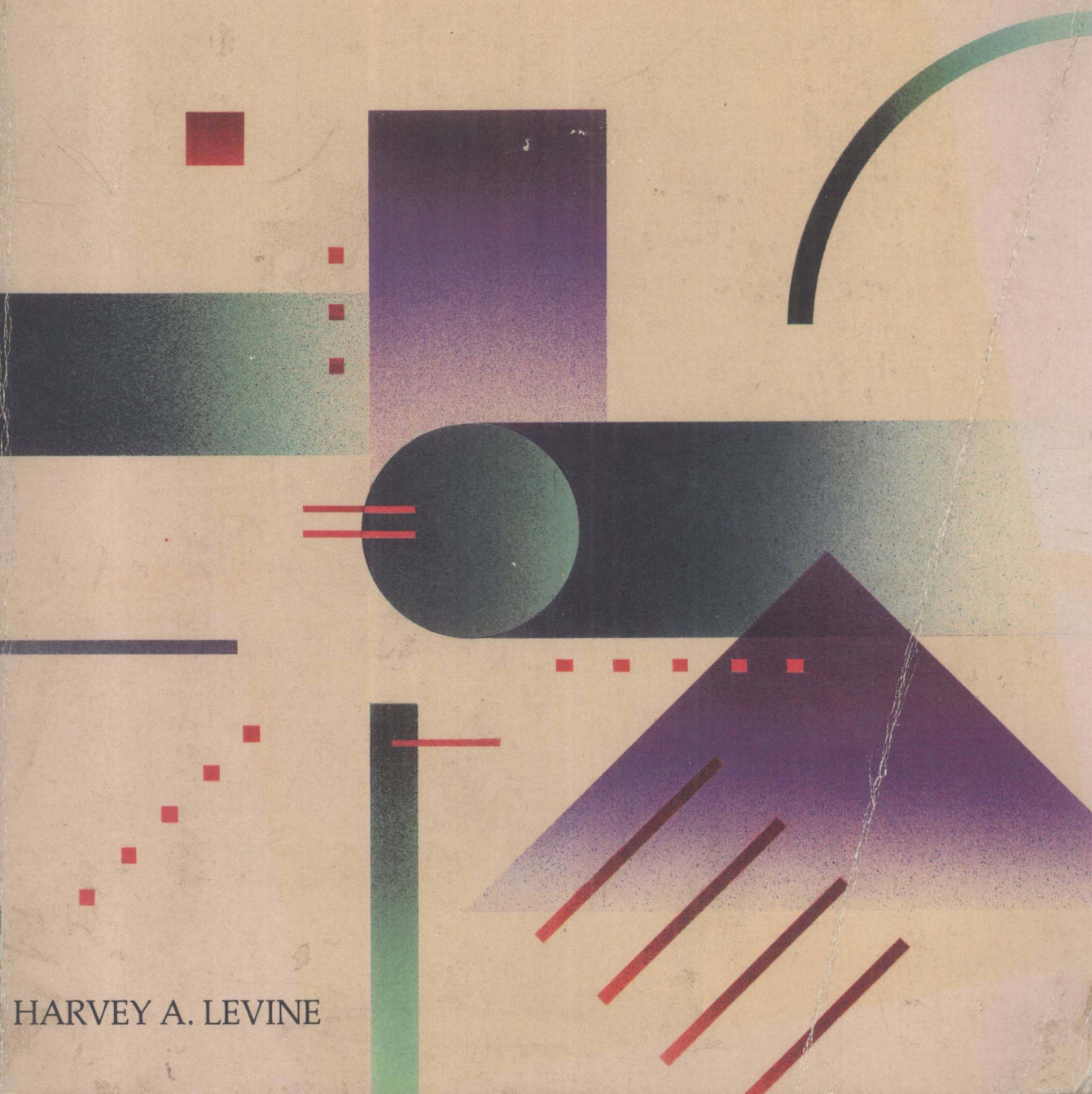


Osborne McGraw-Hill

PROJECT MANAGEMENT USING MICROCOMPUTERS



HARVEY A. LEVINE

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Project Management Using Microcomputers

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PROJECT MANAGEMENT USING MICROCOMPUTERS

Dedication

Among the required ingredients for a satisfying career is a close involvement with other people in one's profession, coupled with the strong support of family. These same ingredients are even more essential to the massive task of preparing a book of this nature. This dedication, therefore, is shared by my professional associates and my family, to whom I am forever indebted.

For professional inspiration and involvement, this book is dedicated to the 5,000 members of the Project

Management Institute, with whom I have shared the opportunity to further the growth of professionalism in project management.

I have always wondered why books are often dedicated to the author's spouse and children. Not any more. The importance of support and understanding from one's family cannot be overestimated. Without the encouragement, support, and understanding of my wife, Judy, this book would not have been written. My thanks also to my three daughters, Deborah, Sarah, and Rebecca, aspiring authors in their own right, for sharing my enthusiasm for writing this book, and for being my number one rooting section.

The final share of this dedication is to the memory of my father, Samuel, who passed away during the writing of this book.

Harvey A. Levine
Clifton Park, New York
April, 1986

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Company, Computer Associates, Breakthrough Software Corporation, Applied Business Technology Corporation, SofTrak Systems, Project Software & Development, Inc., Micro Planning Software, USA, Computerline Inc., Primavera Systems Inc., Strategic Software Planning Corporation, and Computer Aided Management. I thank them all for their support and interest. Thanks also to Alpha Software Corporation and Decision Resources Inc. for their complimentary nonproject management programs Keyworks and Diagram-Master, which helped me use my microcomputer to produce this book.

All diagrams and text for this book were prepared initially on a microcomputer, using the above software and MultiMate by Ashton-Tate. A very special thank you to Mr. Marvin Wulf of Future Information Systems, in Albany, New York, for the loan of his computer. It carried me through until I finally broke down and bought my IBM PC XT.

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To a multitude of professional associates and software vendors, to my coworkers at the General Electric Company, to the members of the Upstate New York Chapter of the Project Management Institute, and to other friends, I extend my eternal gratitude.

Introduction

This book is about *project management*, and focuses primarily on the planning, scheduling, tracking, and control of projects. This book is also about software that is used on microcomputers to help manage projects.

Project management can be a very involved process, requiring expertise in many disciplines. It requires structure and organization. It requires the development and processing of large volumes of data. It requires frequent reporting of plans and progress.

While the complete scope of proj-

ect management involves much more than planning and scheduling, tracking and control, these particular functions can be performed especially effectively using computers. It was nearly thirty years ago that lumbering mainframes were put into service to support project management. For most of those years access to computerized project management was reserved for large organizations that had management information systems operations, an army of dedicated project control specialists, and barrels of money to spend on hardware and software. Due to developments in computer technology during the first half of this decade, the benefits of computerized project management are now available to the rest of us. In the past few years, the world of automation has been turned inside out by the fantastic success of the microcomputer and its acceptance throughout the business community. That acceptance has encouraged the development of computer programs for use in solving business problems. Now, with a minimum investment, and bypassing the MIS bureaucracies, anyone can use computers in the business place. Who would have believed just a few years ago that we would have this abundance of project management software available for the casual, as well as the serious, user, much of it at enticingly low prices. The microcomputer has given us access to sophisticated programs that until recently were the private domain of the information systems gurus.

Project management systems, which combine simple algorithms, calculations, and database management, are a natural for computerization. The need to do "what-if" analyses in the typical project management environment has been an additional driver of the microcomputer explosion. New products address the entire range of the project management marketplace. There are programs for the small theater groups that can help plan play production. There are programs for bankers and researchers. Programs exist at every level for the assignment and tracking of resources and for cash flow planning and monitoring. Even formal project management organizations with mainframe computer systems are finding it advantageous to supplement, or even replace, their expensive batch systems with very sophisticated, professional-level project management software programs for the microcomputer.

How great is the impact of microcomputers on project management? First, as mentioned above, microcomputers have taken the functions of project planning, scheduling, and control out of the hands of the specialty organization, and placed them in the hands of the people really responsible for performing and managing work. Second, the introduction of microcomputers has slashed costs. High-powered project management programs

that would have cost \$60,000 in a mainframe/minicomputer version can be purchased for \$2,000 to \$5,000 for micros. Quality project management programs, while not in the same league as a typical mainframe program, can be purchased for as little as \$250. Graphics plotting capabilities that cost over \$40,000 in a mainframe version are available in supplementary packages at \$1,500 or less. Some vendors offer advanced plotter graphics as part of their basic package. In addition, most of these new wizards of the project management world are faster, easier, and even fun to use.

There is a downside to this boon to the project manager. Cost savings are reduced (1) if you need multiple copies of the software, where one copy on your mainframe served many users, and (2) if you need to buy microcomputer hardware solely to run your project management software. Also, until networking of microcomputers becomes common practice, multiple access to a common project database will be sorely missed in many instances.

How to pick from among the over one hundred products that promise to “do” project management is a major concern. A handful of these are genuine mainframe-quality products that are a credit to the profession and are backed by well-staffed organizations, fully involved with the project management community. A greater number of programs deal with some project management functions. While these cannot replace a highly sophisticated program, they do a more than credible job when the full-blown process is not required, which is a very common situation. We will discuss several of these applications in this book.

As in any marketplace, there are a few recent project management packages that do not address the true needs of project management, and may mislead the prospective buyer. We will describe the desired characteristics of project management software so that you will be able to identify products that fit this category.

Which project management program is right for your application, and how do you use the program? I don’t mean how do you enter data and generate reports; I mean what should you know about the principles and practices of project management in order to use a program effectively? This is not intended to be a buyers’ guide nor a program tutorial, although you will find elements of both in it. We make you aware of the problems that are solvable by the practice of project management, and show you how the microcomputer can be a useful accessory in their solution. We review the concepts underlying projects and show just where the microcomputer fits into the planning and control aspects of project management. We look at all the functions that can be performed during planning

and control, and show how different programs approach these functions. We point out that some programs do not cover all the functions.

While we won't make any decisions for you, the information in this book will help you clarify your needs and prepare a set of specifications for project management software. Following an overview of project management and a review of where the computer is used, we will take a detailed look at each of the functions your project management software must perform: developing a baseline schedule, developing resource plans and budgets, tracking progress and costs, and generating useful reports. At each step, we will provide illustrations from many programs, ranging in cost from \$250 to \$3,000.

An added feature of this book is a collection of eight guest articles from actual users of microcomputer project management programs. These provide a close look at eight different products used in various applications.

The guest authors explain what they were trying to achieve, and show how their choice of program helped in that endeavor. Finally, having explored some actual users' experiences, we wrap things up with a brief listing of additional sources of knowledge about project management.

Part I

Introduction To Project Management

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1

Overview Of Project Management

This book addresses a wide range of readers. You may be an experienced project manager or project control specialist who is interested in finding out how the microcomputer industry supports project management. Or you may be a novice attracted to this discipline by the availability of user-friendly project management software. In either case, you will find much that is useful here. Part I, which consists of this chapter and the next, is primarily intended to satisfy the needs of newcomers to

the field of project management. At the same time, because Chapters 1 and 2 reflect this book's philosophy of project management, they should be of some interest to readers at all experience levels.

This chapter begins by hazarding a general definition of project management (an issue about which there is disagreement) and by differentiating it from general management. Next we discuss what aspects of a project typically get managed, and we outline the phases of project management. The chapter concludes with a brief look at each of the functions involved in planning and control. This overview of planning and control provides a base for Chapter 2, which focuses on the role of the computer in the whole enterprise of project management.

■ What Is Project Management?

In order to define project management, we first need to define the term *project*. The essential characteristic of a project, for our purposes, is that a project is very different from a set of day-to-day functions. Once we accept almost any of the generic definitions of a project, it is easy to see that project management is a process that is very different from general business management.

Reducing the hundreds of definitions of *project* to a generic statement, we can say that a project is "a group of tasks performed in a definable time period in order to meet a specific set of objectives." A project exhibits most of the following conditions:

- It is likely to be a unique, 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 may require the use of multiple resources. Many of these resources may be in short supply and may have to be shared with other projects.
- It may require the establishment of a special organization or the crossing of traditional organizational boundaries.

As you can see, the management of a project is quite different from the management of a continuing operation. The generally accepted definition of *management* is "the planning, organizing, staffing, directing, and controlling of company resources to meet the company's financial and nonfinan-