Taba Workstation: Supporting Software Process Deployment Based on CMMI and MR-MPS.BR

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Abstract. Deployment of software processes based on reference models is a knowledge-intensive task, i.e., a great amount of technical knowledge must be applied in order to guarantee conformance and adherence of processes deployed to the reference models adopted. Moreover, software process deployers have to deal with organizational and individual cultural problems on a regular basis, for instance, resistances to organizational changes. Therefore, the success of software process deployment within an organization or organizational unit depends on both technical and social aspects of the software process deployment strategy definition and execution. This paper presents the Taba Workstation, an enterprise-oriented Process-centered Software Engineering Environment (PSEE) constituted of an integrated set of tools to support software process deployment based on the Capability Maturity Model Integration (CMMI) and the Reference Model for Brazilian Software Process Improvement (MR-MPS.BR). Software process appraisals demonstrated that the Taba Workstation constitutes one of the most important organizational assets to facilitate the success of software process deployment initiatives and to overcome the inherent difficulties.

1 Introduction

Deployment of software processes based on reference models is a knowledge-intensive task, i.e., a great amount of technical knowledge must be applied in order to guarantee conformance and adherence of processes deployed to the reference models adopted. Moreover, software process deployers have to deal with organizational and individual cultural problems on a regular basis, for instance, resistances to organizational changes [1, 2]. Therefore, the success of software process deployment within an organization or organizational unit depends on both technical and social aspects of the software process deployment strategy definition and execution.

One important characteristic of a software process deployment initiative is the selection of an appropriate reference model to base the definition of the software processes and evaluation of the organization. International standards like ISO 12207 [3] and ISO 15504 [4] and software process quality models like CMMI (Capability Maturity Model Integration) [5] were developed aiming to define the requirements of an ideal organization, i.e., a reference model to be used in order to assess the maturity of

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the organization and their capability to develop software. Based on these standards and models, Brazilian industry and research institutions have worked together during the last two years aiming to define the Reference Model for Brazilian Software Process Improvement (MR-MPS.BR) [6, 8, 9]. This model has been deployed in many companies in Brazil and official appraisals were already conducted.

This paper presents the Taba Workstation, an enterprise-oriented Process-centered Software Engineering Environment (PSEE) constituted of an integrated set of tools to support software process deployment based on the Capability Maturity Model Integration (CMMI) and the Reference Model for Brazilian Software Process Improvement (MR-MPS.BR).

Section 2 presents the Reference Model for Brazilian Software Process Improvement and the appraisal method developed. Section 3 presents the main characteristics of PSEE approaches to support software process definition, deployment and enactment. Section 4 describes the main objectives of the Taba Workstation, and how it supports software process deployers during the deployment of processes according to reference models. Section 5 presents the conclusions and points out future directions for the presented work.

2 The Reference Model for Brazilian Software Process Improvement

The Reference Model for Brazilian Software Process Improvement (MR-MPS.BR) was created with the objective to provide an adequate model to Brazilian public and private organizations with different characteristics and sizes based on the most important reference models for software process definition and improvement (ISO/IEC 12207 [19], ISO/IEC 15504 [20], and CMMI [21]).

The reference standard for the software processes of MR-MPS.BR is the ISO/IEC 12207, i.e., this standard is the framework for the definition of the processes that constitute the MR-MPS.BR. Similarly to the ISO/IEC 12207 standard, the MR-MPS.BR defines fundamental processes, supporting processes and an adaptation process. Each company interested in deploying the MR-MPS.BR should select the pertinent processes from that set according to the adaptation process. The expected results for the deployment of the MR-MPS.BR processes are an adaptation of the expected results of the ISO/IEC 12207 processes and activities.

Seven maturity levels were established in the MR-MPS.BR: Level A (Optimization), Level B (Quantitatively Managed), Level C (Defined), Level D (Largely Defined), Level E (Partially Defined), Level F (Managed), and Level G (Partially Managed). For each of these maturity levels, processes were assigned based on the ISO/IEC 12207 standard and on the process areas of levels 2, 3, 4 and 5 of CMMI staged representation. This division has a different graduation of the CMMI staged representation aiming to enable a more gradual and adequate deployment in small and medium size Brazilian companies. The possibility of rating companies maturity considering more levels, not only diminishes the cost and effort of achieving a certain maturity level, but also allows the visibility of the results of the software process improvement within the company and across the country in a shorter time when compared to other models, such as CMMI. The criteria used to divide the processes across