Fişa suspiciunii de plagiat / Sheet of plagiarism's suspicion	Indexat la: 00164/00

Opera suspicionată (OS)	Opera autentică (OA)
Suspicious work	Authentic work

OS	STOICA, Eduard, A. and BRUMAR, Bogdan, A. Advanced modelling for e-learning platforms. In: *Proc. of the 11th WSEAS International Conference on Computers. Agios Nikolaos, Crete Island, Greece*. July 26-28, 2007. p.163-167.
OA	KARAGIANNIS, D. and KÜHN, H. Metamodelling platforms. In: Bauknecht, K.; Min Tjoa, A and Quirshmayer, G. (Eds.) *Proc. of the Third International Conference EC-Web 2002 – Dexa 2002*, Aix-en-Provence, France. Sept.2-6, 2002. LNCS 2455. Berlin, Heidelberg: Springer-Verlag, p.182.

Incidența minimă a suspiciunii / Minimum incidence of suspicion	
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Fişa întocmită pentru includerea suspiciunii în Indexul Operelor Plagiate în România de la
Sheet drawn up for including the suspicion in the Index of Plagiarized Works in Romania at
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Notă: p.72:00 semnifică textul de la pag.72 până la finele paginii.

Notes: p.72:00 means the text of page 72 till the end of the page.

Advanced modelling for e-learning platforms

EDUARD A. STOICA,
Communication Centre,
Lucian Blaga University of Sibiu,
Str. Victoriei 10, 550024,
Sibiu, ROMANIA
eduard.stoica@ulbsibiu.ro

BOGDAN A. BRUMAR,
Department of Computer Science,
Lucian Blaga University of Sibiu,
Faculty of Sciences
Str. Dr. Ion Ratiu 5-7, 550012,
Sibiu, ROMANIA
bogdan.brumar@ulbsibiu.ro

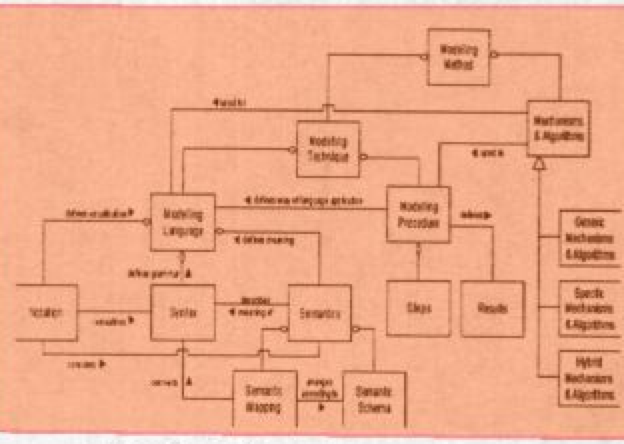
Abstract: - The state-of-the-art in the area of modelling of organisations is based on fixed metamodels. This paper gives an introduction into metamodelling concepts and presents a generic architecture for metamodelling platforms. Three best practice examples from industry projects applying metamodelling concepts in the area of business process modelling for e-business, e-learning, and knowledge management are presented. Due to rapid changing business requirements the complexity in developing applications which deliver business solutions is continually growing. To manage this complexity, environments providing flexible metamodelling capabilities instead of fixed metamodels has shown to be helpful. The main characteristic of such environments is that the formalism of modelling -the metamodel -can be freely defined and therefore be adapted to the problem under consideration. Finally, an outlook to future developments and research directions in the area of metamodelling is given.

Key-Words: - knowledge-management, metamodelling approaches, metamodelling architecture, mechanism, e-learning.

1. Metamodelling Concepts (p2)

1 Introduction

Modelling methods consists of two components: a modelling technique, which is divided in a modelling language and a modelling procedure, and mechanisms & algorithms (shorten: mechanisms) working on the models described by the modelling language (see figure 1). The *modelling language* contains the elements, with which a model can be described. A modelling language itself is described by its syntax, semantics, and notation. The *modelling procedure* describes the steps applying the modelling language to create results, i.e. models. In this paper we define a metamodel as a model of a modelling language. Applying language theory for levelling languages, the result is a hierarchy of languages, meta-languages etc. The hierarchy of the corresponding models, metamodels etc. is described in next section. This gives a short overview of the definition of metamodelling approaches and last section describes different roles in metamodelling. This is fig.1-Components of modelling methods :



2. Modelling Hierarchy (p3)

2 Modelling Hierarchy. Roles in metamodelling.

The creation of a metamodel is also done by using a modelling language. This modelling language is called the *metamodelling language*. The model defining the metamodelling language is the meta-metamodel or *meta*^{2}*-model*.

Building language levels is not limited to a certain level. To "finish" the modelling hierarchy, it is important to find a useful level of abstraction. To use concepts such as "thing", "property" and "relation" may be helpful, but lack of semantics especially if the language of the "finishing" level should provide the foundation for implementing the lower levels. In practice a four layer metamodel architecture is widely used such as shown in figure 3 [e.g. 2, 4, 5, 9, 11]. The lowest level is the original, from which a model is build on the second level. Often the lowest level is seen as runtime data, but we prefer to use the expression "original" because its not always runtime data from which a model is build. The highest level in the four layer architecture is the meta-level, which describes the concepts for building metamodels.

3 Roles in Metamodelling pl

Considering the elements of a modelling method described in figure 1, different roles in administering and using such platforms can be distinguished.

The *method engineer* is responsible for a consistent and properly defined modelling method. Additional to his technical skills, the method engineer often has professional skills in an application domain. Application domains can be divided into verticals such as financial services, telecommunications, public administration, and manufacturing and horizontals such as business process modelling, application development, workflow management, and knowledge management.

The *language engineer* defines the modelling language. He is responsible for an adequate definition of the syntax, semantics, and notation.

The *process engineer* is responsible for the definition of the modelling procedure. Often the process engineer is an expert in applying modelling languages and has considerable experiences in project management and project execution.

The *tool engineer* configures the mechanisms of a metamodelling platform for particular metamodels. If additional mechanisms are needed, he is the responsible for implementing these mechanisms.

The *infrastructure engineer* provides the necessary IT infrastructure to run a metamodelling platform and to integrate the platform into existing infrastructures.

The *method user* applies the modelling method by using the platform. He creates models by using the modelling language, following the modelling procedure and applying the available mechanisms.

4.2 E-learning (p 10) - 11

3 E-Learning

The *ADVISOR* project, which was finished in the year 2000, dealt with *new ways of learning and training methods* in the field of business process re-engineering in the insurance sector and was the successor of REFINE [11]. Frequent changes in business processes, resulting from new products and the adaptation of existing products to new market situations, require tool-based methods in order to provide individuals and teams quickly with the appropriate information for their tasks. In addition, measures for (re-)training staff should be derivable as quickly as possible. In order to capitalise on employees' knowledge, creativity and experience, they should be enabled to provide input to their company's knowledge in a systematic and motivating manner. Starting from these business needs, three main issues were addressed in the ADVISOR project:

a. Improved access for employees to company and performance related information

b. rapid, semi-automatic production of training materials

c. knowledge acquisition for organisational learning.

The first objective of ADVISOR was to provide methods and tools which allow for a holistic approach to information access, training and learning by closely coupling business re-engineering measures with training/learning measures. The second objective was to improve upon the psychological and organisational measures which are necessary to change the attitude towards continuous learning and to lead to better acceptance of new technology and processes. Both objectives were realised on three levels of learning: individual, team, and organisation.

In order to realise these objectives, the project built upon existing business process management methods and tools, which were extended by metamodelling in order to specify information and training needs for employees and to capture employees' experiences with business procedures and training measures. Extensive trial studies with and formative evaluation of the extended technology in the insurance companies accomplished the second main objective.

4.3. Knowledge Management (p 11)

4 Knowledge Management

There is a significant gap between the importance of knowledge management and the realisation on all levels in an organisation: There are many surveys that show that knowledge management is recognized as a management task with high priority. When looking at concrete projects and initiatives, however, knowledge management receives much less attraction. Lack of time is a main reason that knowledge workers mention when asked why they do not support knowledge management.

To overcome these barriers the *PROMOTE* project [12], which will has finished in autumn 2002 with two industrial trial cases, provides solutions to two