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Workflow-Management Systems and Organizational Development – Tools of Change?

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This contribution focuses on the questions, what makes a company apply to a workflow-management system, and what does the use of such a system really mean for a company. What demands does a workflow-management system have to comply with, in order to serve as an instrument of organizational change, not just as a tool for a change in (computer) technology?
Readers who are expecting final answers, turn-key solutions or yet another "one best way", will be disappointed. But: it will be shown, why no algorithm for successful introduction and use of workflow-management systems can exist and why most of today's workflow-management systems are not ready to be used as tools of change.

1. SOFTWARE AND "COMPANY'S REALITY"

In a company decisions are made to reach a certain goal of the company; these goals are superior goals to the processes of operational business and try to improve the competitive position or prepare the start of a business in a new market sector. Those decisions will cause the setting up of new scopes of businesses, the modification or closure of scopes, the cooperation with other companies, the adaption of new production engineering or a change in the organizational structure of the company.

There is no difference when it comes to decisions about production planning and production control systems (PPC systems) or workflow-management systems. The decision for a workflow-management system is no decision for its own sake, but a reaction of a company based on a certain self-assessment. In general, the decisions of an organization don't have to be reactive ones, also prospective activities can be normal to successful companies (cf. Ortmann et al. 1990, Maucher 1996, Paul 1997, Paul et al. 1998).

Decisions for company-wide advanced computer systems such as PPC systems or workflow-management systems have more far-reaching effects than usually expected by the decision makers. Most of them are aiming for goals of decrease: reduced costs of production, smaller stock on hand, shorter pass-through time and no "friction" loss at all. There are also goals of increase: more flexibility, more orientation to the customer, more productivity, more effectiveness, more efficiency… Expecting all that from a single piece of software with no change to the organizational structure one element of the larger problem an increasing number of companies are facing.

A workflow-management system is designed to support the organization's structure and its processes. It is supporting company-wide work contexts, complete segments of an enterprise, not only a single working place. Therefore, the introduction and use of a workflow-management system is significantly more complex than the in-

troduction and use of an interactive computer application for a single working place, which is by far complex enough.

Academically seen, a problem is solved by the correct implementation of the adequate algorithm and the use of the application. Company's reality shows very fast that real world is different. First of all, there are computer applications that are problems – not solutions to problems. More problematic is the fact that single working place computer applications may have effects beyond the boundary of that single working place.

Computer applications take over functions which the human being had to perform before – in the positive tenor as release of burdening, in the negative tenor through dequalification and reduction of working places. They modify work and affect the work activities. The working place with that specific setting of a task, which was starting point for the development of the application, has changed significantly. The effects of that change do not stop at the boundaries of the individual working place, they also affect the neighbouring working places. Computer systems modify the work organization and their processes in whole ranges of an enterprise although they were only thought for individual work positions.

Not yet enough: new requirements and new problems result from the utilization of a "solution" – and new technology is utilized to meet the new requirements. But this technology again has its side effects: a dominoes effect of a range not to be underestimated. Which effects and which results will be then provoked by a computer system which is dedicated to support the cooperation of different organizational units?

The most frequent mistake is to regard the introduction and use of company-wide computer systems exclusively as a technical problem – and to treat it like any other technology. Software sellers do like that point very much: buy this program and a graphical editor, some boxes here and some arrows there we have a new production line with a "lean" business process with much efficiency and effectiveness. But real world is different…

More and more practitioners and scientists have found out that it takes more than a piece of software and computer to eliminate the deficits of an organization. For them the analysis of the actual state of the organization comes first, then it is time for an organizational reshape. At this point they recommend the use of workflow-management systems and the development of workflow applications, not earlier than that. A company-wide interactive computer system shall back up the new structure of the company – just like a supporting corset (Paul, 1997).

2. DYNAMICS AND STATICS

With the discernment to regard the organizational structure of a company no longer necessarily as a result of software technological assumptions and regulations but as a well-considered, task-oriented result of a shared decision process we are one major step beyond those (software-)technocentrical approaches. But there are still some inherent obstacles, wasted potential and unsolved problems – the cause for that lies in the dynamics and statics of organizations.

Computer systems change work and affect work activities. Even when they are dedicated for single working places they have effects on neighbouring working places. Therefore, new computer systems and applications are required. Company-wide computer systems have similar effects: they change the organizational structure and the processes of a company. As a result of that the changed organizational structure and the computer system do no longer fit to each other – no matter how carefully it has been designed – because the utilization of that system has modified the organizational structure (Paul, 1997).

Enterprises which align their organizational structure dynamically to market demands, can be easily characterized by their setting-up of object-oriented units and explicit decentralization of the structures of decision making. In order to be able to fulfil demands on product quality and delivery time, to handle more complex products with an increasing number of product variants etc. have to be dynamical and flexible – it is a must. Organisational flexibility is one of the major characteristics of today's successful enterprises (Fröhlich et al., 1996).

The approach to build a "tailor-made", comprehensive and overall computer application around the reshaped, restructured and reorganized company, will not implement a long-lasting solution. Certainly, companies are able to operate with these computer systems. But: as soon as significant organizational modifications and changes queue up – and they surely will queue up: with new products, new production technology, new partners for joint ventures, new market segments… – the complete process of social and technological development and implementation has to be repeated.

3. INSTRUMENTS OF CHANGE

Organizational change and organizational development should neither be seen as extreme exceptions, nor as nothing but *re*action on external events. A successful company is also able to act anticipating and prospectively, e. g. accounting on assumptions concerning the development of the market or on the results of benchmarking with competitors. Nevertheless, organizational change can be a risky process, even for experienced companies. Any support and every obstacle cleared away means an important aid for the changing organization. A workflow-management system could be such an aid, a supporting instrument of change. The decisive questions are: who is deciding on organizational change, who does initiate organizational change and who is bearing the processes, who is in control of the processes or who thinks that he is in control of the processes.

Hierarchically organized companies with a centralized way of decision making traditionally differentiate among strategic, tactical and functional tiers. Each level has to fulfil a certain type of task, ranging from unstructured to well-structured. Workflow-management systems are regarded as tools for the realization of compiled models and their transformation into software (Gluchowski et al. 1997: 7 ff., Paul et al., 1998).

According to this philosophy, workflow-management systems are useful to support well-structured tasks with well-defined decision situations. On the superordinate tiers with their half-structured and unstructured tasks a different sort of tool is used: “management information systems”, “management support systems”, “management decision support systems”. Decisions about changes in the organizational structure and of its processes are made exclusively on the higher tiers of a company. Workflow-management systems are used to bring those decisions to reality – they are not used to support the process of coming to decisions.

The underlying acceptance of the rule that decisions are made “upstairs” and decisions are executed “downstairs” makes this point of view a problematic one. This way of thinking proves to be counterproductive in organizations with object-oriented units and explicit decentralization of structures of decision making. And it summarizes implicitly those problems a lot of managers have with modern organizational concepts.

What will happen in one of these autonomous object-oriented units, when the unit comes to the conclusion that it has to restructure itself? What will this unit do, when it finds out that it has to reshape its *internal* organizational structure and its *internal* processes? How will it handle the possible need to reconfigure the “interface” to its neighbouring object-oriented units? How to deal with tasks that will become unnecessary or that will be swapped out to other units or swapped in into the unit? Well… the most popular way to handle these problems would be to let these structures and processes untouched, to do simply nothing but “business as usual” and to ignore the findings: because you will never change anything, because you will never succeed with your ideas in “higher” places, and because you will always be punished for your initiatives.

Such frictions are no rare exceptions to the rule: technical, organizational and social frictions can be found in almost every enterprise that is organized in a decentralized and object-oriented way, because frictions are characteristics of change (Fröhlich et al., 1996). Nevertheless, there is a clear need for modular, flexible, scalable, tailorable and object-oriented workflow-management systems which are able to deal with frictions. The main characteristic of this new type of workflow-management system is that it helps the unit to restructure itself and to elaborate adequate interactive computer systems to its new structure.

Therefore, a unit which modifies itself needs additional knowledge: why does the unit has to perform a certain task for whom, what is its function in the general structure of the organization? A workflow-management system can provide this information to the unit, but only when it contains more than just data interfaces to applications. Decentralized structures of decision making and extended scopes of action are more for object-oriented units than just the freedom of deciding whether the task will be done before or after lunch: it means to treat also tactical and strategical questions in a decentralized way and to decide also about innovative and not everyday’s problems on the spot. And it means to change the local organizational structure and its processes locally when it is needed. Workflow-management systems that are real tools of change will support the unit in such a situation – and not hinder it like most of today’s tools do.

It is a special quality of a workflow-management system as a tool of change that it is an useful aid even before structures and processes are well-established and 100 % fixed. It is their special task to support the development of the new structures and processes: they will help the organization to reorganize itself.

Organizations need an efficient and effective set of tools to be able to flexibly adapt themselves to the changing conditions and the new possibilities. In terms of fact, they need a set of tools that allow to deal faster and more efficient with there own workflows and business processes, to reach the goals more easily and to make more profit out of them. They have to be real workflow-*management* systems: managing the workflow, not just make them

flow somehow. They must help the organization to change and to reshape itself, e.g. to set up, run and modify new business branches, to move tasks within the branches, to modify structures of decision making or to establish new forms of cooperation.

At this point, we are breaking new ground again. What do terms like “suitability for the task” or “degree of experience” (see ISO 9241-10) mean, when organizations have to be supported at their tasks instead of individuals? First of all, we have to learn about organizations and their relevant forms of activities. We need to know more about the way they change and adapt themselves. What are important indicators and crucial factors, which alternatives are possible and which are not?

The answers to those questions can be found only by cooperation with disciplines like industrial sociology and organizational sciences and by participation in real organizational change processes, not just by neutral analyses from the distance. We have to understand the processes and dependencies of the domain, in order to find adequate solutions.

Although important findings were made especially in the second half of the nineties, the knowledge about this domain is not complete – e.g. we are just about to understand what makes group work work and what is triggered off by decentralized structures of decision making. Little is known about the initialization of organizational change and the possibilities to “control” such processes. There are much more theories and assumptions about hindrances and stimulating factors of organizational change processes than proven facts.

4. CONCLUSION

Organizational change is no very rare exception to the rule, organizations must be able to modify themselves adapting to changing conditions and the new possibilities – these are lessons learned from successful enterprises. Therefore, tools are needed to help organizations during those critical phases: tools of organizational change, e.g. a new type of workflow-management system. Instead of today’s workflow-management systems they can be used for half-structured and unstructured tasks, especially during the development and establishment of new structures and processes. The resulting workflow systems – including the supporting computer applications – are modular, flexible, scalable, tailorable and object-oriented, in a way that local object-oriented units are able to restructure themselves without the need to rebuild the complete structure.

Workflow-management systems *can* become such tools of organizational change, but today’s management systems are not ready for those requirements. But even if such systems were available we would be unable to use them in an adequate way – we first have to learn more about organizations and organizational change.

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