

## Guest-editorial

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# Knowledge engineering in an intelligent environment

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The concept of knowledge engineering, starting with its deep association with information management, still carries multiple, even conflicting interpretations. The most popular one being a structured field that encompasses processes and techniques for knowledge discovery, indexing, organization, and fusion. Where the classical approach to knowledge engineering and management tends to rely on techniques like concept maps, hypermedia and object-oriented databases, computational intelligence techniques for core knowledge engineering activities like knowledge discovery, organization, and knowledge fusion are rapidly gaining popularity. In the evolved scenario, knowledge engineering may be interpreted as a field that deals with acquisition, storage and application of knowledge for a range of knowledge intensive tasks – whether it is decision support, learning or research support. This special issue on ‘Knowledge Engineering in an Intelligent Environment’ is an attempt to present some of the latest theoretical and application developments in the field of knowledge engineering. This special issue comprises of four papers on different aspects of knowledge management and is organized as follows.

In the first paper Jermol et al. present a virtual enterprise model used in networking international expert teams from academia and business in the area of data mining and decision support. The knowledge manage-

ment aspects of business intelligence as implemented in the virtual enterprise model are analyzed in terms of appropriate business organizational and management models. Further, construction of a knowledge map of the available tools, expertise and collaborative work procedures, cognitive authority in collaborative work management, as well as the network intelligence aspect of the virtual enterprise endeavor are discussed. Authors made use of a European virtual enterprise as a case study to illustrate some of the lessons learned.

Messina et al. in the second paper discuss a rigorous approach to engineer the knowledge within intelligent controllers. The key to real-time intelligent control lies in the knowledge models that the system contains. Authors identified three main classes of knowledge namely parametric, geometric/iconic, and symbolic and examples are illustrated. Each of these classes provides unique perspectives and advantages for the planning of behaviors by the intelligent system.

Since the early eighties, there has been a gradual shift in the focus of development of knowledge based systems away from the rapid prototyping techniques that had previously prevailed, toward more structured methodologies, including model based reasoning and modeling of knowledge domains. The default standard for the development of these systems has become the CommonKADS methodology. In the third paper

Crowther et al. assesses the feasibility of applying the CommonKADS methodology to the knowledge base of an existing legacy system, the subsequent re-useability of knowledge and domain schema that results from the process and the development of collaborative domain ontologies. The resulting model set is assessed to determine its suitability to form the basis of an ontology for electroplating in the manufacturing industry.

In the last paper Mesenzani et al. summarizes the work done in two ESPRIT Projects in the knowledge management area: Klee & Co (Knowledge and Learning Environments for European & Creative Organisations, started in 1998 and ended in 2000) and MILK (Multimedia Interaction for Learning and Knowing, started in early 2002 and expected to be closed by 2004). Klee & Co. developed a web-based prototype allowing users to view knowledge in its context: the main feature of the Klee & Co. system is the "view with context". MILK could support users in any working situation, even mobile and social situations. It means a strong effort in interface and system design in order to create different technological platforms for PC environment, social environment and mobile environment. This paper focuses on the main outputs from the first stage of the MILK project to show the relevance of the

integration between users, technology developers and designers visions for a successful knowledge management solution.

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The Guest Editors would like to thank Dr. Reza Langari, Editor-in-Chief of the Journal of Intelligent and Fuzzy Systems, for the timely help and comments related to this special issue. We hope that the reader will share our excitement to present this special issue and will find it useful.

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