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IMPORTANCE OF PROCESS MODELLING FOR THE UNIVERSITY FARM ŽABČICE OF MENDEL UNIVERSITY OF AGRICULTURE AND FORESTRY IN BRNO

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Abstract

MÁCHAL, P.: *Importance of process modelling for the university farm Žabčice of Mendel University of Agriculture and Forestry in Brno.* Acta univ. agric. et silvic. Mendel. Brun., 2009, LVII, No. 4, pp. 37–42

The University Agriculture Enterprise (UAE) Žabčice is part of the Mendel University of Agriculture and Forestry (MUAF) in Brno and its basic mission is to provide targeted activities for the MUAF in Brno. The UAE Žabčice is unique and quite specific agricultural entity in the Czech Republic, which has been meeting its mission more than 80 years. This fact makes it necessary to cover all processes necessary for the firm to make them more effective, where appropriate, a radical change. The aim of the work is to create a key process „Crop Production in the UAE Žabčice of the MUAF in Brno using the software tool Enterprise Architect, with the assignment of documents to a particular activity. Creating a process model of crop production, presented in this work, indicating the links with other processes, with the allocation of existing documents, it may serve the UAE Žabčice management to implement effective changes, where appropriate, to the fundamental restructuring of internal processes.

process model, reengineering business processes, key process, software tool, Enterprise Architect

Modelling business processes, as shown for example in market analysis of the systems of business process management (BPM) performed in 2008 by the company BEA, shows that the use of this way of the company management can save considerable sums of money due to a better estimate of market risks, may increase profit by improving operational excellence and increase customer satisfaction based on automation of processing documents.

The fundamental success factors in process management can not only be indicated by the mastery of technical problems associated with its implementation, but also problems such as internal company policy, management of changes, lack of experienced staff and lack of organization. Companies and institutions that have successfully used a procedural modelling, do not concentrate only on the technology, but also on continuous improvement throughout the business process. New software tools allow their users to participate in the building, management and monitoring processes as never before. These tools support a wide range of activities that require mutual cooperation and the development of diverse social processes. In today's information society, the organization has to intercept all these free processes and improve the productivity and also ensure best practices.

This work deals with the use of a procedural model of key process Crop production in the University Agriculture Enterprise Žabice just for the possibility of further streamlining.

TARGET

The current world economic recession, inter alia, requires far more efficient behavior of firms, including a flexible approach to the turbulent changes in the market. The core activities include without question the continuous improvement of business processes. The pressure of competition and the common decline in demand forces such conduct directly. Many companies work with their business processes

through their continuous improvement. This approach is based on the understanding and measurement of the current process, which naturally results in its improvement. In this case, it is a "natural process approach". Such a method of improving business processes is suitable for achieving evolutionary – incremental improvement.

However, there is a radical approach to improving processes, the reengineering of business processes. A key role is played by information technology. M. Hammer and J. Champ (1996) show how information technology pulls down limitation of the original rules and replace it by the new rule, allowing radical changes in the functioning of the company:

I: *Technology as a tool for pulling down barriers / rules*

Original rule	Pulling down technology	New rule
Information exists in one time in one place.	Shared databases	Information exists in one time at those places where it is needed.
Complex work can be performed only by experts.	Expert systems	Universal worker is able to control even the expert.
It is necessary always to agree with the decentralization and centralization.	Telecommunication tools, networks	It is possible to reap simultaneously the benefits of centralization and decentralization (centralization with the distribution of data and processing)
All is decided by managers.	Tools to support decision-making (databases, repositories and modelling tools)	Decision-making is a normal part of everybody's work.
Field workers need an office for receiving, storing and distributing information.	Wireless communication, computer transmission.	Field workers can receive, store and distribute information everywhere.
The best contact with potential customers is personal contact.	Interactive video, web sites.	The best contact with a customer is an effective contact.
People have to find things.	Automatic registration, monitoring the movement ...	Things say where they are.
Plans should be reviewed periodically.	Executive computing plans and planning tools.	The plans have been reviewed continuously.

Source: (Hammer, M., J. Champy, 1996)

New information technologies bring new opportunities, which in a sufficiently competitive environment causes strengthening the overall level of competition. Taking into account the current global economic downturn, bankruptcies of major players in the market, gradually increasing difficulty in achieving competitiveness, we can say that now leads the fight for survival.

University Agriculture Enterprise (thereinafter „UAE") Žabčice is an organizational part of the Mendel University of Agriculture and Forestry in Brno and its basic mission is to provide targeted activities for the MUAF in Brno. Service activity of the enterprise is realized in cooperation in particular with the Faculty of Agronomy and the Faculty of Horticulture, that includes practical training and experience of students of their research activities in addressing the final work, as well as the research, development, demonstration and advisory activities of the university academic staff. The company is also regularly used by the Veterinary and Pharmaceutical University in Brno for the practical training of its students. The enterprise has the growing importance also in ensuring the practical training of some secondary technical schools in the South Moravia Region. In the context of fulfilling its core mission the UAE Žabčice creates conditions in the crop, animal and special production. Another important activity of UAE Žabčice is its complementary activity, i. e. the classical agricultural production.

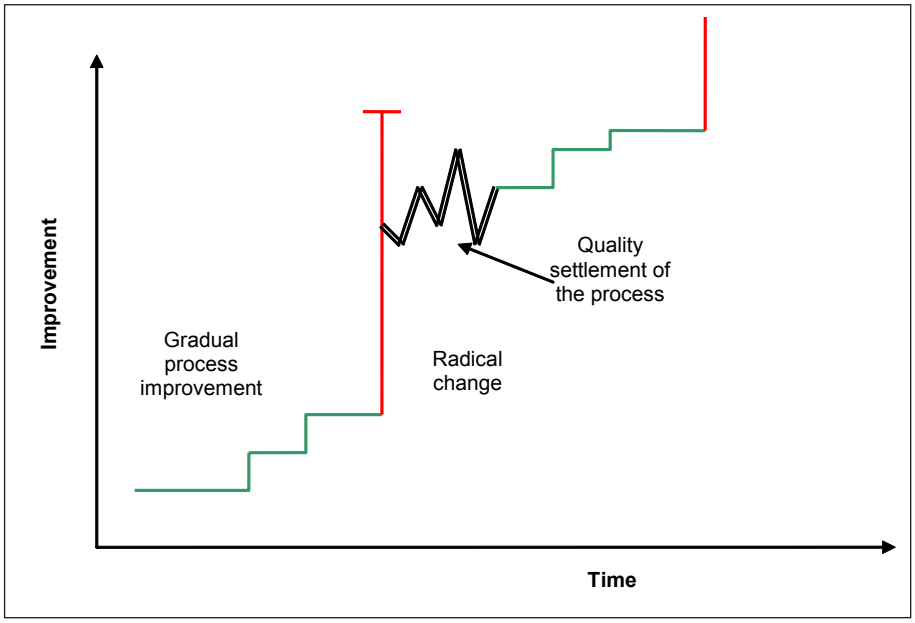
The University Agriculture Enterprise Žabčice is unique, and quite specific operator in the Czech Republic, which has already been meeting its mission more than 80 years since its creation in the years 1922 to 1925. UAE Žabčice is currently composed of two locally separated workplaces, namely the workplace in Žabčice and the workplace in Lednice.

This fact makes necessary to cover all processes of the enterprise to make them more effective, where appropriate, a radical change.

The aim of the submitted work is to create a key process „Crop production in the UAE Žabčice of the MUAF in Brno" using the software tool Enterprise Architect, with the assignment of documents to a particular activity.

MATERIALS AND METHODS

As stated in Davenport, a gradual improvement in processes and reengineering are not alternatives, but complementary phases of the development cycle of the organization. Relief of these phases is shown in the following picture:



Source T. Davenport

1: *The development cycle of a process-driven organization*

The Davenport's figure illustrates the growth process improvement of an organization in time. Gradual improvements of the current concept of processes, while increasing the possibility of the need to implement radical change. After a radical change, naturally accompanied by a temporary ambivalence of the quality performance of the organization, there is again a phase of "harmonious" development of the organization, by gradual improvements of the current approach to processes, by which, however, has gradually been increased the need for further radical change in the future, etc.

- The source of the modelling process for the UAE MUAF in Brno was the first analysis of the events, reactions, process structure, reciprocal links and coherency of key, management and support processes. There are many classifications of processes, such as the classification according to the environment (internal, external), classification according to existing degree of automation (automated, semi-automated, hand), according to the classification of structuring options (structured, less structured, unstructured), etc. In this work the processes are divided into core, management and support.
- Key – the processes that are critical to the functioning of the enterprise and directly relate to external customers. They are usually the primary value chain activities. Key processes are easy to describe and reengineering will have a positive impact on competitiveness and position in a competitive environment. Examples of key process is to satisfy the order.
- Management processes – the processes by which the company plans, organizes
- and manage resources. They have an impact on the efficiency of the enterprise, but they are quite complex.
- Support – the processes that have internal customers and are to support key processes. Easy to describe, but they rather affect the internal efficiency of the enterprise. Examples of support may be the process of administration of human resources.

The analysis was carried out in the following steps:

1. Formulation of necessary activities, and their arrangement in the context of the working procedures, related documents, etc.;
2. Identification of key processes;
3. Evaluation of management processes;
4. Evaluation of support processes;
5. Evaluation of processes related to the purpose of activity;
6. Creation of a key process Crop production.

To create a process model a software tool for modelling Enterprise Architect was used. This modelling tool allows, among others, to assign to processes activities, conditions, events, input / output – documents and links to other processes. For building the model, there was used a methodology created by the author – Metodology for the production of software process models using the Enterprise Architect. An important prerequisite for the creation of procedural models is expert work. Expert activity is defined e. g. By Linhartová as an activity which is performing the role of highly erudite expert or consultant, whether in the field of study or professionally-oriented issues.

In addition to the analysis there was used description, both of the procedural model, and their basic parameters. On the basis of those methods of scientific work there has been formulated a proposal for the implementation of the proposed processes.

RESULTS AND DISCUSSION

By the means of the analysis of the school farm Žabčice there have been identified core processes, from which there are 6 key processes, 3 managerial processes, 4 processes, support processes and 2 in the targeted activities. This is one of the following:

Key processes: Crop production, Purchase, Sales, Production of wine grapes, Fruit production, Animal production.

Management processes: Planning, Supplier-customer relationships, Cash flow management.

Support processes: Accounting; Work and Payroll; Personnel, Technical Services

Service activities: Teaching and practice of students; Research.

This paper is presented one of the processes, and to key processes – Crop production, which in the UAE is based on the possibility that soil and climatic conditions of the area provide – field corn, 70% light sandy soils, 60% of land located in the protection zone water, but also from the requirements of animal production to ensure a sufficient number of large high-quality feed. Choice of market crops in the crop production is oriented mainly to the cultivation of wheat in the best quality food with gluten content above 30%, growing peas for food and feed purposes, seeds of white mustard, alfalfa (lucern) for seed production and alfalfa (lucern) granules. For its high content of crude protein in spring barley 14–16%, the production of malting barley is not possible. As for mechanization, this production is secured, in particular, by a series of ZETOR tractors, plows, skids, gates, combinators, seeding machines. Quality and speed of field work significantly influences executive modern technology, such as tractor Fendt Favorit 822, plow Kverneland PB-115, soil compactor, SATURN 6, sprayer Berthoud-racer 2500, press straw CLASS QUANDRANT 1150, collector packages ARCUSIN-E170, harvesters threshing machine Claas Lexion 460, blade masher Pöttinger Novacat 8600 ED, etc…

Crop production process is iniciated with realization of the event „Plan of Crops Rotation“ and completed by the „Sale after storage“. On the basis of planning activities in the enterprise there will be created the Plan of Crops Rotation that describes the context of actions needed to achieve the status of cash crop production to be sold.

The current process consists of the activities that are sorted by alphabetical order:

- Additional fertilisation
- Additional fertilisation order
- Additional fertilisation within the harvest land adjustment
- Adoption of the request to swing
- Adoption of the requirement for additional fertilisation
- Adoption of the requirement for post-harvest treatment of the soil
- Cattle farming
- Cleaning after storage
- Command for swing
- Exit of technology to the field
- Final drtiny
- Garaging
- Harvesting
- Chemical protection
- Chemical protection order
- Maintenance after swing
- Maintenance after-harvest treatment of the soil
- Maintenance of machinery after enforcement
- Maintenance of machinery in the harvest treatment of the soil.
- Maintenance of machines before additional fertilisation
- Maintenance of machines before chemical maintenance
- Maintenance of machines before swing
- Maintenance of soil – lime fertilizer tillage soft loosening
- Order to the use of machine harvesters
- Pig breeding
- Swing
- Storage
- Supply of seed fertilizer and other goods from the warehouse
- Technical maintenance after additional fertilisation
- Technical maintenance after chemical protection
- The requirement for adoption of chemical protection
- Treatment against diseases and pests
- Treatment against weeds

The process can be assigned to 5 different documents: The command and statement of work, Receipt card issued, Order issued, Plan of the maintenance of machinery and Sowing plan.

The Crop production has links to other key processes, namely to the process Animal production with the sub-processes Pig breeding and Cattle farming, as well as Purchase and Sale, the managerial process Planning and support processes Work and Payroll, and Accounting.

SUMMARY

Detailed traceability of business in real-time is high on the wish list of those who decide in the field of business and trade. Modelling of business processes meets some of these requirements, but with how the operation is becoming increasingly complex and growing volumes of transactions, will be (to cover those needs) necessary to create a new infrastructure, which center will be just the events. Modelling business processes will have to evolve and must also reflect the business focused on demand events.

This work has modeled one of the six key processes of the school farm Žabčice – Crop production. Modern business process modelling system supports two types of processes – both those in their midst is a man, but also those which are focused on a system. Today the promotion of the processes, of which the center is a man, is focused primarily on the organization of predictable actions of man's work processes, in such activities such as processing requirements, claims and customer service. Tasks are allocated to people and often it is presumed that the worker equipped by knowledge will seek ways to communicate with their colleagues and make decisions outside the process, and then insert the results back to the procedural model. It is known that the processes for which the cooperation is applied may contribute to such support. Tools for modelling business processes, however, generally are not designed to support and / or coordination of these relations based on mutual cooperation. It is therefore necessary for responsible management of UAE to use the existing model to initiate the implementation of process-managed organization.

SOUHRN

Význam procesního modelování pro Školní zemědělský podnik Žabčice MZLU v Brně

Detailní sledovatelnost podnikání v reálném čase je vysoko na seznamu přání těch, kdo v oblasti podnikání a obchodu rozhodují. Modelování podnikových procesů část těchto požadavků splňují, avšak s tím, jak se operace stávají stále složitějšími a jak objemy transakcí rostou, bude k pokrytí těchto potřeb zapotřebí vytvořit novou infrastrukturu, jejímž středem budou právě události. Modelování podnikových procesů se musí dále vyvíjet a musí také odrážet podnikatelskou poptávku zaměřenou na události.

V této práci byl modelován jeden ze šesti klíčových procesů Školního zemědělského podniku Žabčice – Rostlinná výroba. Moderní systém modelování podnikových procesů podporují dva typy procesů – jak ty, v jejich středu je člověk, tak také ty, v jejichž středu pozornosti je systém. Dnes je podpora procesů, jejichž středem je člověk, zaměřena převážně na organizaci předvídatelných kroků pracovních procesů člověka u takových aktivit, jako jsou zpracovávání požadavků, pohledávky a služby pro zákazníky. Úkoly jsou přidělovány lidem a často se přitom předpokládá, že znalostmi vybavený pracovník bude hledat možnosti, jak se svými kolegy komunikovat a rozhodovat se vně procesu a teprve poté vloží výsledky do zpět do procesního modelu. Je známo, že procesy, u nichž se spolupráce uplatňuje, se mohou na takovéto podpoře podílet. Nástroje pro modelování podnikových procesů však obecně nebyly navrženy pro podporu anebo koordinaci těchto vztahů založených na vzájemné spolupráci. Je proto nezbytné, aby odpovědní a řídící pracovníci ŠZP využili stávajícího modelu k zahájení implementace procesně řízené organizace.

procesní model, reinženýring podnikových procesů, klíčový proces, softwarový nástroj, Enterprise Architekt

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