

# OIVALLUS

Interim report 2

ENVIRONMENTAL COMPETENCE

EXTENSIVENESS

CUSTOMER COMPETENCE

MULTIPLE SKILLS

TAKING RESPONSIBILITY

FOCUS ON PEOPLE

GLOBAL SKILLS

INTERACTION SKILLS

LEARNING

LANGUAGE PROFICIENCY

SELF-DIRECTION

ENTREPRENEURIAL MINDSET

DESIGN COMPETENCE

ATTITUDES

CUSTOMER COMPETENCE

INITIATIVE

EXPERTISE

PROBLEM-SOLVING

CUSTOMER FOCUS

CREATIVITY

QUESTIONING

NETWORK SKILLS

PROJECT SKILLS

FLEXIBILITY

SPECIALIST SKILLS

VALUES

Skills synergies arise in groups. Future education will support and promote working together.

## SUMMARY

Oivallus - literally 'Insight' - is a project launched by the Confederation of Finnish Industries EK. The second interim report of Oivallus focuses on future competence needs of businesses. Competence needs are changing because the ways of working are changing. Jobs are becoming less and less routine and fewer jobs can be done 'by the book'. The future working life resembles film making: work is increasingly done on a project basis in collaboration with various contributors. There is also a tendency for tasks to become more variable.

In order to succeed in creation and innovation, industries need to acquire technology competencies, business competencies, environmental competencies and service competencies. Successful partnerships are built when the skills and the will to act global are combined. It is becoming increasingly important to focus on users and enhancing user experiences. This requires new methods.

The ability to apply network skills is the foundation of future work. Network skills find their application in the ability to find, utilise and distribute knowledge. At best a learning network can utilise knowledge to identify new opportunities and find solutions for challenges. The key to success is the ability of people with different competencies to work together. Succeeding depends on having a good attitude.

Working as a network, learning from one another and building on existing ideas are skills that require practicing. These skills should be developed from early on throughout education.

## TIIVISTELMÄ

Oivallus-hankkeen toisessa väliraportissa syvennytään elinkeinoelämän muuttuviin osaamistarpeisiin. Osaamistarpeet ovat muutoksessa siksi, että työn tekemisen tavat muuttuvat. Työt irtautuvat yhä enemmän rutiineista, eikä niiden tekemiseksi ole yksiselitteisiä "nuotteja". Tulevaisuuden työtä voi verrata elokuvan tekemiseen: yhä useammilla aloilla töitä tehdään projekteittain vaihtuvissa kokoonpanoissa, yhteistyössä erilaisten osaajien kanssa. Myös työtehtävien vaihtelevuus lisääntyy.

Menestyäkseen uuden luomisessa yritykset tarvitsevat yhteistyöverkostoihinsa liiketoimintaosaamista, teknologiaosaamista, ympäristöosaamista ja palveluosaamista. Kyky ja halu toimia globaalisti edistävät onnistuneiden kumppanuuksien rakentamista. Käyttäjälähtöisyyden ja käyttökokemuksen syventäminen on yhä tärkeämpää. Tähän tarvitaan uusia menetelmiä.

Kyky soveltaa verkosto-osaamisia on kaiken perusta. Verkosto-osaamiset kiteytyvät kykyyn hakea, hyödyntää ja jakaa tietoa. Parhaimmillaan oppiva verkosto tunnistaa hyödynnetyn tiedon avulla uusia mahdollisuuksia ja ratkaisee haasteita. Onnistumisen kannalta on keskeistä se, miten erilaiset erityisosaajat toimivat yhteen. Viime kädessä asenne ratkaisee.

Verkostona toimiminen, toisilta oppiminen ja toisten ideoiden päälle rakentaminen ovat harjoittelua vaativia taitoja. Siksi niiden vahvistamiseen tulee panostaa jo koulu- ja opiskeluvaiheessa.

# What is Oivallus?

The Oivallus project is getting to grips with the competence needs of business. It is creating an outline of what work will be like in the 2020s. Our working hypothesis is that business will be even more networked than it is now.

The project is seeking answers to the following questions: What kinds of competencies will be required for work that is done in networks? What will future professionals be like? How will competencies arise and develop? What kind of education will prepare people for work in the 2020s?

Our ultimate objective is to deliver a message from businesses to education policymakers concerning competence needs for the future.

Oivallus, or "Competence needs of learning networks in tomorrow's Finland", was launched in 2008 and will finish in the spring of 2011. The

project is being coordinated by the Confederation of Finnish Industries EK and funded by the Confederation of Finnish Industries, the European Social Fund and the Finnish National Board of Education.

## Two interim reports and a final report: these results are the sum total of many insights

Dozens of people have taken part in our deliberations on future working life. Together with a number of experts, we have detected faint signals, formed opinions, assembled knowledge and created values-based weightings. This process is referred to as "expert processing".

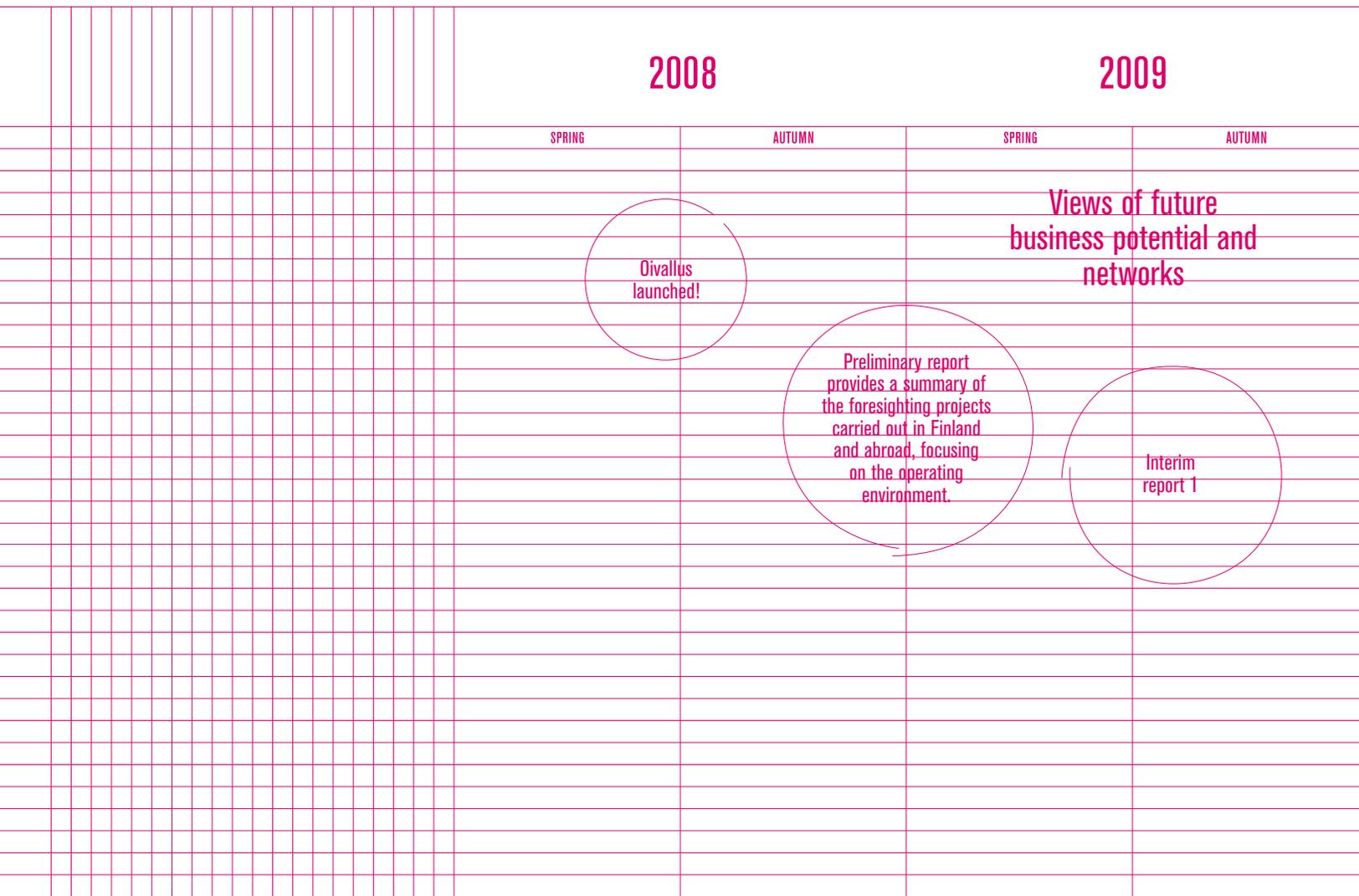
Another procedural principle has been to characterise the future by identifying the practices of trailblazers and by analysing whether these sorts of practices will become more widespread. After

all, people often say that the future is already here – it's just not evenly distributed.

The results of the Oivallus project's forecasts are summarised in two interim reports and a final report. The first interim report, published in November 2009, dealt with trends affecting the future. This interim report goes into greater depth on perceptions of the future and competence needs for work. The final report, to be published in May 2011, will focus on learning and education. It will present a summary of the key results and messages from this three-year forecasting project.

## Interviews in Finland, discussions in the USA, deliberations with a think tank

The people who have played a role in the forecasting in the Oivallus project and the content of this report are listed at the end of this report.



We conducted interviews with several dozen business leaders and discussions with experts from a number of organisations to gather their views on the competencies that generate business competitiveness. In the interviews, the businesspeople were asked about changes in the business environment, their views on work in the future, teams and networks, and the professionals and competencies that will be required. Many of the topics that were widely discussed are present in rhetoric, but are not yet evident in practice. The interviews highlighted the relation between talk and action. The business case studies based on the interviews are in Chapter 3.

The project's study visit to the east coast of the USA in March 2010 shook up our Finnish perspective. The trip participants discussed working methods, problem-solving and creativity with experts from MIT, Harvard and the IBM

Industry Solution Lab. A report entitled "Views on improving and distributing competence" is available (in Finnish) on the project website at [www.ek.fi/oivallus](http://www.ek.fi/oivallus)

There's plenty of talk about competence needs. The Demos Helsinki think tank collected information from the discussions on future competencies and used it to challenge the Oivallus project to think differently about some issues. As part of our collaboration with Demos, we organised a workshop where selected topics were discussed further. Demos Helsinki's report, "From super-individuals to group power", was published in June 2010. It is also available (in Finnish) on the Oivallus website.

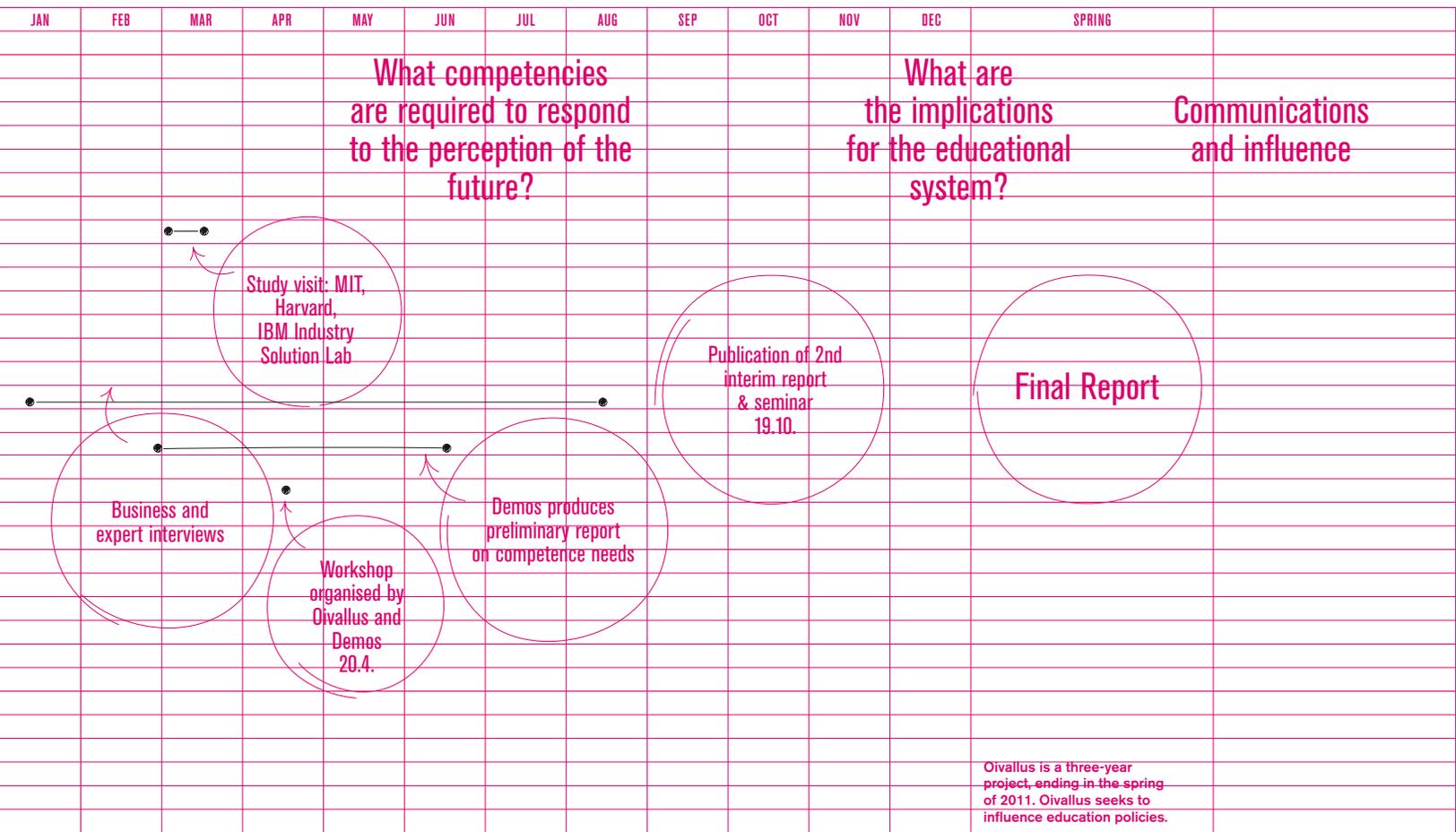
There were two additional future-oriented projects under way at the Confederation of Finnish Industries EK in the spring of 2010. The Green

Economy group considered the requirements of "green" businesses, while the Path to Success business panel, identifying success factors for business in general, also provided interesting viewpoints for the Oivallus project.

In addition to the people and groups mentioned above, many other reports, blogs, columns, videos, etc. have inspired the Oivallus project's forecasts. You can find out more about them on the Oivallus website.

2010

2011



# OIVALLUS

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Visit  
the Oivallus  
website!

All the publications and materials related to the project as well as information on the issues on its agenda are available at the Oivallus website. It also provides a summary of the data that have inspired the discussions on the future.

The website allows you to monitor the progress made between interim reports.

[www.ek.fi/oivallus/en](http://www.ek.fi/oivallus/en)

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## To the reader

The Oivallus project is forecasting businesses' future competence needs. One thing is particularly important to understand about forecasting: it is not about guessing the future, but about shaping it.

This second interim report examines the fundamental issue in the Oivallus project: the competence needs of learning networks. This report draws on a wide range of materials, numerous discussions and joint deliberation on the issues. The report aims to draw together a vision of the competencies required in business and in society as a whole. Utilising a variety of competencies is vitally important everywhere.

This second interim report is steering the project towards its final stage. Its ultimate objective is to present specific ideas, both in terms of content and procedure, for future learning.

I hope this report will trigger new ideas and stimulate wide-ranging discussions among its readers. These discussions can have an impact on a key issue for Finland's future: namely, what kind of education will prepare people for work in the 2020s.

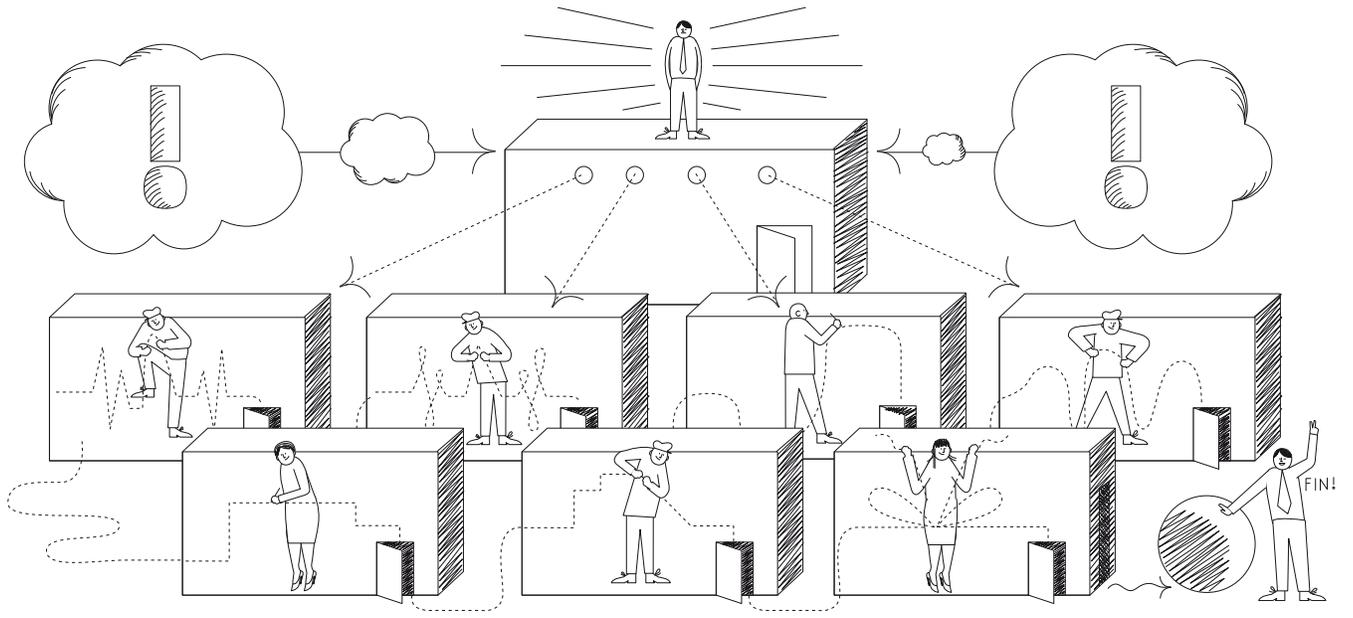
This report was written by Kirsi Juva, project manager, and Anna Hynynen, researcher at the Confederation of Finnish Industries EK. The layout is by OK Do and Tsto.

I would like to thank the steering group, everyone who participated in our forecasting work and the funders of the project, the European Social Fund, the Finnish National Board of Education and the Confederation of Finnish Industries EK.

Helsinki, 19 October 2010

Timo Kekkonen  
chairman of the steering group

FIG 1.



**The way we work and the way we manage work will change.**  
**"The most important thing in a rapidly changing world is not to lie down and wait for someone to tell you what to do. You need to know how to act for the greater good, even if not everything has been set down firmly. When actions are based on common objectives and a foundation of values, people should be able to act on their own initiative."**

*- A managing director in an interview*

# 1. Competence needs are changing because the ways we work are changing

Organisational literature about predictions for work in the future uses terms such as self-organising, self-directed, empowered, democratic, people-centred, cloud-sourced and peer-to-peer. The working life of the future has also been compared to playing jazz music. Wikipedia has the following to say about jazz:

« ... It is music that includes qualities such as 'swinging', improvising, group interaction, developing an 'individual voice' and being 'open' to different musical possibilities. »

*(en.wikipedia.org/wiki/Jazz)*

We can use this metaphor to describe how more and more work is being detached from routines. Tasks are not strictly defined. The objective is known, but there are no specific instructions on how to reach that goal. The end result may be reached in a number of different ways. Thus improvisation, creativity and coming up with solutions on the fly are standard tools and necessary conditions for success.

Developing the individual's "voice" – their competence – is vital, but any competence is constructed in relation to others and is utilised as part of a whole. Fewer and fewer tasks are performed in isolation. Working life

is increasingly based on teams that work together to solve problems or generate something new. Multiple skills are the sum of a team's competencies, not something that an individual has to possess.. There will be variability, both in terms of the complexity of job descriptions and the rapid variation of tasks.

Many of the competence requirements in the future will have their roots in this very change in the nature of work.

## 1.1

### Fewer jobs can be done "by the book"

One of the key objectives of IBM's research activities for over ten years has been to construct a smarter planet <sup>1</sup>. They approach their objective by setting intermediate benchmarks that are reached with concrete solutions. An example of one of these was to build an application

<sup>1</sup> [www.ibm.com/smarterplanet](http://www.ibm.com/smarterplanet)  
The Oivallus project visited the IBM Industry Solution Lab in the USA in March 2010.

that could understand speech in real time and translate messages from one language to another.

According to Google, one of its objectives is to prevent people getting lost<sup>2</sup>. Just as at IBM, Google's objective

was both extremely simple and extremely abstract. In a project with the objective of building a smart planet or preventing people getting lost, one can start and progress in many different ways.

IBM and Google are certainly not typical companies in many people's view. In the future, however, this mindset – not proceeding

“by the book” – will become standard in many companies. This change in work is illustrated in Figure 1. Instructionless work requires different competencies and education than work for which clear instructions exist.

<sup>2</sup> Michael T. Jones of Google explained his company's vision in an interview on YLE's morning news talk show on 15 June 2010. He has developed projects including the Google Earth service.

## 1.2

# Aspects of knowledge work will spread to all jobs

We live in an information society and a service society. Professor Sirkka Heinonen characterises the next stage as the digital, or experiential, society (Fig. 2). We can also talk about a globally networked innovation economy.

What all these descriptions have in common is information and the emphasis placed on it. Researchers largely agree that the management and use of information will not only take on an even greater economic value, but it will acquire a fundamental role in work. Information is created and applied in the development of new solutions, services and products. “Information-intensive” jobs are becoming more widespread.

Information-intensive work may be defined in many different ways; there is no thorough, unified description of it. However, different planning and expert jobs requiring creativity and innovation are emphasised in many definitions.

Characteristics of information-intensive work are requirements associated with the generation, reception and handling of information. IT and communication techno-

### What does information-intensive work mean?

Simple, routine jobs will become rarer.

– The nature of the work will become more abstract.

– The use of IT and communication technology will become more widespread.

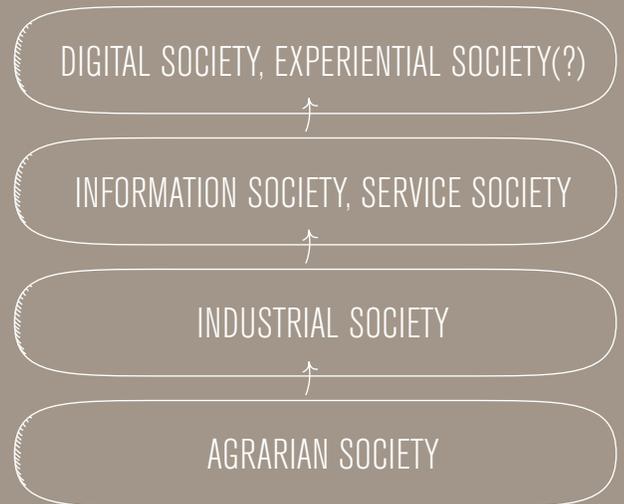
– Work will be more self-directed.

– The importance of communication skills will increase

The boundaries between different professions are becoming blurred: Strictly defined descriptions of professions and individual job descriptions have become less common. Information work is not, however, the same thing as white-collar work. The distinction between information work and other work is based more on myth than reality.

FIG. 2

## FROM INFORMATION SOCIETY TO EXPERIENTIAL SOCIETY?



Source: Professor Sirkka Heinonen, Future Research Centre. Presentation at ELO association's seminar on 5 February 2010 (adapted).

logy are usually used in these jobs. Some researchers wished to underline, however, that the use of technology is not necessarily the central element of information-intensive work. Information work is an all-encompassing process. It also includes stages that are not directly linked to the use of technology. In fact, a more crucial and information-intensive aspect of work – namely, insight – may come about from a thought process that is independent of time, place or indeed technology.

People often think that information-intensive aspects of work are only relevant to innovative technology firms or research and development laboratories. This is not the case. The competence requirements in many practical lines of work have increased, and aspects of information work are required in these jobs as well.<sup>3</sup>

<sup>3</sup> Pyöriä 2006: Tietotyö Suomessa – Teoreettisia ja empiirisiä huomioita.

### 1.3

## Future working life will resemble filmmaking

Changes in working will also be reflected in the organisation of work. Many are predicting a change in organisations from hierarchical to looser structures,<sup>4</sup> such as matrixes or networks. Many companies are already functioning as matrix organisations or are considering moving in that direction. The network model is still rare.

<sup>4</sup> E.g. Green, Philips Design. Presentation to the Oivallus project seminar, 3 / 2009.

Matrix-shaped working is seen as promoting collaboration. Some believe that the move to a matrix is an intermediate stage on the way to a more project-based way of working. In fact, working life is starting to resemble filmmaking. A movie comes about as a joint project by people with different competencies. When the film is finished, the team is dissolved. The next production has a new script and a new objective, so it rarely gives rise to the same group. This “film industry model” is commonplace in engineering and consulting firms: work is done on a project basis, and the professionals with the most suitable competence sets are selected for each project.

The visions described above, of changes taking place within organisations, are supported by many practitioners. Around 30 business leaders and experts interviewed for the Oivallus project believe that collaboration will become stronger, both between employees of a company and with external parties. Collaboration is a tool for uniting various viewpoints and accessing additional information to supplement one’s own competence. The need and wish to collaborate with people with various competence sets will change the structure of organisations. Moving from strictly linear organisations to looser matrixes is seen as a solution that speeds up collaboration. One interviewee summarised the matter as follows:

**« The matrix world is the direction we’re irrevocably heading in. In that world, everything will centre on the ability and willingness to collaborate. »**

– HR director, in an interview

Even though change is seen as inevitable, it does also bring problems of its own. Some interviewees elevated working in a matrix organisation to a competence area of its own. They believed that they would be grappling with the challenges brought by organisational changes for a long time. There was, however, a vision that people would be able to perform more naturally in a more complex, networked world than today.

**« Students should be educated to become workers in global companies – to work in matrixes and networks – even if they wouldn’t end up in them. »**

– HR director, in an interview

### 1.4

## Most people will manage themselves

The flattening out of organisational hierarchies will decentralise decision-making. It will no longer be sufficient for employees to follow rules set by others or to perform tasks specified by others. People will have to deter-

mine more of the rules and tasks themselves. In complex operating environments more people are expected to be able to envision things and to implement their visions. Often, the prerequisites for these practices are working with diverse people in one's own team, one's own organisation and various peer networks that span organisational boundaries.

There is a lot of talk about the need for self-management. It was also talked about a lot on the Oivallus project's study visit to the USA. What will the managing director of the future be like, if his or her subordinates are also managers? How can you direct employees if everyone's own work is guided by independent decision-making?

Professor Thomas W. Malone says that managing directors of the future will have to know things that senior managers at consulting firms know how to do already. In those firms, the manager does not necessarily have the best substantive competencies, but does have the best people skills. Malone is certainly not the only one who emphasises how important it is for senior managers to know how to manage people and competence sets. A manager needs to be capable of forming an image of the desired end result, finding the best possible resources for it and enabling favourable conditions for the work. He or she needs to be familiar with the individual strengths of his or her employees and the group dynamic perspective. The ability to assemble the right kinds of groups will be emphasised as a core part of leadership competencies.

1.5

## In the freelancer society, working life will consist of several careers

It is predicted that in the future, many people will work for several employers at the same time. This phenomenon can already be seen among the ranks of freelance

journalists, but it is expected to spread to other professions as well.

Career timelines have already become fragmented: people change jobs numerous times during the course of their lives. Although this career fragmentation has its downside, more and more people view this variety in a positive light, as an increase in opportunities. The desire to broaden their own skills leads many people to change jobs or to work for several employers at the same time. Freelancer culture is changing from the employer's point of view as well. A managing director interviewed by Demos Helsinki for its preliminary report prepared for the Oivallus project described the change as follows:

**« We used to pay freelancers to do the work we didn't have the time or inclination to do in-house. Now freelancers are usually really paid for the 'highest value' jobs. »**

The rise of freelancer culture is partially explained by the growth of "crowdsourcing" as well. Companies have begun to attract their clients and other stakeholders increasingly to various ideation and marketing efforts. This orientation is predicted to strengthen and make crowdsourced tasks more challenging. At the same time, the fees paid for these tasks will increase.

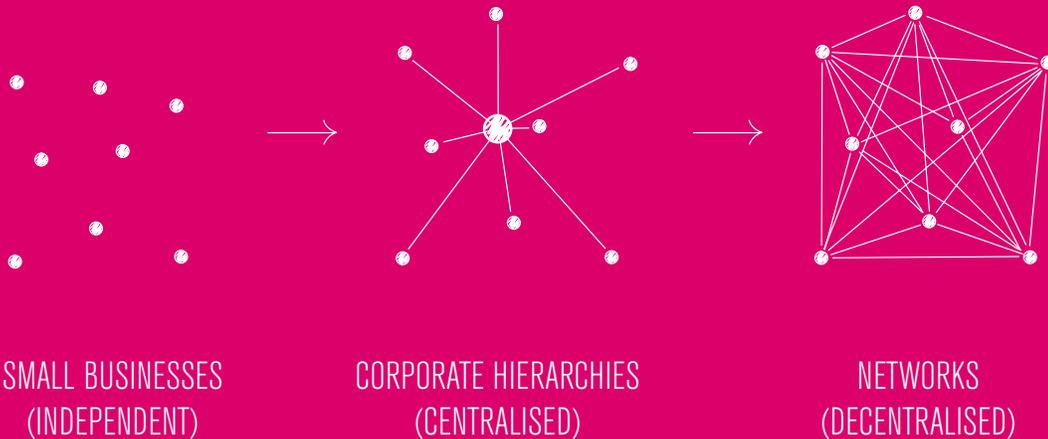
In the future, many will earn a significant proportion of their living from crowdsourced tasks. Social media applications serve as a good foundation for these sorts of jobs. They can be used to form communities that solve companies' challenges on their own initiative.

Freelance work and other entrepreneurial activities call for initiative and bold decision-making. These skills are also required in other tasks. An entrepreneurial attitude is indispensable.

\* \* \*

The previous section describes how people believe that working will change in the future. As jobs change from individual to collaborative, from routine to variable and from concrete to abstract, organisations and management will also change. It is competence needs, however, that are changing the most.

# From a kingdom to a democracy



Organisational researcher and MIT Professor Thomas W. Malone maintains that working is in a transitional stage. Today's isolated cases, such as the Mondragon Cooperative Corporation, will become more common.\* Prof. Malone compares the developments in work to the development of societies. Two factors speed up change in both: people's natural desire to influence the things that affect them and the development of communication technology. Working is on its way from a kingdom towards decentralised decision-making – i.e. a democracy or a meritocracy.

In hunter-gatherer societies, people could only communicate face-to-face, so people organised into small groups. As a result of the development of agriculture, communities grew and settled in one place. Communications practices developed over the centuries, and finally the printing press enabled mass communication to be independent of location. The costs of communication fell, which was of significant importance to the development of societies. People began to receive information about community decision-making and its effects.

The development of communication, and the decrease in its cost, also speeded up the democratisation of work. Improved communication technologies – particularly the internet with its social media services and mobile communications – do not just enable people to receive information on decisions; they also enable them to take part. Social media and applications give people new opportunities to participate in discussions that are relevant and interesting to them.

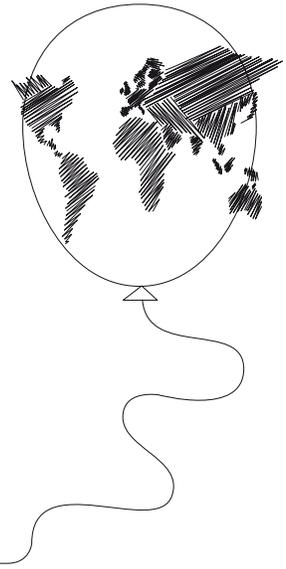
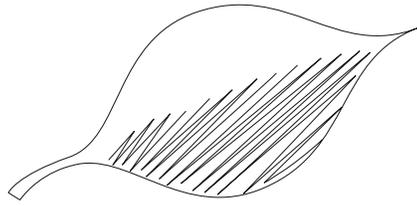
Prof. Malone says that decentralised decision-making does not work in all situations, but it will significantly expand in the coming decades. Decentralised decision-making is particularly beneficial in jobs where motivation, flexibility and creativity are prerequisites for success. The decentralised model requires more leadership than in traditional, strictly hierarchical organisations. According to Prof. Malone, leadership and decision-making should be taught to everyone.

Sources: Malone 2006: The Future of Work & discussion on 10 March 2010.

\*) The Mondragon Cooperative Corporation is a Spanish firm. It is owned by its employees. They select their director and vote on other key issues. [www.mondragon-corporation.com](http://www.mondragon-corporation.com)

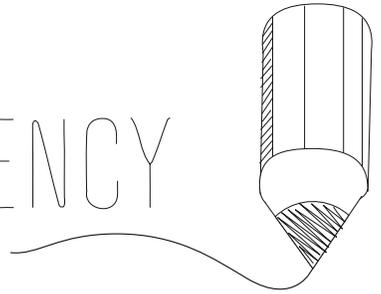
FIG 3.

MARKETING COMPETENCE  
 ENVIRONMENTAL COMPETENCE  
CUSTOMER COMPETENCE  
 PROJECT SKILLS  
 VALUES  
 SALES COMPETENCE  
FOCUS ON PEOPLE  
 MULTIPLE SKILLS  
 EXTENSIVENESS  
INTERDISCIPLINARITY  
 TAKING RESPONSIBILITY  
 GLOBAL SKILLS

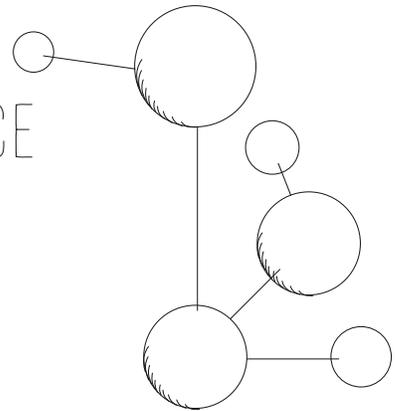
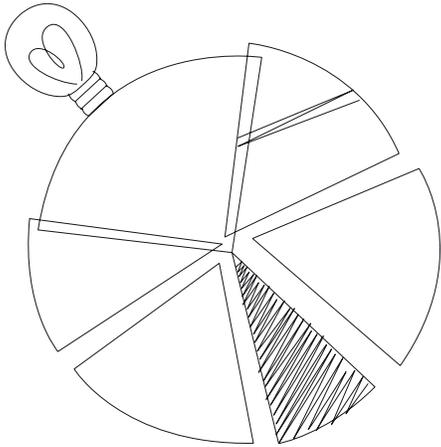


# INTERACTION SKILLS

ENTREPRENEURIAL MINDSET  
SELF-DIRECTION  
 LEARNING  
 LANGUAGE PROFICIENCY  
 DESIGN COMPETENCE  
 INITIATIVE



ATTITUDES  
 CUSTOMER COMPETENCE  
EXPERTISE  
PROBLEM-SOLVING  
SUBSTANTIVE COMPETENCIES  
 SPECIALIST SKILLS  
 CREATIVITY  
 CUSTOMER FOCUS  
QUESTIONING



# NETWORK SKILLS

CULTURAL COMPETENCE  
FLEXIBILITY  
BASIC COMPETENCE

Companies stress the importance of skills in developing their business. The Oivallus project interviewed several dozen Finnish company directors about their future competence needs in the spring of 2010.

## 2. What will we need to know or learn?

In terms of the competencies behind a successful business, the two most fundamental issues are: building on strengths and reacting to essential competence deficits that could impede success. In other words *knowing* how to do something well and improving it even further, and *learning* the things you can't do without.

This chapter focuses on the future competencies that companies need in order to develop and create. The views on competencies that generate competitiveness emerged from interviews with companies and discussions with experts in various fields. The material has also been examined in light of other forecasting.

### **Success is ultimately determined by attitude**

The range of views on future competence needs are presented in Figure 3. The competencies shown in that figure are the ones that featured most prominently in the interviews. The differences between the sizes of the words on the graph illustrate their relative importance. In company interviews, extensiveness, interaction skills and network skills were emphasised the most. One of the core messages was that corporate as well as individual success is ultimately

determined by attitude. A good attitude encompasses things like a desire to learn and “go the extra mile”, as one managing director put it.

Interviewees talked a lot about “competence of renewal”. This refers to things such as freedom from prejudice, willingness to ask questions and creativity. Renewal was seen as requiring more skills rather than scientific qualifications.

Substantive skills were discussed relatively little in the interviews. It would be wrong, however, to interpret this as meaning that companies require only the aforementioned skills, rather than substantive competencies. The emphasis on attitude and other skills does not eliminate the importance of other basic subject-related competencies.

When company managers considered their responses to future challenges and opportunities, they ended up talking about what people ought to be able to do more and better. These increasing competence needs are found in global business skills, further promoting business competence and technology competence, network skills, connecting services to environmental competence and understanding users, and proficiency in experimental design processes.

## 2.1

# Global scope and business competence will form the foundation of success

Restrictions on business based on location have diminished, at least over the past hundred years. The rapid development in communication technology in recent decades has brought about a loosening of the limitations on where work must be performed. A Finnish employee may work with a Chinese colleague who is in China. In summary: Fewer issues in business are dependent on national borders or nationalities. Globalisation has an impact on everything, at least indirectly.

### Acting globally requires ability and desire

In the future, the local, the international and the global will operate side by side. Signs of increasing localisation have been seen alongside – or even running counter to – increasing globalisation.<sup>5</sup> Internationalisation remains a challenge to many small and medium-sized enterprises.

“Born global” will be the starting point of business in the future. The managing directors we interviewed said that aiming for the global marketplace requires ability and desire. The role of desire is particularly highlighted in the creation of genuine business links and the functioning of a multicultural workforce.

Operating in a globalised world requires a thorough knowledge of the cultures and business practices of different markets, specialist competence in international commerce as well as language skills. Language skills are just one aspect of internationalisation skills, but it was discussed a great deal in the company interviews. Fluent English is a basic competence, but the increasing importance of Russia as well as the emerging markets in Asia and South America is broadening the need for language skills. This view is supported by the results of the Labour Force and Skill Needs Survey conducted in 2009 by the Confederation of Finnish Industries EK (Figure 4).

<sup>5</sup> Demos Helsinki 2010: Superyksilöistä joukkovoimaan.

Businesses were asked to estimate how the importance of languages would increase as a criterion for recruitment in the future. Half of the companies predicted that the importance of Russian would increase. The results also showed that the need for Portuguese, Chinese and Spanish in business would increase in the future.

### Continuous investment in business competence is needed

Many of the business leaders interviewed mentioned business competence as an increasing competence need. It is an area that should be invested in continuously. The fruits of innovative development can only be harvested if a company has the competence to generate them, produce or commission them, bring them to market and sell them.

Business competence includes the following abilities:<sup>6</sup>

- understanding and predicting changes in the operating environment, lifestyles and consumption habits
- developing product and service concepts
- financing competence
- sales and marketing competencies
- reinventing business processes and business models.

Developing business competence becomes more challenging as markets become more globalised. The importance of network skills is increased.

<sup>6</sup> Ernst & Young and the Confederation of Finnish Industries EK 2010: Drivers of growth no. 6, Confederation of Finnish Industries EK 2006: Education Intelligence, and Oivallus company interviews.

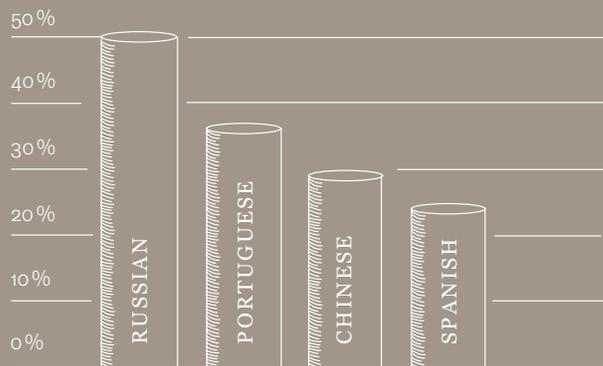
## 2.2

# Individual and group skills are combined in network skills

By networking or collaborating with others, businesses seek out new opportunities and solutions to problems

FIG 4.

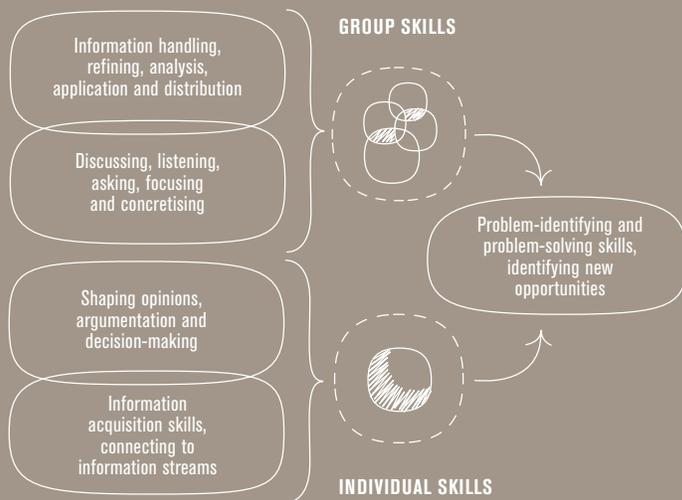
## IN THE FUTURE, COMPANIES WILL NEED LANGUAGE PROFICIENCY TO WORK WITH RUSSIA AND EMERGING ECONOMIES



The percentages indicate the proportion of companies that predict this language proficiency need will increase in the future (n=650). Respondents are member companies of the Confederation of Finnish Industries EK. Source: The Confederation of Finnish Industries EK 2009: Labour Force and Skill Needs Survey.

FIG 5.

## NETWORK SKILLS CULMINATE IN WAYS OF UTILISING INFORMATION



The core of the networked business is the movement of information and knowledge. In order for information to move, and in order for it to be utilised, individual as well as group skills are required.

they do not have the resources to solve on their own or ones that would be uneconomic to tackle on their own. Businesses' networks are made up of customers, subcontractors, competitors, other businesses, research institutions and universities.

In everyday usage, Cooperation skills, social skills and Interaction skills are used synonymously with network skills. Some of the company managers we interviewed also commented that "network skills" was a jargon term used by academics and officials: "It's just collaborating and the ability to work in today's world and today's jobs."

"Working in today's world" is used to refer to working with complex issues, to tight deadlines and in a flood of information. Networks are tools for managing those things. Many interviewees specified that in practice, network skills mean the ability to learn from others or with others. It is the "the ability to look and find, not knowing it yourself". Network skills focus on different ways of acquiring and utilising information. In networks, both group and individual skills are needed. (figure 5).

### Finding information requires you to "be alert"

Network skills include the ability to find the right people and groups from the point of view of one's own job and business.

Many networks that could be useful to a company or individual, may be hidden from view. Business leaders and experts who have considered this problem emphasised that network skills culminate in the desire and readiness to "be alert". Being alert refers to an interest in a variety of things, phenomena and people.

Observing a broad range of things requires an ability to connect to information flows in real time and to see things holistically. This view was particularly evident at the IBM research centre which the Oivallus project visited on its study visit to the USA. IBM Finland's director of innovation, Ville Peltola, said that IT skills correlate to development in the network.<sup>7</sup> That refers to "technically strong" networkers.

<sup>7</sup> Toivonen: "We've been awarded more patents than our four worst competitors combined." Tietoviikko magazine, 27 May 2010

## SOCIAL MEDIA IS USED AS A TOOL FOR GATHERING AND REFINING INFORMATION



**Alekski Neuvonen** kirjoittaa (taas) Pyhtään Munapirtissä, tällä kertaa ajatuksia maabrändin luonto-osioon. Mitkä luontoon ja ympäristöön liittyvät asiat ovat mielestäsi Suomen merkittävimmät vahvuudet? Kaunista luontoa kun on kai muuallakin. | 18 August at 10:33 · Comment · Like



**Riku Eskelinen** Kaunista luontoa on toki muuallakin, mutta suomalaisessa luonnossa on erityispiirteitä, joita ei löydy mistään muualta. Järvi-Suomi on maailmanlaajuisesti poikkeuksellisen suuri ja runsasjärvinen alue. Turun saaristo on vastaava saaristona. Myös muutamat pienemmät luonnon erikoisuuden kuten Länsirannikon kohoaminen ja jääkauden harju- ja järvi muodostelmat ovat erikoisuuksia. | 18 August at 10:39



**Arto Sivonen** Ihmisen ja luonnon läheinen suhde toisiinsa | 18 August at 10:40



**Tommi Laitio** Terve, ei-mystifioitu luontosuhde. | 18 August at 10:44



**Riku Eskelinen** Unohtui mainita, että myös laajat metsä- ja suoalueet ovat poikkeuksellisia, mutta eivät ehkä yhtä erikoisia kuin järvet. Kaikki nämä ovat eksotiikkaa muun maailman asukkaiden silmissä. Suomalainen ei ehkä sitä huomaa enne kuin ulkomaalainen käskee pysäyttää auton keskellä arkisinta mahdollista koivumetsää, jotta saa moisesta oudosta luonnonilmiöstä kuvan. | 18 August at 10:46



**Jeka Pihlainen** Jokamiehen oikeus. Ei se nyt luontoa tai ympäristöä ole suoraan, vaan lainsäädäntöä, mutta vaikuttaa aika raflaavalla tavalla siihen, miten luonnosta voi nautiskella! | 18 August at 10:48



**Sara Maria Johanna Heinämaa** Heinämaa Itämeri kokonaisuutena, ei vain Saaristomeri tai Turun vesialueet, vaan koko alue, on ekologisesti, kultuurihistoriallisesti ja esteettisesti ainutlaatuinen muodostelma, ja sen helmenä on Ahvenanmaan pohjoiskärki. Tämä on lukuisten erilaisten uhkien alla, ennen muuta lyhytnäköisen ahneuden ja mittavan tietämättömyyden (saksalaiset kutsuu sitä jo Euroopan suurimmaksi aavikoksi), ja tuntuu hassulta että suomalaiset jaksaa jauhaa Lapin ihmeistä samalla kun saastaavat tätä eri tavoin lähietäisyydeltä. | 18 August at 11:01



**Matti Kuronen** Jeka sanoi jo olennaisen. Lisätään siihen se, että lähes kaikkea myös voi syödä, oikeasti vaaralliset lajit on vähissä ja etenkin faunassa oikeastaan nolliissa - todennäköisesti luonnon vaarallisin otus on mökkipihan H. Sapiens. | 18 August at 11:03



**Sara Maria Johanna Heinämaa** Tuo edellä siis alueellisesta, mutta entä suhteista: läheinen luontosuhde on kai kaikkien ns. luonnonkansojen yhteinen hyve, joten musta kannattaisi miettiä, mitä erityistä suomalainen kulttuuri on rakentanut tämän suhteen varaan, enkä emmi sanoa, että erityistä on taiteiden ja tieteidenkin läheinen ja tiukka mutta uudistuva sidos luontoon. En tiedä, onko tästä seikasta sulle mitään iloa, mutta musta se on tärkeä ja liittyy siihen mitä Riku edellä kirjoitti. | 18 August at 11:08



**Tea Tönno Samaa** mieltä edellisten puhujien kanssa: jokamiehen oikeudet ja vahvat luontosuhteet! Suomalaisilla on keskimäärin myös tosi paljon kaikkia luontoon liittyviä taitoja ja osaamista. Uimataidot, syötävien kasvien tunnistamiskyvyt, lintujen talv...*See more* | 18 August at 11:20



**Riitta Nieminen-Sundell** Merkittävä erikoisuus on hiljaisuus. Lähimpään kaupunkiin tai valtatiehen on niin pitkä matka, ettei 2000-luku kuulu. Tämä myös ahdistaa joitakuita urbanisteja, olen havainnut :) :( Hiljaisuuteen eli sen mahdollistavaan tilaan liittyy myös n...*See more* | 18 August at 11:30



**Olli Alanen** Se, että oletpa missä tahansa Suomessa, pääset alle vartissa vihreään luontoon pyörällä. Jos oot kova polkemaan niin viidessä minuutissa. Tän kun yhdistää uusimpiin tutkimuksiin viheraluiden onnellisuutta/hyvinvointia lisäävästä vaikutuksesta, niin on aika kova jutska, jota ei toisaiseksi osata hyödyntää tarpeeksi. | 18 August at 12:03



**Heikki Raunio** Hieman teemaa sivuten, kuin uhkakuvana:<http://teema.yle.fi/ohjelmat/juttuarkisto/hiljainen-pako> 18 August at 12:05



**Alekski Neuvonen** Kiitos kaikille mahtavista vinkeistä. Helposti saavutettavat metsät, saaret ja järvet, jokamiehen oikeudet, laadukas lähiluonto ja mutkaton luontosuhde kirjattu ylös. Ja kyllä tässä paljon kehitettävää on, sekin kirjataan. | 18 August at 12:14

Alekski Neuvonen posted a question on Facebook for people's views on what nature-related and environmental issues Finland is particularly strong in. 29 comments were posted under the question concerning the strengths of Finland's environment and natural landscape. 13 of the comments were posted within the first two hours. There were a total of 25 respondents..

Source: Alekski Neuvonen's Facebook profile (adapted)

## Social media communities offer a tool for thinking and acting together

« The importance of social media has definitely increased in our work. What kind of foundations for learning and work and channels for interaction can different forms of social media create – even just within an organisation? I think we're still only in the very early stage, both in Finland and abroad. »

– *Managing director, in an interview*

There was a lot of discussion of social media in the interviews that were conducted. To summarise the message of many business leaders: there are opportunities in social media, but it is not an everyday tool yet. Social media should be understood as a tool for shared thinking and acting, as indicated in Fig. 6.

In the future, social media will be utilised in companies as a marketing channel as well as a strategic foundation.

### Social skills and sociability are different things

In the future, work will be done to an ever greater extent by groupings of different members that change from one project to the next. Competencies as well as goods and services will be created through the joint efforts of many specialists.

Work that is to be done jointly requires the ability to work together, so the importance of social skills will increase. In everyday usage, “social skills” and “sociability” are often used interchangeably. But they are, in fact, different things. Liisa Keltikangas-Järvinen, a professor of psychology, explains that sociability is an aspect of our temperament we are born with, while social skills can – and must – be learned. A social person may have poor social skills, while an unsocial person may possess excellent social skills.<sup>8</sup>

Social skills include the ability to establish contacts with different types of people, to discuss things with them and to understand other people’s points of view. The ability to listen is one of the key social skills. When they are supplemented by the ability to grasp and solve problems, one approaches what “customer competence” is about.

Well-maintained social skills are time- and place-dependent. Our interaction with people from different cultures in our work is increasing, which means that social skills are needed more than before. Prof. Keltikangas-Järvinen says that a socially skilled person possesses a range of functional interaction situation models and is able to choose the best one for any given situation.

Developing social skills is a life-long learning task. In school, social skills can be improved by e.g. supporting a culture of working together and by making learning processes more collaborative.

## 2.3

# Without technology competence, many innovations will remain unrealised

Technology competence is one of Finland’s traditional strengths. Strong technology competence will continue to be the bedrock of many Finnish companies and the innovations they create or utilise in the future as well.

Innovations do not just mean new technologies; increasingly often, they are services or business models. These are examples of broad-scope innovation, in which technical professionals have a smaller, yet still key role as enablers of innovations. The objective is more to solve a customer’s problem than to find a practical application for the technology.

Many solutions are based on “general-purpose technologies”. General-purpose technologies are characterised by the fact that they can be applied in numerous uses in a variety of areas. General-purpose technologies may, however, only find a commercial application long after their scientific breakthrough. Current areas of broad general-purpose technologies are the fields of information and communication technology (ICT), biotechnology and nanotechnology (Fig. 7).

<sup>8</sup> Keltikangas-Järvinen 2010: Sosiaalisuus ja sosiaaliset taidot.

One of the key areas of application for general-purpose technologies will be in environmental businesses. Strong technology competence, particularly the use of information and communication technology, is vitally important in service businesses and in the development of their productivity.

### **The ability to apply technology will become more important**

New technology must be supported by a company's competence capital, ability to innovate and management's vision – in short, skilled people.

It is a cliché to say that Finns are not good at knowing how to utilise or apply new technology. We make better developers. Many of the business interviewees subscribe to this cliché and are emphasizing the need for competencies relating to the utilisation of technology. The relative importance of applications is increasing because technological lead-time does not guarantee future success. Solutions based on one single technology are particularly susceptible to copying.

The business leaders we interviewed want technology professionals to discuss things and work together with other professionals more. In a dream team, solutions could be examined from the perspectives of technology competence as well as the end user and business profitability. Products and services of the future will be expected to be interactive and usable. A good user experience and comprehensibility are typical wishes where technological solutions are concerned.

## 2.4

# All business will be “green” business – requiring environmental competencies

Climate change and the depletion of natural resources are megatrends shaping the future. Environmental problems have given rise to an overwhelming need to develop

and implement technologies and practices that reduce our impact on the environment and promote eco-efficiency.

In recent years, this need has matured into a genuine demand that is now seen in the growth of global environmental business (Fig. 8).

Changes in consumers' values also affect businesses' decisions to invest in developing environmentally friendly solutions. Taru Pilvi, the director of consumer research at Valio, described the issue succinctly:<sup>9</sup>

**« Before, consumers were interested in whether a product contained fat, how much and what kind. Now consumers are interested in different things, including environmental impacts. »**

Climate and environmental issues will have a significant impact on what kinds of jobs are created in the future. It is not at all surprising that companies are pursuing environmental competence and environmental professionals.

### **From environmental awareness to environmental business**

Businesses have been interested in environmental issues for a long time now. For example, guidelines for environmental care and protection were formed in industry back in the late 1980s.

It is a clear trend in businesses of all sizes and in all fields to pay more careful attention to environmental issues. Today, environmental issues are included in many businesses' corporate strategies. They are an integral part of corporate responsibility.

A more recent trend is for an increasing number of companies to practise “green” business or to offer products and processes, services, equipment and operating models that can reduce the impact of other companies, the public sector or consumers on the environment. “Energy and environmental business” or “cleantech” are used as synonyms for green business.

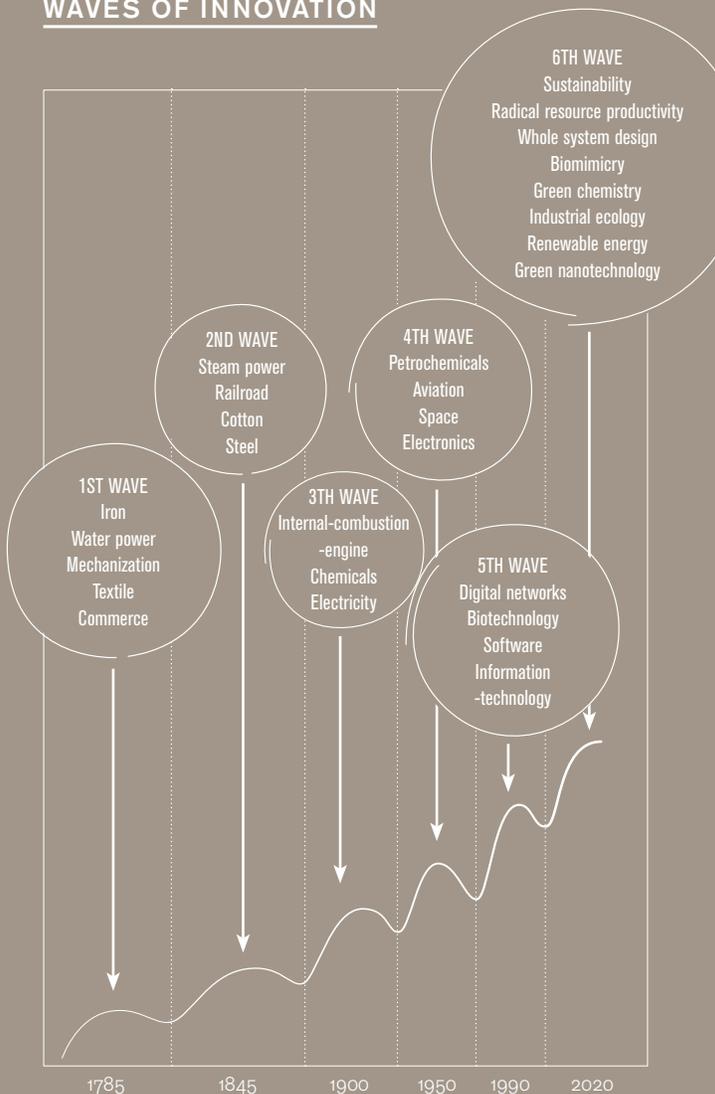
<sup>9</sup> Demos Helsinki interviewed Pilvi for the report it produced for Oivallus. Consumers' changing values are also reflected in the Eurobarometer report (2009). Over 80 per cent of its respondents considered the effect of a product on the environment to be an important or somewhat important factor in making purchasing decisions. The impact on the environment was the third most important factor, after quality and price.

## What is environmental competence?

Environmental competence is used to refer both to specialist competence in environmental matters and to "general competence". In the former view, environmental competence is, strictly speaking, part of a particular job or educational programme. It applies to people like specialists in environmental impact, economy, technology, law or policy. The latter view, on the other hand, enables the view that green competence is needed in all jobs. Everyone must work to reduce their impact on the environment as much as possible.

FIG 7.

## GENERAL-PURPOSE TECHNOLOGIES BEHIND WAVES OF INNOVATION



Source: World Watch Institute 2008

## There is a demand for Finnish solutions...

The strengths of the Finnish economy have traditionally been in natural resources: forests, water and minerals. Sustainable and efficient utilisation of natural resources has given rise to strong environmental competence.

As businesses have developed their operations in Finland and improved their energy and materials efficiency, they have generated competencies which are now in demand on a global scale. Well-known Finnish products include energy-efficient industrial processes, bio-energy furnaces, frequency converters, wind turbine components, clean vehicle fuels, water purification chemicals, waste treatment systems and measuring devices.

The greening of the global economy is thus a significant opportunity for Finnish businesses and competencies.<sup>10</sup>

**10** The Confederation of Finnish Industries EK 2010: Business in the forefront of the green economy.

## ... so business competencies and entrepreneurship are required

Although there is a strong demand for environmental business in the world, people won't come knocking on the doors of Finnish companies. There is no shortage of competition. The business leaders we interviewed were seeking ways of linking sales, marketing and communication skills to environmental competence.

In order for environmental business to generate success stories, what is needed besides innovation and entrepreneurship is strong business competence. Without these, businesses will not be able to utilise the opportunities in growing international markets.

## Cleantech joined by clean service

Technology plays a key role in the development of green business. However, green business is not just a matter of technological innovation and competence. There are many examples of new operating methods and ways of thinking coming into play to promote specialised services and eco-efficiency.

It is anticipated that in the future, cleantech will be joined by clean service. Traditional environmental services include for example waste management services. New service innovation forms are being developed.

**11** More information on Fazer Amica's low-carbon lunches available at [www.amica.fi](http://www.amica.fi), and in Demos Helsinki's report "Superyksilöistä joukkovoimaan".

Fazer Amica is one Finnish company developing these services. They are striving to generate new business by offering their customers a low-carbon lunch option.<sup>11</sup> In a business like this, both environmental competence and service competence are involved.

### Education for environmental competencies encourages questioning

**« I get the sense that environmental professionals are innovators. They want to do things better. They question things and grasp issues as a complete whole. »**

– *Managing director, in an interview*

This is how a business leader described the profile of an environmental professional. Many other people in the Oivallus project who gave their opinions underlined similar skills. Experts say that environmental competence is a strategic-level competence. It requires the ability to search for and identify new areas of growth – the ability to listen carefully to the environment.

Education plays an important role in the acquisition of the necessary “green” competencies for business. Education that generates green competencies and business develops environmental knowledge and attitudes as well as promoting business competence, entrepreneurship and innovation. It also gets people to question and examine issues holistically.

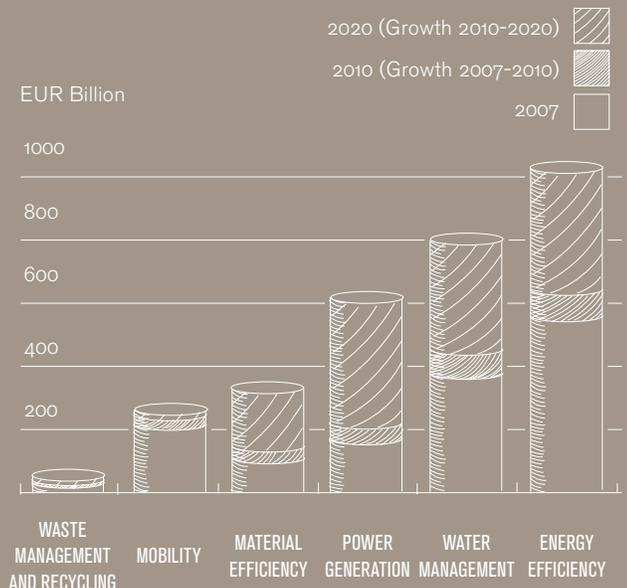
## 2.5

# Collaboration with customers is at the core of customer competence

More and more businesses see themselves as service companies. A company may either sell services or invest in customer service. Regardless of whether we are talking

FIG 8.

## GLOBAL MARKET VOLUME GROWTH OF CLEANTECH

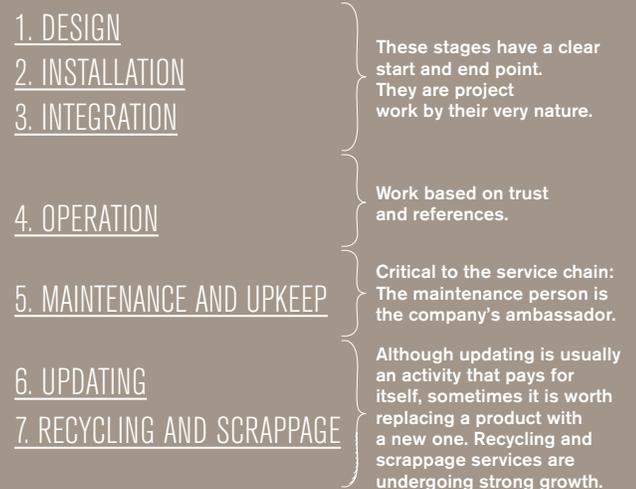


The global market for cleantech is expected to double by the year 2020. In addition to the European Union and the USA, emerging economies are investing in the development of technologies that reduce emissions and promote eco-efficiency.

Source: EK 2009: Labour Force and Skill Needs Survey.

FIG 9.

## SERVICES RELATED TO PRODUCT LIFE CYCLE



Source: Eloranta, Ranta, Salmi & Ylä-Anttila 2010: Teollinen Suomi.

about traditional services, industrial service operations, new internet services or service logistics, the expectations are largely the same.

Service competence is absolutely vital in business-to-business operations as well as business-to-consumer operations. Unfortunately, examples of top-quality services and service culture often come from outside Finland. Companies say there is much to be done to improve service competence and service attitudes.

### **Customer service skills are at the core of service competence**

A service-oriented attitude is seen as an attitude whose importance, the service mindset, was emphasised by every one of the business leaders. Anu Eronen, the managing director of SOL, who was interviewed for the Oivallus preliminary report, expressed it in the most pointed terms: “We recruit the attitude – everything else, we can teach.” Ms. Eronen said that the right attitude is a competitive trump card in service industries.

From a company’s perspective, good customer service is linked to sales competence. In practice, it is often a matter of marketing and communication skills. A good customer service provider knows how to present a product or service and how to make its benefits clear to the customer. The importance of communication skills is emphasised particularly in service businesses, because what they are selling is often intangible.

The majority of topics relating to services that were raised in the business interviews concerned understanding customers, along with social skills (or the lack thereof). Customer competence is a matter of understanding people, as well as understanding customers’ businesses and needs and familiarity with your own range of offerings.

### **The systematic development of services is a challenge**

Developing services and turning them into products are among the most typical areas requiring more competence. In order to be able to develop services in a systematic way, an understanding of the users of the services and the way they use them in various markets and customer segments

is necessary. Developing new service concepts requires a great deal from management in a service business.

The business leaders interviewed in the Oivallus project took the view that connecting different competencies is critical, particularly when developing services. Many interviewees were seeking better ways to link “hard” and “soft” skills, for example integrating technology competence and practical and experiential understanding in systematic service development work.

Services are typically developed through interaction with users, so it is important to learn how to collaborate with them. User-focused approaches are discussed in Section 2.6.

Only a few of the interviewees raised the issue of the role of customer-facing employees in the development of services. The people who are in direct contact with customers can see how the products and services work in practice. They often receive feedback directly from customers as well. This should be better utilised within companies.

### **New services are online or utilise IT**

The range of internet-based services has increased and become more diverse. Many companies take the view that in the future, services should be offered on the net by default. This development will require linking technology competence to other service competencies.

The application of IT and communication technology in industry and traditional service areas is one of the greatest opportunities for renewal or creation. More and more often, businesses are looking for competitive advantages by making their products and services “smarter”.

### **Even industrial companies produce services**

It is often said that work in the future will be service-based. This prediction may well be correct. As a result of changes in society, the role of services has increased dramatically. The key thing to understand is what is meant by “service” or “service field”.

We are used to understanding industrial companies as organisations where production plays a central role. However, services are becoming more and more important to the business of industrial firms. For example,

# Do industrial companies have a future in Finland?

The strategic reason for the location of the factory

		Access to low cost production	Access to skills and knowledge	Proximity to market
		High	SOURCE FACTORY	LEAD FACTORY
Site competence	Low	OFFSHORE FACTORY	OUTPOST FACTORY	SERVER FACTORY

The role of the factory in the global production network.

Source: Eloranta et al. 2010: Teollinen Suomi & Ferdows: Making the Most of Foreign Factories. Harvard Business Review 3-4/2007.

Industry will not disappear, but there will be fewer industrial jobs, emphasise the authors Eloranta, Ranta, Salmi and Ylä-Anttila in their book, “Teollinen Suomi” (Industrial Finland). The nightmare scenario of the disappearance of industry would wipe out hundreds of thousands of jobs from Finland. Many people believe that product development is leaving along with production.

A renewal is needed. By “renewal”, the authors mean renewing investment in things like customer-focused innovation, seeking growth in service activities and redirecting training and purchasing. Expert jobs will increase.

Eloranta et al characterise the role of manufacturing industries in Finland using the theory of Kasra Ferdows. Ferdows defines the role of the factory in a global production network using two dimensions: the competence level and the strategic reason for the location of the factory. A low-skilled factory can manage production jobs that are repetitive, and in which any problems that occur are solved by means of procedures that have been determined in advance

or are otherwise routine. A high-skilled factory, by contrast, is able to solve even unanticipated problems.

The strategic reason for the factory’s location is based on one of three factors: 1) access to low cost production 2) access to skills and knowledge 3) proximity to the market. Figure 10 illustrates Ferdows’ theory of the role and location of a factory.

According to the authors, it is possible to site a factory in a high-cost country such as Finland virtually only in the case of a lead factory. A “lead factory” utilises a high level of competency and its operation is less reliant on routine than other models. A high-skilled contributor factory is also a feasible model for Finland if the market can be flooded with products aimed at a narrow segment, with tailoring and even personalisation. Nimble production emphasises rapid reaction to customers’ requirements and changes in the product range.

Finland's leading mechanical engineering firms derive nearly half of their turnover from the production of services. Similarly, the majority of employees in large Finnish "industrial companies" now work in non-manufacturing jobs. They work in product development, sales, marketing, finance and HR roles, business development or management. These jobs involve either internal or external services.

This change from pure production companies to companies that produce goods and services has been extremely important for the development of Finnish industry, but it has not been easy. One of the key challenges has been to generate from the provision of services. To put it more bluntly, it is a matter of viewing a service as an add-on to the product, and so people did not dare to charge for it. Against this background, it is understandable that businesses consider the pricing of services as a skills gap.

In their book entitled "Industrial Finland", Eloranta, Ranta, Salmi and Ylä-Anttila make it clear that despite these challenges, the strong traditions of generating investment in Finnish industry provide a good, natural base for growing service businesses. These traditions offer a good opportunity to create a comprehensive range of services that covers the entire life cycle of a product, from design to disposal. The key issue is that the life cycle of the product and the service must coincide. Fig. 9 shows what different kinds of services can be part of a product life cycle.

## 2.6

# User focus calls for knowledge of methods and an understanding of people

User focus can be approached from two perspectives. In one, companies try to understand the needs of users and customers better and to acquire a deeper knowledge of the market. In the other, they try to involve the user directly

in the development of their products and services, to make them a part of the company's innovation team.

One study conducted in the 1970s presented reasons why certain product development projects were successful. The study compared hundreds of successful projects with unsuccessful ones. The only significant factors that were found were the differences in the understanding of users' needs and the quality of the internal communication on the projects. The situation has not changed a great deal. Numerous studies have shown that understanding the user is still the weakest link in product development.<sup>12</sup>

**12** Sampsa Hyysalo 2009: Käyttäjä tuotekehityksessä.

The difficulty of understanding users was also noted in the company interviews for the Oivallus project. Typically, the issue was described as follows:

- We need more competence to understand people's habits, behaviours, and motivations.
- We need more competence to understand end users' wishes, needs and values.
- We need a greater understanding of what impressions our products and services generate.
- We need more competence to understand user experiences.

Companies long for more methods-based competencies to examine the issues described above and the ability to analyse their importance for the business. In terms of science, companies often link these competencies to psychology, sociology and behavioural science.

### From customer data to an understanding of the user

User data is more in-depth information than market or customer data. The differences are set out in Table 1. Data on customers' consumption habits is useful to a company, but an understanding of customers' operating environment and values is also necessary.

Products or services are developed for people who are seldom able to explain their future needs or desires in detail. The ability to understand the latent desires of possible users is an increasing competence need. Competence is also required for understanding changes in consumers' values. In this context, many interviewees emphasised

the need for experimenting and the importance of different demos as part of planning and design work.

Customer-focused insights have not often required extensive basic research. A simple end result does not, however, necessarily mean that the development that preceded it was simple. A huge amount of tests must be conducted by trial and error before a product can meet the requirements of the market, even in theory.

### From understanding the subject to working together

Information on users is increasingly acquired by observing them. Observation helps to clarify things such as what users' objectives are, what their general aims are in practice and what kinds of interactions occur between users. Understanding users involves grasping the overall user environment, not just becoming familiar with isolated user experiences. Users should also be examined in context, particularly in relationship to their tools and other people.

Companies talk about their needs to understand users better. There is, however, a lack of systematic methods for doing this. User-related competence focuses mainly on the method-level competencies that are needed to acquire information concerning people's actions. Besides acquiring the user data, companies need to have the competence to analyse that data. Many interviewees specifically said that they needed a better link between behavioural science and business development.

Future innovations will be more user-generated: people themselves will be viewed as the best interpreters of their own needs and wishes. This democratisation of product development will enable the best products and services to get to customers, and will also create a tie between the customer and the company. Some of the most radical examples of user focus can be found in "open source" software communities, in which users develop the products from start to finish.

TABLE 1.

## USER DATA GOES DEEPER THAN MARKET AND CUSTOMER DATA

Type of data	Market data	Customer data	User data
What does it say about users?	Who might buy, where and how?	Who bought, where, what did they complain about or praise?	Who, what, where and why are devices ultimately used?
What does it say about users' actions?	General descriptions (plays tennis)	References to problems and good qualities	What types of environments are they used in and what is most important in practice?
Where to get it from?	Market research, competitor comparisons, focus groups, statistics	Customer feedback, sellers, customer research	User surveys or collaboration with them
Greatest strength	Provides a general overview of potential buyers; an established way to talk about customers	Real data on real customers	Matches what you want in practice. Combines the two previous items.
Typical problems or deficiencies	Often too general for making design solutions	Emphasises certain types of customers; difficult to analyse relationships.	Not many people know how to gather information. Often needs to be supplemented with questionnaires.

Source: Hyysalo 2009: Käyttäjä tuotekehityksessä. (adapted)

## 2.7

# Design competence is designing by experimenting

When Finnair launched its route to New York in 1969, everything from the cutlery to the stewardesses' uniforms was designed in Finland. In those days, the company's customers perceived design essentially as a product made by top designers. Over the decades, the role of design has changed and expanded. Today, design also means a functional route network, convenient time-tables, personal service and a pleasant travelling experience.<sup>13</sup>

The example of Finnair clearly exemplifies how the role of design is developing in more and more companies. In the past, design meant creating

<sup>13</sup> Finnair Plus News 3/2010.

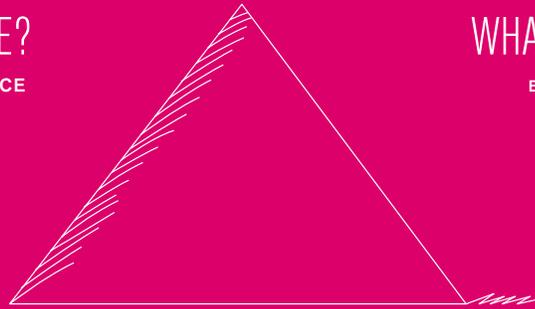
# Design thinking is a process that combines (at least) three competencies

WHAT IS FEASIBLE?

TECHNOLOGY COMPETENCE

WHAT IS PROFITABLE?

BUSINESS COMPETENCE



WHAT IS DESIRABLE?

BEHAVIOURAL COMPETENCE

There are three aspects behind a  
successful product or a service.

Source: Cooper 2003.

Design thinking is a process that aims to create products or services that meet people's needs and desires. Tim Brown, the director of the IDEO innovation and design agency, says that design thinking is the skill of combining people's wants and needs with existing technical resources, within operational constraints. At the competence level, this means a combination of competencies linking an understanding of people and behaviours, technology competence and business competence.

Design thinking procedures emphasise human-centred design, prototypes, experience and testing – and often good old “common sense” as well. Then again, design thin-

king is also fundamentally an understanding of complex systems and strategising in product development. The key stage in the process is prototype testing, which is often followed by longer-term piloting. Piloting and the subsequent phase of early use reveal information on technical defects and design flaws, as well as details of how a device fits into its user environment and how it affects users' behaviours.

The natural method for applying design thinking is in project-based work. With its various stages, it provides a shape and structure for non-linear work. The design process is not linear; the various stages criss-cross each other differently in each project.

Source: Brown 2009: Change by Design.

an appealing aesthetic exterior for a product. Design professionals were included in work only at the end of the innovation process. Nowadays they are roped in to examine and generate ideas to meet consumers' needs and wants right from the start of the process. Design professionals have the ability to visualise a product, service or user experience that appeals to the customer on many different levels, from usability to external appearance.

With the blurring of the boundaries between products and services, design-based thinking – bringing user experiences to the forefront – has constituted a unifying topic that cuts across different fields and jobs.

**« I don't want to talk about service design or product design any longer, rather about design as a human-centred activity that we can use to achieve better solutions. »**

*– Managing director, in an interview*

### **Design process approaches are becoming more common in companies**

Design and creativity came up in virtually all of the company interviews. Design competence is perceived as a competitive factor in new areas that had previously got by without it. It is needed more than before, and throughout entire projects. In the best cases, design professionals bring creativity to a project that is evident in fresh thinking – seeing new approaches and possible solutions.

**« Creativity is often thought of as just design and aesthetics. In design work, though, creativity is balancing these out with money, the environment, social influences, customer expectations and other constraints in a complex field: it is sailing by the wind. »**

*– HR director, in an interview*

The more information-intensive and abstract the work companies talk about, the more they value experiential and testing skills. A product or service that provides a good user experience will generally have been produced through trial and error. Development based on testing brings order to the proceedings and takes the project to a better conclusion. Testing and demonstrations are typical strengths of design professionals.

Developing a product or service that is convenient and aesthetically appealing involves even more collaboration with users or customers. The sketches and prototypes presented to them serve to attract their interest and encourage them to discuss ideas. The idea of making thinking visible also emerged on the Oivallus project's study visit. MIT's Media Lab and the IBM research facility were full of different kinds of demos and models. They served to visualise complex projects and their results to outsiders. Hands-on contact increased understanding, and understanding in turn increased interest.

\* \* \*

The opening section of this report described changes in the ways we work. In the future, even more jobs will break away from "by the book" thinking. They will become project-based and be done in networks. Many changes in organisations will be implemented through management, often through leading by example.

Another factor bringing about change is attitude. "Attitude is ultimately the deciding factor," as virtually every business leader would have it. The attitude required in business consists of a belief in one's own abilities, belief in one's own ability to learn, pride in one's work, openness and giving space to others and the ability to see the big objectives behind what one is doing. Often, it is also boldness instead of cautiousness.

Professor Sari Lindblom-Ylänne of Helsinki University says that faith in one's abilities, or a person's view of their ability to succeed in particular tasks, situations or activities determines an individual's success to a greater extent than their intelligence. Demos Helsinki interviewed Prof. Lindblom-Ylänne when preparing its report for Oivallus. Employees' view of themselves in relation to others in their work community will affect the way they perform their work and their success in various tasks. Research in behavioural science provides strong support for the idea that ability is something that can be taught and learned.

# 3. Business case studies on combining competencies

The term “learning network” is used to refer to collections of people whose success is based on combining different competence sets and the synergies that arise from that combination. Different professionals may be combined in a group on the basis of their field of work, subject area or orientation – into applying, seeing and implementing<sup>14</sup>.

**14** The division into applier, seer and implementer arose in EK's forecasting project Education Intelligence that ended in 2006.

In order to succeed in creating new products or services, learning networks require “building blocks”, which are basically the competencies described in the previous chapter. Combining them enables networks to develop solutions. The case studies in this chapter tell how competencies have been combined in real life.

## Actions speak louder than words

Ideas are typically refined in groups. Someone will come up with an initial idea, but it generally takes a variety of competence sets to refine the idea into a commercial pro-

duct. Collaboration among different areas leads to a broader understanding of the new opportunities for business.

All companies want to combine their competencies, but only a few do it systematically.<sup>15</sup> In the future, different experts will be brought together internally when remodelling organisations or blending teams, and when acquiring competencies from outside the company. Siloing will gradually fall by the wayside as organisations move over to more networked working practices.

Crossing boundaries is a challenge that needs to be supported by people with skills competence. Often there is no common language, even though there would be an arena for the interfaces. Many interviewees told us (more or less with a smile on their faces) that conducting discussions with people with different educational backgrounds is something they have had to learn. This change also requires a supportive operational culture and plenty of practice.

**15** Annukka Berg brilliantly noted on her blog that doing is the highest form of speaking. That is the core of an experiential society. [www.vatupassi.net/aikalaisvisioita/](http://www.vatupassi.net/aikalaisvisioita/)

# An interdisciplinary team created a playground that promotes learning

Seeking solutions  
from many  
fields

Progressing without  
clear milestones

Cf. breaking away from "by the book" thinking in Chapter 1

Around ten years ago, Lappset, a manufacturer of playground equipment, wanted to strengthen its competitiveness by developing new products. Experts from the fields of art, education, exercise and technology put their wise heads together along with the company's product developers.

The objective was to generate new business across competence areas. Three project teams set about developing product and service concepts that utilized new technology for playground environments.

"Our decisions were largely based on intuition and experience, as there was no market for playground environments that combined technology and learning yet at that time," **Reijo Koivula**, the company's Concept Director for technology products, recalled.

## Testing phase as the turning point in product development

After the development work had been under way for two years, it emerged that the three separate project teams' designs could not be combined into an appealing whole. Work began to progress when the teams were combined into a single group. Sharing of information and the importance of dialogue were understood as key factors to the functioning of the group. They emphasised internal communication. Raising technical limitations in ideas meetings was banned. "It won't work" was changed into the form "Let's try it".

After that, planning progressed in an orderly manner, though initially without one single clear objective.

"At some stage, you should nail down a vision of what you are trying to achieve. A complex project also needs a coordinator to manage it. A good group dynamic generates inspiration," Koivula emphasises.

The turning point in the project came when an expert on user interfaces and a software expert joined the team. The development work came on in leaps and bounds, and the products began to take on a more tangible form. The combination of technology with play was tested in a school environment.

The results of the development work led to the creation of the SmartUs concept for playgrounds, which combines technology, games and learning. Children program a computer game with a story they have created. The game is loaded into a computer in the playground via a wireless network.

## Clarifying the importance of commercial conceptualisation

"The children themselves program the game that they then play. The games promote learning, as they involve calculations, learning about history or practising English," explained deputy managing director **Tero Ylinenpää**.

After the end of the project, the team members answered a questionnaire about the objectives and progress of the project. The questionnaire revealed that the team considered promoting interdisciplinary working to be one of the main objectives of the project.

During the project, it became clear to Lappset that in a successful complex product development project, experience, testing and close interaction determine the success of the project. They also gained insight into what additional skills the group would have wished for.

"If we were to embark on a similar project now, we would include commercial conceptualising skills right from the start," Reijo Koivula said.

## Lappset Group

Founded in 1970.

—

One of the world's leading manufacturers of playground equipment.

—

Approx. 300 employees.

—

Subsidiaries in Germany, Spain, the UK and Sweden.

"It won't work"  
"Let's try!"

Trialling and testing  
brings about the end product  
as well as guiding the  
preceding process.

# Material and design brought UPM and Artek together

Attracting interest by making a product into a story

“Every product should have something new about it. Either the product itself, the material or the collaborator should be new,” explained **Ville Kokkonen**, Artek’s director of design and product development. With this idea in mind, the company ended up collaborating with UPM.

In 2005, Artek began to investigate what kinds of natural composite materials it could use in its furniture. A few years later, Kokkonen noticed that UPM was developing a wood-plastic composite as a by-product generated from the raw material used in its label stock business.

The collaboration between the two companies got its start when Kokkonen contacted the head of UPM’s ProFi business, **Markku Koivisto**. The collaboration was founded on a mutual respect between the two companies right from the start.

## A wood-plastic composite transformed into a story

UPM developed its wood-plastic composite expertise by initially producing just one product: a corner protector. Kokkonen showed it to the architect **Shigeru Ban**, and soon companies were building a pavillion made out of corner protectors at the Milan furniture trade fair.

The collaboration helped UPM to make its own processes more efficient. “They needed so many corner protectors for the pavillion that we needed to develop our factory-style process into the ProFi business,” Koivisto said.

“We also learned a lot about how collaborations develop through dialogue,” he added.

Besides the two companies, the collaborative network included the architect, who lived in France, and the students at the design college in Lahti who had built the pavillion.

Koivisto said that UPM got the inspiration from Artek to make the product into a story. “A wood-plastic composite doesn’t sound too exciting on its own, but a story to accompany it made it interesting.”

The collaboration continued when Artek Studio designed a floor tile for UPM in the same ProFi composite. “We created a totally new product from a leftover material that combines the best qualities of wood and plastic and is completely recyclable.” UPM’s materials competencies and Artek’s design competencies were combined.

## Companies learned about working culture from each other

The two companies encountered cultural differences in their ways of working: at UPM people worked quite methodically, while at Artek the style was more flexible and experimental.

“We recognised that you can reach your goal either way, just going via a different route,” Koivisto explained.

Koivisto and Kokkonen described their collaboration as an enriching partnership that expanded their competencies and helped generate new products. Artek’s consumer-focused design skills were deepened by UPM’s global B2B competence, large-scale manufacturing skills and strong engineering competencies.

Wood construction is a huge opportunity, because recyclable products made from wood represent sustainable development. According to the 2006 vision statement from the Finnish Forest Industries Federation, the value of the design- and technology-intensive furniture industry will double by the year 2020.

**Artek**  
 Furniture and design company, founded in 1935.  
 –  
 Employs around 50 people.  
 –  
 Headquartered in Finland.  
 2009 turnover: 11 million.

**UPM**  
 Finnish forestry products corporation. The Group’s first activities were launched in the early 1870s.  
 –  
 Employs around 23,000 people.  
 –  
 2009 turnover: 7.7 billion.

We learn from each other through networking – including about working practices

## A better built environment starts with developing a multidisciplinary dialogue

It's worth getting a dialogue going between professionals right at the start of your project

Learning networks within a company.

Construction projects are getting more complex. Every project is unique and has many aspects to it. **Miia Lehmuskoski**, HR director at WSP Finland, says that in the past, professional identities were largely built around expertise in one particular subject area. Nowadays the ability to work together and achieve the best result is more important.

Insufficient collaboration between architects and structural engineers is generally considered to be the Achilles heel of building projects. Miia Lehmuskoski said that the strength of WSP Finland is that the dialogue between its architects, structural engineers and other specialists begins right at the start of a building project.

### Clients want collaborative projects

The company's services include consulting and engineering for the natural and built environment. Combining its specialist skills in clients' projects gives the company its competitive edge. For the client, joint projects are viewed from multiple perspectives and as the most cost-efficient service solution. For example, WSP Finland tries to include environmental, accessibility and design perspectives right from the initial project scoping stage.

Its joint project-based approach is not yet standard practice in the construction trade, but clients have begun to request it more often.

"All of my current projects are multi-disciplinary," explained **Vesa Erikkilä**, head of the architecture unit.

In WSP Finland's projects, an architect often serves as the chief designer. He or she assembles the necessary competencies, directs the project and informs others of the client's requirements. The structural engineer's expertise includes load-bearing structures, structural physics and fire safety and acoustic issues.

"The most fruitful thing about collaboration is when we get together around the same table right in the early stage of a project," **Sami Lampinen**, head of the structural sector for housing emphasised.

### A feather in everyone's cap

The success of a joint project requires good leadership, communication skills and paying attention to certain limitations.

A good project manager will make sure that work does not get too siloed. Financial limitations and deadlines are the biggest challenges in construction projects. A team has to be totally committed during the planning work, but has to bear in mind all the time that the clock is ticking and costs are adding up.

WSP Finland is committed to creating a favourable environment for joint projects. "Within the company it's important to draw attention to successful joint projects so they strengthen our multidisciplinary and show that everybody who participated gets a feather in their cap," Miia Lehmuskoski said.

### WSP Finland

A company offering engineering, research and consulting services.

—

Employs around 400 professionals.

—

Turnover approx. €30 million, around a quarter of which is exports.

Part of the global WSP Group, which has over 9,000 consultants.

Cf. the collaboration between applier, seer and implementer. They have to know how to build on each other's ideas.

Being able to form a good team is of increasing importance to management

See section 1.4

# Networking is bringing Finland to the summit of water expertise

Tackling global challenges through networked collaboration

See "Wicked problem," Oivallus Interim report 1, p. 15

Kemira's objective is to be the world's leading water treatment chemicals company. In support of this goal, at the start of 2010 the company set up the Center of Water Efficiency Excellence (SWEET) together with VTT, the Technical Research Centre of Finland.

SWEET will collect Finnish expertise in water and create new business opportunities for companies operating in the field of environmental technology. Universities are also being invited to participate in research and development.

"Most of our projects are under way; a number of companies have come on board, and a lot of planning has been done on our pilot projects," explained Kari Larjava, director of technology at VTT.

## Water expertise responding to a global challenge

By developing water technology, they aim to use the power of networked collaboration to respond to a global challenge. Fresh water is in seriously short supply.

"We are looking for partners to support our strong product development. The idea of our centre of excellence is that we won't be acting and resourcing alone. We are looking for collaborators and are developing the industry and technology together with other companies who are in the same market but use different technologies," explained **Eeva Salonen**, Kemira's HR director.

Water expertise has gained tremendous value, because water is now one of our most precious resources. Only about three per

cent of the world's available water supply is fresh water, and salt-water cannot be utilised untreated in industry.

"Fresh water supplies are particularly impacted by 'emerging economies', whose industries are developing rapidly and require ever more fresh water. Desalination of seawater has grown into a very important industry."

## A new industry taking shape together

Eeva Salonen underlined the need to understand other players' water expertise.

"Our core competence is water treatment chemicals – in other words, the use of chemicals to purify water or to make the use of water in industrial processes more efficient. Even though we do not manufacture any equipment, we ought to have a broad understanding of the technology, so we can develop the right kinds of products," she explained.

This new water-related industry is only in its formative phase.

"It's easier to influence how the water-related industry will take shape if we pool our expertise with others."

Network skills mean grasping others' expertise. It helps you to see the whole picture.

Companies + research facilities + universities

**Kemira**  
International chemicals group, founded in 1920.  
– Clients from many industries with high water consumption.  
– Employs approx. 5,000 people around the world.  
– Production activities in 40 countries.

**VTT, the Technical Research Centre of Finland**  
Creates technology solutions and innovation services for businesses and the public sector.  
– The largest organisation in Northern Europe conducting practical research.  
– Employs around 3,000 people.

**The SWEET water research centre**  
Total research expenditure estimated at €20 million.  
– Its purpose is to generate ongoing investment in pilot and demo projects.  
– The centre employs around 200 people on an annual basis.

# Energy and environmental issues affect all business

Horizontal networking among different fields

Energy and environmental issues are increasingly viewed as a “golden thread” that passes through the business world. To some companies, energy and environmental expertise is at the core of their business; to others, it is a means to achieve savings by streamlining production processes. CLEEN Ltd, the Strategic Centre for Science, Technology and Innovation (SHOK) for energy and the environment combines the resources of these companies and research institutions in clustered collaboration.

“These days, virtually every industry knows that investing in energy and environmental expertise creates opportunities to set yourself apart from your competitors. Energy and the environment are forces that have a positive impact on business, rather than being cost factors,” said **Tommy Jacobson**, managing director of CLEEN Ltd.

## A strong network guarantees far-sighted planning

SHOK's structure as a limited company sets it apart from other types of networked research and development work. The corporate structure creates continuity. Its shareholders are committed to long-range, comprehensive research activities: research planning, evaluation of research programmes and development of R&D&I practices. Its research programmes have access to the best applied practitioners and thus the best resources, including from outside its shareholders.

The network is divided into eight topic areas of strategic research. These include carbon-neutral production, energy mar-

kets and smart electricity networks, as well as materials recycling and waste management .

## Equality speeds towards new openings

CLEEN Ltd has members from prominent international players from different value chains: thus no single shareholder ranks above any subcontractor or client, but is more of an equal partner. The equality among shareholders enables genuine cooperation that is not governed by a supplier-client relationship.

“Discussions in the network are balanced because everyone is on the same page, although the business deals differ. SHOK gives companies the opportunity to toss around even radical ideas.”

Collaboration during projects is done via a virtual organisation, largely separate from each other in physical terms. “In the best cases, everyone would work under the same roof part of the time,” Jacobson said.

## Finance and consumer psychology to supplement the skill set

The expertise behind CLEEN is based on Finland's traditional strengths, such as high-tech skills. Jacobson feels that in the future, CLEEN will require experts from other fields as well. These supplementary areas might include finance, consumer psychology, IP and contract law and medicine. Key skills from more and more areas are impacting the development of the fields of energy and the environment.

## CLEEN Ltd and the SHOK centres

CLEEN Ltd is a research, development and innovation centre for businesses and research institutions.

— The core of CLEEN consists of a board of directors, R&D advisory board and sub-groups and research consortia. The board of directors and the R&D advisory board are responsible for determining the general course of CLEEN's research activities. The actual research work, and therefore also CLEEN Ltd's expertise, is located

and developed within its research programme consortia. The SHOK approach is based on R&D&I for the needs of business, which include strategic and applied research as well as piloting and demoing new technologies. The SHOK centres were launched between 2007 and 2009.

In networks, hierarchies are replaced by equality

Network collaboration requires virtual networking skills and the ability to get along.

# 4. Future education will support and promote working together

This chapter summarises the central findings and messages of this report concerning future competence needs for business. Many of them are linked to changes in the nature of work.

One objective of the education system has historically been to aim to prepare people for the requirements of an industrial society – for jobs that had strictly defined tasks, allocated in advance. Employees worked largely separately from others. Learning one skill was sufficient for a long time.

Nowadays, and particularly in the future, work is done increasingly in groups assembled on a project-by-project basis. From the individual's viewpoint, this means that their duties also vary between projects. Strict instructions are replaced by guidelines, and the level of abstraction of tasks is increasing. So it is no longer enough to follow instructions issued by others and perform strictly defined tasks. Increasingly often, people have to define the content and rules of their work themselves, or together with others.

When work is detached from routines, new skills – both substantive and procedural – have to be learned

throughout one's career. This change must be reflected in education from primary school to vocational studies, universities and adult education, i.e. throughout lifelong learning.

## **What should people know or learn?**

The starting point of business in the future will be “born global”. Participating in the global marketplace and global networks requires ability and desire. Abilities include a deep understanding of various market areas and practices, specialist competence in international commerce and language proficiency.

In order to be able to respond to the opportunities and challenges of the future, we must strengthen our understanding of the changes in the operating environment and lifestyles, development of product and service concepts, renewal of business models, financing and sales and marketing competencies – in short, our business competence.

Strong technology competence will continue to be the bedrock of many Finnish companies and the innovations they create or utilise in the future as well. In the

future, the importance of the application of technology will increase. The development of environmental and service businesses will require technology competencies to be linked to them more efficiently and naturally. Although there is strong global demand for environmental business, people will not come knocking on the doors of Finnish businesses for solutions. There is no shortage of competition. Environmental competence must be linked better to sales, marketing and communication skills. Education that generates environmental competence and environmental business will develop environmental skills and attitudes as well as business competence and entrepreneurship. It also spurs people to question things.

More and more businesses are service companies. Even the majority of employees in large Finnish “industrial companies” now work in non-manufacturing roles. Services should be developed more systematically in more companies. The culmination of service competence is in knowing one’s own range of products and services and understanding the customer’s business or needs, without forgetting social skills.

Understanding people – users and customers – better is also at the core of successful service businesses. The need for user focus and the importance of user experiences are recognised in companies, but the methods to achieve these goals are lacking. We are moving away from collecting customer data and trying to understand customers, and towards collaborating with them.

### **Ideas are refined into innovations in groups**

Talk about the competence needs for the future often gives rise to an image of a career “super-individual”. Should one person know everything? No. Instead of the individual person, the group and the network should have a broad and deep range of skills. Diversity and multiple skills arise as the sum of many competencies.

Ideas are typically refined into innovations in groups. Someone will come up with an initial idea, but generally different skill sets are needed so that the idea can be refined into a commercial solution. The key determinant of success is how well the various specialists work together. This requires network competence. Work to be done in groups requires the ability to work in groups, so the importance of social skills increases.

Working in groups, learning from others and building on other people’s ideas are skills that require practice. They are not our current strengths. Thus more systematic investment needs to be made in these areas throughout education.

### **Belief in one’s ability determines performance even more than knowledge**

The old saying that knowledge is power has been twisted into a new form: the utilisation of knowledge is power. Besides imparting knowledge, education should also do a better job of training people to apply and utilise information.

In addition to the application and utilisation of information, companies are looking for the right attitude in their competence needs. Attitude is ultimately the deciding factor. There is a demand for bold thinkers and people prepared to act. Attitude is also linked to the ability of renewal. Various studies have characterised what skills are common for reformers or rebuilders. Virtually all of the portraits include characteristics such as observation, questioning, associating, experimenting and networking.

The current strengths of the Finnish education system are in promoting knowledge. However, people’s performance is strongly determined by their concept of their own competence and abilities. Belief in one’s own abilities and capabilities increases the desire to learn. This also reinforces people’s interest in their own future.

These characteristics should be nourished at all levels of education: let's educate bold thinkers and doers by strengthening their belief in their abilities. Let's utilise a broader range of methods and different learning environments to promote learning and working together. It is also worth practising experimenting and observing things, concretising and explaining one's reasoning even at school level. These skills are useful in work – and outside work as well.

\* \* \*

The right conditions enable groups and their members to shine. The third and final stage of the Oivallus project will focus on what makes a progressive learning environment. What kind of education will prepare people for work in the 2020s? How can we promote working together and learning by doing? The final report of the Oivallus project will be published in May 2011. We will be pleased with the project if it succeeds in providing tools for renewal.

# Oivallus project participants

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## Company interviews:

The basic list of questions is available online (in Finnish) at: [www.ek.fi/oivallus](http://www.ek.fi/oivallus)

Helene Auramo, managing director, Zipipop Oy

Teemu Arina, managing director, Dicole Oy

Majja Itkonen, managing director Powerkiss Oy

Satu Kivelä, managing director Cross Wrap Oy

Ville Kokkonen, director of design and product development Artek Oy

Miia Lehmuskoski, HR director WSP Finland Oy

Veli-Pekka Leppänen, managing director Nanocomp Oy

Jan Långbacka, managing director Proffice Finland Oy

Arja Läärä, director of client relations Psycon Oy

Jari Mathalt, managing director Tahkovouri Oy

Jussi Mälkiä, chairman of the board Meriaura Oy

Mika Okkonen, managing director Imagon Oy

Mika Pukari, managing director iLoq Oy

Juha Ritala, managing director Enmac Oy Engineering

Eeva Salonen, HR director Kemira Oy

Outi Salonen, managing director Ramboll Analytics Oy

Riitta Savonlahti, HR director UPM-Kymmene Oy

Johanna Siltala, marketing director Raisio Oy

Anna Valtonen, vice-chancellor Umeå Institute of Design

Riitta Vänskä, Senior Manager Mobile and Learning Solutions Nokia Oy

Tero Ylinenpää, deputy managing director Lappset Group Oy

## Expert discussions:

William Bates, Vice President Government Affairs the Council on Competitiveness

Chris Carbone, Director Insights & Research, Innovaro

Stephen Ezell, Senior Analyst Information Technology and Innovation Foundation ITIF

Pekka Hako, cultural attaché Ministry of Foreign Affairs, Embassy of Finland, Washington D.C.

Andy Hines, Director Insights & Research, Innovaro, Adjunct Faculty, University of Houston Futures Studies

Mervi Karikorpi, director the Federation of Finnish Technology Industries

Päivi Luoma, director of communications, the Finnish Forest Industries Federation

Daryl L. Nardick, Director of Strategic Project Integration, Georgetown University, Center for New Designs in Learning and Scholarship

Michael R. Nelson, Visiting Professor Georgetown University, Department of Communication, Culture and Technology

Dana L. Nerenberg, Principal, Hyde-Addison Elementary School

Tim Ogilvie, CEO, Peer Insight LLC Deborah van Opstal, Vice President, the Council on Competitiveness

Nina Pihlman, office manager, the Finnish Funding Agency for Technology and Innovation Tekes, M.Ed.

Peter Westersträhle, advisor for science and technology, the Finnish Funding Agency for Technology and Innovation Tekes

## Participants in the Oivallus and Demos Helsinki workshop on 20 April 2010:

Tiia Brax, employment policy specialist, Kiinteistöpalvelut ry

Hannu Hakala, expert, the Finnish Hospitality Association MaRa

Anna Hynynen, project researcher, the Confederation of Finnish Industries EK

Hannele Isola-Miettinen, senior auditor, the National Audit Office of Finland

Kirsi Juva, project manager, the Confederation of Finnish Industries EK

Petteri Kauppinen, expert on labour market issues, Sivistystyöntajat ry

Matti Kiiskinen, director of development, the Finnish Association of Consulting Firms SKOL

Outi Kuittinen, researcher, Demos Helsinki

Tommi Laitio, researcher, Demos Helsinki

Jukka Lehtinen, senior inspector, Ministry of Education and Culture

Leena Lehtinen, project coordinator Commission for Local Authority Employers

Minna-Marika Lindström,  
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Erja Lintunen, secretary, the  
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Mikko Luukkonen, head of department,  
City of Helsinki

Marko Mahkonen, Senior Manager,  
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Veera Mustonen, director of development,  
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Riitta Niinivaara, subject specialist,  
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