

# The Contributions for the Poster Session

Lars Marius Garshol<sup>1</sup> and Lutz Maicher<sup>2</sup>

<sup>1</sup> Bouvet ASA, Oslo, Norway  
larsga@bouvet.no, <http://www.ontopia.net>

<sup>2</sup> Topic Maps Lab Leipzig  
University of Leipzig, Johannisgasse 26, 04103 Leipzig, Germany  
maicher@informatik.uni-leipzig.de, <http://www.topicmapslab.de>

**Abstract.** This paper contains the abstracts of the posters that were presented at the TMRA 2009 conference.

## 1 TMQL4J – A Javabased TMQL Engine

**Sven Krosse**

Topic Maps Lab Leipzig, University of Leipzig, Johannisgasse 26,  
04103 Leipzig, Germany  
krosse@informatik.uni-leipzig.de

In the present the technology of topic maps are used within different business sectors and applications. The main problem of such applications is the complexity of the database modelled with the topic map paradigm. Because of these market requirements of a powerful and meaningful query languages, like TMQL, become more important. TMQL4J is a javabased TMQL engine, which contains different components to support the full process of parsing and interpreting TMQL statements. The engine implements the current draft of TMQL, which is far from the final standard, because of that we have to discuss the benefits and disadvantages of the current draft.

## 2 Towards Topic Map-based e-Learning Environments

**Matthias Neubauer, Christian Stary, and Stefan Oppl**

Johannes Kepler University Linz, Freistädter StraSse 315, 4040 Linz, Austria  
{matthias.neubauer, christian.stary, stefan.oppl}@jku.at

E-learning environments target towards individual capacity building and knowledge generation. Factors, such as learning style, existing competencies, and learning experience, influence that process, and consequently, the development of e-learning environments. Besides cognitive effort mainly social processes determine the transfer und generation of knowledge. Multidimensional e-learning design spaces do not only allow structuring user needs, application context, and implementation concepts, but also to trace design rationales and decisions from

various perspectives. Of particular interest is the mutual context of content and communication elements, as it represents the individualization of e-learning activities.

In order to represent content, individualization and communication facilities, including their mutual context, a polymorph representation scheme is required. Topic Maps are a standardized means to represent polymorph structures in a comprehensive way. Their use and relevance in e-learning environments has already been addressed. For instance, Topic Maps enable organizing learning-objects as well as representing, organizing and reusing of learning modules. Additionally, Topic Maps allow adding meta-data to existing information resources. So far, few approaches exist enhancing the content perspective with social or user endeavors in the course of learning. Such a step may influence user acceptance of e-learning environments given the traceability of didactic developments.

We describe elements and the structure of design spaces for learner-centered developments. Our work is part of developing an e-learning environment that supports knowledge generation in an individualized way. We propose a mutually tuned design space for a Topic Map-based content and communication structure. It enables interactive and flexible usage.

### **3 Implementing TMQL for Teaching: The Straightforward Approach With Emphasis on Understandability and Modularity**

**Benjamin Bock and Sven Krosse**

Topic Maps Lab Leipzig, University of Leipzig, Johannisgasse 26,  
04103 Leipzig, Germany  
`{bock,krosse}@informatik.uni-leipzig.de`

There are a lot of voices claiming, the current TMQL draft is too hard to understand and to implement. We argue that it is not the content but the presentation thereof. For a production implementation the code should be optimized for speed, scalability and preferably direct access to the storage layer. An educational solution should be as understandable as possible. The basis for understanding should be knowledge of the TMDM, represented for a programmer by the TMAPI interfaces. Therefore we implement TMQL on top of the TMAPI interfaces. The basic thinking in TMQL is the path language: navigation between sets of constructs by the means of axes. The most straightforward implementation of this concept is the provision of set classes with navigation methods. The navigation over multiple axes in TMQL is translated to chained calls of methods. With this axes implementation on top of TMAPI, the concept of path style TMQL can fully explained. The lexing and parsing of canonical TMQL and its one to one translation to method calls with arguments is easy. The concepts of select style and FLWR style should be taught in extra lessons, exploiting existing knowledge of the inspiring technologies SQL and FLWR.

## 4 CouchDB and Topic Maps

**Hans-Henning Koch**

Mainzer StraSse 2a, 04109 Leipzig, Germany

`phi04bib@studserv.uni-leipzig.de`

CouchDB is a document-oriented database management system that can be accessed by a REST interface. In contrast to relational databases, the data is not split up among several tables but each set is stored in a JSON document consisting of key-value pairs, making a scheme obsolete. Views, which are JavaScript functions traversing all documents, are the tools that allow querying with something else than a document's ID and getting results other than a whole document.

However, views are not able to produce results whose values are composed of more than one document. In such cases, more than one query is needed. Therefore, the queries stay relatively simple which is in favor of CouchDB's main goal: scalability.

In my bachelor thesis at the University of Leipzig, I am writing a topic map engine with a CouchDB backend. The evaluation will mainly focus on performance and scalability, which can be expected to be quite good due to the design of CouchDB.