Collaboration-based Metrics for Project Management Support in Global Software Engineering

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Abstract

Global Software Engineering (GSE) has brought new challenges to development teams: Geographic separation, working in different time zones and different cultures and languages make the collaboration of team members more difficult and can lead to project delays, cost overruns and quality problems. While project management metrics to monitor cost, time and quality characteristics of a development project, are state of the practice today, these metrics often reveal problems too late.

The hypothesis of this dissertation is that collaboration-based metrics can help to detect and address problems in GSE projects early on. To validate our hypothesis we constructed a set of collaboration-based project management metrics for GSE, combining knowledge from social psychology and software measurement, and tested them in practice. We applied our GSE metrics in an industrial case study of a real-world crisis project as well as a set of GSE student projects, which gave anecdotal evidence that our GSE metrics are helpful to identify and resolve collaboration problems in GSE projects. The GSE metrics provided accurate and useful information to the project teams, while the effort for data collection was acceptable.
Lessons Learned: Dissertation

• **Understand the *problem* before you design a *solution***
  • What makes the problem difficult?
  • Alternative approaches?
  • What’s your contribution?

• **Utilize your courses to support your work** (experiments, literature study)

• **Start writing early**
  • Structure your thoughts
  • Get early feedback from your advisor

• **Publish early**
  • 10 pages are a good size to manage
  • Start with doctoral symposium
  • Accepted papers are an external confirmation of your work

• **Industrial project**: very valuable, high effort (coordination, administration)