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Knowledge Engineering for Enterprise Integration, Interoperability and Networking: Theory and Applications

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Introduction

Today, enterprises can be characterized by various key facets: globalization, distributed manufacturing, data and knowledge management, advanced automation and robotics, virtual engineering, rapid response to market and more. In this competitive economy, enterprises must collaborate using Information Technology (IT) and other tools to succeed in this dynamic and heterogeneous business environment. Enterprise integration, interoperability and networking are some of the major disciplines that are enabling companies to improve collaboration and communication in the most effective way. Thriving enterprise information systems processes aim to develop information systems that respond to increasingly complex objectives, which align the information systems with business goals and processes of the company. Additionally, the enterprise must adapt and improve when facing new requirements or rapidly changing opportunities. As enterprise information systems models become more ubiquitous, the sharing of best-in-class models becomes more desirable. Interoperability between dissimilar systems in sharing information is important, but other aspects are also required in the sharing of enterprise systems knowledge. First, this process is based on the need for collaboration; sharing and mutual understanding of the needs of each stakeholder, i.e. each person involved or affected by the future information system, at each stage of its development. Second, this process follows principles, which highlight the need for formal semantic definition of these models, at various abstraction levels ranging from specification to implementation on site. There is a need to also couple new theoretical results with applied methods and tools supporting existing business reconfiguration and transformation both locally and globally.

In this editorial, we reflect on the current and future theory and applications that would further empower Knowledge engineering in networked enterprises by means of collaborative information systems. We do this inspired by the articles in this special issue, which are 9 revised extended versions (from 21 submissions) of the best papers of the 9th International workshop on Enterprise Integration, Interoperability and Networking (EI2N'2014), and the 20th Cooperative Information Systems Conference (CoopIS'2014), parts of the OTM Federated Conferences, held on October 27-31, 2014 in Amantea, Italy. In addition, we discuss new paradigms that may have considerable impact on Knowledge Engineering in the context of next generation enterprise information systems.

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