

Competency Development in Distributed Work Environments

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Today stringent customer demands, accelerated time-to-market schedules, and high levels of quality have put companies under pressure to adapt and modernize their product development processes. The ability to succeed over the long term on global markets depends in large part on keeping up with dynamic and constantly changing conditions. One way to meet these challenges is the organization of product development and production processes in cooperative, often international, company networks which can react flexibly to new developments on the market. A central characteristic of this new type of work organization can be seen in the increasing appearance of forms of „distributed work.“ Distributed work can be understood as the organization of work across tasks, process chains, or production/service networks. In distributed work, employees from different departments, sites, and often countries, cooperate on a single task, a chain of tasks, or a network of tasks. One of the most important forms that distributed work takes is cooperation in temporary project teams, often supported by the use of modern information technologies. In such open work processes, a wide range of new demands arise for the work content and the competence development of engineers and skilled workers.

A number of new dimensions enter the work process under conditions of distributed work which require companies to organize the creation and transfer of know-how and competencies differently. For instance, due to the limited time frame of distributed work projects, workers have to orient themselves to new work situations, tasks, and social frameworks over and over again. Another major requirement in processes of distributed work is the ability to react and respond in critical or unclear situations. In project organization, it is the participants who have to be in a position to make intelligent and timely decisions even in cases where information or data is incomplete (HINDS, KIESLER 2002).

1. Previous Trends: Competencies in Boundaries

One of the difficulties for competency development in processes of distributed work is that the traditional way that skills are acquired and experience is developed occurs in a “closed” space (MEIL 2000). Industrial skilled employees come out of nationally-based institutions of training and further training where they acquire their formal skills and their specific area of expertise. Then within the company, the continued development of knowledge takes place usually within hierarchically organized functional departments. We call this form of competency development the container model (see fig. 1).

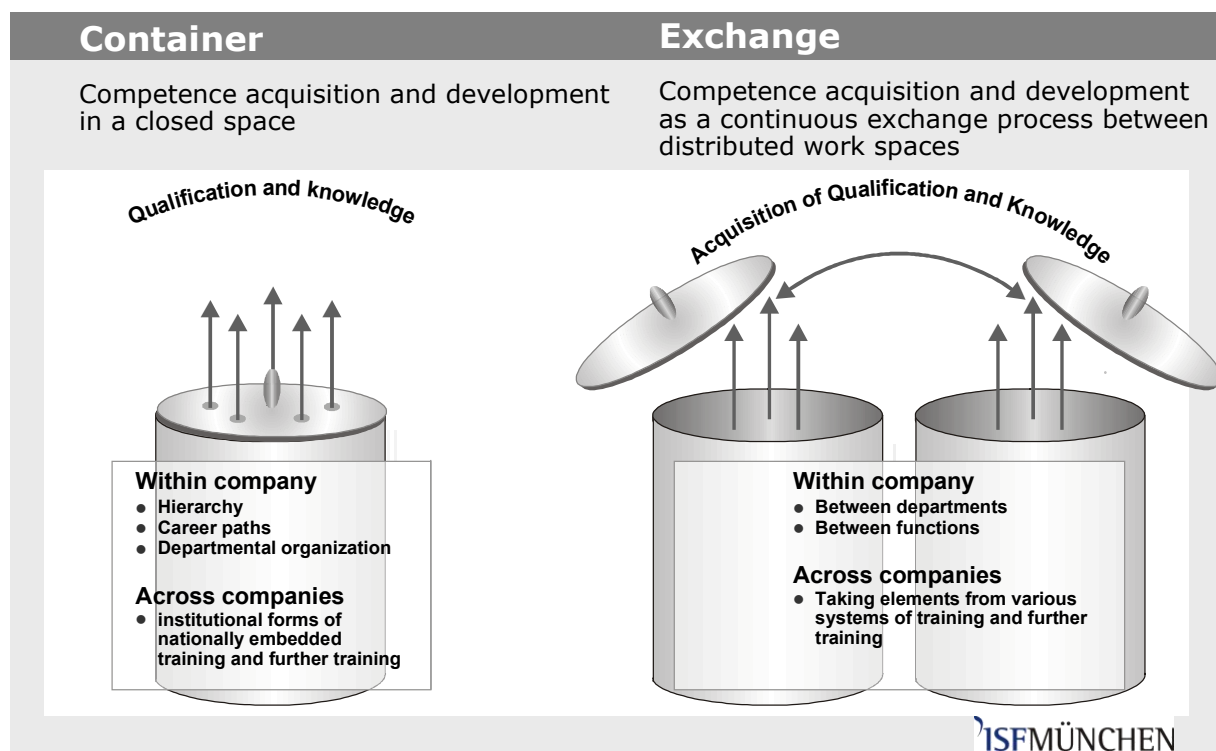


Figure 1: The Container Model

The way knowledge is generated in this closed system can be counter-productive for the requirements that face industrial skilled workers and engineers in processes of distributed work. In distributed work processes, competence acquisition and development is a continuous

process of exchange between departments and functional areas within companies. Across companies, it entails the exchange between different training traditions, cultural backgrounds and working habits. Therefore, the type of expertise and experience acquired in container type organizational structures does not provide the appropriate preparation for the dynamic, conflict-laden, broad-based knowledge and experience necessary in distributed work contexts.

2. New Demands for the Actors in Distributed Work Processes

The question arises as to how to develop competencies necessary for international project work, how to bind them together with existing skills, and use them effectively in company-bound processes of product development. A step to answering these questions comes out of the discussions undertaken with company representatives to identify aspects of distributed work in company practice that can be characterized as “subjective,” especially in relation to objective dimensions (BÖHLE 2002).

The objective aspects of distributed work are closely linked to typical work situations. With typical situations the planned and objectively led approach of developing procedures and rules is generally applied. Yet even for typical situations experience-based work forms, especially in complex work situations, are used by the actors involved. For instance, when a given situation arises, an associative thought process occurs, for instance by calling up analogous situations which complements and rounds out the procedures that have been set down.

Subjective aspects of carrying out work are closely related to critical situations. In critical situations, experience, senses and intuition, as well as associative thought processes are a significant part of the work process. For distributed work processes, these are particularly important because there are so many critical situations that occur in the course of a project. In fact critical situations arise so often that they take on a degree of normality. The company representatives expressed it such that: “critical situations are almost the norm – it is basically

typical to have a critical situation.” There are many types of critical situations: they come about due to last minute changes from the customer, problems of communication or leadership, missing or incomplete information, conflicting priorities, the unwillingness to try new solutions. Thus, the causes have a variety of sources ranging from externally induced risks, internal interactions, poor information flows, etc. Naturally, companies try to use the lessons coming out of critical situations to plan better, to foresee where a critical situation might occur and take steps to prevent it. Indeed, critical situations are often viewed as the outcome of a lack of clarity in the specifications, information, etc. that are provided. However, in the complex interactions of distributed work processes, with their variety of actors, companies and technologies, not every situation can be foreseen or planned. Nor is every critical situation a consequence of diverging from predetermined plans. Moreover, knowing the source of a problem does not ensure that it can be prevented. Thus, the challenge for an experience-based means of working in distributed processes lies in giving project participants the means to learn how to deal with critical situations and convey a problem-solving orientation. This might sound trivial. However, the approaches that would apply to this type of learning contradict with strongly embedded views concerning planning against unforeseen contingencies as a solution, a purely scientific-logical approach to problems and problem-solving.

3. New Competencies in Distributed Work Processes

One of the most challenging aspects of distributed work, particularly in a leadership position, is being able to activate different types of competencies in the different phases of a project for which different working styles and interactions are necessary at the appropriate time. Thus in the beginning of a project, the participants shape and form the work process; they are in an exploratory phase. At various other times in the project, the project leader is called upon to build a consensus, moderate, make decisions, and control the process.

Another critical aspect of operating in distributed work is the development of negotiation cultures (BRANNEN, SALK 2000). In a project, new actors from different companies or departments, often with different cultural and training backgrounds, have to come together, and within a fixed period of time, have to complete something. “Normal” forms of hierarchy or authority do not exist in these systems, and the process can get very complicated due to the complexity of the products, and also due to conflicting interests. However, it should also be recognized that conflict is not the only medium of exchange, since the overall goal of the participants is basically the same and the technical basis for understanding is also the same. The interaction is characterized by a simultaneity of conflict and cooperation as well as power relations that can be both symmetric (for instance, in terms of hierarchical level), and asymmetric (for instance between customers such as automobile producers or airplane manufacturers and their suppliers). The actors working in distributed work processes have to learn to deal with these contradictory elements of interaction. At the same time, trust is an important component of the relationship in project groups as is the certainty that each member takes responsibility for his/her part of the process, especially the project leader who is responsible for ensuring that the project moves forward as a whole. In this framework, project participants have to find a basis for negotiating which brings them both closer to their goal while at the same time representing their particular interests.

An extremely important aspect for development work which is highly conceptual, is the ability to make mental images of projects and processes, often by creating analogies to previous practice and experience. Project participants from various companies are responsible for one piece of a much larger product, whether it be a car or an airplane. They not only have to be in a position to envision the steps of development of their piece, but especially in today's industrial structures, they have to foresee the integration of their piece in the total product. Naturally, these demands require a strong object oriented analytical work implementation. However, the company representatives emphasized the important role that the senses and visions play for the complex perception that is necessary to master these compli-

cated work processes. Thus, an important aspect of distributed work revolves around anticipation and openness, in contrast to more categorical and formalized ways of thinking. Openness is especially significant for distributed work because of the variety of different perspectives and ways of thinking that exist in a project group, and because the development process is not linear, but rather process-oriented. Anticipation is important because the end results can be years away from steps taken at a given time, steps that are nonetheless critical to the final result. Thus, thinking in the present is not sufficient; it is necessary to anticipate what is coming.

4. Conclusion

For forms of distributed work to be effective, it is necessary to utilize the entire range of competencies that are available in a value chain or network of production or service processes. For one, this involves designing the right kind of cooperation processes between individual employees or groups, who come from differing occupational and cultural traditions, and therefore bring different backgrounds, experiences, and bodies of knowledge with them to the work process. It also involves developing the appropriate qualification which give them the opportunity to develop a comprehensive „process“ competence. Thus, distributed work entails decisive challenges for company organization and qualification, and requires new methods and instruments for the generation and maintenance of competencies.

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