Home Exercise #5 Software Quality

Intended learning outcome

After having passed this exercise, the student can specify some metrics and relate them to quality factors and demonstrate a basic understanding of the staged CMMI maturity model.

Problem description

Suppose that you are the manager of the company developing the "Molvo" system as described in exercises 1, 2, and 3. There is no crisis in your company, but you want to improve. In particular, you have hard improving effort estimation. Moreover, your prototyping with usability is fun but hard to manage, and it's hard to draw any useful conclusions. The maturity of the organization was recently evaluated. You fulfill the CMMI process areas REQM, TS, RSKM, VER, and CM.

Task

a) Suggest two different metrics that can help you setting goals and evaluate the usability of your system. Use the template we had in the lecture. Don't use "Number of good and bad features recalled by users" since we elaborated on that in the lecture. Write a note of which part of the "Molvo" system you are evaluating.

b) You read in an article that large size and large complexity of software correlates well with how long time it takes to write the software. Suggest a metric measuring size and one metric measuring complexity. Explain how you can use this to improve on your effort estimations. Use the template we had in the lecture. Don't use "Number of non-comment lines of code" since we elaborated on that in the lecture

c) You need a mature organization. Select the most relevant CMMI process area that you should start working with. Describe the process area and clearly motivate how your choice of the process area can lead to an improved system from the user perspective. (Hint: a good source of figuring out the effects of working with a process area is to look at the specific goals.) Suppose that you manage to reach all specific goals of the process area, which CMMI level in the staged maturity model would you reach for your company? Motivate your answer.

You may make more assumptions of features of the system and the company than those given in the Problem description, but in that case, you shall explain your assumptions in the solution.

Grading criteria

Relevant metrics: The metrics or measurements make sense to the context, that is the scenario and fulfilled process areas. For task b) they shall measure size and complexity.

Well described metrics: The metrics are described according to the template introduced on the slides with the items: Description, how to obtain data, how to calculate the metric, and relevant quality factor. The motivation for the relevant quality factor is most important.

Part of the system: The description can be short, but understandable.

Improvement potential: The motivation for how the metrics in b) can be used for improving estimation is clear.

Description of CMMI Process Area: The description of the process area contains more information than the purpose written in the standard. There is a description of relevant specific goals.

Motivation for user benefits: The motivation(s) is(are) described all the way from the goal of the specific goals to user benefits in the context.

CMMI level: The level is correct.