

## Design Thinking and Requirements Engineering in Application Development: Case Studies in Brazil

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**Abstract :** Organizations, driven by business digitization, have in software the main core of value generation and the main channel of communication with their clients. The software, as well as responding to momentary market needs, spans an extensive product family, ranging from mobile applications to multilateral platforms. Thus, the software specification needs to represent solutions focused on consumer problems and market needs. However, requirements engineering, whose approach is strongly linked to technology, becomes deficient and ineffective when the problem is not well defined or when looking for an innovative solution, thus needing a complementary approach. Research has cited the combination of design thinking and requirements engineering, many correlating design thinking as a support technique for the elicitation step, however, little is known about the real benefits and challenges that this combination can bring. From the point of view of the development process, there is little empirical evidence of how Design Thinking interactions with requirements engineering occur. Given this scenario, this paper aims to understand how design thinking practices are applied in each of the requirements engineering stages in software projects. To elucidate these interactions, a qualitative and exploratory research was carried out through the application of the case study method in IT organizations in Brazil that work in the development of software projects. The results indicate that design thinking has aided requirements engineering, both in projects that adopt agile methods and those that adopt the waterfall process, bringing a complementary thought that seeks to build the best software solution design for business problems. It was also possible to conclude that organizations choose to use design thinking not based on a specific software family (e.g. mobile or desktop applications), but given the characteristics of the software projects, such as: vague nature of the problem, complex problems and/or need for innovative solutions.

**Keywords :** software engineering, requirements engineering, design thinking, innovative solutions

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