

# OFFICE AUTOMATION

Tools and Methods  
for System Building

V. Douglas Hines

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for System Building**

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The availability of low-cost interactive office systems has required management and data processing professionals to take a fresh look at the role of computers in organizational life. A reanalysis of how people and machines will work together tomorrow, and can work together today, is under way.

At the very least, *office automation* is a catch phrase that has people talking. Beyond the talk, however, is substance—people are applying the term to real phenomena. New kinds of equipment are available; we can give powerful information processing resources to individual workers at low cost; and there are opportunities to reshape procedures and policies.

Automated office systems have much in common with more traditional data processing applications, but there are important differences as well. At a strictly technical level, office systems involve new types of software and equipment and an increasing emphasis on data communications and networking. Next, the closer juxtaposition of people and equipment—one of the defining features of office automation—raises important design and implementation issues. Finally, the growing importance of packaged software and turnkey systems creates the prospect for a new era of system building in which evaluating and acquiring existing systems, as contrasted to writing new software, becomes a dominant concern.

This book is written for the “builders” of automated office systems. To build is “to make by putting together materials, parts, etc.” This book explores the process of putting together the basic ingredients of hardware, software, personnel, and procedures to create systems that perform office tasks effectively. Its goal is to place the technical, managerial, and project management ideas relevant to office automation within one comprehensive framework.

Who are the system builders? Today, many are experienced data processing and management information systems professionals who are now being asked to work in the field of office automation. For them, this book provides a useful overview of the development, implementation, and support concepts necessary to make an automated office system “operationally” as well as “technically” successful. I will return to this idea of operational success in a moment.

Another group of system builders comes from the ranks of management within business and government. These are people who have extensive knowledge of office operations, but very little experience with computers or automation. In the age of packaged software and turnkey systems, these managers are being asked to select systems or to work with system developers. For managers thrust into the role of system builder, this book provides a thorough survey of software, hardware, and analysis concepts. In addition, the book approaches office automation from a functional as opposed to technical point of view, focusing more on what the technology does than how it works.

Tomorrow's system builders are now students of management, data processing, and management information systems. For them, this book provides a balanced and targeted introduction to automated office systems. The book is structured so that it may be used in the Office Automation course in the recommended undergraduate curriculum of the Data Processing Management Association (DPMA). I have used it in the Office Automation course offered at the University of Maryland, which follows the DPMA outline.

Whether in the field or in the classroom, people moving into office automation must learn how to:

- Assess the needs of the organization and the office.
- Design and develop systems to meet these needs.
- Select hardware and software.
- Develop a concept of personnel for the system.
- Design screens, menus, commands, and other aspects of the person/machine dialog through which procedures are automated.
- Properly implement, manage, and support automated office systems.

The book features case studies of three organizations—a small business, a government agency, and a large national corporation—to illustrate important ideas. The practical emphasis of the book is reinforced through Methodology Notebook sections that provide guidelines and rules of thumbs for managing the system life cycle.

In addition to imparting fundamental skills, this book provides broad coverage of major topical areas in the field.

- 1 The importance of human factors in office automation is stressed throughout the text, with chapters devoted to personnel (Chapter 7), the person/machine dialogs that automate procedures (Chapter 8), and the importance of procedures documentation and training (Chapters 9 and 10).
- 2 The entire system life cycle is covered. There are two chapters on analysis, design, and planning; five chapters on development; and two chapters on implementation, management, and support.
- 3 The major hardware (Chapter 5) and software (Chapter 6) concepts relevant to office automation are discussed, with emphasis on packaged software, turn-key systems, and commercial product lines.
- 4 There are complete chapters on networks (Chapter 12) and system integration (Chapter 13) stressing the emerging importance of local area networks, the International Standards Organization Open System Interconnection model, and the benefits to personnel and the organization of integrated systems.
- 5 Chapter 14 provides an up-to-date discussion of microcomputer applications including work stations, professional computers, small office systems, and important software packages. Applications and commercial products are discussed, as are specialized systems in medicine, law, and business.
- 6 Chapter 15 reinforces for the reader the idea that both the technology of the office and the tasks performed within it are rapidly changing. For offices that rely on manual procedures, the mature technologies of word processing and management information systems may seem like the office of the future. In 1985, these technologies are being superseded by integrated systems based on

microcomputer and network technology. By the year 2000—just 15 years away—today's technologies and patterns of work organization will be replaced by new forms quite difficult to imagine: Remote work? Animated office systems? The questions are intriguing.

If there is one key concept in this book, it is operational success. A system is operationally successful if it is used as intended within the office. I suggest a simple formula:

Operational success = Technical success + Human-factors success

Technical success means that the hardware and software work. Yet this is not enough; many effective hardware/software packages are installed but never used—or are used improperly. The broader goal of operational success also requires that people do their part by learning and following the procedures associated with the automated system. Achieving this operational success requires human-factors success: the personnel and procedures of the system must work properly as well.

Achieving operational success involves two principles. First, conceive the system broadly to include personnel and procedures, as well as hardware and software. Second, focus on the entire system life cycle. Emphasize planning and analysis and sound development approaches, as is always the case; but also pay special attention to implementation, evaluation, and support of the system once it has been developed. A knowledge of these principles, combined with a solid understanding of the equipment and systems available in office automation, provides the tools needed to build effective automated office systems.

What has been needed in office automation is a coherent definition of an automated office system that takes into account all aspects of the system and all phases of the system life cycle. This book offers one such framework. Within this framework, I have covered important hardware, software, and human-factors concepts. My goal has been to offer a single source-making theory, research, and practical trends understandable to the system builders of today and tomorrow.

**Doug Hines**

*Catonsville, Maryland*

# Acknowledgments

Four people played a crucial role in the development of the ideas in this book. Let me acknowledge my debt to them, more or less in chronological order in terms of their influence on me.

Boyd Alexander introduced me to the human-factors emphasis in office automation. As the director of House Information Systems, he realized the need to put sufficient organization resources in the areas of implementation, training, and support. He pressed for systems that were not only technically sound, but also easy to learn and easy to use. Today, Boyd continues to press ahead in the areas of integrated office systems and workstations to support the members of the House of Representatives.

Gerry Murphy is the chief architect of the friendly-systems concept at House Information Systems. Working with Gerry brought to my attention the excruciating detail involved in creating effective person/machine dialogs: the countless hours of coding, testing, and working with personnel to get a system right.

Henry (Bud) Collins has been the senior engineer associated with the House of Representatives coaxial cable network. He was my mentor in data communications and hardware technology, but he also emphasized the need for well-designed person/machine interfaces within complex systems. Bud read four drafts of the manuscript, commenting extensively on each; his influence is found throughout the book.

I owe a special debt of gratitude to E. R. Lannon, director of the Information Systems Management program at the University of Maryland. He knows what office automation is all about and what undergraduates need to learn in order to function successfully as professionals in the field. He has also read the early drafts of this book, and with Bud Collins, exerted a decisive influence.

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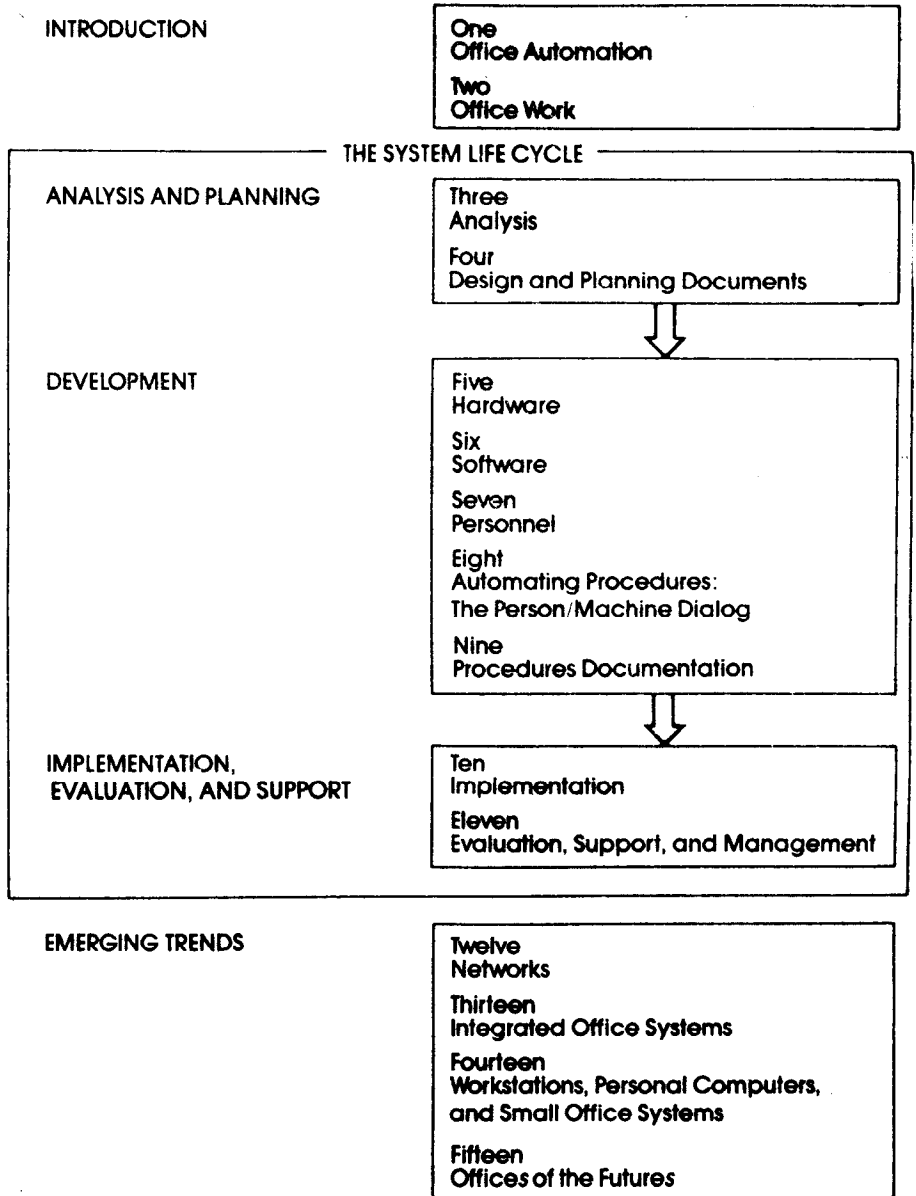
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# INTRODUCTION



## **PART ONE INTRODUCTION**

Successful office system building requires a clear understanding of the nature of office work as well as a sense of the history, scope, and role of office automation. Part One contains two introductory chapters that provide this basic orientation.

Chapter 1 discusses office automation, its history, and its relationship to office work. In addition, the plan and approach of the book is described. Chapter 2 describes contemporary office work through two case studies, setting the stage for our study of the system life cycle.

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## CHAPTER 1

# Office Automation

What is an automated office system? How is office automation viewed by management, office personnel, and data processing professionals? Chapter 1 answers these and other questions. In addition, it provides a general introduction to the concept of office automation as it will be treated in the book, and describes the approach and plan of the book itself.

### CHAPTER OUTLINE

- 1 What Is Office Automation?
  - 2 Defining an Automated Office System
  - 3 The System Life Cycle
  - 4 Productivity and the Human Factor
  - 5 Plan of the Book
  - 6 Conclusion
  - 7 Questions and Terms for Review
  - 8 References
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