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W. H. Inmon
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Data Stores Data Warehousing AND THE Zachman Framework

MANAGING ENTERPRISE KNOWLEDGE

数据存储、数据仓库和 Zachman 框架

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DATA STORES, DATA WAREHOUSING AND THE ZACHMAN FRAMEWORK

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FOREWORD

John Zachman is the foremost expert on comprehensive architectures for Information Technology. His profound work, culminating in the Zachman Framework, has been the cornerstone for many IT departments struggling with the difficult problems of building, integrating, and maintaining their complex systems.

For years, John spoke to individual companies, in seminars and conferences the world over, educating and entertaining us with his brilliance. And for years, people have begged him to write "the book" on the Zachman Framework. I am so very pleased to say that—at long last—the book has indeed been written.

The integration of John's framework with Bill Inmon's important work in data warehousing and operational data stores is an unbeatable combination. Their ideas mesh perfectly giving all of us the ideal roadmap to build our operational systems and strategic decision support systems. Now we have the complete architecture from which to build sustainable systems.

Finally, it is the practical experiences from Jonathan Geiger that provide us with the real-world advice on implementing the Framework. His pragmatic additions to the book reflect the many data warehouses and operational systems he has built using the Zachman Framework and Inmon methodology. His recommendations are of the highest quality.

I hope that you find this book to be as useful as I do. It is, without a doubt, one of the most important books published for IT professionals everywhere. Thank you, John, Bill, and Jonathan, for providing us with such a valuable addition to our IT libraries!

—Claudia Imhoff
President and Founder
Intelligent Solutions, Inc.

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PREFACE

Data . . . Information . . . Knowledge. There is a difference.

As companies prepare to move into the twenty-first century, data and information alone will not suffice. Knowledge will be one of the distinguishing assets of successful corporations. Data simply reflects details found throughout a company, and information provides meaning to the data. Knowledge entails the synthesis of information to provide a corporate entity with an improved awareness and understanding of itself, its human and other resources, and its business environment. Armed with this wisdom, companies will be better prepared to compete in an ever-changing global economy.

The data warehouse, operational data store, and client/server systems have been instrumental in helping companies obtain, manage, and leverage data, transforming it into valuable information. These concepts have been made possible through the integration of advances in database management systems, programming and data access languages, computer hardware and software, and communications facilities. These technologies, by themselves, do not yield the right information . . . at the right time . . . at the right place . . . in the right form. To achieve that end, to consistently convert information into knowledge, companies need to adopt an architected approach.

The state of computer utilization evolved with changes in technology. Companies adopted more powerful computers, computer terminals, client/server tools, database management systems, and the like, to improve productivity and to process data into information. With this technology-driven approach, companies moved through three generations of an evolving computer environment. The Formation Generation introduced the computer to the commercial sector. Recognizing its value, companies expended great sums of money on additional computers and support personnel and facilities, leading to a Proliferation Generation. Money alone did not overcome the unsatiable demand for computer applications. As the backlog grew, business units took matters into their own hands and built their own systems. The Dispersion Generation is typified by widespread use of computers throughout the company without a focused effort directed toward managing them.

Clearly, a better approach is needed. That approach, the Unification

Generation, requires a shift in management emphasis. Companies must shift from managing the computer and the associated technologies to managing the environment within which the computers operate and to managing data as a corporate resource. With this shift, the vast amount of bits and bytes contained in a company's computers can be transformed from data into information, and from information into knowledge.

The Zachman Framework provides the foundation for architecting such an environment. Developed by observing work performed in other disciplines, the Framework addresses all aspects of the Enterprise as a whole and of the Enterprise as viewed by the information technology organization. An architecture such as the one provided by the Framework is required to satisfy modern needs. This architecture enables companies to evolve from their legacy system environment into one which employs data warehouses, operational data stores, and client/server technology to meet their changing needs in a competitive environment.

This book is divided into three Parts. In Part One, the importance of architecture is stressed, and the evolution of the computer environment is traced through the four generations. This review of history points out why some of the approaches of the past have failed, and how an architected environment can help.

Part Two describes the Zachman Framework and demonstrates its role in transforming the traditional *data administration* and *information resource management* role into a *knowledge management* role. The transformation is illustrated by describing the application of the Framework as a generic thinking tool for improving understanding and for making better decisions about designing and managing change for any complex object. In this context, the complex object may be a product, the enterprise itself, the architecture of the enterprise, or the knowledge base of the enterprise.

After describing the Zachman Framework and its transformation role, the Framework is applied directly to develop a strategy and methodology for building and managing data warehouses. Within these chapters, concrete examples of guiding principles and model components are developed. The foundation laid through the Framework enables companies to extend their data warehouse as a means for building an architected knowledge management environment.

Part Three applies the first parts. First, the Framework-based methodology is used to develop a data warehouse. The value of the architected approach is then demonstrated as the complexity of the data warehouse increases, and as the information gained from its development is used to

build an operational data store. The Framework is then used to help define the metadata needs. Chapter 11 portrays the data warehouse and operational data as a means to an end. Using the Framework, these serve as a foundation to help companies migrate to an architected environment which supports processes and systems that are engineered to meet the challenges posed by the dynamic business environment.

The book is designed primarily for managers who are interested in improving the management of complex technological environments. It emphasizes the criticality of an architecture-based approach and provides a conceptual description of the Zachman Framework as the basis for gaining greater business value from information systems and electronic databases. Parts Two and Three are also aimed at the practitioner. After developing a Framework-based strategy and methodology in Chaps. 5 and 6, respectively, the value of the Framework is applied toward building a data warehouse and an operational data store, migrating systems to a new environment, and supporting reengineering efforts and total quality management. This book explains key concepts and their importance and provides information to assist practitioners in understanding the critical steps in the process.

There are many people who have contributed directly and indirectly to this effort. The authors wish to acknowledge particularly the following individuals for their contributions:

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The number of companies which are using the Zachman Framework is continuously increasing. In 1995, the Zachman Institute for Framework Advancement (ZIFA) in Pinkney, Michigan was formed to provide a forum for companies to build on each others' successes in applying the Framework. Over 100 people attended the first ZIFA conference in June 1996. The energy level of the participants was exhilarating. The message was clear: Architecture is not an option—it is a mandate for companies which want to survive and thrive in the twenty-first century. Additional information about the Framework and its application can be obtained by contacting the Institute directly through the Internet at www.zifa.com.

—W. H. INMON
JOHN A. ZACHMAN
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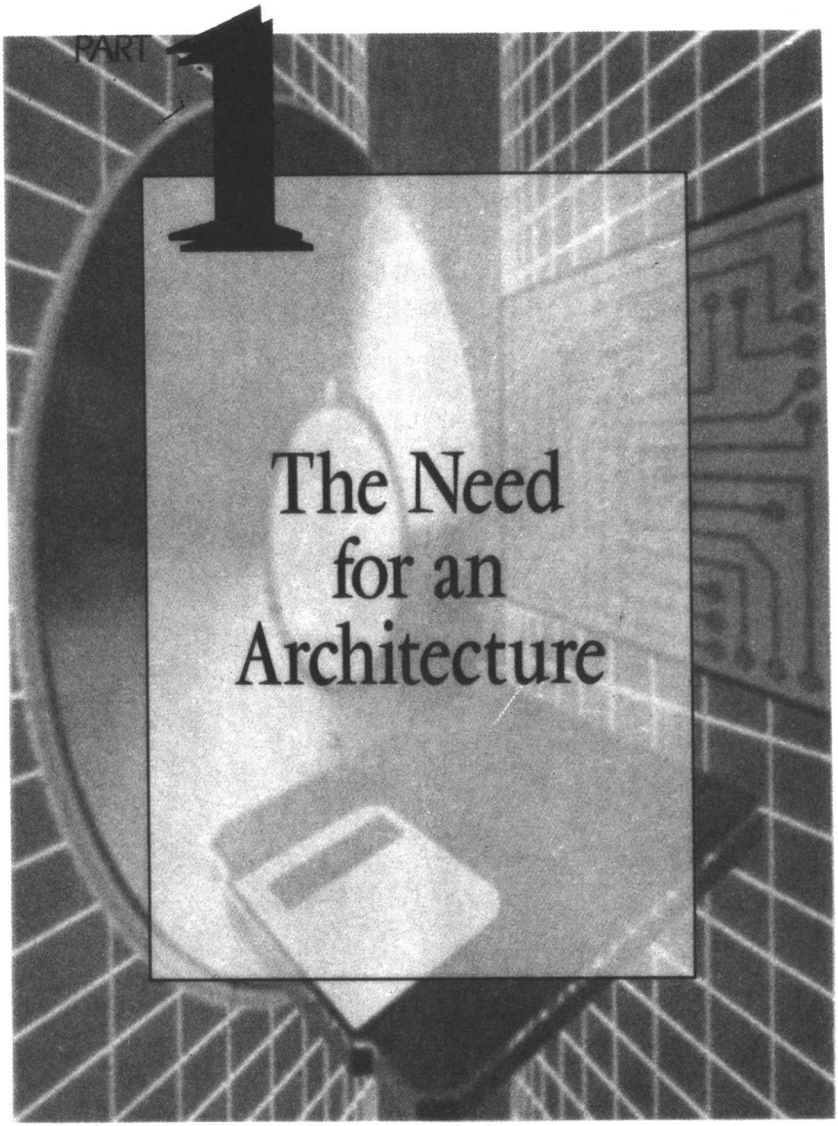

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