

Data Modelling For Information Systems

Data Model Patterns: A Metadata Map not only presents a conceptual model of a metadata repository but also demonstrates a true enterprise data model of the information technology industry itself. It provides a step-by-step description of the model and is organized so that different readers can benefit from different parts. It offers a view of the world being addressed by all the techniques, methods, and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.) and presents several concepts that need to be addressed by such tools. This book is pertinent, with companies and government agencies realizing that the data they use represent a significant corporate resource recognize the need to integrate data that has traditionally only been available from disparate sources. An important component of this integration is management of the "metadata" that describe, catalogue, and provide access to the various forms of underlying business data. The "metadata repository" is essential to keep track of the various physical components of these systems and their semantics. The book is ideal for data management professionals, data modeling and design professionals, and data warehouse and database repository designers. A comprehensive work based on the Zachman Framework for information architecture—encompassing the Business Owner's, Architect's, and Designer's views, for all columns (data, activities, locations, people, timing, and motivation) Provides a step-by-step description of model and is organized so that different readers can benefit from different parts Provides a view of the world being addressed by all the techniques, methods and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.) Presents many concepts that are not currently being addressed by such tools — and should be Information Systems Development and Data Modeling Conceptual and Philosophical Foundations Cambridge University Press

Computer Weekly Professional Series: Information Structure Design for Databases: A Practical Guide to Data modeling focuses on practical data modeling covering business and information systems. The publication first offers information on data and information, business analysis, and entity relationship model basics. Discussions cover degree of relationship symbols, relationship rules, membership markers, types of information systems, data driven systems, cost and value of information, importance of data modeling, and quality of information. The book then takes a look at entity relationship modeling connections, one-to-one relationship, and entity relationship modeling advanced topics, including connection traps, resolving many-to-many relationships, four combinations of membership, and entity merging. The text examines logical data dictionary, data flow diagrams, entity life history, and developing database applications. Topics include data modeling during development, waterfall approach, iterative development, sequence, selection, illegal data flow linkages, conservation of data, second normal form rule, and denormalization. The book is a valuable reference for researchers interested in data modeling.

This Proceedings contains many research and practical papers dealing with the impact and influence of information technology on the global economy.

Information Modeling and Relational Databases provides an introduction to ORM (Object Role Modeling)-and much more. In fact, it's the only book to go beyond introductory coverage and provide all of the in-depth instruction you need to transform knowledge from domain experts into a sound database design. Inside, ORM authority Terry Halpin blends conceptual information with practical instruction that will let you begin using ORM effectively as soon as possible. Supported by examples, exercises, and useful background information, his step-by-step approach teaches you to develop a natural-language-based ORM model and then, where needed, abstract ER and UML models from it. This book will quickly make you proficient in the

modeling technique that is proving vital to the development of accurate and efficient databases that best meet real business objectives. The most in-depth coverage of Object Role Modeling available anywhere-written by a pioneer in the development of ORM. Provides additional coverage of Entity Relationship (ER) modeling and the Unified Modeling Language-all from an ORM perspective. Intended for anyone with a stake in the accuracy and efficacy of databases: systems analysts, information modelers, database designers and administrators, instructors, managers, and programmers. Explains and illustrates required concepts from mathematics and set theory.

Data Modeling Made Simple will provide the business or IT professional with a practical working knowledge of data modeling concepts and best practices. This book is written in a conversational style that encourages you to read it from start to finish and master these ten objectives: Know when a data model is needed and which type of data model is most effective for each situation Read a data model of any size and complexity with the same confidence as reading a book Build a fully normalized relational data model, as well as an easily navigatable dimensional model Apply techniques to turn a logical data model into an efficient physical design Leverage several templates to make requirements gathering more efficient and accurate Explain all ten categories of the Data Model Scorecard Learn strategies to improve your working relationships with others Appreciate the impact unstructured data has, and will have, on our data modeling deliverables Learn basic UML concepts Put data modeling in context with XML, metadata, and agile development Book Review by Johnny Gay In this book review, I address each section in the book and provide what I found most valuable as a data modeler. I compare, as I go, how the book's structure eases the new data modeler into the subject much like an instructor might ease a beginning swimmer into the pool. This book begins like a Dan Brown novel. It even starts out with the protagonist, our favorite data modeler, lost on a dark road somewhere in France. In this case, what saves him isn't a cipher, but of all things, something that's very much like a data model in the form of a map! The author deems they are both way-finding tools. The chapters in the book are divided into 5 sections. The chapters in each section end with an exercise and a list of the key points covered to reinforce what you've learned. I find myself comparing the teaching structure of the book to the way most of us learn to swim.

Perfect for professionals seeking a practical handle on systems analysis and design and advanced database management, this book is a unique, hands-on look at data modeling--a topic of increasing importance in object-oriented programming.

Data Modeling Theory and Practice is for practitioners and academics who have learned the conventions and rules of data modeling and are looking for a deeper understanding of the discipline. The coverage of theory includes a detailed review of the extensive literature on data modeling and logical database design, referencing nearly 500 publications, with a strong focus on their relevance to practice. The practice component incorporates the largest-ever study of data modeling practitioners, involving over 450 participants in interviews, surveys and data modeling tasks. The results challenge many long-held assumptions about data modeling and will be of interest to academics and practitioners alike. Graeme Simsion brings to the book the practical perspective and intellectual clarity that have made his Data Modeling Essentials a classic in the field. He begins with a question about the nature of data modeling (design or description), and uses it to illuminate such issues as the definition of data modeling, its philosophical underpinnings, inputs and deliverables, the necessary behaviors and skills, the role of creativity, product diversity, quality measures, personal styles, and the differences between experts and novices. Data Modeling Theory and Practice is essential reading for anyone involved in data modeling practice, research, or teaching.

Data Modeling Essentials, Third Edition, covers the basics of data modeling while focusing on developing a facility in techniques, rather than a simple familiarization with

"the rules". In order to enable students to apply the basics of data modeling to real models, the book addresses the realities of developing systems in real-world situations by assessing the merits of a variety of possible solutions as well as using language and diagramming methods that represent industry practice. This revised edition has been given significantly expanded coverage and reorganized for greater reader comprehension even as it retains its distinctive hallmarks of readability and usefulness. Beginning with the basics, the book provides a thorough grounding in theory before guiding the reader through the various stages of applied data modeling and database design. Later chapters address advanced subjects, including business rules, data warehousing, enterprise-wide modeling and data management. It includes an entirely new section discussing the development of logical and physical modeling, along with new material describing a powerful technique for model verification. It also provides an excellent resource for additional lectures and exercises. This text is the ideal reference for data modelers, data architects, database designers, DBAs, and systems analysts, as well as undergraduate and graduate-level students looking for a real-world perspective. Thorough coverage of the fundamentals and relevant theory. Recognition and support for the creative side of the process. Expanded coverage of applied data modeling includes new chapters on logical and physical database design. New material describing a powerful technique for model verification. Unique coverage of the practical and human aspects of modeling, such as working with business specialists, managing change, and resolving conflict.

A quick and reliable way to build proven databases for core business functions Industry experts raved about The Data Model Resource Book when it was first published in March 1997 because it provided a simple, cost-effective way to design databases for core business functions. Len Silverston has now revised and updated the hugely successful 1st Edition, while adding a companion volume to take care of more specific requirements of different businesses. This updated volume provides a common set of data models for specific core functions shared by most businesses like human resources management, accounting, and project management. These models are standardized and are easily replicated by developers looking for ways to make corporate database development more efficient and cost effective. This guide is the perfect complement to The Data Model Resource CD-ROM, which is sold separately and provides the powerful design templates discussed in the book in a ready-to-use electronic format. A free demonstration CD-ROM is available with each copy of the print book to allow you to try before you buy the full CD-ROM.

Object-oriented database systems have been approached with mainly two major intentions in mind, namely to better support new application areas including CAD/CAM, office automation, knowledge engineering, and to overcome the 'impedance mismatch' between data models and programming languages. This volume gives a comprehensive overview of developments in this flourishing area of current database research. Data model and language aspects, interface and database design issues, architectural and implementation questions are covered. Although based on a series of workshops, the contents of this book has been carefully edited to reflect the current state of international research in object oriented database design and implementation. Developing High Quality Data Models provides an introduction to the key principles of data modeling. It explains the purpose of data models in both developing an Enterprise

Architecture and in supporting Information Quality; common problems in data model development; and how to develop high quality data models, in particular conceptual, integration, and enterprise data models. The book is organized into four parts. Part 1 provides an overview of data models and data modeling including the basics of data model notation; types and uses of data models; and the place of data models in enterprise architecture. Part 2 introduces some general principles for data models, including principles for developing ontologically based data models; and applications of the principles for attributes, relationship types, and entity types. Part 3 presents an ontological framework for developing consistent data models. Part 4 provides the full data model that has been in development throughout the book. The model was created using Jotne EPM Technologys EDMVisualExpress data modeling tool. This book was designed for all types of modelers: from those who understand data modeling basics but are just starting to learn about data modeling in practice, through to experienced data modelers seeking to expand their knowledge and skills and solve some of the more challenging problems of data modeling. Uses a number of common data model patterns to explain how to develop data models over a wide scope in a way that is consistent and of high quality Offers generic data model templates that are reusable in many applications and are fundamental for developing more specific templates Develops ideas for creating consistent approaches to high quality data models Logical Data Modeling offers business managers, analysts, and students a clear, basic systematic guide to defining business information structures in relational database terms. The approach, based on Clive Finkelstein's business-side Information Engineering, is hands-on, practical, and explicit in terminology and reasoning. Filled with illustrations, examples, and exercises, Logical Data Modeling makes its subject accessible to readers with only a limited knowledge of database systems. The book covers all essential topics thoroughly but succinctly: entities, associations, attributes, keys and inheritance, valid and invalid structures, and normalization. It also emphasizes communication with business and database specialists, documentation, and the use of Visible Systems' Visible Advantage enterprise modeling tool. The application of design patterns to logical data modeling provides practitioners with a practical tool for fast development. At the end, a chapter covers the issues that arise when the logical data model is translated into the design for a physical database.

Data Engineering has become a necessary and critical activity for business, engineering, and scientific organizations as the move to service oriented architecture and web services moves into full swing. Notably, the US Department of Defense is mandating that all of its agencies and contractors assume a defining presence on the Net-centric Global Information Grid. This book provides the first practical approach to data engineering and modeling, which supports interoperability with consumers of the data in a service- oriented architectures (SOAs). Although XML (eXtensible Modeling Language) is the lingua franca for such interoperability, it is not sufficient on its own. The approach in this book addresses critical objectives such as creating a single representation for multiple applications, designing models capable of supporting dynamic processes, and harmonizing legacy data models for web-based co-existence. The approach is based on the System Entity Structure (SES) which is a well-defined structure, methodology, and practical tool with all of the functionality of UML (Unified Modeling Language) and few of the drawbacks. The SES originated in the formal

representation of hierarchical simulation models. So it provides an axiomatic formalism that enables automating the development of XML dtDs and schemas, composition and decomposition of large data models, and analysis of commonality among structures. Zeigler and Hammond include a range of features to benefit their readers. Natural language, graphical and XML forms of SES specification are employed to allow mapping of legacy meta-data. Real world examples and case studies provide insight into data engineering and test evaluation in various application domains. Comparative information is provided on concepts of ontologies, modeling and simulation, introductory linguistic background, and support options enable programmers to work with advanced tools in the area. The website of the Arizona Center for Integrative Modeling and Simulation, co-founded by Zeigler in 2001, provides links to downloadable software to accompany the book. The only practical guide to integrating XML and web services in data engineering Introduces linguistic levels of interoperability for effective information exchange Covers the interoperability standards mandated by national and international agencies Complements Zeigler's classic THEORY OF MODELING AND SIMULATION This book focuses on recent developments in representational and processing aspects of complex data-intensive applications. Until recently, information systems have been designed around different business functions, such as accounts payable and inventory control. Object-oriented modeling, in contrast, structures systems around the data--the objects--that make up the various business functions. Because information about a particular function is limited to one place--to the object--the system is shielded from the effects of change. Object-oriented modeling also promotes better understanding of requirements, clear designs, and more easily maintainable systems. This book focuses on recent developments in representational and processing aspects of complex data-intensive applications. The chapters cover "hot" topics such as application behavior and consistency, reverse engineering, interoperability and collaboration between objects, and work-flow modeling. Each chapter contains a review of its subject, followed by object-oriented modeling techniques and methodologies that can be applied to real-life applications. Contributors F. Casati, S. Ceri, R. Cicchetti, L. M. L. Delcambre, E. F. Ecklund, D. W. Embley, G. Engels, J. M. Gagnon, R. Godin, M. Gogolla, L. Groenewegen, G. S. Jensen, G. Kappel, B. J. Krämer, S. W. Liddle, R. Missaoui, M. Norrie, M. P. Papazoglou, C. Parent, B. Perniei, P. Poncelet, G. Pozzi, M. Schreft, R. T. Snodgrass, S. Spaccapietra, M. Stumptner, M. Teisseire, W. J. van den Heuevel, S. N. Woodfield

This book introduces and describes in detail the SEQUAL framework for understanding the quality of models and modeling languages, including the numerous specializations of the generic framework, and the various ways in which this can be used for different applications. Topics and features: contains case studies, chapter summaries, review questions, problems and exercises throughout the text, in addition to Appendices on terminology and abbreviations; presents a thorough introduction to the most important concepts in conceptual modeling, including the underlying philosophical outlook on the quality of models; describes the basic tasks and model types in information systems development and evolution, and the main methodologies for mixing different phases of information system development; provides an overview of the general mechanisms and perspectives used in conceptual modeling; predicts future trends in technological development, and discusses how the role of modeling can be envisaged in this

landscape.

Information management recognizes that information is rapidly becoming the most important resource of any business organization owing to the relative cheapness and ease of producing. This book is for people wishing to use database technology to provide effective management information.

Continuous improvements in digitized practices have created opportunities for businesses to develop more streamlined processes. This not only leads to higher success in day-to-day production, but it increases the overall success of businesses. Enterprise Information Systems and the Digitalization of Business Functions is a key resource on the latest advances and research for a digital agenda in the business world. Highlighting multidisciplinary studies on data modeling, information systems, and customer relationship management, this publication is an ideal reference source for professionals, researchers, managers, consultants, and university students interested in emerging developments for business process management. Information systems development is not merely a technical intervention but involves social and ethical dilemmas that affect the human, social and organizational domains. To demonstrate this point, the authors conduct a thorough and substantive description and analysis of the conceptual and philosophical underpinnings of systems development. In particular they analyse a number of systems development methodologies including structured methods, prototyping, ETHICS and Soft Systems Methodology to reveal the underlying conceptual and philosophical foundations. The book provides an in-depth analysis of data modelling theory and its links with theories of language and cognition. It offers a framework to describe and analyse different systems development approaches and to explain their strengths and weaknesses. The book is aimed at graduate students taking courses in information systems and data modelling, but will also appeal to information systems managers and professionals for whom the summary of methodologies will be useful.

This is the digital version of the printed book (Copyright © 1996). Learning the basics of a modeling technique is not the same as learning how to use and apply it. To develop a data model of an organization is to gain insights into its nature that do not come easily. Indeed, analysts are often expected to understand subtleties of an organization's structure that may have evaded people who have worked there for years. Here's help for those analysts who have learned the basics of data modeling (or "entity/relationship modeling") but who need to obtain the insights required to prepare a good model of a real business. Structures common to many types of business are analyzed in areas such as accounting, material requirements planning, process manufacturing, contracts, laboratories, and documents. In each chapter, high-level data models are drawn from the following business areas: The Enterprise and Its World The Things of the Enterprise Procedures and Activities Contracts Accounting The Laboratory Material Requirements Planning Process Manufacturing Documents Lower-Level Conventions In Decision Modelling And Information Systems: The Information Value Chain the authors explain the interrelationships between the decision support, decision modelling, and information systems. The first two parts of the book focus on the interdisciplinary decision support framework, in which mathematical programming (optimization) is taken as the inference engine. The role of business analytics and its relationship with recent developments in organisational theory, decision modelling, information systems and information technology are considered in depth. Part three of the book includes a carefully chosen selection of invited contributions from internationally-known researchers. These contributions are thought-provoking and cover key decision modelling and information systems issues. The final part of the book covers contemporary developments in the related area of business intelligence considered within an organizational context. The topics cover computing delivered across the web, management decision-making, and socio-economic challenges that lie ahead. It is now well accepted that globalisation and the impact of digital economy are profound; and the role of

e-business and the delivery of decision models (business analytics) across the net lead to a challenging business environment. In this dynamic setting, decision support is one of the few interdisciplinary frameworks that can be rapidly adopted and deployed so that businesses can survive and prosper by meeting these new challenges.

Data-governance programs focus on authority and accountability for the management of data as a valued organizational asset. Data Governance should not be about command-and-control, yet at times could become invasive or threatening to the work, people and culture of an organization. Non-Invasive Data Governance™ focuses on formalizing existing accountability for the management of data and improving formal communications, protection, and quality efforts through effective stewarding of data resources. Non-Invasive Data Governance will provide you with a complete set of tools to help you deliver a successful data governance program. Learn how:

- Steward responsibilities can be identified and recognized, formalized, and engaged according to their existing responsibility rather than being assigned or handed to people as more work.
- Governance of information can be applied to existing policies, standard operating procedures, practices, and methodologies, rather than being introduced or emphasized as new processes or methods.
- Governance of information can support all data integration, risk management, business intelligence and master data management activities rather than imposing inconsistent rigor to these initiatives.
- A practical and non-threatening approach can be applied to governing information and promoting stewardship of data as a cross-organization asset.
- Best practices and key concepts of this non-threatening approach can be communicated effectively to leverage strengths and address opportunities to improve.

Information systems belong to the most complex artifacts built in today's society. Developing, maintaining, and using an information system raises a large number of difficult problems, ranging from purely technical to organizational and social. Information Systems Engineering: From Data Analysis to Process Networks presents the most current research on existing and emergent trends on conceptual modeling and information systems engineering, bridging the gap between research and practice by providing a much-needed reference point on the design of software systems that evolve seamlessly to adapt to rapidly changing business and organizational practices.

Big data modeling is very challenging to handle using traditional database modeling and management systems. This book will teach you how to model big data using the latest and more efficient tools such as ERWIN, ANACONDA (Python), and WEKA to model data. Just as ontology developed over the centuries as part of philosophy, so in recent years ontology has become intertwined with the development of the information sciences. Researchers in such areas as artificial intelligence, formal and computational linguistics, biomedical informatics, conceptual modeling, knowledge engineering and information retrieval have come to realize that a solid foundation for their research calls for serious work in ontology, understood as a general theory of the types of entities and relations that make up their respective domains of inquiry. In all these areas, attention has started to focus on the content of information rather than on just the formats and languages in terms of which information is represented. A clear example of this development is provided by the many initiatives growing up around the project of the Semantic Web. And as the need for integrating research in these different fields arises, so does the realization that strong principles for building well-founded ontologies might provide significant advantages over ad hoc, case-based solutions. The tools of Formal Ontology address precisely these needs, but a real effort is required in order to apply such philosophical tools to the domain of Information Systems. Reciprocally, research in the information science raises specific ontological questions which call for further philosophical investigations.

Managing Information Technology Resources in Organizations in the Next Millennium contains more than 200 unique perspectives on numerous timely issues of managing information

technology in organizations around the world. This book, featuring the latest research and applied IT practices, is a valuable source in support of teaching and research agendas. Features a five part structure covering: Foundations; Principles; Techniques; Analysis; and Management and Policy. This book includes chapters on Distributed GIS, Map Production, Geovisualization, Modeling, and Managing GIS. It offers coverage of such topics as: GIS and the New World Order; security, health and well being; and the greening of GIS.

The purpose of this book is to provide a practical approach for IT professionals to acquire the necessary knowledge and expertise in data modeling to function effectively. It begins with an overview of basic data modeling concepts, introduces the methods and techniques, provides a comprehensive case study to present the details of the data model components, covers the implementation of the data model with emphasis on quality components, and concludes with a presentation of a realistic approach to data modeling. It clearly describes how a generic data model is created to represent truly the enterprise information requirements.

DATA MODELING AND DATABASE DESIGN presents a conceptually complete coverage of indispensable topics that each MIS student should learn if that student takes only one database course. Database design and data modeling encompass the minimal set of topics addressing the core competency of knowledge students should acquire in the database area. The text, rich examples, and figures work together to cover material with a depth and precision that is not available in more introductory database books. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Summarises ideas in Information Systems Development for graduate students and professionals.

This work has been revised and updated to provide a comprehensive treatment of database design for commercial database products and their applications. The book covers the basic foundation of design as well as more advanced techniques, and also incorporates coverage of data warehousing and OLAP (On-Line Analytical Processing), data mining, object-relational, multimedia, and temporal/spatial design.

The traditional publication will be overhauled by the 'Enhanced Publication'. This is a publication that is enhanced with research data, extra materials, post publication data, and database records. It has an object-based structure with explicit links between the objects. In this book a state-of-the-art overview is given of the structural elements of an Enhanced Publication, as well as publication models, interrelationship and repository issues. The use of Enhanced Publications evokes questions on object models and functionalities. In-depth study is made of these subjects. More practically, a sample is given of datasets together with a demonstrator-project. In the final section, this book deals with long-term preservation issues, linking to the developments of digital repositories that are studied in other books in this series. This brilliant textbook explains in detail the principles of conceptual modeling independently from particular methods and languages and shows how to apply them in real-world projects. The author covers all aspects of the engineering process from structural modeling over behavioral modeling to meta-modeling, and completes the presentation with an extensive case study based on the osCommerce system. Written for computer science students in classes on information systems modeling as well as for professionals feeling the need to formalize their experiences or to update their knowledge, Olivé delivers here a comprehensive treatment of all aspects of the modeling process. His book is complemented by lots of exercises and additional online teaching material. This book explains the fundamentals of data modelling and its importance in the

development of quality information systems. The text illustrates how data modelling is applied in practice and includes detailed examples to show data structures which are encountered in systems development. Describing the environment in which data modelling is performed, such as administration and CASE, the authors seek to clarify the similarities and differences between traditional data modelling and object-oriented modelling and thus to provide a conceptual framework for the migration from one to the other. A selection of illustrated physical implementations on different DBMSs are provided, and the techniques of behavioural data modelling are demonstrated. This is a higher level, rather than introductory, text aimed at final year students of a business information systems degree and those computer science degrees which address organizational/management aspects of their specialism during the final year. Here you will learn how to develop an attractive, easily readable, conceptual, business-oriented entity/relationship model, using a variation on the UML Class Model notation. This book has two audiences: • Data modelers (both analysts and database designers) who are convinced that UML has nothing to do with them; and • UML experts who don't realize that architectural data modeling really is different from object modeling (and that the differences are important). David Hay's objective is to finally bring these two groups together in peace. Here all modelers will receive guidance on how to produce a high quality (that is, readable) entity/relationship model to describe the data architecture of an organization. The notation involved happens to be the one for class models in the Unified Modeling Language, even though UML was originally developed to support object-oriented design. Designers have a different view of the world from those who develop business-oriented conceptual data models, which means that to use UML for architectural modeling requires some adjustments. These adjustments are described in this book. David Hay is the author of Enterprise Model Patterns: Describing the World, a comprehensive model of a generic enterprise. The diagrams were at various levels of abstraction, and they were all rendered in the slightly modified version of UML Class Diagrams presented here. This book is a handbook to describe how to build models such as these. By way of background, an appendix provides a history of the two groups, revealing the sources of their different attitudes towards the system development process. If you are an old-school ER modeler and now find yourself having to come up to speed on UML to get that next job (or keep the current one), this is your guidebook to success. If you are a long time object oriented programmer who has to interact with data modelers, this book is for you too. David has done the hard work of mapping out how to do a logical entity relationship model using standard (and accepted) UML diagram components. This book shows you step-by-step, with ample examples, how to get from here to there with the least pain possible for all concerned. Kent Graziano Certified Data Vault Master and Oracle ACE Past-President of ODTUG & RMOUG Brilliantly organized: three books hidden in one cohesive work. Notwithstanding the tremendous value provided by

cross-training data architects/modelers and object modelers/architects, making each better at what they do, Appendix B presents an absolutely awesome concise, yet detailed, history of modeling objects and data that clearly documents the differences in the approaches over the years and helps bring it all into perspective. This book is packed with useful information. Even the footnotes add clarity and offer interesting and often humorous editorial insight making it a fun read. Whatever viewpoint the reader is coming from this book has something to offer as long as the reader maintains an open mind. Roland Berg Senior Architect Diligent Consulting, Inc. San Antonio, Texas

This book compiles contributions from renowned researchers covering all aspects of conceptual modeling, on the occasion of Arne Sølberg's 67th birthday. Friends of this pioneer in information systems modeling contribute their latest research results from such fields as data modeling, goal-oriented modeling, agent-oriented modeling, and process-oriented modeling. The book reflects the most important recent developments and application areas of conceptual modeling, and highlights trends in conceptual modeling for the next decade. This book constitutes the proceedings of two events held in conjunction with the CAiSE conferences and related to the areas of enterprise, business-process and information systems modeling: the 18th International Conference on Business Process Modeling, Development and Support, BPMDS 2017, and the 22nd International Conference on Evaluation and Modeling Methods for Systems Analysis and Development, EMMSAD, 2017. They took place in Essen, Germany, in June 2017. The focus theme for BPMDS 2017 papers was "Enabling Business Transformation by Business Process Modeling, Development and Support". From 24 submitted papers, 11 were finally accepted and organized by: Non-functional considerations in business processes; new challenges in business process modeling and support; testing business processes; business process model comprehension; an experience report on teaching business process modeling. The EMMSAD conference focuses on evaluating, exploring and enhancing modeling methods and techniques for the development of information and software systems, enterprises, and business processes. It received 25 submissions, from which 9 full and 2 short papers were selected and organized: evaluation and comparison of modeling languages and methods; modeling approaches to support decision making; behavioral specification and business process modeling; and modeling languages and methods in evolving context.

Data modeling is one of the most critical phases in the database application development process, but also the phase most likely to fail. A master data modeler must come into any organization, understand its data requirements, and skillfully model the data for applications that most effectively serve organizational needs. Mastering Data Modeling is a complete guide to becoming a successful data modeler. Featuring a requirements-driven approach, this book clearly explains fundamental concepts, introduces a user-oriented data modeling

notation, and describes a rigorous, step-by-step process for collecting, modeling, and documenting the kinds of data that users need. Assuming no prior knowledge, *Mastering Data Modeling* sets forth several fundamental problems of data modeling, such as reconciling the software developer's demand for rigor with the users' equally valid need to speak their own (sometimes vague) natural language. In addition, it describes the good habits that help you respond to these fundamental problems. With these good habits in mind, the book describes the Logical Data Structure (LDS) notation and the process of controlled evolution by which you can create low-cost, user-approved data models that resist premature obsolescence. Also included is an encyclopedic analysis of all data shapes that you will encounter. Most notably, the book describes *The Flow*, a loosely scripted process by which you and the users gradually but continuously improve an LDS until it faithfully represents the information needs. Essential implementation and technology issues are also covered. You will learn about such vital topics as: The fundamental problems of data modeling The good habits that help a data modeler be effective and economical LDS notation, which encourages these good habits How to read an LDS aloud--in declarative English sentences How to write a well-formed (syntactically correct) LDS How to get users to name the parts of an LDS with words from their own business vocabulary How to visualize data for an LDS A catalog of LDS shapes that recur throughout all data models The Flow--the template for your conversations with users How to document an LDS for users, data modelers, and technologists How to map an LDS to a relational schema How LDS differs from other notations and why "Story interludes" appear throughout the book, illustrating real-world successes of the LDS notation and controlled evolution process. Numerous exercises help you master critical skills. In addition, two detailed, annotated sample conversations with users show you the process of controlled evolution in action.

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