



Editorial to theme section on modeling in low-code development platforms

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1 Introduction

The growing need for secure, trustworthy, and cost-efficient software, as well as recent developments in cloud computing technologies, and the shortage of highly skilled professional software developers have given rise to a new generation of low-code software development platforms, such as Google AppSheet and Microsoft PowerApps. Low-code platforms enable the development and deployment of fully functional applications using mainly visual abstractions and interfaces and requiring little or no procedural code. This makes them accessible to an increasingly digital-native and tech-savvy workforce who can directly and effectively contribute to the software development process, even if they lack a programming background.

At the heart of low-code applications are typically models of the structure, the behavior, and the presentation of the application. In addition, low-code application models need to be edited (using graphical and textual interfaces), validated, version-controlled, and eventually transformed or interpreted to deliver user-facing applications. These activities have been of core interest to the modeling community over the last two decades. However, engineering and employing low-code development platforms still encompasses many research topics, including enabling citizen/end-user software development, realizing recommender systems for low-code platforms, interoperability issues between low-code platforms, and scalability issues in low-code development.

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2 In this issue

An open call for papers was announced in 2021, asking prospective authors to submit their papers by July 2021. The response was positive, with seven abstracts initially submitted, five of which became full submissions. All the submitted papers were refereed by at least three well-known experts in the model-driven engineering and low-code fields, including Luca Berardinelli, Alessio Bucaioni, Antonio Bucchiarone, Hugo Bruneliere, Antonio Cicchetti, Juri Di Rocco, Miguel Goulão, Ludovico Iovino, Timothy Lethbridge, Salvador Martinez, Michiel Overeem, Roberto Rodríguez-Echeverría, Jean-Sébastien Sottet, Matthias Tichy, and Juan Manuel Vara.

At the end of the review process, two papers were selected for this theme issue:

- Alessio Bucaioni, Antonio Cicchetti, and Federico Ciccozzi, in their paper “Modelling in low-code development: a multi-vocal systematic review,” present a systematic mapping study that provides a structured and detailed snapshot of low-code development, with a particular focus to its relations with model-driven engineering. In addition to the scientific peer-reviewed literature review, the authors performed a systematic gray literature review to complement documented research results with insights and results from practitioners and the industry.
- Filipe Correia, Bruno Piedade, and João Pedro Dias, in their paper “Visual notations in container orchestrations: an empirical study with Docker Compose,” propose an approach for specifying and visualizing Docker-based architectures. A controlled experiment has also been performed to empirically evaluate the benefits of the proposed environment for novice developers.

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received his Ph.D. degree in Information Engineering at Politecnico di Milano (Italy), where he was a member of the Database and Web Technologies group. His research interests revolve around software and system modeling, domain-specific languages, and applied logic. He contributes to the design of the ATL model transformation language and investigates the application of deductive verification techniques to model-driven engineering.