New Challenges at Escola Politécnica of University of São Paulo Continued Education

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Nowadays universities work together, they cooperate on course creation and they change their curricular structures in order to adapt to the new worldwide educational context. Based on this context, the reengineering process of a continued education program will be presented .In this context, business process models described using BPMN (Business Process Modeling Notation) and their deployment will be presented, moreover the achieved results will be described in each of the following aspects: cultural, educational, organizational and technological.

Index Terms – Reengineering process, continued education, BPMN, business views.

INTRODUCTION

Engineering Schools have been executing internal transformation in their courses, because of the current worldwide context. A large number of institutions sign agreements to offer a double diploma to their students, thus their professionals will be able to take place at different markets. One actual example is the double diploma between universities of Brazil and France [1].

Outside factors as regional movements, for example the Bologna declaration applied by European Union (EU), transformations have originated in the universities curricular structures to increase the exchange of professionals between EU's countries, and also, creation of professionals formation level (technical, academic, PhD.), with different formation periods (3,4,5 years) has been demanded[2].

The main objective of the continued education program is the state of art knowledge transfer from university research to engineers at any professional cycle stage, to keep them updated and able to apply the knowledge in the companies where they work for. The knowledge transfer occurs by short and medium term specialization and training courses.

The worldwide context impacts the continued education programs. Nowadays there is the need to integrate with other country programs to prepare professional with the specific requirements of each market. There is a need for short term and high specialized courses, and tuned in to current universities structures as the case of countries involved in the Bologna declaration.

International integration and adaptation to the new engineering courses demand structural changes in the continued education program and, inside this context, this paper presents the reengineering of the Continued Education Program in Engineering (PECE) at Escola Politécnica of the University Of Sao Paulo. This reengineering process has used corporative models and processes modeling techniques.

Furthermore, PECE has to follow the strategic plan of Escola Politénica called Poli 2015, which the main objective is to dynamically adapt the School preparing it for the changes will happen in the next years [3].

At the beginning this paper presents the methodology used to modernize the institution organization and after two important stages of this methodology, PECE models and Business Processes.

REENGINEERING METHODOLOGY

PECE modernization process has used a methodology based on models and processes like those used on software projects. The process stages are described below:

- Cultural initiation: The objectives of the modernization strategic plan have been presented to all the involved people, in order to commit them. The whole staff has been prepared with group work techniques and corporative responsibilities.
- Current state analysis: Data has been collected by interviews with employee groups, and then current processes have been described and a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threads) has been developed.
- Corporative models definition: Models in different perspectives have been developed based on ODP (Open Distributed Processing) to guide PECE business processes [4].
- Process modeling and specification: new requirements have been analyzed and PECE business processes have been defined using BPMN (Business Process Modeling Notation) [5].
- Process and systems deployment: The staff has begun new processes usage following corporative directives and some of these processes have been automated by information systems.

Methodology important products are the different views presented by the developed models, because they consider cultural, corporative and organizational requirements.

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PECE MODELS

The structural models are PECE environmental abstract views and they are used to identify and implement requirements, and to elaborate institution's strategic plan. These views increase the organizational management capability and also allow PECE corporative governance to be deployed. The structural models are following described:

- Value Model: elaborated upon values of Escola Politécnica as well as worldwide continued education challenges. This model identifies PECE mission and shows corporative factor as trust, collaboration, valorization, capacity and commitment. These factors have a straight relationship with organization culture.
- Hierarchical Model: based on ODP enterprise view where services components are defined [4]. This model organizes corporative management and is composed of hierarchical levels - strategic, management, and operational – also called corporative architecture. In each of these levels the organizational services are described. Strategic level contains the services related to strategic decisions; Management level contains the services related to process management; and operation level contains services related to process execution [6].
- Organizational Model: based on the same ODP enterprise view as Hierarchical Model, but this model defines management roles and PECE business units and general, administrative and academic coordination. The business units aggregate specific activities and are formed by a management and its operational module. The business units created in PECE are the following: Contact Center, Academic, Financial, Relationship, Infrastructure, Information Technology and Distance Education.

The value model is used to create corporative policies, the hierarchical model is used to determine corporative services and the organization model is used to define the employee roles and their functional range of activities. Therefore, this set defines all the business processes features.

BUSINESS PROCESSES

PECE business processes define activities, tasks, roles, techniques and policies, which have to be used in each hierarchical level and each business unit. They have been elaborated using Current State Analysis, described in Reengineering Methodology, and also using PECE models as reference to define business requirements.

Business processes have been modeled using BPM notation, which has been easily spread out and understood by employees. Currently each business unit has a business process manual, which is used during employee training. This manual is updated when business process is updated due to new corporative requirements.

Figure 1 presents a simple BPMN of PECE Contact Center, in this figure there are two actors: student and attendant; student generates a solicitation which is analyzed by attendant who will answer it immediately if possible, otherwise the attendant open a support solicitation to the specific business unit related to the client demand. At this process metrics are generated to supervise the business unit performance.

Business processes deployment has been occurred gradually during a six months period. People have been trained continually and processes have been documented, there were and there are continuous controls of process usage to avoid return to the old counterproductive model and currently there is also a service quality improvement program.

Nowadays each PECE business unit has its processes described which totalize 35 processes.

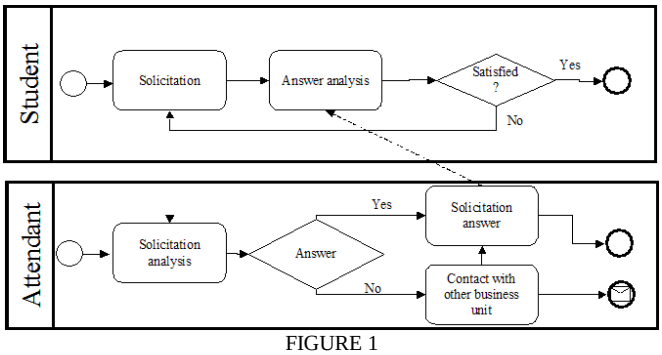

FIGURE 1
BPMN DIAGRAM OF ONE PROCESS OF PECE CONTACT CENTER

RESULTS

PECE reengineering based on the methodology described earlier has brought the following results.

- Organization view: the model based on business units made people allocation easier, evidencing employees weaknesses and serving as a base to "on the flight" trainings. One concrete example occurred at academic business unit which before training only one of the five employees knew a key process and after training all employees were able to execute the process.
- Business View: The organization and reached controls allowed new business opportunities called corporative training programs, which are short term and highly specialized offered to Sao Paulo city companies. PECE has 6 courses like this after reengineering deployment.
- Cultural View: motivation has increased, because new challenges have been created. Some employees have developed skills never presented before, others have had to move out of the comfort zone and few have not found any function and were relocated. An external consulting evaluated some employees and detected in 50% of them a leadership potential development after reengineering. Before it this number was only 15%.
- Technological view: business processes modeled in BPMN have been used as a part of Educational ERP (Enterprise Resource Planning) requirement specification which has been developed by the Information Technology Unit. Today PECE has 3 modules of its ERP developed after one year of reengineering. These modules have substituted a legacy system and manual processes.

CONCLUSION

PECE abstract models and business processes are essentials elements to manage organizational structure changes, thus it is possible to insert new requirements generated by the new continued education context.

PECE integration with overseas universities is possible, because PECE business units have business process, which refers to this type of integration, and PECE information system has interfaces to integrate an educational cooperative environment.

Course creation in accordance to world continued education context is facilitated, because it is treated as a new business where through current business processes each business unit has a role in this creation.

PECE models have been created applying the proposed methodology, and are specific procedures, people, and technology independent. These features make them open, allowing their use in others institutions.

Some business processes proposed by reengineering process could only be deployed and executed by the employees supported by information systems. Otherwise, they would be excessively time consuming.

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