and misunderstandings.

In other words, good development managers need the technical mind of Bill Gates, the organizational skill of Caesar Augustus and the patience of Gandhi.

Once actual software development is underway, a disciplined methodology is essential. There are many methodologies from which to choose, but the choice must be sure to let the project include the stages of planning, design, coding, testing, delivery and service. ■

*Sometimes you can't rely
on the principle,
"Imitate, don't invent."*

For Additional Information on a company that successfully used the RITE Approach, go to: <http://my.summary.com>

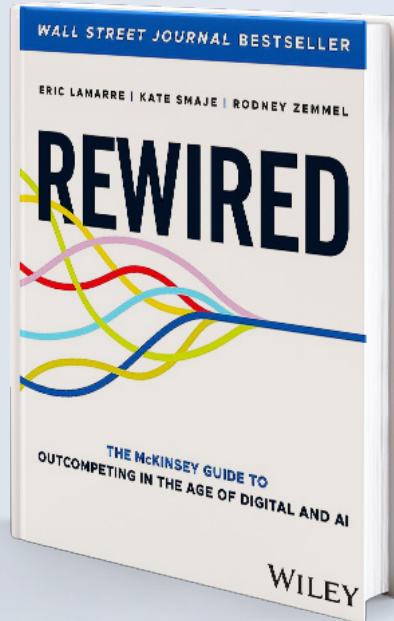
· Book 25 of 35 ·

Rewired

Eric Lamarre, Kate Smaje, Rodney Zemel

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Zooming In On Your Next Read



Rewired

The McKinsey Guide to Outcompeting in the Age of Digital and AI

By Eric Lamarre, Kate Smaje, and Rodney Zemmel

Eric Lamarre is a senior partner and leads McKinsey Digital in North America.

Kate Smaje is a senior partner at McKinsey and the global co-leader of McKinsey Digital.

Rodney Zemmel is a senior partner at McKinsey and is the global co-leader of McKinsey Digital.

Outcompeting in the Age of Digital and AI

In *Rewired: The McKinsey Guide to Outcompeting in the Age of Digital and AI*, authors Eric Lamarre, Kate Smaje, and Rodney Zemmel define digital and AI transformation as “the process of developing organizational and technology-based capabilities that allow a company to continuously improve its customer experience and lower its unit costs and over time sustain a competitive advantage” (xiv). This is what the authors set out to help their readers accomplish in their own organizations. The book is broken down into key sections each highlighting a key aspect of the transformation process, and it ends with three detailed case studies of companies that successfully made a digital transformation.

Lamarre, Smaje, and Zemmel assert that business professionals will be spending the rest of their lives transforming their digital capabilities because digital, by its very nature, is constantly changing. Unfortunately, these transformations are not easy, and they frequently require companies to fundamentally change how they operate. While companies make significant investments in digital technology, their success rate at achieving the desired transformation is generally not very high. According to their research, Lamarre, Smaje, and Zemmel assert that there are specific practices that can help companies succeed. The transition to digital, if well done, is a worthy one as those leading in digital outperform other organizations and are financially rewarded. Lamarre, Smaje, and Zemmel maintain that “cross-functional alignment is core to what differentiates digital winners in any industry” (6). Digital leaders need to attract high quality talent and form agile teams that are capable of continuous improvement. This requires significant investment in numerous areas.

The Transformation Roadmap

Lamarre, Smaje, and Zemmel maintain that it is never too late for a company to begin their digital journey. A company’s top team needs to be aligned when it comes to the desired transformation. Key players need to be aware of why the company is making these changes, and they need to be in alignment. In short, they need to understand their role in the transformation about to take place. There is an initial investment of time needed, but then value needs to be built along the way rather than just at some point in the distance. Also important is the scale. It

is crucial that companies avoid starting either too small or too big. The authors believe that “the right approach is to identify a few important and self-contained domains in the business and rethink them completely” (25). To determine which domains to focus on first, companies ought to consider both “value potential and feasibility” (26). Once the domains are selected, companies then need to look for how they can make a meaningful impact. To do this, the authors recommend against going after every possible technology.

Lamarre, Smaje, and Zimmel believe it is best to organize such transformations around pods or small agile groups. Within these pods, continuity is key, and the authors state that while staffing might evolve, “there is never a handover from one pod to another” (44). Time is also important when it comes to these transformations. While the digital roadmap will likely encompass the next couple of years, it is important to also operate with a vision towards the more distant future.

The Tech Team

Lamarre, Smaje, and Zimmel maintain that digital transformations such as they describe cannot be entirely outsourced. Companies must invest in people. They recommend that 70-80% of the talent be located in house. To begin to accomplish this, a company must first know where they stand with the talent they have on hand. There are numerous ways to evaluate the skills and expertise of a company’s current talent pool such as both manager and individual assessments, online testing, and technical interviews.

When moving on to hire new talent, it is important that companies seek out employees with specific skills and that they also look for other factors such as communication and team-working skills. The authors consider a person’s learning aptitude to possibly be the most important intrinsic skill companies should look for in new hires. Lamarre, Smaje, and Zimmel recommend building a Talent Win Room that includes both tech and HR specialists. Like other key players, these groups should work as agile pods. The difference is that in this case, the customer is the candidate. One problem Lamarre, Smaje, and Zimmel find in tech recruiting is that a company’s technologists are often not treated as primary members of their companies. Instead, tech is treated as a division. This is offsetting to top tech talent as they aspire to work in environments that provide plenty of opportunity to improve their skills while working with high quality colleagues. Once a new employee is hired, Lamarre, Smaje, and Zimmel bemoan the amount of time it takes to get new hires to work because of often cumbersome onboarding processes. “Digital talent wants and expects to contribute immediately” (99).

Lamarre, Smaje, and Zimmel mention two key career paths tech talent can take: the managerial track and the engineering track. When it comes to compensation for these employees, Big Tech is often the mark that other companies base their own compensation packages on. The authors recommend that in regards to compensation, there exists a “granular segmentation of levels driven by credentials” (103). But it is not just financial compensation that matters. Tech professionals want clear job titles and

competent mentors. Companies should consider what meaningful commitments they can give to their talent to demonstrate their importance even if they cannot meet the perks of a Big Tech company. Lamarre, Snake, and Zimmel go on to say the frequent informal reviews are important and that tech talent expects reviews to be done by people who have mastered the craft. Tech talent deserves to know what they will be judged on and what they need to accomplish in order to move up to a higher level.

New Models

Lamarre, Smaje, and Zimmel maintain that the development of an operating model “is perhaps the most complex aspect of a digital and AI transformation because it touches the core of the organization and how people work together” (117). Agile teams are the means by which to accomplish these transformations. Four characteristics frequently differentiate agile pods from legacy systems:

Teams are mission based.

Teams are cross-disciplinary.

Teams are autonomous and are held accountable for impact.

Teams move quickly.

The first task of these teams is to establish their mission for the next year or more. This mission is broken down into OKRs or Objectives and Key Results. The authors also encourage the use of sprints. These sprints occur over a two-week time period and are used to “develop features of a digital solution” (125). These sprints end with teams sharing the work they completed rather than formulating official presentations.

The authors move on to discuss the different types of pods. The number of pods can run in the hundreds or even thousands per organization. Managing these pods becomes more difficult when they increase in number. There are three types of pods within the digital operating model. The first type of pod is a product or experience pod, and the people in these pods create digital services that are used by either customers or employees. In this way, they create value. The second type of pod is the platform pod. The job of these pods is to help support products through back-end technology and data capabilities” (131). The third type is a chapter which refers to “a group of people with the same role.” (132). In this way, people in the same chapter can collaborate with other people who perform the same function in a pod that they do.

There are three types of agile operating models: digital factory, product and platform, and enterprise-wide. While companies often start with the digital factory model, the authors believe the product and platform model will eventually become the dominant model when technology is the major performance differentiator. Product management building is a key factor in digital transformations. Key players in this management are the product owner and the senior product owner. The difference is that the former leads one pod whereas the latter leads multiple pods. These owners are accountable “for the entire lifecycle of



While quality data is crucial in digital and AI transformations, it can be costly to acquire such data.”

the product” (151). These owners are often found within the company rather than from the outside because they need to have an intimate understanding of the business.

Technology

The purpose of technology is to make it easier for pods to release innovations to customers. The authors maintain that “the best architectures provide flexibility, stability, and speed” (173). The cloud is a key component in this. The cloud allows users to pool data and further allows for asynchronous usage. To manage the pitfalls involved with manually building software, the authors posit that automation is key. Flexibility is key as both technology and architecture evolve. When it comes to the cloud Lamarre, Smaje, and Zimmel state that the greatest benefit is not in the lower-cost it provides but rather in the cloud’s greater “agility, innovation, and resilience” (185).

Data

Companies usually have more data than is needed, so it is first important to determine which data is most important and focus attention on that. Once priority is determined, accuracy needs to be ascertained with accuracy mattering more in some cases than in others. While quality data is crucial in digital and AI transformations, it can be costly to acquire such data. Therefore, companies must know clearly what types of data are available to them and what they should invest in.

Data architecture refers to the systems in place that take data from where it is stored to where it will be used. Data platforms are used for both AI-based solutions and business intelligence. Companies traditionally use either cloud based or data lake archetypes. Other options are lakehouses, data mesh, and data fabric. An organization’s needs will determine which archetype to use although at the time of the writing, the authors maintain that the capabilities necessary for successful use of the data fabric archetype are not yet where they need to be.

Another consideration in regards to data is how centralized that data is. Some companies use largely decentralized models while others have teams specifically to serve the whole organization. Many companies are starting to employ chief data officers who are responsible for data strategy and governance. The best DataOps are integrated into every phase of the lifecycle, utilize the maximum amount of automation, and use robust tools for processes such as monitoring.

Change Management

Once digital advances have been made, companies can find

themselves having difficulty getting users to adopt these solutions. This requires change management, but a change management solution will only be helpful if the end product is useful to the user. One strategy to help with adoption is to package all these solutions together in a single change intervention program so users do not have to continuously accommodate to change. A specific adoption team can be helpful when the adoption is complex and will require long-term support.

Managing risk and building trust is key to innovations. Consumers need to know that their data will be protected and that the products are trustworthy. Organizations need to review their policies in regards to data and the cloud. There is the risk that numerous different risk professionals will work in silos. A downfall of this is that sometimes needed information from these security experts does not become available until after significant work has been done. Sometimes trust can be automated when policies are turned into code. This helps speed up development processes and decrease risk.

Near the end of the book, the authors discuss culture. They believe that their book has helped lay out the actions companies need to undertake in order to build their own digital culture. Leaders often need to invest in their own skills and knowledge in order to lead companies on these journeys. Leaders can take classes either virtually or in person, embark on go & see visits, and partake in company supplied programs that help leaders hone and develop the necessary skills for this new environment.

The authors end their book with an examination of three companies that have made progress in transforming their businesses through digital and AI. The book is a highly practical one with specific programs and processes companies can undergo. It is meant to be comprehensive as it focuses on numerous different areas executives need to examine in order to progress their own organizations. The book is useful for both the verbal and the visual learner as ample diagrams are used to explain key ideas. In the end, the book is a valuable resource for those looking to transform their organization.

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The CEO's Digital Survival Guide

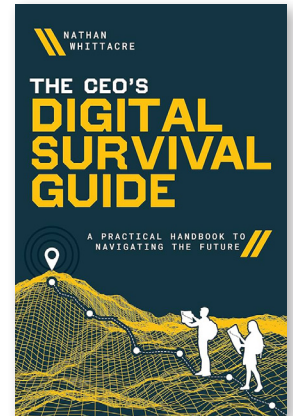
Nathan Whittacre

Executive Book Summaries®

The CEO's Digital Survival Guide

A Practical Handbook to Navigating the Future

by **Nathan Whittacre**



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THE SUMMARY IN BRIEF

No business is immune to cyber threats and technical dangers. But keeping a business afloat despite these threats starts with senior leaders acknowledging the value of implementing the right technology.

The book *The CEO's Digital Survival Guide: A Practical Handbook to Navigating the Future* unlocks the essentials of different features, basic operations, and limitations of digital networks that play an important role in the way businesses survive and thrive. Each chapter here spills easy-to-follow steps to help senior leaders systematically understand, study, and deploy the best systems their organizations need to stay protected.

Author Nathan Whittacre urges CEOs to understand why keeping up with evolving technical dangers is vital to running successful organizations. He talks about the most current technologies available today and offers industry best practices to help leaders maintain the highest level of security in a world dominated by technology.

IN THIS SUMMARY, YOU WILL LEARN:

- How to protect your organization from inside and outside threats.
- About the importance of business planning and analysis.
- How to conduct a digital self-assessment to maximize security.
- How to ensure optimal workforce management across hybrid, remote, and outsourced workforces.

Introduction: Keeping Your Place in the Future

If leaders of a business are not able to clearly understand technology or speak about it with an IT professional, it puts them at a disadvantage.

I have three reasons for writing this book. First, to give you a clear guide to help you speak and make decisions about technology as if it were your second language. Second, to give you a glimpse of how technology can help your business grow and operate more efficiently. Finally, to make it a really interesting book to read and not just a technical manual that only computer nerds would read.

Each chapter of this book has several parts including an introduction story, a section of definitions, a set of self-assessments on topics discussed in each chapter, and more. My goal is for you to be able to use this book as a reference manual that you can review repeatedly as you improve and implement technology in your company.

Chapter 1: A Digital Self-Assessment

I'm going to start this book by giving you an assessment. You can download it as a PDF from my website <https://nathanwhittacre.com/resources>. The assessment is divided into six sections: infrastructure, cybersecurity, compliance, backup and disaster recovery, business strategy, and cloud, and has a score between 30 and 90.

Be honest with yourself when filling out this assessment. This is just the beginning of your journey. By the end of the book, you will understand these concepts and know who needs to implement them inside your company. For now, just get a score for yourself.

If you have 75 or above, you are doing good, and this book will help you improve on the foundation of technology you have built. If your score is between 50 and 75, you are well on your way to understanding what you need to do but most likely need to build the infrastructure inside your organization to implement these pieces of your technology. If you are below 50, I'd suggest focusing on a particular area that you think you can get some quick progress on and start working on it.

Chapter 2: Business Planning and Analysis

Running a business is complex. However, implementing the

right technology inside your business can help it grow faster and be more competitive. You should be familiar with the technology your company uses and be the driver of innovation inside your organization. Here are some key definitions to get you started:

- **Rightsizing.** Ensuring that an organization has correctly scaled its software, services, and hardware.
- **Pro forma.** A tool that businesses use to map out their financial future. It incorporates a budget or financial forecast and is used to help map out different scenarios that a business could encounter.
- **Hardware life cycle.** The lifespan of the equipment that your company buys. Each computer, server, monitor, etc has an estimated time to function normally.
- **Software life-cycle.** The lifespan of the software that the company uses, usually dictated by the company that wrote the software and how long they will continue to provide support, updates, and security patches for the software.

Hardware and software have expiration dates and should be updated and maintained regularly. Defining the right policies and procedures inside your company will lead to a proactive approach to running it rather than being reactive.

Chapter 3: Internal Cybersecurity – Protection from Inside Threats

The biggest threat to an organization's security is internal – your employees and their behavior toward technology is your biggest risk. Helping your employees identify activities that can harm the organization will be your best line of defense against outside hackers. Good security starts with a good policy. Your company's management must be involved in defining the company's security policy and be the best example of behavior.

Remember, no company is too small to implement good security. The threats of loss to a small company, even an individual entrepreneur, are too great today to ignore. Know that security protection requires layers. Each piece of software, security device, or training program has a specific target or type of attack that it will prevent. These different systems should all work in harmony among themselves to provide the protection that you need. Today the common model of security involves seven layers, starting from the inside out. These include assets, data, application, endpoint, network, perim-

eter, and human. Each of these layers requires protection against inside and outside threats. There is no one system to protect against all threats. What worked for security yesterday will not work today or tomorrow. All policies, systems, and implementations must be constantly monitored and updated.

Chapter 4: External Cybersecurity Part 1: Endpoint Threats from Outside the Organization

Hackers are constantly attempting to find vulnerabilities in corporate networks. Beyond the human element, the perimeter of the network is the largest layer of needed protection.

Firewalls have advanced over the years. It is essential to keep your firewall up to date and all security protections active. Mobile devices make it much harder to protect the perimeter of the network because it is constantly changing and growing. Mobile endpoint protection is just as essential to protecting the corporate network as investing in security systems inside the network. A great first step to protecting your company's data is by ensuring all mobile devices have full-device encryption enabled by default.

Remember, cybersecurity planning is much like planning for a challenging hike. There are constant dangers surrounding your business. Many of them are well-known and defined and generally easily mitigated. Other threats are unknown or unexpected. For those, it's important to have contingency plans in place in case disaster strikes.

Chapter 5: External Cybersecurity Part 2: Infrastructure Threats from Outside the Organization

There is no way to guarantee 100 percent uptime for all your systems. Discuss with your internal IT team and all your vendors what their guaranteed uptime is.

Hackers have several tools to cause disruptions in your systems, especially if they have a large network of bots that can attack your network. Distributed Denial-of-Service (DDoS) attacks are a modern form of warfare. They can be used to take down companies and service providers. It is critical for leaders to put tools in place to prevent and mitigate these attacks. Network equipment, such as firewalls, switches, printers, and other network-attached devices, need to be updated, just like workstations and servers.

Servers get their names because they “serve” the network and the users. Their job is to provide functionality for the users of the network to do their work. Some examples of server functions include file services, authentication and security, database systems, remote access, and web services. For these servers to provide their functionality to users outside the internal network, a port needs to be opened on the network's firewall to allow access to the server. This can lead to additional security vulnerabilities. Review the open ports periodically to ensure that only essential access is allowed. Moreover, in today's security environment, it's essential that all your systems are monitored 24/7 by security professionals.

Your IT professionals should be proactive instead of just reactive to security issues. This can be done by having separate security professionals monitoring and testing your systems.

Finally, cloud environments require extra care to protect your data and systems. Make sure you work with your vendors to understand their responsibilities and guarantees.

Chapter 6: Social Engineering

Kevin Mitnick, one of the first successful computer hackers could penetrate the networks and security of some of the largest companies in the world, mostly with little technical work. It was through his ability to use social engineering to convince people to do things that they wouldn't normally do.

Humans have a “default to truth” and lean toward believing an individual is telling the truth. Hackers who use social engineering techniques are friendly people. Anyone can fall victim to social engineering. Attackers have many tools to be able to get someone to do something they wouldn't necessarily do, including creating a sense of urgency, spoofing, baiting, and pretexting.

Hackers can also use the law of large numbers to cast a wide net to get into an organization. Typically, an attacker will spend months and years creating sophisticated attacks to get into their target organization. The two best last lines of defense for this include: continuous education for your employees to keep them alert to and aware of the dangers and the right insurance for your company to cover your losses when your organization falls victim to an attack.

Chapter 7: Physical Security

Physical security equipment is just as important as cybersecurity. Servers and critical equipment should be purchased

and maintained to high standards. Servers should have redundant power supplies and physical storage. Warranties on servers and critical network equipment should be maintained throughout the life cycle of the equipment.

Organizations must expect (and prepare for) power to fail periodically. Make sure you have sufficient battery or generated power to keep critical equipment online during power outages. Remember, servers and network equipment generate heat year-round and should have separate environmental systems from the rest of the building.

Experts in building security and access control can help companies rightsize security systems. Cameras and other surveillance equipment are good deterrents from theft and physical damage. Surveillance equipment should be segregated from the rest of the network to prevent cyber threats from the equipment to the rest of the network.

Chapter 8: Network Design and Business Continuity

Businesses rely on the Internet to conduct operations. All internet connections will have downtime. This is why implementing redundant connections can help avoid business operation interruptions. Having redundant internet service is also an inexpensive insurance policy. It is important to remember that choosing the right internet service for your business requires some additional analysis and questioning of the service provider. Both cyber liability and employee theft insurance are essential for business operations.

When implementing a business continuity solution, it's critical to test it regularly. For this, your IT team should come up with a procedure to ensure two things:

1. Success of data backup or replication
2. Test recovery from system failure

Your IT team should receive notification of the success and failure of each job to replicate data. Successful replication should be looked at periodically to ensure that the reports are accurate and any failures should be resolved immediately.

Chapter 9: Workforce Management – Hybrid, Remote, and Outsourced Workforces

A global pandemic is just one reason why companies are

having to make a shift away from brick-and-mortar business practices. Most companies today have moved some or most employees to remote-only or hybrid work options. Four major areas to focus on when helping your employees work effectively from anywhere include: communication, collaboration, virtual desktop, and team engagement.

There are two types of communication: asynchronous and synchronous. Teams that successfully work remotely know when and how to use each type of communication. Modern cloud solutions allow teams to collaborate on files and documents simultaneously.

For companies that have non-cloud-based, line-of-business applications, solutions such as WVD allow them to still allow employees to access the systems wherever they work. WVD is a technology that allows your employees to access their desktop that is running in Microsoft Azure from anywhere they have access to the Internet. It is critical for companies to implement technologies to provide better team engagement for remote and hybrid workers. Small talk and white space can still happen in virtual environments and leaders must intentionally give opportunities for employees to build strong relationships.

Chapter 10: Business Accounting Systems

Choosing the right accounting system is important to provide proper accounting procedures and financial reporting. Advanced accounting systems such as ERP systems can allow for easier management of financial information in growing organizations.

The company's leadership should regularly review three key reports to show business health: the profit and loss statement, balance sheet, and cash flow statement. Dashboards allow managers to quickly view data and keep track of metrics inside the organization. Each employee should know and be able to monitor a key metric that they are responsible for. To prevent fraud and protect the company's finances, it's critical to establish two-factor accounting protocols. Every company has PII (Personally Identifiable Information) about their employees and customers. Some examples of PII include employee information such as social security numbers, customer data such as credit card account information, biometric data such as fingerprint scans, human resource data, and patient data. Protecting the company's PII is ultimately each employee's responsibility. This is why

it's vital for companies to invest in training employees on how to identify, classify, and secure PII.

Chapter 11: Laws and Compliance

Every company is governed by complex compliance laws and regulations. Some of the most important ones to learn everything about include:

Payment Card Industry Data Security Standard (PCI DSS), National Institute of Standards and Technology (NIST) Cybersecurity Framework, The Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health (HITECH), The Federal Trade Commission (FTC) Safeguards Rule, and Cybersecurity Maturity Model Certification (CMMC)

Implementing a written security plan is a requirement for most government regulations. Most businesses are covered by some type of organizational or government rule for protecting PII or other confidential information. Good cybersecurity policies are the basis for compliance. Laws are updated and changed constantly. Compliance often requires bringing in experts to assist you with developing your programs. Having third-party assessments is key to ensuring compliance with the written security program.

Chapter 12: Documentation, Policies, and Procedures

In business, the lack of documentation is death. Writing documentation can be a difficult task but ensures that company knowledge exists outside the heads of the employees. Documentation of core processes and procedures increases

the value of the business. An enterprise password management system can reduce the risk of stolen credentials.

Storing passwords in a web browser is dangerous because it can be accessed by any software running on the computer. All businesses have intellectual property that requires protection. Using process flow diagrams makes following a process easier to train and understand. A process flow diagram is a graphical sequential representation of a process or procedure, including its operations, timelines, options, and members. Always give the why behind each process to improve understanding and compliance.

Conclusion

Digital success can improve your business, take you beyond your competition, and lead you to long-term business and financial security. My hope is that this book inspired you along your business and digital journey. Happy trails!



Nathan Whittacre has always been passionate about technology and entrepreneurship. He founded his first business at age 11 when he started and ran a candy store for two years from his home. Nathan founded Stimulus Technologies in 1995 with his brother and father with a goal to provide advanced technology solutions for his clients. His passion for innovation, analyzing hard issues, creating solutions, and fixing problems has created a portfolio with a wide variety of Information Technology skills.

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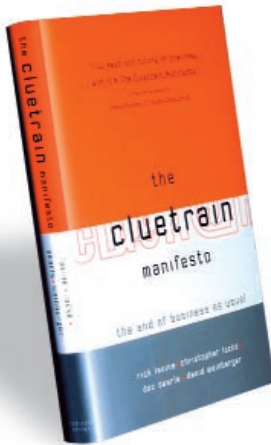
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The Cluetrain Manifesto

Rick Levine, Christopher Locke, Doc Searls, and David Weinberger

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FILE: STRATEGIC MANAGEMENT



By Rick Levine, Christopher
Locke, Doc Searls and
David Weinberger

The End of Business as Usual

THE CLUETRAIN MANIFESTO

THE SUMMARY IN BRIEF

What if the real attraction of the Internet is not its cutting-edge bells and whistles, its graphic interface or any of the advanced technology that underlies its pipes and wires? What if, instead, the Web marketplace is not really based on click-throughs, cookies and credit cards, but on conversations between human beings, millions of them, all linked through a network that was created by many and is controlled by no one?

This is the central question of *The Cluetrain Manifesto*, a revolutionary new way of looking at working that makes hash of corporate assumptions about the nature of online business and challenges executives from Global 1000 companies to sign on or risk missing the boat.

Originally posted on a Web site (www.cluetrain.com), the provocative, sometimes irreverent Manifesto laid out 95 Theses that have caused quite a stir among the command-and-control operatives running Corporate America's response to e-business. Among the flashpoints of conversation are:

- ✓ How the Net connects people to each other, allowing them to have conversations and to comment on things in a forum that joins a wealth of knowledge from different resources;
- ✓ How individuals inside and outside corporations have reclaimed their voices, and how they are using those voices to begin to build a new world;
- ✓ How customers and workers alike use each new method of Internet-based communication to subvert the efforts of corporations to write their stories for them;
- ✓ How the Web has subverted corporate reliance on hierarchy to create a new, "hyperlinked" way of conducting business;

If you only have time for one clue this year, this should be it. Turn the page and get with the revolution ...



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THE CLUETRAIN MANIFESTO

by Rick Levine, Christopher Locke, Doc Searls and David Weinberger

— THE COMPLETE SUMMARY

A Global Conversation Has Begun

A powerful global conversation has begun. The Internet has given people the means by which to discover and invent new ways to share relevant knowledge with blinding speed. Markets are getting smarter — smarter, in fact, than most companies. These markets are, in effect, conversations between members who communicate in language that is natural, open, honest and sometimes irreverent. They communicate in an unmistakably genuine voice — a human voice.

Corporations, on the other hand, still communicate in mission statements, marketing brochures and the modern busy signal known as the hold message. They cannot convince people they are human with lip service about “listening to customers.” They will only sound human when they empower real human beings to speak on their behalf. Those employees exist, but they are often muted by corporate firewalls that keep them in and smart markets out.

It’s going to cause real pain to align the two and extinguish those firewalls, but the result will be a new kind of conversation — the most exciting conversation business has ever engaged in. ■

Why We Long for Something Different

Humans are incredibly resilient — we know it’s all temporary, yet we still roll with the punches, regroup and pick up the pieces when things go wrong. We understand life is just like that; this simple understanding is the seed of a profound wisdom, and also of a profound hunger, a longing for something entirely different from the reality reinforced by everyday experience. We long for more connection between what we do for a living and what we genuinely care about. We long for a release from anonymity, to be part of a world that makes sense rather than accept the accidental alienation imposed by market forces too large to grasp, or even contemplate. These forces don’t like us to be human; they tell us we can fill the holes in our lives with cars, CDs and steak knives. More stuff. Our role is to consume.

It is the conflict between our deeply felt desires and the reality created by today’s market forces that made

the Internet so fascinating and popular in the early 90s. It was a place where people could talk to other people without constraint, censorship or (most significantly) advertising. It was ignored, a fact that allowed it to grow and prosper. The Net worked by different rules than the rules of business; market penetration was never discussed because there was no market. The Net grew like a weed between the cracks in the monolithic empire of traditional commerce.

How Times Have Changed

These days, though, everyone sees the Internet as a big deal, thanks to those weird IPOs and the overnight billionaires they’ve spawned. But most companies with Net dollar signs in their eyes still miss the “something special” dimension that sets the Net apart from any other medium; in an effort to find benchmarks, they view the Net as just an extension of preceding mass media, primarily television. They use the same cryptic jargon, the same rhetoric — brand, market share, demographics, etc. And it works. If nobody was getting rich off this stuff, you wouldn’t hear about it.

Even though corporations try to place it in familiar boxes, the Net still has a radicalizing effect. In spite of the banner ads and promotional hype — it still has that “something special” that sets it apart from every other medium. That something special is what the Manifesto calls “voice.” The Net connects people to each other, allowing them to have conversations and comment on things in a forum that joins a wealth of knowledge from different resources. Workers and markets speak the same language.

Companies need to be involved in these conversations; they can’t innovate or build consensus without

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The authors: Rick Levine is co-founder of Mancala, Inc., and before Mancala, was web architect for Sun Microsystems’ Java Software Group. Christopher Locke has worked for, among other companies, Fujitsu, Ricoh, Carnegie Mellon University and IBM. Doc Searls is the senior editor of Linux Journal. David Weinberger is publisher of JOHO (Journal of the Hyperlinked Organization).

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Why We Long for Something Different

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involvement. But many are still stuck in traditional, conservative, fearful mindsets, creating virtual barriers between themselves and the people they hope to reach.

So what needs to be done? Easy: Burn down business-as-usual. Open the windows and turn up the volume. ■

How to Escape The Managed Age

We don't know what the Web is for, but we've adopted it faster than any technology since fire. We put it on magazine covers and spend billions of dollars on an infrastructure for it. We want it to be important with a desperation that can frighten us when we look at it coldly.

The fervid desire for the Web bespeaks a longing so intense that it can only be understood as spiritual. A longing indicates that something is missing in our lives; what is missing is the sound of the human voice. The spiritual lure of the Web is the promise of the return of the voice.

Why We Manage Everything

The longing for the Web occurs in the midst of a profoundly managed age. We manage our businesses, our households, our children, our ecological environment and anything else we can throw a net over. There are tremendous advantages to believing one lives in a managed world:

- **Risk avoidance.** Nothing unexpected happens if you manage your world.
- **Smoothness.** Everything works in a managed environment simply because broken things are an embarrassment.
- **Fairness.** Life used to be unfair; now you're guaranteed your three-score and ten, and if something goes wrong, the managed system will compensate you.
- **Discretionary attention.** You can decide what interests you in a managed environment; heck, you can even have hobbies.

In spite of what many people think, businesses cannot truly be managed. They can be run, but they exist in a greater world far beyond the control of executives and shareholders. In a managed environment, a competitor would never lower their prices, a key supplier's factory would never burn down and your best employees would never get better offers. These things happen in businesses with stunning regularity.

How to Hate Your Job

A managed environment requires behavior from us as employees that we accept as inevitable although, of course, it is really mandatory only because it is mandated. We call it "professionalism," a canon that includes (but is not limited to):

- **dressing like other professionals,**
- **telling carefully calibrated jokes,**
- **refraining from swearing or mentioning God or sex, and**
- **"managing" home life so that it doesn't interfere with your job.**

Indeed, just about every concession we make to work in a well-run, secure, successful, predictable managed environment has to do with giving up our voice — the strongest, most direct expression of who we are. Managed businesses have taken our voices, and we struggle against it by creating an ironic distance between our company and ourselves. It is only the force of our regret at having lived in this bargain that explains the power of our longing for the Web.

The Home Page as Voice

There are many ways to look at what draws us to the Web — access to information, connection to other people, entrance to communities. None of these are wrong perspectives, but they all refer back to the promise of voice and the authentic self.

Nowhere is this more evident than in the profusion of home pages on the Web. A home page is a place in which we can express who we are and let the world in, to post pictures of our pets and let everyone know how we think the next episode of "The X Files" will end. But they also provide so much more — a place in which we can be who we are, where we can present ourselves to others in a public environment. It is a place where we can express ourselves, where our voices can sound again.

The Web has also infected business in a similar fashion, doing away with old tools and processes. The memo is dead; long live e-mail. The corporate newsletter is dead; long live intranets. Bland, safe relationships with customers are dead; long live customer support reps who are as willing to get angry with their companies as the angry customer is.

We embrace the Web not knowing what it is, but hoping it will burn the org chart, if not the organization, down to the ground. Released from gray-flannel handcuffs, we can reclaim our voices, and when the thrill of hearing ourselves speak again wears off, we will begin to build a new world. That is what the Web is for. ■

The Web Allows Quicker, Sharper Conversations

Every Web page has a person behind it. The Web's low cost of entry to publishers, both small and large, and the amount of unfiltered chat/newsgroup/e-mail text finding its way into search engines guarantees our daily browsing experience has a very strong flavor of individual authorship. Our heightened awareness of distinct, individual voices engenders the urge to talk back, to engage, to converse, and we now have the technology, the tools, to cater to these urges. Chat, free e-mail, home pages — all reinforce our desire, our right, to enter into discourse with others, to share our voices.

Voice is how we can tell the difference between people, committees and bots. An e-mail written by one person bears the tool marks of their thought processes, whether it's employee-to-employee, customer-to-customer or employee-to-customer; in every case, the interaction is person-to-person.

The message here is not new and isn't particularly complex. People talk to each other. In open, straightforward conversations. Inside and outside organizations. The inside and outside conversations are connecting. We have no choice but to participate in them.

Technology Carries the Voice

If there is any newness in the message, it's in how Web technology has changed the balance of the conversational equation — it puts a sharper, more urgent point on the importance of the conversation. These dialogues are moving faster, touching more people, and bridging greater distances than ever before. The main conversational modalities that carry our voices are:

E-mail. Electronic mail is the wedge cracking open

the rock of corporate communication; while most corporations scan e-mails for viruses and the like, the words that comprise the e-mail slip through corporate defenses like wraiths. People exchange mundane, day-to-day business messages, sure, but also ideas, kudos, complaints, jokes and other missives management might rather you didn't voice. The inexpedient comes with the expedient; we have no choice but to work with it.

E-mail is a medium that is informal, honest, yet open to misrepresentations if you choose words and phrases carelessly. In spite of this fact, most people don't find person-to-person e-mail daunting; indeed, the ease and directness of e-mail is forging new connections and conversations throughout virtually every business. Type-click-deliver.

Mailing Lists. Mailing lists, which allow you to send messages to a large number of people at once, can grow from small, focused forums to large, unwieldy free-for-alls. It takes time to wade through all the traffic on a busy list, sifting value from chaff, knowledge from data. The commitment required to understand the content and context of a list before you post it is part of the conversational ante required of this aspect of the Internet.

Newsgroups. Newsgroups are similar to mailing lists, except messages get collected on special computers on the Internet configured as "news servers." They can be moderated or unmoderated, just like mailing lists. They also record the conversational thread structure of their messages, unlike e-mail, so you can see who is talking to whom and why.

Every month, millions of conversations across the globe are enabled by newsgroups. Whereas e-mail conversations are typically between people who know one another, newsgroup exchanges are often between strangers. It is a medium that encourages discourse and can create a kind of community among participants. People write in their own voices because they want to talk, to help, to contribute to the dialogue. They listen to the voices of other participants and decide whom to trust; most of the time, you can come to pretty accurate conclusions about who's on the mark and who is full of hot air.

Chat. Chat gets a bad rap; Web canard says all chat sessions degenerate into conversations about sex within five minutes. That isn't so. Because it is immediate (taking place in real time), chat can enable conversation that feels more genuine, substantial and more human than any other Net channel.

One of the more interesting uses of a chat service has been to provide real-time customer support for Web sites without resorting to expensive telephone call centers. One excellent example is Liveperson.com, which

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Silence is Fatal

Online markets will talk about companies whether the companies like it or not — they can't stop customers from speaking up, and can't stop employees from talking to customers. Their only choice is to start encouraging and empowering employees to talk to customers and act on what they hear.

"Customer loyalty" is not a commodity a company owns. Where it exists at all (and these cases are rare), loyalty to a company is based on respect. That respect, in turn, is based on how the company has conducted itself in conversations with the market. If companies don't engage people inside and outside their organizations in conversation, someone else will.

You have one option: Start talking.

The Web Allows Quicker, Sharper Conversations

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sells a service using a pop-up chat, client-connected to a 24-hour-per-day, seven-day-per-week call center to provide on-the-spot support to Web customers. Each support rep handles up to four chat sessions simultaneously, providing immediate, high-touch attention to customers without phone costs to the customer or the vendor.

Web Pages. Web pages let us look into other people's lives in an intimate way, allowing us to see people as they really are, close up. For example, a how-to article on software installation by Glenn Fleishmann includes a link to the author's personal home page, which told the story of how he fought Hodgkin's disease and won.

The fact that Web pages are conversations hasn't sunk in because they look like publications. But they are indeed conversations — expressions of individual voice looking for a response. Even with corporate Web pages, there is a very strong desire to have a human feel — to speak to the audience in some genuine way. This cries out for communication that is less formal, less professional, less anonymous, and more for the people doing the reading than the people doing the writing. ■

Markets: The Return of the Conversation

As we've seen so far, the Internet is about the human voice, about conversations. What does this mean to companies and organizations? In the following section of the summary, we'll look at the effect of the Internet on the structure and operations of businesses. We begin by looking at how the Internet is transforming the notion of markets and marketing.

The Importance of Talk

Markets are nothing more than conversations. All forms of media — from magazines to CNN — are forms of market conversations. If your company does not take part in the conversation — if you've been working in secret all this time — no one will ever know about you. You'll be ignored, missing in action, rather than involved and entrenched. Your only hope is to talk. Starting now.

First Things Last

The first markets were filled with people, not abstractions of statistical aggregates. Buyers and sellers looked each other in the eye, met and connected. In the twentieth century, the rise of mass communications media enhanced industry's ability to address larger and larger markets, with increasingly larger rewards, which had to

Linux: Slaying Microsoft with Conversation

These days, nearly a third of the world's Web servers are powered by Linux, the dark-horse challenger to Microsoft's software hegemony. Linux was created by Linus Torvalds, who distributed both the finished product and (more importantly) its source code freely over the Internet. Anyone with software engineering tools and technical chops can modify it, add to it and craft it into precisely the tool they need. And many have — thousands of undirected renegade hackers have turned Linux into a real threat to the world's largest, most powerful high-tech corporation. How did they do it?

By conversation. Indeed, Linux, like the Internet, is a powerful demonstration of market conversation at work, without the straitjacket of command-and-control management. It shows that whole markets can rise rapidly out of conversations that are independent of business, government, education and other institutions.

be protected. Layers of bureaucracy were built in markets — more hierarchy, more command and control. The product of all this mass marketing was the message, delivered in as many forms as there were media, and in as many different guises as there were marketers to invent them.

One problem: There's no demand for messages. The customer doesn't want to hear from business, thank you very much. The message that gets broadcast to you and the rest of the world has nothing to do with you in particular. That's the awful truth about marketing: It broadcasts messages to people who don't want to listen. Every advertisement, press release and stunt engineered by a marketing department goes out to a public that doesn't ask to hear it. The conversation of early markets has been replaced with silence.

The End of the Silence

The long silence — the industrial interruption of market conversation — is coming to an end. On the Internet, marketers are getting more connected and more powerfully vocal every day. The Internet is a place — a real place where people can go to learn, to talk to each other and to do business together. It's a bazaar where buyers and sellers meet and connect. It is a conversation, at last and again.

The Internet itself is an example of an industry built by pure conversation. No one controlled it; no one

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Markets: The Return of the Conversation

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directed the effort. The people who incrementally built the Internet — literally, one bit at a time — participated solely out of enthusiasm, an enthusiasm driven by a shared and growing vision of what this strange thing they were building might ultimately become.

What would have happened had the task of building the Internet been sourced out to the leaders of the communications business, companies like Microsoft, AOL, Novell or AT&T? It never would have happened, certainly not as the Net exists now. Each of those companies would have looked for a way to control the Net and make it their property, if they had even taken the job to begin with. Microsoft was famously late to the Internet game in part because Bill Gates thought there was no money to be made. ■

New Messages for Marketing

If markets are conversations (they are) and there's no market for messages (there's not), what's marketing-as-usual to do? What happens to the top two ingredients in the typical marketing arsenal: PR and advertising?

Good question.

Public relations not only fails to comprehend the nature of stories; it also imagines that “positive” stories can be “created” with press releases, press conferences and other staged events. The best PR reps, however, recognize that they are actually the company's best conversationalists; their craft is to discern stories the market wants to hear and help journalists write stories that tell the truth. Some companies have even created sites that give journalists comprehensive, unfiltered information about the industry.

As for advertising, ads may still have a hypnotic, subliminal effect on us, but we now have the world's largest support group encouraging us to acknowledge there is a power greater than ourselves, and it's not some banner ad or a cola company jingle. It's the conversation that is the Web; no number of ads will undo the words of the market.

The Hyperlinked Organization

As we've just seen, the Internet has brought conversations back into the heart of marketing. The Internet has had an equally profound effect on the structure and process of organizations — how they are built and how they operate. In essence, the Internet is replacing the traditional hierarchical organizations with the “hyper-

linked” organization — that is, an organization in which everyone is connected to each other.

Easy Access

Without anyone asking for it, the Web has given the people inside an organization easy access to one another in a rich variety of ways:

- They can send e-mail to one person, a steady group, an entire sales force or the board of directors.
- They can post creative, informative pages that express their interests, correct the mistakes of released documentation or point to the industry analyst's report the company doesn't want anyone to read.
- They can find every piece of information about the company and its competitors.
- They can play backgammon online or blow up their colleagues in a ruthless game of Quake.

They can do these things and much more, not because of a management theory or a best-selling business book, but because the Web reaches everyone with a computer and a telephone line at their desk.

A gulf of expectations opens between those who are connected and those who think an office with a door is a sign of success. These expectations guide a company's perception — the company thinks it's doing one thing while accomplishing the direct opposite with its connected employees. Companies can no longer, for example, pump up morale-starved staffers with feel-good meetings and newsletters, because employees can communicate the truth with one another through e-mail. No longer is the organizational chart a map of who to go to to get things done; it is an expression of a power structure — a map to avoid.

Indeed, modern business has almost universally chosen to build hierarchies as an expression of togetherness. The top, however, is always narrower than the bottom. Power flows from top to bottom, and there are fewer and fewer people as you move up the food chain.

Hyperlinks, however, subvert hierarchy, challenging business assumptions by allowing people to piece things together in different ways, to form newer, flatter connections, thus doing away with the concept of hierarchies in business. Hyperlinks do this in two distinct and important ways:

- **Doing away with individualism.** Hierarchies are predicated on the individual as the fundamental unit of life. The Web, however, is not predicated on individuals; it's a web — it's about connections. Hyperlinks are the connections

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The Hyperlinked Organization

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made by real individuals based on what they care about and what they know, the paths that emerge because that's where their feet are walking, as opposed to the highways built according to a centralized plan. Hyperlinks have no symmetry, no plan — they're messy. They can disappear or multiply and nothing else has to change.

- **Bringing down the pyramid.** Business hierarchies are power structures only because they are fundamentally based on fear. Org charts are pyramids, much like those found in Egypt — only today's business pharaohs build their pyramidal organizations out of the fear of human fallibility. Within the pyramid, we have defined roles and responsibilities. The hyperlinks that replace the org chart as the primary structure of the organization are in fact conversations; they are the paths talk takes. And a business is, more than anything else, a set of conversations going on. The org chart pyramid is being replaced by these hyperlinks; the pharaohs' structures were built on shifting sands. ■

How New Organizations Reflect the Web

What does a hyperlinked organization look like? To answer that question, take a look at what the Web itself is like. You can slice it into several basic themes:

Hyperlinked and decentralized. There is no central authority on the Web; it consists of hundreds of millions of pages, hyperlinked together by the author of each individual page. There are many small pieces that loosely join themselves as they see fit.

Organizations become hyperlinked when they decentralize their teams, committees, task forces and individual reps. Official structure is set aside in favor of networks of trusted colleagues, relationships with a shifting context of links of varying importance and quality. They are self-asserting, not requiring anyone's authority to be put in place. They are the antithesis of the old command-and-control methods of getting things done.

In hyper time. Internet time is, famously, seven times the velocity of "normal" time; you can move at your own pace, take a quick look at a site and come back later without having to find another parking space or go to the end of the line. Control of time is in your hands.

Hyperlinked organizations and groups are driven by their do-it-ourselves zeal to accomplish tasks now. Schedules are driven locally, not centrally, created by

local groups and individuals, in accordance with their assessment of what is realistic. Traditional deadlines are replaced by a team's motivation to turn out a product or help a customer, to do right by their customers and co-workers. Managing them means simply asking them.

Directly accessible. The Net provide what feels like direct access to everyone else on the Net and to every piece of information ever posted. There's nothing standing between you and the rest of the world of people and pages.

Hyperlinked organizations replace old mindsets of hoarding information with new, wide-open policies that encourage collaboration over intranets, moving individual tasks to group tasks and bringing in people because they have necessary skills and shared interests, not because they are in the chain of command.

Full of rich data. The currency of the Web isn't green bar printouts of facts and statistics; it's pages — extraordinarily complex ways of presenting information. They typically tell you as much about their authors as their subjects — a big change from the pre-Web information environment that aimed at generating faceless data.

The various means of communication on the Web (most pointedly e-mail) allows the hyperlinked organization to manage context-rich information in a variety of ways. Linked staff, management and customers can tell stories, create valuable narratives and explore the many ways to translate ideas using each participant's distinctive voice.

Broken. Because the Web is a large, complex network that is controlled by no one, it will always be, in the words of its visionary inventor, Tim Berners-Lee, "a little bit broken."

While old school management aimed at predictability and tried to get there via control, human fallibility and the decentralized nature of the hyperlinked organization will dictate that companies will always be slightly "broken." They will, however, work within the knowledge of that imperfection and embrace errors as opportunities to improve.

Borderless. Because traditional networks were concerned as much with security as with access, it was usually made clear where your stuff ended and other people's stuff began. The Web, conversely, was designed so you can include a link to a page without having to get the author's permission; it's often hard to tell exactly where the boundaries are.

Hyperlinked organizations have never met a wall they liked. Intranets and extranets allow companies to share previously unrevealed processes with customers, and to solicit ideas and suggestions from them. They also

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How New Organizations Reflect the Web

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allow internal communication to flow easier, replacing stuffy closed room meetings with e-mail discussion groups and group intranet sites. When the hurdles to membership in such activities lower, the boundaries blur. ■

Will Corporations Survive?

So, finally, the question we've all been waiting for. In the newly humanized and highly vocal global marketplace the Internet has helped create, can corporations survive at all? Not if they're unable to speak for themselves. Not if they're dumbfounded by the changes taking place around them.

But maybe — and it's a big maybe — companies can get out of their own way and become much looser associations of free individuals. Perhaps they can cut "their" people enough slack to act and sound like people, not robots.

No Crystal Ball

In the end, there is no single set of cogent recommendations, no crystal ball we can use to help business plot its future course, no magic-bullet cure for Corporate Linguistic Deficit Disorder. There is, however, a vision of what life could be like if we ever make it through the current transition.

Imagine a world where everyone was constantly learning, a world where what you wondered was more interesting than who you knew, and curiosity counted for more than certain knowledge. Imagine a world where what you gave away was more valuable than what you held back, where joy was not a dirty word, where play was not forbidden after your eleventh birthday. Imagine a world in which the business of business was to imagine worlds people might actually want to live in someday. Imagine a world created by the people, for the people.

Yeah. Imagine that. ■

A Sampling of the 95 Theses

The themes in this book were first explored in a list of 95 theses put on the Web site www.cluetrain.com. Here is a sampling of those theses.

1. Markets are conversations.
2. Markets consist of human beings, not demographic sectors.
3. Conversations among human beings sound human. They are conducted in a human voice.
4. Whether delivering information, opinions, perspectives, dissenting arguments or humorous asides, the human voice is typically open, natural, uncontrived.
- ...
15. In just a few more years, the current homogenized "voice" of business — the sound of mission statements and brochures — will seem as contrived and artificial as the language of the 18th century French court.
16. Already, companies that speak in the language of the pitch, the dog-and-pony show, are no longer speaking to anyone.
- ...
33. Learning to speak with a human voice is not a parlor trick. It can't be "picked up" at some tony conference.
34. To speak with a human voice, companies must share the concerns of their communities.
35. But first, they must belong to a community.
36. Companies must ask themselves where their corporate cultures end.
37. If their cultures end before the community begins, they will have no market.
- ...
53. There are two conversations going on. One inside the company. One with the market.
54. In most cases, neither conversation is going very well. Almost invariably, the cause of failure can be traced to obsolete notions of command and control.
55. As policy, these notions are poisonous. As tools, they are broken. Command and control are met with hostility by intranetworked knowledge workers and generate distrust in internetworked markets.
- ...
74. We are immune to advertising. Just forget it.
75. If you want us to talk to you, tell us something. Make it something interesting for a change.
76. We've got some ideas for you too: some new tools we need, some better service. Stuff we'd be willing to pay for. Got a minute?
- ...
94. To traditional corporations, networked conversations may appear confused, may sound confusing. But we are organizing faster than they are. We have better tools, more new ideas, no rules to slow us down.
95. We are waking up and linking to each other. We are watching. But we are not waiting.

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The E-Commerce Arsenal

Alexis D. Gutzman

SOUNDVIEW Executive Book Summaries®



by Alexis D. Gutzman

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12 Technologies You Need to Prevail in the Digital Arena

THE E-COMMERCE ARSENAL

THE SUMMARY IN BRIEF

The e-commerce industry shakeout has helped identify the truly innovative and solid e-businesses—those that make best use of the best Internet technologies available. These top-performing companies aren't only technologically savvy; they also remember that retail, whether online or off-line, is a human activity. Using the right mix of personalization or customization, marketing and promotions is still the right strategy; the Web has only increased the pace at which you need to implement technological upgrades to enhance these marketing methods online.

Unrelenting advances in technology ensure that online shopping will continue to get faster and cheaper. The key is to use the correct technology to focus on the three main objectives of any retail establishment, be it online or off-line:

- ✓ Attracting customers.
- ✓ Making shopping easier.
- ✓ Offering superior customer service.

The 12 “must-have” technologies introduced in these pages will help you achieve all three of these goals. For example, you'll learn about:

- **Viral Affiliates Programs** with Web partners who link your site to theirs, enabling their customers to pay you a visit with a click of the mouse.
- **Listfeed Programs** that gets your products into the inventory of buying clubs, product review sites and price comparison engines.
- **WAP-Enabling** that allows WAP (wireless application protocol) surfers to find your site — a key technology as more and more Web customers will be logging on via wireless devices.

✓ **Shopping Wizards** — electronic store clerks can make recommendations based on what you tell them.

Turn the page to access the complete e-commerce “arsenal” that you will need to succeed in the age of the Internet.



— THE COMPLETE SUMMARY

PART I: ATTRACTING CUSTOMERS TO YOUR SITE

Place Your Web Site High In the Search Engines

Search engines locate links to sites relating to the keywords used by the viewer. For example, if a viewer typed in “piano,” the search engine would locate links to sites of piano stores, piano music stores, piano concerts, piano tuners and even Piano Pizza. Once the link is located, the search engine will index all the content and make it available to the viewer in a “directory.” If you want customers to find you, you must be included among the top 15 to 30 listings (depending on how many listings are shown per screen) in a directory.

The best way to submit your site’s Uniform Resource Locator, or URL, is by going to the home page of a search engine or directory and following their rules for submission. Be aware, though, that most search engines restrict the number of pages per each URL that can be submitted every 24 hours. Directories usually only accept a site’s home page.

Ranking Criteria

Search engines search either by content or by popularity. In selecting which listings to rank first, for instance, one engine might rank its results by the number of links it finds to a site elsewhere on the Web, or just list all the ones relevant to the keyword used. Increasing the “link popularity” of your site is thus a good strategy for giving your site a higher ranking in these types of popularity-based search engines. One way to do this is to “inbreed” your site by putting links on all the pages in your site, thus linking them to all the other pages in it.

One of the most important things to remember is that you want qualified *buyers* coming to your site, not just browsers. You can make your site search engine more friendly to such buyers by choosing more selective keywords. For instance, using the keyword “Pentium III” for your site, rather than “computer,” is more likely to be included in a list requested by shoppers who already have an idea of which kind of computer they want to buy and are therefore closer to making a purchase.

Some search engines use a paid-listing model. Sites bid each month for keywords. The sites that bid the most that month will always be listed above other sites;

then the other nonpaying sites are listed in order of relevancy. For a fee, Yahoo! offers a Business Express service, which guarantees that your site will be visited within seven business days.

“Shadow” Sites

Another strategy to place your site higher on the listing is to build two sites—one designed for human use and one designed for search engine use. Agent-detection algorithms allow you to create such dual (or “shadow”) sites. Keep this shadow site rich in text and light on images, because search engines don’t see images, only words that they index. Avoid CGI (common gateway interface) parameters since most spiders (special electronic agents that find and index sites) don’t follow them. Instead, use a flatter design, keeping all the products you want mentioned on the same level.

Monitoring rankings and traffic

If your site is getting a lot of traffic because it is ranked highly, but you’re not seeing enough sales, you may not be using the most precise keywords. You need to pay attention to the introductory paragraph that is included with your listing. Each search engine uses different rules for what viewers see. Some, for instance, only show the first 100 words of the introductory paragraph you submit. You may need to write a different descriptive paragraph for each search engine that selects your site.

There are many commercially available software packages for monitoring search engine rankings. Or you can outsource this service. Web positioning companies charge a fee to get your site listed and will usually maintain the site; remember, however, that the real value

(continued on page 3)

The author: Alexis D. Gutzman, author of *The HTML Bible*, *ColdFusion 4 for Dummies* and *Frontpage 2000 Answers!* is an Internet consultant and the “ECommerce Technology Advisor” columnist for Internet.com’s popular *ECommerce Guide*.

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Place Your Web Site High in the Search Engines

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is getting listed where it counts. Being listed in 700 search engines won't help you much if they are obscure ones. By paying for traffic generated, you are charged only when someone clicks onto your site (although that person won't necessarily purchase anything).

The best scenario is to balance traffic reports from your Web positioning company with your own internal records. You also want to keep track of the conversion rate (browsers converting to buyers) on your site so you can calculate your true acquisition costs. ■

Word-of-Mouth Marketing For the Digital Age

Viral marketing is a new term for electronic word-of-mouth referrals. Some merchants offer existing online customers some sort of savings or reward if they refer a friend who ends up buying from them as well. It works on trust—people will be more likely to open an e-mail about a sales promotion if a friend sent it.

Another way for e-commerce merchants to encourage word of mouth marketing is to set up **affiliate programs**. Affiliates — each with their own Web site or sites — register with a merchant and are assigned an identification number. Each affiliate places links on its site or sites to the merchant's site.

The benefit of this method of customer acquisition is that the merchant only pays for buyers, not browsers. Because of the unique identification numbers, the merchant can then track where traffic — and buyers — are coming from. Commissions are paid only for those visits that result in a purchase.

Another benefit for the merchant is the increased

The Open Directory Project and Natural Language Directories

To help alleviate the difficulty some sites had in getting listed in directories, the Open Directory Project (www.dmoz.org) will share its listing with search engines such as AltaVista, InfoSpace, Lycos, Netscape and others.

Natural language directories use the human element to make searching easier. One such directory, Ask Jeeves, uses human editors to review the answers given to queries typed in by users, to check that they are relevant.

exposure of its products. Anyone viewing any affiliate Web site is only one click away from a purchase.

The downside is that ideally, you only want to pay the acquisition cost of a customer once; by its nature, an affiliate program pays the affiliate every time the customer buys through that site.

Customer loyalty programs offer rewards to customers who are likely to make frequent purchases. They add an incentive for someone to shop at your site. ■

Partner with Aggregators

Online merchants used to believe that the only key to success was to attract customers to their own sites. Today, merchants recognize that you can't depend on customers coming to you; you have to find a way to go to the customer.

One of the best ways of going to the customer is to make your inventory available to **aggregators**. Aggregators, such as buying clubs, product review sites and price comparison engines, allow your entire inventory to be available to almost any browser or buyer.

When partnering with aggregators, you need to evaluate the cost of participation, the compatibility of an aggregator's site with your software, and the amount of traffic generated at a particular site.

Usually there is no start-up fee; payments are made on a per-click basis. In other words, you would pay a set amount (for example, \$.50) every time a customer clicks on your product. This is known as the clickthrough rate. Of course, a prospect who wants to know more about your product will not necessarily buy. The conversion rate — the number of prospects who become paying customers — will also factor into the negotiation with the aggregator.

Often, you can agree with the aggregator on a certain payment structure for the first three months to give you time to collect data on conversion rates; then negotiate a clickthrough rate based on the data you've collected.

Listfeeds

Most aggregator sites accept your *listfeed* — a file of your inventory — daily and then format it for their own sites. The trick is finding a good match between how you have organized your inventory and how the aggregator structures its data. You don't want to have to re-categorize your entire inventory! The larger aggregators — those that have been in existence longer — can usu-

E-Commerce Tip:
Avoid any aggregator that does not offer real-time order transmission, or that does not allow you to run a check on the payment information.

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Partner with Aggregators

(continued from page 3)

ally accommodate most merchants.

Some aggregators also offer universal shopping carts—in which the customer can buy from you and other merchants directly on the aggregator's site. Once the aggregator notifies you of the purchase, you proceed to handle the fulfillment of the order. If you participate in this feature, you may be required to support electronic commerce markup language (ECML) and to allow the aggregator to update your database securely over the Web. ■

Use Targeted Electronic Direct Mail

Merchants who use **targeted EDM** (electronic direct mail) are tapping into the most cost-effective method for bringing one-time or other previous customers back to their site. You already have shopping and buying information from these customers, so you can easily tailor an e-mail message that would interest them. E-mail allows you to build and maintain a relationship with the customer, which in turn helps create customer loyalty. However, direct e-mail will fail if it is not narrowed specifically to the individual or not promoted aggressively.

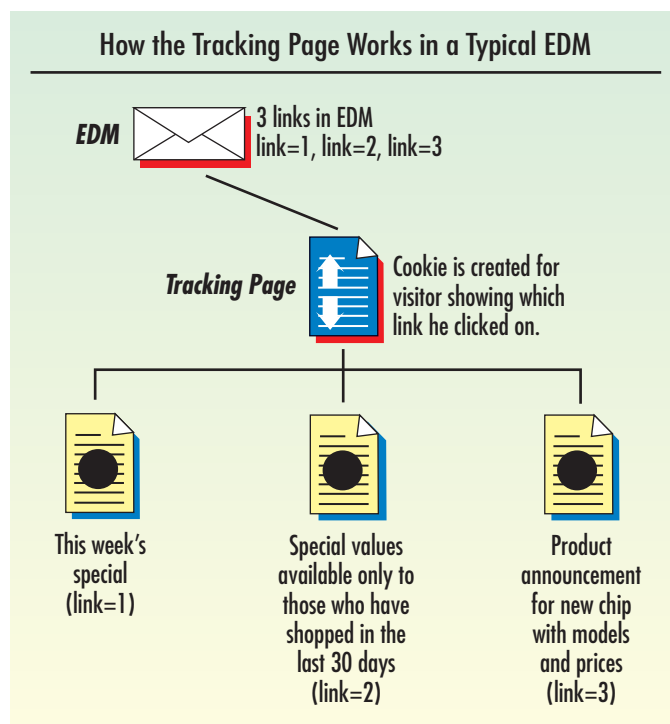
Use Cookies

Targeted EDM can yield valuable marketing data. You can use tracking technology (known as *cookies*) that lets you know which link each customer is clicking onto. This way you can be sure you are sending the most effective message to each customer. Because of the enormous technical knowledge and constant tweaking of content that is required, outsourcing this task can be well worth the cost — unless you have time to be constantly updating and rewriting content for as many as 2 million e-mails that need to be delivered in a 12-hour window! ■

Be Prepared to Connect With Consumers On the Go

It is estimated that within five years, most Web visitors could be logging on via wireless devices. To get in on wireless commerce — also known as mobile commerce or m-commerce — prepare to have a **WAP-compliant** Web site. WAP is the acronym for wireless application protocol, a set of protocols and languages that will allow any WAP-enabled wireless device to communicate with any service provider.

Currently, WAP is popular in Europe due to the high cost of local telephone calls. If you plan to market to European countries, WAP is where you want to be. Also,



be aware that the successor to WAP, Third Generation Mobile Systems, is under development in Europe by the International Telecommunication Union (ITU).

WAP Navigation

Because of the much smaller screen size of wireless, handheld devices, WAP users want simple navigation tools that rely on lists with *drill down capability*. In other words, users scroll down a list and choose one option that gives them another, more targeted list from which they choose an option, and so forth. The users thus drill down the site until they reach the specific information they want.

To help WAP-surfers find your site, try to have your site included as a menu item on the service provider's main menu. These positions are auctioned to the highest bidder.

The most effective way for you to go mobile is to work with a wireless aggregator. The biggest benefit of this is that aggregators only make money when you make a sale, and that drives them to get traffic to your site.

Click-to-Voice

Because cell phones dominate the wireless market, voice is a good option to utilize, especially since it can help to close sales. You can either list your customer service phone number on your site, or use a click-to-voice option. To do this, you need to add a button on each WAP-enabled Web page. The advantage to using button links is that the customer won't be put on hold, and the customer service rep who answers a link will already have all the transaction information so far. ■

PART II: MAKING BUYING EASIER

Make Your Site Personal

There are two ways to personalize your Web site:

1. **Expediting checkout for customers** (for example, by storing their credit card information);
2. **Learning about their interests and what they're most likely to buy.**

If you've ever bought a book through Amazon and then gone back to the site, you'll see a good example of personalization. Based on your previous purchase, Amazon will have other recommendations in the same category for you. The beauty of this type of personalization is its transparency to the customer.

Two dominant methods for analyzing and applying customer preferences for personalization are **recommendation engines** and **click stream analysis**.

Recommendation Engines

Recommendation engines review purchases in your database and make real-time recommendations as to what you should be showing to certain customers. These engines use analytics and *collaborative filtering* techniques.

By clustering customers on the basis of their purchase histories and then factoring in demographics, collaborative filtering identifies what purchases usually lead to other product purchases. Collaborative filtering also allows engines to make recommendations for even new visitors, based on what they are currently viewing.

Click Stream Analysis

Real-time **click stream analysis** shows you what customers have already looked at in their current visit so you can make instant decisions about what to show them next. Amazon's Web site shows what click stream analysis can do.

Once you have information on the customer, use it. Don't have golf and tennis items appear on the site when a customer who told you she enjoys gardening and museums clicks on. ■

Install Search Tools to Help Buyers Find What They Want

One bad online shopping experience can keep a shopper away from the Internet for months, hurting all online merchants. To create a better shopping experience, one that more often leads to a purchase, online merchants can use four technologies: **shopping wizards**, **in-context search tools**, **natural language search tools** and **knowledgebases**.

Shopping Wizards

A shopping wizard is no more than a decision tree. This format is excellent for gift buyers. The customer fills in information about the gift recipient, occasion for the gift and the price range. The shopping wizard then makes recommendations based on this information, and can be programmed to ask progressively more detailed questions. If you decide to create a shopping wizard, make sure that all of the products included are kept up to date.

In-Context Search Tools

Actually just a refinement of the shopping wizard, this in-context search tools let the customer use natural language (i.e., "I need a cordless lawn mower") rather than computer syntax. The in-context search tool then continues to narrow down its range of questions (American or foreign made? How much charging time?).

Natural Language Search Tool

This tool helps integrate your vocabulary with that of your customers. For instance, someone who signs up for a subscription might not know that your computer system instead uses the term "membership." Thus, when they search for "subscription," and get no results, you've probably lost a customer.

Financial services is one area that has benefited greatly from natural-language search tools, since it attracts customers with varying degrees of knowledge of financial terms. Companies that provide natural language search tools can also identify the most frequently asked questions so your site can have answers already posted.

Knowledgebases

For customers who are technically savvy, a knowledgebase (a compilation of questions and answers about products and services) is a good solution. These can be built in-house and updated dynamically from questions that come into the customer service center via e-mail, chat or phone calls.

One prominent example of a knowledgebase is the one used by 3Com. It includes very specific, technical questions and is generally the fastest way for users of its networking products to get answers to these more-or-less routine questions. If their questions can't be answered completely via the knowledgebase, then the 800 number support staff will already know where to begin troubleshooting when they receive a call. ■

Adapt Your Site For Global Customers

The United States is no longer the dominant origin of shoppers represented online. If you plan to compete in the e-commerce arena, your site will need to accept currencies other than just the dollar.

You might be surprised to find that an estimated 30 to 40 percent of your traffic could already be coming from overseas. Your network administrator can locate these browsers and trace their click streams, which usually end at the page that says you only ship to the United States. If these customers are already clicking through your site, why not sell to them as well? Some ways to make your site more internationally friendly include “**internationalizing** your architecture” by:

- **posting shipping policies on the home page or at least near the front;**
- **formatting the site to accept states and provinces outside the United States, postal codes that also include letters, and phone number fields that can accommodate a variety of formats;**
- **using a database that can recognize double-ASCII characters — which is what Japanese and Chinese characters use — and one that can sort a particular field by a specific language;**
- **including fewer graphics to decrease the download time.**

Multicurrency Capability

By asking shoppers early in their visit which currency they’d like to use, your site could then convert to that currency and carry it through to the check-out process. A merchant bank or credit card processing software provider can provide real-time currency feeds. ■

Give Customers Real-Time Inventory Access

Online merchants are generous about product information — before and after a sale. Online customers can view photos of products and read product descriptions before purchasing, and have come to expect timely order confirmation e-mails. But if customers have questions or concerns at the time of purchase (for example, they want to see if the item is in stock) and either have to wait or have to disconnect and call a toll-free number, they might abandon the sale.

If you handle your own inventory, build in an “in stock” button on each product page, thus giving customers **real-time inventory access**. If you use a distributor to handle your inventory or to process your fulfillment, find one who can provide real-time data, or at

least make sure you can get frequent updates.

Order Confirmation: An Opportunity

The ubiquitous order confirmation e-mail is perhaps the most overlooked opportunity to build a relationship with the customer. Unlike other marketing e-mail, which may not even be opened, customers want to read about their order confirmation. So while they’re checking on the status of an already-placed order, you could be helping create future sales. In addition to the order confirmation basics, for instance, this e-mail could include a promotion for a discount on the next order.

One final note: Whatever information a customer has input online should also be available to that merchant’s phone-in customer service center or in-store personnel to allow for seamless and transparent customer service at any portal. ■

Content Management Systems: Keep All Information Current

All **content management systems** (CMS) are not created equal. These software packages — which keep content, prices and specials current on your site — have evolved from simple homegrown affairs to complex systems that now need to integrate your order-management system, business intelligence software, inventory-management software, enterprise resource planning software, customer database software and personalization software.

To achieve this level of customization you need to involve your technical people in the negotiating process with any CMS vendor, because they’ll know the right questions to ask regarding system compatibility.

Basic Features

Because of the importance of CMS to your business success, your system should include all of the following basic features:

- **Content independent of presentation.** You want your customers to be able to read your site, whether they’re accessing it via a desktop browser or a mobile device. You also want your content creators to only have to provide data items once and then have the CMS use logic and templates to place the correct item in the correct place at the correct time.
- **Content stored in nonproprietary format.** This allows for easier migration to future upgrades or new systems.
- **Where the content originates — from marketing staff, freelancers or merchandisers — is irrelevant to the CMS.**
- **Uses a browser rather than proprietary software**

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Content Management Systems: Keep All Information Current

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for better accessibility, version control and compatibility.

- **Uses an intuitive interface** for the myriad stages of the content approval process.
- **Is able to take content live**, without requiring the system to shut down.
- **Manages version control by content creation/approval date and time, by author/approver and by type of content.**
- **Uses templates to manage content**, which makes it easier to build pages and to navigate through them.
- **Uses a personalization engine** that can change what the visitor sees on the page, depending on variables.
- **Enables you to create complex business rules** to manage what products display with other products.

Best of Breed Features

In addition to the basics listed in the article at left, here are some CMS features that can add extra value to your site:

- Enables inputting from desktop applications such as Word, Excel and PowerPoint. This can save time and thus increase productivity.
- WAP-enabled: Europeans are already using mobile devices and the trend is growing in the United States and Asia as well.
- Ease of integration with existing business systems.
- Harvests content from other sites.
- **Enables seamless connection to your payment-processing network.**
- **Provides easy access to metrics data.** ■

PART III: IMPROVING CUSTOMER SERVICE

Can We Talk? Real-Time Presales Chat and Other Online Customer Support

The majority of online customers contact customer service while waiting for an order that has already been placed. Only a very slim margin admitted to contacting customer service before purchasing. In a bricks-and-mortar store, customers can get help from a live salesperson before purchasing. Online, they may feel that dialing an 800 number or sending an e-mail is too inconvenient, and abandon the sale.

Such a live, in-store salesperson is often able to upsell other products and thus increase a sale. The way to do this online is via **real-time chat** using a tool on the merchant site and some sort of instant messaging service. Customers don't need any additional software to access this service.

When a customer clicks on to a live chat button, the customer service representative (CSR) types in a response and his or her name appears in a dialog box on the customer's screen. If the CSR is busy with other customers, a message will inform the customer of that fact. Hot keys allow the representative to quickly respond to commonly asked questions, allowing them to handle about six customers at a time.

Look for live chat programs that allow the CSR to push Web pages to customers so they can see the products they are talking about. It's also helpful if the CSR can monitor the customer as he or she moves about the site.

Using Community to Drive Sales

To date, one of the most successful online shopping sites is Amazon, which was also — not coincidentally — the first site to offer a sense of community to the online shopping experience by adding customer reviews. Lands' End now offers a "Shop with a Friend," which allows two shoppers at different locations to hook up at its site, evaluate the same pages and products and talk to each other in real time. ■

Multichannel Customer Support: Integrate Online And Offline Customer Service

Surveys of online shoppers continue to show that good customer service is the number one reason a one-time customer will become a repeat, loyal shopper. At the same time, the Web has turned retail from a product-centered business to a customer-centric one. A core strength of this refigured industry is customer support at all levels and among all channels. As more and more e-businesses link up with existing stores (and vice versa), customer support needs to follow. The **integration of online and offline customer service** should include:

- **Enabling in-store clerks to find out which offers were made by e-mail to customers, as well as to which offers the customer has already responded favorably.**

(continued on page 8)

Multichannel Customer Support: Integrate Online and Offline Customer Service

(continued from page 7)

- Installing kiosks in offline stores so that customers can order products that may be out of stock in a particular store.
- Making coupons available via wireless devices when customers sign up at bricks-and-mortar stores.
- Enabling in-store clerks to call up an online shopper's history. ■

The Importance of Alternate Payment Systems

One important enhancement to your site should be noted for its importance — and protection — for you rather than the customer: **alternate payment systems**. About 35 percent of all attempted sales transactions (either on- or off-line) are fraudulent. Merchant protection from carrying the costs of fraudulent use of online credit cards is an area that needs improvement, and alternate payment systems attempt to address this problem.

The most important way to protect yourself is to use a payment system that supports nonrepudiation — in other words, if the wrong person uses the credit card, you are not held liable.

Hardware-based nonrepudiation uses smart-card technology, in which a chip resides in the computer. Scanners can read and act on the installed chip.

Encrypted-cookie-based nonrepudiation uses trusted third-party vendors, who collect a customer's identity and payment information and then store it on the computer of the shopper (in an encrypted cookie). *Secure certificate nonrepudiation* depends on customers installing software on their computers, much as merchants who install a secure-sockets layer for transmitting encrypted data.

Other Alternatives

Besides supporting nonrepudiation, the best alternative payment systems are truly alternative — they are independent of traditional credit card networks, and do not require merchants to have a merchant account.

Some of the current alternatives to credit cards for use online include:

Same-As-Cash. Purchasers must go to a physical store location and buy a card that will contain whatever amount they determine. Usually these cards are then activated at the vendor's Web site (the customer supplies a password) and the money on the card can be used with any merchant in the network.

Stored-Value Accounts Online. Customers create an

The most important way to protect yourself is to use a payment system that supports nonrepudiation — in other words, if the wrong person uses the credit card, you are not held liable.

account online at a vendor's site. It can be funded by a credit card number, checking or savings account information, or check or money order. Customers also have a password; when the specified amount is spent, the customer must authorize the transfer of additional money or send an additional check or money order.

Self-Recharging Accounts. Customers create accounts that are funded initially with a credit card or ACH transfer; when the original amount is spent, the same amount is then automatically recharged.

Hardware-Based Stored-Value Accounts. The idea here is simple: accounts are funded in the usual ways (see above), but work only from the computers on which the chip or card reader is installed. Until the major hardware vendors begin to implement these technologies on consumer electronics, this method is not very practical.

Phone Bill Payment. Shoppers need to access the merchant's site with a dial-up connection. At the check-out process, the customer clicks on a button to indicate he or she wants to have his or her phone account charged. The vendor completes a download that connects to a 900 number and then that phone call creates the entry on the phone bill; the customer is then connected back to the ISP and to the merchant's order confirmation page. This method is popular where credit card penetration is low.

Micropayments. Merchants store a "token" from a payment processor confirming that payment was made. This method allows you not to have to store any payment information from your customers. Or, you can give the payment processor access to your servers, and they can then accept payment from your customers. ■

A Baker's Dozen

Readers might note that alternate payment systems is the thirteenth technology featured in this summary. Author Alexis Gutzman explains that while writing *The E-Commerce Arsenal*, she did not anticipate the degree to which merchants' needs for payment alternatives would be met by alternative payment systems providers. New developments in this field convinced her to add an epilogue on this topic to her original text.

· Book 29 of 35 ·

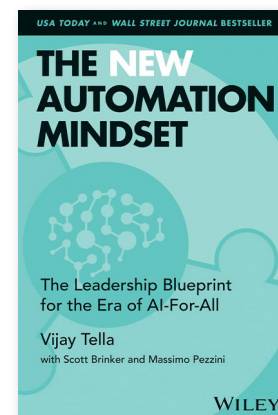
The New Automation Mindset

Vijay Tella

The New Automation Mindset

The Leadership Blueprint for the Era of AI-For-All

by **Vijay Tella, Scott Brinker, and Massimo Pezzini**



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THE SUMMARY IN BRIEF

We find ourselves at a critical juncture in technology and the future of work. The barriers between ideators and automators have been eliminated. One of the most promising developments of this digital age is that any organization can unlock an astonishing level of continuous innovation and automation within organizations. With the right mindset, we do not need the same level of extraordinary resources of prior generations of leaders. With the emergence of generative AI and low-code automation technologies, any business can now achieve the speed and scale to transform and thrive.

But gains in productivity don't happen just because the technology exists. People have to figure out how best to reorganize their work around it. In *The New Automation Mindset: The Leadership Blueprint for the Era of AI-For-All*, authors Vijay Tella, Scott Brinker, and Massimo Pezzini provide CEOs, CIOs, and other business and technology leaders a blueprint to embrace a new way of working, one that focuses on the big picture, thrives on change, and engages everyone. This new way of working results from adopting the new automation mindset.

IN THIS SUMMARY, YOU WILL LEARN:

- The new automation mindset needed to thrive in disruption.
- How to underpin automation with intentional architecture.
- The practitioners guide to world class automation.
- How an enterprise AI platform makes it all happen.

Part 1: The New Automation Mindset

The New Era of Automation

The word “automation” covers a lot of ground. For some, it’s a way to replace manual work with bots. For others, it sparks worry. It’s important to think about automation in a new way so we don’t miss out on its benefits. In the future, companies with the right mindset about automation will thrive in the face of challenges rather than succumb to them. This mindset will determine whether they tap into exciting opportunities such as generative AI (GenAI) or are disrupted by them. In other words, how we think about automation and AI will decide if we succeed or fail.

Companies with the right mindset apply the advances in automation and generative AI to become unstoppable. They look at the big picture, with an ethos that embraces challenges and an approach that is inclusive of all of the talent in their companies. Economic challenges, system shocks, and even potential black swan events only make these companies stronger. They are antifragile. Automation and AI are central to this new way of thinking called the new automation mindset.

To become antifragile, to achieve transformative change at the scale that is required, you need to have process, growth, and scale mindsets working in unison in your company. When that happens, the new automation mindset falls into place and our organizations can become unstoppable.

The Process Mindset

We buy apps to solve problems and add capabilities. They complete tasks or make groups of tasks easier. But the tasks are not isolated; assembled together they make up processes, which make up businesses. To understand how the tasks fit into the big picture, we need to apply systems thinking.

Companies need a cohesive, unified foundation of data, workflows, and user experiences to be able to begin to drive successful transformation across their business. The real value in automation is connecting all our apps and weaving together our existing investments. To solve the ever growing problem of fragmentation across our processes, we need something that enables a holistic cross-functional view of the different processes that support our organization.

The Growth Mindset

Companies who choose to embrace change have a growth mindset. The growth mindset is not only about our ability to react to major events such as the pandemic, market down-

turns, or global supply chain issues. It’s also about our response to everyday challenges that persist in our companies. Our businesses need to be equally as effective at responding to both daily challenges and company-threatening crises.

We are operating in an environment of rapid and continuous change. Technology, competitive dynamics, and—most of all—customer behaviors and expectations are continually shifting around us. Whether those changes are a threat or an opportunity largely comes down to adaptability. We want new processes to be predictable, but the key is that it be adopted to new circumstances. And here’s the beautiful thing: because almost all of our processes today are—or can be—digital or digitally orchestrated, they are extremely malleable.

The Scale Mindset

There is a scale problem with the traditional approach to automation. In the past, companies tried to scale by adding more. But continually increasing headcount is not a realistic or cost-effective choice. The sheer number of processes means there will never be enough IT specialists to keep up with demand.

Business teams are creative, thoughtful, and eager to solve problems. They are well versed in data, applications, and business logic that underlie core processes in their domain and they collectively know the vision and mission of the organization. When business teams are not empowered to solve their problems, it’s a lost opportunity for automation.

The scale mindset means embracing a new operating model that taps into the latent potential of the company. A scale mindset does not disempower the IT team. It raises its profile within the organization. Business teams need to be empowered by training, consulting, mentoring, support services, and the right combination of technologies. The IT team is ideal for this.

Rethinking technical expertise is not designed to replace them but elevate them as a steward of company potential. Adopting the scale mindset will do more than expand a company’s technical capacity—it can focus it.

Part 2: Architectural Underpinnings

Orchestration

Orchestration coordinates people, software, and data in end-to-end processes to get jobs done. With orchestration, people—customers, employees, or partners—are still key components of the process where their strengths are needed most.

We want our companies to do better than survive tough times; we want them to thrive.

Orchestration allows our people and technology to maximize their respective strengths. Tech, especially AI, is able to interpret large sets of data across the entire process and even build a template for the ideal end-to-end orchestration, but people are best at creative tasks or nonstandard exception handling. Orchestration holds technology, human expertise, and automation in balance, maximizing outcomes for the company. It asks how to get the job done best with every resource available.

People, process, and data are orchestration's most basic building blocks. End-to-end processes always involve all three. These ingredients are intertwined and linked to one another. By orchestrating it, businesses establish sustainable advantages with processes that are frictionless and efficient.

Plasticity

We want our companies to do better than survive tough times; we want them to thrive. Thus, we need to build antifragile systems that thrive under stress. Our brains are antifragile. When challenged and trained, they tear down and rewire neural processes.

Like brains, our companies should grow and rewire in response to challenges. Unfortunately, that's not typical. Processes are rigid and in this climate, a rigid company is a dying one. Our brains use plasticity to thrive in challenges and our companies need plasticity too.

Company processes infused with plasticity allow businesses to:

- Thrive despite external pressure from the economy or competition
- Quickly refocus during times of internal organizational turmoil
- Continuously improve to identify new and unique ways of meeting objectives
- Enter new markets, maximize efficiency, create amazing customer experiences, develop innovative products and services

Plasticity needs an automation architecture. It must operate

in lockstep with the operating model, and this requires the right strategy.

The three key components organizations must include in their automation strategy are:

1. Composable capabilities: allowing teams to turn automations into the building blocks of the organization;
2. AI-assisted orchestration: the ability to rapidly connect building blocks to achieve end-to-end outcomes either manually or through assisted AI;
3. Flexible experiences: enabling people to interact and participate in workflows without requiring long development cycles.

It is recommended that companies integrate these components first to eliminate rigidity.

Democratization

Competing interest exists in every organization—governance is how we manage them. Those responsible for maintaining the company's tech protect the company from risk. Line of business workers are trying to make their jobs faster, easier, or to achieve higher quality outputs. These two objectives aren't always aligned. As leaders, our mandate is to embrace these as complementary strengths and build an operating model that supports both sides.

Success lies in the balance of democratization and governance. Democratizing automation allows people to automate workflows using their ideas of what is best for the company. Sometimes those ideas come from the business and other times from IT.

A collaborative approach builds trust between the two teams and a healthy respect for the challenges that each team faces daily. While this may seem fluffy, it is critical, as without trust, many projects get bogged down in finger-pointing and disagreements. By putting IT and the business on the same team, they begin working together rather than against each other.

In this vision for democratization, IT needs to step into a more strategic leadership role. IT must enable people across the business to automate. Training, consulting, mentoring, and support are all needed. That includes providing the technology and means to do the work, but it also means establishing, communicating, and enforcing rules that protect the company.

Part 3: A Practitioner's Guide to World Class Automation

Mastering Your Automation Journey

What we've learned so far gives us a vantage point that rises above our immediate goals and projects to see the outcomes that need to be delivered across the company. With that view, we can align our automation work on the business outcomes that make a company thrive.

Our new automation mindset makes us recognize the core outcomes that automation can:

- Drive revenue growth
- Increase customer retention and expansion
- Help retain employees and empower them to be productive
- Improve supplier relations and efficiency
- Encourage operational excellence

These outcomes are foundational to any business. They should be foundational to any automation strategy, too.

Processes usually have a primary focus on one of these top level goals. These core objectives are called towers of automation. When setting out to execute an automation strategy, leaders should organize their approach around these five towers, which drive associated core objectives.

The Back Office

Back office functions of IT and finance are crucial for a company with the new automation mindset. Many companies have worked hard to make back office functions more efficient, but there is still a lot of room for improvement with automation, including faster end-to-end processing, greater agility, and improved experiences.

While some people downplay the importance of back-office functions due to them not being direct revenue-generating services, they are in fact the foundation of every company.

Automating these foundational processes can have a direct impact on all aspects of customer experience, employee experience, and front-office operations and helps ensure the rest of the business does not grind to a halt.

All of this results in real competitive differentiation for the business. It's for this reason that many companies start with back office functions when embarking on their automation journey.

The Front Office

The front-office tower of automation includes parts of the company that are customer-facing or revenue-driving, with sales and marketing being the largest functions. These areas are all jackpots of automation opportunities.

Automation goals for the front-office are, in short, the same as the business goals. Fundamentally we want to increase revenue.

This is achieved by helping sales teams to sell more products or services, marketing to increase awareness, and customer support or delivery teams to retain and upsell more customers.

But the outcomes do not stop there. A well-automated front office results in enhanced customer experiences, elevated employee experience, and improves the bottom and top lines by creating wow moments for the customers.

The Employee Experience

The employee experience tower includes everything that involves how an employee engages with their employer. It starts from recruitment and goes through onboarding, learning and development, all the way to off-boarding when it comes time to leave. There is an enormous amount of potential to delight our people and drive more productivity with automation.

It is necessary to build seamless processes to support the entire employee journey and create the moments that matter. Not only will we have happy employees, but we'll find efficiencies along the way.

Automation to improve employee experience has three components: culture, technology, and processes. If we want to create delightful employee experiences, all three have to come together.

The Customer Experience

The customer experience leaves a lasting impression and is the difference between whether people become promoters

We need a robust, cohesive, and strategic approach to delivering on the promise of automation.

or detractors of our brands. Thus, creating and obsessing over a great customer experience is a smart approach.

Because so many customer interactions happen in the digital space, customer expectations have shifted to match. This means that customers want their experiences to be faster, self-service, app driven, and more. On the other hand, they don't want the impersonal or restrictive experiences that are over automated and impersonal.

The customer experience tower of automation is made up of the key touch points between organizations and their customers. This includes customer service functions, managing customer data, marketing, and commerce.

As with all towers of automation, this represents a subset of customer related functions but is a great starting point for thinking through your CX automations.

Supplier Operations

Nearly every company has to work with suppliers. Companies may be sourcing raw materials for manufacturing, leveraging external service providers, or relying on partners to support other parts of their business. The interactions between a company and its suppliers and partners are ripe opportunities for automation.

Every supply chain has two flows—goods and materials flow in one direction and data, and information flow back in the other direction. As goods are sent from the sender to the receiver, information from each step along the journey is relayed back to the sender.

Typical processes that are part of the supplier operations tower include order to cash, procure to pay, source to contract, plan to product, and more. All these challenges and all these processes have opportunities to apply automation to significantly streamline operations.

Part 4: Making it Happen

The Enterprise AI Platform

Generative AI has changed the way we see our tasks, jobs,

and organizations. More than text, code, or images, what generative AI can give you is the ability to add substance to ideas. Looking at this from an enterprise lens, AI can rethink existing processes completely. But how? Generative AI is versatile and expressive but the output is raw and varies based on the input.

To harness generative AI at scale, companies need an enterprise AI platform with a set of core technical specifications and capabilities.

- **Explainability:** The ability to generate solutions that can be accurately interpreted by any human.
- **Utility-like:** Users should just be able to “plug or run” these solutions.
- **Observability:** The necessary means for nontechnical personas to monitor and troubleshoot any issues that may arise.
- **Adaptability:** The ability to train and enhance its model based on issues discovered as part of the execution of AI-generated solutions.

The Automation Ecosystem

The number of potential automation solutions is large. Most companies use many specialized tools but still struggle to get the value they were promised. The approach is broken and unsustainable and the cost and effort of most automation tools is intense. To succeed in this new era we have to apply them in the right way.

We need a robust, cohesive, and strategic approach to delivering on the promise of automation. This strategic approach to automation requires the ability to democratize and enable broader teams to automate.

It needs to act as the glue to bring our apps, people, and specialized automation tools together. It needs to orchestrate end-to-end processes while remaining easy to change such that we maintain our plasticity.

This may seem like a tall order, but the reality is that this is all entirely possible today. This is something companies are already moving forward with, called enterprise automation.

Enterprise Automation

Different technologies cover different capabilities. But some of these technologies offer more *technical* value than *business* value. The new automation mindset calls for a broader view of the problem: one that aligns with the business outcomes we want, rather than the technology. This comes down to focusing on the thing we are looking to streamline: the business process.

Every business process is made of human interactions and system actions. Automated processes need to work within the dynamic environments of the business. This means human tasks and system actions need to interact with:

- Communication channels and collaboration tools
- Apps
- Data stored at all locations
- Partners and suppliers

There are three pillars of integration capabilities that we need to support to fully automate business processes.

- Experience: Capabilities related to integrating with employees, customers, and other core stakeholders.
- Data: Capabilities for integrating data across multiple systems for data consistency, system updates, and monitoring for business events in the data.
- Process: Capabilities enabling us to tie these human and system actions together into an end-to-end flow with exception paths and leveraging event-driven actions.

To support these integration requirements at scale, we need to allow for multiple architectural styles. Good architecture enables teams to build solutions that are easy to operate, test, and scale. It also enables them to share reusable assets to cut back on reinventing the wheel.

The New Operating Model

Applying automation to all corners of business is a big deal and will almost certainly change the way employees do their jobs. A well-planned approach is critical.

Large-scale organizational change requires a mix of the right incentives with the right social pressure to move the company in the right direction. With automation, we want to put the right operating model in place and fuel it with a culture of automation. This kind of change impacts many people across the company, and they need to be on board with the change.

The key people you need to consider when looking to implement an automation strategy can be grouped into three categories:

1. Leadership: The widespread use of automation requires buy-in and support from the top levels of the company.
2. Automation builders: Those who build and maintain the automations for the company will need to learn new skills and take on new challenges.
3. Automation recipients: When automating any business process there is a wide range of employees and contractors whose jobs may change as a result of that automation.

Each of these groups has very specific incentives and understanding them will help show each group how they will be better off. Develop key messages that resonate with these teams and as these key messages take root, you will begin to see a movement in the company.

The Future of the Enterprise

The new automation mindset is a new way to think about technology and a different way to think about business. But at the heart, it is a path to building unstoppable companies that are adaptable and resilient despite challenges.

The changing landscape of software, with the low-code and no-code revolution underway, means that the chance to build unstoppable companies is more accessible than ever. The new automation mindset is no longer only reserved for companies that can afford armies of engineers. It is available to any company, from the car dealership down the street to a 100-year-old Fortune 500 behemoth.

It is tempting to think about the new automation mindset as an end goal. If we reach the magical peak of the mountain, we think our journey is complete. It's not true.

Plasticity and the growth mindset mean we take on new challenges and reinvent ourselves. It is a call to always be improving, and always be looking for ways to be more nimble...to work harder than ever to build a different kind of company, an unstoppable company that hopes to thrive in the decades to come.

Unstoppable companies will be able to respond to existential threats not by hiding in a hardened bunker but by embracing the threats and using them to become stronger. The potential outcomes are so exciting, and the possibilities are

endless. But to get there, we have to change our mindset.

The New Career Paths

Fear of change is part of human nature. Today, many are concerned that robots, AI, and automation will make us all redundant. Some politicians and journalists are building careers on this age-old fear. The fear expands beyond tech, but even within tech with the rapid advances of generative AI, people start to wonder. When technology promises to change the way we work, we naturally react:

- What will this do to jobs?
- How will career paths change?
- What kind of new roles will grow in value?
- What can people do to stay ahead?

Change is constant, but some innovations have an outsized impact on society. The good news is that we have seen this before. History is on our side, as technology has created more opportunity every time.

While bots that mimic human work and generative AI models have been grabbing the headlines, an exciting career revolution has been playing out quietly in the background. Low code and no code automation platforms are fueling a new creative explosion in companies.

Business leaders are seeing the opportunities being created and roles focused on low code and no code technology are appearing in thousands of companies. Many of them have the word “operations” in their titles.

IT is tasked with supporting and enabling these operators with more accessible technology. The growing capability

of operators will continue to fuel demand for these types of jobs. Everyone has a new chance to position their careers for this change.

There is an exciting future ahead for us in automation. New opportunities, ideas, challenges, and efficiencies are just waiting to be discovered. All it takes is someone motivated and able to step up and build something that changes the trajectory of their company—and their career—forever.

The decisions of even one business leader can have real implications on how history unfolds. If we stick with the old automation mindset, we are setting up our companies for failure. Taking up the new automation mindset is the right path for every company.

Not only will it lead to dramatic business outcomes, it will also empower individuals to accelerate their own careers—ultimately leading to happier people and a healthier society. The technology is there. All we need to do is step up to our roles as catalysts—and the rest will follow.



Vijay Tella is founder and CEO of the automation platform Workato. Workato was recently named to the Forbes Cloud 100, the Deloitte Fast 500, and the CNBC Disruptor 50. The company is the culmination of his pioneering work in both the enterprise automation and consumer-facing software spaces. This includes being the founding VP of Engineering at TIBCO, the Chief Strategy Officer of Oracle Fusion Middleware, and the CEO of real time video company, Qik, now part of Skype.

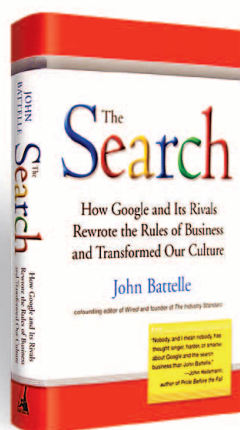
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The Search

John Battelle

SOUNDVIEW Executive Book Summaries®

FILE: SMALL BUSINESS/
ENTREPRENEURSHIP

By John Battelle

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How Google and Its Rivals Rewrote the Rules of Business And Transformed Our Culture

THE SEARCH

THE SUMMARY IN BRIEF

Jumping into the game long after Yahoo!, AltaVista, Excite, Lycos and other pioneers, Google offered a radical new approach to search, redefined the idea of viral marketing, survived the dot-com crash, and pulled off the largest and most talked-about initial public offering in the history of Silicon Valley.

But this summary is much more than the inside story of Google's triumph. It also takes a big-picture look at the past, present and future of search technology and the enormous impact it is starting to have on marketing, media, pop culture, job hunting, international law, civil liberties, and just about every other sphere of human interest.

The information contained in this summary draws from interviews with more than 350 people, including Google co-founders Larry Page and Sergey Brin; Google CEO Eric Schmidt; key executives at rivals such as Microsoft, Yahoo! and AOL; early pioneers; scientists working on the future of search; venture capitalists; and even entrepreneurs whose fortunes rise and fall with every tweak in the Google search algorithm.

Through the story of the start and rise of Google, this summary attempts to explain the history of search.

In addition, you will learn:

- ✓ *Who created Google?*
- ✓ *How does a search engine work?*
- ✓ *How did Google and its rivals rewrite the rules of business and transform our culture?*
- ✓ *What happens to privacy when every word ever written about you is saved forever and searchable?*
- ✓ *Is the government going to get its hands on search databases?*
- ✓ *If companies can track every click you make online and send you highly targeted ads, is that a good thing or an invasion of privacy?*
- ✓ *The founders of Google declared that their motto is "Don't Be Evil" — but do they really act that way when the big money is at stake?*
- ✓ *Where will search technology be in a few years?*
- ✓ *What might search tell us about ourselves and our global culture?*

THE SEARCH

by John Battelle

— THE COMPLETE SUMMARY

The Database of Intentions

By the fall of 2001, the Internet industry was in full retreat. Hundreds of once promising startups lay smoldering in bankruptcy. The dreams of Internet riches, of changing the world of business and reshaping our culture in the process, dreams celebrated in magazine cover stories and TV specials and unheard of stock market valuations, were stone cold dead.

Could the Internet story ever pick itself up off the ground? The answer to that question could possibly be found in the first edition of *Google Zeitgeist*. *Zeitgeist* is a clever public relations tool that summarizes search terms that are gaining or losing momentum during a particular period of time. By watching and counting search terms, *Zeitgeist* provides a fascinating summary of what our culture is looking for or finds interesting, and conversely, what was once popular that is losing cultural momentum.

A Weekly *Zeitgeist*

Since 2001, Google has maintained a weekly *Zeitgeist* on its press relations site. In 2001, the fastest declining queries demonstrated how quickly our culture was abandoning frivolity: *Pokemon* was number one, followed closely by *Napster*, *Big Brother* (a reality television show), *X-Men*, and the woman who won *Who Wants to Marry a Multi-Millionaire*. *Zeitgeist* revealed that Google had more than its finger on the pulse of our culture: It was directly jacked into its nervous system. The 2001 *Zeitgeist* was a glimpse into the “Database of Intentions” — a living artifact of immense power. Google knows what our culture wants! Given the millions upon millions of queries streaming into its servers each hour, the company was sitting on a gold mine of information.

Within Google’s rich database lay potential fieldwork for thousands of doctorates in cultural anthropology, psychology, history and sociology. This little company is holding the world by the thoughts.

Maybe the dot-com dream isn’t dead; perhaps it was simply hiding behind the implacable facade of a Google search box.

Back in April 2001, Eric Schmidt, a founder of Sun Microsystems, had left his job running Novell, the perpetually struggling networking giant, and accepted the

chairman and the CEO role over at Google. The industry was baffled by the move.

But he was onto something big. Google, it seemed, was thriving.

The Billion Dollar Opportunity

Google was a technology business. In an interview at the time, Schmidt said, “We’re looking for the next billion-dollar market in technology.”

It didn’t take long for Google to take its place as a giant in the media landscape. A year later, Schmidt said, “Isn’t the media business great?”

In essence, Google and its competitors have created the first application to leverage the Database of Intentions in a commercial manner: paid search. In less than five years, the business has grown from next to nothing to more than \$4 billion in revenue, and is predicted to quadruple in another five years.

Along the way, search has moved from a useful service on the edge of most Internet users’ experience to the de facto interface for computing in the information age. “As the amount of information available to us explodes, search has become the user’s interface metaphor,” observes Raymie Stata, a Silicon Valley-based engineer and entrepreneur. “There is now all this information that is possible to get into your hands. Search is our attempt to make sense of it.”

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The author: John Battelle is a co-founding editor of *Wired* and the founder of *The Industry Standard*, as well as TheStandard.com. He is currently program chair for the Web 2.0 conference, a columnist for *Business 2.0*, and the founder, chairman and publisher of Federated Media Publishing Inc.

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The Database of Intentions

(continued from page 2)

Implications

What do Japanese teenagers think is cool this week? What pop star is selling, and who is falling off the charts? Which politician is popular in Iowa, New Hampshire or California, and why? Where do suburban moms get their answers about cancer? Who visits terrorist-related Web sites, and how do they find them? Nearly any question one might frame can be answered in one way or another by mining the implacable Database of Intentions that is building second by second across the Internet.

So what does the emergence of such an artifact auger? What effect might it have on the multibillion dollar marketing and media industries? Why have the governments of China, Germany and France threatened to ban search engines like Yahoo! or Google, and why might our own national security hinge on plumbing the depths of their databases? What, in the end, might search tell us about ourselves and the global culture we are creating together online?

Complicated Territory

The answers to these questions are not simple. Search straddles an increasingly complicated territory of marketing, media, technology, pop culture, international law and civil liberties. It is fraught not only with staggering technological obstacles — imagine the data created by billions of queries each week — but with nearly paralyzing social responsibility. If Google and companies like it know what the world wants, powerful organizations become quite interested in them, and vulnerable individuals see them as a threat. Through companies like Google and the results they serve, an individual's digital identity is immortalized and can be retrieved upon demand. Google's co-founder Sergey Brin assures us that such demands are neither made nor met. But in the face of such power, how long can that stand? ■

Who, What, Where, Why, When and How (Much)

Before taking the journey around the contours and implications of search, it makes sense to get our bearings. Most cub reporters are taught to answer five questions about any topic before writing about it: who, what, where, why and when. If you crammed answers to all those questions into your lead paragraph, then you had essentially done your job.

But to those five questions, it is helpful to add a sixth — how — and a corollary: Who's making the money, and how much? First, let's address the how.

How

So how does a search engine work? There's a very, very long answer to this question, but here is a much shorter one. In essence, a search engine connects words you enter (queries) to a database it has created of Web pages (an index). It then produces a list of URLs (and summaries of content) it believes are most relevant for your query. While there are experimental approaches to search that are not driven by this paradigm, for the most part, every major search engine is driven by this text-based approach.

A search engine consists of three major pieces — the crawl, the index, and the runtime system or query processor, which is the interface and related software that connects a user's queries to the index. All three pieces are integral to the quality and speed of the engine, and there are literally hundreds of factors in each that affect the overall search experience delivered. But the basics are pretty much the same for all the engines. As Tim Bray, a search pioneer now at Sun Microsystems puts it in his excellent series "On Search," "The fact of the matter is that there really hasn't been much progress in the basic science of how to search since the '70s."

Who

Who searches the Web? The simple answer is nearly everyone. We can learn quite a bit from the data collected so far on search habits. In the summer of 2004, the Pew Internet and American Life Project released a research paper on American usage of the Internet. It concluded that of all Americans who use the Internet, about 85 percent use search engines, or more than 107 million people in the United States alone. More than two-thirds of those are active users of search — employing a search engine more than twice a week and averaging more than 30 searches a month.

Pew estimates that on any given day in the United States, 38 million people are using a search engine. All those searches add up to nearly 4 billion queries each month.

So who are these people, the folks using search engines? Are they any different from the average American? Turns out the answer is yes. Pew has found a technology elite that drives usage of the Internet. Thirty-one percent of the U.S. population, Pew claims, are members of this elite. Pew also found that the younger you are or the higher your educational attainment, the more you search.

What

Now that we've established who is searching and how

(continued on page 4)

For additional information on fun facts about search queries, go to: <http://my.summary.com>

Who, What, Where, Why, When and How (Much)

(continued from page 3)

the process works, what are they searching for? Herein lies the beauty and the potential of search: It is driven by the unimaginable complexity inherent in the human language — nearly infinite combinations of dialects, words and numbers. Investment bank Piper Jaffray estimates that the world conducted about 550 million searches each day in 2003, a figure it expects to grow at about 10 to 20 percent a year.

Where and Why

So far we've reviewed how search works, who is searching, and what they're searching for. But where are they going and why are they going there in the first place? In the aggregate, most searchers stick close to home: 85 percent use one of the big four engines — Microsoft, Yahoo!, Google or AOL. And they tend to stick with them once they've started: Market share among these giants has fluctuated in the past years, but even with major moves by both Microsoft and Yahoo! to improve their search engine results, Google remains the market leader.

As to the question of why we search, the answer is more complicated than it might seem. Sure, we search to find information on all manner of things, or to locate something to buy, or to simply find the shortest route to a site we already know exists (the practice of typing in a word you know so as to yield a site you wish to visit, also called a navigational query). In short, we search to find.

When

The rather mundane question of when we search can be boiled down to one straightforward fact: We search from both home and work, with our searches pretty much evenly broken up between them. Search traffic tends to increase in the morning and peaks again in the evening, as we all fire up our home computers and look for movie tickets, homework help, or a local plumber to fix the dripping sink.

The Money Shot

All those searches, and all those searchers, have translated into a major business opportunity, in fact, the fastest growing media business in the history of media. Why the extraordinary growth? In short, paid search works. Lining up short, text-based advertisements against the queries of those hundreds of millions of searchers results in extremely efficient marketing leads. Search, a marketing method that didn't exist a mere five years ago, provides the most efficient and inexpensive way for businesses to find leads. ■

Google Is Born

Search Before Google

As the search economy deepens and proliferates, there will be countless innovations built upon the basic breakthrough of the paid search model. But before we head into the economic implications of Web search, or the story of Google, its brightest star, it's wise to consider a bit of history. For while it seems that the words "Google" and "search" are now nearly one and the same, the truth is, search has been around for decades, in one form or another. Google is currently our culture's grandest declaration of the power of search — but it's by no means the first.

There were other search engines — had their timing been better or their owners wiser — that could have been Google instead. These companies include Lycos, AltaVista, GoTo and Yahoo!. The reason why Google was able to emerge ahead of them was that they had to concentrate on doing search well and not becoming a portal. The Internet bust actually helped them focus on what became one of the best business models on the planet.

Heirs to Tesla

Larry Page always wanted to be an inventor. When he was 12 years old, Page read a biography of Nikola Tesla, one of history's most prodigious inventors. Tesla discovered or developed the foundational technologies for an astonishing array of innovations, from wireless communication and X-rays to solar cells and the modern power grid. But despite his extraordinary invention, Tesla remains a minor figure — in particular when compared to Thomas Edison, a man Tesla worked for, fought with, and competed against for much of his career.

The 12-year-old Page was struck by this fact: Regardless of how brilliant and world-changing Tesla's work had been, the inventor received little long-term fame or fortune for his efforts.

It's fair to say that Page and his partner, Sergey Brin, have managed to avoid Tesla's fate. They've gotten their inventions into the hands of hundreds of millions of people. Along the way, they've made thousands of people very rich, improved the businesses of hundreds of thousands of merchants, and fundamentally changed the relationship between humanity and knowledge. In the process, Page and Brin have become wealthy and famous. And it did not take them a lifetime to do so. It took as long as the average doctorate in computer science — five years, give or take.

It Began With an Argument

Larry Page first met Sergey Brin in the summer of 1995, before he had decided to accept Stanford's offer

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Google Is Born

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of admission. Like most schools, Stanford invites potential recruits to the campus for a tour. But it wasn't on the pastoral campus that Page met Brin — it was on the streets of San Francisco. Brin, a second-year student known to be gregarious, had signed up to be a student guide of sorts. His role that day was to show a group of prospective first years around the City by the Bay.

Page ended up in Brin's group, but it wasn't exactly love at first sight. "Sergey is pretty social; he likes meeting people," Page recalls, contrasting that quality with his own reticence. "I thought he was pretty obnoxious. He had really strong opinions about things, and I guess I did, too."

"We both found each other obnoxious," Brin counters when he is told of Page's response. "But we say it a little bit jokingly. Obviously we spent a lot of time talking to each other, so there was something there. We had a kind of bantering thing going."

The Audacity of Rank

Page says that it had never been his intention to create a search engine — indeed, he and Brin had no idea what useful things the project might turn up.

Page hypothesized BackRub — a system that would discover links on the Web, store them for analysis, then republish them in a way that made it possible for anyone to see who was linking to any given page on the Web.

But in order to create BackRub, Brin and Page had to crawl the Web. Crawling the entire Web to discover the sum of its links is a major undertaking, but simple crawling was not where BackRub's true innovation lay. Page was naturally aware of the concept of ranking in academic publishing, and he theorized that the structure of the Web's graph would reveal not just who was linking to whom, but more critically, the importance of who linked to whom, based on various attributes of the site that was doing the linking.

If BackRub knew the importance of a site, it could give that site a relative ranking. For any given site, one could see not only who was linking to that site, but the ranking of those links as well. Certainly, that might be useful, Page thought.

Being useful was an extremely important aspect of Page and Brin's research (and has become a mantra for all of Google's product development since). They hadn't yet decided that there was a company in BackRub, but the lessons of Tesla were never far from Page's mind. He says, "My goals were to work on something that would be academically real and interesting."

Once Page and Brin had crawled the Web and stored a graph of its links, they needed to determine a ranking

methodology. Inspired by citation analysis, Page theorized that a raw count of links to a page would be a useful guide to that page's rank. He also theorized that each link needed its own ranking, based on the link count of its originating page. But such an approach creates a difficult and recursive mathematical challenge — you not only have to count a particular page's links, you also have to count the links attached to the links. Very quickly, the math gets rather complicated.

Math Gifts

Fortunately, Brin's prodigious gifts in mathematics could be applied to the problem. Brin, the Russian-born son of a NASA scientist (his mother) and a university math professor (his father), emigrated to the United States with his family at the age of 6. By the time he was a middle-schooler in suburban Maryland, Brin was a recognized math prodigy.

Page and Brin's breakthrough was to create an algorithm — dubbed PageRank after Page — that manages to take into account both the number of links into a particular site, and the number of links into each of the linking sites. This mirrored the rough approach of academic citation counting, and it worked. This is a simplified view, to be sure, and Page and Brin had to correct for any number of mathematical cul-de-sacs, but the long and the short of it was this: More popular sites rose to the top of their annotation list, and less popular sites fell toward the bottom.

Page and Brin quickly noticed that BackRub's results were superior to those of traditional search engines like AltaVista and Excite, which often returned irrelevant results. And not only was the engine good, Page and Brin realized that it would scale as the Web scaled — PageRank worked by analyzing links, so the bigger the Web got, the better the engine would be. That fact inspired the founders to name their new engine Google, after "googol," the term for the number 1 followed by 100 zeros. They released the first version of Google on the Stanford Web site in August 1996.

Among a small set of Stanford insiders, Google was a hit. Due to its size and scale, the project grew into something of a legend within the computer science department and the campus network administration offices. At one point, the BackRub crawler consumed nearly half of Stanford's entire network bandwidth, an extraordinary fact considering that Stanford was one of the best networked institutions on the planet. And on at least one occasion, the project brought down Stanford's Internet connection altogether.

"We're lucky there were a lot of forward-looking people at Stanford," Page recalls. "They didn't hassle us too much about the resources we were using."

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A Company Emerges

As Brin and Page continued experimenting with search, BackRub and its Google implementation were gaining buzz, both on the Stanford campus and within the cloistered world of academic Web research. Back in the early days, Page and Brin weren't sure they wanted to go through the travails of starting and running a company. But as Brin's adviser described it, if Google pans out, then great. If not, come back to school and finish your thesis.

By late 1998, the service was serving more than 10,000 queries a day, and it was clear to Page and Brin that the service would quickly outgrow their ability to beg resources to support it. Starting a company became the only viable alternative. They turned to faculty adviser David Cheriton for advice. He told them to contact Andy Bechtolsheim, a founder of Sun who was active in early-stage investments.

Page and Brin gave a laptop demo to Bechtolsheim at Cheriton's home. Andy then asked many questions. Then he said that he didn't want to waste a lot of time. "I'm sure it'll help you guys if I just write a check." He wrote them a check for \$100,000 dollars.

Press coverage of Google often glosses over this fact,

Search Engine Bias

Brin and Page were deeply suspicious of blending advertising and search. In their academic paper introducing Google, they wrote:

"In our prototype search engine one of the top results for [the search term] 'cellular phone' is 'The Effect of Cellular Phone Use Upon Driver Attention,' a study which explains in great detail the distractions and risk associated with conversing on a cell phone while driving. The search result came up first because of its high importance as judged by the PageRank algorithm, an approximation of citation importance on the Web. It is clear that a search engine which was taking money for showing cellular phone ads would have difficulty justifying the page that our system returned to its paying advertisers. For this type of reason and historical experience with other media, we expect that advertising funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers."

Over time, the Google founders have clearly made peace with their reservations about advertising, but back in the early days, they were adamant that their company not fall into the same trap as had the companies that spurned them. Google would never put advertisers ahead of its users.

but the truth is that the company was bereft of a viable plan for making money until early 2001. "There was a genuine concern about where the revenues were going to come from," said early Google employee Ram Shriram. Mike Moritz, another early Google team member, says, "As 1999 trickled by and we were burning cash without a clearly illuminated path to revenues, there was considerable concern."

The story of how Google found its business model — and its subsequent rise to glory — requires a diversion into the history of another company, GoTo.com. For while Page and Brin struggled with the notion of turning search into a business, the founder of GoTo.com, Bill Gross, saw in search the seeds of an economic revolution. ■

A Billion Dollars, One Nickel at a Time

Had he just stuck to his guns, he'd be the one hailed as the revolutionary, the one on the cover of every business magazine, no, the cover of *Time* magazine, with a guest chair on *Charlie Rose* to boot: Bill Gross, founder of the company with the most anticipated IPO in the history of Wall Street, the mad genius who rewrote the rules of business and rewired the way our culture understood itself.

Indeed, had Bill Gross not given up his argument, had he just followed his gut, there might not even be a Google. Brin and Page might have sold out to Yahoo! or Excite or Microsoft, or merged with Ask Jeeves or gone the way of AltaVista — sinking slowly into the dark oceans of corporate mergers and acquisitions. Imagine that, *a world with no Google*. A world where Brin and Page are no more than forgotten footnotes in a much grander story — the story of a serial entrepreneur with a mottled past who finally proved himself beyond all possible doubt. Indeed, had this version of history come to pass, this very summary would be talking about how GoTo.com changed everything.

Only it's not. Bill Gross has not created tens of billions of dollars in market value, at least not yet, and the trail of lawsuits and querulous press clippings littering his past are proof he failed in his quest to get each and every one of his investors very, very rich. But Bill Gross can quite legitimately claim to have created the business model that made Google possible, in the process reinventing pretty much the entire economic cardiopulmonary system of the Internet. And at the end of the day, that's certainly something.

Very, Very Rich

Wiry, manic and bespectacled, Gross is philosophical

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A Billion Dollars, One Nickel at a Time

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about the matter. Brimming with a conspiracist's good-natured glee, he's eager to pull you into his confidence. After all, he's very, very rich. And while people have never heard of the man, the company Gross founded later became Overture, a paid-search giant sold to Yahoo! in 2003 for more than \$1.6 billion. Not a \$30 billion IPO, but not pocket change, either.

Bill Gross is the founder of IdeaLab, an incubator where he manages about a dozen or so startups at a time. What became GoTo.com was a company called Overture. And if Google was a home run, then Overture was a triple ripped through the gap: good, but the base runner didn't quite get home. Overture was a hit, yes, but it might have been Google, or at least it could have tried to be. At the core of Gross' insight was the premise that search was broken, but the portals didn't seem to care.

Gross believed, and this belief fuels the entire search economy, is that the search term, as typed into a search box by an Internet user, is inherently valuable — it can be priced. "All our false starts made me realize that the true value of search lies in the search term," Gross says.

Overture, and then later GoTo, went through many deals and made a lot of money before finally selling out to Yahoo! for \$1.6 billion. It was a decision that was made because of market factors and the memory of the quick devaluation of net companies after the net bust.

A World-Class Company

GoTo/Overture may be IdeaLab's greatest success to date, but any triumph Gross claims is overshadowed by what might have been. Gross saw the opportunity first and he built a world-class company to take advantage of it, but in the history of search, Overture will remain a footnote.

Perhaps that's why Bill Gross isn't finished dreaming the next great dream. So what's he working on now? "Basically I have the next paradigm in search," Gross says. "It's the next economic model and the next relevance model."

In the fall of 2004, Gross delivered his answer: SNAP, a new breed of search engine that ranks sites by factors such as how many times they have been clicked on by prior searchers, among many other things. ■

For additional information on what motivates Gross to start again, go to: <http://my.summary.com>

Google Today, Google Tomorrow

Despite Google doing a number of things wrong on the way to its initial public offering (IPO), it turned out to be quite successful. In the summer of 2004, Google had \$3 billion in the bank and a market cap pushing \$50

billion. Clearly the company needed a plan. While traditional companies — some might call them mature — have well understood corporate development plans, Google was still flying by the seat of its pants.

As Google looks toward its own future, that responsibility — to shareholders, to employees, and to users — will only increase. Google faces perhaps its most tremendous test in the next few years: Can it continue to innovate in the face of treacherous competition? Can it keep its most productive employees despite their personal wealth? Can it learn to partner with outside companies who find Google's loose approach to business confusing and dangerous? Can they take the company from 3,000 employees to 30,000?

Google's mission of organizing the world's information and making it accessible sets the company up to deliver nothing short of every possible service that might live on top of a computing platform — from mundane applications like word processing and spreadsheets (Microsoft's current bread and butter) to more futuristic services like video on demand, personal media storage, or distance learning. Many experts believe that in the near future, we'll store just about everything that can be digitized — our music, photographs, work documents, videos and mail — on one massive platform: the Google grid.

In other words, Google has, in its seven short years of corporate life, become a canvas upon which we project every application or service that we can imagine might arise in our increasingly digital future. Google as phone company? As cable provider? As university? As eBay, Amazon, Microsoft, Expedia and Yahoo! all rolled into one? It's conceivable, and that, in the end, is what makes the company — and search, the application that spawned it — so fascinating to us all. Nothing beguiles like the promise of unlimited potential. For now, anyway, Google holds that promise. ■

Search, Privacy, Government and Evil

Did you know that Google knows where you live? Worse yet, did you know that Google will give out your address to anyone who asks? Who does it think it is?

Many people have the same revelation: Google knows where you live. In our society, reverse directories are legal. Addresses and phone numbers are presumed to be public information. But while this kind of information is public, it is not widely available. Until Google and others made the digital connection via search, the public could assume it was difficult to do a reverse directory lookup. But what if it was as easy as typing a name into Google? Turns out often it already is.

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Search, Privacy, Government and Evil

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Nearly everyone with a computer will Google someone else. If you are a knowledge worker, chances are you Google someone nearly every day, if not more often. Have a job interview? Google the prospect. It's probably even a good idea to Google yourself often just so that you get a good idea of what picture the world sees of you.

The China Question

Google's mantra of "Don't Be Evil" has been put to the test by the requirements of the nation's PATRIOT Act. Even now, the government is suing the company in order to access the nation's surfing records. But at least we don't live in China. In response to the perceived threat the Internet represents, China has gone to extraordinary lengths to censor the Internet — to the point of building what is known in academic circles as the Great Firewall of China: a technological infrastructure that automatically filters out banned sites — political opposition sites in Taiwan or Tibet, for example — from the walled garden of the Chinese Internet.

A Dilemma for Democratic Businesses

China represents a dilemma for democratic businesses — its political and moral cultures are repugnant, but its market is far too rich to ignore. Google can't afford to not be in China, according to one eminent Chinese expert. "They are facing a hard choice. They really don't want to be seen as doing something that is evil, but no one goes into China on their own terms." In China, Google may have finally found a situation in which its Don't Be Evil motto cannot stand.

It is odd to think that seven years after they started a company to "organize the world's information and make it universally accessible and useful," Brin and Page find themselves pondering a role as the morality police for the global economy. And it's doubly odd to think that the decision that they make will have a significant impact on literally billions of people's lives, not to mention hundreds of billions of dollars in economic value. ■

Perfect Search

Where does Google go from here? Now that Google is public, and revealed to be mortal, now that almost every major media and information technology company in the world has declared search integral to its future, what might come next? Can anything possibly match the cultural thunderclap of the early Web, or the singular epiphany we all felt the first time we used Google?

Of course it can. When it comes to search, as with the Internet itself, the most interesting stuff is yet to come. Search is at best 5 percent solved. We're not even into dou-

ble digits of its potential. And search itself is changing at such a rapid pace — in the past year important innovations have rolled out once a week, if not faster — that attempts to predict the near future are almost certainly doomed.

So let's instead imagine a world of perfect search. What might that look like?

There are a number of trends that are pointing toward fulfilling at least some part of that larger vision. Those trends are ubiquity, personalized search (the application of your personal Web toward a more perfect answer), the rise of the semantic Web (the tagging of information so as to make it more easily found), domain-specific search, and the Web time axis. But how does it all fit together?

The World at Your Fingertips

Google aside, there's no single moment when all these trends converge. Think back to your first Google epiphany, or if you've been searching the Web for a while, your first AltaVista epiphany. Think about what that felt like — how you suddenly realized that all of the world was at your fingertips. Or maybe it was the time you found the perfect CD due to a recommendation made by Amazon's search algorithms. Or maybe it was the first time you installed a desktop search program and found that obscure e-mail thread that you'd forgotten about.

The Search for Perfection

Whatever your first perfect search moment was, there will be many, many more as the space evolves. Search is no longer a stand-alone application, a useful but impersonal tool for finding something on a new medium called the World Wide Web. Increasingly, search is our mechanism for how we understand ourselves, our world and our place within it. It's how we navigate the one infinite resource that drives human culture: knowledge. Perfect search — every single possible bit of information at our fingertips, perfectly contextualized, perfectly personalized — may never be realized. But the journey to find out if it just might be is certainly going to be fun. ■



If you liked *The Search*, you'll also like:

1. ***Does IT Matter?*** by Nicholas G. Carr. Carr argues that IT has become a commodity, and because the nature of strategy requires differentiation, IT cannot qualify as a strategic competitive advantage.
2. ***The E-Commerce Arsenal*** by Alexis D. Gutzman. Gutzman has put together a tool box containing the technologies you must master to establish a successful Web site.
3. ***e-Profiteer*** by Peter S. Cohan. Cohan offers tips and tactics that allow you to first identify the areas of your business processes that can be transformed by e-commerce technology, then create and implement a plan.
4. ***Business @ the Speed of Thought*** by Bill Gates with Collins Hemingway. Gates shows how to maintain flow through a single integrated digital infrastructure that uses digital tools.
5. ***The Clickable Corporation*** by Jonathan Rosenoer, Douglas Armstrong and J. Russell Gates. The authors identify and explain eight "value propositions" that companies can offer their customers through the Web.

· Book 31 of 35 ·

The Tech That Comes Next

Amy Sample Ward, Afua Bruce

The Tech That Comes Next

How Changemakers, Philanthropists, and Technologists Can Build an Equitable World

by **Amy Sample Ward and Afua Bruce**



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THE SUMMARY IN BRIEF

There's no easy way to change the systems and practices that have created the imperfect technologies we have today. Truly creating an equitable world will most certainly require contributions from everyone in some way. This book is a practice in thinking about new options and priorities, looking for inspiration from a diversity of other efforts, and acknowledging the lessons that many different people may offer us.

In *The Tech that Comes Next: How Changemakers, Philanthropists, and Technologists Can Build an Equitable World*, authors Amy Sample Ward and Afua Bruce focus on five key groups identified as social impact organizations, technologists, funders, policymakers, and communities. Belief systems about where resources are accumulated and how they are distributed, who has access to training and decision making, and what work is worthy of investment are core to what will be changed so that we can organize and collaborate in new ways. This book is an exercise in imagining a world that does technology differently. It is intended to invite us to dream of the tech that comes next.

IN THIS SUMMARY, YOU WILL LEARN:

- How technology supports social change.
- Why community accountability is crucial.
- Why funding and development of technology needs to change.
- The role laws and policy play in technology equity.

Technology to Support Social Change

Technology. Just the word itself evokes a range of emotions and images. Many people hold a number of these sometimes contradictory emotions and perspectives at the same time.

In fact, individuals often define “technology” differently. Although some people may think of technology as being exclusively digital programs or internet tools or personal computing devices, in this book technology is defined in the broadest sense: digital systems as well as everything from smart fridges to phones to light systems in a building to robots and more.

Regardless of how complicated feelings about tech may be, we all must embrace it: we live in the age of technology. Whether you consider how food travels from farm to table, how clothes are manufactured, or even how we communicate, tech has changed and continues to change how these processes happen. Certainly, we complete a number of services through technology systems and we expect the technology tools and applications we use to provide smooth and seamless experiences for us every time we use them. In many cases, technology works how we expect it to; it helps us get things done.

Unfortunately, not everyone has the same experiences with technology. The phrase “technology has unintended consequences” is something many people in technology companies say when referring to products that don’t work for a segment of the population, or to systems that leave people feeling exploited. However, these “unintended consequences” are often the same: they result in excluding or harming populations that have been historically ignored, historically marginalized, and historically underinvested. The biases and systems that routinely exclude and oppress have spread from the physical world into the technological world.

How can we have these uneven, unequal experiences with technology when one of the supposed attributes of technology is impartiality? There are so many examples of how technology, regardless of how quickly it moved or innovated, repeatedly did not deliver on the hopes and promises for *all* people. Why? Technology is put into use by humans, and accordingly, is good or bad depending on the use case and context. Technology is also built by humans and, as a result, technology reflects the biases of its human creators.

Technology exists within systems, within societies. The application of math and science, as well as the structure and collection of data, are all human inventions; they are

all therefore constructed to conform to the many rules, assumptions, and hierarchies that systems and societies have created. And, historically, the people who create the most ubiquitous technology are a small subset of the population who happen to hold a lot of power—whether or not they reflect the interests and feelings, opinion, and thoughts of the majority, let alone of the vulnerable.

All of these factors—feelings about technology, the benefit technology can provide, the reality that technology isn’t neutral—serve as a backdrop to conversations about tech created for and in the social impact sector.

Organizations that promote political or social change can vary in size and scope, but a common aspect of these mission-driven organizations is that they focus on the mission first—feeding hungry children, promoting sustainable farming, delivering health care equitably, and more.

Social impact sector organizations work hard every day to push back against the inequities and injustices in society. With limited budgets they manage to effect real, positive change on a number of social issues and improve the quality of life for many humans.

We often assume that oppressive systems will always continue to exist, but what if this weren’t the case? What if we could restructure how we think about developing systems and services to move beyond this picture and truly exist in a world where humans are centered and justice is pursued? We must consider how the different levers in society can work together; we must consider how we build the tech that comes next.

Technology That is Accountable to Community

The philanthropic sector is full of pledges and commitment statements about everything from addressing racial inequity to making their grantmaking more accessible and less onerous. These pledges are important in many ways, but they are not enough to help many organizations and communities even to stay afloat—let alone build a better world.

If the technology-enabled systems, data collection, and even service models we employ toward a positive mission are themselves causing harm, because they are extractive, don’t acknowledge our identities, or are inaccessible, we must acknowledge that harm and make change—in both the technology tools themselves and in the way we create technology for our needs.

... those putting technology to work need to be in control of the technology we choose and how it works for us, not the other way around.

Keeping our community central in our process, through engaging many people in the goal setting, decision making, design, and implementation of our work allows us to be accountable for technology use that causes harm and to make appropriate adjustments. As we build toward a better world, those putting technology to work need to be in control of the technology we choose and how it works for us, not the other way around.

Equitable technology includes the networks, hardware, software, and services that support everyone's access to, participation in, and fulfillment in an equitable world. How we develop technology is as important as what technology we develop.

Many communities are supported through a diversity of valuable social impact organizations, from food pantries and book banks to concerts in the park and advocacy efforts to shift local policies to advocating for the rights of community groups.

These missions are all important pieces of the fabric of programs, services, and support that have direct impact on communities everywhere. The best way to further the value of these missions is to ensure that administration and delivery of the work is advancing the mission, too—and not inadvertently contributing to the issues the mission aims to address.

Technology is a big part of this unintended negative contribution—from extractive data collection to perpetuating digital exclusion. And those working in social impact organizations are in a critical position to catalyze change for the way technology is selected, implemented, budgeted, planned, and used toward the mission.

We need people who are experts in their missions and community's needs to collaborate with us on the many challenges we face. Our vision is for technology projects, funders, and policymakers to prioritize the participation and perspective of communities most affected by the many intersecting systems we are working to change.

In many of the existing funding dynamics for social impact

work and for technology development, the power and focus are on the funders, who can decide if or how a project moves forward.

The dynamic needs to be reversed so that the communities and people receiving the social impact work and technology can be the ones setting the priorities. We can't continue to perpetuate the belief that those with the most money know best.

Resources should be managed and prioritized by communities and organizations putting technology to use for positive impact, instead of on the priorities of those with the most financial assets.

Changing Technology Culture

Technology can accelerate the work of social change. Social impact organizations need a cultural understanding of tech that keeps the focus on the mission and community—not on the tools themselves. They also need to invest strategically to meet the mission.

Shifting both the culture and investments around technology in social impact work starts with acknowledging that both people and technology are necessary—but one is not a replacement for the other.

Technology should help with readily automated, routine tasks, allowing people to focus on the many things that require a human's focus. But before we consider how to select the best technology for an organization, we have to first focus on establishing a viable culture for that technology.

We've all heard the tropes foisted upon the social impact sector: this work is for charity; it is work of the heart, and not a place for sophisticated strategies and innovation. These assertions are absolutely untrue.

Unfortunately, staff, volunteers, board members, and program participants or service beneficiaries collectively buy into both sets of thinking, which just perpetuates starvation cycles for social impact funding and training.

Changing how social impact teams think about technology can also improve many other important aspects of the work, including staff roles and advancement, training and professionalization, program effectiveness and community impact, and values and trust in both the mission and the community.

Investing in technology really means investing in people, focusing on the community, and planning for processes that allow for participation and collaboration across teams.

Training for technology shouldn't involve only those who operate it. When technology is a critical element to how an organization operates—or indeed, is critical to whether an organization can operate at all—it is a leadership component.

Every executive director or CEO needs to be part of technology training with the rest of the organization—and needs to reinforce a culture that acknowledges technology as a strategic part of the mission. Central to technology leadership is the work to align tech to the organization's mission and community needs.

Creating a culture of technology leadership across an organization is just as important as embedding community-centered models in every technology project. Technology will continue to change. Social impact organizations need to continue investing in technology training for all staff, improving accessibility, and strengthening the opportunities for community voices and priorities to be central in the plans for the organization's work and systems.

Developing Technology for Social Impact Organizations

Technological development truly changes how people live and interact with the world. Many people expect technologists to quickly enter the social impact space and create innovations that “single-handedly” feed the hungry around the world, solve climate change, and improve access to and outcomes for education—and then spontaneously dream up the next invention.

This, of course, is not how things work. The social impact sector tackles challenges based on systemic inequity and injustice, problems that can't be solved with a simple invention. There must be a recognition that the big technological solution is in fact a combination of many small solutions.

Also, the expertise technologists bring can help create a new and better world, but only if the technology is appropriately

designed in the context of local communities and with deep understanding of the multifaceted elements in play, such as the root causes of the problem, interventions that can make progress possible, and the network needed to realize sustained change. This understanding must derive from how these problems are actually experienced, not from how they are interpreted from outside.

Technologists in future social impact organizations must strike the balance between:

- (a) building basic technology systems, such as a simple database to store information on clients, for the social impact sector; and
- (b) identifying ways in which new, never-before-used technology can be created and applied to social change.

These complex challenges present a high bar for technologists to meet, beyond “just” deploying complex tech. They must understand the power and potential of technology, as well as its limits and constraints; they must also be able to determine when technical proposals are documented pipe dreams and not possible within the constraints of reality, as well as when not to pursue a technical solution at all.

Technologists must intentionally extend the mission and impact of social impact organizations by:

- expanding access to themselves
- continually checking for consistency between code and values
- consciously deciding when to exercise technological caution versus when to push organizations into something new

Good things can happen when technologists are intentional about learning from their social impact partners, thorough in considering various technical approaches, and deliberate about selecting and implementing the ideal model. Detailed understanding of the technology deployed is necessary to responsibly execute a technology solution.

Appropriately designed technology means responsibly using advanced technology in the right situations. By applying the complexity and limits of technology, including a diverse group of people throughout the design and development process, and consistently checking for ethical decision making enshrined in code, social impact technologists can play a critical role in sustaining a transformed organization.

Small amounts of funding spread out thinly misses the needs and reality that technology projects and social change require long-term support. . .

Changing Technology and Social Impact Funding

With the onset of the COVID-19 pandemic, millions of people across sectors and industries transitioned to working virtually and remotely almost overnight. This nearly spontaneous phenomenon was enabled by technology.

But for many social impact organizations, moving to a virtual model simply wasn't possible in one night or one week, because the technology tools and organization's skills and strategies with them weren't positioned effectively for staff to pick up working from wherever they may be.

The community challenges and the prevalence of technology didn't start with the COVID-19 pandemic. Many social impact organizations had always relied on ill-suited tech; the pandemic merely forced some long-delayed, long-necessary decision making.

Similarly, opportunities for funders to accelerate social good also preceded the pandemic. The problem is that many funders value the visibility of funding new things and partnering with prominent technology companies, which leads to funding for projects that build technology outside the community.

But if financial resources were prioritized and invested in those deploying and affected by technology so that they could build what they need, then everything from research and development, piloting, adopting, and scaling technology would move more effectively.

Small amounts of funding spread out thinly misses the needs and reality that technology projects and social change require long-term support, space for learning and testing, and a systemically inclusive approach.

We can accelerate the impact by changing how and who we fund as well as by developing technology for social impact. This calls for rethinking and reworking the models, expectations, and values that organize our systems of investment, from grantmaking to seed funding. Foundations and corporate philanthropy efforts, venture capitalists, and individual

donors can all play a role in shifting what funding means and can do in the service of the social good.

Funding technology for social impact work is tantamount to funding social impact work. Social impact work cannot happen in a sustained, shared, or scaled manner without technology supporting either operations or delivery, or both. Funding technology in social impact work needs to cover more than just technology tools and systems.

An efficient, effective operation requires the selection, customization, implementation, and maintenance of software, hardware, and other applications. And so, technology funding must include the resources to adequately train staff, support necessary upgrades and maintenance, and engage community members in research, design, implementation, and evaluation.

If we value those who benefit from social impact efforts, we need to learn how to fund the technology that will get us close to a better world. Funding should be comprehensive, with a technology budget reflective of all the costs associated with making and keeping technology working for the mission.

Further, product donations should not be conflated with funding. Product donations can be undeniably helpful—in an organization that already has the right infrastructure and staff training. But if the free or discounted products have a term limit, the benefit can turn costly, and the “charity” model reveals itself as the sales pipeline it actually is.

Providing free products that have real costs for the corresponding implementation, maintenance, and training is an inequitable and unethical revenue pipeline. Funding models for technology in social impact organizations should reinforce impact over financial return.

Changing Laws and Policies

Policymaking is ultimately about affecting change for large groups of people; centering the communities most affected by potential policies in the policymaking processes is the

only way we will create a more equitable world.

Technology can support the flow of information throughout communities and between communities and policymakers. But what happens if the communities don't have access to the technology? Or, what happens if the technology to which communities do have access causes confusion, disenfranchises people, or fails to protect them?

The policymaker that comes next must consider all these aspects in their role. They must insist on involving community members and social impact organizations in the policymaking process.

- They must make sure communities can access technology.
- They must understand how technology intersects with the issues they govern.
- They must require that the technology that touches society is secure, trustworthy, and not exploitative.

It's a lot to manage, but by listening to their constituents, getting advice from experts, and effectively using technology themselves, policymakers can create rules and regulations that enable a thriving society.

Individuals who make policies and plans for local, state, and federal governments—that is, policymakers—who have often spent their careers in the policymaking world, traditionally come from nontechnical backgrounds.

This would not be a significant problem if society still operated as it did a century ago—before modern technology was so intertwined in how people live their lives and how policy is implemented.

This is not to say that all policymakers should also be technology experts; that would be unreasonable. Policymaking itself is a specialized skill that takes time and experience to refine. But policymakers must consider how technology can extend the impact of policy.

The conversation about policymaking for what comes next must come from two angles: policy about technology, and technology in policymaking. The common factor in improving policymaking in both cases is strengthening the connection between policymakers and community members. To this end, it is important that policymakers proactively seek out technical expertise—and not just in corporate America, but also within grassroots advocacy organizations and other social impact organizations.

Just as technology can be used to advance the missions of social impact organizations, technology can also be used to structure policymaking conversations in new ways. Technologists can inject new-to-policy design processes that consider how policies may be successfully technically implemented, as well as how to repeatedly learn and adjust based on testing and piloting designs.

To effect widespread systems change, policies, regulations, and laws must also change. Policymakers are uniquely positioned to adjust these levers, and they too can actively participate in building what comes next.

Changing Conditions for Communities

In all of our discussions about social impact organizations, technology development, funding, and policymaking, we've stressed focusing on community connection, participation, and leadership. That focus must be reinforced by supporting community members in their efforts to engage and lead; they need resources to help them build skills, design solutions, direct funding, and decide on policies.

And an essential aspect of that support calls for removing barriers to community access and participation in social impact work, technology development, resource allocation, and policymaking.

Communities are made up of a widely diverse range of individuals who possess a widely diverse spread of experience, training, and confidence with technology. This complicates the need to upskill a community, and illustrates the importance of supporting parallel initiatives rather than relying on simplified solutions.

Directly central to a discussion of community is the power we have when we build our vision of what comes next together, with everyone's skills and expertise and brilliance brought to the table. There are a multitude of questions that can guide us in building what comes next:

- What might community ownership look like?
- Who is making social change?
- How do we invest resources into the emergent and collaborative spaces where solutions could emerge?

The best way communities can pursue creating a better world will be to eliminate barriers that prevent community leaders, community members, and communities from designing solutions that meet their needs—as well as to elimi-

nate the barriers to being supported and funded in the ways social impact organizations and technology developers are privileged to be.

Ultimately, only so much time can be spent studying the challenges in and of the social impact space. Whether you are:

- a funder who can make capital available more quickly,
- a technologist who can expand the capabilities of mission-driven organizations,
- a social impact leader who knows which levers to pull to make change,
- a policymaker who can create systems and laws that protect and encourage,
- or a community member who can actively participate in solution development,

YOU have the knowledge and power to make an impact.

There's no single place to begin. This book, like the work ahead of us, doesn't include a road map, a checklist, or a well-worn path.

Instead, all of these ideas are invitations for you to begin wherever you are with whatever resources you have—and to bring those resources near you along, too.

There's no permission to be granted before each of us pushes these conversations into our organizations or our coalitions or our technology projects. There's no application process to be the one that commits to doing things in new ways.

The opportunity to build what is next is an opportunity for us *all*. Inherent in the value of collective power and wisdom is the reminder that real change will be possible when building what is next includes us all.

The work ahead of us is massive. The world we have today is filled with challenges. There are real hardships and injustices everywhere we look. It's because of this that we know that, together, we must commit to something else.

Today, this moment, right now is the right time for us to take the next step toward a more equitable world, a world that works for all of us.



Amy Sample Ward believes that technology should be accessible and accountable to everyone, especially communities historically and systemically excluded from the digital world. They are the CEO of NTEN, a nonprofit creating a world where missions and movements are more.

Afua Bruce is a leading public interest technologist who has spent her career working at the intersection of technology, policy, and society. Her career has spanned the government, non-profit, private, and academic sectors, as she has held senior science and technology positions at DataKind, the White House, the FBI, and IBM.



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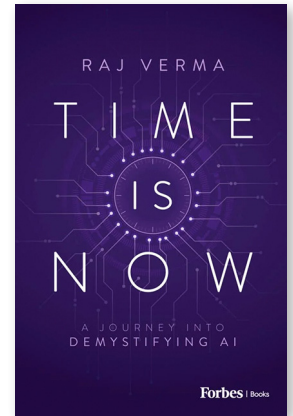
Time is Now

Raj Verma

Time is Now

A Journey Into Demystifying AI

by **Raj Verma**



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THE SUMMARY IN BRIEF

In a world where technology impacts the very fabric of our existence, it has become vital for leaders to navigate its impact on business and society.

The book *Time is Now: A Journey Into Demystifying AI* is an educational journey toward keeping up with rapidly evolving technology, harnessing the power of artificial intelligence for intelligent decision-making, and ensuring that our choices positively impact business and the world.

Author Raj Verma introduces us to the essence of “Now” and The Trinity of Intelligence - Information, Context, and Choice to make smarter choices in the age of AI. Through his personal and professional reflections, he guides us to amplify our own intelligence by leveraging AI, and demystify our own selves by demystifying AI.

IN THIS EXECUTIVE BOOK SUMMARY:

- The powerful impact a single decision can make on one’s destiny
- The reality of today and where many companies find themselves
- The implications and decisions we all must make about how we shape our future as generative AI evolves

Introduction

History has shown us that the present is better than the past. The future can be better than the present if we are good stewards of Now. With AI, we have an opportunity to create new insights into which way the wind is blowing. But before we can decide how to use AI, we have to consider the power of Now: How it is shaped through Information, how it is given Context by technology and human behavior, and how it drives Choice.

This book is divided into three sections. The first section is semi-autobiographical, showing my own journey and the powerful impact mere seconds – a single decision – can make on one's destiny. The second section looks at the reality of today and where many companies find themselves. The third section discusses the implications and decisions we all must make about how we shape our future as generative AI evolves.

The moment we are in is not isolated – it has been shaped by the past, is powered by the present, and molds the future. This is not the time to exploit or run away from the potential of generative AI. Rather, with the right information available to us placed in the right context, Now is the time to leave an impact on this world by choosing to do what's right.

Part 1: How We Got There

Chapter 1: The Power of Now

Life is a series of Now, and each passing has reverberations into the future. Our memories are made of the information we take in throughout our lives and give us our identity. The current context gives us impetus. How we choose to act in the Now is what makes us, us. To understand the power of Now, we must become students of how it forms through Information, Context, and Choice.

- **Information.** In technical terms, our memory is the collection of the data that shapes our identities. Yet it also includes the events that happened outside of our control, before our lives began. Similarly, the future is being decided with each Now. What you choose matters. And much more when you have a never-before-available tool like AI.
- **Context.** When it comes to AI, we have a responsibility to ask ourselves how we will use it. The heart of AI is data - that is, the information it learns. We must see AI not as artificial intelligence but as amplified intelligence and we must recognize that these tools have

the potential to both help and harm. As leaders, we control this ship. Ask yourself: How are we utilizing the tools before us? Are we being responsible?

- **Choice.** Whether it was a whim or destiny, my choice to walk into Wipro (my workplace) changed the direction of my life forever. I've taken many chances in my life, but there have been five big ones that have shaped me, this being the first. In doing so, I learned one of the most valuable lessons in my life: you're not going to score on the chances you don't take.

Whether you're a spiritual individual or not, approaching Now ethically requires the cultivation of your soul and mind. With generative AI - or any other emergent technology - we must be cautious in our approach to how we use it to further our agendas. We need to be asking, "What's the ultimate goal of this project? Is it going to bring good into the world?" These are questions that should be asked in a public forum to gain insight, not hidden away in a locked boardroom.

When we can combine Information and Context through this lens, we can make better Choices, not only for ourselves but for the world and the future. In the combination of Information, Context, and Choice, through the lens of soul and mind, we can find the right direction, the right moment, and the right time. The question remains: Are we brave enough to do so?

Chapter 2: Practice Makes Relevant

The sense of ambition I felt on my first day at Wipro was quite audacious. There, I made a promise to myself - to make a name for myself, yes, but to also be the best version of myself. On my first day, I was asked to go up to a building at nine-thirty every morning, take the elevator to the top floor, then take the staircase back down, knocking on every office along the way to see if they wanted to buy a computer or printer from us. That experience became one of the great lessons throughout my professional career. It helped me figure out that the greatest selling point was the idea of relevancy.

This was the context I had to create for people. I had to show prospects the problem they didn't yet see: becoming irrelevant. The business landscape was shifting, and I had to show how computers would keep them relevant. Automation - one of the biggest buzzwords in the AI landscape - is no more than how you create relevancy. For example, at Wipro, I learned how to pitch prospects not on every feature of the computer but rather to zero-in on one aspect that would make their office more efficient, and more relevant. Often, this meant explaining the power of word processing to them.

It's not about replacing people with technology. It's about empowering people with technology for impact.

But for those of us in the present, we have to consider this carefully. What tools are available today that can make us more competitive, more productive, and more efficient than we were yesterday? What process can be automated? What system can be made more efficient? It's not about replacing people with technology. It's about empowering people with technology for impact. This is the context of relevancy at work. If you seek only to exploit AI for momentary selfish gain, you do not have a relevancy mindset. Remaining relevant always looks forward and around. It asks, "How will this impact the next generation? Will this do good or harm for my fellow human?"

You only remain relevant through sustained effort. You can "go viral" and be forgotten in the same week. Practicing discipline through discomfort makes the difference in staying relevant.

Chapter 3: Low Chance of Success

A common theme throughout my life has been taking opportunities that appeared to have a low chance of success. This began with walking up to the Wipro office and asking for an interview when I had already failed their assessment exam at my college. This was also true in my decision to shift to software sales just as hardware sales were booming.

In the face of increasing globalization, we leaders have an opportunity to increase our chances of success - especially in light of how AI can assist us in creating new insights. As leaders, we must understand that innovation is not technology. Innovation is about culture. It's about facilitating a culture in which it's okay to challenge the status quo, to try the new.

Increasing your low chances of success requires great curiosity. It drives you to ask the deep questions that produce deep answers. A curious culture asks, "What can we do better? What can we learn from our mistakes? What are we not doing that we should start doing? What should we stop doing because it's now ineffective?"

Curiosity is the question. Innovation is the answer. Artificial intelligence is simply another tool to guide your curiosity to the answer with the greatest chance of success right now.

Part 2: Where We Are

Chapter 4: Student and Teacher

Vivek Ranadive, the founder of TIBCO, which became my home for the greater part of my career, was the one who came up with the term Real Time, earning himself the nickname "Mr. Real Time."

In essence, he proposed that if you could get the right information to the right person or place at the right time, then you could solve any problem in the world. Since he was at the forefront of the Real Time conversation, I inhaled his teachings from his first book published in 1999. While technology has changed a lot since then, the philosophies he espoused have not. Without his knowing it, he had become a major influence and teacher for me. As a student of Real Time, every day at work filled me with a sense of joy and wonder. I had a voracious appetite to learn everything I could. If I found myself in a group of people complaining about a problem, I'd make an excuse to leave. Then I would surround myself with more ambitious people who wanted to make the world a better place. These were the teachers I chose.

Chapter 5: Creating Insight

In the discussion about generative AI, much of the focus has been on automation, on outsourcing aspects of human work to become more efficient. This is a limited view, however. The greatest opportunity AI provides for leaders isn't in automation - it's in creating insight.

No one gets to avoid trials in life. When you are not in control of the circumstances around you, you can either complain about it or you can create insight from it. In the age of AI, there is a great lesson to be learned here. Things will not always go your way. Projects will go awry. Mistakes will be made by others that impact you. You must keep in mind that such trials are not the end of the story but a chapter within it. You can always use trials to create insight for yourself on what to do next.

Chapter 6: Identity Shift

More than anything else, our identity is rooted in the ac-

tions we take. With an identity shift, it is never just a matter of words. It is a matter of action.

How relevant and how recent the data is empowers a company to be more relevant itself. Speed is of the essence here but it's not everything. If you are the fastest on the track but run in the wrong direction, you don't win the race. You become a laughingstock. This is the importance of insight. It allows you to take the right action in the right direction.

Artificial intelligence is the culmination of this journey. The advancements we see through data analysis and creating insight show this to be true. The one who creates insight the fastest wins.

Inaction is not an option. The individuals and companies who take no action will lose their identities, and lose their relevance. The ones who do take action to become faster - to amplify their intelligence with the tools now available to us - will make the necessary identity shift to survive.

Chapter 7: Improvisation

There is always a risk in improvisation. Yet it is often the secret ingredient in what differentiates you from the rest of the crowd. It is what creates an experience people will cling to. But is there a metric to use to know if you're improvising the right way? I believe there is.

To know whether you are improvising the right way or not, the secret is this: you must consider the user experience. Ultimately, the key to creating a superior product is the user experience. Consider Sony's Betamax player from the 1980s. It was arguably the better-designed product from a technological view. But VHS was the more user-friendly product and won the market. History is filled with great products left behind, leapfrogged by a "lesser" product. The user experience always casts the deciding vote and is always about the latest context. That is, are you meeting the user's expectations today? This is also the power of Now.

Your ability to pivot, to create an excellent experience, to improve each day - are what will future-proof you. It will be the same with generative AI. It's an iterative process, a continuous swinging of the hammer. The companies that can implement AI to create a better experience, to help them improvise with more insight, will be the ones who thrive. To get there, they will have to leverage the power of Now - wielding the right Information in the right Context for the right Choice.

Part 3: Where We Are Going

Chapter 8: A Great Escape

If there is any one lesson I've learned from my past, it's that the future is always a bit foggy. It encapsulates the unknown. But the choices you make today - in the Now - can provide great clarity to what the future holds.

Choices, I realized, are not solitary phenomena. They ripple outward, influencing not just our own reality but the realities of others. Choices are not made in a vacuum. They are the product of Information and Context, the raw materials from which we construct our identities. The more I pondered this idea, the more it struck me how, in many ways, companies mirror the complexity of individuals. They are conglomerates of people, each with their own Information, Context, and Choice. This trifecta is what differentiates one company from another, even when they operate in the same market with similar products and services.

In essence, Information, Context, and Choice are not only the pillars that make up Now - they are also the building blocks of intelligence. When we apply this thinking to both human intelligence and artificial intelligence, we can begin the process of demystifying how we can create insight, how we shape our identities through our choices, and how we build the future we want.

Chapter 9: Demystifying AI

We find ourselves in a fast-moving, fast-changing world where every week brings a new announcement about tech, new noise around AI, or a new company or product being launched into the world. With each passing Now, the landscape is being augmented, and it's easy to get lost. If we keep a foggy, narrow lens through which the view of AI is not well-informed or well-rounded, we will lose our way in the landscape.

Stack Overflow had long been the proverbial "watering hole" for developers - a thriving hub where engineers could share their coding conundrums and collectively troubleshoot. And then, in the blink of an eye, the landscape changed. With the advent of ChatGPT in late 2022, the once-bustling Stack Overflow saw a precipitous drop in traffic.

But here's where the story takes an interesting turn. Chat GPT-4, the brainchild of OpenAI, had been trained on publicly available data up until September 2021. This data, allegedly, included the same billions of transactions that Stack Overflow had been diligently collecting and analyzing. Then

To define AI, we need to first recognize that data and memory play a key role in how we currently define human intelligence.

why did the same data in the hands of OpenAI lead to such a seismic shift in the coding landscape? What did OpenAI do differently with the same information that Stack Overflow had been sitting on for years? The answer lies in context. Stack Overflow had the data, but it was OpenAI that took the data and added context to create action.

To define AI, we need to first recognize that data and memory play a key role in how we currently define human intelligence. Only then can we go down the hypothetical path of recreating intelligence through a machine. Much like the human brain's synapses and neurons, the data we collect are connected to each other. When our brains discover a pattern in this data and how it is connected, the raw data elevates to knowledge. The more experiences and learnings we have, the more "knowledgeable" we become.

The data points that what we incessantly and perpetually collect vary from moment to moment. Before these experiences are filed away in the recesses of our minds, though, we add an additional layer to these data points. We add Context. With Context, our brain attaches emotions, thoughts, and lessons together. We are also selective in what we choose to remember. We effectively live in an incessant cycle of Now. What makes us different from each other, even if we live through the same experience, is the context of every single piece of data we process. The last piece of the puzzle that brings Information and Context into action is Choice.

When Information and Context come together, we can make Choices that align with actions. Repeated action leads to the building of skills, which is often referred to as muscle memory. It is this combination of Information, Context, and Choice that forms the building blocks of a framework we call the Trinity of Intelligence (or, TOI) to Demystify AI.

In embracing the foundational pillars of Information, Context, and Choice, the TOI framework delineates a multidimensional path for translating AI's potential into tangible outcomes. Seizing the opportunities lying at the intersection of these pillars, organizations can unravel the mysterious tapestry of artificial intelligence and devise strategies that harmonize technology and human intelligence.

Building on the TOI framework, our team has developed a blueprint architecture for enterprise AI that you can freely use to make your own choices. In short, it's a blueprint for companies to understand and master AI through data. You can delve deeper into this topic and download the blueprint from timeisnow.ai. You see, the brain has three key layers that are always interacting with one another to drive our decision-making processes. Likewise, AI can be understood through these three layers:

- Layer 1: The first layer is made up of interfaces - that is, the receptors and effectors. Think of these as the nerve receptors that are taking in all the information from throughout the body-especially the input of our five senses. These interfaces directly interact with the outside world, taking in a constant stream of data occurring in real-time.
- Layer 2: Prefrontal cortex models and tools. Within the scope of AI, this "prefrontal cortex" is composed of the models and tools performing the work. While decision-making looks different with artificial intelligence than humankind, it's still making choices based on the parameters of the model or tool. Without these, it would be incapable of giving any kind of meaningful results.
- Layer 3: Memory and context-analysis of transactional data. The core of AI is data. The tool itself is irrelevant without it. The longer it takes AI to get the relevant data, the further away you move from Real.

If you can ensure your database gets the right information to the right person at the right time, you can solve any problem in the world. By demystifying AI, we are forced to also demystify our own motivations as leaders. What kind of impact do we want to make on people? On the world? What does the database of our experiences and the context of the moment tell us? If life is indeed a series of Now, the time is now for us to decide what tomorrow will look like.

Chapter 10: Leadership in the Age of AI

With more insight, more information, and more context-you can gain more confidence about when to climb the peak and when to stay in the tent. You can never predict

everything, but the more knowledge you have within your view, the more likely you are to succeed. Relevancy and recency also play a role here. The better the information available, the more likely you are to string two steps together and rebound from the occasional step backward.

As a leader, creating a healthy culture is one of your most important responsibilities. Creating culture falls into three categories:

- What you promote. This is where you verbalize the mission, the vision, and the values.
- What you practice. This is where you have to live out the values you proclaimed.
- What you permit. Here is where you have to set the boundaries of what you will allow and what you won't.

Always communicate. Communication is not always about the information. It largely depends on the context. Naturally, your team can't read your mind and can't grasp the full context of your thinking. The responsibility falls on you to repeat with clarity and high frequency. Don't be afraid of the unknown. When making decisions about the unknown, it is only in hindsight that it becomes obvious what the right choice was. The majority of your executive team may disagree with you and if you're wrong, well, then it could cost you your company, your financial well-being, and your legacy. But if you can consistently connect the dots, and find the pattern across a universe of dots to make conviction-based decisions, then you can keep putting one foot in front of the other.

Conclusion

In the age of AI, we leaders must remember that we have a moral responsibility to neither run from AI nor exploit it. We must set the boundaries of what we will promote, what we will practice, and what we will permit. While this may be the end of the book, it should be seen as the beginning of a conversation. If you've enjoyed the insights here, I invite you to engage with me through LinkedIn. An eternity lives in Now. The time for this conversation is Now. Do not put it off. For Now sits at the crux of Information, Context, and Choice. Now is the time for courageous leadership. Now is all we have... because the time is Now.



Raj Verma's professional journey has spanned more than two decades in infrastructure software, culminating in his becoming chief executive officer at SingleStore in 2019. While Raj is an avid golfer, reader, and pursuer of holistic health of mind, body and spirit, he identifies first and foremost as husband and father to four amazing children. His philanthropic interests center around helping the vulnerable in our society.

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Trust.

Dominique Shelton Leipzig

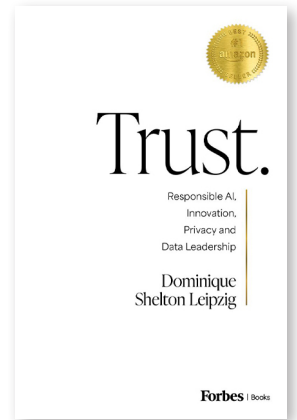


Executive Book Summaries®

Trust.

Responsible AI, Innovation, Privacy
and Data Leadership

by **Dominique Shelton Leipzig**



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THE SUMMARY IN BRIEF

Digital transformation is already here and the time for the CEO and their Board of Directors to adapt to this new reality is yesterday. From leveraging the power of data to avoiding ethical lapses that erode consumer trust – success in today’s business landscape requires leaders to transform their companies into responsible data stewards that benefit all stakeholders.

The book *Trust.: Responsible AI, Innovation, Privacy, and Data Leadership* offers a comprehensive framework for leaders to align their data practices with their organization’s mission, create an ethical data culture that runs on trust, keep reputational, legal, and financial losses at bay, and ultimately improve the bottom line through responsible AI implementation.

By deploying her insights from advising Fortune 100 companies on digital innovation, data privacy, strategy, and artificial intelligence, Author Dominique Shelton Leipzig helps leaders truly understand their customers, monetize data opportunities, and streamline processes using responsible AI, all while boosting customer trust and ensuring legal compliance in a rapidly evolving regulatory landscape.

IN THIS SUMMARY, YOU WILL LEARN:

- How to find your unique personality, profile, authority, and center.
- How to align your personality with your business and your life.
- How to implement your findings in business.
- How to cultivate an aligned and fulfilling business ecosystem.

Introduction

I wrote this book for you, the business leader: you're a CEO, in the C-Suite, or on the board. Your company is entrusted with data, and you know, intuitively, that trust in technology is critical for the future. This book is designed to give you instant expertise, provide the playbook to accelerate your company's future, and to equip you with the core concepts and vocabulary so you can communicate your data vision.

The pages within disrupt the presumption that data breaches, misinformation, privacy violations, danger for our children, and bias are the only paths forward with technology. I'm looking forward to sharing the essential things that leaders can do today to transform from technology users to technology leaders based on trust.

I hope you enjoy demystifying the way that you can take control and make sure your company is a data leader, not a data loser. Read on to learn more about how current industry and regulatory shifts present an opportunity not only to keep pace but also to add value to your business.

Chapter 1: Data Is Core to Your Mission

To understand what data means for your company, you must see digital transformation not as an ill-defined event that will arrive at some vague moment in the future but as something that is already here. Understand that trust in your brand's handling of data comes about through leadership and deliberate effort. The first step is to learn the tools for understanding, managing, and building with data.

Start with knowing your customers, what they want, and how to reach them. The data in a company already tells a story about who the customers are. There are many touchpoints throughout an organization where isolated divisions of a business might be gathering information about customers or products that could be harnessed to the benefit of the company. These include data from digital marketing, retaining "social listening" vendors to monitor how a brand and its competitors are discussed online for advertising purposes, internal and social media data, and more.

Have a system in place to track customer reactions to your products and services. Have your team identify where customer comments are located, and train them to store those data points in one central repository so that learnings can be extracted.

Once you're armed with clear and real-time knowledge of who your customers are, you can develop a streamlined marketing approach. Focus on this data to ensure you know how to protect your brand and stay on mission by being aware of your customers' values and perspectives.

A comprehensive data strategy is also vital for smarter product development. Make your mergers and acquisitions strategy demand-focused. If you're not certain that your M&A currently is as needs-based (which is to say data-driven) as it could be, this is your evidence of how to leverage data as a pre-tangible asset. Much like intellectual property, the value of data as an intangible asset can be unrealized, rendering it invisible on the balance sheet. But if data is treated like a "tangible" asset such that it is discussed every quarter as an asset, it would go from being hidden on the balance sheet to becoming a "pre-tangible" asset of the company. For this you need to know the following:

- What data you need to actualize your business strategy.
- What data you have and what it tells you.
- What data you need to get where you need to go.

Chapter 2: A Post-Data World in Detail

Why do I use the word "post data" to describe today's society? The digital transformation that your marketing teams keep warning you about is, in fact, already here. It is staggering to think that we are globally generating over 2.5 quintillion bytes of data per day. To put this number into perspective, one quintillion bytes has 18 zeros behind it. In addition, developments such as deep learning and generative AI make the value of data in the future even more certain.

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers. These networks attempt to simulate the behavior of the human brain – albeit far from matching its ability – allowing it to "learn" from large amounts of data. Generative artificial intelligence describes algorithms (such as chat GPT) that can be used to create new content, including audio, code, images, text, simulations, and videos. Once enabled, deep learning can reveal keen insights regarding your business at the touch of a dashboard.

You will likely also discover that your company is already using several technologies that assist in data gathering, such as cloud computing, IoT (the Internet of Things), sensor data,

The sooner you can develop a strategy to synthesize, study, and understand these thousands of gigabytes of data. . . the better equipped you will be to grow in the future

facial recognition, biometrics, other information gathered for physical security, and data purchased from data brokers.

These are just a few of the many ways in which your company is already a data company. The sooner you can develop a strategy to synthesize, study, and understand these thousands of gigabytes of data, as well as the governance practices that will make you a data leader, the better equipped you will be to grow in the future.

Chapter 3: Geopolitical Issues Surrounding Data

Cyber-attacks are expected to cost our global economy \$10 trillion by 2025. Given the geopolitical volatility in the world, it only makes sense to build national security awareness into a risk framework.

When you are interacting globally, it's important to understand the national security risk environment as well as the legal requirements that your company is subject to and then act in accordance with those factors. Consulting with the right legal and national security experts is a must to protect the brand. This is the only way the CEO and the board can know the necessary and important questions to pose to their management team to assess and protect against these risks.

Chapter 4: C-Suite and Board Data Privacy and Security Liability

With an increasing trend of officers and directors in the United States being named in lawsuits following data privacy and security incidents, it's vital to explore the common allocations triggering these lawsuits in the United States, the landscape in the United Kingdom and Europe, and the steps companies can take to mitigate this risk.

Outside counsel must be involved in training your C-Suite and board regarding these regulatory risks. Some important privacy programs and cyber preparedness efforts companies can implement include:

- Prebreach or preprivacy incident, security, or privacy risk assessment.
- Privacy or security compliance audits.
- Technical test results.
- Privacy and security impacts.
- Vendor due diligence and vendor contracts.
- Board meetings regarding privacy or security.
- Prior privacy or security incidents.
- Training programs on privacy and cybersecurity, including training involving the board and CEO.
- Some post-privacy or security incident communications companies can implement include:
- All internal communications investigating a privacy or security incident.
- Mitigation, remediation, post-incident reports, and management meetings regarding cybersecurity.
- Board meetings regarding reporting on an incident.
- Forensic investigations.

To permit candidate discussion of data best practices and incidents, care needs to be taken to preserve privilege so that board discussions are not weaponized against the board and the organization.

Here's an overview of lawsuits against officers and directors in the United States:

- Failure to stay informed.
- Lack of board committee with data privacy and security oversight.
- Lack of qualified officers.
- Failure to safeguard personal data.
- Failure to respond to known cyber threats.
- Failing to conduct adequate due diligence.
- False sec and other public statements.
- Lack of transparency.

- Insufficient oversight of vendors and third parties.
- Failure to provide timely and adequate notices.
- Noncompliance with laws.

Currently, the main regulatory risks for CEOs and Boards in Europe relate to security breaches, direct marketing, profiling, and ad tech breaches, unlawful data sharing, failures of transparency, and failure to comply with rights requests.

Chapter 5: Why Data Leadership Is Important Now

Nasdaq-listed companies lost over \$1.4 trillion in market cap in 2022, with impacts on the Dow and other global exchanges. The headlines scream about the losses in the market. Yet missing from the coverage is the stated cause for the losses in ad revenue that led to the sell-off in the first place, which is grounded in data privacy.

Data privacy and responsible data stewardship have gone from a legal compliance issue to a business imperative. The concept is straightforward. Lack of responsible data privacy leadership leads to distrust among consumers and employees, which eventually translates into losses in market cap. Your customers and business partners will not continue to work with your company if the data practices cannot be trusted. This is especially true if one of your competitors adopts trustworthy data practices and gives customers an alternative they can flock to. If your customer base takes a nosedive, it is hard to drive investors to purchase stock in your company.

Although not easy, focused leadership can sustain a company's commitment to data privacy and stewardship. In this context directors and officers need to understand the following three things:

- As with other global enterprise environmental, social, and corporate government (ESG) issues that present both risks and opportunities, data privacy and security require board-level focus.
- Global legislators and regulators should align with best practices to promote business and consumer interests and create uniformity in legal requirements.
- Data privacy and security require partnership and leadership among government entities, consumer groups, and industry experts to develop global strategies on how to manage through our fourth revolution – digitalization.

Chapter 6: Board-Level Cyber, Privacy, and Data Risk Governance

As today's explosive headlines make clear, privacy and cybersecurity have moved beyond IT and legal compliance issues. They are now essential ESG benchmarks vitally affecting market caps and shareholder values.

At a high level, data privacy concerns the personal information companies collect, use, and share and how they communicate about their practices. Cybersecurity, on the other hand, concerns what companies do to protect personal and business critical-data and maintain resilience. Currently, there are over 160 countries with data protection laws. Beyond the legal landscape, privacy and cybersecurity impact the bottom line in a big way

In 2021, the FTC published "Corporate Boards: Don't Underestimate Your Role in Data Security Oversight." The document called for boards to "build a team of stakeholders" who can "bring a different perspective to the issues." In addition to cybersecurity issues, privacy has also been a focus for regulators. In the current environment of looming legal requirements on the horizon, US shareholder derivative litigation risks, heightened global criminal and geopolitical cyber risks, and global regulatory director guidance, boards should consider the following five steps to anticipate privacy and cyber issues:

- Ensure that adequate privacy and cyber competence exist in the boardroom either through board appointments or third-party advisors.
- Execute a board-level risk strategy for data risk governance and resilience.
- Contextualize cyber risk to financial exposure.
- Ensure the board is educated enough to meaningfully participate in data strategy.
- Look at the bigger picture. Technological innovation is bringing about a Fourth Industrial Revolution. By leveraging data effectively, companies can be the disrupters rather than the disrupted.

Chapter 7: Four Ways That Strategy Can Enhance Your Revenue by Billions

You already know that Gen. Z is the first generation to be born into a digital-first world. This is the largest generation in the United States and is already responsible for \$360 billion

Every company is as good as its last hire.

in consumer spending. From a company's perspective, these trends represent 360 billion reasons to adopt a targeted data strategy. The top ways that a data strategy can enhance your revenue by billions are by offering the following:

- Heightened awareness of demand. As discussed, a data strategy will allow you to understand your customers better and know what they want. This can be as simple as understanding a niche. Take the example of RewardStyle, a multibillion-dollar business that got its start over a decade ago when an entrepreneur decided to build an API (application programming interface) to organize a referral network for social influencers in the luxury market.
- Targeted communications with customers. A targeted message that responds to consumer demand is one of the easiest ways to have an impact. AI will permit companies to gather more feedback at scale from customers. Savvy companies will create a continuous feedback loop to expand everything from product development to recruiting the best talent to address customer demand.
- Focused product development. Armed with information from both within and outside the company, products can be developed that are targeted to the company's optimal growth. Sources of valuable product improvement information can include business intelligence research, social listening, consumer complaints and comments expressed to the help desk, website contact us portals, and customer care departments.
- Strategic hiring advantage. Every company is as good as its last hire. Developing a workforce that is innovative, metrics-driven, and focused depends much on your digital strategy to attract the best and make sure that your digital brand presence matches the innovation within your company.

Chapter 8: Ask These Questions to Develop a Digital Strategy and Value Your Data

By now you've understood that your data has value, even

though standard accounting practices do not generally allow such holdings to be put on the books. How can we solve this dilemma? While the Financial Accounting Standards Board is currently considering methods to include such nonstandard asset valuation, there are still steps you as a company leader can take to value your data and develop and execute a strategy that optimizes value. Asking the following four key questions will set you on the right course:

- What data do you need, and what is the value of your data?
- What is the data?
- Who in the company is responsible for the data?
- What teams should collaborate to best leverage the data?

Arriving at a valuation of your data takes attention to and understanding of what data you have overall. Comparing the data you have with the goals and mission of your company will reveal quickly which data is worth keeping and which should be divested. Once you establish which data is critical to the growth of your business, you should assign a value to it. Partnering with the valuation expert and the right business units in your company can help you arrive at a line item to value your data, taking it from a pre-tangible asset to a concrete one that can be followed at every board meeting. Here are the four important questions to consider when developing a digital strategy:

- Where is your data? Once you've aligned your mission with the data that is necessary to achieve it, you will want to know whether you have the data, or you need to acquire it in some other way (for example M&A or buying the data from a third party). You will also want to ensure that your data teams understand where the data resides.
- Who is responsible? As a CEO or board member, you need to know who in the company has responsibility for the critical data of the company.
- Who should collaborate? Many companies have several people who have responsibility for data in the company. Their titles might include chief data officer, chief data strategy officer, chief innovation officer, chief privacy officer, chief information security officer, and increasingly, chief trust officer.

Chapter 9: Artificial Intelligence: The Future is Now

Artificial intelligence is the future, and the future is now. In fact, if you are just now addressing AI and its impact, you are already behind. The key to the success and acceptance of AI is trust. Business leaders must understand the specific ways in which regulators, community groups, and legislators are thinking about the issue of trust in AI. Here's a list of priorities to address AI risk- and earn and keep the trust of their stakeholders:

- Human oversight is key to AI success.
- Accuracy and cybersecurity will be important to protect the integrity of the data that's collected for the AI as well as the algorithm output. Attention should be paid to the integrity of the data that is used to train models.
- Processes should be in place for testing and monitoring algorithms before they are put into the wild for general consumption.
- Large technology companies that create generative or other AI offerings as a service must take care to conduct an antitrust analysis.
- Make sure to update testing and verify accuracy even after routine changes have been made to systems such as operating systems or software changes.
- Ensure that a diverse team works on the development of the algorithms, training of the data, and the decisions about what data should be used to train models.

The regulatory landscape related to data protection, privacy, and AI can be a dizzying amalgamation of laws and policies. These regulations vary from country to country and even from state to state. But no corporation can afford to ignore the issues of data protection and privacy in the development of AI. It is not enough to have some policies. Data must be protected as a valuable asset – one whose safekeeping and integrity must be paramount.

Chapter 10: Take Charge and Lead: Seven Keys to Implementing Data Strategy in Your Company

CEOs and board members should consider data as a key element for strategy. But all of this doesn't mean you need to reinvent the wheel. You can still use the principles you already have in your wheelhouse for every other asset of your company.

- Leverage your data assets. Figure out what data is necessary to implement the company's long-term and short-term strategic plans.
- Build with your data. Ask how your business can grow through the strategic use of data, such as growing a sales and marketing strategy that is smart about data.
- Sustain your growth with your data. Use AI tools like machine learning to understand your business better and know what is working well and what can be improved in the future.
- "Inventory" your data. As with any other asset, you need to know what you have. This will place you in the best position for the future as well as eliminate inefficiencies and prevent different parts of the company from acquiring the same data.
- Protect your data assets. You should not delegate your data asset protection solely to the CISO. Just as the C-suite gets reports about other critical assets of the company, so should those at the top be aware of your data strategy.
- Insure your data assets. Review your insurance portfolio to ensure that it covers your data: how you collect it, use it, and store it.
- Avoid illegal data activity. You would never think of putting your company's most valuable product at risk by failing to pay attention to legal requirements.

Chapter 11: Leading with a Legally Compliant Data Transformation Program

Companies across the globe would do well to develop a top-line compliance strategy to ensure substantial compliance in the jurisdictions that they care about. Here are the six phases that will be critical to your compliance program:

Phase 1: Data Privacy/AI and Cyber Leadership

It's vital to have a task force comprising a chief data officer, privacy and data security officer, AI engineers, and relevant stakeholders to create rules for data collection that are synergistic with legal and technical requirements in the company.

Phase 2: Conduct a Legally Compliant Inventory

This can help enhance digitization models and compliance

with myriad privacy and data security laws and best practices.

Phase 3: Legal Gap Assessment

Gap assessments are critical to creating a compliant organization. They should be tied to legal assessments to compare actual practices with legal requirements, and ethical best practices.

Phase 4: Impact Assessment for High-Risk Processing

Businesses should consult with experienced legal counsel to develop a template impact assessment form for high-risk processing such as financial, location, and health data.

Phase 5: Mitigation of Risks Assessed in Phases 3-4 with Targeted Policies

The company should retain an experienced privacy council regarding tools to help mitigate risks. These will include establishing ethical data practices with legal requirements for AI, privacy, and cyber, internal governance policies, external notices for privacy and AI, litigation defense playbooks, and more.

Phase 6: Auditable Record

An auditable record can be assessed annually or throughout the year when new processes or procedures are introduced. This record can be refreshed easily by using the templates established in phases one through five.

nical wizard to lead change. You need to be aware of the issues, ask the right questions, and ensure you have the best leaders for this brave, new data-laden world.

Conclusion

Because all companies are data companies, you are the leader of a data company. You do not need to be a tech-



Dominique Shelton Leipzig is a Mayer Brown Privacy & Cybersecurity Partner. Leading Global Data Innovation, she counsels CEOs and Board Members on smart digital governance. She has trained 50,000+ professionals in AI, privacy and cyber. For decades, Dominique has studied legal trends to accurately forecast digital risks and opportunities. Companies with a collective market cap of 3 trillion USD have benefited from her insights. Her articles include a Financial Times op-ed concerning cross-border transfers, that the White House adopted. She founded the Digital Trust Summit for leaders to reimagine effective data oversight.

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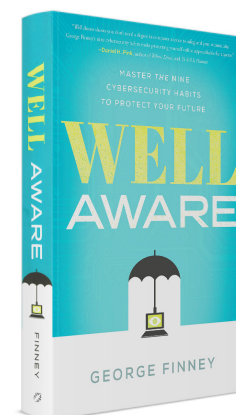
Well Aware

George Finney

Well Aware

Master the Nine Cybersecurity Habits
to Protect Your Future

by **George Finney**



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THE SUMMARY IN BRIEF

Close your eyes and think of the word *cybersecurity*. Nine out of ten people think of something like a dark room with a number of computers with blinking screens, someone in a hoodie or a mask, trying to scramble through some code as if stealing something. But cybersecurity is about so much more than this. It requires nine powerful pillars that won't just make your organization more secure, but will also help you be a better leader and community.

Each of the nine cybersecurity habits found in *Well Aware* builds on the previous one to form a shield you can use to protect yourself, your organization, or your community. The internet is always evolving, so to stay literate, you must continually relearn your environment. And you must understand the best way to educate yourself, your family, or your business. Effective security requires a level of deception without giving up on the community and culture that matter most.

IN THIS SUMMARY, YOU WILL LEARN:

- How to build a comprehensive approach to cybersecurity that incorporates and build on the main pillars of effective security.
- How leadership plays an essential role in cybersecurity and in success generally within your organization or community.
- How security literacy, skepticism, vigilance, and secrecy are critical to cybersecurity.
- The role that community, culture, mirroring, and deception have to play in building a robust cybersecurity plan.

Introduction

An element of security involves understanding your environment. This involves continuous learning. Being a skeptic is also important, as it means not trusting something until you've established its credibility, which also requires patience. Vigilance is a state of mind that's about keeping watch so that when you see something, you are ready to recognize it and act.

Secrecy is the natural barrier between that which is public and that which is private. But security and secrecy controls in and of themselves are not enough for protection. Once you've developed security routines, you need to have a plan for orchestrating how those routines work together. When groups of people form, norms are established. You need help to be secure. We work together to solve problems. We share information to protect others and unite in a common defense.

When a company experiences a breach due to a failure of the human element, it's because one or more of these layers of the shield was weak or missing. These nine habits are just as relevant for the programmer coding the next great app as they are for the soccer mom who just wants to protect her kids online. They are just as relevant for the former law enforcement computer forensics investigator as they are for the business executive who is moving his organization into the digital age.

Security is not a technology problem. Sometimes, people make the mistake of believing technology is the most important part of any security program. It isn't. People are the most important part. People use the technology, and people create and implement the processes. To be successful, you can't simply be reactive to threats in your environment. You must identify and proactively change the behaviors that most commonly lead to security challenges before you've been hacked or breached. The result is that you'll be able to use these habits to make your own organization both more secure and more successful.

If you can master the pillars presented in this book, you'll be able to protect the future of yourself and your community.

Literacy

An element of security involves understanding your environment. This involves continuous learning. You need to know how your alarm system works, how to set privacy settings, and what kinds of scams to be on the lookout for.

Literacy also means being aware and making informed decisions.

We don't need to think about security all the time. Instead, we need to have just-in-time security. We must be able to recognize when security issues have come up or are about to come up, and we need to be able to do something about those issues. This process aligns with the definition of literacy.

If being literate means recognizing the words on the page, then having cybersecurity literacy means recognizing potential threats. You may need to have experience to know what to do or how to respond, but maybe you'll just need to Google the answer. The habit of cybersecurity literacy means you have the foundation necessary for seeking sources to find answers and solve challenges.

Skepticism

Missouri calls itself the "Show Me State" because residents won't believe anything unless they see it with their own eyes. Being a skeptic means not trusting something until you've established its credibility, which also requires patience.

We must all be willing to stand up and be 'no men' and women, and it may even help us be more successful in our careers. Still, it's one thing to be skeptical and speak up if the situation calls for it. But when it comes to security, one of the most commonly expressed feelings is that people should be skeptical all the time at the same high level of intensity. But humans should bring the right amount of skepticism with them based on what the situation calls for—no more and no less. This is the habit known as vigilance.

Vigilance

Vigilance is a state of mind that's about keeping watch so that when you see something, you are ready to recognize it and act. Monitoring server logs and reviewing physical access records are great examples of this. Vigilance is a kind of directed skepticism toward specific threats.

One of the first questions leaders ask during an incident is, "Who is this attack coming from?" Often, cybersecurity practitioners don't have the answer to that question. When they do, it often leads to tripled security budgets. But not everyone has that option. Still, whether you have an unlimited budget or no funding at all, the most common path that everyone takes is to start with matters to you or to your organization.

As leaders, our job is proving to our employees how good they already are, how good they can become, and how much capacity they have for being great.

Secrecy

Secrecy is the natural barrier between that which is public and that which is private. This barrier is a healthy part of every human experience. It is so integral to our society that it is a guaranteed protection in the US Constitution's Bill of Rights. The controls we use to protect ourselves are dictated by the nature of the secrets that require protection.

But with secrecy comes a delicate balancing act: Where that barrier falls can change depending on what the secret is. The government might classify one piece of information as top secret, while another piece might only be confidential, and others might be public. This approach has the benefit of focusing your protections on the highest levels of secrecy while also allowing individuals inside the organization to freely communicate about less secret information, facilitating collaboration and increasing productivity. Still, if you have something people think is particularly valuable, you should expect that they will try and steal it.

Culture

Security controls in and of themselves are not enough for protection. When groups of people form, norms are established. Sometimes, these norms are antithetical to security. In these cases, one person changing their behavior won't change the whole company. A culture of cybersecurity embraced at all levels of a company, government, or community is needed.

Cybersecurity culture is only one facet of an organization's overall culture; it must be considered part of a larger whole before it can change. For example, a company may have a high-pressure culture where employees are expected to respond to an email instantly. What hope is there that they'll identify and respond to red flags and phishing messages if this culture is in place? On the other hand, what if the industry or the job is so competitive that changing that aspect of the culture would mean going out of business? Cybersecurity culture should be tightly integrated into company culture as a whole, and the way they interact must be understood.

Diligence

Once you've developed security routines, you need to have a plan for orchestrating how those routines work together. After you've experienced an incident, you must have plans and protocols for handling the way you respond.

Diligence is the habit of taking time to think. When we practice cybersecurity diligence, we plan for what to do when something goes wrong. We prepare for many kinds of events depending on who we are and what we're trying to protect, which requires that we understand secrecy and we know what controls we can put in place to protect ourselves. Cybersecurity diligence includes having a plan in place that we revise when necessary, learning from our mistakes, implementing the right kind of training, and being proactive. When we are diligent about cybersecurity, we take the time to think.

Community

You need help to be secure. We work together to solve problems. We share information to protect others and unite in a common defense. We must look for help not just from law enforcement or inside our companies but from peers in our industry or in similar roles across industries.

What if our job as leaders isn't to coerce our employees into blindly complying with the policies we write for them but creating experiences where they develop the confidence to set their talents free and pursue their potential? As leaders, our job is proving to our employees how good they already are, how good they can become, and how much capacity they have for being great. The foundation that this potential for success is built on is a community of people willing to work together for their mutual protection. This approach requires us to create a culture of cooperation, where it's okay to tell our stories, where we're not shamed for making mistakes, and where we can ask questions if we're not sure what to do. That's the power of a community.

Mirroring

An element of curiosity is involved in mirroring. You want

to be able to see yourself and what you look like from someone else's perspective. Penetration testing is this habit put into practice, but so is looking at your social media profiles from different perspectives or googling your own name.

As you participate in a community, you need to practice mirroring both for yourself and for the communities you are a part of. You'll need to understand what information you may be inadvertently leaking and, through mirroring, change it. You'll play a role in helping your community see itself and improve as well. Ultimately, however, not every leak can be patched. Some doors must stay open for good reasons. The previous habits discussed in this book have shown you how to protect those open doors. We should expect, however, that some small fraction of the people that walk through those open doors will come with knowledge, the ability to evade our defenses, and the intent to do harm. This leads to the final and perhaps most controversial habit: deception.

Deception

Have you ever seen a movie where someone asks a question like, "Do you know Captain Harris?" When the person answers, "Yes, of course!" you know they're lying because Captain Harris doesn't exist. You might create 'lies' in cybersecurity that you use for common password challenge questions. Or you might set up a 'honeypot,' or a security mechanism on your internal network to alert you if anyone accesses it. Deception can be both a preventative and detective habit.

Practicing a handful of deceptive techniques like decoys, breadcrumbs, or watermarking can help you protect yourself and your communities when no other security habit can. This explains why police selectively leak clues to the press to identify imposters. Deception can be an important

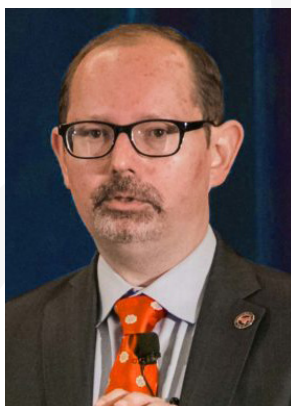
tool in your arsenal of cybersecurity habits, but it should be used with caution and should only be used as a supplement to all of the other habits.

Deception is not a replacement for the other habits; it complements them. Deception helps you know your adversary and allows you, assuming you've mastered all nine cybersecurity habits, to engage them on terrain where you have the advantage.

Conclusion

Having read this book makes you part of a community. / community is the most important of the nine habits. A security community is a collaboration between a league of community members to protect their common interests. Because security requires a community, and communities arrange themselves in hierarchies, different relationships tend to form with different security implications.

The changes you make in your security will have an impact on all the members of your community, and when they also begin to change, there will be a multiplier effect as small improvements ripple through your shared community. The requirements for this are communication and trust, even if only within a small inner circle. The more openly you discuss security, the greater the impact you will make.



George Finney is the CSO for SMU in Dallas, Texas and is the author of the book, *Well Aware: Master the Nine Cybersecurity Habits to Protect Your Future*. Finney is a CSO that believes that people are the key to solving our cybersecurity challenges. As a part of his passion for education, George has taught cybersecurity at Southern Methodist University and is the author of several cybersecurity books. Finney is an attorney and is a Certified Information Privacy Professional as well as a Certified Information Security Systems Professional and has spoken on Cybersecurity topics across the country.

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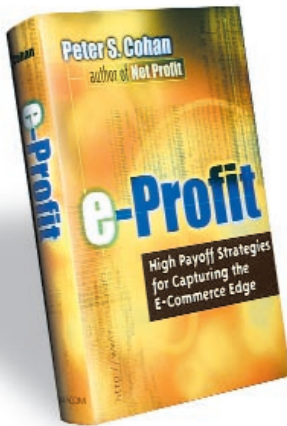
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e-Profit

Peter S. Cohan

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FILE: STRATEGIC MANAGEMENT



By Peter S. Cohan

High Payoff Strategies for Capturing the E-Commerce Edge

e-PROFIT

THE SUMMARY IN BRIEF

The numbers don't lie. There was \$74 billion worth of electronic commerce conducted in 1998, a figure that many experts expect to balloon to \$1.2 trillion by 2002. Despite such extraordinary forecasts (or, perhaps, because of them), many managers tend to maintain a high degree of skepticism about the role of e-commerce in our economy, and, subsequently, about the role it is taking in their businesses.

In *e-Profit: High Payoff Strategies for Capturing the E-Commerce Edge*, Peter S. Cohan addresses both skeptics and believers, offering tips and tactics that allow you to first identify the areas of your business processes that can be transformed by e-commerce technology, then create and implement a plan to make the technology work for you. Using such disparate companies as Amazon.com, Merrill Lynch, Toronto Hospital, Astoria Financial, and others, Cohan addresses the following topics and more:

- **How to identify and create high-payoff opportunities for e-commerce in your company.**
- **How to evaluate your organization's process-related needs that e-commerce can streamline and improve.**
- **How to use e-commerce to create competitive advantage for your organization.**
- **How to get hesitant senior managers involved in e-strategy and implementation.**
- **How to build an e-commerce infrastructure, from designing the architecture to evaluating suppliers, negotiating deals, and managing implementation.**

Whether you're just starting out with a Web site or need to improve what you already have, you likely face a mountain of questions every day, dealing with issues ranging from managing e-commerce projects to resolving organizational resistance to avoiding false starts and wrong turns on the road to e-business success. These are all valid questions, ones that businesses across a wide swath of industries and markets are addressing along with you.

The answers are just a page away ...



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— THE COMPLETE SUMMARY

Evidence on High Payoff

People who need proof of the high value of properly implemented Internet solutions need look no further than Cisco Systems, whose Cisco Connection Online (CCO) has helped the company generate over 80 percent of its sales, or some \$12 billion in revenue — easily one of the most successful e-commerce payoffs ever.

CCO is a Web site that performs two primary functions for Cisco's customers: It lets them find online solutions to their technical problems with Cisco products and it lets customers place and track the progress of orders for network equipment. A system started by mid-level managers, CCO has allowed Cisco to use the

Internet to solve basic and complex business problems, from selling branded souvenir items like golf tees, to changing the entire way network services are marketed and distributed.

Perhaps the system's greatest achievement is the manner with which it gives customers the tools to configure network solutions over the Internet, allowing them to pick the correct components and troubleshoot any potential problems electronically. Resellers use CCO because it allows them to take quick delivery of equipment and perform their jobs much more efficiently. As a result, Cisco has been able to reduce its staff in several key areas (such as order processing) and increase its e-commerce-related revenues some 315 percent per year.

From its humble beginnings as a tool to solve basic problems to its status as the shining star of its company's e-commerce strategy, CCO illustrates the high payoffs that are possible when companies engage in a series of tightly budgeted experiments targeted at solving discreet business problems. Indeed, the highest-payoff e-commerce applications share a number of characteristics:

- **Management has created an environment that encourages people at all levels to engage in frugal experimentation.**
- **Management has placed enhanced customer satisfaction at the top of the corporate hierarchy of values.**
- **Management has encouraged an effective working partnership between IT and business units.**
- **Managers have thought in nontraditional ways to conceive effective e-commerce applications.**
- **Management recognizes that experiments in e-commerce require less rigorous upfront analysis.**

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Avoiding Low-Payoff E-Commerce Applications

Here are three important pitfalls that contribute to the failure of e-commerce initiatives and how you can avoid them:

1. Avoid investing in e-commerce initiatives where the vision for the technology is clearer than the economic benefit to participants. Make sure all of your channel partners get involved in your e-commerce project, from conception to implementation. Incorporate their goals, as well as yours, into the solution, to avoid creating an inadvertent state of competition between channels.

2. Avoid the deployment of untested e-commerce technologies. Your organization does not have to be a guinea pig just to implement the latest in e-commerce innovation. Make certain your systems are rigorously tested in a simulated production environment before you deploy them.

3. Avoid skimping on communication, training and adjustments to your compensation system that are inherent in a new e-commerce application. Just as reengineering a process involves radical rethinking of how an organization works, so does e-commerce involve fundamental changes in the way work is done — an "e-engineering." Develop a clear plan for communicating and training the people who will facilitate the e-engineered work process, making explicit any changes to jobs, compensation and other key considerations.

The author: Peter S. Cohan is president of Peter S. Cohan & Associates, a management consulting firm. Author of *Net Profit* and *The Technology Leaders*, Cohan previously worked for The Monitor Company, a consultancy founded by Michael Porter.

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Evidence on High Payoff

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- **Management adopts a pioneering spirit in its e-commerce efforts.**
 - **The company generates their e-commerce applications effectively by understanding the significant sources of organizational and customer pain.**
 - **The company integrates and rigorously tests the front- and back-end systems before an e-commerce application goes live.**
 - **The company aggressively markets their e-commerce application, to reach a critical mass. ■**
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Your E-Commerce Evaluation in Seven Steps

One major part of your e-commerce implementation plan is to discern the costs and benefits of proposed e-commerce projects. A rigorous evaluation of those costs allows you to gain a thorough understanding of not only the concrete financial effect of the proposed e-commerce project, but also its intangible risks and benefits — disconnects in control and audit security, for example — allowing you to alter your plan to address these issues.

Here is a seven-step process you can follow to conduct an e-engineering project financial analysis:

1. Diagram your current business process. You must understand how an e-commerce project will enhance your company's cash flows, in order to truly assess the value of the project. Create a cross-departmental team that can diagram the specific steps in the process from its beginning in one department to its conclusion, however many organizations later. Select a mapping methodology that helps identify how specific processes act on information and documents at different levels of the organization, pinpointing disconnects and opportunities for improvement.

2. Measure the time and cost of your current process. Once the current process is mapped, measure the time and cost of the current process by interviewing pertinent managers and workers and accessing relevant records to identify the fully loaded annual cost of doing business. In completing this step, you are developing baseline statistics for the current process' operating and financial performances. Indeed, when Steps 1 and 2 are complete, you will have a baseline against which you can compare the costs and benefits of an e-commerce project.

3. Map out the e-engineered process. Develop a map that shows where Internet technology can be used to improve your process — how information will be collected, how it will be shared, and how your customers

will ultimately be able to accomplish their objectives. Compare this map to the map you created for your current business processes and note the significance of the process improvements outlined in the new plan.

4. Estimate the time and cost of the e-engineered process. Quantify the ways in which the new process enables you and your customers to accomplish more without human intervention. Employ the same measuring technique you used in Step 2.

5. Develop a plan for the e-engineering project. Create an implementation plan for your e-engineering project, including the significant project phases from concept development to system testing and installation. Also, estimate the amount of time that internal and external project participants will devote to each action step, and the expenses incurred with each activity.

6. Calculate the cost of the e-engineering project. Convert the time estimates in each phase of the plan to specific costs — for example, the time of internal and external resources, additional hardware, software, etc.

7. Prepare an integrated cash-flow analysis of the e-engineering project. While each potential e-commerce project will have unique elements, the sources and uses of cash from the proposed project will likely fall into four categories:

- **Incremental cash inflows from additional revenues.**
- **Incremental cash inflows from reduced costs.**
- **Incremental cash outflows for building the e-commerce system.**
- **Incremental cash outflows for operating the new system.**

Calculate the net-present value of the project, discounting the net cash flows in each year of the project by the appropriate annuity discount factor, to account for the risk of the project and the timing of the cash flow. ■

Amazon vs. B&N: Competitive Advantage through E-Commerce

It's too early to tell whether e-commerce produces sustainable competitive advantage; while it has utterly transformed some industries, in others it has barely made a dent.

One industry that definitely falls into the former category is retail bookselling, in which the primary e-role-player is Amazon.com. One measure of the company's impact is that two years from the date of its initial public offering, the company's stock market capitalization was over six times that of its two biggest brick-and-mortar

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Amazon vs. B&N: Competitive Advantage through E-Commerce

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competitors, Barnes & Noble and Borders, combined.

Amazon.com's success is the result of the cumulative effect of many sources of competitive advantage, including the following:

- **Warehouse locations.** Amazon.com's founder, Jeff Bezos, felt that the company should own its own warehouses, so that it could maintain quality control over the packaging and shipping of orders. He headquartered the company in Seattle, to be in close proximity to one of the distribution facilities of Ingram, Amazon.com's largest book supplier, and also maintains warehouses in Delaware and Reno, Nevada.

- **Enhancing customers' experiences.** Bezos altered the Web site to make it easy to understand, streamlining the order process and responding immediately to each customer question. He also made certain the site's search capabilities were top-notch.

- **Hiring.** Bezos' motto for hiring was that every time his company hired a new employee, he or she should raise the bar for the next hire, so that the overall talent pool constantly improves.

- **Frugality.** Amazon.com is loath to spend money on things that do not add value. For example, Bezos has desks made from doors — the wood and brackets cost around \$70, and the labor is about \$60. True to form, Bezos made the first four himself; he now hires carpenters to come in and build them 70 at a time.

- **Corporate development.** Bezos looks for ideas everywhere — on other Web sites, from his employees,

from other companies, and so forth. He has expanded his company's offerings from books to CDs to just about any other consumer retail product imaginable, and he has, through acquisitions, accumulated the technology to continue personalizing each customer's shopping experience with every sale.

- **Time management.** Bezos and his top executives recognize time as a strategic resource that must be managed. He conducts quarterly analyses of his calendar, and makes changes as needed to better address competitive issues.

The Competitive Response

Barnes & Noble has taken two significant countermeasures to compete against Amazon.com:

- It established its own Web site, bn.com — a separate legal entity from the privately held B&N that was taken public in June 1999.

- It announced its intention to purchase Ingram, Amazon.com's book wholesaler, in 1998, directly threatening Amazon.com's supply lines. The Federal Trade Commission balked at the deal, but B&N had gotten their upstart competitor's attention.

Ultimately, however, the winner of the battle between Amazon.com and Barnes & Noble will be the one who understands that the customer experience on the Internet is what matters most — word of mouth is, in its way, more powerful than any monetary investment. ■

Getting Senior Management Online

In general, senior executives are cautious about e-commerce in the short run, but more optimistic about its potential to enhance the company's long-term value. Part of their initial hesitation stems from a general lack of sophistication regarding the Internet and technology in general. Research indicates that CEO attitudes toward e-commerce depend chiefly on two factors:

1. *How much e-commerce can potentially change the structure of the industry or the company's relative position.* What actual strategic impact the Internet will have on the CEO's market or industry is an important determinant of the CEO's response to e-commerce technology.

2. *How comfortable the CEO is with the Internet.* Has the CEO gone online to send e-mail, buy books, or do research? Does he/she recognize the impact the Web can have on competitive advantage?

The combination of these two factors determines the CEO's attitude toward e-commerce in four distinct ways:

- **High Strategic Impact/High CEO Comfort.** The

How Do You Use the Internet to Create Competitive Advantage?

1. Form an e-commerce strategy team.
2. Study customer needs.
3. Analyze e-commerce strategies of current and potential competitors.
4. Identify capabilities needed to provide superior customer value.
5. Perform a strategic audit of capabilities needed to provide superior customer value.
6. Envision e-commerce strategic options, such as using the Web to sell products, provide customer service, or interact with employees.
7. Evaluate your strategic options.
8. Select the optimal strategy.
9. Implement your strategy.

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Framework for assessing CEO's attitude toward e-commerce

Strategic Impact of E-Commerce	High	More Aggressively	Experiment
	Low	Be Creative	Ignore
		High	Low
		CEO Comfort with the Internet	

Getting Senior Management Online

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CEO is likely to move aggressively to conceive and implement the use of the Internet to improve the company's competitive position and financial performance.

- **High Strategic Impact/Low CEO Comfort.** The CEO may dabble with the Internet, experimenting with it by setting up a separate subsidiary that does e-commerce or asking a smaller group of employees to investigate the Web on a small scale.

- **Low Strategic Impact/High CEO Comfort.** The CEO is likely to try to conceive of a way that he/she can use the Internet to transform the industry. Depending on that industry, this move could be a successful breakthrough, or a resource-sapping bomb.

- **Low Strategic Impact/Low CEO Comfort.** The CEO will likely stay away from the Internet altogether. If the Web doesn't transform everything, this is a smart move; if it does, the CEO must take the blame for striking an ineffective posture. ■

Engaging the CEO in E-Strategy

If your CEO is comfortable with the Internet, here is a four-step process to engage your CEO in strategy to move your company's e-commerce initiative forward:

1. **Identify an Internet-only competitor that is growing rapidly in your market.** While some CEOs may tend to dismiss the importance of small, new competitors as if they were gnats, others understand history and the potential for such small competitors to come out of nowhere and dominate an industry. Microsoft CEO Bill Gates thought little of Netscape's Web browser until he recognized how hard the upstart could impact his company's business.

To Be or Not to Be Aggressive: A Study in Contrasts

The Aggressive Mover

Despite its limited capital resources, Kosher Grocer, Inc. (an online retailer whose only employees are its two founders) moved aggressively to incorporate the Internet into their business, with effective results. The company hired an Intel/SAP joint venture, Pandesic, to host its entire computer system, from its e-commerce catalog and transaction processing system to back-end fulfillment and accounting functions. Without sinking too much capital into the infrastructure needed to deploy its selected e-commerce solution, Kosher Grocer was able to generate tremendous value for customers for a reasonable amount of overhead.

The "Ignore" Approach

Astoria Financial's CEO, George L. Engelke, has no computer in his office, does not like voice mail, and has absolutely no interest in the Internet. He says his work is unrelated to opening accounts or processing mortgages; he sees himself more as a devil's advocate when it comes to matters of technology.

It is debatable whether Engelke understands the Internet is not right for his company, or if he's simply too old to change his ways. By the time he retires, though, he may face a dire decision — either his company will adapt to e-mortgages or perish.

2. **Study the most dangerous Internet-only competitor's management and strategy.** You must conduct research that will reveal key information about the Internet-only competitor, such as what customer needs they meet, what advantages they have over you, and where they are vulnerable.

3. **Set up teams to "war game" your competition with the Internet-only competitor.** Set up two executive teams — one to plot your strategy against the Internet-only competitor, and the other to plot the competitor's strategy against you. Present each team's case to your CEO, and allow him or her to determine whether your organization's assumptions about your competitor were correct.

4. **Create a new e-strategy for your company based on the insights from the "war gaming" effort.** Work with the CEO to develop a plan to engage the marketplace with an e-commerce initiative. You may need to create a separate business unit dedicated to developing an e-strategy to block the growth of the competitor. ■

Managing and Sustaining E-Commerce-Induced Change

How do you manage e-commerce-induced change? Here are some guidelines:

1. Determine whether senior management must be educated about the Internet's potential impact. Until senior management is on board, there is no use in attempting to change your organization to accommodate e-commerce. Merrill Lynch, for example, was dragged into the world of online trading — it announced that it was entering the field before it even had worked out a mechanism to do so. Much of this hesitancy was a result of Merrill's senior executives' initial reluctance to embrace the Web as a tool for trading. When the company's brokers started losing business to online trading houses, management finally came around.

2. Tailor senior management's education to their specific needs. Get senior management online to conduct such basic activities as e-mail, checking stock prices and researching competitors. From there, senior managers can appreciate the power of the Internet, then be driven to learn about how the Web can transform business models and create competitive advantage.

3. Senior management must develop a vision for how e-commerce will change the business. Management must create a clear vision for e-commerce and develop it in tandem with those who implement that vision. Merrill Lynch's online trading endeavor was saved and advanced by Vice Chairman Launney Steffens, who developed his solid strategy only after soliciting input from brokers and customers.

4. Implement the vision as a series of experiments. Think through key issues ahead of time, then put an experimental "best guess" online quickly, altering and maintaining your online presence as your market evolves.

5. Communicate the vision to employees and customers. Let employees work with a prototype, both to acclimate them to your endeavor and to help you troubleshoot it. Likewise, engage customers with your e-commerce entity, solicit their feedback and demand that employees draft effective responses to that feedback.

Sustaining Change

Once you have led your company into the new Internet frontier, you must effectively adapt to and sustain that change in the face of increasing competition and increasingly demanding customers. There are six essential principals for accomplishing this most daunting of tasks:

● **Develop new services and products in close conjunction with customers.** Do not create new products

in a vacuum and expect customers to be ecstatic with what you come up with. Work closely with your most innovative customers to test your prototypes and collaboratively develop new products and services — ones with a built-in audience.

● **Go outside for new technologies and products, if your customers demand them.** Sometimes, you cannot develop new products and services quickly enough to meet customer demands. When this happens you must obtain the expertise or extra hands you need to get the job done, whether by corporate acquisition, outsourcing, or forming other partnerships.

● **Get the best talent available.** The most valuable e-commerce-centric companies have very few tangible assets, but are brimming over with intangibles. One of those intangible assets is talent — companies must, in order to sustain change, have a stable of very smart people who can anticipate change and react to it quickly.

● **Be objectively self-critical.** The most successful, change-sustaining companies encourage fact-based self-criticism. Microsoft's software development teams can look forward to a 100-page memo from their project managers at the end of a project, criticizing everything that went wrong (the memo is distributed to everyone on the project team and to Bill Gates). While it may seem extreme, this self-criticism has led to product improvements and a more rigorous methodology for incorporating customer input in the development of those products.

● **Tie employee compensation to service improvements.** Delivering customer satisfaction and shareholder value is imperative to long-term success in your e-commerce endeavor. Create a compensation system that rewards improvements in both areas, measured by customer satisfaction surveys and share price, respectively. Such a system rewards sustained change by encouraging employees to develop new ways to make customers happier. ■

Building an E-Commerce Infrastructure

Senior management's role in crafting a company's e-commerce architecture depends to a large extent on how dependent the business will be on the effective operation of the e-commerce-enabling technology.

If the business is not heavily dependent on reading e-commerce, the e-commerce architecture is important only to the extent that its failure will potentially anger a relatively small number of customers.

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Building an E-Commerce Infrastructure

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If the business relies heavily on e-commerce, senior management must be actively involved in setting the vision for the endeavor, establishing the performance standards for the system, and ensuring the organization has the resources required to satisfy those standards as the system grows. Those standards include cost-effectiveness, integratability, scalability, ease of end-use and supplier participation.

Designing the Architecture

Charles Schwab's co-CEO, David S. Pottruck, believes it is impossible to lead his company if he is not conversant and comfortable with Internet technology. He spearheaded the company's foray into online training, and before most of his competitors could point and click, Schwab had a significant portion of the online market cornered. Indeed, much of the credit for the fact that 80 or 90 percent of their trades now occur online (at a rate of 4 million transactions an hour) can be credited to the swift business decisions by top management.

It hasn't always been easy. In early 1999, the enormous increase in trading volume (from 617,000 in December 1996 to 1.2 million two years later) caused Schwab's trading system to fail twice, due to problems with its main computers. The company responded quickly, migrating from batch processing of trades to real-time processing on mainframe computers. When even that wasn't enough to meet demand, Schwab increased the percent of its annual revenue spent on information technology and made plans to add 32 new mainframes in a configuration that would act as one single computer. If one goes down, another will take over, with no downtime whatsoever.

The company's aggressive approach to system architecture has paid off — 2.7 million of the company's 6.0 million customers use their online trading service. The company's success helps illustrate the guiding principles of e-commerce architecture:

- **Senior management must set the vision.**

Schwab's top brass realized the importance of competing in the online trading market early and created the context in which the company developed its superior e-commerce technology.

- **Companies must match the architecture to the extent to which it embraces e-commerce.** Senior management must recognize where their companies stand in the spectrum of e-commerce architecture, and must match their architecture with their place in the spectrum.

- **Senior management must establish performance standards.** Just as Schwab's senior brass set (and, even-

tually, the company met) ambitious targets for ROI, uptime and other factors, so should your company's management set specific performance standards for system architecture. You don't have to pick the hardware and software, but you do need to make sure they help your organization provide superior customer value online.

- **Senior management must drive the company's compliance with performance standards.** Keep track of what competitors offer and how customer expectations change. Senior management must assure that e-commerce architecture evolves to keep the company at the head of the pack as its industry evolves.

- **Companies must build e-commerce capacity to anticipate rapid demand growth.** If your e-commerce architecture is not sufficiently robust to satisfy rapidly growing demand, your successes can actually lead to failures. Monitor your e-commerce demand and make realistic forecasts for future demand.

- **Companies must respond decisively to network interruptions.** While it is almost inevitable that you will experience network interruptions, you must have a plan on hand to address and correct those problems quickly and efficiently. Senior management must step in to cover reasonable losses customers incur as a result of that downtime. If you don't take responsibility for your failures, you will lose the loyalty of your customers. ■

Nine Steps to Evaluate E-Commerce Suppliers

There are nine essential steps to evaluate different e-commerce-related technologies, including hardware, software, and various consulting and network services:

1. **Create an interdisciplinary team for evaluating e-commerce suppliers.** General managers, information technology staff, financial staff, and others who have been involved in the e-commerce strategy/development process should be included.

2. **Agree on the specific, measurable business objectives that the e-commerce technology is intended to meet.** These should be measured in terms customers will consider important, such as system uptime, ease of use and speed of response.

3. **Translate the business objectives into a Request for Proposal (RFP).** The RFP should describe the most important things you want the e-commerce system to do for your business; they should, however, be general enough that you and the team will be able to measure how well prospective suppliers will perform on each requirement.

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Nine Steps to Evaluate E-Commerce Suppliers

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4. Identify between five and ten potential vendors who you expect will respond effectively to the RFP.

The list should be balanced between well-known vendors and start-ups that specialize in new technology.

5. Develop specific criteria for evaluating the suppliers. Translate your business objectives into a set of evaluation criteria you can use to evaluate suppliers.

6. Create tests to assess how well each supplier meets these evaluation criteria. Design and, when proposals are returned, vigorously execute tests based on your evaluation criteria. Frequently, external consultants prove excellent resources for this step.

7. Score each supplier on the evaluation criteria. Create decision matrices that array vendors against the evaluation criteria, and grade each supplier based on that criteria.

8. Rank the evaluation criteria in terms of their relative importance to meeting the e-commerce project objectives. Agree with the team on the relative importance of each evaluation criterion, and create a weighted grading system that gives higher marks to the most important criteria.

9. Choose the winning supplier based on the highest average score. Rank the suppliers in descending order of the weighted average score. The winning supplier is at the top of your list. ■

Negotiating Deals and Managing Implementation

Negotiating e-commerce purchasing contracts is an important management responsibility that can determine how effectively the vision for e-commerce is implemented. In order to conduct a successful negotiation, you must develop a clear vision for how the process will work and communicate that vision to the vendors and employees who will negotiate the contracts. Once the process is underway, it is essential that you develop an RFP that is both comprehensive and realistic, containing detailed proposal specifications, technical requirements and expected contract terms and conditions.

You must also communicate openly and frequently with the vendors who participate in the process, and develop a framework for assessment that contains quantifiable criteria such as cost, reliability, management capabilities and account support. Once you receive bids, you can compare the responses to that criteria, and

make firm, learned evaluations. When the winning bidder is identified, you can then review the vendor's processes, meet the people who will manage your account, and get everything (particularly performance measurements and compliance reporting) down on paper.

Managing Implementation

E-commerce's ability to create value for customers and shareholders depends heavily on how well executives manage implementation. You must address several key issues, including the elements of project management that are unique to e-commerce, and determine which project management principles work most effectively for your organization, in order to successfully implement an e-commerce solution. Finally, you must determine the methodology you will follow to successfully implement your e-commerce project.

In order to address these key factors, you must enact six crucial principles of successful e-commerce implementation:

1. Identify the capabilities needed to make the project successful. As technology becomes more sophisticated and scalable, e-commerce projects likewise demand a broad range of capabilities, including Java, HTML, and special ways to link these two technologies with back-end systems to fully integrate the online experience.

2. Analyze your organization's capability gap. Determine whether your organization's "homegrown" capabilities are sufficient to meet the challenges of e-commerce implementation, or if you must rent the capabilities needed for the project.

3. Outsource project help, when appropriate. If necessary, hire outside consultants with compelling track records and lots of experience.

4. Anticipate the effort of integrating back-end and front-end systems. Make sure your Web site's front-end interface links effectively to back-end fulfillment system, for superior customer value.

5. Fix the time and cost of the e-commerce development process. Be willing to commit the resources necessary to achieve deadlines and budgets that are sufficiently realistic so that fixed-price/fixed time contractors are willing to take on your project.

6. Be prepared to modify the e-commerce system after it goes into operation. Solicit e-mail feedback from customers and act on their input, solving problems quickly and adapting your e-commerce system to their changing needs and the equally changing strategies of your competitors. ■