

Work Process Oriented Introduction of Knowledge Management: Reconsidering the Guidelines for SME

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Abstract: Within a series of practical projects of introducing knowledge management systems in small/medium enterprises (SME), we realized the need to reconsider current guidelines such as the European Guide to good Practice in Knowledge Management. Our basic assumptions leading to this reconsideration are that the introducing of knowledge management is a wicked problem, that a strong relationship to the employees' actual work process has to be established as well as a dense integration of technical and organizational structures, that it needs at least 3 to 4 workshops to develop an understanding of the usage of KM at the workplace, and that the introduction is more often triggered by opportunities than by strategic planning. On this basis, we re-orientate the phases of *setting up, knowledge assessment, development, implementation and evaluation*.

Keywords: knowledge management, guidelines, project management, process of systems introduction, socio-technical systems; workplace; technology adoption

Categories: C.5, H.1.0, J.3

1 Introduction

Introducing knowledge management (KM) systems into small and medium enterprises (SME) is a particular challenge because of the limited resources of these kinds of companies. The guidelines which help to establish projects for introducing knowledge management, such as the European Guide to good Practice in Knowledge Management - Part 3: SME Implementation [CEN Part 3, 2004] or others [Herbst 2000; Brücher 2004] are more practitioner-oriented than the comprehensive compendia [Mayer, 2004; Schwartz, 2006] in the field of knowledge management.

We have contrasted the available guidelines with our experience of a series of cases¹ which we have empirically investigated and / or where we were involved as

¹ Background of these cases are the project WInn (BMBF 01HL0018; Herrmann et al. 2003), Wink (www.wissenmanagen.net, BMWI MM00029) and the project Nova.PE (<http://www.novape.rub.de>).

consultants in an action research² context. We have accompanied knowledge management projects in the following business areas:

- IT-consultings
- Development of E-learning software
- Web-Design consulting
- PR-Agency
- Quality assurance with respect to steel welding
- Valve layout
- Manufacturing planning
- Communication agencies
- Public relations management of a non-profit organisation

According to our experience, the guidelines of introducing knowledge management have to be modified for companies in these business areas. Fig. 1 shows the project management scheme published by the CEN guideline. In the following sections we focus our considerations on those aspects which indicate the differences between our recommendations and the current literature. The structure of the following description uses the typical differentiation between phases such as getting started (Starting the project, section 2), analysis/assessment (section 3), planning a solution/development (section 4), implementation (section 5), evaluation (section 6).

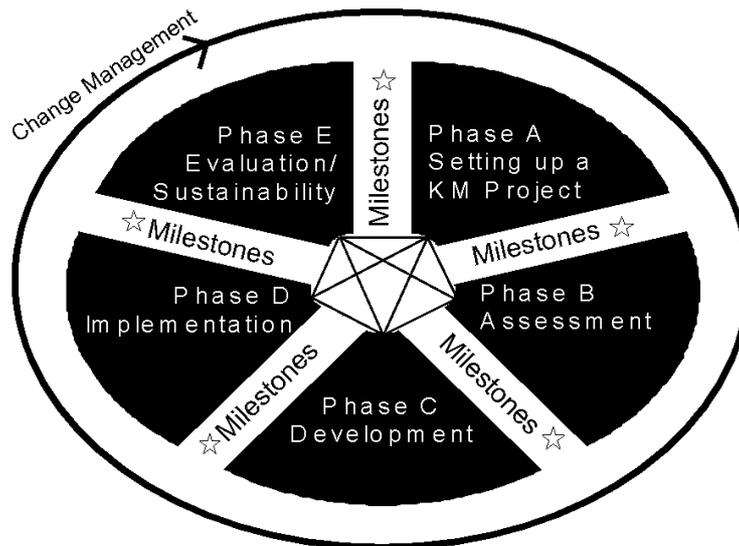


Figure 1: Project Management Scheme for KM Implementation [CEN Part 3, 2004]

² Action research is an iterative process in the context of the focused aspects enabling us to understand a social or sociotechnical phenomenon or to improve its quality. It consists of several phases “analysis” (reflection) and “action” (change) which alternate and are interwoven, and Avison calls “cycle of action”: “Action research involving researchers and practitioners acting together on a particular cycle of activities, including problem diagnosis, action intervention, and reflective learning (...) in real situations, gain feedback from this experience, modify the theory as a result of this feedback, and try it again” (Avison et al. 1999, p. 94-95).

Our approach can be characterized by the following basic assumptions:

- Establishing knowledge management is a wicked problem (Rittel & Webber, 1973; Conklin, 2005) which is not clearly defined at the beginning of the project. **The problem definition is not earlier achieved than its solution.** People don't have clear ideas about what knowledge management is, how it could help them, and what expectations they have towards this type of methods and technology.
- KM has to be established as a socio-technical solution which integrates technical and organizational structures and prepares the human actors to take part. It is not only about configuring technical components but also about developing commitments and conventions.
- The KM solution has to be deliberately grounded in the actual work processes of those employees who are going to become the KM users. Therefore, the individual tasks as well as their interplay in the dynamics of work processes have to be understood.
- KM in SME is de facto more often triggered by opportunities than by endeavours of strategic planning.

2 Starting the project

Strengthening the starting basis

The available guidelines usually start at a point (setting up the project) where it is presumed that a sufficient starting basis is already established. However, it usually has to be a task of the project itself, to check whether an appropriate starting basis is available. This basis should be strong enough to make a sustaining project and a successful implementation possible. The salient triggers which will push the project have to be understood. Typical examples are problems with customer relations, with communication between different actors during manufacturing processes and with quality of products and services, with information overload, with incomplete documentation of project work, changes within the personnel etc. Positive opportunities are

- increased motivation of people with respect to knowledge sharing,
- ongoing reflection of an organization's cultural and of its willingness to be innovative,
- people's need to have reliable knowledge when they react to difficult situations
- or the availability of new technology.

The starting basis can be strengthened by finding out what the most promising topics or areas of work are, and where the mostly motivated people can be found who are willing to promote knowledge management.

Creating an understanding of what KM is about

Although some guidelines propose to start with a strategic approach asking questions such as "Why is KM necessary?", "What kind of visions and which goals do you

connect with KM?", we do not recommend to proceed this way. The answers to these questions are not reliable, since the questions are much too abstract and people usually do not really understand what KM is about at the beginning of the project. Therefore the project should begin with examples of prototypes or of applications as they run in other companies. These examples have to be related to the problems and needs employees experience in their every day work life to give them a feeling what KM is good for and how it could improve their performance.

Focusing on work processes

It is mostly assumed that strategic thinking and the definition of and a commitment to a set of knowledge related goals is a crucial factor which increases the sustainability of KM. However, we suggest that anchoring KM in the work process is more decisive with respect to sustainability. This orientation includes that we identify quick wins which cover tasks such as finding the needed information or dealing with information which has been produced and considered as valuable for others or for future situations. The work situations have to be investigated back and forth to find the relevant problems which help to make clear the benefits of KM. Therefore, the process oriented approach considers the interdependencies between different organizational units, between different phases of time, between different actors and their resources etc.

Promoting Marketing and Involving the Management

Already with the starting phase, a continuous process of marketing for the KM-project has to begin. We found that those companies were more successful KM adopters who invest a lot of communication to explain the advantages of KM to their whole personnel. Therefore it is also necessary that parts of the management become active within the KM-project and belong to the first adaptors who start to work with the system. The analysis of the starting basis should also take into account that there might be other intervening factors and dependencies such as limited personal motivation or resources, the market and order situation of the company, other ongoing projects of changing the infrastructure etc.

3 Assessment and Analyzing

The main aspect of our experience compared to current guidelines is that one should not start with the classification of knowledge or with knowledge maps but should begin with the every day tasks. For example, a KM-solution for the maintenance of copy machines should not start with classifying the description of these machines but with describing the typical problems and activities of the service engineer. The work-oriented approach includes going back and forth between:

- task and the information being used/produced
- abstract information level and concrete examples
- kind of knowledge or types of information which can be mirrored in the KM infrastructure and those skills of the employees which cannot be documented.

From these points of views, the analysis has to establish a terminology which helps to consistently refer to the knowledge and to develop a common ground (Clark & Brennan, 1996) for communication and shared understanding. A means has to be provided for reflecting practices of work as well as using or producing information and its KM- related details [Schoen 1983. We suggest using a methodological approach which allows to depict the work activities and to make them a subject of mutual reflection – where those details can be taken under considerations which are related to the employing and production of knowledge. We recommend using a semi-formal modelling notation to represent the work processes and information handling with diagrams. We have developed the modelling method “SeeMe” (Herrmann & Loser 1999) to give an example of the characteristics of such a semi-formal notation. SeeMe is comparable and compatible with other modelling notations but has some distinctive features: explicit indicators for incompleteness and uncertainty, rough as well as complete specification of relationships, multi-perspective decomposition of elements, indication of possibilities for free decision-making³. The advantage of such a semi-formal representation is that it is suitable when expressing the contingent relationships of social structures as well as the formal specifications of a technical solution.

Furthermore, the recommendation to document the knowledge assets doesn't sufficiently take into account that the relevant knowledge mostly is not available. The relevant knowledge is sometimes not explicitly documented and it may even not be comprehensible which kind of implicit knowledge is relevant. Often enough, it is hard to find traces which indicate the relevant items of knowledge. The focus on documenting the already established tools, methods and documentations of knowledge management neglects the tremendous effort which has to be invested into the process of extracting knowledge and making it explicit. The guidelines should pay more attention to the challenge of knowledge engineering⁴ since it can be so time consuming that it slows down the whole KM-project and makes its success questionable.

The result of the assessment shouldn't be an isolated documentation of types of knowledge, or knowledge maps, which is not anchored into the everyday work but a kind of documentation which represents the knowledge structure and its close coupling to the work where information is used and produced.

4 Developing the solution

From our point of view, the development and planning of a solution have to be closely coupled with the analysis of the work process. This analysis has to be migrated into a concept which specifies the technical tools which may support the information structuring, storing, and distribution as well as the organizational conventions which accompany these activities. This socio-technical concept has to be permanently mirrored to the potential users by employing an appropriate modelling

³ Herrmann (2006) provides a detailed description of the modelling notation.

⁴ The term „knowledge engineering” has its origins in the context of designing Knowledge Based Systems (cf. Studer et al., 1998). We use this term with a narrower connotation to circumscribe the effort to construct knowledge with experts of to make it explicit.

method. The graphical models have to be enriched with examples of documents and prototypes which facilitate the understanding of what is knowledge management about.

Our empirical studies reveal that KM-projects, which involve the relevant stakeholders in a process of participatory design, lead to more sustainable solutions. Current guideline propose a set of possible methods from which the project leaders can select appropriate tools, such as Balanced Scorecard, Brainstorming, Minutes, Video conference (vgl. CEN Part 3 2004, S. 22 ff.). With this recommendations CEN don't give the details of how one should proceed to extract the knowledge. For practitioners it is not sufficiently helpful to them give references to a set of methods which they might not know. By contrast, they should have a clear description of a procedure to analyse the work oriented solution and to develop a KM solution. We propose to combine various methods of analyzing, facilitating, documentation etc. into an integrated approach – the socio-technical Walkthrough – STWT (Herrman et al. 2007). The STWT consists of a series of participatory workshops where the graphical models of work processes, of knowledge structures and/or examples of technical components are discussed and improved by considering its details step-by-step. This in-depth consideration and discussion have to be systematically facilitated.

The first workshops of the STWT can start in the analytical phase. Entering into the conceptual phase can begin with a graphical model or with the example of a technical component which are discussed step-by-step to give the participants a feeling of how a solution can look like. It can be reasonable to work with throw-away-prototypes which have the only purpose of illustrating how technical support and knowledge-based work can be intertwined. It has to become clear from the beginning that technology is a secondary issue while it is more important to find commitments which prepare conventions, e.g. about the structuring of folders, assigning of keywords, rhythm of updating the documentation etc.

Planning and designing a solution has also to be interwoven with experimenting; therefore the intertwining of implementation and developing a solution concept is needed.

5 Implementation

The implementation is mostly about to bring the planned solutions into reality. This has also to happen step-by-step and by starting with little pilot areas where the advantages of the KM-solution can be easily realized and demonstrated to the employees, in particular to the management. The members of the KM-project have to understand that the first stages of the implementation are to a lesser extent a technical challenge but more an issue of communication, marketing and building alliances. These aspects are important for the further dissemination of the KM-solution.

We found some important aspects which should be emphasized since they are usually neglected in the course of implementation:

- Make sure that the users have had sufficient training and that they have understood the reasons why they should employ new tools and comply with new conventions of knowledge handling
- Provide a help desk which can be easily reached
- Make sure that the benefits of the system become obvious as fast as possible

- Prepare key-users who are knowledgeable and willing to help others
- Make sure that the technology really works before it is used by employees who are absorbed by their actual tasks and not willing to be part of an experiment.
- Make a clear cut by transferring the relevant data from the old to the new system; try to avoid that the same data is managed twice and has to be updated on two systems

The new system should not exist as an island but should be integrated in the knowledge infrastructure of its environment from the beginning. If various different systems are used to maintain data, the differences between them should be clear and their purposes should be clearly differentiable.

6 Evaluation

During the evaluation, direct personal feedback is more valuable than operationalizing abstract strategic goals (such as increased extent of shared knowledge) and measuring their degree of fulfilment. Gathering personal feedback means that those who were involved or interested in the KM-project should report whether their task completion has become more effective and efficient, whether their job satisfaction has increased etc. People should be asked whether the quick-wins and other promises which were made at the beginning have been accomplished. The simple question is whether the most urgent problems which lead to the KM-project are really solved. This elicitation of feedback should immediately become part of continuing improvement. The KM-project as well as the users of the KM-solution should be aware that the analyzed work processes and knowledge structures are not stable but subjects to dynamic change which requires a continuous adaptation.

7 Conclusion

The European guideline is a valuable orientation for those who are newcomers in the field of KM. However, these guidelines are too abstract if clear guidance is required of how to proceed in the case of KM-introduction. For example, the tools which are mentioned, such as lessons learned or debriefing are not an appropriate set of means. They may help to identify the relevant knowledge assets but the guidelines don't describe procedures how implicit knowledge can be identified and made explicit.

By contrast, our approach helps the KM-project to run workshops where the participants make their knowledge explicit for others, classify it with respect to their tasks, and document it in conjunction with the work processes. This conjunction results in increased comprehensibility of the process and their improvement. This improvement may be achieved although it was not a strategic goal at the beginning of the KM-project.

KM-project leaders have to realize that the described phases can be highly intermingled. It can be reasonable to implement an example for KM-technology right at the beginning of the project. The phase of implementation can even reveal needs for continuing the analyses of work processes and the related knowledge. The whole KM-project is an ongoing effort of communication to establish an understanding of

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the characteristics and benefits of KM within the personnel. This communication can include back and forth considerations and up and downs which have to be accepted to make KM a success.

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