

What are Hybrid Development Methods Made Of? An Evidence-based Characterization

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Abstract: Regardless of company size or industry sector, a majority of project teams and companies use customized processes that combine different development methods—so-called hybrid development methods. Even though such hybrid development methods are highly individualized, a common understanding of how to systematically construct synergetic practices is missing. Based on 1,467 data points from a large-scale online survey among practitioners, we study the current state of practice in process use to answer the question: What are hybrid development methods made of? Our findings reveal that only eight methods and few practices build the core of modern software development. This small set allows for statistically constructing hybrid development methods.

This summary refers to the paper *What are Hybrid Development Methods Made Of? An Evidence-based Characterization* [Te19]. This paper was published as full research paper in the proceedings of the International Conference on Software System Process.

Keywords: Software Development; Software Process; Hybrid Methods; Survey Research

1 Introduction

Software development is diverse, and companies have to adopt to new technologies and markets quickly. Hence, software engineers seek suitable development methods. According to Klünder et al. [K119], 78.5% of practitioners combine and evolve their processes over time, e.g., to improve product quality and to keep flexibility to react to change.

Problem Statement & Objective An understanding of what a *hybrid development* method is composed of is missing, e.g., which combinations of frameworks, methods, and practices for software and system development help practitioners implement a suitable process.

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Contribution Based on a large-scale international online survey, we analyze 1,467 data points that provide information about the combined use of 60 frameworks, methods, and practices. Our findings indicate that using hybrid development methods *is* the norm in companies of all sizes and across all industry sectors. We identify eight base methods providing the basis for devising hybrid methods, and we statistically compute sets of practices used to embody the base methods.

2 Results

An analysis of 1,467 data points revealed that using different frameworks, methods and practices in combination as hybrid methods is the norm across companies of all sizes and industry sectors. We identified eight base methods and few practices only that find agreement among study participants. For the study participants that explicitly stated to use processes in combination, we could identify 27 base methods and method combinations that, together with three practices forming three pairs, build the basis to devise hybrid methods. We also found that the sets of practices have limited dependencies to the methods. We therefore argue that practices are the building blocks for devising hybrid methods. We also note this core set of practices along with the complementary sets of practices identified in [Te19] are common to all development methodologies. Since they are so widely deployed, we observe that development organizations see these practices as essential activities enabling them to deliver good software to their customers.

3 Conclusion & Future Work

Our paper [Te19] documents findings from the second stage of the HELENA study. Based on the data collected in HELENA stage 2, among other things, we study different influence factors for method construction and we work towards the development of a statistical construction procedure for hybrid methods.

References

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