Every organization wants to improve the way it does business—to improve its ability to respond rapidly and dynamically to market forces and to competition, and to produce goods and services more efficiently, while increasing profits. Leading companies are increasingly using business process management techniques to define and align their processes, vertically and horizontally. At the same time they are implementing process governance and performance measurement systems to assure cost-effective and consistent outcomes. Managers face many challenges when they try to implement these techniques. Business Process Change, 2nd Edition provides a comprehensive and balanced discussion of business process change today. It describes the concepts, methodologies, and tools managers need to improve or redesign processes and to implement business process management systems in their organizations.

Features
This is a complete revision and update to the popular 1st Edition of Business Process Change. It includes new material on all aspects of process change including Business Process Management Systems (BPMS), Business Rules, Business Process Architectures, Enterprise Architectures, Business Frameworks, Performance Metrics, Process Redesign, and Six Sigma and Lean methodologies.

- Includes the most comprehensive, up-to-date look at state of the art business process improvement methodologies.
- Shows you how all the different process elements fit together.
- Presents a methodology based on current best practices that can be tailored for specific needs, and that maintains a focus on the human aspects of process redesign.
- Provides all new detailed case studies showing how all these methodologies are successfully being implemented by leading companies.

About the Author
Paul Harmon is Executive Editor and Senior Analyst at Business Process Trends (www.bptrends.com), the most trusted source of information and analysis on trends, directions, and best practices in business process management. He is the co-author and editor of the BPTrends Product Reports, the most widely read reports available on BPM software products. In addition, he is the Chief Methodologist and a Principal Consultant at BPTrends Associates, a professional services company providing consulting, executive education, and training services to organizations interested in understanding and implementing business process change programs.

Paul is an acknowledged BPM thought leader and a respected author and consultant who has helped numerous companies apply business process technologies and methodologies to solve their business problems. He has developed and presented seminars, keynotes and executive briefings on BPM to conferences and major organizations throughout the world.
Praise for Business Process Change

You've picked up the right book for just about any goal you have in process management. If you're an enterprise process architect or manager, Harmon tells you what you need to think about and do at the enterprise level. If you are an owner or improver of a particular process, there's an entire section devoted to managing particular processes. If you're charged with using IT to support processes, you are similarly in luck. The book should be on the desk, in the briefcase, or on the bedside table of anyone who believes business processes are an important way to understand businesses and make them better.

—From the foreword by Thomas H. Davenport, Director, Process Management Research Center, Babson College.

Paul Harmon is without doubt the best informed and most trusted observer of all things BPM. True to form, in this book Paul provides a comprehensive and insightful summary of the current BPM landscape.


Paul Harmon has done a great job updating his 2002 classic. BPM has changed significantly over the past 5 years and Paul has integrated those changes with the interrelationships of six sigma, lean, ERP, BPMS, SOA, and other enablers. Paul makes sense of the proliferation of BPM tools while recognizing the fundamental management changes that underpin them. As a result, this book is an excellent tactical reference for cross-functional teams to implement and sustain BPM as a platform for business transformation and to execute strategy.

—George F. Diehl, Global Director, Process Management, Air Products and Chemicals, Inc.

Business Process Change does a superb job explaining why Business Process Management has emerged as a critical discipline for improving competitiveness. Paul Harmon has succeeded in covering the key aspects of this field in a manner that is intellectually sound, and yet grounded in pragmatic realities. A must read for business process experts.

—David S. Frankel, SAP Labs, Author of Model Driven Architecture.

Business Process Change by Paul Harmon, has proved very valuable as a prescribed source in the Doctor of Management in Information Technology Program (DMIT) at Lawrence Technological University, Michigan. In this program, designed for the experienced professional, IT enablement of business processes is a key concern. This text has proposed a way to approach alignment of the IT strategy with enterprise strategic planning, and provides guidance for managing business process improvement and reengineering initiatives, including a useful case study. With the fast changing IT scene we look forward to the new revised edition.

—Annette Lerine Steenkamp, Ph.D. Professor and DMIT Program Director, College of Management, Lawrence Technological University.

Six Sigma plays a role in business process change—but this role is often not well understood. Contrary to the proclamations of certain pundits, Six Sigma is not the be-all and end-all or the last work in process change. Nor is it an isolated tool used only for solving problems or optimizing performance within existing processes. It’s more subtle than either of these extreme views, and it’s critically important to get it right. Until now, no one has effectively addressed the role of Six Sigma in this larger context. But Paul Harmon hits it square-on. Every Six Sigma practitioner should read this book—and better understand the nature of Six Sigma within the greater world of business process change.

—Bruce Williams, Vice President and General Manager for Business Process Management Solutions, webMethods. Coauthor of Six Sigma for Dummies and Lean for Dummies.
It's a relief for process professionals to be able to move beyond theoretical BPM with case studies and find techniques and methodologies which provide great results in applied BPM. Paul Harmon's writing has been an invaluable guide for me for several years, and his methodologies in combination with the open-standard framework based on SCOR®, benchmarking, and methodologies we have been using at Supply-Chain Council provide a complete end-to-end approach for organizations to take themselves not just to the next level, but to place themselves permanently on the top-level of performance. This is a must read for process professionals, whether you're coming at it from "the business" or "the IT" side, a "Wade-Mecum" for the Third-Wave Generation of process experts.

—Joe Francis, CTO, Supply-Chain Council.

I enjoyed the writing style because it took some complex concepts and ideas and boiled them down into very simple, easy to understand concepts. Considering that there is lots of differing opinions on BPM by press, analysts and vendors, it makes it very difficult for the end customer to get a true understanding of the concepts. The two chapters that I read make it very easy to grasp the concepts. It makes very easy reading for the busy executive or the practitioner who wants to get an understanding of the BPM market.

—Trevor Naidoo, Director, ARIS Solution Engineering, IDS Scheer North America.

Harmon takes a clear-eyed look at the "movements," the standards, the strategies and the tactics and distills it into a clear picture of how to manage an agile business in the 21st century. As change accelerates and margins fall, this book becomes a must-read for survivors-to-be.

Business Process Change
A Guide for Business Managers
and BPM and Six Sigma Professionals

Second Edition
Business Process Change
A Guide for Business Managers and BPM and Six Sigma Professionals
Second Edition

Paul Harmon
Executive Editor, www.BPTrends.com
Chief Methodologist, Business Process Trends Associates

Foreword by Tom Davenport
To Celia Wolf and Roger Burlton,
my business partners and my friends
Foreword

Tom Davenport
President's Distinguished Professor of Information Technology and Management
Director, Process Management Research Center
Babson College
Wellesley, Massachusetts

Paul Harmon has a knack for writing clearly about topics that other people tend to obfuscate. Whether the topic is expert systems, e-business, or process management, he cuts through needless complexity and uses clear terminology to get the relevant points across. In this book, of course, he has focused on process management and associated technologies. There are unfortunately many possibilities for obfuscation in this topic area. Other people might confuse the technologies with the actual business change involved in process management, but not Harmon. He is always careful, for example, to note that “BPM” means business process management, and “BPMS” means systems that help accomplish BPM. If only that other writers and speakers on these topics were so careful.

In this regard and in many other ways, Business Process Management is a model of clarity. All books on business process management should be this clear. In fact, all books about how to manage anything should be this clear. Process management should be treated—as it is in these pages—as one of the basic principles of contemporary management, rather than anything exotic or esoteric.
Why is an extremely clear approach to process management particularly important? One reason is that process management has been somewhat faddish in the past. As a management topic it has been a bit immature, coming in and out of fashion over time. For some reason managers and firms have often latched onto the more fashionable, short-term elements of the approach instead of the more timeless ones. There have been multiple flavors or different religions of the movement, including Total Quality Management (TQM), Reengineering, Six Sigma, Lean, and so forth.

Each decade seems to see the rise of a new flavor, although as Harmon describes, many of the underlying principles are similar. Perhaps the excitement of a “new” approach (or at least a new combination of previous ideas with a new name) is necessary to get people excited, but there is a downside to this approach. The problem is that devotees of a new process religion become bored as rapidly as they were converted. Basic business process management may not be new or sexy, but it is clearly necessary. Perhaps it should be adopted whether it is sexy or not, and then perhaps it will persist over the long term without cycles or fads. This book goes a long way toward advancing that perspective on processes.

It’s also apparent that process management, as it has changed over time, is a synthetic discipline. Each new process management approach has built on previous foundations, and added one or more new elements. This book, I am happy to note, also takes a synthetic, broad approach to process management. Ideally, an organization would be able to draw upon all of the elements or tools available to meet the process management needs of any individual project. Harmon provides a methodology for process management that contains most if not all of the attributes an organization could need with regard to improving processes.

The book also takes—at least to my mind— the appropriate perspective on information technology in the process context. Most approaches to process management either devote too much attention to information technology or too little. Some devotees of reengineering and BPM technologies act as if IT is literally all that matters in improving processes. They usually achieve no business change as a result. Advocates of Six Sigma and Lean usually ignore technology altogether. However, IT is a powerful tool, and to ignore it is to leave a lot of potential change on the table. Harmon’s approach is like Goldilocks’ porridge: just right. It treats IT not as the primary objective of BPM, but as an enabler. Yet the book has plenty of detail and useful knowledge on how IT can help in managing and improving processes. Harmon has carefully
updated the book since the 2002 edition to address the latest technologies in the realm of process management.

Finally, process management advocates—like enthusiasts for other management trends—often pretend that process management is the only business idea that matters. Get that right, the argument goes, and everything else about a business is either irrelevant or will automatically fall into place. Harmon is under no such illusions. He knows that processes must coexist with strategies, value disciplines, enterprise systems, and other aspects of organizational life. The book provides useful guidance on how process management relates to, and can support, other modern management ideas. As with other aspects of the book, it's a sober and realistic approach.

You've picked up the right book for just about any goal you have in process management. If you're an enterprise process architect or manager, Harmon tells you what you need to think about and do at the enterprise level. If you are an owner or improver of a particular business process, there's an entire section devoted to managing particular processes. If you're charged with using IT to support processes, you are similarly in luck. The book should be on the desk, in the briefcase, or on the bedside table of anyone who believes business processes are an important way to understand businesses and make them better.
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Preface to the Second Edition

BUSINESS PROCESS CHANGE was originally written in 2002, and published at the beginning of 2003. Since then, the interest in business process and the number of business process projects have increased dramatically. In 2002, there were no Business Process Management (BPM) conferences in the U.S. In 2006, there were eleven major BPM conferences and dozens of other meetings on more specialized aspects of process change. In 2002, most corporate process work was focused on specific business process improvement projects. Today, leading organizations are focused on enterprise business process architectures and on developing corporate performance management and measurement systems that will allow senior executives to plan, monitor and manage enterprise-wide transformation efforts. Many of these enterprise efforts are being facilitated by newly available business process frameworks, like eTOM and SCOR, that make it possible to create enterprise models and performance measurement systems in weeks rather than months.

During this same period, new tools and methodologies have become common among those undertaking business process change projects. Six Sigma programs in most major corporations have expanded and now include Lean technologies. Several Six Sigma groups have extended their practices to include Human Performance techniques or aligned their practices with frameworks like SCOR. New process modeling notations have begun to replace earlier notations. There has also been significant work done to integrate business process modeling techniques with business rules technologies.
In a similar way, new software tools have made it possible to automate the day-to-day management of processes. BPMS products were unavailable in 2002 and are now widely available and becoming very popular. During the same time period a number of technical standards have been created to support these new software tools.

This book focuses on the entire range of options that business managers face when they try to redesign, improve or automate their company’s business processes. I have tried to emphasize the relationships between the various approaches. I am convinced, as a result of years of work with leading companies, that the companies that succeed, over the long term, are those that figure out how to integrate and coordinate all their different business process change options. Any one approach may seem like a fad. In any given year, one or another of the approaches will get more attention in the popular business press. But, over the long term all are necessary. Six Sigma with its emphasis on quality and its powerful grassroots organizing abilities, IT with its automation techniques, and those who are focused on strategy, business process architectures, and process management training and evaluation all understand important aspects of process. Smart managers will insist that the practitioners from each of these areas coordinate their efforts to assure that their organizations achieve outstanding results.

In 2003, just as Business Process Change was published, Celia Wolf and I founded Business Process Trends (www.bptrends.com), a web portal that publishes a wide variety of articles on business process practices. As the Executive Editor of BPTrends, I have been well positioned to observe the evolution of the business process market and realized, as 2006 was drawing to a close, that a new edition of Business Process Change was necessary if the book was to continue to serve as a comprehensive guide for managers and practitioners who need up-to-date information on current business process practices.

To reflect the major shift that has occurred in business process practice in the last four years, I have reorganized the book and divided it into three major sections, one focused on Enterprise Level Concerns, one on Business Process Project Concerns, and a third on Implementation Technology Concerns. I have added significant new material to each section. I discuss the new emphasis on business process architectures and the use of business process frameworks in the Enterprise section. I include new process redesign and improvement techniques—like Lean—in the Process section, and I describe Business Process Management System products and several new standards in the Implementation section. Throughout the text I have updated discussions
to reflect the evolving practices. Overall, perhaps half of the text has changed in whole or in part.

*Business Process Change* sold well during the past four years and many readers told me that they liked the way the book provided a comprehensive overview of all of the options that were available to managers and practitioners. I have tried to maintain that approach, updating earlier material and adding new material to assure that this second edition will continue to provide readers with the broadest overview of the techniques and practices that are being used to effect business process change in today’s leading organizations.

Today, our Business Process Trends Web site ([www.bptrends.com](http://www.bptrends.com)) provides an excellent extension to this book. Each month we publish current information on new techniques and case studies that illustrate trends in business process practices. In the earlier edition of *Business Process Change*, we included an extensive Glossary and a Bibliography, which quickly became out of date as new terms and books became popular. In this edition we have omitted both and have placed them, instead, on the BPTrends Web site so they can be frequently updated.

I want to thank the many, many readers of *Business Process Change* and the members of the Business Process Trends Web site who have talked with me and sent me email. Business process change is complex and expanding and I have been able to cover it as well as I have only because of the many different people who have taken the time to teach me about all of the different kinds of process work that is being undertaken in organizations throughout the world. I can hardly name them all, but I can at least name a few who have provided special insights.

The first book originated in conversations I held with Geary A. Rummler. I worked for Geary in the late sixties and learned the basics of process analysis from him. I’ve continued to learn from him and read everything he writes.

In 2003, Celia Wolf and I founded Business Process Trends. Two years ago Celia and I joined with Roger Burlton, Artie Mahal and Sandra Foster to found Business Process Trends Associates, an education, training, and consulting services group. As I have worked with Roger, Artie, and Sandy to create the BPTrends Associates curriculum, I have benefited from their extensive and practical experience in affecting business process change.

A number of people stand out for their role in teaching me about specific technologies. I have never met Michael Porter, but his books and writings have taught me almost everything I know about strategy, value chains, and the development of com-
petitive advantage. Joseph Francis, currently the CTO of the Supply Chain Council first convinced me of the importance of business frameworks and proceeded to demonstrate their power at Hewlett-Packard. George Brown of Intel has also been very helpful in regard to both the SCOR framework and the VRM framework. I owe Pam Garretson and Eric Anderson a great deal for teaching me how Boeing GMS organized its entire division using a process-centric approach. They really demonstrated what a dedicated management team can do to create a process-centric company. I owe a debt to Roxanne O'Brasky, Executive Director of ISSSP; Don Redinius and Ron Recker of AIT Group and David Silverstein of the Breakthrough Management Group (BMG) for teaching me more about Six Sigma. I owe a similar debt to Howard Smith of CSC, Derek Miers, and Rashid Kahn for teaching me about the nature and potential of BPMS products. I owe thanks to Stephen White for his many conversations on notation and BPMN and to David Frankel, Sridhar Iyengar, and Richard Mark Soley for their ongoing insights into the evolution of the software market and the OMG's standards setting process. I also owe a debt of gratitude to Curt Hall for his continuing conversations on business rules and artificial intelligence in all its manifestations. And I want to thank Thomas Davenport for his insight and support over the last few years and for writing the Foreword.

This just scratches the surface; however, and I also owe thanks to lots of others for their special insights into business process practices and technologies. With apologies to anyone I've accidentally omitted, this list includes: Wil van der Aalst, Roger Addison, John Alden, Paul Allen, Michael Anthony, Gopala Krishna Behara, Oscar Barros, Conrad Bock, Peter Bolstorff, David Burke, Allison Burkett, Frits Bussemaker, Richard Butler, Mike Costa, David Chappell, Brett Champlin, Fred Cummins, Bill Curtis, Joseph DeFee, George Diehl, Jean-Jacques Dubray, Chuck Faris, Paul Fjelstra, Peter Fingar, Layna Fischer, David Fisher, Mike Forster, Kiran Garimella, Ismael Ghalimi, Mike Gilger, Praveen Gupta, Keith Harrison-Broninski, Hideshige Hasegawa, David Heidt, Stan Hendryx, Jenny Huang, Casper Hunsche, Brian James, John Jeston, Gladys Lam, Antoine Lonjon, Mike Marin, Mark McGregor, Mike Melenovsky, Amit Mitra, Michael zur Muehlen, Johan Nelis, Mark Nelson, James Odell, Ken Orr, Nathaniel Palmer, Ron Peliegrino, Jan Popkin, Carlos Pratis, John Pyke, Alan Ramias, Pete Rivett, Mike Rosen, Michael Rosemann, Ron Ross, Rick Rummler, Jim Sinar, Andrew Spanyi, Steve Stanton, David Straus, Keith Swanson, Doug Timmel, Donald Tosti, Alan Trefler, Cedric Tyler, Guy Wallace, Michael Webb, Cherie Wilkins, Bruce Williams, and James Womack.
Each of these individuals helped make this book better than it would have been otherwise. Needless to say, in the end, I took everything that everyone offered and fitted it into my own perspective and expressed it in my own words. Those who helped can take credit for the many good things they suggested, but can hardly be blamed for the mistakes I'm sure I've introduced.

I also want to thank my editor, Diane Cerra, who has worked with me on a variety of books over the years. She makes a difficult task as easy as it can be.

Finally, I want to thank Celia Wolf one more time. She critiqued the entire manuscript and kept asking insightful questions about the market, the strategies and services of the various vendors, and company practices, until I finally understood them and could explain them to her satisfaction. We have worked together over the past five years to create the Business Process Trends Web site and Business Process Trends Associates. She has consistently proven to be both a wise partner and a wonderful friend. I couldn't have done it without her support and encouragement.

—Paul Harmon, San Francisco
Introduction

We live in a world that changes faster all the time. What worked only yesterday may not work today or tomorrow. Smart managers know that organizations that succeed do so because they adjust to keep up with the changes that are taking place. This book is about business process change. It describes how smart managers analyze, redesign, and improve the business processes they manage.

Every year dozens of books are written by management consultants to propose a great new management idea. Some of these new ideas have merit, but most are simply fads that are popular for a year or two and then gradually fade. This book is not such a book. In the first place, this book describes a variety of process change techniques that have been proven over the course of two decades. It describes how companies can achieve efficiencies by integrating and improving their business processes and by aligning those business processes with corporate strategies and goals. Companies that routinely practice business process improvement, using the techniques described in this book, are able to consistently improve on the results obtained from existing processes. Companies that undertake more extensive business process redesign efforts frequently achieve improvements in excess of 50%. This isn't miraculous; it simply reflects the fact that most existing processes are less efficient than they could be and that new technologies make it possible to design much more efficient processes.

This book wasn't written to hype the idea of process change. If you need convincing or motivation, you should read one of the popular books that have been written to do just that. This book is designed to help you actually make process change happen, systematically and consistently.
Levels of Concerns

Companies undertake process change initiatives for a variety of different reasons. Organizations new to process work usually start by deciding to improve a specific business process. More experienced companies usually have some kind of corporate business process architecture and a BPM group assigned to consider all possible process change initiatives, to prioritize interventions, to coordinate efforts, and to document results. Organizations that have more sophistication usually support a number of ongoing activities that are managed at the enterprise level. These initiatives include the maintenance of a corporate business process architecture, the ongoing measurement and analysis of process performance, and some kind of corporate process management. These activities are not, typically, projects, but ongoing managerial processes performed to support executive decision-making efforts and to define specific process change opportunities.

At the same time, these organizations normally undertake a variety of specific projects to create, redesign or improve specific business processes. These projects are usually managed by divisional or departmental managers. We refer to these projects as process level concerns.

Allied to the projects at the process level, but at a further remove, are more specific projects undertaken to acquire and install new software applications or to create new training courses that will actually implement changes defined at the process level. Thus, for example, an enterprise level BPM group might decide that a company supply chain is operating inefficiently. The BPM group initiates a supply chain process redesign effort. The supply process redesign project team undertakes a study of the supply chain, considers options, and concludes that a number of different changes should be made. Once the process level project team's recommendations are approved by senior management, IT launches an implementation level project to acquire new ERP software to support some of the changes in the supply chain. At the same time, Training creates new job descriptions and launches a separate implementation level project to develop a new training course to provide new employees with the skills they will need to implement the new supply chain process.

One of the major insights we've drawn from studying a wide variety of business process efforts during the past three years is that it is very useful to distinguish between the various levels of concern. Projects or activities at different levels require different participants, different methodologies, and different types of support. We illustrate these three different levels of concern with the business process pyramid shown in Figure I.1.

Figure I.1 The BPTrends Business Process Pyramid.
Throughout this book we will rely on the distinction between different levels of concern to help organize our discussion. We will describe the major process initiatives being undertaken at each of the three levels and present appropriate methodologies for work at each of these levels. Some of the material will be the same as it was in the first edition of *Business Process Change*, but there are also new insights and concepts and techniques that have evolved and become popular during the past three years. This is especially true at the enterprise level, where business process architectures are now the focus of efforts at leading companies, and at the IT implementation level, where new business process management software (BPMS) products have become popular. Each of these developments, and others besides, are rippling through all aspects of business process work and effecting subtle changes in emphasis and practice.

In early 2006 the *Business Process Trends* Web site undertook a survey of its readers to determine what companies were doing to support business process change. The questionnaire remained online for a little over one month, and during that time 348 people completed the questionnaire. The respondents came from large and small companies from throughout the world and from a wide variety of different industries. Given the size of the response and the distribution of the respondents, we believe this represents the best current data on worldwide business process activity.

One question asked if the respondent’s organizations were active in any aspect of business process change. Figure I.2 shows how the survey participants responded. In
2001, when we conducted the survey reported in the first edition of this book, 17% of our respondents indicated that they weren’t involved in any aspect of process improvement or redesign. In early 2006, only 6% suggested that they had no interest. **Figure 1.2 Responses to the question: What commitment has your company made?**

We also asked respondents to indicate what the term “BPM” meant to them.

![Pie chart showing responses to the question: What commitment has your company made?

- Significant commitment to multiple high-level process projects: 23%
- Major strategic commitment by executive management: 28%
- Initial commitment to limited number of mid- or low-level projects: 23%
- Exploring opportunities: 20%
- No interest: 6%

Figure 1.3 shows how the respondents answered. This response is consistent with lots of other data about why companies undertake business process projects. In bad times, companies seek to make their processes more efficient to save money. In expansive times, companies seek to redesign processes to make them more competitive, to offer new services, or to get into new lines of business. Or they acquire companies and have to integrate the processes used at the two different organizations. In addition, especially during expansive periods, companies look to see if they can gain a competitive advantage by incorporating a new technology. During the past several years, much of the technology-driven work has been a result of developments in Internet technologies and companies have redesigned processes to let customers or employees access information and make purchases via the Web, or to take advantage of the communication efficiencies offered by email or Internet-based phone services.

The fourth major reason for undertaking business process change is perhaps the most interesting, and ultimately the most revolutionary. A growing number of leading companies have begun to believe that a corporate-wide focus on process provides a superior way of managing the company. These companies tend to be in industries that are undergoing rapid, extensive changes. Their senior executives have concluded that they need the insights and the agility provided by a process-oriented approach to management in order to respond quickly and effectively. These are the organizations that are making
major commitments to develop enterprise-level business process tools and management systems to assure that they have aligned all their business resources and functions to their value chains and can manage those processes in something close to real time.

To summarize this more graphically, consider Figure 1.4. In this case, we use the process pyramid to suggest changes that have occurred between the emphasis on process that was typical of leading organizations in the nineties and the emphasis we see at leading organizations today.

In the nineties, most organizations were focused on business process redesign or reengineering projects. Leading companies focused on processes that cut across departmental or functional lines, but most companies concentrated on redesigning processes within specific departments or functional units. At the same time, Six Sigma was popular in manufacturing organizations for process improvement efforts. Toward the end of the nineties, standard or off-the-shelf software applications (ERP, CRM) became a popular way to standardize processes and reporting systems. During this same period, workflow systems became popular as tools to automate document-processing systems. In the past six years, all of these process change strategies have continued to be popular. Today, however, leading companies are putting more emphasis on developing enterprise-wide business process architectures and corporate performance management systems. They seek to standardize specific processes throughout their divi-

**Figure I.3** Responses to the question: What is Business Process Management?
sions and subsidiary organizations to assure that the same ERP or CRM modules can be used throughout the corporation and they seek to understand their corporate value chains to assure regulatory compliance. At the same time, there is a major emphasis on installing new software automation technologies—usually termed Business Process Management Systems (BPMS)—to automate the day-to-day control of processes and to provide real-time performance data for senior management.

This book is written for today’s manager and focuses on the business process change problems today’s managers face. This book was written to educate managers in the best practices available for today’s challenges and to provide practical tips for anyone undertaking the development of a business process architecture, undertaking a business process change project, or considering the development of a BPMS application.

**Business Process Change and Management**

Every company wants to improve the way it does business, to produce things more efficiently, and to make greater profits. Nonprofit organizations are also concerned with efficiency, productivity, and with achieving the goals they set for themselves. Every
manager understands that achieving these goals is a part of his or her job.

Consider the management of the automobile industry. The first internal-combustion automobiles were produced by Karl Benz and Gottlieb Daimler in Germany in 1885. In the decades that followed, some 50 entrepreneurs in Europe and North America set up companies to build cars. In each case, the companies built cars by hand, incorporating improvements with each model. Henry Ford was one among many who tried his hand at building cars in this manner.

In 1903, however, Henry Ford started his third company, the Ford Motor Company, and tried a new approach to automobile manufacturing. First, he designed a car that would be of high quality, not too expensive, and easy to manufacture. Next he organized a moving production line. In essence, workmen began assembling a new automobile at one end of the factory building and completed the assembly as it reached the far end of the plant. Workers at each point along the production line had one specific task to do. One group moved the chassis into place, another welded on the side panels, and still another group lowered the engine into place when each car reached their station. In other words, Henry Ford conceptualized the development of an automobile as a single process and designed and sequenced each activity in the process to assure that the entire process ran smoothly and efficiently. Clearly, Henry Ford had thought deeply about the way cars were assembled in his earlier plants and had a very clear idea of how he could improve the process.

By organizing the process as he did, Henry Ford was able to significantly reduce the price of building automobiles. As a result, he was able to sell cars for such a modest price that he made it possible for every middle-class American to own a car. At the same time, as a direct result of the increased productivity of the assembly process, Ford was able to pay his workers more than any other auto assembly workers. Within a few years, Ford's new approach had revolutionized the auto industry, and it soon led to changes in almost every other manufacturing process as well.

Ford's success is a great example of the power of innovation and process improvement to revolutionize the economics of an industry. Other examples could be drawn from the dawn of the Industrial Revolution or from the early years of computers, when mainframes revolutionized the census process in the United States and began to change the way companies managed their accounting and payroll processes.

The bottom line, however, is that the analysis of business processes and their improvement in order to increase the efficiency and productivity of companies is a perennial management responsibility. Managers, of course, have other responsibilities,
but one of the most important requires that they constantly examine the processes by which their companies produce products and services and upgrade them to assure that they remain as efficient and effective as possible.

Some business process gurus have advocated crash programs that involve major changes in processes. In a sense they are advocating that today’s managers do what Henry Ford did when he created the moving production line. In some cases this kind of radical redesign is necessary. Today’s managers can often use computers to automate processes and achieve major gains in productivity. Similarly, in responding to challenges created by the Internet, some managers have been forced to create new business processes or to make major changes in existing processes. eBay and Amazon.com come to mind. In most cases, however, gradual improvements are more effective.

There are other times, however, when a crash program is too far reaching and a gradual improvement effort wouldn’t be enough. These are cases that we refer to as business process redesign projects. They implement a significant change without redesigning the entire process. Many projects that automate a portion of an existing process fall in this category. In some cases, redesign takes place in a series of steps in order to minimize disruption. A series of modules, for example, could be installed over the course of several months, one after another, with enough time between each change to assure that the employees can adjust as the changes are made.

**The Evolution of an Organization’s Understanding of Process**

Managers have been thinking about business process change for several decades now. Some organizations are more sophisticated in their understanding of business processes than others. Software organizations, for example, have spent quite a bit of time thinking about the software development process. In the 1990s, the Department of Defense funded a major effort to determine how the software development process could be improved. This task was entrusted to the Software Engineering Institute (SEI), which is located at Carnegie Mellon University. The SEI/DOD effort resulted in a model of the stages that software organizations go through in their understanding and management of processes.

The SEI model is known as the Capability Maturity Model (CMM). It was initially described in a book, *The Capability Maturity Model: Guidelines for Improving the Software Process*, published in 1995. In essence, the CMM team defined five stages that organizations go through as they move from an immature to a mature understanding of business processes. These stages were defined using examples from software organizations, but they apply equally to any large organization.
Although the CMM model is more commonly applied to large organizations, the model can also serve as an excellent reference model for small- and medium-size firms. Remember the key point of such reference models is to help you understand where you are today and to assist in developing a road map to help you get where you want to go. No one is suggesting that all companies should attempt to follow the model in the same exact way.

The key assumption that the CMM team makes is that immature organizations don't perform consistently. Mature organizations, on the other hand, produce quality products or services effectively and consistently. In the CMM book, they describe it this way:

In a mature organization, managers monitor the quality of the software products and the processes that produce them. There is an objective, quantitative basis for judging product quality and analyzing problems with the product and process. Schedules and budgets are based on historical performance and are realistic; the expected results for cost, schedule, functionality, and quality of the product are usually achieved. In general, the mature organization follows a disciplined process consistently because all of the participants understand the value of doing so, and the necessary infrastructure exists to support the process.

Watts Humphrey, one of the leading gurus behind the CMM effort, describes it this way:

An immature software process resembles a Little League baseball team. When the ball is hit, some players run toward the ball, while others stand around and watch, perhaps not even thinking about the game. In contrast, a mature organization is like a professional baseball team. When the ball is hit, every player reacts in a disciplined manner. Depending on the situation, the pitcher may cover home plate, infielders may set up for a double play, and outfielders prepare to back up their teammates.

CMM identified five levels or steps that describe how organizations typically evolve from immature organizations to mature organizations. The steps are illustrated in Figure I.5.

The CMM model defines the evolution of a company’s maturity as follows:

- **Level 1: Initial.** The process is characterized by an ad hoc set of activities. The process isn’t defined and success depends on individual effort and heroics.
- **Level 2: Repeatable.** At this level, basic project management processes are established to track costs, to schedule, and to define functionality. The discipline is
available to repeat earlier successes on similar projects.

- **Level 3: Defined.** The process is documented for both management and engineering activities and standards are defined. All projects use an approved, tailored version of the organization's standard approach to developing and maintaining software.

- **Level 4: Managed.** Detailed measures of the software process and product quality are collected. Both the software process and products are quantitatively understood and controlled.

- **Level 5: Optimizing.** Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

Figure 1.5 The five levels of SEI's Capability Maturity Model (CMM).

The CMM approach is very much in the spirit of the Total Quality Management (TQM) movement that was popular in engineering and manufacturing during the late eighties. (The latest version of CMM is termed CMMI. We'll consider CMMI and some alternative process maturity models later in the book.)
studied by SEI were in either level 2 or 3. In effect, they had processes, but in most
cases they weren’t as well defined as they could be. Their management systems were
not well aligned with their processes, and they weren't in a position to routinely im-
prove their processes. Put a different way, most organizations today are focused on re-
designing specific, departmental-level processes and only beginning to move to a more
comprehensive process architecture. Leading companies today, however, are focused
on moving from level 4 to level 5. They have created comprehensive business process
architectures that describe how all the processes fit together (level 3) and have then
moved on to create management systems that measure process performance and assign
specific managers with responsibilities for assuring that processes perform as necessary
(level 4). The best organizations have integrated management systems that automati-
cally trigger process improvement efforts whenever there is a failure to achieve targeted
process goals (level 5). This progress reflects the concerns we illustrated in Figure I.4.

In this book we won’t make any assumptions about where your organization is
today. We will, however, put lots of emphasis on how companies document processes,
how they develop process architectures that describe how processes relate to each oth-
er, and how they align management systems to assure that corporate goals are aligned
with managerial goals; and we will stress the importance of routine, continuous pro-
cess improvement. In effect, this is a book that should help managers conceptualize
where their organization should go and provide the tools they need to help with the
transition.

The Variety of Options
If there were one way of handling all business process problems, we would be happy to
elaborate it. Unfortunately, there are many different types of business process change
problems. They vary by the organization’s level of concern, by industry, and by the na-
ture of the environmental change that needs to be accommodated. Some changes are
undertaken to provide executives with the tools they need to manage a process-centric
organization. Other changes only require modest improvements in existing processes.
Still others require the complete redesign of an existing process or the creation of a
new process. Some focus on changes in how people perform, while others involve the
use of software applications to automate a process. In some cases a software applica-
tion can be purchased, and in other cases it must be developed and tailored for your
specific needs. In a nutshell, there are many different ways to improve or redesign
business processes. Managers face options. This book will provide you with an over-
view of all the options and describe the best practices available to help you choose the approach that is best for your situation.

The Variety of Solutions
One of the problems with the business process field is that various authors and vendors use the same terms in different ways. In this book we will use certain terms in very precise ways to avoid confusion.

*Process improvement* refers to relatively minor, specific changes that one makes in an existing business process. Every manager responsible for a process should always be considering process improvements. In addition, on occasion, special process improvement efforts are required to get everyone focused on improving a specific process. Six Sigma is a good example of a popular approach to process improvement.

*Process design or redesign* refers to a major effort that is undertaken to significantly improve an existing process or to create a new business process. Process redesign considers every aspect of a process and often results in changes in the sequence in which the process is done, in employee jobs, and in the introduction of automation. Business Process Reengineering, the BPTrends Process Redesign methodology, and the Supply Chain Council’s SCOR methodology are all good examples of popular approaches to process redesign.

*Process automation* refers to the use of computers and software applications to assist employees or to replace employees in the performance of a business process. The use of BPMS tools, workflow systems, or XML business process languages are ways to automate the management of processes or activities. The use of off-the-shelf ERP and CRM applications are also examples of automation. Similarly, software development methodologies like Rational Software’s Unified Process or the Object Management Group’s Model Driven Architecture are other examples of popular approaches to process automation.

Many authors use the term *business process management* (BPM) to refer to process automation efforts. It is used to refer to the fact that, once processes are automated, the day-to-day execution of the process can be managed by means of software tools. Business executives, however, often use the term *business process management* in a more generic sense to refer to efforts on the part of business executives to organize and improve the human management of business processes. On the corporate level, *business process management* is also used to refer to the development and maintenance of a
business process architecture. We will use the term BPM in its most generic sense, to refer to how business managers organize and control processes. When we want to use it in the more specialized sense, to refer to automated systems, we will use the term “Business Process Management Software” or BPMS.

**How This Book Is Organized**

This book provides a pragmatic introduction to business process change. It’s designed to provide managers with an overview of process concepts and best practices and to explain the options managers face as they seek to improve, redesign, or automate their business processes.

We will start with an overview of the kind of systematic business process improvement methodologies companies have used during the past decade. In effect, Chapter 1 will provide a brief history of business process change, just to assure we understand the basic options and are all using the same vocabulary.

The remainder of the book is divided into three major parts. Chapters 2 through 7 consider enterprise level concerns. Chapters 8 through 14 focus on process level concerns. Then, in Chapters 15, 16 and 17, we discuss implementation level concerns. Chapter 18 pulls together all of these concerns and provides some final advice. Now let’s consider this plan in a little more detail.

**Part I: Enterprise Level Concerns**

In Chapter 2 we consider how companies develop strategies and define goals. This introduction to the strategic process will necessarily be rather general, but it will establish important themes, including ideas such as strategic positioning, value chains, and the importance of well-integrated processes for companies that want to achieve a competitive advantage.

In Chapter 3 we’ll discuss enterprise level process concerns in a more practical way. We’ll introduce the BPTrends Enterprise Methodology, and then consider what a company needs to do to develop a good basic understanding of the processes that make up an organization.

In Chapter 4 we’ll consider the nature of a business process architecture. In essence, it is the business process architecture that defines how the various business processes work together to create value. It is also the key to linking the organization’s strategic goals to process goals and then to specific managerial goals. The business process archi-
tecture also provides a basis for prioritizing process change initiatives. And it provides the means by which business managers and IT managers can work together to establish a corporate software infrastructure and prioritize software development efforts. We’ll also discuss business process frameworks in this chapter and consider how they can help an organization in the rapid development of a business process architecture.

In Chapter 5, on process management, we’ll consider the role that managers play in organizing and maintaining an organization’s business processes. We will also look at some frameworks that define best practices for process management.

Chapter 6 will focus on measuring process performance. We’ll consider the development of a process performance measurement system in more detail. We’ll discuss the Balanced Scorecard system that many companies use and see how it can be modified to support a more sophisticated process monitoring system.

In Chapter 7 we will examine the functions that a executive-level business process management group—or Process Center of Excellence—can provide. A BPM group can assist in all aspects of process change and it can, in particular, serve as the center for prioritizing, planning, and coordinating a company’s business process redesign or improvement projects.

Part II: Process Level Concerns

In Chapter 8, we will provide a general introduction to the overall analysis of process problems. We will provide a basic approach to conceptualizing process problems and analyzing the nature of the gap between what is now and what kind of process you would like to create. Then we will use that knowledge to scope specific redesign or improvement projects.

In Chapter 9, we will pause to define the basic concepts and modeling techniques used to create process diagrams. There are lots of ways of diagramming processes, and we have chosen the simplest we know about that is specifically designed for business managers. As automation has increasingly become a major part of any process redesign effort, there has been a tendency to discuss processes in the more technical terms that software analysts sometimes employ. We believe this is a serious mistake, since it makes it harder for average business managers to understand the processes that they are ultimately responsible for managing. We rely on a very simple way of modeling organizations and processes that assures that business managers can stay in control of the effort.
In Chapters 10 we drill down a bit further and consider what is involved in analyzing specific activities and defining the tasks or procedures that employees must follow and maintaining employee performance. We will also consider how we might define the rules that employees use to make decisions as they perform specific activities.

Chapter 11 considers what is involved in day-to-day management of a business process. Unlike Chapter 6, which considered enterprise-wide process management issues, this chapter focuses on the specific activities that supervisors must master to be effective process managers.

Chapter 12 shifts and focuses on a specific, popular process improvement methodology, Six Sigma. Six Sigma is derived from operations research and provides a systematic way to measure and refine the output of specific processes. We do not go into the statistical techniques used in the Six Sigma process, but focus instead on the overall process and on how Six Sigma practitioners relate goals and measures to satisfying customers. We will also consider the Lean methodology that is increasingly being combined with Six Sigma.

In Chapter 13 we discuss a methodology for systematically redesigning a business process. The BPTrends Process Redesign methodology we consider is one we use and teach to those new to business process redesign. It combines and integrates all of the techniques we have discussed in Part II. Our stress in this chapter is not only on process analysis and redesign, but on the other things one must do to assure the success of a project, including the organization and management of the project, the gathering of information and facilitation of discussions, and the communication and change management skills necessary to assure that others will join you in making the changed process a success.

Chapter 14 presents a major case study of a hypothetical manufacturing company that redesigns its order-fulfillment process using the approach, concepts, and techniques we have discussed in these chapters.

Part III. Implementation Level Concerns

Chapter 15 is the first of three chapters that focus on business process software tools and automation. In Chapter 15 we begin with an overview of the types of software tools available to those who seek to redesign or automate business processes. We then proceed to consider the use of business process modeling tools and how they facilitate process analysis and redesign.
In Chapter 16 we shift and consider Business Process Management Suites, software tools that allow companies to manage the real-time execution of business processes on a day-to-day basis. These exciting new tools combine the best features of an earlier generation of workflow and EAI tools and offer a powerful way to help companies achieve new levels of integration and automation. And they rely on new Internet protocols and techniques like those embodied in the Service Oriented Architecture (SOA), which we will briefly consider.

In Chapter 17 we focus on ERP (enterprise resource planning) applications, systems of software modules that companies can use to support or automate established business processes like inventory and accounting operations. We also consider some of the newer packaged applications used for CRM (customer-relationship management) automation. In addition, we focus on the modeling languages commonly used for the design of ERP and CRM systems. We will conclude by considering how ERP and BPMS applications are likely to evolve in the near future.

Finally, in Chapter 18 we will try to pull together all the main points we make in this book. The chapter recapitulates the major options we have discussed and makes some suggestions about when each of the techniques is likely to be most effective. This book doesn’t advocate a single methodology or a single set of practices to deal with business process change. Instead, we believe that business managers need to understand their options and then use the practices best suited to specific problems they face.

We have included appendices on BPMN and on various BPM standards to provide a succinct summary of some of the standards efforts underway.

Our goal was not to write a long book but, instead, to create a book that a wide variety of managers could turn to when they needed information and insight on one or another aspect of their business process change. We hope this will serve as a guide and a tool for the business managers who will lead their companies through the changes that will challenge organizations in the decade ahead.

Notes and References

All references to anything published by Business Process Trends (BPTrends) can be accessed on the BPTrends Web site: www.bptrends.com. All information on the BPTrends Web site is available without charge.

Specifically, BPTrends has published a series of surveys. To access the complete
survey cited in this chapter, go to www.BPTrends.com and click on the tab marked BPTrends Surveys.

McCraw, Thomas K. (Ed.), Creating Modern Capitalism: How Entrepreneurs, Companies, and Countries Triumphed in Three Industrial Revolutions, Harvard University Press, 1997. There are several books that describe the Industrial Revolution and the birth of modern corporations. This is my favorite, and it's where I got my basic information on Henry Ford and the Ford Motor Company.


This chapter provides a brief history of corporate business process change initiatives. Individuals working in one tradition, whether BPR, Six Sigma, or ERP, often imagine that their perspective is the only one, or the correct one. We want to provide managers with several different perspectives on business process change in order to give everyone an idea of the range of techniques and methodologies available today. In the process we will define some of the key terms that will occur throughout the remainder of the book.

People have always worked at improving processes. Some archaeologists find it useful to organize their understanding of early human cultural development by classifying the techniques and processes that potters used to create their wares. In essence, potters gradually refined the pot-making process, creating better products, while probably also learning how to make them faster and cheaper.

The Industrial Revolution that began in the late 18th century led to factories and managers who focused considerable energy on the organization of manufacturing processes. Any history of industrial development will recount numerous stories of entrepreneurs who changed processes and revolutionized an industry. In the introduction we mentioned how Henry Ford created a new manufacturing process and revolutionized the way automobiles were assembled. He did that in 1903.
In 1911, soon after Henry Ford launched the Ford Motor Company, another American, Frederick Winslow Taylor, published a seminal book: *Principles of Scientific Management*. Taylor sought to capture some of the key ideas that good managers used to improve processes. He argued for simplification, for time studies, for systematic experimentation to identify the best way of performing a task, and for control systems that measured and rewarded output. Taylor's book became an international bestseller, and many would regard him as the father of operations research, a branch of engineering that seeks to create efficient and consistent processes. From 1911 on, managers have sought ways to be more systematic in their approaches to process change.

New technologies have often led to new business processes. The introduction of the train and the automobile, and of radio, telephones, and television, have each led to new and improved business processes. Since the end of World War II, computers and software systems have provided a major source of new efficiencies.

Two recent developments in management theory deserve special attention. One was the popularization of systems thinking, and the other was the formalization of the idea of a value chain.

**Organizations as Systems**

Many different trends led to the growing focus on systems that began in the 1960s. Some derived from operations research and studies of control systems. Some resulted from the emphasis on systems current in the computer community. Today's emphasis on systems also arose out of contemporary work in biology and the social sciences. At the same time, however, many management theorists have contributed to the systems perspective. One thinks of earlier writers like Ludwig von Bertalanffy, Stafford Beer, and Jay W. Forrester and more recent management theorists like John D. Sterman and Peter M. Senge.

In essence, the systems perspective emphasizes that everything is connected to everything else and that it's often worthwhile to model businesses and processes in terms of flows and feedback loops. A simple systems diagram is shown in Figure 1.1.

The idea of treating a business as a system is so simple, especially today when it is so commonplace, that it is hard for some to understand how important the idea really is. Systems thinking stresses linkages and relationships and flows. It emphasizes that any given employee or unit or activity is part of a larger entity and that ultimately those entities, working together, are justified by the results they produce.
To make all this a bit more concrete, consider how it is applied to business processes in the work of Michael E. Porter.

**Systems and Value Chains**

The groundwork for the current emphasis on comprehensive business processes was laid by Michael Porter in his 1985 book, *Competitive Advantage: Creating and Sustaining Superior Performance*. Porter is probably best known for his earlier book, *Competitive Strategy*, published in 1980, but it’s in *Competitive Advantage* that he lays out his concept of a *value chain*—a comprehensive collection of all of the activities that are performed to design, produce, market, deliver, and support a product line. Figure 1.2 shows the diagram that Porter has used on several occasions to illustrate a generic value chain.
Although Porter doesn't show it on this diagram, you should assume that some primary activity is initiated on the lower left of the diagram when a customer orders a product, and ends on the right side when the product is delivered to the customer. Of course it may be a bit more complex, with marketing stimulating the customer to order and service following up the delivery of the order with various services, but those details are avoided in this diagram. Figure 1.2 simply focuses on what happens between the order and the final delivery—on the value chain or large-scale business process that produces the product. What's important to Porter's concept is that every function involved in the production of the product, and all of the support services, from information technology to accounting, should be included in a single value chain. It's only by including all of the activities involved in producing the product that a company is in position to determine exactly what the product is costing and what margin the firm achieves when it sells the product.

As a result of Porter's work, a new approach to accounting, Activity-Based Costing (ABC), has become popular and is used to determine the actual value of producing specific products.

When Porter's concept of a value chain is applied to business processes, a different type of diagram is produced. Figure 1.3 illustrates a value chain or business process that cuts across five departmental or functional boundaries, represented by the underlying organizational chart. The boxes shown within the process arrow are subprocesses. The subprocesses are initiated by an input from a customer, and the process ultimately produces an output that is consumed by a customer. As far as I know, this type of diagram was first used by another management systems theorist, Geary Rummler, in 1984.

Geary Rummler was the second major business process guru of the 1980s. With a background in business management and behavioral psychology, Rummler worked for years on employee training and motivation issues. Eventually, Rummler and his colleagues established a specialized discipline that is usually termed Human Performance Technology (HPT). Rummler's specific focus was on how to structure processes and activities to guarantee that employees—be they managers, salespeople, or production line workers—would function effectively. In the 1960s and 1970s he relied on behavioral psychology and systems theory to explain his approach, but during the course of the 1980s he focused increasingly on business process models.
At the end of the eighties Rummler and a colleague, Alan Brache, wrote a book, *Improving Performance: How to Manage the White Space on the Organization Chart*, that described the approach they had developed while consulting on process improvement during the course of the eighties. Rummler focused on organizations as systems and worked from the top down to develop a comprehensive picture of how organizations were defined by processes and how people defined what processes could accomplish. He provided a detailed methodology for how to analyze an organization, how to analyze processes, how to redesign and then improve processes, how to design jobs, and how to manage processes once they were in place. The emphasis on “the white space on the organization chart” stressed the fact that many process problems occurred when one department tried to hand off things to the next. The only way to overcome those interdepartmental problems, Rummler argued, was to conceptualize and manage processes as wholes.

Later, in the nineties, Hammer and Davenport would exhort companies to change and offered lots of examples about how changes had led to improved company performance. Similarly, IDS Scheer would offer a software engineering methodology for process change. Rummler and Brache offered a systematic, comprehensive approach designed for business managers. The book that Rummler and Brache wrote did not launch the BPR movement in the nineties. The popular books written by Hammer
and Davenport launched the Reengineering movement. Once managers became interested in Reengineering, however, and began to look around for practical advice about how to actually accomplish process change, they frequently arrived at *Improving Performance*. Thus, the Rummler-Brache methodology became the most widely used, systematic business process methodology in the mid-1990s.

One of the most important contributions made by Rummler and Brache was a framework that showed, in a single diagram, how everything related to everything else. They define three levels of performance: (1) an organizational level, (2) a process level, and (3) a job or performer level. This is very similar to our levels of concern, except that we refer to level 3 as the implementation level to emphasize that an activity can be performed by an employee doing a job or by a computer executing a software application. Otherwise, our use of levels of concern in this book mirrors the levels described in Rummler-Brache in 1990.

Rummler and Brache also introduced a matrix that they obtained by crossing their three levels with three different perspectives. The perspectives are goals and measures, design and implementation issues, and management. Figure 1.4 illustrates the matrix. Software architects today would probably refer to it as a framework. The important thing is that it identifies nine different concerns that anyone trying to change processes in an organization must consider. Approaches that focus only on processes or on performance level measures or on process management are limited perspectives.

<table>
<thead>
<tr>
<th>Levels of Concern</th>
<th>Goals and measures</th>
<th>Design and implementation</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational level</td>
<td>Organizational goals and measures of organizational success</td>
<td>Organizational design and implementation</td>
<td>Organizational management</td>
</tr>
<tr>
<td>Process level</td>
<td>Process goals and measures of process success</td>
<td>Process design and implementation</td>
<td>Process management</td>
</tr>
<tr>
<td>Activity or performance level</td>
<td>Activity goals and measures of activity success</td>
<td>Activity design and implementation</td>
<td>Activity management</td>
</tr>
</tbody>
</table>

*Figure 1.4* A performance framework (modified after a figure in Rummler and Brache's *Improving Performance*).
Notice how similar the ideas expressed in the Rummler-Brache framework are to the ideas expressed in the SEI Capability Maturity Model we considered in the introduction. Both seek to describe an organization that is mature and capable of taking advantage of systematic processes. Both stress that we must be concerned not only with the design of processes themselves, but also with measures of success and with the management of processes. In effect, the CMM diagram described how organizations evolve toward process maturity, and the Rummler-Brache framework describes all of the things that a mature organization must master.

Mature organizations must align both vertically and horizontally. Activity goals must be related to process goals, which must, in turn, be derived from the strategic goals of the organization. Similarly, a process must be an integrated whole, with goals and measures, a good design that is well implemented, and a management system that uses the goals and measures to assure that the process runs smoothly and, if need be, is improved.

The Rummler-Brache methodology has helped everyone involved in business process change to understand the scope of the problem, and it provides the foundation on which all of today's comprehensive process redesign methodologies are based.

Prior to the work of systems and management theorists like Porter and Rummler, most companies had focused on dividing processes into specific activities that were assigned to specific departments. Each department developed its own standards and procedures to manage the activities delegated to it. Along the way, in many cases, departments became focused on doing their own activities in their own way, without much regard for the overall process. This is often referred to as silo thinking, an image that suggests that each department on the organization chart is its own isolated silo.

In the early years of business computing, a sharp distinction was made between corporate computing and departmental computing. A few systems like payroll and accounting were developed and maintained at the corporate level. Other systems were created by individual departments to serve their specific needs. Typically, one departmental system wouldn't talk to another, and the data stored in the databases of sales couldn't be exchanged with data in the databases owned by accounting or by manufacturing. In essence, in an effort to make each department as professional and efficient as possible, the concept of the overall process was lost.

The emphasis on value chains and systems in the 1980s and the emphasis on business process reengineering in the early 1990s was a revolt against excessive departmentalism and a call for a more holistic view of how activities needed to work together to achieve organizational goals.
The Six Sigma Movement

The third main development in the 1980s evolved from the interaction of the Rummler-Brache approach and the quality control movement. In the early 1980s, Rummler had done quite a bit of consulting at Motorola and had helped Motorola University set up several courses in process analysis and redesign. In the mid-1980s, a group of quality control experts wedded Rummler's emphasis on process with quality and measurement concepts derived from quality control gurus W. Edwards Deming and Joseph M. Juran to create a movement that is now universally referred to as Six Sigma. Six Sigma is more than a set of techniques, however. As Six Sigma spread, first from Motorola to GE, and then to a number of other manufacturing companies, it developed into a comprehensive training program that sought to create process awareness on the part of all employees in an organization. Organizations that embrace Six Sigma not only learn to use a variety of Six Sigma tools, but also embrace a whole culture dedicated to training employees to support process change throughout the organization.

Prior to Six Sigma, quality control professionals had explored a number of different process improvement techniques. ISO 9000 is a good example of another quality control initiative. This international standard describes activities organizations should undertake to be certified ISO 9000 compliant. Unfortunately, ISO 9000 efforts usually focus on simply documenting and managing procedures. Recently, a newer version of this standard, ISO9000:2000, has become established. Rather than focusing so much on documentation, the new standard is driving many companies to think in terms of processes. In many cases this has prompted management to actually start to analyze processes and use them to start to drive change programs. In both cases, however, the emphasis is on documentation, while what organizations really need are ways to improve quality.

At the same time that companies were exploring ISO 9000, they were also exploring other quality initiatives like statistical process control (SPC), total quality management (TQM), and just-in-time manufacturing (JIT). Each of these quality-control initiatives contributed to the efficiency and quality of organizational processes. All this jelled at Motorola with Six Sigma, which has evolved into the most popular corporate process movement today. Unfortunately, Six Sigma's origins in quality control and its heavy emphasis on statistical techniques and process improvement has often put it at odds with other, less statistical approaches to process redesign, like the Rummler-Brache methodology, and with process automation. That, however, is beginning to
change and today Six Sigma groups in leading corporations are reaching out to explore
the whole range of business process change techniques. This book is not written from
a traditional Six Sigma perspective, but we believe that Six Sigma practitioners will
find the ideas described here useful and we are equally convinced that readers from
other traditions will find it increasingly important and useful to collaborate with Six
Sigma practitioners.

**Business Process Change in the 1990s**

Much of the current corporate interest in business process change can be dated from
the business process engineering (BPR) movement that began in 1990 with the
publication of two papers: Michael Hammer’s “Reengineering Work: Don’t Automate,
Obliterate” (*Harvard Business Review*, July/August 1990) and Thomas Davenport and
James Short’s “The New Industrial Engineering: Information Technology and Busi-
Davenport wrote a book, *Process Innovation: Reengineering Work through Information
Technology*, and Michael Hammer joined with James Champy to write *Reengineering
the Corporation: A Manifesto for Business Revolution*.

BPR theorists like Champy, Davenport, and Hammer insisted that companies
must think in terms of comprehensive processes, similar to Porter’s value chains and
Rummler’s Organization Level. If a company focused only on new product develop-
ment, for example, the company might improve the new product development sub-
process, but it might not improve the overall process. Worse, one might improve new
product development at the expense of the overall value chain. If, for example, new
process development instituted a system of checks to assure higher-quality documents,
it might produce superior reports, but take longer to produce them, delaying market-
ing and manufacturing’s ability to respond to sudden changes in the marketplace. Or
the new reports might be organized in such a way that they made better sense to the
new process development engineers, but became much harder for marketing or manu-
facturing readers to understand.

Stressing the comprehensive nature of business processes, BPR theorists urged
companies to define all of their major processes and then focus on the processes that
offered the most return on improvement efforts. Companies that followed this ap-
proach usually conceptualized a single business process for an entire product line,
and ended up with only 5–10 value chains for an entire company, or division, if
the company was very large. The good news is that if companies followed this advice, they were focusing on everything involved in a process and were more likely to identify ways to significantly improve the overall process. The bad news is that when one conceptualizes processes in this way, one is forced to tackle very large redesign efforts that typically involve hundreds or thousands of workers and dozens of major IT applications.

Business process reengineering was more than an emphasis on redesigning large-scale business processes. The driving idea behind the business process reengineering movement was best expressed by Thomas Davenport, who argued that information technology had made major strides in the 1980s, and was now capable of creating major improvements in business processes. Davenport's more reasoned analysis, however, didn't get nearly the attention that Michael Hammer attracted with his more colorful rhetoric.

Hammer argued that previous generations of managers had settled for using information technologies to simply improve departmental functions. In most cases, the departmental functions hadn't been redesigned but simply automated. Hammer referred to this as "paving over cow paths." In many cases, he went on to say, departmental efficiencies were maximized at the expense of the overall process. Thus, for example, a financial department might use a computer to assure more accurate and up-to-date accounting records by requiring manufacturing to turn in reports on the status of the production process. In fact, however, many of the reports came at inconvenient times and actually slowed down the manufacturing process. In a similar way, sales might initiate a sales campaign that resulted in sales that manufacturing couldn't produce in the time allowed. Or manufacturing might initiate changes in the product that made it easier and more inexpensive to manufacture, but which made it harder for salespeople to sell. What was needed, Hammer argued, was a completely new look at business processes. In most cases, Hammer argued that the existing processes should be "obliterated" and replaced by totally new processes, designed from the ground up to take advantage of the latest information system technologies. Hammer promised huge improvements if companies were able to stand the pain of such comprehensive business process reengineering.

In addition to his call for total process reengineering, Hammer joined Davenport in arguing that processes should be integrated in ways they hadn't been in the past. Hammer argued that the economist Adam Smith had begun the movement toward increasingly specialized work. Readers will probably all recall that Adam Smith
compared data on pin manufacture in France in the late 18th century. He showed that one man, working alone, could create a given number of straight pins in a day. But a team, each doing only one part of the task, could produce many times the number of pins per day that the individual members of the team could produce, each working alone. In other words, the division of labor paid off with handsome increases in productivity. In essence, Ford had only been applying Smith’s principle to automobile production when he set up his continuous production line in Michigan in the early 20th century. Hammer, however, argued that Smith’s principle had led to departments and functions that each tried to maximize its own efficiency at the expense of the whole. In essence, Hammer claimed that large companies had become more inefficient by becoming larger and more specialized. The solution, according to Hammer, Davenport, and Champy was twofold: First, processes needed to be conceptualized as complete, comprehensive entities that stretched from the initial order to the delivery of the product. Second, Information Technology (IT)\(^1\) needed to be used to integrate these comprehensive processes.

As a broad generalization, the process initiatives, like Six Sigma and Rummler-Brache, that began in the 1980s put most of their emphasis on improving how people performed while BPR, in the 1990s, put most of the emphasis on using IT more effectively and on automating processes wherever possible.

The Role of Information Technology in BPR

Both Hammer and Davenport had been involved in major process improvement projects in the late 1980s and observed how IT applications could cut across departmental lines to eliminate inefficiencies and yield huge gains in coordination. They described some of these projects and urged managers at other companies to be equally bold in pursuing similar gains in productivity.

In spite of their insistence on the use of IT, however, Hammer and his colleagues feared the influence of IT professionals. Hammer argued that IT professionals were usually too constrained by their existing systems to recognize major new opportunities.

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\(^1\) Different organizations use different terms to refer to their information technology (IT) or information systems (IS) or data processing (DP) groups. We’ll use these terms and abbreviations interchangeably. In all cases, they refer to the organizational group responsible for analyzing needs, acquiring computer hardware, acquiring or creating computer software, and maintaining the same, or to the systems created and maintained, or to both.
He suggested that IT professionals usually emphasized what couldn't be done rather than focusing on breakthroughs that could be achieved. To remedy this, Hammer and Champy argued that the initial business process redesign teams should exclude IT professionals. In essence, they argue that the initial Business Process Reengineering team should consist of business managers and workers who would have to implement the redesigned process. Only after the redesign team had decided how to change the entire process, Hammer argued, should IT people be called in to advise the team on the systems aspects of the proposed changes.

In hindsight, one can see that the BPR theorists of the early 1990s underestimated the difficulties of integrating corporate systems with the IT technologies available at that time. The BPR gurus had watched some large companies achieve significant results, but they failed to appreciate that the sophisticated teams of software developers available to leading companies were not widely available. Moreover, they failed to appreciate the problems involved in scaling up some of the solutions they recommended. And they certainly compounded the problem by recommending that business managers redesign processes without the close cooperation of their IT professionals. It's true that some IT people resisted major changes, but in many cases they did so because they realized, better than most business managers, just how much such changes would cost. Worse, they realized that many of the proposed changes could not be successfully implemented at their companies with the technologies and manpower they had available.

Some of the BPR projects undertaken in the mid-1990s succeeded and produced impressive gains in productivity. Many others failed and produced disillusionment with BPR. Most company managers intuitively scaled down their BPR efforts and didn't attempt anything as large or comprehensive as the types of projects recommended in the early BPR books.

Misuses of BPR

During this same period, many companies pursued other goals under the name of BPR. Downsizing was popular in the early to mid-1990s. Some of it was justified. Many companies had layers of managers whose primary function was to organize information from line activities and then funnel it to senior managers. The introduction of new software systems and tools that made it possible to query databases for information also meant that senior managers could obtain information without the need for so many middle-level managers. On the other hand, much of the downsizing
was simply a natural reduction of staff in response to a slowdown in the business cycle.
The latter was appropriate, but it led many employees to assume that any BPR effort
would result in major reductions in staff.

Because of some widely discussed failures, and also as a result of employee dis-
trust, the term "business process reengineering" became unpopular during the late
1990s and has gradually fallen into disuse. As an alternative, most companies began
to refer to their current business process projects as "business process improvement"
or "business process redesign."

**Other Process Change Work in the 1990s**

Many of the approaches to business process redesign that emerged in the mid-1990s
were driven by software technologies. Some companies used software applications,
called *workflow systems*, to automate applications. In essence, early workflow systems
controlled the flow of documents from one employee to another. The original docu-
ment is scanned into a computer. Then, an electronic copy of the document is sent
to the desk of any employees who need to see or approve the document. To design
workflow systems, one creates a flow plan, like the diagram shown in Figure 1.3, that
specifies how the document moves from one employee to the next. The workflow
system developers or managers can control the order that electronic documents show
up on employees’ computers by modifying the diagram. Workflow systems became a
very popular way to automate document-based processes. Unfortunately, in the early
1990s, most workflow systems were limited to automating departmental processes
and couldn’t scale up to the enterprise-wide processes.

During this same period, vendors of off-the-shelf software applications began to
organize their application modules so that they could be represented as a business pro-
cess. In effect, one could diagram a business process by simply deciding how to link
a number of application modules. Vendors like SAP, People Soft, Oracle, and J. D.
Edwards all offered systems of this kind, which were usually called enterprise resource
planning (ERP) systems. In effect, a business analyst was shown an ideal way that
several modules could be linked together. A specific company could elect to eliminate
some modules and change some of the rules controlling the actions of some of the
modules but, overall, one was limited to choosing and ordering already-existing soft-
ware application modules. Many of the modules included customer-interface screens
and therefore controlled employee behaviors relative to particular modules. In essence,
an ERP system is controlled by another kind of "workflow" system. Instead of moving documents from one employee workstation to another, the ERP systems offered by SAP and others allowed managers to design processes that moved information and control from one software module to another. ERP systems allowed companies to replace older software applications with new applications, and to organize the new applications into an organized business process. This worked best for processes that were well understood and common between companies. Thus, accounting, inventory, and human resource processes were all popular targets for ERP systems.

SAP, for example, offers the following modules in their financials suite: Change Vendor or Customer Master Data, Clear Open Items, Deduction Management, Payment with Advice, Clearing of Open Items at Vendor, Reporting for External Business Partners, and SEM: Benchmark Data Collection. They also offer “blueprints,” which are, in essence, alternative flow diagrams showing how the financial modules might be assembled to accomplish different business processes.

Davenport supported and promoted the use of ERP packaged applications as a way to improve business processes. At the same time, August-Wilhelm Scheer, a software systems theorist, advocated the use of ERP applications for systems development, and wrote several books promoting this approach and the use of a modeling methodology that he named ARIS.

Most large companies explored the use of document workflow systems and the use of ERP systems to automate at least some business processes. The use of document workflow and ERP systems represented a very different approach to process redesign than that advocated by the BPR gurus of the early 1990s. Gurus like Hammer had advocated a total reconceptualization of complete value chains. Everything was to be reconsidered and redesigned to provide the company with the best possible new business process. The workflow and ERP approaches, on the other hand, focused on automating existing processes and replacing existing, departmentally focused legacy systems with new software modules that were designed to work together. These systems were narrowly focused and relied heavily on IT people to put them in place. They provided small-scale improvements rather than radical redesigns.

We have already considered two popular software approaches to automating business processes: workflow and the use of systems of packaged applications. Moving beyond these specific techniques, any software development effort could be a response to a business process challenge. Any company that seeks to improve a process will

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2 Systems that coordinate the flow of work from one software application to another are usually called **Enterprise Application Integration (EAI)** systems.
at least want to consider if the process can be automated. Some processes can't be automated with existing technology. Some activities require people to make decisions or to provide a human interface with customers. Over the course of the past few decades, however, a major trend has been to increase the number of tasks performed by computers. As a strong generalization, automated processes reduce labor costs and improve corporate performance.

Software engineering usually refers to efforts to make the development of software more systematic, efficient, and consistent. Increasingly, software engineers have focused on improving their own processes and on developing tools that will enable them to assist business managers to automate business processes. We mentioned the work of the Software Engineering Institute at Carnegie Mellon University on CMM, a model that describes how organizations mature in their use and management of processes.

At the same time, software engineers have developed modeling languages for modeling software applications and tools that can generate code from software models. Some software theorists have advocated developing models and tools that would allow business analysts to be more heavily involved in designing the software, but to date this approach has been limited by the very technical and precise nature of software specifications. As an alternative, a good deal of effort has been focused on refining the concept of software requirements—the specification that a business process team would hand to a software development team to indicate exactly what a software application would need to do to support a new process.

The more complex and important the business process change, the more likely a company will need to create tailored software to capture unique company competencies. Whenever this occurs, then languages and tools that communicate between business process teams and IT teams become very important.

The Internet and Y2K

During the same period that the enthusiasm for BPR was declining, and at the same time that companies began to explore workflow and ERP approaches, new software technologies began to emerge that really could deliver on the promise that the early BPR gurus had oversold. Among the best known are the Internet, email, and the Web, which provide powerful ways to integrate employees, suppliers, and customers.

In the early 1990s, when Hammer and Davenport wrote their books, the most popular technique for large-scale corporate systems integration was EDI (electronic
data interchange). Many large companies used EDI to link with their suppliers. In general, however, EDI was difficult to install and expensive to maintain. As a practical matter, EDI could only be used to link a company to its major suppliers. Smaller suppliers couldn’t afford to install EDI and didn’t have the programmers required to maintain an EDI system. The Internet changed that.

The Internet doesn’t require proprietary lines, but runs instead on ordinary telephone lines. At the same time, the Internet depends on popular, open protocols that were developed by the government and were widely accepted by everyone. A small company could link to the Internet and to a distributor or supplier in exactly the same way that millions of individuals could surf the Web, by simply acquiring a PC and a modem and using browser software. Just as the Internet provided a practical solution for some of the communications problems faced by companies, email and the Web created a new way for customers to communicate with companies. In the late 1990s, customers rapidly acquired the habit of going to company Web sites to find out what products and services were available. Moreover, as fast as companies installed Web sites that would support it, customers began to buy products online. In effect, the overnight popularity of the Internet, email, and the Web in the late 1990s made it imperative that companies reconsider how they had their business processes organized in order to take advantage of the major cost savings that the use of the Internet, Web, and email could provide.

Of course the story is more complex. A number of “dot.com” companies sprang up, promising to totally change the way companies did business by using the Internet, Web, and email. Some have carved new niches for themselves, but most disappeared when the stock market finally realized that their business models were unsound. That process encouraged large, established companies to consider how they could use Internet technologies, but it also distracted them and encouraged some to attempt rash ventures to compete with the dot.coms that achieved extraordinary stock valuations in the late 1990s.

At the same time, other technology gurus began to warn of the approach of the end of the millennium. Too many software systems had been created in the last half of the 20th century with two-digit dates (e.g., instead of representing the year 1965 with four digits, it was represented as “65”). This had been done on the assumption that the systems created in that manner would be retired well before the end of the millennium. Most hadn’t, and that posed a significant problem, since it was possible that a system given the date “01” would read it as “1901” rather than “2001” and make costly, and in some cases life-threatening, mistakes. Thus, in spite of the opportunity
for process improvement created by Internet techniques, many companies diverted IT resources to checking their existing software applications to assure that they didn't contain what became popularly known as the Y2K bug.

The overall result is that change that might have happened in the late 1990s was delayed, but it is now at the top of most companies' agenda in the first decade of the new millennium.

A Quick Summary

Figure 1.5 provides a summary overview of some of the historic business process technologies we have described in this chapter. Most are still actively evolving. As you can see in the figure, business process management is made up of a diverse collection of ideas and traditions. We have grouped them, very loosely, into three general traditions, the Operations Research/Quality Control tradition that is primarily focused on improving operational processes, the Management and Business Process Redesign tradition that is focused on aligning or changing major business processes to significantly improve organizational performance, and the IT tradition, which is primarily focused on process automation. Most large companies have groups working in each of these traditions, and, increasingly the different traditions are borrowing from each other. And, of course, none of the groups has confined itself to a single tradition. Thus, Lean Six Sigma is focused on process improvement, but it also supports process management and process redesign initiatives. Similarly, IT is focused on automation, but IT process groups are often heavily involved in process redesign projects and are strongly committed to architecture initiatives that incorporate process architectures.

The author of this book comes from the Management and Process Redesign tradition—he began his process work as an employee of a consulting company managed by Geary Rummler—and this book describes that tradition in more detail than any other. However, the author has worked with enough different companies to know that no solution fits every situation. Thus, he is firmly committed to a best-practices approach that seeks to combine the best from all the process change traditions and provides information on the other traditions whenever possible to encourage the evolving synthesis of the different process traditions. Senior managers do not make the fine distinctions that we illustrate in Figure 1.5. Executives are interested in results and, increasingly, effective solutions require practitioners from the different traditions to work together. Indeed, one could easily argue that the term “business process management”
was coined to suggest the emergence of a more synthetic, comprehensive approach to process change that combines the best of process management, redesign, process improvement and process automation.
Business Process Change in the New Millennium

For awhile, the new millennium didn't seem all that exciting. Computer systems didn't shut down as the year 2000 began. The collapse of the dot.com market and a recession seemed to provide a brief respite from the hectic business environment of the nineties. By 2002, however, the sense of relentless change had resurfaced.

The corporate interest in business process change, which seemed to die down a bit toward the end of the century, resurfaced with a vengeance. Many people working in IT realized that they could integrate a number of diverse technologies that had been developed in the late 1990s to create a powerful new approach to facilitate the day-to-day management of business processes. The book that best reflected this new approach was called Business Process Management: The Third Wave by Howard Smith and Peter Fingar. They proposed that companies combine workflow systems, software applications integration systems, and Internet technologies to create a new type of software application. In essence the new software—a Business Process Management System (BPMS)—would coordinate the day-to-day activities of both employees and software applications. The BPMS applications would use process models to define their functionality, and make it possible for business managers to change their processes by changing the models or rules that directed the BPMS applications. All of these ideas had been tried before, with earlier technologies, but in 2003 it all seemed to come together, and dozens of vendors rushed to create BPMS products. As the enthusiasm spread, the vision was expanded and other technologists began to suggest how BPMS applications could drive management dashboards that would let managers control processes in something close to real time.

In 2002 there were no BPM conferences in the U.S. In 2006 there were 11 major BPM meetings in the U.S., and there will be as many in 2007. In 2003 Gartner suggested that BPMS vendors earned around $500 million dollars. Gartner now projects that the market for BPMS will exceed $1 billion by 2009.

If everyone were only excited about BPMS, then we might suggest that the market was simply a software market, but that's hardly the case. All the various aspects of business process have advanced during the same period. Suddenly large companies are making major investments in the creation of business process architectures. To create these architectures, they seek to define and align their processes while simultaneously defining metrics to measure process success. Similarly, there is a broad movement toward reorganizing managers to support process goals. Balanced Scorecard has played
a major role in this. There has been a renewed interest in using maturity models to evaluate corporate progress. A number of industry groups have defined business process frameworks, like the Supply Chain Council’s SCOR and the TeleManagement Forum’s eTOM, and management has adopted these frameworks to speed the development of enterprise level architectures and measurement systems.

Process redesign and improvement have also enjoyed a renaissance and Six Sigma has expanded from manufacturing to every possible industry while simultaneously incorporating Lean. A dozen new process redesign methodologies and notations have been published in the past three years and over 100 books on the various aspects of process change have been published. It’s hard to find a business publication that isn’t talking about the importance of process change. Clearly this interest in business process change isn’t driven by just BPMS or by any other specific technology. Instead, it is being driven by the deeper needs of today’s business managers.

**What Drives Business Process Change?**

So far, we have spoken of various approaches to business process change. To wrap up this discussion, perhaps we should step back and ask what drives the business interest in business processes in the first place. The perennial answers are very straightforward. In economically bad times, when money is tight, companies seek to make their processes more efficient. In economically good times, when money is more available, companies seek to expand, to ramp up production and to enter new markets. They improve processes to offer better products and services in hopes of attracting new customers or taking customers away from competitors.

Since the 1980s, however, the interest in process has become more intense. The new interest in process is driven by change. Starting in the 1980s, large U.S. companies became more engaged in world trade. At the same time, foreign companies began to show up in the U.S. and compete with established market leaders. Thus, in the 1970s, most Americans who wanted to buy a car chose among cars sold by General Motors, Ford and Chrysler. By the mid-1980s, Americans were just as likely to consider a VW, a BMW, a Nissan, or a Honda. Suddenly, the automobile market had moved from a continental market to a world market. This development has driven constant changes in the auto market and it’s not about to let up in the next few years.

Increased competition also led to mergers and acquisitions, as companies attempted to acquire the skills and technologies they needed to control their markets or enter
new ones. Every merger between rivals in the same industry created a company with two different sets of processes and someone had to figure out which processes the combined company would use going forward.

During this same period, IT technology was remaking the world. The first personal computers appeared at the beginning of the 1980s. The availability of relatively cheap desktop computers made it possible to do things in entirely different and much more productive ways. In the mid-1990s the Internet burst on the scene and business was revolutionized again. Suddenly people bought PCs for home use so they could communicate via email and shop on-line. Companies reorganized their processes to support web portals. That, in turn, suddenly increased competitive pressures as customers in one city could as easily buy items from a company in another city or country as from the store in their neighborhood. Amazon.com revolutionized the way books are bought and sold.

The Internet and the Web and the broader trend toward globalization also made it easier for companies to coordinate their efforts with other companies. Increased competition and the search for greater productivity led companies to begin exploring all kinds of outsourcing. If another company could provide all the services your company’s Human Resources or IT departments used to provide, and was only an email away, it was worth considering. Suddenly companies that had historically been manufacturers were outsourcing the manufacture of their products to China and were focusing instead on sticking close to their customers, so they could specialize in designing and selling new products that would be manufactured by overseas companies and delivered by companies who specialized in the worldwide delivery of packages.

In part, new technologies like the Internet and the Web are driving these changes. They make worldwide communication easier and less expensive than in the past. At the same time, however, the changes taking place are driving companies to jump on any new technology that seems to promise them an edge over their competition. Wireless laptops, cell phones and personal digital assistants are being used by business people to work more efficiently. At the same time, the widespread purchase of iPods by teenagers is revolutionizing the music industry and driving a host of far-reaching changes and realignments.

We won’t go on. Lots of authors and many popular business magazines write about these changes each month. Suffice it to say that change and competition have become relentless. Large companies are reorganizing to do business on a worldwide scale, and, predictably, some will do it better than others and expand, while those that are less
successful will disappear. Meantime, smaller companies are using the Internet and the Web to explore the thousands of niche service markets that have been created.

Change and relentless competition calls for constant innovation and for constant increases in productivity, and those both call for an intense focus on how work gets done. To focus on how the work gets done is to focus on business processes. Every manager knows that if his or her company is to succeed it will have to figure out how to do things better, faster, and cheaper than they are being done today, and that's what the focus on process is all about.

**Notes and References**

We provided a wide-ranging history of the evolution of business process techniques and concerns. We have included a few key books that provide a good overview to the concepts and techniques we described.


Forrester, Jay, *Principles of Systems*, Pegasus Communications, 1971. Forrester was an influential professor at MIT who wrote a number of books showing how systems theory could be applied to industrial and social systems. Several business simulation tools are based on Forrester’s ideas, which are usually referred to as *systems dynamics*, since they focus on monitoring and using changing rates of feedback to predict future activity.
Sterman, John D., *Business Dynamics: Systems Thinking and Modeling for a Complex World*, Irwin McGraw-Hill, 2000. Sterman is one of Forrester’s students at MIT, and this is a popular textbook for those interested in the technical details of systems dynamics, as applied to business problems.

Senge, Peter M., *The Fifth Discipline: The Art and Practice of the Learning Organization*, Currency Doubleday, 1994. Senge is also at the Sloan School of Management at MIT, and a student of Forrester. Senge has created a more popular approach to systems dynamics that puts the emphasis on people and the use of models and feedback to facilitate organizational development. In the Introduction we described mature process organizations as organizations that totally involved people in constantly improving the process. Senge would describe such an organization as a learning organization.

Porter, Michael E., *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press, 1985. This book focuses on the idea of competitive advantage and discusses how companies obtain and maintain it. One of the key techniques Porter stresses is an emphasis on value chains and creating integrated business processes that are difficult for competitors to duplicate.

Hammer, Michael, “Reengineering Work: Don’t Automate, Obliterate,” *Harvard Business Review*. July–August 1990. This article, and the one below by Davenport and Short, kicked off the BPR fad. The books that these authors are best known for didn’t come until a couple of years later.


Hammer, Michael, and James Champy, *Reengineering the Corporation: A Manifesto for Business Revolution*, HarperBusiness, 1993. This was a runaway bestseller that got everyone in business talking about reengineering in the mid-1990s. It argued for a radical approach to redesign. Some companies used the ideas successfully; most found it too disruptive.
Davenport, Thomas H., *Process Innovation: Reengineering Work through Information Technology*, Harvard Business School Press, 1993. This book doesn’t have the breathless marketing pizzazz that Hammer’s book has, but it’s more thoughtful. Overall, however, both books advocate radical change to take advantage of the latest IT technologies.

Smith, Adam, *The Wealth of Nations*, (any of several editions). Classic economics text that advocates, among other things, the use of work specialization to increase productivity.


Boar, Bernard H., *Practical Steps for Aligning Information Technology with Business Strategies: How to Achieve a Competitive Advantage*, Wiley, 1994. Lots of books have been written on business-IT alignment. This one is a little out of date, but still very good. Ignore the methodology, which gets too technical, but focus on the overviews of IT and how they support business change.

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ENTERPRISE-LEVEL CONCERNS

UNTIL RECENTLY, MOST BUSINESS PROCESS efforts focused on redesigning or improving specific business processes. In the past few years, however, leading organizations have realized that they cannot achieve the results they want by modifying specific processes in isolation from one another. The only way to achieve a significant competitive advantage is to assure that all the processes that make up a common value chain are integrated and support each other. This insight, in turn, has led organizations to begin to focus on enterprise-level concerns.

In essence, an enterprise focus shifts from trying to improve processes to conceptualizing the entire organization as a system of interacting processes and working to maximize the effectiveness of the whole system. Once executives shift from worrying about specific processes to worrying about all the processes in the organization, they naturally want an enterprise model that shows how all the organization's processes fit together, a set of enterprise process measures that show how processes support enterprise strategies and goals, and how all the process and subprocess are aligned to achieve those goals. They also want a system that defines responsibilities for managing the processes in the organization. This entire set of models and measures, and the resources alignment to support them, is referred to as a business process architecture.

In the 1990s, when companies focused on improving specific processes, most process change was project oriented. One started with a broken process and worked till it was fixed. As companies shift to enterprise-level process work, they are finding
that they need to develop tools and organizational structures to support a sustained effort. A business process architecture isn't a product that can be developed in one push. A business process architecture is usually developed in stages over a period of time. It's usually easiest to begin with a description of an organization's processes and then progress to defining measures and managerial responsibilities. The sophistication of the architecture tends to evolve as managers learn to use it as a tool for strategizing and decision making. Moreover, to be useful, an architecture needs to be maintained and that requires an organization to constantly monitor processes and changes and incorporating them into the architecture. Thus, as companies begin to focus on enterprise-level process concerns, they find that they need to adopt an entirely new attitude and a new level of commitment to generate the desired results.

Restated in slightly different terms, any organization that shifts from focusing on specific processes to enterprise-level concerns is making a major shift in its process maturity. It is undertaking a shift from CMM Level 2 to CMM Levels 3 and 4. Today it is common to refer to organizations whose executives decide to commit to organizing around processes as process-centric organizations.

In this section we are going to focus on some of the key enterprise-level concepts and practices that organizations need to understand and implement to become process-centric organizations.

In Chapter 2 we will discuss organization goals and strategies and how they can be tied to processes and to competitive advantage.

In Chapter 3 we will present an overview of the BPTrends Enterprise Methodology, one approach to defining and implementing the tools and practices needed to manage processes at the enterprise level. We will also consider what's involved in understanding an enterprise and defining its major value chains and key business processes.

In Chapter 4 we will consider the idea of a business process architecture. A process architecture defines the major processes in a value chain, establishes their relationships, defines their performance measures, determines who manages each process, and describes how the processes are aligned to other organizational resources, including, for example, goals and policies, business rules, IT resources, training programs and knowledge-management systems.

We can't consider all aspects of a business process architecture in a single chapter, so we focus on modeling processes and resource alignment in Chapter 4 and then consider process management in Chapter 5 and process measurement in Chapter 6.
In Chapter 7 we conclude our discussion of enterprise-level concerns by considering how a BPM group—or BPM Center of Excellence—can be used to maintain the business process architecture, provide executives with timely reports, and support the on-going process activities of an organization. We will also look at a case study in Chapter 7 to see how one organization has managed to implement all of the enterprise-level tools we have discussed in Part I.
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The concept of a business strategy has been around for decades, and the models and process used to develop a company strategy are taught at every business school. A business strategy defines how a company will compete, what its goals will be, and what policies it will support to achieve those goals. Put a different way, a company’s strategy describes how it will create value for its customers, its shareholders, and its other stakeholders. Developing and updating a company’s business strategy is one of the key responsibilities of a company’s executive officers.

We are going to start our discussion of enterprise-level process concerns with a look at how business people talk about business strategy. This will establish a number of the terms we will need for our subsequent discussion of processes. To develop a business strategy, senior executives need to consider the strengths and weaknesses of their own company and its competitors. They also need to consider trends, threats, and opportunities within the industry in which they compete, as well as in the broader social, political, technological, and economic environments in which the company operates.

There are different schools of business strategy. Some advocate a formal process that approaches strategic analysis very systemically, while others support less formal processes. A few argue that the world is changing so fast that companies must depend on the instincts of their senior executives and evolve new positions on the fly in order to move rapidly.
The formal approach to business strategy analysis and development is often associated with the Harvard Business School. In this brief summary we’ll begin by describing a formal approach that is derived from Harvard professor Michael E. Porter's book, *Competitive Strategy*. Published in 1980 and now in its 60th printing, *Competitive Strategy* has been the bestselling strategy textbook throughout the past two decades. Porter’s approach is well known, and it will allow us to examine some models that are well established among those familiar with strategic management literature.

**Defining a Strategy**

Porter defines business strategy as “a broad formula for how a business is going to compete, what its goals should be, and what policies will be needed to carry out these goals.” Figure 2.1 provides an overview of the three-phase process that Porter recommends for strategy formation.

![Figure 2.1 Porter’s process for defining a company strategy (after Porter, *Competitive Strategy*).](image-url)
Phase 1: Determine the current position of the company. The formal strategy process begins with a definition of where the company is now—what its current strategy is—and the assumptions that the company managers commonly make about the company's current position, strengths and weaknesses, competitors, and industry trends. Most large companies have a formal strategy and have already gone through this exercise several times. Indeed, most large companies have a strategy committee that constantly monitors the company's strategy.

Phase 2: Determine what's happening in the environment. In the second phase of Porter's strategy process (the middle box in Figure 2.1), the team developing the strategy considers what is happening in the environment. In effect, the team ignores the assumptions the company makes at the moment and gathers intelligence that will allow them to formulate a current statement of environmental constraints and opportunities facing all the companies in their industry. The team examines trends in the industry the company is in and reviews the capabilities and limitations of competitors. It also reviews likely changes in society and government policy that might affect the business. When the team has finished its current review, it reconsiders the company's strengths and weaknesses, relative to the current environmental conditions.

Phase 3: Determine a new strategy for the company. During the third phase, the strategy team compares the company's existing strategy with the latest analysis of what's happening in the environment. The team generates a number of scenarios or alternate courses of action that the company could pursue. In effect, the company imagines a number of situations the company could find itself in a few months or years hence and works backward to imagine what policies, technologies, and organizational changes would be required, during the intermediate period, to reach each situation. Finally, the company's strategy committee, working with the company's executive committee, selects one alternative and begins to make the changes necessary to implement the company's new strategy.

Porter offers lots of qualifications about the need for constant review and the necessity for change and flexibility but, overall, Porter's model was designed for the relatively calmer business environment that existed 20 years ago. Given the constant pressures to change and innovate that we've all experienced during the last three decades, it may be hard to think of the 1980s as a calm period, but everything really is relative. When you contrast the way companies approached strategy development
just 10 years ago with the kinds of changes occurring today, as companies scramble to adjust to the world of the Internet, the 1980s were relatively sedate. Perhaps the best way to illustrate this is to look at Porter's general model of competition.

**Porter’s Model of Competition**

Porter emphasizes that “the essence of formulating competitive strategy is relating a company to its environment.” One of the best-known diagrams in Porter’s *Competitive Strategy* is the one we have illustrated in Figure 2.2. Porter’s diagram, which pulls together lots of information about how managers conceptualize the competition when they formulate strategy, is popularly referred to as the “five forces model.”

![Figure 2.2 Porter’s model of the five forces driving industry competition (after Porter, *Competitive Strategy*).](image)

Porter identifies five changes in the competitive environment that can force a company to adjust its business strategy. The heart of the business competition, of course, is the set of rival companies that comprise an industry. The company and its competitors are represented by the circle at the center of Figure 2.2.
Industry competitors. As rival companies make moves, the company must respond. Similarly, the company may opt to make changes itself, in order to place its rivals at a disadvantage. Porter spends several chapters analyzing the ways companies compete within an industry, and we’ll return to that in a moment.

Beyond the rivalry between the companies that make up the industry, there are changes in the environment that can potentially affect all the companies in an industry. Porter classifies these changes into four groups: (1) buyers, (2) suppliers, (3) potential new companies that might enter the field, and (4) the threat that new products or services will become desirable substitutes for the company’s existing products and services.

Buyers. Buyers or customers will tend to want to acquire the company’s products or services as inexpensively as possible. Some factors give the seller an advantage: If the product is scarce, if the company is the only source of the product, or the only local source of the product, or if the company is already selling the product more cheaply than its competitors, then the seller will tend to have better control of its prices. The inverse of factors like these give the customer more bargaining power and tend to force the company to reduce its prices. If there are lots of suppliers competing with each other, or if it’s easy for customers to shop around, prices will tend to fall.

Suppliers. In a similar way, suppliers would always like to sell their products or services for a higher price. If the suppliers are the only source of a needed product, if they can deliver it more quickly than their rivals, or if there is lots of demand for a relatively scarce product, then suppliers will tend to have more bargaining power and will increase their prices. Conversely, if the supplier’s product is widely available, or available more cheaply from someone else, the company (buyer) will tend to have the upper hand and will try to force the supplier’s price down.

Substitutes. Companies in every industry also need to watch to see that no products or services become available that might function as substitutes for the products or services the company sells. At a minimum, a substitute product can drive down the company’s prices. In the worst case, a new product can render the company’s current products obsolete. The manufacturers of buggy whips were driven into bankruptcy when internal combustion automobiles replaced horse-drawn carriages in the early years of the 20th century. Similarly, the availability of plastic products has forced the manufacturers of metal, glass, paper, and wood products to reposition their products in various ways.
Potential entrants. Finally, there is the threat that new companies will enter an industry and thereby increase the competition. More companies pursuing the same customers and trying to purchase the same raw materials tend to give both the suppliers and the customers more bargaining power, driving up the cost of goods and lowering each company's profit margins.

Historically, there are a number of factors that tend to function as barriers to the entry of new firms. If success in a given industry requires a large capital investment, then potential entrants will have to have a lot of money before they can consider trying to enter the industry. The capital investment could take different forms. In some cases, a new entrant might need to build large factories and buy expensive machinery. The cost of setting up a new computer chip plant, for example, runs to billions of dollars, and only a very large company could consider entering the chip manufacturing field. In other cases, the existing companies in an industry may spend huge amounts on advertising and have well-known brand names. Any new company would be forced to spend at least as much on advertising to even get its product noticed. Similarly, access to established distribution channels, proprietary knowledge possessed by existing firms, or government policies can all serve as barriers to new companies that might otherwise consider entering an established industry.

Until recently, the barriers to entry in most mature industries were so great that the leading firms in each industry had a secure hold on their positions and new entries were very rare. In the past three decades the growing move toward globalization has resulted in growing competition among firms that were formerly isolated by geography. Thus, prior to the 1960s, the three large auto companies in the United States completely controlled the U.S. auto market. Starting in the 1970s, and growing throughout the next two decades, foreign auto companies began to compete for U.S. buyers and U.S. auto companies began to compete for foreign auto buyers. By the mid-1980s, a U.S. consumer could choose between cars sold by over a dozen firms. The late 1990s witnessed a sharp contraction in the auto market, as the largest automakers began to acquire their rivals and reduced the number of independent auto companies in the market. A key to understanding this whole process, however, is to understand that these auto companies were more or less equivalent in size and had always been potential rivals, except that they were functioning in geographically isolated markets. As companies became more international, geography stopped functioning as a barrier to entry, and these companies found themselves competing with each other. They all
had similar strategies, and the most successful had gradually reduced the competition by acquiring their less successful rivals. In other words, globalization created challenges, but it didn’t radically change the basic business strategies that were applied by the various firms engaged in international competition.

In effect, when a strategy team studies the environment, it surveys all of these factors. They check to see what competitors are doing, if potential new companies seem likely to enter the field, or if substitute products are likely to be offered. And they check on factors that might change the future bargaining power that buyers or sellers are likely to exert.

**Industries, Products, and Value Propositions**

Obviously Porter’s model assumes that the companies in the circle in the middle of Figure 2.2 have a good idea of the scope of the industry they are in and the products and services that define the industry. Companies are sometimes surprised when they find that the nature of the industry has changed and that companies that were not formerly their competitors are suddenly taking away their customers. When this happens, it usually occurs because the managers at a company were thinking too narrowly or too concretely about what it is that their company was selling.

To avoid this trap, sophisticated managers need to think more abstractly about what products and services their industry provides. A “value proposition” refers to the value that a product or service provides to customers. Managers should always strive to be sure that they know what business (or industry) their company is really in. That’s done by being sure they know what value their company is providing to its customers.

Thus, for example, a bookseller might think he or she is in the business of providing customers with books. In fact, however, the bookseller is probably in the business of providing customers with information or entertainment. Once this is recognized, then it becomes obvious that a bookseller’s rivals are not only other book stores, but magazine stores, TV, and the Web. In other words, a company’s rivals aren’t simply the other companies that manufacture similar products, but all those who provide the same general value to customers. Clearly Rupert Murdoch realizes this. He has gradually evolved from being a newspaper publisher to managing a news and entertainment conglomerate that makes movies, owns TV channels and TV satellites, and sells books. His various companies are constantly expanding their interconnections