The Impact of COVID-19 in Software Design Activities in Global

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September 20, 2023

Abstract

Background: Global Software Engineering (GSE) extends geographical, temporal, and cultural boundaries in distributed environments. Over the past two decades, GSE research has evolved to manage software development for distributed teams. The COVID-19 pandemic highlights the need for comprehensive research, particularly during the software design phase, to support team collaboration in distributed development. Aim: This study systematically analyzes the evolution of research emphasis in the GSE field, specifically exploring whether the research focuses increasing on software design due to the global pandemic. Method: We systematically analyzed the existing literature in two phases. In the first phase of our study, we mapped GSE research over the two decades leading to the pandemic (2000-2020). In the second phase, we used the forward snowballing approach to examine the literature on the software design phase published between 2020 and 2022. Results: The analysis of 592 research studies in the two phases reveals various trends in GSE research. Evaluation research is the most explored research type in methods and processes, and human aspects of development. Despite the paradigm shift caused by the COVID-19 pandemic that increased reliance on distributed teams, results show that while software organizations are extensively studied across all software engineering phases, the software design phase remains one of the least explored areas. Conclusion: This work highlights the evolving GSE research trends, emphasizing the rising significance of collaborative software design in distributed settings. Our findings address current research gaps and underscore the need for further research on software design activities. This contribution envisions a more collaborative, adaptable GSE field, guiding future research to support distributed teams.

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