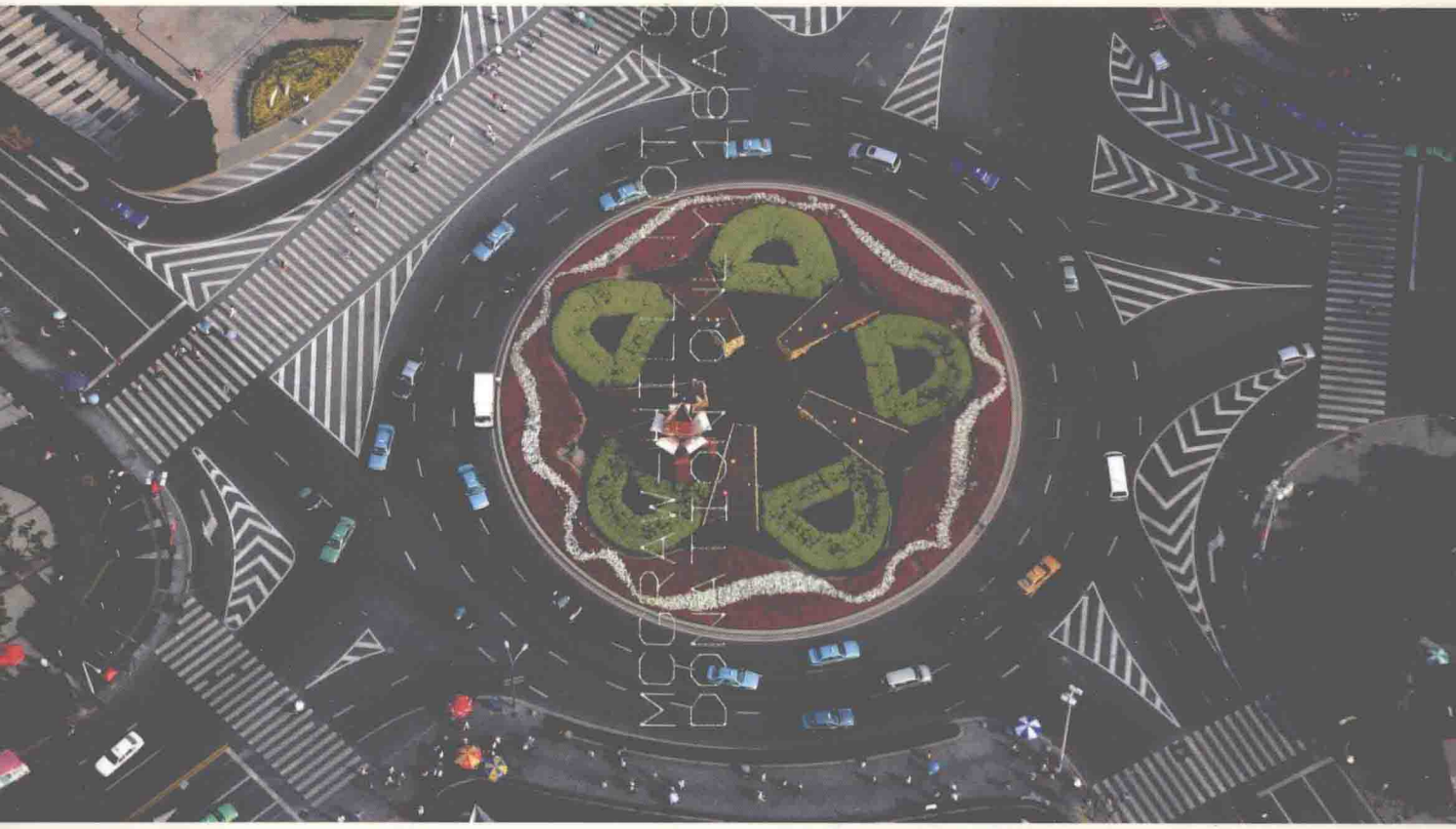
SAP R/3 ENTERPRISE SOFTWARE
An Introduction



/ ROGER HAYEN /

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Roger Hayen

McGraw-Hill Irwin

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Bangkok Bogotá Caracas Kuala Lumpur Lisbon London Madrid Mexico City
Milan Montreal New Delhi Santiago Seoul Singapore Sydney Taipei Toronto

SAP R/3 ENTERPRISE SOFTWARE: AN INTRODUCTION
Published by McGraw-Hill/Irwin, a business unit of The McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY, 10020.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 0 QPD/QPD 0 9 8 7 6

ISBN-13: 978-0-07-299067-6
ISBN-10: 0-07-299067-8

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Cover design: *Jillian Lindner*
Cover image: *Cover photograph by Stephen Codrington*
Typeface: *10/12 Palatino*
Compositor: *Interactive Composition Corporation*
Printer: *Quebecor World Dubuque Inc.*

Library of Congress Cataloging-in-Publication Data

Hayen, Roger L.
SAP R/3 enterprise software : an introduction / Roger Hayen.
p. cm.
Includes index.
ISBN-13: 978-0-07-299067-6 (alk. paper)
ISBN-10: 0-07-299067-8 (alk. paper)
1. SAP R/3. 2. Business—Data processing. 3. Management information systems.
I. Title.
HF5548.4.R2H39 2007
650.0285'53769—dc22

2006041959

www.mhhe.com

To Dakota Marie, our newest family member and a shining light in our lives, who has yet to learn the letters S A P, but whose life will be touched in many ways by information technology.

—Hayen

About the Author

Roger Hayen

Roger Hayen is the Towle Professor of Management Information Systems in the Department of Business Information Systems of the College of Business Administration at Central Michigan University. Since 1997, he has continued to work on integrating the SAP R/3 Enterprise Software into the college's curriculum. During this time, he has developed and taught courses that include an introduction to SAP R/3 software, ABAP programming, and SAP R/3 configuration and implementation. His current curriculum development efforts include integrating the SAP R/3 software into the Information Systems course and other courses required of all majors in the College of Business Administration. He has published several articles that describe various efforts in integrating SAP R/3 software in college and university curricula.

Preface

This book explores enterprise software by using the SAP R/3 Enterprise System as its example software. The purpose of the book is to provide you with a good, overall understanding of enterprise software including what it is, how it is used, and how it is deployed in business organizations.

SAP R/3 Enterprise software encompasses most of the common business applications that organizations use to manage their day-to-day business activities—general ledger, purchasing, order entry, accounts receivable, accounts payable, payroll, and inventory. This book introduces the deployment of the SAP R/3 Enterprise software in business organizations. We relate R/3 Enterprise (formerly known as SAP R/3 System) to an information systems framework, examine its technical structure, and consider general implementation issues. Key issues explored concentrate on the features involved with the deployment of enterprise software in achieving organizational objectives. Implementation issues include configuring R/3 Enterprise to meet specific business workflow requirements and managing the implementation project. We examine the role of Solution Manager with the Accelerated SAP methodology by carrying out and managing implementation activities. Understanding the concepts and issues of R/3 Enterprise will give you an overall understanding of the use of enterprise software. You should gain a fundamental understanding of the R/3 Enterprise software and its use in organizations. You should be ready to begin to learn the details of working with the individual modules of the R/3 Enterprise software after you have examined these topics: Overview, Application Modules, Business Processes, Navigation and Systems Operation, Web Application Server, Internet-Enabled Solutions, Configuration, Implementation Framework, Implementation Planning, Organization Structure, and Customizing Tools.

The book is arranged in three parts with the following general content:

PART ONE—Understanding Enterprise Software

This is an introduction to the concepts of enterprise software and its deployment in organizations. It provides a conceptual foundation of enterprise software and the business supply chain. The application modules that support supply chain management are introduced and examined. The use of the Accelerated SAP methodology in deploying the R/3 Enterprise System in an organization is considered.

PART TWO—Displaying SAP R/3 Information

This is an introduction to the hands-on navigation and operation of the R/3 System using the IDES training data for Version 4.7. Typical R/3 System transaction screens are displayed to familiarize you with the navigation and structure of R/3 Enterprise transactions.

PART THREE—Processing SAP R/3 Transactions

This is a more in-depth, hands-on exploration of the R/3 System using the IDES training data for Version 4.7. You create data for the processing of typical transactions. This builds upon the navigation skill from Part 2 while exploring many of the fundamental transactions that support supply chain management processing throughout the customer order to cash cycle.

You should complete the Overview and Navigation and Systems Operation in Part 1 before doing Part 2. Additionally, you should complete Application Modules and Business Processes in Part 1 together with Part 2 before doing Part 3. These combinations of the three parts of the book allow you to integrate the hands-on, step-by-step R/3 System processing activities with your study of the underlying concepts of the R/3 Enterprise System.

When you have completed all three parts of the book, you should have a very good understanding of what the SAP R/3 Enterprise System and enterprise software are. You should be ready to begin working with the R/3 System in a business organization and have the introductory knowledge needed to begin more advanced study of the system and enterprise software.

Acknowledgments

I would like to thank the many people who contributed to the successful completion of *SAP Enterprise Software: An Introduction.*

I am grateful to SAP AG for encouraging my university to be the fifth one joining their University Alliance Program, which made their software available to us for teaching and research. This alliance has made this book possible and continues to integrate enterprise system technology in education.

I would like to thank the many people at McGraw-Hill/Irwin for their efforts in completing this project: Dick Hercher, Katie Jones, Jim Labeots, and Pat Forrest at Carlisle Publishers Services.

I am grateful for the many suggestions and valuable insights provided by my colleagues. The faculty and staff in the Business Information Systems Department at Central Michigan University encouraged and supported the book's formulation and development in a variety of ways. The department chair, Monica Holmes, provided considerable direction and encouragement in completing this book.

I would also like to thank the following reviewers for their excellent work: Ray Boykin, Cal State—Chico; Shad Dowlatshahi, University of Missouri—Kansas City; Seong-Jong Joo, Central Washington University; Alden Lorents, Northern Arizona University; Sundar Srinivasan, University of Missouri—Rolla; Lou Thompson, University of Texas—Dallas; and Vincent Yu, University of Missouri—Rolla.

And last but not least, I would like to thank my wife, Sandy. During this project, the book overshadowed many family activities and produced many late nights, but her encouragement, support, and most of all, perseverance, enabled me to complete this project.

Roger Hayen

Brief Table of Contents

Table of Contents

Part 1

Understanding Enterprise Software

Chapter 1

Overview

What Is Enterprise Software?

Enterprise software is integrated software that facilitates the flow of information among all the main processes of a business: from sales order entry to manufacturing to invoicing to collection. It is comprehensive, packaged software that joins together the complete range of business processes and functions. Enterprise software provides a holistic view of business within a single information systems (IS) technology architecture. These systems exhibit broad but tightly integrated functionality. They encompass the core transaction-processing activities of a business enterprise—that is, all the processes of an organization's supply chain. A **supply chain** describes the chronological and logical relationships of business transactions from raw material supplies to finished goods and final consumption. Those activities in the supply chain that add value to a product or service of an organization are its **value chain.** A value chain encompasses all the business events from the receipt of a customer order to the delivery of that order. For example, value is added when the production processes take raw materials and transform them into a finished product, and when that product is sold to a customer. A company is profitable if the price consumers are willing to pay for a product exceeds the costs of creating value.

For example, with integrated software, Brenda in the sales and marketing department can check on the quantity of a product that is available for shipment to a customer while she is on the phone. She can tell the customer how much is available and where it is, regardless of whether the location is down the street or halfway around the world. Before Brenda completes her conversation with the customer, the order can be confirmed, the credit check approved, and shipment of the order to the customer initiated from the closest location. If there is inadequate product in inventory, the production of any additional quantity can be scheduled and an expected delivery date set. All this is done within one integrated business software application. Without integrated software, Brenda would need to access several different systems to check on the quantity in inventory, the customer's available credit, the production schedule, and the shipping schedule. What she was able to accomplish in a matter of minutes while on the phone with her customer would likely take several days without an integrated system.

What Is ERP?

Enterprise resource planning (ERP) is frequently viewed as the software that supports its related business functionality. That is, **ERP software** is yesterday's term for today's enterprise software (ES), which has evolved beyond the earlier capabilities associated with ERP software. Clearly, ES is more than just resource planning for an enterprise. You can gain a better understanding of ERP software by considering the manner in which this software grew with advances in computing power.

In the 1960s many software packages used by business included an inventory control (IC) capability. The ongoing development of this software guided the creation of a next generation of **material requirements planning** (MRP) systems during the 1970s. These MRP systems used a master production schedule and a bill of materials that contained a list of materials needed to manufacture each product. Hence, they served a major role in planning a company's production. As they continued to evolve (see **Figure 1.1**), MRP systems were enhanced by adding features for sales planning, customer order processing, and rough-cut capacity planning. These enhancements provided a closed-loop MRP system, which furnished input into production scheduling that is a planning process. The ongoing development of this software resulted in MRPII ("MRP-two") systems in the 1980s that incorporated even more functional features of financial accounting and of other manufacturing and materials management systems. These systems continued to be developed in parallel with computing capabilities and resulted in better integration of material and capacity requirements for production that were translated into financial information. They became much more than just their initial focus on inventory control and material requirements.

By the 1990s, these earlier systems had evolved even further to provide seamless integration of all information flows in a company, including financial accounting, human resource management, supply chain management, and customer information. They became known as **ERP systems.** However, the evolution of these systems continued, again aided by increased computing power at ever decreasing costs. More features and better integration were added to the software to support the entire value chain of business operations, that is, the **order-to-cash cycle,** from the receipt of a customer order until the cash payment was received from the customer for that order. With all these enhanced features, ERP and ERP software became far more than what was implied by the word "planning" in "enterprise resource planning"—a better, more descriptive name was needed. Enterprise software of the 2000s is the result of this continuing evolution. ES not only encapsulates the functionality of ERP software and its predecessors, but it also provides better integration and more functionality that meets information processing needs for an entire business enterprise. What does the future hold for the next generation, the 2010s? Surely a new name will be needed by then. The ES integration presented in this book includes the functionality of what has come before in ERP software and represents the next generation in integrated business-processing software. This book is about the next wave of ERP software—enterprise

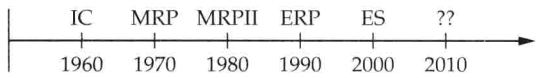

FIGURE 1.1
Timeline of Integrated Software Generation Developments

software—exemplified by the most popular software product of this type: SAP R/3. In some manner, enterprise software will touch your life in the future. Whether you are traveling on Delta Airlines, making a purchase at Home Depot, or working for a company such as Dow Chemical, enterprise software will be at the heart of how business transactions will be conducted.

What Is SAP R/3?

SAP R/3 is enterprise software because it is integrated and encompasses the primary aspects of supply chain processing. That is, R/3 Enterprise is information systems technology for the core business processing that supports **supply chain management** (SCM). R/3 Enterprise provides information for managing supply chain activities. R/3 Enterprise consists of a series of integrated core business application modules for transaction processing. These modules contain a set of functions that implement best business practices for SCM activities. A **best business practice** is a ready-made business process, such as customer order entry, that reflects the combined experiences, suggestions, and requirements of leading companies in a host of industries.

R/3 Enterprise is more than software modules that implement best business practices. It contains integrated tools that make it possible to implement very different organization structures and processing requirements. That is, the tools to customize an R/3 Enterprise system to meet an organization's specific requirements are built into the software. They are not a separate add-on that is used only for customization. So, both the business processes and the customization tools are integrated into the R/3 Enterprise system. Fundamentally, everything you need to run a business is included in the best business practice processes, while everything you need to set up the R/3 Enterprise system to meet your specific organizational requirements is also included.

Who Is SAP?

SAP (Systems, Applications, and Products in Data Processing) AG was founded in 1972 in Walldorf, Germany. It is the world's leading business application software company. In 1992, SAP launched its R/3 System, which runs in a client/server environment. This product has seen phenomenal growth. From a zero base in 1992 until 2002, over 17,500 organizations had installations, an average annual growth rate of 166 percent. These organizations represent an estimated 10 million users served by the R/3 System. SAP markets its products all over the world to almost every industry as well as to government, educational institutions, and hospitals.

Application Modules

Application modules are a high-level means of thinking about the available business process functionality encapsulated in an SAP R/3 system. You can envision the R/3 system as consisting of a series of application modules that support all of a company's business transactions and that are integrated interactively. With this integration, a change of data in one application module will automatically update the data in all other application modules that use that data. All the application modules have a common architecture and user interface. That is, the screens and

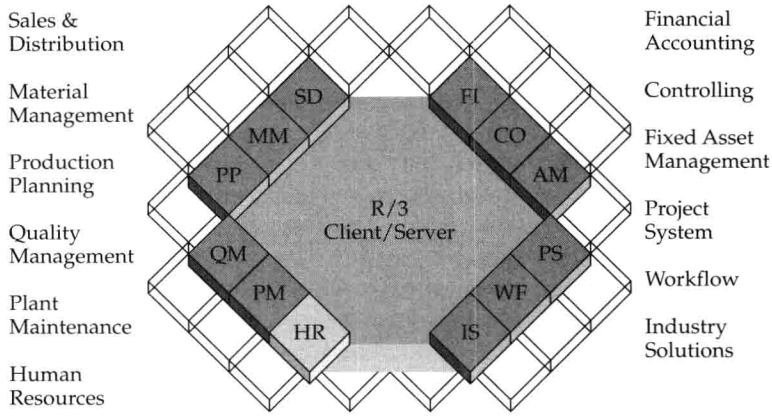

FIGURE 1.2
Application Modules Identify Functional Business-Area Processing

menus provide the same "look-and-feel" for the end user to navigate the system. Each application module consists of those best business practice functions that are used for processing the business transactions assigned to a particular module. As illustrated in **Figure 1.2,** the primary application modules are Financial Accounting, Controlling, Fixed Asset Management, Sales & Distribution, Material Management, Production Planning, Quality Management, Plant Maintenance, Human Resources, Project System, Workflow, and Industry Solutions. While each application module represents a business area's overall set of transactions, these are not actually distinct program code modules. Rather, each application module is a lower-level coordinated collection of related **business process procedures** (BPPs) that are processed at the atomic level. That is, the BPPs are applied to support a particular module's function business area. (Actually, as you will learn later in this book, the atomic-level BPPs are shared, as appropriate, among the various module areas to furnish the high level of functional integration provided by the SAP R/3 System.) To gain an overall view of the system's available processing capabilities, you will find it helpful to think about the R/3 Enterprise as consisting of the application modules.

In **Figure 1.2,** Workflow and Industry Solutions are known as the Common Systems. Workflow integrates the functionality of the other application modules, whereas Industry Solutions provides the functionality for the integration of add-ons to the R/3 System that are developed to meet specific processing needs of a particular industry, such as those found in banking or used by utility companies. Industry Solutions complement the extensive set of business processes and functions included with the standard R/3 System. A number of these solutions have been developed by other software vendors and consulting companies.

The application modules share data through the R/3 database, which is contained within the "R/3 Client/Server" function shown in **Figure 1.2.** When data is entered for any one of the modules, it is placed in the R/3 database and is immediately available to all other R/3 application modules.

Process Integration

The SAP R/3 Enterprise software integrates the core business processes found in many organizations through a very comprehensive set of BPPs available within the various application modules. Key business processes can be used to illustrate the arrangement of the fundamental SCM processes, which follow the customer