

# ProjectIT-Time: Integrated Management, Evaluation and Measurement of Information Systems Projects

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## 1. Introduction

Professional system developers and their customers share a common goal of building information systems that effectively support business process objectives. In order to ensure that cost-effective, quality systems are developed which address an organization's business needs, developers employ some methods to direct the system's development life cycle, designed by Process Model.

While nearly all system development efforts engage in some combination of business modelling, analyse, design, implementation and test tasks, they can be differentiated by the feedback and control methods employed during activities execution. Actual processes models do not fit in an enterprise reality; they face great difficulties concerning organizations structure. This work proposes a tool to configure processes through the developed architecture that includes improvement in activities, products and roles. The main goal is to adapt good engineering practices in a software project development through a project management environment integrated with process configuration.

## 2. Process and Project concepts

A *process model* is an abstract representation of software production activities and their relationship. *Activities* are the units of work that sometimes may be related to each other forming a hierarchy, and they can be associated to roles. *Roles* describe in an abstract form the set of skills and/or responsibilities associated with the execution of one or more activities. During activity execution, developers create and transform *WorkProducts* that correspond to typical software development objects, such as requirements documents, test plans, test cases, etc. *Process models* are meant to be instantiated, resulting in an executable entity called a *project*.

## 3. The ProjectIT Initiative

The ProjectIT [1] is an investigation program that integrates some concrete projects on engineering and studies the problematic of information systems conception, development and operation.

ProjectIT intends to produce some results, nominated (1) a collaborative tool with Web interface (i.e., with Web-client access) assigned by ProjectIT-Enterprise; and (2) a tool, with Windows interface (i.e., with rich-client access), for bigger productivity activities accomplishment, assigned generically for ProjectIT-Studio. Both tools will present forts complementarities and integration mechanisms. The Studio version has as main goal provided mechanisms of high productivity to requirements management and specification, models drawing, automatic code generation and software development. On the other hand, the Enterprise version provides contributions mechanisms to development teams of average and great dimension, privileging on activities of project management and documents management, such as versions control, time management, quality or risk.

## 4. Related Work

Existing software development tools can be classified through two different perspectives: process or project supporting environment. Software Process Engineering Metamodel Specification (SPEM) [2] is the standard for process specification. However, environments that support process configurations are few. Rational Process Workbench (RPW) and RUP builder are two complementary environments that implements process configuration. Initiatives in project management involve tools to support heavyweight projects like Team Unifying Platform from Rational, Enterprise Project Management from Microsoft, Software Delivery Platform from Borland and eProject Enterprise. MASE and GForge are projects

that investigate methods, techniques, and tools to support the coordination of virtual software engineering projects using agile methods.

## 5. Problem Definition

The application of concrete processes in software project development involves an enormous effort from the organizations, also depending on its own dimension and capabilities. Commercial products with bigger quality and at lowest cost increase the competitiveness between organizations. To increase the efficiency and control of its projects, organizations must improve its work effort, considering support systems that allow them to semi-automatize at the maximum its processes. A project involves a set of predefined activities that can be planned and coordinated in the context of project management. An interconnection between process and project management is essential. To assist team members on their work, the effort spend in a process configuration could be used in other tasks, such as the project management task to control activities, work products and team members. The problems observed in these two dimensions and that they allow identify investigation areas are:

**P1: Lack of resources.** The technological resources that organizations allow to configure its processes are few. The only platforms considered as complete are the RPW and the RUP Builder. However they have no connection to project management.

**P2: Inexistence of integrated solutions for process and project management.** Through the analyzed tools, we can evidence that none of studied environments presents solutions for project management of different kinds of processes.

**P3: Lack of individual work management.** Project management with integrated team management allows team members to observe its performance and being informed about related activities and products status.

**P4: Lack of planning based on the process.** On the analyzed tools, individual work coordination is not based on factors related with the project.

**P5: Lack of metric guided by processes (management metrics).** Estimating and evaluating project entities, based on some metric, is not directly related to the process type adopted in the project development.

## 6. ProjectIT-Time GOALS

This work main goal is to integrate process and project management, considering the Project Management Knowledge Areas. According to PMBOK 2004 [3], project management includes a set of nine knowledge areas; however actual project management supporting tools to do not evidence the dependence of the knowledge

areas. Project success depends on the effectiveness of the process adopted by the organization, which implies more control and estimation over activities, products and project people. Recognizing the synergy between process and project management it's essential to define its relations.

As synthesis, this investigation main focus consists on the definition of a process metamodel (PIT-ProcessM) with connection to project definition and management (PIT-ProjectM), activities coordination considering information associated with system requirements and a metrics model based on specifications of high level (use cases). These work contributions enclose four great areas: process management; project management; integration with other areas and systems; management metrics.

## 7. Conclusions and Future Work

Beside new business and technological environments, information systems are becoming more complex and difficult to manage. The evolution of system development has reflected the changing needs of computer customers. As customers demanded faster results, more involvement in the development process, and the inclusion of measures to determine risks and effectiveness, the methods for developing systems changed.

The comparation between different collaborative tools allows understanding that the necessary features to integrate process and project management due not coexist in the analysed tools. Recognizing that most critical problems occur during project management and mechanics used in its support, we believe that integrating process and project the passed projects experience can be used to automatically control some project activities, as we propose in ProjectIT-Time.

Within ProjectIT-Time we have already defined a process metamodel and a project metamodel. Some ProjectIT-Enterprise components have been developed considering these two metamodels. Future work includes additional components like budged management, version and notification mechanisms. But the main challenges involves activities monitoring based on project requirements and the definition of management metrics.

## 8. References

- [1] Alberto Silva, "O programa de Investigação Project-IT", November 2004.
- [2] OMG, "Software Process Engineering Metamodel Specification", Version 1.0, November 2002, [www.omg.org/technology/documents/formal/spem.htm](http://www.omg.org/technology/documents/formal/spem.htm).
- [3] Project Management Institute, "A Guide to the Project Management Body of Knowledge (PMBOK Guides)", 2004.