



# STRATEGIC INFORMATION TECHNOLOGY

SECOND EDITION

---

BEST PRACTICES TO DRIVE  
DIGITAL TRANSFORMATION

ARTHUR M. LANGER  
LYLE YORKS

WILEY



# **STRATEGIC INFORMATION TECHNOLOGY**

---

**F**ounded in 1807, John Wiley & Sons is the oldest independent publishing company in the United States. With offices in North America, Europe, Asia, and Australia, Wiley is globally committed to developing and marketing print and electronic products and services for our customers' professional and personal knowledge and understanding.

The Wiley CIO series provides information, tools, and insights to IT executives and managers. The products in this series cover a wide range of topics that supply strategic and implementation guidance on the latest technology trends, leadership, and emerging best practices.

Titles in the Wiley CIO series include:

*The Agile Architecture Revolution: How Cloud Computing, REST-Based SOA, and Mobile Computing Are Changing Enterprise IT* by Jason Bloomberg

*Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses* by Michael Minelli, Michele Chambers, and Ambiga Dhiraj

*The Chief Information Officer's Body of Knowledge: People, Process, and Technology* by Dean Lane

*CIO Best Practices: Enabling Strategic Value with Information Technology (Second Edition)* by Joe Stenzel, Randy Betancourt, Gary Cokins, Alyssa Farrell, Bill Flemming, Michael H. Hugos, Jonathan Hujsak, and Karl Schubert

*The CIO Playbook: Strategies and Best Practices for IT Leaders to Deliver Value* by Nicholas R. Colisto

*Enterprise Performance Management Done Right: An Operating System for Your Organization* by Ron Dimon

*Executive's Guide to Virtual Worlds: How Avatars Are Transforming Your Business and Your Brand* by Lonnie Benson

*IT Leadership Manual: Roadmap to Becoming a Trusted Business Partner* by Alan R. Guibord

*Managing Electronic Records: Methods, Best Practices, and Technologies* by Robert F. Smallwood

*On Top of the Cloud: How CIOs Leverage New Technologies to Drive Change and Build Value Across the Enterprise* by Hunter Muller

*Straight to the Top: CIO Leadership in a Mobile, Social, and Cloud-based World (Second Edition)* by Gregory S. Smith

*Strategic IT: Best Practices for Managers and Executives* by Arthur M. Langer and Lyle Yorks

*Transforming IT Culture: How to Use Social Intelligence, Human Factors, and Collaboration to Create an IT Department That Outperforms* by Frank Wander

*Unleashing the Power of IT: Bringing People, Business, and Technology Together* by Dan Roberts

*The U.S. Technology Skills Gap: What Every Technology Executive Must Know to Save America's Future* by Gary J. Beach

# STRATEGIC INFORMATION TECHNOLOGY

---

BEST PRACTICES TO DRIVE DIGITAL  
TRANSFORMATION

SECOND EDITION

Arthur M. Langer

Lyle Yorks

WILEY

Copyright © 2018 by John Wiley & Sons, Inc. All rights reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the Web at [www.copyright.com](http://www.copyright.com). Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at [www.wiley.com/go/permissions](http://www.wiley.com/go/permissions).

**Limit of Liability/Disclaimer of Warranty:** While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993, or fax (317) 572-4002.

Wiley publishes in a variety of print and electronic formats and by print-on-demand. Some material included with standard print versions of this book may not be included in e-books or in print-on-demand. If this book refers to media such as a CD or DVD that is not included in the version you purchased, you may download this material at <http://booksupport.wiley.com>. For more information about Wiley products, visit [www.wiley.com](http://www.wiley.com).

***Library of Congress Cataloging-in-Publication Data is Available:***

ISBN 9781119484523 (Hardcover)

ISBN 9781119484554 (ePDF)

ISBN 9781119484547 (ePub)

Cover Design: Wiley

Cover Image: © iSam iSmile/Shutterstock

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

*I want to thank and acknowledge all of my students at  
Columbia University for their dedication and inspiration to  
continue to explore the complexities of the role of the CIO  
and other technology leaders in a digital-driven world.*

*—Arthur Langer*

*To my granddaughters Maya, Zoe, Maisy, Lia, and Ella  
Josephine, and my grandson Ian. You are all a wonderful  
part of my life.*

*—Lyle Yorks*





# CONTENTS

FOREWORD xi

PREFACE xiii

ACKNOWLEDGMENTS xix

## CHAPTER 1 The CIO Dilemma 1

Business Integration 2

Security 2

Data Analytics 3

Legal Exposure 3

Cost Containment 3

Some History 4

The Challenge 5

The New Paradigm 6

Consumerization of Technology: The Next Paradigm Shift 7

The End of Planning 8

The CIO in the Organizational Context 9

IT: A View from the CEO 14

## CHAPTER 2 IT Drivers and Supporters 19

Drivers and Supporters 19

Drivers: A Closer Look from the CIO 23

Supporters: Managing with Efficiency 23

IT: A Driver or a Supporter? 24

Technological Dynamism 25

Responsive Organizational Dynamism 26

IT Organization Communications with “Others” 31

Movement of Traditional IT Staff 31

Technology Business Cycle 33

Information Technology Roles and Responsibilities 38

Conclusion 39

### **CHAPTER 3 The Strategic Advocacy Mindset 41**

What Is Strategic Advocacy? 41

A Political Economy Framework for Contextualizing Strategic Advocacy 44

Strategic Thinking: A Particular Kind of Mindset 47

Political Savvy as the Underpinning of Effective Strategic Advocacy 56

Conclusion 62

### **CHAPTER 4 Real-World Case Studies 67**

BP: Dana Deasy, Global CIO 68

Merck & Co.: Chris Scalet, Senior Vice President and CIO 70

Covance: John Repko, CIO 71

Cushman & Wakefield: Craig Cuyar, CIO 73

Prudential: Barbara Koster, SVP and CIO 75

Procter & Gamble: Filippo Passerini, Group President and CIO 76

Cushman & Wakefield: A View from Another Perspective 77

Conclusion 83

### **CHAPTER 5 Patterns of a Strategically Effective CIO 87**

Personal Attributes 87

Organization Philosophy 100

Conclusion 114

### **CHAPTER 6 Lessons Learned and Best Practices 117**

Five Pillars to CIO Success—Lessons Learned 117

The CIO or Chief IT Executive 120

Chief Executive Officer 134

Middle Management 145

Conclusion 150

### **CHAPTER 7 Implications for Personal Development 159**

Rationale for a Self-Directed Learning Process of Personal Development 160

Adopting a Developmental Action Inquiry Process for Both Strategic Insight and Mindset Awareness 162

Testing One's "Business" Acumen	165
Thinking Holistically in Terms of Situational Analysis and Synthesis of the Organization's Position	167
Developing Strategic Mindsets Within the Technology Function	171
The Balanced Scorecard	172
Conclusion	176

## **CHAPTER 8 Digital Transformation and Business Strategy 179**

Introduction	179
Requirements Without User Input	184
The S-Curve and Digital Transformation	187
Organizational Change and the S-Curve	189
Communities of Practice	190
The Technology Leader Role in the Digital Era	190
Technology Disruption on Firms and Industries	191
Critical Components of "Digital" Organization	193
How to Assimilate Digital Technology	194
Conclusion	196

## **CHAPTER 9 Integrating Gen Y Talent 197**

Introduction	197
Employment in the Digital Economy	199
Attributes of Gen Y Employees	200
Benefits of Gen Y Employees	201
Integration of Gen Y with Baby Boomers and Gen X	201
Designing the Digital Enterprise	202
Gen Y Talent from Underserved Populations	203
Larger Workforce Maturity Arc	204
Implications for New Pathways for Digital Talent	210
Global Implications for Sources of Talent	212
Conclusion	212

## **CHAPTER 10 Creating a Cyber Security Culture 215**

Introduction	215
--------------	-----

Presenting to the Board	217
Designing a Cyber Security Culture	217
Dealing with Compromise	218
Cyber Security and Responsive Organizational Dynamism	218
Cyber Strategic Integration	219
Cyber Cultural Assimilation	220
Summary	221
Organizational Learning and Cyber-Minded Application Development	222
Risk and Cyber Security	222
Risk Responsibility	223
Cyber and Driver/Supporter Theory	225

**CHAPTER 11 The Non-IT CIO of the Future 227**

Driver-Side Responsibilities—New Automation	227
Conclusion	242

**CHAPTER 12 Conclusion: New Directions for the CIO of the Future 245**

**BIBLIOGRAPHY 261**

**ABOUT THE AUTHORS 267**

**INDEX 269**

# FOREWORD

After a 44-year career at IBM, as I stated in the first edition, I have experienced many changes in the IT industry and seen how firms struggle to understand the value of IT in general. With over one hundred years of accumulated personal board experience, those controversies are still discussed at board meetings today. The debates over the role of the CIO continue, including issues of where they should report, their specific responsibilities, and whether they can contribute strategically to the business. Most important is the forecast of the CIOs of the future: What will be their titles and responsibilities?

*Strategic IT, 2nd Edition*, by Drs. Langer and Yorks, deals with the issues that every CIO faces. This second edition addresses three major and critical developments since the first edition, specifically, digital disruption, cyber security, and analytics. Independent of geography, size, business, or purpose, the constant, critical question facing each and every technology leader in the 21st century is: Are you a cost or are you an investment? That is, are you part of the business tactics or part of its strategy? Langer and Yorks have written the complete CIO survival handbook for thriving in the fast-paced and rapidly changing world. Langer and Yorks remind us that *change* is the norm for technology leaders and that time to change is not an ally; rather, speed and demand typically dictate the environment CIOs call home with regard to their scope of responsibilities.

Drs. Langer and Yorks use the rich research and practice they have obtained as faculty at Columbia University where they hold workshops on technology leadership and teach in the Executive Masters of Science program in Technology Management. Therefore, much of their experience with CIOs and other technology leaders and students back up their theories and coursework. Their real-world examples bring life to the A-Z framework of success. Indeed, I have experienced the excitement of participants at their lectures.

Based on my experience, Langer and Yorks touch on the critical issues facing all CIOs today. While CIOs must be experts in technology, have organizational skills, contribute to the bottom line, and have executive presence, the more vital skill today is their need to be enablers of innovation and change agents in their firms. Furthermore, they must keep their organizations safe from cyber threats. Whether we speak about a large or small enterprise, a for-profit or not-for-profit organization, the CIO's success is all about understanding change. The only way to help transform organizations is by having a very agile and focused IT strategy. As a director on a number boards, I understand the complexity of dealing with the multiple perspectives on how to use

information technology. I hear all of the different opinions about the value of big data, mobile applications, mobile devices, cyber security, and cloud computing, just to name a few. What is most challenging is that all these new technologies develop and change in the wink of an eye. Yet little if any of these new technologies were discussed, let alone needed, five years ago. And what will be needed five years from now is truly a mystery to most enterprise leaders today.

For all these reasons and many more, the authors' definition of the successful technology leader in *Strategic IT* is "spot on" and a must-read for CIOs that are planning how they will emerge as leaders in a digital-based society. So much of an organization's success depends on whether the CIO and the leadership team work closely together and have a shared vision of the business. *Strategic IT* will give CIOs more than a fighting chance to make a difference in their organizations—a difference that most of them want to accomplish with the tools they need to survive and thrive in today's fast-paced world.

Nicholas Donofrio  
IBM Fellow Emeritus & EVP Innovation  
and Technology (Ret.)  
NMD Consulting, LLC  
Executive in Residence, Columbia University  
Center for Technology Management

# PREFACE

## How This Book Is Structured

---

Four broad themes provide the structure for this book:

1. How is technology organizationally positioned as an effective strategic driver?
2. What challenges are posed by various ways of positioning technology, and what are the implications of how these challenges are resolved?
3. What strategies are used by effective chief information officers (CIOs) in addressing these challenges and strategically positioning technology?
4. How did these CIOs learn these strategies, and what are the implications for developing this capacity in high-potential technology managers?

This book grows out of the work we have done with the CIO Institute conducted at Columbia University and the Executive Master of Science in Technology Management program at Columbia University, along with several projects working with the technology management staff within corporations with the focus of developing their staffs to the strategic realities described earlier. Part of this work has experimented with educational and mentoring strategies with successful CIOs to foster strategic mindsets and the capability of meeting the challenges of navigating into senior executive roles.

Specifically, this book provides a comparative analysis of case studies of organizations with CIOs widely regarded as being at the forefront of addressing the challenge of strategically positioning technology within the business models of their organizations. These CIOs are recognized as having successfully made the transition into the C-suite and having earned their “seat at the table” through integrating technology as a business driver.

Each case study involves interviews with the CIOs, their colleagues in the C-suite, and chief executive officer (CEO), along with archival documents to describe both the personal and organizational transitions that have occurred. The cases involve Procter & Gamble, Covance, Cushman & Wakefield, Merck, and Prudential, among others. Cross-case analysis reveals the essential and unique themes of strategically positioning technology in the organization along with developmental practices for high-potential technology managers.

The remaining chapters of this book develop the remedies as we see them based on best practices from our cases, the integration of theories in the areas of learning and development and how they relate to the successful growth of the CIO position. Here is a brief summary of each chapter.

### **Chapter 1: The CIO Dilemma**

Chapter 1 addresses why CIOs need to make technology an important part of business strategy, and why few of them understand how to accomplish it. In general, we show that most CIOs have a lack of knowledge about how technology and business strategy can and should be linked to form common business objectives. The chapter provides the results of a research study of how chief executives link the role of technology with business strategy. The study captures information relating to how chief executives perceive the role of information technology (IT), how they manage it and use it strategically, and the way they measure IT performance and activities.

### **Chapter 2: IT Drivers and Supporters**

This chapter defines how organizations need to respond to the challenges posed by technology. We present technology as a “dynamic variable” that is capable of affecting organizations in a unique way. We specifically emphasize technology’s unpredictability and its capacity to accelerate change—ultimately concluding that technology, as an independent variable, has a dynamic effect on organizational development. This chapter also introduces the theory of driver and supporter and responsive organizational dynamism (ROD), defined as a disposition in organizational behavior that can respond to the demands of technology as a dynamic variable. We establish two core components of ROD: Strategic integration and cultural assimilation. The chapter also provides a perspective of the technology life cycle so that readers can see how ROD is applied on an IT project basis, defining the driver and supporter functions of IT and how it contributes to managing technology life cycles.

### **Chapter 3: The Strategic Advocacy Mindset**

Chapter 3 provides a framework for engaging in strategic advocacy, linking strategic learning practices such as analog reasoning and scenario thinking with political savvy influencing practices in organizations. Distinctions between technological, adaptive, and generative challenges that confront the IT executive are presented along with the implications for effectively building productive relationships with senior executives. Specific practices are provided along with examples from both our research and working with a range



of IT executives. How the IT executives' mindset impacts the effectiveness of how they utilize these practices is also developed.

## **Chapter 4: Real-World Case Studies**

In Chapter 4, we provide five case studies of companies that, as a result of the strategically focused business mindset of the CIO, have made the journey transitioning from a service to driver positioning of technology. These cases, among other data sources, have provided the basis for the points made in previous chapters and the more detailed analysis that follows. Emphasis is placed on how the CIO has enabled or is enabling this ongoing transition. Drawn to provide variance in terms of industry and/or markets, the cases are BP, Covance, Cushman & Wakefield, Merck, Procter & Gamble, and Prudential, along with a summary that frames the following chapters.

## **Chapter 5: Patterns of a Strategically Effective CIO**

Chapter 5 provides evidence of why certain CIOs have attained success as strategic drivers of their businesses. This evidence is presented from the case studies and integrates our findings based on our theories of why certain CIOs are more successful than others. These theories have led us to understand the patterns that suggest why these CIOs have been successful in introducing an IT strategy and how they build credibility among C-level peers in their organizations.

## **Chapter 6: Lessons Learned and Best Practices**

This chapter seeks to define best practices to implement and sustain strategic advocacy and success at the CIO level. The chapter sets forth a model that creates separate, yet linked best practices and maturity "arcs" that can be used to assess stages of the learning development of the chief IT executive, the CEO, and the middle management in an organization. We discuss the concept of "common threads," where each best practice arc links through common objectives and outcomes that contribute to overall performance in the CIO suite.

## **Chapter 7: Implications for Personal Development**

In Chapter 7, we provide a framework for the development of high-potential IT talent. The importance of both formal and informal experiential learning of working across a business is emphasized along with development of both strategic learning and influential practices. Specific exercises are provided for fostering these practices. Effective mentoring practices are also presented, again based on experience.

## **Chapter 8: Digital Transformation and Business Strategy**

This chapter explores the effects of the digital global economy on the ways in which organizations need to respond to the consumerization of products and services. From this perspective, digital transformation involves a type of social reengineering that affects the ways in which organizations communicate internally and how they consider restructuring departments. Digital transformation also affects the risks that organizations must take in what has become an accelerated changing consumer market.

## **Chapter 9: Integrating Gen Y Talent**

This chapter focuses on Gen Y employees who are known as “digital natives.” Gen Y employees possess the attributes to assist companies to transform their workforce to meet the accelerated change in the competitive landscape. Most executives across industries recognize that digital technologies are the most powerful variable to maintaining and expanding company markets. Gen Y employees provide a natural fit for dealing with emerging digital technologies; however, success with integrating Gen Y employees is contingent upon Baby Boomer and Gen X management to adapt new leadership philosophies and procedures suited to meet the expectations and needs of these new workers. Ignoring the unique needs of Gen Y employees will likely result in an incongruent organization that suffers high turnover of young employees who will ultimately seek a more entrepreneurial environment.

## **Chapter 10: Creating a Cyber Security Culture**

The growing challenges of protecting companies from outside attacks have established the need to create a “cyber security” culture. This chapter addresses the ways in which information technology organizations must further integrate with business operations so that their firms are better equipped to protect against outside threats. Since the general consensus is that no system can be 100% protected and that most system compromises occur as a result of internal exposures, information technology leaders must educate employees on best practices to limit cyber attacks. Furthermore, while prevention is the objective, organizations must be internally prepared to deal with attacks and thus have processes in place should a system be penetrated by a third-party agent.

## **Chapter 11: The Non-IT CIO of the Future**

This chapter explores the future requirements for CIOs, particularly placing an importance on business knowledge and how technology provides competitive advantage and operational efficiencies. We see the role of the CIO

becoming more of a chief of operations or chief being functionally responsible for contracts, equipment management, general automation, and outsourcing while having a central role in conversations about strategically leveraging emerging new technologies.

## **Chapter 12: Conclusion: New Directions for the CIO of the Future**

Chapter 12 summarizes the primary implications of the book for the IT field and the implications for other executives in terms of building strategically productive relationship with IT.



# ACKNOWLEDGMENTS

There are many colleagues and corporate executives who have provided significant support during the development of this second edition.

We owe much to our colleagues at Columbia University, Teachers College, namely Professor Victoria Marsick and Professor Emeritus Lee Knefelkamp for their ongoing mentorship on adult learning and developmental theories. We appreciate the support of Aarti Subramanian, our graduate assistant, for her participation in the research process, including transcribing interviews, and to Jody Barto, another graduate assistant, who helped with finalizing some of the exhibits. Nicholas Donofrio, emeritus (retired) executive vice president of innovation and technology at IBM, also provided valuable direction on the complex issues surrounding the emerging role of CIOs, especially how they operate with boards of directors.

We appreciate the corporate CIOs who agreed to participate in the studies that allowed us to apply our theories to actual organizational practices (in alphabetical order): Steve Bandrowczak from Xerox; Craig Cuyar from Omnicom; Dana Deasy now CIO of the Department of Defense; Barbara Koster from Prudential Financial; Filippo Passerini, now retired from Procter & Gamble; and Chris Scalet, retired from Merck. All of these executives contributed enormous information on how corporate CIOs can integrate technology into business strategy.

And, of course, we are indebted to our wonderful students at Columbia University. They continue to be at the core of our inspiration and love for writing, teaching, and scholarly research.



# CHAPTER 1

## The CIO Dilemma

The role of the chief information officer (CIO) continues to be a challenge in many organizations. Unlike the CIO's related "C-suite" colleagues, organizations struggle to understand the need for the role and more importantly how to measure success. We know that most CIOs have short terms, the vast number only lasting about three years. At CIO conferences, many CIOs have coined the CIO acronym as standing for "Career Is Over." Nothing should be further from the truth. We know that technology continues to be the most important factor in strategic advantage among chief executive officers (CEOs). And we also know that there is a population of CIOs that have clearly demonstrated the success of the role by the sheer longevity that they have held their position. We will cover some cases of these individuals later in the book. This chapter focuses on the common dilemmas that face CIOs based on our research and practice.

The isolation of information technology (IT) as a department is nothing new. Technology people have been criticized, and in many cases rightfully so, for their inability to integrate with the rest of the organization.<sup>1</sup> Being stereotyped as "techies" continues to be relevant, and the image seems to have gravitated to the level of the CIO. Even with the widespread importance of IT over the past two decades, CIOs have been challenged to bring strategic value to their companies—and those that have not done so have had short-lived tenures. There is little question about the frustration that exists with CIOs at the CEO level, the reasons for which we will address in this book. Satisfying the CEO is a challenge for most CIOs—it involves the complexity of explaining why IT is so expensive, understanding why projects take so long to complete, and clearly articulating how IT supports the business. Our best evidence of this communication gap between the CEO and CIO was best represented by Carr's 2003 article titled, "IT Doesn't Matter," which was published in the *Harvard Business Review*.<sup>2</sup> The article sharply criticized the IT function and attacked its overall value to organizations. It received instant popularity among chief financial officers (CFOs) and CEOs as many began to review their investments in IT and the role of the CIO in general. The question remains, *why*? Especially since so many CEOs acknowledge that IT is the most important variable of competitive advantage.

Because technology is changing at such a rapid pace, the ability for any CIO to operate in a dynamic business environment is staggering. As we will see in this book, the CIO fights a “two-front war”: Keeping technology operational and secure while at the same time attempting to bring strategic advantage for the business. This is certainly not an easy task, as Schein discussed in his 1992 article, “Management and Information Technology: Two Subcultures in Collision.” The article disclosed much of the imbalance between the CEO and IT. This “imbalance” has continued to be the key success factor for many CIOs, especially when they attempt to bring strategic value to their organizations.

The results of our research suggest that the CIO’s value to the business lies in the following key areas:

- Business integration
- Security
- Data analytics
- Legal exposure
- Cost containment

### **Business Integration**

---

There is nothing new about the mission for CIOs to figure out how to integrate technology in their respective businesses. The consensus among successful CIOs is that they spend a significant amount of their time meeting and working with key business owners, particularly business heads. However, Langer’s research found that line managers were even more important.<sup>3</sup> Line managers are defined as those managers that have ultimate day-to-day responsibility for a business area, so successful CIOs ensure that they are in touch at that level as well. Spending time is one thing; however, accomplishing true integration requires CIOs to commit staff to those line units and even consider permanently moving IT resources to business units. The results of our research show that many CIOs say they are integrated, yet few really are. The key aspect of CIO business integration is relationship building. True relationships mean spending consistent time and becoming part of the challenges of the business unit.

### **Security**

---

In the past 10 years, security of information has become of top concern for many organizations because of the growth of the Internet, social media, and widespread online accessibility in general. Depending on the industry, protecting data and information are paramount to the lifeblood in such



industries as finance, health care, and government. A breach of security can quickly create a loss of client confidence and even result in penalties imposed by various regulatory bodies. So explaining how the CIO and a CISO (Chief Information Security Officer) are protecting the business's information is a very important topic at board meetings.

## **Data Analytics**

---

"Data analytics," the current term used for understanding the data that the organization owns, has been the most growing area of interest for CIOs because of board-level interests. Knowledge is power, as they say, and being able to aggregate data for competitive advantage is critical for any organization. Data analytics requires CIOs to first be able to figure out the technical challenges of aggregating the data, then being capable enough to learn how best to present what the data mean. The more board members see meaningful data, the more questions they have, which ultimately leads to an ongoing inquiry of questions and responses. The interaction, if done effectively, promotes the importance that the CIO has to the business.

## **Legal Exposure**

---

IT has many legal exposures; the data they save, the intellectual property they own, and the complexity of contractual relationship they have cause much exposure for any firm. CIOs need to understand how to operate with their organization's corporate counsel and be heavily versed on the international legal terrain. Furthermore, there are growing legal exposures that relate to the information that firms keep, which can be used as part of discovery during legal cases. In addition are the complexities of protecting intellectual property, patents, trademarks, and copyrights, and in many industries such as health care, the overabundance of regulation on protecting and using data. The responsibility for much of all of these issues falls on the CIO.

## **Cost Containment**

---

Let's not underestimate the value that IT has in reducing certain operational costs. Providing IT shared services is still a significant value proposition to many boards. Squeezing costs to improve shareholder value is another avenue of IT value. Many CIOs can obtain board confidence by showing ways to cut existing costs. There are dangers in trying to do this, particularly with the business units that may be affected, so CIOs need to be very careful how they

embark on cost-reduction initiatives. Having a cost-efficient mindset is also impressive to boards, as CIOs historically have been classified as “spenders” and they still represent a very large part of a firm’s overall capital expenditures.

When looking at these issues, it seems overwhelming that one individual could ultimately be responsible for all of these functions. Yet while there are other executives involved (e.g., legal counsel), the CIO must be involved in setting the strategy and operational controls that protect the organization and make it competitive at the same time. It seems like the CIO has a two-front war, as we shall discuss in later chapters.

A major IT dilemma is how to design an enterprise IT organization that addresses the factors just discussed. What does this mean? The question really is whether user and consumer expectations toward IT innovations result in significant changes in how technology is delivered and managed within an organization. This question is being raised during a time where there:

- Are disruptions of traditional models being challenged by the market.
- Is greater opportunity for innovation in a global context.
- Is a much more demanding employee base.
- Is a need to accelerate the speed of change.
- Are third-party infrastructures for consideration.

So, the need for IT leadership has never been greater, during a period where there is a shortage of CIO talent!

As Chris Scalet, former CIO of Merck, once stated at Columbia University, “CEO demands from IT are dramatically increasing”:

- They want it all—productivity, speed, predictability, cost effectiveness, and innovation.
- Technology as an accelerator and differentiator rather than a speed bump or “gating factor.”
- Generation of revenue.
- Market leadership.
- Relevance.
- Tight alignment with the business.

So the CIO now has to rethink IT services to meet these demands. We are at that “fork in the road.”

## Some History

---

Much of the CIO leadership, simply by their age, likely began their careers during a different phase of the IT evolution. During the 1970s, the mainframe was king. IT was locked down and was mostly used for accounting and number

crunching. By the 1980s, the personal computer (PC) hit the market and for the first time IT could no longer control technology solely inside the walls of the IT department. Unfortunately, IT executives tended to reject the PC as a viable IT solution, coining it more as a toy than a real business solution. However, by the 1990s, distributed computing became a reality, especially with the proliferation of networked PCs—which allowed for the widespread expansion of IT throughout the business. IT could no longer restrict users from working with computers directly. The advent of PC networks also required that IT leaders become enamored with the need to support the end user—those CIOs that provided the best support were the best CIOs. Unfortunately, support in the 1990s meant quick response to user requests within limits that restricted access to certain computers, software, and operating systems. By 2000, the Internet revolution was upon us, the dot-coms had crumbled, but the user also became a consumer, and consumers rule the business. So in the 40-year evolution, IT leaders have needed to make significant shifts in the way they deliver and manage IT services—with an evolution toward “consumerization.” Unfortunately, many of those “older” IT executives have found it difficult to adjust and change, which has resulted in a common turnover of CIOs usually in the three-year range. The typical reason is that CIOs formulate a strategy in their first year, implement in their second, and fail to deliver in their third and final year! Not an impressive story, for sure. The dilemma then also relates to past experiences with CIOs that attempt to either ignore or block past IT evolutions.

The consumerization of technology is staggering. Ninety-five percent of employee purchases of technology are used for business. A Unisys study of 2,820 employees reflected that workers are generally dissatisfied with the level of support IT provides for its consumer technologies. While 95% of technologies are self-purchased by employees, 70% of their employers want to standardize technologies for them, thus restricting their abilities to use the technologies they have purchased. Furthermore, 57% of those employers are not interested in providing stipends for employee expenditures.

## The Challenge

---

Today, we see another level of IT evolution that specifically involves cloud computing, mobility, predictive analysis, cyber security, and social media—all affecting how CIOs deal with the legal complexities, business integration, and security challenges mentioned earlier. Cloud computing has established an entirely new service model that allows businesses to gain access to outside networks that store data and provide common software solutions at lower and more effective prices. This mobility requires IT executives to provide employees with the capacity to work wherever they are, without necessarily requiring

them to use a laptop or desktop computer. Predictive analysis, a subset of data analytics, provides the ability of users to access reliable data and understand past transactions to effectively predict what will happen in the future. Finally, social media must optimize communication between companies and their customers and suppliers.

Oxford Economics recently surveyed C-suite executives and asked them to rate the impact of each of these areas on their businesses over the next five years. Almost 60% selected mobile technology, and over 35% selected predictive analysis and cloud computing, with slightly over 30% picking social media.

This leads to two important questions: (1) How will this new wave of “disruptive” technologies affect organizations, and (2) can CIOs establish a natural evolution in their organizations that will lead to a fundamental shift in the way IT is managed and measured?

## The New Paradigm

---

Prahalad and Krishnan realized the effects of consumerization on IT in their book *The New Age of Innovation*. They established a model called the “New House of Innovation.”<sup>4</sup>

At the core of this model is the proposition that there is a need for “flexible and resilient business processes and focused analytics.”<sup>5</sup> The “pillars” of this need are represented by  $N = 1$  and  $R = G$ .  $N = 1$  is the consumer: Every business must serve each consumer as a unique individual.  $R = G$ , however, suggests that resources must be global. So the model essentially frames consumerization as being the ability to serve one customer’s needs by using multiple resources from global sources. In other words, to successfully compete, organizations must be agile enough to provide specialized services; the only way to accomplish this is through a multitude of providers that can respond and deliver. For example, if a user needs service at an off-peak time, the organization that can provide such support using global resources will be the winning businesses of the future. A consumer needing something at midnight in New York perhaps will be serviced by someone in Singapore—it’s “on-demand,” specialized for the individual. An alternative analogy is the Burger King slogan: “Have it your way.” The difference here is that consumers want it on demand. So Burger King would have to provide hamburgers at midnight and provide almost unlimited choices. Not an easy world, but the reality of what technology has created in the *new* world. So the message for the contemporary CIO is to treat every user as a unique entity and have dynamic resources that can deliver what they want and when they want it. To accomplish this feat, CIOs need multitudes of strategic alliances and new types of employees.

## **Consumerization of Technology: The Next Paradigm Shift**

We continue to expand this idea of the paradigm shift expressed thus far. The need for new forces in organizations can be represented by four fundamental shifts in IT service requirements now also known as the key aspects of digital transformation:

1. Speed must be more important than cost.
2. The workforce must be empowered to respond to consumer and market needs.
3. Choice of devices over standardization and controls.
4. On-demand infrastructure (networks, computing power, and storage).

Much of these four shifts will serve to further the commoditization of many traditional IT roles and responsibilities. This will place greater emphasis on the ability of the CIO to lead. Thus, there must be emerging shifts in the way IT is used, led by the CIO, to construct this new consumerization:

- Information is more important than the technology used to deliver it.
- IT must be embedded in the business more significantly and in a much different way.
- Service deliveries must use internal and external resources through strategic alliances and partnerships.
- Knowledge within IT must be mapped into actual business responsibilities.
- The traditional role of IT must be openly diminished.

So the CIO dilemma ultimately is to figure out how to lead this transformation. The impact on the IT organization will be significant in five ways:

1. IT must completely overhaul its value services, transitioning them to areas like business intelligence to improve collaborations with users and customers.
2. Back-office operations will continue to be commoditized and outsourced where appropriate.
3. Business units will become increasingly capable of obtaining IT services directly from third-party service providers.
4. Business leaders must learn how to develop and drive their own technology strategies and seek leadership from the CIO.
5. Traditional IT roles such as project management and change management must be transitioned into more business-defined services.

## The End of Planning

---

Accenture issued a report in February 2012 from its Institute for High Performance. The report, “Reimagining Enterprise IT for an Uncertain Future,” discusses the complexity of being an IT executive, emphasizing the “uncertainty” of the future. More important was Accenture’s finding that there are seven “large-scale forces” that can make or break IT organizations:

1. The culture impact of consumer IT: Smartphones, social networks, and other consumer technologies are creating the need to change cultures, attitudes, and workplace practices.
2. Global, Internet-based competition: Companies with Internet-based models are challenging and overtaking traditional industry leaders from North America, Europe, and Japan.
3. Vulnerable technology and information—particularly security and reliability.
4. Increasing pressure for quality and efficiency—while keeping costs low.
5. Rise of data-driven decision making for critical systems.
6. New approaches to innovation—rethinking how to provide and control new products and services.
7. Disruptive disasters caused by man-made catastrophes and wars.

The report also states, “Executives are paid to anticipate what might go wrong and what might be different tomorrow than it is today.” Ultimately, this means that CIOs cannot operate based on long-term plans because its assumptions are likely to be highly vulnerable to realities. As we will discuss later in the book, CIOs need to “sense” opportunity and “respond” in a dynamic fashion. This represents a huge leap in their thinking and doing.

The world of the CIO has changed. Some may view this change as the end of the role—others will see this transition as an opportunity to transform their organizations, evolve the culture, and build technology-based businesses with an emphasis on the following core concepts:

- Employees and consumers will demand special technologies and services, which will alter the “control” mindset of many IT organizations over their constituents.
- Historical CIO responses to change will not work this time—avoiding or ignoring the need to change will not be sufficient for the CIO to survive.