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ORGANISING WORK FOR INNOVATION AND GROWTH

EXPERIENCES AND EFFORTS IN TEN COMPANIES

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About VINNOVA

VINNOVA, Swedish Governmental Agency for Innovation Systems.

VINNOVA´s mission is to *promote sustainable growth*
by funding *needs-driven research*
and developing *effective innovation systems*.

Through its activities in this field, VINNOVA aims to make a significant contribution to Sweden´s development into a leading centre of economic growth.

VINNOVA's Working Life initiatives aim to strengthen innovative capacity in industry and the public sector. They contribute to sustainable growth by improving organizational conditions for competitiveness and growth. The emphasis is on organization and management systems – the goal, global competitiveness. Swedish industry and working life is continuously changing and adapting. To meet future challenges, Swedish companies and organisations must develop the capacity for innovation, creativity and renewal. Individuals and companies must be afforded opportunities to cope with the changes that global development and increased competition bring. Operational efficiency and value creation need to be combined with social responsibility. Managing and organising work is not just a vital focus for research but also a question for public discussion. VINNOVA's efforts in this area involve companies and organisations from various sectors. Central to this are processes of innovation and change in and around companies, including various aspects of work organisation and operational management plus industrial and organisational change.

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Research and Innovation for Sustainable Growth.

Organising Work for Innovation and Growth

Experiences and efforts in ten companies

by

Marianne Döös & Lena Wilhelmson (Eds.)

Foreword

The achievement of a sustainable knowledge economy depends on what happens in the workplace. Work-oriented innovations are gaining significance as engines of sustainable growth, i.e. growth that is economically, ecologically and socially sustainable. It is therefore important to consider workplaces as systems not only for production, but also for learning and innovation.

Work-life issues such as the interactions between a skilled workforce, enlightened management strategies and conditions for work-based learning, creativity and innovation are key-factors for a successful progress of the European Employment Strategy. The strategy is closely aligned with the strategic goal set up in Lisbon by the European Council to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. Experiences from several European countries confirm that problems with work-life-balance, occupational health, competence and work performance are linked to, and also the cause of, insufficient organisational innovation, slow productivity growth and declining competitiveness.

The Swedish Governmental Agency for Innovation Systems (VINNOVA) and the Swedish Council for Working Life and Social Research (FAS) have taken the initiative to produce this book in order to inspire European companies, politicians and social partners, as well as researchers to support the development of innovative work organisations as a means for innovation and sustainable work-life development. The book provides ten examples on how companies work in practice to create organisational conditions that promote innovation, competitiveness and growth by taking the high road vision as a strategy for development.

The background is to be found within the Work-In-Net project and the co-operation between national funding and research management organisations in Europe in the field of work-oriented innovations (see www.workinnet.org). Work-In-Net is an ERA-NET programme under the Sixth Research Framework Programme of the European Commission aiming to support transnational harmonisation of research activities. The strategic objective of Work-In-Net is to increase the awareness of the importance of the field of work-oriented innovations, and by doing so directing Europe’s attention to the potential of a high road way of thinking.

We hope that this book can be used in a European dialogue on work place improvement. It is based on Swedish examples but we are looking forward to seeing and learning from similar experiences from other European countries in order to

enhance and deepen the future policy debate on work-oriented innovations, quality of work, sustainability and job creation.

We wish to thank all the authors for their contributions. We are particularly grateful to Lena Wilhelmson and Marianne Döös at Stockholm University for coordinating the project and for their excellent editorial work.

Stockholm in October 2009

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Contents

1 In search of the high road: Companies' efforts to organise for competitiveness

MARIANNE DÖÖS AND LENA WILHELMSON

Loch Lomond

Background

The ways in which a company organises work is the centre of attention in this book. The reason for this focus addresses the argument that how work is organised makes a difference for innovation, competitiveness, and growth. The query of critical significance in competitive races between organisations in the learning economy (Lundvall, 1996, p. 59) concerns how companies can, metaphorically speaking, succeed in the search of the high road. In brief, the high road strategy means to shift focus and strive for increased value creation as opposed to cutting costs. Such a shift in thinking and acting is by no means a quick fix. This book provides ten examples of how companies – technology based as well as service based – strive in practice to create organisational innovation. This will hopefully inspire politicians, managers and CEOs, as well as researchers and policy makers to create more examples and more actionable knowledge. Researchers in Sweden present the following company cases, by focussing upon the query: How do companies work in practice to create organisational conditions that promote innovation, competitiveness, and growth?

This introductory chapter has been written in the midst of a global financial crisis. Economies are put on hold in nations as well as companies. If we believe that growth and competitiveness are essential for recovery, then this book can offer some

inspiration for how to be more innovative, and not simply settle for old solutions. While there is knowledge about which factors contribute to a creative workplace or an efficient workplace, less is known about how to create the business conditions, which have the potential to simultaneously lead a company in a creative and efficient direction. More knowledge is needed about high road alternatives, in order to sensibly handle the future. This book attempts to contribute with examples where such endeavours have resulted in interesting experiences. In an effort to attain competitiveness, finding ways that allow for regarding climate issues is also important. Ecological aspects must also not be left behind in the quest for new economic prosperity. Simultaneously solving many challenging problems is required to attain sustainability.

The vision of the high road strategy for competitiveness marks this chapter's point of departure. We will then touch upon two concepts that we regard as important in this endeavour: *sustainable work systems* and *organisational learning*. The reason for choosing these out of the many possible options is that they easily connect to the high road idea. They also contribute with elaborate research-based understanding that we regard as useful in further clarifying this notion. In doing so, we will introduce the book's ten case chapters.

The high road strategy

The high road approach to work organisational research entails exploring different organisational issues that promote, or are affected by, a change from a strategy in use – that primarily focuses on minimising value consumption – to one that concentrates on maximising value creation. The high road strategy strives to increase value and is seen as a win-win situation for both employers and employees. Thus, the high road approach contrasts with attempts to remain competitive by means of short-term cost-driven changes (otherwise known as the low road) (Totterdill, Dhondt, & Milsome, 2002).

The strength of the high road strategy (HRS) may very well lie in its visionary contribution. Despite the attention drawn to the HRS, it seems to hold little conceptual stringency. As an idea, HRS exists both within the context of regional development (Bailey, 2007; van Grunsven & van Egeraat, 1999) and, which is of relevance here, in work organisational context (Docherty, Forslin, & Shani, 2002b; Helper, 2008; Huzzard, 2003; Totterdill, et al., 2002). What is shared is the obvious wish to use labels in order to signify potential success. Also in cases where short-term cost reduction is clearly part of the strategy that is put forward, the term high road may be used to lend lustre to the venture (e.g. Martinsson & Ekstedt, 2002). However, there seems to be too little knowledge regarding how to pursue the high road, in the sense of having shifted the main attention from cost reduction to value creation. Success is not a question of either value or cost, and what we highlight in this book is the side where there is a lack

of knowledge: that is to say, the value side. It is important to develop knowledge about how people strive within companies to obtain free space and innovative capability, and how they endeavour to contribute to the survival and the stability of organisational changes and social innovations also when the economic climate turns harsh.

There are both researchers and policy makers that claim the potentiality of the high road strategy, which connects high productivity to high competence of the employees (Helper, 2008; Huzzard, 2003; Totterdill, et al., 2002). Huzzard (2003) is among the researchers who have tried to clarify and conceptualise the HRS. He does so by distinguishing the high road organisations from those of the low road when describing them as two contrasting paths of development (see Table 1). In contrast to low road organisations, the high road organisations choose solutions that "achieve a dynamic balance between product and process innovation" (Huzzard, 2003, p. 94). In Huzzard's terms, there is in the high road organisations a converging, i.e. positive, relationship between competitiveness and Quality of Working Life (QWL) facilitators such as job enrichment, job enlargement, participation, autonomy, and developmental scope. In low road organisations, however, this relationship is regarded as diverging or negative.

Table 1. The high road organisations and the low road ones. (Source: cited from Huzzard 2003, p. 94).

High road organisations	Low road organisations
Quality of Working Life competitiveness convergence	Quality of Working Life competitiveness divergence
Long term decision making horizons	Short term decision making horizons
Dynamic performance measures	Static performance measures
Sustainable work systems	Intensive work systems

The cases described in this book in different ways explore the possibilities for organisational and social innovation as a means for technical innovation and product development. These can, therefore, be seen as examples of the aforementioned dynamic balance between product and process innovation.

Helper's (2008) approach is more policy oriented; it mainly concentrates on suggesting public support for manufacturing companies in order to create more jobs and stabilise the companies that are in danger as a result of the global financial crisis. Under the heading "The high road in manufacturing" Helper identifies a need for enabling plants to handle more variety and smaller orders, reduce supervisory overhead through self-management, and empower workers to employ the knowledge they have.

Pot and Vaas (2008) aim to broaden the concept of organisational innovation with their definition of social innovation, which “includes such things as dynamic management, flexible organisation, working smarter, development of skills and competences, networking between organisations” (p. 468). Moreover, they argue that this cannot be achieved simply by new technologies and seeking competitive advantage by means of cutting costs. In fact, social innovations seem to be more important than those that are technological. According to research in industrial sectors from the Erasmus University/Rotterdam School of Management, social innovations also explain 75 per cent of innovation success, compared to the 25 per cent for the technological innovations (see Table 2).

Table 2. Explaining innovation success. (Source: Erasmus University: Competition and Innovation monitor 2006, as presented by Pot and Vaas, 2008)

Technological Innovation	Social Innovation
Technological knowledge	Management knowledge
R&D and ICT investments	Education and experience
Research and Development	Organisation, management, labour
Knowledge creation	Acquisition, integration, application of new knowledge
Explains 25% of innovation success	**Explains 75% of innovation success**

Sustainable work systems

Companies find themselves amidst contradictory forces and demands that must be considered and acted upon in order to realise the potential and generate value along the high road. Transformational capacity is needed in order to sustain in a changing environment. We will briefly display in this section the sustainability concept. Its roots are found in ecology, since the concept of sustainability was originally conceptualised in the environmental movement of the early 1970s. An independent commission, led by the UN, presented a report at the time where sustainable development was seen as a common goal for all nations in the quest for human progress across the entire planet (Grady, 2000). The report entitled “Our Common Future” became widely used as a planning document, resulting in the UN Conference on Environment and Development in Rio de Janeiro in 1992. In traditional development, the economy takes precedence in community decision-making; in sustainable development, however, equal weight is given to the economy, the environment, and social well being (ibid.).

The sustainability concept was later adopted and used in the field of organisational development as a way to define work systems[1] that strive away from intensity.[2] Thus, the key concepts of intensity and sustainability can be seen as opposite forces within work life.

> Work intensity refers to the consumption of human resources – physical, cognitive, social, and emotional – in work organizations, while the sustainable work systems-concept presents a vision for the future competitive organizations in which human resources are [...] allowed to grow. (Docherty, et al., 2002a, p. 3).

The vision for a sustainable work system is a complex one. Reality is contradictory. Different stakeholders' legitimate needs and goals have to be balanced. There are the interests of personnel as well as those of the owners, the needs of customers and clients, as well as those of society as a whole; not the least, there are the compelling needs of the global ecological system. Sustainability is easily thought of as a state of being, possible to reach, and – as with learning – is easily seen as entirely positive and good. In our view, it is beneficial to think of sustainability as a process that includes periods of comfort, growth and equilibrium, as well as phases that host pain, fractures, and labour. Thus, we look upon sustainability in a dynamic way:

> … only a system that is continuously in a state of "becoming" can be called "sustainable". Sustainability cannot be regarded as a static characteristic of a structure or a process because everything in the system is constantly "on the move". A definition of sustainability must take account of time as a key factor, and should focus on dynamic qualities of the system. (Backström, Eijnatten & Kira, 2002, p. 65).

Resource-centred workload theory (Moldaschl, 2002) gives a basic understanding that is useful for comprehending sustainability. The purpose of the theory is to integrate requirements and resources, and object and context, in a relational definition. Whether something is a resource depends upon its relation to the context. A work system is non-sustainable if the reproduction of resources is not adequately taken into account. The theory focuses upon the consumption and creation of resources in the processes of work. *Finite resources* are assets limited in the physical world (e.g. petrol). *Regenerative resources* are consumed in use, but regenerated by work/human effort (e.g. food production). *Generative resources* are means for human action, created and amplified in their use (e.g. human skill).

A work system can be viewed as sustainable on an organisational level when it develops a potential for competitive existence and when it concurrently handles the

[1] "By a work system we understand a regulated collaborative activity on different levels: a group, a department, or a higher organizational unit" (Moldaschl 2002, p. 59).
[2] Large costs are estimated due to intensity in work life in Europe. "A conservative estimate of the costs amounts to some 20 billion Euros annually. Even more staggering is the human suffering of many millions of workers" (Docherty, Forslin & Shani, 2002a, p. 3).

constraints of economic competition in a way that does not make employees sick and does not the destroy the environment. Conversely, the development of employees is seen as a vital part of competitiveness. A sustainable work system maintains – or even extends – an organisation's human, social, and institutional resources. The organisation needs an ability to generate shared frames of interpretation in order to be adaptive to changes in the environment. Employees require education along with distributed power and responsibilities to be adaptive, as well as to cope with ongoing organisational change.

To summarise, here are some of the principles for a sustainable work system (Docherty et al., 2002a, pp. 4-5):

- The operation of a sustainable work system is aimed at the generation of the resources it utilizes – human, social, material, and natural resources.
- The development of one type of resource does not exploit resources of other types.
- A sustainable work system does not strive to secure its existence by exploiting resources external to it, a sustainable work system "gives back".
- Complex tools are needed for understanding what a work system is and how it functions. Oversimplified models of work systems lead to oversimplified models of responsibility and regeneration.

Organisational learning

Organisational learning can make a difference for organisations' capability to drive along the high road; this is crucial for the short-term success of the company on the market, as well as the sustainable competitiveness. Easterby-Smith (1997) made a basic distinction within the field of learning when he identified organisational learning (OL) as discipline-based and analytic, to which he contrasted the normative ideal type of organisation, the so called learning organisation (LO). OL focuses upon the processes of learning and organising. In practice, creating operational conditions that enable such processes and, thus, improve the result of the business should be a leadership task. However, leadership tasks can be shared and distributed in an organisation, and are thus not singularly carried (see e.g. Pearce & Conger, 2003; Wilhelmson, 2006). We will now underline some of the ways in which one can connect OL to high road thinking.

It has long been known that individual learning is not enough. An epistemological paradigmatic shift is perhaps needed in western societies and workplaces in order to understand concepts such as knowledge, learning, and competence as phenomena that are both individual and collective at the same time. In many workplaces, the epistemological way of thinking is still very much stuck in notions such as knowledge is seen as objective, individual, and factual; and, competence is seen as individual and

formal. Such taken-for-granted assumptions result in individual ways of organising work. There is a need to establish organisational conditions that promote learning and the development of competence as being integrated in the everyday work tasks of individuals, as well as teams, units, and companies. Companies will then benefit from also seeing knowledge as subjective, relational and collective, and competence as relational and informal.

Easterby-Smith (1997) offers a potential connection between organisational learning theory and the high road strategy (HRS). He says that it is common to theoretically distinguish between lower level learning, which occurs within the organisational routines, rules and structures, and the higher level learning that comes about "within an ambiguous context, and involves changing the overall rules and norms that govern specific activities and behaviors" (p. 1097). The lower level is referred to as the normal state of an organisation, whereas the higher level is hard to reach, but is "generally seen as more desirable" (p. 1097). These lines of reasoning have similarities with Ellström's (2005) two logics of learning: the logic of production versus the logic of development, and with Döös and Backström's (2003) research that distinguishes between the logic of control versus the logic of learning.

Organisational innovations are of prime importance to thriving companies, and it is people who can make a difference; that is to say, ordinary managers and organisation members (Dixon, 2000). There is a need to better understand how managers and other organisational members (employees) find space to allow for higher costs, given that more value is produced. Leadership with an ability to organise (work) for learning and competence bearing relations (Döös, 2007) is of importance here. Therefore, the HRS ambition would be to create conditions for higher level learning (Easterby-Smith, 1997; Ellström, 2005) that would not be the exception; rather, they would be part and parcel of everyday operations. With a high road strategy, organisational space is created for the benefit of human creativity. The launch of the idea of HRS in work organisational contexts calls for the possibility of companies to take the high road in a sense that would free managers and ordinary employees from being locked in by rules and structures.

The significance of the ability of an organisation to learn and renew competence is also as interesting as it is problematic. A common occurrence today is the conflict between efficient production of an organisation and the learning possibilities for the organisation and for its individuals. Competence development is stressed, while learning conditions frequently deteriorate due to staff reductions and the slimming of organisations. However, since competence is recognised as a crucial issue for competition, management continuously struggles with how to organise for competence development. Dixon (2000) adds to our understanding of this issue when she speaks of three major shifts in organisations that are capable to successfully handle change:

- The first is a shift in thinking about who in the organisation has credible and valuable knowledge that the organisation can use to solve its difficult problems;
- The second is a shift from thinking of knowledge as an individual phenomenon to thinking of knowledge as embedded within a group or community;
- The third is a shift from thinking of knowledge as a stable commodity to thinking of knowledge as dynamic and ever changing. (Dixon, 2000, pp. 148-149).

Organisational conditions include quality of working life issues, which are seen as a means that may promote innovation, competitiveness, and growth (Docherty, Kira, & Shani, 2009; Huzzard, 2003). In other words, one must focus upon new ways to organise work, as well as new ways of understanding and acting upon the current situation. Thus the queries here concern which ideas there are for organising work and what are the alternative ways to think about workplaces when a high road strategy is the aim.

Introducing the chapters

Researchers in Sweden have been invited to contribute to the understanding of how the high road strategy could take place in practice by presenting some company cases. The question the chapters aim to shed light upon is: How do companies work in practice to create organisational conditions that promote innovation, competitiveness, and growth?

The chapters in this book aim to contribute to giving content to the vision of the high road strategy. Contextual circumstances are not necessarily in favour of taking the high roads, which some of the contributors point at.

The following chapters all aim to presenting cases where inventive product or service development is the target for innovative ways of organising work. Thus, process innovation is the means for product innovation. Half of the chapters focus upon ways of organising internal work processes; the other half focuses upon external relations, as they all strive to develop products or services. Work place innovations are important sources of productivity and economic growth (Alasoini, 2009). Therefore, the first five cases show how this can be handled in practice. However, such results, i.e. so called good examples, are not easily spread, nor is learning from them, in terms of linear diffusion. Alasoini states that what he coins as the “creation-transfer-reception” link is, in practice, vulnerable. Other alternatives where organisations open up and find ways to cooperate and organise for learning and development across their external borders are, therefore, fruitful in order to guarantee the import of ideas and experience. The internally directed cases in the following sections constitute the first half of this volume; the externally directed cases form the second half.

Tony Ghaye and *Ewa Gunnarsson* have written the first case chapter, chapter two in the book. In the context of a bank, interventions have been made around portraits of well

being, aimed to create an appreciative culture. *Jan Löwstedt* has written the third chapter. In an IT-company the entrepreneurial company culture is supported by the human resource function, resulting in successful ways of working and attaining company growth even in hard times. *Per Odenrick*, *Johan Mattsson*, and *Mikael Blomé* have written the fourth chapter. The role of the project managers in a large project-based company is discussed as a way to decrease deviations between strategy and practice. *Sofia Ritzén* and *Susanne Nilsso*n have written the fifth chapter. Here, a global company uses innovative teams as a means to identify new opportunities for the development of new products. *Lena Wilhelmson* and *Marianne Döös* have written the sixth chapter. From an empowerment perspective, managers and other devoted leading people within a unit of the Ericsson Group created new understanding; this resulted in more shared ways of working with product development.

The book continues with chapters that focus upon diverse ways of using external relations for the purpose of product and service development. *Johanna Nählinder* and *Elisabeth Sundin* have written the seventh chapter. New ways of finding and encouraging the development of innovative ideas within the public health care sector was developed through a new project organisation. *Carina Sjödin*, *Christer Nygren*, and *Tomas Backström* have written the eighth chapter. Within the context of an amusement park, the employees are encouraged to use ideas from visitors and international organisations as inspiration to make innovative changes in their services to the public. *Jörgen Eklund* and *Linda Rose* have written the ninth chapter. A story is told where a small company develops a new product through technical know-how and support from a diverse and large contact network; this gives access to user experiences as well as the latest research findings in the area. *Matti Kaulio* has written the tenth chapter. Two companies struggle to find ways to develop a common new product through the partnership in an alliance, which results in many lessons learned. *Xianghong Hao* and *Torbjörn Stjernberg* have written the eleventh chapter. The cooperation between the Volvo Car Corporation and its suppliers is described here: employee commitment can achieve a balance between flexibility and control.

Don’t take the low road

> Oh! Ye'll take the high road, and I'll take the low road,
> And I'll be in Scotland afore ye,
> But me and my true love will never meet again,
> On the bonnie, bonnie banks of Loch Lomond.
> (Vocal Melodies of Scotland, 1841)

In closing the beginning of this book, we would like to bring back attention to the metaphoric high road, by referring to the chorus of the Scottish traditional song *Loch*

Lomond.[3] Regardless of how fast, straight and easy the low road might appear, taking the road over high rugged country, which by no means is a quick fix, is what adds value and leads to success and future life. Also giving the opportunities to enjoy the breathtaking views from the slopes of Ben Lomond. Although there are differing theories about the meanings of the song, we have interpreted the version where two young soldiers have been captured in Carlisle after the failed rising of 1745. One was to be executed; the other was to be released. Thus, the song is about the early arrival of the Spirit of the dead soldier travelling by the 'low road' to the underworld and would reach Scotland before his comrade, who would be struggling along the actual high road over the mountains. So, do take the high road.

Along with the help of the cases presented in this book, we conclude that taking the high road can mean embarking upon a journey that might be lengthy, bumpy, and uncomfortable – yet both necessary and invaluable. It is striking that it is not always the revolutionary changes that ensure a company's success. Perhaps surprisingly, it is not the incremental continuous change either. What matters is seeing things differently and learning to think in a better way. A richer practice, thus, emerges. Consequently, reading this book might require its reader to make use of cognitive capacity and to shift mental models.

To conclude, the "leaders of high commitment, high-performance organisations refuse to choose between people and profits" (Eisenstat et al., 2008, p. 51), and this is one of the mind shifts that point to the direction of the high road. Innovations are created by human beings and the challenges for the future lie in understanding how to create enabling conditions over time. Taken together, we learn that empowerment and possibilities for competence development may give way for employees to make innovations in their daily work tasks. Moreover, an organisational culture that supports integration as well as autonomy may be a greenhouse for innovative product and service development in different lines of business. Having an appreciative culture within the company and an openness towards the surrounding world seems to support innovative development processes, which can enhance the possibilities for innovation, competitiveness and growth, as described in the chapters of this book.

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[3] Preferably the not so common 1937 recording by Benny Goodman and the jazz vocalist Martha Tilton which you can find at http://www.youtube.com/watch?v=w9vo9xnowSk.

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PART I

ORGANISING INTERNAL WORK PROCESSES

Editors´ comments

The focus of chapter two is the issue of changing organisational culture and, in doing so, making use of the yin and yang of critical and creative thinking. Intelligent organisations can achieve this by thinking better and recognising the value in asking “what” questions or, as the authors frame it: “If we change the questions we ask, we may change the conversation. Change this and we might change the action.” Individual and organisational well-being is connected to high performance and happy customers.

2 Creating cultures of appreciation: Organisational innovation through employee well-being

TONY GHAYE AND EWA GUNNARSSON

Abstract
This chapter is about developing a high road strategy for improving organisational innovation through employee well-being in the financial sector. It reports part of an on-going four year action research project conducted by a Nordic university in collaboration with a bank. It concludes by suggesting that even in times of crisis, organisations can be innovative if they invest in building cultures of appreciation.

Keywords
Culture of appreciation, well-being, innovation, reflective conversation.

A winter's tale 2009

We are writing this chapter with the words of the 44th US Presidential Inauguration speech, by President Barack Obama (January, 2009), ringing in our ears. He said, "Our challenges may be new. The instruments with which we meet them may be new. But those values upon which our success depends, hard work and honesty, courage and fair play, tolerance and curiosity, loyalty and patriotism, these things are old. These things are true. What is demanded then is a return to these truths. What is required of us now is a new era of responsibility." In this statement we find words of hope. Then a week later, a report emerged about Wall Street executives taking an estimated US$18.4 billion in bonuses in 2008, even as the federal government was pouring billions of bailout dollars into the financial sector.

The general scene

We are also writing this chapter in the more general context of a global financial crisis. Financial institutions like Fannie Mae in the USA, Northern Rock and HBOS in the UK and Landsbanki in Iceland, have all been in crisis. Governments across the world have been trying to think of ways to restore market confidence. The Norwegian government, for example, gave the banks in Norway 350 billion Norwegian crowns to try to achieve this. Back in October, 2008 the Presidents of the USA, France and the European Commission, unveiled plans for a series of summits to discuss the crisis. The Europeans wanted these meetings to pave the way for talks on an overhaul of the

world's financial regulatory systems. Speaking before talks at Camp David, former US President Bush said it was "essential that we work together." He also said, "Together we will work to modernise and strengthen our nations' financial systems so we can help ensure this crisis doesn't happen again." In these two statements we find a call to innovate. To think and to do things differently. We suggest that, at this time, it is critical for those working in the area of organising for innovation, in supporting and sustaining innovative action, to share their knowledge and experience freely and on an on-going reflective basis? Arguably there is not time to re-invent wheels. So we need to synthesize our extensive, existing knowledge-bases by thinking creatively about new solutions.

Introduction to the case

In this chapter we cut a thin slice (Gladwell, 2004) through the many challenges the current financial crisis brings with it, and focus on improving the relationship between the employee and the organisation. To illuminate this, we use a case study of an organisation (a bank) which has had the vision and courage to ask itself the central question, *'How can we build a culture of innovation within the organisation, so that we can continuously improve our financial products and services for our customers?'* The bank's Code of Practice clearly states that it wishes to be the preferred bank of choice for individual persons, and for small and medium-sized businesses. The organisation prides itself on being close to the customer, being local and competent. Despite being buffeted by the unsettled financial markets, this is not a failing organisation. It is a good one. The macro-economic situation in the region is expected to become weaker in the period ahead. It is anticipated that this will bring about lower demand for credit, coupled with a continued, increased level of credit losses. In spite of this, the organisation plans to continue to emphasise the importance of balance sheet growth, both as far as deposits and loans are concerned, making every effort to increase other income through the sale of new and different financial products and services. In challenging times, an organisation's ability to be flexible, adaptive and, above all, innovative is fully tested. By asking the central question above, the organisation hopes to move from being good, to being great (Collins, 2001). Many employees within the organisation are aware of the challenges implicit within this question. Three of the most fundamental ones are: (a) the bank's ability to be an intelligent organisation characterised by a free and frequent flow of actionable information; (b) the organisation's current social architecture particularly in relation to staff well-being; (c) the tensions between working within a highly regulatory system, on the one hand, and being innovative on the other. For this chapter we concentrate on (a) and (b). Despite these challenges for the organisation's 800+ staff, the bank is committed to being innovative, being competitive and to growth.

Framing the case

There are many ways to frame this case in order to try to understand it. For example a familiar framing is an operating versus innovating frame.[4] Another, and powerful framing, is associated with a phenomenon called complexity catastrophe. This helps to explain why, in some networked organisations such as this one, there is the possibility that the more interdependencies there are, the more potential there is for conflicts to constrain innovative thinking and action. Complexity can lead to innovative gridlock. In this chapter we have chosen an *appreciative* frame (Ghaye, 2005) in order to both understand and then to suggest how the organisation might continue to address the central question concerning a culture of innovation, as stated above. In essence, this is a frame that accentuates the positive, that requires the use of our appreciative intelligence (Thatchenkery, 2005, Thatchenkery, & Metzker 2006, Thatchenkery & Chowdhry, 2007), that draws on productive thinking (Hurson, 2008) and which understands that having happy and healthy employees means higher performance and happier customers (RobertsonCooper, 2008). Our chapter therefore can also be framed in relation to earlier Swedish research that looked at what constituted healthy work (Aronsson, Bejerot & Härenstam, 1999) and links between health and working life (Aronsson, 2005). Additionally it is related to the nature of participation (Hickey & Mohan, 2004) and theories of personal control, for example (Seligman, 1998).

Well-being incorporates two interrelated processes called monitoring and maintenance. There are two aspects to monitoring. They are task working and team working. The former is about getting the job done and the knowledge, skills and attitudes needed for this. It is about performing tasks. Team working is about inter-personal relationships and an employee's ability to work, with others. Knowledge about other team members (e.g. skills, preferences) sensitivities towards each other (e.g. being respectful) and patterns of interaction (e.g. who supports whom) all contribute to a sense of well-being. On the other hand, maintenance is about the organisation's capacity and capability to provide a context where employees can be the best they can, receive appropriate support that enables them to work and learn together and to be innovative.

The data for this case study

This case study is part of an on-going four year collaborative project conducted by a Nordic University working in partnership with the bank. As a way to illuminate aspects of the central question stated above, the organisation agreed, in April 2008, to invite all its staff to complete an organisational well-being questionnaire called PODS (Ghaye 2008). PODS is an acronym. It stands for Personal and Organisational Development Support. It has been developed over a ten year period. To date 16,800 employees and

[4] Operating (managing current activities) versus innovating (investing in new and different products, processes and services).

5,500 customers have used it in countries like Norway, Sweden, Tanzania, Nigeria, the UK and Japan. The way results from this questionnaire have customarily been feedback to employees, is shown in Figs. 1-3. PODS was distributed to 839 bank employees using Questback (Questback.com), in 44 different branches (i.e. local offices) of the bank. It was therefore an on-line survey. A total of 472 responses were received, representing a 56.2 percent response rate. This was regarded as a good response from the bank. PODS explores three aspects of organisational well-being. They are about: (1) Relationships – interpersonal behaviours; (2) Creativity – capacity to work differently; (3) Impact – better customer care. Within each aspect there are a number of metrics. In total, PODS seeks information about ten metrics. These are shown in Table 3.

Table 3. Ten metrics of organisational well-being

RELATIONSHIPS	CREATIVITY	IMPACT
TR = Trust How far you trust others and feel they are open and honest with you.	**L = Leadership** How far you have leadership skills that help others to think and act differently.	**Inn = Innovation** The extent to which you feel you can 'try things out' and be creative in your work.
TC = Team Cohesion How far you feel a sense of belonging and togetherness within a team.	**DM = Decision Making** How far you feel empowered to make most of your own decisions.	**I = Influence** The extent to which you feel collectively able to shape and develop your service.
C = Communication How far you feel you understand what is expected of you and how clearly procedures and policies are communicated.	**CW = Coping with Work** How far you are coping with your workload rather than feeling constantly under pressure.	
R = Respect How far you feel appreciated, valued and are treated courteously by others.		
FS = Feeling Supported The extent to which you feel management supports you and you support one another.		

Data from the survey was computed and represented in the form of *well-being portraits* on a branch-by-branch basis. For each branch of the bank, located in different parts of the country, three portraits were generated:

1 A *branch* portrait: Some of these portraits are shown in Figs. 1-3.

2 An *age-related portrait:* There are some significant differences in employee scores for each of the ten metrics, between age groups and particularly with regard to the experiences of the youngest (20-29 year employee group) compared with the oldest employee group (+60 years).

3 *Role portraits:* Again some intriguing and important differences are visible in the data, especially between staff who face individual customers, on a daily basis, and those working with small and medium sized businesses. There are also significant differences between the portraits of mangers and other employees. This kind of analysis enables both intra and inter branch and regional comparisons to be made.

The well-being portraits essentially serve as a catalyst for *experience-based, reflective conversations* within staff groups. These conversations have been about such matters as sustaining good relationships, making wise decisions, using power constructively, managing conflict sensitively, supporting learning for all staff and, of course, how to be even more innovative. Arguably the first step in achieving this latter goal is to think better, differently and more productively. In this case study we are essentially suggesting that being committed to being innovative, being competitive and to growth, requires an equal organisational commitment to two things. First to investing in an organisation's thinking capacity and capability. "The ability to think better will soon become the most significant competitive advantage companies and individuals can claim. Thinking better is what it's all about" (Hurson, 2008, p. 10). Secondly we suggest that all organisations need to develop a business case for investing in (or continuing to invest in) organisational well-being. "Over the past ten years well-being has gone main-stream. No longer is it a nice to have, or a soft concept that comes a poor second to more tangible bottom-line outcomes. In fact, it is now generally accepted that well-being actually influences most of the success indicators that organisations value. You only have to watch a selection of TV adverts to see that countless businesses put well-being at the heart of their marketing campaigns; this is because they understand that people are always actively seeking ways to be healthy and feel good. This wider societal swing has also been reflected in the way that organisations treat their workforces as they increasingly buy in to the evidence that having happy and healthy employees means higher performance and happier customers" (RobertsonCooper, 2008, p. 3). Organisational well-being raises issues about what constitutes a healthy workplace, designed to promote staff health, happiness and a sense of purpose. In doing so, preventing staff illness and providing a workplace that is conducive to more productive thinking. This raises an intriguing question namely, what are the benefits of being in a healthier and more fulfilling work environment where employee efforts are appreciated and appropriately rewarded? Additionally, how are work environments like this built-up and sustained? What we have learnt from research associated with work-life balance is important to acknowledge here (Isaksson, 2008). The concept of work-life balance opens the way

for discussions around important gender issues, such as gender contracts (Gunnarsson, 2007). In severeal EU-projects where we have participated the theme of work-life balance has been a way to incorporate gender issues.

Some examples of well-being portraits

There is clearly a lot more to being innovative than merely asking (or even requiring) employees to work harder, longer hours or differently. Paradoxically we suggest that one important key to being innovative, is to see the process as working within boundaries. Without boundaries to define it, there is no *innovation space*. Being innovative is not synonymous with sloshing around simply hoping to bump into something good or different. Boundaries are the constraints that imply a direction. A hope or general goal for the investigation or task. Organisational leaders need to be able to identify and articulate the boundaries that constitute and define the innovation space for their employees. If they can do this, it increases the chance that their employees will be delighted to attack the challenge positively and bring their imaginations with them as they do. The innovation space is a place for both divergence and serendipity. A place where high levels of trust and mutual respect are needed to get the most from being within it. We suggest that playing status games and hierarchy, dampens down creativity in groups and negatively impacts on organisational innovation. True innovation spaces are egoless places (Ibbotson, 2008). It is about feeling free in the right context.

The well-being portraits

Each organisational well-being portrait, that was produced, was a bounded space within which to have an experience-based reflective conversation. Figure 1 is an illustration of such a bounded space. When discussing the portraits with employees, there are always ethical issues that need to be managed sensitively. Issues about who gets to know what! Usually branches do not get to see the portraits of other branches. If they do, the branch is anonymised. This is not universally applied because there are times when more value is added to the conversation when comparisons can be made. For this chapter we have chosen particular branches only as illustrations of portraits with different characteristics.[5]

[5] After using PODS for a period of ten years, Reflective Learning-UK has learnt that connecting the scores for each metric, and thereby creating a line, substantially improves the quality of the reflective conversation with employees. The resultant line enables actual and potential connections between the metrics, to be discussed. The line encourages more joined-up (systems-like) thinking which, hopefully, leads to joined-up working (Ghaye 2005, 2008).

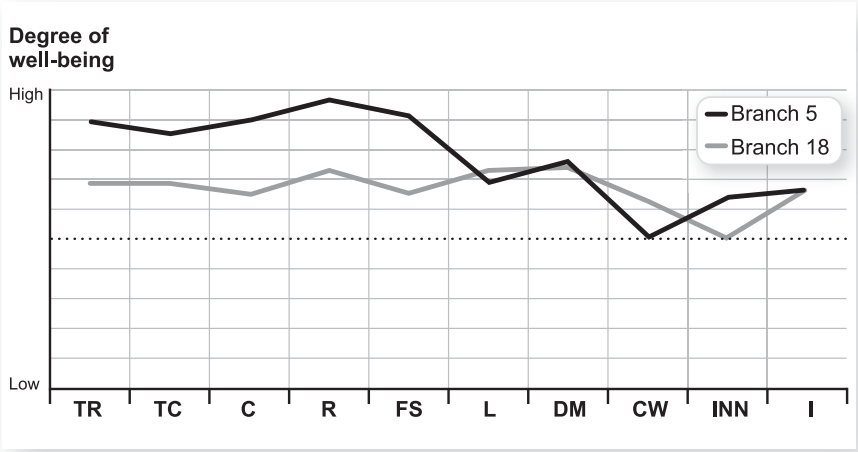

Figure 1. The well-being portraits for two bank branches

If we were in conversation with employees from these branches, what are some of the things that might be deduced from this portrait?

1 The lines represent mean scores. The lines for each branch are different, with the greatest difference in mean scores being associated with the five relationship metrics (TR, TC, C, R, FS. See earlier for an explanation of each). This is intriguing.

2 Both lines generally fall from left to right on the portrait (something mirrored across the whole sample). The lower the line is located on a portrait, the more it might be a cause for organisational concern. Neither line goes below the mid-score point (the dotted line). Neither line is bumping along the bottom! So these are both good portraits, with one being relatively better than the other.

3 The score for *Respect* (R, defined as how far you feel appreciated, valued and are treated courteously by others) is the highest point on the whole portrait. So one of the branches is doing something very well in terms of building a workplace culture that is respectful in nature. Other branches might learn from this.

4 In one branch, employees' ability to cope with their work (CW) is their lowest score. In the other the lowest score is associated with being innovative (INN). This is one of the general findings from the whole sample.

Asking an appreciative question

If a question beginning with 'Why' is asked, we should not be surprised if it generates a deficit-based conversation. Not coping with work and not being sufficiently

innovative may be perceived as problems and deficits. Things to fix and to get rid of. Explanations may also lead to employees linking coping (CW) and innovation (INN) together in some way. It is important not to forget to use these portraits as an opportunity to generate a culture, where asking appreciative (positive) questions are the norm. Questions like, What is most satisfying about this portrait? What are the reasons why you are satisfied? What do you need to keep doing, at work, in order to sustain (and even amplify) this satisfaction? If we change the questions we ask, we may change the conversation. Change this and we might change the action.

Using the portraits to compare things of interest

As we mentioned earlier, individual well-being portraits can be compared, and these compared with a single portrait for the whole sample (organisational norm). This is shown in Figure 2. This figure also enables two further points to be made. These portraits are a snapshot, taken at one moment in time. If seen as a repeated activity, they provide useful organisational benchmarking data. Secondly they are a catalyst for an appreciative conversation. The challenge for leaders and managers is to create a context in which portraits like these, can be discussed safely and without recrimination.

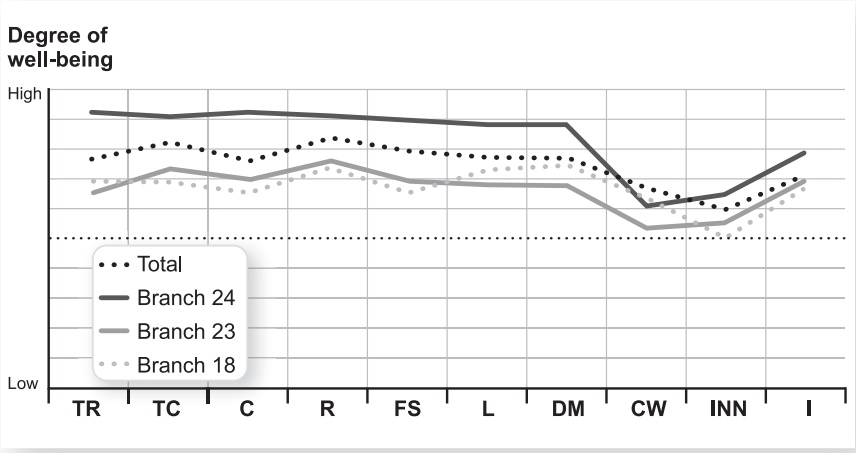

Figure 2. Well-being portraits for 3 bank branches (referred to as branch 18, 23, and 24) compared with the organisational norm (TOTAL), for one moment in time (April 2008)

Using portraits to visualise points of consensus and diversity

A second kind of organisational well-being portrait is also offered to employees. This is shown in Figure 3. It retains the line shown in Figs. 1 and 2 (the average scores for each metric) but adds a diversity bar. This is done to add another layer of richness to the reflective conversation. Another layer of insight into employee experiences of well-

being. The width of the bar, for each metric, is calculated using a statistic which describes the amount of variation around the mean. The wider the bar, the more variation (or diversity of view) there is, amongst employees for each metric. The narrower the bar, the more consensus there is. This inclusion of a consensus-diversity measure enables employees to discuss some crucial questions about the role of consensus-seeking strategies and their association with decision-making processes. These kinds of questions are ones that have been regarded as important in Swedish management practice (Isaksson, 2008). Figure 3 illustrates how important it is to understand the power of diversity (of view) and to try to positively embrace it, if we are ever going to build and sustain cultures of innovation.

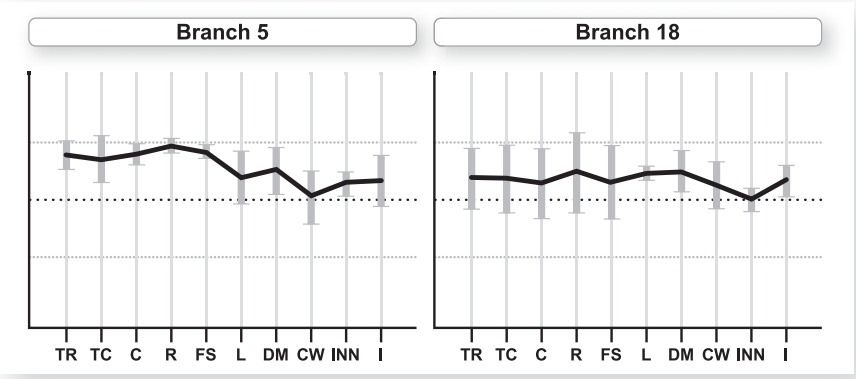

Figure 3. The organisational well-being portraits for the two bank branches shown in Fig 1, but now with the inclusion of a consensus-diversity measure

Figure 3 also shows two very different patterns of consensus-diversity. For example in bank branch 5 there is more consensus of view (more employees feeling the same way) about each of the relationships metrics, than in branch 18. A question is, In what ways does this affect well-being, innovation and the quality of working life? There are a number of consequences or opportunities when consensus and diversity are portrayed in this way. For example there is an opportunity to discuss when consensus is needed and when diversity is welcomed. Arguably a certain degree of consensus in needed, within the first five metrics (relationships) if a team (or work group) is to get along and achieve its goal or task. Also there may be certain metrics, like innovation, where diversity of view might be actively encouraged. Additionally it would be unwise to think that consensus is always good and diversity is bad. The width of the bar for each metric might depend upon the time team members have been working together, their goal or current work task, external demands or pressures and the prevailing

organisational culture. Portraying consensus-diversity in this way is a catalyst for a reflective conversation about things that matter to those involved.

So what are we learning?

So far at least two themes are emerging. These are:

a the bank's ability to be an intelligent organisation characterised by a free and frequent flow of actionable information, and
b the state of the organisation's current social architecture (particularly in relation to staff well-being) that promotes a culture of appreciation.

What does it mean to be an intelligent organisation?

The notion of an intelligent organisation has been attracting interest since the late 1990's (Pinchot, 1997, Stonehouse and Pemberton 1999, Botha 2008). For us, an intelligent organisation makes full use of the intelligence capability (cognitive capital) of all its employees. Data from this case is suggesting that the organisation might usefully think more about how to use its employee intelligence to think better, more productively, in order to further enhance its products and services. This suggestion has both internal and external dimensions, particularly with customer-facing, service industries, where the creativity and innovative ensemble is increasingly falling outside the locus of influence of the organisation. We ask two questions and make one suggestion here. In general, the organisation's metric *being innovative at work* received the lowest score of all ten metrics. Yet in an important sense, the bank was performing well. Its third quarter report for 2008 concluded 'the bank has good financial strength and continues to have satisfactory liquidity'. But why is performing well *and* being innovative apparently so hard? Current data suggests that the answer to this dialectic might not be found, if attention to innovation continues to be a largely internal and closely managed or regulated activity. A potentially useful re-framing that brings so called open innovation into its organisational life, might enable the organisation to come up with even better ideas for new products and services, more quickly and cheaply. Central to this is the process of distributed co-creation where more of the management of innovation is delegated to customers. This raises an intriguing second question namely, How can technology link these outsiders more securely into the organisation's innovation processes?

Creative and critical thinking

Our suggestion is that increasing the organisation's intelligence capability, might require a shift in some employee mindsets. A shift away from seeing creative and critical thinking as oppositional. We suggest that they are not naturally antagonistic towards each other. An organisation's creative and critical thinking capability are

different. But they can (and indeed we feel they should) be mutually supportive of each other.

One way of looking at things is to see creative thinking as the ability to generate new ideas and to see things with fresh eyes. Critical thinking is the ability to judge the worthiness of these ideas and fresh ways of seeing. It is very difficult to generate and judge at the same time. If we are overly critical we can judge our ideas out of existence! The longer we can defer judgement, the more ideas we may come up with. So creative thinking is generative, non-judgemental and expansive. Arguably then critical thinking is the *yang* to creative thinking's *yin*. An important role for critical thinking inside organisation's is to be analytic. By this we mean it serves the important function of probing, questioning and putting ideas under pressure. Secondly it has a role in helping us to come to decisions and to make judgements. In other words it helps us determine which ideas are worth pursuing, and with the right processes in place, able to turn themselves into genuine organisational innovations. Finally critical thinking helps us be selective. It helps us narrow down long lists of ideas, possibilities and options. It helps us make choices. Hurson (2008) puts it this way. "Imagine a kayak paddle. One side stands for creative thinking, the other for critical thinking. If you always used the creative paddle, you'd go around in circles. If you always used the critical paddle, you'd go around in circles the other way. The key is to alternate between the two … that way you develop enormous forward momentum" (Hurson, 2008, pp. 46-47).

Currently the organisation engages its employees in what it calls the learning house. Essentially this is web-based and provides everyone with, what the organisation feels, are necessary competencies and qualifications. The data is suggesting that a more expanded view of a learning house might be useful. One where individuals and groups can discuss issues of significance to them. A learning house that equates to an *innovation engine*. These may be regarded as a special case of the more general form of a community of practice (Wenger, 2002). So what might the characteristics of these innovation engines be? How might these individual engines transform into *communities of innovation*? So what is the tipping point for this to happen? Communities, rather than individuals, have greater potential to sustain innovations. Much more research is needed to deepen our understanding about these things.

How far does health and well-being at work matter?

The short answer is that it matters a lot! 'At the organisational level, a growing body of research demonstrates the links between investing in well-being in the workplace and subsequent improvements in a range of outcomes. These outcomes include higher morale, increased productivity and cost savings through reduced sickness absence' (RobertsonCooper, 2008). This case study data is suggesting that there are some important links between employee well-being and innovation. Arguably at a time

described as a global financial crisis individuals, work teams and organisations are under severe pressure from the market, shareholders and from investors/customers. When the system is under pressure, workplace absence through anxiety, depression, stress, illness, overworking and so on, may well increase. Employee absence, just at a time when organisations need all the cognitive capital they can use! One way to try to off-set this is to build workplace *cultures of appreciation.* A central part of this is developing conversations using what Orem, Binkert and Clancy (2007) call appreciative questions. Here are some examples of the kinds of questions, with a strong appreciative (and reflective) tone, that we have in mind.

1 What is giving you most joy and satisfaction in your work right now?

2 What were you doing recently, in managing your time, that enabled you to use your strengths?

3 What actions were you taking when you were successful at prioritising those things that you are really good at doing?

4 What was happening when you found yourself thinking, that really worked well?

5 What did someone say, or do, to make you feel that your professional experience was greatly appreciated?

6 What did you do that prompted a colleague to say, 'thank you. It's nice to be respected'?

7 What were you doing that prompted a colleague to say, 'It's great working here. It's nice to be valued'?

8 What did you do that enabled a colleague to say, 'That's different. I hadn't thought of that.'

At this stage in the project, we are learning, that cognitive capital and well-being, together, affect the organisation's ability to be innovative. One challenge is to bring these two realms of knowledge together, to build greater practical wisdom. Our position is that we do not need *collected* wisdom. Rather we need *collective* wisdom. A coherent integration of our diversity that is greater than any or all of us could generate separately. We would argue that this offers organisation's a way to generate a new kind of collectivity that does not repress individuality, diversity and creativity but that, instead, allows them to arrive at a creative consensus and innovative outcomes, without compromise or coercion.

The data is helping us appreciate that, in the context of a financial crisis, employers need to concentrate on the twin processes of supporting employees retain more positive emotional experiences than negative ones, and a feeling that their work has meaning and a sense of purpose. Additionally further analysis of data, from the five relationship metrics in the PODS questionnaire, suggests that generally in the organisation, people feel that they have good relationships with their work colleagues. However when these

relationships go wrong, and become dysfunctional, they have the biggest negative impact on psychological well-being. More research is needed to ascertain the nature and impact of this on the organisation's ability to be innovative. We know well-being is related to productivity (RobertsonCooper, 2008) but how is increased well-being related to innovation? More research is needed to understand how organisations develop a well-being vision. More research is needed to answer the question: How would working life be different if organisations got their well-being vision right? Two more key research questions are: What happens to an organisation's capacity to innovate when it synthesizes its cognitive capital with its well-being strategy? And if it achieves this, what does it do, that it couldn't do before?

Conclusion

Interestingly Isaksson (2008) asks the question, 'Is the Swedish management style useful in a global age?' He goes on to argue that what he calls the Swedish way is associated with leadership, operational efficiency and work-life balance. Data from our case study expands these three things in these ways.

1 That an *appreciative leadership style* is fundamental to creating workplace cultures of appreciation.

2 That the use of an *appreciative eye* enables future operational efficiency to be developed from aspects of the positive present.

3 That work-life balance is created through the positive alignment of employee *well-being* and employee *engagement*. Well-being is about feelings of health, happiness and a sense of purpose. Engagement is about the relationship between the employee and their employer.

The case study suggests that creating workplace cultures of appreciation, where employee well-being is a central characteristic, might usefully be regarded as a high road strategy for improving organisational innovation.

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Editors' comments

Entrepreneurial organisations are the focus of chapter three. It highlights the creation of a communicative infrastructure that is necessary for a growing company that wants to keep its entrepreneurial company culture alive. Attention is drawn to interesting ways of communicating, concurrently stressing at the informal aspects and the need for routines and standards. The author presents an interesting HR practice with a managerial role: a practice that is integrated into goals and visions of the business.

3 Managing entrepreneurial culture in Professional Service Firms

JAN LÖWSTEDT

Abstract
In Professional Service Firms is growth supposed to be related to a coherent company culture and dependent on highly motivated employees. Organisation structures are expected to be flat. Management as well as the organisation of work tends to be informal and to focus development of both business and employee competence to be successfull. Still, the growing firm needs formalised routines and human resource management practices. The chapter describes the role of entrepreneurial corporate values and human resource processes and routines in a growing engineering firm.

Keywords
HR practice, entrepreneurial organisation, Professional Service Firm, employee in PSF.

Introduction

The IT industry had its heyday at the turn of the millennium and was sometimes described as a sector where old ways of working and experience and knowledge about work organisation has become obsolete. New forms of work seemed to read *no* forms of work – anything was possible In the research literature this type of unorthodox way of organising is sometimes referred to as corporate entrepreneurship. The concept corporate entrepreneurship relates commonly to the phenomenon whereby entire organisations act in entrepreneurial manners with a minimum of bureaucratic structures. Covin and Miles (1999) for example use the term corporate entrepreneurship to refer to "cases where entire firms, rather than exclusively individuals or other 'parts' of firms, act in ways that generally can be described as entrepreneurial" (1999:49). Approaching entrepreneurship in this way has shown that there is not necessarily a contradiction between being entrepreneurial and developing routines and systems for management control. It is more of a balancing act according to Lövstål (2008).

As we gain distance from the IT bubble, it is now of great interest to see what happened to companies that managed to stay in business and develop in the business climate that followed the bursting of the IT bubble.

Existing research in this kind of organisational settings often focus on the specific nature of entrepreneurial work or the entrepreneur per se but, more seldom from a human resource perspective. The lack of concern has also been notified for other types

of organisations, for example Consulting Firms (Richter et al. 2008) and Professional Service Firms (Armbuster 2006).

Inasmuch as organisational behaviour always is anchored in actions of individuals and teams such a perspective could be expected to be fruitful by raising questions like: How is this kind of firm organised and managed? What is done to foster and reproduce the entrepreneurial spirit that signified the early years of operation? What is their role of human resource management routines for a growing Professional Service Firm?

This chapter describes a Swedish IT company, Technia, that has shown continuous growth, even during the period of hard times for the IT sector. The growth of the company is explained by its focus on a specific product niche as well as a careful strategy of organic growth in combination with a coherent company culture. Technia describes this concentration on entrepreneurial values and human resource practices as a continual focus from management on skills development, organisational structures and the continued development of methods and processes for project work and project monitoring, all of which help to ensure that Technia employees have the space they need for their own personal development and the opportunity to produce high-quality work. More specifically, the company applies the following four processes as means for developing the entrepreneurial organisation: the Technia Blue Book, the Technia Knowledge Network, Mentorship, and the Technia University.

The aim of the chapter is to describe how these four human resources oriented management practices and routines are used by management to develop and maintain a company culture that makes a continued successful business possible. This case is written on the basis of interviews conducted with Technia management, HR personnel, and representatives from the employees as well as company documentation.

An awarded business

It is said that everyone loves a winner. In the case of Technia, it is obvious that company growth has been accomplished hand in hand with employee development and an appreciated company culture. This is indicated by the fact that, over the past decade, the company has received several prizes for its business, growth and ways of working:

- In June 2002, Technia was named “Growth Company of the Year” by the Swedish daily newspaper *Svenska Dagbladet*
- In February 2003, Technia was recognised as one of the five best workplaces in Sweden by the business weekly *Veckans Affärer* and Oxford Research
- In November 2007, AddNode, due in large part to Technia, places 58th on Deloittes’ list ranking the fastest growing technology companies in Europe and the Middle East.

To be awarded for company growth and ways of working is a clear indicator that the company is successful in both of these areas. This recognition from the business community gives both management and employees renewed confidence in what they are doing and how they work, as well as improving their self-esteem.

Recognition of this type does not necessarily come from the blue. In most cases, as with the three awards mentioned above, a company must apply to be evaluated. It should therefore be considered as one of many components in the toolbox used by management to build a successful company that the employees can be proud of and a company culture that is appreciated by the employees.

The Technia Company

Technia is one of the leading suppliers in the Nordic region of Product Lifecycle Management (PLM) solutions for creating and managing product information, from product planning, development and design – to production, sales and support, figure 4. More simply put, the company sells and implements a licensed information system based on a product database that supports the entire lifecycle of a product – from product development and production to maintenance. In addition to this, the company also provides its customers with training and consultancy support.

The company was founded in 1994 by three entrepreneurs and at that time included CAD/CAM (computer-aided design and manufacturing) solutions from two American information systems suppliers. In 1996, the company branched out into Product Data Management (PDM) and only two years later, in 1998, the company acquired some major Swedish industrial firms as clients. During its first five years, Technia developed into a major player in its field. With 60 employees, it is not a very big firm yet, but is successful. The US information systems analyst CIMdata ranks Technia as the leading product data management (PDM) system suppliers in the Nordic countries, with a market share of 34 percent.

Despite the recession and problems in the IT industry in 2000-2001, when many IT companies started in the mid-1990s proved to have no future, Technia continued to develop and gain important new clients like Ericsson, Nokia and Metso and added 30 new names to the payroll. In 2004, Technia was bought by the AddNode group, listed on the Stockholm Stock Exchange, but continued to operate as an individual company within the new company group structure. Recently (2007), Technia has actively taken part in the consolidation of the PLM industry with two acquisitions, making the company the top vendor for PLM solutions in the Nordic countries. This acquisition did play a role in Technia's strategic ambition to be a complete PLM partner to major industrial firms as well as small and medium sized firms in the Nordic countries.

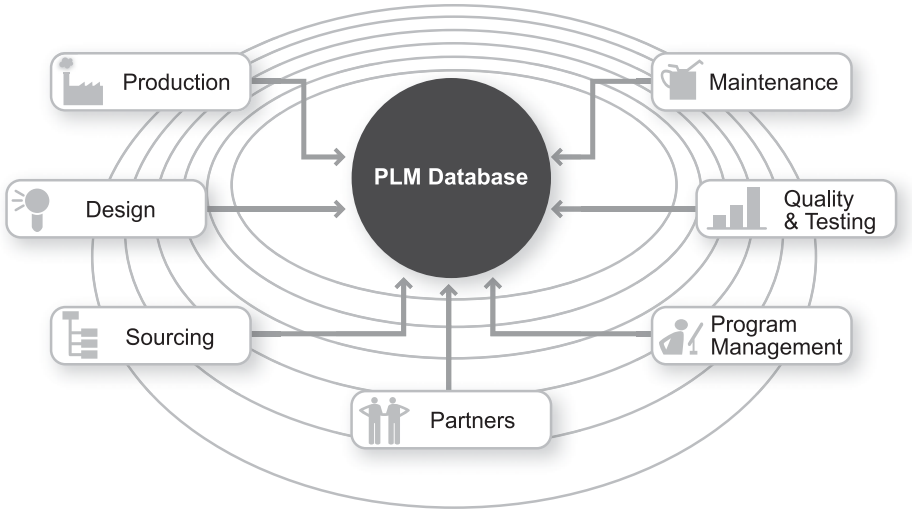

Figure 4. Product Lifecycle Management (PLM) – Database and Products

As can be seen from this short presentation of Technia's development, the company has grown by adding new customers to its client list, developing its product portfolio by adding new services, and targeting new markets. This is an example of mainly organic growth, though lately the company has grown by means of acquiring firms.

Today, Technia has more than 200 employees and conducts business throughout the Nordic region. The growth in the number of employees can be followed in Table 4 below. During the company's first ten years, it had only male employees in consulting positions – not at all atypical for the industry. More recently this has changed. So, despite the total percentage of women remaining the same, over the past five years more than 30 female consultants have been hired. Today women can be found in most company positions – from management to technical experts and sales.

Table 4. Change over time in number of employees

	1996	2000	2004	2008
Total number of employees	25	60	80	200
Whereof women	5	10	16	40

The head office is located in Kista, Stockholm, with branch offices in Gothenburg, Malmö, Helsinki, Tampere and Oslo. Technia employees represent more than 20 different nationalities and therefore different cultures, profiles, and a wide range of

knowledge and experience. This is something that has a strong influence on the development of the company culture.

Organisation

Today, with the company having reached 200 employees, the company structure becomes an issue. Until now, organisation of the company could be said to have followed fairly pragmatic principles, such as who is in charge of a certain customer or type of business, or due to historical geographical facts.

Figure 5 shows an organisational chart from 2008, in which Technia is structured as a matrix where *Solution Delivery* is in focus. Here, we see six departments divided according to the product or solution, staffed by anywhere from 6 persons in the smallest unit to 40 in the two largest PLM-Matrix groups in Finland and Sweden. These groups are responsible for delivering projects to customers. In the other dimension of the matrix, we find other specialised units: *Sales*, responsible for key customer accounts, and *Products & Technology*, *Business, Support & Quality* and *Systems Service*, responsible for add-on applications in project delivery and quality and support. *Business Operations* and *Employee Success* are two units organised according to function, with eight and three employees, respectively.

The Employee Success function

The Employee Success unit is what most companies call Human Resources, and comprises three persons headed by a manager who is also a member of the company's top management team. Among the responsibilities of these three people, we can find traditional HR duties like recruiting, competence development, formalising working procedures (handbooks), etc.

The Employee Success function also administrates a Technia Alumni virtual group to maintain contact with former employees – an indicator that employees are considered to belong to the Technia family or clan also after leaving the company. One goal for 2008 was to re-recruit five former employees to the company. It is the Employee Success function that has been responsible for the development of the four human resource oriented management support practices to be described below: the Blue Book, the Knowledge Network, Mentorship, and the Technia University. In collaboration with *Systems Service* they have designed the ICT-routines that support the interaction between management and personnel in these areas.

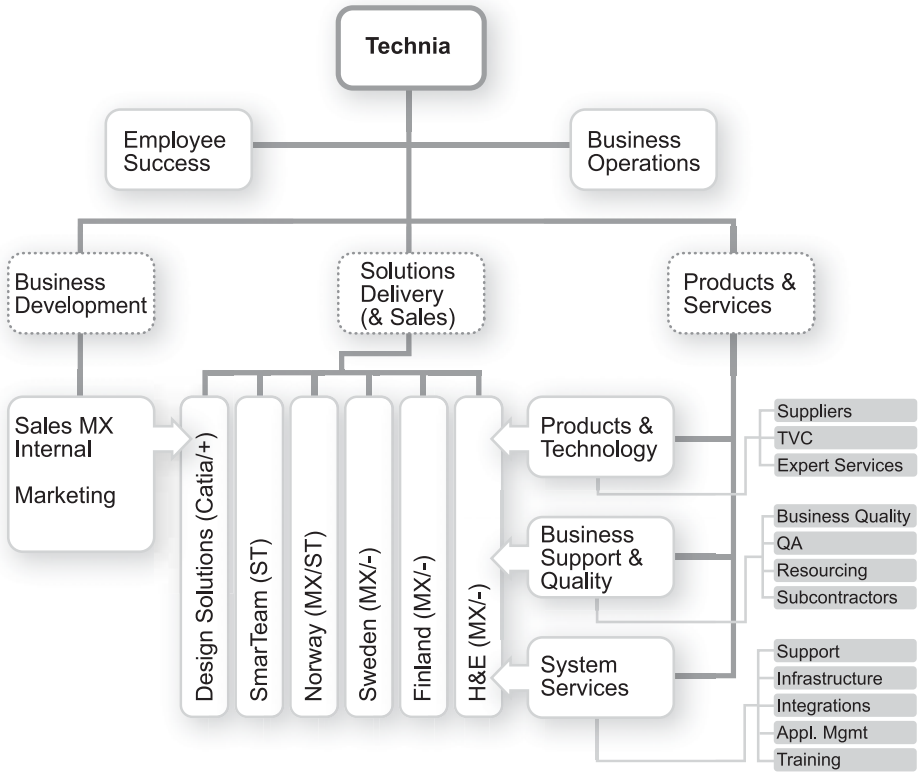

Figure 5. Technia 2008 Organisation

Management practices that promote company success

The company's continuous growth over 15 years requires an approach to personnel that permits an extra ordinary work load at times, e.g., in cases of shortages of people, as well as autonomy and new interesting job assignments. In the interviews, management and employees keep coming back to what they describe as their "whatever it takes" culture. To fit in with the company culture, workers are expected to deliver what is needed to a client even if this sometimes means working late into the night or coming into the office on weekends. Most people remain with the company and employee turnover is very low. From a traditional human relations perspective this could be seen a counter intuitive. Relatively young personnel with good education could be expected to leave for jobs without such high demand for flexibility and devotion for delivery in time to the customer.

There are two main reasons given for why people like their work and stay at Technia. Firstly, people feel they are able to grow in competence and as professional with the company, through getting new and demanding job assignments and often a high degree of autonomy. Management does not interfere but expects people to solve problems on their own. Secondly, according to the interviewees, they enjoy working for Technia and what they describe as "[their] laid back culture". This is an expression for a very informal family like company culture, including an informal way of relating to managers and owners, a collegial form of work in projects and relations to clients and an informal dress code.

The *core values of the company* are formulated in three key concepts – *innovation, dedication and long-term success*. These are explicitly expressed in company documents, respectively, as:

> … a preparedness to change and to regard problems as an opportunity to learn and to be creative and innovative; a "whatever it takes" philosophy devoted to ensuring complete customer success and satisfaction, including a willingness to do our best at all times; and making long-term relationships with employees, customers, partners and suppliers, as well as good working conditions based on mutual respect, an ongoing priority. (The Technia Brand Book).

In the following, we will present how management has worked to maintain the entrepreneurial company spirit from the mid-1990s when the company was small and very much in the hands of the three founding owners of the company. Recently reaching 200 employees there is a concern for how to sustain this type of company culture. The focus will be on the Technia Blue Book, the Technia Knowledge Network, Mentoring, and the Technia University. The first two are examples of more structured ICT supported means of management, whereas the latter two are examples of soft human resources oriented management devices. Also these more human resource oriented practices is governed by ICT support to promote and make their use more routine.

The Technia Blue Book and the Technia Knowledge Network

In a growing company delivering IT systems and solutions to industry, the question of formalisation of working procedures becomes important. Quality requirements from the clients raise questions of documentation and transparency in working relations with the company at hand. In the case of Technia, the issue of formalising working procedures was related to ISO 9000 standards developed in 1998. The quality requirements stemming from ISO developed into an internal project to draw up the Technia Blue Book. The Blue Book was an ambitious project aimed at covering many of the work processes in Technia (such as project delivery, sales, support, administration, management responsibility, etc.). In the introduction to the Blue Book, management describes it as follows:

> This is not an ordinary quality handbook, it is much more than that. The Blue Book provides employees, customers and partners a guide for day-to-day operations, and is based on ISO 9000, CMM and FDA criteria, but most importantly on our long experience of implementing PLM solutions for our customers.
>
> The Blue Book ensures that, as a company and as individuals, we have proper opportunity to develop our skills and experience to be able to deliver high quality solutions with full delivery precision to our customers.

The Blue Book is not a physical book but rather an integrated part of the Technia Knowledge Network, which is a name for the company intranet. Hence, most efforts have been put into the customer delivery process. Without going into too much detail, it basically entails employees being urged to use the support in the process of delivering the project to the client.

The intranet browser serves as a formalised support for employees working with the process of delivering products and services to clients. The net contains administrative support on how to conduct performance appraisals or perform mentor meetings as well as the system for time tracking etc.

The Blue Book and Knowledge Network represent the formalised and structured aspects of management and constitute the building blocks of the management governance system within Technia.

Mentorship – a way of organising?

Mentoring is an integrated aspect of management in the case of Technia. All employees at Technia have a mentor – a more senior employee in the organisation who is supposed to guide the employee through the planning of individual work-related objectives. The mentor also supports the individual's professional development through discussion of the need for training or new demanding tasks. Goals are planned according to a Balanced Scorecard model, which also includes individual development. During these periodic meetings, including regular follow-ups, the mentor and the mentee review areas of responsibility and performance, focusing on what has been achieved.

How the work has been done with respect to the four competence perspectives of the Balanced Scorecard model is discussed with the line manager in the Performance Appraisal at the end of the year. It is often also discussed in the mentoring meeting, since the degree of goal fulfillment is related to individual and company bonuses paid twice a year. The mentoring process and meetings are supported by a step-by-step guide on the Technia Knowledge Network. It requires that the mentor enters data from meetings with the mentee into the support system.

Often the mentor works in the same department as the mentee, but this doesn't have to be the case. Sometimes the mentor is also the employee's manager in the line organisation, though in most cases the mentor is a senior employee working with tasks

and projects in the same area as the mentee. As described in the presentation of the company organisation, Technia has a flat organisation with no explicit group managers. This means that some of the line managers have a large span of control. Here, the mentoring program in some respects fulfills the role of the formal organisation, where mentors implicitly serve the role of group manager.

Mentors also play a vital role for people starting with the company. Over the last years, the company has recruited approximately 30 new employees per year, some of whom have recently graduated from university. In relation to a flat organisation with few or no middle management this creates a demand for introduction and support. As management believes in moving people into projects as soon as possible, on-the-job training is preferred and the project work and introduction becomes somewhat part of the introduction program. The mentor is vital for the new recruits for continuing advice and support as they are successively socialised into Technia's ways of working.

Technia University – creating a high commitment approach to work

In companies like Technia that work with new technology, there is an ongoing need for competence development. New releases and updates of programming, databases and middleware, etc., are dealt with in courses and shorter update meetings. Considerable time and effort is also given to training in the company's internal processes and methods, which is of great importance for quality and effectiveness in customer projects. The sharing of knowledge and experience is also a key area for the Technia management. These three areas for competence development are organised in several different ways: internal or external courses, cross-functional group meetings, webcasts, 2-hour update sessions, etc. All such training and competence enhancing activities are gathered under the heading of "Technia University". Hence, Technia University is much more than a way of organising training, it is also instrumental in management's effort to build and cultivate the company culture.

Apart from regular courses and training seminars, there are two formats that are institutionalised and cited as very important: the *Technia University Conference* and *Summer Camp*, and *Brown Bags*. Brown Bags are meetings held twice a month at lunchtime, where one of the consultants or an invited guest presents his or her experiences from a project or other topic of general interest for the company. Everyone is invited and those who register in time get a "brown bag" lunch. It is an event appreciated by the employees, who come to these lunches if they are in the office.

The Technia University Conference takes place at the beginning of each year. It is usually held over a long weekend and, still, more or less all of the employees attend. The ambition of the conference is set from year to year according to the financial results. The conference can be held in the Alps where attendees have the opportunity to ski during their spare time, or at a Mediterranean conference resort. Conferences have also been held at local conference facilities in the Stockholm area. The objectives for

next year's conference are communicated early on and considered to motivate people during the year. The conferences are used for information purposes and training activities, but also as an important opportunity for team building. Due to the company's growth in numbers and branch offices, in recent years, it has also become the only time when all the personnel is gathered.

Management puts a lot of effort into this yearly event. For example, there is usually a trailer on the company intranet to promote the event and peak the interest for the upcoming conference. One year, a professional director was hired to create a short film documenting the conference, mainly covering after-work events like the award ceremonies – the Technia Awards.

The Technia Awards, which take place at the conference, are not only an event to celebrate the nominees and the winners, the HR manager tells us, the purpose of the seven awards is also to establish a driving force in each and every one to "go for the prize" and be part of the process of nominating colleagues who have excelled during the year:

> The nominations for the awards take place in November-December, at the end of our fiscal year, and the celebration is held at the awards ceremony in the beginning of the next year at our Technia University Conference. All employees are asked to nominate people to the different categories (one category is also nominated by customers). The University Board makes then the final decision. (Intranet: Technia Knowledge Network)

According to people employed at Technia, these awards and other happenings during the conference are very important for creating what they believe to be a very attractive culture in the company. A more business-oriented example of what is done during the conference is the presentation and discussion of what can be learned from an Employee Survey recently conducted by a consultancy firm.

There is also a conference in late summer called the "Summer Camp". This conference is less ambitious in format, but organised in the same manner as the winter conference. There are mandatory information sessions and training, but, in following with the company culture, there are also a great deal of amusement-oriented activities. It is considered an important kick-off for the approaching autumn and winter season. One example of a Summer Camp activity is an exercise where the pros and cons of Technia company culture were investigated in a one-day group meeting. Management described it as an integrated part of their continued work to maintain and develop the company's core values and culture, described above as innovation, dedication and long-term success. As an example of how management uses the Intranet to infuse the company with values it can be mentioned that the results from this exercise were summarised and presented shortly after the meeting on the company intranet under the heading of "Good Things about Technia Culture".

Table 5. The 7 Technia Awards and their descriptions. Source: Technia Knowledge Network, Intranet

Coach Award	The employee who supports others and promotes their development, demonstrating the ambitions and guiding new hires into their roles and responsibilities.
Outstanding Sales Award	The person whose overall contribution to the fiscal year's most important sales deal was most outstanding.
Quality Award	The employee who is most devoted to and contributes to development, improvements and maintenance of our processes and our business handbook, the Technia Blue Book.
Rookie of the Year Award	The new employee whose achievement is the most outstanding during the year. This can apply to the nominee's performance in his/her own function or relate to his/her assisting or contributing to others reaching their goals.
Special Award	An open award for any individual achievement.
Technical Award	The person who has developed/increased his or her technical role most and taken on technological leadership.
Customer Choice Award	The recipient of this award is chosen by the customers. Customers are asked to nominate a deserving Technia employee that they have worked with in projects in the past year.

Managing culture and corporate growth – Summary and conclusion

This case description of Technia has painted a brief background of the company history and organisation, to show that the company has been successful in several aspects. The company has shown a continued growth in business volume, number of markets and products. Technia has also been recognised as the recipient of different types of awards, both for business success and as a model employer. Hence, the focus of this case report has been to describe some key human resource oriented management practices used by Technia management to develop and maintain a entrepreneurial culture that make continued successful business possible.

Two characteristics frequently described by management and by employees in the case study are that the company culture is informal and entrepreneurial; following a demanding, but relaxed atmosphere. Technia management describes this concentration on company culture and human resources practices as a continual focus on skills development, organisational structures and the continued development of methods and

processes for project work key to ensure that Technia employees “have the space they need for their own personal development and the opportunity to produce high-quality work.” This view on human resources are core to a management striving for a high trust and high performance culture (Six & Sorge 2008) comparable to the high road strategy discussed elsewhere in this book.

As was shown by the organisation chart, there is a group of three people under the heading “Employee Success”, which in most companies would be labeled “Human Resources”. From the case study it was also evident that Employee Success plays an important role when it comes to develop and design both the hard and soft management practices and routines of the company.

The Technia Blue Book and the use of the intranet (Technia Knowledge Network) exemplify hard management practices by means of formalised and highly structuralised ways of supporting and governing how employees work. The Technia University and the way mentoring is used, on the other hand, are examples of a softer management practices aimed at motivating and cultivating employees and developing a cherished entrepreneurial company culture. In these respects, the Employee Success function can be said to play a managerial role as well as a traditional personnel department role in the company. Viewing HR, as often is the case in academic and business literature, as a support structure for company management, whether administrative or strategic, or as an internal consultant, however, seems in this case to be a bit too dichotomised. At Technia, HR activities exercised by the Employee Success function are not something external to management or a support for management, it is more an example of management as such in this kind of growing Professional Service Firm.

Taking a closer look at the management practices used by Technia shows that these practical applications of management have both soft and hard aspects. The role of the Employee Success function is to provide qualified means (hard as well as soft) for company as well as individual growth. This is done by the design of routines and management practices that is expected to reproduce and develop the entrepreneurial company culture and thereby promote parallel and interrelated, individual and organisational, learning and control processes.

Company growth and employee development are in many respects difficult to separate in cases like this. The growth of the company has been dependent on the development of the employees as describe by the proponents of the high road strategy for innovation and growth. In the 15 years of the company’s existence, many new key persons have joined and stayed with Technia. Many of them have been relatively young and sometimes starting their first job after graduation from university. The professional development of these employees is highly interrelated to the overall learning curve of the company, as it has added new and more sophisticated projects to its business.

To conclude, this case study is an example of a Professional Service Firm with a typical flat and informal organisational structure. Management is informal and put its faith in an entrepreneurial company culture more than explicit supervision. Parallel to the increasing size and scope of the firm, the human resource function has developed routines and support structures for managerial governance. These routines are ICT-supported and are aimed at making both management and the employee ways of working more formalised without putting the entrepreneurial spirit at risk. If this is possible is beyond the reach for this case study and therefore need further investigation.

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Editors' comments

The authors of chapter four take us inside a technology-based organisation and show how the organisation thinks about, understands, as well as uses and develops a methodology for project management. The method gives structure that helps to shorten lead times. Improvements in terms of communication, clarity, and commitment are identified. Together, they offer a holistic view: closer communication requires a stronger commitment and clarified roles in project management.

4 How does one make a project a success story?

PER ODENRICK, JOHAN MATTSSON AND MIKAEL BLOMÉ

Abstract
A project orientation enables an organisation to cope with a dynamic environment and surroundings. A project organisation is temporary, which means it can be adjusted to the circumstances, while at the same time being a well-proven way of solving problems. The present case from the Swedish company Alfa Laval is one example of how a large company continuously is working to improve their management of projects. The vision is to make every project a success story. This chapter presents conclusions based on experiences from the case and theoretical reflections by the authors. To successfully manage a project, a holistic view is needed. However, the holistic view can be broken down into three important factors: communication, clarity, and commitment.

Keywords
Project management, competence development, lead time, communication, commitment.

Introduction

More and more corporations around the world are starting to work in project formats and are leaving behind their traditional function-based ways of organising. This leads to new ways of approaching and implementing changes and improvements. It requires an approach that deals with the individual employee to a greater extent. At the same time, the individual employee has to be trained to see him or herself as a part of the organisation.

A project orientation enables an organisation to cope with a dynamic environment. This kind of organisation is temporary, which means it can be adjusted to the circumstances, while at the same time being a well-proven way of solving problems. It provides a short-term solution for dealing with new problems that arise and is thus able to address them even in the long run. However, project orientation requires much more of its members than a traditional organisation does. The project's success is, to a great extent, dependent on the skills and abilities of the individual project members. But, to increase the capability among project leaders and project members it is important to create an affordance in the organisation that supports development among individuals. It is not

only a question of competence development, but also a question of how to create value by improving the innovation capability in the organisation.

With this in mind, it is vital that the project members are highly trained in the art of project orientation and what it means to work in a project-based organisation. It is also vital that they, with ease, are able to provide the right information and motivation to the recipients of a project.

The present case from the Swedish company Alfa Laval is one example of how a large company continuously is working to improve their management of projects from the perspective of project managers. Data in the case was collected through in-depth interviews with project managers and project owners according to a question guide. Empirical data was also found in the company documentation system. The company's vision is to make every project a success story. What does the company mean by success story and how can the project managers be supported in their work? When using methods and tools for implementing various concepts, processes, strategies and methodologies, deviations between strategy and practice often arise and are defined as *The Gap*. How can project managers decrease The Gap in relation to how Alfa Laval deals with information and communication during a project life cycle? These are questions that this chapter tries to answer in the light of the case example. At the end of the chapter some examples of how project managers can be supported to minimise The Gap and make success stories out of the projects are provided.

Theoretical aspects

The main driving force in a project is to be productive and to achieve something of value. To be able to reach the project objective, the project group must have a clear vision of what is to be accomplished and the vision must be shared by everyone. In an ideal situation, everyone concerned with the project thinks that it is of high importance and truly values the project.

There are three major benefits of decreasing the lead time of projects: competitive advantage, higher profitability and fewer surprises. The ability to quickly respond to needs from the market and customers increases the market leverage for an organisation and hence its competitive advantage. Increased speed of a project results in the deliverables being taken into action earlier and the benefits of the projects can thus be utilised at an earlier stage. The third benefit of increased speed in a project is fewer surprises. The conditions and requirements set at the start up of the project will not have time to change as much if the project is conducted with high speed (Cooper, 1993).

Every project goes through a project life cycle, which consists of four phases: conceptualisation, planning, execution and termination. The conceptualisation phase

determines the scope for the project and the circumstances under which the work is carried out. The objectives and the means of reaching them are also described in this phase. The planning phase establishes the plan for achieving the objectives. Budgeting, scheduling, and resources allocation are examples of typical activities carried out in this phase. The execution phase is the actual implementation of the project in the organisation. In this stage performance capabilities are secured and verified; materials and resources are also procured. Lastly, the projects is terminated and closed. In this phase the project is completed and handed over to the clients (Katz, 2004).

Management is responsible for clarifying the structure, rationale and performance challenge for the group, but management must also leave enough flexibility for the team to develop commitment to its own spin on the purpose, specific goals, timing and approach. A good group invests a large amount of time and effort in exploring, shaping and agreeing on a purpose that belongs to them both collectively and individually (Katzenbach & Smith, 1993).

It is necessary to state the reasons for praise with any positive feedback. Giving negative feedback is generally considered to be difficult. It is bad management, however, to avoid doing so. Presenting negative feedback formally and professionally makes it more comfortable for both parties. When offering negative feedback, your aim is to express your negative opinions honestly, but in a positive manner, clarifying what went wrong and why, drawing out ways to improve poor performance/behaviour and removing the negative feedback from the emotional realm by being objective and non-personal (Pillai, 2006).

It is crucial to set up the organisation in such a way that it facilitates learning for all employees through their daily work. But individual learning does not automatically mean that the organisation learns. Much learning takes place when people interact, converse, or co-act. Backström and Döös (2008) present the concept relatonic, and stress the importance of interactions and relations for an organisation's capability to learn. The relatonic is of extra importance for networked and virtual organisations, where people not as often meet naturally just by working close to each other (Backström and Döös, 2008). One approach to support organisational learning is to provide a system or methodology for gathering up learning gained by the employees regarding procedures, policies, strategies, and routines. *PROMAL* is such a project management tool and is described below.

Company description

Alfa Laval is a global provider of specialised process engineering solutions and equipment, based on three key technologies: heat transfer, centrifugal separation and sanitary flow technology. Alfa Laval sells its products to over a hundred countries. It sells products individually and in combination with each other to form systems. Solutions are

designed by the company to improve the performance of their customers' manufacturing processes. Alfa Laval provides products to the food and beverage industry and waste water treatment, power generation, biochemical and pharmaceutical industries.

OD Supply and its project managers

Operations Development Supply (OD Supply) is a function in the Division of Operations at Alfa Laval that works cross functionally. OD Supply consists of eight employees, supervised by a senior project manager. They work as project managers in the Division of Operations. Because of their cross functional way of working, OD Supply works with the entire supply chain from Alfa Laval's suppliers to its customers. The eight project managers in OD Supply have one of three areas as their area of expertise: supplier, production or customer within their own niche. Two project managers operate with the suppliers, two with production and two with customers. The project managers are also qualified to work in the areas outside of their particular expertise.

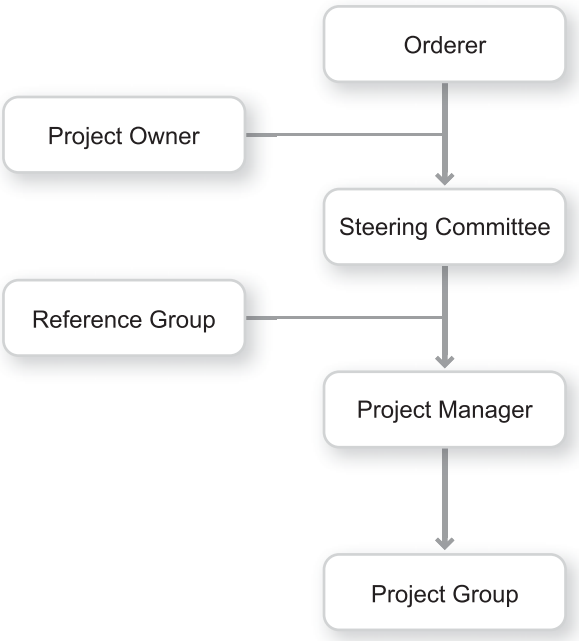

Figure 6. Project organisation at Alfa Laval

The relation between different stakeholders in the project organisation is illustrated in Figure 6. The steering committee decides the budget and framework for the project. As

can be seen in Figure 6, the relation between the project manager and the project owner goes through the steering committee.

A project manager has the operational and executive responsibility to deliver the project according to its specifications. The project manager is also authorised to take decisions within the scope of the approved project specifications and to choose and decide among available options provided by either the steering committee or the project owner. The control and follow up of the assigned project resources are in the hands of the project manager. He/she also suggests and manages the project team and determines the project specifications with the project owner. During the project, the project manager is responsible for administration, documentation and information regarding the project. He/she is also the one who conducts status reports, risk analyses and reports possible deviations. The main objective for the project manager is to ensure the overall quality and success of the project. He/she needs to do all of this within the framework of standards and procedures which defines the project.

Project work tools

PROMAL is a locally developed tool that helps the project managers to perform their work tasks. PROMAL is used whenever a project of a certain size is to be conducted. The cost limit is roughly €30,000. The model consists of five sequential phases all ending at separate tollgates, where a decision is made. The model is visualised in Figure 7. The tollgates work as decision points where it is determined whether to kill, hold or go on with the project.

The first phase involves the initiation of a project. It is called the *Idea Phase* at which point a need or a strategic direction is indicated. Any kind of idea can be addressed and then the project moves on to the *Feasibility Phase* where the idea is identified, pinned down and studied. A basic estimation of the proposed project is also made: resources, costs, benefits and savings are presented on a rough basis. The project idea is examined from a broad perspective. The purpose of the Feasibility Phase is to increase understanding of the idea and how it may come to affect the organisation. A feasibility study is carried out resulting in pre-study specifications.

After approval of the specifications, the *Pre-Study Phase* starts. The pre-study can be described as a more comprehensive and detailed version of the feasibility study. In the pre-study different parameters are estimated at a higher level. Different scenarios and problems are identified. The main purpose of the pre-study is to prepare for an efficient implementation of the project. A good end result requires a good pre-study. The achievements of the pre-study may very well be the most important document of the entire project. This document is called a project specification, which sets out the direction and objectives of the rest of the project. It should provide a uniformed and agreed view of the project.

The project is realised in the *Implementation Phase*, which is broken down into realisations. It takes the longest time and therefore also the most focus and resources in the project. A tollgate is placed at the mid-point of the phase to determine whether to hold, kill or go on with the implementation. Status reports are due on a continuous basis. All involved parties are expected to read the status reports so they are aware of the progress of the project. Afterwards, the Implementation Phase continues and is completed at which time the project process reaches another tollgate where the utilisation of the project is determined. The deliverables of the project are then compared with the original project specification.

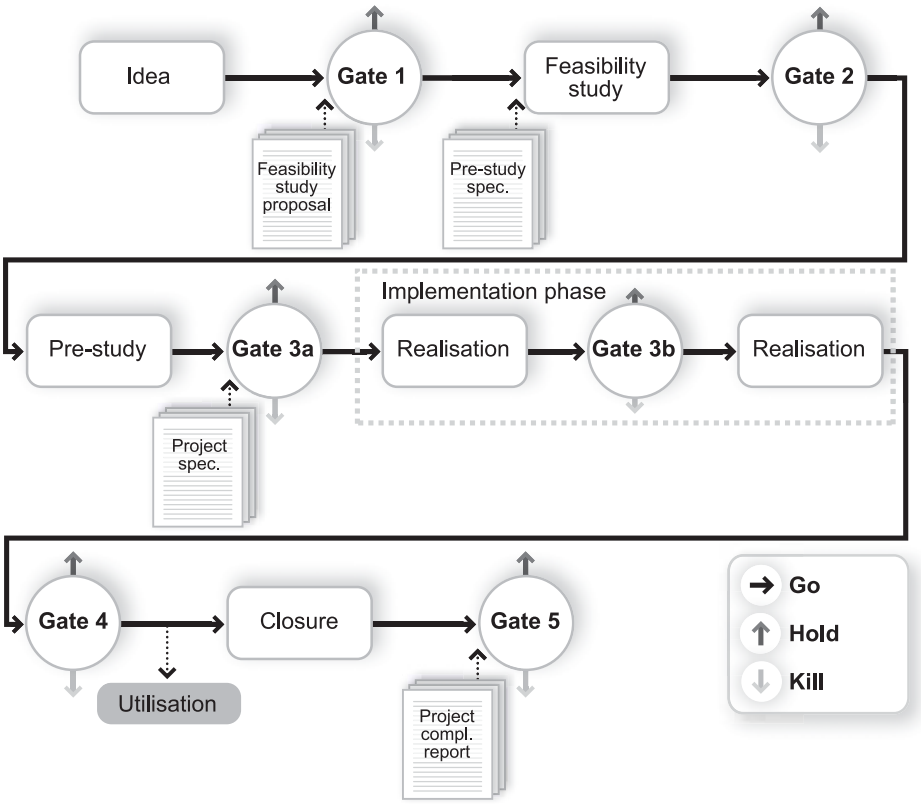

Figure 7. The PROMAL methodology used at Alfa Laval. Modified from Mattsson and Wikström (2008)

The final stage of the project is the *Closure Phase*. A distinct end of the project is important. The closure should be described in the Project Completion Report, with the purpose of learning from both successes and failures. The Closure Phase may also include a follow-up of the deliverables.

Alfa Laval has an established definition of a project: A project is an activity that is carried out for a limited period of time, uses specific resources, has a defined objective or goal, and requires a temporary well-defined organisation. The project manager is accountable for reaching the objective at the right time for the right cost, and has the total responsibility to reach the goals according to the project description.

Project work in practice

Currently, the individual project manager works on average with three or four different projects at the same time. Most often they work on their projects by themselves with no official support from the other project managers at OD Supply. However, all project managers expressed that their colleagues are easy going and that they do not hesitate to ask each other for help; if such is needed it happens on an unofficial level. Lately efforts have been made to unify the projects and run several projects in related areas towards the same bigger objective thus allowing several project managers to work in the same direction while working with their own projects. The members of OD Supply feel that their strength is their combined competence or as one of the project managers put it: “Combined competence is a higher competence”.

When asked to describe what the project managers believe is important when leading a project, they all state the same three parameters:

- *Communication:* They all feel that to be able to motivate the project members it is vital that they know what is going on and why. If the workforce is aware of the changes in the project process and accepts them, the resistance to change will be lower, from the managers’ experience.
- *Clarity:* The communication must be clear and should not be possible to be misunderstood. It is more important to give a clear answer, even if it is negative, than to give a vague answer with room for a lot of interpretation.
- *Commitment:* The commitment must be from both the project manager and the steering committee. If both parties are committed to the project, their enthusiasm and passion should grow in the project group and every involved party will start to feel the same way and be ready to put in that extra effort necessary for the success of the project.

A problem that was experienced by most of the project managers is the interaction with the steering committee. How and when the steering committee is to be involved is not clearly defined in PROMAL. Several project managers felt that it should be made easier to interact with the steering committee. They also expressed that the steering committee does not always seem prepared and that they use the meetings to read the material and not to give competent direction.

The steering committee, in turn, states that to be able to direct a project properly and in a satisfying manner the project manager and the steering committee have to be on the same side. This is not always the case and the direction for some projects is not as good as it should be. The steering committee would prefer the project manager to be proactive and initiate contacts with the steering committee's chairman, the project owner, in an informal manner between the steering committee meetings. The steering committee considers both the engineering and the commercial aspects of a project as important but should, according to the project managers, also focus on the critical issues which can jeopardise the project.

Decreasing lead time

At OD Supply they focus on the lead time instead of the start and end dates, which enables them to carry out projects in any order possible and when necessary resources are available. However, they do not make any specific efforts to try to decrease the lead time of a project. Some of the project managers stated that the projects were changed during the time they were running and as a result, surprises arose.

Competence development

Alfa Laval enables their employees to educate themselves by letting them choose which educational events (training, seminars, etc.) they want to attend. A wide range of education and training opportunities are offered and management encourages employees to improve their competencies. This is typical individual learning. Project managers gain more individual learning experiences through their daily work.

OD Supply has a competence matrix in which the overall competence of the department is broken down on the single project manager level. The matrix helps identify needs and the project managers can more easily determine the fields in which to seek out more training. Through the competence matrix, OD Supply maps all the competencies of its own department and this enables the project managers to learn from each other. The "20 Hours" initiative consists of activities that let both the individual and the organisation learn from the projects. This initiative means that every project manager is supposed to spend 20 hours in another manager's project and in so doing learn how others lead projects and deal with different situations and new technical expertise.

Much of the traditional learning from seminars and courses focuses on how to learn in an efficient input/output aspect learning and since OD Supply project managers attend these activities they are well trained in this type of learning. Most have master degrees in engineering and they are used to tackling undefined problems. Another factor that helps increase effective learning by the project managers is that they are writing their own project specifications, where the objectives and deliverables are to be defined;

ergo they are not already defined and it is up to the project manager to make the most of the situation.

Follow-up of projects and project managers

The Closure Phase in PROMAL makes sure that the project is ready to be accepted by the internal organisation. However, there is no Post-Implement Phase where the project could be evaluated in retrospect to determine if it actually was performed in the way as it was planned. The majority of the project managers can very well see this new phase being introduced to the PROMAL methodology. They argue that it would help them grow in their roles and that they could benefit from earlier projects when dealing with difficulties in new projects.

Presently, the project managers are evaluated at an annual evaluation based on their overall performance, not associated with the separate projects. Most of the project managers requested more structured feedback on a regular basis linked with individual projects to supplement the overall performance evaluation.

Comments and recommendations

In the present case description we showed how a large international company supports and develops their strategy for handling project work. This strategy to make every project a success story can be enhanced in several ways as stated in the following comments and recommendations.

How can the lead time be decreased?

A company often rates a project as successful when the lead time is shorter than expected. A better interaction between the project manager and the steering committee will make the project run smoother resulting in decreased lead time. If the interaction improves, some matters will also be solved in an unofficial manner and at an earlier stage.

In addition, there are more actions that can be taken to decrease lead time. If the project managers only run one project a time and if they spend more time in the Pre-Study Phase, the speed of the project will increase. If they are just managing one project, there will be a need for set-up time and the project manager will be able to focus all of his/her energy and resources on the single project. Spending more time in the pre-study will help the project manager to be better prepared in the Implementation Phase and ready to handle a variety of scenarios. This will also increase the clarity of the project and the real implementation work can start earlier and more efficiently. A better pre-study will also increase the communication between the project manager and the project owner at the start of a project.

How can the project management be supported?

The involvement of different stakeholders in the various phases of the process is vital to its success. They have to be involved in the right phase at the right time; meanwhile the knowledge level of the stakeholders regarding the project needs to be the same.

The project owner must be sure of his/her role and responsibilities. The project owner's role involves more than just being the chair of the steering committee. He/she must also realise that marketing and project justification are the tasks of a project owner. To be able to do this, knowledge about the project's content is necessary, knowledge which often is possessed by the project manager. For that reason the project owner has to work closer with the project manager and in that way strengthen their relationship.

Status reports are currently used. Even though they are good, they do not instruct the project manager in what to report, which areas to address and how to address them. The method should include what kind of issues to be raised, such as the commercial ones and the ones which are critical for the progress of the project. By introducing this sort of reporting, the steering committee meetings would increase their efficiency and the committee would be able to better direct the projects.

A more structured follow-up at the end of a project will enable the project manager and project group to develop their competencies through reflections, which are made when formulating the follow-up. The process is more important from a competence development perspective than the actual end product.

After the project is delivered there is a great risk of just a short-term effect and the project can be seen as a failure. To limit this, it is important that a follow-up exists in this process as well. An easy solution is that the project manager carries out a follow-up with some of the project members in the organisation. The results should then be analysed and depending on the analysis, the project manager should decide if there is a need to do something about the project or not.

During the Post-Implement Phase the project could be evaluated in retrospect to determine if it actually delivered what it set out to. The majority of the project managers can very well see this new phase being introduced to the PROMAL methodology. They argue that it would help them develop in their roles and that they could benefit from earlier projects when dealing with difficulties in new projects.

How can deviations between strategy and practice decrease during a project life cycle?

The factors that create the deviation between strategy and practice in the projects are: the interactions between project manager and the steering committee; the lack of follow-up; the slow speed in the projects; and a need for better development of competencies in OD Supply.

Several of the parties involved expressed that the guidance provided by the steering committee in some cases was not adequate. This most likely derives from a general lack of communication between the project manager and the steering committee.

There is a certain amount of follow-up in the status reports but not enough to be able to increase the communication and give constructive feedback. Thus, there is a need for a better follow-up in order to succeed with projects in OD Supply. The project owners argue that the follow-up is the responsibility of the project manager, and the project managers state that it is necessary for the project owner to intermediate in this process to get a better view of how the project is progressing. This difference in view can lead to conflicts between project managers and project owners if not handled in a constructive way.

The senior project manager has recommended that every project manager spend twenty hours a year in someone else's project since this could improve the overall competence in OD Supply. According to the project managers, though, this should not be a recommended task since they will not be able to complete it due to lack of time and energy.

But project managers do not currently know about the other projects in which their fellow managers are working. An alternative solution to increase this awareness could be a weekly meeting where the project managers discuss all the problems that have arisen in the projects. When a problem has been presented it should be followed by a discussion and brainstorming. In this way all managers would be involved in every project, which would encourage continued discussions after the meetings. The overall competence would increase since project managers would learn from one another through interactions. From such a meeting they would also know the projects in which everyone is working, resulting in stronger relations and greater involvement of them all.

Even though competence development through courses, education and seminars is important, it is far from the only source of competence development. The intangible lessons learnt or competence obtained through experience and trial and error is just as important.

A holistic view

Finally, to successfully manage a project, a holistic view considering the relatonic is needed. This can be broken down into three important factors: *communication*, *clarity*, and *commitment*, which all should support interaction and relations. In this case communication would benefit from closer and informal dialogues between project owner, steering committee, and the project manager. It would require a stronger commitment which costs energy, but frequent contacts and mutual understanding could on the other hand result in clarified roles of the project owner and the project manager,

and clarified content of status reports. The PROMAL methodology is supposed to support this communication by providing structure and decision points, but such a system must have a transparency and organised follow-ups where the different stakeholders communicate and learn from each other in order to find unique solutions in an efficient structure. Thus, the shared holistic view among the stakeholders would strengthen the relatonic and increase the organisation's capability to learn how to manage projects successfully.

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Editors' comments

The fifth chapter deals with the building of innovation capability within an organisation and across internal organisational borders and functions. The goal is to create a creative climate. The formula prescribed is enhancing divergent thinking in temporary teams. Such temporary collaborative structures where people meet with a joint task in focus is found to add to innovativeness in the search for identifying new opportunities for product development. The importance of key people is also acknowledged, as is management attention and team composition.

5 Innovative teams: Identification of new opportunities

SOFIA RITZÉN AND SUSANNE NILSSON

Abstract
Temporary innovative teams work for a limited period of time on an open ended assignment in a strategically important technology area. In a successful exercise using innovative teams at the present case company, skilful and highly creative people produced inventions, patent applications, prototypes and new knowledge reports. Based on their experiences, this chapter gives recommendations on how temporary innovative teams may be organised.

Keywords
Product innovation capability, teams, knowledge search, creative climate.

Introduction

For fifty years now, the pacemaker has been a device that saves and improves the lives of many people. Today St. Jude Medical AB[6] develops and produces pacemakers with ever increasing functionality. The technical challenges are still large and innovation is needed both in development of the products and in organisation and management. This chapter describes the case of St. Jude Medical AB in Veddesta, just outside the capital of Sweden, where temporary innovative teams were organised as a means to identify new opportunities in technology and product realisation. Developing the organisational capability to innovate is identified as key in reaching and holding a leading market position. The temporary innovative teams approach enables a company to take advantage of existing competence, develop it further and create new values for the company, illustrating a high road strategy for innovation and growth.

Organising for product innovation

In most companies today, product development is a highly advanced organisational and managerial issue. One reason for this is the many competencies needed in development work due to the amount and advanced level of materials and technologies in the products themselves, a complexity which can also mean that there is a large number of

[6] AB is Swedish for Incorporated (Inc.)

people involved. Development work should not be isolated to a specific development division – it is a task for the whole company. A typical product development organisation runs the development work in projects, with defined project members and specified assignments and time frames. Activities are organised in phases with check points or decision points in between. This is prescribed by a variety of sources, usually with the added rationales of decreasing lead time and securing quality (see e.g. Wheelwright & Clark 1992, Cooper 1993, Ulrich & Eppinger 1995).

However, there is a downside for such an organisation in addition to the challenge of making it work on a daily basis (see e.g. Fonseca 2002). An efficient product development organisation, goal oriented and chasing time units, allows little room for risk taking or for elaborating on new ideas. Ekvall (1996) defines a number of factors that constitute a creative climate, and also shows that a creative climate has a direct relation to the success of a company. Free time for idea generation, playfulness, room for discussion and risk taking are some of the influencing factors. Following a number of studies, another creativity researcher, Kristensson (2003) states that divergent thinking is fundamental to creativity. A streamlined organisation with tough deadlines and limited resources allows for little divergent thinking. Thus, a possible outcome of today's product development is that little innovation will happen, however successful the management of it appears to be (see e.g. Christensen 1997).

A specific aspect of product development is teamwork, often recommended for reaching good technological results (see e.g. Norell 1992; Ulrich & Eppinger 2007) and, as stated above, completely necessary in order to cover the broad competence needs in today's product development or product innovation. Perry-Smith and Shalley (2003) support this, as teams expose individuals to new knowledge and enable collaborative working in problem solving. However, the construction of teams can also hold several implications (see e.g. Kurtzberg & Amabile 2001; Taylor & Greve 2006), mostly referring to group related problems such as defining common routines, communication problems, finding mutual agreement. In light of the way many companies today are being challenged to increase their innovativeness (Olsson 2008), temporary innovative teams can be of specific interest as a means for innovation and for change. West et al. (2004) for instance define a twelve step model for work teams to reach innovative organisational change in response to the external requirements of an organisation. At SJM, the temporary innovative teams were used mainly as a means for product innovation.

The case company

St. Jude Medical[7] develops medical technology and services that focus on treating cardiac, neurological and chronic pain patients worldwide. With headquarter in St. Paul, Minnesota, St. Jude Medical employs more than 13,000 people worldwide and has five major focus areas that include: cardiac rhythm management, arterial fibrillation, cardiac surgery, cardiology and neuromodulation.

St Jude Medical AB (SJM) is a European site with more than 700 staff working with the development and manufacture of pacemaker systems for treatment of heart rhythm disorders all over the world. Research and development at SJM focus on the development of new applications and design for future pacemakers and implantable defibrillators. Medical technology development requires skilled competence within a broad field of sciences. Material research, telecommunications, clinical research, software and hardware development are just some of the functions present at SJM. Nearly 300 people are involved in R&D at the site.

SJM is an ordinary company in terms of how product development looks today. Product development is mainly conducted in development projects using cross functional teams and a process with defined stages and gates from research phase to the transfer of the product to market. The product development organisation is designed to increase efficiency in terms of quality and lead time. The time perspective varies in different phases, as well as in different sections of the development organisation: for instance, in technology development a long term perspective is relevant, whilst in product development, shorter development cycles with a focus on smaller improvements with direct effect on existing products are important.

Innovation has always been a critical success factor for the company. Today this involves not only developing products to stimulate the heart but also understanding complex relations between different conditions and illnesses in order to develop new systems for the patients. This raises issues on new technologies and products and has an additional impact on the organisation and management of innovation, as well as on how to attract, utilize and further develop people and their competences. Several approaches to increase the innovation capability of the company, integral to aims of a high road development of a company, have been developed, and the creation and implementation of temporary teams specifically designed for innovation is one of them. This chapter presents the temporary innovative teams approach in general and the experiences from the first round of teams at SJM. Conclusions from an interview study (see table 6) will form the basis of recommendations for other companies interested in using this approach.

[7] A group of companies worldwide.

Research context and data collection

PIEp, Product Innovation Engineering program, is a national research and development program aiming for increased innovation capability in people and organisations. During 2007, PIEp conducted a large research investigation involving 26 companies across Sweden (Olsson 2008). The case of temporary innovative teams in SJM is part of this larger study which encompassed topics concerning organisational factors, process dependencies, customer involvement and measuring of innovation capability.

The SJM data was mainly collected by semi-structured research interviews, according to the Kvale method (1996). In all seven interviews were conducted with people from three different temporary innovative teams and from SJM management, see Table 6.

Table 6. Interviewees with their role in the company and relation to a temporary innovative team

Respondent	Function	Relation to team
1	Research Scientist	Team member
2	Design Development Engineer	Team member
3	Software Development Engineer	Team leader
4	Design Development Engineer	Assistant team leader
5	Patent Director	Developed the activity, part of innovation management
6	Technology Director	Developed the activity, team assigner
7	Vice President	Decision taker

The two authors of this chapter have complementary perspectives as researcher and practitioner, giving additional value to the work. In an ongoing discussion, before during and after the interview sessions, we have reflected on the function of temporary innovative teams and on the experiences from finished team activities, as well as on ways to increase innovation capability at SJM in light of the data provided by the interviews. The analysis of the interviews was based on the notes and recordings of the first author, and categorized as presented in the following sections.

Innovative teams

Initiation

During a strategic work undertaken by the management of SJM in 2005 several new technology areas were defined as of strategic importance and in need of further development. As well as new opportunities to the company, there were certain risks

associated with at least some of the areas (since the product potential was unknown), and there was little further development at that time.

According to the Patent Director at SJM, a number of so called innovation champions emerged at SJM during the same time period. They didn't have a special assignment to develop work methods for innovation (as she defines her own work) but they had ideas they were willing to share and experiment with. The CEO of the company verifies this picture of innovation champions in the company.

In the fall of 2005, top management of St. Jude Medical directed the R&D organisation to evaluate an invention method as part of their development to increase innovation capability. The rationale behind this decision was that the invention method was considered to fill a gap in the company's six sigma tool portfolio.[8] The method to be evaluated was TIPS,[9] and it was positively received by SJM management in Veddesta, who proposed that people well known for their innovative skills should be organised into specific teams to apply it. From this the background an initiative grew to form innovative teams, specifically designed by the R&D organisation in Sweden.

Innovative team rationales

There were two major purposes behind the formation of innovative teams. The first was to approach the technology areas defined as of strategic importance. The second was to draw together people from different specialised groups to create a multidisciplinary team with a strong innovation focus rather than a common competence. It was widely understood that being selected would be well received and seen as a reward. Team members were selected based on the following principles:

- Competence: people with high skills in certain technology areas;
- Creative skills: people known to have many ideas;
- Divergence: teams should have members of different age, gender and roles in the organisation.

It was believed that in addition to bringing their expertise and creativity to the team, each member would also benefit from their experience. For instance, the members would learn a new method and be able to bring this knowledge back in to their daily work; they would also learn to know people better outside their own divisions or groups and increase the informal contacts in the company, as well as developing skills within the particular technology area their team was occupied with. An additional goal

[8] Six sigma is a business management strategy to continuously improve company processes, one feature is a portfolio of tools for quality improvement.
[9] TIPS stands for Theory of Inventive Problem Solving, also known as TRIZ which is the abbreviation from the original Russian name of the invention method, description available at numerous web pages, e.g. www.aitriz.org.

for the individuals was to develop their enthusiasm for working with long term issues in a creative manner enabling additional innovation champions to emerge.

Team composition and assignment

In the first round, three teams were designed consisting of 7-8 people each. Each team differed slightly in terms of team management and allocated time. To exemplify with one team: a team leader worked fifty percent of full time, with an assistant team leader committed for the same (or a little less) working time. The team members were allocated ten percent of their total working time. The team worked for a period of 4-6 months. A steering committee was put together for all teams. The teams reported to this committee several times during the working period and also had close contacts with the patent department.

On average, each team met weekly to work on their assignment. TIPS was applied and specific activities were organised by the team leader and assistant team leader, e.g. invited speakers, study visits on other locations. The team leaders also gathered data and prepared work between meetings. Other team members could also have tasks to do between meetings, thus the time available for group work was limited.

The assignment was strict in the sense that the team had well defined targets as a certain numbers of invention notifications and patent applications, prototypes or models which were set up at start in dialogue with team manager and steering committee. However, only a specific technology area was defined and no requirement specification set, making the assignment more open ended.

Results from Round 1

By the time of the interview sessions, the first round of innovative teams had finished. The management in SJM reported that two of the teams (Team 1 and 2) were successful in producing assigned deliverables. Team 1 delivered several patent applications in a for the company new area; Team 2 delivered several patent applications and also prototypes. Team 3 delivered a written report and despite not reaching initial targets the results from this team were considered as a valuable contribution to the knowledge base of the strategic area.

Experiences from team members

The initial belief of the team creators that being selected as a team member would be seen as a reward was correct. The respondents with experience as a team member all reported that they were enthusiastic and proud to be selected to a team. They also felt that being part of the team was satisfying, though the experiences of the different team members vary a little in this respect. This seems to have direct correlation to the results of each team. Team members from Teams 1 and 2 say that the work was satisfying and successful, whilst members of Team 3 describe being sometimes frustrated when not enough progress could be made and requested targets were not reached. This team had

a special situation whereby, in their ordinary work, most of the team members were occupied in a project that was struggling with severe problems and tough deadlines. Also the technology area defined as strategic was seen by several people in the company as one of the most challenging, and with little experience or competence already existing within the company.

Several factors were mentioned as being important to the positive experiences of working in an innovative team:

- New ways of working with new colleagues and new tasks;
- Management prioritised technology areas;
- Collaboration took place with open minds and little judgment of each other's ideas in early phases;
- Scheduled time to work on idea generation.

However, factors resulting in more negative experiences were also mentioned:

- Competence lacking (despite company specialists being selected);
- Too little time for team members;
- Assignment defined goals that were impossible to reach although the assignment director was still satisfied with the outcome.

The issue of competence was brought up by several respondents. Because of the character of the assignment (i.e. the company's unfamiliarity with the technology area) the competence of the team members varied. One respondent reported that in their team the leader was sort of an expert in the area and as such could guide the team members and drive the work forward. Another respondent reported that he from time to time felt frustrated with the fact that he was new in the area and someone else would have been better suited to the task. In this particular case the respondent had been chosen primarily for his creative skills, despite the fact that the area was selected as of strategic importance, little competence existed within the company at that time.

The respondents all had positive experiences from applying TIPS, although each team developed their own variant of the method in order to make it better suited to their specific needs. They felt that the method contributed with a systematic approach in an otherwise very free assignment, and that it also functioned as a means to team building. The method supported firstly a divergent phase, opening up for free idea generation, and then a convergent phase, supportive in evaluating ideas.

Key issues for the success of innovative teams

Four specific issues were identified to have specific importance for the success of the innovative teams and in avoiding negative experiences for team members:

- Seeing and benefiting from *innovation champions*,
- *Time allocation* for team managers and team members,
- The *assignment to the team* regarding definite deliveries and learning outcomes,
- *Systematic approaches* for idea generation and idea evaluation in the initial stages of team work.

Before the innovative teams, SJM already had a purposeful organisation for efficient product development and an emphasis on developing the organisation and management of actors and activities in development work. However, at a certain point, a need for raising focus on innovation was identified. Several of the respondents mean that at this point the company climate and the existence of *innovation champions* made it possible to develop innovative teams as a working method. This is an interesting finding which points to the importance of striving for a climate where personal interests and commitment to specific issues are allowed, and are sometimes of direct use. Champions should be cared for as they are important key people in change work, as earlier observed in companies striving for the integration of environmental aspects (Ritzén & Beskow 2002).

The experiences of the teams are overall of a consistently positive nature. The principles used to define the number of members in a team and the selection process worked well, and, is supported in several literature sources (see e.g. Belbin 1981) – i.e. teams should be composed of different personalities and not consist of too many members. The *time allocation* for each person in a team, however, should be questioned, as should the timing. The most negative experience reported in the interviews was that too little time could be spent in the team, and that – in the case of Team 3 in particular – the working tasks occurred in a phase that was already absorbing all available time and energy. Thus Team 3 failed to fulfil the defined assignment of invention notifications and patent applications. In Team 1, the fact that the team manager had more time dedicated to the team (in comparison to both Teams 2 and 3) was reported as key to being able to fulfil the whole assignment. It would therefore seem that the allocation of only ten percent working time for most team members should be revised. However, it was not a recurring opinion among interviewees, which could be interpreted as meaning that the weekly team meeting time, which was for many members the only time they spent working on the assignment, was constructive and value adding. It is important to point out that the meetings were problem solving in nature rather than administrative.

The outcome of each team needs to be specifically reflected upon and put in relation to *the assignment*. The teams had defined goals and also had purposes of competence development and inspiration, i.e. hard and soft goals. The teams succeeded differently in achieving the hard goals, although the management representatives interviewed

reported that all the teams succeeded, and that the learning outcome was the most important feature. Failing in delivering patent applications for example did actually show that this area was harder to get into than had been previously assumed, and that more work was needed. Interestingly, this conclusion was not shared by the members of Team 3, who instead felt rather disappointed with their delivery. This addresses a need of alternative ways of defining the assignments with larger emphasis on the risk in the assignment and the need of competence development. Whether a person is satisfied with the deliveries is strongly connected to how the goals are formulated and the satisfaction of delivering as requested affects the experience as a whole.

In addition to the time allocation and assignment, the *systematic approach in team work*, through the application of a specific method, seemed also to impact on the experiences of the interviewed team members. Firstly, although it is not possible to draw conclusions here that this method was particularly useful, TIPS was reported to be both satisfying and congruent with the team tasks regarding idea generation and idea selection. Secondly, the use of TIPS was reported to be especially useful in the formation of team work and in team members getting to know each other. It was reported that the use of the method decreased communication barriers and reduced what had been experienced in other settings – namely an eagerness to show off. Learning the method was a joint effort and following its structure took the team through its initial phases. Members from Team 1 reported that part of their success came from the harmony in the team and that in any situation they felt free to say anything without being evaluated or their ideas being misjudged. The creative climate according to Ekvall (1996) is characterised by open discussions, debates and trust between people that work together, factors that were obviously met in Team 1. (Note: this is not to say that these factors were missing in the two other teams.) Also, Taylor and Greve (2006) argue that teams are not always more innovative than individuals because of the likelihood of team-related problems – miscommunication and disagreements – issues that TIPS seems to have offset. Thus, a *systematic approach* to organise for creativity seems to be a factor in the success of the innovative teams. Further, organising the input from new knowledge sources (e.g. performing literature search, preparing expert visits etc.) was carefully handled by the team leaders who states the importance of their higher time allocation in order to make that happen.

Innovative teams in continuation

An interesting question for companies inspired by the formation of temporary innovative teams is, of course, whether SJM continued to organise teams after the first round or not. The first round was organised jointly between the patent department, the management of SJM and the specific divisions that assigned the team members. The attention that was put upon this innovation approach at the time was probably

important for the realisation of the teams. However, after the initial high attention situation, further teams have indeed been organised and given other assignments. Managers interviewed in this study report that they are becoming better at organising teams, although a personal commitment from a manager is required for the assignment and formation of a team. This is not actually a disadvantage, since this personal commitment also ensures that the team has a certain level of management attention during the execution.

One implication from the first round is that a team not only needs certain resources in its realisation phase but also in taking care of its results. Utilising the method used at SJM, for one division of 40 people, development teams should not be assigned more than twice a year. To keep up a certain excitement around a temporary innovative team, it is likely that the method benefits from being sparsely used. Also, each team should have a team leader and preferably an assistant team leader, working a minimum 50 per cent of their time in the team. To gain most from the method, participating in a team ought to be made possible for many people in product development. Thus the effects (such as competence development, net working in the company and having the benefit of being part of an innovative team) are distributed throughout the company. This could however, have the side-effect that innovative teams in extension will not have the character of being unique for specifically creative people. A team should also run under the same control as an ordinary product development project, with a steering committee and the same status in the company, thus maintaining the explicit differences regarding long time frames and open assignments.

Knowledge search and creativity creation

In drawing conclusions from the data collected in the interview sessions, a number of factors can be identified as influencing the results and experiences from innovative teams. From these several recommendations for companies willing to try the concept of *temporary innovative teams* can be derived. For SJM, the concept has been shown to provide two important functions, namely exploring complex technical issues and idea generation, whereby the innovative teams are an effective means for increasing the innovation capability of the company. They target the search for new knowledge in strategically important areas, and also create situations that support creative problem solving and the development of a creative climate.

The respondents' observations of which factors were important in terms of positive experiences can be translated to reasons for the formation of temporary innovative teams:

- New ways of working with new colleagues and new tasks; *"creative people were rewarded and given a chance for personal development"*.

- Management prioritised technology areas; *"new knowledge was gained" as well as "the work was important to the company"*.
- Joint problem solving and idea generation was created with open minds, divergent thinking and promoting dialogue; *"a creative climate was developed"*.
- Scheduled time to work on idea generation; *"a creative climate was developed"*.

With these reasons in mind four main recommendations can be formulated for other companies, based on the case of temporary innovative teams in SJM AB.

Management attention and innovation champions

Whilst selecting *strategically important areas* is obviously important in that it determines where a company might look for high future potential, it is also important to have the company's management involved in the selection process. They can bring attention to the content of the team work, and a large commitment can be generated by the feeling that the team is working on something that is of utter importance to the company. This can be especially important when the search for new opportunities covers an extremely wide area. SJM experienced the real value of lifting up the innovation champions they found in their company. Innovation champions often exist in an organisation, characterised by their eagerness to address innovation issues and their willingness to develop and implement changes for increased innovation capability. Once identified, such people can easily become successful agents in any organisation.

Team design for team work

Team composition should follow the principle guidelines of team creation (Belbin 1981). That is to say that 6-8 people with various backgrounds should be chosen to form a team where different skills and experiences are represented. Each member also needs to have a critical amount of time to act within the team, varying between ten and fifty percent of their full working time depending on their level of responsibility in the team. A systematic approach should be used to take the team through the initial phases of the team work, and establishing a creative climate is important. Creativity techniques can be useful in creating dialogues and supporting divergent thinking.

Assignment for divergent thinking

The assignment and goal definition must be strongly related to the actual outcome expected from the team. Besides securing the likeliness of reaching what is requested, it is important to hold up the enthusiasm and positive experiences that arise from being part of a team. If divergent thinking is required, the hard goals referred to earlier (i.e. patents, prototypes etc.) will be difficult to define and must therefore be replaced with other kinds of goals. As at SJM, the purpose of an innovative team can also be revised *after* the interviews and teams – specifically designed for exploring complex technical issues – have been set up.

In many areas clear and well defined goals directly influence success, which is why it is particularly challenging to define good goals for divergent thinking work. However, it is important to remember that the creative people that would be selected for a temporary innovative team are likely to be just as challenged by open ended problem definitions.

Learn from team to team

Finally a reflective approach to the strategy of innovative teams is recommended – evaluating each team and making adjustments where necessary to incorporate learning outcomes from earlier teams when setting up new ones. In addition, several sources support the statement that a learning environment must be fostered in order to continuously develop an organisation and its management (e.g. Senge 1990, Forslin & Thulestedt 1993, Argyris & Schön 1996). The development of innovation capability includes maintaining a dynamic capability of new learning and re-learning. Thus one of the most important properties of a learning organisation is to utilise an experiential learning approach that highlights the need for reflection upon experiences, and for allowing this to influence the development and refinement of existing work procedures (Kolb 1984). In the case of temporary innovative teams, the task of reflection of assignment, outcome, personal experiences and implementation of results are particularly recommended.

Final remarks

SJM chose to construct temporary innovative teams at a certain point in order to explore new strategically important areas in their search for identifying new opportunities. The results are defined by SJM management as successful, new inventions were made, patents will be applied for, product prototypes were built and new knowledge was reported. They also acknowledge that the concept has been responsible for inspiring active knowledge search and creativity in the team members, who were extremely positive about their experiences. This in itself might be even more important as SJM strive to increase the innovation capability of the company – the positive experiences from teams are an integral part of building an innovative climate and learning new ways to organise and manage product innovation.

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Editors' comments

Chapter six belongs to the land of mind shifting. Thinking differently and aligning new understanding and intentions with action and renewal, brought about good results. The combination of a supportive context and radical change was grounded in joint responsibility taking and teamwork on all organisational levels.

6 Breaking the rules: Organisational innovation grounded in empowerment and interaction

LENA WILHELMSON AND MARIANNE DÖÖS

Abstract
Value is created by people whose work decides the results and competitive strength of the organisation. This chapter deals with innovative organising through illuminating organisational development grounded in empowerment and interaction. A company case is analysed from a managerial perspective with the aid of concepts from organisation pedagogics. The analysis shows that a management's basic values can, if reflected and characterised by ideas of empowerment, be of decisive importance as a driving force of organisational development.

Keywords
Competence, organisation pedagogics, relations, interaction.

Introduction

> Bad managerial decisions self-correct in Sweden. If the employees think something is completely wrong, then nothing happens: the question simply crops up again later. Elsewhere – in the UK for example – they don't self-correct and employees react on the lines of: "Well, if he says so." (Jack 2008, telecom manager)

Together, the manager quoted here and a colleague, setting their sights on successful new products and with a basic idea of empowered employees, turned their organisation's results from bad to great. After that the managers themselves were empowered to break the conglomerate's rules in order to avoid constraints and concentrate on developing the telecom products of the future. This chapter, dealing with their innovative organising, uses concepts from the field of learning to highlight the underlying learning processes which generate opportunities for an organisation.

Value is created by people whose work decides the results and competitive strength of an organisation. People's work inputs in turn hinge on the way in which the activity they are employed in is organised. Necessary competence for an organisation is developed mainly in the performance of work, by individuals who are competent, not only singly but also jointly. Working together means interacting, and through interactions with quality, relations are built which sustain competence. Organisational changes are liable to break up but, given the right circumstances, can also strengthen,

competence-bearing relations. The importance of interaction has been studied by Losada and Heaphy (2004), who show that high-performance teams have a higher connectivity than low and medium-performance ones. In this way they can generate a complex order (complexors), which is of value since "the stability of complexors is dynamic, flexible and innovating" (ibid: 751).

The chapter sheds light on innovative thinking and organising on the part of managers. Organisational development was here based on values of empowerment and is analysed with the aid of concepts from organisation pedagogics. The ambition is to bring out the understanding of potential positive processes. We show how interpersonal interaction inside work tasks can affect an organisation's ability to achieve what is termed second-loop learning (Argyris & Schön, 1978), i.e. learning to question prevailing working patterns and developing new ways of tackling tasks and problems at work. This case, as we see it, is an example of a high road strategy (Huzzard, 2003; van Grunsven & van Egeraat, 1999).

The high road strategy concept links high productivity to high competence on the part of employees, which implies a need for "continuous innovation, learning and upgrading" (van Grunsven & van Egeraat, 1999:145). With a high road strategy, organisational scope is created for human creativity (Huzzard, 2003), and firms will then bank on achieving competitive strength through the competence and innovative capacity of their employees. This calls for a high level of flexibility within the organisation, as well as autonomy and empowerment for the employees (ibid). Shipton, Fay, West and Birdi (2005) have shown that a learning climate in organisations seems to have positive effects on innovations in product development and production processes. Losada and Heaphy (2004) argue that when people working together meet one another with a suitably balanced mixture of advocacy and inquiry, there will be good prospects of creativity.

> We need to have organisations where the polarity of other and self, of you and I, is integrated into a sense of we; where the polarity of inquiry and advocacy, of questions and answers, can drive a productive and ongoing *dialogue*; where the abundance of positivity, grounded in constructive negative feedback, can generate the state of realistic *enthusiasm* that can propel organisations to reach and uphold the heights of excellence. (Losada & Heaphy, 2004:762, original italics).

The case round which this chapter revolves is from the telecom industry, from one of Ericsson's software development R&D units, Ericsson Internet Group (EIG), which underwent a comprehensive process of organisational renewal during the second half of the 1990s. We argue that the case has high road qualities and it is chosen for this book because of its managers' ambitions and the way they and their employees developed products, organisational structures and added value (see also Wilhelmson & Döös, 2002; Wilhelmson & Döös, 2009). Here we concentrate on three aspects of renewal as they were conceptualised by the EIG management, namely *empowerment, small*

company approach and *teamwork*. Empowerment constituted an important underlying idea and motive force for managers and key people at the EIG unit. Small company approach and teamwork were fundamental organisational principles introduced within the unit. The case is described from the managerial perspective.

The importance of interaction in this process of change is analysed using three concepts from organisation pedagogics as intellectual tools, namely *competence, collective learning* and *relatonics*, the aim being to show how the prerequisites of interaction were created through underlying values and through the way in which the operation was organised.

The case will now be briefly presented, after which the theoretical concepts will be defined and an analysis made focusing on the importance of interaction. The chapter ends with a discussion of its importance for organisational innovation.

Ericsson Internet Group

The Ericsson Internet Group (EIG)[10] was mainly tasked with new product development (NPD). The unit was formed when two local design centers were merged into a single one with approx. 200 employees, mostly engineers. The new unit was during five years lead by two managers (here called Jill and Jack) working in joint leadership.[11] EIG acted in a business environment characterised by thorough and rapid changes in several areas. Telecom business in Sweden was recently deregulated and the company operated on a global market. Technology in itself had undergone a fast development; hardware had become smaller, faster and diversified. The technology development brought on an ongoing merger between, and also a shift from, telecom to datacom. This created new opportunities for new product development and new telephony services. All this took place on a highly competitive market just before the IT bubble burst. Ericsson, which at the time employed around 145 000 people all over the world, was competing through refinement of old products as well as through new product development and was totally dependent on human competence, which resulted in challenging demands on competence development.

EIG was innovative in terms of both product and process innovation, i.e. when it came to both generating ideas for new products and devising organisational preconditions for the product innovations. After a year-long improvement process to get things right, EIG had achieved its target of delivering in time and with the quality promised. According to an index measuring software quality, delivery on time, price performance, productivity and service, EIG came third among the 34 local design centers of the

[10] A unit within the Ericsson conglomerate of companies.
[11] Joint leadership means two (or more) managers sharing responsibility and authority for one and the same operation (Wilhelmson, 2006a).

division, whereas previously it had come 19th out of 23. At this point they could have rested on their laurels, efficiency having been achieved. Instead they turned their attention to more long-term threats from the business environment, e.g. that of low-wage countries being able to manufacture their products at a fraction of the cost within the not too distant future. Realising that they could not compete through cost reductions, the two managers and the other key people wanted to contribute towards the future maintenance of telecom R&D jobs in Sweden by means of a high road strategy. They appreciated the need for adjustment to the world at large and argued that the necessary change of direction could not be achieved while the employees were spending their time refining existing cash-cow products. The change of direction which materialised was dramatic, impinging on the competence of the employees involved. EIG divested itself of its established products, which were taken over by other parts of Ericsson. The decision was taken by a show of hands in the steering group. At the time no plan existed as to what they were to develop instead. Partly as a result of brainstorming meetings with the entire personnel, it was eventually decided to concentrate on developing services and software for IP (i.e. Internet-based) telephony. For the engineers, this meant that their deep telecom knowledge was no longer sufficient: they would have to learn to develop new products in the new context of datacom and with new programming languages. Both work organisation and ways of working were transformed in order to cope with this redirection of activities.

The renewal process was guided by the vision of creating added value for the individual and profit for the enterprise. The two managers Jill and Jack, were prime movers in the process of renewal, together with a group of key people, all of whom were ignited by notions of empowerment geared to operational benefit. This group had no formal standing as a group. It was an informal network of people who talked to each other a lot about the change processes and helped to move these forward. The network included the HR manager, quality manager, the CEO of one of the virtual product development companies, one or two competence managers, one project leader and so on. The organisation these people built up around them looked roughly as follows (see Figure 8). It can be described as a kind of matrix organisation with competence companies as home bases for staff and product development companies as structures where production and projects ran.

The steering group was a large one, 20 people strong, constituting an arena in which everyone with a managerial or CEO function was included. This was where overarching decisions were taken and important discussions held concerning the focus for the future.[12] The NPD activities themselves were carried on within so called virtual product development companies (PDC), each headed by a CEO. The work of each

[12] The key people were also included in the steering group *ex officio*.

company concentrated on the development of *one* product; product development inside PDCs took place in projects, which in turn were divided into a number of smaller teams with three or four engineers in each. The employees had their organisational home base, not in the product development company where they were working but in one of the eight competence companies, each of which was headed by a competence manager. The competence companies were a fundamental organisational idea, aimed at facilitating the flexibility and mobility needed between the projects while at the same time catering to the individual person's need of a home base from which to move between different development projects.

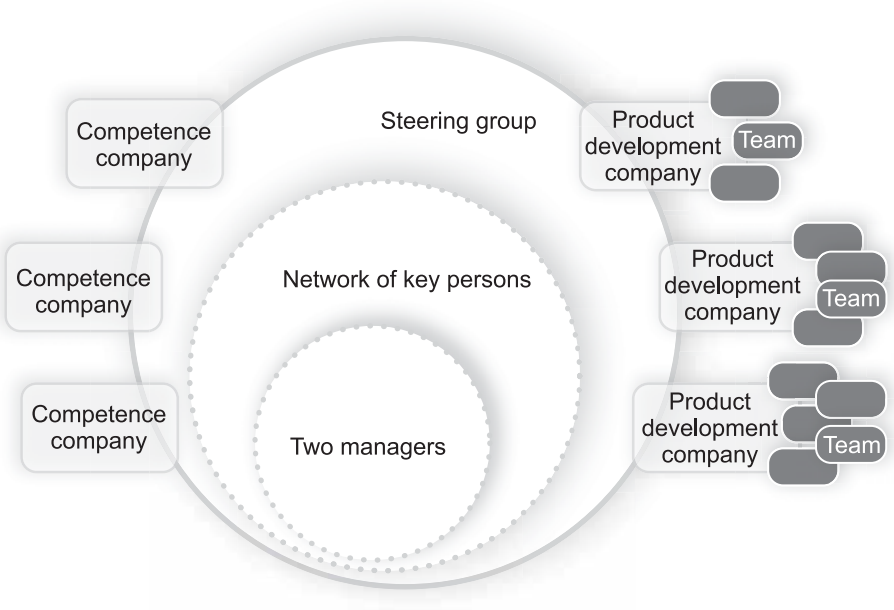

Figure 8. The various partnership constellations making up the EIG unit's organisational structure. For reasons of space, only three companies of each kind have been plotted

The case has an international setting in that the company is a global one, operating in five continents. In this, in many ways an international entrepreneurial environment, the key people used their basic values as a guiding star for their organisational innovation. The way in which their minds worked and the way in which they organised their activity were thus rooted in the surrounding social climate in Sweden at the end of the 1990s and in Sweden's management tradition (see Isaksson, 2008). Below follows a description of the three aspects of renewal from the EIG case.

Empowerment

Working at the slow, centrally controlled pace of the bureaucracy, with little assumption of responsibility at lower levels, was according to the managers no longer a competitive proposition. They described an organisational habit of employees awaiting orders and the moment for their own, limited tasks. Instead the management now required people to take the initiative, embrace the whole chain of product development, assuming complete responsibility for the end result, customer contact and feeling for the customer's needs. In this way, the managers reasoned, EIG and its employees would create their own future through new business ideas and products in the border zone between telecom and datacom.

What impelled managers and key people to think and act in this way in the renewal process was a jointly reflected view of human nature underlying the organisation of the process, emphasising people's manifold potential for self-propulsion and independent thinking.

> People have a huge capacity and are incredibly adaptable. Whatever interests them, whatever means something, they can handle. And if they can't, they learn to – people have an enormous capacity for taking in a lot of things, understanding a lot of things, perceiving connections and overall patterns, and then at the end of the day, human beings are our biggest asset. (Jill, manager)

This belief in the individual employee's potential for creativity and ability to assume responsibility both for tasks shared with others and for his or her own competence development and future technical specialisation meant, as one of the managers put it, sitting at the wheel, not in the back seat, making active choices, e.g. concerning which virtual product development company and projects to work with, how to sustain their professional skills, who to have as their competence manager and, accordingly, which of the eight competence companies to belong to. Each employee's choosing of one's own organisational domicile in this way broke the bounds of normal organisational practice. And as one of the engineers framed it: "It's very dynamic, it surely is, but it doesn't feel that dramatic".

Empowerment did not only apply to the regular employees. Leaders and managers of different kinds within the EIG unit were also expected to have visions of their own and a cogently worked-out view of human nature. The unit's two managers argued that lack of one's own navigation marks could lead to the consolidation of traditional hierarchic patterns, which stand in the way of innovative thinking, and they described this as a drawback to run-of-the-mill managerial appointments.

> There are many managers who have not acquired their managerial responsibility for having something specific in mind which they want to accomplish. (Jill, manager)

The two managers, Jill and Jack, heading the whole of EIG were also, themselves, included in top-down empowerment. Their unit was designated a free zone and called

upon by the nearest superior executive to break as many rules as possible, since the rules were judged liable to stifle the creativity of managers, leaders and employees. Together with the quality manager, Jill and Jack had come to the conclusion that many routines were being followed without really being needed, thus causing unacceptable delay at a time of growing competition to be first to market with new products. The EIG unit was thus viewed as an investment in the future and was given support and a free hand from the top for its innovative activities, as regards both work organisation and exemption from control routines and documentation work surviving merely by force of habit.

Small company approach

In the process of devising new products, EIG's employees generated many (160) product ideas focusing on IP telephony. These were examined and a virtual product development company formed round each one of the few surviving a commercial analysis. The aim was to achieve a sense of entrepreneurship, enthusiasm and responsibility which, it was argued, was present in small, independent development companies outside the Ericsson company. This way of organising was named small company approach (SCA) to stress their autonomy. These product development companies were directly responsible for a product all the way from idea to delivery and support, with a separate budget, a CEO and board of directors. However, besides the CEO no staff belonged there organisationally. Instead the so called Competence companies were used for staffing to guarantee secure organisational belonging while at the same time feeling free to move between product development companies. This was a deliberate breach with Ericsson's conventional organisation. In addition, co-operation and partnerships was built up with small external firms in the industry which were capable of contributing specific competence to EIG and a feeling for customer and market, a more entrepreneurial spirit:

> The world our partners stand for is one of speed, of a tremendous feeling for market and customer. Things happen. Not in a very formal sense. And fleeter of foot in every way. (Jack, manager)

The employees, were as mentioned domiciled in the competence companies. Each competence manager had the task of coaching individuals, manning one or two product development companies and supporting development of the necessary competence for one's product development company/ies. Each employee chose which competence company they wanted to belong to and, accordingly, who was to be their wage-setting and development-interviewing competence manager.[13]

[13] Every employee had a personal development interview with their competence manager, both at regular intervals and additionally when the occasion demanded.

Jack pointed out that the small company structure affords the flexibility of manning according to customers' needs. In a more traditional organisation, where the individual belongs to a product development company, his or her security depends on the survival of the unit (product), a rigid and obstructive arrangement, Jack says. The purpose of employees belonging to competence companies was for their security to lie in a combination of this home base and their own competence:

> Often a line organisation is of a piece with the product, so that if the product has to be discontinued the organisation struggles to prevent this happening and a lot of time and energy are lost. But here you have the security of your competence, your tenure and the competence company, enabling you to move in and out of different assignments. (Jack, manager)

Jill emphasised that the form of organisation affects people's readiness to assume responsibility, arguing that the old top-down drainpipe organisation, in which every function constitutes a downpipe having limited tasks and a narrow field of functional and technical specialisation, was conducive to indolence, fatigue and lack of pride – people stopped thinking.

> We've really seen for ourselves that, given the chance, people are both willing and able to assume responsibility. That people who previously would just point somewhere else, to a manager or project leader, as if the whole of their life was someone else's responsibility, are now doing all sorts of things, genuinely assuming responsibility, taking action, seeing the big picture and the consequences, understanding and comprehending the business operation. Being a part of this journey has been great fun, because it's taken a good many discussions to convince people of their own capabilities. (Jill, manager)

Teamwork

A common feature of EIG was that the organisational demands lead to people working together, in constellations of various sizes: Jill and Jack practised joint leadership, which enabled them to show by their own example how they thought co-operation could proceed. The big steering group split up, where necessary, into smaller groups for specific tasks. The eight competence managers met regularly and acquired a common overview of the situation regarding competence and manning throughout the organisation. In the product development companies, the engineers worked in small NPD teams of large projects.

Working on joint tasks was the basic form of organising work. In this way capacities were practised such as those of shared responsibility, communication and joint accomplishment of the task, which contributed to a reciprocal and common development of skills and knowledge in the various constellations.

Teamwork, managers and key people maintained, provides a context and a sharing of responsibility for a bigger task than would otherwise be possible. The team provides the confidence for assuming a greater measure of individual responsibility, which contributes towards joined and individual creativity, transcendence of frames, and the

discovery of new slants and smart solutions. Jill and Jack found it easier to make demands on a team than on individuals, and easier for a team to make counter-demands for time and resources. Teamwork, they argued, contributes towards motivation, commitment and job satisfaction, making it easier to understand how one's own work contributes towards the finished product. Teamwork was also intended to counteract existing elitism, i.e. only so called gurus being rated competent, with all the bottleneck problems involved when only a few people were capable of solving significant problems in the course of product development work.

> Quite big changes can be made in a pretty short time to people's attitudes and ways of working. Something which, previously, I imagined was very difficult indeed. But it takes a huge effort and it isn't painless. I've come to realise that, in order for a change to happen, everyone has to play a part in it. Or at at any rate accept it. (Project leader)[14]

Methods

This chapter is mainly built upon interviews with managers and leaders. Data cover the 1995–2001 period. The main data collection took place in 1999, mainly through field visits and semi structured interviews. Later, some contacts took place with representatives for the unit, two managers were interviewed in 2000, one of them again in 2008. Qualitative research methods were used with the purpose of understanding processes of learning in working life. The analysis of the case is part of a more extensive project where the concept of sustainability has been examined (Wilhelmson & Döös, 2002; 2009).

Through the spectacles of organisation pedagogics

The case is analysed in a perspective of organisation pedagogics. Through this perspective, attention is made to focus on processes of change between people and the preconditions for those processes in working life (Döös, 2007). Together the three concepts chosen – *competence, collective learning* and *relatonics* – can contribute towards an understanding of the importance of interaction for organisational innovation. The concepts are used to shed light on different aspects of the phenomenon of interaction. By competence we here mean above all the competence of individuals, by collective learning we mean learning common to a working group or team and with relatonics we find ourselves on the organisational level.

[14] The product development companies had a number of project leaders who headed different parts of the product development process and in their turn were divided into teams.

Defining the concepts

When the human being is seen as an active constructor of knowledge and expertise learning is linked to the potential for action, and enhances the carrying-out of intended tasks. Learning involves transactions between individuals and their environment (Kolb, 1984) and can be described as the process through which *competence* will be generated. Competence is defined as a potential ability to carry out tasks, solve problems and cope with situations. In a conceptual sense, competence is thus related to a task or a problem, and, as a consequence, also related to apprehension and understanding of this task (Döös, 2007). Competence thus viewed is personal and so linked to the individual.[15] In order to enable learning and development of competence, when doing pedagogic analyses and interventions, the specific contextual features need to be considered as important conditions.

Learning as a collective process means people learning through some form of interactive and communicative action, a learning process which creates added value in the form of synergy. Furthermore, the reference is usually to learning which results in notions which, in some sense, are consensual, in a similar understanding of a particular thing, and in a more communal capacity for action and competence which are rooted in this understanding (Dixon, 1994; Sandberg & Targama, 2007). Other important ingredients of learning together are acting together, seeing one another in action, and thereby seeing results and experiencing consequences of the doings of others. In a workplace where communicative habits have been developed which are conducive to collective learning (Dixon, 1994), there are greater possibilities than otherwise of achieving synergistic effects at work. Collective learning, thus viewed, means that the focus is on the group level. A form of collective learning which implies a revolutionary and at the same time common transformation of views and notions can be termed collective transformative learning (Wilhelmson, 2002). This learning means that the differing perspectives of the individuals are transcended in a common creation of new views which no one could have developed on their own.

One aspect of organising for qualified learning to take place whilst executing work tasks lies in the designing of various types of work processes that afford communication as well as joint action where people see each other in action. Larsson and Löwstedt (2002) describe this as organising an operation so that learning is put into system. The basis for systematic learning of this kind is:

> a structure that provides frequent opportunities to meet, a content to the meetings and gatherings that are permeated by joint reflection about experiences, and also a method of working that makes manifest the knowledge and experience in action of individual colleagues. (ibid: 111, our translation).

[15] For the purpose of the analyses made for this chapter the individual aspect of competence has been used. The relational aspects of competence are in the analyses dealt with using the concept of relatonics.

The concept of *relatonics* (Döös, 2007) takes relations up to the organisational level, moves on from a focus on relations between two or more specific individuals, and elevates the level of argumentation to the core task of the organisation and organisational learning. A relatonic is defined as the "composite existence of relations in a workplace that are of importance in and for the performance of the core operational task" (Backström & Döös, 2008:1368). A relatonic and its component relations bear the competence of the organisation. The relatonic of a specific workplace can be said to take on a particular form, as constituted by the pattern shaped by workplace relations as a whole. Thus, the relatonic holds the competence of the workplace (organisation) in its competence bearing relations. However since a relatonic is continuously created and recreated it is a dynamic structure with processual qualities of ongoing relational processes that carries and develops competencies.

At work the relational processes are geared to the intention of performing the perceived task, and so the conditions for knowledge formation are integrated with the tasks and the employees are each other's preconditions. Competence-bearing relations occur in connection with interactions where the thought networks of the individuals (Döös, 2007) are changed by their participation in the interaction. Competence then consists in the joint action between two or more individuals; together they can do what none of them is able to do by one's own efforts.

Prerequisites of interaction at Ericsson Internet Group

We shall now analyse the prerequisites of interaction that were created within EIG through the way in which work was organised, viewed in the perspective of organisation pedagogics. Each chosen aspect of the case will be viewed in relation to the concepts of organisation pedagogics. We will start with the idea of empowerment, which underlies the mode of organisation in the small company approach and teamwork. Using the concepts of the theoretical perspective, we will illuminate and interpret the three chosen aspects of the case in a perspective of opportunities. Some combinations prove to be especially important for the development engineers, others for Jill and Jack, others again for the competence managers, and so on.

Empowerment

Empowerment in an individual competence perspective. A development oriented view of human nature, with expectations of people being co-responsible and influencing their work – requires the individual to measure up to those expectations. The individual was expected to do this by developing the kind of new competence which was called for as a consequence of the re-direction and new organisational principles of the EIG unit. Sticking to the security of yesterday's knowledge was not good enough. In their integration with a broader task entailing greater responsibility and a more extensive mandate, the engineers needed to develop the capacity for assuming that kind of

responsibility. For managers, responsibility for organisational renewal resulted in developing a greater degree of organising competence. Responsibility for product development work led CEOs of the virtual product development companies as well as engineers to develop both technical and work process related competence.

Empowerment in the perspective of collective learning. The idea was that when responsibility is handed over to and accepted by a team, the shared responsibility forces them into collective learning. In the course of interaction, friction sometimes occurs in relation to others sharing the same task, and then there is a possibility of collective transformative learning taking place. In EIG, especially between the unit's two managers and the key people, there was a process of openly exploring ways of thinking and acting; the process of organisational innovation was regarded, not as an end in itself but as a way of being. They were apprehensive of becoming excessively bogged down in their own visions and norms. The two managers and the key people acted out of a critically reflective attitude here, based on mutual trust, whereby they conditioned one another's concepts in a more consensual and, at times, revolutionary direction.

Empowerment in a relatonics perspective. The tasks entailed a need to forge contacts and to understand what was going on in terms of technology development. The delegation of responsibilities and decision-making added to the importance of understanding the changes together with others. It was also the intention for each engineer to have contacts in several directions: with product development companies and projects in order subsequently to venture further into new projects; with the competence manager in order to be allowed to go on training programmes and for the manager to keep updated regarding the engineer's competence and usefulness; with colleagues, in order to share their experiences. Managers and key people endeavoured in principle to keep in touch with every single employee, so as to understand the activity and the process of change they set in train. The interaction in many different constellations builds up a densely woven relatonic of competence-bearing relations. It was underpinned by joint meetings, e.g. for joint celebration of successes, and the non-hierarchic stance which Jill and Jack created, emphasising the importance of themselves being accessible and visible – an accessibility underscored by the two of them sitting in the middle of the open-plan office.

Small company approach

The small company approach in an individual competence perspective. To the engineers, this form of organisation meant that they were expected to seek employment with the product development companies and that it was their responsibility to have the competence in demand there. In the longer term there was a threat of otherwise being

relegated to the substitutes' bench.[16] To the CEOs of the product development companies, the small company approach meant comprehensive and independent responsibility for finance and the entire chain of working operations, from product development to sales and support. To competence managers it meant having to be chosen in order to get employees to coach; they had to display coaching competence. This form of organisation, then, meant that demands on the competence of individuals and functions were made clear.

The small company approach in the perspective of collective learning. For the competence managers especially, small company approach meant an opportunity for collective learning. Each competence manager had a coaching responsibility towards his or her own employees, but the competence managers also undertook the joint task of optimising manning in the organisation as a whole. Together they overcame the risk they might otherwise have been exposed to, namely that of only ensuring that the product development company or companies they individually were responsible for acquired engineers with the right competence. This task was important for counteracting bottlenecks and organisational inflexibility, especially as the competence managers were building competence for the future rather than overtaxing those who were fully fledged already. Tasks were to be allocated in such a way that many people became skilled and there would be less reliance on consultants. Thus, the competence managers created knowledge uncommon in organisations. Their work tasks required them to integrate the perspectives and needs of different task levels; of single individuals, as well as of product companies and of the entire EIG unit. They worked as a team with different levels of task sharing. The integrated knowledge they produced whilst carrying out their work tasks can be seen as a result of corporate problem solving, a simultaneous awareness of the need to handle all three task levels jointly and without excessively conflicting results for any of those levels. The CEOs of the product development companies did not create any corresponding joint task, nor did they ever form any such team, their focus being entirely on their own products.

The small company approach in a relatonics perspective. Small company approach was intended to mean mobility. The plan was for product development companies to be formed, projects started and competence companies chosen and then left. Mobility entails a need to know what is going on; in addition to formal meetings of various kinds, one needs to build up one's own social network to provide for one's own information requirements. The delegation of responsibility to both competence company managers and product company CEOs meant that they needed to build up interfaces of their own within and outside EIG in order to be capable of shouldering the responsibility. In addition, the interdependence of competence and product

[16] A sporting metaphor. In the event this never happened.

development companies meant that ongoing contacts were needed in order to supply the projects with the right competence.

Teamwork

Teamwork in an individual competence perspective. For many tasks, the EIG employees were given joint responsibility in teams of different kinds. Responsibility carried with it the possibility of each individual influencing the course of activities and decision making. A major common task makes bigger demands on interaction; tasks have to be organised, and common sensemaking is then needed in order to formulate, allocate and perform the task. In addition to professional skill, each individual was required to have co-operation competence and a willingness to utilise the broader scope available.

Teamwork in a perspective of collective learning. More or less common understanding of tasks developed in the teams. Collective learning is created through reciprocal influence on ways of thinking and acting, which creates stability and the courage to do things differently or to question and influence one's conditions, whether one is a manager or an engineer. In order for co-operation on common tasks to be possible, the task must be perceived in a reasonably similar way by the team members. This, in turn, is facilitated when people see each other in concrete action and to describe their views to each other. In this way, interaction in the team's work can operate to the depth of each individual's understanding. In a team with a common task, the planning process will also be a common concern. For example, the teams of a project may assemble for debriefing. Preparatory to this and afterwards, the individual teams get together to identify and interpret their impending task. All the project teams then meet again and present and modify their plans in a process of give and take. Finally the teams return to work and the engineers now have a fairly similar view of what is to be done, when and why. Joint planning leads to a shared sense of responsibility and mutual frankness which makes it natural, for example, to help each other negotiate bottleneck problems.

Teamwork in a relatonics perspective. Many interactions within and between teams of different kinds contribute towards high density relatonics. The movement of individuals between teams and projects also adds up to relatonics building, interfaces are expanded, competence-bearing relations become more numerous. The big steering group, which can also be viewed as a team, had contacts extending everywhere in EIG, and in this way the unit was tied together through competence-bearing relations.

The importance of interaction for organisational innovation

What conclusions can be drawn concerning the importance of interaction for the ability of organisations to be innovative in their way of organising work – for the achievement of greater value added? As we began by noting, in a knowledge organisation like EIG it

is people who make the difference. Value is augmented through people, through their individual and combined competence. The EIG management were well aware of this, and accordingly they opted for a high road strategy which meant maximising value through the employees creating organisational opportunities for making use of and developing competence, rather than minimising costs by means of a low road strategy. In this way valuable components of the possibilities of the high road strategy have been identified and presented in this chapter. The case is an example of how to organise (work) for learning (Döös, 2007).

From this case we can learn that management's basic values, its view of human nature, can, if reflected and characterised by ideas of empowerment, be of decisive importance as a driving force of organisational innovation. The case may be criticised for showing too smooth a picture and for being more of a presentation of managerial intentions than a presentation of the so called reality. On the other hand, we argue, that reality is an issue of perspective, and the intention with this chapter is to bring forward the managerial perspective. Thus, the managerial interpretation is here given precedence without us claiming that to be the single truth. Organisational creativity of this kind can, as we have seen, promote individuals' competence development, collective learning by groups and the organisation's relatonics. Interaction is here seen as the continuously ongoing, uniting process which constitutes the foundation of organisational innovation. Ideas are broached, changed and implemented. Networks grow more and more ramified and far-reaching. Superficial relations deepen, trust is built up, common views are developed on the basis of which different agents act increasingly attuned. In other words, interaction (as a process) needs to possess certain qualities if it is to support organisational innovation (as an emergent structure). Interactional qualities favouring organisational innovation include, for example:

- A task base (Döös, 2007), i.e. interaction revolving round the task. Organising for co-operation in order to accomplish a specific task makes the task the cause and hub of the interaction and relation building.
- Delegation of responsibilities and powers, i.e. as many people as possible involved in decision making processes of various kinds, supported by non-prestigious, non-hierarchic attitude on the part of managers, and employees understanding why they are to shoulder responsibilities and being prepared to do so in partnership with their team colleagues. What happened in EIG, then, contrasts with the two common problems identified by Argyris (1998) in connection with empowerment, namely that it is mostly a case of lip service on the part of managers, whereas employees do not wish to be held personally accountable.
- Density of relation building (Watts, 1999), i.e. a densely woven relatonic criss-crossing between individuals and groups and possibly supported, for example, by something as simple as the design of the room.

- Dialogue competent communication (Wilhelmson, 2006b), i.e. frankness and mutually positive response combined with a critically investigative approach (Losada & Heaphy, 2004).
- Transformative learning (Mezirow, 2000; Wilhelmson, 2002), i.e. readiness to change one's views, to learn from mistakes and to modify one's actions accordingly.

Interactional qualities like this, we believe, put people in a good position to create added value for their activities, since they promote learning in the context of the ordinary working day. Learning is the process which leads to competence, within and between individuals. A chain of preconditions for the creation of value can, in other words, be described as follows: organisational innovation of the EIG kind leads to greater interaction which leads to greater learning which leads to increased individual and joint competence which leads to added value. But this is not just a simple cause-and-effect sequence. In our case the renewal process began with the strength created by the two managers and the key people. Once the process is underway, all parts of it affect all other parts through a host of feedback loops (Argyris, 1978), a complex organisation comes into being which cannot be governed by hierarchic command but by building common understanding among people who are at the same time autonomous, with a high degree of independence, and integrated through interaction and co-operation on the task (Backström & Döös, 2008).

However, Ericsson at large did not go in this direction. The global Ericsson company remained a traditional hierarchical organisation. This small scale openness to the testing of alternative ways of working have difficulties in surviving harsh times and in influencing established structures (for an example see Werr, Norén & Bryskhe, 2000). In this sense EIG was no exception. On the other hand, despite the recent world wide financial crisis, we can again identify small greenhouses in order to organise for creativity.

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PART II

ORGANISING EXTERNAL COOPERATION

Editors' comments

Innovation support processes that change organisational structures in order to promote low-tech innovations are the centre of attention in chapter seven. The potential of outward looking idea pilots and idea carrier support is stressed in highlighting everyday innovations and taking them to the market. The authors couple everyday creativity to market success, and the role of an intermediary is improved between innovators and the market. Successful innovators within the care sector are identified as being different to the mainstream innovators that innovation support structures normally serve.

7 Everyday innovation in elderly care and healthcare

JOHANNA NÄHLINDER AND ELISABETH SUNDIN

Abstract
The chapter describes everyday innovations in the care sector as a high road strategy for competitiveness. The main idea is to take innovations from employees working in care to the market. To do that, all the organisations involved have to change, especially the consultant firm Almi, a main actor in the innovation support system. Through the construction of a development project, an established state owned consulting organisation changes its ways of working. The chapter presents the changes introduced and the following intra- and interorganisational processes.

Keywords
Everyday innovations, projects, organisational change, path dependency.

Introduction

The following chapter describes everyday innovations in the care sector as a high road strategy for competitiveness. This road takes its starting point in problems both on the national and the local level. The problems articulated are many and are found within the care sector as well as in the manufacturing industry. The current situation within the care of the elderly and health care (below called care) sector, as well as its expected future, is an acknowledged political problem with many dimensions. In this political context, the problems can be interpreted as a need for new strategies and structures. Swedish industry on the other hand, needs new ideas to take to the market. That is where the road meets the high road so to say. To connect the needs of the care sector with the needs of industry demands vision and action. This chapter presents a way that seems to be successful. Through the construction of a development project, an established consulting organisation changes its ways of working. How this was done is presented below.

A starting point for the strategies presented is the conviction that there is a lot of creativity everywhere in Swedish working life, even on the lower hierarchical levels. In the care sector, the individuals working in the service front line have to be creative as in their work tasks they meet with the problems of the sick and the elderly. Everyday they make adaptations to unexpected situations and sometimes even innovations to keep things going. The solutions to everyday problems consequently lie in the hands of

the front line personnel. Such creativity has the potential to contribute to added value and growth. However, this creativity on the shop floors seldom reaches the market. Given the number of employees there are surprisingly few products on the market that come from the ideas of assistant nurses.

The absence of products (by products we here mean both material products and services) from the care sector could be seen as a weakness of the established system for taking ideas to the market. The system does not seem to work adequately for these kinds of innovators and for their ideas which emanate from the carrying out of ordinary work tasks close to the care of the elderly and of patients. Therefore it seems that the way the organisation of the support system works must be changed. In the case presented here the necessary changes were achieved through the construction of a project called PIMM.[17] The organisations involved are of three kinds; public organisations in the care sector where the everyday innovators work, producing enterprises on the market and an organisation working as an intermediary between the innovators and the market. The intermediary develops the ideas of the care workers and connects them to producing enterprises. The intermediary in this case is the Swedish state owned firm, Almi which holds a key role.

The purpose of this chapter is to analyse how the PIMM project influences the working practices as well as the strategy and structure of Almi. Almi here represents an established and somewhat old fashioned way of developing Swedish industry, a way that seems to defend traditions rather than create new possibilities. The PIMM project represents the new service economy in two ways; one is through its focus on personal services and the other is its focus on the employees. Personal services is the most expanding sector in the Swedish economy. The importance of the employees is often mentioned as typical for these services, as it is the employees that are the people handling the service to the customer, in this case the elderly and the sick. The new project based organisation, PIMM, is used as a change agent for and of the old organisation, Almi.

The chapter is organised as follows; The old intermediary, consultant firm Almi, will be presented. Almi is in many respects a special firm and its particularities have an impact on the way it works. The PIMM project will be outlined. PIMM is a joint project between care organisations and Almi. In more ways than one to work with care organisations is something new for Almi. Firstly, the work tasks of the care organisations are not what the ordinary customers of Almi do. Secondly the organisations producing the care are much bigger than Almi´s ordinary customers. Thirdly the care organisations are public organisations owned by the municipality and the county council, whereas Almi's regular customers are from the private sector. The

[17] PIMM is a Swedish acronym referring to product renewal in care sectors.

innovation support processes of Almi and the PIMM project will be compared. How and why do they differ? Finally, the wider implications of organisational learning and organisational change are discussed and connected to how to make everyday innovations a high road strategy for competitiveness.

Almi supports innovation in a traditional way

Almi, which has 450 employees nation wide in 21 different regional subsidiaries,[18] is the host of PIMM. Almi's business idea is to provide financing and help business development, which thus puts innovation and innovation support at its very core. In the diverse landscape of firms, Almi is a hybrid between an ordinary consulting firm in business planning, a loan provider and a public sector organisation. Almi's funding is predominantly public and the state directs what type of activities the organisation should engage in, but its working methods and structure are those of a private firm.

Almi uses several different methodologies to support the innovation processes of its clients. In order to better understand the working methods of Almi, it is essential to understand its history. Almi is deeply rooted in organisations which were created for aims which differ considerably from that of supporting innovations made by care employees.

The history of Almi

Almi has its origin in semi public inter-war organisations, of which there was one in each region, which were established to channel regional support in order, among other things, to strengthen firms in danger of closure.[19] In the middle of the 1970s, these organisations were transformed into regional development funds. As the result of a governmental decision in 1993, these funds were transformed into Almi. What we now refer to as Almi has thus been previously known in other incarnations with similar aims.

The mission of the organisation changed with its incarnation. Initially, the focus of the organisation was to support firms which risked closure but this work widened to include guidance and public investment loans, for example. At the very beginning, the target group of Almi consisted of manufacturing small and medium sized enterprises (SMEs) and some industry related services. The quote below illustrates its limited relation to services which were first just considered as something to investigate:

> the question regarding the need of the service industries of guidance and financial supporting in general will be investigated. (Government bill 1977/78:40, p. 1).

[18] Source: Företagsfakta. This chapter mainly concerns the subsidiary of Almi Östergötland, which is further on referred to as Almi.
[19] Source to the facts in this section is: Government bill 1977/78:40.

To support product renewal, marketing, the establishment of new firms and the development of subsuppliers are mentioned as the main targets of Almi. For some years now, strategic guidance, information and financial support are the corner stones. The history of Almi has had an impact on the innovation process of the PIMM project, as will be discussed below.

Supporting innovation

One of the focus areas of Almi is supporting innovation and the general innovation support process consists of three phases. The purpose of the initial phase is to investigate the novelty value of the potential product and check the ambition of the idea carrier. The second phase focuses on investigating the technical and commercial potential of the product, which implies the need of an extended feasibility analysis and discussions about protecting the idea. The last phase is that of commercialisation, which means that the product reaches the market, typically through a new enterprise. In other words, the goals and activities differ from phase to phase, and each phase functions as a stage gate. We may also note that the innovation support process is intertwined with the financing process. This process is particularly adapted to supporting innovation in goods, innovation which needs capital to be tested and innovation which may be protected.

With the birth of the PIMM project, Almi became involved in a new line of business – that of supporting employee driven innovation, and extensive outward looking activities and licensing.

The PIMM project supports innovations in a new way

As already mentioned, PIMM as a project is hosted by Almi.[20] The aim of PIMM is to support innovative everyday ideas from employees in three public healthcare organisations, two municipalities and one county council, all working with elderly care and in the local hospital. Among other things, the commercialisation of the ideas is expected to lead to new jobs. The project thus aims at increasing (regional) competitiveness and growth through facilitating innovation. The aim is accomplished through peer information to health care sector employees, guidance by innovation advisors and lastly, the licensing of the ideas. The peers receiving information are women that have been working in elderly care and at the hospital themselves. They are called idea pilots. They are still employed by the care organisations but work close to the innovation advisor employed by Almi.

[20] The project is collaboration with a number of regional actors that have different roles in the project and is owned by the intermediary “Hälsans Nya Verktyg”, which stands for “new tools for health”.

The PIMM project targets a group of employees that are not usually considered innovative – women in care sectors, some of them with only a general level of education. Further, the ideas are usually not technologically advanced, but are instead solutions to everyday problems faced by employees, patients and, to some degree, the next of kin.

The day to day work of the project is supervised by an Almi project leader. In addition to the project leader, three so called idea pilots have a proactive role that entails contacting peers and holding presentations about the project. They are the first links in the innovation support chain. They stimulate and help employees to contact Almi, encouraging them to believe that their ideas are valuable and make a first selection of which ideas are feasible. They administer the first novelty tests. The PIMM project innovation advisor, employed by Almi, has a background as a manager of a construction firm. His role is to elaborate the ideas coming from the employees, mainly through the idea pilots, in an interactive way. The aim is to turn ideas into innovations.

Description of the project methodology

The innovation support process of PIMM (see Figure 9) resembles the traditional innovation support process, as is obvious from the figure below. The figure has clearly been developed with goods product development in mind. However, the project description also notes that:

> for service ideas the modus operandi is principally the same even if the terms technical solutions, prototypes, production are not used but are substituted by the terms solutions, models, conceptualisation etc. (PIMM project plan, p. 8)

There are some other notable differences. First and foremost, the processes start differently. In Almi in general, there have been no outward looking activities, creating a kind of self selection where pushy idea carriers self select.[21] In PIMM, in contrast, considerable resources are invested in the three idea pilots. In other words, in Almi in general, the innovation advisors could sit and wait for clients while now, they are expected to go out searching for them.

Investigating licensing as a type of commercialisation was also an implicit purpose of the project as such. Licensing as a road to market introduction will be discussed further.

[21] The information concerning the PIMM-project, ways of working, changes etc comes from both interviews and informal takes with key-actors in 2006, 2007 and 2008.

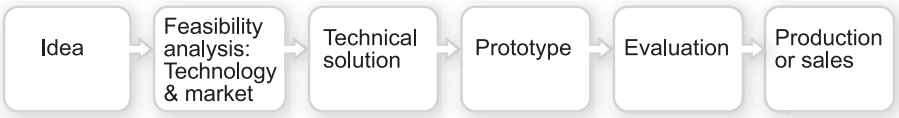

Figure 9. The PIMM innovation support process

The project plan of PIMM was written in February 2006. Two years later, the innovation support process was described in seven steps by the PIMM-innovation advisor:

- *The first step is a pre-feasibility analysis*. In this phase the idea pilot investigates whether the idea is at all realistic and has any connection to the care sectors. The idea carrier plays an active role. If the idea is considered to have a potentially large market,
- *an extended feasibility analysis* which focuses on estimating the uniqueness of the idea and any potential conflicting intellectual property rights (IPR) is made. The draft funds necessary may be issued by the innovation advisor himself. Very seldom is the idea or its solution totally new. The third step is to
- *give feedback on the extended feasibility analysis* to the idea carrier. In successful cases the idea now enters a *prototype phase* where additional funding for developing a prototype is required and the same rules apply as for Almi in general. Decisions on feasibility analysis funds are taken by an interorganisational group which takes technological sophistication into consideration.

If the idea is still considered viable after the evaluation of the prototype phase, a

- preliminary patent application is filed and
- potential licensees are contacted and if a mutual agreement is met, the patent application is finalised. The last step is to facilitate market introduction, even if this, strictly speaking, goes beyond the project goal.

As can be seen from the list above, PIMM was inspired by the general innovation process when the innovation supporting process was designed. According to the innovation advisor the innovation support process is suitable for everything although it was constructed for goods product development, since it is built up around issues such as prototypes and IPRs. One important difference is that in the PIMM-context, the innovation support process starts earlier than it does in general through the proactive outreaching activities of the idea pilots.

The importance of adapting methods to targeted groups is something Almi has learnt from its PIMM project. But there are also other lessons learnt which will be commented on in the following.

From low road to high road – changes in the innovation process support

Above we noted some differences in the innovation support processes between the traditional Almi-way and the new PIMM-way. In many respects, PIMM as a project has been a challenge to Almi and created both intra- and interorganisational change processes.

Here, we would like to mention four such challenges for Almi which PIMM has given rise to. Together they mean change along a high road strategy for the organisations involved:

- the challenge of attracting a new type of idea carrier,
- the challenge of developing a new type of commercialisation,
- the challenge of supporting a new type of product, and lastly
- the challenge of supporting less complex innovations.

Attracting a new type of idea carrier

Comparing the general innovation support structure of Almi with that of PIMM, we noticed among other things how PIMM included and dedicated resources to outward looking activities in order to motivate potential idea carriers. Innovation advisors testify that this is an important issue. In general, idea carriers are often (over)confident, whereas the PIMM idea carriers typically need to be encouraged and coaxed to even describe their ideas to the innovation advisor. Without PIMM, few of the idea carriers would have contacted Almi. Thus, through this new methodology, Almi can reach another type of idea carrier. These idea carriers have a different educational background to that of the typical innovator. They are trained in care, as assistant nurses or nurses, not in technology as the conventional innovators are. Many of them are women, as care occupations are dominated by women while the conventional innovator is a man. One of the goals of PIMM is that the number of female idea carriers should correspond to the share of female workers in the targeted workplaces. Even though this goal has not yet been reached, a considerable number of the female idea carriers come to Almi via the PIMM project. Although it is too early to draw far-reaching conclusions, there are indications that this is a valuable method for finding idea carriers, and that the self selection of idea carriers in the general innovation support structure has its disadvantages.

Developing a new type of commercialisation

Traditionally, for Almi the natural commercialisation of a new idea has been a new start-up. The ambition of the idea carrier has been carefully evaluated and the innovation support process has been coupled not only with financial support but also with general business development support measures.

Some see PIMM as a testing ground for licensing. Licensing means to sign an agreement with a firm allowing them to manufacture the product against compensation. Licensing differs considerably from the start-up strategy. For example, the product is expected to reach the market more safely and faster through licensing than through start-ups. In addition, the ambition of the idea carrier is not as crucial.

Almi has developed strategies for licensing which incorporate matching license givers and licensees, something which is a far from trivial matter. The experience of licensing as a method is now also a component in the general innovation support process. The rest of the organisation has learned from the experience of PIMM. However, to everyone's surprise, many idea carriers, especially those with more modest ideas, have chosen not to license their idea but instead have started a small enterprise on the side. For example, the assistant nurse who invented a skirt peg (which keeps the clothes out of the way during a toilet visit) has chosen to sell the product through a firm of her own. The skirt peg is a media success.

Supporting a new type of product

The innovation support process was designed with goods in mind, as could be seen in the quotation earlier from the project description. The focus on prototypes and IPRs as a measure to protect novelty is also an indication of this. This observation has also been confirmed in conversations with the project leader and the innovation advisor. The project leader has worked hard to find other projects, similar to PIMM and to find best practises to support service innovation development and find good examples of services to present to the idea pilots. There is a lack of knowledge about how to support service innovations, not only in Almi, but also among other key actors and policy makers. Supporting service innovations is considered complicated. Two problems are that of knowing what is really innovative and knowing how to protect it. An additional problem is that of estimating the market for innovations when the public sector is the expected financer of the services or products. Although the issue of supporting services was on the agenda as early as in 1987, supporting structures for service innovation have yet not been fully developed.

Many ideas for new ways of working and organising so called service innovations, have been discussed with the peer meetings organised by the idea pilots. Not many of them have been dealt with inside PIMM. One reason may be that the issue of services is hard to grasp and generalise, even when exemplified and contextualised (Nählinder 2008). This implies among other things, that it is difficult for the idea pilots to give

examples of service innovations. In addition, service innovations are typically more difficult to separate from their innovator (Nählinder 2005), which implies that they are also more difficult to license.

Photo 1. Annika Nithagen, assistant nurse at Kvillinge service center for elderly people invented and in contact with PIMM designed safe, comfortable and nice looking underpants holding a catheter bag. Photo: Setareh Yusufi.

Supporting less complex innovations

The innovation support process is designed and described with technical advanced products in mind. PIMM, on the other hand, focuses on innovations which are solutions to everyday problems in care. In PIMM the solution is not necessarily technologically advanced, but the solution fulfils an everyday need. One example of such an idea is the catheter underwear which has an inbuilt holder for a urine bag in a slightly longer leg. The solution is not technologically advanced but it is clearly novel and fulfils an obvious need. Another example is the hand cream card which gives instant guidance on which kind of skin care product is suitable for a number of medical skin conditions commonly encountered in the care sectors. The complexity of a typical idea which comes into PIMM is typically lower than that of other ideas which are taken to Almi.

Learning, changing and organisational path dependency

We have described how Almi and its predecessors have a long history of supporting manufacturing industries. However, previous history and experience are not only an advantage, as many studies of organisational change have shown. The concept of path dependency could help us to understand how the previous experiences of the organisation may function as an impediment in itself. Path dependency is about the force of habit and means that it is difficult to break new ground. Path dependency is of relevance both for individuals and organisations. Small incremental changes in an organisation may eventually lead to a lock-in where it is difficult to change behaviour. The classical example is that of the traditional QWERTY keyboard. The design of the key board was originally introduced to slow down typing so that the keys would not tangle. Although the original technical problem has disappeared, the lock-in effect (that it is very difficult to change keyboard once you master one type) has led to a suboptimal keyboard design (North 1997). In a similar way, we may describe the history of Almi as being focused on solving a particular problem, that of supporting manufacturing industries. This has shaped the methodology, the innovation process support, in a way that has an impact upon the available solutions perceived. Creating organisational conditions that promote innovation, competitiveness and growth for a new type of idea requires learning, and this may be limited, but not determined, by organisational path dependency. It requires a conscious effort on the part of the Almi firm to counteract this and to instead break new ground.

Some parts of the sequence of operations in PIMM are unique and have also already had an impact on the larger host organisation, Almi. The experience of PIMM has had an important impact on an ongoing project about the innovations of women. Licensing as a method to commercialise innovations has increased in the whole organisation.

The work of the idea pilots, as well as the process of taking the ideas through the host organisations, the municipalities, the county council and Almi, is elaborated through a coaching strategy. This strategy demands a new way of working and thinking which emphasises discussion and empowerment. Now, in spring 2009, the peer strategy with idea pilots has been spread inside the organisations involved as well as to other organisations. The method will also be used in other parts of the organisations involved, i.e. outside elderly care. Another municipality will start with idea pilots in care and Almi-companies in other parts of the country will use the method developed. Idea pilots, licensing and coaching are considered to be a highway to create regional and industrial development.

The aim of the project presented here was to stimulate economic and industrial development and change. This can not be done without organisational change – and organisational change is never easy, as was discussed with the path-way-concept above.

We will end with some comments from the organisational study field which we find to be of great importance. From that perspective:

- PIMM can be presented as a project organisation established to create change.[22]
- To use peers as idea pilots and let them remain employees in the mother organisations is an unconventional strategy
- All the contacts with the old organisation, Almi, are handled by Almi-employees who are open to new ways of working and new ideas. As they are organisational members, they do not provoke but can work as change agents from within.
- The project, PIMM, includes organisations and individuals not belonging to the established Almi-context is not noticed on the project working level. The decoupling of the practical project level from the governance level makes necessary changes easier to implement.

With these strategic decisions the PIMM project has influenced the working practices as well as the strategy and structure of Almi. Almi here represents an established old fashioned way of developing Swedish industry. The PIMM project represents the new service economy. The new project based organisation, PIMM, is used as a change agent for the old organisation, Almi. There are already signs that parts of the methods can be used in other parts of the economy too. If identified and handled the right way, everyday innovations occurring in unexpected places could be a high road strategy for competitiveness.

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Editors' comments

Chapter eight concerns making use of external relations and ideas. The authors point to issues of communication and involvement of customers, partner organisations and employees. Openness, lust, and trust are the key elements in the value creating process. The chapter takes a managerial perspective when dealing with open innovation in the experience sector.

8 Visitor involvement and extensive networking

CARINA SJÖDIN, CHRISTER NYGREN AND TOMAS BACKSTRÖM

Abstract
This text is about the importance of openness for innovation and development. Visitors and partners have been invited to describe emotions and problems while visiting the park. The case describes the process that occurs when Parken Zoo[23] goes from working with in-house innovation systems towards reciprocal and open innovation processes in contact with customers and networks. Parken Zoo sees visitors in a new role: that of value creating networks as co-creators of future experiences.

Keywords
Openness, visitor involvement, innovation process, networking.

Introduction

The focus of the case described is an open innovation system of Parken Zoo. Visitors at Parken Zoo have been invited to participate in the development process, to which an extensive networking with a regional cluster of small businesses has also contributed.

The aim is to discuss the importance of openness as a means for innovation and development. External information sources are of central importance in idea development and innovation processes (Bessant & Tidd, 2007). Reciprocal processes involving different external partners developed into an open innovation system at Parken Zoo.

To begin with, the setting will be described. Parken Zoo has a long tradition of networking and use of external input in the innovation process. The employees work with external contacts on a regular basis; they are grounded in shared values and an attitude of openness. Secondly, two new parts of the innovation system will be introduced:

1 The procedures for visitor involvement at Parken Zoo. Visitors contribute by documenting their emotions and the problems they encounter during a day in the park. This appears to be a valuable tool for growth and a new kind of openness.

[23] English translation: *The Park Zoo*

2 Extensive networking with a regional cluster[24] for small businesses specialised in designed communication. Parken Zoo serves as an arena for experimentation and participation in developing cooperation models within the network.

Employee participation in the open innovation system and preliminary results of the case will also be described. We will discuss how visitor involvement and regional networking has been valued by the organisation, e.g. how Parken Zoo sees visitors in a new role: that of value creating networks as co-creators of future experiences.

Third, the planned next steps in Parken Zoo's development will be discussed, as will be the need for a high-road strategy among the employees; this is where the development of a common value ground is in progress. All employees participate in this process.

Data is collected from a research project[25] studying and supporting the development work at Parken Zoo. The case is presented from a managerial perspective.[26]

The setting: Parken Zoo

Parken Zoo is a community-owned organisation by a holding company of Eskilstuna municipality in Sweden. Approximately 50 people are employed full-time. During the summer season, the number of employees increases by approximately 250 people – mainly students – who are employed on short-term contracts.

Parken Zoo is made up of four divisions:

1 *Operations* organises the commercial aspects of the company such as restaurants, camping, an amusement park, a souvenir shop, lottery/games, and pool facilities.
2 *Marketing* encompasses sales, customer service, conference, and parking.
3 *Finance and Administration* is responsible for the facilities, surroundings, administration, economy, and contact with authorities.
4 *The Animal Park*, which contains five sections: Asia, Africa, South America, More to Know, and Research & Education.

Each division has a manager who, along with the CEO, forms the managerial body.

The vision of Parken Zoo is to be the most innovative and exciting place to experience in Sweden. Parallel to commercial goals, the animal park division aims to promote:

[24] The name of the network is *Ideaplant*.
[25] The research project is called KIT and is partly financed by VINNOVA; it has been organised by MTC (Marketing Technology Center in Stockholm). Other participants include: CTF (Service Research Center at Karlstad University); Mälardalen University; Department of Innovation, Design, and Engineering (MDH); and Ideaplant, which is a regional cluster for small businesses specialised in designed communication. Project period is 2008-2010.
[26] Based upon three complementary interviews with representatives from the management of Parken Zoo.

preservation projects with a focus on preserving endangered animals, education and informing the public, and recreation and research.

The aims of the innovation system

Parken Zoo does not have a general policy or a certain department that handles the innovation process. Instead, there is a general atmosphere of encouragement when it comes to suggestions for change. According to the managers at Parken Zoo, innovation and development is the responsibility of each division and each individual employee.

Management uses three key words to categorise the internal innovation process: *communication climate*, *customer satisfaction*, and *networks*. These terms indicate that management sees competent and motivated employees as being central to the innovation system. The employees and their ability to interact with the world outside the organisation is vital for creating new services and products – both in order to identify signals and to act upon them. This is not a management driven task only; to create value in use for customers, every person involved must have open eyes and ears. In addition to other qualifications, an employee's relational capacity is acknowledged here as being a necessity. With the ambition to fulfil a high road strategy, management demands that employees possess certain traits: such as having initiative and an open-minded attitude towards complexity and change.

Communication climate

Good communication is one of Parken Zoo's key values. Each individual is part of a network structure within the organisation and is responsible for distributing information. On each level of the hierarchy, a person is present from a lower level. These people have the responsibility of transferring information up and down the levels of the organisation. Ideas often originate from conversations with colleagues in frequent meetings and contacts. Listening is vital; according to a representative for the managers, the internal communication climate is good. Employees have access to information needed in innovation work and management listens and acknowledges their ideas.

Customer satisfaction

Quality is defined by customer satisfaction. The customer satisfaction index must be enhanced each year and the evaluation of all changes relates to customer satisfaction. Management and owners have set this goal. Employees and temporary staff understand the value of innovation and the constant need for development. According to the managers, they are encouraged to listen and to suggest changes or ideas. Good ideas, however small or big, are rewarded with movie or lottery tickets.

Networks

The organisation has a long history of networking and is involved in various circles, networks, and alliances. For example, the animal park division is involved in structured networks on a national level, as well as on European and global levels.[27] Inspiration and ideas are often derived from these networks. Employees visit other Zoos both in Sweden and abroad, which are of central importance for the innovation process. An example of this is presented below:

> A group from Parken Zoo was visiting a park in Holland in order to learn more about a new entrance system. During the visit, they took notice of a marching band playing throughout the park. Each time they saw the band, they discovered new features of the musicians, who played different roles, as well as being entertainers. Parken Zoo representatives took pictures, registered the setting of the band and began talking about this feature. Thus, the idea of having a band at Parken Zoo was born. The concept was pitched to the CEO, and a project was initiated for this purpose. The idea of having a band evolved into a full-fledged orchestra with musicians in animal costumes. In essence, the band in Holland was the trigger. The rest of the process was the work of this particular group with some support from a developer within the organisation. The entire process – from the study visit to Holland to the orchestra's debut – took a little less than a year. This is a rather typical example, both in terms of process and execution.

Design of open innovation

Parken Zoo had used text-based surveys as a tool for market research; however, these surveys had not captured what can be termed as customers' inner meaning and had also failed to commit employees to act according to the information that was gathered. In cooperation with a research project,[28] visitor involvement and extensive networking was used as a means for open innovation. Various types of user involvement can be described when comparing user innovation with traditional professional development: what is the purpose, where in the process does it take place, what is the level of intensity, and how do the users communicate their input (Magnusson et al., 2003).

During the visitor involvement project, a method had to be developed to select and approach visitors and to determine the tools that could be used to record visitors' experiences, feelings, needs, ideas, etc. One of the questions during this research was: *What makes customers tick?* In this case, it is vital to identify various kinds of needs. Some needs are latent and some are expressed. User innovation can be described as a process of democratising innovation. By creating their own products and services, users can create value both for themselves and for other users. Users often tend to freely reveal their innovations (von Hippel, 2005).

[27] European Association of Zoos and Aquariums and World Association of Zoos and Aquariums.
[28] The aforementioned KIT project.

The idea behind involving visitors as a design for open innovation comes from the lead user theory (Franke, von Hippel, Schreier, 2006). This suggests that innovations of interest for a firm can be found through involvement of a selection of *lead users*. According to von Hippel (2005), lead users can be defined as users who possess two distinguishing characteristics: they are at the leading edge of current trends and expect to benefit greatly from finding a solution to their needs. Value can be created for a much larger part of the target market by identifying this group.

Visitor involvement

Participating visitors were recruited to Parken Zoo from guests who were staying at the park's camping ground. Since Parken Zoo caters to families with younger children as a target group, the reception staff at the camping site was responsible for informing and recruiting potential participants. These visitors were approached as they were checking in. Parken Zoo's CEO had written an invitation to potential participants asking them one simple question: "How can Parken Zoo be even better than it is?" If they expressed an interest in participating, the families were asked to join in on a free breakfast meeting the next morning. During this breakfast, a management representative informed them about what they were expected to do and answered any questions. Two different instructions were used: half of the participants were asked to register any type of emotion they experienced during their stay; the other half were asked to document problems and obstacles of any kind. They were encouraged to document everything; they were told that nothing was too trivial and that all input held value. They were also told that any input from children was just as useful and as valuable as the input from the adults. The participants were guaranteed confidentiality (only the researchers would have full access to the information).

Each participant was equipped with a digital camera and a writing pad along with the instruction to register his or her day in the park. The pictures and films were used to depict what each visitor wanted to express. After their day in the park, all of the participants met with one of the researchers for a reflective discussion about their documentation. This input was later translated into a standard form. A total of 14 families were recruited in this way during 2008 at Parken Zoo.

Regional networking

A model for collaboration with small businesses was also tested. A *regional network* of small businesses partly contributed to the innovation process as visitors who shared their thoughts about a visit to the park. Approximately the same number of families participated from the network companies.

The small businesses not only acted as visitors; they were also potential suppliers of some of the ideas generated in the process. This could create relational problems since expectations must match the level of involvement and the output. The first impression

of “what’s in it for me” could restrain the motivation to participate. This group differs from the visitors recruited at the camping site since they are local and have, therefore, been previously familiar with the park. Time has shown an increase in the commitment from these small businesses, and they enter workshops and seminars with great enthusiasm and dedication. It is a learning journey for the network as well.

A total of 28 families delivered approximately 260 suggestions, emotions, problems and/or other input. Some of the comments were short statements of feeling well in a particular situation or a quick complaint about another. Other comments were substantially longer: presenting a problem, suggesting a solution, and also commenting upon the added value this service might also have for others.

Employee participation

Visitor involvement and extensive networking were implemented in the Parken Zoo culture. The managers say this is particularly true in the communication climate, where customer satisfaction and networks are key features, and where participation from competent and motivated employees is seen as central to the innovation system.

Although the general attitude among the staff is to put the visitor first, the traditional visitor surveys that had been conducted in the park prior to the present case did not necessarily trigger innovation. Pictures and films have proven to be much more efficient when it comes to making the staff pay attention. “It had great impact,” the sales manager said as she continued to talk about how efficient it was to use pictures and films in order to communicate the guests’ input. The camera represents the eyes of the visitors.

In the open innovation system, partners are invited to describe emotions and problems while visiting Parken Zoo. While implanting this, a risk was observed. Employees may understand the suggestions as critique on their work and competence; therefore, they may become defensive in the innovation process. The solution tested was to have a somewhat neutral person act as a receiver of the feedback, problems, and/or emotions. One of the researchers had such a role in the project.

Results

Visitors can create value. The principles for user involved product development and innovation is also valid for visitor-involved development in the service sector.

Thus far, the findings have shown new suggestions that differ from earlier market research. One example is a suggestion from some visitors to create a path in the park: a route that will ensure that visitors have not missed anything. Another interesting point is that, in the past, mostly women answered the traditional surveys. In this case, visitors participated as a family and responded as such. User involvement can be seen as a complementary method, rather than something that will replace the former processes.

Parken Zoo has identified user involvement as a way of complementing its other market research methods and efforts. This did not necessarily come from a higher level of innovation; instead, it came from actual experiences and practical reflections. Those who work at Parken Zoo have noticed that new kinds of suggestions evolved from this direct approach and that capturing the emotions of the visitors in real time provided interesting and sometimes challenging knowledge. Staff obtained new knowledge about the visitors and an awareness of the actual situations in which they found themselves. Thus, their relationship to the visitors tended to be more enriched with more aspects to consider due to a higher level of situational knowledge.

The next step in Parken Zoo's networking strategy

Parken Zoo has plans for the future. The managers hope to reach out and find new ground for alliances and to create a new base for networking, in addition to reaching out and involving visitors. They want to build value-based mutual relationships as a way of being less vulnerable to shifts in the economy. Parken Zoo can help other organisations communicate their environmental concerns by connecting with the environmental-related activities of the zoo. In return, external companies give Parken Zoo a connection to the mass market, which could otherwise be difficult to reach.

The Parken Zoo's CEO hopes that if the relationship is based upon values instead of other motives, then the network ties will grow stronger – even during bad times. The CEO says this can happen: "…because it is a way for them to be even more distinct in expressing their values towards their clients and stakeholders." This extended relationship adds a new dimension on both a commercial and a moral ground. The way in which partners choose to expose their respective alliance with Parken Zoo is of utmost importance, and the fact that the partnership is an active one. One way of doing this is to agree upon the higher goal to save endangered species. The CEO describes these plans as a three-step process:

1 A strategic decision to create a value-based platform.

2 The content and the intentions of the platform shall be based upon the reflections and actions from the entire organisation.

3 The platform will be connected to a strategy for growth in order to formalise co-operations with strategic partners.

This is a dialogue-based process that has just begun within Parken Zoo; it requires a high degree of involvement from all employees and an ambition from the management to be perceptive. Many different views must be included to create a common ground. According to the CEO, shared value platform will perhaps be less distinctive than a strictly strategically formulated vision by the management. However, it is more important to have a vision that can be used as a solid ground for decisions on all levels

of the organisation. When values are formulated in a process that includes all employees, then these values will be genuine and visible. This can be seen as an expression of the high road strategy.

Discussion

Customer and user involvement is frequently used in the technology sector and in product development as a method of innovation and to improve products. Here we have discussed a case where visitors have been invited to participate in the progress and development of Parken Zoo: a company in the experience sector. Visitors contribute by documenting their emotions as well as the problems they encounter during a day in the park. This appears to be a valuable tool for growth and a new kind of openness. Parken Zoo sees visitors in a new role: in value creating networks as co-creators of future experiences.

When analysing the data – that is to say, the emotions and the problems registered by the visitors – even latent needs must be taken into consideration. Although the visitor may have a fixed suggestion on how to solve a certain problem, it is not certain that this is the solution that should be adopted. Other patterns can appear when categorising the input. The researchers in the KIT project are testing a model for analysing latent needs.

Compared to the organisation's regular guest surveys, the use of films and photos as a method of collecting data made the results more engaging and easier to interpret when they were presented to the rest of the staff. The overall feeling was that a new closeness to the visitor emerged. The method was effective, as is apparent in the reaction of the Parken Zoo's sales manager: "It made an impact!"

The importance of communication

> Creativity should be perceived as a collective process to raise the level of innovation potential of the organization. (Merx-Chermin & Nijhof, 2004: p.137).

Innovation can be seen when there is a transformation of valuable knowledge into added value for different stakeholders. In order for this to happen, it is necessary to obtain knowledge generation. Sharing is vital in this process (ibid).

Holmes and Moir (2007) suggest that when there is a flow of knowledge between parties and close working situations, learning will be an outcome. And, this learning will result in innovation. This can be related to the ongoing contact with the participants of the regional network and their growing enthusiasm. The ability to communicate can lead to increased competence of all parties involved (Backström & Önnered, 2008).

Cross-sector collaboration as a way for companies to position themselves as responsible corporate citizens can be discussed in terms of motivation, engagement conditions, and intra-firm factors (Holmes & Moir, 2007). Chesborough (2003)

established innovation outcome as a result of such external relationships; for example, there is a connection between value-based platforms and growth. Holmes and Moir (2007) provide a theoretical background regarding the stakeholder view of the corporation:

> Good communication is seen as crucial for productive stakeholder engagement. (ibid: p.418).

Within the organisation of Parken Zoo the importance of communication was emphasised. This attitude towards contacts and communication created a climate where listening worked well. Ideas were presented and discussed. This openness improved the process of importing good ideas and turning them into successful internal innovation and development projects.

One weakness worth mentioning is the risk of in-house competition. The different divisions might become too close to their own ideas and forget to look at the whole picture (i.e. the Parken Zoo perspective). Sub-optimisation might hinder the innovation process and organisational learning between different divisions. This weakness can be related to organisational structure, where the divisions are central bodies. This may be dealt with in the next development step of Parken Zoo, where common values will be developed as described above.

Trust, networking and openness

Trust and vulnerability are two sides of the same coin. It is important to open up and give possibilities of development both in business and in organisation (Chesborough, 2003). However, opening up means increasing vulnerability and risking backlash when a competitor or hostile organisation uses the openness in a false or injurious way. Trust between partners is, therefore, needed to overcome this risk (Aldrich, 1999). One central point is that Parken Zoo has understood that others have important competencies, which Parken Zoo cannot obtain alone. This understanding was an important motive for building trust and courage, and for increasing transparency. In addition, Parken Zoo complies with the Swedish *principle of public access to official records* and, therefore, must always be ready to disclose all documents and any information. The question is whether this is a threat or an advantage for Parken Zoo. Perhaps the tradition of openness, awareness, and experience gives the organisation an advantage and prepares it to work in networks where information is spread freely and is not fully controlled. Parken Zoo's CEO has a relaxed attitude towards the issue of openness:

> We try to be as open as we possibly can, within reason. I believe it is the way to unite people to work for a common goal and this is something that makes Parken Zoo an attractive company to work for.

KIT is perhaps a research and development project where all parties involved feel a sense of trust: I involve myself in this; therefore, I trust that I will get something back.

Nørretranders (2003) discusses altruistic behaviour on a personal level. Maybe that approach can be used in an analysis of an organisation? In short, a description on the general thoughts in this study can be summarised as *from openness and trust to lust and innovation*. In one way, this concerns generosity and how the various interested parties – from the organisation to the visitors – give something while getting something in return. An active involvement is beneficial for all. One of the unexpected effects of the KIT project for Parken Zoo is the level of dedication from the regional network members. Additionally, Parken Zoo's sales manager mentions how entertaining the learning process has been: "It has been a lot of fun."

There is a possibility that this method with visitor involvement works especially well when a somewhat neutral partner participates in the process. There could be a certain potential in using a neutral partner as a gatekeeper without the intention of stopping suggestions; rather, the partner's role would be to receive comments and suggestions without any defence filter. This *broker* is also a person or function that would process the received information. To stimulate a more thorough reflection concerning, as an example, latent needs. Many theories about networking practices discuss the role of a broker in relations and communications. A broker can also be a person central in a social network who controls the flow of information (Backström & Önnered, 2008). This role involves the responsibility for someone within the organisation to communicate with the collaborating partners. The sales manager has served as the broker in the open innovation system of Parken Zoo.

The regional network cooperation

The regional network constellation of companies is a forum for handling and preparing the results from visitor input. The results are shared with the network; as aforementioned, both positive and negative opinions of Parken Zoo are spread beyond its control.

A long-term perspective results in solid and well-established relationships. Many interactions with similar players have a mutual need for the higher goals to be fulfilled, and a competitive part is "tuned down" in favour of the bigger picture. The relationship history along with the power of the participating parties are of importance, as is the degree of antagonism among those involved (Holmes & Moir, 2007). Parken Zoo is aware that all three aspects determine the outcome of a partnership, being a local player with an international and even a global perspective. The organisation often has a proactive approach and takes the initiative to network activities. According to the CEO, taking the initiative is related to the strength of the brand. The stronger the brand, then the greater the attraction for external partners to co-operate.

An internal motive of the open innovation initiative is to obtain new perspectives and ideas; this may be referred to as acquiring new energy into the company. External motives for the open innovation initiative include: becoming a stronger player in the

industry, offering better services, preserving the animals of the world, and attracting more people to the park. A network perspective is one way to approach challenges at work with the insight that openness and trusting others can make the organisation stronger.

The future innovation model

This chapter is a story about an organisation evolving from working with Rothwell's fourth generation innovation model to Rothwell's fifth generation model (Bessant & Tidd, 2007). This means going from in-house innovation systems towards reciprocal and open innovation processes in contact with customers and networks.

External information sources are normally of central importance in idea development and in the start of an innovation process. Rothwell's fourth generation of innovation models recognise this:

> Parallel model, integration within the company, upstream with key suppliers and downstream with demanding and active customers, emphasis on linkages and alliances. (ibid, page 84)

A fifth generation is described as "systems integration and extensive networking, flexible and customised response and continuous innovation" (ibid, page 84). In this model, openness reaches a new level. As a result, new perspectives are explored that can be both surprising and confirming. In this case, we have discussed the elements of trust and attitude on behalf of the organisation as important for reaching new perspectives. As for employees, the fifth generation model also includes opportunities for learning in collaboration with other parties.

Rothwell (1994) also discusses the fifth generation model related to organisational structures. Top management commitment and support ranks high as a vital factor for development with committed and empowered project leaders and product champions, and increased decision-making at lower levels (ibid). According to Rothwell, the ability to access external know-how is a vital factor in successful innovation. According to our understanding, this reasoning can be seen as expressions of a high road strategy that can be connected to a distinct customer focus and networking.

In this case, the high road strategy connection is the fact that a new focus upon visitor involvement, extensive networking with regional cluster of companies (as well as with international organisations) requires a culture of trust that all personnel involved are comfortable in communicating. Openness, lust, and trust are the key elements in this shared value creating process.

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Links

CTF - Service Research Center at Karlstad University
http://www.ctf.kau.se/ http://www.ctf.kau.se/

Ideaplant
http://www.ideaplant.com/

MDH – Mälardalen University
http://www.mdh.se/

MTC - Marketing Technology Center in Stockholm
http://www.mtcstiftelsen.se/Bazment/1.aspx

Parken Zoo
http://parkenzoo.se/

Editors' comments

The authors of chapter nine identify work environment as being the driving force behind new product development and company turnover and profit. The chapter deals with the innovation capacity that is inherent in a stable networking innovation system: a Triple Helix network. Shared values concerning ethical aspects that stress the importance of having a good work environment bring actors together over a long period of time. The significance of a stable hub in the network is recognised, as is the loss of innovation capacity and continuity that follows from losing the hub.

9 A network organisation supporting innovative product design

JÖRGEN EKLUND AND LINDA ROSE

Abstract
This case shows the crucial and decisive role of the network organisation of a small enterprise in their development of a new state-of-the-art welding visor. The key factor was integrating customer and user experiences together with knowledge from universities, research institutes, governmental authorities and other network partners. The resulting high-tech product became a market success due to outstanding usability and work environment.

Keywords
Competence development, work environment, SME, usability.

Introduction

A small manufacturer of welding visors, Hörnell Elektrooptik AB, decided to develop a new generation of welding visors. The ambition was to position the product as market leader through better value to their customers, leading to higher volumes and allowing a higher price than their competitors. The company developed a high-tech product, giving advantages for the welders as well as their employers in terms of excellent work environment, safety, usability, productivity and quality. This final product was a market success, with increased sales volume each year. Total sales have exceeded two billion Swedish crowns, including more than 90 per cent on export, and the market potential is still excellent. The welding visor has also been awarded with many design awards.

The focus of this chapter is on the building and using of a network organisation and on how competence was built up in the company as a basis for the development of the new product. A long term effort to build up a widespread network preceded the development organisation. A project group was formed on the basis of collaboration between Hörnell and other companies, research institutions and public organisations. This development network was cross-disciplinary and included development personnel, researchers and practitioners. Small and new companies normally have a shortage of resources, competence and networks for such development. Product development personnel in small and new companies need a broad network of persons and organisations with knowledge around the product. Development of new competence

takes place through continued discussions and interactions with persons and stakeholders in the network. In addition, business relationships develop as a result of such interactions. Access to a relevant network of stakeholders is therefore a necessary condition for SMEs in their innovative product development.

This chapter aims at describing the product development of Hörnell's welding visor Speedglas 9000. The chapter is based on retrospective interviews with persons in the company and the network, shortly after the product was presented (Willén, 2003), and in 2008 especially for this chapter. The findings are also based on documentation and notes taken during the project. The chapter presents the background to the formation of the company and how the network for product development was formed. Further, the development project leading to the new welding visor is described. Finally, important experiences and conclusions are pointed out and discussed, in order to contribute to our knowledge in this field.

Background to the formation of Hörnell Elektrooptik AB

In 1972 two students at Chalmers University of Technology carried out a Master of Science thesis project related to the work environment of welders. Welding causes several work environment problems such as inhalation of welding fumes, adverse muscle loads on neck and shoulders, burns due to metal sparks, burned skin due to ultra violet light, and eye injuries due to intensive light. The objective of the thesis project was to define the spectral distribution (distribution of wavelengths) in the light from welding arcs.

Ever since the technique was developed, electric arc welding has led to painful eye problems (arc eye) caused by exposure to ultra violet light during the welding process. The available conventional welding visors have a dark glass for protection of the eyes against the strong light. As a consequence, the welders have to choose between to start welding either without initially seeing the welding object or to do so without the protective visor. The two students identified the welding light's spectral distribution and became employed at a shipyard for a year to develop a visor glass that would protect the welders from the dangerous invisible light of the welding arc, but transparent for the visible wavelengths emitted from the lighting. However, they were not successful in this and the project was terminated. One of them, Åke Hörnell, started working at Chalmers developing glasses for people sensitive to light by using Liquid Crystals (LC). After a couple of years he got an idea to develop welding visor glasses with the same technique. In co-operation with ESAB, a major welding company, he developed an automatic welding glass prototype, using photocell sensors and LC technique. The intense welding light initiated an electric voltage that was applied to the LC's, changing their direction of polarisation 90° and thereby effectively darkening the glass. The first prototype was ready in 1978. However, ESAB declined to commercially exploit it, partly since the company had a shortage of funds for product

development in this area. A further reason was that an analysis resulted in an estimated global market potential of selling 3-4000 automatic welding visors a year. The market was considered too small to motivate the investments needed.

However, equipped with a more positive market analysis, Åke Hörnell founded the company Hörnell Elektrooptik AB together with his wife in 1979. They started manufacturing their product in the basement of their house, situated in Gagnef, a small village in the middle of rural Sweden. In 1980, a press release about the auto darkening welding visor earned much attention worldwide. The automatic welding glass was the first in the world, and it was mounted in an existing welding visor product from another manufacturer. The following year, the company employed two more persons to handle the growing demand. But further expansion to a wider market proved difficult for the newly born company, partly because of the lack of good distributors and other partners, especially abroad. Therefore an export manager was hired to build a distribution and marketing net.

It was difficult to market the product using written text – its advantages became clear first when welders tested it. This phenomenon has also been identified from the marketing of other ergonomics products (Franzén and Hedman, 1995). Moreover, the lack of competitors created some scepticism towards the concept. The purchasers at companies often focused on the price, which was about ten times higher than for standard welding visors. Further, the companies that were early adopters of the new technology and could have served as door openers to a larger market were unwilling to state that they used the new visors, since this had given them competitive advantages by increased welding productivity with up to 20 per cent.

Hörnell struggled with a far too small production capacity since the start, but 1984 the situation became critical with waiting lists up to three months. The company moved out of the family house basement in 1985 and the production was doubled. The export manager was promoted to market director and in this position he continued to develop the sales channels. The strategy was to create a demand directly from the end users, i.e. from the welders. This was time consuming but successful, especially in Sweden where the welders often decide on what equipment they use. Eventually a standard for automatic welding glass was developed by a standardisation committee.

Subsequently, other companies started to develop and market automatic welding glass and the acceptance for such products increased, although automatic welding visors just had a few per cent of the total market of welding visors. At the end of the 1980´s there were five manufactures of automatic welding glass. Hörnell started to feel competition from other companies, but lay in the technology frontline with their product development and competence. In 1992, the world market for auto darkening welding visors was 150 000 units and Hörnell’s Speedglas 9000 series had about half of it.

The route to successful product development

Below follows an account of the course of events that resulted in the development of the new welding visor Speedglas 9000 in 1996.

Carbon dioxide reduction in welding visors

In the Linköping region, health examinations among 80 welders from an industrial health service during the 1970´s revealed that the tiredness welders feel is related to inhalation of carbon dioxide. This is due to expired air with its carbon dioxide content being trapped behind the welding visor (Eklund, 1981). These problems with inhaling expired air were known from diving and other respiratory equipment. There had since long been limit values of carbon dioxide levels in general and in particular for respiratory protection equipment. But since the problems with high carbon dioxide levels behind welding visors were previously unknown, no regulation existed for visors. Further research showed that carbon dioxide levels behind existing welding visors normally were above 1 per cent, which was a critical value in other applications. (Eklund et al., 1984, Strömberg et al., 1996).

In 1984, a researcher in ergonomics at the Institute of Technology at Linköping University met researchers specialised in carbon dioxide re-inhalation at the University Hospital in Linköping. Together with an innovation company, Cenova, they carried out a project funded by the Work Environment Fund. Measurement methods were further developed and solution ideas were tested by developing and evaluating different prototypes. The carbon dioxide reduction invention was offered to the largest welding equipment companies. Neither of them wanted to take the risk of launching something completely new, and pointed to their present good sales. Further, one visor manufacturer was not interested in developing such visors, since they had not received any demand or request from their customers of lower carbon dioxide levels. Another company judged it to be difficult and costly to get the new type of visor certificated in international standards and also judged that there would not be a market for visors with ventilation equipment, since the weight of visors was in focus in the ongoing debate. A couple of companies declared they would consider selling the product *after* it was fully developed and manufactured by someone else.

In addition, the Swedish National Board of Occupational Safety and Health (NBOSH) declared that no carbon dioxide standard for welding visors could be set until there was at least one visor on the market fulfilling this limit. However, no visor manufacturer was interested in developing such a product, and research into these issues was not continued for several years.

Some years later, a known inventor was hired as a consultant to make an inventory of potentially commercial innovations at Linköping University and heard about the welding visor project. As he knew Åke Hörnell personally, he contacted Hörnell and in

1993 this led to cooperation between the company and the researchers at Linköping University. The development was more difficult than expected, as a number of different aspects had to be considered, such as aesthetics, marketing, safety and production costs. However, a prototype that met the criteria was developed, based on the existing welding visor.

The network created before the project start

Before the start of the project leading to the new Speedglas 9000 series, the product development group at Hörnell had built up a broad network consisting of many different organisations and individuals. They contributed with knowledge, experiences and data that were of relevance for the future developments. Many ideas had been collected for inclusion in the new product development. The network was large, so only the most important stakeholders directly related to the product development are described below.

The most important stakeholders in the network were the *customer companies and their welders*. The openness of these companies and the low power hierarchies in Sweden allowed the product developers to spend much time on the shop floor to observe the welders and to discuss their experiences, problems and preferences regarding the welding visors. Problems and ideas from the welders were systematically collected by Hörnell and new prototype solutions were continuously brought to these welders for testing. To some extent, the companies became extended experimental laboratories. In several cases, *Occupational Safety and Health* (OSH) personnel were involved in the decision to purchase welding visors. This group was important to communicate with both at individual customer companies and at work environment and safety exhibition trade shows. These exhibitions were also a meeting place for market and product development personnel in competitor companies. Here, informal discussions could take place and information could be exchanged.

Another network partner was the *SIS/STG standardisation committees*. Hörnell appointed one product developer as their representative in the committees for protection of the respiratory organs, and for face and eye protection. Other committee representatives included test organisations, researchers, union representatives, experts, other companies, and safety and work environment specialists from authorities or other organisations. The work and discussions in these groups served as an important means for building up competence and knowledge about different aspects of the visors. This knowledge was brought back home to Hörnell, but also knowledge and needs from Hörnell were fed in to the standardisation committees. In other words, the standardisation organisation served as a body for the exchange and build up of knowledge, ideas and requirements. In addition, Hörnell developed contacts with several of the manufacturing companies that participated in the committees, which led to sub delivery relationships with several of these companies.

Linköping University was another collaboration partner in the network. The researcher who identified the carbon dioxide retention problem organised further collaboration with the division of Quality, the division of Fluid Mechanics and the division of Engineering Materials at Linköping University. The main collaboration took place within the division of Industrial Ergonomics where research on carbon dioxide reduction in welding visors had been performed for many years, together with the *National Institute of Occupational Health* (NIOH) and *Cenova*. Further, the division of Clinical Physiology at *Linköping University Hospital* was another major collaboration partner for measurements of carbon dioxide in the inhalation air of humans.

Together with *The National Defence Research Establishment* (SDRA) in Umeå, a standardised test method was modified to allow carbon dioxide content in the inhalation air behind welding visors to be measured. The equipment could test and compare different prototypes, existing products and competitor visors. This equipment was a technical simulator that took no account of human variability, nor nose breathing. The results were however important as a complement to the measurements from Linköping University Hospital. Experiences from SDRA were important for the competence build up of the product development personnel at Hörnell. The carbon dioxide problem was realised by Hörnell during tests at SDRA 1987, which contributed to the recognition of the problem and the readiness to solve it.

Since Hörnell is located in a small village in great need of job opportunities, the *local partners* play an important role. A local bank was heavily involved in Hörnell, supported the company in lending money and also contributed with a member of the company's board of directors. Also the Local Municipality was supportive.

The Ergonomics Design Group a well-known industrial design group had earlier worked with the design of the first visor that Hörnell developed, and had therefore useful experiences from the design of welding visors. *The Swedish Industrial Design Foundation* (SVID) contributed with activities and contacts in order to support the spread of industrial design.

Several student reports and theses were performed as part of Hörnell's product development. Some examples are optical aspects of the glass, Liquid Crystals, electronics, user values and ergonomic aspects. The students were enrolled at *Dalarna University* or *Linköping University***,** but there were also students from other universities. In general, Hörnell has had an open philosophy towards student involvement, and in some cases former students have been employed by the company.

Governmental authority representatives from *The Swedish National Board of Occupational Safety and Health* (NBOSH) were discussion partners for several of the persons involved in the product development. These contacts were of importance, when relating visor properties to the national and international rules in the field.

Tool manufacturers and sub deliverers were other groups of companies with whom intensive contacts and collaboration took place, closely related to the development work. Consultants were used in fields where Hörnell had limited experience, e.g. the Patent Agency contracted and other organisations within marketing and advertisement. Further, the network included the Development Fund and the Swedish Trade Council. These organisations will not be dealt with further in this chapter.

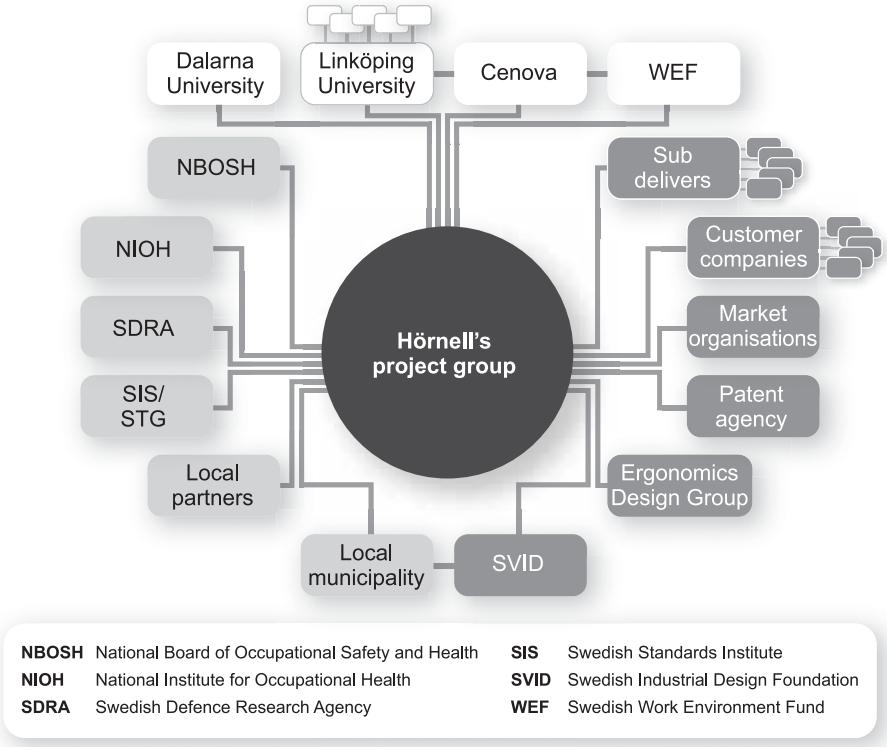

Figure 10. A graph of the network around the development of Speedglas 9000, including three clusters; universities, public authorities and private companies

The network was created by and coordinated from Hörnell's product development team. Some partners were included on the initiative of existing partners. However, the development team purposely allowed and took initiatives so that several of the partners could meet one another and collaborate directly instead of communicating through the members of Hörnell's team. This resulted in an efficient communication when solving complex interaction problems.

Market influences

The product development group had during a period of many years systematically built up high level knowledge about the functions, usability and other aspects of welding visors. This group was allowed to work relatively independently, and they formed the strategy that the perceived usability of the visors had the highest priority in their future work, not low price. They had substantial experience from different improvements, prototypes and tests from customer companies and among their welders. The continuous contacts with welders and their experiences had become indispensible for the development.

One patented solution for the visors, the Side windows was a result from a problem perceived by welders at Volvo. Two persons needed to coordinate their tasks inside the car when one performed welding and the other assembly. This demanded peripheral vision, something that was lacking in welding visors. The solution to this problem was Side windows. Tests showed several advantages, not only for the jobs at Volvo but also in many other jobs including welding, grinding and use of respiratory protection equipment. The Side windows had advantages of not only improving safety of the welders, but also to decrease the feeling of being isolated and locked in. Further, tunnel vision decreased, enabling faster and easier access to tools and other materials needed at the workplace, which contributed to increased productivity.

Another market strategy by Hörnell emerged in order to take responsibility for their customers was later considered to be successful. The welding glass was in the beginning not as robust as desired. So if the glass broke down for a customer, Hörnell replaced that component without costs. However, the technology was improved at a rapid pace. When a new generation of welding visors had been developed, a completely new welding visor had to be given to the customers, since the glass did not fit into the old product system. Of course, the customers were very pleased when they got a new welding visor for free, a visor that was also much better than the original. Often these customers came back after some time to buy several more new visors. This strategy contributed substantially to satisfied customers, increased market shares and was economically reasonable due to the relatively high price for the visors. The knowledge gained from the problems that appeared was extremely important as a basis for the improvements of the product in addition to the good-will created.

University collaboration

The Linköping researchers had started their collaboration with Hörnell in 1993. Initially, the project aimed at improving the carbon dioxide content in the inhalation air of the welders by modifying the existing visors. The Linköping researchers received a grant together with Hörnell from the Swedish Work Environment Fund (WEF) to improve knowledge about the carbon dioxide issue. There was a conditional repayment tied to the grant, given that the developed product showed to be profitable.

Subsequently, Hörnell payed back the grant. A major task was to measure carbon dioxide content in the inhalation air accurately. Another research group within Linköping University Hospital had developed a unique technology for this, in order to perform similar measurements on the pressure suit developed for Saabs fighter aircraft JAS Gripen. This measurement system could measure the carbon dioxide content in the inhalation and exhalation air of visor users in real time, and this was indispensible in the development of the carbon dioxide reduction feature. The researcher who invented the carbon dioxide reduction feature was involved during the whole product development period. The existing solution needed to be developed to fit the requirements of the new visor. This included compromises between manufacturability and engineering design, such as tool design, and with the welding glass cassette design.

One early sub project was that two researchers from the division of Quality Technology at Linköping University performed a customer needs assessment, in which they identified the needs of the welders regarding welding visors. The results formed an important basis for the development project in pointing out that the needs were foremost related to the visor, and to less extent to the auto darkening glass. This input broadened the development approach and put more emphasis on the visor and its plastic parts. Further, a questionnaire in five countries supported the insight that the visor shell was a component that gave more comments by the welders than the auto darkening glass did. The results from these two investigations were key events, influencing the course of the project. Discussions were also held with plastic materials researchers at Linköping University in order to investigate alternative materials. Also, a researcher from the field of fluid mechanics gave input to the design of the visor regarding air flows.

The company decides to run the new development project

There were several reasons behind the decision to start a development project of a new visor generation. First, Hörnell Elektrooptik AB had experienced a continuous growth since the start of the company, with the exception of a few years of decline in the world economy, see Figure 12. In 1994, the message from Hörnell's sales organisation was that they wanted a new and cheaper welding visor, since the present ones were expensive in relation to the competitors. The company had expanded to employ some 50 persons, and a few persons were working with product development on both a short and a long time horizon. Second, many new solutions and ideas had been developed, but could not be implemented in the old visor. Third, by coincidence, Hörnell got an offer from Swedish Industrial Design Foundation (SVID) in collaboration with the local municipality. These two organisations offered free design resources to Hörnell. The company was sponsored with 50 000 SEK (approximately 5000 Euro) from SVID and the same amount from the municipality. The company could choose any designer

or design group they preferred. The timing of this offer was perfect for Hörnell, and this supported their decision to start the development project and to use professional industrial designers. After discussions with a few alternative designers, the choice was to use the Ergonomics Design Group in Stockholm. The ambitions were high, and Hörnell's project group aimed at designing the best visor in the market.

The Ergonomics Design Group started their work by getting background data from Hörnell of requirements, principles and ideas. At the time, it was unusual to get such a broad input of requirements and specifications on the product. A number of sketches were produced by the design team and presented to Hörnell's project group. After some time, one main proposal emerged. A clay prototype was built and this was thereafter transferred to a computerised model. Working prototypes were built and evaluated from all aspects in the demand specification. Compromises and adjustments took place frequently.

During this period, there was parallel development in several laboratories. At Hörnell, the welding glass including the electronics and the Side windows were optimised and other solutions were developed. The carbon dioxide reduction solution was developed and improved at Linköping University and tests were run with prototypes at SDRA in Umeå and at Linköping University Hospital. Some detail solutions could be manufactured as prototypes and integrated in the old visors, which were tested by welders at customer companies. There were also many contacts with stakeholders from other organisations. Many details in the product development were dealt with during the course of the project. These processes were to a large extent internal, costs were considered and compromises took place between conflicting demands, including manufacturability and quality. When the design had been finalised, tool manufacturing started with all the contacts needed there.

The visor was developed during a two year period. It was due to be presented at an exhibition in Paris 1996. Only a very small group at the company had seen the final result. At the presentation in Paris, most of the international representatives from Hörnell's sales organisation were present. There was much astonishment when they saw the visor. Some were positively surprised by the design, while others who wanted a cheaper visor were disappointed and considered that the solution gave the impression of being expensive and lacking robustness. The positive reception of the market showing good sales soon changed the hesitant opinions.

Figure 11. The new welding visor Speedglas 9000. A view of the outside of the visor to the left and a view of the inside of the visor to the right.

Further developments and achievements

The development project resulted in a unique welding visor that gave the users a number of advantages. The automatic welding glass allowed the welder to make several welds without lifting and nodding down the visor. Welding therefore became easier and resulted in improved productivity. Due to full visual control during the whole welding process, quality of the welding was improved. Better visual control in the periphery improved safety and made work easier. When working with a conventional visor, welders had to make a forceful movement of the head in order to nod down the visor, sometimes up to 1500 times a day. This movement contributes to the risk of neck problems of the welders, and may be prevented with the new visor. Furthermore, the new visor gave less feeling of being isolated, better air quality, less moisture on the face and on the inside of the glass. The reduced carbon dioxide content in the inhalation air reduced breathing frequency and lowered heart rate with up to 10 beats per minute. All these improvements contributed to lower the physiological load on the welder, resulting in less tiredness.

The visor has won several design prices, including the European Design Prize. The development has continued in new steps, including several products in a product series. One important step is the development of the Fresh Air solution, which is an air filtering unit with a fan and filters attached to the waist of the welder to clean the air. This supports the welder with fresh air behind the visor. Other solutions where the visor is integrated with helmets have also been developed. Each step of development

has been taken with separate decisions for each step. In the year 2004, Hörnell was sold to 3M, a major supplier of safety equipment and with a strong market organisation. Presently, Hörnell's unit in Gagnef is the development centre for welding visors, and that unit employs some 200 persons. Sales of their welding visors are increasing and showing good profitability. More than 90 per cent is exported, although only one visor out of ten worldwide has adopted the new technology with automatically darkening welding glasses.

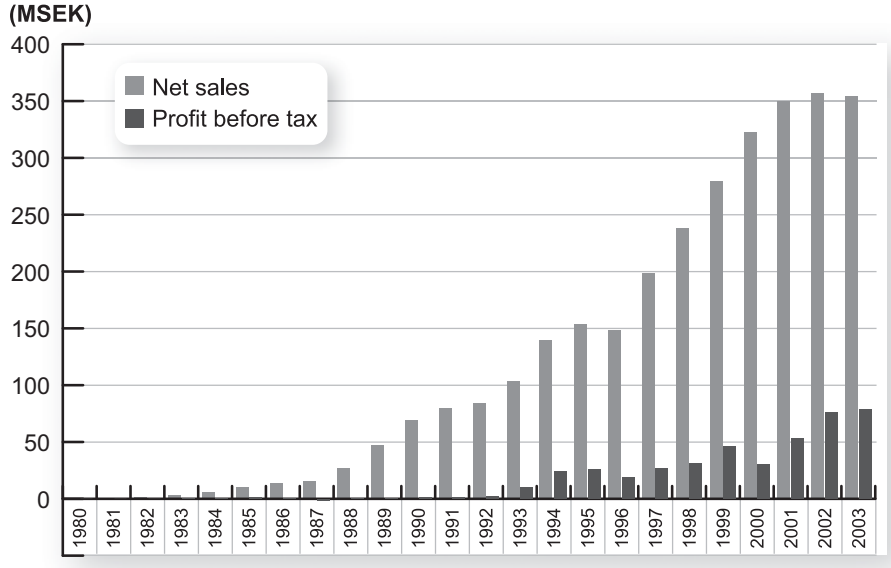

Figure 12. Turn over and profit by Hörnell before the acquisition by 3M. The figures have been collected by the former marketing manager, John Danielsson, and are based on the preliminary year reports of the company

Discussion and conclusions

This case is an example of how a low-tech product can be improved in terms of work environment, safety and usability, by means of new technology. The case also shows how a focus on the user and the work environment can improve productivity and quality for the user organisation, and thereby become a driving force for new products. It confirms repeatedly the unwillingness of large and established companies to take risks by developing innovative product ideas that are offered to them. Also, it shows the difficulties for innovators to get their ideas accepted, i.e. the unwillingness of larger companies to adopt product innovations that originate from outside their own firm.

Organising the product development project in this case was to a large extent a project that evolved continuously. It was organised in steps, and new decisions were taken after each step of if, and how to proceed. There was an overall plan to create a modular system for a group of products fitting with the visors. The ambition increased over time, and a series of products was developed. Seen from the start to present, the development activities demanded huge resources, something that is a critical difficulty for small and young companies.

Since Hörnell was a small and young company based on an innovation concerning a welding glass, the product development personnel strongly needed to build up their knowledge relating to welding visor usage. The ambition was to become leading in technology and usability for welding visors, which meant that they had to explore new fields of knowledge in which they had no experience. For this, new research had to be initiated and many discussion partners from different backgrounds and knowledge fields were needed. As earlier mentioned, this included SDRA, the National Institute of Occupational Health (NIOH), SIS/STG, the Swedish National Board of Occupational Safety and Health, Linköping University, and the Ergonomics Design Group. Today, the National Institute of Occupational Health / the National Institute for Working Life and its library is closed down, Linköping University has shut down their research in this area, the Swedish National Board of Occupational Safety and Health has decreased their work in this field and can not afford to send representatives to SIS/STG and ISO, the Occupational Safety and Health organisations have decreased their activities, and SDRA´s work in the area has closed down. The development network used in this case has been dismantled:

> Today, I can neither test eye and face protection, nor respiratory protection in Sweden since no such laboratories exist any more. Today, we have to make these tests in England, Germany and in the US. Standardisation has less support from authorities, which decreases the opportunities to run projects and influence international work environment standards. Thus, also the opportunities to discuss and create networks have disappeared. The consequence is that the development of the next generation work environment products will not take place in Sweden. (One product developer at Hörnell).

The network created was also important for building up business relationships with other companies which became sub deliverers of components to Hörnell's products.

One of the most crucial competitive advantages for the development of the Speedglas 9000 visor was the tight relationships with the customer companies and the excellent access to welders. In the Swedish culture with a direct and easy communication between management and production personnel (see Isaksson, 2008), it was comparatively easy to hold deep discussions about the welders´ perception and experiences of their welding visors. Also, new prototype solutions were tested without too much effort. Hörnell's strategy to put the user needs in focus for the new development was another important reason for the successful results. The high

ambition level regarding customer value for the welding visor through technology leadership was another success factor in the creation of a sustainable market growth. The opportunities to develop products that improve the work environment were very good in terms of customer company support, welder support and an infrastructure of work environment knowledge networks that existed and could be used. High-tech product development often requires a complex organisation in order to obtain results that are beneficial for the broad range of demands from the producing company as well as from product purchasing companies.

Universities in Sweden are supposed to collaborate with organisations in the society. This case points to important effects due to this task. The openness of Hörnell to collaborate with universities and research centres, company representatives, governmental authorities, customer companies and in particular the users of the welding visors has given the company competitive advantages in their growth and development. Their practice of developing in-house ideas in combination with adopting ideas and solutions from the outside was one success factor. The continuous efforts by the company to build a network that was used in the development contributed strongly to the results obtained. The stakeholders in the network were from universities, private industry and authorities, i.e. a Triple Helix model.[29] Many work environment products have been successful in Sweden, due to high competence in widespread network organisations. It must be noted that the conditions and organisations that existed at the time when the visor was developed do not exist any more. The innovation potential of Sweden has therefore been reduced for work environment products. This is particularly worrying considering the unwillingness of larger companies to take risks and a threat against running future innovative product development projects in Sweden.

Another reflection from this case is that when a leading company in the market, Hörnell in this case, introduces a new innovation, their market channels are extremely effective in spreading the new knowledge in the branch. No research reports can compete in that respect.

To conclude, work environment innovations have a good potential to become successful in the market, especially if they also have productivity and quality advantages. However, innovative product ideas have difficulties to be adopted by larger companies. Small and new companies normally lack resources, competence and a network for such development. In order to create commercially available products, product development personnel in these small and new companies need a broad network of persons and organisations with knowledge around the product development project. Continued discussion with persons in the network is the mechanism by which competence development takes place and by which business relationships develop.

[29] A policy model of cooperation between private industries, universities and public organisations.

Access to such network stakeholders, including governmental authorities and universities, is therefore a necessary condition for SMEs in their innovative product development processes. The field of work environment products has been successful in Sweden, due to among other things a long tradition and knowledge build up in the field, low power distance between production personnel and management and an open climate to share experiences with other companies and product developers. There has been a competent and widespread network in Sweden, but national developments over the last decade have dismantled the network of stakeholders in the field. Future innovative product development projects in Sweden are thus meeting increasing challenges.

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Editors' comments

In chapter ten the partnership between a large company and a small research organisation is brought to the fore by showing the potentiality of alliances in new product development. Challenges and difficulties arise in collaborative arrangements and the need to re-negotiate and learn along the road is identified. The author draws attention to issues of leadership in managing mutual support processes. The R&D alliance is presented as an alternative organisational and contractual form to outsourcing and acquisitions.

10 On the challenges of managing innovation in alliances

MATTI KAULIO

Abstract
In today's competitive landscape, the importance of collaborative arrangements is increasing. Some researchers have even argued that it is supply chains or supply constellations, rather than individual companies that struggle against each other. This chapter describes the process of development of the partnership as well as the learning achieved by two companies in a complex alliance, in which the competence from one company should leverage the development of a new product and where significant learning took place between the partners.

Keywords
Innovation, alliances, alliance process, critical events.

Introduction

For product-and-system developing companies, the New Product Development (NPD) alliance stands out as the first option in order to acquire complementary technologies within existing research and development (R&D) resource frames. Alternatives are the acquisition of a company, the creation of a joint venture, outsourcing or relying on consultants. Although acquisitions and joint ventures can fulfil the strategic goal of acquiring a specific technology, the drawbacks are that they require a much larger financial – as well as organisational – engagement by the company than an alliance. Conversely, outsourcing can also fulfil the strategic goal; however, outsourcing is most often used for production purposes. Finally, consultant relations are the last option. Although consultants can also fulfil the strategic goal, a consultant is mainly used to balance the workload, and does not normally include the mutual interests as an alliance.

In light of alternative organisational solutions to the issue of acquiring complementary technology and competence, the alliance stand out as an attractive and manageable middle way. Therefore, both practitioners and researchers have recently paid attention to the issue of managing NPD alliances. However, the majority of existing research on alliances addresses the strategic motives of an alliance: not how to manage and lead the process of execution of the joint innovation process in an alliance in which the resources of two (or more) organisations are used in order to develop a new product or system (Salk, 2005).

This chapter describes[30] the process as well as the learning achieved by two companies in a complex NPD alliance, in which the competence from one company should leverage the development of the next generation of products for another company and where significant learning in the middle of the process changed the ways of working together.

The specific questions addressed in this chapter are:

- Why was the alliance created?
- How did the execution phase of the alliance evolve?

From a high road strategy perspective the case study is important for two reasons. First, in the wake of outsourcing, alliances as an organisational form are increasing in use by companies. Second, alliances are also assumed to have the potential to fulfill both requirements of a high road strategy in that sense that they develop employees' specialisation and competence, and in the same time contribute to a more value-intensive product.

The chapter is structured as follows. First the product in focus as well as the alliance is presented, including a short presentation of the participating companies. Thereafter follows a description of the joint development process structured according to the logic presented by Doz (1996) of initial conditions. The process of development (in this case presented in terms of pre-study and development project) is described and also the evolutionary model suggested by Ariño and de la Torre (1998). Then follows an interpretation of the case study linked to the questions posed, all summarised as managerial implications. Finally, the conclusions of the study are presented.

The product and the alliance

In essence, an NPD alliance is a contractual arrangement where two or more organisations participate in the joint development of a product, service or system, where participating organisations contribute with resources, and where the organisations share commercial risks. An NPD alliance can be dyadic (i.e. only two partners) or be of a consortium (i.e. with multiple partners). Furthermore, an NPD alliance is based upon a formal contract, defining the initial conditions for the relationship, the governance structure, and the contributions of each partner.

The focus of this case study is the joint development process of a sub-system to an automatic guided vehicle (AGV): a small robot that transports material in production plants. An AGV is a complex system consisting of the vehicle, a number of so called

[30] The chapter is based on a case study developed from interviews by managers within both organisations, as well as secondary material such as project plans, specifications and internal reports. Data for the case study was collected by the author during 2008.

lighthouses used for positioning the vehicles, a communication system, as well as control software. To position an AGV, various techniques can be used for tracks inserted in the ground to laser. This case study deals with the joint process of development of a laser-based positioning system for an AGV: a complex sub-system including a number of specific engineering disciplines such as mechanics, optics, electronics, and software.

Two companies participated in the alliance:

- *The Large Company* – Danaher Motion AB – a business area of a large global U.S.-based industrial firm that develops, produces, and markets complex electronics and systems. The conglomerate focuses upon high-growth sectors, mainly through a process of acquisition and development. Central for the operating strategy is a set of tools and processes that are referred to as being inspired by Toyota Production Systems; these are continuously used to improve business performance in critical areas such as quality, delivery, cost, and innovation. The system is based upon five cornerstones: teamwork, customer focus, kaizen, innovation, and shareholder focus.
- *The Research Company* – Optronics AB – a medium-sized R&D company within the field of optics and electronics. The company has a history stretching back to 1974 as a partner, and offers technology scanning and consulting, product development, and production at the forefront of its technology focus. The competitive advantage of this company is its core competency in physical and geometrical optics. A project model has been developed around these core competencies, which covers the product life cycle.

In this case study, the concepts of the Large Company and the Research Company are used in order to capture the overall respective role that each partner has in the alliance. The Large Company maintains the relationship with the customer in the alliance and holds system knowledge in combination with specific knowledge about its application and the market. In contrast the Research Company invests in its internal resources and competencies and capitalises upon, as well as develops, its own core competencies (for example, through alliances).

Initial conditions

From the Large Company's perspective, the motivation for engaging in the alliance was to outsource hardware development and production as the company focused its resources on software. From the Research Company's perspective, the project fit very well with its business strategy of offering complete solutions within the optics and mechatronics area. These areas included development, production, and product

management. Additionally, the Large Company was a client in which the Research Company had been interested for long time.

The project started in 2005. The Large Company asked the following question: *What are the Scandinavian requirements for the next generation of product 'Laser System generation 5'?*

The project was organised as a pre-study and a development study. The aim of the pre-study was to answer the above stated question and to more in detail plan a possible development project for the product. In addition, in the agreement the Research Company was to take responsibility for the subsequent production of the product designed.

In project management terms (of the Large Company), the pre-study covered Toll-Gate 1-2 (TG1-2) as well as the development phase – Toll-Gate 2-6 (TG 2-6) – as can be seen in Figure 13. The arrangement with a pre-study followed by a development project is typically used in research and development (R&D) organisations in order to create a distinct decision point (in this case TG2) where a go/no-go decision is made.

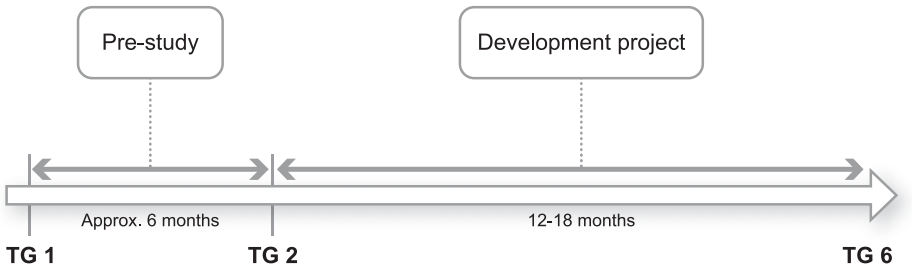

Figure 13. Overall illustration to the project (TG = Toll Gate)

From the Large Company, the intention of the alliance was that the Research Company should be referred to as product owner for the sub-system it designed. This included responsibility for the product's design, cost and production, as well as continuous product improvements. This role fit very well with the business strategy of the Research Company, as it wanted complete and long-term outsourcing relationships.

A contract was created that contained the following main issues: both the pre-study and the development phase should be delivered at fixed prices, and the cost for development should be divided depending upon the unit price of each product. This was a solution that fit both the Research Company's business concept and the Large Company's R&D strategy, where the latter partner saw it as a risk reduction strategy. Fines, via a malus system, were linked to the time-plan of the development if the

Research Company was late. A one-week kick-off meeting was held where members of both organisations participated and discussed the plan of the project.

The Pre-Study

The Pre-Study was initiated with the aim of estimating and planning a full project. A conclusion once the pre-study was completed (TG1-2) was that the initial estimations of the cost of the development project should have been revisited. The cost of development would be higher than the initially estimations. To discuss this, a meeting was held where engineers from both organisations participated and where the task was to find ways to reduce the project cost. The outcome was that a division of tasks had been decided where the Research Company was to be responsible for hardware development and the Large Company was to be responsible for software development.

The Development Project

As time-to-market was crucial for the Large Company, the development phase of the project began and, during the subsequent period of development, work proceeded as planned. During this period the Research Company worked mainly on its own where their work to a large extent was guided on the basis of a specification developed during the Pre-Study. Interaction between the Research Company and the Large Company was limited to progress reviews with little knowledge transfer, except for what was included in the specification. The relationship between the two partners' engineers was good. In the following three critical events are presented that radically changed the relation between the two companies.

Critical event 1

After three months a hardware prototype was to enter a test phase. The trial was to test the integration of the hardware and software together; specific software was developed for this purpose. Upon the basis of these tests the Research Company found that it could not guarantee full functionality of the hardware as the software only tested parts of the functionality. In contrast, the Large Company argued that the Research Company was responsible for the hardware regardless of the software, which was meant to be used as a tool for testing the hardware, and not to be used as a contract disclaimer for the Research Company. The infected situation resulted in both parties blaming each other. An extra steering committee meeting was held, and strategies for continuing the work were discussed. No immediate decision was made, however, and this discussion lagged on for another six months without any definite solution. The result was that the project was delayed eight weeks and project costs had increased.

Critical event 2

A technical problem was found at the point of delivering the prototype: the sound level of the hardware was too high. The Large Company was of the opinion that the Research Company had missed a requirement or hidden the obvious difference in the sound level from the previous version. In contrast, the Research Company argued that there was no specification of sound level in the formal specification. At this point of the project, there were no additional resources for improving the product. About a month later, the hardware prototype encountered technical problems relating to stability. The Research Company accepted that it had delivered a substandard product; however, it argued that the formal specification was ambiguous. Furthermore, it said that if the software had been able to test the full functionality of the hardware, then this problem would have been detected at an earlier stage.

The Large Company was disappointed with the lack of communication with the Research Company and expected a more open dialogue. The Research Company, on the other hand, had not succeeded in making any changes in the formal contract. In addition, the project manager at the Research Company was responsible for an over-run development budget. The CEOs of the respective companies now entered the discussion; changes in terms of project scope and time schedule were then made. Project work was being compromised.

Critical event 3

A few months later, the project was put on hold and a process of re-negotiation started; this included the scope, business terms, and engineering tasks. At this point, the engineering work was held on a very low level. The result from this re-negotiation was to re-start the project. The contract was revisited in which the major change was a new compensation-model based upon an open account, and not fixed price. The project changed name and the Research Company introduced a new project manager.

The development restarted; this time, there was a much more intense approach to communication between the two companies. The engineers of the Large Company now worked close to engineers at the Research Company and co-learning about the technical system took part. The product was delivered a year later than was initially planned. From a mechanical point of view the developed solution seemed to be a success. An innovative design had been developed. However, from a managerial point of view, and in terms of scheduling and cost, the alliance was a failure.

Managing the NPD alliance: interpretation and learning

In the following section, the two questions that were initially posed will be revisited and discussed: in relation to existing literature, to what actually happened, and to learning.

Why was the alliance created?

The first question posed was why create an alliance. From a theoretical point of view, there are several rationales for creating an R&D alliance. First, the rapid evolution of technology, in combination with the increased functionality and complexity of products, makes it hard for companies to have front-end competencies in all necessary areas of technology. Consequently, companies focus their core competencies on a limited set of specific areas where they have a critical mass of specialised engineers, and which they consider to be crucial for having a long-term competitive edge. In other complementary technology areas, companies search for other approaches for getting competencies. The main driver for this behaviour is cost, either as limitations in an R&D budget or in project budgets. The second main rationale for entering into an alliance is time-to-market. In highly competitive markets where product functionality is central, it can take too long time to develop new technologies in-house; therefore, the only realistic option is to source or acquire complementary technologies on the market. The third rationale concerns globalisation, in terms of deregulated market and a growing worldwide supply of knowledgeable workers (i.e. engineers). In addition to this contributing force, information and communication technology, as well as the global diffusion of project as work organisation, are also amplifying factors.

In the case study presented, the motivation to create the alliance was from the Large Company's perspective: to outsource hardware development and production as the company was focussing its resources on software. From the Research Company's perspective, the project fit very well with its business strategy of offering complete solutions within the optics and mechatronics area: these included development, production, and product management. On paper, it looks as though the rationales stated by the participants of the alliance could work as a fruitful basis for an engagement where both parties could benefit from a closer relationship, while simultaneously increasing their focus on their core activities. Nevertheless, the initial conditions stated from the first contract, in combination with different perspectives on what the specification actually stood for, were weak prerequisites for the future development of the alliance.

How did the execution phase of the alliance evolve?

The second question posed was: how did the execution phase of the alliance evolve? From a theoretical perspective, few studies have addressed this question of leading and managing the execution of an alliance. For example, Ring and van de Ven (1994) described a model of how cooperative inter-organisational relationships are developed, and Doz (1996) described how an alliance evolves. Ariño and de la Torre (1998) then summarised these two studies, and suggested a model of evolution of collaborative ventures (see Figure 14). The execution of an alliance, i.e. the operative work of joint development of the product or system, often includes continuous changes and re-negotiations. Innovation processes, which include aspects of learning are, therefore,

difficult to define in specific detail (Ring and van de Ven, 1994; Doz, 1996; Ariño and de la Torre, 1998). These dialectic natures of the R&D alliance, where a formal contract governs an emerging collaborative innovation process, is a characteristic that makes the alliance a difficult organisational unit to manage.

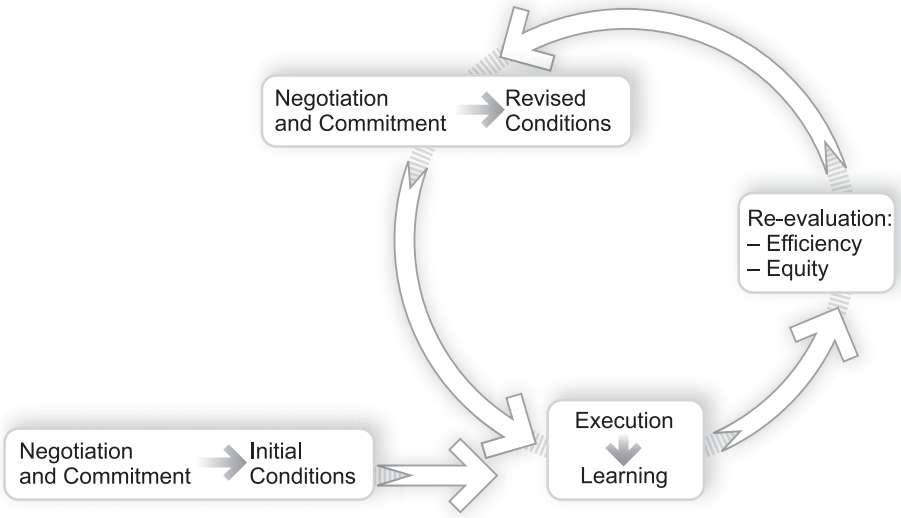

Figure 14. Suggested evolutionary model of collaborative ventures (from Ariño and de la Torre, 1998)

The Ariño and de la Torre model (1998) suggests that *initial conditions* are the result of preliminary negotiation and commitment that occurs during the formation of the alliance, resulting in a formal agreement. During the process, when commitments are executed, *learning* occurs where the initial conditions are re-evaluated in relation to the two criteria: efficiency and equity. *Efficiency* here refers to a situation where the alliance is regarded as the best option in relation to other organisational solutions (i.e. own investments in R&D, the use of consultants, or the acquisition of an entire company). This means that an alliance is considered the most cost-effective way of reaching the purpose of the alliance. In contrast, *equity* should be understood as fair dealing; here, it is seen not as an exact equivalence in terms of commitment, but as a perceived satisfactory mutual contribution – necessary in order to bring work in the alliance forward. Additionally, initial distribution rules must be set so as to provide incentives for each partner to behave in a manner that is expected of them. Changes in any of the dimensions that determines the value of the alliance to the respective parties would lead to changes in either how one (or both) parties perceive the efficiency or equity (fair dealing) of the relationship. Such changes could, for example, include increased cost for development that would diverge functionality of the product/system,

thus, creating a more favourable/unfavourable product for one of the parties or delay in time.

In the case study, two critical events preceded the third one, which actually led to a full re-negotiation loop as stated by the model. In other words, there seems to have been a plateau stage, where the relationship did not develop and where no changes were made. After a period, however, yet another critical incident triggered a re-negotiation of the working approach. One crucial aspect of reaching such a re-negotiation stage was that the project arrived at a point were matters were carried to an extreme, the CEOs now entered the discussion and *revised conditions* were developed.

To a large extent, the model presented above is illustrative and fruitful in order to describe the evolution of joint innovation processes – especially as it captures the process of re-definition of an alliance. In other words, the model can be used as a framework, perhaps not to predict where problems will occur; rather, it acts as a script for the nature of how the process will evolve.

Concluding Remarks

Summing up the interpretation made in relation to the two posed questions the following concluding remarks can be made.

Starting with the specific learning by the companies. From the Large Company perspective, its specific learning is mainly related to the difficulties of outsourcing hardware. The strategic idea behind the project was to contract out hardware development, as this part successively decreased in importance for the company in favour of software: a well-known situation in many companies. This division of engineering areas that, in theory, seem to be straightforward and obvious, was shown to be considerably more difficult in practice. In contrast, from the Research Company perspective, its specific learning is related to its strategy and project/process management. It is a complex task to be a Research company, which successively builds and capitalises on its own core competencies through alliances while, at the same time, provides value for its alliance partner– depending upon the partners.

From a more theoretical perspective, the following concluding remarks can be made. First, the case study indicates (what theory implies) that there is a relationship between the initial conditions and changes. Too rigid initial conditions (such as fixed prices or lack of communication) can lead to inflexible behaviour by one partner leading to a situation where the trust is diminishing between the partners. For example, in the case study, the fixed price deal seems to limit the behaviour of the Research Company's engineers, which decreases communication with engineers at the Large Company in order to avoid additional functionality of the product. In this case, this was not expected by the other party, which lead to a situation where the expectations of one partner was on open communication, and the behaviour of the other partner was formal

communication. The case study also confirms the model in the sense that it included a "full loop": a negotiation and commitment of the contract, project scope, cost, and tasks. In other words, the alliance does not follow the simple linear plan-execute model of a project, simply because an alliance should simultaneously fulfil the multiple business-related goals, and ensure that the alliance is based upon resources from two (or more) different organisations with different competencies and cultures. Moreover, during the alliance process, change is likely to occur. Learning takes place both regarding how to cooperate and relating to the product that is to be developed. Changes and/or technical difficulties in the product will automatically lead to new and/or additional deployments of cost to one or both partners. This will then lead to the re-evaluation of the alliance, a process that initiate another re-negotiation loop.

Secondly, one cannot over-emphasise the difficulties of outsourcing sub-system development, in which there is an intricate relationship where the contractor (i.e. The Large Company) is contractor both on an overall level, as well as it acts as the sub-supplier of software to the sub-system developed by the Research Company. Interfaces between the modules of the systems, as well as test procedures, will become crucial areas and risk areas. The intention from the Large Company that the Research Company should be the product owner of the sub-system was never fully analysed by the Research Company, which illustrates the difficulty (from both sides) in managing the transfer of a sub-system from one organisation to another.

Third, in this type of R&D alliance that includes complex innovation processes, there is a need for interplay between the business perspective and engineering perspective in each company. In the case study, decision forums existed such as a steering committee; however, it reacted too slow thus leaving the engineers in a situation of continuing work without knowing the project parameters. Contractual agreements (i.e. initial conditions) need to be aligned with how the work process is intended/thought to evolve. For example, malus system in the formal contract (i.e. fines related to late deliveries) seems to be counter-productive to the logic of an alliance that is based upon mutual contributions and cooperation.

Fourth, engineers need to communicate directly. In order to function, the participants in an alliance need to hold at least a common denominator of shared knowledge. What exactly is this common denominator is hard to specify. Therefore, enough slack resources must exist, as well as communication possibilities in order to learn from one another.

Fifth, work in alliances posed new requirements upon the individual. On the one hand, it is engaging and stimulating for the engineers to participate in joint development activities, as it represents a new arena for innovation that can stimulate creativity and innovation. The individual also gets more responsibility, as well as he/she must act as a representative for his/her own company in relation to the partner. On the other hand,

however, since the alliance is embedded into the administrative system of two organisations; difficulties and conflicts will emerge that need to be solved within the alliance.

Finally, from a high road perspective strategy, the alliance stand out as one potentially interesting organisational form that actually may fulfil the two requirements of simultaneously develop employees' competences and contribute to the creation of more value-intensive products. One aspect that seems particularly fruitful for future investigations are the division of labour between what in this chapter is referred to as the Research Company and the Large Company. Another aspect for future research is how to properly manage the type of emerging development process that an alliance represents. Contractual-based alliances such as an NPD alliance, can be said to form a distinctive and growing field of investigation where the study of strategic, managerial, and leadership issues is considered to be one of the most important management issues today.

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Editors' comments

Chapter eleven shows the importance of people. Product development is planned, and gate systems are followed. Serious problems do occur, and autonomous employees repeatedly save the situations by compensating for routines and for the gate system's weaknesses. This is about opening one's eyes to what is well known so that it can be seen and, thus, changed. The authors point to uncertainty inherent in product development, and to the capability of regaining balance. This is not only done in-house; it also involves subcontractors and suppliers. Thus, norms, commitment, and reciprocity are the centre of interest.

11 Creating cars and maintaining norms: Combining flexibility and control

XIANGHONG HAO AND TORBJÖRN STJERNBERG

Abstract
Many car companies aim at producing automobiles for the prestigious luxury market by manufacturing premium products that offer added value beyond mere transportation. How does the Volvo Car Corporation (VCC) organise its daily project work in order to reflect such value in its cars? In this chapter we argue that the manufacture of cars for this market requires flexibility that is achieved through norms of reciprocity, the ability to fight fires and a strong commitment by the engineers to project goals. Group meeting structures and physical proximity of personnel strengthen these capacities at VCC. However, it is difficult to transmit such norms and practices to the suppliers that cooperate with VCC in product development.

Keywords
Product development project, automobile industry, flexibility, control.

The challenging balance

In product development in the automobile industry, there is constant tension between flexibility, on the one hand, and control, on the other. For premium cars, manufacturers often have to make design decisions late in the development process in order to take advantage of the latest available technology. This requires flexibility. However, manufacturers also try to avoid costly late design changes. This requires control through formal planning. Thus, achieving the right balance between flexibility and control is crucial. Such a balance must be based on strong commitments by the people involved in the projects where trust, a sense of responsibility and a willingness to give and receive help in and between projects are essential elements of the project culture.

In this chapter we describe how VCC struggles with achieving such a balance. We focus on two problems in a project at VCC and describe the tools the company used to solve these problems. Thus, we address the following question: How does a project organisation manage the contingencies that arise when trying to balance flexibility and control?

Achieving the right balance between flexibility and control requires dealing with the challenge of integrating actions, not only in VCC's product development organisation but also in its relationships with its partners and sub contractors. Here we focus on the sources of complexity that arise from dealing with problems where there is a need to coordinate activities across organisational boundaries. Our main conclusion is that such problems require a project culture based on norms and behaviour that are part of the high road strategy that this book addresses. At VCC, this strategy means the company combines organisational routines with trust in employee commitment and competence as they deal with project problems.

In the following sections, we first describe our data collection methodology, followed by a description of two major contextual changes that influence the project – the reorganisation of the product development organisation and the increased use of outsourcing. We next explain the VCC gate system – a mechanism the company uses for dealing with complexity in product development. We then describe how two problems were handled at VCC. In our analysis, we describe the group meeting structure and the organisational routines that are based on, and support, the norms of commitment and trust necessary to balance flexibility and control.

An ethnographic approach

Using ethnographic methods, we followed the latter work stages in a facelift project, called P2004, at VCC for the model platform known as P2 that is used for several car models. Our observations were preceded by a series of interviews at one of the line units in the product development organisation. Thereafter, during seven of the 36 months of the product development process, we observed meetings, shadowed project engineers and project managers, and interviewed project participants about the problems described in this chapter.[1]

Throughout our research, we were impressed by the willingness of the VCC people to share information about project successes and problems and by their trust in us as we observed and recorded sensitive moments. Their openness is a strong indication of their confidence in their own abilities and in those of others. We believe this attitude reflects the VCC norms and culture we studied.

[1] In this context, shadowing means that we followed and observed people as they met other project participants and tried to solve problems (cf. Czarniawska, 2007). We also interviewed participants about their perceptions of the meetings. We participated in different meetings that we recorded except for a few occasions when sensitive information was discussed. We made our analyses by describing processes and selecting quotes from interviews and discussions. We presented our descriptions and analyses, first, to each respondent individually, and then, at a later stage, in workshops to key persons in the project. Thus, we checked the validity of our results by comparing our descriptions and analyses with the participants' reactions to them.

Reorganisation – a source of complexity in the studied project

During our study, the product development division reorganised by adopting the new product development organisation known as New Generation of Product Development Management (NGPDM). The goal of this reorganisation strategy is the promotion of core engineering capabilities for use in developing systems in cars that can be shared across models in the Ford family. Using this strategy, VCC, as an organisation, asks, for example: "How can the best climate system be created for all car projects?" rather than "How can the climate system be developed for a few specific car models?" The rationale for the new organisational principle was the expectation that in the system teams, technical competences could be strengthened by specialisation, which in turn would make it possible to develop advanced components and systems to be used in a wide range of models.

In this reorganisation, the line organisation was strengthened. People were relocated in organisationally and physically close communities-of-practice (Brown & Duguid, 1991). This arrangement supported the cooperation of experts in similar technical areas. These experts were expected to develop standardised systems or solutions useful as a base for further applications in the projects. In the previous module teams, experts from different areas were located in close proximity, in order to work together on a module for one or a few car models.

In the new VCC organisation (after NGPDM), each functional area selected a representative to represent its sub system on a project coordination committee in order to integrate the specialists in the line organisation with the project. These representatives worked with a project manager who had responsibility for coordinating the activities in each sub system for a specific project, such as P2004.

Seemingly, this major organisational change from module teams to specialist teams during project P2004 was managed without major disruptions. We believe that this smooth transition is indicative of a project culture where strong norms may create stability across organisational boundaries – norms that make the organisation less vulnerable to changes in organisational structures and routines.

Outsourcing – leading to complexity in product development

Outsourcing has become very common in the last decade, including at VCC where many ready-to-assemble components are sent to the assembly plants for final installation. In terms of value, VCC manufactures only about 25 per cent of each car's components. The other 75 per cent are purchased from about 345 external suppliers located in approximately twenty different countries. Outsourcing at VCC means

suppliers do a large part of the product development, and the VCC product development teams need to integrate work sourced from many different companies.

This reorganisation of product development and the outsourcing of components have created higher organisational complexity, characterised by an increased demand for coordination and cooperation, both inside the company and between the company and its external partners and networks. Coordination is required in working with companies that operate in cultures foreign to the norms that have developed at VCC over many years.

Controlling complexity – the gate system

VCC's product development utilises a gate system – an officially scheduled review point system, based on breaking down the product development work into systems and components development in sub projects (see Table 7). The gate system facilitates problem solving since the gates act as alarm clocks in the process of meeting deadlines.

Specification Freezing, a term used in the VCC gate system, means that there is a point when the product specification has to be determined, i.e., frozen. Thereafter, at least in principle, no changes are allowed in the product specification since additional changes will affect subsequent tooling and materials purchasing.

In the gate system, the colours green, yellow and red are used to signal the state of the development work. The green point indicates approval, the yellow point indicates more adjustment is needed, and the red point indicates change or improvement is needed.

Problem 1: A supplier's product is not developed on time

Two problems illustrate the difficulties that may arise when VCC has to balance control and flexibility in product development. Each problem involves product development by suppliers.

The production of seats is outsourced, which means that the supplier is responsible for the realisation of the seat design according to the requirements formulated by VCC. The system development of the Alternative Seat Generation (ASG), according to the time plan, should have been frozen at Gate 2; however, it wasn't frozen until 15 months later. This meant that the delivery of the seats for the testing of the car was also delayed.

At Gate 7 (two years after the planned specification freezing) the project still had not received the seats. The testing of such functions as comfort, safety, etc. was delayed. In such a delay, potential problems may not be identified on time. Despite using simulation equipment and other tools, many tests can only be performed when every component is in place.

Table 7. The gate system used in VCC for facelift projects

There are nine gates for the development phase and three gates for production. (There are no G3 or G4).

G-3	Kick off
G-2	The scope of work is defined for the project, including the cost of testing cars, the technical characteristics and the various possibilities..
G-1	The systems should have been verified.
G0	is open to put the outer shell and the inner shell together in a car.
G1	is open to proceed from component development to re-tool.
G2	is open to buy materials.
G5	Series production.
G6	Pre-tryout.
G7	Tryout.
G8	The production starts.
G9	The cars are delivered to the customers.
G10	The project ends.

How was the problem solved?

A very high priority was given to solving the problem at Gate 7. Tasks that usually took a month or longer were completed in one week of intensive work.

- Meetings: The issue was discussed intensively right after Gate 7 at different meetings – project meetings at P2004, project meetings at different units (e.g., Interior, Purchasing, Electrical and Testing) and meetings across several units (e.g., Interior with Purchasing and Interior with Electrical).
- Help across projects: A colleague from another project on a different platform helped the P2004 system task leader with seat purchasing. The system task leader was then able to explain to the supplier exactly what needed to be done.
- Communicating a sense of urgency to the supplier: The Interior Unit arranged several face-to-face meetings and factory visits with the supplier to make sure that the supplier took the issue seriously and would speed up the delivery of the seats.
- Extra efforts from the employees: After the seats were delivered, the Testing Unit did extra work to test and verify the seat functions, which was followed by the property and comfort adjustments.

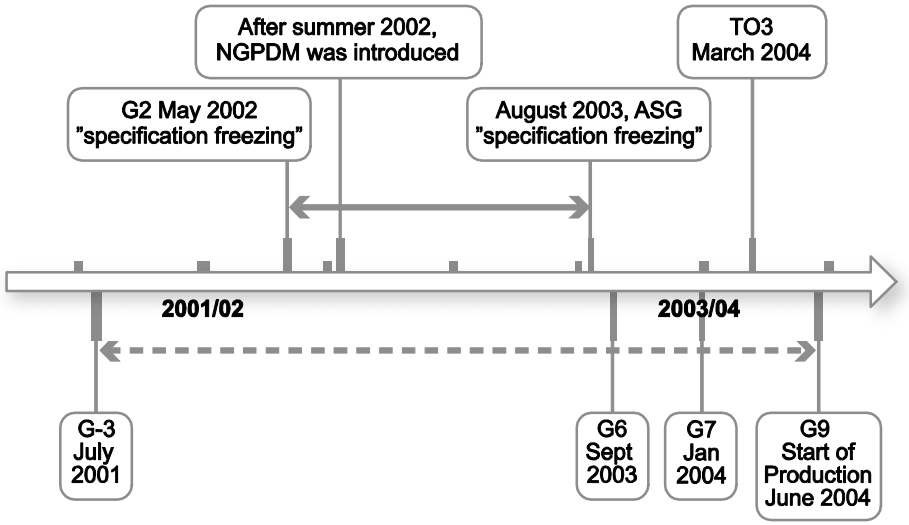

Figure 15. The delay of the Alternative Seat Generation (ASG) sub project[31]

Problem 2: New material cannot be proved durable

With a supplier, VCC developed and tested a new material for the exhaust manifold. The new material had never been used in turbo engines, such as those in the P2004 project. However, as it was known that the new manifold material would save 70 USD per engine, the project management decided to use the new material despite uncertainties about its durability. A series of tests were performed, as part of the project, to verify the durability of the new exhaust manifold.

After almost one year of experiments and testing, the project reached the point of no return – the point at which no changes in the hardware (in this case, the manifold) are allowed since all the subsequent optimisation and certification work is based on the hardware's attributes. Late changes in the hardware create disturbances that lead to costly and time consuming rework of product development activities linked to previous stages in the process.

Of course, the ideal way of dealing with uncertainty stemming from using components that are not fully tested, according to the project leader, is to run parallel development

[31] The thickest arrow in Figures 15 and 16 indicates the timeline of the P2004 project. The lower dotted arrow shows the start and end of the project. The upper arrow in Figure 15 indicates the time period from the point that the seat specification should be frozen according to the gate system to the point when it was finally frozen. The upper arrow in Figure 16 indicates the time period from the point that no hardware should be changed in Powertrain to the point when the project made the decision to replace the nondurable new manifold with the old, durable one. TO3 means Try-out 3, i.e., the 3rd time for testing the assembling of cars on the assembly line.

of the options: in this case, of all properties related to the new manifold on the one hand, and of all properties related to the original cast manifold on the other. If the new manifold material fails, then the project can return to the original manifold material without any delays in the project. However, there were insufficient resources for such parallel developments. All resources were devoted to the new manifold, which meant that all the engine software programs were optimised in accordance with the new manifold.

Unfortunately, after Gate 7, 14 months after the point of no return and only 18 weeks before the production start, the new manifold material still failed under stress.

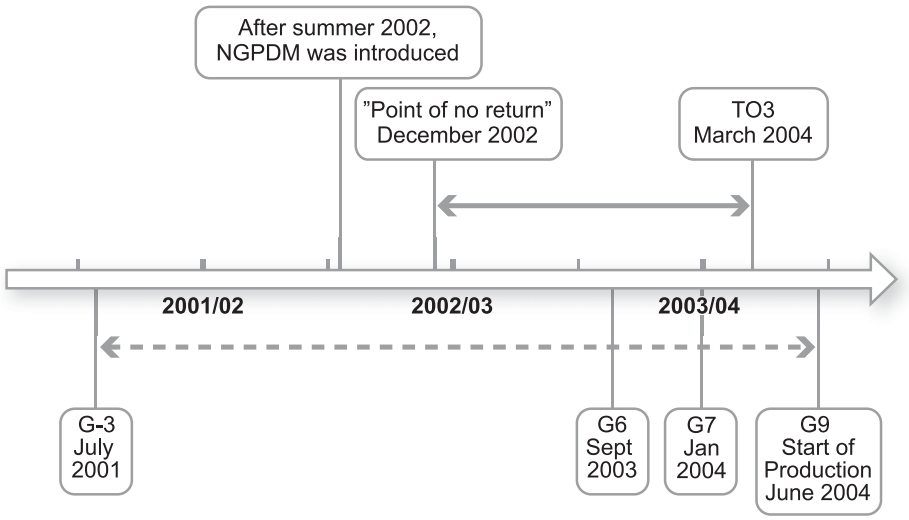

Figure 16. The delay of the manifold sub project[32]

How was the problem solved?

- Continuing testing: The hardware system task leader at Powertrain (i.e., the department responsible for developing engines and related parts) discussed the situation with the supplier who was still optimistic about the new material. Therefore, the decision was to continue with another round of tests.
- Developing an alternative: At the same time, the Powertrain software system task leader made an action plan in case of a materials change although he hoped there would be no such change.

[32] See the Footnote of Figure 15 for an explanation of the details of both figures.

- Securing extra resources: The Powertrain sub project leader demanded guarantees of extra help from the Powertrain line manager and also from the P2004 Technical Project Leader.
- Project management assumed responsibility: At Tryout 3, 15 months after the point of no return and 13 weeks before the start of production, the worst thing happened – the new material still failed. At this time the project management team decided that the project would return to the original cast manifold. The software system task leader reconfigured all the software properties related to and influenced by the change in the hardware.

The rhythm of product development

Both problems concern failures to meet the deadlines established by the gate system. In the first problem – the late delivery of the front seat – the focal point of complexity was the interdependence between four units: the external seat suppliers and the VCC Interior, Electrical and Testing Units. Until the front seats were assembled in the cars, testing could not begin. Technically, all these areas were dependent on one another in a series where one function provides input to another function and receives feedback from yet another. The delay interrupted the cycle of feedback among these functions. Improper testing of the front seat meant that misfits in other areas of the car might be overlooked.

So the question is: Why were the seats not in place?

Most respondents offered the same explanation: The failure to allocate enough resources to the early phases of the project. This understaffing at the beginning of the project meant more staff was needed toward the end of the project. In the later phases of the project, many people are needed to solve problems in very short periods of time; however, the people who work in this phase should be working in the beginning of the next project. So the yearly facelift projects are always understaffed at the project start, resulting in late decisions and a greater workload for downstream activities (e.g., making tooling adjustments, testing components and the complete cars, and detecting late problems). This failure is referred to as a failure to front-load the projects. According to the respondents, this staffing problem is a vicious circle in each facelift project – a problem created at the beginning of a project leads to circumstances at the end of that project that recreate the same problem at the beginning of the next project.

Many respondents described this vicious circle as typical. In fact, VCC's formal system, Business Management System (BMS), describes the different project phases, their expected results and the required documentation for every gate. Front-loading is prescribed. But there are many problems that arise in people's everyday work that they solve, not by following a prescribed routine but by following their experience and established practices.

At VCC, it is acknowledged and accepted:

1 that the project will lack engineers in the early development phases;
2 that in the early phases, people are allowed to work toward the so to say perfect world without making timely decisions and without considering the consequences of the late decisions; and
3 everything will be all right in the end, and a good car will result.

As Giddens (1976) points out, recurring practices are not random activities, but are more or less routine and expected. Such practices become part of the structured social context, which is both enabling and constraining. The recurrent practices at VCC were enabling in the sense that the development of the project participants' practical knowledge was accepted as knowledge and was applicable to future projects. However, the recurrent practices were constraining in the sense that the vicious circle was the only way of organising available, so people took it for granted, and it became the practical knowledge that Tsoukas (1996) describes – an established rhythm that works.

The impact of uncertainty

The front-loading problem was not just about obtaining engineers for the system development phase. It was also about uncertainty at the project start, especially in the system development phase. Many individuals and several companies were involved in the project. The relationships between the various parties were complex, and may (or may not) have involved formal contracts. The existence of the multiple parties in the delay of the seat's problem introduced uncertainty because of ambiguities in the specification of responsibilities, in the perceptions of roles, in the communication across interfaces and in the mechanisms for coordination and control. For example, a mismatch of management levels between VCC and its suppliers caused subsequent difficulties in trying to resolve the problem. On one occasion the VCC technical project leader met with the members of the supplier's project organisation who did not have the authority to deal with the problem. One conclusion is that a match between hierarchies, and thus, authority, is essential when a company meets with its suppliers.

P2004 had a permeable boundary in the sense that the project's organising processes had to be adapted and changed in response to environmental changes, whether it was an outsourcing policy change or a new way of organising the project. The project had difficulty in determining which of these environmental changes would be important. It broke with the old ways of organising, and many participants had to explore new roles and new ways of coordination. The reorganising of the product development function described above added to the complexity

As a result, all these factors made the planning and management of the project complex. To manage these strategic changes (i.e., the increased outsourcing and the organisational changes) P2004 had to break with established management procedures at

several levels. Thus, in many ways, P2004 was a training ground for new working procedures.

Balance-regaining capability

In addition to the project problems, the project participants' remarkable ability to conduct the P2004 product development work should also be noted. Despite the parallel changes in the external environment of the project, such as the outsourcing trend and the reorganisation of the product development function, the project participants successfully completed the project. It seems that in such a turbulent situation, norms such as commitment, open communications and mutual support may compensate for the uncertainties caused by the changing routines and structure.

A critical collective capability for effectiveness in continuous organising requires that participants adapt prior experience and standard tools to the specifics of a current change process. We call this a balance-regaining capability where managers break free from current routines and rules so that they can solve new problems. They create new routines and rules for a project, often in a process that may be described as a firefighting operation.

In the P2004 project, much of the work of building communication networks occurred among people at the different levels of the projects, including those people responsible for components, the systems and the overall project. They did the extra work of solving the unanticipated issues and providing the links for knowledge transfer.

The manifold materials problem shows that the project team needed flexibility in adapting the development process to the environmental uncertainty. Such flexibility required the team to recognise and take advantage of new opportunities. To respond rapidly to unanticipated changes in market conditions and advances in technology, the project participants had to be aware of the opportunities for new products and processes.

Lundin and Söderholm (1995) claim that flexibility in the later, execution phase of a project is commonly considered undesirable. They describe how a project moves from relative openness at the beginning to relative closeness in the execution phase. In the execution phase, predetermined action should be carried out according to the plans, in planned isolation. In P2004, the emerging technical opportunity disturbed this planned isolation.

Taking advantage of the elasticity in a sub project deadline can be a useful way to improve the effectiveness of projects although too much elasticity in deadlines may threaten delivery of the total project on time and within budget. However, utilisation of opportunities that increase the value for owners and users may ultimately prove more effective than stricter adherence to the deadlines set early in the gate system.

In the manifold materials problem, two questions were relevant:

1 How long could the project managers maintain their unwavering commitment to the best components, not settling for inferior ones?

2 How long could the project managers let the innovative flexibility proceed before control had to be exerted?

Firefighting and Improvisation

The decision to gamble on waiting until the late phases in the development process to solve the technical problem was based on the knowledge that resources might be mobilised to deal with the failing material at that time. In VCC, there is a strong norm of reciprocity: “You need help this time – and I know that you will help me when I am in trouble during some future project”. And there is also a strong commitment among team members to the project: “I expect that I will need to work overtime if there is a crisis in the project”.

Thus, the project managers and project members counted on being able to mobilise unplanned-for-resources when interpreting the project plan's decisions about deadlines as specified by the gate system. The firefighting and improvisational capacity, characterised by using skunk work, social capital and gut feelings, provided flexibility in the product development.

As the problems described above reveal, an engineer is likely to experience frustration and stress if he or she faces severe difficulties that must be solved quickly. At such times, engineers may ask others for help, resources or alternative solutions. They may go outside the normal procedures by bending the rules or by allocating extra resources unofficially. In so doing, they bank a favour to be redeemed when they themselves have a similar problem. Working in this unofficial manner is an integral part of the project work at VCC. Such unofficial improvisation is one of the main elements in what the company proudly calls its firefighting capability.

In the beginning of the project, when a problem arose about poorly defined roles and responsibilities between the company and its suppliers, there was no decision authority in the project group that could bring the problem to the table. People made informal, under-the-table contributions in the form of skunk work just to get the job done; an issue was only brought to the table when a short term goal, such as a deadline for a try-out or an audit, was not met. New problems received extra attention, people were assigned to solve them, and discussion meetings were held to generate ideas.

The manifold materials problem illustrates how the organisation allowed project participants to create the time, space and opportunity to experiment with new, innovative and possibly more effective ways of performing their work. At VCC, improvisation characterised their way of coping with uncertainty. Intuitive judgment especially was applied in loosely structured situations where relevant information was

lacking or where time pressures compelled people to act quickly. In such situations, people use their intuitive decision making skills and improvisational capabilities.

Meetings upholding norms

As illustrated by the two problems, project management at VCC is based on the ability to balance control, achieved through formal planning, with flexibility, achieved through mobilising resources creatively. One tool in this balancing act is the meeting system where problems are identified and discussed, and company norms are communicated.

In the product delay problem, it was evident that initially hierarchical control by the project management group was lacking. For example, the seat specifications were finally frozen, but only after a delay of 15 months. However, in the later phases of the project, especially after Gate 7, such control was regained in the extensive meetings between different functions and with the suppliers. In this way, meetings can be a stabilising and controlling mechanism for project progress.

The meeting system is also important for maintaining control when many development activities are outsourced. The outsourcing decision requires interaction between VCC and its suppliers, but the management of the relationships and the operational implementation of the actual contacts among the partners are very complex. From an operations perspective, it is typical that control over delivery precision may be lost when work is outsourced. Assembly quality control and problem identification/investigation are also significantly more complex when major subactivities are outsourced. It is difficult to conduct continuous improvement, team building and problem solving across business boundaries. Projects teams may become involved in unfamiliar, cooperative situations with new suppliers. The only solution is for the projects to find their own ways of establishing functional relationships with suppliers. The meeting system provides stability by transforming complex and difficult problems into manageable ones. Meetings are the arenas for gathering and sharing facts and information, asking for and making commitments, and matching problems to problem solvers. At VCC, the meeting structure focused on the relationships between problems and the owners of the problems, between different functions, between VCC and its suppliers, between costs and deadlines, and between projects and line organisations. In group meetings, these relationships become more manageable.

Various respondents claimed that meetings taught them how to solve short term project and supplier problems. These meetings functioned as forums for the dissemination of knowledge and information, both related to the VCC and to the industry. The long term goal was to make the suppliers feel they were part of one company (VCC), and that disagreements could be settled in the same way they were settled in their own companies. The suppliers attended several of the meetings described in Table 6, such as the audits. Of course, on the level of sub projects, there were various meetings with the

suppliers where VCC tried to communicate to them the VCC and P2004 objectives, goals and value system as well as to create a sense of urgency so that the suppliers would consider the effect of their activities on the project performance.

However, as shown in the problems described, especially the product delay problem, such meetings with suppliers were still difficult. The norms shared by VCC people were not shared to the same extent by the suppliers. Thus, to make meetings function as tools for creating flexibility and for dealing with crises and contingencies, certain understandings had to be reached with the suppliers.

Handshaking

A major purpose of meetings is to gain commitment from people – a process at VCC that is sometimes referred to as handshaking. This means that a problem is recognised and communicated, often across organisational units. Then an individual on behalf of his or her team accepts the responsibility for the problem and the commitment to its solution. This acceptance is symbolically acknowledged at VCC as the handshake.

Handshaking, as a process, deals with clarifying the nature of the cooperation – the expectation of, and the possibility for, cooperation among the parties. In such a process, the parties reach an agreement about the willingness to take responsibility and the promise of contribution. Handshaking, as a governance mechanism for a partnership, conveys trust, commitment and equality, all attitudes needed to achieve quality in a cooperative relationship.

We argue that the major contribution of handshaking is that people may divide the work by defining and clarifying their roles and responsibilities (both in a project and with suppliers). They can establish reporting relationships that create communication channels and can develop consultation procedures that efficiently contribute to the desired cooperation. Handshaking has a significant symbolic aspect – the handshake refers to a personal commitment that is mutual and that will be honoured. It is a very strong and traditional symbol of promise and trust – an eternal promise in our Scandinavian culture.

Table 8. Meetings

A. "Check-out-what-is-going-on-in-P2004" meeting
– the Technical Project Meeting, TPM
The project team meets every Wednesday morning for four hours. The TPM's aim is to function as a project level executive decision forum. The participants are sub-project leaders (DPLs) who are supposed to go to the TPM in order "to report", "to give information", "to find out what's going on", "to say what one has to say", and the like.

B. "Now-we-do-our-homework" meeting
– the Technical Project Meeting Unit, TPMU
For each function, there is a corresponding meeting (TPMU) every week. TPMUs are line organisation forums for each system and its sub-systems. During these meetings, problems are presented and entered into a formal reporting system.

C. "Homework-checking" meeting
– the Design Review Meeting, DRM
The DRM exists at the project level. Design reviews are a series of verification activities that are more than engineering inspections. Every Wednesday afternoon there is a four-hour DRM with the sub-project leaders (DPLs) and the people responsible for system development (SUs), chaired by one project leader and a representative from the Complete Car Unit. The DRM is an effective way to anticipate problems and prevent misunderstandings; it also provides a mechanism for monitoring progress and reporting to management.

D. "Only-when-you-promise-to-meet-target-cost-then-you-can-go" meeting
– the Cost Review Meeting, CRM
Cost management during the latter phases of the project are performed by project controllers. They set up CRMs to examine whether the project is meeting cost requirements. The engineers have to explain and justify differences from cost targets.

E. "You-never-know-who-can-come-up-with-a-good-idea" meeting
– the Work Meetings in each section and across sections
A number of meetings exist at the intersection between all sub-systems. These meetings also serve the function of formulating and maintaining a broad working agreement on the project and the necessary steps in the design of the product.

F. "Throwing points" meeting
– the Volvo Quality Documentation Centre, VQDC
In addition to the DRMs, there are extra VQDC meetings when many "events" and "fault points" are discussed.

G. "TPL-is-present" meetings
– Styling Review Group, Audit and meetings with suppliers
At formal project level meetings, one TPL is always present. After such meetings, that TPL reports all information as soon as possible to the other two TPLs who are not present. They localise the problems, determine the answerable people, update the current status of a certain function or the whole project, express concerns, and ask for help.

H. "Hallway-talk"
– informal conversations between people
In P2004, the majority of settlements are not worked out during formal meetings, but rather during informal meetings held in advance of the formal meetings. The formal meetings therefore are the sites for the agreements' symbolic and official "handshaking". So the informal and formal meetings play different but equally important roles in ensuring that concerted action is taken.

I. "Handshaking" meeting
– the Audit
There are three types of Audit meetings: one is the Audit organised by the project coordinator after try-out; the second is the Audit that is reported to VCC senior management; the third is the Audit with the suppliers.

Conclusions – The VCC high road strategy

We have pointed to overlapping elements in the VCC norm system that were important in balancing control with flexibility. We have identified these elements in the norm system as the capacities for firefighting and improvising. We have also noted the importance of the meeting structure with its symbolic outcome, the handshake.

According to Barley (1986) and Giddens (1984), every organisation constitutes a bounded locality with distinctive qualities that provide cues for work behaviours. Thus organisations have distinctive norms, routines and rhythms for the composition, sequencing, and pace of work. These cues constitute the social context of work (Ancona & Chong, 1996) while the spatial organisation of work constitutes its physical context. These contexts are mutually dependent – product development at VCC takes place in an open space landscape and the engineers relocate to the new units and work processes in the NGPDM organisation. The VCC glass walled meeting rooms are also open and thus contribute to the transparency in the open social climate. For example, the agenda of a technical project meeting, accessible to authorised personnel before the meeting on the internal IT system, is projected on a screen that can be seen by both meeting participants and passers-by. Decisions at a meeting are recorded on a parallel screen and are made immediately available to the participants.

As this discussion shows, "Volvo ways of working" are characterised by working toward achieving a balance between flexibility and control based on the high road strategy identified in this book.

Interaction: the new organisational structures and routines require interaction between different functions. The daily project work requires redrawing module boundaries. The meeting system at VCC provides an arena for such interaction, enabling quick problem identification and resolution. An important complement to the formal meetings is the trust among employees that they will help others, and in turn be helped by them.

Flexibility: Project participants are allowed to bend the rules in order to create and mobilise resources for innovative activities. Such flexibility is possible so long as the norms of commitment and responsibility are widely shared, and so long as each participant understands how such rule bending contributes to the goals of the project.

Cooperation: VCC realises that the suppliers have a large effect on the quality and price of the products. One important ingredient of a high road strategy is to involve suppliers in working together to generate value in the products. This strategy is translated into daily cooperation with suppliers by providing them with technical assistance – that is, skunk work where VCC people help suppliers solve problems. Of course, this way of working requires each individual's willing commitment to extra work and to value creation.

Appreciation of the firefighting spirit at VCC reflects the value of allowing project members to seise emerging opportunities rather than to minimize deviations from an initial plan. The development process, which is an unpredictable and nonstructured process of knowledge creation, gives employees autonomy and influence in their work with the products and processes.

However, this appreciation poses a certain danger in the high road strategy. As shown in other studies of high commitment work strategies (e.g., Walton, 1981) high commitment may mean that positive and engaging work can lead to employee burn out. At times, VCC has actively worked with programmes dealing with this risk (Dellve & Stjernberg, 2008). In fact, the origin of our study was partly based on VCC product development managers' concerns about stress that might make capable project members unwilling to take on challenges that could lead to work life imbalance.

Thus, a high road strategy often juxtaposes the possibility of a fantastic panorama with the risk of a calamitous failure. Therefore, adopting such a strategy requires norms of trust and commitment to innovation projects by the project members as well as acceptance of norms of responsibility and concern for project members by their employer. Although our focus in this chapter is on the first aspect – the commitment and responsibility of the project members – we also underline the importance of the latter aspect. The employer has a responsibility to meet the employees' high commitment to work with an equally high commitment to their welfare.

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