

# **Telework Strategies: The Diffusion of a Workplace Innovation**

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## **ABSTRACT**

Telework can be seen as a strategic building block for overall organizational change initiatives. Organizational change processes, however, frequently seem to lack an integration with workplace innovation projects. Workplace innovations, like the implementation of telework, are often restricted to mere pilot projects without a clear strategy for the diffusion of the innovation throughout the organization as a whole.

This paper presents a multi-level strategy model for the diffusion of telework as workplace innovation. This model builds on theoretical findings concerning the diffusion of innovations, on the one hand, and practical experiences from a broad range of telework pilots, on the other hand. Thus, it synthesizes the outcome of application research and economic evaluation studies of more than 25 telework pilot projects in German industry as well as public administration with international experience. The model offers guidance for the strategic diffusion of telecooperative work forms and shows the impact of strategic alternatives for organizational change processes.

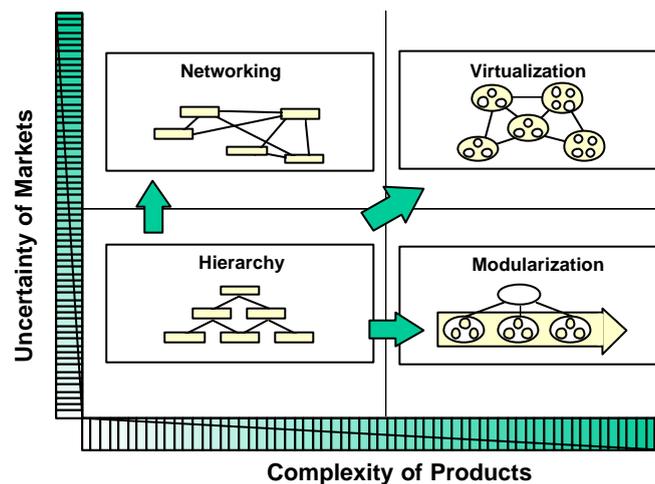
## **1. INTRODUCTION: STRATEGIES OF ORGANIZATIONAL INNOVATION**

The competitive environment of firms has changed dramatically in recent years due to such developments as the internationalization of corporations, societal value changes, as well as an increasing complexity of technical knowledge and information flows. Employees tend to expect more from their work than merely a sufficient income as means of survival. Such factors force organizations to find new ways for a more effective deployment of human capital. Telework as workplace innovation is well suited for organizations to realize the necessary shift in values and social preferences. Telecooperative work models allow for personal goals (e.g. self-determination, mobility, and independence) to be fundamental components of organizational concepts. For this reason, telework can be seen as a strategic building block for overall organizational change initiatives. Organizational change processes, however, frequently seem to

lack an integration with workplace innovation projects. Workplace innovations, like the implementation of telework, are often restricted to mere pilot projects without a clear strategy for the diffusion of the innovation throughout the organization as a whole. However, such a strategy seems to be necessary in order to provoke organizational innovation processes.

As shown in figure 1, there are three main strategies of organizational innovation that are followed by corporations in order to adapt to changing internal and external conditions (Pribilla *et al.*, 1996; Wigand *et al.*, 1997; Reichwald *et al.*, 1998; Möslein, 1999):

- *Strategies of modularization* of organization structures are of particular importance where products and services are getting more and more complex and the hierarchy therefore lacks the necessary flexibility of the internal communication channels.
- *Strategies of networking* and cooperation are gaining advantage where increasing levels of market uncertainty mean growing risk for integrated corporations. In this case networking with market partners stands for the distribution of risk among several cooperation partners.
- *Strategies of virtualization* are said to be particularly well suited for those tasks that are characterized by both their high level of complexity and a correspondingly high level of market uncertainty.



*Fig. 1: Organizational Innovation Strategies and Assignment Characteristics*

All three strategies of organizational innovation need information and communication infrastructures for their realization and can profit from media-supported forms of distributed work. In order to unfold the potential of telework and telecooperation for the implementation of organizational change and to overcome the boundaries of narrowly designed pilot projects, our model of telecooperation tries to integrate different forms of telework as building blocks of overall organizational innovation strategies. This model will be presented in the following section.

## **2. TELEWORK AND TELECOOPERATION: BUILDING BLOCKS OF ORGANIZATIONAL INNOVATION**

Telework as a primarily workplace oriented design strategy focusses on the spatial distribution and relocation of workplaces. In terms of spatial factors, we can distinguish among four relevant

organization types of telework: (1) *Home-based Telework*, (2) *Center-based Telework* (e.g. work in satellite offices or neighborhood offices), (3) *On-Site Telework* (work that takes place at the location of the customer, supplier or cooperation partner), and (4) *Mobile Telework*. As shown in figure 2, these are the fundamental alternatives of work location. All of them can be combined with different time concepts, contractual rules and technical infrastructures, but they still form the basic building blocks of spatial workplace innovation.

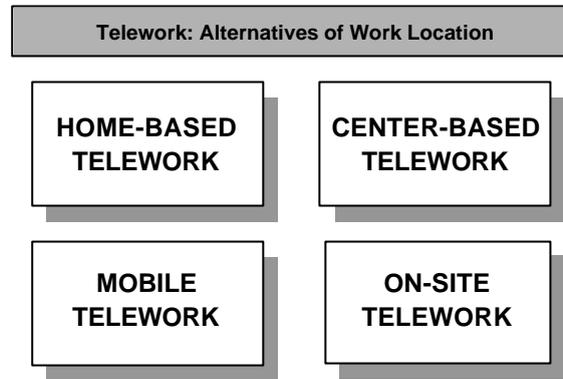


Fig. 2: Telework – Alternatives of Work Location

Work in spatial distribution doesn't take place in isolation. For this reason it has proven helpful for the analysis, design and implementation of distributed work forms not just to focus on aspects of *telework*, but also and at the same time on aspects of *telemangement* and *teleservices*. Together, telework, telemangement and teleservices form the three dimensions of telecooperation, thus allowing us to take a more holistic perspective on distributed work processes in organizations (Reichwald and Möslein, 1996 and 1999; see also figure 3):

- the *perspective of telework* highlights aspects of workplace design and distribution;
- the *perspective of telemangement* focusses on the management and coordination processes in distributed work arrangements, and
- the *perspective of teleservices* looks at the products and services that are provided by telecooperative business processes.

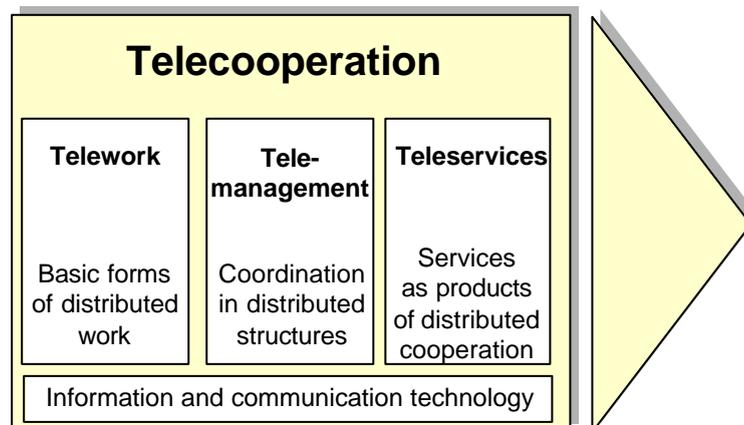


Fig. 3: Dimensions of Telecooperation

From an organizational viewpoint this three-dimensional perspective on telecooperation makes sense, as organization and the organized achievement of tasks always comprise (1) the design of work processes, (2) the management and coordination of these work processes, as well as (3) the products as outcome of these work and coordination processes (Wigand *et al.*, 1997).

The adequate combination of distributed forms of work, management and delivered services opens up a broad range of design options for organizational innovation and flexibility. These options, however, do not automatically translate into real business benefit. They first have to be implemented and the implementation strategy that is chosen determines the economic effects that can be realized. Figure 4 puts together the parts of our multi-level strategy model for the implementation and diffusion of telework, as it has been used for the design, implementation and evaluation of telecooperative work forms in a broad range of pilot projects.

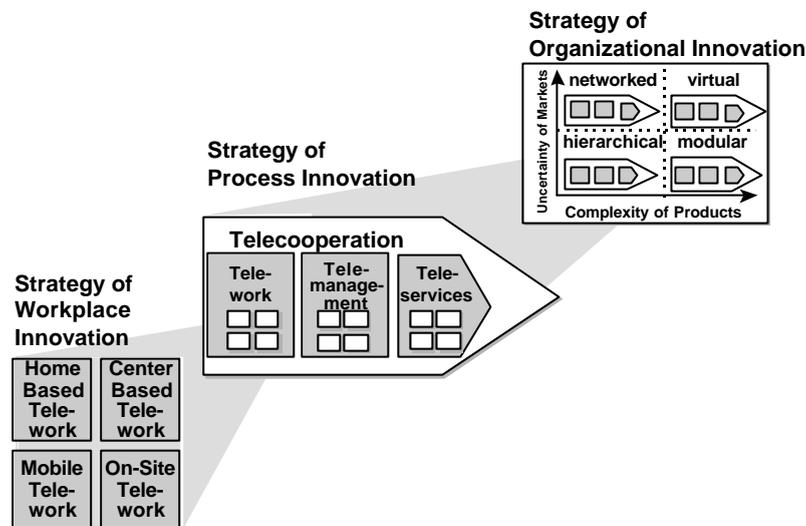


Fig. 4: Basic Strategies for the Implementation and Diffusion of Telework and Telecooperation

This model distinguishes three main strategies for the implementation and diffusion of telework and telecooperation. They are located on three different strategy levels with corresponding levels of business impact (Reichwald *et al.*, 1998):

- *Telework as a strategy of workplace innovation* focuses on the spatial distribution of work locations.
- *Telecooperation as a strategy of process innovation* looks at work locations within the broader context of distributed business processes.
- *Modularization, networking and virtualization as strategies of organizational innovation* integrate telework and telecooperation as basic building blocks of organizational restructuring in order to gain competitive advantage in globally distributed markets.

Hereby, telecooperation as a process strategy forms the „missing link“ between alternative forms of work location and their overall organizational context. Pilot projects for the implementation of distributed work forms in business and public organizations can be designed, implemented and evaluated on either level, but the design and implementation strategy should be decided carefully as the goals that can be achieved and the effects that will be realized are

strongly influenced by the selected strategy level: The mere relocation of workplaces won't end up with optimized business processes, and the mere optimization of business processes won't generate new products in order to gain new markets. This seems to be self-evident, but in most pilot projects in the field of telework and telecooperation the strategic goals are not well formulated. Diffuse expectations are the consequence. In many (if not most) telework pilots they lead, in the end, to unrealistic and consequently unsatisfied expectations that are – from our point of view – one of the main reasons for the relatively slow rate of adoption that telecooperative work forms in practice still have to deal with.

### **3. THE DIFFUSION OF ORGANIZATIONAL INNOVATIONS: DRIVING FORCES AND ADOPTION RESISTANCE**

„Getting a new idea adopted, even when it has obvious advantages, is often very difficult. Many innovations require a lengthy period, often of many years, from the time they become available to the time they are widely adopted. Therefore, a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation“ (Rogers, 1995, p. 1). More than 25 years have passed, since Jack Nilles has coined the term telecommuting during the 1973 oil crisis (Nilles *et al.*, 1976). Since then a lot has changed. Telework has become widespread. Nevertheless, hardly any of the telework predictions and visions of the 1980s has come true in the 1990s business reality. Outsourcing, business process reengineering, lean management and virtualization have become the leading business trends of the 1990s. Telework, however, while still gaining popularity, has never reached the status of a dominating business trend in practice. Why?

On the one hand, the advantages that are expected from a telework implementation seem to be clear and convincing (Smart Valley, 1994; Wheeler and Zackin, 1994; Reichwald and Möslein, 1996; Jackson and Van der Wielen, 1998; Reichwald *et al.*, 1998): Telework is said to improve individual productivity, to support corporate diversity initiatives, to retain valuable employees, to reduce employee stress, to improve employee moral or to increase employee loyalty. In addition, employees expect increased flexibility, increased motivation and commitment, reduced commuting time as well as reduced work distractions. Economic forces of work place dissolution are expectations on improved resource productivity (especially with regard to know-how and capital), increased competitiveness (especially with regard to time factors, quality factors or flexibility factors), as well as the opening up of new markets. On the other hand, all these effects on the „benefit side“ of telework are hard to be measured.

In general, the decision for the implementation of a telework program is a management decision. This applies equally to business organizations as well as public administrations – at least in western industrial nations. Management decisions, however, have to be justified. An economic evaluation that clearly shows the advantageous cost/benefit ratio of an innovation usually seems to provide the best justification.

The importance of making visible economic effects has already been pointed out by Everett Rogers in his outstanding book „Diffusion of Innovations“ (1995, p. 213): „(...) a combination of an innovation's profitability plus its observability were most important in determining its rate of adoption“. For workplace innovations like the implementation of distributed work arrangements, overcoming the problems of measuring and making visible reliable cost/benefit ratios remains therefore a critical success factor for adoption and diffusion.

The role of the adoption cost / adoption benefit ratio for adoption decisions has also been clarified by Nault, Dexter and Wolfe (1998) for electronic communication innovations in general: In order to overcome adoption barriers, the interplay of innovation support, adoption cost and adoption benefit has to be designed strategically on the supply side of the innovation. This will make adoption decisions much more likely to happen and will help to overcome adoption resistance within the diffusion process.

#### 4. OVERCOMING ADOPTION RESISTANCE: CLARIFYING THE ROLE OF ECONOMIC EVALUATION

Practicability is a necessary precondition for the diffusion of telework and telecooperation. However, as a precondition it is by no means sufficient. Practicability refers to the technical, organizational, personal, financial or legal requirements that have to be fulfilled in order to make the implementation of telecooperative work forms possible. For years, pilot projects in the field of telework and telecooperation have focussed on testing these requirements – they have mainly been studies of practicability (Reichwald *et al.*, 1998).

For the diffusion of innovations in business environments, however, the economic advantage is decisive (Hauschildt, 1997, p. 381). From an entrepreneurial perspective, it is only the expected economic advantage that provides the incentive for the adoption of an innovation and that can foster its diffusion. Innovations that show observable benefits with regard to dominant business goals have the potential to be easily adopted. Here we find the explanation for the rapid diffusion of organizational innovations like outsourcing, business process reengineering or lean management, on the one hand side, and the relatively slow adoption process of workplace innovations like telework, on the other hand side. Making visible the strategic business advantage of telework and telecooperation can therefore be seen as key for the acceleration of the diffusion process.

For this reason we have developed a strategy-oriented approach to evaluating the economic effectiveness of telework and telecooperation pilots. The approach offers guidance for the strategic diffusion of telecooperative work forms and shows the impact of strategic alternatives for organizational change processes. It has been applied in telework projects in German industry (e.g. BMW AG, Deutsche Telekom AG, SIEMENS AG) as well as public administration (e.g. the POLIKOM project that focuses on telecooperation between the distributed government locations Bonn and Berlin or the TAMIN project, the telework pilot of the German Federal Ministry of Education and Research). Thus it has already proven usability in practice. Here, we can just sketch some core elements of this strategy-oriented evaluation method. For details refer to Reichwald *et al.*, 1996; Reichwald *et al.*, 1998; Reichwald and Englberger 1998).

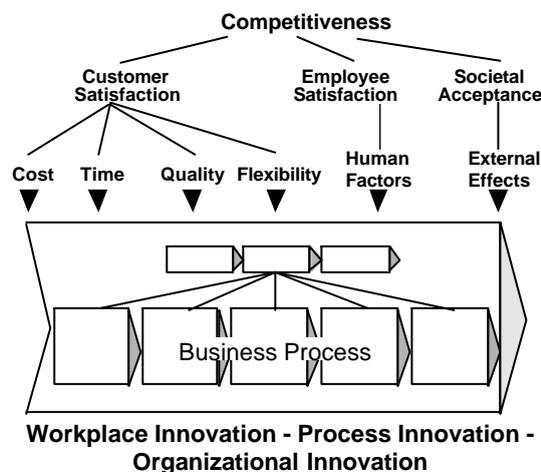


Fig. 5: Economic Evaluation – A Strategy-Oriented Approach

As figure 5 tries to visualize, the starting point of any strategy-oriented evaluation process is to determine the strategic business goals of the organization in question. Which are the primary sub-goals of corporate competitiveness? What is the strategic value and the relative importance that is attributed to these sub-goals? Which of the strategic goals and sub-goals are addressed by the telework initiative? In what respect? Which are the criteria that can show the possible contribution of the telecooperative work arrangement with respect to these strategic goals and sub-goals? How can they be measured – quantitatively or qualitatively?

In order to gain a truly holistic picture of the effects that can be expected from a telework pilot, these questions have to be asked and answered from different perspectives (management perspective, teleworker perspective, co-worker perspective, customer perspective, ...) and on different levels of abstraction (workplace level, process level, corporate level, societal level). A computer based evaluation tool that can be applied throughout the evaluation process has been developed and allows for an efficient and effective evaluation process.

Without going into more detail of the evaluation method or the evaluation process, we can present some general findings with respect to the evaluation outcome that are of importance for the question of adoption and diffusion:

- The business potential of telework and telecooperation pilots is highly determined by the underlying implementation strategy (strategy of workplace innovation, process innovation or organizational innovation).
- Depending on the selected implementation strategy, the primary economic effects will be located on different organizational levels (see figure 6).
- Economic effects of telework and telecooperation won't come true as long as savings of resources or the restructuring of organizational structures and processes are prohibited by corporate settings and frameworks (as it is often the case!).
- The highest potential for telework and telecooperation is to be expected in the field of innovative information services, as they promise to be the most advantageous application field with respect to economic effectiveness.

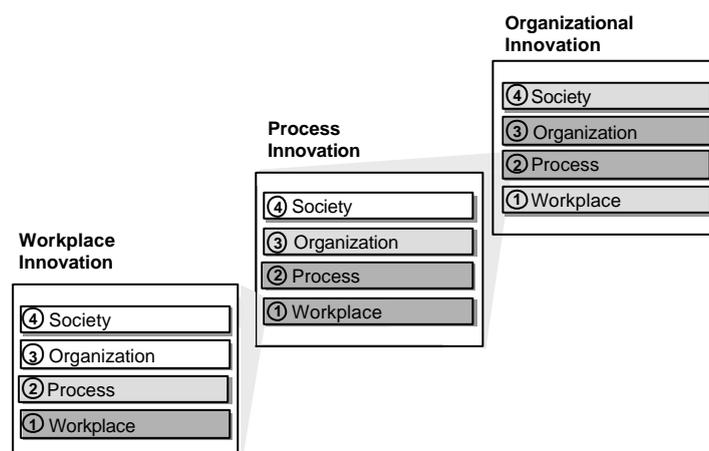
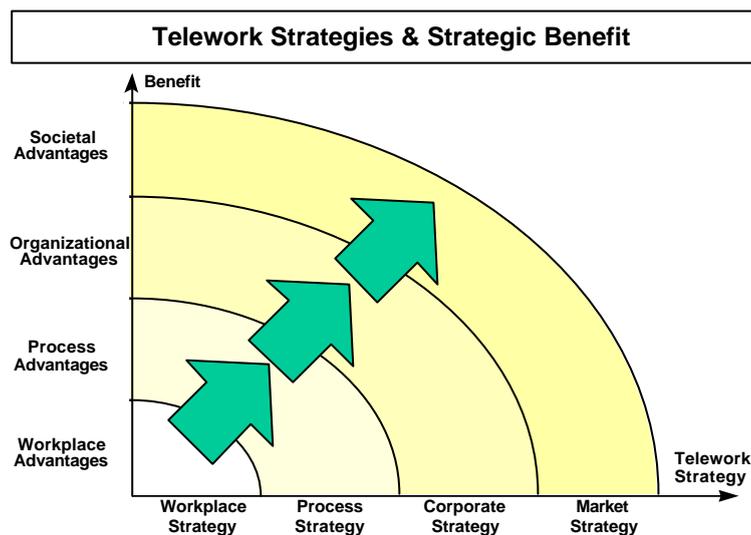


Fig. 6: Implementation Strategy & Primary Economic Effects

Figure 7 shows alternative strategies for the implementation and diffusion of telecooperative work forms, on the one hand side, and the primary strategic benefit that can be expected, on the other hand side. Depending on the strategy that an organization has decided to follow, the implementation of telework will generate economic effects on different levels and for different target groups. It goes without saying, that classical investment calculations that focus on purely monetary effects generated by the implementation of stand-alone innovations cannot capture these effects in an adequate manner.

Our strategy-oriented approach to evaluating telework and telecooperation, on the contrary, tries to capture a holistic picture of the innovation process. As a path-oriented evaluation method, this approach also intends to give guideline and orientation for organizational innovation processes: It shows an innovation path starting from workplace-oriented telework pilots through process redesign and overall organizational innovation to long-term visions of societal changes and the opening up of new markets. In Germany, several organizations have decided to follow this path. Step by step, they move from early experiences with „classical“ telework pilots to more innovative forms of telecooperative work arrangements that allow for real strategic benefit (see for instance: Deutsche Telekom, 1998, for the experiences at Deutsche Telekom AG or <http://twist.bmw.de> for the experiences at BMW AG).



*Fig. 7: Telework Strategies & Strategic Benefit*

## 5. MANAGEMENT PERSPECTIVES FOR TELEWORK PILOTS

The findings presented show a clear link to the findings of general innovation and diffusion research: The diffusion of innovations that have to rely on network effects in order to generate business benefit has always proven especially problematic. This is the case for almost all innovations in the field of communications (see Rogers, 1995). In a long term study, Stephan Haeckel observed the adoption and diffusion processes for information and communication technology and he identified three striking steps on the general Scurve that characterizes diffusion processes (Deighton, 1996; Reichwald and Möslein, 1998; see figure 8):

- the substitution phase,
- the experimental phase, and
- the innovation phase.

Haeckel illustrates these three phases as follows: In the early 1960s, mainframe systems opened up radically new forms of information processing and information storage. The new options were adopted immediately and in a truly substitutive manner: for the electronic administration of physical stockkeeping and inventory control (*step 1: substitution phase*). Later, on started to experiment with calculation-intensive algorithms for inventory scheduling and lot-size calculation that were enabled by computer support (*step 2: experimental phase*). The real innovation, however, didn't show up before the early 1990s: Manufacturing without stockkeeping and just-in-time logistics. These innovations were enabled by the computer support of inventory management networks. They marked the „real innovation“ (*step 3: innovation phase*).

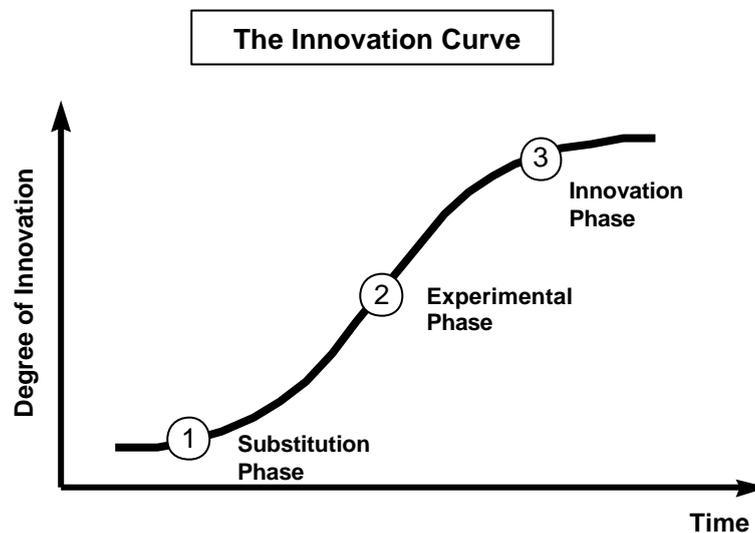


Fig. 8: Three Steps in the Diffusion Process

Haeckel's observation can be translated to the experiences in the field of telework and telecooperation: Since the mid 1970s organizations have started to implement telework as a purely substitutive concept. The basic idea of the substitution of commuting by telecommuting characterizes this early phase of telework (*step 1: substitution phase*). Since the early 1990s, we observe more and more experiments in pilot fields: organizations try to combine the implementation of telework with process redesign or corporate restructurings (*step 2: experimental phase*). Today, telework and telecooperation gain new importance in the context of small office / home office networks (SOHO networks), of virtual corporations or electronic markets. *Step 3* still opens up a broad range of possibilities for innovative forms of telework, telemanagement and teleservices in organizations and markets.

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