SIMULATION GAME
FOR ORGANISATION DEVELOPMENT

DEVELOPMENT, USE AND EVALUATION
OF THE WORK FLOW GAME

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ABSTRACT

This study concerns the simulation game for organisation development focusing on the development, use and evaluation of the Work Flow Game (WFG). It is a method for participatory improvement of work processes and knowledge work. The WFG is tailor-made and based on the simplified model of the real work process and work activity of the employees. The theoretical framework of the study includes the discipline of simulation gaming, organisation development tradition in behavioural science, the sociotechnical systems approach and the business process re-engineering.

The aims of the study were to develop and to use the simulation game for work process improvement, to evaluate the experiences of the participants, to evaluate effects and outcomes of the WFG and to create an evaluation framework of the simulation game. The WFG was constructed in close interplay between academic research and practical organisation development in ten organisations. Longitudinal, intensive case studies in three organisations described the use of the WFG, including its planning, the game day and the debriefing, and evaluated its effects and outcomes. The evaluation focused on the participants’ (N=98) experiences in the WFG and ideas for work and organisational improvements collected by questionnaires and interviews before and after the WFG. Video recordings were used for documenting. Performance measurements were collected on the quality and efficiency of the work process. Occupational health checks on personnel were used in one organisation.

As part of organisation development, the WFG proved to be useful for analysing the present state of work processes, and for testing new operational modes, particularly when planning and implementing new information system. The WFG integrates work process improvement, use of information technology, and participation and learning by personnel. The WFG promoted the participants’ interaction, communication and co-operation across organisational borders. The participants obtained an overview of the work process and its development needs. The WFG promoted participants’ idea generation and also creation of organisational innovations, which were not presented before the WFG. The improvement ideas were implemented in the organisations: the work process was redesigned, division of work was clarified and the new information system was implemented smoothly. These activities indicated improvements in the quality and efficiency of the work process and in customer relations, overtime work and workload peaks of employees were decreased. The participants had positive attitudes towards the WFG and perceived it a useful method. In conclusion, a model was created on the effects and outcomes of the simulation game within the context of organisation development. The role of the WFG can be described as that of a catalyst for organisation development.

Key words: simulation game, the Work Flow Game, organisation development, work process, knowledge work, evaluation.
TIIVISTELMÄ (FINNISH ABSTRACT)


LIST OF ORIGINAL ARTICLES

This thesis is based on the following original publications referred to in the text by the Roman numerals I – V.


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1 STRUCTURE OF THE DISSERTATION

The motivation of the study lies in the attempts to improve work processes, and to promote participation and learning by employees as part of organisation development. The pragmatic motivation was the need for new methods for managing organisational change, considering both productivity and employee well-being. A simulation game called the Work Flow Game (WFG) was thus developed. The WFG was studied in case organisations in order to test its usability, to find its potential effects and to explore the experiences of the organisation members.

This study concerns the development, use and evaluation of the WFG. The study is constructed on the results of five articles and an extended summary. Article I concerns the literature review on simulation games and their effects within the context of the experiential learning model, which has been one theoretical root for the development of the WFG. Article II concentrates on describing the WFG including its design principles and characteristics followed by a summary of results from ten reported case studies. Articles III, IV and V focus on three intensive case studies conducted in different organisations with follow-up and evaluation results.

The extended summary broadens and deepens the theoretical connections of the WFG and shows the theoretical and practical contribution of the study (Figure 1).

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![Diagram](image)

**Figure 1.** The structure of the dissertation based on constructive research.
The theoretical background of the study includes the traditions of simulation gaming, organisation development, the sociotechnical systems approach, as well as development of business and work processes. The practical relevance concerns development of knowledge work and methods for organisation development.

In results the development and use of the WFG are described with literature comparisons, raising its conceptual and theoretical level. As one central result, a model of the WFG as an integrative method is formed. Another result is a phase model to carry out the WFG as part of organisation development. The empirical results include the summary of three case studies in different organisations, and their cross-case comparisons and follow-up evaluations showing phenomena from the cases. The results of evaluations concern the experiences of the participants in the WFG as well as the effects and outcomes of the WFG. In conclusion, a multilevel and multiphase model is created on the effects and outcomes of the WFG.

In the discussion the contribution of the dissertation is assessed in terms of its scientific and practical contributions. Finally, the reliability and validity of the study is discussed, and implications for future studies are presented.

2 THEORETICAL BACKGROUND

2.1 Needs to develop knowledge work

In industrialised societies, the success of companies will increasingly be based on their ability to create and apply new knowledge efficiently, while traditional factors in production, such as natural resources, labour and capital, will play a less important role (OECD 1998). Knowledge has become the strategic competitive resource, playing a key role in organisations, and in a society, referred to as the knowledge society (Drucker 1993). The great management task of the 21st century is the effort to make knowledge work more productive; the methods needed, however, are different from those that increased the productivity of manual work (Drucker 1999). It is a challenge to restructure knowledge work, and make it part of a broader work system (Drucker 1999).

Considerable attention has recently been given to knowledge intensive organisations and knowledge work. It is claimed that there is an increasing significance of information or knowledge intensive organisations, where products and/or services are based on or tightly connected to information (Alvesson 1993, Drucker 1999). An empirical study by Roe et al. (1995) showed that a typical organisation is engaged in services, which to a considerable degree consist of information processing, like collecting, storing and
processing data as well as advising and informing people. Alongside that, information and communication technology is also used for internal functions and for interaction with clients, firms and partners (Roe et al. 1995).

From the perspective of work and organisational psychology, the increased importance of knowledge at work, the spread of information and communication technology, and new types of organisation seem to have changed the nature of work. One of the changes is the increased ‘mentalization’ of work activities (Zuboff 1988): physical components in work activity are reduced in favour of an increase of mental operations, like information processing, problem solving and communication activities. Related to this is the change in work objects: tangible, material work objects are being replaced by information objects and information systems. Knowledge work, in which mental activities dominate over physical activities, where tasks are executed with computers and contacts with others are electronically mediated, is not yet fully understood. Examples of such include work performed by clerks and secretaries, business service employees, managers, journalists, logistic planners, researchers etc. A proper understanding of this kind of work calls for new methods of analysis and/or (re)design, in-depth studies over the phenomena, and studies on the experiences of employees. (Roe & Meijer 1990, Meijer & Roe 1993, Roe et al. 1995).

The description above is here understood as knowledge work. In literature, the concept of knowledge work remains surprisingly ill-defined and generally not well understood irrespective of the frequency to which it is referred (e.g. Ruohomäki 1991, Vartiainen & Ruohomäki 1992, 1993, Davis et al. 1993, Meijer et al. 1993, Blacker 1995, Davenport et al. 1996, Collins 1997, Hayman & Elliman 2000). Knowledge work is difficult to define precisely, and a single definition may be inappropriate. The following conceptualisations seem to be relevant for this study.

According to Davis et al., (1993) knowledge work means a set of work activities that use individual and external knowledge to produce outputs characterised by their information content. Knowledge work typically is non-routine and complex work; it depends on the application of an individual’s knowledge and experience; it requires significant cognitive information processing to guide work as well as to manipulate, produce and communicate symbols; and, it results in outputs characterised by information content (Davis et al. 1993).

Davenport et al., (1996) define the primary activities of knowledge work as the acquisition, creation, packaging or application of knowledge. They limit their definition to professional and expert workers, but agree that many other types of jobs involve application of knowledge as well. Davenport et al. (1996) suggest a process view of knowledge work in order to promote an examination of what and
how things are done to produce value for a customer. By work process they mean an order of work activities with a beginning, an end, and identified inputs and outputs; in other words, a structure for action to reach targeted outcomes. The challenges involved in developing knowledge work processes are connected to a variety of and uncertainty in inputs and outputs, for instance, which are often less tangible and discrete as well as to the unstructured procedures of knowledge work.

In Finland, the percentage of employees doing knowledge work is about 40%: this amount is three times higher than twelve years ago (Pyöriä 2001). In this survey knowledge work was defined in terms of using information technology and including non-routine planning tasks as well as the educational level of the employee (at least post-secondary education) (Pyöriä 2001). About 48% of Finnish wage earners report that they process, distribute or produce information at work, which is interpreted as characteristic of knowledge work (Pekkola & Ylöstalo 1996), and about 45% have information occupations based on job titles (Statistics of Finland 1999). As positive characteristics of knowledge work, task variety and interesting tasks as well as flexibility in terms of working time and place, are mentioned (Pyöriä 2001). On the other hand, negative aspects of knowledge work are, for example, time pressure, overwork and mental work overload (Pyöriä 2001). Work related stress is higher than average, with the main sources of stress being information overload, problems in mastery of work due to frequent changes, and a lack of control over one's work (Kalimo 2000). Scientific analysis and new solutions are needed to prevent stress (Kalimo 2000), and to develop competencies in technological and organisational changes (Huuhtanen et al. 2000).

In this study, knowledge work includes administrative, office and expert work where information and communication technology is used intensively. Knowledge work and work processes are here studied within different organisational contexts, i.e., in the finance department of the university, in the employment office as part of the labour administration, and in the administration of the industrial company. The organisation members in this study have variety of different job titles and their work includes a broad variety of tasks (such as planning, advising, calculating, leading, collecting and transferring knowledge).

The pragmatic motivation of this study was the need for methods that would be applicable in developing quality and efficiency of knowledge as well as employee well-being. The purpose was to improve work processes and to promote participation and learning of the organisation members as part of organisation development. As a practical method, the simulation game called the WFG was developed and used in organisations.
2.2 Simulation games

2.2.1 Conceptualisation and classification

Based on the extensive literature study on the conceptualisation of simulation games (other terms used are simulation/games and gaming simulations) (Shubik 1975, VanSickle 1978, Greenblatt & Duke 1981, Ellington et al. 1982, Kryukov & Kryukova 1986, Ceccini & Frisenna 1987, Crookall et al. 1987, Greenblatt 1988, Saunders 1988, Gredler 1992, Crookall & Arai 1995), I have summarised the key concepts about the definitions of simulations and games as follows. Simulation is a working representation of reality - it may be based on an abstracted, simplified or accelerated model of a system, process or environment. A simulation includes critical elements of a real-life system. A simulation simplifies reality, emphasising its most essential aspects. Models may be e.g. verbal description, diagrammatic representations or pictures, mathematical or statistical by nature. A game means a setting in which players make choices to achieve certain objectives, implement them and receive the consequences of those choices. A game is played when one or several players compete or co-operate according to a set of rules for an objective. Usually a game contains some material(s) or hardware, like cards, boards or computers. A simulation game combines the features of a simulation, i.e. incorporation of critical features of reality, with those of a game, i.e., participants, roles, rules, competition or co-operation. A simulation game reflects reality. It involves the performance of game activities in a simulated context. A game is a simulation game if it refers to an empirical model of reality. In simulation games goals, activities, roles, constraints and consequences, and the links between them, simulate these elements of the real-world system. Simulation games differ from role-playing exercises in the degree of structure and formalisation they entail, and their emphasis in interaction processes rather than on the playing of individual roles. In this study, a simulation game refers to an interactive, experiential intervention that combines the features of a simulation and a game.

A series of definitions for key concepts with simulation and gaming are presented. The contents and applications of simulation differ between different disciplines. In social science, Inbar and Stoll (1972) classify different types of simulations as a function of the game designer’s goal (research, teaching) and state of available knowledge (explicit, implicit) (Figure 2). According to Inbar and Stoll (1972) simulations can vary in their forms, and may utilise computers, people or both. Machine simulations stress the exclusive reliance on a computer. Computer games indicate that human actors make decisions, and the computer is responsive to the player’s activities. Games involve interaction between two or more people, and decision-makers are human actors. The term ‘game’ is used instead of man
simulation (or social simulation), because there is disagreement as to whether they could be called simulations at all (Inbar & Stoll 1972). Gaming, in contrast to simulation, necessarily employs human beings acting as themselves or playing simulated roles in an environment which is actual or simulated (Shubik 1975). Inbar and Stoll (1972) note that the more one intents the simulation to be used for teaching and learning, the more it should take the form of a game so that the players have a chance to learn about the process. This viewpoint of learning through simulations and games is supported by the studies of Lane (1992) and Lainema (2000). The arrow in the figure, suggested by Lainema (2000, p. 33), describes the increase in learning potential of participants in different types of simulations and games.

Concerning the scientific conceptualisation of games, Klabbers (1999) emphasises games as being social systems. Games include actors (players), rules and resources, which are basic building blocks of social systems. Games can also be models of existing or imagined social systems. Human organisations, like companies, institutions and groups are examples of social systems with structural properties. Social structures are systems of interaction. Actors constitute systems of interaction, and draw upon rules and resources while functioning in organisations. When playing a game, people apply knowledge and skills to triumph over difficulties, for example, set by socio-economic circumstances. They act within the boundaries of organisations guided by rules or shaped by those organisations. (Klabbers 1999).
**Variety of different kinds of simulations and games** is wide, and they have been used for different purposes in different application eras. The modern era of simulation gaming began in the late 1950s through the integration of war gaming, computer science, and operation research, supported by new educational theories that emphasised active learning methods and a recognition of the importance of experience and reflection as key parts of the learning process (Wolfe & Crookall 1998). Nowadays, simulations and games are actively used for different purposes in many fields like education and training, social research, environment and urban planning, research and consulting, public policy and business management.

Simulation games have been suggested for their visibility, reproducibility, safety and economy (Greenblat & Duke 1981). Simulations and games can be used when there is no way of obtaining experience with systems or situations in real life (Saunders 1988, Peters et al. 1998), such as in research on future situations (Peters et al. 1998). Simulation and games allow learners to explore systems where reality is too expensive, complex, dangerous, fast or slow (Saunders 1988). In some situations it is impossible to train students in the real situation because one is required to have certain knowledge or skills before one can be admitted to that situation (Peters et al. 1998), as in the training of pilots, doctors, police officers, fire fighters or business managers. In the field of developing new policies, a policy maker may seek insight into effects, and the potential negative side effects through simulation gaming, when the real situation is not an appropriate place for these exercises (Peters et al. 1998). In a similar way, in an organisational context, organisation members can explore visions, and new organisational and technological solutions with simulation games before implementing them in practice (Ruohomäki 1992, 1994).

The field of simulation and gaming has been unable to create a generally accepted **classification** of the nature of simulation games (Wolfe & Crookall 1998) despite many efforts over several years (e.g. Greenblat & Duke 1981, Kryukov & Kryukova 1986, Crookall et al. 1987). There are pure simulations and pure games as well as hybrids of simulation games (Greenblat & Duke 1981, Ellington et al. 1982, Klabbers 1999). Games have been classified, for example, according to their format, the means through which game is presented, such as manual games (like card and board games) and computer-based games (Ellington et al. 1982). Some classifications are based on the game rules, for example, in a continuum from rigid-rule games to free-form games (Shubik 1975).

According to Gredler, (1992) categories often used in common language are, for example, ‘business simulations or games’, ‘computer simulations or games’ or ‘social simulations or games’. However, Gredler (1992) notes that those categories do not reveal the underlying dynamics of the particular exercise. Instead, simulations
and games should be examined in terms of their defining characteristics. According to Gredler (1992), the nature of the relationship between participants reveals different types of exercises. As major types, she presents tactical-decision simulations and social-process simulations. In tactical-decision simulations the participants interact with a complex problem, interpret data, organise findings and manage a solution strategy to the problem. Types of tactical-decision simulations, having roots in war games and data-management simulations. Examples of managing financial resources are common in business schools in banking and finance. The focus of social-process simulations, in contrast, is the various human interactions involved in pursuing social or political goals; thus, participants in their roles attempt to complete a task in a social milieu. The actions of other participants and their reactions are relevant, as well as the ways that one’s beliefs, assumptions, goals and actions may be assisted or hindered in interaction with the others. Examples of social-process simulations are communication skill simulations and empathy training simulations. (Gredler 1992).

Klabbers (1999) has constructed a scientific framework for a taxonomy of gaming based on syntax (i.e. grammatical arrangement of a game), semantics (i.e. conceptual frames) and pragmatics (i.e. designing, preparing, conducting and assessing a game). Within each semiotic representation the building blocks of social systems are evident, i.e. actors, rules and resources. The level of abstraction of the taxonomy allows a description of different kinds of games. If actors, rules and resources are all defined, then we are in the domain of gaming. If no actors are involved, it is then a question of simulation. Gaming with no resources, but with actors and rules involved, is close to theatre or role play. (Klabbers 1999).

The process of designing and using a simulation game can be represented in Figure 3 according to Peters et al. (1998). The arrow at the left side indicates the process of the simulation game design. The situation or problem that is the object of research, development, or teaching is called the reference system. The reference system of the real world has to be translated into a usable simulation game. To create a model, we describe the elements of the reference system and the relations between them. We can use various types of models (like conceptual, graphical, mathematical etc.). We have to acquire a good understanding of the characteristics of the reference system and transform these characteristics into the elements that constitute a simulation game (like events, roles, rules, scenario). Next, the participants play the game; this will result in new knowledge and experiences. Then observations and experiences made in the simulation have to be translated back to the reference system, which is often referred to as debriefing. This is indicated by the arrow at the right. When simulation games are applied, the basic assumption is that we are able to translate acquired knowledge and experiences from one system to another.
If we want to make inferences about reality based on experiences and knowledge acquired in a game, we have to be sure that the game model is a valid representation of the real situation. (Peters et al. 1998).

2.2.2 Simulation games for training and education

Applying the contextual and constructive frameworks for learning means that people are regarded as active participants in organisational change and development. Their learning needs and motivation rise from everyday problems and challenges in the work context. According to Kauppi (1993) learning may occur in two ways:

- by integrating learning into the complex environments in everyday life, or
- by creating simulation-based learning environments that correspond to real life situations, without the fear of serious mistakes and their consequences.

Empirical research has shown that the best approach is to train people on the job to ensure effective transfer of procedural skills; the next best approach is simulation games that reflect the job environment (Thiagarajan 1993a). One way to deal with complex systems or situations is the simulation approach: build a simplified model of this reality, learn from this simplified model, and transfer the findings and knowledge back to reality (Peters et al. 1998). Simulation games are based on this idea following the experiential learning model (Peters et al. 1998).

Simulations and games are a commonly employed teaching method throughout the world. They have gained acceptance in classrooms at all levels of education.
and training in a variety of subject areas or disciplines, such as history, culture, geography, biology, literature, mathematics, languages, literature, social sciences, health education, economic, business and management (Wolfe 1993, Crookall & Arai 1995, Wolfe & Crookall 1998).

For training and education, simulation games are applied to present complex models of reality in rich and concrete forms. Students who participate in these simulation games are expected to describe, analyse and evaluate the realities to which the simulation game refers. Simulation games are applied as training devices as well. Students are expected to develop specified cognitive, psychomotor or affective skills as a result of participating in simulation games. (VanSickle 1978).

Simulation games are designed and implemented to meet some specific objectives. Simulations and games for training and education are used for the following purposes: to heighten interest and motivation; to present information and principles; to practice skills needed later (Greenblat & Duke 1981); to practice knowledge and skills already acquired; to identify gaps in knowledge and skills; to develop a new relationship among concepts and to serve as a summation (Gredler 1992).

Research efforts concerning simulation games have been primarily focused on cognitive learning (Butler et al. 1988). Based on reviews in school environments (Bredermeier & Greenblat 1981, Greenblat 1988, Randel et al. 1992), simulation games for educational purposes may have positive effects on participants in terms of attitude changes, increased motivation and interest, learning of subject matter, increased knowledge of other participants and different viewpoints, development of interaction skills, as well as better communication and co-operation. The reviews concluded that simulation games are at least as effective as other conventional methods for teaching facts, concepts, generalisations and application of knowledge.

The gaming simulation as a learning environment makes it possible to cope with real problems and authentic situations that are very close to reality (Kriz 2001b). Gaming simulation offers an excellent learning environment for the training of social skills and for the understanding and development of a real social system (Kriz 2001a). Simulation games are increasingly being used to develop communication, decision-making and problem solving skills as well as teamwork that are relevant at work (e.g. Percival et al. 1993, Ruohomäki & Jaakola 1999, Kriz 2001a). It is a challenge to transfer skills from the simulation game to real-life situations, for example, at school and at work (Percival et al. 1993).

The importance of experiential learning theory (Kolb 1984) to the practice and theory of simulation games is widely acknowledged. Personal experience (in real life or in a simulation game) is the focal point of learning. Participants learn from their experience through reflective observations and abstract conceptualisation in
debriefing discussions, followed by applying lessons learned in a real life context (e.g. Thatcher 1986, 1990, Miller 1987, Leveault & Corbeil 1990, Ruohomäki 1995a). The role of debriefing discussions after simulation game is emphasised to transform game experiences into learning and to compare it to the real world (Lederman 1992, Lederman & Kato 1995, Thiagarajan 1993a, Baker et al. 1997, Kriz 2001b). Common points and central differences between simulation game and reality should be worked out to reduce the risk of mixing up reality and simulation (Kriz 2001b).

2.2.3 Management games

Simulations and games that are used for management training and focus on improving management competencies are usually called management games or business games. In these games participants typically deal with a fictitious company that has to strengthen its market position, and participants try to maximise the company’s profit in a more or less static environment by searching for efficiency gains (Joldersma & Geurts 1998). Management games may have an industrial, commercial or financial background (Elgood 1996). Players receive a description of an imaginary business and make decisions, for instance about on price and production targets, and how their company should be run (Elgood 1996). In management training emphasis is placed on abilities and skills to improve performance. Management games are mediums to address a variety of issues such as managerial behaviour, business economics, leadership, strategy and ethics (Klabbers 1999).

The simulation game gives the new manager opportunities to gain decision-making experience without risk to the firm of suffering the consequences of a wrong decision (Faria & Dickinson 1994). Management games allow theory to be put into practice in a risk-free environment and encourage team working and decision-making (Elgood 1996). Typical objectives are to demonstrate, to distribute and to promote an exchange of knowledge among participants, to stimulate thinking and to examine some organisation phenomena (Elgood 1996).

Senge and Fulmer (1993) argue that simulations on system dynamics of an organisation can provide an environment for individual and organisational learning that can improve both the present and the future. Simulations designed for management learning are useful in helping individuals see relationships between various business decisions and potential outcomes. The insights gained from experience with these activities may be transferred to the organisation when participants face situations that remind them of similar challenges faced in the simulation. (Senge & Fulmer 1993).
2.2.4 Simulation games for organisation development

The focus of this study is on the use of simulation games for organisation development which is a less reported application area. Recently there has been increased interest and experience in using simulation games for organisation change and development (e.g. Klabbers 1993, Ruohomäki 1994, 1995b, 1998, Piispanen et al. 1996, 1998, Riis 1996, Smeds 1996, De Caluwe´ 1997, Joldersma & Geurts 1998, Smeds & Riis 1998, Tsuchiya 1998, Wenzler & Chartier 1999, Riis et al. 2000, Ruohomäki & Jaakola 2000). However, only a few empirical articles can be found on their successful use and potential effects.

Based on the review by Joldersma & Geurts (1998) simulation/games for organisation change and policy development differ from traditional management games in their attention to change processes in a dynamic environment as well as tacit knowledge and the perceptions of participants. Simulation/games for organisation change and policy development offer participants opportunities to interact with each other. At the same time, the review shows that simulation games for organisation change and policy development can be used to fulfil different objectives. According to review, they can be ordered along the dimensions of individual and organisational learning. Individual learning objectives are explicating or changing participants’ mental models, or gaining participants’ support. Organisational learning objectives concern understanding a situation, testing alternatives and training participants to deal with a new situation.

Most of the simulation games are general games for educational purposes, like many management games, but more and more company specific games, which are tailor-made for specific organisation aims can be seen. In particular, for purposes of organisation change and policy development simulation games should be tailor-made (e.g. Ruohomäki 1995a, Joldersma & Geurts 1998).

The theoretical challenge is to bridge the gap between the simulation gaming discipline and the organisation sciences (Joldersma & Geurts 1998). The review by Joldersma and Geurts (1998) shows that articles on simulation/games for organisation change and policy development have similarities in their theoretical backgrounds. The main theoretical concept is a social system referring to an integral understanding of factors related to a particular situation and the participants involved. Feedback loops and situation dynamics are also emphasised. A social-constructive view on reality can be recognised: it is assumed that participants have different perceptions of reality that influence the ways they behave and interact (Joldersma & Geurts 1998). The review (Joldersma & Geurts 1998) also shows that the central function of a simulation/game is to share knowledge and improve communication among participants. While interacting, participants may develop
shared perceptions of reality. This study follows the above mentioned theoretical assumptions.

Practice has shown that attempts to integrate simulation games as part of organisation development have not always been successful (e.g. Jacobs & Baum 1987). From the companies’ perspective, some reasons for limited use of simulation games for organisation development may be limited knowledge about simulation games and their application possibilities, limited competence in designing and using simulation games, as well as problems with evaluating their effectiveness and usefulness. This study suggests that a simulation game which is tailored for a specific organisation context and which is closely linked to an on-going development activity can be used as an intervention method for promoting organisation development.

The challenge in the evaluation of simulation games in the context of organisation development is the central interest of this study. Based on the literature review by Joldersma and Geurts (1998), the number of empirical studies is very limited. The review shows that typically surveys and interviews with participants are carried out soon after the game to evaluate the usefulness of simulation games. The focus of attention has been paid to the participants’ experiences in the simulation game. Participants have usually been quite satisfied with the results soon after simulation gaming in terms of learning and understanding other players’ behaviour and organisation problems, as well as promoting communication and a relationship between participants. Furthermore, new ideas or options may be generated. Additionally, communication and relationships among participants may be improved. (Joldersma & Geurts 1998).

However, it is more difficult to evaluate the long-term organisation outcomes, because the effects of simulation games may mix with other interventions in an organisation, such as training, implementation of information systems, and changed work practices. From a methodological point of view, it has been recognised that evaluations on effects and outcomes of simulation games have mainly been conducted at the individual or group level instead of broader systemic or organisation levels. For example, little is known about the effects and outcomes of simulation games on real work activities and organisation developments in practice. (Ruohomäki 1995a).

One carefully reported longitudinal evaluation study of a simulation game was conducted by De Caluwe’ (1997). He described a cultural change in an insurance company from bureaucracy towards a flat and client oriented organisation with teamwork. He studied the effects of a large-scale culture intervention in which a simulation game formed an integral part. On the basis of five measurements carried
out over a period of 18 months, a learning curve was discovered showing an extremely positive effect in the short term, which diminished after a year, but returned again later as positive. Results also showed the participants’ acceptance of the change and consciousness of what one still has to learn. De Caluwe’ (1997) concluded that organisation change should be regarded and structured as a learning process. From a scientific point of view, even if the effects can be found, it can be questioned if they are due to the simulation game, or could they have been gained by some other methods (Joldersma & Geurts 1998). Therefore, the effectiveness of simulation games, like other methods and interventions, is very difficult to prove.

In any event, in practice, managers in organisations are interested in how companies can use simulation games and benefit from them, what employees can learn from them and what kind of practical improvements the company can gain. The basic question is how effective is simulation gaming in achieving its objectives. To meet both academic and practical needs, a multilevel evaluation and multiphase follow-up study is needed to examine the usefulness of simulation games and their outcomes as part of organisation development. This is a central challenge in this study.

2.3 Organisation development

The literature contains numerous definitions of organisation development (OD). The definitions suggest the following key dimensions to OD. First, most authors define OD as planned organisational change aimed at increasing organisational effectiveness and individual development (French & Bell 1999) or employee well-being (Beer & Walton 1987) or health (French et al. 1983). Second, OD is a long-term, system wide and continuous effort (French et al. 1983, French & Bell 1999). Third, OD relies on theories, concepts and methods from the behavioural sciences, primarily from psychology (French et al. 1983, Beer & Walton 1987, French & Bell 1999).

OD focuses on the human and social aspects of organisations, and views organisational behaviour as the coordinated goal-directed activities of a number of people (French et al. 1983). The major goals of OD programmes are firstly, to increase the effectiveness of individuals, teams and the total organisation; and secondly, to teach organisation members how to continuously improve their functioning (French & Bell 1999). OD is a systematic process of applying behavioural science principles and practices in organisations to increase individual and organisational effectiveness (French & Bell 1999).

French et al. (1983) has summarised OD as

- being system wide, long-range, planned, sustained, and based on overall
strategy,

- being based on reflexive and self-analytical interventions and collaborative action research,

- aiming at changing culture and processes to improve organisation health and effectiveness,

- using a consultant acting as a change agent and facilitator,

- utilising the behavioural science base.

A long definition of OD by French & Bell (1999, p. 25-26) is the following: "OD is a long-term effort, led and supported by top management, to improve an organisation’s visioning, empowerment, learning and problem-solving process, through an ongoing, collaborative management of organisation culture utilising the consultant-facilitator role and the theory and technology of applied behavioural science, including action research."

OD is based on the assumption of organisations being open systems consisting human and other subsystems. In order to change the behaviour of the whole organisation, it is important to understand and change the behaviours and interaction of its subsystems. OD is based on the notion that organisations are collections of individuals or a set of human relations. Therefore changing how organisations work is thus fundamentally about changing these relations. The idea is that individuals within an organisation can collaboratively manage the culture of that organisation, simultaneously attaining the goals and purposes of the organisation, and furthering the human values of individuals. (French et al. 1983).

In additional, based on more recent studies, OD assumes that people will work more effectively together if they share the same vision of the organisation’s future, and if they are able to develop skills and understanding through empowerment to make decisions and act on their own initiative. OD also assumes that people are capable of development through appropriate experience, hence the emphasis on problem solving and learning. (French & Bell 1999).

The value base of OD, including humanistic and democratic values, has been discussed since its origin (French et al. 1983, French & Bell 1999). The values underpinning OD and the interventions used make OD distinct from the general field of organisation change management (Huczynski & Buchanan 2001, Hornstein 2001). OD values include the ability of individuals to grow and develop, the importance of considering feelings, shared leadership and the positive nature of collaboration (Moosbrucker & Loftin 1998). Instead, manipulation or exploitation of any group of an organisation at the expense of another is explicitly rejected (Moosbrucker & Loftin 1998). The values underpinning most OD efforts is outlined
by Robbins (1998) as follows:

- The individual should be treated with respect and dignity;
- The organisation climate should be characterised by trust, openness and support;
- Hierarchical authority and control are not regarded as effective mechanisms;
- Problems and conflicts should be confronted, and not disguised or avoided,
- People affected by change should be involved in its implementation.

**The role of the OD practitioner** or OD consultant is described as a neutral third party who facilitates the change process and conducts interventions, rather than being an expert in the content issues (French et al. 1983). OD practitioners are facilitators, collaborators and co-learners with the client system (French & Bell 1999). They structure activities to help organisation members learn to solve their own problems and learn to do it better over time (French & Bell 1999). The consultant facilitates the organisation change and uses interventions or methods that will encourage the client to own the process and the results (Hornstein 2001). The role of the OD consultant should not be rigid nor dogmatic but flexible (Farias & Johnson 2000). The greatest value can be delivered when the consulting relationship is a collaborative one (Hornstein 2001). When an organisation calls an OD consultant typical difficulties in an organisation are that people do not work well together, there are conflicts or value diversity, culture does not support the needs of the new business or help is needed when moving to a team-based organisation (Moosbrucker & Loftin 1998).

**Historical roots** of OD are found in the late 1950s and early 1960s in North America when the issue of planned organisational change became a scientific topic and the term “organisation development” surfaced. OD has emerged both from the demands of a changing environment and from the knowledge provided by the evolution of the applied behavioural sciences. OD has three main roots. The first root is connected to the research work of Kurt Lewin in the field of group dynamic and T-group training, called the laboratory training movement. The second root concerns the survey research and feedback workshop. It is a certain intervention that gathers systematic data, like attitude surveys, on the organisation that are presented to individuals and groups of the organisation. Action research is seen as the third root of OD. (French et al. 1983, French & Bell 1999).

In the 1960s the values and assumptions supported by the OD movement represented a radical departure for most organisations at that time: managers did not think in terms of involving their employees in decision-making, or of inviting their ideas and contributions. Most managers did not recognise a link between interpersonal
relationship and self-awareness, on the one hand, and the performance of their business on the other. Early practitioners in OD were more interested in ‘people-problems’, such as interpersonal relationships and group dynamics as well as informal or hidden aspects of organisations (like perceptions, attitudes, feelings, values), and were less concerned with productivity issues (French et al. 1983, Heller 1998, French & Bell 1999). In its origin OD was primarily concerned with changing people rather than organisations. In the light of current knowledge, the term organisation development was misleading because the emphasis was on individual attitudes, values, interpersonal relations and leadership behaviour (Heller 1998).

Since the 1960s OD has been associated with the argument that ‘bureaucracy is bad’ and that the sharing and empowering organisation is not only a better place to work but is also financially and materially more effective. Bureaucratic organisations characterised by rigid functional boundaries, fixed hierarchies and routine jobs usually have problems like poor communication, conflicts between functions, frustration and lack of innovation. OD relies on the diagnosis of problems and solutions like job enrichment, job rotation, team building, training and the changing of structures. Nowadays, the large public sector bureaucracies are in need of OD support and interventions more than ever. (Huczynski & Buchanan 2001).

OD was reviewed in 1974 for the first time in the Annual Review of Psychology by Friedlander and Brown. The review by Porras and Silver (1991) showed that in the 1960s and 1970s interventions on social factors (like culture, interaction, communication, attitudes etc.) were dominant. In the 1980s there had been a shift from interventions emphasising individual and group processes to interventions focusing on structural, organisation-level arrangements (like goals strategies, formal structures, administrative systems and policies, reward systems etc.). Beer and Walton (1987) argued that OD knowledge and expertise has gradually penetrated general management literature and management practices itself, which means broadening the concept of OD. They elaborate on OD as general management, as human-resource management as well as managing and implementing change. In the late 1990s, many authors regarded work groups or teams and inter-group activities as essential targets of OD (French & Bell 1999). Human resource management and other change management movements during the 1990s have been influenced by OD (Huczynski & Buchanan 2001).

Traditional OD has received much criticism from both academia and practitioners. One of the main weaknesses of the traditional OD concerns its failure to connect social issues with the technical and structural side of the organisation change (e.g. Huczynski & Buchanan 2001). Another weakness is that human interaction is poorly related to organisation context and change processes (Pettigrew 1985), and as well, theory building in the field has been weak (Beer & Walton 1987). Heller (1998)
argues that OD seems to be a more highly developed approach as professional consulting than as an academic discipline. Heller (1998) sees two reasons for this. In the first place OD has grown out of efforts to improve managerial skills and was seen as part of the investment in training personnel. Therefore, available resources were spent on the development of programmes rather than on research. The second reason is the inherent difficulty of applying traditional psychological assessment methods to study the complex field of organisation change and development.

An increasing dissatisfaction with the traditional OD surfaced in the 1990s when the necessity of rapid, fundamental changes in organisations was recognised. Organisations have to function within a turbulent changing environment and face emergent change and strategic transformations. The flatter, organic structures with delegation to smaller groups are replacing those organisations based on traditional hierarchical, bureaucratic control. High-performance organisations focus on the customer and continuous quality improvement and place a high value on human resources. Discussions in the 1990s concerned organisation development vs. organisation transformation (Porras & Silver 1991), evolutionary vs. revolutionary change (Tushman & Romanelli 1985), incremental vs. radical change (Hammer & Champy 1993) and developmental vs. design approach (Boonstra & Vink 1996). Early OD efforts primarily concerned making moderate adjustments to the organisation, its people and processes, while today more fundamental change is required in many instances (French & Bell 1999).

**Action research** (e.g. Whyte 1991) gained acceptance in OD during the 1990s, especially as a model for organisation research. Consistent with the overarching goals of OD, action research is a collaborative approach, involving leaders, organisation members and OD practitioner work together to define and resolve problems and opportunities. The ‘research’ signals the aim of generating knowledge that can be applied also in other organisation settings. Generalisable knowledge is produced from active attempts to change and improve organisation functioning. (French & Bell 1999, Huczynski & Buchanan 2001). In this study, action research is used as a research approach, and more is written about it in Chapter 4.3.

**In recent literature,** OD has received much attention, and research on the activities of OD consultants is on the move as well. For example, a debate concerns current OD theory, practices and contributions in the pages the Journal of Applied Behavioural Science (Moosbrucker & Loftin 1998, Worren et al. 1999, 2000, Farias & Johnson 2000, Hornstein 2001). Worren et al. (1999) argue that major challenges associated with implementing large scale changes are integration and navigation as well as development of models and methods to promote integration and navigation. By integration, they mean creating congruence between OD, technological/business process and strategic perspective. Navigation is described
as the temporal management of the ‘change journey’ as it unfolds over time. Farias and Johnson (2000) noted that contemporary literature indicates that the scope of OD has grown from its roots in human relations variables to focus on strategic issues as well, and OD has nurtured an interdisciplinary approach. One conclusion of the debate concerned the importance of considering the human dimension in organisational change (Farias & Johnson 2000, Worren et al. 1999, 2000, Horstein 2001) which is a clear contribution of OD. Another conclusion was that further applied research is necessary, because organisation change is far from being understood (Farias & Johnson 2000, Horstein 2001).

OD has endured half a century and continues to influence organisation research, management thinking and consulting practices. As summarised by Huczynski & Buchanan (2001), OD seeks to apply behavioural science knowledge, concepts and methods in a manner that will enhance both organisation effectiveness and the quality of the work experience for the organisation’s members. In pursuit of these twin objectives, OD has a clear and prescriptive value orientation. Interventions to achieve these goals are deliberate, planned and systematic. In this study, the OD lays one underlying framework for development and the use of an intervention method, i.e. the simulation game called the WFG. The WFG is meant to be used as a method for organisation development.

2.4 Sociotechnical systems approach

A long tradition of work and organisation (re)design exists in northern and western Europe, where the sociotechnical systems approach has had an important role over the last few decades (Sitter de et. al 1997). The oldest European model, the classical sociotechnical systems approach was developed by the Tavistock Institute of Human Relations, founded in London in 1946 (Trist & Murray 1993). The innovative ‘Tavistock group’ of psychologists, psychiatrists and anthropologists as well as many other authors have contributed to the sociotechnical paradigm over the decades, relating theory and practise in a new mode (Trist & Murray 1993). The beginnings of the sociotechnical system design are found in the British coal industry in the early 1950s, when researchers discovered an alternative form of work organisation, now called semi-autonomous work groups (Trist & Murray 1993).

The contents of the sociotechnical systems design as the “new organisation paradigm” can be characterised as a reaction to the unilateral stress of previous paradigms (scientific management, bureaucracy, human relations) on the technical or social aspects of the organisation. In the new viewpoint, both factors are moulded together as components of the same sociotechnical whole. The central idea is that any sociotechnical system combines a social system (people) with a technical system
(machinery). The Tavistock group developed the concept of the organisation as an open sociotechnical system. An open system means that it interacts, in a purposive way, with its external environment in order to survive. The aim of sociotechnical systems design is to reach the best match between the social and technical components and their requirements. The main (re)design strategy is the ideal of joint optimisation of coupled, but independently-based, social and technical systems. (Eijnatten 1998).

The sociotechnical systems design has made it clear that an alternative to bureaucratisation exists. Furthermore, it has offered a systems framework with a high level of validity in the practice of organisational design, especially at the shop floor level, in improving effectiveness while also paying attention to human values (Pasmore 1988, Sitter de et al. 1997). The success of the sociotechnical approach is attributable both to the theory of organisations upon which it is based and to the principles and methods which have been developed to apply this theory to organisational redesign (Pasmore 1988).

The sociotechnical systems perspective considers every organisation to be made up of people (the social systems) using tools and techniques (the technical system) to produce goods or services valued by customers, who are part of the organisation’s external environment. Therefore, how well the social and technical systems are designed with respect to one another and with respect to the demands of the external environment determines to a large extent how effective the organisation will be. Effective organisations are those which produce excellent results by measures of costs, quality, or efficiency while simultaneously enhancing the energy and commitment of organisational members to the success of the enterprise. In the sociotechnical systems approach, it is recognised that the social system holds the key to long-run organisational survival. Therefore, the social system should receive as much attention during organisational design as the technology and the environment. (Pasmore 1988).

The underlying assumptions of the sociotechnical systems (re)design are based on the studies of the Tavistock group. One assumption concerns choices of organisational design. Another assumption is that organisations are agreements among people, and that changes in the organisation will affect these agreements and vice-versa. Therefore, in addition to determining which changes in design will be most effective, it is especially important to focus attention on the process of change itself. (Pasmore 1988).

In sociotechnical (re)design according to Vartiainen (1991, 1994, 1998) an expert typically analyses and describes the state of the work system (subjects, tools, objects, results) and its context, which results in a sociotechnical worx description. The
description is then fed back to personnel and is reflected on together, which forms a shared cognition or mental model concerning the work system to be redesigned, its critical points and problems.

Sociotechnical (re)design objectives utilise social and technical resources effectively, maximise co-operative effort, develop human abilities, innovation, and awareness of external environment (Pasmore 1988). Some principles for job and organisational design can be summarised as follows (based on Pasmore 1988): to create an optimal variety of tasks; to construct meaningful patterns of tasks that lead to holistic jobs; to optimise the length of the work cycle; to leave scope for employees to set their own standards and determine their own means of production; to include auxiliary tasks such as maintenance and quality control in primary jobs; to ensure that jobs are worthy of respect in the community and contribute directly to the end product; to employ various forms of autonomous work groups when tasks are interdependent; to ensure employee involvement in the design of tasks; to make certain that the design of the organisation fits with the goals intended and that each part of the design fits with each other; to control technical variance and their source; to create jobs that require multiple skills; to ensure that information is available to all who need it to make decisions; to provide opportunities for individuals to meet needs for learning, growth, decision-making, social support and recognition; and, to encourage re-examination of the design itself.

Sociotechnical models of ‘good work’ emphasise the variety of tasks, and jobs should also be complete in their structure, i.e., include preparation, execution, checking and organising tasks as well as some thinking demands. The mental load of work should be optimal for the employee. The challenge is that knowledge work seems to include new characteristics unnoticed before, for example, continuous interruptions and breakdowns in the information system. Therefore, the content of ‘good work’ is under pressure. (Vartiainen 1994, 1998).

Concerning the development and implementation of information systems, sociotechnical approach tries to find a balance between the needs of users and technical possibilities as well as the organisational context (e.g. Mumford 1983, 1997, Eriksson 1990). In that process, one central principle is user participation in system development (e.g. Mumford 1983, 1997, Eriksson 1990). As an example of the sociotechnical approach, the ETHICS (Effective Technical and Human Implementation of Computer-based Systems) stresses the participatory design of the technical and social system together to find the best combination, which should be organisationally efficient and satisfying to the employees (Mumford 1983). According to Mumford (1997), the principles of sociotechnical design include a humanistic use of technology that assists rather than controls the employee and work structures that stimulate and reinforce efficiency, learning and
effective problem solving.

According to Davis, (1991) one typical problem in offices is inadequate integration of information technology (computers, electronic mails, networks, databases etc.) with other business functions. This is often connected to the lack of involvement of management and employees to the implementation process and strategic decision making. According to Davis, (1991) another typical problem with information technology implementation is that existing, inefficient work procedures are computerised without sufficient analysis of how to improve work processes. In the redesign of clerical jobs, such factors as multiple skill requirements, an acceptable level of autonomy, the satisfaction of producing a completed task, feedback from the work itself, and a sense of identification, are often ignored, all of which influence job satisfaction (Davis 1991). In information system design, it is important to understand the nature of knowledge work, its core activities and implicit links between tasks in order to support the knowledge worker (Hayman & Elliman 2000).

From the early days of the sociotechnical system design the role of the researcher is not distantly observant, but more involved and influential, like in action-research (Eijnatten 1998). According to Mumford (1997), sociotechnical system design requires a researcher/consultant to work closely with the users of the system that is to be considered for redesign. The users will decide on what changes to make, while the researcher/consultant helps them analyse their own needs and problems, evaluate alternative solutions and arrive at design decisions. A high level of participation usually leads to a sense of user ownership and enthusiasm for the new system, provided that the system delivers what has been promised. No enthusiasm will survive, if the system, usually its technical component, turns out to be unsatisfactory. Evaluation is needed on how well the new system is meeting the organisation, technical and social objectives that were set for it (Mumford 1997).

The sociotechnical approach is further developed in various directions in the Nordic countries, Germany, the Netherlands and Australia; some emphasising the importance of participation in workplace design, others the need for total redesign of organisations (Eijnatten 1998). In the Nordic countries important milestones for sociotechnical system design were the Industrial Democratisation project in Norway in the 1960s, the Democratic Dialogue in Norway and Sweden in the 1980s, and the LOM programme (“Leadership, Organisation and Codetermination”) in Sweden during the latter half of the 1980s (Beinum van 1993, Eijnatten 1998).

Scandinavian variations of the sociotechnical approach emphasised employee involvement in the change projects. The Scandinavian writers Gustavsen and Engelstad (1985) pointed out that the classical sociotechnical approach has been
too strongly dominated by expert knowledge introduced from outside the organisation. They argue in favour of a process-oriented rather than a structure-oriented approach, and the development of democratic dialogues in which organisation members develop their own local theory and shared viewpoints. In the 1970s Emery launched the idea of participatory design, according to which sociotechnical design is a process where researchers and those concerned both participate (Gustavsen 1992). This idea can appear in different versions and with different implications. In participatory design, organisation members are brought together to analyse the problems in the organisation, describe their situation, redesign the work organisation, and learn from each other. Methods to facilitate participation include conferences, workshops, and project teams, which search for common grounds (Gustavsen 1992). In this study, the simulation game can be seen as one participatory method as well.

Participation, open communication and collaboration in the organisation development process played the key roles in the Swedish LOM programme. In LOM programme researchers utilised clusters of enterprises, their joint conferences and the principles of democratic dialogue to support changes in organisations. LOM was a research and development programme for the support of local changes in the private and public sectors in order to improve both productivity and the working environment. In the LOM programme from 1985 to 1990 encompassed about 150 enterprises and public institutions and about 60 researchers in cooperation with labour market parties. Working life and research moved towards each other in terms of action research. Productivity and the participation of organisation members were seen as positively correlated phenomena. (Gustavsen 1988, 1992, Nachold et al. 1993).

The theoretical platform in the LOM programme was a theory of communication rather than a theory of design. Theory, practice and language are seen as intimately connected. The key concept was a democratic dialogue, which means an open communication process that has certain criteria. The dialogue is a process of exchange, i.e., ideas and arguments move between participants. It must be possible for all concerned to participate based on their own work experience. Everybody should be active and the participants should be able to tolerate an increasing degree of difference in opinions. The dialogue must continuously produce agreements that can provide platforms for practical action. The dialogue has the benefit of drawing upon a range of opinions and ideas, which inform practice, while at the same time being able to make decisions that can gain the support of all participants. In the LOM programme, development work was based on the everyday language of participants and their local theories, i.e., the maps for understanding the present situation and plans of action of people in work communities. Sharing ideas,
arguments and experiences were thus essential for reconstruction of new organisation-specific solutions. The logic of organisational change was interactive rather than linear. (Gustavsen 1992).

The idea of democratic dialogue can be expressed in a number of different contexts. Conferences are broadly applied as an arena for dialogue, for example, in the LOM programme. Conferences were applied to promote development work within organisations and to create links across organisation boundaries. In dialogue conferences, representatives of various professional and hierarchical groups discuss the development issues of their workplaces concerning products, productivity, working conditions and personnel. Conferences are applied either with a single organisation or with a cluster of several organisations with the help of a few researchers. There are typically start conferences and experience conferences, enabling participants to exchange ideas and assess the progress made to date. (Gustavsen 1992).

Evaluation of the LOM programme showed that development activities were carried out in 62 organisations, of which one third achieved innovative developments in communication, but only one in seven innovations in the areas of technology, work organisation and personnel (Naschold 1993). As the outside evaluator, Naschold (1992) criticised inadequate methods and instruments of the LOM programme. The communicative instruments, especially the start-conferences, were well tailored for the initial phase of projects, but medium-term methods and instruments for the subsequent course of projects were lacking. He criticised that the programme neglected formal design approach that is necessary in the management of change. As another weakness of the LOM programme, Cole (1993) noted that participatory activities were not related to the work process improvement nor tied to a customer as a means of increasing organisational effectiveness.

**In Finland**, following the ideas and experiences of the LOM programme, different types of dialogue-conferences and the principles of democratic dialogue are utilised in participatory change projects in many organisations; action research in particular is broadly used to develop work practices and to contribute to science (e.g. Juuti & Varjoranta 1993, Kauppinen & Lahtonen 1994a, Kauppinen & Lahtonen 1994b, Lahtonen 1996, Laitinen et al.1996, Pankakoski 1998, Buhanist 2000).

**This study** has some features similar to the LOM programme in terms of an action research approach, broad participation, creating an arena for open communication and interaction as well as use of local knowledge and everyday language of organisation members. This study also aims at integrating participation of organisation members and work process improvement that was neglected in the LOM programme. This study concentrates on the development activities within
single organisations at time rather than a cluster of several organisations. Instead of conferences, this study tries to promote dialogue with the WFG by offering the opportunity to exchange ideas, attitudes and opinions of organisation members. Such a process may allow the development shared language to understand events that occur in the change process. Understanding each other’s perspectives, interests, and convictions is a prerequisite for developing a common image of a desirable future.

In the 1990s, the focus of the sociotechnical programme and projects has shifted and broadened from work design to organisation (re)design (Sitter et al. 1997). The design principles of the contemporary sociotechnical systems approach can be summarised as the transformation of complex organisations offering simple jobs into simple organisations offering complex jobs (Sitter de et al. 1997). What is central is the shift from the maximal division of work in classically structured organisations to the minimal division of work as the leading principle of design for flexible and modern organisation (Boonstra & Vink 1996).

We may ask, why sociotechnical approach has not received a permanent position in the European enterprise management (Mathews 1997). Vartiainen (1998) suppose that the main reason is that the sociotechnical models were invented in more academic circles than their counterparts in Japan and America. One criticism concerns the separation of the social and technical system elements which may block the view of the functional relations between the two rather than seeing them as a complete system (Sitter de et al. 1997). Another criticism is that there has been little progress in the development of concepts and methods, and a stagnation in empirical field research (Pava 1986, in Sitter de et al. 1997). In a review Mathews (1997) noted that instead of the sociotechnical systems approach companies have chosen business process re-engineering to redesign their work processes through the use of information technology. He assumes that companies have not been aware of the sociotechnical tradition, nor seen it as relevant. He concludes that more effort was spent by proponents of the sociotechnical approach on ideological contests than on developing sound methodologies and procedures that would have taken the approach into the mainstream and linked it with innovations in information technology.

Concerning the future of the sociotechnical approach, Sitter et al. (1997) points to opportunities to make organisation research more relevant to organisation practise. They also call for an integral approach of the system to optimise the relations between social and technical aspects. As one future direction Mathews (1997) and Eijnatten (1998) expect that business process re-engineering will play an important role. Mumford (1997) suggests that sociotechnical approach and business process re-engineering can be complementary, and that if they could be brought together a
very powerful system for improving organisation performance would result. Mathews (1997) presents as an innovation the possibility to use simulations for work (re)design: work teams could design and test work and organisational structures before their implementation in practice. That idea is very close to the idea of using simulation games for managing organisational change (Ruohomäki 1992, 1994, Vartiainen & Ruohomäki 1994), which forms a relevant basis for this study.

In this study, I explore the above described visions in organisation practice by utilising a simulation game as well as ideas of both the sociotechnical systems approach and those of business process re-engineering. Case studies in organisations concern the planning and implementation of a new information system as part of organisation development. Both the social and the technical systems are considered when improving the work processes with the WFG.

2.5 Focus on business and work processes

Companies created to thrive on mass production, stability, and growth cannot be fixed to succeed in a business world where customers, competition and change demand flexibility and a quick response. Management wants companies that are lean, flexible, competitive, efficient, customer-focused, and profitable. In that situation the American theory of radical organisational change focused on the redesigning of business processes in the 1990s. Business process re-engineering (BPR) is defined by Hammer and Champy (1993, p. 32) as “fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical measures of performance, such as cost, service and speed”.

The BPR advocates a process orientation to the analysis and redesign of work and organisations. A process approach to business is particularly appropriate today, for we are living in the age of the customer. Corporations will be founded and built around the idea of reuniting work tasks into business processes. A business process means a set of activities that takes one or more kinds of input and creates output that is of value to the customer. The customer may be the eventual user of the product or service, or it could be an ‘internal customer’ – the person or section responsible for the next set of activities in the overall process. Lack of process orientation is typical for an organisation structured vertically into distinct functions such as purchasing, warehouse, production, finance, personnel and marketing, rather than horizontally around the work process. Process orientation requires a horizontal analysis of work along an activity chain. Many problems in the work process arise from the fact that staff are concerned primarily with what happens at their own slot along this work process and are not aware of what has gone either before nor what
will happen afterwards. Processes are often fragmented by organisational structures. This leads to unnecessary duplication of some activities and the unwitting transmission of problems ‘down the rail’. Processes are often invisible, unnamed and unmanaged, because people think about the individual departments, not about the process with which all of them are involved. The real action is on the front lines, where people do the real work of the business. (Hammer & Champy 1993, Hammer 1996).

According to Hammer (1996) the problems that afflict modern organisations are not task problems, but process problems: the problems lie not in the performance of individual tasks and activities, the units of work, but in the process, and how the units fit together into a whole. According to Hammer (1996, p. 5-6), “the reason we are slow to deliver results is not that employees are performing their individual tasks slowly and inefficiently… We are slow because some of our people are performing tasks that need not be done at all to achieve the desired results and because we encounter agonising delays in getting the work from the person who does one task to the person who does the next one. Our results are not full of errors because people perform their tasks inaccurately, but because people misunderstand their supervisor’s instructions and so do the wrong things, or because they misinterpret information coming from co-workers. We are inflexible not because individuals are locked into fixed ways of operating, but because no one has an understanding of how individual tasks combine to create a result… We do not provide unsatisfactory service because our employees are hostile to customers, but because no employee has the information and status of the process whose result they await”.

Hammer & Champy (1993) argue that the old division of work and pyramidal organisational structures with complicated processes of producing a product or delivering a service simply do not work any more. For business process redesign they suggest the following general principles:

- Dismantle functional departments and create process teams;
- Customers deal with a ‘case manager’ and not get pushed around the structure;
- Empower people, and give them enriched jobs with discretion;
- Provide training and education to allow people to perform expanded roles;
- Flatten the organisation hierarchy;
- Measure people on the results they achieve, not just on activity performed;
- Promote people on the basis of ability;
• Turn senior managers into leaders, not scorekeepers.

BPR means putting aside much of the received wisdom of two hundred years of industrial management; it means forgetting how work was done in the age of mass production and deciding how it can best be done now (Hammer & Champy 1993). Hammer (1996) claims that a process-centred organisation is a complete break with the past: it means the end of narrow jobs, rigid hierarchies, supervisory management, and traditional career paths; it means boundaryless organisations with professionals and coaches, process owners and result-based pay, and an institutionalised capacity for change. BPR means starting from scratch ‘with a blank sheet of paper’. For this reason modelling the existing work processes is often seen as unnecessary. (Hammer & Champy 1993).

Choosing the business processes to re-engineer Hammer & Champy (1993) suggest three criteria. The first is dysfunction: Which processes are in the deepest trouble? The second is importance: Which processes have the greatest impact on the company’s customers? The third is feasibility: Which of the company’s processes are at the moment most susceptible to successful redesign? BPR emphasises the use of opportunities offered by modern information technology; information technology allows organisations to do work in radically different ways (Hammer & Champy 1993, Hammer 1996). Typically BPR projects begin by defining the business requirements and technology issues in order to quantify the problem, reducing it to a set of known conditions that must be satisfied. The desired result of BPR is stated in quantitative terms and is usually related to some business measures such as cost, revenue, quality or service (Moosbrucker & Loftin 1998). BPR has been criticised for focusing on cost reduction and not focusing enough on increasing revenues (Davenport et al. 1996).

BPR has attracted polarised opinions and raised much criticism. Some argue that rapid and radical process improvement is essential to enable organisations to deal with increasing environmental turbulence. Other commentators dismiss BPR as a futile and irrelevant repackaging of traditional management methods: recommendations are similar to those made by OD since the 1960s, and horizontal process analysis is a conventional method that has been used by sociotechnical system analysts for decades (Huczynski & Buchanan 2001).

One criticism of BPR has concerned its ‘slash-and-burn’ implications for job security, because BPR applications typically caused downsizing and job loss (Huczynski & Buchanan 2001). Since the existing process is de-emphasised and is not worth saving, and most time is spent on the new work design, it makes sense to employees mostly outsiders to do the redesign (Davenport et al. 1996). The needs, desires and fears of employees whose jobs and lives were being re-engineered
were largely ignored (Moosbrucker & Loftin 1998). The problem is that re-engineering is seen as cutting jobs and costs while people continue working in traditional ways, roles, and mind-sets; the basic beliefs about the organisation and how it works are not challenged (Jaffe & Scott 1998).

Another criticism concerns almost total separation of BPR from OD, and thus negligence of social, behavioural and cultural issues in organisation renewal (Boonstra & Vink 1996, Jaffe & Scott 1998, Moosbrucker & Loftin 1998). A central problem is that re-engineering projects are carried out by expert consultants and top-managers with a small number of participants and without paying enough attention to the operative level employees’ knowledge and viewpoints (the top-down approach) (Piispanen et al. 1996, Jaffe & Scott 1998). BPR decision-making is highly structured and formalised with few opportunities for the discussion of different opinions; it does not contribute to the enhancement of the ability to change at the lower levels of the organisation (Boonstra & Vink 1996). There is a great danger that collective norms and values will not develop, power structures are not influenced, and that, therefore, fundamental change cannot be achieved (Boonstra & Vink 1996). The fatal mistake in a BPR project occurs when the designers of the new work flow processes assume that they are competent to implement those processes; but implementation usually fails (Moosbrucker & Loftin 1998). The technocratic model of change in BPR, where experts make plans, and people are told to implement them or lose their jobs, often fail in the implementation stage; for example, two large consulting firms noted that only a third of their designs were implemented in practice (Jaffe & Scott 1998).

Research has shown that re-engineering has a high failure rate: some 70 % of re-engineering projects have not reached the goals set (Champy 1995). Radical redesign has many risks and many organisations have not gained the desired outcomes (Hammer 1996). Concerning knowledge work improvement, only 4 % of organisations with re-engineering initiatives had actually redesigned (Davenport et al. 1996). Objectives and results of improving knowledge work processes have been less radical and less ambitious than in classical BPR (Davenport et al. 1996). In sum, BPR has attained tremendous popularity for what it promises – rapid change as well as a technical and rational process - but experience shows that its real returns are far lower than expected (Jaffe & Scott 1998).

Despite the criticism, many companies of management consulting have included the BPR or work process improvement in their service, and the methods for process improvements have gained popularity (Werr et al. 1997, Worren et al 1999). From the consulting point of view, BPR has been the choice for firms intending to transform their work processes through the use of information technology (Worren et al. 2000). Jaffe and Scott (1998) noted that “companies invest in 21st century
information systems but are content to install those systems in the 20th century bureaucracies that use 19th century view of human nature”.

BPR and a Japanese approach, total quality management (TQM), both emphasise the importance of processes and the needs of the customer. However, these two approaches differ fundamentally. TQM works with the framework of a company’s existing processes and seeks continuous incremental improvement. The aim of TQM is to do what is already done, only do it better. BPR, instead, seeks breakthroughs, not by enhancing existing processes, but by replacing them with entirely new ones.

It is worth questioning whether BPR is appropriate for improving knowledge work processes, like professional services, financial services, product development, education, or management processes. According to Davenport et al. (1996) the top-down re-engineering approach is often insufficiently participatory for improving knowledge work. In a study of thirty organisations, they found that although there are benefits from viewing knowledge work from a process perspective, there are significant differences in how process concepts and methods are applied to knowledge work versus operational work. Knowledge workers with autonomy operate through accumulated experience and tacit knowledge. They may not have predetermined task sequence that, if executed, guarantees the desired outcome. Challenges in applying a process view to knowledge work are connected to the following issues (Davenport et al. (1996):

- Variety and uncertainty in inputs, processes, and outputs;
- Unstructured and individualised work rules and routines;
- High variability in performance across individuals and time;
- A lack of quantitative measures;
- A lack of information technology support.

The improvement objectives and results of the companies were not always explicit and measurable but more general and qualitative. Redesign strategies for knowledge work processes lie in three areas (Davenport et al. 1996):

- Changing or reducing the unit of knowledge that employees can reuse or access or by improving knowledge capture techniques;
- Changing where and with whom employees work, such as working in the same room or in new team structures;
- Employing information technology tools such as telecommunication, discussion databases or knowledge bases.
Davenport et al. (1996) concluded that flexible and participatory approaches that allowed professionals to design and execute their own work were successful for improving knowledge work processes. Companies can select methods and tactics that reflect their organisational culture, the type of work, and the business requirements for the change project.

This study utilises process orientation in analysing and developing knowledge work. However, this study has the following crucial underlying differences to BPR. Firstly, in order to make a conceptual difference with BPR, the term ‘work process’ is used instead the business process. Work process is defined by Harrington (1991) as “any activity or group of activities that takes an input, adds value to it, and provides an output to an internal or external customer. Processes use an organisation’s resources to provide definitive results.” Secondly, as an organisational change strategy, this study leans on the broad participation of organisation members instead of the top-down approach by BPR. Thirdly, the existing knowledge and learning capabilities of the organisation members is emphasised as main resources for organisational change, which are often neglected in BPR projects. Fourthly, company’s present state forms a starting point for development, and incremental improvements can be accepted alongside more radical ones.

2.6 Phase models of planned organisational change

During the last few decades, many different models of planned organisation change have been presented. Planned or intentional organisational change involves movement from the present state of the organisation to some future or target state (Beckhard & Harris 1987). Planned organisational change typically defines a future state of the organisation (such as new strategy, technology or culture), analyses and diagnoses the present state of the organisation, and manages the process that moves the organisation from its present state to the desired future state (Beckhard & Harris 1987).

Many theories of OD culminate in phase models or lists of success factors. One of the earliest was the three-stage ice model (unfreeze – move – refreeze) provided by Lewin 1951, which has later been modified and expanded (Bullock & Batten 1985). Bullock and Batten (1985) suggested a four-phase model consisting of exploration, planning, action and integration phases. The exploration phase includes the initial consideration of a problem, the search for consulting assistance and the contract between the consultant and the organisation. Planning begins with the resource commitment and joint diagnosis (data gathering, analysis and feedback) of the current state to the collaborative design of solutions, and the decision to proceed with the plan. The intervention phase includes implementing the action
plan, evaluating the effects and taking corrective action on the basis of the evaluation. In the integration phase, the changes are stabilised by integration and diffusion into the permanent social system, and the OD process is institutionalised.

Recent OD models also include creating a vision of the desired organisation future state (Moosbrucker & Loftin 1998). The situation determines whether the present or future state is approached first, and these may be worked iteratively. In practise, change rarely unfolds in such a straightforward manner. The original plan is always subject to modification and refinement. Some stages may be omitted or passed quickly, or revisited several times during the change process. This does not invalidate the model, which remains a useful guide or route map in the OD process, as noted by Huczynski & Buchanan (2001).

In management literature, the role of (shared) vision building and top management actions seem to be relevant, for example, in the models by Kanter et al. (1992) and Kotter (1995). Kanter et al. (1992) have found the same major themes from the typical models of planned change. First, the company must be awakened to a new reality and disengage from the past, recognising that the old way of doing things is no longer acceptable. Next, the organisation creates and embraces a new vision of the future, uniting behind steps necessary to achieve that vision. Finally, as new attitudes, practices, and policies are put into place to change the corporation, these must be solidified. Kanter et al. (1992) have summarised “operating procedures for organisations attempting to achieve significant organisation change” as follows: analyse the organisation and its need for change; create a shared vision and common direction; separate from the past; create a sense of urgency; support a strong leadership role; line up political sponsorship; craft an implementation plan; develop enabling structures; communicate and involve people; reinforce and institutionalise the change.

The management model aiming at fundamental organisational change is presented by Kotter (1995) as “eight steps to transform your organisation”. They are the following: establish a sense of urgency; form a guiding coalition; assemble a team to lead the change effort; create a vision; communicate the vision; empower people to act on the vision; create short-term wins; consolidate improvements to produce further changes; and, institutionalise new approaches (Kotter 1995).

Management models are built on the assumption that organisational change can be planned and executed in a systematic manner. These rational and linear models of organisational change have attracted criticism, mainly because they do not capture the iterative and complex nature of organisational change (e.g. Heller 1998, Huczynski & Buchanan 2001). One weakness is that the implementation of changes is neglected in the phase models (Buhanist 2000, Salminen 2000). Another weakness
is that top management usually creates the vision, not the employees at operative level of the organisation – the employees may be encouraged to ‘act upon the vision’ but not empowered to build the vision as noted by Buhanist (2000). The critics argue for a more adaptive and situational approach for managing change (e.g. Beer & Walton 1987). As opposite to linearity, Gustavsen (1992) and van Beinum (1993) suggest an interactive change strategy. Pettigrew (1985, 1990, 1997) argues that to understand organisational change it is necessary to consider the substance, the context and the process of change, which is relevant for research.

The action research approach in OD differs from the planning model by emphasising cyclical and more iterative change process. OD has identifiable flows of events moving over time toward the goals of organisational improvement and individual development. OD is an iterative process of major phases: diagnosing the situation to determine what is happening and, planning and taking actions to change the problematic conditions, evaluating the effects of actions, making adjustments as necessary, and repeating the sequences. Every OD programme is unique because every organisation has unique problems and opportunities. (French & Bell 1999).

In a similar way, any sociotechnical change can be described according to the phase structure (Pasmore 1988, Vartiainen 1991, 1994, 1998). Vartiainen (1991, 1994) describes the sociotechnical change as a cyclical and dialectical process in a form of the developmental cycle. The developmental cycle is a model abstracted from typical descriptions used in different studies and theories (e.g. Engeström 1987). At first, the need for change is recognised and an analysis of the present state of affairs is conducted, which results in the sociotechnical work description. At the beginning, there may be a preliminary vision or strategic frame of how things should be in the future. After critical examination and evaluation of the present state, the vision of the future or a strategic frame is constructed. Then, the vision is practically applied and the new way of working is piloted, for example, in a pilot unit. The solution is evaluated and, if it proves to be adequate, is applied to other work units. Next, a new developmental cycle can start and, at its best, on a qualitatively higher level. Later, Vartiainen (1998) has revised the developmental cycle so that the vision for future is needed already at the beginning of the organisational change, and the development dynamic is created by comparing the wished future with the resources available. In the development cycle, tools and methods are needed to reach the goals in organisational change and to guarantee a balanced change process (Vartiainen 1991, 1994, 1998)

**This study** utilises the cyclical view of planned organisational change rather than strict linear models. The main phases in the developmental cycle form a general theoretical model to describe the sociotechnical change process and organisation development. In this study, the idea is that the organisation development process
could be structured and promoted with interventions and methods like the WFG.

### 2.7 Participation of organisation members

Participation has always been one of the most important foundations of OD, and participation by all levels of the organisation is a central goal and value of the field (French & Bell 1999). Accordingly, OD interventions are basically methods for increasing participation. Besides OD, the sociotechnical systems approach also emphasises the participation of organisation members (e.g. Pasmore 1988, Gustavsen 1992, Vartiainen 1994).

Participation is defined, in general terms, as a process that allows employees to exert some influence over their work and the conditions under which they work (Strauss 1998). Participation is defined as the involvement of people in planning and controlling a significant amount of their own work activities, with sufficient knowledge and power to influence both processes and outcomes in order to achieve desirable goals (Wilson & Haines 1997, Haines & Wilson 1998). Some authors emphasise participation as a group process, involving groups of employees and managers; others stress delegation, the process by which the individual employee is given freedom to make decisions.

Within organisations, participation has become popular for different reasons. From the psychological point of view, at the root of participation lies the general need of people to interact effectively with their environment (Wilpert 1998). Recent technological and economic changes and the growth of service work have considerably strengthened participation, which is seen as the key to maintaining a competitive edge (Strauss 1998). A high degree of participation with real decision-making power is one central success factor in managing organisational change (e.g. Salminen 2000).

Three broad arguments support participation summarised by Strauss (1998). The first is humanistic and related to the employees’ well-being: by contributing to personal growth and job satisfaction, participation will enhance human dignity (like a sense of competence, social approval, achievement and creativity). The second argument concerns power-sharing: participation will distribute social power, protect employee’s interests, strengthen unions, and extend the benefits of political democracy to the workplace. The third is that participation will promote organisation efficiency.

Based on recent studies, most commonly referred to benefits of participation are the following ones (Wilson & Haines 1997, Haines & Wilson 1998, Strauss 1998, Wilpert 1998). Firstly, employees with shared knowledge and experience of work
can provide a clearer understanding of both the types of problems being encountered and the solutions that will be appropriate. Therefore, participation may result in better decisions. Secondly, involving employees in analysis, development and the implementation of change generates greater feelings of solution ownership and thus may breed a greater commitment to changes being implemented. People may be more likely to implement decisions they make themselves than decisions imposed on them. Thirdly, participation may improve communication and co-operation. For example, joint participation by employees and management to solve problems may improve their relations. Fourthly, employees may learn new skills and their job-related competencies may be enhanced through participation. Further still, with the dissemination experience, participation may facilitate organisation learning.

On the other hand, it must be realised that in practice the culture of expertise is still strong. Participatory projects are not always easy to investigate or support. One of the main obstacles is people’s (un)willingness to get involved (Wilson & Haines 1997, Haines & Wilson 1998). For example, management might see participation as a threat to their right to manage, and employees may lack sufficient motivation, time and energy or they mistrust management’s motives for involving them. Other problems may be associated with the process of participation. For example, planning and developing new systems may be slower, more complex and require greater effort than non-participatory approaches (Wilson & Haines 1997, Haines & Wilson 1998). As well, problems may relate to the psychological conditions and consequences of frustrated participatory aspirations, for example, many industrial conflicts may arise as a consequence of a reaction to limited freedom of choice (Wilpert 1998). In this study, employee participation is discussed in relation to work process improvement and planning new ways of working as part of organisation development, as opposed to decision making in organisation in general. The participation of organisation members is also a central characteristic of the WFG and its use.

2.8 Methods for organisation development

Organisational interventions and intervention methods comprise one of the main fields of work and organisation psychologists (Heller 1998). The literature on interventions and methods for organisational change is large and varied (Huczynski 2000). Methods for the technical aspects of the organisational change are quite common while on the human side the availability of methods has been more limited (Werr et al. 1997). Consulting companies in particular strive towards more structured approaches to the handling of the human aspects of organisational change (Werr et al. 1997).
**Intervention** is defined in OD as a set of structured activities in which selected organisational units (targets or individuals) engage in a sequence of tasks with the goals of organisational improvement and individual development (French & Bell 1999). This definition emphasises the participatory nature of intervention i.e. the organisation is engaged in development activities. Therefore, interventions are not just the use of methods or tools by an expert consultant. The OD practitioner also brings values, assumptions and goals of OD to the organisational setting (French & Bell 1999). Interventions used in OD are typically reflective and self-analytical by nature (French et al. 1983, French & Bell 1999).

Problems and opportunities in organisations can arise at different organisation levels. OD interventions are typically categorised based on those levels at which problems arise: individual, group, inter-group (or cross-functional) or organisation level (French & Bell 1999, Hutzynski & Buchanan 2001) or even the inter-organisation level (Schein 1997). The first step in OD concerns diagnosing and identifying the level at which the problem has been recognised. In complex organisations, problems are likely to be caused and reinforced by factors at more than one level. For example, individuals may be unsatisfied with their repetitive tasks, have lack of inter-group communication and be worried about the implementation of new technology. The selection of appropriate intervention(s) can thus be a complex choice.

Schein (1997) categorises typical problems and interventions in five levels:

- The individual level concerns the “intra-psychic” issues that a person has as well as problems of bonding with others, of membership in an organisation or community. Inter-personal problems concern the relationship between the individual and other members of the organisation. Typical interventions are individual counselling, various forms of training, coaching and mentoring.

- The group level shifts to problems or issues that are lodged in how a group of people functions as a group. The consultant plays a variety of helping roles, from being a non-directive facilitator of meetings to managing the agenda or helping to structure the work of the group.

- The inter-group level focuses on problems or issues that derive from the way in which groups, teams, departments and other kinds of organisation units relate to each other and co-ordinate their work on behalf of the organisation or larger client system. The issues concerns improving the co-ordination of the organisation units involved. Large multi-unit interventions are needed in order to intervene at this system level.

- The organisation level pertains to problems or issues that concern mission, strategy and welfare of a department, whole organisation or community. Whether
the consultant is working with the individual leaders, groups or inter-groups may vary, but the focus is on total systems’ level problems. Examples of interventions are survey feedback projects, search conferences, cultural analysis and integrated strategic change.

- The inter-organisation level deals with interventions that influence organisation sets, consortia, industry groups and other systems where the members of the system are themselves complete organisation units but are working in some kind of alliance or joint venture with each other. Many of the same kinds of interventions that are used in the organisation or inter-group level would apply here also.

The OD matrix in Table 1 outlines problems that can arise at four levels, with respect to behavioural factors, organisation structural factors and wider contextual factors (Huczyski & Buchanan 2001). Each cell in the matrix identifies, in italics, a relevant OD intervention. For example, if the problem lies with the individual, but the causes are structural, then a job redesign may be relevant. It is important to recognise that an intervention strategy cannot simply be ‘read’ from the matrix. Knowledge of the organisation context and local knowledge of the organisation members are always relevant. The intervention has to be tailored to fit the culture and problems of the client system. In any particular organisation, some interventions or approaches are likely to be more appropriate, and perhaps more acceptable, than others.

This study pays special attention to the intervention methods in the inter-group level (other terms used are inter-functional or cross-functional level). It is common to find that functions, departments or sections in an organisation hold their unique perspectives and behaviours, which prevent effective cross-functional communication and collaboration. The functional boundaries can lead to ineffective working, dysfunctional conflict or competition. OD interventions like ‘inter-group confrontation’, ‘organisation mirroring’ or ‘third party peacemaking’ typically seek to change the perceptions and attitudes that different functional or occupational groups in an organisation hold with respect to each other, and to improve their interaction and collaboration (French & Bell 1999, Huczynski 2000, Huczynski & Buchanan 2001). Interaction and communication can increase through a range of participatory methods such as discussion groups, workshops or ‘search conferences’ between different groups from different departments and levels of the organisation structure (e.g. French & Bell 1999).

However, it is quite questionable if these interventions are enough to change real work practises and work processes and to improve organisation effectiveness. One weakness in the existing OD interventions seems to be that they do not aim to
Table 1. OD matrix for organisational diagnosis and intervention (*in italics*) (Huczynski & Buchanan 2001).

<table>
<thead>
<tr>
<th>Behaviour / What is happening?</th>
<th>Structure / What is the system?</th>
<th>Context / What is the setting?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual needs not met,</td>
<td>Poor job definition, tasks too</td>
<td>Poor individual – job fit, poor</td>
</tr>
<tr>
<td>frustration, resistance to</td>
<td>or too difficult.</td>
<td>selection or promotion, inadequate</td>
</tr>
<tr>
<td>chance, few learning</td>
<td><em>Job restructuring or redesign,</em></td>
<td>training, inadequate reward.</td>
</tr>
<tr>
<td>opportunities.</td>
<td>*job enrichment, clear</td>
<td><em>Improve personnel procedures and</em></td>
</tr>
<tr>
<td><em>Counselling, role analysis,</em></td>
<td>objectives.*</td>
<td><em>training, align recognition and</em></td>
</tr>
<tr>
<td><em>career planning.</em></td>
<td></td>
<td><em>reward with objectives.</em></td>
</tr>
<tr>
<td><strong>Group level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate working</td>
<td>Tasks poorly defined, role</td>
<td>Lack of resources, poor group</td>
</tr>
<tr>
<td>atmosphere and leadership,</td>
<td>relations not clear, leader</td>
<td>composition, inadequate physical</td>
</tr>
<tr>
<td>leader not trusted or</td>
<td>overloaded, inappropriate</td>
<td>facilities, personality clashes.</td>
</tr>
<tr>
<td>respected, leader in conflict</td>
<td>reporting structures.</td>
<td><em>Change the technology, change</em></td>
</tr>
<tr>
<td>with peers and superiors,</td>
<td><em>Redesign role relations,</em></td>
<td><em>the layout, change group</em></td>
</tr>
<tr>
<td>goals disputed.</td>
<td><em>autonomous groups, socio-</em></td>
<td><em>membership.</em></td>
</tr>
<tr>
<td><em>Process consultation, team</em></td>
<td><em>technical system design.</em></td>
<td></td>
</tr>
<tr>
<td><em>building.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inter-group level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-units not co-operating,</td>
<td>No common perspective on task,</td>
<td>Differences in sub-units values</td>
</tr>
<tr>
<td>conflict and competition,</td>
<td>difficult to achieve required</td>
<td>and lifestyles, physical barriers.</td>
</tr>
<tr>
<td>failure to confront</td>
<td>interaction.</td>
<td><em>Reduce physical and</em></td>
</tr>
<tr>
<td>differences, unresolved</td>
<td><em>Redefine responsibilities,</em></td>
<td><em>psychological distance, exchange</em></td>
</tr>
<tr>
<td>feeling.</td>
<td><em>change reporting relations,</em></td>
<td><em>roles, arrange</em></td>
</tr>
<tr>
<td><em>Inter-group confrontation,</em></td>
<td><em>improve liaison mechanisms.</em></td>
<td><em>cross-functional</em></td>
</tr>
<tr>
<td><em>role negotiation.</em></td>
<td></td>
<td><em>attachments.</em></td>
</tr>
<tr>
<td><strong>Organisational level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor morale, pressure,</td>
<td>Inappropriate and poorly defined</td>
<td>Product market, labour market,</td>
</tr>
<tr>
<td>anxiety, suspicion, weak</td>
<td>goals, strategy unclear,</td>
<td>technology, physical working</td>
</tr>
<tr>
<td>response to environmental</td>
<td>inappropriate structure,</td>
<td>conditions, geography.</td>
</tr>
<tr>
<td>changes.</td>
<td>inadequate environmental</td>
<td><em>Change strategy, location,</em></td>
</tr>
<tr>
<td><em>Survey feedback,</em></td>
<td>scanning.</td>
<td><em>conditions or culture.</em></td>
</tr>
<tr>
<td><em>organisational mirroring.</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
improve the actual work process between different functions in order to promote organisation effectiveness. Another weakness is that opportunities to use new information and communication technology to promote cross-functional communication may be less utilised. Therefore, this study elaborates on theoretical ideas from the sociotechnical systems and business process re-engineering approaches in order to construct the WFG method. The WFG is meant especially for the cross-functional level of organisation to improve work processes, but it also concerns the organisational level. At the organisational level, it may be useful to “get the whole system in the room” (French & Bell 1999), which is attempted with the WFG in order to analyse the present and new modes of working.

**Methods** for organisation development are widespread in both management literature and consultants’ practices. Consultants and other practitioners see the methods as an important support providing an overall structure to organisation development, or in other words, methods provide operational guidance to manage a change process (Werr et al. 1997, Worren et al. 1999). This guidance often has a step-by-step models of change process, defining what should be done when, how, why and by whom, thus providing a basic structure in the discussions about particular change process (Werr et al. 1997). The structured methods are said to facilitate the communication, collaboration and exchange of ideas both between the different consultants and between consultants and the client system (Werr et al. 1997, Worren et al. 1999). For a client, a clear method provides with a ‘road map’ which facilitates stakeholders’ active involvement (Werr et al. 1997). Werr et al. (1997) emphasise that methods have to be chosen and adapted to fit the specific situation and needs of an organisation. The legitimacy of methods is generally based on a belief in the effectiveness of their application in the change process. However, empirical evidence about the effectiveness of methods used by consultants seems to be limited in academic arenas, which is a relevant motivation in this study.

From the sociotechnical point of view, both theoretical and practical tools (or methods) are needed in the management of organisational change. The basic idea for the ‘tools approach’ came from the observation by Vygotsky (1978) that humans use tools (concrete tools) and signs (psychological tools) to mediate their activities (Vartiainen 1991, 1994, 1998). ‘The theoretical tools’ include concepts and heuristic principles used during the whole change process, like the developmental cycle, work activity as the object of change, sociotechnical work description, participation of the personnel and models of ‘good work’. ‘The practical tools’ are more specific and technique-like instruments and procedures. They include methods to analyse and (re)design the work system, participatory group and dialogue techniques, and methods to support continuous change. The hypothesis is that considered from the human (well-being, motivation, qualifications) and productivity (competitiveness,
economical results) viewpoints development of work and implementation of production or information technology are carried out in a balanced manner with the help of these tools (Vartiainen 1991, 1994, 1998). The methods available have mainly been meant for managers, while methods for practitioners at the operative level of enterprises have been more limited (Vartiainen & Ruohomäki 1994).

The need for new methods for developing knowledge work in particular has been recognised (Vartiainen & Ruohomäki 1992, Meijer & Roe 1993, Roe et al. 1995). The nature of work seems to have changed in such a way that one must doubt whether formerly designed methods for analysing and developing work are still applicable. Most available methods are either originally developed for an industrial type of work, or for software and interface design. The methods designed on the basis of traditional production work, firmly rooted in the stable, well-defined and routine-like character of work, and with close connections to the physical environment, may not be efficient or applicable in a knowledge work context (Meijer & Roe 1993, Roe et al. 1995, Drucker 1999). The typical methodological problems for analysing and developing knowledge work are related to the lack of direct access to mental activity, and the complexity of the interaction between the employee and the work environment (Meijer & Roe 1993). Traditional methods having roots in the field of software and interface design are mainly focused on technical human-machine systems and tasks conducted by the computer (Eason et al. 1996) rather than group of employees of the organisation. The central problem is that the initial methods often neglect the social nature of knowledge work as well as the practical action and situated, ‘tacit knowledge’ of employees (concept by Polanyi 1966), which is difficult to verbalise and make explicit (Suchman 1987, Piispanen et al. 1996, Vehviläinen 1997). Many sociotechnical methods may not help in integrating individuals’ or units’ work to the organisation’s other functions or processes, i.e., understanding of cross-functional activities may be limited.

It can be concluded that OD calls for practical methods to solve problems in cross-functional levels, i.e., methods for work process improvement are needed. Methods for making visible the ‘invisible’ knowledge work and cross-functional work processes are needed in order to increase quality and productivity/efficiency of knowledge work. It is a methodological challenge to support employees to externalise and share their tacit knowledge and experiences, and to involve them in developing their own work practices. The above described practical and methodological requirements were relevant starting points when planning and designing the WFG, which is the focus of this study.
2.9 Comparisons of background theories and an integrative approach

Researchers and consultants with different academic backgrounds and functional responsibilities in organisations tend to develop distinctive perspectives on how one should go about planning, and executing and studying organisational change. Related to the planned organisation change it is worth asking how different or similar the OD tradition, the sociotechnical approach and the business process re-engineering actually are to each other. An attempt to highlight the differences between these three approaches is summarised in Table 2. The table is reconstructed based on the comparisons between sociotechnical paradigm and BPR by Mumford (1997) and between OD and BPR by Moosbrucker and Loftin (1998).

BPR and the sociotechnical systems approach have very different origins and have followed different developmental paths. A dilemma between them is crystallised by Boonstra and Vink (1996) as follows. On the one hand, an expert design approach by BPR permits a far-reaching breakthrough innovation but neglects the development of learning capacities. On the other hand, the sociotechnical systems approach instead gives way to learning but the drawback is that it allows participants to fall back to conventional and fragmental solutions in their thoughts and deeds, while innovative and completely new ideas are needed.

For business process improvement, more holistic and participatory approaches are needed, where the well-being of personnel is also considered (Caron et al. 1994, Mumford & Beekman 1995, Piispanen et al. 1996). Studies by Moosbrucker and Loftin (1998) show that success in BPR efforts are enhanced when the client organisation uses the principles and practices of OD. Accordingly, the OD values of open and honest communication and participation were key factors in the successful implementation of new work flows and a new information system as part of organisation change. It is concluded that if the disciplines of OD and BPR were to be integrated, they would be likely to meet both the needs of the business and the individual needs of employees and to achieve breakthrough performance (Nader & Merten 1998, Moosbrucker and Loftin 1998). They call for more studies on the use of OD paradigm for business process redesign and implementation of information systems, which is one challenge of this study.

Research and practise have shown that there is a need to support the participatory development of sociotechnical systems to ensure consideration of organisation requirements and options as well as human well-being alongside technical opportunities (Caron et al. 1994, Mumford & Beekman 1995, Eason et al. 1996). For example, the Dutch variant of sociotechnical systems design, known as Integral Organisational Renewal (IOR), emphasises participation and seeks an integrative
<table>
<thead>
<tr>
<th>Change philosophy</th>
<th>Organisation development</th>
<th>Sociotechnical systems approach</th>
<th>Business process re-engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long term, planned effort based on overall strategy.</td>
<td>Design of the social and technical systems considering demands of the external environment</td>
<td>Revolutionary change.</td>
<td></td>
</tr>
</tbody>
</table>

| Stimulus for change | Forces internal and external to the organisation. | Factors operating in environment, customers, community and competition. | Increased business competition. |

| Primary objectives | Organisational effectiveness and employee well-being. | Optimise the contributions of people and technology. To create a high performance organisation and a high quality work environment. | To improve organisational performance, speed and quality. To improve ‘competitive edge’ through major change. |

| Focus | Human and social aspects of organisation, whole work system. | Social (people) and technical (machinery) systems. | Business process. |


| Nature of typical intervention | Reflexive and self-analytical interventions, action research. | Work or job redesign, action research. | Radical redesign of business processes, use of information technology. |

| Role of consultant | Facilitator, process consultant, change agent or action researcher. | Expert, designer or action researcher. | Expert, designer. |
approach to improve the quality of work and organisation (Sitter de et al. 1997). Vartiainen (1998) notes that the paradigms and models of organisational change have transformed and integrated with each other, and more emphasis is now put on learning and knowledge creation.

In order to manage large-scale organisational change, collaboration among organisation professionals with different disciplines is necessary, and they must understand one another in order to work together effectively (Nader & Merten 1998, Moosbruker & Loftin 1998). In addition to having a core competence in one discipline, like OD, BPR or IT, consultants and managers should understand the other disciplines well enough to integrate them into the organisation change process (Nader & Merten 1998, Worren et al. 1999). Moosbruker and Loftin (1998) offer insights about underlying barriers to explain why such collaboration between OD and BPR has been limited so far: different language and history, different paradigms and tools, divergent values and organisation structure are all inhibitors to collaboration. In any event, some modern consulting firms have multidisciplinary teams consisting of different professionals with complementary skills in OD, BPR and IT (Worren et al. 1999), which is a challenge for researchers as well.

To draw a conclusion from the present literature review, a growing need can be seen for an integrative approach on organisation change in which social, technical and organisation systems are considered; furthermore, success depends upon the effective participation and learning of organisation members (Caron et al. 1994, Mumford & Beekman 1995, Eason et al. 1996, Mumford 1997, Jaffe & Scott 1998, Moosbruker & Loftin 1998, Nader & Merten 1998, Worren et al. 1999, Järvenpää & Eloranta 2000). This kind of integrative approach is the core idea of this study. An ambitious effort is to develop and use the simulation game, i.e. the WFG, as an integrative method for organisation development as well as to evaluate its effects and outcomes.

3 THE AIMS AND RESEARCH QUESTIONS OF THE STUDY

This doctoral dissertation concerns the development, use and evaluation of the simulation game called the Work Flow Game (WFG). The aims and the research questions are the following:

1. To develop a simulation game for work process improvement.
   - Why has the simulation game been developed?
• How has the simulation game been developed?

2. To use the WFG for work process improvement.
   • When to use the WFG for work process improvement?
   • Why use the WFG for work process improvement?
   • How to carry out the WFG in different organisations?

3. To evaluate the experiences of the participants in the WFG.
   • What is the participants’ motivation towards work process improvement?
   • What kinds of attitudes do the participants have towards the WFG?
   • What is the perceived usefulness of the WFG?
   • What are the perceived advantages and shortcomings of the WFG?

4. To evaluate effects and outcomes of the WFG.
   • What are the effects of the WFG on the participants’ perceived interaction, communication and co-operation?
   • What are the effects of the WFG on the participants’ perceived learning?
   • What are the effects of the WFG on the participants’ idea generation for work and organisational improvements?
   • What are the work and organisational outcomes of the WFG?

5. To create an evaluation framework and a model on the effects and outcomes of the simulation game.

4 RESEARCH APPROACH

4.1 Constructive approach

One of the aims of this study was to develop a simulation game for work process improvement. The challenge of developing a new method, like the WFG, for the practical purposes of organisations have connections to the constructive approach
(Neilimo & Näsí 1980, Kasanen et al. 1993). According to Kasanen et al. (1993) the constructive approach is a research procedure for producing constructions. The constructive approach produces an innovative construct; something that differs from anything which existed before. The constructive approach means problem solving through the construction of models, diagrams, plans, organisation and so on. For example, managerial constructions refer to entities that solve relevant problems that emerge in running business organisations. Constructive research can be viewed as a type of applied research, and it is used in technical science, industrial management, mathematics, operations analysis, and clinical medicine (Kasanen et al. 1993). It is so far less used in work and organisational psychology.

The simulation game called the WFG can be seen as an example of a new construction, because it is a novel method for organisation development focusing on work process improvement particularly in knowledge work area. The WFG was constructed in close interplay between practical organisation development in ten organisations and academic research (Article II).

Kasanen et al. (1993) emphasise that the usability of the construction should be demonstrated through its implementation. The other aim of this study concerns using the WFG in practice for organisation development and evaluating the experiences of its application in different organisations, which is referred as market test by Kasanen et al. (1993). Considering the requirements of the typical applied science a successful construction shows practical usefulness, it is relevant, simple and easy to use. These criteria follow from the pragmatic starting points of the problem and from ensuring that the solution works. One also has to show that the construction has theoretical connections, i.e. that it is a part of a particular theoretical framework (Kasanen et al. 1993). Therefore the theoretical connections of the WFG are described and created throughout this study.

4.2 Case study approach

This thesis includes three case studies which describe, explore and evaluate the WFG within the context of organisation development. Three case studies in this thesis (Articles III, IV and V) are analysed and reported on based on the case study approach, which is especially appropriate in exploring new topics (Eisenhardt 1989), providing descriptions, evaluating outcomes and generating theory. The case study is a research strategy that focuses on understanding the dynamics present within single settings, and tries to catch the particularity and complexity of a single case. Case study research can include both single and multiple cases, and numerous levels of analysis. Case studies typically combine several data collection methods, and rely on multiple sources of evidence. The evidence can be qualitative,
quantitative or both. As a research strategy, the case study is widely used, for example, in the fields of psychology, sociology, industrial management, business studies and political science. (Eisenhardt 1989, Patton 1990, Yin 1994).

The case study approach is especially appropriate for studying complex, longitudinal organisational change processes, as is the question in this study. Case studies are suited for studying individual, organisational and social phenomena as well as complex processes, where it is difficult to separate the phenomenon’s variables from their context. Case studies are preferred when the focus is on a contemporary phenomenon within its real-life context and when the investigator has little control over events. Case studies are dependent on real context and naturalistic settings which cannot be controlled like experimental research designs. (Eisenhardt 1989, Pettigrew 1990, Gummesson 1993, Yin 1994). The intensive case study enables us to grasp holistic and meaningful characteristics of real life events – such as organisational and managerial processes and social phenomena over a relatively long period of time (Pettigrew 1990, Yin 1994).

This study represents an inductive case study. It is a challenge to build theoretical constructions from case studies based on an inductive research strategy. This study explores the new method and an area that is little known, i.e. application and evaluation of the simulation game focusing on organisation development. Therefore the theoretical orientation is to create new knowledge and conceptualisations about the use of the WFG and its effects and outcomes rather than to test an established theory. In this study, the purpose is to follow the inductive theory building process described by Eisenhardt (1989) and Patton (1990): it first includes intensive within-case analyses and then cross-case comparisons. In this study, separate within-case analysis is reported in detail for identification of phenomena and to generate conceptual understanding of the WFG and its use. This dissertation includes three intensive case studies conducted in organisations with follow-up evaluations (Articles III, IV and V). The cross-case comparison over three cases is used for exploring cross-case phenomena on the WFG (extended summary).

### 4.3 Action research

This study is action research oriented trying to contribute both to the practical and to the academic fields. Action research (Argyris et al. 1985, Whyte 1991) is an approach to studying and understanding dynamic processes and actions that are temporally interconnected and embedded in context. It is aimed at developing descriptive accounts and explanations by looking at patterns of events to gain knowledge of problems, solving practical work-related problems in reality, and directing changes in work action. Action research can be characterised by the co-
operation and mutual learning of the researchers and people working in the context of research, participation and contribution to the outcome of those affected. According to Pihlanto (1994) action research oriented case studies aim to achieve a profound understanding of behaviour of people in organisations instead of producing causal explanations and finding general laws in a positivistic manner. Action research oriented, descriptive and exploratory case studies can also be theory generating (Gummesson 1993).

4.4 Evaluation research

In evaluation research, case studies have a distinctive place, and have different applications (Yin 1994). One application is to describe an intervention and the context in which it occurred. Case studies can illustrate certain topics within an evaluation in a descriptive mode. The case study strategy can be used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes. The case study can also be applied to explain the causal link in real-life interventions that are too complex for the survey or experimental strategies. Depending on the type of evaluation questions, there are descriptive case studies, exploratory case studies or explanatory case studies (Yin 1994). This dissertation is, on the one hand, as a descriptive and exploratory study referring to evaluation questions on participants’ experiences and effects of the WFG (“what…”). On the other hand, it is also an explanatory study trying to explain the reasons for developing the WFG and using it in organisations (“when…”, “why…”, “how…”).

This is an evaluative study on the WFG and its use in organisations. The evaluation of the WFG considers both the processual analysis and the outcome evaluation. When studying and evaluating complex organisational change, both processual analyses and multilevel outcome evaluation are suggested to be used (e.g. Pettigrew 1997). The perceptions and experiences of different organisation members are key consideration in order to form a many-sided picture of the object of evaluation, i.e. the WFG (Patton 1990, Burgoyne 1994).

Processual analysis is emphasised in organisational settings by Pettigrew (1997). According to him process means a sequence of individual and collective events and actions unfolding over time in context. The driving assumption behind processual studies is that social reality is a dynamic process that occurs rather than merely exists. Social processes are deeply embedded in the contexts that produce them and are produced by them. Another assumption is the need to reveal temporal interconnectedness: it is crucial to understand the sequence and flow of events over time (Pettigrew 1997). There is the scope to examine causal processes in context, and to explore holistic explanations within and between cases.
The longitudinal comparative case study approach is applied in this study. The processual analysis concerns on the one hand how the WFG has been developed, and on the other hand, the way the WFG has been used in organisations. The processual analysis elucidates the research questions “why and how the simulation game is developed”. Therefore the background and starting points of the WFG, and the main phases of its design process are described chronologically following the order of the real time process (Articles I-III, extended summary). The processual analysis also aims at deepening understanding of the WFG and its use by answering the research questions, “when to use the WFG for work process improvement” and, “how to carry out the WFG in different organisations”. In order to answer these question, the method description and the case studies present a chronological progression of events over time when using the WFG as a part of organisation development (Articles II-V, extended summary).

**Outcome evaluation** examines the extent to which objectives and goals of an intervention are being achieved (Herman et al. 1987). The primary goal of applying the WFG is to facilitate organisation development by improving work processes, and by promoting employees’ participation. It is also important that the participants could accept the WFG and perceive their involvement useful. The goals of the organisation development project, where the WFG is used, are always specified based on the needs and context of the case organisation. In this study, to extent to which the goals of an organisation development with the WFG have been achieved is evaluated (Articles III, IV, V and extended summary).

The approach for evaluating results-oriented organisational training (Robinson & Robinson 1989) has been one source of inspiration for constructing the evaluation framework for the WFG of this thesis. The approach is said to be applicable to any situation where the purpose of intervention is to help the organisation to gain its objectives. Improved results in work or organisational performance may occur when skills and knowledge learned in a training programme are applied on the job, and when the work environment reinforces the use of the knowledge of the personnel (Robinson & Robinson 1989). For evaluation outcomes of organisational training, four levels have been suggested (Kirkpatrick 1983, Robinson & Robinson 1989): 1) participants’ opinions and reactions (“satisfaction index”), 2) learning knowledge, skills and attitudes, 3) change in work performance by applying the acquired knowledge and skills, and 4) impact on organisational performance (e.g. improved quality, productivity, cost-effectiveness).

Several **levels of analysis** should be used when studying organisational change processes and outcomes, (e.g. Pettigrew 1997, Torraco 2000). In organisational studies, the levels of analysis and interventions typically suggested are the following: individual, group, inter-group and organisational level (Harrison 1994, Schein 1997,
Table 3. Evaluation framework of the simulation game.

<table>
<thead>
<tr>
<th>Evaluation level</th>
<th>Research questions</th>
<th>Research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIVIDUAL LEVEL</td>
<td>What is the participants’ motivation towards work process improvement?</td>
<td>Questionnaires and interviews before and after the game day.</td>
</tr>
<tr>
<td>Attitudes and perceptions of</td>
<td>What kinds of attitudes do the participants have towards the WFG?</td>
<td>Videotapes of the game day and the closing meeting.</td>
</tr>
<tr>
<td>the participants</td>
<td>What is the perceived usefulness of the WFG?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What are the perceived advantages and shortcomings of the WFG?</td>
<td></td>
</tr>
<tr>
<td>Learning of the participants</td>
<td>What are the effects of the WFG on the participants’ perceived learning?</td>
<td>Questionnaires and interviews before and after the game day.</td>
</tr>
<tr>
<td></td>
<td>What are the effects of the WFG on participants’ idea generation for work and</td>
<td>Project documents.</td>
</tr>
<tr>
<td></td>
<td>organisational improvements?</td>
<td></td>
</tr>
<tr>
<td>CROSS-FUNCTIONAL PROCESS</td>
<td>What are the effects of the WFG on participants’ perceived interaction,</td>
<td>Questionnaires and interviews after the game day.</td>
</tr>
<tr>
<td>LEVEL</td>
<td>communication and co-operation?</td>
<td>Videotapes of the game day and the closing meeting.</td>
</tr>
<tr>
<td>Interaction,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>communication, co-operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(INTER-)</td>
<td>What are the work and organisational outcomes of the WFG? (implementation of</td>
<td>Follow-up interviews and questionnaires.</td>
</tr>
<tr>
<td>ORGANISATIONAL LEVEL</td>
<td>improvement ideas and information systems, quality and efficiency of work process,</td>
<td>Performance measures and project documents at the beginning and</td>
</tr>
<tr>
<td>Work and organisational</td>
<td>customer service).</td>
<td>after the project.</td>
</tr>
<tr>
<td>performance</td>
<td>What are the outcomes concerning the physical and mental well-being of personnel?</td>
<td>Occupational health-check.</td>
</tr>
</tbody>
</table>

Huczynski & Buchanan 2001) as well as inter-organisational level (Schein 1997). Instead of group and inter-group levels Torraco (2000) suggests a level, which focuses on a work process, i.e. a sequence of interrelated tasks, activities and functions that produce a given output. A work process integrates the contributions of several functions (or other structural units of the organisation like departments
and divisions), thus the term cross-functional process is often used (Torraco 2000). This study adopts the four-level systems model, which forms the basis for the evaluation framework next described.

4.5 Evaluation framework of the simulation game

For this study, I have constructed the multiphase and multilevel framework for evaluating the simulation game, particularly the WFG. This evaluation framework has been applied to within-case analysis (Articles III, IV and V) and to the cross-case comparisons as well (extended summary).

Concerning organisational change, it is necessary to organise the acquisition of data for a sufficiently long time and frequency (Eisenhardt 1989, Pettigrew 1990). In order to explore the effects and outcomes of the WFG and to understand when they may be received, it is important to gather data in several phases of the organisation development project. The purpose was to reveal a sequence of events over time, and to understand the relationship between the past, present and future, i.e. before, during and after the WFG. In the longitudinal, follow-up case studies, data was gathered in the following phases of the organisation development project: at the beginning of the project, during the planning of the WFG, during the game days, after the game days, at the end of the project and as follow-ups after the project end.

Evaluation concerning the experiences of the participants as well as the effects and outcomes of the WFG was conducted at an individual level, cross-functional process level as well as an organisational level in all case studies. In one case study, the inter-organisational level was also studied. The purpose was to elucidate research questions concerning the participants’ experiences in the WFG, their perceived interaction, communication and co-operation, perceived learning, participants’ motivation and idea generation for work and organisational improvement as well as work and organisational outcomes of the WFG. The evaluation level, its connection to research questions and research methods used are shown in Table 3. The research methods are described in detail in the next Chapter.

5 RESEARCH MATERIAL AND METHODS

5.1 Reported case studies

Selection of cases is an important aspect of building theories from inductive case studies (Eisenhardt 1989). In this study, the selection of WFG case studies was
based on the replication logic to choose the kind of cases likely to extend or replicate the emergent phenomena in different contexts or situations (Eisenhardt 1989, Pettigrew 1990, literal replication by Yin 1994). Next I describe the criteria for the selection of the cases, and the reported case studies (Table 4). I follow the suggestion by Pettigrew (1997) to stick with a careful comparison of a small number of cases.

The first criteria for selection of the cases for this study, was the organisational context in which the WFG was used. The idea was that the cases would represent different kinds of organisational contexts in terms of the public or private sector, and in terms of service or industrial organisation. The purpose was to examine the usefulness of the WFG in different organisations, and to explore whether similar kinds of phenomena would be found. In all the case organisations, administrative cross-functional work processes were selected as the object of development with the WFG.

The second criteria was the actual phase of the organisation development project, when the WFG was used. The WFG has been utilised at the beginning of a development project to analyse the present state and to initiate change (“the present state WFG”), and later on, to test new modes of operations (“the vision WFG”) (Ruhomäki 1994). In this study, it is meaningful to describe the use of the WFG in both phases of organisation development. Two case studies allow both “the present state WFG” and “the vision WFG”. One case study shows the application only in the present state, because the organisation did not need “the vision WFG”.

The third criteria concerned the role of the researcher. As a researcher, I had an active role during the organisation development project in the reported case studies. I was responsible for the planning of the organisation development project with the WFG, tailoring and using the WFG as well as organising feedback and follow-up activities in co-operation with the other members of the project team. In each

<table>
<thead>
<tr>
<th>Case</th>
<th>Organisation and unit</th>
<th>Pu/Pr</th>
<th>Work process</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Finance Department at Helsinki University</td>
<td>Pu</td>
<td>Invoicing</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>Labour administration under the Ministry of Labour</td>
<td>Pu</td>
<td>Administrative and service tasks in labour market training</td>
<td>X</td>
<td>_</td>
</tr>
<tr>
<td>C</td>
<td>Administration of an industrial company</td>
<td>Pr</td>
<td>Salary payment process</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
case we had two or three researchers/consultants sharing the responsibility of the project with the representatives of the case organisation. I was responsible for research design, data collection, data analysis and reporting of the results of the selected case studies with the assistance of other team members. My role could be characterised as an action researcher (Argyris et al. 1985, Whyte 1991) which means close co-operation with different stakeholders in the case organisations, participation with and contribution to the outcome. I was conducting action research as a game facilitator and a process consultant in the reported case studies, which enabled access to data, the study of processes and organisational reality in general.

The focus of this study is on three case organisations representing different organisational contexts and business areas: a finance department at Helsinki University (Case A), a labour administration under the Ministry of Labour (Case B) and an administration of an industrial company (Case C). The university and the ministry represent the public sector and service work, whereas the industrial company represents the private sector. All cases are large organisations according to the number of the personnel, which is over one thousand, and with bureaucratic or functional structures. The nature of the work was knowledge work including mainly administrative, service and expert tasks conducted in an office environment.

In the case organisations, the targets of development with the WFG were in the administrative work process: purchase and invoicing in the university administration (Case A), administrative and service tasks in the labour market training (Case B), and the salary payment process in the industrial company (Case C). The work processes were cross-functional, complex, undefined and abstract in all cases. The selected organisational case studies and work processes are summarised in Table 4. Case A is described in the Article III, Case B in Article IV, and Case C in Article V.

5.2 Research material

The participants of the WFG represented the case organisations and its cross-functional work process. The participants worked in different units, departments and hierarchical levels of the case organisations. There were both managers and operative level employees. The number of participants of the WFG were the following: 39 in Case A, 20 in Case B, and 39 in Case C. During the game day, the participants had roles as players or observers with the following distribution: 15 players and 24 observers (Case A); 8 players and 12 observers (Case B); 12 players and 27 observers (Case C). These numbers exclude the game facilitators, assistants, persons responsible for videotaping and visitors present during the game day, and not involved with the study. If those persons were calculated, the total number of participants would be 50 in Cases A and C, and 27 in Case B. The number of the
Table 5. Participants of the WFG and the project team\(^1\) in the case organisations. The members of the project team are underlined. The number of researchers/consultants in each case is presented in parentheses. N=number of the persons.

<table>
<thead>
<tr>
<th>Case</th>
<th>Participants of the WFG</th>
<th>Participants N</th>
<th>Project team N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Employees of the finance department and the information technology (IT) unit, administrative manager, representatives of one university department, chief accountant, head of the finance department, head of the IT-unit</td>
<td>39</td>
<td>3 (+3)</td>
</tr>
<tr>
<td>B</td>
<td>Employees and managers in the employment office and the training organisation, officers of the Ministry of Labour, inspectors and advisors of the labour district, training planner of the Ministry of Labour</td>
<td>20</td>
<td>7 (+2)</td>
</tr>
<tr>
<td>C</td>
<td>Salary administration personnel, personnel manager, head of the IT-department, quality manager, financial manager, workers of the factory, company nurse, union representative, head of the salary office, representatives of salary administration personnel, IT-contact person, production engineers, plant managers</td>
<td>39</td>
<td>8 (+3)</td>
</tr>
</tbody>
</table>

participants in the WFG (total number 98), and the project team, are summarised in Table 5. Background information about the participants is presented in Appendix 1.

### 5.3 Data collection methods

In this study, the multiple sources of evidence as well as triangulation of quantitative and qualitative data were used. The combination of different data types, especially qualitative and quantitative, is highly synergistic. Triangulation of evidence strengthens the grounding of theory. The results become more reliable when using many methods and information sources, and when comparing these data in the analysis phase. (Jick 1979, Patton 1987, Eisenhardt 1989, Yin 1994).

Qualitative methods are especially recognised as appropriate in understanding the nature and effects of simulation games (Wolfe & Crookall 1998). The within-case

\(^1\) Project team is responsible for planning and conducting the WFG
studies combined the following data collection methods and information sources for evaluating the participants’ experiences of the WFG and its effects and outcomes: interviews, questionnaires, video recordings, performance measures and an occupational health check. The main information source was the participants of the WFG representing different stakeholders of the case organisations, who have different interests and viewpoints (compare Burgoyne 1994). Data collection methods are presented below.

**Semi-structured interviews** were used as an information source in all case studies. The participants of the WFG were interviewed with the list of themes and open-ended questions designed for this study (Articles III, IV and V, Ruohomäki 1994, Ruohomäki et al. 1996). The individual face-to-face interviews which took about an hour were conducted at the beginning of the development project as starting interviews and after the WFG and/or after the project as follow-up interviews. In Case B, the starting interview was not needed, because the member of the research group was already familiar with the organisation and its personnel after a consulting project. Table 6 presents the interviews conducted and persons interviewed.

With the starting interviews at the beginning of the organisation development project, information was gathered about the background and actual situation of the case organisation as well as the needs and aims for organisation development. The starting interviews had questions on the following themes:

- Organisational background, like organisational structure, personnel, strategy, climate, management culture;
- Actual problems and development needs of the organisation;
- Organisational performance and well-being of personnel;
- Previous development projects and methods used, and experiences with them;
- Aims, wishes and expectations of the forthcoming development project and the WFG.

With the follow-up interviews, information was collected on the participants’ experiences with the WFG, its usefulness and effects. The follow-up interviews included the questions on themes such as (Appendix 2):

- Using of the WFG including its planning, the game day and debriefing;
- Communication and co-operation among the participants of the WFG;
- Potential effects and outcomes of the WFG;
- Evaluation of the WFG and its usefulness, advantages and shortcomings;
- Further applications and comparisons with other methods.
Table 6. The type of interviews used, the interviewed persons and their number (N). I=conducted at the end of the development project, II=conducted six months after the end of the development project, III=conducted 18 months after the end of the development project.

<table>
<thead>
<tr>
<th>Case</th>
<th>Starting interviews</th>
<th>N</th>
<th>Follow-up interviews</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Project team, managers</td>
<td>6</td>
<td>I Project team members, managers</td>
<td>6</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td>I Project team members</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>Project team members, managers, other employees,</td>
<td>9</td>
<td>I Project team members, managers</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>company nurse</td>
<td></td>
<td>II Project team members, managers, other participants,</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>company nurse</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>III Project team members, managers, other participants,</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>company nurse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of starting interviews</td>
<td>15</td>
<td>Number of follow-up interviews</td>
<td>35</td>
</tr>
</tbody>
</table>

The follow-up interviews were conducted at the end of the organisation development project with the WFG. In Case C, the follow-up interviews were conducted also six months and 18 months after the end of the development project, because, in that case, the final outcomes and goals could only be received after the planning and implementation of the new information system. The follow-up interviews had similar questions in all the case studies but were modified for the specific organisation.

Questionnaires were used in all the case studies as a relevant source of information. The questionnaires were designed for this study and tailored for each case context (Articles III, IV, V, Ruohomäki 1994, Ruohomäki et al. 1996). The questionnaires were used first before and then after the game day of the present state WFG. The questionnaires included both structured forced-choice quantitative questions and open-ended qualitative questions. The number of respondents to the questionnaires is presented in Table 7.

With the questionnaire used before the game day, data were collected on the following issues: background data on participants; personal interest and motivation for participating in the development project; participants’ knowledge of the work process and its quality; perceived problems and ideas for improvements. The participants filled in the questionnaire in the information session about two weeks before the game day. In Appendix 3 there is an example of the questionnaire used before the game day.

After the game day, data were collected with the questionnaires about the
Table 7. The number of respondents (N) to the questionnaires and the response rate (%) before and after the game day. “Total” refers to the number of participants of game day.

<table>
<thead>
<tr>
<th>Case</th>
<th>Before the game day</th>
<th>After the game day</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>37 (95%)</td>
<td>24 (62%)</td>
<td>39</td>
</tr>
<tr>
<td>B</td>
<td>15 (75%)</td>
<td>16 (80%)</td>
<td>20</td>
</tr>
<tr>
<td>C</td>
<td>32 (82%)</td>
<td>28 (72%)</td>
<td>39</td>
</tr>
</tbody>
</table>

participants’ experiences and evaluations concerning the WFG. The questionnaires included both the same questions as before the game. In addition the questions under the following themes: preparing the game day; attitudes towards the WFG; experiences in the WFG; perceived usefulness of the WFG; interaction and communication of the participants; personal learning experiences from the WFG; personal opportunities to participate in the development project; and influence the development ideas. The participants filled in the questionnaire about two weeks after the game day. In Appendix 4 there is an example of the questionnaire used after the game day.

Two researchers classified the answers to the open-ended questions into different categories for the qualitative analysis of the data from the questionnaires. There was over 80% agreement on the classification on every question. The quantitative data collected before the game day were compared with the corresponding data collected after the game day to uncover possible changes in the participants answers, potentially indicating the effects of the WFG. The frequencies of the responses were compared using the Chi-square –test (χ² –test). The same test was used when comparing possible differences between the groups of respondents (players vs. observers, project team members vs. other participants, different occupational groups).

As a follow-up study in Case C, the data concerning the implementation of the new information system and its application in daily work were gathered 18 months after the development project. The key users of the salary payment system, i.e. the salary administration personnel (n=8), answered the short questionnaire with the structured forced choice questions (scale 1-5) concerning experiences with the implementation process, and the effects of the system on salary payment.

**Performance measures** were used to describe the quality and efficiency of the work processes. Available performance data in case organisations was limited, because of the lack of suitable measures and difficulties in analysing the work
processes. The complicated work processes, which were the objects of development, were neither described nor measured in the case organisations before this study. Performance measures were tailored for each case in close co-operation with representatives of the organisation. Performance measures concerning the work process varied from case to case (e.g. errors in the case process, through-put-time, customer satisfaction). The work processes under study were so different from each other that it was not possible to find common performance measures between the case studies. Performance measures were collected both before the WFG and afterwards to study possible changes, which might indicate potential effects and outcomes of the intervention.

In the finance department of the university (Case A), the quality and efficiency of the process of handling typical invoices was evaluated in three ways. First, statistics were collected concerning the number and amount of invoices that were paid late, i.e. their handling time was over two weeks. The sample of late invoices was collected from the biggest supplier of the university ("external customer") for a period of two months at the beginning of the development project. Another similar sample of statistics was collected two years afterwards, when the development project was finished, and the new information system and new mode of operation was implemented. Second, a questionnaire was used to follow-up the actual handling process and the through-put-time of invoices. The follow-up questionnaire was attached to all the invoices in two university departments representing internal customers. The person handling the invoices marked in the questionnaire the date, her/his own code and the organisational unit. The follow-up was conducted six months after the project ended for a period of two weeks. Third, the number of work tasks in the handling process was calculated based on the documents and simulation of the work process concerning the present and the new mode of operation. (Ruohomäki 1994, Ruohomäki & Piispanen 1996).

In the labour administration (Case B, Article IV), the quality of the administrative process of labour market training was studied from the customers’ point of view. The nation-wide survey on the customers’ experiences of the services they had received in the employment offices was conducted by the Ministry of Labour (Kohtanen 1995, 1997). With the questionnaire, the job-seeking customer feedback was requested on 53 aspects of services (such as quality of received information, interaction between the customer and the customer service personnel, customers’ waiting times for service). The questionnaire also concerned labour market training, which was the focus of the WFG. The survey was conducted in the employment office of this case study both before the development project with the WFG and one year after the project ended. The results of the survey concerning the employment office case were received directly from the researcher at the Ministry
of Labour.

In the industrial company (Case C, Article V), the quality of the salary payment process was evaluated by studying the errors occurring in that process. The researchers and a factory clerk designed a questionnaire for salary payment personnel for following up on errors occurring in the salary payment process. Using the questionnaire, salary payment personnel marked down for one month all errors that occurred in the documents needed to calculate the salaries (e.g. timecard stamps, work time forms and absence forms). The number of errors in different documents was then summed up. The follow-up of errors was conducted at the beginning of the development project and after the project’s end. In order to get information about the efficiency of the salary payment process, the personnel manager of the company collected internal statistics on overtime hours of salary payment personnel and the cost of overtime to the company. The personnel manager reported the results of the statistics to the researcher both before the development project and 18 months after the project’s end.

**Occupational health checks** were used in the industrial company to obtain information on the well-being of salary administration personnel (Case C, Article V). In co-operation with the company nurse the physical and mental well-being of salary administration personnel (n=8) was evaluated by an occupational health check both before the WFG and six months after the project’s end. A standard questionnaire for occupational health check (by Unit of Occupational Health of Tampere) included questions under the following topics: amount of work, variety of work tasks, job satisfaction, physical and mental workload, job control, physical illnesses, symptoms and pains, sleep disorders and experienced state of health. Based on that questionnaire, the company nurse interviewed salary administration personnel, and shared the results with the researcher. In Cases A and B, information concerning the perceived well-being of personnel was collected only with interviews and questionnaires, because the representatives of the organisation thought that the health check was unnecessary.

**Project documents** were collected about the development and use of the WFG throughout the study. The project material was extensive, consisting of hundreds of pages of project documents over many years due to the intensity and duration of the development of the WFG and the organisational projects in which it has been used. The written documents were collected throughout the development project and the use of the WFG in the case study organisations. The documents consisted of research and project plans, contracts, project reports, meeting memos of project teams, and field notes of researchers. The documents consisted of the materials collected when designing and using the WFG in the case study organisations, including descriptions of the organisation’s strategies and structures, its work processes and personnel. In the
examined organisations the following documents were used: work flow chart of the example work process, documents concerning the example work process, manuscript for the game day, list of the participants and their roles, drawing of the game setting, list of questions for the observers, and an action plan for further development work (what actions will be done, by whom, and when).

As the follow-up of the development project with the WFG, the project team checked how the development activities were conducted, how the improvement ideas were implemented compared to the action plan, and how the goals of the project were achieved. In Case A, the evaluation meeting was conducted eight months after the project’s end. In Cases B and C, the evaluation was conducted in a closing meeting at the end of the project. In the closing meeting the representatives of the project team had an oral presentation on the results and outcomes of the development project with the WFG. The transparencies of the presentation and video recordings were used as documents of the meetings.

In Cases B and C, the organisation members of the project team prepared their presentation for the closing meeting by answering together the list of questions under the following topics (Ruohomäki et al. 1996):

- Achievement of the aims of the project and the WFG;
- Results gained and development activities conducted;
- Role and usefulness of the WFG in the development project;
- Needed resources vs. outcomes of the WFG project;
- Future plans for applying the WFG.

In the Case B, another follow-up was conducted six months after the project’s end. The project team checked the implementation of the development activities based on the action plan, and answered individually the same questions as in the first follow-up. The list of questions was mailed to the project team, who mailed their answers to the researcher.

**Video recordings** were used for documentation (Laws & Barber 1989, Suchman & Trigg 1991) during the game days in all the case studies, and during the closing meeting of the development project in Cases B and C. The participants were asked beforehand for permission to videotape and they all agreed. In this study, the videotaped material was used to complement the information received from project documents, the questionnaires and the interviews, and to support their analysis. In Case A, the video document was used to recall afterwards what happened during the game day and to promote discussion about an action plan. In Case C, the video document was later used as training material for new employees.
6 SIMULATION GAME CALLED THE WORK FLOW GAME (WFG)

This chapter describes the background of the WFG dealing with the research questions, “Why and how has the simulation game been developed?” The WFG as an integrative method is also described as well as the use of the WFG as part of organisation development. Finally, the role of the game facilitator is illustrated. The chapter is based on the Articles I-V with some further elaboration, theoretical expansion and literature comparisons.

6.1 Background and development of the WFG

The development of the WFG was a kind of probing and learning process: it was developed by probing with the first versions in the organisation development cases, then, learning from those experiences in order to develop the method further (compare Lynn et al. 1996, Pankakoski 1998). Through the accumulation of knowledge and experiences over the years the WFG as a method progressed from single cases to a handbook and dissemination. The development and progress of the WFG can be illustrated as four waves (Figure 4, modified from Teikari et al. 1995). The lifecycle of the WFG is next described from my viewpoint as the researcher and the developer of the WFG.

Preliminary studies and the first game experiments. My first experiences of using simulations were connected to the psychological personnel assessment when I worked as an assistant in the Finnish Institute of Occupational Health. I applied
simulated work situations and group tasks as well as a car driving simulator as part of the personnel assessment to some specific jobs. In that context, I found simulations to be useful.

As a researcher I faced the difficulties of analysing human mental processes in field conditions, when I studied customer service employees and their computer-supported work in an insurance company. I developed a research strategy where simulated customer service situations were videotaped and the thinking aloud – technique (Ericsson & Simon 1984) was used to analyse the employees’ work activity and cognitive processes in a real work context (Ruohomäki 1991, Ruohomäki & Vartiainen 1991). That idea of simulating work tasks and thinking aloud proved to be useful when I later started to study and develop simulation games in the Laboratory of Work Psychology and Leadership in Helsinki University of Technology (HUT). The challenges of analysing mental processes at work from the psychological point of view were realised (Vartiainen & Ruohomäki 1992, 1993, Meijer et al. 1993) which raised the question of how to develop that kind of work.

I studied the possibilities of using simulation games in managing organisation change under the project called “Practical tools and methods for a learning organisation” in 1992-1993, which aimed at developing tools and methods for practical purposes. At that time simulation games were a new research area in Finland, so we started the pioneering work with literature surveys and preliminary conceptualisations (Ruohomäki 1992, Ruohomäki & Vartiainen 1992, Vartiainen & Ruohomäki 1994, Ruohomäki 1995a). We also organised a series of seminars for researchers and practitioners who were interested in the topic. There I met the senior consultants from the Finnish Institute of Public Management (HAUS), who had used some kind of role-plays for participatory system design (TOTO-model by Piispanen & Pallas 1991). The idea was born to develop together a simulation game for work process improvement. In close co-operation we carried out a one-year development project at University of Helsinki, which concerned the development of the administrative work process with the simulation game. The consultants of HAUS were responsible for consulting, while as a researcher I was responsible for documenting the project, describing the method and studying the participants’ experiences of it. In this project, the simulation game was named “Työnkulkipeli” (Work Flow Game, WFG in English), its use and the participants’ experiences were studied for the first time (Ruohomäki 1993). I reported the elaborated results with theoretical implications for my licenciate thesis (Ruohomäki 1994) and in English as an article (Ruohomäki 1995b). The method was then used in the consulting assignments of HAUS in public administration.

**Method development and applications.** Based on the promising first experiences
of the WFG, there was a fast growing interest and need to use the method among researchers, consultants and representatives of companies. However, at that time it was difficult to answer the needs of the market, because the WFG was not yet formalised as a method, and there were only a few persons who had experience and methodological knowledge of the WFG. We therefore decided to further develop the WFG and formalise it as a method for work process improvement aiming to produce it in the form of handbook (Ruohomäki & Piispanen 1994).

The WFG was further developed, tested and commercialised in co-operation with the Laboratory of Work Psychology and Leadership at Helsinki University of Technology and HAUS as part of the Finnish National Productivity Programme in the project called Productive Office (Prooffice) 1994-1995. As a background of the project was the notion that white-collar productivity (including administrative, office and expert work) has not has not shown appreciable improvement in spite of increasing investments in information and communication technology in offices (Davis 1991, the “productivity paradox” by Landauer 1995). Despite problems in productivity and human well-being issues, much needed attention had not been paid to development activities in administrative and office work. The limits of existing tools and methods could also be investigated.

A multidisciplinary team of researchers of the Prooffice project presented the fields of psychology, adult education, industrial management and business administration. The approach was pragmatic: the purpose was to develop new methods for analysing and developing administrative and office work focusing on the WFG. Principles or criteria for the WFG were defined as the following ones: focus on work processes and operative level, employee participation, bottom-up approach, practical usability and usefulness of the method. We also had an extensive programme for the spreading of knowledge. We formed a cluster of five pilot organisations applying the WFG in their own organisation. The method development and its testing were carried out in the cluster that provided opportunities for a rich experience in using the WFG in different contexts. The researchers’ role was to facilitate and promote the project and to apply the WFG in organisations.

The process of formalising the WFG method was an intensive and demanding project. We formalised the seven phases of using the present state WFG as a phase model, which was used as a basis in the organisation cluster. When implementing the WFG in pilot organisations we gained a common understanding of the methodological core of the WFG, while the pilot organisations received training and consultation to use the WFG. We produced training material for the pilot organisations and asked for feedback on the material, which worked as draft versions for the handbook. The simulation games carried out during the cluster served as model projects for later use of the WFG. The outcome of the method development,
i.e. the description of the WFG and how to use it, was published first in Finnish (Piispanen & Ruohomäki 1995) and later in English as articles (Piispanen et al. 1996, Ruohomäki et al. 1996). The results of the organisation cluster were summarised as the final project report (Teikari et al. 1995).

The central goal of the Proffice project was to produce a handbook of the WFG. The practical-oriented handbook was meant for the game facilitators and project teams to plan and implement the WFG in different kinds of organisations (Piispanen et al. 1996, 1998). When we wrote the handbook, the WFG had been tested in 15 Finnish organisations. Ten of those games had been documented and used as source material for the handbook. The structure of the organisation cluster, our own experiences as game facilitators and documented best practices formed the basic material. The handbook consists of three parts (Appendix 5). The first part presents an introduction to the WFG. The second part presents a detailed and practical guide for planning and implementing the method including many practical examples and learning points. The third part consists of practical tools to support the use of the WFG, like data collection forms, work calendar, checklists, evaluation form and examples from the previous games. The handbook was based on the idea of self-directed learning and organisation development. The handbook presents the WFG so that people with experience from organisation development can apply the WFG independently. Enclosed with the handbook is a participants’ guide, which can be copied as instructions for all the participants of the game day. We have also produced a video programme to introduce the WFG.

Dissemination of the WFG. The dissemination of the WFG for Finnish work organisations continued as a training programme for game facilitators in the Simnet project of HUT under the Finnish National Productivity Programme 1996-1999. During the Simnet project, 52 game facilitators were trained in 31 different organisations. The structure and content of the training programme was very similar to the organisation cluster in the Proffice project. The difference was that only the game facilitators participated in the training days instead of the whole project team from the company, and that the game facilitators were responsible for carrying out their development processes in their organisations without researchers or consultants. Following the principles of action learning to build a training programme for real life problems and development projects (e.g. Margerisor 1994), the training days and development work in organisations were linked together according to the phases of the WFG method. During the programme, the participants learned to use the WFG independently in their organisation. In the Simnet project, I did not participate in a direct training programme; instead, my contribution concerned the training material that formed the learning basis of the WFG. The handbook, the video programme, project reports, a collection of articles and a set
of transparencies, in which I have been one of the authors, were intensively used during the whole training programme. The results concerning the dissemination of the WFG have been reported as a project report and as a dissertation (Pankakoski et al. 1998, Pankakoski 1998).

International interest increased in the WFG based on conference presentations and the first publications. The WFG was recognised as an innovative method, and I was invited as a representative of HUT to the “European Continuous Improvement Circle” (ECIC-project) within the Innovation Programme of the European Commission 1997-1999. The purpose of the ECIC was to offer methodologies for improvement and innovations developed for the European arena. The ECIC-toolkit is a collection of different methods, models and approaches, which would help organisations support a continuous improvement process. The ECIC-toolkit is produced as manuals and guidelines on how to use these methods as well as a CD-ROM and a video. My contribution concerned writing project reports and producing material about the simulation games, including the WFG, for the CD-ROM, video programme and www-pages of the ECIC-project. As a result of the ECIC-project, the handbook of the WFG was translated into English, the method was demonstrated to the project partners, and the WFG was accepted for international dissemination (ECIC, Final Report 1999). The partners of the ECIC considered the WFG as a novel, inspiring and innovative method. However, the partners’ expectations about its possible usefulness varied from country to country. For example, the Swedish and the Austrian partners thought that the simulation games might be useful in their business context, whereas the Spanish partner found it too advanced within the context of Spanish culture. It was also realised that work process improvement may not (yet) be so common in other European countries as it is in the Nordic countries (Ruohomäki 1999).

**Evaluation of the WFG.** During the Proffice project and Simnet project the consulting work with the pilot organisations focused on the game facilitators’ points of view. However, I become more and more interested in the viewpoints of other stakeholders in the organisation. For example, how the employees and managers would evaluate the WFG and its usefulness. I found that attitudes, perceptions and experiences of different organisational members should be carefully considered when planning and implementing the WFG. Different viewpoints of organisation members seemed to be relevant to the success and effects of the WFG and the organisation development effort as well. Therefore, data was collected on the participants’ experiences of the WFG in the organisations. Afterwards I continued to collect follow-up data on the participants’ experiences and evaluations on the WFG. I focused on the research area concerning the evaluating of the WFG and its effects and outcomes in an organisation. The evaluation of the WFG forms a
synthesis of findings over a number of years. The evaluation concerns deepening and expanding the theoretical connections of the WFG with literature comparisons, and reporting the results in academic arenas, which is the purpose of this dissertation.

6.2 Description of the WFG

The WFG is a tailored, action-oriented simulation game. According to the definitions of simulation games, the WFG combines the features of a simulation (incorporation of critical features of reality) with those of a game (participants, roles, rules, cooperation). The WFG is based on a simplified model of the real work process, which is simulated in accelerated time during the game day. The WFG is based on human interaction, and communication between participants. It is man-based instead of computer-based. The participants have their own professional roles and tasks, and they simulate their real work activities together, which separates the WFG from role-plays. (Ruohomäki 1994).

The development and design of the WFG has been influenced by the tradition of designing simulation/games referring to stepwise, participatory process and communication character (Duke 1974, Greenblat & Duke 1981). As a type of simulation game, the WFG resembles social-process simulations characterised by

Table 8. The design characteristics of the WFG.

<table>
<thead>
<tr>
<th>Object of simulation</th>
<th>The work process: a typical example case that has actually occurred.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>All the employees who have been involved in the work process, including the customer, supplier and other stakeholders.</td>
</tr>
<tr>
<td>Roles</td>
<td>Players and observers in their own work roles, game facilitator and messenger, other auxiliary roles as needed.</td>
</tr>
<tr>
<td>Game setting</td>
<td>Round table setting, players in the inner circle, observers in the outer one.</td>
</tr>
<tr>
<td>Course of events</td>
<td>According to a script describing the flow of the work process divided into acts.</td>
</tr>
<tr>
<td>Game rules</td>
<td>Common agreed rules.</td>
</tr>
<tr>
<td>Game material</td>
<td>Documents and tools used during the real work process.</td>
</tr>
<tr>
<td>Directing of the game</td>
<td>Facilitator acts according to the script and follows game rules. Clock and gong also used</td>
</tr>
<tr>
<td>Documentation</td>
<td>Videotaping, recording, observations, notes.</td>
</tr>
</tbody>
</table>
Gredler (1992). In order to identify the WFG, its design characteristics are summarised in Table 8.

The WFG has the following underlying features, which are relevant in its use:

- It is tailor-made for the specific needs and context of each organisation.
- Process approach, focus on work process improvement.
- Participatory approach, management and personnel plan the WFG together.
- The goals of the WFG are made public, there is no hidden agenda.
- It is based on co-operation, not competition.
- Employees, managers and customers participate in the game day.
- Participation is voluntary, nobody is forced to participate.

6.3 The WFG as an integrative method for organisation development

The WFG is a method for participatory improvement of work processes in an organisation. The WFG is meant to be used as part of organisation development in order to improve the efficiency and quality of work as well as human well-being. The tradition of organisation development and its underpinning values (French &

![Diagram](image)

Figure 5. The WFG as an integrative method.
Bell 1999) form the basis of using the WFG. The WFG integrates the essential system elements that are relevant in organisation development (Figure 5): work process improvement, use of information technology, participation and learning of personnel. These theoretical principles of the WFG are described next.

The WFG is used for developing cross-functional work processes (cf. Harrington 1991, BPR by Hammer & Champy 1993) and actions that are temporally interconnected and embedded in the organisation context. The work process cuts cross-functionally through the whole organisation and involves different organisation levels – from top management to the individual employees at the operative level. The aim of the WFG is to analyse and develop work processes as a whole, not just individual tasks. Here, the term work process is used according to Harrington (1991, p. 9) as “any activity or group of activities that takes an input, adds value to it, and provides an output to an internal or external customer. Processes use an organisation’s resources to provide definitive results.” With the WFG the material and information flows are studied in space and time. The idea of the WFG is to study cross-functional work processes by using a real case example from the customer’s point of view. The work process is either related to an organisation support process (e.g. salary payment process) or to a core process in the organisation (e.g. customer service process); it can also be inter-organisational between two or more organisations (e.g. between the buyer and the supplier of the product or service) (Figure 6). An example of the work process is selected to represent the entire work process. It is like a sample of the work process, including its systemic parts, like the tasks and roles of personnel, information systems and documents applied. The example work process helps to create a sufficiently concrete and visual description, i.e. a simplified model, of the work process.

Figure 6. Work processes as objects of the WFG. A = intra-organisational process, B = inter-organisational process.
The WFG has been inspired by the Scandinavian tradition of the participatory design of information systems (e.g. Ehn et al. 1990, Eriksson 1990). Following the definition by Eriksson (1990), information system consists of data, computers and equipment, and the operating instructions; the purpose is to satisfy users’ information and data needs in an organised way. Employees are regarded as subjects who interpret data and give meaning to information, and use information system to control their work (Eriksson 1990). From the sociotechnical perspective (Pasmore 1988), the WFG considers both the social system (people) and the technical system (such as information systems). The WFG aims to provide opportunities to analyse the practical work tasks of employees, and, if they use information systems, how they use them to produce services or other outputs to customers. The information system is not a necessary element, but usually it is used as a tool in knowledge work, and therefore it is often included in the WFG. The purpose is to study the functioning of the present information systems by the participants of the WFG. For example, problems in the quality of the information system or problems in using it may be identified. The WFG can also be used when planning and implementing a new information system into an organisation. For example, the WFG may provide practical information about the users’ needs and requirements. Additionally, the WFG may offer opportunities for interaction and communication between the users and the professionals (like systems analysts, designers, consultants) associated with information systems.

The WFG has been influenced by participatory approaches like OD (French & Bell 1999) and the sociotechnical systems perspective (Pasmore 1988). Employee participation (cf. Strauss 1998, Wilpert 1998) is a central principle of the WFG. Generally, the WFG can be used under different development traditions that are based on the participatory approach. The WFG also contains features from action research (Argyris et al. 1985, Whyte 1991), where the members of the organisation are involved in the development work and solving the practical problems of their day-to-day work. The organisation development with the WFG is carried out in a participatory way so that the representatives of various occupational groups and hierarchical levels of the organisation are involved in the analysis and development of the work process. During the game day, the participation expands to dozens of organisation members. In the WFG, participants are encouraged to express improvement ideas which will be implemented and then form a basis for a new way of working. This way participation in the WFG allows employees to influence their work and working conditions.

The WFG aims to provide possibilities for the participants to share knowledge and learn together when they are involved in simulation activities and debriefing. The game day creates a learning environment for the participants (cf. VanSickle 1978,
Kauppi 1993). After the game day, the purpose is to continue with concrete development activities within a real work context. The application of the WFG follows the phases of experiential learning by Kolb (1984):

- briefing (planning and introduction to the WFG),
- concrete experience (playing the WFG on the game day),
- reflection and abstract conceptualisation of experiences (debriefing discussions after the simulation),
- active experimentation of learned issues (improvement ideas and development activities after the simulation).

From the perspective of organisation learning (Senge 1990, Senge & Fulmer 1993, Nonaka & Takeuchi 1995, Argyris & Schöen 1996) the challenge of the WFG is to help organisation members to share and expand their knowledge of organisation reality, as well as to generate and change ideas about the future.

### 6.4 WFG in the organisation developmental cycle

The following chapters, 6.4-6.6, answer the research question “When and why use the WFG for work process improvement?” by describing the main points and phases of using the method as part of organisation development.

Change process in organisations can be described as a developmental cycle (Vartiainen 1991, 1994, 1998). The organisation development projects with the WFG may vary significantly in their scale and scope, from a few months to up to a one-year project. The organisation is seen as a “temporal whole” when studying its current situation and possible visions about its future state. The WFG can be utilised at different phases of the developmental cycle to promote organisational change (Ruohomäki 1994, Vartiainen & Ruohomäki 1994, Figure 7).

At the beginning of the development process, “the present state WFG” can be used to visualise and analyse the present situation and start the change process. The WFG is proved to be useful to get a shared overview of the present state, to identify problems and need for change, and in generating improvement ideas (Articles III-V, Ruohomäki 1994). Most of the reported applications of the WFG concern its use for the present state simulation, which represents the basic version of the method. The handbook (Piispanen et al. 1996, 1998) also describes the WFG from the viewpoint of current status.

Later on, new modes of operation based on visions and strategic frames can be tested with “the vision WFG”. The WFG is found to be useful in demonstrating,
testing and evaluating future modes of working before their implementation in practice. The new ways of working are based on the improvement ideas presented by the participants as a result of the present state game. The vision game also serves as a training possibility for the participants when anticipating and orienting to the future. During the same development project, first “the present state WFG”, and later “the vision WFG” can be used for promoting large-scale organisation development. (Articles III and V, Ruohomäki 1994).

Methods for organisation development, like the WFG, should not be used rigidly, but rather adapted to the specific situation, which is pointed out in literature (e.g. Werr et al. 1997, French & Bell 1999). The chief characteristic of the WFG is that it is tailored to the specific needs and aims of the organisation - it can therefore be used in a flexible way, and every application is unique. The WFG has been successfully applied in the following situations in organisations (Articles III-V, Ruohomäki 1994, 1995, Piispanen et al.1998, Pankakoski 1998):

- Problems in current work processes and operations;
- Customer dissatisfaction with the quality of service;
- Problems in co-operation, communication or the division of work;
- Planning and implementation of a new information system;
- Organisational change towards a process-based or team-based organisation.

The context and general situation in the organisation can be seen as critical factors that can partly either further or hinder the development process with the WFG. The participatory development tradition is favourable in using the WFG. Commonly
reported themes in organisation development (e.g. Beer & Walton 1987, French & Bell 1999) and in management literature (e.g. Kotter 1995) are sufficient human resources and time as well as management support, which are essential factors for the successful use of the WFG. Motivated personnel and an enthusiastic attitude help introduce a new method. In contrast, many parallel change processes competing for the same limited resources can prevent the organisation having a meaningful use of the WFG. Negative aspects of organisational conflict or an inflamed relationship between management and personnel make the situation unfavourable for using the method. The WFG is not suitable for the downsizing of organisations nor cutting down on personnel. It is worth noting that the WFG is not a suitable method in the following situations (Piispanen et al. 1996, 1998, Pankakoski 1998):

- Insufficient time and/or resources;
- Lack of management commitment and support;
- Several simultaneous changes that strain personnel;
- Severe conflict situations;
- Reduction in personnel;
- Lack of competence of the game facilitator;
- Game facilitator’s unclear position for development.

6.5 The present state WFG: identifying development needs

The WFG is a structured method having step-by-step phases like other modern methods for business or work process improvement (e.g. Werr et al. 1997). The phase model of the WFG consists of planning, the game day and development activities. Seven phases of the WFG are presented in the Figure 8. Phases 1-4 form the planning of the game day, Phase 5 is the actual simulation of the work process during the game day, and Phases 6-7 concern development activities after the game day. Main phases are next described, more detailed instructions are presented in the handbook (Piispanen et al. 1996, 1998).

The planning and implementing of the WFG usually takes 2-3 months depending on the size and complexity of the work process and the number of participants. Based on the reported case studies so far, the project team usually requires some 20-50 man days and the game facilitator needs some 10-30 workdays to plan and implement the WFG.

The planning of the WFG is carried out by a project team of 4-8 persons working together with the game facilitator. The project team is formed based on a cross-
functional work process and having different professional competencies. At the beginning, common goals for the development project are set, and one work process is selected as the object of development. During goal setting, different viewpoints and development needs of employees, managers, customers and other interest groups are analysed. Criteria for selecting the work process include: process is typical or it causes many problems; importance of the process for earning and costs; needs of an internal or external customer; process is highly connected and extends across organisational boundaries.

The work process with the example case is analysed and described in order to form the simplified model of the real work process. The selected work process is described by using, for instance, the wall chart technique (Saaren-Seppälä 1983) and presented as a work flow chart. The aim is to form a general picture of the work process, its customers, the services and products. It is essential to understand the process at a general level in order to see the details brought up by the case example in the context.

In the WFG the actual simulation on the game day is based on a real, previous example case representing the work process. It is possible to reach an understanding of the structure and functioning of the work organisation from a single case, providing that all the important characteristics of the system are represented in the example work process (Gummesson 1993). One or sometimes several example work processes are selected. The criteria may include: a typical case example that represents the entire work process; an exception that could lead the way to making important future innovations; or a case that represents the goals of the development project.
Examining the example work process and collecting the material for the game day starts with the “field round”: the progress of the case, i.e. the work flow, is followed by “walking through” the different departments and units of the organisation. Who has been involved in the case and what he/she has done is studied at the same. All those employees who have been involved are interviewed about their tasks, tools used and equipment, and outcomes. They are also asked about possible problems in their work. Documents they have used and produced concerning the example case are collected for the game day. Based on the material of the “field round”, a manuscript is prepared for the simulation on the game day. Practical preparation of the game day includes inviting and informing the participants, planning the seating order in the game setting, and preparing game material.

**During the game day**, the example work process is simulated. The tasks of the work process are followed step-by-step, from one person and workstation to the next, thus, everyone can see all the actions and their consequences at the same time. Some 20-50 persons participate in the game day. The participants have roles as players and observers. The participants are seated in a circle, which form the game setting. The players sit in the inner circle and the observers in the outer circle of the game setting (Figure 9).

The players are those employees, managers and customers who have been involved in the case example in reality. The players have real occupational roles and tasks in the game. The tasks that need social interaction like service situations and telephone calls are performed as direct conversation between the players. The players handle the original papers and documents, and use the same equipment, like computers and telephones, as was used as in the performance of the actual tasks. Each player describes his/her tasks one at a time by thinking aloud about (thinking aloud – technique by Ericsson & Simon 1984):

- What they do and how they perform their tasks;
- What is their work based on (e.g. laws, rules);
- What equipment and documents they use;
- What kind of problems are faced when performing tasks;
- Who the next person is in the work chain that they contact or send documents to.

The observers’ task is to follow the game events with a list of questions. The observers are usually representatives of management, specialists of information technology, union representatives and other co-workers. They make notes about observed problems like unnecessary repetition and hindrances in using a certain information system as well as ideas for improvement. One or two persons act as messenger moving in the middle of the game setting. His/her task is to transfer
Figure 9. The game setting of the WFG.

paper documents and/or computer printouts from one work unit to the next.

**Debriefing** after the simulation is an integral part of the WFG. The purpose of the debriefing is to acquire insights about the meanings of simulation/gaming experiences and to learn from those experiences (Lederman 1992, Lederman & Kato 1995). During the debriefing the participants’ experiences are examined, discussed, and turned into learning (Miller 1987, Baker et al. 1997). In the WFG, in addition to the learning process, the aim of debriefing is to evaluate the simulated work process and perceived problems together, and to find improvement ideas. The details that have come up during the simulation are linked with the functions of the entire organisation. The debriefing can be organised either during the game day and/or afterwards. The debriefing is organised in small group discussions, where the notes of the observers provide an outline. The outcomes of the small group discussions are presented to other groups, and the debriefing is summarised in a joint discussion with all participants. After the debriefing, the concrete action plan for implementing the ideas is prepared (what actions will be done, by whom, and when).

### 6.6 The vision WFG: demonstrating future modes of working

People can construct possible futures in their minds. People can set goals, make plans and plan actions – thus a hypothetical future is transformed into reality.
Sometimes predictions can be self-fulfilling prophecies. Research has shown that when people describe future actions, it increases the likelihood that predicted actions will occur (e.g. Locke & Latham 1990). It is proposed that mental simulations of future events link thoughts and actions by increasing the expectancy that the imagined event will occur, by providing concrete plans, and by increasing levels of motivation (Taylor & Schneider 1989, Ross & Newby-Clark 1998). The central idea of Duke (1974) was that simulation gaming is a form of communication, a language which is oriented to the future, thus offering possibilities to deal with many futures and seeking consensus on policy questions by groups in interactive processes.

Simulation games can be used for exploring future situations in organisations, which are otherwise inaccessible. Simulation of alternative ways of working in future may concretise abstract visions and images about the future, and thus help future orientation and decision-making. The vision WFG is suggested to be used for demonstrating, testing and evaluating future modes of working before implementation of organisational change in practice. The purpose is to demonstrate and evaluate the new way of working in an “as if” –situation. For the participants, it serves as a common forum for discussion, “what if…?”. The aim is to form a common view and shared understanding of the new operational mode and how it works as a whole. It is essential that the future mode is a draft and the participants can still influence it. (Article III and V, Ruohomäki 1994).

The vision WFG resembles the idea of future workshop or scenario workshop (e.g. Meristö 1991), although the WFG is more structured and focused on the specific organisation context and aims.

The use of the vision WFG follows phases similar to the present state WFG, but is oriented towards the future mode of operation. The phases in using the vision WFG are the following:

- Planning future mode of operation.
- Describing the future work process and the case example.
- Simulation of the case work process in the game day.
- Debriefing and evaluation after the game.
- Development activities and the implementation of the new mode of operation.

The planning of the future mode of operation is usually based on both the strategic frame presented by management, and on the improvement ideas presented by the participants of the present state WFG. The planning may concern different relevant systemic elements of the organisation, such as division of work, work process or use of information systems. The project team, consisting of different organisation
members, arrange the planning with the help of the game facilitator. The action plan written after the present state WFG usually acts as a basis for their work.

The same work process that was analysed and simulated in the present state WFG are usually selected for the vision WFG as well. It is therefore possible to make comparisons between the present and future way of working. The focus is on the work process as a whole and the main solutions concerning division of work. Specific work descriptions of individual employees can be left open. The main tasks of the example work process including tools and equipment needed are described for the simulation. Attention should be paid to issues that make the future process different from the present one. The model of the future process is described on a more general level than the present process for the present state WFG, because there may still be many open questions. The details are included if they are relevant to future decision making about alternative solutions. The manuscript for the simulation and the preparations for the game day are conducted in a way similar to that presented for the present state WFG (phases 2-7, Figure 8).

On the game day, the example of the future work process is simulated similarly to the present state. The same persons who were involved in the present state WFG participate as players and observers on the game day. In case of a new division of work, the players can also be different persons acting as representatives of those persons who will in future work with the simulated tasks. In the case of a team-based working model a whole team instead of individuals can take the role of players and be seated in the inner circle of the game setting together. The tasks of the future work process are followed step-by-step and the players describe their working by thinking aloud. New tools and equipment, like computer systems, can be used and tested if they are available. The messenger sends documents or their prototypes from one person to the other. The observers’ task is to evaluate the new way of working.

In the debriefing discussion the participants share their experiences, and evaluate critically the new operational mode from different viewpoints. The notes of the observers provide an outline for the discussions. If the participants consider that the new operational mode serves its purpose and it receives appreciation within the organisation, its implementation can start. Sometimes modifications and more detailed planning are needed before implementation.

6.7 Role of the game facilitator

The role of the game facilitator is essential in planning and implementing the WFG as is the case with other types of simulation games. The game facilitator’s
knowledge, skills and attitude have an influence on the success of the simulation game and achieving its targets (Greenblat & Duke 1981).

Instead of expert or doctor, the role of the game facilitator of the WFG resembles that of the process consultant, who helps the client perceive, understand and act upon the process events that occur in the client’s environment (Schein 1987). It is essential in organisation development (French & Bell 1999) and in process consultation (Schein 1987) to identify the levels of the problems in an organisational system where the intervention like the WFG is used. It is central to the role of the game facilitator to balance the interests of different stakeholders in the organisation. Concerning the psycho-dynamics of the relationship between the client organisation and the game facilitator, the process consultation principles are followed with respect of clients as in being helpful, dealing with the reality and sharing the problem, but remembering that the client owns the problems and their solutions (Schein 1997). The psychological atmosphere in the WFG is meant to be safe, supportive, open and co-operative, which are essential psychological factors of promoting the human learning process (Knowles 1984) and creating organisational innovations (West & Altink 1996, West 2000).

The game facilitator of the WFG can be an external or internal consultant, change agent or researcher. An external facilitator has more clearly the non-directive role of a process consultant, bringing new tools, concepts and models to the process. If the external consultant is too directive, there is a danger that the participants adopt a passive role and become too dependent on the game facilitator and may not take responsibility for development activities after the WFG. The role of the internal game facilitator may be more directive, because he/she may be responsible for the organisation development project at the same time. For the internal game facilitator it is important to have a legitimate position for organisation development and enough resources for that work. (Piispanen et al. 1998).

The game facilitator is involved in all the phases of the WFG, i.e. in planning, the game day and debriefing. The task of the game facilitator is to act as a supporting person, who helps the members of the organisation to study the work process and work practices as well as to find possibilities for improvements. It is the responsibility of the game facilitator to estimate when the WFG can be implemented in the organisation and whether it has the capability to deal with the themes and needs for change that may come up during the WFG. The game facilitator is responsible for informing and preparing the participants, and for creating a trustful and positive atmosphere so that the participants can join the game day without hesitation. If personnel feel the WFG too threatening or that it has hidden agendas, the facilitator must know when to stop in time. During the simulation, the game facilitator ensures that the process goes on according to the manuscript and game
rules, and the focus remains on the work process as a whole, neither on individual
tasks nor personalities. After the simulation, the game facilitator promotes
constructive and relevant discussions focusing on the aims of the WFG. The role
of the game facilitator diminishes after the debriefing, when the project team and
managers take responsibility for the further development activities according to
the action plan. However, detailed instructions for the game facilitators are not
presented here, because they are reported in the handbook (Piispanen et al. 1998).
The role of the game facilitator goes far beyond individual counselling or group
facilitation, which are typical roles of work and organisation psychologists. The
diagnosis of whom to work with, what to focus on, and whose interest to consider
in planning the next steps in an organisational system may be very complex (cf.
Schein 1997). The use of the WFG is guided by the game facilitators’ knowledge
and experience. The game facilitator should have former experience and knowledge
needed for organisation development. A good game facilitator for the WFG may
have the capabilities of a process consultant as well as facilitator of adult learning.
Using the WFG requires similar change and project management skills as any
organisation development project independently of the methods used. Some basic
consulting skills – especially interpersonal skills – are useful as a basis.

7 DESCRIPTION OF THE CASE STUDIES

The chapter deepens understanding of the WFG and its use by answering the research
question “How to carry out the WFG in different organisations”. The chapter
describes the use of the WFG in different organisations following the phases of the
WFG described in the Chapters 6.5 and 6.6 (Table 9)

7.1 Case A, university administration

“In our organisation, the WFG offered a unique opportunity to discuss and to
plan together new ways of working”. (Manager in the interview, Case A)

Organisational context and background. The case study deals with the
administration of Helsinki University, which is the largest and the oldest university
in Finland. The administration and its functions have evolved over decades as
hierarchical, rigid and bureaucratic structures. Because of a financial recession at
the beginning of the 1990s, the university administration faced pressure to reduce
costs and to seek greater flexibility and efficiency in redesigning organisationa
structures. At the same time, the faculties and departments needed more services
Table 9. Organisation development project with the WFG in the case studies.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
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<tr>
<td>Describing the work process and its example</td>
<td>April</td>
<td>February-April</td>
<td>March-April</td>
</tr>
<tr>
<td>Preparing the game day</td>
<td>May</td>
<td>April-May</td>
<td>May</td>
</tr>
<tr>
<td>Game day of the present state WFG and debriefing</td>
<td>June</td>
<td>May</td>
<td>June</td>
</tr>
<tr>
<td>Development activities and planning of the new mode of operation.</td>
<td>June-October</td>
<td>June-December</td>
<td>June-October</td>
</tr>
<tr>
<td>Describing the new work process and its example.</td>
<td>October-November</td>
<td>—</td>
<td>October-November</td>
</tr>
<tr>
<td>Game day of the vision WFG and debriefing</td>
<td>November</td>
<td>—</td>
<td>November</td>
</tr>
<tr>
<td>Closing of the project</td>
<td>December 1992</td>
<td>December 1995</td>
<td>December 1995</td>
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and timely information from the university administration. The central administration, managed by the administrative director, was divided into a financial department, technical department and administrative department as well as into a unit of information technology (IT-unit), an information unit and a planning unit. The total number of personnel was over 200 in the central administration. Some discussions concerned possibilities for decentralisation of the university administration out to faculties.

The focus of the study was on the financial department and accounting. There were over 30 employees who were responsible for accounting, bookkeeping, paying, invoicing, reporting and other financial tasks. The employees handled over 100,000 invoices a year. They had a quantitative work overload and overtime was normal. Tasks were mainly simple and repetitive operative routines. Employee opportunity for planning or controlling tasks was limited. Problems of well-being with the personnel as well as a lack of communication and co-operation were recognised in the survey, which was conducted by an outside consultant. In additional to that, information systems and other tools were old and did not support working. For
example, invoices were usually handled manually with many errors and delays. There was a need for implementation of a new information system for financial administration. Before the new information system could be implemented it was necessary to analyse and improve work processes, which were complicated and undefined. The representatives of the IT-unit had tried to describe the central work processes with the technical flow charts, but they were neither understood nor accepted by the employees. The initiative for the organisation development project with the WFG came from the head of the IT-unit.

**Starting the project.** The contract for consulting and research was written between the university administration, the Finnish Institute of Public Administration (HAUS) and the Laboratory of Work Psychology and Leadership at HUT. The organisation development project with the WFG was conducted in the finance department of the university administration for work process improvement and the creation of new organisational solutions. The aims of the project were defined together with managers and personnel as follows:

- To create a new mode of operation for the finance administration;
- To redesign job content;
- To simplify and speed up work processes;
- To promote co-operation;
- To improve customer service.

The development of work processes and the technical planning of the information system were conducted as parallel processes. The common goal was to implement the new information system within a year. The IT-unit of the university was responsible for the technical planning and implementation of the new information system. At the beginning of the project, the personnel of the finance department described their tasks and expressed their wishes for organisational development in small group discussions with the help of the consultants. They also tried to form a preliminary vision for the future mode of working, but it was not possible because there was no common understanding of the present situation.

The project team including two consultants and one researcher had the joint responsibility of planning and organising the WFG. The purpose of the present state WFG was to demonstrate the work flow in order to identify its problems and to start development activities. The purpose of the vision WFG was to test the new mode of working and use of the new information system before their implementation.

**Work process description.** The project team with the employees of the finance
administration decided that the object of development would be the process of handling a typical invoice. The process of handling invoices is governed by many detailed rules and instructions. The description of the work process was based on the employees' own experience and partly on the technical flow charts, which were simplified and elaborated in the project team.

**Describing the example work process.** The chief accountant and the head of the finance department selected as a typical example the handling process of 'an invoice concerning a computer for a researcher'. They collected background information and documents concerning the case example. They also interviewed all the employees involved in the case process. It was recognised that it was not easy for all the employees to discuss their work, and some were worried about forthcoming changes and the new information system. The material collected and documents were elaborated by the project team and a work flow description was drawn up.

**Preparing the game day.** Preparation of the manuscript for the game day was started on the basis of the interviews and process descriptions of the case example. The seating order in the game setting was planned. The information and invitation to participate in the game day were mailed to the participants. The project team organised a briefing for the personnel of the finance department and the IT-unit. The briefing concerned the WFG, the plans for organisational development and the new information system. As well, the administrative director presented visions of the university administration emphasising that there would be no requirements for personnel reduction, an important point for the participants.

**Game day of the present state WFG.** The game day took place in a large classroom at the university. As an introduction, the consultants introduced the aims and timetable of the game day, the game rules, the game setting and the work flow description. There were 15 players and 24 observers. One consultant was the game facilitator assisted by the other consultant and the researcher. In addition, there was one messenger, some visitors, and persons taking care of the videotaping. The simulation of the work process started when "the internal customer", the researcher of the university department needed a computer and ordered it. This was shown as a videotaped interview with the researcher. The supplier then delivered the computer to the university department. The handling of the invoice was simulated according to a manuscript in the same manner as the events of the real work process. The players sat in the inner circle of the game setting and performed their manual tasks. The observers followed the simulation in the outer circle of the game setting and made notes about improvement needs and ideas concerning the work process. The cross-functional group of managers from the finance department and the IT-department, called "the vision group", had to think about a strategic frame for the new mode of operation. The progress of the work process was followed with an
oversized work flow description and a big calendar on the wall. Immediately after the simulation, all the participants had the opportunity to express their feelings about the simulation and ask questions about possible unclear issues.

**Debriefing.** The debriefing, which took over two hours, was organised as small group discussions in the afternoon after the simulation. In eight groups the participants reflected on their experiences on the simulated work process and its developmental needs. They discovered many such needs and improvement ideas for the work process, which were jointly discussed and written down. The results of the small group discussions were reported for all the participants and the debriefing was summarised as a general discussion.

**Development activities and planning of the new mode of operation.** Only after the game day was it possible to create a vision for the future. “The vision group” started the planning of the new division of work and new mode of operation based on the findings of the present state game and its debriefing. “The vision group” elaborated on the idea of a team-based division of work. At a common meeting all the employees watched the videotape of the game day and started to plan the implementation of the improvement ideas. At that meeting, “the vision group” talked about the preliminary vision for the future concerning team-based working and shorter work processes. The representatives of the IT-unit prepared the implementation of the new information system. The employees started to participate in the computer training courses concerning the information system for finance administration. Discussions started about the need for a support person who would help the employees in computer use.

**Describing the new work process and its example.** Based on the preliminary vision, a draft of the new work process for handling invoices was drawn up. The description was on a general level, because there were still many open questions. When the vision game was planned, it was necessary to simplify and concretise the new mode of operation based on customer service teams, teams for special tasks and a team for support tasks. For demonstration in the vision game, the same example work process was selected which was simulated in the present state game, i.e. ‘the handling of the typical invoice concerning the computer for a researcher’, in order to see actual differences between the old and new solutions. Additionally, another example was used, i.e. ‘the handling of the invoice concerning equipment for a faculty’, in order to demonstrate that another team would handle the invoices of that faculty. The vision group prepared the manuscript and planned the game day with the help of the consultants and the researcher. In the briefing before the game day, the participants were informed about the aims of the vision game and the new mode of operation. They received the manuscript and the programme of the game day, the description of the new work process and the printed documents
from the new information system.

**Game day of the vision WFG.** The vision WFG was organised in a large classroom at the university. The administrative director opened the game day. The manager of finance administration presented the new mode of operation and introduced the new information system to the finance administration. The same players and observers as in the first game took part. This time, however, the players had group roles and worked together as teams discussing and planning how to conduct the tasks of the team. The players used the new computer in real time, which was in the middle of the game setting. The screen was visible to everybody with the overhead projector. The computer support person assisted the players if needed. One consultant facilitated the game. The other consultant and researcher had roles as “computer files”: they demonstrated the functioning of the computer by standing up when the file was active and showing the facts on the file on large paper sheets. The handling of two different invoices was simulated according to a manuscript as short acts. Between them there was time for discussion about critical points and the participants had the possibility to ask for clarification. The demonstration thus served as a training event for the new mode of working and using the information system. Progress of the work process was followed using the oversized work flow description and the big calendar on the wall. The observers evaluated the new mode of working and made notes with a list of questions. At the end of the simulation, the participants had the opportunity to express their initial feelings and reactions.

**Debriefing.** The debriefing was organised as small group discussions in the afternoon after the simulation. The purpose was to share experiences of the simulated work process and to evaluate the new mode of operation. For the discussion, the participants had the same lists of questions that the observers used during the game. The questions concerned the likelihood of reaching the goals of the project. How is the new information system working? Is the team-based division of work meaningful? Can the work process be speeded-up? Can service quality be improved? What kind of support is needed in future? The results of the small group discussions were written down and presented for everybody in a general discussion. The participants considered that the new operational mode served its purpose well, receiving wide appreciation although there were still many open questions.

**Implementing.** In a meeting in December, the focus was on the implementation of the new operational mode. The action plan and the timetable for the implementation were created. A preliminary plan was constructed for the division of work in teams. The employees needed new skills in computer use and teamwork, thus participating in computer courses and teamwork training after the project ended. The new mode of operation and new information system were implemented in March (Chapter 8.8).
7.2 Case B, labour administration

“Compared to other methods used in the labour administration, it is unique that the WFG has the customer in focus.” (Training planner in the evaluation seminar, Case B)

Organisational context and background. This case study deals with the labour administration under the Finnish Ministry of Labour and the labour market training process. Unemployment rates in Finland have been high during the last decade. The labour administration has a policy to maintain jobs in the country by preventing mass unemployment and by offering labour market training. Labour market training programs are designed for people who have been unemployed for several months. Labour administration had a bureaucratic and hierarchical structure: the Ministry of Labour decides on the weightings of the different labour fields, labour districts plan the labour market training, and the employment offices select participants for the training.

The case study was conducted in the employment office in a small town in southern Finland with 25 customer service employees and information service officials. Their job consists of service and administrative tasks. The task environment is complex and unpredictable, and customer service situations are often demanding. In that office, the average number of job-seeking customers is over 5200 a year. Employees produce services both in face-to-face contact and via computer networks. They use information and communication technology intensively. The employment offices co-operate with the training organisations which produce training courses by planning and carrying them out. The private training organisation in question is Finland’s largest adult education centre. Communication and co-operation between the employment offices and the training organisations have a central role in a fluent work process and high quality customer service. However, there was lack of communication and co-operation, and an unclear division of work between these organisations.

The employment office had earlier experience with the participatory development of work tasks. Interventions like small group discussions and surveys with feedback seminars were used with the help of a researcher. Problems were perceived with the bureaucracy of labour market training. However, at the office level, it was not possible to develop the labour market training process. Therefore interventions at the cross-functional level seemed to be fruitful. The initiative for the organisational development project with the WFG was born in discussions with the representatives from the employment office and from the training and development unit of the Ministry of Labour.

Starting the project. The research contract was written between the Ministry of
Labour and the Laboratory of Work Psychology and Leadership at HUT for the one-year organisation development project with the WFG. At the beginning of the project the steering committee and the project team were established. The project team was responsible for planning and organising the WFG in close co-operation with two researchers. The researchers organised three information sessions about the project and the WFG for different stakeholders. The project team defined its aims after long discussions as the following:

- To improve the quality of the administrative process of labour market training, for instance, by cutting unnecessary tasks and by clarifying the division of work;

- To promote employees’ interaction and co-operation within the labour administration (intra-organisational viewpoint) and between the labour administration and the training organisation (inter-organisational viewpoint).

- To improve the quality of customer service;

- To study improvement needs of the information system.

The representatives of the Ministry of Labour also wanted to gain an understanding of the WFG to use it later in their organisation. The WFG was applied to visualise the initial work process, and to increase employees’ and managers’ understanding of it. The purpose was to identify needs for improvement, and to start development activities.

**Work process description.** The project team selected the administrative process of labour market training as the object of development, because it was found to be too complicated. The administrative process of labour market training crosses borders between organisational units and operations inside the labour administration. That work process is also inter-organisational, crossing the boundaries between the labour administration and the training organisation. In the employment office, the tasks of the labour market training process consist of advising and informing customers, collecting and transferring information about courses and selecting students for training. The project team analysed and described the process on the basis of documents.

**Describing the example work process.** The representatives of the employment office selected, for the simulation, ‘a computer course for unemployed secretaries’ as an example of the administrative process of labour market training. The members of the project team “walked through” the route of the example process and interviewed the employees involved, which took several days. The example process included 67 work tasks. The actual paper and computer documents were collected (a total of 40), and copied for simulation on the game day.
Preparing the game day. The researchers, with the members of the project team, prepared the manuscript for the game day on the basis of the interviews and process descriptions of the case example. The employees involved in the case process carefully checked the manuscript, and it was modified several times. The information and invitation for the game day were mailed to the participants. The seating order in the game setting was planned. The researchers organised a briefing for the participants two weeks before the game day, and their roles as players or observers, as well as the aims and rules of the game and game setting were clarified. The participants received the descriptions of the work process and the printed manuscript with all the documents.

Game day of the present state WFG. The game day took place in a large classroom of the training organisation. Its manager bid the participants welcome. The half-day simulation was divided into three acts, and it proceeded according to a manuscript in the same manner as the events of the real work process. Eight of the 20 participants were players and 12 were observers. In addition, there was one assistant, two visitors and one video operator. Two researchers were the facilitators. Because the real customer was not available, an employee played his role. In the game setting, the players sat in the inner circle and the observers in the outer circle of the game setting. The players used the same equipment that was required to perform the actual tasks. Instead of the real information systems, baskets and wires were used to symbolise the information flows between computers.

Debriefing. The debriefing, which took two and half an hours, was organised in the afternoon after the simulation. In small group discussions, the participants reflected on their experiences on the simulated work process and its development needs. They discovered many development needs and improvement ideas for the work process, which were jointly discussed. The debriefing was summarised with the help of the researchers as a general discussion with all the participants together.

Development activities. The participants’ improvement ideas awakened during the game day were classified under different themes. The project team formulated an action plan, which functioned as a guideline for the implementation of ideas. The actualisation of the improvement ideas was partly transferred throughout the labour administration and partly by the training organisation as smaller further projects. The representatives of the labour administration and the training organisation had common meetings with the help of the researchers in order to plan common development activities. At the end of the year, the project team and the researchers had an evaluation seminar, which finished the project. The development activities continued also after the end of the project (Chapter 8.8).
7.3 Case C, administration of an industrial company

“The WFG was an historic event for our company: for the first time so many people, working in such a long work chain, were able to meet each other face-to-face at the same time. The WFG served as a kick-off to make decisions.” (Manager in the same day, Case C)

Organisational context and background. The company represents the process industry in chemistry. The company employs about 1 500 persons, about 600 of whom are office employees and 900 workers. The number of employees has increased significantly and the turnover of the organisation has doubled within the last ten years. The company is divided into different functions. The personnel is encouraged to participate in decision-making and the development of their own work. The company had a long tradition in developing production work, while the development of administrative work was a new challenge. In salary administration the division of work was unclear, personnel worked under a high quantitative workload and did much overtime. They had many repetitive, routine tasks. Personnel used computers intensively in their work and there was a need for a new information system. Before the information system could be planned, it was necessary to analyse the present salary payment process and to design a new operational mode for salary payment. Small group discussions and work flow descriptions were carried out with the help of the management, but development work did not start in salary administration. Surveys on the organisational climate were also used without organisational development activities. The organisational development project with the WFG was launched when the representative of the IT-department, supported by the personnel manager, asked the researchers to help in managing the organisational change. Organisational development that crossed the departmental boundaries of the company had not taken place before that project.

Starting the project. The research contract was written between the company and the Laboratory of Work Psychology and Leadership at HUT for the one-year organisational development project with the WFG. A project team was responsible for the planning and carrying out of the WFG in close co-operation with three researchers. The focus of the development was on the salary administration and on the salary payment process. The project team and the managers defined the aims as follows:

- To improve the quality and efficiency of the salary payment process;
- To promote interaction and co-operation between different occupational groups and units;
- To clarify the division of work and responsibilities in the salary payment process;
• To support learning by personnel by encouraging involvement in developmental work;

• To improve the well-being of the salary administration personnel;

• To support the planning of a new information system and its implementation.

The WFG was first applied to present the work process in order to identify its problems, and to start the improvements. Then, the WFG was used six months later to test a new operational mode for salary payment. The researchers organised information sessions and sent material about the project and the WFG.

Work process description. Members of the project team described the work process, i.e. ‘the salary payment to a worker paid per hour’, based on the available documents and their own knowledge. With the help of the researchers, work flow charts and the wall chart technique were used to iterate a general description of the salary payment process. Although it should have been routine, it was complex and undefined and not planned for problem situations.

Describing the example work process. The project team, in co-operation with the salary administration, selected three case examples to be simulated in the WFG. The first typical case example was selected to show the entire process, representing a typical accounting period and salary payment process crossing organisational boundaries (including 43 tasks and 15 documents). The second case example, i.e. the problematic case, was to clarify the salary payment that created a lot of work for the factory office clerks when having to handle documents containing insufficient data and errors that had occurred during the process (18 extra tasks). The third case example, i.e. salary payment about sick leave, was to show the work demands on special cases for the salary calculators (19 extra tasks). In the field round, the researchers interviewed all the employees involved in the selected cases and collected the data and documents for the manuscript.

Preparing the game day. The researchers drew up a manuscript for simulation, which the players supplemented and corrected. The manuscript included in chronological order all the work phases and tasks of the personnel, the documents they needed and tools or information systems they used. The seating order in the game setting and the participants’ roles were decided. Before the game day, a briefing was arranged for all participants. The participants received the program of the game day, the manuscript for the simulation and a participant’s guide that helped them prepare for the game day. The players wanted to practice the game events, so the researchers organised a dress rehearsal for them.

Game day of the present state WFG. The head of the company offered the opening words for the game day, which took place in a large hall on the company premises.
The simulation of three case examples was organised as three acts during in the morning hours. There were 12 players and 27 observers, two messengers, one assistant and two visitors. Two researchers acted as facilitators. The players performed their normal tasks according to the manuscript, handled the original documents and used their own tools and equipment. The computers were symbolised by baskets where the necessary printouts were put. One messenger transferred paper documents from one work unit to the next, and the other messenger moved computer printouts between various information systems. The observers made notes about improvement needs and ideas with a list of thematic questions. The researchers helped the participants follow the progress of the simulation by showing its phases in the work flow description.

**Debriefing.** After the simulation, the debriefing took over three hours in the afternoon. For small group discussions, the participants were divided into six cross-functional groups. The notes of the observers provided an outline for intensive discussions and an evaluation of the work process. The outcomes of the small group discussions were then presented to other groups in a joint discussion with all participants. The participants discovered many ideas for improvement of the work process. The researchers facilitated the general discussion and collected the written outcomes of the small groups. Two weeks after the debriefing, the project team with the researcher classified the ideas for improvement into four groups: ideas which are ready for implementation, ideas which need preparation before implementation, ideas related to the information system of the salary administration, and, other dreams or wishes. The action plan for implementing the ideas was prepared (what actions will be done, by whom, and when) by the organisation members.

**Development activities and planning of the new mode of operation.** Development activities started soon after the WFG by implementing the improvement ideas according to the action plan. Implementation of the ideas was related to the company’s initiative system. The planning of the new operational mode began on the basis of the innovative idea concerning the new integrative information system and new division of work. That idea was further elaborated on common meetings. A central aspect of the new mode of operation was a new division of work that the salary payment process would be based on, after the change to project-based salary payment, and after new information systems were implemented. A new division of work was planned in meetings with the salary administrative personnel and managers with the help of the researchers. The information system planning team defined what information systems were needed and how they were to be connected to each other. In planning meetings with the various personnel groups, a general common view of the new operational mode was achieved.
However, it was difficult to imagine how the new operational mode would work as a whole.

**Describing the new work process and its example.** The plans and images about the new mode of operation became more concrete when the vision WFG was planned. The plan for the new operational model was still a draft with many open questions. Therefore, the description of the work process was at a general level without details. The description was elaborated on by the project team. The same three case examples used in the first WFG were simulated in the vision WFG. The manuscript was prepared and copied for the participants. The same persons who had participated in the first WFG were invited to the vision WFG.

**Game day of the vision WFG.** At the beginning of the game day the foremen and the factory office clerk talked about their positive experiences with the project-based salary payment, which had been started in one production unit as a pilot scheme. The purpose of the vision game was to demonstrate the new way of working in an “as if” situation, and the participants were told that they can still influence it. The simulation took half a day. There were 12 players and 25 observers, two messengers, two game facilitators and four technicians for videotaping. The players were seated in the inner circle and the observers in the outer circle of the game setting. The players conducted the tasks according to the manuscript. Symbols were used for the new information system, because real systems were not yet available. The observers’ task was to evaluate the new solution.

**Debriefing.** The aim of the debriefing was to evaluate the new operational mode. The debriefing was arranged in small groups whose discussions basis was a list of questions. The notes of the observers provided an outline for the group discussions. The groups wrote down their views on the new mode of operation considering the aims of the organisational development project (division of work, co-operation and communication, fluency and quality of the salary payment process). Critical phases and needs for modification were also reported. The outcomes of each group’s work were presented to the other groups in common discussions. At the end of the year, the project team and the researchers had an evaluation seminar. The participants considered that the new operational mode served its purpose well and it received wide appreciation throughout the organisation. The implementation of the new operational mode continued after the project was finished (see Chapter 8.8).
8 CROSS-CASE COMPARISONS AND EVALUATIONS

In this chapter, the cross-case comparisons and evaluations concern the participants’ experiences in the WFG, and the effects and outcomes of the WFG. Comparisons and evaluations over the separate case studies (Articles III, IV and V) are reported in order to form a synthesis of findings and for theory building. The results are reported according to the order of the research questions of the study.

8.1 Reasons and aims of using the WFG

The purpose in describing the reasons and aims for case study organisations to use the WFG is to broaden the research question on “Why use the WFG for work process improvement” in different organisations. The reasons for using the WFG are presented in Table 10. The aims of the development project with the WFG in the case studies are shown in Table 11. The categories used in the tables are based on the interviews and project documents.

In all the case studies (A, B and C), it was recognised that the cross-functional work processes needed improvement because of problems in quality, efficiency and/or customer service. There were problems in division of work, communication and co-operation between different organisational units and functions within the organisation (Cases A and C), and between two organisations (Case B), which was a common reason to start organisation development with the WFG. The challenges of planning and implementing the new information system was a preliminary reason to use the WFG for work process improvement and to support organisation development (Cases A and C). In addition, employees had high workloads, resulting in overtime (Cases A and C). Before the new information system could be planned, it was necessary to analyse and improve the initial work processes, and to study the functioning of the old information system. Work processes were, however, so abstract, complicated and undefined that no one had an overview of them nor their improvement potential. Therefore the present state WFG was used for visualisation of the initial work processes and to identify needs for improvement in all case studies. In Cases A and C, the vision WFG was later used to demonstrate the new mode of operation and to test its functionality before implementation.

It was common to all case studies that the development activities did not start with other previously used methods (surveys on organisational climate with feedback seminars, lectures, small group discussions, work flow descriptions) by the organisations’ own representatives nor by external consultant. Interventions at the cross-functional level were relevant, because improvements were not gained with
Table 10. Reasons for using the WFG for organisation development in the case studies.

<table>
<thead>
<tr>
<th>Why was the WFG used</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-functional work processes needed improvement because of problems in quality,</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>efficiency and/or customer service.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There were problems in division of work, co-operation and/or communication.</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>The planning and/or implementation of new information needed support</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>The functioning of the old information system or manual system needed to be studied</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Management needed support in structuring and managing organisation development</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Development activities did not start with other previously used methods by the</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>organisations’ own representatives nor by external consultant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The employees were overloaded and their well-being was lowered</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>There was interest in learning to use the WFG in future without the facilitation of</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>the researchers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11. Aims of the development project with the WFG in the case studies.

<table>
<thead>
<tr>
<th>Aims of the development project with the WFG</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve the selected work process</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To clarify division of work and responsibilities</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To promote interaction and co-operation within the organisation</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>To promote interaction and co-operation between two organisations</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To support the planning of a new information system and its implementation</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To reduce the work overload of employees</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>To gain competencies to use the WFG</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
the interventions at the unit or group level. In all case studies, management needed external support and practical methods in structuring and managing organisational change. Therefore the WFG was used as a method to promote organisation development activities.

8.2 Participants’ motivation towards work process improvement

“The clearest advantage of the WFG was that the employees were motivated for organisational change. Their resistance to change turned to an interest in developing their work.” (Manager, Case A)

The purpose of this chapter is to answer the research question “What is the participants’ motivation towards work process improvement?” The participants’ perception of the importance of work process improvement was studied with the questionnaire both before and after the game day. The participants in all the case studies were well motivated towards work process improvement, they perceived it as important. Especially after the WFG, in particular, most of the participants found the work process improvement to be very important (Table 12).

In Case A, the participants perceived the work process improvements a little more important after the game day than before it ($\chi^2=7.9$, df=2, p<0.05). As a result of the game day most of the participants perceived improvement in work processes very important and nobody found it not important. After the game, the participants (24 out of 25, 96%) reported that they better understood the improvement needs as a result of the game day. The managers reported in the follow-up interviews about increased motivation and commitment for a new mode of operation, and interest in further training among the employees. The result of Case A indicates that the participants’ motivation increased towards work process improvement through their increased awareness of the work process as a result of the WFG.

<table>
<thead>
<tr>
<th>Case</th>
<th>Total</th>
<th>Very important</th>
<th>Quite important</th>
<th>Not important</th>
<th>Total</th>
<th>Very important</th>
<th>Quite important</th>
<th>Not important</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>25</td>
<td>5 (20%)</td>
<td>19 (76%)</td>
<td>1 (4%)</td>
<td>30</td>
<td>12 (60%)</td>
<td>8 (40%)</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>15</td>
<td>10 (67%)</td>
<td>5 (33%)</td>
<td>0</td>
<td>15</td>
<td>10 (67%)</td>
<td>5 (33%)</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>27</td>
<td>15 (56%)</td>
<td>11 (41%)</td>
<td>1 (3%)</td>
<td>26</td>
<td>17 (65%)</td>
<td>9 (35%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 12. Participants’ perception of the importance of work process improvement before and after the game day.
In Cases B and C the participants were well motivated towards work process improvement already prior the WFG, and there was no significant change in their motivation. In Case B, most of the participants perceived the work process improvement to be very important, and they (12 out of 15 respondents, 80%) expressed their willingness to participate in the work process improvement. In Case C, most of the participants considered the work process improvement very important, especially after the game day, when nobody found it unimportant. Nearly all of the participants (25 out 27 respondents, 93%) expressed their willingness to participate in the work process improvement.

8.3 Participants’ attitudes towards the WFG and its perceived usefulness

“At the beginning, I was sceptical of how the WFG would work. But the experience was good – the WFG functioned well.” (Employee, Case B)

This chapter answers the research questions “What kinds of attitudes do the participants have towards the WFG?” and “What is the perceived usefulness of the WFG?” In all the case studies, the participants’ attitudes towards the WFG were mainly positive, especially after the game day (Table 13). In Case A, the participants’ attitudes were chiefly positive, although there were a few negative attitudes prior to the game day. In Case B, most of the participants had positive attitude both before and after the game day, with no change in their attitudes. In Case C, feedback was more positive after the game experience compared to the situation before it. Nobody expressed a negative attitude after the game experience. In general, the participants described their attitude mainly as curious and interested in the WFG before the game day based on the written and oral information. Some persons, however, were suspicious of the new method and negatively associated it with “playing or gaming”. After the game day, the interviewed persons described

<table>
<thead>
<tr>
<th>Case</th>
<th>Total</th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
<th>Total</th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>17</td>
<td>12 (71%)</td>
<td>1 (5%)</td>
<td>4 (24%)</td>
<td>30</td>
<td>18 (60%)</td>
<td>12 (40%)</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>16</td>
<td>13 (81%)</td>
<td>3 (19%)</td>
<td>0</td>
<td>16</td>
<td>13 (81%)</td>
<td>3 (19%)</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>28</td>
<td>17 (61%)</td>
<td>10 (36%)</td>
<td>1 (3%)</td>
<td>28</td>
<td>25 (89%)</td>
<td>3 (11%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 13. Participants’ attitudes towards the WFG before and after the game day². Total indicates the total number of respondents. The number of respondents is marked in numbers, and in parenthesis as percentages (%).

² In Case A, this question was asked after the vision WFG, whereas in Cases B and C, it followed the present state WFG.
Table 14. Usefulness of the WFG for organisation development\(^9\). Total means the total number of respondents. The number of respondents is marked in numbers, and in parenthesis as percentages (%).

<table>
<thead>
<tr>
<th>Case</th>
<th>Useful</th>
<th>Neutral</th>
<th>Useless</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22 (73%)</td>
<td>8 (27%)</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>16 (100%)</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>26 (93%)</td>
<td>2 (7%)</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>

the WFG as an inspiring and interesting method, and as a useful experience.

In all the case studies, the participants perceived the WFG as a **useful method** for the development of their organisation (Table 14). They reported its usefulness in terms of broad participation, cross-functional communication and co-operation as well as promoting development activities over organisational boundaries.

### 8.4 Advantages and shortcomings of the WFG

*“The WFG had clearly more advantages than disadvantages”.* (Employee, Case C)

Concerning the research question, *“What are the perceived advantages and shortcomings of the WFG?”*, participants were asked to evaluate the WFG method after the game day, and to report the best issues as well as shortcomings in the questionnaire’s open question. The respondents’ answers to the open question were classified into different categories by two researchers.

The participants in all the case studies reported more advantages than shortcomings of the WFG. The participants perceived the **advantages of the WFG** in quite a similar way in all case studies (Table 15). The clearest advantage of the WFG concerned the concrete way the work process was demonstrated, which created the opportunity for the participants to see, hear and understand the work process as a whole. The second advantage of the WFG perceived by the participants was the possibility to interact, communicate and co-operate with the people from different organisational departments, units and levels. As a third advantage, the revealing of development needs and alternatives to the work process was cited. In addition, the well structured development project and the game day, as well as the feeling of belonging together were considered as the advantages in Cases A and C.

The participants described the advantages of the WFG, for example, as follows:

\(^9\) In Case A, this question was asked after the vision WFG, whereas in Cases B and C, it followed the present state WFG.
• “All the participants had an opportunity to see and hear how the salary payment process is organised as a whole, step by step, from beginning to end.” (Case C)

• “The WFG showed in an excellent way how many tasks are involved in one work process.” (Case B)

• “The WFG revealed problems and bottlenecks in the process, which we will solve together.” (Case B)

• “It was useful that different persons, from salary administration, management and production, participated in the development work and collaborated.” (Case C)

Concerning the perceived shortcomings of the WFG, only a few issues were mentioned. There were not common, systematic problems concerning the method as such (Table 16). In Cases B and C, the fairly tight timetable of the WFG was perceived as a shortcoming. Some of the participants perceived the timetable as too constraining to handle such a broad development project, while some would have liked more time for common discussions during the game day and debriefing. On the other hand, a few persons in Cases A and C thought that the WFG project

<table>
<thead>
<tr>
<th>What was best about the WFG</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstration of the work process as a whole</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>27 (35%)</td>
</tr>
<tr>
<td>People were able to interact, communicate and co-operate over organisational boundaries</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>16 (21%)</td>
</tr>
<tr>
<td>Development needs and alternatives to the work process were revealed</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>11 (14%)</td>
</tr>
<tr>
<td>The organisation development project and the game day were well structured</td>
<td>4</td>
<td>4</td>
<td></td>
<td>8 (10%)</td>
</tr>
<tr>
<td>Feeling of belonging and learning together</td>
<td>3</td>
<td>4</td>
<td></td>
<td>7 (9%)</td>
</tr>
<tr>
<td>Motivation and commitment to organisation development was increased</td>
<td>3</td>
<td></td>
<td></td>
<td>3 (4%)</td>
</tr>
<tr>
<td>Different stakeholders understood the importance of the quality of the work process</td>
<td></td>
<td></td>
<td>3</td>
<td>3 (4%)</td>
</tr>
<tr>
<td>Possibility to see how the WFG is applied</td>
<td>2</td>
<td></td>
<td></td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Total number of responses</td>
<td>25</td>
<td>17</td>
<td>35</td>
<td>77 (100%)</td>
</tr>
</tbody>
</table>
Table 16. Participants’ perceptions of the shortcomings of the WFG. The number of responses in each category is marked in numbers. Note that one person may have given more than one response.

<table>
<thead>
<tr>
<th>What were the shortcomings of the WFG</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fairly tight timetable of the WFG</td>
<td>6</td>
<td>4</td>
<td></td>
<td>10 (26%)</td>
</tr>
<tr>
<td>Videotaping during the game was disturbing</td>
<td>5</td>
<td>1</td>
<td></td>
<td>6 (15%)</td>
</tr>
<tr>
<td>Some practical arrangements of the game day connected to the large number of participants</td>
<td>4</td>
<td>2</td>
<td></td>
<td>6 (15%)</td>
</tr>
<tr>
<td>Real customer was not present on game day</td>
<td></td>
<td></td>
<td>5</td>
<td>5 (13%)</td>
</tr>
<tr>
<td>It was difficult to face the development needs</td>
<td>1</td>
<td>3</td>
<td></td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Work process was simulated on a general level</td>
<td></td>
<td></td>
<td>3</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Too much working time needed</td>
<td>1</td>
<td>2</td>
<td></td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Observers were passive during the game day</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Total number of responses</td>
<td>11</td>
<td>14</td>
<td>14</td>
<td>39 (100%)</td>
</tr>
</tbody>
</table>

took too much time. In Cases A and C, some players felt videotaping during the game day was disturbing. However, participants were asked for permission to videotape for research documentation, and they all agreed to that. In Cases A and C, the shortcomings concerned the practical arrangement of the game day for a large number of participants, such as problems in seeing or hearing, and too small or warm a room. In Case B, the absence of the real customer, which would have been important for a realistic customer service situation, was a shortcoming. In Cases A and B, some players felt that it was not easy to face the development needs. There is a risk in the WFG that criticism might be taken personally, although it is meant to concern the work process as a whole and generally used working procedures in the organisation. Therefore careful preparation, information and a safe organisational atmosphere are important factors for meaningful application of the WFG.

The participants described the shortcomings of the WFG, for example, as follows:

- “The timetable of the development project and the game day was quite tight.” (Case B)
- “I was afraid of the videotaping.” (Case A)
- “I could not hear well enough what the players were talking about.” (Case A)
- “We were well prepared for the game day; however, I took the criticism arising rather
personally. However, it was meant to concern the generally used working procedures.” (Case B)

8.5 Participants’ interaction, communication and co-operation

“The WFG created a common language between the IT department and the salary administration. It served as a common platform for co-operation and implementing the information system.” (Representative of the IT department, Case C)

This chapter explores the research question, “What are the effects of the WFG on the participants’ perceived interaction, communication and co-operation?” On the game day, the different stakeholders of the organisations met each other face-to-face over organisational boundaries around a common task, which was a unique event in all the case studies. The WFG created an arena for the participants for cross-functional interaction, communication and co-operation. The participants reported the effects of the WFG on the cross-functional interaction with the questionnaire after the game day. The perceived interaction improved between different organisational units in all the case studies, between occupational groups in Cases A and C, and between hierarchical levels of the organisation in Cases B and C (Table 17). Additionally, in the case study B, all the respondents reported that interaction was improved especially between two organisations i.e., the labour administration and the training organisation (inter-organisational viewpoint). The

<table>
<thead>
<tr>
<th>Case</th>
<th>Improved</th>
<th>No effects</th>
<th>Weakened</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Between organisational units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>25 (78%)</td>
<td>7 (22%)</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>B</td>
<td>11 (85%)</td>
<td>2 (15%)</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>C</td>
<td>24 (86%)</td>
<td>4 (14%)</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Between occupational groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>30 (91%)</td>
<td>3 (9%)</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>C</td>
<td>25 (89%)</td>
<td>3 (11%)</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Between hierarchical levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>10 (71%)</td>
<td>4 (29%)</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>C</td>
<td>21 (75%)</td>
<td>7 (25%)</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 17. The effects of the WFG on the perceived interaction between organisational units, occupational groups and hierarchical levels.4

4 In Case A, this question was asked after the vision WFG, whereas in Cases B and C, it followed the present state WFG.
question about occupational groups was not relevant to that case study, because of the limited number of the participants and a broad variety of their different occupations. In the case study A, the interaction between different occupational groups was emphasised. The question about hierarchical levels was not relevant in that case, because the participants were working at the same hierarchical level.

The respondents in all the case studies reported that important and relevant issues were discussed during the game day. The respondents perceived that the present state game offered them good opportunities to express their opinions (Table 18), and to hear each other’s viewpoints. Throughout the WFG the participants could form a **common language for communication** on work and organisation development. In Cases A and C, it was reported in the interviews that the WFG created a common language, especially between the IT department and the other stakeholders of the organisation, which formed a common platform for the planning and implementing of the new information system.

In the interviews many participants emphasised **cross-functional co-operation** as the best part of the WFG development project. The interviewed participants in all the case studies reported that the WFG well demonstrated that communication and co-operation between different stakeholders plays an important role in the fluent proceeding of the work process. As a result of the WFG, the needs for co-operation were commonly understood and accepted by the participants, which allowed decision making about actions for changes. After the game day, the co-operation continued in the form of implementing improvement ideas awakened during the WFG. The follow-up interviews showed that co-operation also continued afterwards. For example, in Case A, the perceived co-operation between different occupational groups improved, and employees participated in the common meetings more actively after the WFG than before it. In Case B, the inter-organisational co-operation between the labour administration and the training organisation became more intensive in terms of common meetings and development activities, which was not the case before the WFG. In Case C, the participants realised the need for collaboration in order to achieve a fluent salary payment process without errors and delays. The salary administration increased the number of common meetings
above that before the project, and their relationship with the production unit improved. The cross-functional project team learned to work together during the organisation development project with the WFG, which they have found useful in other projects as well.

8.6 Participants’ perceived learning

“Throughout the WFG project, I learned first to analyse complex work systems and problematic situations from many perspectives before making decisions and acting on them. It has been very useful in my work.” (Employee, Case C)

This chapter explores the research question, “What are the effects of the WFG on the participants’ perceived learning?” Active involvement in the development project and the WFG – including its planning, the game day, debriefing discussions and the subsequent action plan – provided the participants with a rich learning experience. The participants understood the work process and its cross-functional complexity. It was emphasised in the interviews as a clear advantage of the WFG: the WFG was considered a unique possibility to understand the work process as a whole. Based on the questionnaire after the WFG, the participants in all the case studies perceived having learned an overview of the work process (Table 19).

In all the case studies, the participants estimated that they learned quality problems of the work process as a result of the WFG (Table 20). The participants reported in the interviews that the WFG revealed the quality problems of the work process,

<p>| Table 19. Participants’ perceived learning concerning the overview of the work process. |
|---------------------------------|-----------------|-----------------|-----------------|------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Case</th>
<th>Very good</th>
<th>Good</th>
<th>Moderate</th>
<th>Poor</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>15 (63%)</td>
<td>7 (29%)</td>
<td>2 (8%)</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>6 (38%)</td>
<td>9 (56%)</td>
<td>1 (6%)</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>9 (33%)</td>
<td>17 (63%)</td>
<td>1 (4%)</td>
<td>0</td>
<td>0</td>
<td>27</td>
</tr>
</tbody>
</table>

<p>| Table 20. Participants’ perceived learning concerning quality problems in the work process. |
|---------------------------------|-----------------|-----------------|-----------------|------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Case</th>
<th>Very good</th>
<th>Good</th>
<th>Moderate</th>
<th>Poor</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8 (33%)</td>
<td>13 (54%)</td>
<td>3 (13%)</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>10 (63%)</td>
<td>6 (37%)</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>3 (11%)</td>
<td>22 (78%)</td>
<td>3 (11%)</td>
<td>0</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>
Table 21. Participants’ perceived learning concerning different viewpoints of actors.

<table>
<thead>
<tr>
<th>Case</th>
<th>Very good</th>
<th>Good</th>
<th>Moderate</th>
<th>Poor</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14 (58%)</td>
<td>8 (33%)</td>
<td>2 (8%)</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>4 (25%)</td>
<td>10 (63%)</td>
<td>2 (12%)</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>4 (14%)</td>
<td>19 (68%)</td>
<td>5 (18%)</td>
<td>0</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 22. Participants’ perceived learning concerning their own tasks as a part of the work process.

<table>
<thead>
<tr>
<th>Case</th>
<th>Very good</th>
<th>Good</th>
<th>Moderate</th>
<th>Poor</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 (22%)</td>
<td>7 (39%)</td>
<td>4 (22%)</td>
<td>3 (17%)</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>2 (13%)</td>
<td>8 (53%)</td>
<td>5 (34%)</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>C</td>
<td>6 (21%)</td>
<td>13 (46%)</td>
<td>8 (29%)</td>
<td>1 (4%)</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 23. Participants’ perceived learning of new points during the game day.

<table>
<thead>
<tr>
<th>Case</th>
<th>Very many</th>
<th>Many</th>
<th>Some</th>
<th>Not many</th>
<th>None</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7 (29%)</td>
<td>9 (38%)</td>
<td>0</td>
<td>7 (29%)</td>
<td>1 (4%)</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>6 (38%)</td>
<td>8 (50%)</td>
<td>1 (6%)</td>
<td>1 (6%)</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>4 (14%)</td>
<td>9 (32%)</td>
<td>7 (25%)</td>
<td>7 (25%)</td>
<td>1 (4%)</td>
<td>28</td>
</tr>
</tbody>
</table>

like its slowness and number of errors. The participants identified several overlapping tasks in the work process, i.e. tasks done twice or several times, like checking and correcting errors in Case A. The participants in the Case B were able to identify more overlapping tasks after the game day than before it. In Case C the participants found unnecessary tasks, like preparing and mailing statistical reports. The participants realised the limits of the old inflexible information system in Cases B and C. As a result of the WFG, the participants focused their attention on the same problems and became aware of improvement needs. Increasing awareness of the work process and its problems was a necessary starting point for restructuring the work process and increasing its quality and efficiency.

The WFG formed a setting for different organisational stakeholders to analyse and reflect on their work activities together in a broader organisational context. The participants perceived to have learned of different viewpoints of the actors
concerned in the work process (Table 21). The WFG provided the opportunity to observe the distribution of tasks and responsibilities between the various parties and to understand others’ viewpoints and perspectives.

With the help of the WFG, the participants realised the function and role of their own tasks as a part of the whole work process (Table 22). The players found it especially useful, whereas many of the observers were not directly working with the simulated work process and could not reflect their role in the process. The participants’ knowledge seems to have expanded from their own tasks to a broader, systemic context of the entire work process. For example, in Case A, one employee revealed that before the WFG she did not know where documents came to her and what happens to them after her tasks; only after the game day she realised how her tasks were connected to the whole work process. In Case C, the participants reported in the interviews that the WFG offered a new perspective on salary administration. It was not a separate unit of the organisation but closely tied to the operations of the other departments.

Most of the participants reported in all cases that they learned many new points during the game day (Table 23). However, there were some differences in perceived learning between groups of participants. In Case A, the persons with short (under three years) work experience in the organisation, perceived learning more new points than persons with longer (three years or more) work experience ($t=1.89$, df=18, $p<0.05$). More experienced persons were possibly more familiar with the issues handled in the game day compared to the relative novices. In Case B, those persons who had not participated in the planning phase of the game considered they had learned more during the game day than those persons who were involved in the planning, i.e. the project team ($\chi^2$-test, $p<0.05$). This may be quite natural, because during the planning phase, the project team already became familiar with the work process when analysing it. For other participants, the entire work process as a whole was seen only on the game day. In Case C, those participants who had the role of observers in the WFG perceived they had learned more than the players ($\chi^2$-test, $p<0.01$). For many of the observers, the work process was unfamiliar beforehand, so they learnt new points on the game day. Many of the players who also represented the project team, studied the work process already when planning and preparing the game day, so they did not learn so many new points anymore during the game day.

In the follow-up interviews the members of the project reported that their competencies in participatory development activities had improved significantly through their involvement in the WFG project. The WFG offered for the project teams an opportunity for learning-by-doing with the help of the researchers that occurred through every phases of the project from the starting procedures until the
implementation and evaluation of the development activities. For example, in the case study C, one employee told that her knowledge on the organisation development work has expanded so much during the project that she has grown into a new role as a change agent in the company. In Case B, the members of the project team gained competencies to use the WFG. They later continued to successfully use the method in their organisation without the researchers.

8.7 Participants’ idea generation and organisational innovations

“We found many new ideas and solutions to improve the work process.” (Manager, Case C)

This chapter answers the research question, “What are the effects of the WFG on the participants’ idea generation for work and organisational improvements?” The participants of the WFG in all the case studies reported that the WFG offered an excellent or good opportunity to express one’s ideas for work and organisational improvement. The participants expressed that the WFG also enhanced the rise in new improvement ideas. The participants generated many improvement ideas which were collected with a questionnaire both before and after the present state WFG. As there were nearly two hundred improvement ideas altogether, they are not all presented here but summarised in the main categories (Table 24).

In Case A, before game day 14 persons reported 21 improvement ideas, and after the game day, 12 persons presented 45 improvement ideas (Table 25). The total amount of ideas was 114 % higher after the WFG than before it. Most of the ideas, especially after the game day, focused on shortening and simplifying the long work process, such as cutting unnecessary tasks. Before the game day, many ideas concerned the form of the invoice and facilitating the acceptance of invoices as well as division of work and responsibilities. After the game day, the number of ideas concerning customer service procedures increased. Ideas concerning the use of information technology were presented only before the game day.

In the case study B, nine persons presented 13 ideas before the game day and 19 ideas after the game day (Table 26). The total amount of ideas was 46 % higher after the WFG than before it. The ideas concerning common working procedures on course information and student selection dominated. There were more ideas concerning the co-operation and division of work between the labour administration and the training organisation after the WFG than before it.

In Case C, the number of ideas presented by 22 persons was 29 before the game
Table 24. Classification of the improvement ideas produced by the participants. X indicates that one or several ideas were presented belonging to this category.

<table>
<thead>
<tr>
<th>Improvement ideas</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division of work and responsibilities</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Information and communication technology</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Improving the work process and the process flow</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Customer relations, customer service</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Communication and co-operation</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Common working procedures</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Training and competencies</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Salary system</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Other issues</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 25. Improvement ideas awakened before and after the WFG in Case A.

<table>
<thead>
<tr>
<th>Improvement ideas</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving the work process</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>Form of invoice and acceptance of invoices</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Customer service procedures</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Division of work and responsibilities</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Information technology, tools</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total number of ideas</td>
<td>21</td>
<td>45</td>
</tr>
</tbody>
</table>

day and 47 after it (Table 27). The total number of ideas was 62% higher after the WFG than before it. Before the WFG, most of the improvement ideas concerned the project-based salary and information systems, mainly correcting the existing information system or buying a new one. Afterwards, the information system became the most important object of improvement ideas, emphasising a new integrated single system. After the WFG, several improvement ideas concerned cutting unnecessary tasks and the division of work. Some ideas were presented for personnel training and creating common working procedures, which were not mentioned at
Table 26. Improvement ideas awakened before and after the WFG in Case B.

<table>
<thead>
<tr>
<th>Improvement ideas</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common working procedures on course</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>information and student selection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operation and division of work</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Information technology</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Planning of the training courses</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Meeting objectives of labour market training</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total number of ideas</strong></td>
<td>13</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 27. Improvement ideas awakened before and after the WFG in Case C.

<table>
<thead>
<tr>
<th>Improvement ideas</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information system</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Salary payment system</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Cutting unnecessary tasks</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Division of work and responsibilities</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Communication and co-operation</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Training and education</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Common working procedures</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Other issues</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29</td>
<td>47</td>
</tr>
</tbody>
</table>

all before the WFG.

The results showed that the WFG promoted the participants’ idea generation for work and organisational improvement. Additionally, qualitatively different kind of ideas were presented after the WFG compared to the situation before the game day. The results suggest that the WFG drew the participants’ attention to the whole work process and its problems while other issues were left for minor attention. Most of the ideas concerned correcting errors and making existing routines more effective. However, after the WFG in particular, the new ideas presented focused
Table 28. Organisational innovations, their origin and moment of presentation.

<table>
<thead>
<tr>
<th>Case</th>
<th>Organisational innovation</th>
<th>Origin</th>
<th>Moment of presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Decentralisation of the finance administration into four locations</td>
<td>Group of managers and employees</td>
<td>Debriefing on the game day</td>
</tr>
<tr>
<td></td>
<td>Team-based division of work</td>
<td>Group of employees</td>
<td>Debriefing on the game day</td>
</tr>
<tr>
<td></td>
<td>Redesigned work process</td>
<td>Group of employees</td>
<td>Debriefing on the game day</td>
</tr>
<tr>
<td>B</td>
<td>Inter-organisational division of work and co-operation in customer service</td>
<td>Members of the project team</td>
<td>Meeting between two organisations six months after the game day</td>
</tr>
<tr>
<td></td>
<td>Applying information technology to inter-organisational communication</td>
<td>Members of the project team</td>
<td>Meeting between two organisations six months after the game day</td>
</tr>
<tr>
<td>C</td>
<td>New integrative information system</td>
<td>Cross-functional group of managers</td>
<td>Debriefing on the game day</td>
</tr>
<tr>
<td></td>
<td>New division of work and responsibilities</td>
<td>Cross-functional group of managers</td>
<td>Debriefing on the game day</td>
</tr>
</tbody>
</table>

on information technology, structures and strategic questions on the entire organisation, referred here as organisational innovations. The participants were able to create innovative organisational solutions not presented before the game day.

The innovations aroused by the WFG, the origin of innovation and the moment of its presentation are summarised based on direct observations, the project documents and follow-up interviews (Table 28). In Case A, the innovations were presented by the participants of the WFG in the debriefing discussion immediately after the present state WFG. The idea of decentralisation of administration was presented by the “vision group”, members of which included managers and employees who were responsible for constructing visions for the future. The idea for teams came as an initiative of the employees. In Case B, the innovation concerning a new kind of inter-organisational co-operation between the labour administration and the training organisation was created by the participants of the WFG six months after the game day in a common meeting of both organisations, which was facilitated by the researchers. Single members of the project team presented preliminary ideas already in the questionnaire before the WFG, which formed a basis for the shared common innovation. In Case C, a completely new mode of operation concerning a new integrative information system, and new division of work and responsibilities
was created by the participants of the WFG in the debriefing of the present state WFG. In the debriefing discussions, different kind of ideas and even contrasting viewpoints from managers representing different organisational functions were shared and put together, forming the new innovative solution.

### 8.8 Work and organisational outcomes

“The WFG worked in an excellent way. Without this kind of concrete method, we could not have achieved this change process – at least not in such a fundamental way.” (Manager. Case C)

The purpose of this chapter is to explore the research question, “What are the work and organisational outcomes of the WFG?” Work and organisational outcomes of the WFG depend on the way the improvement ideas are implemented and how development activities are carried out in the specific organisational context. Therefore, first, an overview of the implementation is summarised, and then, work and organisational outcomes which are partly context-specific, are reported case by case.

The follow-up in the case studies (based on the closing meeting, the follow-up interviews and the project documents) showed that the improvement ideas and organisational innovations aroused by the WFG were implemented over different time spans. The improvement ideas concerning routines were implemented immediately or soon after the WFG, while the developments relating to the new information system or new division of work were more time-consuming. The participants’ ideas for work and organisation improvement created new ways of working in all case studies. In Cases A and C, the new mode of operation was demonstrated and tested with the vision game before its implementation. The vision game provided the stakeholders with a shared vision of a future mode of operation. The development activities aroused by the WFG concerned both social and technical issues as well as organisational structures. The implementation of improvement ideas is summarised on a general level in Table 29. As an example, the implementation of the improvement ideas over different time spans in Case C is presented in Appendix 6.

The work and organisational outcomes of the organisation development project with the WFG concerned the actual changes in the work process, the division of work, the information system and customer service. Context-specific work and organisational outcomes are next reported case by case based on the follow-ups.

In the finance department at the university (Case A) the WFG promoted work process redesign and the planning and implementation of the new information system (Table 30). The overlapping tasks and various routines were sharply reduced, and many tasks were computerised. The new division of work based in customer
Table 29. Implementation of the improvement ideas after the WFG.

<table>
<thead>
<tr>
<th>Case</th>
<th>Implementation of the improvement ideas</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The idea of team-based work was elaborated on by the “vision group”, who collected feedback and comments from the personnel. The IT department was responsible for the implementation of the information system and support of the users. The employees participated in user training and in occupational training courses. The functioning of the new mode of operation – the customer-based teams, the new information system and the redesigned work process – was tested in the vision game. The personnel accepted the new mode of operation, which was smoothly implemented within four months. Decentralisation started with a pilot unit which spread gradually to other units.</td>
<td>After 4 months</td>
</tr>
<tr>
<td>B</td>
<td>The actualisation of the improvement ideas was partly transferred throughout the labour administration, and partly by the training organisation. The intra-organisational development activities concerned improving the internal information system and clarifying norms governing customer service procedures. The inter-organisational development activities concerned division of work and co-operation on the counselling of students and on course information. Effective use of information technology in communication played a central role in the new mode of co-operation. Six months after the project end, most of the ideas were implemented, while the use of information technology needed longer preparation.</td>
<td>After 6 months</td>
</tr>
<tr>
<td>C</td>
<td>The project team divided the improvement ideas into categories (ready for implementation, preparation needed, related to the information system, other wishes), and formed an action plan for their implementation. Implementation of the ideas was related to the company’s initiative system. Many ideas concerning routines could be carried out immediately after the present state game, while the developments related to the new information system required longer planning. The new mode of operation – including the new division of work, improved work process and new information system – was demonstrated in the vision game. The new operational mode received widespread appreciation among personnel and was smoothly implemented within a period of 18 months.</td>
<td>After 18 months</td>
</tr>
</tbody>
</table>

Service teams provided the employees with enriched job content and new customer service tasks. The invoices were handled by a team of three to five persons serving a group of customers. The employees were quite satisfied with the teamwork and the
possibilities to plan and control their work. The workload was distributed among the teams. The manager estimated that overtime work was no longer needed. The number of employees remained the same as before.

The development activities and the new information system for the finance
<table>
<thead>
<tr>
<th>Dimension of development</th>
<th>Before WFG</th>
<th>After WFG</th>
</tr>
</thead>
</table>
| Administrative process of labour market training | Complicated and ill-defined  
   Nobody had an overview of it | Simplified  
   Shared overview of it |
| Information system       | Three separate information systems were perceived inflexible | Some improvements in internal information system and ideas for the planning of a new one |
| Division of work         | Unclear inter-organisational division of work and responsibilities | Clarified division of work and responsibilities between two organisations |
| Quality and efficiency of the administrative process of labour market training | Quality problems in customer service: unclear norms in customer service procedures, lack of informing applicants, slow handling of applications  
   Several overlapping tasks in the process between the labour administration and the training organisation | Clarified norms and customer service procedures  
   Cutting of unnecessary and overlapping tasks  
   Positive customer feedback and shortened waiting times |
| Communication and co-operation between two organisations | Lack of inter-organisational communication, co-operation and development activities | Perceived improvements in communication and co-operation  
   Common development activities  
   Use of electronic mail and data transfer |

administration indicated improvements in the quality and efficiency of the work process. The follow-up study showed that the through-put-time of invoices was decreased from over one month to the optimal time of two weeks. During the follow-up period of two weeks conducted six months after the project end, all the invoices were paid in the optimal time without late invoices. The follow-up study two years after the project’s end based on statistics covering two months showed that the number of late payments was radically reduced (by 79%) compared to the situation before the development project. This meant a saving in costs: the amount of interest paid because of late payment of invoices was reduced from 36 734 Fmk
to 4 476 Fmk (88% reduction). The representatives of the suppliers were satisfied with receiving their money on time. The representatives of the university departments were also satisfied when receiving on-time financial information.

**In the labour administration (Case B)** the WFG promoted inter-organisational development activities concerning division of work, co-operation, customer service procedures and using information technology (Table 31). These development activities indicated, in the long term, improvements in the quality of the work process and better customer service. The project team reported that it was possible to cut unnecessary tasks and paper bureaucracy, which made the work process faster. The customer service employees’ work was facilitated and sped up with the improvements in the internal information system and its more effective use as well. The customer feedback survey by the Ministry of Labour showed improvements in the service of the employment office. The activities of the customer service personnel received very positive feedback, the interaction with the customers was well managed and customers’ waiting times for service were shortened compared to the situation before the development project (Kohtanen 1995, 1997).

**In the industrial company (Case C),** the follow-up study showed that development activities lead to improvements in the quality and efficiency of work as well as in the well-being of the salary administration personnel (Table 32). Long-term outcomes of the WFG and the whole development project were seen when the new information system was implemented in all areas of salary payment and personnel administration. Better quality in the salary payment process was achieved when the number of errors in documents was radically reduced. Salary administration personnel therefore needed to spend less time on corrections and verifications of errors. Measured in saved working hours, this means savings in quality costs according to the manager. A more efficient salary payment process was achieved when repetitive routines were automated and unnecessary tasks were eliminated. The same number of employees was able to produce more salaries and to conduct other tasks too. The manager estimated that overtime costs also decreased.

Workload peaks related to every salary payment period decreased. The factory office clerks were satisfied with their new enriched job description and the variety of their tasks. The elimination and automation of repetitive routine tasks released their resources for handling new, more interesting tasks. Physical pain symptoms were used to indicate long-term work related stress reactions. According to the job-related health checks among the salary administration personnel, the pain symptoms in neck, shoulders and back areas had decreased. The salary administration personnel reported that their work was appreciated more highly through the development project.
Table 32. Work and organisational outcomes in Case C. Dimensions of development of the organisation at the beginning of the development project (before WFG) and after it (after WFG).

<table>
<thead>
<tr>
<th>Dimension of development</th>
<th>Before WFG</th>
<th>After WFG</th>
</tr>
</thead>
</table>
| Salary payment process   | Complicated and ill-defined  
Nobody had an overview of it | Redesigned and simplified based on the participants’ ideas  
Shared overview of it |
| Information system       | Four separate systems  
System for salary payment was inflexible and ineffective | Smooth implementation of the new integrated system for salary and personnel administration connected to production control system |
| Division of work         | Unclear division of work and responsibilities  
Salary administration personnel had repetitive routine tasks for about 80% and more challenging tasks for 20% of working time | Clarified responsibilities  
Salary administration personnel had enriched job descriptions; routine tasks for about 30-40% and more challenging tasks for 60-70% of working time  
Factory office clerks received new titles as department secretaries |
| Quality and efficiency of the salary payment process | Low quality with shortcomings in 3-30% of documents  
High quality costs  
Overtime costs of about 20% for the salary administration | High quality with shortcomings in 1-2% of documents  
Low quality costs  
Overtime costs of about 10% for the salary administration |
| Communication and co-operation | Problems in cross-functional communication  
Little co-operation between different professionals  
No cross-functional development | Perceived improvements in communication and co-operation  
Cross-functional development  
Use of electronic mail and mobile phones in communication |
| Well-being of the salary administration personnel | Workload peaks, overtime work  
Pain symptoms in neck, shoulders and back  
Feeling of underrated work | Workload peaks and overtime work decreased  
Good physical and mental well-being without pain symptoms  
More highly valued work |
8.9 Success of organisation development with the WFG

The organisation development with the WFG in the case studies can be evaluated according to their relative success. The success of the organisation development in the case organisations was defined as the degree to which the change effort fulfils the following criteria presented by Salminen (2000):

- Reaches the aims set for it;
- Is implemented on schedule and within budget;
- Generates positive operational and economic results in a reasonable time frame;
- Is perceived as successful by most of the stakeholders.

According to these criteria, I categorised the case studies on the basis of their overall success, and they all seemed to be successful. The aims set for the organisation development project with the WFG were achieved in all case studies. In Case A, the work process was improved, employees were satisfied with the new division of work, co-operation and development activities promoted, and planning and implementation of the new information system was supported. In Case B, the aims of the project concerning communication and co-operation as well as improvements in the work process and customer service were reached. In Case C, the quality and efficiency of the salary payment process were improved, division of work and responsibilities were clarified, communication and co-operation were increased, and planning and implementation of the new information system was promoted.

According to the project documents, all the organisation development projects with the WFG were conducted on the planned schedule and within the budget available. Operational results were generated in all the cases. Economic results were generated in Cases A and C based on the performance measures and the management interviews. In Case B, the managers could not estimate the economic results and data was not available on the financial performance of the project.

Both management and the project team perceived the organisation development project with the WFG as successful and were satisfied with the results. In additional, the other participants reported the WFG was a useful method for the development of their organisation. The managers and the project team concurred that the organisation development was successfully managed and was catalysed by the WFG. The management emphasised its role as a facilitator for decision-making. Management also estimated that the work and organisational outcomes would not have been gained without the WFG method in Cases A and C, while the representatives of Case B found it difficult to estimate.
8.10 Model on the effects and outcomes of the simulation game

One aim of the study was “To create a model on the effects and outcomes of the simulation game”. As a general conclusion of the cross-case comparisons and evaluations, I form a multilevel and multiphase model concerning the effects and outcomes of the WFG (Table 34). The model is based on the empirical findings of the three longitudinal within-case studies and cross-case evaluations in different organisations. The effects and outcomes of the WFG were identified on the relevant levels of the organisational behaviour: the individual level, the cross-functional process level and the organisational level; additionally, on the inter-organisational in one case study. The WFG seemed to facilitate the crossing of these system levels, thus integrating the individuals with the work process and the work process with the whole organisation and customer relations.

The individual level refers to the attitudes and perceptions of the participants in the WFG, as well as to their perceived learning and idea generation. Participants’ collective idea generation during debriefing and creation of organisational innovations reflect organisational learning; therefore it could also refer to the organisational level of outcomes. The cross-functional process level refers to the interaction, communication and co-operation between different organisational functions. This level reflects the way organisational functions relate to each other and co-ordinate their work in the whole work process on behalf of the organisation or larger client system. The organisational level refers to the outcomes and changes in the information systems, the division of work, the work processes, their quality and efficiency, as well as customer service. In one case study (C), the mental and physical well-being of the employees seemed improved after organisation development. Well-being could also refer to the individual level of outcomes. The inter-organisational level refers to the outcomes perceived between two different organisations, i.e. the buyer and the supplier of the service in Case B. Improvements concerned inter-organisational communication and co-operation, clarified division of work and the quality of the customer service.

The case studies showed that the effects and outcomes of the WFG were realised over different time spans. The participants’ attitudes and perceptions as well as their learning and idea generation were perceived immediately after the game day; thus they can be called immediate effects. Interaction, communication and co-operation among the participants started in the game day and continued shortly after it, as in the form of common meetings or implementation of improvement ideas. These effects could be called short-term or intermediate effects of the WFG. The work and organisational outcomes concerning improvements in the division of work, work process, customer service and the well-being of personnel
were received after the implementation of the improvement ideas over a longer time span; therefore they could be called **long-term outcomes** of the WFG. It could be concluded that the WFG could initially produce its own immediate effects, and these immediate effects could in turn produce some intermediate effects and in turn produce long-term outcomes.

### 9 GENERAL DISCUSSION

The contribution of this dissertation can be assessed in terms of its theoretical contribution to science as well as its practical contribution to the field of application, which are discussed next. The reliability and validity of the study are then discussed followed by implications for further studies.

#### 9.1 Theoretical contribution: an integrative method and its evaluation

An essential theoretical value of the dissertation concerns an effort to bridge the gap between the disciplines of simulation gaming and organisation sciences, which is recognised as a relevant theoretical topic (Joldersma & Geurts 1998), and an important challenge when creating scientific knowledge of simulation gaming (Wolfe & Crookall 1998). In this study, scientific traditions of simulation games, organisation development, a sociotechnical approach and work process improvement have laid a theoretical foundation concerning the WFG method and its use as well as providing an evaluation of its effects and outcomes.

Firstly, a central contribution of the study is the creation of **the model of the WFG as an integrative method**. The WFG and its use integrate the essential factors of organisation development, i.e. work process improvement, use of information technology, participation and learning by personnel (Chapter 6.3). Those factors are broadly presented in the literature and their need for integration is recognised (Caron et al. 1994, Mumford & Beekman 1994, Eason et al. 1996, Mumford 1997, Jaffe & Scott 1998, Moosbrucker & Loftin 1998, Nader & Merten 1998, Worren et al. 1999, Järvenpää & Eloranta 2000).

From the sociotechnical point of view, with the WFG it is possible to combine the development of both the social system (like division of work, interaction, communication and co-operation of organisation members), and the technical system (like use of tools, planning and implementation of the new information system). In the case organisations, some of the sociotechnical design principles
Attitudes and perceptions of the participants in the WFG

The participants had mainly positive attitudes towards the WFG before the game day, although some were a bit suspicious. After the WFG attitudes were very positive.

The participants’ perceived the WFG as a useful method for the development of their organisation and were satisfied with the results gained by the WFG.

Main advantages of the WFG perceived by the participants:

- Demonstration of the work process as a whole; to see, hear and understand it.
- Opportunity to interact, communicate and co-operate over organisational boundaries.
- Development needs and possibilities of the work process were revealed.

Main shortcomings of the WFG perceived by the participants:

- Tight timetable of the WFG project and the game days.
- Practical arrangements of the game day connected to large number of participants.

Learning of the participants

The participants perceived having learned

- an overview of the present work process,
- quality problems and needs for improvement,
- different viewpoints of stakeholders in the work process,
- their own tasks as a part of the whole work process,
- competencies in participatory organisation development.

The participants’ realised the importance of development activities.

The participants’ generation of ideas and organisational innovations was promoted.

**Interaction, communication and co-operation**

Perceived interaction was improved between different organisational units and levels as well as occupational groups.

Communication and co-operation over organisational boundaries was started and promoted.

**Work and organisational outcomes**

The participants’ improvement ideas awakened during the WFG were implemented.

Division of work was clarified or new division of work was implemented.

Improvements and corrections to the present information system were made.

The planning and implementation of the new information system was promoted.

The work process was redesigned.

Quality of the work process was improved.

Efficiency of the work processes was increased.

Customer relations or customer service were improved.

Mental and physical well-being of personnel was improved.
were utilised including use of group work, job enrichment, and whole jobs with variety of tasks (compare Vartiainen 1994). This study supports the hypothesis that with the help of the theoretical and practical tools, here the WFG, development of work and implementation of information system can be carried out in a balanced manner considering human and productivity viewpoints (Vartiainen 1991, 1998, Vartiainen & Ruohomäki 1994).

This study had some similarities with the LOM programme (Gustavsen 1992, Naschold et al. 1993) in terms of the action research approach, broad participation, creating an arena for open communication and interaction as well as using local knowledge and everyday language of organisation members. The WFG was used as an arena for open dialogue for different occupational groups. The game rules of the WFG correspond to the discussion rules of the dialogue conferences.

From the perspective of the business process re-engineering (Hammer & Champy 1993, Hammer 1996), the change projects are usually carried out by top managers, consultants and experts on information technology (the top-down approach). Hammer & Champy (1993) claim that BPR cannot be implemented by frontline employees and middle managers (the bottom-up approach), because it is difficult for them to see a process as a whole and to recognise its poor overall design as the source of their problems. However, in this study, even for top managers it was difficult to see the whole work process. As well, it is difficult for them to recognise practical problems of frontline employees, for example, in customer service, and to understand that those problems may be based on the poor design of the work process and organisational structures. Therefore, an interactive and participatory approach, involving organisation members over hierarchical and functional boundaries, is useful for work process improvement and organisational change, as this study shows. In the WFG, organisation members at the strategic and operative levels met each other.

Secondly, this study utilised the **phase model to carry out the WFG** as part of organisation development. In the organisation developmental cycle (Vartiainen 1991, 1994) simulation games can be utilised to promote organisational change in its different phases (Ruohomäki 1992, 1994, Ruohomäki & Vartiainen 1994) (Chapter 6.4). The phase model to carry out the WFG (seven phases include planning, the game day and development activities) concerns the present state WFG (Chapter 6.5) and the vision WFG (Chapter 6.6), thus integrating the WFG temporally as part of the on-going organisation development. The vision WFG in particular is a novel and not yet formalised construction. The empirical results showed that the WFG is an effective method for analysing the present state of work processes, and for testing new operational modes before implementation. The present state WFG served to create a shared overview of the work process, to
identify its development needs as well as to find new ideas for improving the process. The participants’ ideas for improvements created a basis for a new operational mode. It was demonstrated and tested with the vision WFG, which provided the stakeholders with a shared vision of a future mode of operation including work process, organisational structure and technical solutions. The participants assessed the usefulness of the new mode of operation from different viewpoints, which generated a high level of commitment to the changes being implemented. It is essential that with the WFG the bridge between the present and future mode of operation is built on the participants’ own ideas, rather than the ideas of consultants or researchers usually used in expert-driven approaches such as BPR. The organisational change strategy with the WFG is interactive, not linear top-down.

Thirdly, this study contributes to the area of **evaluation of the simulation game** within the context of organisation development. For systematic evaluation of the experiences of the participants as well as the potential effects and outcomes of the WFG, the **evaluation framework** was created (Chapter 4.5). This framework could be applied more broadly when evaluating other types of simulation games and other organisational intervention methods as well. Based on the review by Joldersma & Geurts (1998), extensive evaluations are still rare. Most of the studies have been limited when concentrating only on participants’ opinions and reactions acquired soon after the simulation game (Joldersma & Geurts 1998), without comparison of the situation before and after the simulation game. Earlier studies have mainly reported on the results at the individual level (Joldersma & Geurts 1998), thus neglecting other potential outcomes on broader systemic levels.

The WFG — including its planning, the game day and the debriefing — is a social process of interaction, communication and mutual learning by participants. The WFG provides an arena for the participants for **interaction, communication and co-operation** over organisational boundaries. Communication between different members of the organisation is necessary to understand each other’s viewpoints and to create a common vision for the future. Throughout the WFG, the perceived interaction improved between different organisational units and levels as well as between occupational groups. The WFG seemed to promote communication and co-operation, which are crucial for successful organisational change (e.g. Gustavsen 1992). In the WFG the participants were able to create a kind of ‘common language’ to discuss their work, organisation development and forthcoming changes. Communication also started between the experts of information technology and the users, which formed a common platform for the planning and implementing of the new information system. This study follows the idea by Duke (1974) that simulation games offer a language for future; in addition to this, the WFG can
offer an arena for creating and planning the future.

When using methods and interventions, a learning process in the company in connection with the change process is emphasised. According to Werr et al. (1997), learning by the client is today the strongest argument for involving expensive consultants in often time-consuming organisational change projects. The results of this study showed that active involvement in the WFG provides the participants with individual and organisational learning experiences (Chapter 8.6), which is also reported in other studies concerning simulation games (e.g. Joldersma & Geurts 1998). The participants perceived that they learned an overview of the entire work process and realised its main problems as well as the different viewpoints of the actors concerning the work process. The WFG seems to promote system thinking and helps participants understand the interrelations of different tasks as part of the whole work process. The learning process which occurs during the WFG could be described in terms by Nonaka and Takeuchi (1995) as a continuous and dynamic interaction between tacit and explicit knowledge, where individual tacit knowledge is first externalised and shared collectively, and then provides the formation of shared mental models. The WFG provides possibilities for a shared overview, understanding and reflection of work activities in a broader organisational system, which is essential for developing knowledge work and increasing its productivity (Drucker 1999). With the WFG, it is possible to integrate different types of organisational knowledge, and to use this knowledge for the development of work processes and organisations. These elements are relevant to organisational learning (Senge 1990, Argyris & Schön 1996) and knowledge creation (Nonaka & Takeuchi 1995). As well, the members of the project team gained competencies in participatory development activities through their involvement in the WFG project. The WFG offered the project teams an opportunity for learning-by-doing with the help of the researchers, occurring through each phase of the project from the starting procedures to the implementation and evaluation of the development activities.

The results showed that the WFG promotes participants’ idea generation and creation of organisational innovations (Chapter 8.7). The participants presented many ideas for work and organisational improvement, especially after the WFG. Many ideas focused on correcting errors and making existing routines more effective, which can be called single-loop learning in terms by Argyris & Schön (1996). It is worth noting that after the WFG the participants, both the employees and the managers, reported also completely new ideas that they did not report before the WFG. The ideas concerned, for example, new divisions of work, the use of the information technology, work process redesign and strategic questions for the entire organisation. These kinds of ideas could be called as organisational innovations reflecting changes on the organisational level (West & Altink 1996,
West 2000). Creation of organisational innovations may indicate double-loop learning (Argyris & Schön 1996). It was interesting to note in this study that the organisational innovations were often created immediately after the simulation during the debriefing in small group discussions. In the debriefing, the participants externalised, shared and put together different kinds of ideas and even contrasting viewpoints. Those ideas were then accumulated and presented as organisational innovations. This finding emphasises the central role of a careful debriefing discussion after the simulation not only for learning but also for the creation of organisational innovations.

The way the WFG influences potential work and organisational outcomes depends on the way the improvement ideas are implemented and how development activities are carried out within the specific organisational context (Chapter 8.8). In this study, the participants’ improvement ideas awakened in the WFG were implemented in practice according to the action plan over different time spans. The improvement ideas concerning one department or routines were implemented immediately or soon after the WFG. Development activities concerning several departments or functions of the organisation were more time consuming, such as the implementation of the new information system or new division of work. The participants’ improvement ideas awakened in the WFG created new ways of working in all case studies. This study suggests that in addition to the typical objectives of simulation/games concerning individual and organisational learning (Joldersma & Geurts 1998), also work and organisational outcomes can be achieved with the WFG.

The development activities aroused by the WFG concerned both social and technical issues as well as organisational structures. The follow-up study showed that relevant work and organisational outcomes were achieved concerning actual changes in the work process, the division of work, the information system and the customer service as well as the working conditions of personnel (Chapter 8.8). In the finance department at a university (Case A), the cutting of overlapping tasks, redesigning of the work process and the new team-based division of work as well as the implementation of the new information system led to improved quality and efficiency of the work process of handling invoices. Personnel had enriched jobs with more customer service tasks, and distributed their workload among teams. In the labour administration (Case B), inter-organisational co-operation between the employment office and the training organisation was promoted and information technology was utilised for communication. Cutting out overlapping tasks, clarified divisions of work and customer service procedures led to improved customer satisfaction. In the industrial company (Case C), the new division of work, the redesigned salary payment process and implementation of the new information
system led to a higher quality and efficiency in the salary payment process. The workload peaks of salary administration personnel was decreased. The perceived mental and physical well-being of salary administration personnel seemed improved through their possibilities to influence their work, through clarified responsibilities and enriched jobs. The results of this study supports the idea that simulation games can enable an organisation to break old rules and to create new ways of working (Tsuchiya 1998).

As a theoretical contribution, this study produced the multilevel and multiphase **model of the effects and outcomes of the simulation game** (Chapter 8.10). The effects and outcomes were identified along the relevant system levels of organisational behaviour: the individual, the cross-functional process level, the organisational and the inter-organisational levels. The WFG is a special kind of method when it facilitates the crossing of the system levels, thus integrating the individuals with the work process and the work process with the whole organisation and customer relations. The effects and outcomes of the WFG were discovered over different time spans classified as immediate, short-term and long-term outcomes. The WFG forms an integral part of the organisation development. The long-term work and organisational outcomes may not be direct effects of the WFG because of many changing and uncontrollable variables. Instead, they can be seen as indirect effects enabled by the WFG. To sum up, the role of the WFG can be described as that of a **catalyst for organisation development**.

### 9.2 Practical contribution: development and use of the WFG

The central criterion to assess the results of applied studies is their practical usefulness and relevance; therefore the constructive research approach emphasises the practical relevance and functionality of the construction (Kasanen et al. 1993). This study has been constructive and pragmatic in its nature when a novel construction i.e., the WFG, has been produced and used in the organisations. The practical contribution of this study is related to the development of the WFG, to its successful use in the case organisations and its further applications.

Firstly, the central practical contribution of this study was the development of the **simulation game called the WFG**, which is a concrete method for work process improvement and organisation development. The WFG grow from the needs of praxis: the primary reason for developing the WFG was the need of participatory methods in the field. The WFG was constructed in a multidisciplinary team in close interplay between academic research and practical organisation development in ten organisations. Typically methods for organisational consulting are developed in consulting companies (e.g. Werr et al. 1997) rather than in the universities, when
the problem is that the methods and their development may not be documented, evaluated nor disseminated. This study carefully described how the WFG was developed and designed showing its roots and background (Chapter 6.1). This description may be very useful when new types of simulation games are be planned and developed in future. As a simulation game, the WFG was characterised and its underlying features were described (Chapter 6.2), so it can be clearly identified among different types of simulation games and intervention methods.

Practitioners need interventions and methods, like the WFG, to support providing an overall structure to the organisation development, to give operational guidance to manage a change process, and to facilitate communication and collaboration (Werr et al. 1997, Worren et al. 1999). The WFG as a structured and formalised method shows a high level of practical relevance to work process improvement and organisation development (OD). The WFG meets the practical challenges of improving work or business processes, which are bureaucratic structures, boundaries between departments or functions, complicated and invisible work process, communication problems and limited understanding of the whole work process (compare Harrington 1991, Hammer & Champy 1993, Teikari et al. 1995, Hammer 1996). Compared to other methods used in work process improvement or in business process redesign (BPR) (Werr et al. 1997) the WFG clearly contributes by considering the human behavioural aspects of change including participation, communication and learning of the employees, which are often neglected in BPR projects. So far, the availability of methods on the human side of work process improvement has been limited (Werr et al. 1997).

Among intervention methods in OD, the WFG contributes on the cross-functional level of organisation. Interventions at that level typically concentrate on attitudes, beliefs and the interaction of organisation members (Huczynski 2000, Huczynski & Buchanan 2001), while the WFG also concerns practical work activity. In OD, the WFG is reminiscent of the idea of ‘getting the whole system in the room’, which is used in large-scale organisational change (French & Bell 1999). Compared to other methods used in the participatory approaches, like seminars, quality circles, and conferences (Gustavsen 1992, French & Bell 1999), the WFG is more structured and more closely connected to work activity and work process improvement. From the perspective of a learning organisation, the WFG can be seen as one method among others for promoting organisational learning. To sum up, the practical contribution of the WFG method is that it can combine human participation and learning as well as the use of information technology and work process improvement in the same organisation development project.

Secondly, this study described the use of the simulation game as part of an ongoing organisation development process. The use of the WFG is an example how
simulation games can be used as large-scale intervention in organisations with large group of participants (compare de Caluwé 1997, Peters et al. 2001). When the WFG was used in the case organisations (Chapter 7), the primary concern was the practical utility for the organisations in terms of promoting communication and co-operation, improving work processes and the division of work and implementing a new information system. High level consulting goals, such as this, are not often achieved because they need lot of time and effort and may have many risks (e.g. Robinson & Robinson 1989, Harrison 1994). In this study, the practical goals of the case organisations were achieved, the organisational change was facilitated and the representatives of the organisations were satisfied with the results gained. The organisation development projects with the help of the WFG were successful, and the participants perceived the WFG as a useful method for development of their organisation. There was no need for downsizing or a reduction in personnel in any of the organisations. Inspired by the experiences of the WFG, all the case organisations continued to apply the method after the study as well. The results described show high practical functionality of the WFG and thus fulfil the criteria for a strong market test by Kasanen et al. (1993).

This study showed that the WFG can be well applied to administrative, service and expert work, which can be referred to in broad terms as knowledge work. The method seems to work well in large or middle size organisations where the work processes are cross-functional and complicated. The WFG is applicable to service and industrial organisations both in the public and private sectors. Practical experiences show in other studies that the WFG is successful but sometimes quite time-consuming when carrying out organisational changes (compare Pankakoski 1998, Pankakoski et al. 1998). Participatory approach can be generally less expensive because it uses knowledge of organisation members and need fewer consultants (Davenport et al. 1996). Participatory approach with the WFG often takes longer time compared to BPR but involves lower risk of obvious failure and may offer better result in long term (compare Davenport et al. 1996).

The participants’ attitude towards the WFG was curious, and they found it an interesting and inspiring method, which supports earlier findings concerning other types of simulation games (e.g. Greenblat & Duke 1981, Randel et al. 1992, Joldersma & Geurts 1998). However, before the WFG a few participants were suspicious towards the new method, negatively associating it with “funs playing or gaming”. This kind of attitude towards simulation games is recognised in other studies as well, which may be one hindrance in their implementation in companies (Jacobs & Baum 1987). Concerning participant experiences, the main advantages of the WFG were connected to the participant interaction, communication and co-operation over organisational boundaries, as well as a concrete demonstration of
the work process as a whole, which revealed its problems and development potential. Concerning the shortcomings of the WFG, common, systematic problems concerning the method as such were not perceived. Shortcomings concerned too tight a timetable and the practical arrangements of the game day connected to a large number of participants. Special requirements for designing and running simulation games for a large group of participants must be carefully considered in future applications (compare Peters et al. 2001). In one case study, the absence of a real customer, which would have been important for a realistic customer service situation, was a limitation. A few players recognised that it may not be easy to face the development needs, and there is a risk in the WFG that criticism arising from it might be taken personally. Therefore, careful preparation, information and a safe organisational atmosphere are important factors for meaningful use of the WFG.

The context and general situation in the organisation are important factors that can partly either further or hinder organisation development with the WFG. Sufficient human resources, time and management support are essential for the successful use of the WFG. Instead, many parallel change processes competing for the same limited resources can prevent meaningful use of the WFG. Negative aspects of organisation conflict or an inflamed relationship between management and personnel make the situation unfavourable for using the method. The game facilitator needs adequate competencies for using the WFG and also a legitimate position for organisation development. (Piispanen et al. 1998, Pankakoski 1998).

Thirdly, the promising experiences of using the WFG have raised broad interests on further applications of the WFG among other researchers and practitioners. For organisation developers, human resource developers, consultants, change agents and other practitioners, the WFG may be one potential intervention method to be used as part of participatory organisation development. So far, the WFG is widely used in about one hundred Finnish organisations, and beyond the national borders as well (ECIC, Final Report 1999), for example, in North America and Canada (Tuomi 2000). This study and the handbook (Piispanen et al. 1998) is utilised as training material when training new game facilitators and disseminating the WFG. The new game facilitators from different organisations have been convinced about the clear advantages of the WFG in terms of visualising the work process, improving operational modes, and enhancing the interaction and communication (Pankakoski 1998, Pankakoski et al. 1998). The WFG is also being successfully applied in a new contexts, like in the health care sector (Ventä 2000) and in quality management in public administration (Tuomi & Tauriainen 2001). The ideas of the WFG have also been utilised in different kinds of simulations in a laboratory environment (Smeds 2001), but unfortunately ignoring theoretical backgrounds of the WFG. In addition, several variations of the WFG, although under different titles, have been

9.3 Reliability and validity of the study

Several methodological issues could be addressed to evaluate the present findings. The validity of the WFG is first discussed, and next, the reliability and validity of the study is discussed based on the case study approach.

The concept of validity in relation to games is that the validity of a simulation game is the degree of correspondence between the reference system and the simulated model thereof. If we want to make inferences about reality based on experiences in a simulation game, we have to be sure that the game model is valid representation of the real system. The question regarding whether the correspondence is sufficient depends on the objectives of the game. Threats of validity are connected to the errors during the game design. For example, essential elements from the simulated model are wrongly left out, or elements of minor importance are included. Or elements are transformed into such a symbolic structure that the participants fail to see the link with the real system. One cause for making errors is that the game designer does not have enough knowledge of the real system (Peters et al. 1998).

In order to increase validity of the simulation game and to prevent errors in the game design, Peters et al. (1998) have presented some guidelines, which have been utilised in this study. One guideline concerns careful analysis of the reference system and small steps during the design process. A participatory way of designing, in which the client is highly involved, is recommended. In this study, the WFG was designed and tailor-made for each organisation in close co-operation with the researchers and organisation members who formed the project team. The managers and employees of the project team were familiar with the organisation and the process under the study. The project team analysed and described the real examples of the work process, and interviewed all the employees working in that process. They also collected all the existing documents concerning the work process for the game. This kind of careful, systematic and participatory way of working formed a realistic base for the WFG with minimal risk of errors.

Another guideline to improve the validity of a game, is to check the validity explicitly, that is, to ask other persons’ opinions about the correspondence between
the game and the reference system (Peters et al. 1998). In this study, the organisation members, i.e. future players, checked the manuscript for the game session and they were also asked to make needed corrections; this procedure is referred to as member check (LeCompte & Goets 1982, in Peters et al. 1998). After the game session during the debriefing discussion, the participants were also asked how realistic they saw the WFG. They found it as quite a realistic overview in all the case studies. In Case A, the participants were also asked to evaluate the validity of the game with a questionnaire. The participants found that the simulated work process corresponded very well (84% of the respondents) or quite well (16% of the respondents) the reality. In general, the WFG seemed to correspond reality sufficiently.

This dissertation includes two forms of case study output (based on Pettigrew 1990, Yin 1994): the longitudinal cases as analytical chronology (Articles III-V, extended summary), and cross-case comparisons (Article II, extended summary). Publishing case study findings as articles, which are reviewed by international reviewers, can raise the quality of research. However, presenting research based on comparative case study findings in article mode is not an easy task, and this is why so many case study works often appear in research monograph form (e.g. Pettigrew 1997, Bengtsson et al. 1997).

Generally accepted guidelines on how to evaluate case study research do not seem to exist (Eisenhardt 1989, Bengtsson et al. 1997). To establish the quality of any empirical social research, four criteria concerning validity and reliability have been commonly used. The reliability, construct validity, internal validity and external validity of this study are next discussed from the viewpoint of the case study approach (Yin 1994) also taking into account that it is an evaluation study at the same time. Even though these criteria are originally presented for the positivistic type of studies, they can also be applied to more interpretative studies. In additional, issues about the credibility and transferability of qualitative research are considered (Patton 1990).

**Reliability** concerns demonstrating that the operations of the study, such as data collection procedures can be repeated, with the same results (Yin 1994). In action research, the requirement of repeatability of the case study is quite problematic; in practise, exactly the same study cannot be done again, because the people, their work and the organisations under study have changed during the research process. In any event, a systematic approach and careful documentation of the study can greatly enhance its reliability. In qualitative research, part of the reliability is associated with describing the researcher’s paradigm, role and experience (Patton 1990, Gummesson 1993). Therefore I have presented my role in developing and applying the WFG in the case organisation as an action researcher, which described
my access to the data and studied phenomena.

In order to raise reliability, the triangulation through multiple investigators was applied (Patton 1990). It reduced potential bias that may come from a single person collecting and analysing data. The representatives of all the case organisations checked the questionnaires before their use in order to avoid possible misinterpretations with the questions asked. In Case A, I designed the questionnaires and interviewed the stakeholders myself. In Cases B and C there were other members of the research group who helped me in designing the questionnaires and conducting interviews. In all cases, two researchers independently analysed and classified the data to the open-ended questions of the questionnaires and then compared findings. They agreed on the classification in over 80% of the questions, which showed high reliability. During the follow-up of the case studies I had to conduct the data collection and analyses myself because the research group was not available after the end of the project.

The draft reports of this study were reviewed by the key informants and participants of the WFG, which is recommended to increase reliability and also construct validity in the reporting phase of the study (Yin 1994). The representatives of the case organisations read the manuscript of the case report of their own organisation in Finnish, and gave their feedback on it. Some facts concerning the organisation were corrected, but the case description and the interpretation of the data reported by the informants was accepted without criticism. Those Finnish project reports formed a basis for the English articles of this dissertation. The members of the research group also read and checked on the within-case manuscripts that interpretations were realistic from their point of view as well. In order to raise the reliability as recommended by Yin (1994), I have tried to write this dissertation in such a form that the findings can be traced back to data collection and further back to the aims of the study.

**Construct validity** refers to the establishment of correct operational measures for the concepts being studied (Yin 1994). In general, in quantitative research, a valid instrument is one which measures what it claims to measure; similarly, in qualitative research, a study is valid, if it truly examines the topic which it claims to have examined (King 1994). Case study research has been criticised for its inability to develop an operational set of measures and that subjective judgements are used to collect the data.

To increase the construct validity of this study, multiple sources of evidence were used during data collection and analysis (compare Patton 1990, Yin 1994). The findings of this study were based on the convergence of information from different sources which were highly complementary: semi-structured interviews,
questionnaires, project documents, video recordings and performance measures. The use of both qualitative and quantitative data was synergistic, and also necessary to understand both the process of using the WFG and its outcomes. With the triangulation of several methods and data sources the potential problems of construct validity and credibility were addressed, because the multiple data source of evidence provided multiple measures of the same phenomenon (compare Jick 1979, Patton 1990, Yin 1994).

A lot of effort was put into the evaluation of the WFG. For example, findings about the participants’ experiences of the WFG were based on both the interviews and the questionnaires answered by different organisation members, i.e. employees, managers and project team members, all having different perspectives on the WFG. Validating information from people having different perspectives is called triangulation of qualitative data sources (Patton 1990). For instance, the findings concerning work and organisational outcomes were based on the evidence from three separate sources, which together covered a long period of time, i.e. the interviews, project documents and the performance measures designed for a specific organisational context. For instance, it was useful to study the participants’ idea generation both with the questionnaires, showing a rise in individual ideas, and with project documents and direct observations, which showed a collective creation of organisational innovations. Concerning the participants’ interaction, communication and co-operation, findings were based on the information from questionnaires and interviews. Both of these methods presented the participants’ subjective perceptions of the phenomena. There was a lack of objective measures, like observations, to study real communication and co-operation in the actual workplace, which can be seen as one limitation of this research. A similar kind of limitation concerned the evaluation of the participants’ learning, which was studied with the questionnaires and interviews emphasising their subjective perception. However, the amount and quality of improvement ideas presented by the participants as well as the implementation of those ideas indicated the participants’ learning more objectively, showing outcomes in work practices. In general, the methods used in the study were appropriate, at least when compared to prior research, which has mainly relied on questionnaires and interviews directly following the simulation game (compare Joldersma & Geurts 1998).

Another way to increase the constructive validity and also the reliability of the information in this study was to maintain a chain of evidence; that is, explicit links between the questions asked, the data collected, and the conclusions drawn (compare Yin 1994). The chain of evidence is shown in the outline of my reporting the study: the specific research questions were asked with links to the research design and data collection methods, the data source of the findings were mentioned and the
results were written based on the research question mentioned at the beginning of each chapter. The purpose is that a reader could follow my thought-process and the logical steps from the research questions until the conclusions of the study, and could make their own judgements about its credibility (compare Patton 1990).

**Internal validity** means establishing a causal relationship, where certain conditions are shown to lead to other conditions. The analysis of internal validity is typical only for causal (or explanatory) case studies and experimental research, in which an investigator is trying to determine whether event x led to event y. It is not so applicable for descriptive or exploratory case studies. (Yin 1994). It is worth remembering that my research approach and also knowledge produced, was different from quantitative survey studies analysing isolated variables out of context and producing linear, causal explanations (x causes y).

This thesis included some explanatory purposes, as when I explained the reasons for developing the WFG and applying it in organisations (research questions “why…” and “how…”). The synthesis on why and how the WFG was developed was based on the available material, i.e. research and project plans, contracts, meeting memos and publications as well as on direct observations and work history as a researcher over the years. In addition to those information sources, the explanation on why and how the WFG was applied in the case organisations was based on the interviews and discussions with the representatives of the case organisations. I have reported the chronological events as they occurred considering the viewpoint by Patton (1990) that the main role of causal speculations in qualitative analysis is the ability to provide an orderly description of rich details of the case study, and data from participants provides the actual linkage between processes and outcomes.

The methodological and analytical challenge of this thesis concerned exploration of the effects and outcomes of the WFG (“what…”). The longitudinal comparative case study approach was appropriate in order to reveal the chronological sequence of events over time, and to understand links between them (compare Pettigrew 1990, 1997, Yin 1994). The empirical data was collected in three case organisations over a long period of time to determine possible causal events. The same issues were studied with the questionnaire both before and after the game day; and the performance measures were conducted both at the beginning of the organisational development project with the WFG and after the project end. This kind of pre-post research design revealed changes in issues under study indicating causal relationship. I analysed causal processes in different organisational contexts, and explored holistic explanations within and between three cases. The results showed similar kinds of outcomes in all three cases over different time spans, which formed the basis for the causal logic between the WFG and its outcomes (classified as immediate, short-
term and long-term outcomes). The logic of the model on the effects and outcomes of the WFG (Chapter 8.10) closely resembles the “program logic model”, which has been used for evaluating outcomes of public policy interventions (Wholey 1979, in Yin 1994).

Statements about which things appear to lead to other things and how processes lead to outcomes are areas of interpretation and hypothesising (e.g. Patton 1990). They are difficult to prove, because the phenomena of causal relationship are so complex. For example, in organisations there may be many changing, uncontrollable and unknown variables. Nevertheless, as Patton (1990) has noted, when careful study of the data gives rise to ideas about causal linkages, there is no reason to deny evaluation users the benefits of those insights simply because they cannot be proven.

**External validity** refers to the domain to which a study’s findings can be generalised. It deals with the problem of knowing whether the findings can be generalised beyond the immediate case studies. Use of multiple cases over a single case is suggested as a way to increase the external validity of research. (Eisenhardt 1989, Yin 1994). Multiple cases in this dissertation followed a replication logic, i.e. to investigate whether findings from one case organisation holds in another case organisation. Literal replication with three case organisations was useful to develop the emergent theory concerning the participants’ experiences in the WFG and the outcomes of the WFG: in each case the findings were similar or corresponding, which showed strong evidence on the emergent phenomena. Concerning external validity of the WFG, a relevant question could be, “Can the WFG be applied in other organisations with similar results?”

The theoretical framework of applying the WFG was described (Chapter 2 and 6.3) to state the conditions under which a particular phenomena is likely to be found (compare Yin 1994). In addition to the cross-case comparisons of three organisations (extended summary) the summary of ten different case studies (Article II) broadened the application area of the WFG and replicated the experienced usefulness of the method. The organisational situations where the WFG has been successfully applied, and also the situations where the WFG may not be a suitable method were summarised (Chapter 6.4).

The logic of generalisations from case studies is one of replication, not statistical sampling, and the generalisations are analytic generalisations in nature, not statistical (Yin 1994). In analytical generalisation, the goal is to generalise a set of results to broader theory, expand it or to generate a new theory (Yin 1994). For theory building purposes and generalising of present findings, I followed the suggestion by Pettigrew (1997) to stick with a careful comparison of a small number of cases. In this study
three intensive case studies over a period of two and a half years and the summary of ten cases showing similar kinds of results might be quite enough. Eisenhardt (1989) recommends that the case research should stop when theoretical saturation has been achieved, usually within the range of four to ten cases. For scientific purposes, it is not meaningful to increase the number of cases, for example up to 88 cases (Forssén & Haho 2001), to only report that “results support earlier findings” without identifying those findings nor new ones, and without theory building.

Instead of the generalising of the research findings, transferability is suggested as an appropriate evaluation criteria with qualitative case studies (Patton 1990). Showing the high transferability of the findings of this study, the WFG has already been applied in several different organisations (Chapter 9.2). Thus the WFG is a method which can be transferred to different kinds of contexts and organisations. I have provided the reader with a thick description of the context of this study to enable the reader to compare it to his/her context to assess the possibilities for tailoring the WFG for his/her purposes and transferring the findings to an other organisation (compare Patton 1990). Thus, next it is time for the reader to continue with the applications and studies on the WFG and with other simulation games as well.

9.4 Implications for further studies

One future plan concerning the WFG is to organise network meetings in order to share research results, application experiences and new ideas about the WFG. Networking between researchers and practitioners from different organisations offers opportunities for knowledge sharing and mutual learning. The WFG is grounded in the tradition of participatory development, which is a quite typical element in Finnish organisations. However, the WFG is a potential method for use beyond national borders as well. The WFG is already translated into English and has been accepted for international dissemination. This lays a broad foundation for use and study of the method in different countries, which is an opportunity for future. Further applications of the WFG for inter-organisational development is another opportunity to global business with network organisations.

Developing scientific knowledge of simulation games remains a relevant challenge. Several problems can be seen in the use of intervention methods, like the simulation game, and in approaches to organisational change. Typically, a new method or approach is introduced, becomes the ”in thing”, and then just as rapidly is discarded as people move on to some newer methods or approaches. The problem is that systematic evaluation of the method is usually not done: specifically, if it works, when and where it works, and why it works. The risk is that both the strengths
and weaknesses of the method are implemented equally, or then rejected without
the cumulative building-up of a body of theory and practice, the hallmark of a
successful scientific endeavour. With further study, the evaluation framework and
the model on the effects and outcomes of the simulation game created in this study
could be applied more broadly and also further elaborated on. Future challenges
concern comparisons between simulation games and other methods. A cumulative
body of literature and attempts towards theory building are needed to guide those
who wish to contribute to the art and science of simulation and gaming in future.

The challenges of knowledge work and different forms of knowledge intensive
organisations remain as areas for continued study. In this study, employee
participation, face-to-face interaction and direct communication among organisation
members were essential factors in knowledge sharing and successful organisation
development. It is worth asking employees if they have enough of these kinds of
opportunities in highly computer mediated work with global and virtual organisation
forms. Whether employees in a turbulent business can find the needed time to
share and reflect upon together their work activities and experiences, crucial for
individual and organisational learning as well as for successful business results in
the long term, can certainly be asked. Social interaction and communication among
organisation members may be important factor for human mental well-being as
well. Positive social mechanisms at work could be seen as resources for promoting
well-being and preventing negative stress of employees. Further research is needed
concerning social and organisational factors in human well-being in knowledge
work and organisations as well as in society.
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Appendix 1: Background data on participants of the WFG

Appendix Table 1.1 Background data on participants in Case A (N=37).

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Education</th>
<th>Vocational training</th>
<th>Work experience in the organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>36</td>
<td>Primary school 6</td>
<td>No training 8</td>
<td>Less than a year 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle school 6</td>
<td>Vocational courses 2</td>
<td>1 – 5 years 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary school 7</td>
<td>College or Institute 21</td>
<td>5 – 10 years 8</td>
</tr>
<tr>
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<td></td>
<td>Upper secondary school or secondary school graduate 18</td>
<td>University 2</td>
<td>Over 10 years 13</td>
</tr>
<tr>
<td>Men</td>
<td>1</td>
<td></td>
<td>Other training 4</td>
<td></td>
</tr>
</tbody>
</table>

Appendix Table 1.2 Background data on participants in Case B (N=15).

<table>
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<tr>
<th>Sex</th>
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<th>Education</th>
<th>Vocational training</th>
<th>Work experience in the organisation</th>
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</thead>
<tbody>
<tr>
<td>Women</td>
<td>11</td>
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<td>College or Institute 8</td>
<td>Less than a year 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle school 2</td>
<td>University 7</td>
<td>1 – 5 years 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary school 2</td>
<td></td>
<td>5 – 10 years 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper secondary school or secondary school graduate 10</td>
<td></td>
<td>Over 10 years 3</td>
</tr>
<tr>
<td>Men</td>
<td>4</td>
<td></td>
<td>No answer 4</td>
<td></td>
</tr>
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Appendix Table 1.3 Background data on participants in Case C (N=27).

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Education</th>
<th>Vocational training</th>
<th>Work experience in the company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
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<td>Primary school 5</td>
<td>No training 5</td>
<td>Less than a year 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle school 11</td>
<td>Vocational courses 6</td>
<td>1 – 5 years 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary school 2</td>
<td>College or Institute 8</td>
<td>5 – 10 years 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper secondary school or secondary school graduate 9</td>
<td>University 5</td>
<td>Over 10 years 20</td>
</tr>
<tr>
<td>Men</td>
<td>14</td>
<td></td>
<td>Other training 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No answer 2</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2: Outline of the follow-up theme interviews

Planning of the WFG (of concern only to the planning team of the WFG)

- How did the planning of the WFG proceed as a whole?
- How did the different phases of the planning process proceed?
- What problems or difficulties came up during planning?
- What factors promoted or facilitated planning?
- What did you think of the planning team? (For example, number of members, representation, prior experience in organisation development)

The game day and debriefing

- How did the game day succeed as a whole?
- Did you receive enough information about the WFG before game day?
- What kinds of attitudes did the participants have about the WFG?
- What were the atmosphere and feelings among participants during and after the game day?
- How would you evaluate the communication and co-operation among the participants during the game day and debriefing?
- Did you find the experience useful?

Evaluation of the potential effects and outcomes of the WFG

- Have you received the aims of the WFG project? (Which aims have been received? Which are still in progress?)
- Concerning the simulated work process, did you uncover problems in the work process? (What were they?)
- Did you find improvement potential or ideas for improvements concerning the work process? (What were they?)
- Did you have any new ideas for improvements?
- How would you evaluate the implementation of these improvement ideas? (What development activities have been implemented? Which are still in progress?)
- What kinds of effects and outcomes did the WFG offer your organisation in your estimation? (In the short-term? In the long-term?)
- What was the most important result or aspect of the WFG project for your organisation?
Evaluation of the WFG method, its usefulness and further application

- In the WFG, the participants represented different units and occupational groups (and different organisations). What possible advantages or disadvantages did you find with this kind of structure?

- What potential advantages and/or disadvantages did you find in the WFG?

- How did you evaluate the usefulness of the WFG in your organisation?

- What further application possibilities of the WFG do you see in your organisation? (Do you have plans to use the WFG?)

- What hindrances in applying the WFG do you see in your organisation?

- How would you compare the WFG with other development and training methods applied previously in your organisation?
Appendix 3: Questionnaire used before the WFG

Case C, industrial company

Please answer the following questions by circling the best choice and/or writing your answer on the lines following the question. Thank you for your comments!

Role in the WFG

1. My role on game day was as
   1 a player
   2 an observer

2. In planning the WFG I was
   1 a member of the planning team
   2 interviewed
   3 not participating in planning

Background data

3. My job title is …

4. I am
   1 a woman
   2 a man

5. Educational background
   1 primary school
   2 middle school
   3 secondary school
   4 upper secondary school
   5 secondary school graduate

6. Post-secondary education for vocational training
   1 no further training
   2 vocational courses
   3 college
   4 institute
   5 university
   6 something else….

7. Work experience in the company
   1 less than one year
   2 1 – less than 5 years
   3 5 – less than 10 years
   4 over 10 years
Knowledge of the salary payment process

8. List all the units and employees who are involved in any way in the salary payment to a worker paid per hour.

9. What tasks do the factory office clerks perform in the salary payment process?

10. What tasks do the salary calculators perform in the salary payment process?

11. How are your own tasks connected or what is your role in that process?

12. How much can you affect the flow of the salary payment process?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>not at all</td>
</tr>
<tr>
<td>2</td>
<td>only a little</td>
</tr>
<tr>
<td>3</td>
<td>somehow</td>
</tr>
<tr>
<td>4</td>
<td>quite much</td>
</tr>
<tr>
<td>5</td>
<td>very much</td>
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</table>

Quality of the salary payment process and its development

13. Are there errors occurring in the salary payment process?

<p>| | |</p>
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<tbody>
<tr>
<td>1</td>
<td>I don’t know</td>
</tr>
<tr>
<td>2</td>
<td>not at all</td>
</tr>
<tr>
<td>3</td>
<td>only a little</td>
</tr>
<tr>
<td>4</td>
<td>quite much</td>
</tr>
<tr>
<td>5</td>
<td>very much</td>
</tr>
</tbody>
</table>

14. What kinds of errors or problems have you noticed?

15. What do you see as the reasons for those errors or problems?

16. Do you have ideas on how to decrease the number of errors?

17. Do you know who to contact in your organisation if you face problems in salary payment or salary administration?
18. How do you evaluate the quality of the salary payment process in general?

1  poor
2  somewhat poor
3  satisfactory
4  good
5  very good

18. How do you evaluate the importance of improving the salary payment process?

1  not important
2  quite important
3  very important

19. Which are the most important issues that should be improved? Why?

20  How well do the information systems (TUPLA, SYSLAT, HERE) support the salary payment process?

1  I don’t know
2  very poorly
3  poorly
4  satisfactorily
5  quite well
6  very well

21. Do you have ideas on how to improve the information systems? What kinds of ideas?

22. Would you be willing to change your working procedures in order to develop the salary payment process?  
1  yes  2  no

23. Would you be willing to participate in developing the salary payment process if you had the opportunity for that?  
1  yes  2  no

**Division of work and co-operation**

24. How would you evaluate the division of work between the different actors in the salary payment process?

1  unclear
2  somewhat clear
3  clear

25. Do you have ideas on how to improve the division of work? What kinds of ideas?
26. How would you evaluate the co-operation between the different actors in the salary payment process? 

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td>poor</td>
</tr>
<tr>
<td>2</td>
<td>quite good</td>
</tr>
<tr>
<td>3</td>
<td>good</td>
</tr>
</tbody>
</table>

27. Do you have ideas on how to improve this co-operation? What kinds of ideas?
Appendix 4: Questionnaire used after the WFG

Case C, industrial company

Please answer the following questions by circling the best choice and/or writing your answer on the lines following the question. Thank you for your comments!

Experiences and evaluations concerning the Work Flow Game

1. Were you satisfied with the amount of information you received on the WFG in advance?
   1 I didn’t receive any information
   2 not satisfied
   3 more or less satisfied
   4 almost satisfied
   5 fully satisfied

2. In preparing for the game day, did you consider the guide for the participants sufficient?
   1 I don’t know
   2 not sufficient
   3 satisfactory
   4 almost sufficient
   5 sufficient

3. In preparing for the game day, did you consider the briefing for the participants sufficient?
   1 I don’t know
   2 not sufficient
   3 satisfactory
   4 almost sufficient
   5 sufficient

4. What was your attitude towards the WFG before the game day?
   1 negative
   2 neutral
   3 positive

5. What was your attitude towards the WFG after the game day?
   1 negative
   2 neutral
   3 positive
6. Please describe your attitude towards the WFG in your own words.

7. Were important issues discussed during the game day?
   1 not at all
   2 not sufficiently
   3 satisfactorily
   4 almost sufficiently
   5 sufficiently

8. How good were the opportunities to express your opinions during the game day?
   1 not at all
   2 poor
   3 moderate
   4 good
   5 very good

9. How well were the other participants able to express their viewpoint during the game day?
   1 not at all
   2 poorly
   3 satisfactorily
   4 well
   5 very well

How would you evaluate the effects of the WFG on the interaction between
10. organisational units  11. occupational groups  12. hierarchical levels

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1 much weakened</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2 weakened</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3 no effects</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4 improved</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5 much improved</td>
</tr>
</tbody>
</table>

13. How well did the WFG help you form an overview of the salary payment process?
   1 not at all
   2 poorly
   3 moderately
   4 well
   5 very well

14. How well did the WFG reveal the quality problems in the salary payment process?
   1 not at all
   2 poorly
   3 moderately
   4 well
   5 very well
15. How many new points do you think you learned during the game day?
    1  none at all
    2  not many
    3  some
    4  many
    5  very many

16. How well did the WFG help you understand the different viewpoints of the actors concerned in the salary payment process?
    1  not at all
    2  poorly
    3  moderately
    4  well
    5  very well

17. How well did the WFG help you understand your own tasks as part of the salary payment process?
    1  not at all
    2  poorly
    3  moderately
    4  well
    5  very well

18. How well did the WFG offer opportunities to express improvement ideas?
    1  not at all
    2  poorly
    3  moderately
    4  well
    5  very well

19. Were completely new improvement ideas brought out during the WFG?
    1  no  2  yes

20. How would you evaluate the usefulness of the WFG for the development of your organisation?
    1  don't know
    2  useless
    3  neutral
    4  useful

21. Would you be willing to participate again in a similar kind of game event?
    1  no
    2  perhaps
    3  yes
22. What was the best thing about the WFG?

23. What were the shortcomings of the WFG?

24. Do you have ideas on how to improve the WFG? What kinds of ideas?

--------

Note: This questionnaire included additionally the same questions that were asked already before the WFG concerning the themes of 'knowledge of the salary payment process', 'quality of the salary payment process and its development', and 'division of work and co-operation' (questions 8-27).
Appendix 5: The contents of the WFG handbook

TO THE READER

PART I SMOOTH FLOWING ADMINISTRATION THROUGH SIMULATION

What is the Work Flow Game?
Simulation game method
When is a game suitable?
The background of the simulation game
Work process as object of simulation
Characteristics of the Work Flow Game
What are the benefits?
Who plans the game?
The role of the game facilitator
How does the planning of the game progress?
Critical stages in game planning

PART II HOW TO PLAN AND IMPLEMENT THE WORK FLOW GAME?

1 Starting the development project
   1.1 What is expected from development?
   1.2 Is the Work Flow Game suitable?
   1.3 Selection of the work process
   1.4 Getting the project team together
   1.5 Goals of the development project
   1.6 For the information of all (Briefing 1)

2 Describing the work process
   2.1 Description of the process begins
   2.2 How to define the simulated work process
   2.3 How to evaluate and measure the work process

3 Selecting of the case and the field round
   3.1 Which case is selected for simulation?
   3.2 Adding new members to the project team
   3.3 When and where to play?
   3.4 More information (Briefing 2)
   3.5 Field round
   3.6 First version of the scripts

4 Preparing the game session
   4.1 The game session draws nearer (Briefing 3)
   4.2 Planning the game setting
   4.3 Roles of participants in the game
   4.4 Seating order at the game table
   4.5 Work, game and visualisation equipment
   4.6 The script and the act structure
4.7 Documents in order
4.8 The programme and goals of the game session
4.9 Planning the debriefing and further measures
4.10 Documenting the game session
4.11 Furnishing the game premises
4.12 Information for the participants (Briefing 4)
4.13 Is a dress rehearsal necessary?
4.14 To be remembered before the game!

5 Game day
5.1 Introduction to the game (setting the mood)
5.2 Action – let’s play!
5.3 Debriefing

6 Debriefing after the game day
6.1 Debriefing continues
6.2 Immediate assessments of the game session
6.3 Analysing development needs
6.4 Launching the development initiatives

7 Follow-up and evaluation

PART III APPENDICES

1 Reported Work Flow Games
2 Work calendar for the project team
3 Goals and object of the development project
4 How to inform about the Work Flow Game (Briefing 1)
5 Data collection form
6 Script drafting form
7 Invitation to the game (Briefing 3)
8 Work Flow Game setting
9 Checklist for the project team
10 Evaluation form for the Work Flow Game

REFERENCES
Appendix 6: Implementation of the improvement ideas in Case C

<table>
<thead>
<tr>
<th>Developments implemented at the end of the project were:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Since the persons who need internal factory statistics can check them directly from the information system, the information is no longer mailed.</td>
</tr>
<tr>
<td>• Active use of e-mail to distribute information more effectively.</td>
</tr>
<tr>
<td>• Unification of the shift lists of workers.</td>
</tr>
<tr>
<td>• In accordance with the ideas of salary and factory office clerks, the necessary improvements in the old information system were carried out</td>
</tr>
<tr>
<td>• Teaching of the salary system to familiarise new employees and foremen with it is now included in the introduction courses for new employees</td>
</tr>
<tr>
<td>• Salary payment during training courses has been simplified: the participant lists for training sessions now include the type of salary paid, and the clerk is directly informed of the amount of the salary the employee receives during training.</td>
</tr>
<tr>
<td>• The immediate correction of errors in project-based salary payment once it is observed.</td>
</tr>
<tr>
<td>• Improving access to foremen by giving them cellular phones.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Developments implemented six months after the project were:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Selection of the new information system for salary administration.</td>
</tr>
<tr>
<td>• Enrichment of the job description of factory office clerks.</td>
</tr>
<tr>
<td>• Department secretary is the new title given to a factory office clerk.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Developments implemented 18 months after the project were:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Implementation and start up of the new information system.</td>
</tr>
<tr>
<td>• The arrangement of a training course to apply the information system.</td>
</tr>
<tr>
<td>• Transfer of the responsibility of running the salary system to salary administration.</td>
</tr>
<tr>
<td>• Completion of the change-over to a project-based salary payment phase by phase, and unification of the grounds for salary payment.</td>
</tr>
</tbody>
</table>