VISUALIZING PROJECT MANAGEMENT

MODELS AND FRAMEWORKS FOR MASTERING COMPLEX SYSTEMS

THIRD EDITION

KEVIN FORSBERG, PHD, CSEP
HAL MOOZ, PMP, CSEP
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To those who master complexity and
provide us with simple, elegant solutions.

FOREWORD TO THE THIRD EDITION

Today's industrial products, and many public sponsored projects, show a strong increase in functionality and complexity. Think of automobiles, mobile phones, personal computers, airplanes, or a space mission. To ensure success and cope with inherent risks of modern products, project management and systems engineering have become indispensable skills for forward-looking enterprises. They have been thrust into the center of attention of top executives. Both fields, project management and systems engineering, ensure success by focusing on technical performance, cost, and schedule—and beyond that on parameters such as return on investment, market acceptance, or sustainability.

Anyone who has lived with the space program, or any other high-tech industrial product development, can immediately appreciate this acclaimed book. It addresses and "visualizes" the multidimensional interactions of project management and systems engineering in several important ways. The book shows the interdependencies between the two disciplines and the relationships that each discipline has with the many other engineering, manufacturing, business administration, logistics, enterprise, or market-oriented skills needed to achieve successful products.

Since the early 1970s, many of the world's space projects have been planned and implemented through broad international cooperation. Having lived through some of these as engineer, project manager, and managing director, I well understand the need for simple and broadly accepted principles and practices for the practitioners of project management and systems engineering.

My years in industry gave me significant insight into the different engineering and project management cultures and practices prevailing in Europe and the United States. It enabled me to understand and easily interact with the different organizations that

were involved in the most complex transatlantic cooperation of the 1970s. Remember, failures result not only from poor hardware engineering, software engineering, or systems or project management; they can also originate from differing cultural interpretations of engineering, communications, or management practices.

On more recent, highly complex international projects, such as the world's largest radar missions (SIR-C and SRTM) flown on the space shuttle, and the International Space Station (ISS), we learned again the lesson that project management and systems engineering, when focused on the essentials, are key ingredients to assured success.

At the Technical University of Delft in The Netherlands a few years ago, we initiated a new international postgraduate Master program of space systems engineering for senior engineers with a focus on modern "end-to-end" systems engineering. We emphasized the importance of multidisciplinary engineering, communication, and management interaction on the basis of a common use of terms and definitions. We also gave strong consideration to the fact that systems engineering and project management need to closely interact to achieve results.

The importance of this excellent book, able to encompass these two key disciplines, cannot be overemphasized. I was hence delighted to have been invited to write the Foreword for this third edition.

—Heinz Stoewer

Heinz Stoewer is the president of the International Council on Systems Engineering (INCOSE). Professor Stoewer started his career in aerospace. He spent a number of years in German and U.S. industry (MBB/EADS and McDonnell-Douglas/Boeing). In the 1970s, he was appointed the program manager for the Spacelab, the first human spaceflight enterprise at the European Space Agency. He eventually became a managing director of the German Space Agency. As professor for space systems engineering at the Technical University of Delft in The Netherlands, he initiated a highly successful space systems engineering Master program. Throughout his career, he has been aware of the need to interact effectively with compatriots in other fields and in other countries in areas covering the management of projects, systems, and software engineering.

FOREWORD TO THE SECOND EDITION

There are a thousand reasons for failure but not a single excuse.
Mike Reid

It is every manager's unending nightmare: In today's world of increasing complexity, there is less and less tolerance for error. We see this daily in the realms of health care, product safety and reliability, transportation, energy, communications, space exploration, military operations, and—as the above quote from the great Penn State football player Mike Reid demonstrates—sports. Whether the venue is the stock market, a company's customer base, consumers, government regulators, auditors, the battlefield, the ball field, or the media, "No one cares"—as the venerated quotation puts it—"about the storms you survived along the way, but whether you brought the ship safely into the harbor."

Over the course of my own career in aerospace, I have seen an unfortunate number of failures of very advanced, complex—and expensive—pieces of equipment, often due to the most mundane of causes. One satellite went off course into space on a useless trajectory because there was a hyphen missing in one of the millions of lines of software code. A seemingly minor flaw in the electrical design of the Apollo spacecraft was not detected until Apollo 13 was 200,000 miles from Earth, when a spark in a cryogenic oxygen tank led to an explosion and the near-loss of the crew. A major satellite proved to be badly nearsighted because of a tiny error in grinding the primary mirror in its optical train. And, as became apparent in the inquiry into the *Challenger* disaster, the performance of an exceedingly capable space vehicle—a miracle of modern technology—was undermined by the effects of cold temperature on a seal during a sudden winter storm. Murphy's Law, it would seem, has moved in lockstep with the advances of the modern age.

THEORETICALLY, SUCCESS IS MANAGEABLE

In the grand old days of American management, when it was presumed that all problems and mistakes could be controlled by more rigorous managerial oversight, the canonical solution to organizational error was to add more oversight and bureaucracy. Surely, it was thought, with more managers having narrower spans of control, the organization could prevent any problem from ever happening again. Of course, this theory was never confirmed in the real world—or as Kansas City Royals hitting instructor Charlie Lau once noted regarding a similar challenge, "There are two theories on hitting the knuckleball. Unfortunately, neither one works."

The problem with such a strategy of giving more managers fewer responsibilities was that no one was really in charge of the biggest responsibility: Will the overall enterprise succeed? I recall the comment a few years ago of the chief executive of one of the world's largest companies, who was stepping down after nearly a decade of increasingly poor performance in the marketplace by his company. He was asked by a journalist why the company had fared so poorly under his tutelage, to which he replied, "I don't know. It's a mysterious thing."

My observation is that there is no mystery here at all. After decades of trying to centrally "manage" every last variable and contingency encountered in the course of business, Fortune 500 companies found themselves with 12 to 15 layers of management—but essentially ill prepared to compete in an increasingly competitive global marketplace. Or as I once pointed out in one of my Laws, "If a sufficient number of management layers are superimposed on top of each other, it can be assured that disaster is not left to chance."

A NEW LOOK AT PROJECT MANAGEMENT

Today's leaders in both the private and public sectors are rediscovering the simple truth that every good manager has known in his or her heart since the first day on the job: Accountability is the one managerial task that cannot be delegated. There must be one person whose responsibility it is to make a project work—even as we acknowledge the importance of teamwork and "worker empowerment" in the modern workplace. In other words, we are rediscovering the critical role of the project manager.

The importance of the project manager has long been noted in our nation's military procurement establishment, which has tradi-

tionally considered the job to be among the most important and most difficult assignments in peacetime. Performed properly, the project management role, whether in the military, civilian government, or in business, can make enormous contributions and can even affect the course of history.

Challenges of this technology-focused project management role are particularly noteworthy for the insights they provide into the broader definition of project management. Perhaps the greatest of these is inherent in technology itself. In the effort to obtain the maximum possible advantage over a military adversary or a commercial competitor, products are often designed at the very edge of the state of the art. But as one high-level defense official noted in a moment of frustration over the repeated inability of advanced electronic systems to meet specified goals, "Airborne radars are not responsive to enthusiasm." In short, managerial adrenaline is not a substitute for managerial judgment when it comes to transitioning technology from the laboratory to the field.

Despite considerable tribulations—or, perhaps because of them—the job of the technology-focused project manager is among the most rewarding career choices. It presents challenging work with important consequences. It involves the latest in technology. It offers the opportunity to work with a quality group of associates. And over the years, its practitioners have generated a large number of truly enormous successes.

THE LURE OF PROJECT MANAGEMENT

This brings me to the broader observation that the project manager's job, in my opinion, is one of the very best jobs anywhere. Whether one is working at the Department of Defense, NASA, or a private company, the project manager's job offers opportunities and rewards unavailable anywhere else. Being a project manager means integrating a variety of disciplines—science, engineering, development, finance, and human resources—accomplishing an important goal, making a difference, and seeing the result of one's work. In short, project management is "being where the action is" in the development and application of exciting new technologies and processes.

The principles of successful project management—picking the best people, instilling attention to detail, involving the customer, and, most importantly, building adequate reserves—are no secret, but what is often missing in the literature on the subject is a

comprehensive, easy-to-understand model. This is one of the many compelling aspects to Visualizing Project Management. The authors have taken a new, simplified approach to visualizing project management as a combination of sequential, situational management actions incorporating a four-part model—common vocabulary, teamwork, project cycle, and project management elements. The beauty of their approach is that they portray management complexity as process and discipline simplicity.

Kevin Forsberg, Harold Mooz, and Howard Cotterman are eminently qualified to compose such a comprehensive model for successful project management. They bring a collective experience unmatched in the commercial sphere. One author has spent his entire career in the high-tech commercial world; the two others have more than 20 years each at a company (Lockheed Corporation, which is part of the new Lockheed Martin Corporation) that established a reputation strongly supporting the role of the project manager. Collectively, the authors have spent many years successfully applying their "visualizing project management" approach to companies in both the commercial and the government markets. Their technical skill and work-environment experience are abundantly apparent in the real-world methodology they bring to the study and understanding of the importance of project management to the success of any organization.

SUMMARY

As corporate executives and their counterparts in the public sector expect project managers to assume many of the responsibilities of functional management—indeed, as we look to project managers to become "miracle workers" pulling together great teams of specialists to create products of enormous complexity—we need to make sure that the principles and applications of the project management process are thoroughly understood at all levels of the organizational hierarchy. This book will help executives, government officials, project managers, and project team members *visualize* and then successfully *apply* the process. I recommend this book to all those who aspire to project management, those who must supervise it in their organizations, or even those who are simply fascinated with how leading-edge technologies make it out of the laboratory and into the market.

—Norman R. Augustine

Norman Augustine retired in 1997 as Chair and CEO of Lockheed Martin Corporation. Upon retiring, he joined the faculty of the Department of Mechanical and Aerospace Engineering at Princeton University. Earlier in his career he had served as Under Secretary of the Army and prior to that as Assistant Director of Defense Research and Engineering. Mr. Augustine has been chairman of the National Academy of Engineering and served nine years as chairman of the American Red Cross. He has also been president of the American Institute of Aeronautics and Astronautics and served as chairman of the "Scoop" Jackson Foundation for Military Medicine. He is a trustee of the Massachusetts Institute of Technology and Johns Hopkins and was previously a trustee of Princeton. He serves on the President's Council of Advisors on Science and Technology and is a former chairman of the Defense Science Board. His current corporate boards are Black and Decker, Lockheed Martin, Procter and Gamble, and Phillips Petroleum. He has been awarded the National Medal of Technology and has received the Department of Defense's highest civilian award, the Distinguished Service Medal, five times. Mr. Augustine holds an MSE in Aeronautical Engineering from Princeton University.

ABOUT THE AUTHORS

Kevin Forsberg, PhD, CSEP, is co-founder of The Center for Systems Management, serving international clients in project management and systems engineering. Dr. Forsberg draws on 27 years of experience in applied research system engineering, and project management followed by 22 years of successful consulting to both government and industry. While at the Lockheed Palo Alto, California, Research Facility, Dr. Forsberg served as deputy director of the Materials and Structures Research Laboratory. He earned the NASA Public Service Medal for his contributions to the Space Shuttle program. He was also awarded the CIA Seal Medallion in recognition of his pioneering efforts in the field of project management. He received the 2001 INCOSE Pioneer Award. Dr. Forsberg is an INCOSE Certified Systems Engineering Professional. He received his BS in Civil Engineering at Massachusetts Institute of Technology and his PhD in Engineering Mechanics at Stanford University.

Hal Mooz, PMP and CSEP, is co-founder of The Center for Systems Management, one of two successful training and consulting companies he founded to specialize in project management and systems engineering. Mr. Mooz has competitively won and successfully managed highly reliable, sophisticated satellite programs from concept through operations. His 22 years of experience in program management and system engineering has been followed by 24 years of installing project management into federal agencies, government contractors, and commercial companies. He is co-founder of the Certificate in Project Management at the University of California at Santa Cruz and has recently developed courses for system engineering certificate programs in conjunction with Old Dominion and Stanford Universities. He was awarded the CIA Seal Medallion in recognition of his pioneering efforts in the field of project management and received the 2001 INCOSE Pioneer

Award. Mr. Mooz is a PMI certified Project Management Professional (PMP) and an INCOSE Certified Systems Engineering Professional (CSEP). Mr. Mooz received his ME degree from Stevens Institute of Technology.

Howard Cotterman has served The Center for Systems Management in capacities ranging from project manager to president, and has held executive positions at leading technology and aerospace companies, most recently as vice president of Rockwell International. Mr. Cotterman has successfully managed a broad range of system, software, and semiconductor projects, including Intel's family of microcomputers and peripherals. His 36 years of project management experience began with the development of IBM's first microprocessor in the mid-1960s and includes research, development, and manufacturing projects as NCR's Director of Advanced Development and at Leeds & Northrup where he was Principal Scientist. Mr. Cotterman was co-founder of Terminal Communications, Inc. and founder of Cognitive Corporation, specializing in knowledge management and online training. Mr. Cotterman received his BS and MS degrees in Electrical Engineering from Purdue University where he was a Sloan Fellow.

ACKNOWLEDGMENTS

The process models, best practices, and lessons learned embodied in *Visualizing Project Management* have been significantly enriched and refined in this *Third Edition* by collaboration among the many new contributors and by the reinforcement from successful project management and systems engineering practitioners.

We particularly wish to acknowledge the following contributors: Ray Kile for articulating the cause and effect relationships among the visual models, process improvement, and the achievement of peak performance; Frank Passavant for sharpening the core systems engineering messages, and particularly for his thoughtful and in-depth critique of requirements management and the Dual Vee; and John Chiorini for clarifying the synergies among our primary messages and those of the PMI® *PMBOK® Guide* and *INCOSE Systems Engineering Handbook*. We appreciate the substantial subject matter expertise contributed by Ray Kile relating to the SEI-CMMI® and cost estimating; by Jim Chism in clarifying the role of UML and SysML; and by Jim Whalen's DoD 5000 insights. We thank Marsha Finley for helping to identify the 100 most commonly misunderstood terms; Greg Cotterman for his contributions to Part I and to manuscript production; and Chris Fristad for his perspectives on the PMI® *PMBOK® Guide* and OPM3®. We are grateful to Neal Golub for agreeing to add his software project planning and estimation templates to our downloadable template database.

CONTENTS

INTRODUCTION

USING VISUAL MODELS TO MASTER COMPLEX SYSTEMS

The traditional telephone is heading for extinction—one more casualty of the Internet and evolution. Consider how quickly the cell phone grew from its modest beginnings as a mobile version of Alexander Graham Bell's telephone to being a complex entertainment, knowledge management, and communications system. But technology advance represents the most manageable facet of the complexity growth. Consider the business and social implications. Your boss will be able to contact you no matter where you are. Vacations will exist in name only.

While some organizations cite complexity as an excuse for late, flawed, and overrun projects, others welcome the challenge and strive to simplify and manage complexity as a competitive advantage. This book is dedicated to mastering complexity.

"The ability to simplify means to eliminate the unnecessary so that the necessary may speak."

Hans Hoffman[1]

IT'S ALARMINGLY COMMONPLACE FOR PROJECT TEAMS TO FAIL

Almost daily we are made aware of projects that have failed or haven't met customer expectations. Past examples include Iridium, Globalstar, and many others where the technical solution worked as specified but the business case was never realized. The English Channel tunnel has never achieved predicted revenues and the Boston "Big Dig" has overrun its $2.6 billion budget many times over

($14.6 billion and counting). At the other extreme, billions of dollars in failed projects have been attributed to minor technical problems, such as a missing line of code or crossed wires. Concurrent with these troubled projects are those that meet or exceed expectations. The Olympics are perhaps the best examples. Except for isolated instances such as Montreal, they routinely accomplish difficult objectives on time and usually with substantially—sometimes surprisingly—higher profits (Los Angeles Olympics profit was $100,000,000—ten times that expected). Product introductions such as the Apple iPod and the Toyota Lexus are among the excellent examples of projects that were very well executed.

Widely varying project results would lead one to conclude—quite correctly—that project success is too often dependent on the specific team. But any team can succeed when it is committed to improving its processes and applying the fundamentals of project management and systems engineering comprehensively, consistently, and systematically.

Since projects and project teams are temporary, their performance may be incorrectly attributed to the luck of the draw.

RESPONDING TO THE ULTIMATE "WHY?"

Ironically, most of the billions of dollars lost in high-tech project failures have been traced to low-tech causes. Following each failure there is usually an extensive analysis that seeks to identify the root cause. Here's a representative list of reported root causes:

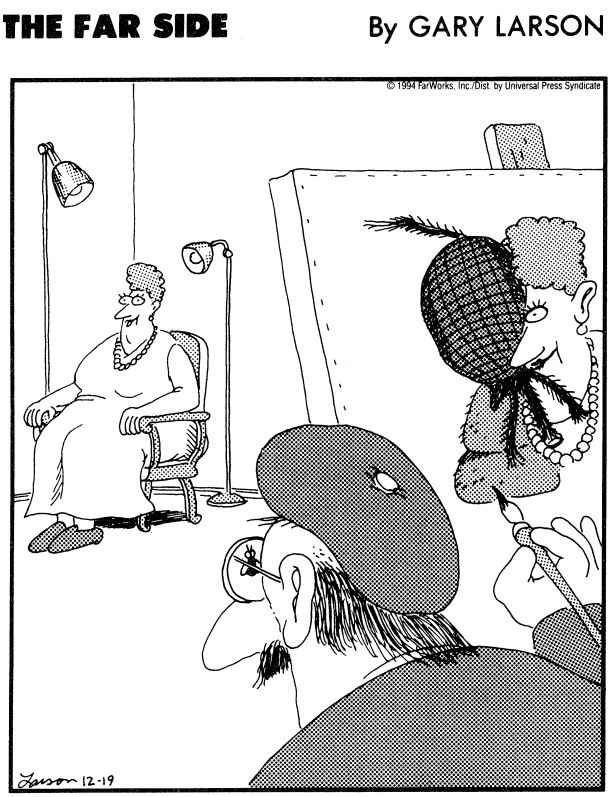
- No one communicated a change in design.
- A piece part was not qualified.
- A line of software code was missing.
- Two wires were interchanged.
- Unmatched connectors were mated.
- A review or decision gate was skipped.

We have only to ask "Why?" to see that these are symptoms of the real root cause. They are human errors—the results of behavior. Why wasn't the change communicated? Was it fear of interrogation? Why wasn't the part qualified? Was it a cost savings? And why weren't the interchanged wires detected? Was it incompetence or expediency? These are the ultimate "Whys?" that should be answered for every failed project. Chapter 4 addresses this question in a cultural context.

WHY DO COMPLEX SYSTEMS HAVE A DISMAL PROJECT PERFORMANCE RECORD?

Failure often results from flawed perception of what is involved in successfully managing complex system development from inception through completion. Even experienced managers often disagree on important aspects, like the blind men who encounter the elephant and reach different conclusions concerning the nature of the beast. In the parable, the man feeling the tail concludes the elephant is like a rope, while the man holding the trunk decides the elephant is like a snake. Project reality is such a complex organism that personal experience alone can result in biased and flawed views.

Being temporary, projects often bring together people unknown to each other. The newly formed group usually includes specialists motivated by the work itself and by their individual contributions. Teams of highly skilled technicians can make costly errors—even



Visualization without confirmation through a common language can produce a flawed vision of reality. The results can be equally misleading whether we see the world through the optimist's rose-colored glasses or through a "buggy" lens as this Far Side cartoon depicts. (THE FAR SIDE © 1994 FARWORKS, INC./Dist. by UNIVERSAL PRESS SYNDICATE. Reprinted with permission. All rights reserved.)

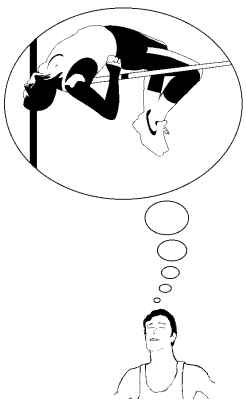
fatal ones—simply because the members fail to understand or internalize a systematic approach for applying best practices to project management. A major factor critical to project success is the availability of an effective and intuitive management process—one the group will quickly buy into and build their team upon.

VISUALIZATION: A POWERFUL TECHNIQUE FOR ACHIEVING HIGH PERFORMANCE

No matter how much intuition you have, you can't rely on personal experience alone as you navigate through the increasingly complex and dynamic environment of projects. On the other hand, management excellence cannot simply be taught any more than excellence in Olympic gymnastics or being a great artist. Fortunately, complex systems do not require complex management, quite the contrary. The most effective project managers are able to decompose the apparent complexity of their project environment in order to view it more simply.

Improved visualization and intuition can be developed with time and training.

Psychologists agree that most people have insight and creative abilities far beyond those used routinely. This has been attributed to childhood education that favors left-brain (logical) modes of thinking, while downplaying the right brain's creativity. Albert Einstein is just one of many people believed to have overcome traditional Western society left-brain learning patterns. He was able to "see" three-dimensional pictures in his mind before he wrote equations. He emphasized the importance of visualization to his own working methods. Everything he did on the theory of relativity was already in the literature, but other physicists just couldn't visualize how to put it all together. Experts now believe that visualization, and the subsequent intuition improvements from right-brain thinking, can be developed with time and training.



Visualization can be a powerful technique for achieving high performance and success in business as it is in fields such as sports. Top athletes often perform successfully in their minds before competing. They experience their winning achievement visually—see it—even feel it. NASA researcher Dr. Charles Garfield reports that most peak performers are visualizers. Business people who need to persuade others, such as salespeople or entrepreneurs, prepare for the responses they expect by visualizing scenarios of their situation. Visualization—a right brain activity—is a vital characteristic of leadership, another right brain activity. We employ this technique to gain insight into the logical and systematic project management and systems engineering environments and processes—left brain activities.

THE SIMPLIFYING POWER OF MODELS

Visual models enable us to see the big picture. They provide a powerful language for comprehending each key element in the project environment and for visualizing how each element relates to the whole and to the others:

- Models help us to explain and to understand how things work by simplifying complexity. Models enable us to visualize and characterize what to expect. What young science student hasn't been enlightened by a physical model of the reciprocating engine or of a molecule?
- Models can broaden our perspective as does a desktop globe or a model of the solar system.
- Models provide a common conceptual frame of reference just as a common vocabulary does for communications.
- Models can express rules and ideas more simply, models like pictures are worth more than a thousand words.
- Models clarify relationships, identify key elements, and eliminate confusion factors. In Thomas Kuhn's words, ". . . all models have similar functions. Among other things they supply the group with preferred and permissible analogies or metaphors."

Model: A representation of the real thing used to depict a process, investigate risk, or to evaluate an attribute.

"The power of a science seems quite generally to increase with the number of symbolic generalizations its practitioners have at their disposal."

Thomas Kuhn

The appropriate models help avoid costly errors that can lead to failure. One of the major sources of project failure is flawed requirements and scope management. Models of the project environment, therefore, need to address the development and management of project requirements. Continuing to work on the project solution with an insufficient understanding of stakeholder requirements and a deficient requirements development process often leads to expensive time delays and redesigns. This doesn't have to be the case. A strong requirements development and management process model can provide that ounce of prevention.

From road maps to wind tunnels, models help us avoid costly errors and dead ends—that is, if we're correctly modeling the right things.

THE INTEGRATED PROCESS MODEL

The most popular models in the development project environment focus either on project administration, technical development, or process improvement, often to the exclusion of the other areas.

All too often projects proceed with innovation and sophisticated development without paying heed to the evolving business case. Furthermore, the managers of supporting subsystems or items usually

Developers often focus on what is possible technically regardless of the constraints of cost, a limiting schedule, or what the customer requires.

have little knowledge of the driving business case and of the derivative cases at their level. This lack of awareness of the underlying business issues stems from inadequate collaboration between the business and technical disciplines and can lead to a wrong project solution that is ultimately rejected by the users, customer, or marketplace.

How then to best accommodate the evolving business case and to have it drive the technical and financial decisions throughout the project life cycle? The answer begins with internalizing the integrated process model presented here, tailoring the processes, and then putting the practices to work. The set of models presented in these pages builds on the natural synergies of project management and systems engineering, enabling project teams to:

- Develop new products and services that meet customer needs—the right solution the first time.
- Shorten time-to-market for new developments—effective business strategies and development tactics.
- Improve efficiency and productivity—organizational and personal capability maturity.
- Establish competitive positions in national or world markets—best in class processes leading to best in class performance.

To implement an effective process, any model must be intuitive because it is impossible to install if it can't be quickly understood and affirmed.

Installing an integrated project management and systems engineering culture, based on the models in this book, coupled with training and certifying key team members has significantly improved project success rates. Moving beyond success to a strong project culture and a predictable performance improvement program can represent a distinct competitive advantage.

Navigating the Book—Exploring the Models

This book is organized with three goals in mind:

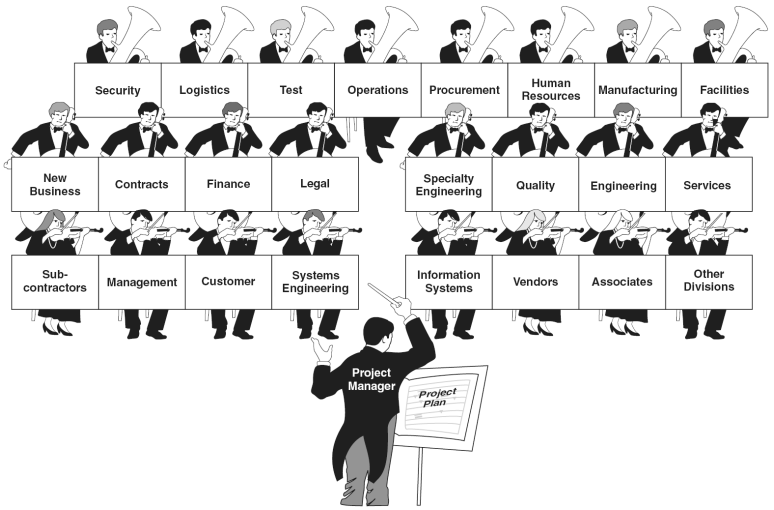
1. Visualizing what's involved in mastering complex systems at the concept level. Part One introduces the integrated process model that enables you to visualize the major relationships.
2. Internalizing the processes and understanding how to leverage them. The chapters in Parts Two and Three correspond to the visual process model's building blocks and introduce supporting tactics, methods, and techniques.
3. Mastering complexity with a deeper understanding of systems engineering principles and their application. Part Four presents advanced topics that prepare you to confidently accept responsibility for the challenges of complex projects.

The visual models presented here can broaden your perspective on all aspects of your project, enabling you to lead from your right brain and manage with your left.

PART ONE

USING MODELS AND FRAMEWORKS TO MASTER COMPLEX SYSTEMS

As in previous editions, the wheel and axle model is the centerpiece—the basis for visualizing the overall project management process and for structuring the book's content. The theme of the book, and our metaphor for a great project team, is a symphony orchestra, each musician capable of solo performances, but committed



Note that the first violinist is systems engineering, the team's technical lead that, in project teams, frequently sets the pace and orchestrates the technical players in timing and intensity.

to teamwork. This edition emphasizes the pivotal role of systems engineering, the first violinist in the orchestra metaphor.

Visualizing Project Management, third edition, has four parts:

Part One draws on systems thinking to consider the project environment, highlighting the critical role of solution and stakeholder requirements.

Part Two applies our visual model to reveal the relationships and interdependencies among the major project success factors.

Part Three provides the tactics required to navigate skillfully in order to achieve the project goals.

Part Four describes how processes can best be deployed to achieve predictable performance improvements.

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MARGIN NOTES

PMBOK® Guide
This form of margin note is used for PMI *PMBOK® Guide* references.

INCOSE
This form of margin note is used for *INCOSE Handbook* references.

This third edition uses two forms of margin notes. As in previous editions, margin notes are used to emphasize a point or to annotate a diagram, such as the systems engineering role in the first paragraph. The second form, shown here in the margin, is used to reference specific sections of the PMI *PMBOK® Guide* and the *INCOSE Systems Engineering Handbook, Version 3 (2006).*

SECTIONS

We occasionally refer to specific chapters by number and to a section nearby. *Sections* are delimited by headings in all caps and centered, such as this one.