

Research Oriented Software Engineering

Master's Thesis Proposal:

Modeling Knowledge in Software Projects



Area and background

Do you want to carry out a Master's thesis project that combines 1) software engineering questions about project and process modeling, 2) mathematical modeling, based on stochastic processes, 3) survey methodology, and 4) implementation of a Tomcat application in Java? In that case, this may be a thesis proposal for you!

In a team, people sometimes leave the team and become replaced by new persons with less experience, and sometimes people participate in new activities and thereby obtain new knowledge. Different processes, in terms of different management strategies, can be followed, e.g., to introduce people to new tasks so they get new knowledge. There is a need to investigate the long-term effects of different strategies on a team's software product knowledge. In [1] an initial approach for how this type of knowledge can be modeled as a stochastic process is presented, metrics representing the long-term effects on knowledge are derived, and two different example strategies are investigated numerically.

To do in the thesis project

The basic idea is to build on the work presented in [1] and develop a model for one more management strategy and to implement a combined analysis tool and survey tool in Tomcat based on the formulated strategies. That is, the following steps can be foreseen:

- Literature review
- Define one more strategy in the same way as the two strategies in [1] were defined
- Develop a web based tool for a Tomcat server that can be used to analyze an organization based on available and derived models for formulated strategies
- Adapt the web based tool so that it also includes a survey tool, which can be used to understand what strategies are most common, most preferable, etc.

The work is intended to be carried out at the department by one or two students. Required knowledge include software engineering (basic course and an advanced course like ETSN05, ETS032, ETS170, ETS200), mathematical modeling (e.g. ETS075 Queuing system) and knowledge of Java.

The thesis work is planned to be the basis, together with information from [1], for a conference or journal publication.

Contact

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References

1. Martin Höst, "Modeling the Effects of Project Management Strategies on Long-Term Product Knowledge", in proceedings of International Conference on Product Focused Software Development and Process Improvement (PROFES), 13-15 June, Madrid, Spain, 2012, pp. 104-115.