

Determining Context Factors for Hybrid Development Methods with Trained Models

Jil Klünder,¹ Dzejlana Karajic,² Paolo Tell,³ Oliver Karras,⁴ Christian Münkel,⁵
Jürgen Münch,⁶ Stephen G. MacDonell,⁷ Regina Hebig,⁸ Marco Kuhmann⁹

Abstract: Selecting a suitable development method for a specific project context is one of the most challenging activities in process design. To extend the so far statistical construction of hybrid development methods, we analyze 829 data points to investigate which context factors influence the choice of methods or practices. Using exploratory factor analysis, we derive five base clusters consisting of up to 10 methods. Logistic regression analysis then reveals which context factors have an influence on the integration of methods from these clusters in the development process. Our results indicate that only a few context factors including project/product size and target application domain significantly influence the choice.

This summary refers to the paper “*Determining Context Factors for Hybrid Development Methods with Trained Models*”. This paper was published in the proceedings of the International Conference on Software and System Process in 2020.

Keywords: Software Process; Hybrid Development Method; Trained Models

1 Introduction

Nowadays, most software development processes do not consist of a single method and/or practice. Research has shown that the combination of different methods and practices into a so-called hybrid method is state-of-the-practice. Research has shown, how a “typical” hybrid method looks like, and how a hybrid method can be statistically constructed [Te20].

Problem Statement & Objective So far, hybrid methods have been devised based on experience and over time [K119]. However, it remains unclear which factors need to be considered when devising such a hybrid method. Therefore, in this paper, we analyze which (context) factors can help to derive a suitable hybrid method.

¹ Leibniz Universität Hannover, Germany, jil.kluender@inf.uni-hannover.de

² University of Passau, Germany, dzejlana.karajic@gmail.com

³ IT University Copenhagen, Denmark, pate@itu.dk

⁴ Leibniz Universität Hannover, Germany, oliver.karras@inf.uni-hannover.de

⁵ Leibniz Universität Hannover, Germany, christian@muenkel.cc

⁶ Reutlingen University, Germany, j.muench@computer.org

⁷ Auckland University of Technology, New Zealand, stephen.macdonell@aut.ac.nz

⁸ Chalmers | University of Gothenburg, Sweden, regina.hebig@cse.gu.se

⁹ University of Passau, Germany, kuhmann@acm.org

Contribution We analyze a subset of the HELENA dataset consisting of 829 data points using exploratory factor analysis and logistic regression analysis. We cluster the set of methods and investigate which context factors influence the likelihood of using methods from a specific cluster.

Our results reveal that only a few context factors including the company size and some target application domains influence the likelihood of using methods from one of the clusters.

2 Results

The exploratory factor analysis on 829 data points from the HELENA dataset revealed five clusters consisting of up to ten methods. These clusters can be described as *mainly agile*, *mainly traditional* or *a mixture of agile and traditional methods*. The logistic regression analysis then reveals for each of the clusters, which context factors influence the likelihood of using methods from the respective cluster. Our results indicate that (1) companies working distributed across one continent tend to use agile methods, (2) the target application domain has an influence in some cases (defense systems, space systems, telecommunication, web applications), and (3) small projects tend to use traditional methods. In all other cases, our analysis did not reveal significant influences. In the last step, we extend the method clusters with frequently used practices following a construction process similar to Tell et al. [Te20].

3 Conclusion & Future Work

Our paper [Kl20] documents context factors that influence the likelihood of using methods and practices from a specific set. As, according to our results, context factors seem to be not as relevant as they are supposed to be, future work should investigate which other factors decide on the shape hybrid methods.

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