

Cooperation Between Information System Development and Operations: A Literature Review

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1. CONTEXT

Software development can profit from improvements in the deployment and maintenance phases. DevOps improves these phases through a collection of principles and practices, centered around close collaboration between Development and Operations personnel. Both sides have paid little attention to issues faced by each other. Yet knowledge sharing is invaluable. Development personnel can for example make software more robust by implementing scalability and performance features desired by operations personnel.

2. GOAL

As a starting point for research into DevOps we performed a Systematic Literature Review (SLR) on DevOps.

The main question we address in this research is "How does the relation between development and operations influence Information System development?" We asked the following research questions: (1) What are the main concepts related to DevOps? (2) What are the problems encountered in Information System development attributed to the relation between development and operations? (3) How does DevOps alleviate the problems in RQ2?

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3. METHOD

We used Kitchenham's SLR guidelines for conducting the SLR [1]. We used three search terms: (1) *DevOps*; (2) *"Continuous Delivery" AND Software*; and (3) *"development and operations" AND software*. We applied the search terms to the databases of Scopus, Web of Science, IEEE Xplore and ACM Digital Library. As a literature review is concept-centric [2], we constructed a table describing which major concepts we encountered during the review.

4. RESULTS

For this research we selected 13 journal articles, 10 conference proceedings and two industry reports, totaling 25 articles. Most journal articles (8) originate from the Cutter IT Journal as it released a special issue on DevOps. The main concepts related to DevOps are culture, automation, measurement, sharing, services, quality assurance, structures and standards. The first four of these concepts form the CAMS framework, which multiple articles referred to. The framework can also be used for categorizing problems in adopting DevOps, and for making a DevOps implementation strategy. DevOps is supported by principles and practices which solve problems in each category of the framework.

5. CONCLUSIONS

Organizations need to change their structures for supporting DevOps. We discovered that DevOps is an approach and not a method. Organizations need to experiment with the principles and practices to discover which work for them.

There is a great opportunity for empirical researchers to study organizations experimenting with DevOps. Our research aims at helping researchers and practitioners reason about and define DevOps clearly. We hope that in the future a framework for implementing DevOps will be created using the concepts we identified in this research.

6. REFERENCES

- [1] B. Kitchenham. Procedures for performing systematic reviews, 2004.
- [2] J. Webster and R. T. Watson. Analyzing the past to prepare for the future: Writing a literature review. *MIS Q.*, 26(2):xiii–xxiii, June 2002.