Special issue on information systems quality for digital transformation

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1 Introduction to the special issue

Digital transformation has gained certain relevance during last years, and especially in the pandemic many organizations have been pushed to accelerate the change. Digital transformation integrates ICT into all the business areas changing operations and how additional value is delivered to customers. In this context, enterprise information systems are key to support digital transformation. Thus, poor quality levels in enterprise information systems could prevent the success of digital transformation. Therefore, quality aspects in data, software, processes for developing these systems, among other concerns, deserve special attention.

This special issue comprises 6 papers that present innovative and significant contributions in the field of quality management practices, methods, and techniques that support the quality assurance of information systems that drive the digital transformation of companies and organizations.

Moguel et al. tackle the challenge of quantum service-oriented computing, that is beginning to attract the interest of companies. Thus, this paper attempts to provide some good service-oriented practices to integrate both the classical software systems and new quantum ones providing solutions to problems that still remain unmanageable today.

Hinterreiter et al. propose a technique for detecting feature-oriented clones across pull operations in distributed development. The evaluation of this technique shows that the feature-oriented operations work with high precision and recall for different cases of feature interactions, also when feature implementations are scattered across many locations in the source code.

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Olianas et al. address quality assurance of web applications through end-to-end testing, i.e., the web application is automatically tested by performing the actions that a user would do. In particular, this contribution addresses the challenge of threads' sleeps due to the asynchronous calls.

In the security and critical-system domain, two papers are included. First, Carbone et al. propose an extension of the well-known Scrum methodology for the development and innovation of safety-critical systems. They validate the applicability of the methodology over a real case study from the railway domain. Second, Catillo et al. analyze the suitability and effectiveness of public datasets for training machine learning systems to detect networks intrusions as the Denial of Service (DoS) attack. They conclude that the perfect detection figures obtained in the context of a public dataset may not transfer in practice.

Finally, Becker et al. discuss the applicability of a process core ontology for system modelling. This strategy can semantically enrich domain ontologies and helps the understanding of process and method specifications.

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