

Adaptación de MoProSoft para la producción de software en instituciones académicas

Adaptation of MoProSoft for software production in academic institutions

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Resumen

El modelo MoProSoft (Oktaba, 2005) se aplica al desarrollo de productos de software en pequeñas y medianas empresas (Pymes); en un contexto global, 90 % de las empresas que desarrollan software están incluidas en dicha clasificación. Este proyecto de investigación tiene como propósito adaptar el modelo de calidad MoProSoft para desarrollar proyectos de software en instituciones académicas, en particular en el Instituto Tecnológico de Colima. El desarrollo de los productos de software está basado en los procesos del modelo de calidad de la norma MoProSoft NMX-059-NYCE-2005.

Palabras clave: modelo de calidad, MoProSoft, procesos, desarrollo de software.

Abstract

Model MoProSoft (Oktaba, 2005) is applied to the development of software products in small and medium-sized enterprises (SMEs); in a global context, 90% of the companies that develop software are included in this classification. This research project aims to adapt the quality MoProSoft model for developing software projects in academic institutions, in particular at the

Technological Institute of Colima. The development of software products is based on the processes of the quality of the standard model MoProSoft NMX-059-NYCE-200.

Keywords: quality model, MoProSoft, processes, software development.

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Introduction

The software industry is largely involved in the economy of the country; Information and Communication Technologies have acquired great importance in recent years, to the extent of originating a computer revolution, where software companies are the most profitable in the world (Peñaloza, 2002). This situation was hard to imagine 30 or 40 years ago, but now the use of the software has crowded in many organizations around the world.

In 2002 there were about 300 companies from software in our country, but only 20% were formally structured, either as subsidiaries of international companies or as software 100% Mexican companies. The 90% of these software companies is comprised of micro-enterprises (Ventura, 2006); however, the participation of academic institutions in the development of software in our country is scarce, it is necessary that curricula are better linked with the software industry, to ensure congruence between the technological needs and current quality standards.

The Ministry of Economy in its branch of industry of software development included within its main objectives to increase the competitiveness of Mexico on software development projects. Thus, the program for the Software industry development (ProSoft) was designed, and one of its main strategies aims to reach international levels in process capacity, which was proposed to introduce a model of processes and assessment appropriate for the Mexican software industry. This model is called MoProSoft, which means process model for the development of Software; the model is aimed mainly to small and medium-sized enterprises, and development of software (Peñaloza, 2006).

However, there is a model aimed at academic institutions focused to the improvement of the practices for the development of software, therefore this project aims to adapt the model of quality MoProSoft to the development of software within academic institutions.

QUALITY STANDARDS

The use of quality standards in the construction process of IT projects is essential now, and the increase of companies dedicated to this area offers multiple solutions, generating increasingly selective customers, but what is the quality of software?

"The agreement with the functional and performance requirements explicitly established, documented standards development and the implicit characteristics expected of all professionally developed software" (Pressman, 2002).

The quality standards define the criteria of development leading the way leading software engineering, and are intended to generate products of high quality software; standards provide a means for all processes are conducted in the same manner and are a guide to achieve productivity and quality (Piattini, 2003).

A software quality standard meets the activities and makes each is planned, controlled and run in a systematic way. Some standards are: ISO 90003, ISO 12207, ISO 15504 SPICE, IEE / EIA 12207, ISO 20000, ITIL, COBIT 4.0, ISO 25000 SQUARE, IEEE Std 1061-1998.

Moprosoft

MoProSoft is the Process Model for Software Industry in Mexico, whose purpose is to standardize its operation incorporating improved practices in management and software engineering. The model allows to increase the capacity of providing quality products to organizations and achieve international standards of competitiveness.

MoProSoft born with the needs of small and medium enterprises engaged in the development and maintenance of software provides a set of processes that can be adopted and adapted to the needs of each company, it is easy to understand and its implementation is not expensive, unlike

international standards which are designed for large and medium enterprises dysfunctional for SMEs in Mexico.

MoProSoft is organized in three categories covering the areas of a company dedicated to software development: Executive, Management and Operation. Figure 1 shows the scheme gives the categories with each process that integrates.

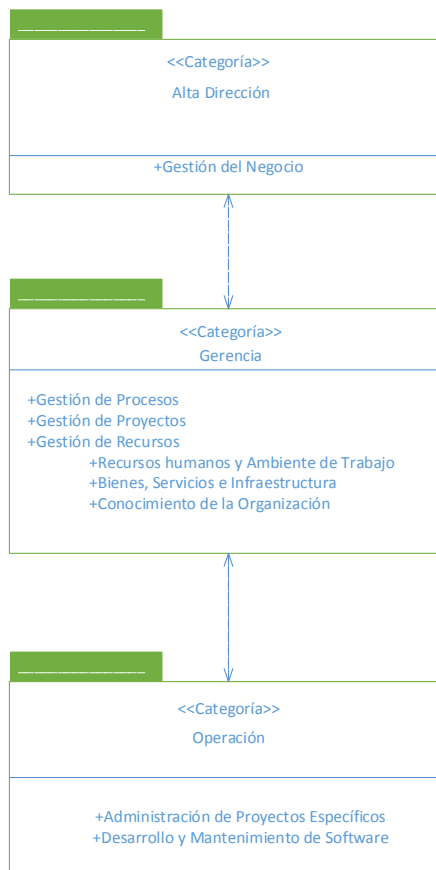


Figura 1. Estructura MoProSoft

Senior Management Category

It focuses on practices related to business management. It also provides guidance to the category management process and receive the required feedback from the information generated by these.

Category Management

It focuses on practices related to the management of processes, projects and resources in accordance with the guidelines established by senior management category. It also provides the necessary processes category Operation elements, receives and evaluates information generated by these and communicates the results to senior management category.

Category Operation

This category focuses on practical projects development and maintenance of software. Activities carried out by the elements given by management and communicated to the results.

Schools or academic institutions, including universities, require that there is communication with the business sector for the generation of technology products, which currently does not exist. Another problem is that some institutions have not have a methodology to ensure the quality of the products offered to the business sector; For these and other reasons, potential customers have confidence in the education centers that are suppliers of technological solutions. They do not have a quality model that allows them to be proficient in the job market, and this requires companies that seek technological solutions require products certified companies and not in academic institutions. Another common problem encountered when developing software is to understand the business processes and understand the point of view from the perspective of the customer, who often does not know sometimes what you really want or need, and have a clear idea of strategic activities operation in a company.

The colleges that offer courses in Information Technology and Communication do not have a methodology to ensure the quality of the developed technology products. In addition, the engineering requirements is essential in the development of software applications, and these requirements define what the system will perform, thus identifying each correctly software provides the functionality expected by the user . It is also possible that the requirements change and it impacts significantly to the planning and architecture of the project way. The number of requirements can be very large and difficult to control, but this task can be facilitated if it adheres to established quality standards.

It is desirable that institutions or companies adhere to quality standards and tested to ensure a competent product, so it is necessary to adapt a model that can efficiently cover the production of software in an academic institution.

The problem is that current standards (ISO 90003, ISO 12207, ISO 15504 SPICE, IEE / EIA 12207, ISO 20000, ITIL, COBIT 4.0, ISO 25000 SQUARE, IEEE Std 1061-1998) are extensive, ie they are applied development of software products for large companies, making it very expensive to implement; however, in the state of Colima, all are small and micro enterprises, so a quality model that suits develop software product for these businesses is required.

"Described in general, a company is looking for an intelligent solution to approach problem solving, among many, a human need" (Goodman, 1988).

With regard to the problem raised in the previous point, it is proposed to implement a quality model that serves all academic institutions in Mexico for technological products based on standards that ensure quality and customer satisfaction.

The proposal defines a systematic process of developing a quality model based on the Mexican standard NMX-I-059-02, with which the safety of getting a software process as a computer system develops quality characteristics will have more competitive in the market.

Figure 2 shows a diagram showing the structure of the model and the processes that make up the standard NMX-I-059-01-NYCE-2005.

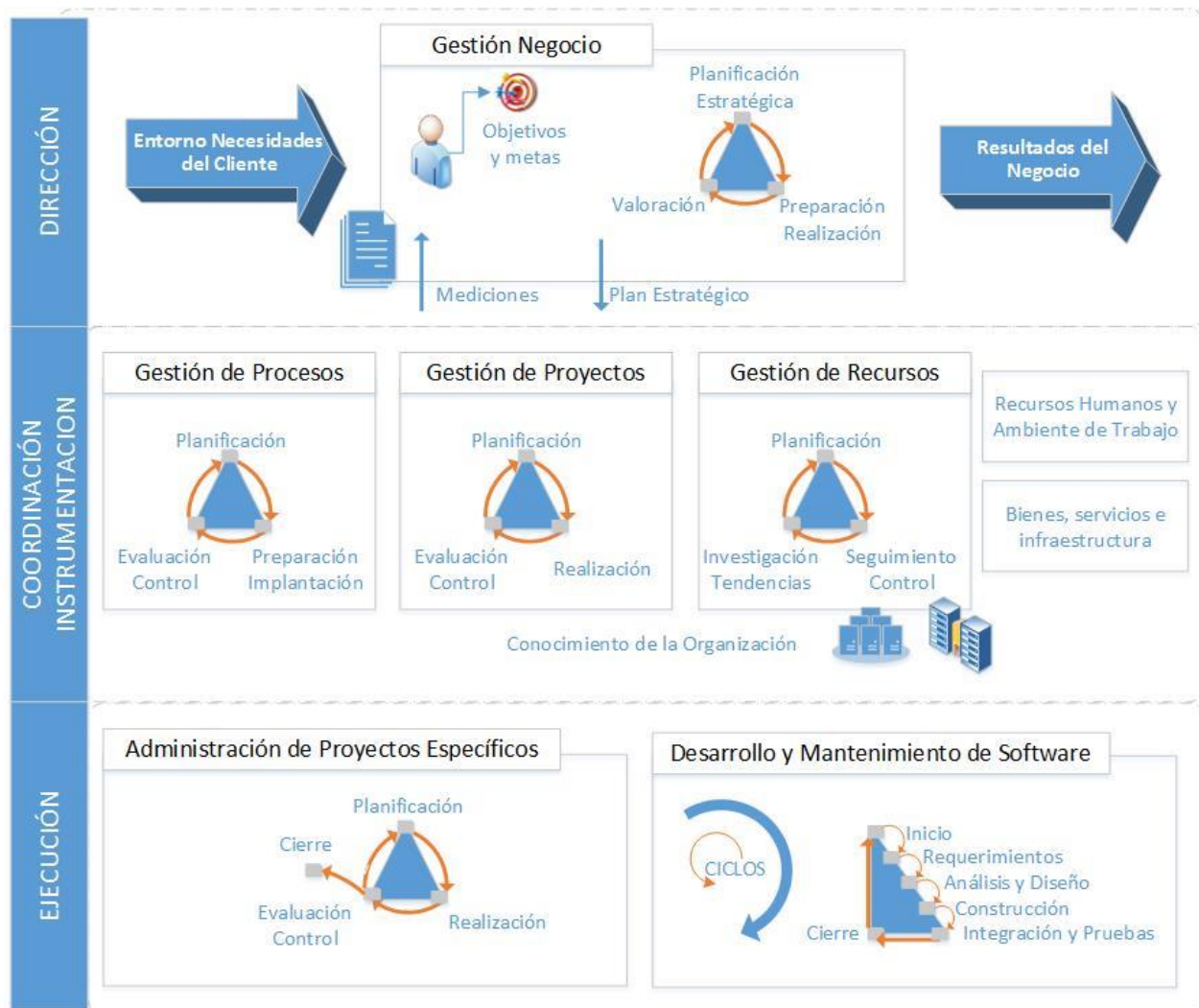


Figura 2. Estructura del Modelo MoProSoft

Senior Management category contains the Business Process Management, in her senior management practices that are related to business management are addressed, the lines are generated for the three processes that make up the category of Management and feeds the information generated by them.

Management category is formed by the processes of Process Management, Project Management and Resource Management, the latter formed by the threads of Human Resources and Work Environment, Goods, Services and Infrastructure Organization's Knowledge.

The process category addresses process management practices, projects and resources in accordance with the guidelines established in the category of top management, their main task is to provide the elements for the functioning of the process operation category, receive and

evaluate the information generated by these and communicate the results to the Senior Management Category, Operation category consists of processes Specific Projects Management and Software Development and Maintenance. This category addresses the practical process of development projects and maintenance of software; also it performs the activities according to the information provided by the Management Category and delivers this information and products generated.

The products generated in the process are classified into software products, plans, reports, records, lessons learned and other products.

The software product is generated in the process of developing and maintaining software, these software products are classified into requirements specification, analysis and design, software, record, and manual tracking, classification may be specialized according to the needs (NMX-I-059-01-NYCE, 2005).

Production Laboratory IT SOFTWARE COLIMA

It is the Center for Innovation and Production Software Colima Institute of Technology, founded with the purpose of strengthening the link between the technology community with the productive sectors of the region.

mission

JaguarSoft group's mission is to generate technological solutions to optimize the business processes of the productive and social sector in the region by applying quality standards.

view

Being a leading group to strengthen the link between the Technological Institute of Colima to promote the use of ICT in public agencies and private sector in the region.

Among the services offered by the center include the following:

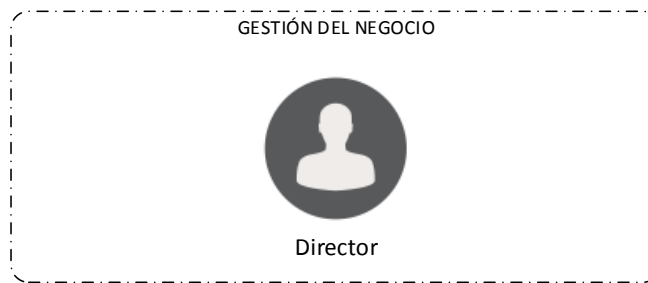
- Development of management applications for desktop or Web-based
- Developing applications for mobile devices
- Implementing and Managing e-business applications
- Design, installation and management of computer networks technologies

- Preventive and corrective maintenance of computer equipment
- Consulting, advice on ICT

ADAPTATION OF MOPROSOFT-JAGUARSOFT

MoProSoft structure is based on processes, consisting of three categories. Figure 3 below shows the categories management with senior management and organizational integration of the Technological Institute of Colima.

ALTA DIRECCIÓN



GERENCIA

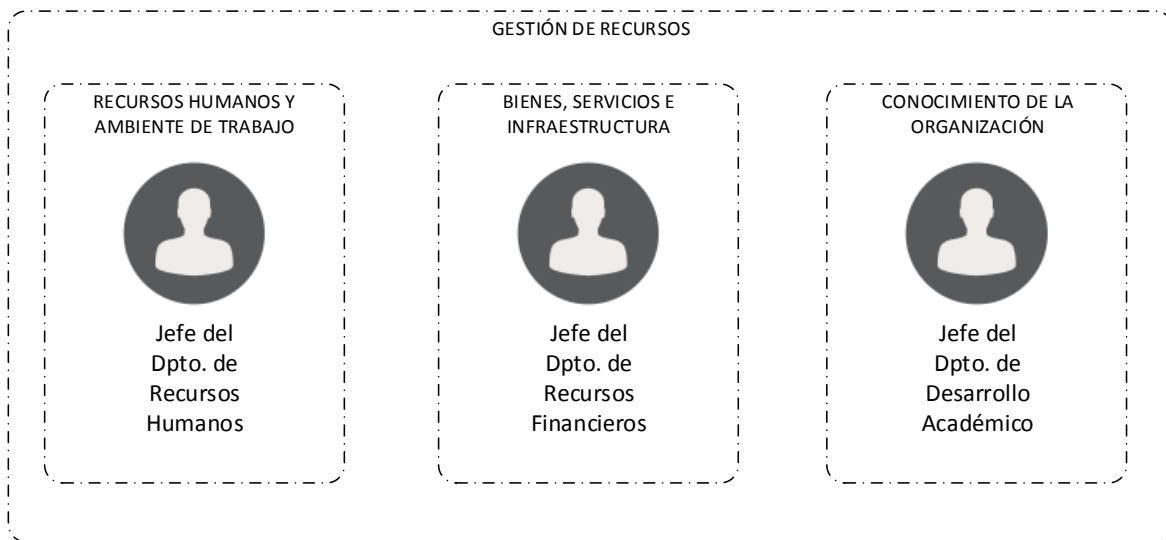
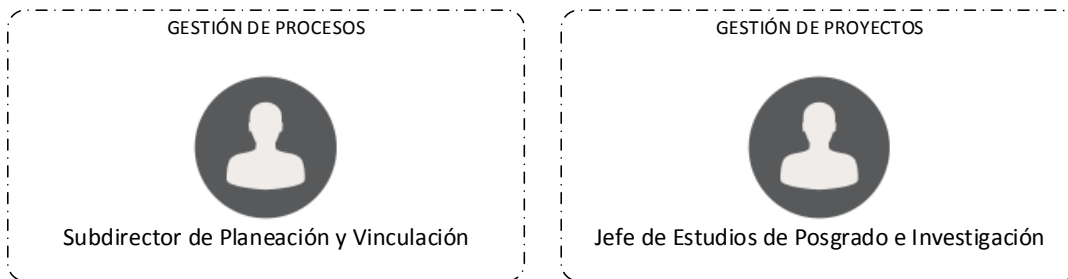


Figura 3. Alta Dirección y Gerencia

Senior Management category consists of the Business Process Management, responsible for the process would be represented by the director of the Technological Institute of Colima, who would be responsible for fulfilling the purpose of the process.

The purpose of Business Management is to establish the rationale behind the organization, its objectives and the conditions for achieving them, which is necessary to consider the needs of customers, and to assess the results to propose changes that allow continuous improvement .

Additionally, it enables the organization to respond to a changing environment and its members to work according to the targets set (NYCE, 2005).

Management category consists of processes Process Management, Project Management and Resource Management, responsible for process management would be represented by the Deputy Director of Planning and Liaison, who would be responsible for fulfilling the purpose of the process.

The purpose of Process Management is to establish the organizational processes, depending on Required Processes identified in the Strategic Plan. And define, plan and implement improvement activities therein.

Responsible for fulfilling the purpose of the Project Management process would be represented by the Head of Graduate Studies and Research; the purpose of project management is to ensure that projects contribute to fulfilling the objectives and strategies of the organization.

The Resource Management process, which is comprised of Human Resources and Work Environment, Goods, Services and Infrastructure Organization's Knowledge, aims to obtain and provide the organization of human resources, infrastructure, work environment and suppliers, and create and maintain knowledge base of the organization. The aim is to support the achievement of the objectives of the Strategic Plan of the organization.

The process of Human Resources and Work Environment would be represented by the Head of Human Resources Department, whose responsibility is to provide adequate human resources to fulfill the responsibilities assigned to roles within the organization and assess the work environment.

The process of Goods, Services and Infrastructure would be responsible to the Head of Financial Resources whose purpose is to provide suppliers of goods, services and infrastructure that meets the requirements acquisition processes and projects.

The process of knowledge of the organization would be responsible to the Head of Academic Development, which aims to maintain and manage the available knowledge base containing the information and products generated by the organization.

The search operation within MoProSoft structure consists of two processes, Specific Projects Management and Development and Software Maintenance. Then Figure 4 shows the alignment of the organizational category with the Technological Institute of Colima.

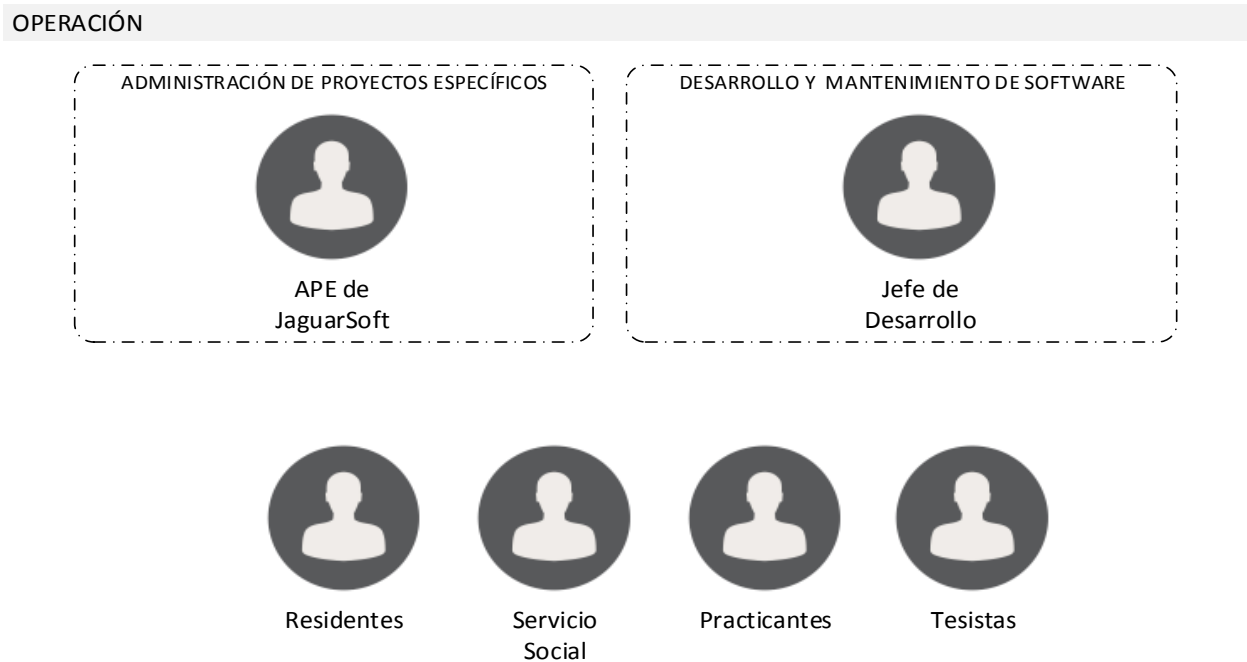


Figura 4. Operación

The purpose of Specific Projects Management is to establish and systematically carry out activities to meet project objectives on time and expected cost; responsible for this process would be the Project Manager JaguarSoft.

The purpose of Software Development and Maintenance is the systematic implementation of the activities of requirements elicitation, analysis, design, construction, integration and testing of new software products or modified to comply with the specified requirements; responsible for this purpose would be the Head of Development.

CONCLUSIONS

The adaptation of this quality model for JaguarSoft at the Technological Institute of Colima incorporates the most important parts in the methodologies used in software development companies are certified in MoProSoft, allowing it more competitive in the event that certification is required for a tender. the resulting product as an agile and quality model that can adapt to any academic institution is considered.

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