

CENTERIS 2013 - Conference on ENTERprise Information Systems / PROjMAN 2013 -
International Conference on Project MANagement / HCIST 2013 - International Conference on
Health and Social Care Information Systems and Technologies

QRP: a CMMI Appraisal Tool for Project Quality Management

Alberto Allué^a, Eladio Domínguez^b, Antonio López^a, María A. Zapata^{b*}

^aInfozara Consultoría Informática, Marina Española 12, pral. C, Zaragoza 50006, Spain

^bUniversidad de Zaragoza, Pedro Cerbuna 12, Zaragoza 50009, Spain

Abstract

Organizations adopt software process improvement (SPI) frameworks for developing higher-quality software more efficiently. CMMI is one of the most widely used SPI frameworks; however, software tools that provide a higher automation level are required. In this paper, the QRP platform, which guides and evaluates conformance to a CMMI level, is presented. The main innovation provided by the platform is the automation of the CMMI level assessment using evidences collected during day-to-day project development, facilitating the appraisal of CMMI to a great extent.

© 2013 The Authors Published by Elsevier Ltd.

Selection and/or peer-review under responsibility of SCIKA – Association for Promotion and Dissemination of Scientific Knowledge

Keywords: Software Process Improvement; Quality Assurance; Project Control and Monitoring; CMMI; SCAMPI

1. Introduction

Organizations adopt software process improvement (SPI) frameworks to achieve more effectiveness in their development process and a higher quality of the final software product [1, 2]. Specifically, CMMI (Capability Maturity Model Integration) is an SPI framework [1] that, on the one hand, provides guidance for improving the

* Corresponding author. Tel.: +34-976-761131; fax: +34-976-761132.
E-mail address: mazapata@unizar.es.

software lifecycle and, on the other hand, can be used for appraising the maturity of the development process [3].

However, the adoption of CMMI by organizations is not a simple task. There are studies that describe successful CMMI adoption cases [4, 5], but other analyses conclude that sometimes organizations consider it to be infeasible to adopt CMMI, requiring radically less cost and time [2, 6]. For this reason, a solution could be any tool or software platform that facilitates and eases the adoption of CMMI, reducing cost or time [7].

In this paper, we describe QRP (Quality Ready Portal), which is a platform that supports quality assurance during the different phases of project development. The main innovation provided by this platform is the automation of the assessment of the degree of compliance with a CMMI maturity or capacity level through the natural use of the platform, facilitating the appraisal of the CMMI to a great extent.

The paper is structured as follows. The next section is devoted to presenting our proposal and the related work. Section 3 explains the way in which process monitoring is performed by means of QRP. The CMMI appraisal by means of QRP is presented in Section 4. The last section includes conclusions and future work.

2. Proposal and related work

Software process improvement (SPI) has been the subject of intensive research. Most papers address SPI from a prescriptive (telling the SPI professionals what to do), descriptive (reporting actual instances of SPI programs), or reflective (theoretically analysing) goal [1]. However, few articles are devoted to analysing or proposing software support systems for facilitating and easing the adoption of SPI practices.

Among the several proposed SPI frameworks, *CMMI for Development* (CMMI-DEV) is a collection of best practices for improving engineering processes and development in organizations that develop products and services [3]. With the goal of identifying the strengths and weaknesses of the processes of an organization and assessing the organization's proximity to CMMI best practices, regular assessments of compliance with the model are conducted. Specifically, the *Standard CMMI Appraisal Method for Process Improvement* (SCAMPI) is the official CMMI appraisal method that is used to evaluate organizations' processes and to provide ratings [8].

A problem is that the adoption of CMMI by organizations is occasionally infeasible [2, 6], and it is necessary to facilitate this task to avoid wasting time and cost. One way of achieving this goal is to provide organizations with tools or software products that make the adoption of CMMI easier. However, few tools support all of the types of CMMI-related activities because the support level that is provided is often very limited and a tool's ability to be customised according to the users' needs is quite small [9]. To our knowledge, MATURE [9] is the most flexible and adaptable tool because it supports the automatic generation of a language that can be used to specify process area practices. The main problem is that this adaptability makes it difficult to be used by a non-expert user in SPI. Other more specific tools, such as Spago4Q [10] or Polarion (www.polarion.com), up we know, do not implement the official CMMI appraisal method SCAMPI.

Our proposal, QRP (Quality Ready Portal) is a platform that supports quality assurance during the different phases of project implementation. This platform adopts CMMI-DEV as an SPI model and implements the SCAMPI method. The main innovation provided by the platform is the automation of the assessment of the degree of compliance with a CMMI level through the natural use of the platform. Therefore, QRP is a platform that is integrated into daily work and that guides and evaluates the conformance to a CMMI level.

QRP has been designed with a modular architecture based on three levels of generality: the system, organizational and project levels. Figure 1 shows a partial diagram of this architecture, which represents the modules that we will discuss in this study (modules of the system level are not included). The platform has been designed and implemented to be offered as an SaaS (Software as a Service) at the third level of maturity, which means that it can provide service to multiple clients with a single instance of the software [11].

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات