

## **DevOps in the Industry**

### **Critical Success Factors and Frameworks:**

Azad and Hyrynsalmi present a systematic literature review identifying 10 critical success factors (CSFs) in DevOps, categorized into technical, organizational, and social & cultural dimensions. The proposed framework contributes collective knowledge for researchers and practitioners, aligning with our class discussions on the importance of organizational and cultural aspects.

### **Control Approaches in DevOps Teams:**

Wiedemann et al. take a unique perspective by investigating control in DevOps teams. Their study identifies and resolves tensions between software development and operations, proposing a DevOps control approach. This adds a valuable dimension to our understanding of project management and control in the DevOps context, complementing topics covered in our class.

### **Software Automation Enhancement through DevOps:**

Srivastava et al. delve into the practical aspects of DevOps, emphasizing the paradigm's role in unifying development, operations, and quality assurance. Their focus on automation tools and platforms aligns with our class discussions on continuous integration, delivery, and testing. The emphasis on efficiency and collaboration resonates with key DevOps principles.

### **Architectural Design Issues in DevOps:**

Shahin, Nasab, and Babar conduct a mixed-method study exploring architectural design issues in DevOps. The study identifies eight specific design issues, emphasizing the importance of loosely coupled architectures prioritizing deployability, testability, supportability, and modifiability. This aligns with our class discussions on architectural principles and design considerations.

### **DevOps Challenges: A Mixed-Methods Study:**

Tanzil et al. undertake a mixed-methods study, combining topic modeling and a survey of DevOps practitioners. The study identifies 23 DevOps topics grouped into four categories, shedding light on prevalent challenges developers face with existing tools and techniques. This research enriches our understanding of practical challenges and aligns with our class discussions on real-world implementation issues.

The combined insights from these studies align with and extend topics discussed in our class, including continuous integration, unit testing, project management concepts, architectural design, and the practical challenges faced in implementing DevOps. The synthesis of these studies provides a more holistic understanding of DevOps, spanning technical, organizational, and practical dimensions. Future research can build on these insights, focusing on specific challenges and potential solutions to further refine our understanding of DevOps in the rapidly evolving landscape of advanced software technology.

The proposed frameworks, identified critical success factors, control approaches, architectural design considerations, and practical challenges offer actionable insights for researchers, practitioners, architects, and managers in implementing and optimizing DevOps practices. The emphasis on collaboration, automation, and continuous improvement resonates with the principles that underpin successful DevOps adoption. This paper serves as a comprehensive guide to recent research on DevOps, weaving together diverse perspectives to deepen our understanding of this critical aspect of advanced software technology. The synthesis of these studies enhances our awareness of DevOps practices, challenges, and opportunities, providing a foundation for future research and practical implementations.

## **References:**

Azad, N., & Hyrynsalmi, S. (2023). DevOps critical success factors—A systematic literature review. *Information and Software Technology*, 157, 107150.

Wiedemann, A., Wiesche, M., Gewalt, H., & Krcmar, H. (2023). Integrating development and operations teams: A control approach for DevOps. *Information and Organization*, 33(3), 100474.

Srivastav, S., Allam, K., & Mustyala, A. (2023). Software Automation Enhancement through the Implementation of DevOps. *International Journal of Research Publication and Reviews*, 4(6), 2050-2054.

Shahin, M., Rezaei Nasab, A., & Ali Babar, M. (2023). A qualitative study of architectural design issues in DevOps. *Journal of Software: Evolution and Process*, 35(5), e2379.

Tanzil, M. H., Sarker, M., Uddin, G., & Iqbal, A. (2023). A mixed method study of DevOps challenges. *Information and Software Technology*, 161, 107244.