Abstract — The article deals with the use of process management and process analysis as a component of Business Process Management in the frame of: Individual national project "Effective Institutions - EFIN". The introduction is devoted to the definition of BPM, its waves (developmental perspective) and components. It is followed by a specially developed process modelling component (other components of the BPM will not be analyzed in detail in the text). As next were selected the main conclusions of the project EFIN in relation to the use of BPM for process analyses of higher education institutions.

Keywords — Business Process Management, Education, Knowledge, Higher Education, Effective Organizations, Effective Institutions

I. INTRODUCTION

PROCESS management is an approach that has been becoming more popular recently and gets increasingly implemented in more and more companies. Process management can be understood from two perspectives. One is the process management as a managerial discipline. The second aspect understands the process management as a technology that supports process-oriented management. Process approach allows organizations to eliminate the biggest disadvantage of the traditional functional approach that cannot be considered as an approach appropriately flexible for changes in the corporate environment, variety of procedures, or excessive substitution of workers. Processes are always understood in relation to the customer. Only if the management processes are effective, then the companies can effectively manage, modify, improve efficiency, improve performance, identify and resist market risks [1], [2].

Moreover an electronic business environment changes more rapidly under the globalization, even small and medium size companies also change their business. With enterprises becoming bigger and bigger, the legacy business systems may not be flexible enough to adapt this change and the discordance between business and information systems in their organization may occur [4], [5]. However, the application of process approaches is not just a domain of corporate, or more precisely, business sector, but it has been ever more intensively promoted in the management of offices, hospitals, educational and research institutions.

It is the very management of higher education both abroad and in the Czech Republic that has been facing a difficult situation. In addition to requirements for continuous quality improvement, it must provide, while often spending the same amounts of funding, more activities and actions and offer current, or even higher quality in education, and R&D.

To fulfil this assignment is not possible without the implementation of more efficient and economical use of internal resources, which can be carried out from energy savings, the efficient use of buildings and facilities, streamlining administrative and procedural structures, decision-making processes, more efficient communication and information flows, to better exploitation of the potential of employees, their time and skills.

Management has been ever more increasingly looking for an approach analogy and effective organizations principles of the corporate sector and has tried applying them to an academic environment. Among the most significant principles are the following:

- the customer-oriented principle - a customer is the main evaluator of quality products and services provided, irrespective of whether he is external or internal;
- the internal service-oriented principle – a customer derives benefit from a particular service provided by an organization. Due to this reason, special attention must be focused on the quality of service output;
- the principle of service implementation by process – the actual service is the attention focused on the quality of the interface between the individual follow-up activities;
- the principle of the efficient use of resources - based on the limited amount of resources and the need to ensure their effective use.

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Many foreign and domestic higher education institutions have focused on enhancing their processes and services and have recently paid special attention to the efficiency of internal processes. Attention is focused on the following areas:
- administration and management of institutions;
- finance;
- property;
- human resources;
- informatics.

In the context of higher education and R&D institutions, there are further areas of activities involved that help promote effective administration and support of key education and research processes.

Second, it must be remembered that in the digital era, information fluency has become one of the most important capabilities for students [3]. Information fluency implied that students should be able to apply existing knowledge to generate new ideas, develop innovative products, or make use of technology as cognitive or productivity tools. From the perspective of social constructivism, the function of individual differences on skills, aptitudes and learning preferences could have impact for the application of technology in classroom settings. Learners’ learning styles affect the preferences of information process and prior knowledge affect the propositional network of the long-term memory. Previous studies have confirmed that matching types of instruction with learners’ stronger learning styles could enhance learners’ information and communication technology (ICT) skills and motivation [6], [7], [8].

Nevertheless, the article presents the generalizable basic knowledge of guarantors of the individual national project “Effective Institutions” - EFIN (hereinafter referred to as “Project”). The aim of the project EFIN is to support and develop effective management principles, especially supportive economic and administrative processes in higher education institutions (universities and higher professional schools) and R&D institutions. This specific area is therefore interesting and quite unusual for the application of BPM principles. Reasons for the realization of this project are clearly aimed at strengthening the competitiveness of these institutions in a national, European and global context.

Part of the project EFIN is implementation of process analyses at selected universities, higher professional schools and R&D institutions. These process analyses reflect many applied approaches on which there are based, but are associated with a number of specifics as well.

II. LITERATURE REVIEW

A. A Short History of Business Process Management

We should begin with the principles. Managers are often confronted, even in renowned magazines, with several similar terms and concepts which may be confusing or at least their correct content and principles may be misinterpreted on the basis of inaccurate information. What do the terms Business Process Management (BPM) and Business Process Reengineering (BPR) mean? What is their application in practice? In this subheading we would like to acquaint you briefly but precisely with these terms and their content.

From the point-of-view of management and Business Process Management development, authors such as King, Fingar, Smith etc. have offered various conceptions in order to comprehend the connections and differences between them. King, for instance, has distinguished between four development waves BPM [2].

He has mentioned the following in his publications:

1) the first wave of BPM – was concentrated on constant improving of the processes and coincides in many ways with the philosophy of TQM (Total Quality Management), a philosophy which leads to an increase in productivity, a simultaneous increase in quality and increased customer satisfaction while decreasing losses caused by poor quality production. TQM is thus a systematic and consistent application of several methods within the company organization clearly concentrated on quality and customer satisfaction.

2) the second wave of BPM - consisted of a focus on Business Process Reengineering, or in short Reengineering. This is regarded as the second wave involving the trend of management leading towards essential, radical and fundamental changes in the organization of applied work procedures or technologies. The achievement of not merely incremental but has a radical rise in organization productivity as the expected result.

3) the third wave of BPM – the authors [11] refer to activities leading to the creation of a process focused organization. This involves the application of main component procedures or process management consisting of the following:

- key process determination including the appointing of process possessors and customers;
- within the process description, their mapping and process map formation (a company process model) for recording process system management;
- the application of process maps (models) for cost intensity evaluation and increases in their efficiency;
- continual process improvement and measuring of efficiency;
- quality in the enterprise is mainly understood as the demand for quality standards which lead off the process model;
- information technologies considered as the process support in the enterprise;
- while the process model creates the basis of the process management, the strategy management is comprehended as the peak of the “pyramid” of process management;
competence management is comprehended as the system enabling fulfillment of roles in individual processes (both management and key processes) by those people who have appropriate knowledge and abilities for them.

Consequently mentions as crucial [9]:
- the process model;
- constantly improved processes – procedures for optimization and improvement of the processes;
- strategy management;
- competence management;
- quality management.

4) the fourth wave of BPM – is a group of activities leading towards the achievement of competitiveness based mainly and exclusively on the processes.

It is essential to additionally adduce other authors for a better understanding of the differences and links between BPM and BPR; e.g. [12] when applying this managerial trend they recommend implementing process management in the organization first and consequently focusing on reengineering processes on the basis of the specific priorities of the organization.

According to an entire range of authors [13], the consistent realization of several steps is recommended for an increase in the process productivity of the company. These three authors agree on this fact in large measure. This procedure can be defined as following:
- endorsement of fundamental rules within the process management application;
- formulation of the sense of such a project;
- identification and endorsement of crucial factors of prosperity;
- identification and endorsement of individual types of company processes;
- simulation of individual types of company processes (according to crucial prosperity factors) with the application of process teams – creation of a process map;
- determination of process priorities;
- measuring of process efficiency;
- optimization of company processes;
- additionally, the projects of the reengineering processes often follow in accordance with an individual scenario [16].

The project EFIN emphasizes another extremely important aspect of process management that is aimed at the efficient (optimal) use of necessary resources. In general, it regards financial, human, property resources, and IS/ICT, or more likely information resources. It is essential to effectively manage and develop these resources through appropriate processes. For this very reason, institutions use the supportive and administrative processes. It is these processes that are specifically analyzed by the project EFIN, and suggestions for improvement apply to them in the first place. In elaborating process analyzes of universities, higher professional schools and R&D institutions, fundamental emphasis is placed on efficient and economical resource management. Higher education institutions and R&D institutions are in fact subject to the following challenge - to gain a higher effect out of the given financial amount (or resources, more generally) by proper managing other resources (material, financial, information and human).

We must emphasised, that the process management belongs to the knowledge services specifically to professional services. The notion professional services is understood as a type of service better then classification of providing services according to [10, 14]. She characterizes the professional services as following:
- They are highly knowledge services provided by people with university education and usually closely focused on the scientific knowledge development in the relevant field of expert opinion.
- They include high level of customization.
- They contain high level of individual work and personal judgment of experts providing services.
- Usually they require close interaction with the company client.
- They are provided with restrictions given by professional norms of behaviour that place position of client needs higher than their profits and respect limits of professional examination.

What is unique on professional firms?
- high quality of individuals
- service strongly concentrated on client
- subjective quality evaluation [15].

III. PROCESS MODELLING IN HIGHER EDUCATION

The aim of Process Modelling is the creation of a process model of the organisation. The design of such a process model is highly-demanding on time, and it is only with great difficulty and with many restrictions that it can be mastered without the appropriate software.

A core component of the whole system for the documentation of processes is the mutual interlink age of all of an organisation’s document flows, which are broken down into three basic levels:
- The Organisational – these define the organisation’s structures and their aims.
- The Processional – these define the approaches and procedures that lead to the attainment of the organisation’s aims and goals.
- The Performance – the level at which activities are carried out by the appropriate responsible employees.

a) It turns out that the above described process management components can be used also to streamline processes within public universities, or more likely private universities, R&D institutions or higher professional schools.
IV. CONCLUSION

In the Process Modelling, there can be applied various types, models, as well as the degree of granularity. Models can be schematic, but the processes can be also described by text, or more precisely by a list of appropriate processes (groups of activities).

The process analyses implemented by the project EFIN are specifically focused on selected processes of administration and development of fundamental resources. In the analysis, it concerns their assessment by maturity model. The model is based on the CMM and gradually characterizes processes in the range:
- processes are not implemented in an institution,
- processes are implemented ad-hoc,
- processes have been already standardized in an institution,
- processes have been standardized, i.e., they are described and also include criteria for assessment,
- compared to the previous level, processes are permanent and continuously optimized.

The outcome of the performed analyses will be next to the “picture of selected maturity processes” further specific proposals and recommendations on how to optimize processes and use resources in different institutions so they would reflect into an effective management method in the long term. The proposals are implemented as anticipated real savings relative to total costs.

Currently, institutions have identified examples of good practice, which can be generalized and recommended for application in other higher education institutions and R&D institutions. Preliminary results show great potential for full cost approaches, orientation on optimizing the process of purchasing (outsourcing) resources (especially energy), products and services. Last but not least, it involves internal management processes and effective use, development and motivation of employees.

REFERENCES