



The  
**SPIDER'S  
STRATEGY**

*Creating Networks to Avert Crisis,  
Create Change,  
and Really Get Ahead*

AMIT S. MUKHERJEE

Vice President, Publisher: Tim Moore  
Associate Publisher and Director of Marketing: Amy Neidlinger  
Acquisitions Editor: Martha Cooley  
Editorial Assistant: Heather Luciano  
Operations Manager: Gina Kanouse  
Digital Marketing Manager: Julie Phifer  
Publicity Manager: Laura Czaja  
Assistant Marketing Manager: Megan Colvin  
Marketing Assistant: Brandon Smith  
Cover Designer: John Barnett  
Managing Editor: Kristy Hart  
Project Editor: Jovana San Nicolas-Shirley  
Copy Editor: Gayle Johnson  
Proofreader: Leslie Joseph  
Indexer: Erika Millen  
Senior Compositor: Jake McFarland  
Manufacturing Buyer: Dan Uhrig

Published by Pearson Education, Inc.  
Publishing as FT Press  
Upper Saddle River, New Jersey 07458

FT Press offers excellent discounts on this book when ordered in quantity for bulk purchases or special sales. For more information, please contact U.S. Corporate and Government Sales, 1-800-382-3419, [corpsales@pearsontechgroup.com](mailto:corpsales@pearsontechgroup.com). For sales outside the U.S., please contact International Sales at [international@pearson.com](mailto:international@pearson.com).

Company and product names mentioned herein are the trademarks or registered trademarks of their respective owners.

Copyright © 2009 by Amit Shankar Mukherjee

All rights reserved. No part of this book may be reproduced, in any form or by any means, without permission in writing from the publisher.

Printed in the United States of America

First Printing: August 2008

ISBN-10: 0-13-712665-4

ISBN-13: 978-0-13-712665-1

Pearson Education LTD.  
Pearson Education Australia PTY, Limited.  
Pearson Education Singapore, Pte. Ltd.  
Pearson Education North Asia, Ltd.  
Pearson Education Canada, Ltd.  
Pearson Educación de Mexico, S.A. de C.V.  
Pearson Education—Japan  
Pearson Education Malaysia, Pte. Ltd.

Library of Congress Cataloging-in-Publication Data

Mukherjee, Amit, 1958-

The spider's strategy : creating networks to avert crisis, create change, and really get ahead / Amit Mukherjee.

p. cm.

ISBN 0-13-712665-4 (hardback : alk. paper) 1. Business enterprises—Technological innovations. 2. Technological innovations—Management. 3. Business networks.

4. Organizational change. I. Title.

HD45.M846 2008

658.5'14—dc22

2008007912

# 1

---

## The Fire That Changed an Industry

About 8 p.m. on March 17, 2000, a lightning bolt struck a high-voltage electricity line in New Mexico. As power fluctuated across the state, a fire broke out in a fabrication line of the Royal Philips Electronics radio frequency chip manufacturing plant in Albuquerque.<sup>1</sup> Plant personnel reacted quickly and extinguished the fire within ten minutes. At first blush, it was clear that eight trays of silicon wafers on that line were destroyed. When fully processed, these would have produced chips for several thousand cell phones. A setback, no doubt, but definitely not a calamity.

At a chip factory, production takes place in “clean-room” conditions. The cleanest of such facilities have no more than one speck of dust per cubic foot. Stated differently, these facilities are ten thousand times cleaner than hospital operating rooms.<sup>2</sup> And therein lay the problem. Fire produces smoke and triggers sprinklers. Fire and smoke take lives, and sprinklers save them, but all—fire, smoke, and water—wreak havoc on property. As they dug deeper, plant personnel found that smoke and water had contaminated millions of chips that had been stored for shipment. Damage this extensive was definitely a calamity.

Four thousand miles away, at a Nokia plant outside Helsinki, a production planner who was following a well articulated process for managing chip inflows from Philips failed to get a routine input he needed from Philips. The failure could well have been an anomaly. Even so-called Six Sigma facilities (of which, despite the hype about

the term, there are very few anywhere) produce 3.4 defects per million. Nevertheless, he informed the plant's purchasing manager, and again following an established process, they passed on word of a possible problem to Tapio Markki, the top component purchasing manager.

In Albuquerque, Philips engineers and managers grappled with the aftermath of the fire. They realized that cleanup would take at least a week, which meant that customers would be affected, at least temporarily. Nokia and its archrival, Ericsson, accounted for 40% of the plant's shipments. Philips management decided that their orders would be filled first when the plant returned to normal.

On March 20, Philips called its customers, including Mr. Markki. He recalls that Philips said that the disruption would last about a week. The *Wall Street Journal* article (cited earlier and published months later) implied that Philips had underestimated the extent of the problem.

Mr. Markki had, early in his career, worked for five years at a small semiconductor company that supplied Nokia. He told me, "I knew the cleanup would take more than one week (but) for me it wasn't special." Nevertheless, in a culture that encouraged discussing possible problems openly, he informed his bosses, including Pertti Korhonen, then Senior Vice President of Operations, Logistics, and Sourcing for Nokia Mobile Phones. Nokia's production planner began checking the status of the five parts made in New Mexico once a day instead of the customary once a week. Nokia had developed this enhanced monitoring process over the prior five years. Several components—almost all from normally functioning plants—received the same treatment each year if Nokia became concerned with their maker's performance for any reason.

A few hundred miles away, executives at Ericsson also got a call from Philips. Until this call, Ericsson's planners and managers had not sensed any discrepancy in Philips' performance. As such, its

management had no reason to disbelieve Philips' explanations. They certainly did not perceive a need for concern or stepped-up action.

Nokia's intensified tracking and communications with Philips did not raise Nokia's confidence that its partner had the problem under control. Its executives began regularly urging their counterparts at Philips to take stronger action. They also moved toward adopting the response routines they had developed for such eventualities. On March 31, exactly two weeks after the fire, Philips admitted it would need more time to fix the problem; ultimately, the plant remained out of action for six weeks.

Recognizing that Philips' problem could affect the production of several million mobile phones, Nokia took three key steps:

- One team of executives and engineers focused on Philips, seeking a major role in developing alternative plans. Guided by Mr. Korhonen and assisted by CEO Jorma Ollila, it pressed Nokia's case with Philips executives, including its CEO, Cor Boonstra. Philips responded by rearranging its plans in factories as far away as Eindhoven and Shanghai.
- A second cross-continental team redesigned some chips so that they could be produced in other Philips and non-Philips plants. Where appropriate, it consulted with Philips to assess the possible impact of its actions.
- A third group worked to find alternative manufacturers to reduce pressure on Philips. Two current suppliers responded within five days.

The magnitude of the cooperation between Nokia and Philips cannot be fully appreciated without a few words on Philips. Once considered a leading-edge technology company, by the mid-1990s Philips was being criticized by many an analyst. Mr. Boonstra ignored their calls to dismember the company and instead spent three years reshaping it and rebuilding its reputation. In 2000, Philips' Semiconductor Division was functioning very well.<sup>3</sup> It had acquired several plants from IBM and boosted its production capacity 40% over 1999 levels.

Its seventeen plants were churning out eighty million chips a day; these chips were used in 80% of the mobile phones sold worldwide. That year, chip volume grew 33% and revenues 55%. Despite the fire—which did not merit a single sentence in Philips' 2000 annual report—divisional operating income rose 119%.<sup>4</sup> This superb performance meant that Philips simply had no surplus capacity. Helping Nokia required managerial and technical effort equivalent to pulling a rabbit out of a hat.

Philips' predicament was not unique. In 2000, the mobile phone market was growing at over 40% per annum, but so were the markets for laptops and other electronics. Component makers, ranging from chip to liquid crystal display producers, were working at capacity.<sup>5</sup> Some consumer electronics companies were ready to pay virtually any price for key components. By midyear, Sony, Micron Technology, Dell, Sun, and even Philips itself had announced that component shortages would rein in their (very strong) financial performances. Shortages were expected to continue unabated till year-end.

At the end of March, in this market environment, Ericsson finally came to appreciate the gravity of its problem. However, for reasons about which one can only speculate, it still did not act speedily. Jan Warby, the executive who headed the mobile phone division, did not get involved till early April. By then Ericsson had very few options left.

Nokia's initial sensing of the problem and its rapid and effective response carried the day. In the third quarter of 2000, its profits rose 42% as it expanded its share of the global market to 30%. *Its quarterly statements and annual report for 2000 did not even mention the fire.*

On July 20, 2000, Ericsson reported that the fire and component shortages had caused a second-quarter operating loss of \$200 million in its mobile phone division. As such, annual earnings would be lower by between \$333 million and \$445 million.<sup>6</sup> Six months later, it reported divisional annual losses of \$1.68 billion, a 3% loss of market share, and corporate operating losses of \$167 million. It also announced the outsourcing of cell phone manufacturing to Flextronics

and the elimination of several thousand jobs; Flextronics took over Ericsson's plants in Brazil, Malaysia, Sweden, the U.K., and the U.S. In April 2001, it signed a Memorandum of Understanding to create Sony Ericsson; the informal negotiations that led to this step had started at the height of the crisis in July 2000, though Ericsson had denied it in public. The deal was finalized in October 2001.

Ericsson's woes spread beyond mobile phones and continued into subsequent years. It finally returned to health in 2004, but as a much smaller company. Compared to 2000, its revenues had fallen 52%, total assets about 30%, and number of employees 52%; net income and operating income were almost, but not quite, the same.

The face of the mobile phone industry had changed forever, all because of a fire that had been contained in ten minutes.

### *That was an exciting story, but so what?*

Since early 2001, stories about the fire have appeared in many publications and forums. Some—but only a fraction—of the articles that have appeared are listed in the endnotes of this and subsequent chapters. Collectively, these stories perpetuated several myths:

- **Myth #1: Nokia succeeded because it relied on individual effort, while Ericsson relied on teams.** No individual—or even a group of individuals acting independently—could have pulled off the cross-continental, cross-organizational response that Nokia took. When I interviewed him at the Nokia headquarters at Espoo, Finland, in the spring of 2006, Mr. Korhonen made it clear that Nokia's culture did not tolerate individualistic cowboys.
- **Myth #2: Nokia succeeded because it used superior information technology.** Several software makers claimed that their software had helped Nokia, and some technology analysts wrote that IT had saved it from Ericsson's fate. Like most large companies, Nokia could not have functioned without IT. However, IT played a supporting role, and the specific benefit it gave Nokia was so prosaic that no technology partisan that I know ever wrote about it.

- **Myth #3: Nokia succeeded because Finns are less cautious than Swedes.** An explanation rooted in unfounded national stereotypes has little to teach us and is undoubtedly wrong. In any case, *national* culture played no role; a French executive, Jean-Francois Baril, who had spent many years in the U.S., led the building of many of Nokia's capabilities.
- **Myth #4: Nokia succeeded because Mr. Korhonen was a brilliant crisis manager.** Mr. Korhonen and Nokia replaced James Burke and Johnson & Johnson's handling of the Tylenol cyanide poisoning as the poster child for impeccable crisis management. Academics use the story to illustrate types of crises that companies must be able to withstand and to cajole them to upgrade their supply chains. Risk management professionals use it to scare potential clients into buying appropriate insurance. In reality—and despite the fact that the *Wall Street Journal* article quoted Mr. Korhonen as calling the situation a “crisis”—*Nokia successfully avoided the crisis that engulfed Ericsson*. A long way into our conversation, perhaps after he felt that I understood what Nokia had really done, Mr. Korhonen said:

Externally, the fire has been a much bigger thing than internally. For us, it has been business as usual. We have had to manage many such things.

Mr. Korhonen did play a key role—but mostly during the prior five years, when Nokia created the capabilities that enabled it to shrug off a challenge that has captivated the business world. These capabilities—built into its strategy, processes, and values and supported by technology—enabled it to *adapt* rapidly to huge changes in the assumptions embedded in its business plans. Even today, seven years after the fire and almost eleven years after Nokia began transforming itself, only a handful of large companies can do what Nokia did in 2000.

Such a capability is exceedingly important, because we live in a *networked* world in which each company partners with a set of other companies. A company's network extends from its customer-facing side, through its product and technology development functions, and



on to its supply network side. While such networks are critical to modern businesses, they enable shifts in market or operating conditions to rapidly propagate far beyond their origins. If a company is unable to sense such a shift and respond effectively, it can lose tremendous amounts of value, see the reputations of its senior executives tarnished, and destroy the livelihoods of thousands.

Companies—like Nokia—that can intelligently and effortlessly adjust to major shifts in market or operating conditions are Adaptive Businesses.

## Design Principles for Adaptive Businesses

This book presents four Design Principles that senior executives can apply to transform their companies into businesses that will thrive in a networked world. A Design Principle is a guideline for policy, rather than a template to stamp out identical sets of tools and procedures. Indeed, I do not believe it is possible to provide replicable templates; companies must use the Principles to create their own unique solutions. The Principles are as follows:

1. ***Embed sense-and-respond capabilities within normal plan-and-execute processes.*** The ability to detect a problem (or opportunity) early and correctly and the ability to react effectively are key determinants of competitive advantage. Unless these abilities are a part of everyday work, companies will lurch from crisis to crisis, be they big or small.
2. ***Adopt strategies that promote collaborative action among network partners.*** As they globalize and as their supply-and-demand networks fracture, companies lose visibility into aspects of their competitive landscape. Unless they develop cooperative relationships with their partners, they will not get preferential assistance with either crisis or opportunity.

3. ***Value and nurture organizational learning.*** Companies must collect, analyze, and share across their networks knowledge about what works and what does not. Absent such “intelligent knowledge sharing,” they will lack information to act decisively and effectively.
4. ***Deploy technologies that enable intelligent adjustment to major environmental shifts.*** To adjust to changed conditions effectively and efficiently, companies must apply information technologies that support the prior principles.

The four Principles are deceptively simple; stating them is far easier than applying them day after day. For example, despite embarking on its transformation in 1995, Nokia has only recently become comfortable with the idea that its adaptive capabilities are inextricably interwoven into the fabric of its organization. Hewlett-Packard—another company that I will profile extensively—also began changing at the same time and is still institutionalizing the capabilities it has built.

The difficulty of implementing the Principles is what gives them their great power; *collectively they change how work is performed on a day-to-day basis.* For example, to sense and respond, one might need the preferential help of a partner company. This presumes that the companies look after each other's interests. Technology aids the ability to sense and respond, but unless people can make sense of what they are sensing, all the effort will be for naught.

Companies also must consider major organizational changes in order to marshal and deploy people with the skills needed to design, create, and manage their networks. Many may decide to centralize these people in a coherent group, while others may decide to keep them dispersed but well linked. In either case, they must consider appointing a senior executive to give them a voice in top management deliberations. Whether or not he or she actually holds the title formally, this executive, the Chief Network Officer, will bear primary responsibility

for the four Design Principles. No company that I know of, including Nokia, currently uses this title; nevertheless, a couple of key people at Nokia have played the Chief Network Officer's *role* well.

Seen through the lenses of Adaptive Businesses and network management, Nokia and Philips treated each other as *preferential* partners and won. Ericsson, which had no one to “watch its back” when the chips were down (literally and figuratively!), lost. Ironically, the lesson Ericsson took away was not one of codependence; instead, it resolved never again to become dependent on a single supplier.

## Organization of the Book

In the rest of Part I, “Why Change?,” I build the case for transforming the modern enterprise by addressing its key limitations and the impact they have on performance.

Chapter 2, “Shadows of the Past,” first summarizes a fascinating piece of historical research that tracks how and why companies have changed over the last two-hundred-odd years. In response to periodic “epochal” shifts, companies have modified how work is performed, how their organizations are structured, and even their corporate ethos. Distributed computer networks are driving the present epochal change by fragmenting work across time and space, engendering extreme product customization, and blurring industrial boundaries. In this environment, companies will fall into *the execution trap* if they believe that reliance on traditional “good management”—plan well and execute brilliantly—*alone* will help them succeed.

Chapter 3, “Visions from the Present,” advances the case for corporate transformation. In order to succeed in a world of corporate networks, companies must develop three capabilities to augment their traditional plan-and-execute skills. They must be able to sense changes in their environments, respond to these seamlessly, and learn from their experiences and apply the lessons in other situations.

Senior executives should take responsibility for guiding this transformation, because research shows that financial markets are penalizing companies and executives for perceived failures more severely than ever before.

Part II, “Design Principles for Adaptive Capabilities,” lays out the four Design Principles that can transform a company.

Chapter 4, “Transform Everyday Work,” introduces the first Design Principle: ***Embed sense-and-respond capabilities within normal plan-and-execute processes.*** Without embedding, a company cannot be adaptive; at best, it can be great at managing crises. Embedding requires changing work practices, just as becoming truly quality-focused requires making quality the responsibility of individual employees.

Chapter 5, “Succeed in a Dog-Eat-Dog World,” explains the second Design Principle: ***Adopt strategies that promote collaborative action among network partners.*** The fragmentation of work will require companies to create win-win partnerships with their partners, because no company can succeed while its network is ailing. Research shows that executives recognize the need for collaboration, but this does not always lead to action. Understanding why companies act against their best interests can help executives change such behavior.

Chapter 6, “Ensure That Work Teaches,” discusses the third Design Principle: ***Value and nurture organizational learning.*** The failure to learn keeps companies from intelligent and effortless adaptation. It impedes both the effective use of the prior Principles and the interpretation of environmental signals to take action. Executives must understand how they can manage culture, systems, and organizational structure to improve their companies’ ability to learn.

Chapter 7, “Make Technology Matter,” provides focused guidance on the fourth Design Principle: ***Deploy technologies that enable intelligent adjustment to major environmental shifts.*** It asserts that companies must invest in technologies that *provide visibility, support analysis, facilitate collaboration, or enable mobility.* Technologies

that do not build these capabilities may be essential for security or legal reasons, but they will not provide competitive advantage. This discussion focuses on technology strategy (what, why) and not technical details (how).

Part III, “Going Adaptive,” discusses the challenging task of transforming a company into an Adaptive Business by systematically implementing the four Design Principles.

Chapter 8, “Create the Organization,” addresses the organizational changes companies must make. Managing internal and external networks must become a focal point for key decisions. People who are superb at designing, creating, and managing human networks will undertake this task and increasingly become highly prized by their employers. A Chief Network Officer, who may or may not be formally designated as such, should lead them.

Chapter 9, “Introduce Change Holographically,” deals with the general management challenge of initiating the transformation and maintaining momentum. Companies must adopt what I call *holographic change management*. This approach advocates the implementation of all four Design Principles in one business area and subsequent replication in other areas. It also advises against implementing one Design Principle at a time across the entire company.

The Epilogue brings closure by describing two perspectives on an Adaptive Business. One comes from a junior manager who works at the company, while the other comes from this person’s CEO.

Given my focus on *corporate* transformation, many of the issues I discuss fall within the bailiwicks of top managers. Starting with Chapter 2, I make specific recommendations for them. However, becoming adaptive is not a spectator sport for middle managers and other professionals; indeed, Hewlett-Packard’s efforts have been led by such people. Most chapters, therefore, end with a sidebar titled “So You Are Not the CEO...,” which addresses the critical roles these professionals must play.

## Basis of the Ideas

Historically, most “big ideas” in management arose in the manufacturing sector and then spread to the service sector. Adaptive Businesses, too, are evolving in manufacturing (and retail) companies, but will sooner or later migrate to the service businesses. (Indeed, a top strategy executive of a major British manufacturer recently argued coherently that a premier American investment bank applies all four of the Design Principles and is no less adaptive than Nokia.)

So, this book builds on a robust intellectual foundation of research on manufacturers. I also present evidence from a study of over five hundred manufacturing and retail companies that I conducted a few years ago for the software firm SAP. I supplement these with stories, some from the media, but many others from over a quarter century of personal association with companies in industries that include steel wire, food, white goods, glass, medical devices, pharmaceuticals, consumer-packaged goods, and electronics. I have advised several CEOs—and other C-level executives—of global firms, led cross-organizational product-development efforts, and worked on the graveyard shift beside line workers carping about managerial idiocies. I protect their confidentiality by not naming them, but I do provide enough contextual information to make the stories meaningful.

Most importantly, I draw on many hours of interviews (and associated secondary research) that I have conducted at Nokia and Hewlett-Packard. To the best of my knowledge, Nokia has not given anyone else similar access to the executives involved. These two stories—Nokia's in particular—present a comprehensive picture of the transformation that companies must undergo. I cannot credibly call for *multidimensional* change and then provide piecemeal examples cobbled together from different firms facing divergent challenges. For the record, neither company is—or has been—a client of mine. What they have created, they have done on their own.

## Endnotes

- <sup>1</sup> I have pieced together the description of the fire and, indeed, the broader story of what happened at Nokia, Ericsson, and Philips from interviews I conducted, numerous news reports, website descriptions of technology companies, and annual reports. Of the news reports, the best known is “Trial by Fire: A Blaze in Albuquerque Sets off Major Crisis for Cell-Phone Giants. Nokia Handles Supply Shock with Aplomb as Ericsson of Sweden Gets Burned—Was Sisu the Difference?” by Almar Latour, the *Wall Street Journal*, January 29, 2001. Other newspaper and newsmagazine citations are given here and in subsequent chapters in conjunction with specific quotes.
- <sup>2</sup> Intel website, <http://www.intel.com/education/cleanroom/index2.htm>.
- <sup>3</sup> Royal Philips Electronics annual report for 2000 (pp. 38–39 and 60–61).
- <sup>4</sup> A single line in the 2001 report noted an insurance payoff for damages sustained due to the fire.
- <sup>5</sup> “Companies fear no end in sight for component shortages,” by Rachel Konrad, CNET News.com, July 26, 2000.
- <sup>6</sup> “Ericsson’s Mobile Worries,” BBC, July 21, 2000, 21:35 GMT, 22:35 UK, <http://news.bbc.co.uk/2/hi/business/845619.stm>.

# INDEX

**Note:** Page numbers followed by *n* refer to footnotes.

## A

### Adaptive Business

capabilities, 54

CEO perspective on, 226-227

Design Principles, 9-11

employee perspective on, 225-226

holographic change management

actively transferring lessons

learned across business  
units, 213

allowing results to speak for  
themselves, 220-221

building master plan, 215-216

defining core policies at

corporate level, 212

hologram metaphor, 211

incentive systems, 220

introducing capabilities business  
unit by business unit,  
212-213

introducing Design Principles in  
waves, 217-219

overview, 209-212

role of non-CEOs, 222-223

selecting business unit that wants  
to change, 213-214

starting at top of organizational  
hierarchy, 214-215

starting with non-customer-facing  
ends, 219-220

rule of staff, 198-199

adaptive strategies

collaborative action, 100

sense-and-respond capabilities, 69

adaptive technologies, 184

airline industry, 119

Alahulta, Matti, 48, 215, 226

Allaire, Paul, 156



Allison, Graham T., 137, 186  
 American Airlines, 77  
     collaborative action strategies  
       example, 122  
     customer relations example, 89  
 AOL Time Warner, 122  
 Apple, 50-51  
 Argyris, Chris, 136  
 Arpey, Gerard J., 122  
 Arthur D. Little consulting  
     company, 213  
 assurance of service, 110  
 assure supplies, 51  
 AT&T and iPhone, 52  
 AutoCo, 203  
 automotive industry  
     collaboration in, 107  
     collaborative action strategies  
       example, 97-99, 124

**B**

B-player rule, 213, 222  
 Baril, Jean-Francois, 71, 111-112,  
     114-116, 119-120, 125, 145,  
     200, 214  
 Baskin-Robbins, 197  
 Bazerman, Max, 73  
 Bekaert, 131, 153-154, 174  
 Beretta, 17, 20-23  
 Billington, Corey, 108  
 blurring of industries, 28-29  
 Boonstra, Cor, 5  
 bottlenecks, 83  
 Bowman, John, 143, 147  
 Bristol-Meyers Squibb, 53  
 business units  
     actively transferring lessons learned  
       across business units, 213  
     hologram pieces metaphor, 211  
     introducing capabilities  
       business unit by business  
       unit, 212-213  
     making Adaptive Businesses, 41-42  
     selecting business unit that wants to  
       change, 213-214  
 Buy-Sell process (Hewlett-Packard  
     example), 78-80

**C**

capabilities  
     Adaptive Businesses, 54  
     introducing business unit by  
       business unit, 212-213  
     networks of companies, 54-55  
       Ericsson, 55-57  
       Nokia, 55-57  
 Carr, Nick, 165  
 Case, Steve, 122  
 Cerberus, 98  
*Challenger* space shuttle disaster, 189  
 Champy, James, 142  
 change management, 210  
 changing incentives, 157-158  
 Chief Network Officers  
     (CNOs), 11, 212  
     characteristics of strong  
       CNOs, 204-206  
       business savvy, 205  
       collaborative nature, 205  
       imagination, 206  
       willingness to learn, 206  
     Nokia, 199  
     qualifications for, 206  
     responsibilities, 199-203  
       evangelizing, 201-202  
       knowledge transfer, 203  
       mediation, 202-203  
       network building, 202  
       prospecting, 200  
       support staff, 203-204  
 Chrysler, 98, 124  
 CIM (Computer-Integrated  
     Manufacturing), 22  
 Clark, Kim, 165  
 CNOs. *See* Chief Network Officers  
 collaboration, 176-181  
 collaborative action strategies, 100  
     automobile industry  
       example, 97-99  
     customer relationship  
       scenarios, 100-102  
     example scenarios, 121-125  
     implementing, 113-114  
     information sharing  
       policies, 117-118  
     metrics, changing, 118-120

overcoming distrust, 120-121  
 recruiting believers, 114-116  
 solving practical problems,  
     116-117  
 importance of, 105-107  
 multiperiod Prisoner's Dilemma  
     and, 107  
     Hewlett-Packard example,  
         108-111  
     Nokia example, 111-113  
     Prisoner's Dilemma versus, 102-105  
 communities of practice, 147  
 complementary resources, 52  
 Computer-Integrated  
     Manufacturing, 22  
 conceptual learning, 139  
 consumer packaged goods (CPG), 27  
 ConsumerCo, 132-133  
 coordination of sense-and-respond  
     capabilities, 86-87  
 core policies, 212  
 corporate teams, 204  
 corporate transformations, 58  
 CPG (consumer packaged goods), 27  
 Crandall, Robert L., 123  
 cross-departmental work flows, 187  
 cross-functional work flows, 187  
 cross-organizational learning, 158  
 culture, 148-150  
 customer relations  
     customer-relationship  
         scenarios, 100-102  
     sense-and-respond capabilities  
         and, 89-90  
 customized products, 26-28

**D**

Daimler, 98  
 Dambre, Paul, 153, 174  
 Decaluse, Rafael, 138  
 decision rights, 207  
 decomposition of work, 24-25  
 Dell  
     customized products, 26  
     response capability design, 83  
     sense-and-respond example, 80-81  
 Delphi, 98

design, organizational  
     Design Principles, 9-10  
         collaborative action, 100  
         defined, 9  
         introducing in waves, 217-219  
         organizational learning, 135  
     overview, 197-198  
     role of staff in Adaptive  
         Business, 198-199  
     sense-and-respond capabilities  
         response capability design, 83-86  
         sensing capability design, 82-83  
 distributed computer networks, 23  
     blurring of industries, 29  
     learning, 134  
 distrust, overcoming, 120-121  
 diversity on IT teams, 188-189  
 Duke, Michael, 69-70  
 Dunkin' Donuts, 197  
 Dynamic Control epoch, 49

**E**

empirical testing, 189-190  
 empiricalized learning, 141-142  
 employees, 198  
 enabling mobility, 181-184  
 English System, 20-21  
 Enterprise Resource Planning  
     (ERP), 27  
 epochs  
     Dynamic Control epoch, 49  
     of manufacturing, 17, 20-23  
 Ericsson, 4  
     blurring of industries, 29  
     customized products, 27-28  
     decomposition of work, 25  
     Execution Trap, 31-39  
     falling share prices, 58-60  
     networks of companies, 55-57  
     reaction to fire at Royal Phillips  
         Electronics, 6-7  
     reputations, 60-62  
 ERP (Enterprise Resource  
     Planning), 27  
 ethical issues in sense-and-respond  
     capabilities, 89-90  
 evangelizing, 201-202

execution process  
 embedding sensing capability  
   into, 82  
 Execution Trap, 30  
   Ericsson, 31-39  
   holding off on self-  
     congratulations, 40-41  
   relationship with planning, 71-73  
 executives  
   CNOs (Chief Network Officers)  
     characteristics of strong  
       CNOs, 204-206  
     Nokia, 199  
     qualifications for, 206  
     responsibilities, 199-203  
     support staff, 203-204  
   mid-career executives  
     building organizations, 207-208  
     collaborative action  
       strategies, 126  
     creating learning organizations on  
       your own team, 160  
     implementing technology, 191  
     overcoming skepticism, 126  
     tasks for groups of managers and  
       professionals, 94-95  
   role in Adaptive Business, 198-199  
 experiential learning, 139

## F

facilitating collaboration, 176-181  
 falling share prices (Ericsson), 58-60  
 FedEx, 182  
 Feynman, Richard, 189-190  
 FiberCo, 132  
 Fiorina, Carly, 26  
 FIRE model, 140-141  
 firefight, 140  
 Fisher, Richard, 121  
 Flextronics, 7, 24  
 focusing on people, 186-187  
 Ford, 97  
 Forrester Research, 163  
*The Fountainhead*, 176  
 Friedman, Thomas, 201

Frito-Lay, 95*n*  
 Fujimoto, Takahiro, 107  
 future-proof phones (Nokia), 46

## G

Galileo, 169  
 Gartner, 163-165  
 General Motors, 97-98, 101  
 GlaxoSmithKline, 91  
 GPS (Global Positioning System), 169

## H

Hammer, Michael, 142  
 Hellström, Kurt, 34-36  
 Hendricks, Kevin, 58  
 Hewlett-Packard, 78, 104, 203, 207  
   changing metrics for, 119  
   information sharing  
     policies, 117-118  
   organizational structures, 146  
   overcoming distrust, 120  
   PRM program, 108-111  
   recruiting believers in collaborative  
     action, 115  
   sense-and-respond example, 78-80  
   solving practical problems with  
     collaborative action, 117  
 holographic change management  
   actively transferring lessons learned  
     across business units, 213  
   allowing results to speak for  
     themselves, 220-221  
   building master plan, 215-216  
   defining core policies at corporate  
     level, 212  
   hologram metaphor, 211  
   incentive systems, 220  
   introducing capabilities  
     business unit by business  
     unit, 212-213  
   introducing Design Principles in  
     waves, 217-219  
   overview, 209-212  
   role of non-CEOs, 222-223  
   selecting business unit that wants to  
     change, 213-214

- starting at top of organizational hierarchy, 214-215
- starting with non-customer-facing ends, 219-220

humility, 226-227

Hunter, Richard, 164

Hurd, Mark, 215

## I

IBM, 26, 77

Icahn, Carl, 122

identifying learning organizations, 159

imagination, 206

ImClone, 53

implementing

- adaptive technologies
  - avoiding band-aids and artistic flourishes, 187-188
  - diversity on IT teams, 188-189
  - empirical testing, 189-190
  - focusing on people, 186-187
  - overview, 184-185
  - selecting technologies, 185-186
  - tips for mid-career executives, 191

- organizational learning, 151-152
  - changing incentives, 157-158
  - creating self-contained learning organizations, 155
  - making learning a line responsibility, 156-157
  - mutual reinforcement, 152

incentives

- changing, 157-158
- incentive systems, 220

industries

- blurring of, 28-29
- industry transformation, sense-and-respond capabilities and, 91-93

information sharing policies, 117-118

institutionalizing knowledge, 143

intellectual property, 51

intellectualize, 140

iPhones, 52

IT, 184

## J-K

Jaikumar, Ramchandran, 17, 20-22, 138

Kallasvuo, Olli-Pekka, 226

Kawasaki, Guy, 208*n*

keiretsu, 129*n*

Kindler, Jeffery, 122

knowledge

- institutionalizing, 143
- knowledge transfer, 203

Korhonen, Pertti, 4, 46, 70-71, 74-76, 87, 105, 111, 114-119, 135, 148, 168, 186, 200, 212, 225-226

## L

Lave, Jean, 137

leadership

- challenges, 62-63
- humility, 226-227

Lean Enterprise, 26

Lean Sigma, 95*n*, 220

learning, 133

- conceptual learning, 139
- cross-organizational learning, 158
- distributed computer networks, 134
- empiricalized learning, 142
- experiential learning, 139
- how people learn to solve business problems, 138-140
- modes of learning, 140-141
- organizational learning, 133

learning organizations

- creating
  - culture, 148-150
  - model lines of Bekaert, 153-154
  - organizational structures, 146-148
  - processes, 142-145
  - on your own team, 160
- creating self-contained learning organizations, 155
- identifying, 159

legislation concerning sense-and-respond capabilities, 89-90

lessons, actively transferring across business units, 213

LG Electronics, 25  
 López de Arriortúa, José Ignacio, 101  
 Lord Chancellor, 20

## M

Mankins, Michael, 38  
 manufacturing, epochs of, 17, 20-23  
 Manufacturing Resource Planning (MRP), 72  
 market builders, 51  
 markets  
   falling stocks, 58-60  
   leadership challenges, 62-63  
   reputations, 60-62  
 Markki, Tapio, 70, 76, 112, 118-120, 186, 210  
 master plans, 215-216  
 MaterialsCo, 131-132  
 matrix organizations, 204  
 Maudslay, Henry, 20  
 McKinnell, Henry, 122  
 McKinsey, 164  
 mediation, 202-203  
 metrics, changing, 118-120  
 mid-career executives  
   building organizations, 207-208  
   collaborative action strategies, 126  
   creating learning organizations on your own team, 160  
   implementing technology, 191  
   overcoming skepticism, 126  
   tasks for groups of managers and professionals, 94-95  
 mismatches, 53  
 mobility, 181-184  
 model lines of Bekaert, 153-154  
 modes of learning, 140-141  
 Morgan Stanley, 121  
 Morison, Elting E., 143  
 Motorola, 123  
 MRP (Manufacturing Resource Planning), 72  
 multiperiod Prisoner's Dilemma, 107  
   Hewlett-Packard example, 108-111  
   Nokia example, 111-113  
 mutual reinforcement, 152

## N

Nagali, Venu, 108-110, 115-120, 188, 212  
 NAICS (North American Industry Classification System), 28  
 Nardelli, Bob, 124  
 negotiations, Prisoner's Dilemma, 102-105  
 Nelson, Richard R., 137  
 net present value (NPV), 185  
 Netflix, 95*n*  
 network building, 202  
 networks, getting ready for, 63-64  
 networks of companies, 48-49  
   Apple, 50-51  
   capabilities of, 54-57  
   mismatches, 53  
   workgroups, 51-52  
 NIH (not invented here), 148  
 Nilsson, Sven-Christer, 23  
 noise, 82  
 Nokia, 5, 45  
   bottleneck identification, 84  
   CEO perspective on, 226-227  
   change in leadership, 226-227  
   changing metrics for, 119  
   CNO (Chief Network Officer), 199  
   collaboration, 176  
   collaborative action strategies  
     example, 111-113  
   creating routines, 85  
   employee perspective on, 225-226  
   future-proof phones, 46  
   implementing collaborative action strategies, 114  
   information sharing  
     policies, 117-118  
   networks of companies, 55-57  
   organizational learning, 151  
   organizational structures, 147  
   original application of adaptive principles, 212  
   overcoming distrust, 120-121  
   people-technology link, 186  
   plan-and-execute model, 46-48  
   reaction to fire at Royal Phillips Electronics, 4-5, 8

recruiting believers in collaborative action, 115-116  
 response capability design, 83  
 sense-and-respond example, 70-77  
 solving practical problems with collaborative action, 117  
 visibility technologies, 168  
 North American Industry Classification System (NAICS), 28  
 not invented here (NIH), 148  
 Novartis, 53  
 NPV (net present value), 185

## O

Ohno, Taiichi, 21, 72  
 Ollila, Jorma, 5, 45-47, 70, 212, 215, 226  
 online stores (Dell example), 80-81  
 OnStar, 182  
 organization design  
   creating learning organizations, 146-148  
   overview, 197-198  
   role of staff in Adaptive Business, 198-199  
 organizational hierarchy, starting change at top of, 214-215  
 organizational learning, 133-136, 151-152  
   changing incentives, 157-158  
   creating self-contained learning organizations, 155  
   making learning a line responsibility, 156-157  
   mutual reinforcement, 152  
 outsourcing, 24  
 overcoming  
   distrust, 120-121  
   skepticism, 126

## P

Parsons, Richard, 122  
 passion for collaborative action, 114-116  
 people, focusing on, 186-187  
 personal relationships, building, 120-121

*Le Petit Prince*, 227  
 Pfizer, 122  
 pharmaceutical industry, 91-93  
 plan reconfirmation process (Nokia example), 75-77  
 plan-and-execute model  
   Nokia, 46-48  
   sense-and-respond capabilities within, 71-73  
 planning process  
   embedding sensing capability into, 82  
   master plans, 215-216  
   relationship with execution, 71-73  
 plug-and-play analysis software, 174  
 Plummer, Daryl, 164  
 policies, defining at corporate level, 212  
 post mortems, 147-149  
 practical problems, solving with collaborative action, 116-117  
 predictable events, 40  
 predictable surprises, 73-75, 83  
 preferential partners, 11  
 Press, James, 124  
 Prisoner's Dilemma  
   multiperiod Prisoner's Dilemma, 107  
   Hewlett-Packard example, 108-111  
   Nokia example, 111-113  
   overview, 102-105  
 privacy issues, 89-90  
 processes, creating learning organizations, 142-145  
 Procurement Risk Management (PRM) program, 108-111  
 prospecting, 200  
 Purcell, Phillip, 121

## Q-R

radio frequency identification, 90  
 Ramqvist, Lars, 23  
 Rand, Ayn, 176  
 Raskino, Mark, 163-164  
 real-time deep-analysis software, 174  
 reconfirmation of plans (Nokia example), 75-77

recruiting believers in collaborative  
action, 114-116

Reding, Viviane, 90

Redmond, Andrea, 123

reputations, 60-62

response capability, 83-86

restructuring, 39

RevCo, 155

Reynolds, Martin, 164

RFID (radio frequency  
identification), 90, 170

Roller, Patricia, 24

Rosenberg, Bill, 197

RosettaNet, 169

routines, creating for response  
capabilities, 84-85

routinize, 141

Royal Philips Electronics, 3-9

## S

Saarinen, Esa, 116

Sabre, 77-78

Schneider, Eric, 109, 114, 121, 146

Scholler, Patrick, 104, 115, 119

Schon, Donald A., 136

Schwarzenegger, Arnold, 90

Scientific Management, 21

segmentation, 45

selecting technologies, 185-186

self-congratulations, 40-41

self-contained learning  
organizations, 155

Senge, Peter M., 133, 136

senior executives, role in  
sense-and-respond capabilities  
coordination of efforts, 86-87  
ethical and privacy questions,  
answering, 89-90

industry transformation, 91-93

technology usage decisions, 87-89

sense-and-respond capabilities

Dell example, 80-81

designing

response capability design, 83-86

sensing capability design, 82-83

Hewlett-Packard example, 78-80

importance of, 71-73, 93-94

Nokia example, 70-71, 75-77

predictable surprises, 73-75

Sabre example, 77-78

senior executives' role in  
coordination of efforts, 86-87  
ethical and privacy questions,  
answering, 89-90  
industry transformation, 91-93  
technology usage decisions, 87-89

Wal-Mart example, 69-70

share prices, falling, 58-60

sharing information, policies  
for, 117-118

SIC (Standard Industrial Codes), 28

signals, 82

skepticism, overcoming, 126

software agents, 88

solving practical problems with  
collaborative action, 116-117

SPC (statistical process control), 21

Spear, Steve, 157

St. Exupery, Antoine de, 227  
staff

CNO (Chief Network Officer)  
support staff, 203-204

role in Adaptive Business, 198-199

Standard Industrial Codes (SIC), 28

standard plane, 20

statistical process control (SPC), 21

Steele, Richard, 38

Stein, Ben, 98

strategic decisions on visibility  
technologies, 170-173

Strengths, Weaknesses, Opportunities,  
Threats (SWOT), 185

support analysis, 173-175

## T

Taylor, Fredrick Winslow, 21

Teboul, James, 144

technology

collaboration, 176-181

implementation

avoiding band-aids and artistic  
flourishes, 187-188

diversity on IT teams, 188-189

empirical testing, 189-190

- focusing on people, 186-187
  - overview, 184-185
  - selecting technologies, 185-186
  - tips for mid-career executives, 191
- mobility, 181-184
- in sense-and-respond capabilities, 87-89
- strategy without technology, 166
- support analysis, 173-175
- technology without strategy, 163-166
- visibility technologies
  - definition, 167
  - Global Positioning System (GPS), 169
  - importance of, 168
  - RFID, 170
  - RosettaNet, 169
  - strategic decisions on, 170-173
- testing, empirical, 189-190
- Thyssen, 154
- timing for executing response capabilities, 85
- total shareholder returns (TSR), 61
- Toyota, 26, 97-99, 216
  - empiricalized mode, 141
  - implementing organizational learning, 157
- transformations, corporate, 58
- TSR (total shareholder returns), 61

## U-V

- United Auto Workers, 98
- Ven, Andrew Van de, 222
- Vinck, Karel, 138, 153
- Vinod, Singhal, 58
- visibility technologies
  - definition, 167
  - Global Positioning System (GPS), 169
  - importance of, 168
  - RFID, 170
  - RosettaNet, 169
  - strategic decisions on, 170-173
- Vistacon, 98

## W

- Wal-Mart, 95*n*, 209
  - RFID, 170
  - sense-and-respond example, 69-70
- Warby, Jan, 6
- Watkins, Michael, 73
- waves of change, 217-219
- Wenger, Etienne, 137
- WhiteGoodsCo, 131-132
- win-win relationships, 113
- Winter, Sidney G., 137
- Woolwich Arsenal, 20
- work decomposition, 24-25
- workgroups, 51-52
- The World Is Flat*, 201

## X-Y-Z

- yield management
  - Dell example, 80-81
  - Sabre example, 77-78
- Zander, Ed, 123
- Zuboff, Shoshana, 124, 187