The electronic version of the booklet is available here:

http://www.omilab.org/web/user/booklet/

ISBN 978-3-902826-03-9

Contact
Elena-Teodora Miron
University of Vienna
Open Models Laboratory
Research Group Knowledge Engineering
Währingerstraße 29
A-1090 Vienna

Phone: +43 1 4277-78940
E-Mail: events@omilab.org

Cover & Layout
Xiulian Benesch and Valentina Tessa

Copyright
© 2014 Open Models Laboratory
All rights reserved. Unless otherwise indicated, all material is copyrighted. Responsibility for papers and method descriptions lies with the respective author(s). Links and logos are copyrighted to the respective authors and/or their institutions. ADOxx® is a registered trademark of the BOC Group. Any unauthorized reprint or use of this material is prohibited. No part of these pages, either text or images may be used for any purpose other than personal use, unless explicit authorisation is given by the author / publisher.
Trainings and Dissemination

The OMi Laboratory offers various training and dissemination opportunities: from broadcasting to on-demand services, regular publications and international workshops to tutorials and research visits.

www.omilab.tv
# Table of Content

| The Modelling Methods Booklet                          | 6 |
| Idea and Objectives                                    | 7 |
| BEN Business Engineering Navigator                     | 10 |
| BIM Business Intelligence Model                        | 11 |
| CIDOC Conceptual Reference Model - ISO 21127 Standard  | 12 |
| COMVANTAGE Collaborative Manufacturing Network for Competitive Advantages | 13 |
| DIBA Data Integration for Business Analytics           | 14 |
| DL4DSL Description Logics for Domain-Specific Languages | 15 |
| EDUWEAVER E-Learning Independent Courseware System     | 16 |
| eGPM Exemplary Business Process Modelling              | 17 |
| EKD Enterprise Knowledge Development                    | 18 |
| EC Evaluation Chains                                    | 19 |
| HCM-L Human Cognitive Model Language Modeler           | 20 |
| ADOxx® Horus                                           | 21 |
| IMP2.0. Immigration Policy                             | 22 |
| iSTAR                                                  | 23 |
| JCS Japanese Creative Services                         | 24 |
| MELCA Method for Large Collaborative Applications      | 25 |
| MEMO Multi-Perspective Enterprise Modelling            | 26 |
| MOSES4EGOV                                             | 27 |
| OKM Open Knowledge Models                              | 28 |
| PETRI NETS                                             | 29 |
| RUPER T                                                | 30 |
| SDBD Semantic Database Design                          | 31 |
| Secure Tropos                                          | 32 |
| SeMFIS Semantic-based Modelling Framework for Information Systems | 33 |
| SOM Semantic Object Model                              | 34 |
| VLML Very Lightweight Modelling Language               | 35 |
| ADOxx® in Research - Selected Projects                 | 37 |
| ADOxx® Development Environment                         | 38 |
| Glossary                                               | 39 |
The Modelling Methods Booklet

The publication at hand gives an overview on the modelling methods which have been realized by communities of practice using the Open Models (OMi) Laboratory environment. Intended as the first one in an upcoming series, it presents in short 25 modelling methods, which have been conceptualised, developed and deployed by different research groups. Located in 18 universities on 4 different continents the method engineers tackled a large variety of application domains.

The presentation of each modelling method thereinafter is structured as follows: a short description of the goal of the method as well as the application domain it belongs to. References to literature sources – either books or scientific articles – aim to provide the interested reader with in-depth information about the concept and the details of each method. The project website within the OMi Laboratory is where each of the presented modelling methods is available as an IT-based modelling toolkit for interested community members. And last but not least the responsible for each modelling method and their contact data are provided to facilitate direct contact with those interested.

As the Open Models Laboratory understands itself as a space for method engineering experimentation, it provides also access to different project independent resources, events and dissemination activities.

We would like to thank all members of the community for their valuable input, their tireless collaboration as well as for their efforts to participate in this publication.

We would also like to extend our gratitude to the University of Vienna, the Faculty of Computer Science, who provides us with the physical infrastructure and organisational environment, thus facilitating this scientific endeavour.

Dimitris Karagiannis
Vienna, 2014
Idea and Objectives

The Open Models (OMi) Laboratory is a dedicated research and experimentation space for modelling method engineering. Both a physical and virtual place, it is equipped with tools to explore method creation and design, experiment with method engineering and deploy software tools for modelling.

Open to all those interested, the laboratory is a platform where all participants can bring in ideas related to modelling and engage in the exploration process. The lab’s idea is to act as a facilitator to the development and application of scientific methods to communities who value models, and implicitly modelling methods. It is open to all application domains which can benefit from the use of models; it promotes openness of community projects and encourages communities to share their projects to the extent feasible.

As the construction of modelling methods is a complex task, the OMi Laboratory introduces the OMiLaboratory Lifecycle which uses the “Conceptualization Process” as a framework for developing modelling methods. Starting with the “Creation” step and ranging until the “Deployment” of the modelling method as an IT-tool, the laboratory provides the conceptual steps, the collaborative environment and the necessary working resources. For the “Design”, “Formalization” and “Development” steps the OMi Laboratory makes an open use of the ADOxx® meta-modelling platform. Such a platform allows the use of concepts that support the modelling method engineering process (e.g. patterns, DSML) and formalisms which favour the re-use/evolution/variants of modelling methods. It also grants openness to other tools and open source add-ons.

Visit us at www.omilab.org!
Standardisation Activities
Towards a Metamodelling DSL

OMLAB

With the community...  ...for the community

Modeling Method Domain Specific Language (MM-DSL) has been designed to simplify the realization of modelling methods. It is completely platform independent, self-documenting, and easy to learn language for describing modelling method components: a metamodel, graphical representation, and algorithms.

In theory, MM-DSL code can be compiled and executed on any metamodelling platform, if one develops a compiler for that particular platform. MM-DSL is supported by an integrated development environment (IDE) which provides several helpful features:

- compile time error checking,
- code suggestions and auto completion,
- code templates which can be extended,
- and code coloring.

The MM-DSL IDE is built upon Eclipse technology and can be easily modified and extended with new features.

Community members are invited to download the specification and contribute at www.omilab.org
Modelling Methods
**BEN Business Engineering Navigator**

The Business Engineering Navigator (BEN) is a framework that allows for holistic design and management of organisations.

To meet this end, five different layers concerning enterprise architectures are distinguished. These layers reflect strategic issues and organisational structures as well as hard- and software infrastructure and their alignment. For all these layers appropriate modelling methods in terms of modelling languages and reference models (or patterns) are provided and can be used in order to create models and analyses. The corresponding tool which was realised in OMiLAB is named ADOben.

**Based on the Book**

**Access**
http://www.omilab.org/web/ben/

**Contact**
**Prof. Dr. Robert Winter**
University of St. Gallen, Switzerland
E-Mail: robert.winter@unisg.ch
BIM Business Intelligence Model

The Business Intelligence Model (BIM) aims to enable business users to conceptualise business operations and strategies and performance indicators in a way that can be connected to enterprise data through highly automated tools. BIM draws upon well-established concepts and practices in the business community, such as the Balanced Scorecard and Strategy Maps, as well as techniques from conceptual modelling and enterprise modelling, such as meta-modelling and goal modelling techniques.

The BIM allows business users to conceptualise their business operations and strategies using concepts that are familiar to them, including: Actor, Directive, Intention, Event, Situation, Indicator, Influence, Process, Resource, and Domain Assumption. These concepts (and their semantics) are synthesized from business and conceptual modelling sources. While the BIM by itself can facilitate understanding of the enterprise, the more fundamental aim, in the context of BI, is to provide a business-friendly way to exploit the vast amounts of data collected by the enterprise. BIM works together with advanced conceptual data integration technology.

Relevant Publications

Access
http://www.omilab.org/web/bim/

Contact
Prof. Dr. John Mylopoulos
University of Trento, Italy and University of Toronto, Canada
E-Mail: jm@cs.toronto.edu
CIDOC Conceptual Reference Model

CIDOC CRM provides a model of the intellectual structure of cultural documentation describing the implicit and explicit concepts and relationships used in cultural heritage documentation. Apart from the use of cultural heritage, its usefulness in applications in e-science and biodiversity has been proven.

It is a core ontology which aims at linking and integrating information useful for reasoning about the material state of the past, based on a common conceptual approach. The ontology provides a uniform and extensible semantic framework that can gather, link and integrate any information or metadata describing the historical context of physical or information objects. The purpose of this standard is to: (i) provide a common language for experts in the field (archaeologists, conservators, curators, record keepers of historical or scientific material, etc.), (ii) formulate requirements for information systems, (iii) serve as a guide of good practices for conceptual modelling, (iv) and be a core schema for aggregation services in culture heritage and e-science.

Relevant Publications

Access
http://www.omilab.org/web/cidoc-crm/

Contact
Dr. Martin Doerr
Institute of Computer Science FORTH, Greece
E-mail: martin@ics.forth.gr

Prof. Dr. Dimitris Plexousakis
University of Crete and FORTH, Greece
E-Mail: dp@ics.forth.gr
**ComVantage Collaborative Manufacturing Network for Competitive Advantages**

The method is developed as part of the ComVantage research project, to support the design-time decomposition of a business view across multiple layers of abstraction, reaching down to the level of mobile app and data requirements.

The project as a whole investigates new possibilities for enterprise collaboration, as created by the technological specificity of mobile applications consuming Linked Data. Towards this goal, the project proposes a runtime IT architecture which uses model information captured at design-time. Therefore, the method integrates business process modelling with aspects related to access control, mobile interaction requirements, data requirements and the organizational scope of the business context. Key mechanisms of the method are the export of model information in a Linked Data format that enables model querying outside the modelling tool and the derivation of role-based app orchestration models from multi-role business process models.

**Relevant Publications**
All relevant publications are available at www.comvantage.eu.

**Access**
http://www.omilab.org/web/comvantage/

**Contact**
**Dr. Robert Buchmann**
University of Vienna, Austria
E-mail: rbuchmann@dke.univie.ac.at
DIBA  Data Integration for Business Analytics

For assessment of data quality in business analytics, metadata describing substantive properties of the data are of utmost importance. In particular one needs many times information on how representative the data are or about methods of data collection, knowledge which goes beyond the information in the data base scheme. By combining ideas from statistical metadata management and business workflow management DIBA offers an environment which allows to compute metadata for new data in a warehouse obtained by a data integration activity.

The basic idea of the approach is to process metadata simultaneously with the data, i.e. DIBA defines besides database operations like joins corresponding metadata operations which update the data description. Besides the definition of the corresponding populations represented by the integrated data an important topic is keeping track of missing values and documentation of missing values occurring in connection with the operation process.

Relevant Publications

Access
http://www.omilab.org/web/diba/

Contact
Prof. Dr. Wilfried Grossmann
University Vienna, Austria
E-Mail: wilfried.grossmann@univie.ac.at
DL4DSL Description Logics for Domain-Specific Languages

We are developing a framework and a corresponding methodology to use domain-specific languages (DSL) for generating application systems in domains such as e-Health or e-Government. A DSL is used to describe the desired target application system which is then generated by combining predefined components from a toolbox and configuring them accordingly. A specific DSL provides a domain-specific terminology which includes object types e.g. for all the components in the toolbox, relationships between object types, constructs for defining constraints on properties and behaviour of objects, etc.

Our approach will reduce the complexity usually associated with configuring a target application or adapting it to evolving requirements during its life cycle. By applying a meta-modelling approach, where a DSL is defined by creating a corresponding meta model, the DSLs can be easily extended to accommodate new constructs as needed by an application domain.

In contrast to most other approaches, which are e.g. based on UML, our framework for creating DSLs is based on description logics. We thus utilize the model-theoretic semantics of description logics to obtain a sound semantic foundation of the resulting DSLs. The semantics lays down in which ways the language constructs can be combined and enables the modelling tools to support the users in creating consistent and meaningful models, e.g. by prohibiting inconsistent combinations of constructs.

Relevant Publications

Access
http://www.omilab.org/web/dl4dsl

Contact
Prof. Dr. Ulrich Reimer
University of Applied Sciences St. Gallen, Switzerland
Email: ulrich.reimer@fhsg.ch
EDUWEAVER E-Learning Independent Courseware System

eduWeaver is part of the eduBITE project, which stands for “Educating Business and Information Technologies” and tries to fulfill the needs of high-school teachers in the field of business informatics. It should assist in multimedia teaching to evolve the knowledge of “integrated business information systems” as well as innovative and didactically reasonable usage connected with new teaching methods.

eduWeaver supports teachers by the individual design courses and the distribution of high quality multimedia teaching materials among higher educational institutes. Teachers can reuse the teaching materials offered through the learning object pool of eduWeaver and do not face any more the time consuming and non-trivial creation of multimedia applications. Further they can structure their courses according to their individual requirements focusing on didactical guidelines.

Relevant Publications

Access
http://www.omilab.org/web/eduweaver/

Contact
Dr. Claudia Steinberger
Alpen-Adria-Universität Klagenfurt, Austria
E-Mail: Claudia.Steinberger@aau.at
eGPM Example-Based Business Process Modelling

The example-based business process modelling („exemplarische Geschäftsprozessmodellierung“ - eGPM) is a scenario-based, visual approach to representing business processes and their IT support. It is equally understandable for employees in specific fields, IT professionals and organisational managers.

The result of the modelling approach is not only to provide meaningful models, but also a common understanding of the modelled processes.

eGPM has been used in academia and industry in domains such as banking, insurance, logistics and health care. It is suitable for several purposes, including requirements engineering and organisational development.

Relevant Publications


Access
http://www.omilab.org/web/bpm/

Contact
Prof. Dr. Heinz Züllighoven
University of Hamburg, Germany
E-Mail: zuelligh@informatik.uni-hamburg.de
EKD  Enterprise Knowledge Development

EKD is an approach that provides a controlled way of analysing and documenting an enterprise, its objectives and support systems. The purpose is to provide a clear, unambiguous picture of: (a) how the enterprise functions currently; (b) what are the requirements for change and the reasons for change; (c) what alternatives could be devised in order to meet these requirements; (d) what are the criteria and arguments for evaluating these alternatives.

The EKD approach represents an integrated set of techniques and associated tools for the purpose of dealing with situations of change such as the transformation of business processes, the re-engineering of information systems, the transition of high-level requirements to systems supporting these requirements and so on. It can be used in any business or information system engineering settings including both forward (from business requirements to data and process development) and reverse engineering (from legacy systems to business policy).

Relevant Publications


Access
http://www.omilab.org/web/ekd/

Contact
Prof. Dr. Pericles Loucopoulos
Loughborough University, United Kingdom
E-Mail: P.Loucopoulos@lboro.ac.uk
Evaluation Chains

Enterprise modelling is esteemed as an excellent methodology to evolve and manage the business processes and the IT-assets so they can fully enfold their power in a company. Nevertheless in practice, typical enterprise models with thousands of partial models are very tedious to create and difficult to update. This is caused by the numerous factors and intermediate results that influence the modelling processes. To control them a dedicated method has been developed based on ‘evaluation chains’.

The ‘evaluation chains’ incorporate the diverse factors of the enterprise modelling process. They start with business goals, then derive essential modelling goals and link them with the crucial factors to realize the desired outcomes. Although the ‘evaluation chains’ initiative is rooted in the domain of enterprise modelling, also other complex and typically long-term ventures of companies and organisations can be evaluated and improved by the evaluation chain method.

The integrated approach to evaluate the economics of enterprise modelling serves to objectify decisions rather thoroughly. Until now these decisions could usually only be based on belief or simplified reasoning. The framework provides organisations with a pragmatic foundation to control modelling activities and learn from the analysis of intermediate and business results.

Relevant Publications

Access
http://www.omilab.org/web/ec/

Contact
Prof. Dr. Frank Wolff
Duale Hochschule Baden-Württemberg Mannheim, Germany
E-Mail: wolff@dhbw-mannheim.de

Website: http://www.dhbw-mannheim.de
HCM-L  Human Cognitive Model Language Modeller

HCM Modeller is developed and realized as part of the HBMS (Human Behavior Monitoring and Support) project. HBMS aims at helping individuals to manage their day-to-day activities by assisting them in using their own former related knowledge when needed. This knowledge is learned by observation, activity recognition, modelling and model integration. The modelling language HCM-L was developed, according to the OMi approach, as a domain specific language based on common fundamentals. HCM-L is lean (few and powerful concepts) and is intuitively understandable by users of the AAL (Ambient Assisted Living) domain, e.g., by psychologists or care givers.

HCM-L Modeller provides a comprehensive modelling tool for HCM-L based on ADOxx. In particular, HCM-L modeller covers the entirety of HCM-L concepts, including syntax, semantics and consistency checking. In the next development stage HCM-L Modeller modules will support complex scenarios, model optimization and advanced reasoning techniques. Various functionalities provided by ADOxx will also be available at the HCM-L modeller interface: archiving, analyses, querying, creation of tables, user rights management, ready-made solutions for publishing opportunities, and graphical tool support for the representation and manipulation of objects.

Relevant Publications

F. AlMachot, H.C. Mayr, J. Michael, Behavior Modeling and Reasoning for Ambient Support: HCM-L Modeler, to appear in (A. Moonies et al., Eds.), Proc. of 27th Int. Conf. on Industrial, Engineering and Other Applications of AIS, Taiwan, June 2014

Contact
Dr. Fadi Al Machot
Alpen-Adria-Universität Klagenfurt, Austria
E-Mail: fadi.almachot@aau.at
ADOxx® Horus

“The Horus modelling method for business process engineering comprises steps for an integrated modelling of business processes and for the improvement and further use of the created models (Schönthaler et al., 2012). The application of this method always considers a business process in terms of its organisational environment. This is realized by using a set of interrelated models describing different aspects of the business process which are part of the Horus modelling method.

A special feature of the Horus modelling method is the use of XML nets for process descriptions. XML nets are high-level Petri nets where tokens represent identifiable objects (Lenz and Oberweis, 2003). The places are typed by an XML schema whereby places can be interpreted as containers for XML documents describing relevant process objects. Using XML nets enables the integrated modelling of structured business objects and object flows as well as process simulation.” (Source: Fill et al., 2013)

References


Access
http://www.omilab.org/web/adoxx-horus-method/

Contact
Prof. Dr. Andreas Oberweis
Karlsruhe Institute of Technology (KIT), Germany
E-Mail: oberweis@kit.edu
IMP2.0. Immigration Policy

EU governmental organizations are seeking effective ways of monitoring, tracing and auditing movement of illegal immigrants, while at the same time facilitating legal immigrants to move freely or seek employment within the EU. However, EU countries have significant organisational, legal, technological, societal and political differences in the way they adopt migration policies, which is a serious setback to the effective monitoring and management of immigration flows.

ImmigrationPolicy2.0 will take advantage of state-of-the-art ICT technologies, Business Process Modelling, the semantic web and policy models to provide a motivating and user-friendly environment empowering citizens participation in the policy making process. Accordingly the project will pilot services targeting both citizens and decision makers, in particular:
(1) empower public administrators, politicians and decision makers to work and collaborate towards a harmonized EU migration policy, (2) facilitate societal groups of immigrants or individual legal immigrants in order to be able to get informed and evaluate various migration-related proposals and policies, while also expressing their feelings and opinions about the policies under development.

Relevant Publications
All relevant publications are available at http://www.immigrationpolicy.eu, in particular D2.2.: Definition of Services and Service Bundles, pp. 39-51

Access
http://www.omilab.org/web/imp20/

Contact
Prof. Dr. Nineta Polemi
University of Piraeus, Greece
E-Mail: dpolemi@unipi.gr
iSTAR

The i* Method has been developed at the University of Toronto and facilitates the showing of social relationships and their analysis. The name i* stands for distributed intentionality, referring to the premise that actors are intentional and that they do not necessarily share common goals (Samavi, 2009).

The i* Method offers two main conceptual parts: (1) the Strategic Dependency Model and (2) its refinement into a Strategic Relational Model. These two parts are also a natural approach how to map existing information and further detail the different relationships. One could say it is a „top down approach“ according to the procedure setting-up the models.

**Relevant Publications**


**Access**

http://www.omilab.org/web/istar/
http://www.upc.edu/gessi/istar/

**Contact**

**Dr. Margit Schwab**  
University of Vienna, Austria  
E-Mail: margit.schwab@dke.univie.ac.at

**Prof. Dr. Xavier Franch**  
Universidad Politécnica de Catalunya (UPC), Spain  
E-Mail: franch@essi.upc.edu

Website: http://www.istarwiki.org/
JCS Japanese Creative Services

This project focuses on the in-depth analysis towards the value creation seen inside the Japanese Creative Services. The areas that would be examined are namely the areas of Japanese food, Shinise (long-standing organisations), Traditional Cultural Activities, and „Cool Japan“. In order to represent these value co-creation patterns as an exploitable item, certain approaches such as the meta-modelling approach are applied alongside new approaches inside the use of technology. This approach helps to conceptualize a fitting model method in an explorative and iterative way. Taking those aspects in mind, JCS focuses its research based on the following models: the Service Value Chain Model, the Service Evaluation Model, and the Service Interaction Model. They represent the visualisation of knowledge flow, the visualisation of data from customers, and the stimulation of interaction in a service encounter.

Related Publications


Detailed publication list of Prof. Hara:
http://www.gsm.kyoto-u.ac.jp/hara/paper-e.html

Access
http://www.omilab.org/web/jcs/

Contact
Prof. Dr. Yoshinori Hara
Kyoto University, Japan
E-Mail: hara@gsm.kyoto-u.ac.jp
MELCA  Method for Large Collaborative Applications

The methodology focuses on developing collaborative environments for complex systems. It emphasizes large scale collaboration now increasingly important in business units and agency collaborations and in developing smart city applications. The methodology supports the trend towards modelling systems that evolve in increasingly complex environments and ways to define non-functional requirements for such systems. It focuses on the evolution of integrated systems of systems and the collaboration in business activities to integrate systems into their social and technical environment.

The design and modelling method described here focuses on processes that support knowledge sharing and creation through collaboration. It identifies the social structures and the communities that must be supported in such processes and tools needed to support such communities.

Based on the Book


Access
http://www.omilab.org/web/melca/

Contact
Prof. Dr. Igor Hawryszkiewycz
University of Technology Sydney, Australia
E-Mail: Igor.Hawryszkiewycz@uts.edu.au
Enterprise models integrate representations of an organisation’s action system with those of its information system. Thereby they do not only contribute to integration and reuse, but also support analysing, planning and managing the firm. In addition to that, enterprise models serve as a conceptual foundation for implementing enterprise systems. To support the development of powerful enterprise models, MEMO offers a framework that allows structuring an enterprise to a high degree of abstraction. It corresponds to abstractions common in management science and software engineering. The framework suggests three main perspectives on the enterprise: strategic, organisational, and information system. The perspectives themselves are further detailed by different aspects (resource, structure, process, and goal). To support conceptual models that are semantically rich and intuitive, MEMO includes an extensible set of DSML. The various partial models that form an enterprise model are integrated through a common meta meta-model.

Related Publications


Access

http://www.omilab.org/web/memo-orgml-bp/

Contact

**Prof. Dr. Ulrich Frank**
University Duisburg-Essen, Germany
E-Mai: ulrich.frank@uni-due.de

**Prof. Dr. Stefan Strecker**
University Hagen, Germany
E-Mai: stefan.strecker@FernUni-Hagen.de
E-Government refers to the use of information and communication technologies (ICT) to support and simplify internal and external processes. In Austria, the “portal group protocol” (PVP) is an important concept in the E-Government system, which enables participating organisations to use other organisation’s web applications in a secure manner. PVP provides a federated identity management scheme, which allows government units to use their local user administration and access control processes and systems to be used with external applications.

Our approach is based on the application of model-driven architecture (MDA) paradigms (Frankel, 2010) in the design and implementation of security requirements in E-Government applications. In the MDA approach, the security requirements are specified on an abstract level which reflects high level specifications defined by legislation, organizational internal regulations, or the result of a threat analysis. Afterwards, the higher level specifications are translated into software artefacts by automation tools, which can be directly deployed in the actual E-Government environment. The development of this modelling method is the important part of the whole scenario. We started from using an old Eclipse-based modelling language, adapted it for our project needs and improved it by using the ADOxx® meta-modelling platform.

Relevant Publications
Z. Ma, Ch. Wagner, T. Bleier, Model-driven security for Web services in E-Government system: ideal and real.

Access
http://www.omilab.org/web/moses4egov/

Contact
Dr. Zhendong Ma
Austrian Institute of Technology (AIT), Austria
E-Mail: zhendong.ma@ait.ac.at
OKM Open Knowledge Models

Open Knowledge Models is a community which is interested in improvements of graphical knowledge modelling. The knowledge models cover all aspects of knowledge about an enterprise.

The community discusses changes and extends modelling languages, methodology, algorithms/services. In particular, it extends the business process modelling with special-purpose graphical knowledge models covering adaptive case modelling, business rules, and semantics of data models.

Relevant Publications

Access
http://www.omilab.org/web/okm/

Contact
Prof. Dr. Knut Hinkelmann
University of Applied Sciences
Northwestern Switzerland FHNW
E-Mail: knut.hinkelmann@fhnw.ch

Prof. Dr. Holger Wache
University of Applied Sciences
Northwestern Switzerland FHNW
E-Mail: holger.wache@fhnw.ch
PETRI NETS

The main goal of this project is the implementation of a simulation tool which provides the user with the capability of describing or studying any information system with the use of Petri Nets through its simulation. The developed tool aims, not only to provide the user with the means of designing a Petri Net, from a modelling point of view, but also with the means of examining, whether the designed Petri Net fulfills the correctness criteria or not.

The cornerstone of the implementation of the Petri Nets simulation tool is the book “Understanding Petri Nets” by Wolfgang Reisig which serves as the basis of Petri Nets, providing a good understanding of the mathematical background of the Petri Nets and all the means for identifying and implementing the basic mechanisms which ensure the correctness of an implemented Petri Net.

**Based on the Book**

**Access**
http://www.omilab.org/web/petrinets/

**Contact**
**Prof. Dr. Wolfgang Reisig**
Humboldt University Berlin, Germany
E-Mail: reisig@informatik.hu-berlin.de

Website: http://www2.informatik.hu-berlin.de/top/pnene_buch/index.php
Quality management is of utter importance for companies facing constantly changing customer requirements and growing market transparency. Existing methods of quality management (e.g. Six Sigma, TQM, etc.) enable enterprises to optimize their business processes. This is achieved by the application of method-specific quality techniques. However, regarding the variety of existing quality methods and techniques, most responsibles are overstrained in selecting an appropriate approach for realizing a certain quality goal.

The “RUPERT - Regensburg University Process Excellence and Reengineering Toolkit“ closes this gap. It provides a manageable set of quality techniques that have proven very helpful and beneficial for manifold quality management projects. The techniques are logically arranged as a “roadmap” which coordinates their structured and systematic application. The roadmap covers all steps of a quality management project. Each technique is easy to handle and learn.

Relevant Publications

Access
http://www.omilab.org/web/qm-roadmap/

Contact
Dr. Florian Johannsen
Universität Regensburg, Germany
E-Mail: Florian.Johannsen@wiwi.uni-regensburg.de

Prof. Dr. Susanne Leist
Universität Regensburg, Germany
E-Mail: Susanne.Leist@wiwi.uni-regensburg.de
SDBD Semantic Database Design

The SDBD method assumes that the primary purpose of the future system is to automate current or planned activities of the enterprise. The method assumes – as do all database design methodologies – that different views of the enterprise, conflicts, and political differences will be resolved during the database design process.

SDBD is applied during the design of database with its applications.

Relevant Publications


Access
http://www.omilab.org/web/sdbd/

Contact
Prof. Dr. Nick Roussopoulos
University of Maryland, United States
E-Mail: nick@cs.umd.edu

Website: http://www.cs.umd.edu/~nick/projects/methodology.html
Secure Tropos

The Secure Tropos methodology is based on the principle that security should be analysed and considered from the early stages of the software system development process and not added as an afterthought. As such, the methodology provides a modelling language, a security-aware process and a set of algorithms to support the analysis and consideration of security from the early stages of the development process.

The Secure Tropos language consists of a set of concepts from the requirements engineering domain, and in particular Goal-Oriented Requirements, such as actor, goal, plan and dependency enriched with concepts from security engineering such as security constraint, security objective and attacks.

The process in Secure Tropos is one of analyzing the security needs of an organisation by identifying security constraints and modelling relevant security objectives and security mechanisms to satisfy those constraints. In parallel, threat analysis is performed both at organisational and technical level. Relevant security attack scenarios are identified and modelled to support threat analysis.

Relevant Publications


Access
http://www.omilab.org/web/secure-tropos/

Contact
Prof. Dr. Haris Mouratidis
University of Brighton, United Kingdom
E-Mail: h.mouratidis@brighton.ac.uk
SeMFIS Semantic-based Modelling Framework for Information Systems

The aim of the Semantic-based Modelling Framework for Information Systems (SeMFIS) is to allow for the semantic enrichment of conceptual modelling languages that represent a particular knowledge area. For this purpose it provides configurable meta-models, mechanisms and algorithms that extend the modelling language of the knowledge area and enable the user to apply advanced semantic processing.

Due to the flexible approach of SeMFIS, it can be easily adapted to arbitrary knowledge areas. The current implementation of the SeMFIS framework provides an exchange mechanism with the Protégé toolkit developed by Stanford University to integrate data from OWL ontologies in the modelling framework and make it available for the annotation of model elements.

The available prototype is based on a knowledge area from business informatics to demonstrate the applicability of the approach. Knowledge areas that can be expressed using (visual) meta-modelling techniques and that benefit from semantic processing functionalities, include: Semantic Business Process and Workflow Management, Semantic Enterprise Architecture Management, Semantic Performance Management.

Relevant Publications


Access
http://www.omilab.org/web/semfis/

Contact
Priv.-Doz. Dr. Hans-Georg Fill
University of Vienna, Austria
E-Mail: hans-georg.fill@univie.ac.at

Website: http://homepage.dke.univie.ac.at/fill
SOM Semantic Object Model

SOM is a comprehensive methodology for modelling business systems. The acronym means Semantic Object Model, expressing that the SOM methodology is both fully object-oriented and designed to capture business semantics explicitly. The SOM methodology is based on concepts of systems theory. SOM supports the core phases of business engineering, such as analysis, design, and redesign of a business system. A business system is an open, goal-oriented, socio-technical system. Thus the analysis of a business system focuses on the interaction with its environment, goal pursuing business processes and resources. Moreover, the dynamic behavior of a business system requires analysis of properties such as stability, flexibility, and complexity.

The backbone of the SOM methodology is an enterprise architecture using different perspectives on a business system via a set of models. These models are grouped into three model layers referring to a business plan, business process models and resource models. Each layer describes the business system as a whole, but with respect to a specific perspective on the model. In order to reduce complexity, each model layer is subdivided into several views, each focusing on specific aspects of a model layer.

**Relevant Publications**

**Access**
http://www.omilab.org/web/som/

**Contact**
Prof. Dr. Elmar Sinz, Domenik Bork
University of Bamberg, Germany
E-Mail: elmar.sinz@uni-bamberg.de
VLML  Very Lightweight Modelling Language

VLML is based on the idea of bringing together
(1) the expressive power and ease of natural language,
(2) rapid and easy sketching, and
(3) the structuring, analysis, validation power of models.
VLML is most effective in early requirements engineering (RE).

Relevant Publications
M. Glinz, Very lightweight requirements modeling. In Requirements Engineering Conference (RE), 2010 18th IEEE International, 27 September 2010 - 01 October 2010


Access
http://www.omilab.org/web/vlml/

Contact
Prof. Dr. Martin Glinz
University of Zürich, Switzerland
E-Mail: glinz@ifi.uzh.ch
ADOxx® Platform
## ADOxx® in Research - Selected Projects

### Collaboration in Factories of the Future

- [adapt4ee](http://www.adapt4ee.eu)
- [ComVantage](http://www.comvantage.eu)
- [e-SAVE](http://www.e-save.eu)
- [Bivee](http://www.bivee.eu)

### eGovernment and Interoperability

- [immigration policy](http://www.immigrationpolicy2.eu)
- [LD-CAT](http://www.ldcastproject.com)
- [FIT](http://www.boc-group.com/research)
- [GENESIS](http://www.boc-group.com/research)

### Service and Software Architecture

- [akogimo](http://www.akogimo.org)
- [BREIN](http://www.eu-brein.com)
- [MoSeS eGov](http://www.boc-group.com/research)
- [MOST PROJECT](http://www.boc-group.com/research)

### Technology Enhanced Learning

- [next tell](http://www.next-tell.eu)
- [MATURE](http://www.mature-ip.eu)

### Personalisation and Mobile Mass Data in Security and eHealth

- [FOCUS](http://www.focusproject.eu)
- [eHealthMonitor](http://www.ehealthmonitor.eu)

### Intelligent Information Management for Enterprises

- [AsIsKnown](http://www.asisknown.org)
- [plug-IT](http://www.plug-it-project.eu)
ADOxx® Development Environment

ADOxx® is a development and configuration platform for implementing full-fledged modelling tools.

It supports the implementation of individual modelling languages, modelling procedures and corresponding functionalities like visualisation, simulation, queries or transformation.

ADOxx® supports method- and software-engineers in developing their own modelling tools to create “model value” for the end users in form of human or computer interpretable models.

Theoretic background is the Generic Modelling Method Specification Framework, which defines the modelling method elements. ADOxx® applies the meta-modelling approach, thus enabling quick development of professional modelling tools. Implementation background is a configuration approach for the modelling language and a scripting approach for the functionalities. Resulting modelling tools are compiled from vast available functionalities like persistence, user management, a complete model editor, querying, simulation and import/export transformation as well as from scripted new functionalities and individual add-on implementations.

The development steps are:
- Download ADOxx®
- Define model structure following the tutorial
- Configure and script functionality following the tutorial
- Build a new modelling tool on adoxx.org
- Receive installation package for the new modelling tool

Access
http://www.adoxx.org/

Contact
Email: info@adoxx.org
**Glossary** *

The Open Models Laboratory environment understands the terms in practical use as follows:

**Meta²-Model**
A meta²-model defines the general concepts and their relations, which are available to define a modelling method. The meta²-model is the highest abstraction on the hierarchy on the stack of reality, model, meta-model and meta²-model.

**Meta-Model**
A meta-model is a result of an abstraction process to reduce domain complexity and enable management and handling of artefacts by humans and machines.

**Model**
A model is the result of a transformation process using formalisms. Models can be divided in two main categories: iconic and linguistic models. A model is the abstraction of the reality.

**Conceptual Model**
Conceptual models are a representation of the reality constructed for a specific purpose, which can be operationalized.

**Modelling Method**
A modelling method is a mean to express models using its ingredients modelling language, modelling procedure and mechanisms & algorithms.

**Modelling Language**
A modeling language is a part of a modeling method consisting of syntax, semantic and notation, used to make models explicit.
Glossary

System under Study
A System under Study (SUS) is a part of the world considered relevant for the subject under investigation.

FDMM: Formalism for Describing Meta-Models and Models
FDMM is a formalism for specifying modelling method requirements. It consists of static and dynamic parts and regards classes and relation classes as object types.

Class in context of Meta-Modelling
A class is a construct that is used as a template to create objects of that class. The objects of a class are alternatively called “instances”.

Relation Class in context of Meta-Modelling
A relation class is a construct that is used as a template to create relations between objects. A relation is always a directed connection between objects, i.e. each relation has a from-side and a to-side.

Attribute in context of Meta-Modelling
An attribute is a property of a modelling construct such as a model, class or relation. Each attribute has a type and a value.

*Any suggestions on the Glossary are welcome and should be submitted to events@omilab.org
Contributing Institutions