

Preface

Many strategic IT projects fail, meaning that organisations are unable to reap the benefits of their IT investments to the fullest extent. One of the key reasons for this failure is the lack of coherence and congruence among the various components of an enterprise. This lack of congruence inevitably translates into a lack of integration among the many IT projects. Because of the penetration of IT in many aspects of an organisation, the need for a unified and integrated perspective on the organisation and its support with enterprise information system has become more important than ever before. One of the main goals of enterprise engineering is to foster the development of a congruent and coherent perspective of the organisation, in which all parts of the organisation are arranged in a harmonious and skilful way. In particular, the development of an encompassing ‘Enterprise Architecture’ is to offer a global perspective on an organisation’s design, facilitating in this way better project and programme management by ensuring the mutual fit of individual projects. This book takes a design perspective to enterprise engineering and focuses on creating comprehensive and cohesive descriptions (models) of certain aspects of the enterprise. Such models allow gaining insight in the core structure of the enterprise, and they can be used to create the required essential structures of its supporting information systems. This book focuses on *domain modelling* as a way to foster the development of a common language to talk about essential business concepts and to develop a shared understanding of the rules that govern these business concepts. The MERODE approach offers a practical method for domain modelling and using these domain models for enterprise information system engineering.

The name ‘MERODE’ originally stood for ‘model-driven entity relationship object-oriented development’, referring in this way to the roots of the method. The most outstanding feature of MERODE is that it uses the principle of existence dependency. This contributes to the completeness and flexibility of models while at the same time enabling intelligent consistency checks. Second, the method makes a clear distinction between specification and implementation, implementation being

achieved by transforming the specifications, not by elaborating them. Finally, MERODE is different from most other approaches in that it guarantees an extremely large independency between the enterprise layer and the application layer. This feature further improves flexibility and extensibility of the resulting enterprise information systems.

Over time, MERODE has integrated 25 years of research on requirements engineering, conceptual modelling, Entity Relationship Modelling, Jackson Systems Development, object orientation, process algebra, UML, BPMN, Enterprise Architecture frameworks, Services-Oriented Architecture, event-driven architecture and model-driven engineering performed within the Management Information Systems group of the Faculty of Business and Economics of the KU Leuven. The MERODE approach combines on the one hand best-of-breed industrial practices but—due to its academic development—also has a formal foundation that is based on the process algebra CSP, theory of Finite State Automata and Petri Net theory. This formal underpinning enables an intelligent approach to model quality uncommon in industrial standards, while at the same time, practitioners don't need to care about formal definitions or algebraic formulas.

This book is primarily intended for practitioners, students and researchers:

- Enterprise architects will find in this book practical advice on how to obtain a clear separation between demand and supply and a practical approach for the demand side of software development or delivery. MERODE is compliant with Enterprise Architecture frameworks such as TOGAF and ZACHMAN, but more importantly, it complements these architecture frameworks by offering very practical guidelines on how to obtain a correctly layered architecture and how to build a domain model and what quality criteria a good domain model should satisfy. They will also find a good example of how model-driven engineering can be put at work using a template-based approach.
- Both business analysts and students will find in this book practical advice on how to create complete models that combine structural and behavioural views of a system-to-be and that are ready to be transformed into a code using a generative approach and how to evaluate the quality of those models.
- Researchers in the area of conceptual modelling or enterprise modelling will find in this book a good integrated overview of the main research results related to the MERODE project.

This book has benefit from the work of many researchers that collaborated on the MERODE project (in reverse order of appearance): Gayane Sedrakyan, Tom Huysegoms, Pieter Hens, Manu De Backer, Geert Monsieur, Raf Haesen, Wilfried Lemahieu, Geert Poels, Anne-Marie Depuydt, Guido Dedene and, last but not least, Maurice Verhelst. The method has also benefit from the contributions of those who did not only use the method in their work but also took the time to challenge its practical relevance, engage in discussions with the researchers and guide master thesis students investigating particular topics of the method (in reverse order of appearance): Marc De Decker, Jan Wirix and Bert Dingemans. Finally, I'm also

indebted to the many, many students who have attended my classes and challenged the approach with interesting questions. These questions were a source of constant improvement.

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