Project tool for observing metric in SW projects

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Abstract. In this paper, we present a metrics monitoring tool for project members, project managers and upper management. The tool is used to help reporting and following projects metrics. The tool collects data from projects reports and other project management tools, moreover, the user can input additional project data to the software. As output, the tool shows the project status on the base of direct project metrics and calculated derived metrics and gives recommendation what actions there should be done in the project.

The prototype was compared with other project management tools. It seems that the set of features giving instant feedback after the reporting is unique among these tools. Our hypothesis for future work is that the feedback system motivates the project managers to good reporting and also to follow the metrics.

Keywords: Metrics; Project management; Application

1 Introduction

2 Project management

– Project management in general
– What is a project management tool, why they are used?
– Agile projects, scrum, agile.

3 Metrics

A software metric is the measurement of a particular characteristic of a software or the measurement of a software project and process. Software metrics are categorised to predicting metrics and controlling metrics depending if we are measuring, and predicting the status of, a software product itself or measuring the process to develop the product. [9]. The control metrics can also be categorised to project metrics and process metrics depending on whether they are measuring an individual project and supporting tactical decisions or if they are measuring the process and supporting strategic decisions [4]. Direct metric means that the raw data that has been measured; indirect means that the metric is counted on the base of the other metrics [4].
In this paper we use terms: product metrics, project metric, process metric, direct metric and derived metric. One of the most important reason that a project fails is poor reporting of the projects status [10]. Because of the poor reporting, the management does not know the state of the project and thus does not execute the right actions. So it is failed on the monitoring and controlling phases [Mkiaho 2015]. Following the project metrics gives rigorous information on the project to the management. For example, by following the current statuses of the requirements, history of effort needed for moving a requirement from a state to another, working hours estimations and the resources left on the project, the management can prioritize requirements, move resources from development to testing, etc. If the metrics are followed and the meaning of them are understood (monitoring phase) the right actions can be done in time (controlling phase).

4 New metrics monitoring tool

The prototype of MMT-metrics monitoring tool was implemented by the students of SIS/UTA - School of Information Sciences of University of Tampere during the academic year 2014-2015. One of the principles when planning the tool was to make the reporting easy and motivating as one of the reason was projects fail is bad reporting [10] The motivation is raised by giving an instant feedback to the project by showing the project metrics, comparing the project to other projects, showing the project history and by giving hints on actions to do. This way it is also encouraged to follow the metrics. There are evidences (todo hypothesis?) that there is a link between good reporting, following the metrics and the good quality [Mkiaho 2015]

MMT is a web-based tool that can be installed to any environment having web-server, PHP-server and a relational database. It can be connected to other project management tools like Redmine [Redmine] and also to Facebook. Data is input to the tool by importing well-defined weekly reports. Weekly reports are readable text-files with predefined tags. The managers can use the same reports they send to their supervisors. After the weekly report is imported, it can still be edited before saving to the system. The reports can also be typed directly on the editor. Data to the system come also from other tool via implemented interfaces. Currently, there are interfaces to another PM-tool, Redmine and to Facebook. When a project is linked to the Redmines project, the requirements (Issues in Redmine) are imported automatically to the tool. Project can also be connected to a Facebook group. Thus one can follow, for example, discussion activity on the projects FB-group. The direct metrics, that comes via the input channels are stored as is to the systems database; for example, the number of open requirements and the number of planned working hours left. On the base of the direct metrics the tool counts derived metrics. An example of the derived metrics could be hours per requirement left which is counted by dividing the number of the open requirements with the number of working hours left. The values of the derived metrics are not stored to the database but the formula is. As on output, the systems presents the status of the project by showing the selected...
metrics as numbers and graphs. One can also look the history of the selected metrics and thus forecast the trends. If the user has access rights to multiple projects, he select more than one projects to view. On the base of the metrics and given preset boundaries, the system evaluates projects statuses and gives warning signals and hints. This artificial intelligence - part of the system is still under constructions and doing it requires piloting ot the system. This piloting will be done on the project management courses during the semester fall 2015. The systems presents on a public page all of the projects that are defined public. On the public page there is only a subset of the metrics. This way the project manager can easily compare his project to other project. This feature will be useful in piloting where the projects are quite homogenous regarding on the starting point, duration and the workload.

On Picture 1, the weekly report has been imported to the tool. Here the project manager can still check and modify the report before he saves it to the database. He can also create the weekly report directly here.

![Fig. 1. Importing weekly report.](image)

The projects supervisor (or anyone who has access rights to the project) can choose the project from the project list and see the status of the project on one view, Picture 2.

Project can be compared with other projects; on Picture 3, there is compared the monthly working hours history between four projects.

All the projects that are set to be public are shown on the public page. On Picture 4, there is an example of the public page with 2 public projects.

MMT does not have all the features of commercial tools Microsoft Project or BaseCamp nor open source tools like Redmine or Trello nor the ones of Redmine or Trello. However, it can be connected via interfaces project management tools.
Fig. 2. Project status.

Fig. 3. Comparing projects.
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It has been planned to make reporting easy and motivating by being able to use the same text-file for sending the report and importing the data to the system. Moreover, the user gets instant feedback on the base of the data imported on the report. It makes also easy to see the status of the project on one view.

Fig. 4. Public page.

5 Conclusions and future work

– Miten kehitetään jatkossa?

References

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