

Management of quality requirements in agile and rapid software development: A systematic mapping study

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Abstract. *Context.* Quality requirements (QRs) describe the desired quality of software, and they play an important role in the success of software projects. In agile software development (ASD), QRs are often ill-defined and not well addressed due to the focus on quickly delivering functionality. Rapid software development (RSD) approaches (e.g., continuous delivery and continuous deployment), which shorten delivery times, are more prone to neglect QRs. Despite the significance of QRs in both ASD and RSD, there is limited synthesized knowledge on their management in those approaches. *Objective.* This study aims to synthesize state-of-the-art knowledge about QR management in ASD and RSD, focusing on three aspects: bibliometric, strategies, and challenges. *Research method.* Using a systematic mapping study with a snowballing search strategy, we identified and structured the literature on QR management in ASD and RSD. *Results.* We found 156 primary studies: 106 are empirical studies, 16 are experience reports, and 34 are theoretical studies. Security and performance were the most commonly reported QR types. We identified various QR management strategies: 74 practices, 43 methods, 13 models, 12 frameworks, 11 advices, 10 tools, and 7 guidelines. Additionally, we identified 18 categories and 4 non-recurring challenges of managing QRs. The limited ability of ASD to handle QRs, time constraints due to short iteration cycles, limitations regarding the testing of QRs and neglect of QRs were the top categories of challenges. *Conclusion.* Management of QRs is significant in ASD and is becoming important in RSD. This study identified research gaps, such as the need for more tools and guidelines, lightweight QR management strategies that fit short iteration cycles, investigations of the link between QRs challenges and technical debt, and extension of empirical validation of existing strategies to a wider context. It also synthesizes QR management strategies and challenges, which may be useful for practitioners.