

CSIMQ Anniversary Editor-in-Chief Thoughts and Editorial Introduction to Issue 38: Model-based and Decision Support Methods for Next-generation Information Systems

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Abstract. CSIMQ enters its second decade of existence, therefore the preface for the current issue starts with a message from the Editor-in-Chief, highlighting the journal’s mission of dealing with complexity management and systems modeling as meta-fields that have emerged from Information Science but remain relevant across diverse domains.

Afterwards, the 38th issue is introduced by summarizing the four articles selected by guest issue editors on topics related to novel decision support methods or model-based frameworks for evolving or evaluating information systems. Design-oriented research is the dominant approach in these works, balancing technical design decisions insights with empirical evaluation cases. Three of the selected articles contribute with decision-support methods or frameworks – for ESG (Environment-Social-Governance) accounting, for democratized decision services and for information security management. Another article revisits UML-based model-driven software development from a new perspective.

Keywords: Decision Support Systems, Model-driven Engineering, Modeling Method Engineering, ESG Methods, Information Security Management.

1 Editor-in-Chief Thoughts at CSIMQ’s 10 Years Anniversary

Science journals communicate new scientific results and understanding. Peer review checks the scientific newness and quality of the findings to be published. Peer review, as used today, is relatively new. As late as 1953, Crick and Watson sent the famous “double helix” paper to Nature,

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asking the editor to publish it. Then, editors and editorial boards selected articles to publish. When scientific publications dramatically increased in numbers and diversity and became an engine driving scientific progress, the capacity and capability of journal editors and boards became a time and quality limiting factor. They had no time or capacity to scrutinize which articles would be published. Today, scientific quality is “guaranteed” by peer review.

Scientific journals gain their reputation through their peer review. Science and Nature cover all scientific areas, and publishing an article there is seen as a significant step forward for science. All accredited scientific journals share that policy.

Nowadays, as a scientist, you earn your professional position by obtaining a score from peer-reviewed publications in the “right” journals. The score is often a deciding factor when you apply for a promotion, a position, or research contracts and when you are invited to talk at conferences. Peer review has driven science and scientific quality in almost all contexts.

In a world where science plays an ever-increasing role in progress, it is seen in all perspectives.

The journal *Complex System, Informatics and Modeling Quarterly* (CSIMQ), a product of meticulous efforts led by Marite Kirikova, stands as a beacon of recognition in informatics. With its certified peer-reviewing process, CSIMQ is poised to continue its pioneering publishing for another decade, cementing its status as a trusted platform for scientific discourse in informatics.

Acting as an editor for a journal in Information Sciences, an area other than my professional one in Natural Sciences, has been rewarding. It invites us to compare topics, structures, and developments. Both Sciences are Meta ones, and both are agglomerates of subfields. Subfields are more specific and show a different logic. They originate and sometimes disappear due to scientific development; often, they are created at the border between metafields. They grow and reach saturation. Natural Science as a Meta deals with the understanding of the physical world. Information Science deals with the knowledge of the information world. Both Metas are truly global.

Information Science is a world we create, communicate, and use. A world amid a growth of importance fueled by information and information flows.

Natural Sciences discovered a new world at the beginning of the 20th century. Information science shaped a new world at the beginning of the 21st century.

The CSIMQ publications use titles with words such as information, complex, and system. Still, in titles, you find words such as enterprise, business, engineering, and management. Within both metafields, new subfields are created. Information Science is in a dynamic phase, and we can expect a future expansion and more subfields to appear. Almost certainly, AI will soon be ubiquitously present and used in Information Science. AI will profoundly change Information Science. It will ease and increase the production and communication of information. Quantum computing will enable the Information Science tools to understand and handle information creation and distribution.

CSIMQ has an important job to do. A job that will be exciting beyond expectations. A personal wish: Can we create a knowledge, learning, and teaching world built on Information Science?

2 Guest Editorial for Issue 38: Model-based and Decision Support Methods for Next-generation Information Systems

Decision support systems (DSS) are going through major transformations – not only in terms of underlying methods but also in terms of increasingly diverse domain-specific application case.

Three of the articles selected for this issue deal with decision support. Two of them focus on application domains that may be perceived as specific but tend to pervade information systems as cross-cutting concerns: ESG (environment-social-governance) accounting and information security management (tailored for the specificity of transportation systems). Another article builds a decision support method by means of agile metamodeling and model-driven deployment of decision systems. Finally, one article revisits the more traditional ambition of code generation and model-driven software development and in that context introduces a novel UML-driven method.

The first article, authored by Vijanti Ramautar, Sergio España and Siamak Farshidi and titled *Navigating the complex ESG accounting landscape: engineering a method selection framework* continues a long term preoccupation of the authors with ESG policies, reporting and accounting methods. Recognizing that a large diversity of ESG methods have been emerging during recent years, the article takes a design science approach to formulate and empirically validate a method selection framework. The contribution ultimately acts as a decision support system and its presentation details adoption contexts, with specific criteria and case priorities.

The second article, authored by Robert Woitsch, Christian Muck, Wilfrid Utz and Herwig Zeiner is titled *Enable Flexibilisation in FAIRWork's Democratic AI-based Decision Support System by Applying Conceptual Models Using ADOxx* and is an extended version of a article presented during the OMiLAB-KNOW workshop at BIR 2023[†]. It reports on European project work and again tackles a need for multi-criterial decision support systems. This time the key ingredient is metamodeling as a means of method engineering to enable the description of decision scenarios in terms of an adapted version of DMN and associated model-driven decision services. Project background is established as a context for the problem statement, before the DSS is described in terms of operating procedure, architecture, leading to prototype deployment in project cases.

The third article was written by Pascal Andre and Mohammed El Amin Tebib and is titled *Assistance in Model Driven Development: Toward an Automated Transformation Design Process*. It revisits the topic of model-driven methods for software development from an assistance perspective and gradual/granular transformation rather than the traditional ambition of magical code generation. The technical ingredients are UML for modeling grammar and associated model interchange, and ATL for model transformations. A case study provides empirical application context, demonstrating feasibility and usefulness, leading to a recommendation to further develop domain-specific languages to better streamline the approach.

In the last article, titled *Information Security and Privacy Management in Intelligent Transportation Systems*, Mariia Bakhtina, Raimundas Matulevičius and Lukas Malina propose a framework for information security management (subsuming privacy management in the spirit of GDPR). Insights from a literature survey and a case-based survey from the transportation systems domain are used for empirical grounding, leading to pragmatic recommendations for enterprises working in the mentioned domain. The framework is based on ISACA's business model for information security, the McCumber Cube and the Reference Model of Information Assurance & Security (RMIAS).

These are the four articles selected based on the valuable feedback from three evaluators on average for each article. The CSIMQ guest editors would like to thank the reviewers for substantial advice leading to extensive revisions that clearly pushed the quality and richness of these reports towards the current versions.

The authors who submitted their work made significant efforts to meet the reviewer demands and we are thankful to have this selection of high quality reports for this issue.

[†] <https://bir2023-ws.omilab.org/>