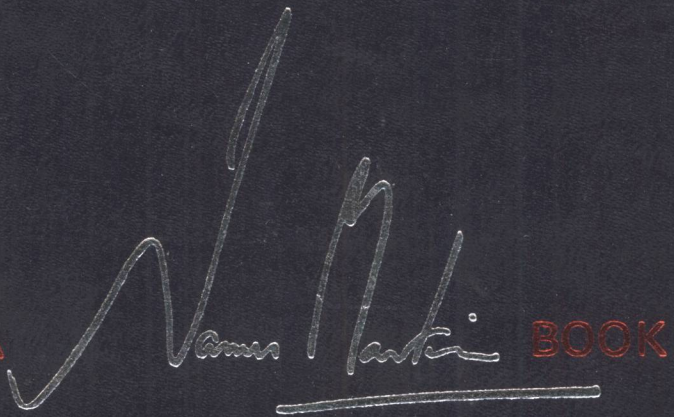
A
BOOK

THE DATA-BASE ENVIRONMENT

JAMES MARTIN

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James Martin

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MANAGING THE DATA-BASE ENVIRONMENT

A James Martin BOOK

MANAGING

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TO CORINTHIA

A data base is a shared collection of interrelated data designed to meet the needs of multiple types of end users.

The data are stored so that they are independent of the programs that use them. A common and controlled approach is used in adding new data and modifying and retrieving existing data.

The objective of data-base technology is to speed up computer application development, reduce application maintenance costs, and provide end users with the data they need for doing their jobs as efficiently as possible.

Data-base technology will become the backbone of most data processing.

The move to a data-base environment is not just a change in software; ***it is a change in management.*** *Unless an appropriate change in management occurs, the major benefits of data-base operation will not be realized.*

This change must be understood not only by the managers in question but by the systems analysts, programmer teams, end users, and department managers who are affected.

A major responsibility of management at all levels in a computerized corporation is to ensure that the data structures they need come into existence and are compatible.

BOOK STRUCTURE

PART I	INTRODUCTION
PART II	SOFTWARE
PART III	DATA ADMINISTRATION AND DESIGN
PART IV	DESIGN OF DATA-BASE APPLICATIONS
PART V	END USERS
PART VI	IMPLEMENTATION CONSIDERATIONS
PART VII	THE VIEW FROM THE TOP
EPILOGUE	REASONS FOR SUCCESS AND FAILURE

PREFACE

Data-base technology is a foundation stone of much future data processing. It will be essential for the computerized corporation of the future and requires good management. The intent of this book is to explain this.

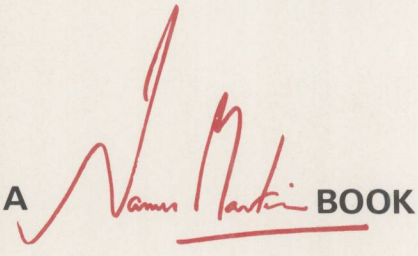
At present, data-base technology is not achieving the benefits and successes touted by the salespeople. Techniques used in many organizations contain the seeds for considerable future difficulties and anxiety.

In this book, clear techniques for the management of existing and future data bases are described. The move to a data-base environment requires a fundamental change in management. How well the data-base environment is managed will affect the profitability of many corporations in the future.

This book is the latest in the integrated set of data-base books published by Prentice-Hall. Watch this space—there is more to follow!

James Martin

MANAGING THE DATA-BASE ENVIRONMENT



CONTENTS

Preface *xiii*

PART I **INTRODUCTION**

1 Executive Challenge *3*

2 Data Base Is a Change in Management *13*

3 Four Types of Data Environment *29*

4 Measures of Success *39*

5 The Need for Top Management Involvement *53*

6 Who Does What? *69*

PART II **SOFTWARE**

7 Choice of Software *87*

8 Use of Data Dictionaries *113*

9 High-Level Data-Base Languages *139*

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PART III DATA ADMINISTRATION AND DESIGN

10 Bubble Charts *171*
11 Data Modeling *189*
12 Third Normal Form *203*
13 Fourth Normal Form *227*
14 Canonical Synthesis *235*
15 Design Tools *277*
16 How to Succeed with Data Modeling *289*
17 Stability Analysis *303*
18 Machine Performance and Physical Design *321*
19 The Data-Base-Administration Function *339*

PART IV DESIGN OF DATA-BASE APPLICATIONS

20 Logical Access Maps *361*
21 Data-Base Action Diagrams *375*
22 Compound Actions and Automatic Navigation *413*

PART V END USERS

23 The Concerns of End Users *427*
24 End-User Education *441*
25 Data-Base Languages for End Users *449*
26 Separate End-User Systems *485*
27 Information Center Management *497*

PART VI IMPLEMENTATION CONSIDERATIONS

28 Excessive Application Pressure *541*

29 Data Base and Politics *551*

30 Conversion *565*

31 Information Quality *577*

32 Security and Privacy *587*

33 Auditability *609*

34 Executive Information Systems *621*

PART VII THE VIEW FROM THE TOP

35 Organization of Top-Down Planning *655*

36 Subject-Data-Base Planning *673*

37 Corporate Entity Analysis *685*

38 Entity-Activity Analysis *707*

39 Corporate Reorganization *717*

Epilogue: Reasons for Long-Term Data-Base Successes and Failures *727*

Glossary *735*

Index *755*

PART I INTRODUCTION

1 EXECUTIVE CHALLENGE

INTRODUCTION

A task of executives of all types in the years ahead is to assist in the building of computerized corporations.* In the age of microelectronics, fast response to customers, fast reaction to problems, and fast response to information needs will be increasingly vital for competitive survival.

Data-base usage is the key to flexible employment of computers and their transmission networks. How well the data-base environment is managed affects executives in all areas of a corporation.

> *CORPORATE MEMORANDUM:*
>
> . . . .Data management is primarily a business function. Decisions as to what data is important to the business, who is responsible for it, and how it is to be organized and used, can realistically be made only by business managers. The present DP community can support this function, but cannot manage it outright. . . .

SUCCESSES AND FAILURES

There is now much experience in the use of data-base systems. Some installations have gained great benefits from the data base approach. In others, data-base techniques have been a failure, or disappointing.

A few years ago I was involved in a series of meetings at IBM where we were going through postmortems of data-base systems that had failed or had

*We will use the term "corporation" to refer to organizations of all types, including those such as government departments or universities which are not necessarily a corporation.

not worked as expected. It dawned on me during those meetings that the people there were saying the same thing over and over again. There were the same reasons for failures and the same reasons for successes.

About that time my book *Principles of Data-Base Management* [1], was in the page-proof stage, so I decided to put an epilogue at the back of the book which listed the reasons for failure, and alongside those the reasons that have made data-base installations particularly successful.

Ever since then I have been observing data-base installations. Both the technology and the perceptions of what data bases should accomplish have changed somewhat. In this book I will indicate what actions are likely to make a data-base installation succeed and what are likely to make it fail or be disappointing.

Often we find that there are partial successes. An installation has done some things right but not everything. It is desirable to succeed in *all* the different areas. In other words, get the whole act together.

WHAT IS A DATA BASE?

A data base is a collection of data that are shared and used for multiple purposes.

The term *end user* implies the *ultimate user* of a data-base facility, not an interim user such as a programmer programming functions for the end users. Data-base end users are a diverse cross section of humanity: accountants, engineers, administrative managers, civil servants, shop-floor foremen, department heads, budget controllers, professionals, actuaries, the president, and his aides.

Any manager, planner, or professional whose job will be changed in the future by data-base systems should understand the principles of data base, and become involved.

Any single user does not perceive all the types of data in the data base, only those that are needed for his or her job.* A user may perhaps perceive only one file of data. That file always has the same structure and appears simple, but in fact it is derived from a much more complex data structure. Other users see *different* files derived from the same data base.

A data base is thus not only shared by multiple users, but it is *perceived* differently by different users (Fig. 1.1).

You might think of blind persons confronted with an elephant. One person touches its leg and perceives it as being like a tree trunk. One touches its tail and perceives it as being like a rope. Another touches its tusks, and so on. Similarly, different data-base users perceive different *views* of the data. Someone has to design and manage the entire elephant. In doing so he must make sure that he meets the diverse needs of many users. In other words, all relevant user views must be derivable from the data base. This is a complex

*In the future I will use "his" and "he" as an abbreviation of "his or her" and "he or she."

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