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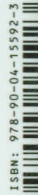
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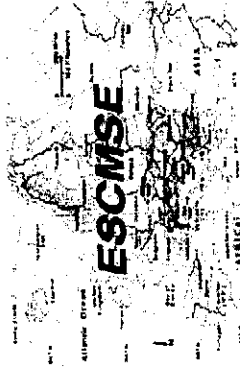
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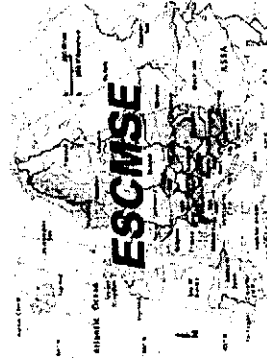


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A Support Tool for Rapid Software Process Assessment

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Abstract: The process appraisals a company carries out internally and that spend a short time, a small budget and without much rigour are known as rapid process assessments. They are useful to get relevant information about the performance of processes for its control and improvement. In order to facilitate the collection of relevant information about the processes, this paper describes a tool to support the rapid software process assessment, named SPQA.web. This tool has two main features: firstly it supports different assessment instruments obtained from process reference models, and secondly it allows to manage the assessment instruments according to the requirements of the environment. The goal of using SPQA web to do assessment activities is to reduce the time and resources consumed by these activities. Furthermore, the experience of its application and utilization on a small software organization which implements a SPI programme is also shown.

Keywords: Software process improvement, SPI, Rapid process assessment, Small software organizations, Small and Medium Enterprises (SMEs).

ACM Subject Classification Index: D.2.9 Management

1. Introduction

From the very beginning of the ninety decade, the Software Engineering community (practitioners and researchers) have shown special interest on the Software Process Improvement area - SPI. The increasing number of papers that deals with SPI (according to the analysis of the tendencies published on [7] about Process Improvement), as well as a lot of standards related to SPI created by remarkable international organizations like SEI or ISO, are evidences of this growing interest. In order to carry out SPI efforts in a company it is necessary to involve different kinds of models: a model that lead to process improvement (e.g. IDEAL); a process appraisal method (e.g. ISO/IEC 15504); and a process reference model (e.g. CMMI) are some highlighting examples.

In order to carry out a processes appraisal in a company, it is necessary to follow a method that produces quantitative results which characterize the process capability (or the organization maturity). These results give information that help to determine the current state of software processes, its strengths and weaknesses. This information serves to define processes improvement execution strategies. The process appraisals a company carries out internally that spend short time, a small budget and without much rigour are known as rapid process assessments and they are useful to get important information about process performance. Rapid assessments applied in organizations are the key to successfully implement process improvement because they can be frequently done, in shorter time and with fewer resources than usual. This allows to get information about the impact of the improvement

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actions on the processes which make use of SPI strategies. Some works related to rapid process assessments and SPI are detailed in [5],[1],[6].

To obtain relevant information about the processes, it is important to provide companies with software tools to facilitate the rapid process assessments execution. This kind of tools support repetitive actions, by reducing the cognitive load of people involved on the assessment activity and any administrative load associated to the manual application of this activity.

This paper describes a Web tool to support the rapid assessment of software processes, named SPQA.web, which assists and manages several assessment instruments. The goal of the tool is to facilitate to companies involved in SPI the execution of rapid process assessments. The experience of its application and utilization in a small software organization which implements a SPI programme is also shown.

2. Assessment support tool SPQA.WEB

The assessment processes have two main goals: to obtain high quality data to help to identify problems in software processes and to define the basis for companies to make internal decisions. The rapid process assessments allow companies to get relevant information about the execution of its processes in a short time and with a small budget. In order to guarantee the quality of the obtained information from the assessment activity, it is convenient to use software tools to support and reduce the time and resources consumed by this activity.

The SPQA.web tool has been developed and maintained by the SPI Group part of the IDIS Research Group. It is a web tool which supports the rapid software process assessments and has two main features: firstly it supports different assessment instruments obtained from widely accepted process reference models, and secondly it allows to manage the assessment instruments according to the needs of the environment (like the update or creation of new improvement standards), or from companies which the SPI Group supports.

The SPQA.web tool supports rapid assessments about the way in which the software development process has been carried out in an organization. Currently, the tool has two assessment instruments: the first instrument is based on some areas of CMMI [1] processes and the second one is based on ISO/IEC 12207 [3]. The assessment is performed by assigning fulfillment or non-fulfillment values from the generic or specific practices defined by the process reference model selected. For instance, there is an assessment instrument for the SPQA.web tool which helps to verify at level of practices the current state of the software processes in companies according to the CMMI process areas. This assessment instrument consists of 123 questions about several specific and generic practices of CMMI process areas level 2 staged version. The assessment instrument is made of independent surveys about every area of process, letting the user to choose the process area to evaluate. Questions refer to the fulfillment of the activities which are considered like the best software development practices in an organization which intends to guarantee the software processes capability. The tool supports the "Modelo Ligero de Evaluación de la Calidad de Procesos de Desarrollo de Software" - Light MECDEPS - presented in [10], and it is based on ISO/IEC 15504 to determine the process areas capability and the maturity of the organization.

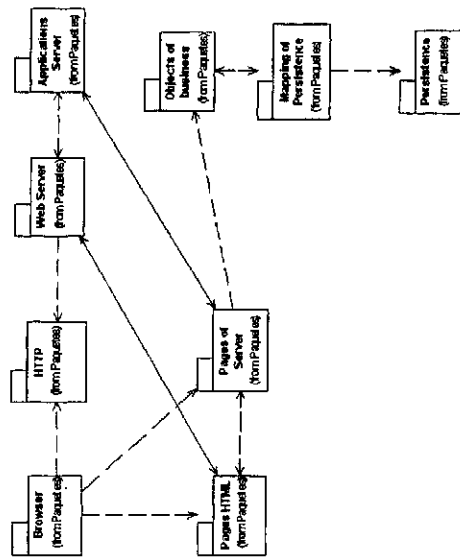


Figure 1. SPQA.web architecture

This tool uses a three layers architecture [8]: interface, business logic and persistence, as shown in Figure 1. Figure 2 represents the general diagram of use cases.

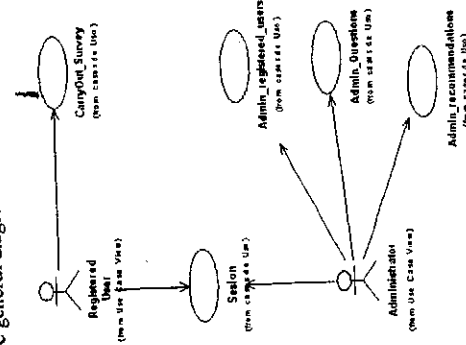


Figure 2. Use case diagram of SPQA.web

Currently the tool is being applied in an improvement programme carried out by Unisoft Colombia Ltda., a small software organization from Cauca (Colombia) with 5 years experience in the regional market. At the moment, the improvement programme is being applied on the diagnosing phase in which assessment activities to estimate the general state of processes in the company are being performed. The SPQA.web tool is being used to support the assessment activity (to see Figure 3).

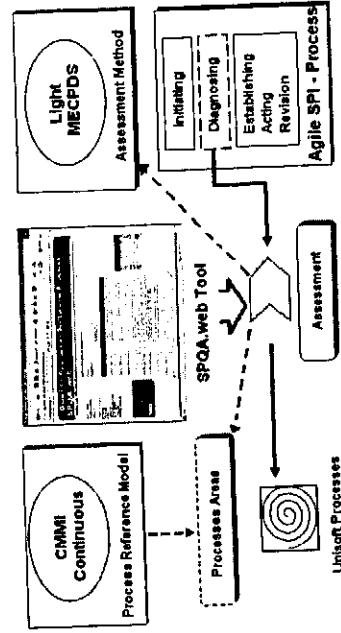


Figure 3. SPQA.web Tool and Unisoft Improvement Programme

3. Conclusions

In this article the SPQA.web has been presented. It is a web tool which supports the rapid software process assessments and has two main features: firstly it supports different assessment instruments obtained from widely accepted process reference models, and secondly it allows to manage the assessment instruments according to the requirements of the environment. The goal of using SPQA web to do assessment activities is to reduce the time and resources consumed by these activities. The tool has been developed and maintained by the SPI Group part of the IDIS Research Group. In [9], [4] and [2] among others, is observed another related works with process assessment tools inside software process improvement. These tools support an only instrument of valuation and are expensive. From the first application of the SPQA.web Tool in industry we can conclude the experience was satisfactory for both the Unisoft Company and the SPI Group which is responsible for the tool. The company's employees who participated in the assessment using the tool expressed the following impressions:

- The tool is easy to use and it is useful for assessments.

- Many of the questions of the survey allow them to visualize easier the changes they are adopting, to keep in mind the activities they should do but they do not actually do, and identify their problems and weaknesses by themselves.
- The tool provides recommendations for undone activities, as well as the feedback which helps them to improve the processes.
- The tool lets the person in charge of the improvement in the company to have a general vision of the states of the processes every time the assessments are done. This information is useful to manage the software process improvement programme.

The group responsible for the tool got a first appraisal of its use in real scenarios and verified its correct operation. Besides, the feedback information provided by the employees who used the tool was crucial to adjust it and to make some improvements. Such improvements will be focused on increasing the way of answering the questionnaire and considering the percentages or intermediate values. Another suggestion was to have an option which supports the relation between the explanatory information and the questions, in order to make them more understandable and to avoid having to continuously consult a support person of the improvement programme. The possibility of supporting other kinds of assessment methods is also being analyzed.

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