Preface

The *Advanced Topics in Database Research* book series has been recognized as an outstanding academic book series in the fields of database, software engineering, as well as systems analysis and design. The goal of the book series is to provide researchers and practitioners easy access to excellent chapters which address the latest research issues in the field of database (the term "database" is used here broadly).

This is the third volume of the *Advanced Topics in Database Research* book series. This book consists of 16 excellent chapters ranging from theoretical database issues to practical applications of database techniques. In terms of research methodology, the chapters vary from meta-modeling to empirical case studies. Although the topics are broad, the book provides a sample of some of the best research work done in the database area. The contributing authors represent almost every part of the globe. We have authors from the USA, Canada, The Netherlands, Spain, Chile, Hungary, Israel, Lebanon, Korea, and China.

The book is divided into three sections: (I) Analysis of Development Methodologies; (II) Database Design and Development: Issues and Solutions; and (III) Database Design and Development: Applications. In the following, we briefly describe each chapter:

Section I: Analysis of Development Methodologies consists of three chapters.

Chapter I, "Agile Development Methods and Component-Orientation: A Review and Analysis," presents and analyzes the state-of-the-art agile methods used in the agile development process. Different conceptual foundations and practical uses of these methods, as well as their limitations, are listed and discussed. Service-based component concepts applied at the level of modeling, architectural design, and development are proposed to ensure and strengthen agile development principles and practices. The paper also introduces necessary agility to more traditional development.

Chapter II, "Comparing Metamodels for ER, ORM and UML Data Models," gives a concrete metamodel analysis of the three main database modeling techniques used in the industry — Entity Relationship (ER), Object Role Modeling (ORM), and Unified Modeling Language (UML). ORM is used as the metamodeling language because of its great expressibility and clarity. Discussions based on the metamodel analysis are detailed in the chapter.