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POSSIBILITIES OF APPLICATION OF PROCESS MODELLING WHEN DEVELOPING A PROPOSAL OF THE BUSINESS PROCESS MANAGEMENT SYSTEM FOR A UNIVERSITY DEPARTMENT

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Abstract

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Today's global environment requires every sustained effort to outmatch both competition and innovation. Top organizations of all types – governments, non-profit organizations, companies, institutions and universities try to solve the following difficult questions: How to improve standard of customer service and raise the productivity without concurrent growth of expense accounts. How to control risks and observe the rules without losses of entrepreneurial (competition) benefits? How to stimulate all the employees to participate in innovation, development of new products and services, finding new markets and more efficient satisfaction of customers?
The paper deals with possibilities of procedural simulation both for the improvement and innovation of present processes, and for the formation of completely new trends of the Institute of Lifelong Education of Mendel University of Agriculture and Forestry in Brno. An important condition for the design of procedural simulation is expert activity provided by highly professional experts or consultants in the field of education as well as in business matters.

process management, process, activities, subprocess, Business Process Reengineering, process modeling, SYCAT software

Origins of Business Process Management (BPM) can be traced back to the era of establishment of first production units – manufactures. The difference between individual historical periods consist above all in the fact that in individual developmental stages the managers put more or less emphasis on individual attributes of the system of management. However, it is important that each of these approaches has to deal with organisational processes because they are nothing else than a sum of logically arranged activities, resources and responsibilities, which lead (and result) in a transformation of inputs to outputs. The main objective of this transformation is to be as efficient as possible and to reach the expected level of performance. This is the main goal of any business and institution (and thus also of univerities). The present turbulent era requires also a great amount of market flexibility so that the companies and/or institutions are forced to change and modify permanetly all their internal processes.

Besides a continuous impovement of business processes, which results in an only partial progress, it is also possible to use a more radical approach, i.e. the so-called reengineering of business management processes. Davenport (1993) enumerated the following characteristic differences between both approaches to changes in business management processes:

The method of process reengineering *per se* is implemented on the base of a concrete methodology and it can be said that, for the time being, there are tens of such methods available. So, for example, Hess & Brecht (1995) mentioned 15 of such methods and it can be said that they are mostly oriented to teh application of information technologies (IT).

I: *Gradual improvement vs. reingeneering of business management processes*

	Improvement	Innovation
Level of change	Gradual	Radical
Starting point	Existing processes	"Green meadow"
Frequency of changes	Single/continuous	Single
Necessary time interval	Short	Long
Participation	Bottom-up (decentralised)	Above-down (centralised)
Typical extent	Limited/narrow	Wide
Risk bearing	Medium	High
Primary tools	Classical management	Information technologies
Type of changes	Cultural	Cultural/structural

Source: Davenport, 1993

In principle, process modelling enables to obtain a dynamic view of activities performed within the framework of real business processes depicted by means of methods and approaches used for specification and analysis of such processes. In this way it is possible to model nearly any organised system and to specify its behaviour, demands and requirements in an exact manner. Modeling enables to define the main purpose of business activities as a correct specification of business processes on the one hand and as an analysis of their properties on the other. The purpose of modelling is to create such an abstraction of processes, which enable to understand all its activities and relationships existing among these activities and roles, as represented by the capabilities of people and facilities invovled into a given process.

Transformation of the all-university workplace Institute of Lifelong Education of Mendel University of Agriculture and Forestry in Brno (ILE MUAF) to a university body pursuant provisions of § 22 of the Act No. 111/1998 Sb. on universities required, among others, transformation of old and implementation of new processes. A new system of processes was developed unsing the project of the functional model of process management of the university institute as a base.

The main objective of this project is to develop both a key process called "Bachelor Studies" and a supporting process called "Entrance Exams" in the university Institute of Lifelong Education, MUAF Brno on the base of SYCAT software. Both aforementioned processes were implemented in practice.

MATERIAL AND METHODS

Modelling of processes of this university institute was based on an analysis of key and supporting processes, their structure, mutual interrelationships, reactions and links. This analysis was performed in the following steps:

1. Formulation of essential activities and their arrangement within the framework of working procedures, methods, related documents etc.,
2. Definition of key processes (i.e. those, which contribute to the creation of added value),
3. Definition of supporting processes,
4. Development of the key process "Bachelor Studies",
5. Development of the supporting process "Entrance Exams".

The process model was developed using the SYCAT software, which enables (among others) to assign activities, human resources and roles to individual processes. This analysis was combined with the method of description of not only process models but also of their basic parameters. The proposal of implementation of developed processes was formulated on the base of performed analysis and description.

RESULTS

At first, the performed analysis involved a formulation of those activities of ILE MUAF, which were related to the implementation of its mission within the framework of the university. At MUAF Brno, the Institute of Lifelong Education was established as an independent university body purusant provisions of § 22 of the Act No. 111/1998 Collection of laws on universities and also on the base of a Rector's Decision No. 15/2006, which was issued on 15 August 2006; the main objective of this decision was to contribute to the implementation of accredited study programmes and to perform corresponding scientific, research and development (R&D) activities.

In the field of a further education of teachers, it is oriented above all to bachelor studies of secondary school teachers of professional subjects and practical training. The longlife education concerns also teachers of professional and practical subjects, professional training, and practical education within the framework of accredited programmes, scientific and R&D activities and also on the implementation of pedagogical education of university teachers.

In the field of a further professional education, the ILE will assure a continuous development of

the lifelong education of general public in special programmes. The content of and tuition in these courses will be prepared and performed above all by the teachers of MUAF Brno.

The education of seniors will be organised within the framework of the University of the Third Age, which is an integral part of the system of lifelong education offered by ILE MUAF.

The key processes are the following:

a) Bachelor studies,
b) Studies in paid/commercial educational programmes (i.e. courses of lifelong education),
c) Senior studies,
d) Activities in the fields of science, research and development,
e) Implementation of projects elaborated by the Centre of Excellence.

The supporting processes are as follows:

a) Entrance exam,
b) Planning of professional practice,
c) Budgeting,
d) Planning of human resources,
e) Planning of classrooms,
f) Planning of semestral time schedules,
g) Academic ceremonies,
h) Marketing and PR,
i) Enrollment into the courses of lifelong education.

DISCUSSION

There are many approaches to and methods of modelling of business processes; as usual, they came into excistence in association with the application of software products developed for the purposes of process modelling. They were compared by Řepa (2007) who documented basic elements of business process modelling. Such elements are common to all methods, standards and approaches that concern these problems. In general, the following can be mentioned as the basic elements of each process model:

- Processes,
- Activities,
- Events,
- Dynamic links.

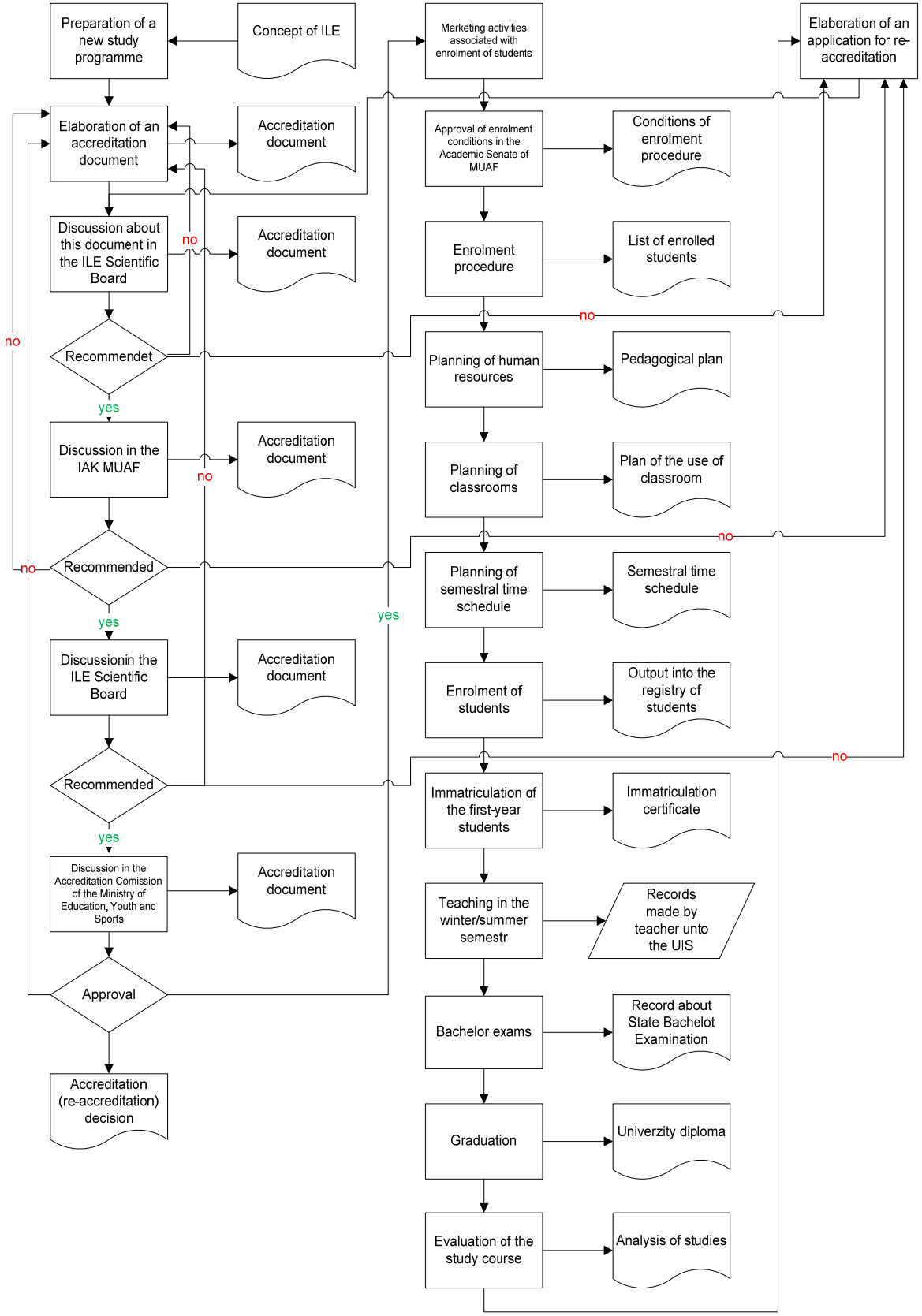
Each process is modelled as a structure of mutually interlinked and/or connected activities. However, each activity can be described also independently as a process. The fact is a given activity is or is not described as a process depends above all on the method used by the author of such a model, on the need of its comprehensibility, and/or on the SW tool used. As far as the process itself is concerned, it is always possible to define its internal situation, i.e. its status. Some methods describe and model process situations (i.e. model status) as a special model element (e.g. the methods MMBAP or FirstStep) while others are based on special events (e.g. the methods BPMN or ARIS).

Using dynamic linkages it is possible to arrange individual activities into mutual relations. Such linkages enable to arrange individual process activities into a system, which begins with a simple sequence and continues through variant solutions to parallel systems and their combinations. Different definitions are used for all basic types of linkage crossings. So, for example, the method IDEF3 calls them *junctions*, while the method PSL ISO 18629 calls them *crossroads* the method BPMN *gates*, and the method ARIS *logical operators*.

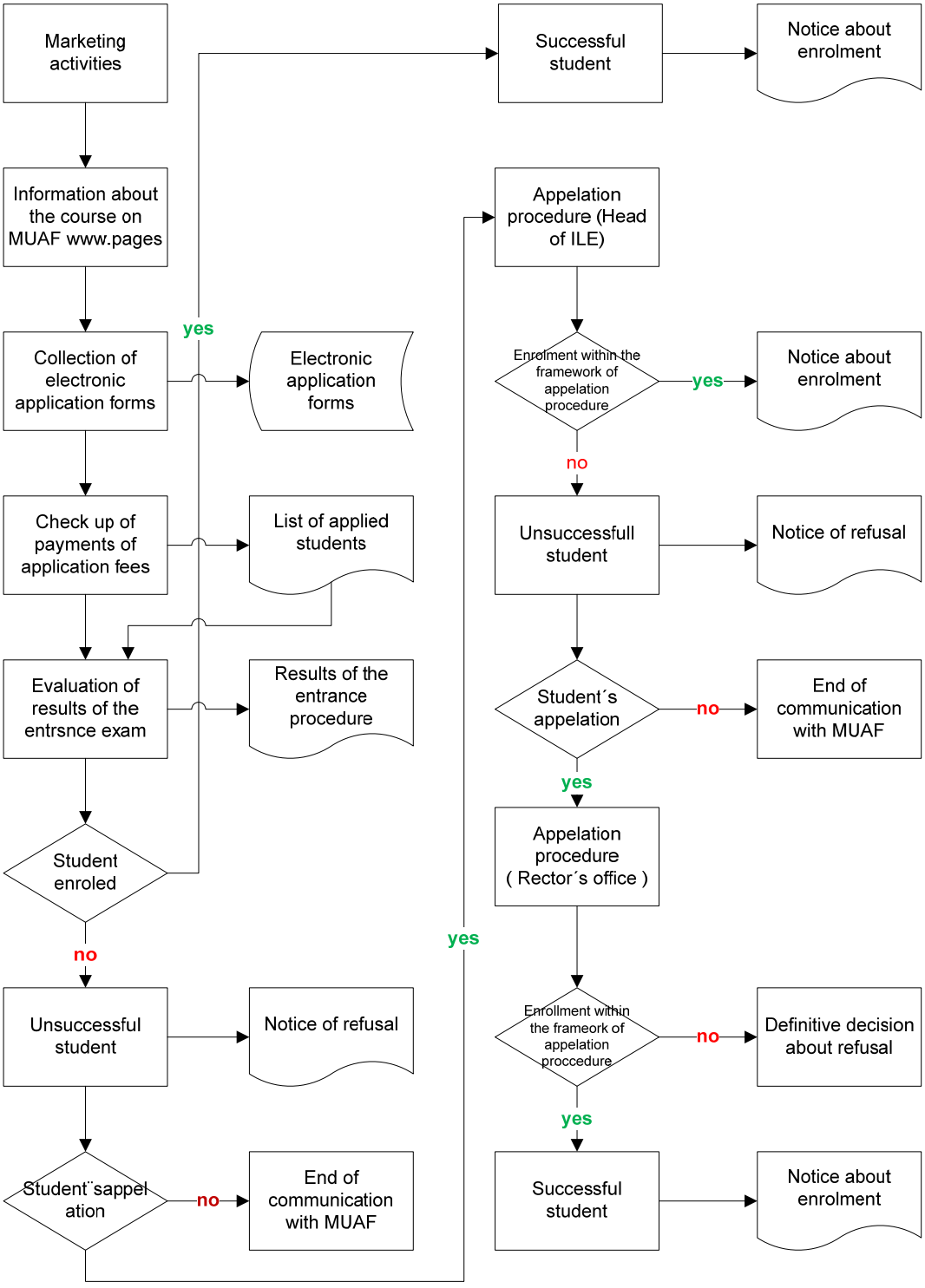
The model, which is presented in this paper, was developed by means of the SYCAT software tool. The methodology does not define any exact procedure. Its development consists of several steps:

1. In the first step, individual processes, functional regions, activities and sub-processes are defined and tabulated. Further it is possible to assign to these elements for example human resources, documents, data and costs. Human resources (employees) may be grouped and each of them can be identified with a certain role. Individual documents, as well as data, may be classified into individual type groups.
2. In the second step, the described model can be transformed automatically into a graphic form using the diagramming software MS Office Visio. This graphic model should be supplemented with linkages and relationships existing among processes, activities, and sub-processes.
3. In the last step, the developed model enables to obtain a process manual containing a survey of associated data and document sets. Besides the process manual it is also possible to obtain a list of requirements concerning the IS/IT functionality.

The development of models of key and supporting processes described in this paper enabled us to start efectively and without problems bachelor studies at the ILE MUAF Brno and to enrol the first 120 students into these courses. It was also demonstrated that the process orientation may be a real contribution to activities of such institutions as the public universities, especially if it is supported by a productive solution of uncovered technical and organisational problems and a systems approach (as mentioned by B. Lacko from the Brno University of Technology (2002).



1: *Model of the key process "Bachelor Studies" Source: Author*



Source: Author

2: *Model of the supporting process "Entrance Exam"*

SUMMARY

This paper deals with possibilities of application of process modelling not only for the improvement and innovation of the existing processes but also for the creation of completely new processes in the Institute of Lifelong Education at MUAF Brno. This process modelling was based on an analysis of key and supporting processes, their structure, linkages, events, responses, and mutual relationships. Basing on results of this analysis it was possible to develop two process models, viz. one key model and one supporting model. The creation of these process models and their subsequent implementation enabled to manage effectively the establishment of a new bachelor study programme and to enrol the first 120 students at the ILE MUAF Brno. This method of management demonstrates its suitability for the application under practical conditons.

SOUHRN

Možnosti použití procesního modelování pro návrh systému procesů vysokoškolského ústavu

Dnešní globální prostředí si vyžaduje jak neustálé úsilí o překonání konkurence, tak také snahu předčít konkurenci v inovacích. Špičkové organizace všech typů – vlády, neziskové organizace, podniky, instituce i univerzity řeší následující složité otázky:

- Jak můžeme zlepšit úroveň služeb pro zákazníka a zvýšit svoji produktivitu bez současného vyvolání růstu nákladů?
- Jak můžeme řídit rizika a dodržovat předpisy bez ztráty podnikatelské (konkurenční) výhody?
- Jak můžeme podnítit každého zaměstnance k inovacím, ke snaze vyvíjet nové produkty či nové služby, vyhledávat nové trhy anebo vyvíjet účinnější způsoby uspokojování zákazníků?

Takovéto hledání není novinkou dnešní doby: iniciativy v oblasti řízení výkonnosti jsou známy již od 50. let 20. století. Přesto však i dnes zůstává zlepšování firemních procesů pro podnikovou exekutivu základní prioritou.

Organizace orientované na procesy si rychle uvědomují to, že se mnoho procesů v průběhu času změní v souvislosti s případnou reorganizací, s uváděním nových produktů a služeb na trh, v důsledku reakce na změny předpisů a také z důvodu získávání nových zákazníků. Proto musí být tyto procesy budovány tak, aby umožňovaly snadné, plynulé a dynamické změny.

Vizuální notace procesních modelů různými nástroji zaručuje, že uživatelé procesního modelu jsou schopni se snadno orientovat ve způsobu čtení a konstrukci diagramů a tím samozřejmě v problematice znázorněné v modelu.

Příspěvek se zabývá využitím procesního modelování jednak pro potřeby zlepšování a inovaci stávajících procesů a jednak pro vytvoření zcela nových procesů vysokoškolského ústavu Institutu celoživotního vzdělávání Mendelovy zemědělské a lesnické univerzity v Brně. Zdrojem k modelování procesů vysokoškolského ústavu byla analýza klíčových a podpůrných procesů, jejich struktura, vzájemné vazby a to na základě analýzy událostí a reakcí a jejich vzájemných souvislostí. Na základě analýzy byly vytvořeny dva modely procesů – jeden klíčový a jeden podpůrný. Vytvoření procesních modelů a následná implementace procesů umožnily efektivně zvládnout zavedení nového bakalářského studijního programu a přijetí jeho prvních studentů na ICV MZLU v Brně. Důležitým předpokladem pro tvorbu procesních modelů je expertní činnost, jak ji definuje D. Linhartová (2008), která plní roli vysoce erudovaného experta či poradce, ať v oblasti studijních nebo odborně zaměřených záležitostí.

procesní řízení, proces, činnost, podproces, Business Process Reengineering, procesní model, SYCAT software

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