

## **The Toolkit for Managing Knowledge Repositories (The Methods and Tools for the Concept Store Based Knowledge Representation)**

### Project summary

The goal of the research and development expert team, co-operating during the implementation of the project, is to create a tool system, which is capable of generating, developing, analyzing and managing knowledge bases. Every organizational (scientific field, subject field, corporate, institutional) information system is considered to be a knowledge base, which has its primary goal to record, to methodize, to recycle and to distribute the knowledge, generated within the organization. An experienced concept store model is going to be applied to store the ordered knowledge. The originally disordered or partially disordered information (thus the information carrier electronically stored document, data structures and data bases) is made to be effectively manageable by the knowledge, represented by the concept store.

The general steps of the creation of a knowledge base:

- Look at the subject field knowledge of an “organization”, available in various forms (such as thesauri, glossaries, standards, descriptions, analyses).
- Build a consistent concept store form it, which represents professionalism at high levels.
- Provide the opportunity that the constantly arriving new information can be consistently integrated into this concept store.
- Provide, that the stored knowledge could be easily and naturally searched, and surveyed in the concept store.
- On the basis of the knowledge stored in the concept store, make the system capable of the content-based automatic classification and representation of the documents.

It was recognized during the preparations, that these goals could not be achieved with a single, uniform tool. For this reason a tool system is planned to be developed, from which – within an organization – the system, implementing the goals, configured due to the demands, can be generated within a rational schedule.

Within the boundaries of this project

- We aim to explore the specific features of the concept store based knowledge representation;
- We will define and will make measurable certain characteristics of the concept databases such as consistency, completeness, closeness, coherence and balance;
- We will examine the interrelations of these characteristics, and their dependence upon the topology of the concepts;
- We will carry out research on the formalization of the definitions of the concepts in order to make commensurable the alternative defining options residing in the definitions and in the topology of knowledge bases;
- Possessing the out coming results, we will work on with the formation of the conceptual maps of texts;
- Methods will be worked out for the contextual exploration of electronically stored natural language texts not only by statistical but also by topological methods;
- The correctness of the research conception will be continuously monitored on the available concept data bases.

*Theoretical and methodological results of the project:*

- It will be achieved to detect absences and errors in the concept databases, furthermore certain parts of those absences and errors might be automatically corrected;
- We will be able to understand what a concept data base reaches an ideal state for;
- We will explore those methods, by which the deviation of a discrete database from the ideal state can be detected and measured;
- Methods will be worked out to decrease and to eliminate deviations;
- The thesauri and concept stores of similar subject fields will become commensurable;
- Model(s) will be set up for the concept store based formalization of the concepts/definitions;
- The conceptual models and conceptual maps will establish the innovative ways of automatic indexing and context exploration of electronically stored texts.

*Developmental results of the project:*

- The modularly constructed program system, capable of implementing the elaborated methods;
- The integration of the new system elements into a document managing system accomplished in an earlier project.

*Results achieved by the concept store knowledge>*

- The establishment of a general linguistic concept store system;

The establishment of three subject field concept stores (in a selected field of economy, technology and of linguistics).