

PRACTICAL PROJECT MANAGEMENT

Tips, Tactics, and Tools

Harvey A. Levine

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JOHN WILEY & SONS, INC.

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ACKNOWLEDGMENTS

Project Management has often been called the “accidental profession.” That designation has come about due to the preponderance of PM practitioners who have found their way to this field, not through a structured education or career strategy, but rather as a side trip from their planned careers. My side trip has lasted some 40 years and, thanks to many whom I have met along the way, the side trip has become a journey of discovery and fulfillment. This book records much of what I have learned and disseminated during that trip. Therefore, it is only fair that I express my gratitude not only to the direct contributors to this material, but also to those who helped to pave the way.

It was way back in 1962 that Adelaide Oppenheim offered me the opportunity to change careers and try my hand at planning and scheduling at GE’s Knolls Atomic Power Laboratory. Adelaide encouraged personal growth and enlisted us soldiers to spread the word about the benefits of structured planning and control of projects. Later, moving on to GE’s commercial operations, I was afforded the opportunity to bring the benefits of project management to several divisions of this conglomerate. Along the way, Jack Gido encouraged me to present my first technical paper, which eventually led to my emergence as a writer and educator, as well as stimulating me to get involved in the Project Management Institute. After the support of many led to opportunities to teach at Rensselaer Polytechnic Institute, to publish a book for Osborne/McGraw-Hill, and to be elected President and Chairman of the Project Management Institute (all in 1985–1986), I was further encouraged to leave the comfort of the corporation and to strike out on my own. The apprehension associated with such a decision was eased by Joel Koppelman, President of Primavera Systems, who became my first client and a supporter for the next 15 years. Joel was the first of dozens of leaders in the project management tools and services industry that extended a friendly hand and allowed me to become an active member of their community. I wish that I could name all of these people who became an important part of my life, but they would number in the hundreds. But I will single out Roger Meade, CEO of Scitor Corporation, for his faith and support for a decade and a half.

A special attribute of this profession, which has been so endearing to me, has been the willingness of my fellow practitioners to share their ideas and wisdom with each other. People like David Cleland, Harold Kerzner, Francis Webster, Max Wideman, Bill Duncan, Paul Dinsmore, who through their publications, seminars, and support for the development of a body of knowledge in the field of project management, have helped PM to become a recognized and respected profession. I am honored to have been in their company and to have had them as my colleagues.

Much of what is presented in this book is based on work that I have prepared during the past decade, based on my experiences in the field. There were a few areas for which I reached out to others for the benefit of their insight and expertise. I offer my gratitude to the following colleagues, who responded to my invitation to participate in this project: Lois Zells, Patrick Durbin, Wendy Wheeler, Brad Holtz, Richard Hayden, Nancy Allen, Matt Light, and Ted Tzirimis. My thanks also to some of the consulting firms that provided reports and data, including Gartner Group, SPEX, KPMG Consultants, PricewaterhouseCoopers, LLC, and Project Partners, LLC.

To the many hundreds of people with whom I have had professional contact through the years (you know who you are), I thank you for the enrichment that you provided and for the opportunity that you extended for me to share my knowledge and ideas with you. You are all clearly contributors to this book.

Harvey A. Levine

April 2002

PREFACE

It was the first Sunday in April 1986, when the *New York Times* reviewed my first book *Project Management Using Microcomputers*. What struck me the most in that review was the reviewer's description of project management as *arcane*. I had to look the word up and found it to be a synonym for *mysterious*. To be *arcane* is to "be beyond one's powers to discover, understand, or explain," says my thesaurus.

Well, perhaps it was arcane in the mid-1980s. But that's not quite true as we enter the twenty-first century. Projects, and project management, are garnering much more attention, today. And while it might not be appropriate to describe project management as arcane or mysterious, there are many people who would still claim that it is "beyond one's powers to discover, understand, or explain."

So here we find the main purpose of this book. Here we strive to uncover the mysteries of project management. We explain basic, practical aspects of project management and hopefully bring to our readers a new understanding of the value, purpose, and skills of this important discipline.

Project Management as a Discipline

Perhaps the most important thing to note is that project management is, indeed, a discipline of its own. It has its own terminology, its own body of knowledge, its own set of skills and practices. One might not need a degree in project management to practice this discipline. But you cannot just have someone wave a magic wand in your direction and bestow these capabilities upon you. As obvious as this might appear, there are far too many instances where this is exactly what happens. A senior manager *declares* that Jack is going to manage projects, with all the knowledge and skills required of that discipline. No way!

Some 40 years ago, I had the good fortune of making a career change, from engineering to project management. Starting with basic planning and scheduling, I learned and practiced practical skills in project management, eventually reaching into all aspects of the discipline. For 24 years, these skills were first honed for my own use, and then used to develop and implement project management capabilities

and systems in several divisions of the General Electric Company. Since 1986, as founder and principal of The Project Knowledge Group, I have had the opportunity to share my project management expertise with hundreds of clients—and to learn from them as I came to understand their challenges.

A unique and beneficial aspect of this consultancy is that half of my clients were firms that were in the process of developing a project management capability and implementing a computer-based project management practice. The other half were firms that were developers and vendors of the tools used in managing projects. With this balanced involvement, I found myself to be acting as a bridge between the vendor and user communities.

I continually fed insights to the vendor community about what the users felt that they needed. And I was able to bring to the users, the latest developments in PM tool concepts. Through all of this, I was able to learn what impediments lay in the way of the successful adoption of project management in the field, and was able to develop practical applications of essential project management concepts to smooth the way around, over, and through these impediments.

These were wonderful experiences. Challenges, leading to discoveries and solutions to aid in making project management work. What I learned is, as they say, enough to fill a book. So here it is.

Why Read a Book about Project Management?

Sure! You've heard it all before. "It's a jungle out there!" So many traps befall the typical project. Things can go drastically wrong at every turn and there are dangers lurking behind every rock.

You probably accepted your project based on a set of good assumptions—most of which will prove to be in error before the project is over. Is there anything that you can do that can minimize what can go wrong? And when they go wrong, is there anything that you can do to minimize the damages?

That's what practical project management is about. You'll make your plans. Things won't happen as planned. But you'll know what is happening. You'll be able to evaluate alternative strategies. With some heroic effort, you will bring the job in on time, under budget, and with the full committed scope.

There have been numerous studies that report an excess of project failures—failures that resulted in extensive consequences. Projects failed, and when these projects were tied to the future health of the enterprise, the sponsoring businesses also failed. True, the potential for project failure is large. But the potential for project success is just as available.

Projects are essential for most businesses. The failure to execute projects successfully will prevent most businesses to grow and prosper in an ever-changing

and challenging environment. The question isn't whether to engage in project work. The issue is how do we promote project success?

Projects fail. And when we evaluate the failures, we often find that the project never had a chance. We find that the failure was in the basic inability to specify, plan, and manage projects. So we decide to implement a computer-based project management capability.

And still projects fail. And when the failures occur, we look around for somewhere to place the blame. Frankly, we can often find the culprit by looking in the mirror. *For the most part, the failures in implementing project management can be traced back to this simple misconception: that we can take shortcuts with project management—that we can treat it casually and unprofessionally—and still have it work.*

Success, in any endeavor, doesn't just happen. It requires a serious and time-consuming effort to develop the proper organization and to populate it with the best prepared resources available. It requires the top-down development of an enterprise-wide culture, complete with the practices that are necessary to carry out the firm's mission. It requires that the firm understand the technology associated with the products and that it invest in the machinery to effectively execute the technology, using the accepted practices.

The business of projects deserves no less than this. It requires commitment, leadership, resources, skills, practices, and tools. And all of this must be brought into an environment that recognizes the importance of project management as a means of achieving the firm's mission.

We hope that you will find this book to be a useful guide in achieving these goals.

The Scope of This Book

Project management is a many-faceted discipline. It will usually involve project scoping, task planning and scheduling, resource planning and workforce management, budgeting and cost control, risk and contingency management, change management, and project closeout. And while we are doing this, we will need to apply skills in maintaining quality, avoiding scope creep, and managing extensive and sensitive communication, with numerous stakeholders, in widespread locations.

If this were not enough to intimidate even the most stalwart soul, we then throw in the challenge of learning to use new computer-based tools. We claim that these tools are necessary for efficient and effective project management, and will help us to do the job. But the challenge to learn to use and effectively apply such new tools, at a time when most new users are involved in some kind of crisis management (we are rarely asked to learn and implement project management at

our leisure) can be disabling, at the least. If you have been to this place, I can understand and feel your pain.

All of these skills that are specific to project management must be applied by individuals who also are endowed with the more traditional management skills: (1) the ability to lead and work with others; (2) the ability to converse with technical experts in their applied field; (3) the ability to interface with operations, finance, and human resources personnel; (4) the ability to participate in strategic and operational planning; (5) the ability to mentor, negotiate, and make decisions. While we don't cover most of these skills in this book, we don't ignore the fact that these skills are necessary components of the Project Manager's toolkit.

While the breadth of project management is indeed wide, the subject really isn't that complex. Failures in project management are more likely to come from trying to take excessive shortcuts than from not mastering the requisite knowledge. There are basic requirements, including those for (1) organizing for project management, (2) management support, and (3) documenting and communication. These are no different from the requirements for any other discipline.

In this book, we outline and discuss these basic requirements, so that your organization can recognize the commitments that must be made to successfully implement project management. We introduce shortcuts that *do* work—because they are designed to facilitate good project management practices, rather than circumvent them. We cover the wide spectrum of project management, although you will have the option of studying each area as you identify a need. We will guide you to the appropriate sections.

Our Style and Conventions

We aim at keeping the style and language of the book as casual as possible. Yes, there will be the usual new terms and alphabet soup. But the general approach is a one-to-one sharing of knowledge and insights.

The whole idea is to present the practical aspects of project management. In some cases, we offer suggestions on straightforward ways of accomplishing some of the essential components of project management. We point these out to you as *Tips*. Many of these will be optional functions, to be performed if needed for your specific applications. In other areas, we point the way to common misconceptions—things to avoid. We'll note these as *Traps*.

Many of the discussions will involve the use of project management software. These are the tools of the trade. We talk about the features and functions to look for in the tools, but no tool evaluations are included and no specific tool recommendations are made.

Last, we try to prevail upon the reader to do the right thing. We point the way

to the things that organizations must do to give project management a chance to succeed. All in all, we provide the benefit of 40 years of project management practice, updated to meet the needs and environment of this new century, and expanded to be applicable to emerging industries that, heretofore, were not considered to be the center of project management activity.

How to Use This Book

This book may be used as a complete guide to practical project management—reading each of the sections in the order that they appear. However, it is more likely that most readers will either be looking first for the essentials needed to get a feeling for and the requisite knowledge to get started in project management. Yet others may be looking for some of the finer points of this discipline.

To this end, we have identified four categories for use in classifying the chapters according to their primary value to the end user. These categories are

PM 101 These are essential to understanding the basics of project management. Newcomers to the field are urged to read these chapters, in the order that they appear. Others are invited to review selected chapters in this category to refresh their understanding of these topics.

1.1	About Projects and Project Management	pg. 2
1.2	Organizing for Project Management	pg. 13
2.1	Project Initiation Techniques	pg. 41
3.1	Critical Path Scheduling	pg. 76
3.5	Practical Scheduling	pg. 107
4.1	An Overview of the Different Elements of Resource Management	pg. 119
4.3	Resource Leveling and Games of Chance	pg. 139
4.4	Practical Resource Scheduling	pg. 150
5.1	Concepts and Issues of Project Budgeting and Cost Control	pg. 162
6.1	Using and Managing Contingency	pg. 180
6.2	Risk Management for the Sigmaphobic	pg. 197
7.1	Change Control and Scope Management	pg. 218
8.1	Measuring the Value of Work Accomplishment	pg. 249
9.1	Defining and Implementing Project Portfolio Management	pg. 263
10.1	The Search for Automated, Integrated, Enterprise-wide Project Management	pg. 283

12.1	A Simplified and Balanced Approach to PM Software Selection	pg. 309
13.2	Making Project Communication Work	pg. 344

Missives with a Message These are in the style of editorials, either urging the reader to buy into the concepts and philosophy presented, or to be aware of important ideas. Some of these chapters provide insight into popular misconceptions or identify dangers associated with certain actions (or inaction). In many instances, the reader may wish to use one or more of these chapters to help convince others of their own position on matters of importance, such as: organizing for project management, or dealing with risk.

1.3	Does Your Company Need a CPO?	pg. 24
1.4	Implementing a Computer-based Project Management Capability	pg. 29
3.4	How Important Are Schedules and Time Compression?	pg. 100
7.2	Real-time Status versus Period Data	pg. 234
7.3	Automatic Project Management: A Classic Oxymoron	pg. 240
9.2	Bridging the Gap between Operations Management and Projects Management	pg. 271
9.3	Project Selection and Risk	pg. 276
12.2	New Names for Old Games	pg. 320
13.1	Implementing Project Management	pg. 337
13.3	Why Project Management Implementation Programs Fail	pg. 352

Finer Points These chapters contain discussion of some of the finer points of practical project management. They assume a working knowledge of the basics, and an interest in understanding some of the important, but less apparent, aspects of the discipline. Understanding the finer points will help the reader advance from a novice PM practitioner to an expert in practical project management.

2.2	Do You Weebis? Clarifying WBS, OBS, and RBS	pg. 60
2.3	Project Life Cycles	pg. 65
3.2	Critical Path, Critical Chain, and Uncertainty: Exploring Concepts of Shared Contingency	pg. 84
3.3	Estimating Task Durations	pg. 93
4.2	Role-based Needs for Managing Resources in a Project-driven Organization	pg. 123
5.2	Software Support for Cost Management	pg. 172
6.3	Some Computer-based Approaches to Schedule Risk Analysis	pg. 205

10.2	Integrating PM and ERP	pg. 288
11.1	Defining the PSA Market	pg. 299
11.2	Building PSA Solutions	pg. 303
12.3	The e Revolution: Collaboration Services, B2B, Gateways	pg. 327

Off the Beaten Path There is a softer side of project management. This includes issues dealing with people and organizations. If you are committed to providing the best environment for people to contribute to project success, you will want to read these important chapters.

13.4	Teams, Task Forces, and Bureaucrats	pg. 357
13.5	The Psychological Contract: How to Stimulate Initiative and Innovation in Any Organization	pg. 362
13.6	Shared Rewards	pg. 371

Deliberate Redundancy

There are several topics in this book that have more than one appropriate chapter in which to appear. Although to repeat this material would be redundant, to leave pieces out because they appear elsewhere would weaken the subject chapter. Also, with the assumption that some chapters will be skipped, or read later, we can't be certain where you will come across the material first.

Therefore, we have deliberately repeated some of the material in more than one chapter, feeling that it was important to retain continuity and flow, without sending you all around the book to find referenced passages. Rereading these parts, as they are placed in each appropriate chapter, will help you to get the full impact of the subject and to reinforce the message.

Enjoy.

Harvey A. Levine

April 2002

TEAMFLY

SECTION 1

SETTING UP THE PROJECT MANAGEMENT OPERATION

Project management doesn't just happen. Successful project management is the result of a structured and determined effort to develop practices and skills within an organization that has been deliberately designed to support project work and the management of that work. There are almost unlimited options as to how to achieve this. One option that does not exist, however, is to engage in project work without setting up some kind of projects operation.

There is no option to engage in project work in the absence of a set of project management practices. These practices must be developed specifically for your organization and circumstances, and must be communicated and implemented throughout the operation. Neither is there an option to manage such project work in the absence of the skills needed to address all of the many facets of this discipline. Project objectives get achieved because there are skilled people who can define the objectives, and can plan and direct work to satisfy the objectives.

So the most important step toward project management maturity is to set up a project management operation that can best develop and utilize skilled personnel and direct their efforts, via a set of project management practices, supported and directed by an enlightened senior management.

Section 1 shows the way to set up the project management operation. We start with a general definition of projects and project management (1.1). We then discuss the general aspects of organizing for project management (1.2). We present a case for the Central Project Office and a Chief Project Officer (1.3). Then, we outline the steps to implement a computer-based project management capability (1.4).

CHAPTER 1.1

ABOUT PROJECTS AND PROJECT MANAGEMENT

Here's a familiar scene. It is played out daily, across the world. The firm finds itself with a "project." It "assigns" the project to one or more project leaders. Other people are asked to contribute to the project. The work starts. Responding to an inquiry from a senior level person, the project leader reports, "We're not sure where we're going, but we're making good time." The boss asks, "Where's the plan?" Leader responds, "Who has time to plan? We are already in over our heads." Leader continues, "Where are all the people whom I was promised?" Boss asks, "Where is the project charter? And, besides, without the plan how do we know what you need and when?"

Well, you can fill in the rest. It goes on and on and gets worse and worse. The firm is not set up to work on projects. Roles are not clear. Procedures are nonexistent. Senior management expects that projects will be staffed and managed, but has not provided any mechanism or protocols. They fail to realize that executing and managing projects is not the same as normal daily operations. Meeting deadlines, working with increased risk, using people who normally work in different departments, working to stay within defined budgets, controlling scope creep—these are special characteristics of the projects' environment. It's not "business as usual."

The firm must take steps to organize for projects. This does not mean that there must be a projectized organization. Nor does it mean that any resulting or-

ganization is intended to be permanent. But something must be done to expand from a straight functional orientation. And something must be done to add new skills and to support cross-disciplinary teams.

Just what are these special characteristics that make projects different, and that require special skills to manage? Let's look at a generally accepted definition of project management, prefaced with a definition of a project.

A Project Is

- A group of tasks, performed in a definable time period, in order to meet a specific set of objectives.
- It is likely to be a one-time program.
- It has a life cycle, with a specific start and end.
- It has a workscope that can be categorized into definable tasks.
- It has a budget.
- It is likely to require the use of multiple resources. Many of these resources may be scarce and may have to be shared with others.
- It may require the establishment of a special organization, or the crossing of traditional organizational boundaries.

With the definition, above, we should start to see why we need a different set of practices to manage projects. Here we are managing specific tasks and resources against a time-oriented set of objectives. The budgets are associated with defined work, within a specified time frame. Resources are often led by people to whom they do not report. It's not so much what we manage that is so different, but rather the way that we manage and the measurement and control practices involved in this task. There are many areas of project management, but the eight below are the major components.

What We Manage

- Workscope.
- Time.
- Resources.
- Costs.
- Quality.
- Communication.
- Risk.
- Contracts and Procurement.



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