1. Developing Mobile Applications Via Model Driven Development: A Systematic Literature Review

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Abstract: Context: Mobile applications (known as "apps") usage continues to rapidly increase, with many new apps being developed and deployed. However, developing a mobile app is challenging due to its dependencies on devices, technologies, platforms, and deadlines to reach the market. One potential approach is to use Model Driven Development (MDD) techniques that simplify the app development process, reduce complexity, increase abstraction level, help achieve scalable solutions and maximize cost-effectiveness and productivity. Objective: This paper systematically investigates what MDD techniques and methodologies have been used to date to support mobile app development and how these techniques have been employed, to identify key benefits, limitations, gaps and future research potential. Method: A Systematic Literature Review approach was used for this study based on a formal protocol. The rigorous search protocol identified a total of 1,042 peer-reviewed academic research papers from four major software engineering databases. These papers were subsequently filtered, and 55 high quality relevant studies were selected for analysis, synthesis, and reporting. Results: We identified the popularity of different applied MDD approaches, supporting tools, artifacts, and evaluation techniques. Our analysis found that architecture, domain model, and code generation are the most crucial purposes in MDD-based app development. Three qualities – productivity, scalability and reliability – can benefit from these modeling strategies. We then summarize the key collective strengths, limitations, gaps from the studies and made several future recommendations. Conclusion: There has been a steady interest in MDD approaches applied to mobile app development over the years. This paper guides future researchers, developers, and stakeholders to improve app development techniques, ultimately that will help end-users in having more effective apps, especially when some recommendations are addressed, e.g., taking into account more human-centric aspects in app development. © 2021 Elsevier B.V. (33 refs)
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