

Editorial Introduction to Issue 39: Managing Complexity and Knowledge in Enterprise Projects

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Managing complexity has been a relevant research topic and a concern for practitioners across various application domains. Different communities employ for this either conceptual modeling, aiming for sense-making across complex networks or association, or data analytics looking for patterns and trends to understand the system from where the data emerged. This issue of the CSIMQ journal includes articles that demonstrate this alternation of approaches in relation to particular purposes within an enterprise scope, therefore assuming interactions involving business processes and goals, technologies and people, data and content. Three of the articles explore enterprise modeling as a critical approach that provides sufficient structure and semantic richness – not only to visualize and analyze enterprise systems, but also to facilitate a better understanding of the components that build up complexity. The architectural perspective is then complemented by harnessing insights from data analytics that allow organizations to filter the ever increasing amount of information and content to identify patterns, trends and anomalies that can inform decision making. Despite advancements in automation and data-driven decision making, the human factor remains very important and well recognized for addressing complexity in enterprise projects as it underlies long term objectives, policies and strategies. The last article deals with techniques to capture organizational conversations as means of knowledge discovery.

The first article, authored by Konstantinos Tsilionis, Miltiadis Geropoulos and Yves Wautelet and titled *On the Complementarity between CMMN and iStar in Complex Domain Modeling* evaluates the Case Management Modeling and Notation and iStar modeling frameworks and conducts a specific literature review in order to identify some criteria that might be used in a more holistic assessment of the two modeling techniques. The work concludes that the two modeling techniques include areas of semantic convergence and it could be effective to use them together in order to effectively represent complex domain problems.

The second article, *Variability Modeling in Enterprise Architecture Management: Case Study and Survey on Existing Approaches*, written by Ahmed Dehne, Sahib Niyazov, and Kurt Sandkuhl, addresses the challenge of managing variability in business processes and IT landscapes, a task that becomes increasingly complex due to digital transformation, Internet-of-Things solutions, and AI integration. The authors followed a systematic literature review to identify what is the state of

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research on managing variability in enterprise architectures and found out that there is not much work on managing variability in enterprise architectures across different architecture layers. Based on this, they motivate the adoption of new constructs in enterprise architecture models to express dependencies between variations at different levels and present an example for an industrial case study.

In the third article, titled *Enterprise Integration as a Driving Factor for Guiding Digitalization in a Small and Medium Manufacturing Enterprise*, Dan Palade, Charles Møller, and Andreas Hansen propose a framework to help small and medium manufacturing enterprises in managing the complexity of their digital transformation. The study is based on a practical approach as it describes the expertise gained through the implementation of the Innovation Factory North project in Denmark. The authors propose a three-dimension approach that helps modeling and executing an enterprise integration/digitalization project within manufacturing SMEs. The first dimension refers to the architecture, promoting a nuanced choice between monolith-structured architecture and edge architecture, that could harness the strengths of both. The second dimension considers the operational capability stacking, motivating the creation of new capabilities when integrating specific information systems. The last dimension, the governance facet, advocates for a balance between technology driven and process-driven optimization techniques.

The article authored by Aritha Kumarasinghe and Marite Kirikova is titled *Requirements Template for Analytics Projects* and addresses a current need for data analytics in enterprises and the raised complexity in describing analytics projects. The authors propose a requirements template that guides the specifications of analytics projects. Using the proposed template, it is easier to identify the generic requirements for a new data analytics project and what attributes need to be addressed by these requirements. The template is presented as a checklist derived by studying 16 data analytics project reports and afterwards, validated against 20 different projects.

In the last article, *Survey on Organizational Chat Conversation Analysis: Exploring Dialogue Summarization from a Knowledge Discovery Perspective* the authors Ksenija Kosilova and Ilze Birzniece explore advances in natural language processing for summarization of multi-participants conversations. Conversation analysis enables the examination of the dynamics of human communication within the enterprise, allowing a better understanding of the engagement or satisfaction of customers or among employees.

Enterprise modeling, data analytics, and conversational analysis are thus presented as means for navigating complexity, managing knowledge, optimizing performance, or achieving strategic objectives.

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