Management Of Tacit Knowledge To Overcome Learning Barriers Between Professions

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Abstract
The health care sector is under heavy pressure from lawmakers and stakeholders to reduce costs and raise the quality of services. And as such hospitals are obliged to introduce a quality management system. They need to become learning organisations in order to adapt to this new demand.
This paper evaluates problems which arise from the professional segmentation and how hospital management tries to cope with it. Therefore the paper ties aspects of knowledge management, to sensemaking in the process of learning.
Research will be framed by the system theory approach, which divides learning into two phases: triggering irritation and resultant modification of knowledge structures. Learning is coined by existing knowledge and sensemaking. The first serves as the reference structure, while the latter constitutes the process of relating the new information to the existing knowledge. Both aspects are affected by profession which is imposing specific interpretation and observation schemes on its members. As a result, this leads to asynchronous learning stages and different learning content throughout the organisation. This problem has to be tackled by knowledge management techniques and governance.
A case study about quality management and daily working routines was conducted, by using structured narrative interviews. In addition cognitive maps were used to analyse the interpretation patterns in each profession. The coordinating role of quality management was evaluated subsequently. Interviews and maps revealed hidden semantic connections with group-typical knowledge and sensemaking schemes.
The definition of “quality” constituted the core of shared knowledge across professions and was oriented towards the cure and professional autonomy. Yet each professional group retained their own set of aims, which led to different dysfunctional learning results.
Quality management instruments were used to structure and explicate knowledge on the scale of the whole organisation. This synchronised the system's elements temporarily, in the long run only emergent inter-professional collaboration led to a mutual understanding and made hidden interpretations transparent and consensual affiliations possible.
It became clear, that to master the dynamics of organisational learning in health care institutions, strategies of explication of and access to knowledge alone fall short. Thus, management of tacit knowledge is necessary to align different interpretation schemes and ensure cross-professional learning.

Keywords
organisational learning, professions, collaboration, knowledge management

1 Introduction

The hospital sector is under immense pressure from the political and economic world, to accomplish faster and better results with reduced financial and personal resources. Focusing on organisational learning and quality management is one way in which hospitals try to cope with presented challenges.

Yet hospitals cannot be reinvented from scratch, because their structure and division of labour originate from their long standing tradition. Additionally organisational development is slow, dependent on internal dynamics caused by tension between functions and professions.

Autonomous professions in particular, have developed a highly specialised knowledge base and a distinct mode of socialisation and interaction. This is not only evident on the explicit level, with overt instructions, structures and practices, but also on the tacit level. Each professional subsystem has a distinct culture, a set of unquestioned routines and interpretations.

Coordination becomes especially difficult, when the creative process of learning requires cross-professional collaboration. Diverting interpretations can then lead to internal conflicts and foil any attempt to structure and channel organisational development.

While explicit knowledge is easily managed by means of information systems, tacit knowledge is much harder to cope with. In this paper we present the obstacles that arise when different tacit

knowledge bases clash. We point out, that coordination on the one hand has to find a common ground for collective learning and communication, but on the other hand has to be careful not to destroy the subsystem's complexity. We will investigate how the administration uses quality management to narrow barriers between professions. We will also show, how each profession perceives these intervention attempts and how they try to keep their autonomy intact.

2 Theory

The description of organisational learning, its objects, processes, barriers and protagonists are viewed through a theoretical lens. Hospitals are functionally and professionally complex organisations. Each unit serves a distinct function and has its own vocabulary and its own organisational structures. Organisational learning theory in and between these professional groups has to account for these differences. There are several different approaches that describe organisational learning (Crossan & Guatto 1996). Our argument is that the system theory answers those questions the best.

2.1 Functional differentiation and professional subsystems

The primary aim of hospitals is to cure their patients. In system theoretic vocabulary the health system is the primary reference, which is operating with the difference between healthy/not healthy. Hospitals use this orientation in their core semantics. But other functional subsystems such as politics, economics, research make demands on hospitals. In turn hospitals become more complex as they try to meet those demands. In the process other semantics such as profits, laws and verification are introduced.

This complexity grows in combination with increasing numbers of patients and differentiated diagnosis and treatments; because new specialised professions, functions and branches arise and grow. As administration coordinates and integrates external claims, employees and documentation, hospitals become multi-professional and multi-functional organisations. System theory interprets it as an emergent communication process based on decisions. In each differentiated subsystem a specific decision context emerges due to its environment exposure (Seidl 2005). Eventually the subsystems start to decide differently, they drift apart in their communication. This process is amplified by path dependency, where each subsystem refers to its previous decisions in order to make new decisions. Consequently an inherent logic develops, subsystem specific structures form and a distinct vocabulary is shaped.

This gap is widened by each subsystem's demand for qualified members. Profession is used as a selection criterion. Each profession is characterised by pre-organisational socialisation process through education, training and ethical codes (Millerson 1964, Freidson 2001). Members from the professional groups import different vocabulary, cause-effect-relations and mindsets into the organisation (Saks 1998, Hugman 1991). The advantage to handle problems more efficiently through specialisation is foiled by the threat of decomposition of integrative norms, contexts, habits and shared goals.

Sackmann (1997) locates a “subculture-bermuda-triangle” between the three dominant groups in a hospital:

1. physicians: demands for diagnostics, therapy and technology conflicts with cost cuts (technical care).
2. care domain: orientation towards high quality and comprehensive care, which is personnel-intensive. This conflicts with cost orientation and leads to professional dispute with the physicians (interpersonal care).
3. administration: orientation towards efficiency, effectiveness and cost control, which leads to a concentration on specialisation and focussed activities.

There is no integrative rational structure in the inter-professional collaboration, but situational decision making, professional power structures and sequential action based on the therapy.

Organisational learning therefore has to account for these profession-specific differences in observation and communication as it takes place in a turbulent network of interacting cultural subgroups (Marshall et al 2003, Duguid 2005).

The following section discusses the connection between organisational learning and knowledge. The resulting theoretical framework will be the basis for the presented investigation.

2.2 Organisational learning and knowledge management

System theory defines learning in a most general way as a (partial) structural change that is caused by information (Luhmann 1995). Hence we can distinguish between two operations: the triggering cognition (irritation) and the resulting structural change. Both irritation and change relate to the organisation's knowledge base, which consists of explicit elements (formal organisation) such as documented processes and hierarchies and tacit elements (informal organisation) such as semantics, stories and cultures (Lyles & Schwenk 1992). Hence the organisational knowledge base differs in each subsystem.

Irritations arise from observations under the subsystem's premises, where the knowledge base is the pattern which selects and classifies input from the environment. Information results from a misfit between the observed event and the expectation, interrupting the standard procedure. The organisation is irritated by the information and has to react in order to maintain its autopoiesis. Thus information can either be neglected or structural change is triggered.

The communication based approach in system theory entails organisational structures as generalised expectations. In this wide definition structures are the organisation's knowledge base (Duncan & Weiss 1979). Learning is coping with a cognitive mismatch by means of supplementation, replacement or reconfirmation.

How the process of change takes place is best described by the information based approach (Daft & Huber 1987). Beside the already discussed information selection, an interpretation process occurs where new information is integrated into the knowledge base. Structural and cultural constraints guide this interpretation (Daft & Lengel 1990). This should lead to different learning results in each subsystem, due to diverging interpretation schemes. This ties in with Argyris and Schön's (1978) theory of learning and as well as concepts of “mental models” (Kofman & Senge 1993) and “frames of reference” (Shrivastava 1984). Each profession and functional unit has a structured and narrowed view on what is relevant and what should be learned.

Coordination and integration of profession specific learning is therefore problematic, since the knowledge base and the construction of sense is diverging. Knowledge Management can be one alternative to overcome these challenges by monitoring and coordinating learning efforts between subsystems. Knowledge management contains concepts and methods that deal with knowledge in an effective and efficient way and can lead to more awareness and a shared overt knowledge base (Davenport and Prusak 1998). Even if it mostly concentrates on the transfer of explicit components of organisational knowledge, such as documented processes, hierarchies and statistics, it should also focus on tacit knowledge (e.g. experiences). Both knowledge components are necessary for knowledge generation with regard to organisational learning (Nonaka & Takeuchi 1995). Tacit knowledge enables the context-specific interpretation of knowledge, which is necessary due to the fact that, the overt and shared knowledge sources are ambiguous.

We, therefore, conclude, that a shared core can be identified in each organisation that serves as a pivot point and common orientation for learning. In this context knowledge management can structure the learning process. A special focus should lie on tacit knowledge because of its ability to support the integrating mechanism during the learning (Schreyögg 1993).

2.3 Sensemaking and tacit knowledge

Each professional subsystem possesses its own cultural imprint with a set of related norms, values and basic assumptions. Schein (2004) distinguished between explicit and tacit elements which constitute knowledge resources.

A way to combine the tacit and explicit dimension is shown in Weick (1995). The process of sensemaking is about structuring the unknown and coping with interruptions. The information drawn from the interrupting event does not per se make sense. It needs to undergo a process of sense construction to generate new knowledge. Weick (1995, p.55) describes sensemaking as follows:

“Once people begin to act (enactment), they generate tangible outcomes (cues) in some context (social), and this helps them to discover (retrospect) what is occurring (ongoing), what needs to be

explained (plausibility), and what should be done next (identity enhancement)."

Through sensemaking processes tacit knowledge takes effect in several stages of organisational learning:

1. Interpretation of environmental events as irritations
2. Classification and attribution of the irritation
3. Selection of the reaction towards an irritation
4. Characteristic of the lesson learned

New knowledge arising from sensemaking activities occur on the inter-subjective level. The density of day-to-day interaction correlates with the membership in a certain profession. This is why Sackmann (1992) points out, that the interpretation and attribution process takes place in the member's professional context. New knowledge is always context specific and is coined in cultural settings. Only at certain occasions, i.e. ward rounds or inter-professional meetings professions share experiences.

Our hypothesis is therefore, that professional segmentation leads to the emergence of learning barriers. Different professional groups identify problems differently and arrive at diverging conclusions of how to react in response to them. Learning can have ambiguous sometime conflicting results.

Methods of knowledge management are not sufficient to overcome those barriers and coordinate learning processes on the hospital level. The role of management is therefore to coordinate these sensemaking activities through the generation and maintenance of a shared meaning in the organisations identity, i.e. by means of a mission statement (also see Lipshitz & Popper 2000).

3 Methodology

The hypothesis put forward in the previous section is evaluated in a case study in medium sized hospital (366 employees) in the suburban area of Berlin, Germany. It treats around 11.000 patients a year in ten medical departments. It is lead by a director and has three professional subunits, administration, physicians and nursing staff.

Special attention was paid to quality management coordinating and triggering organisational learning. Yet, it has no direct influence on the professional hierarchies. Quality management deploys several methods to monitor and trigger learning. The compulsory statistics are used to report to supervisory units as well as to find weaknesses. Complaint management offers access to an external view on the organisation through patients' reviews along side with medical controlling which monitors costs and benefits. Structured feedback and innovation projects are further practices that coordinate learning activities and observation on different organisational levels and as well as creating new knowledge apart from day-to-day routines.

As the hypothesis point out, our intent is to investigate barriers between professions. The barriers are assumed to be rooted in diverging interpretations and mental models. We chose two different methods to collect data. But due to the tacit nature of the subject matter, we concentrated on qualitative research methods.

The prime method was a structured narrative expert interview to survey for the role of quality management in learning processes. The interview covered questions about the definition of quality and its importance in day-to-day work, experiences with quality management in general and its outcomes especially. Furthermore the perception of the personal involvement and results of learning processes were investigated.

Hospital staff from two different functional domains (psychiatry and internal medicine) as well as administration were selected as interviewees, because each represents a specific orientation toward the patient. The internal medicine is driven by well defined cause-effect relations, ailments are therefore cured in a particularistic manner. In psychiatry on the other hand a more holistic approach of curing is applied. We therefore assume that both domains show different patterns of cooperation and learning.

The professional segmentation was accounted for by including an equal number of nursing, administrative staff and physicians into the sample. Experts in their field were interviewed. Hierarchical distortions were reduced by the participation of ordinary medical staff.

The interviews were transcribed and therefore made accessible for content analysis. The transcripts

from each group of interviewees were analysed in terms of similarity and discrepancy. Striking arguments and phrases were analysed in depth through objective hermeneutics (Reichertz 2004).

As a second method of data collection cognitive maps (Bougon et al 1977, Weick & Bougon 1986) were used. During the interview each interviewee was asked to choose specific terms from a set of words and group them around the central item “quality”. The interviewee would then indicate the impact between the words by connecting them with arrows. These cognitive maps were used to find semantic associations and to identify different mindsets in relation to quality. Beyond the figurative representation, the comments of the interviewee were recorded in order to identify and double check the results. The maps were transformed into matrices and combined according to functional unit and profession in order to find patterns of associations and interdependencies.

Each method presented above has been evaluated in different contexts, as the literature suggests. Yet the results tend to be distorted by the researcher's interpretation. Interviews and cognitive maps were therefore used for mutual validation. It was attempted to match each pattern with accordant phrases in the interview. Core argumentations were traced through all interviews to confirm their validity and to eliminate distortions caused by individual or overlaying effects.

We encourage the transfer of these methods to other domains, especially those with a large extend of tacit knowledge, that is difficult to explicate. Working with semantic maps is particularly interesting. It helps to transfer qualitative expressions into quantitative datasets and is therefore suited to be combined with classical survey methods.

4 Results

The claim that efficient cross-professional learning requires a common vocabulary and a shared set of cause-effect relations was tested on the definition of quality in each professional group. The term “quality” is apparent in the thinking of the professional groups and is used to communicate problems. It represents a shared core of explicit knowledge. Yet, each profession connects different means and ends to this definition.

Nursing concentrates on the therapy practice. Thus quality is connected to the well-being of the patient and attributed to individual professional and social skills. This is rooted in the structure of day-to-day work: Continuous patient contact and observation lead to a closer social connection between patient and nurse. Also dense collaboration processes between nurses reduce the claim for individual professional autonomy. Beside these individual effects, personnel and technical resources are named as quality influencing factors.

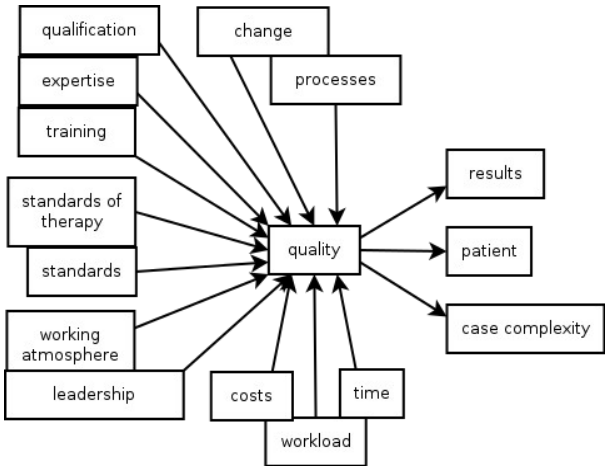

Figure 1: Semantic attribution by the nursing domain

Physicians on the other hand concentrate on their professional skills, which are seen as mostly technical. The therapy is conducted as state-of-the-art. Structural and procedural conditions are the key factors influencing quality. And as such, the effect of individual qualification is not questioned. This is an indication of a high degree of professional autonomy, this is because physicians mutually trust qualification. External claims (from administration or medical care) for monitoring and evaluating their work are rejected. Physicians undergo a long socialisation process in a strongly hierarchical system, also the structure of their day-to-day work focusses on collaboration amongst peers with a very

specialised vocabulary and distinctive routines. This attitude has caused a high degree of professional closure.

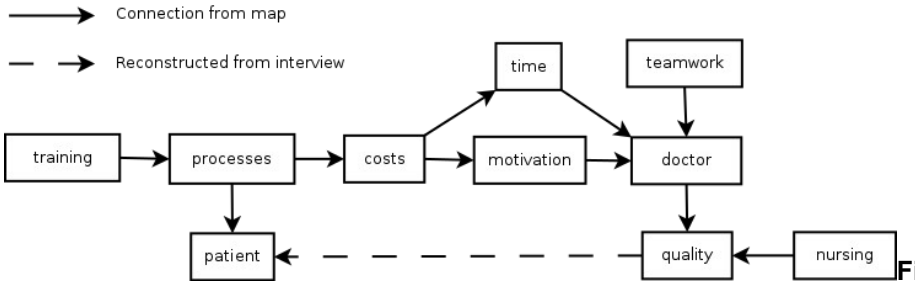

Figure 2: Semantic attributions by physicians

The central quality manager is another significant actor due to his official role in defining quality for the whole organisation and transferring this definition to professions and departments. The statements suggest that quality is seen as an overall framing. This view meshes with the two aforementioned. Each professional group can follow its interpretation in order to observe quality. On the other hand statements can be found, where emphasis is put measurability to objectify these professional perceptions. This view can be clearly associated with a management approach to steer the organisation indirectly and allow a sufficient degree of self-governance and complexity.

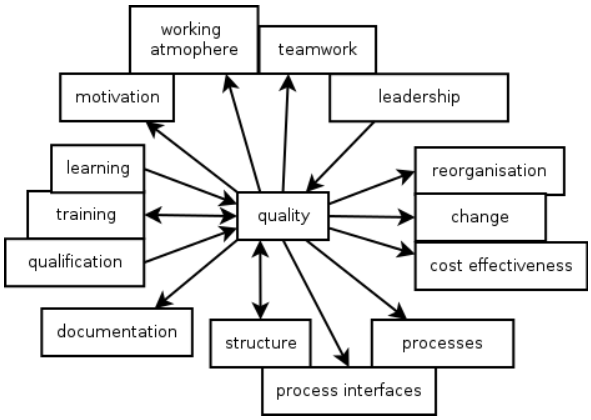

Figure 3: Semantic attributions by quality manager

We be observed from the example of the definition of quality, how different socialisation patterns and professional cultures influence the observation and attribution of problems. Even though a shared core is given each profession grounds its learning on their own distinct assumptions and interprets the causes and potential effects differently. The lack of a mutual understanding and dissimilar vocabulary therefore constitutes a first learning barrier, since some problems could be in the blind spot of other professions and learning is restricted to the team level and this has effect on what is learned.

Quality Management uses several structural and process related instruments to coordinate learning. Structural knowledge defines who is responsible for and capable of learning activities. It covers aspects of assignment and qualification. Diverging knowledge in the structural dimension, would lead to obscured expectation with regard to the capacity to initiate and shape change. In our case, we see that each profession attributes responsibility and qualification alike.

Responsibility for quality and the resultant learning activities are seen on the professional team level. The central representative for quality management on the other hand has to set the context and to provide the methods for the implementation in daily work routines. So no learning barrier can be identified between the medical professions and administration. This supports the findings of team based learning, where no barriers where evident.

"… and we put much emphasis on the joined ward rounds with the different colleagues. In my opinion this is the central point of quality management here." (Physician)

"Quality Management has to impose structures, it has to communicate, that there are methods whereby each employee can make his day-to-day work easier and better." (Administration)

Yet problems coordinating learning activities can arise between physicians and medical care. This is

because multi-professional institutions that are binding and moderate the change are missing in internal medicine.

“There are guidelines for physicians and clinical paths, but nursing was not integrated, as we wished, when they were defined.” (Nurse)

The psychiatry ward on the other hand learned how to coordinate different professional groups. Due to a high density of multi-professional collaboration in day-to-day work, the cooperation in quality management and learning seems natural.

“… we always think as a team. Not that the doctor decides on his own and he is always right. Our work only functions if all professions work with the patient. In day-to-day work there are always hints from nursing or music therapy.”(Physician)

Quality management encourages self-governance which leads to solutions that fit the needs of each profession. Yet this induces problems when collaborative learning is needed. For the mere fact, that results tend to be dysfunctional for other professions. Learning barriers emerge as each profession optimises its work in relation to its tacit knowledge and if there is lack of inter-professional collaboration, with the possibility to align tacit knowledge. The contrast between the ward for internal medicine and the psychiatry with differing collaboration structures shows that lack of mutual understanding will lead to insufficient cross-professional learning and hinders a diffusion of the lessons learned to the entire organisation. Thereby making the organisation blind to unplanned learning processes.

Coordination through quality management is rather framed by processes not by structure. Especially the aforementioned certification, internal auditing and projects serve as factual and temporal elements that consolidate learning on the organisational level. It is either the internal quality management that serves as a harmonising agent or external evaluators, that press the subsystems to exhibit a homogeneous picture of the organisation.

Both events explicate the learning results and the accumulated knowledge through documentation and reviews. At this stage, little feedback is given to each profession. The learning on team and profession level is therefore not structured by administration, since new knowledge is not shared mutually.

Quality management steers through framing of observation, impulses for solutions and standard processes. This is again interpreted differently by each profession. Physicians who claim a high degree of professional autonomy, usually experience framing as not compulsory. Medical care on the contrary perceives the frame as obligatory and uses it as a guideline for their work. Learning barriers between professions occur due to the rejection of framing attempts by physicians.

“It [a place for the notes] was somewhat unified during the certification, but afterwards the doctors let it die out, because doctors don't like being told, where to take their notes.”(Nurse)

The reason for this behavioural pattern by doctors, is that they usually reject connection to other knowledge sources in their learning process. The tacit knowledge underlying this behaviour is found in the construction of a singular professional experience with specialised skills. By the doctor's reasoning, these skills are inexplicable and incomprehensible to other professions. This unwillingness and inability to share knowledge creates a lack of common understanding, shared assumptions and trust, and this hinders effective communication and collective learning.

There is no formal coordination by hierarchy or process, when the learning results diverge between professions. Quality management retreats to a position of a framing instance, it only serves as an external observer, who does not temper with the internal complexity of the subsystems. Learning on an organisational level is a mere collection of formalised processes. If the subsystems do not establish a coordinating institution, cross-professional and cross-functional learning fails and barriers continue to exist. These barriers can only be resolved if there is an opportunity to align sensemaking processes. As the example of the psychiatry suggests, inter-professional team meetings can help to lessen the tacit knowledge gap either by introducing a common interpretation scheme or by sensitising each group for the cause-effect-chains of each other.

5 Conclusion

The ability to transfer and coordinate learning on an organisational level is crucial for hospitals to cope with claims for efficiency and cost reduction from the political and economic system. Maintaining

therapeutical quality is essential for the self-concept of each profession in the hospital. Despite this common orientation it was shown that each professional subsystem preserves their own interpretation of what quality is and into which cause-effect relation it is embedded in. Tacit knowledge obtained in professional training and consolidated in day-to-day work is the main factor explaining this difference. Barriers of organisational learning arise as causes and solutions are interpreted differently.

By the example of a medium-sized hospital it was shown how each professional group constructs their own image of quality. Learning always takes place in a team. Tacit and explicit knowledge is therefore advanced in relation to the knowledge resources already existent in the team. Up to this point learning is path-dependent, professional knowledge systems drift apart. Barriers between professions tend to increase.

On the other hand it is also shown, that administration can play a coordinating role. There are two measures that were observed in our case study. The first is intervention through framing. Quality management provides a set of definitions, interpretations and methods. If these methods are accepted, as shown in the case of the psychiatry, cross-professional learning can take place. Barriers are reduced through a transparent, common understanding on the level of mixed group. But the same method is also likely to fail, as suggested in the case of the internal medicine. Due to a lack of resources and a strong emphasis on professional autonomy, collaboration is blocked. Barriers stay intact. Hence learning displays an uncoordinated, sometimes dysfunctional character.

The second mode of intervention presented here is the use of an organisation-wide explication of tacit knowledge elements. Internal auditing, certifications and projects temporally accumulate the results from team based learning. This method consumes a lot of resources and attention. It also has to cope with deficits of fully externalising tacit knowledge. The resulting information also needs to be interpreted in each profession. A structured feedback process is needed to align and share interpretations and therefore temporarily reduces the barriers.

Even though the case study is limited to the scope of a medium-sized hospital, transfer to other contexts might be possible. In the same sector, similar results might be found with larger hospitals and care facilities. Since our findings suggest, that the work context and the density of interprofessional collaboration affects the occurence of learning barriers, the results might not be valid for smaller facilities. Here collaboration occurs on a more personal level. If learning barriers occur, they are more likely to be found on a psychological and motivational level and not so much due to the organisational configuration.

The problems of professional segmentation and functional differentiation are generic to other domains as well. The theoretical approach is not only valid for the healthcare sector. Our results can therefore be transferred to other domains, where a similar professional segmentation is found. This is especially true for knowledge intensive organisations, since the divergence of tacit knowledge components tends to be greater there. Hence, the results of our case study are of interest to the overall discussion of knowledge management.

Since the explicit knowledge base in professionally segmented organisations such as hospitals has very little overlapping elements, coordination can only be reached through creating a shared understanding of goals, processes and responsibilities. Management of explicit knowledge cannot achieve this alone. Knowledge sharing is therefore not only related to information sharing but should rather be associated with a synchronisation of mental models on the tacit and explicit level. The focus should therefore be on social rather than technological knowledge management in order to overcome learning barriers between professions.

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