582695 Software Process Definition and Management (Fall 2012)

Exercises 5

11th October

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1) Continuous and model-based improvement

   Explain the difference between continuous and model-based improvement approaches.

2) Model-based improvement

   What is the difference between the staged and continuous representations of CMMI?

3) Continuous improvement and the Quality Improvement Paradigm (QIP)

   a) Explain the role of the first step "Characterize"

   b) Define a measurable improvement goal based on the Quality Improvement Paradigm

4) Business Alignment with GQM$^+$ Strategies

   Use the customer satisfaction example from the lecture and define two alternative strategies for reaching the overall business goal. Define respective goals for these strategies using the template from GQM$^+$ Strategies and define criteria that indicate if the goals are fulfilled or not.

5) Empirical studies

   The traditional test method in a large development organization involves producing test cases in a primarily manual way. These test cases are then reviewed and collected into a test suite, which, in turn, is used to test every product release. The organization is considering the gradual introduction of a new model-based test method. In this method, a set of models is created that describe the tested system and its environment. Using these models as a basis, a test suite generation system produces a large number of test cases in a completely automated fashion.

   Although this new method has the potential of saving a significant amount of work, its introduction would also involve significant risk. For this reason, the organization wants to empirically study its viability and effectiveness. Concretely, the following questions should be addressed:

   1. Are the Quality Assurance (QA) people satisfied with the current method? (There are around 100 people in the QA department).
   2. Does the new method reduce Quality Assurance costs (with respect to the current method) when applied to small systems?
   3. Will the application of the new method reduce overall project costs when used in the (rather large) projects that are common in the organization?

Which types of empirical studies (controlled experiment, case study, survey) would you use to address each of these questions? Explain why your type of choice for each question would be appropriate and why it would be better than other study types in that particular case.

6) Software Process Simulation

   When would you use a continuous simulation approach, and when would you prefer a discrete-event approach? Give an example for each preference and explain your decision.

7) Course feedback

   Fill in the course feedback form. All course feedback is anonymous and helps in improving teaching activities.

   https://ilmo.cs.helsinki.fi/kurssit/servlet/Valinta?kieli=en