Towards Shaping the Software Lifecycle with Methods and Practices

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Abstract: Software development processes are very diverse, and the use of methods and practices varies in many facets. However, it is unclear for what reason single methods and practices are included in a development process and which phases they are meant to support. Based on a survey with 27 practitioners, we provide a mapping of methods and practices to different project phases and vice versa. Our results indicate that, when devising a development process, it is worth a thought if all phases of the software lifecycle are addressed and if the use of selected methods and practices is meaningful.

This summary refers to the paper *Towards Shaping the Software Lifecycle with Methods and Practices* [Kl21a]. This paper was published as full research paper in the proceedings of the Joint International Conference on Software and System Processes and International Conference on Global Software Engineering and received the IEEE Best Industry Experience Paper Award.

Keywords: Software lifecycle; software process; survey study

1 Introduction

Software development processes need to be adjusted to the project and the development team, resulting in a wide variety in the use of methods and practices [Kl20]. The analysis of a large international survey yields that there are, for example, many variations of Scrum that are somewhat unique, but nevertheless widely distributed in practice. This diverse use of basic methods such as Scrum or eXtreme Programming raises the question for what purpose they are used in the development process, i.e., whether they are for example used for project management or implementation.

In a survey with 27 practitioners, we analyzed the use of methods and practices throughout a software development process, revealing three insights: (1) There are discrepancies between the intended use of methods and practices according to literature and the real use in practice, (2) practices are used more consistently than methods, and (3) some phases of the software lifecycle are hardly covered by widely distributed methods and practices.

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2 Results

An analysis of 27 data points revealed that the top-3 methods Scrum, DevOps, and Kanban are used very diversely in the development processes. For example, Scrum as project management framework is reported to be mainly used for implementation. DevOps (for operation) and Kanban (for work organization) are used for a number of different project disciplines. Compared to the methods, the practices are used more stringent: The top-3 practices code reviews, coding standards, and daily stand-up meetings are mainly used for implementation (independent from their intended use).

In addition, we observe differences in the coverage of the project disciplines by the methods and practices. While project disciplines such as project management or implementation are frequently covered, other disciplines such as maintenance and evolution or configuration management are hardly covered by the methods and practices used in our study.

3 Conclusion and Future Work

Our paper [Kl21a] shows that several methods and practices are not used as they are meant to. Consequently, practitioners should think about the usefulness of a specific method in a given context and stop using methods just because everybody does so. Following this line of thought also points to the missing baseline of what, e.g., Scrum really is about. Therefore, future research should look at the practitioners' mental models of the methods and practices. And practitioners should be aware of three things: (1) whether they deviate from a specific method/practice, (2) how they do it, and (3) why. As long as these questions can be meaningfully answered, deviating from original ideas can be suitable. Otherwise, they should critically question whether the given process needs to be adjusted.

Data Availability

The survey study and the anonymized answers are available online [Kl21b].

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