

KONZEPT DES INTEGRIERTEN, INFORMATIONSGESTÜTZTEN PROZESSMANAGEMENTS



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An integrated Approach to IT-enabled Process Management

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Ladies and Gentlemen

It is a great honour to be awarded the Latsis Prize and having the opportunity to present some of the results of my research to you. I would therefore like to express my deep gratitude to the Latsis family and their Foundation for their generous acknowledgement of my past research activities.

Introduction

The transformation of the economy from the industrial to the knowledge age initiates numerous changes such as globalization, enforced competition and new products or services. A lot of examples show that process management enables these changes. Consider for example a company of the process industry segment, which reengineered its whole supply chain from its suppliers to its customers.

A business process is a set of activities supported by information technology, its value adding results from process deliverables to its internal and external customers. A process has its own management system in place, which is responsible for a process-oriented implementation of the business strategy. A company usually concentrates only on a few processes, which are crucial for the company's business success. Typical processes within a company are product development, supply chain or after sales.

We distinguish three different types of processes: customer focused processes, support processes and management processes. Process management itself means a customer oriented management endeavor to achieve exceptional performance in that business processes which transcends functional boundaries. Process management is not a program for continuous improvement alone. It is embedded in a SBU strategy, to achieve a number of breakthroughs in the area of internal and external customer satisfaction and adding value to all other stakeholders. The important question is: If we were a new firm or business unit, how would we design the business processes so as to increase the

external customers ability to compete or enhance their satisfaction to an extent which would put us all way ahead of our competitors? [see Hinterhuber 1995].

Ten major requirements for process management have been derived from action research: (1) Process management is really an ongoing management task, (2) it is a task of strategic and operational management, (3) it is established by a management structure, (4) it implements a customer oriented business strategy, (5) it integrates structures, processes and behavior, (6) it creates transparency in both business processes (inside view) and business process deliverables (outside view), (7) it uses process metrics to evaluate the current and future process performance, (8) it is based on existing knowledge and covers external process benchmarks, (9) it is enabled by information systems and (10) uses different techniques and instruments to design and further improve business processes.

Framework

Ulrich [see Ulrich 1984] characterizes management by design, continuous improvement and development of social systems. These terms cover the most important functions of management [see Krüger 1994, p. 23 f.; Schwaninger 1994, p. 16 f.]. By adopting this understanding to the management of business processes, the framework of IT-enabled process management is divided into the following major functions: *process design, process improvement and process development*.

Process design is responsible for a process or customer oriented implementation of a company's business strategy and exploits the potential of information technology [see Oesterle 1995]. Process improvement is responsible for continuous planning, controlling and deriving actions to achieve process objectives. Process development covers all tasks, which are necessary for the identification and the qualifications of improvement potentials for business processes.

Design and improvement is divided into *strategic and operational* process management. Strategic process management defines the process-oriented architecture of a company on a high level of abstraction; it defines strategic process targets and plans an inter-processual implementation of business processes. Operative process management is responsible for the intra-processual design and

improvement of selected business processes using the information technology as an enabler.

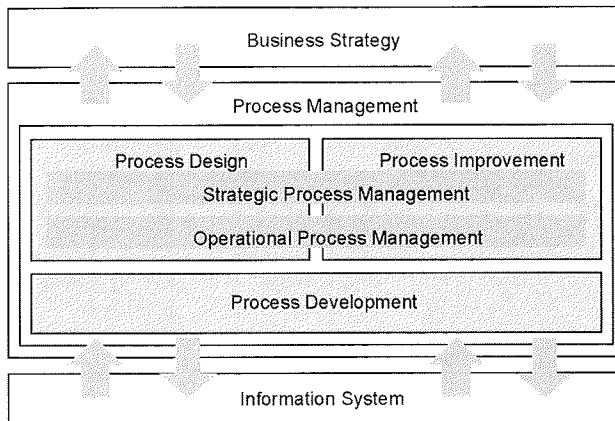


Fig. 1: Framework of IT-enabled Process Management

Process management is supported by information systems. On the one hand side business processes are implemented using different kinds of applications (e.g. ERP-systems) on the other hand side information systems provide all necessary information for design and improvement of business processes. The systems allow monitoring the organization and deriving actions for further development. The framework of IT-enabled process management is summarized in figure 1.

Method

Based on the framework of IT-enabled process management, we now focus on process management as a method. A method is a systematic procedure to derive different, well-defined deliverables which supports all tasks of designing, improving or even developing different objects. The description and development of a method is called *method engineering*. Method engineering is an area of research by itself. It has its origin in information systems management and software engineering, where the necessity arises to find ways how to document and develop different methods of software engineering [see Smolander et al., 1991; Humphrey/Kellner 1989; Heym 1993, p. 14 f.]. We use

method engineering to describe the content of IT-enabled process management. Based on Heym [see Heym 1993] the description of a method covers five areas: activities, roles, deliverables, techniques and the meta-data model (see figure 2).

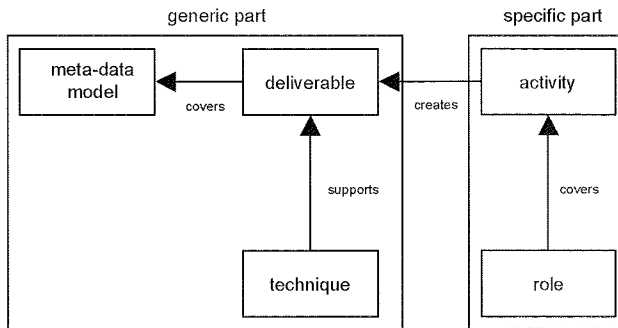


Fig. 2: Areas of Method Engineering

An **activity** is a functional task to produce one or more deliverables. Examples of activities within IT-enabled process management are defining process targets, deriving improvement actions or designing process deliverables for external customers.

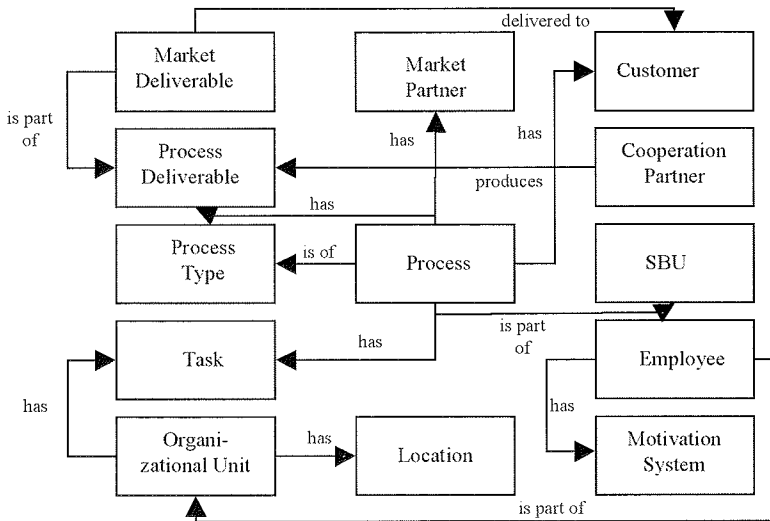
Employees or teams are responsible for tasks, but they perform these tasks in different roles. A **role** is defined as a summary of tasks, with a well and pre-defined target. Examples of roles within IT-enabled process management are process manager, process circle or change agent. **Deliverables** are the result or the outcome of activities. Examples might be: a process flow diagram, a list of performance indicators, an action plan or a process progress report.

The **techniques** are the basic elements of IT-enabled process management. Techniques are validated procedures, helping to derive different deliverables. Examples of techniques in IT-enabled process management are the technique of planning the company's process architecture, the technique of analyzing process deliverables or the technique of process performance measurement. In the meantime these techniques are widely used in practice to support management in process related tasks.

Meta-data Model

The meta-data model is the conceptual model of all objects covered by a method. A data model covering all objects like entity-types, attributes and relationships describes the meta-model.

The meta-model's entity types are called meta-model components or meta-entity types. Considering again Ulrich's definition of management tasks [see Ulrich 1984, p. 114] he says: «design means the creation of an institution and its purpose oriented establishment». Therefore, all design activities of IT-enabled process management cover the conceptual and structural fundamentals and define the rules in which business processes are embedded. These design objects of IT-enabled process management are summarized in a view on the meta-data model, which we call the view on *processes and organization* (see figure 3).



*Fig. 3: Meta-Entity Types of the View Processes and Organization
(Semantic Network)*

Again Ulrich states that «setting of targets, initiating actions and controlling of target oriented actions of the system, its components or

elements» is part of the management function, we call improvement [see Ulrich 1984, p. 115]. All business objects, which are relevant for process improvement, are therefore summarized in the view *on processes and improvement*.

The development of social systems is another management function [see Ulrich 1984, p. 120]. Since we consider process development as an additional task of IT-enabled process management, we are able to define another view on the meta-model. We will call this view, the view *on processes and potential*, which covers all business process objects, which are relevant for process development.

Automation and rationalization mainly characterize the design of business processes. Besides this there exists a strong relationship between processes and IT-enabled solutions. The view on processes and information systems covers all business process objects, which are relevant for system-supported implementation of business processes and its management system.

The IT-enabled implementation, however, is not enough for a successful change of business processes. «Successful leaders of transformational restructuring understand that changes in mental models, attitudes, values, and, ultimately behavior are the foundation for successful implementation of these changes in operational and management structures and systems» [see Davenport 1993, p. 175]. We will, however, not separately emphasize this point, but it is covered in all the different views as additional business objects, to be handled within IT-enabled process management.

The Integrated Approach

The integrated approach of IT-enabled process management now contains the three functions of process management: process design, process improvement and process development, which are the framework of the approach. Each of these functions has its business objects, which have to be designed, improved or developed. These business objects are covered in the meta-data model, with its different views. The views are necessary to reduce complexity of the model. 41 fundamental business objects (entity types) are part of the meta-model, and each of these business objects is described in detail, considering a description, its attributes, examples and relationships to other funda-

mental or non-fundamental entity types. The method itself is the key for IT-enabled process management. It is a cross functions to the dimensions of the framework and provides business process designers, process improvers and even process developers a unique tool to support their individual tasks.

Outlook

With regard to the tendency towards this process orientation, the focus has been set so far on modelling the companies flow structure and on supporting the whole life cycle of a process. This includes methodical and technical support, for process modelling and design but also for implementation.

In the meantime this integrated approach of IT-enabled process management has been disseminated to numerous companies, which introduce process management principles. As process improvement is an ongoing task, the approach itself has been developed further. Two areas of research are most important. Area one focuses on the implication of e-Business tools like systems for advanced planning and collaboration, for customer relationship for trading in electronic markets on business models and business processes. Area two extends the value chain taking the processes of the customer's customer and the supplier's supplier into consideration as well. An integrated management of this network of business processes is a tremendous challenge since the requirements for an efficient and effective design of the business network, the management system or the information technology support is much more difficult than considering a company by its own.

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