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HUOM! TÄMÄ ON RINNAKKAISTALLENNE

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Knowledge work and new ways of working

Knowledge work challenges industry management practices

The world has changed faster than the ways in which organizations organize the work. Industrial mass production and its benefits are based on management practices that emphasize predictability, control and long-term planning. Drucker (1999, 79) says that the most important contribution of management in the 20th century was the productivity increase of the manual worker whereas the most important contribution management needs to make in the 21th century is the increase of the productivity of knowledge work and knowledge workers. Work is becoming more knowledge intensive and that kind of work is characterized with unpredictability and unclear tasks. Work that requires new solutions, innovation, creativeness and interaction between different people is often a poor fit with traditional industrial structures and management practices.

There are, of course, still many fields of businesses where traditional industrial structures of organizations and management practices work well but, at the same time, there are also others where new, flat, networked, openly operating businesses are overtaking traditional businesses in many aspects. These companies are competitive because of their ability to put the customer in focus and to use new ways of working and modern technology. Many studies (Appelbaum et al. 2000; Cappelli and Neumark 2001) have investigated how the productivity of organizations could be improved by introducing new ways of organizing working. Also, the new social innovations and new ways to manage work have been of importance according to prior studies. They have contributed to the productivity either as such or in combination with product innovations or production innovations. (Barney and Wright 1998; Kauhanen and Maliranta 2011;

López-Cabrales, Pérez-Lunõ and Valle-Cabrera 2009.) According to prior studies, highly productive ways of working are such that they decentralize the organizational decision making and problem solving and thus increase the employee commitment (Edwards and Wright 2001). The concept of new ways of working is also multidisciplinary: it relates to human resources management, information technology and facilities management. (Laihonen et al. 2012, 103). Complexity theory including the concepts of chaos and emergence has been considered one of the most revolutionary products of the 20th century having influence on science, technology and economics among others. Complexity theory studies how patterns emerge through the interaction of many agents in a way that the whole becomes greater than the sum of its parts in a way that the whole system cannot be understood by simply looking at its individual parts (Sullivan 2011). The theory suggests that organizations tend to self-organize themselves to a state where they regulate themselves. Any complex systems, such as organisms, societies or the Internet, have emergent properties that cannot be reduced to the mere properties of their parts. The behaviour of these systems is unpredictable and uncontrollable, and it cannot be described in any complete manner. (Heylighen 2008.)

Traditional management research considers organizations as machine-like mechanisms that can be controlled. It is also common for traditional management theories to assume that organizations need some kind of hierarchical management. Indeed, these kinds of management models function well in the context of physical production but they seem to be ill-suited in knowledge-oriented economy. (Uhl-Bien, Marion and McKelvey 2007, 298.) Prior studies (Daft and Lewin 1993; Mitleton-Kelly 2003.) claim that change of paradigm from traditional management towards complexity theory in defining the context of organizations has changed the ways of working and organizing. Redefining organizational practices means moving away from

mass production efficiencies, hierarchical organization and central control and introducing flexible, learning organizations that constantly change and solve problems through interconnected, self-organizing processes. In short, it has been suggested that future work will be organizing like the Internet. Instead of pyramid-like organizations, there will be flexible organizations that hand over management tasks to anybody in the organization who has the knowledge needed in the given situation.

The complexity theory offers an alternative way to look at organizations. The assumption that everything can be modelled given enough time or intelligence has been given up and instead, it has become evident that not everything can be formalized into predictable, mechanistic patterns that are easy to understand or recognize (Pelrine 2011, 27-28). This implies that the traditional command and control model has ceased to work in organizations who need to respond quickly to their environment and customer needs and produce new, innovative products or services. Digitalization, artificial intelligence, technology and robotics are going to replace many traditional tasks in the future. Work is not disappearing but it is changing its nature.

The automatization of knowledge work is not only a vision any more. Many tasks are already taken care by robotic process automation. For instance, accounting can be considered a typical example of knowledge work where repetitive and routine work lends itself easily for automatization. Productivity increases when employees can concentrate on their core competencies and let robots take care of their routine work. This way the profitability increases as well. Financial sector is digitizing its services, which may be good news for those customers who prefer taking care of their money affairs using smart phones, but bad news for the employees whose jobs are disappearing – or at least there is a new division of labour between an employer and a robot. Another field of industry that has been very keen on the possibilities of

robotic process automation is health care where traditional knowledge workers such as doctors feel that computer work with inadequate information technology systems takes such a lion's share of their working hours that it has harmful effects on the patient work.

However, at the same time as the technological development increases new opportunities for many it can also cause serious alienation for others, which, in turn, can cause for many kind of social turmoil. This creates challenges for human resources management in organizations.

It seems that innovation, creativeness, learning, interaction and social intelligence are tasks where humans still excel - and that cannot be taken care by automatization, at least not yet. The level of innovativeness and creativeness in organizations usually increases when everybody working for the organization is allowed to generate ideas and experiments are implemented fast without management decisions. Innovativeness is something that can be learned. A network-structured organization enables faster information share, which, in turn, increases the learning ability of a network in a tremendous way comparing to a hierarchical organization. Digital tools enable sharing of knowledge and information, but tools cannot be a solution as such because no digital tool or technological solution is able to change the patterns of behaviour. Changing the behaviour of people in the organization requires a change in the organizational culture. It starts from changing the ways of thinking: Managers have to be ready to give up their power and employees have to be ready to share their knowledge.

The insights and examples brought about in this chapter are based on an organizational study that was carried out in Finland. Work life in Finland has encountered many reforms during the past years that have also been characterized by an extremely difficult economic recession. The educational level in Finland is remarkably high and power relations in organizations considerably low by tradition. The employees are empowered in many ways, especially

concerning their work conditions. However, changes that have happened in work places and their operational environment have increased the demand level of work while, at the same time, work conditions, collective agreements and management traditions have not always followed these changes.

The ability of companies to look for solutions that boost productivity and job satisfaction may be relatively low because of lack of knowledge, knowhow, management practices or motivation. Input needed to improve profitability or the quality of working life can be bigger than the benefits, at least in the short run. (Alasoini 2011, 24-25). However, retaining the welfare state needs economic growth through the increase of productivity.

In an economy like Finland, the emphasis of work life has already changed from production and performance into knowledge and thinking, which changes the way in which the productivity of work is understood: It is not about how to produce more but it is about how to learn more and faster. New ways of working have been introduced as a remedy to improve the productivity of work life on national level but there seems to be no mutual understanding on what these new ways of working could be. Instead, to improve the productivity of work life, new quantitative reforms have been introduced instead. However, there is a national project (Valtakari 2015, 3-4) in Finland aiming at improving the quality of work life in Finland to make it the best in Europe by year 2020. It has been recognized that developing the quality of work life conditions and productivity support each other. Differences in the production level are created mostly inside working communities by the way how work is done. Recognizing this change requires renovation in organizations, new practices in working, new kinds or work life skills and ability to utilize the possibilities offered by technology.

Despite of all above, it is possible to find organizations that can be considered forerunners in terms of new ways of working, productivity, profitability, innovation, reputation and the general quality of working life. People working for these organizations have understood that improving the productivity is a question of organizational learning process where individual learning of one employee is beneficial for the organization only when it links to the learning of the whole community. The term *alternative organization* (Reedy and Learmonth 2009, 244) refers to companies whose aims are different from those of so called traditional organizations. According to them, the aims can include targets like mutual support, sustainable development, self-management, self-expression or bringing a change in society. These kinds of targets make alternative organizations operate in a different way comparing to traditional organizations, especially in terms of hierarchy or power relations. All employees are involved in the development, which also helps in dealing with the changes and insecurity. People working for these companies feel that their achievement level is high and that they get support from their fellow workers and from the management. The benefits of work are spread out evenly and possibilities brought by new technology are utilized when creating new solutions or services. This chapter is animated by examples extracted from interviews that were carried out in organizations that can be called alternative organizations. The companies were chosen for the study because they deviated from the mainstream of organizations in the following ways: their organizational structure is very flat, they use shared management practices, they have a reputation as a good workplace, they have excellent products, they have won many prices in competitions like Great Place to Work and – last but not least – they are highly profitable companies. All the companies are producing information technology solutions or software. This implies that the employees in the companies are typical information era knowledge workers.

The data was collected by conducting ten audiotaped, semi-structured interviews with fourteen interviewees in six different companies. The interviews covered 12 different topics: 1) personal questions about the interviewees and their role in the company, 2) information about the company, 3) the ways of working 4) the target setting and follow-up 5) the role of managers 6) the role of personnel 7) internal co-operation and organization 8) remuneration 9) customer relations 10) external networks and communications 11) dialogue 12) challenges is the past, present and future. The analysis started analysing the interviews line by line, with a process of putting tags, names or labels against pieces of the data. The theoretical framework was used to give observations a meaning, interpretation or explanation and to build a connection between observations and, finally, to draw conclusions on them. (Eriksson and Koistinen 2005, 30-31.)

Who is a knowledge worker?

Knowledge has become an important commodity in a knowledge-based economy. This has led to the emergence of so-called knowledge worker. Knowledge used to be power but not any more: Knowledge is valuable only as long as it is shared and flows and creates value in the organization's network. That is why knowledge work consists of talking, listening, interaction and information processing.

Knowledge work is a broad term for any profession that produces knowledge. It is typically contrasted with physical work that contains processes and practices that are predictable and can easily be defined in advance. Digitalization has multiplied the amount of knowledge available. Knowledge work is more complex and difficult than routine work because problems solved in knowledge work are such that there are no right answers for them. Knowledge work, characterized often with the overflow of information, is a burden for our brain, but not

necessarily in a negative sense because complex tasks of knowledge work are connected with a human being's inner motivation whereas routine work is considered harmful, unhealthy and unmotivating because it prevents employees from using their higher cognitive skills. Indeed, the importance of motivation and strength are highlighted in knowledge work.

A knowledge worker has been in the focus of many prior studies (Drucker 1969; Drucker 1999; Nonaka and Takeuchi 1998; Storey and Quintas 2001) that highlight the difference of a knowledge worker from a traditional employee because there is a deeper interdependency between a knowledge worker and his employer. Many traditional professions such as doctors and lawyers or project managers and business analysts represent knowledge workers. Traditional knowledge workers used to work alone. Nowadays there is also an increasing amount of information age knowledge workers whose tasks are typical for organizations operating in complex environments. Co-operation, communities and networks characterize this kind of knowledge work. Among the qualities needed from knowledge workers are creativity, innovation, problem solving, ethics and morale. A manager interviewed in the study pointed out: "We aren't good for everyone. A person who needs instructions and procedures is not fit to work with us because here it's more about applying than taking the best possible decision in that situation."

The knowledge workers' input is highly valued in the external marketplace and it is a key to a company's success. As one interviewee said: "It starts from customer needs and then we build a project team around it. And the project team and the customer define together how we will do the project." This fact shifts power to the knowledge workers, which in turn makes them less dependent upon their immediate employer as demand for the services they produce arises from the customers. The knowledge and expertise of knowledge workers must, however, be enhanced

all the time in order to be able to offer customers high-level new knowledge services. This enhancement brings mutual benefits: the market value of the individual increases while the company maintains its competitive advantage. (Donnelly 2006, 81, 92-93.)

The only bargain an employer can offer a knowledge worker in return for their commitment – in addition to the remuneration – is the opportunity to develop their skills continuously (Donnelly 2006, 81). A human resource specialist described this by saying that "When introducing this new pilot, we started to think what kind of dreams we have, what each one considers meaningful in the future, what he wants to achieve and for what reason." The increased expertise increases the employer dependency and this is why the employers have to invest to the loyalty of their staff if they want to avoid the risk of losing them. This gives the knowledge workers power so that they can exercise considerable influence over factors such as their working environment or either temporal or locational flexibility of their work for instance. (Donnelly 2006, 82, 87.)

Knowledge workers demand different things from their employment relationship comparing to traditional workers. They want to manage their own development and they want their job to reflect their own philosophy of work, career and life in general as described by an interviewee: "My role in the company has been built on my own opinions. I haven't been given one single target. If I ever asked what I should start doing the answer was that check what needs to be done. I have created my own role." On the other hand, knowledge workers depend on their employer – if not so much on the employment, but on the ability to skill enhancement and access to resources (Donnelly 2006, 81-81).

Knowledge work is done with physical, social, digital and emotional inputs within given time resources. Estimating the productivity of knowledge work is not easy though productivity differences between different knowledge workers can be tenfold. Traditional productivity

measures like quantity of outputs are usually unsuitable for measuring the productivity of knowledge work due to the complex, intangible and individual nature of knowledge work. Productivity of knowledge work is about quality because the increase in productivity cannot be created by doing more, it can only be created by doing things in a different way in order to create more value in work. (Antikainen and Lönnqvist 2006, 1-2; Ojasalo 2003, 14.) One interviewee described this as follows: “But there are no such arbitrary numerical targets like plus five or plus fifteen or something. It is common knowledge that these kinds or arbitrary, numerical targets impair the performance in the organization.”

Instead of quantitative productivity measures, the quality of employees, innovation capability, learning, meaningfulness and the outcomes perceived by customers are considered measures of performance that are more important. Work is considered an essential part of a person’s identity and an employer’s role is to enable passion as pointed out by an interviewee: “We are not aiming at profitability separately, because profitability is the consequence of meaningfulness, fun, customer focus.” It has been proposed by many studies (Okkonen 2004, 140; Vuolle 2010) that in the case of knowledge work productivity measurements should concentrate on subjective approach on actual working processes such as the working atmosphere, because other productivity output measures are too challenging. The importance of the customer focus is explained by the fact that knowledge workers usually produce some kind of services and the classical services are ones where a customer participates the service provision and thus has a role in either improving or deteriorating productivity (Gummesson 1998, 6-7).

Personnel often knows best the factors facilitating or hindering their productivity. Continuous improvement of knowledge work productivity requires new ways of working. Organizations have to be able to combine on one hand the possibilities offered by new technology and on the

other hand the know-how of people. Learning is an integral part of daily job as describes a management consultant: “This is a very scientific job. We study a lot, read books and articles, find out what is happening in the world, carry out our own research, take empirical tests and verify theories.” Most of learning in organizations happens elsewhere than in traditional formal training and the most important resources in learning are different kinds of communities of practice and peer-to-peer networks. This means that even though individual knowledge is important, it is an integral part of collective leaning process in the organization and outside the organization where the information is shared openly and other companies operating in the same field of business are seen as partners rather than competitors.

Cynefin framework as a sense-making tool in knowledge work

What happens when an organization finds itself in a situation where the old way of organizing, the old ways of working and the old ways of managing the organization have stopped being effective? Kurtz and Snowden (2003) developed the Cynefin framework refined later by Snowden and Boone (2007) as a sense-making tool for strategic decision making in business problems and situations. The conceptual thinking of the framework draws from complexity science and knowledge management. The idea of Cynefin framework is to provide pointers on how to study complex systems (der Walt and de Wet 2008, 152).

The Cynefin framework divides the types of situations that organizations typically face and need to manage in four different categories: There are so-called ordered domains that are called simple and complicated, then there are so-called unordered domains that are called complex and chaos. They do not mean lack of order, but they describe the emergent order. The fifth possible, although not desirable, domain is the domain of disorder. It should be noted that in the

framework there is no preference of one domain over the other: the model does not try to point out where the best domain is, it only tries to help people in sense-making. (Kurtz and Snowden 2003, 468-469.)

According to the model, a simple context is the domain of *best practice* that are derived from past experience in the organization. In simple context the cause and effect relationship is known and repeatable and it is possible to determine, based on facts, a correct action or right answer for each organizational situation in advance. Repeatability allows the use of predictive models and it is possible to operate on the basis of routines and standard procedures. (Kurtz and Snowden 2003, 468; Snowden and Boone 2007, 4).

A complicated context is the domain of learning organization and *good practice*. It is also predictable but more varied because the cause and effect are separated over time and space. However, it is possible to move from the complicated domain to the simple domain if only enough time and resources can be used because there are clear relationships with multiple answers and they can be tackled using expert analysis and communication between experts. (Kurtz and Snowden 2003, 469; Snowden and Boone 2007, 4-5). This is usually a domain that describes how things have been in the past of the organization as witnessed by one interviewee: "This is a challenge for us, a challenge of clever thinking. We have been taught to think that a real project has a plan. And a plan must be followed. And changes must be managed and so on. It's all rubbish."

A complex context is the domain of *emergent practice* and thus it links to complexity theory. It is the most common context for organizations performing knowledge work. In a complex context no cause and effect relationships are known, which means that there is no or very little predictability. Information is unstructured and related but people do not know how. This is why

categorization or analytic techniques are not available and taking decisions cannot be based on knowledge or analytical approach but instead, the actions can only be based on emerging patterns, experimentation and increased interaction. Also, narrative techniques are particularly powerful in this domain. The management is based on facilitating and it is possible to evaluate the adequacy of actions only in retrospective because emerging patterns are such that they can be perceived but not predicted. (Kurtz and Snowden 2003, 469; Snowden and Boone 2007, 5). An interviewee described this as follows: “At the moment, team leaders have an important role in helping people to reach the targets.”

Sargut and McGrath (2011) point out that complex organizations are far more difficult to manage than complicated organizations because they interact in unexpected ways and because their degree of complexity may lie beyond our cognitive limits. Managing in a complex context is a challenge not only because managers have to be able to stand a lot of uncertainty but also because it is very difficult to make sense of a situation and avoid unintended consequences. Managers are also dependent on the employees' willingness to do things voluntarily. In a complex context there is little if any room for authority. Instead, management is shared throughout the organization in networks, the ecosystems of organizations, where the right people take timely decisions.

A chaotic context is even more turbulent, complicated, surprising and challenging than a complex context. The cause and effect relationships cannot be defined. Every piece of information is a fragment with no relationship to any other. Applying best practice is what probably precipitated chaos and there is nothing to analyse nor will any patterns emerge. In a chaotic context people need strong contention, authoritarian intervention and crisis management to reduce the turbulence. Novel practice and innovations come to the force in a chaotic context

and it is possible to enter this domain even on purpose in order to open up new possibilities. (Kurtz and Snowden 2003, 469; Snowden and Boone 2007, 5-6).

Finally, disorder is a context where an organization ends up from any of the above mentioned contexts when it is unable to recognize, define or decide its context. It is a domain to understand conflict among decision makers looking at the same situation from different points of view. In this kind of situation people tend to pull it towards the domain they feel the most comfortable. That is why it becomes important to reduce the size of the disorder domain and to achieve consensus among decision makers – both on the situation and on the most appropriate response. (Kurtz and Snowden 2003, 469-470; Snowden and Boone 2007, 4).

It is as interesting to investigate the possibilities concerning moving between the different domains of the Cynefin framework as to think of the present domain because a move across boundaries requires a shift to different way of understanding and interpretation – and thus a different management style. The simple and complicated domains are the domains of order where the most important boundary for sense making is what can be used immediately because it is known and what needs time and energy to be found out but is knowable at the end. In the complex and chaotic domains knowability is less important but instead interaction is important – that is, what can be patterned in complex domain and what needs to be stabilized for patterns to emerge in chaotic domain. (Kurtz and Snowden 2003, 474-475.) The function of management is to support the self-management of employees and to enhance the communality. In building such conditions the ways of interacting are in an important role. A human resource specialist explains: “For example, we don’t distribute work to employees but there is a work list with deadlines and they choose the work they want to do.”

In the order domain (the simple and complicated ones), connections between managers and staff are strong. There are structures that control behaviour like procedures and forms. On the other hand, in the disorder domains (the complex domain and chaos) connections between managers and staff are week and control through structure usually fails. In simple and chaotic domains connections between staff are weak and emergent patterns do not form on their own. In complex and complicated domains connections between staff are strong and stable group patterns can emerge. (Kurtz and Snowden 2003, 470-471.) An interviewee describes this: “Managing or management is not a question of hierarchy, it’s a question of workmates and colleagues, it’s about how they see things should be done.”

In the simple domain, characterized by a clear relationship between cause and effect, the decision model is to sense the situation, categorize it and respond in a way that is based on best practice. The complicated domain is also characterized by cause and effect but there may be multiple right answers. The decision model is to sense, analyse and respond. This requires expert work and can be described as good practice. The complex domain is unpredictable in a way that cause and effect can only be understood in retrospect. Answers are found by experimentation and the decision model is thus to probe, sense and respond. This way practice emerges. (Kurtz and Snowden 2003, 468.)

In the domain of chaos there is no link between cause and effect nor are there any right answers. The decision model is to act, sense and respond as, for example, in crisis management. Crises often occur when weak signals have been omitted and there has been an unrecognized context change in the simple domain. In that kind of situation best practice ceases to work and the system collapses catastrophically into chaos leaving two different approaches for the management: either the decisive, directive management control to re-establish the good practices and forcing

the organization to move from chaos back to the simple domain, or either to look for small patterns in the chaos that show the type of practice the organization wants to have. Managers can thus support these beneficial patterns and try to replicate them throughout the organization. This is a way to move from chaos to the complex and then the complicated domains. It should be noted, however, that neither of these approaches automatically guarantees success. (Kurtz and Snowden 2003, 468).

New ways of working

According to Snowden and Boone (2007, 5), most decision-making situations in organizations take place in a complex context. The framework is based on the idea that many problems in management are caused by the mismatch of management style and organizational environment. Defining the context of the organization accurately is a prerequisite for finding a successful and purposeful way of organizing the work and way of managing the organization. The context of the organization defines the nature of the problems they handle. As a management consultant in a big it-company said: "Everything comes from the context. We have to understand what we are doing, what methods we are using and what kinds of problems arise and how we are able to tackle them."

The Cynefin framework challenges the assumptions of order, rational choice and intent (Massy 2005, 15). People working for alternative organizations often define their ways of working by describing what they *do not have*. The complex environment has made the companies to abandon many traditional organization and management practices. Among these are hierarchy, charts of organization, line organization, job descriptions, management practices, bureaucracy, documents, instructions, processes, control, meetings, targets, problem solving or personal incentives. In

complex contexts, the above-mentioned practices are rather ineffective and do not concentrate on the right things as one interviewee pointed out: “We have removed unnecessary bureaucracy. This allows us to spend our time in tasks that are really important.”

Instead, the companies have adopted strategy as simple rules ideology that helps them capture unanticipated opportunities in order to succeed, Simple rules poise the company on what is termed in the complexity theory *the edge of chaos*. When a pattern emerges from the processes, the result can be a long-term competitive advantage that no one can predict how long it will last. (Eisenhardt and Sull 2001,)

Heylighen (2008) explains that these mostly negative observations emphasize the traditional qualities that complex systems lack. However, there are also a number of positive features, such as flexibility, autonomy and robustness, that traditional mechanistic organizations lack. The positive qualities are aspects of the process of self-organization, where order is created out of disorder. These kinds of systems organize themselves to the state where they want to be and where they regulate themselves as to better cope with internal and external conflicts, and this allows them to adapt to a constantly changing environment. This increases the utility of the system.

While challenging the assumptions of order, rational choice and intent the Cynefin framework offers a perspective of complex systems characterized with a high level of uncertainty (Massy 2005, 15). In a complex context, management practices include, among others, the improvement of communication, the promotion of new ideas, the tolerance for difference and the constant observation of the organizational context. (Snowden & Boone 2007, 6). A management consultant says in the interview: “All those functional organizations, specialized roles,

departments; they represent all that old game. They actually support inefficiency although – and it is a paradox – we think they improve efficiency and control."

Having given up the traditional ways of working the companies have adopted Agile ways of working instead. Agile method offers a highly flexible and interactive way to manage especially information technology development projects, or any other knowledge work projects. The central elements in Agile methods are cross-functional teams of motivated individuals who are able to manage themselves. Teams represent emerging organization.

Pelrine (2011, 29) explains that if the software building process is seen as a complicated task that could easily be broken down into smaller pieces, then it is likely that an expert driven process-based software development method is used. If the tasks of an information technology company are seen as complex problems, then the Agile methods become in use. The method emphasizes communication, self-organization and team dynamics and recognizes the contributions of individuals as fundamental in relation to productivity. The role of management is to facilitate and coach the teams.

Teams have an essential role in increasing the performance of the organizations – a role that hierarchical ways of building an organization failed to take into account: teams make it possible for people to find other people they can recognize as their tribe. Free organizational structures let the right people combine with each other and this increases innovation and creativity more than combining people on a paper.

The Agile methods use the Scrum project management framework that consists of an iterative, incremental model of development where work is divided into iterations that are called sprints and where there is a review and reflection step at the end of each iteration. An interviewee describes this: "If we look at the production, there are Agile methods in use and there are teams

around certain products. Things are done in one month sprints and we try to give power to team members concerning content; what we are doing, how we are doing it and such."

The method is very empirical and flexible comparing to the traditional sequential product development methods and it emphasizes learning, fun and individual decision making. The work happens in self-organizing teams that work in close physical distance and communicate effectively both online and face-to-face to reach a common goal. In applying Scrum, there is an emphasis on skills as an opposition of knowledge and there are few rules. (Pelrine 2011, 29, 36.)

The basic idea of the method is to recognize that in the course of the project. the customers cannot fully understand the requirements of the end product and thus quick changes are needed because of emerging requirements (Pelrine 2011, 27). When the customer is in focus, the only targets for the work come from the customer as explained by a human resource specialist: "Our target is to keep the customer satisfied especially when the project is over. We want the customer leave happy and to feel that they have got what they wanted and even more. But we don't have written targets for the project, the main thing is the customer experience. If the customer is not satisfied with our project, he will get his money back, that is, he doesn't have to pay anything, and he will get the source code of everything that has been done by so far. So it means that the customer really gets what he expects and that we understand correctly the needs of the customer." This way customer service become a learning process and increases the creativity of both parties.

As Kurtz and Snowden (2003, 468) state, a simple environment is predictable and it allows management by a prescribed set of rules and control tools. Also, the structure of the organization can be planned ahead. The role of management is to sense, categorize and respond – for example, to find cause and effect linkages, to simplify and to control. As the complexity of

context increases, organizations must increase their own complexity to correspond the complexity level of their environment, because it takes complexity to defeat complexity (Uhl-Bien, Marion and McKelvey 2007, 301).

The alternative organizations (Reedy and Learmonth 2009, 244) differ from traditional organizations in the way that they handle complexity to generate innovation, learning and adaptability. They have consciously given up pursuing order and control and this is reflected in the ways of working and managing the company. Instead, they are operating at the edge of chaos, which is the balance necessary for adaptation and self-organization to occur (Heylighen 2008).

In a complex environment the employees have to make an effort to collaborate. Thus, flatter hierarchies, decentralization of decision-making, self-organization, emergence and the empowerment of employees are key characteristics of complex systems. In the case of a complex or occasionally even chaotic environment (Kurtz and Snowden 2003, 469), which are typical for knowledge work (Donnelly 2006) there is a need for other kinds of ways of working and ways of managing. The probe, sense and respond model becomes useful for the management (Kurtz and Snowden 2003, 468) because emergence disguises cause and effect (Sullivan 2011).

All companies described in this chapter operate in the field of information technology and use Agile methods as their ways of working. This way the process becomes result-driven instead of the plan-driven model and corresponds a probe-sense-respond model of the Cynefin framework. It is helpful in dealing with issues in complex domain whether they are related to software development or something else. (Pelrine 2011, 28.)

Complex context requires interaction and communication. Organizations operating in a complex environment are usually open and exchange information with their wider environment

(Heylighen 2008). People in the organizations describe in this chapter communicate through their normal activities and learn from each other This way organizations can become more innovative by creating new order, for instance new products or new working culture. Productivity and profitability do not represent the aim of the organizations as such. Instead, the alternative organizations believe that when the organization is fine-tuned with regard of everything else, productivity and profitability are unavoidable consequences.

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