European Foundation for the Improvement of Living and Working Conditions

The Knowledge Society in Finland: Current situation and future trends

Wyattville Road, Loughlinstown, Dublin 18, Ireland. - Tel: (+353 1) 204 31 00 - Fax: 282 42 09 / 282 64 56
e-mail: postmaster@eurofound.eu.int - website: www.eurofound.eu.int

Description of the Euforia project

In the context of its four-year work programme, Analysing and Anticipating Change to Support Socio-Economic Progress 2001-2004, the European Foundation for the Improvement of Living and Working Conditions launched a project on 'European Knowledge Society (KS) foresights for living conditions, working conditions and industrial relations'. The purpose of the project is increase understanding of the 'drivers' of a KS and to anticipate their potential impacts on living conditions, working conditions and industrial relations. The underlying aim is 'to identify and support paths to positive transformation while avoiding unsatisfactory development paths'.

The European Knowledge Society foresight project sets out to be a new type of Foundation project, a 'developmental' project. It is intended that the project should be at the same time:

- integrative
- explorative
- experimental
- developmental
- forward looking

The project intends to look at life as a mix of living conditions, working conditions and industrial relations and to analyse these strands through experimental, developmental and future-oriented methods. The project should encompass research, network building and the fostering of exchange of information and expertise with KS specialists, social partners and the state. The 'foresight' concept links the project closely to the Commission's sixth European Research Programme 2002-2006 concerning network-building and the innovation policy framework of the European Research Area.

The project is also closely related to the goals of the declaration of the Lisbon Council. The Council's declaration set out the aim for Europe to become 'the most competitive and dynamic knowledge-based economy, capable of sustained economic growth with more and better jobs and greater social cohesion.' The project's relation to the declaration lies through investigating how social foresight can fill the gap between the Lisbon Council employment strategy and technology foresight.

The project has now entered its second phase (2002 - 2003) aiming at the:

- development of a report on advancement indicators of the Knowledge Society
- establishment of temporary national foresight centres in three different EC Member States
- production of national Knowledge Society foresights concerning the 'drivers and impacts' of the Knowledge Society
- production of a synthesis report consolidating the project results

Introduction

The EUFORIA national activities of Finland concerned a foresight study seeking to understand the Finnish knowledge society. The aim of EUFORIA national activities has been in finding out the development of the knowledge society in Finland using different means and methodologies. The national process was an experimental study purposing to identify current and future influencing forces of a knowledge society for Finland. The study has been aiming at producing national knowledge society foresight studies dealing especially with living conditions, working conditions and industrial relations.

The process has involved a range of expertise participation in addressing the main issues of drivers and trends of a knowledge society. This process helps to overview the positive paths of development towards the knowledge society and to avoid negative paths.

The results to be presented in this report are originated from several national and international EUFORIA activities. These activities include a cross-national workshop, knowledge society indicators' development and a Delphi study. In Finland took place also two national future workshops that focused on current situation, drivers, trends and scenarios of the Finnish knowledge society. These two workshops were carried out in Helsinki on 3rd February 2003 and 9th June 2003. This report is a summary of the national results of Finland from these various activities

From history to today – drivers and national characteristics

This chapter describes the knowledge society drivers and current situation of Finland. It is a presentation of the drivers and national specifics that are very relevant and important according to the Finnish EUFORIA experts. These issues have arrived from the national centre activities. These are issues that the experts considered as responsible for development and can be used to better understand the present situation and past developments of Finland.

1. Government policy

1.1 Education: historical background, contents of education and in-company training

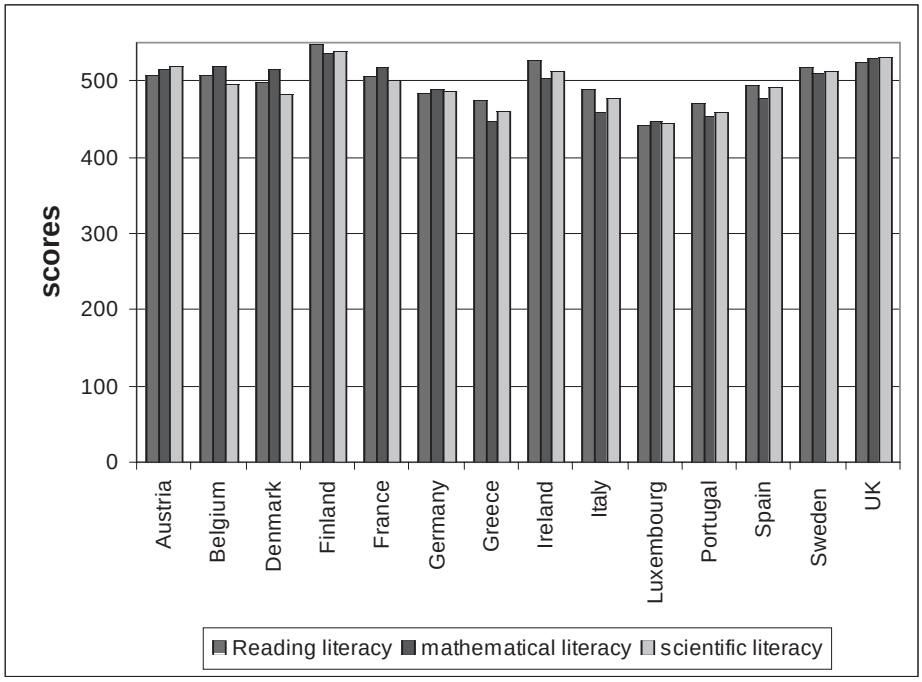
The positive Finnish societal development has its foundations on well-developed educational system that is based on Nordic welfare model. The strategic decision to invest in education was both sustaining and profitable, because that decision guaranteed a possibility for free education from comprehensive school to university for everyone and it is evident that education and innovations go hand in hand. That strategy supported the positive and competitive socio-economic development of Finland.

These days it is evitable that those nations that have invested in the increase of workforce's skills and creativeness, have managed very well in the 21st century's societal change. The significance of education has grown into very important factor in Finland, because global economy has its foundations in the growth of knowledge capital. However, knowledge capital is not only build on formal education. Most important is the capability to utilise human capital and how to apply it in real problem-solving situations at working life.

Finnish children get high quality basic education at primary level education. The OECD PISA-study shows for instance that Finnish schoolchildren have good skills in literacy, mathematical and scientific reading (Figure 1). In secondary and tertiary education it is noticeable that main emphasis is on technology and social sciences. This reflects e.g. to the high quality of engineering skills. Emphasis on technology and especially information and communication technology can be seen in Figure 2. Instead quality of business education in Finland is lower than the average in the OECD countries.

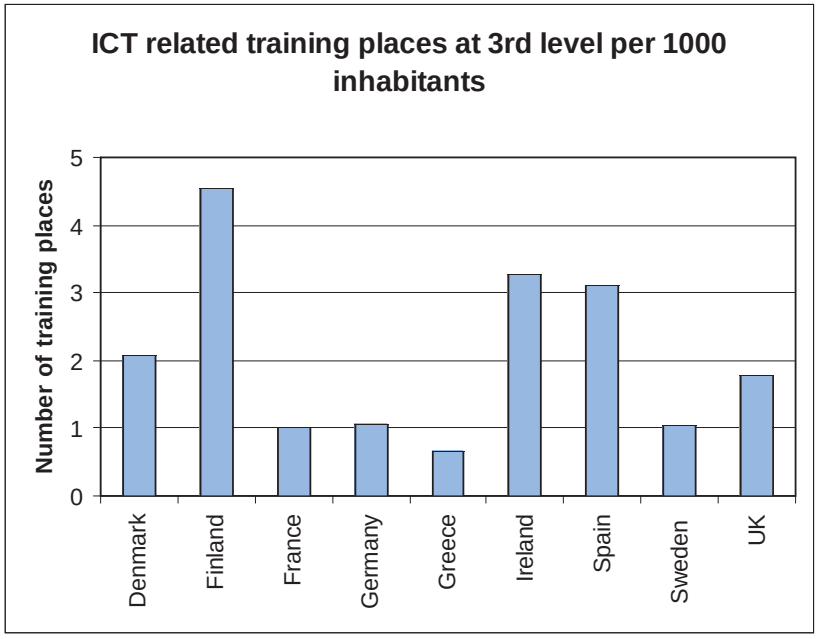
Finnish educational system has also other weaknesses. For instance the educational level gap between young and elderly is very wide. Young people are highly educated but elderly workers in Finland have rather low standard of education compared with other OECD countries. One problem is also that Finnish children start their school-life later that others and graduations times are longer than in other OECD countries.

Figure 1: *Country mean achievement literacy scores of the OECD's PISA programme for international student assessment*



Source: *OECD 2001, Measuring student knowledge and skills*

Figure 2: *Number of ICT related training places at third level*



Source: *Eurostat 2001, Information society statistics*

Table 1: *Estimation of Finnish educational system's strengths and weaknesses by Ministry of Finance*

Strength	Average level	Challenges and developmental requirements
Competent investments in education	Educational expenses	Modest level of mathematical and scientific studies at comprehensive school
Young people have high educational level and willingness to learn	Teacher/pupil ratio	Long duration of education
Extent and level of engineer education	Level of science and technology research	Low rate of business and juridical education
Teachers' high level of education	Investments in personnel training	Low rate of apprenticeship contract training

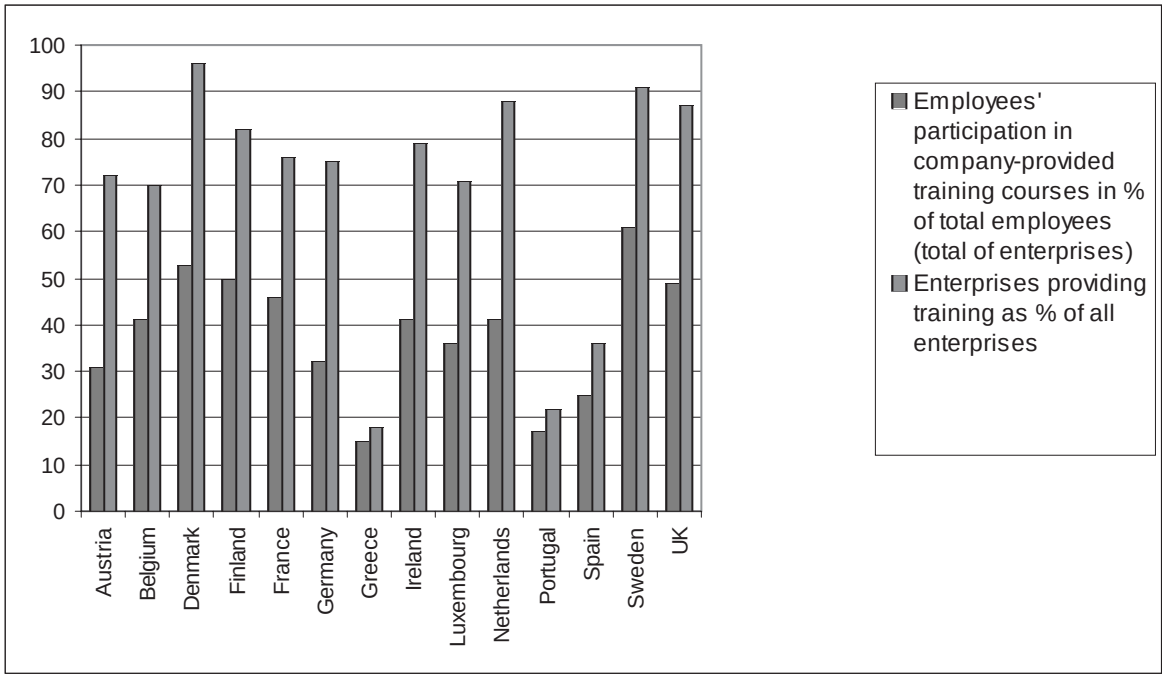
Source: *Ministry of Finance (1998), Benchmarking Finland, Helsinki.pp 143.*

One positive driver of Finnish knowledge society has been the good co-operation between economic life and educational system. But a new problem is arising. The problem is that Finnish educational system has been founded on the needs of industrial welfare society. Therefore the development of educational system needs new ways of co-operation between enterprises, schools, public sector and civic society in the knowledge society.

The aspect of Nordic welfare society can be seen also in the background of latest public educational decisions. In Finland education is seen as a mechanism preventing different social groups from dropping outside the knowledge society. One example of this is that public sector has awakened to understand the importance of supporting those special groups that are on the risk of dropping outside the knowledge society. An example of this type of public sector's investment is the TIKAS-project that aims at encouraging special groups to study and improve their skills to use ICT (see: http://www.tikas.net). Better skills to utilise ICT eases the use of services and ensures participation in all activities in the knowledge society. The TIKAS-project is directed at groups having difficulties in learning at conventional school environment and/or for those having difficulties to understand Finnish, for instance: elderly, immigrants, disabled and dyslectic people.

Social capital, intellectual capital and tacit knowledge become more and more important factors of competitiveness. In the knowledge society it is essential that people obtain high standard basic education in order to succeed in the labour market. Careers are based on many different projects that increase workers' knowledge capital. Nowadays success of business life is very dependent on highly skilled workforce. Companies have realised that life-long learning is a key driver of competitiveness. In order to succeed and increase the knowledge and intellectual capital basic education is not adequate, but companies also have to increase in-company training and on-the-job training. In consequence of this companies are continually willing to invest in training and other educational possibilities of employees and also employees are interested and willing to participate in training (see Figure 3).

Figure 3: *Employees' participation in training courses, enterprises providing training*



Source: *Empirica (2003), Advancement of the knowledge society in the European Union*

1.2 Science and technology policy

In these days it is evident that in the knowledge society welfare and competitiveness are obtained through innovations. Education and R&D act as catalysts for innovations. Finland's intense investments in education and R&D come out as improved conditions for development and success. One considerable driver strengthening conditions of competitiveness in Finland and other Nordic countries has been these countries' purposive strategy to accomplish actions increasing knowledge intensive growth.

While accomplishing science and technology strategies the Nordic countries have emerged to the global group of advanced knowledge society countries. Kasvio (1999) stresses that lately especially the succeeding Nokia has been an important forerunner of knowledge society development and the engine of growth in the Finnish national economy. Also high ranking in the latest competitiveness reports are characterising the positive anticipations of future growth. Finland being an advanced forerunner of knowledge society is not though totally based on Nokia's success. The success of information technology is actually based on the formed ICT-cluster of Finland.

Despite the great role of NOKIA as an investor of R&D, also public sector has been important R&D investors. For instance the Academy of Finland is concentrated on financing basic research and the autonomous National Technology Agency of Finland - TEKES has contributed to the success of Finland by being the country's principal public promoter of research and development. TEKES finance is directed to promote R&D of business life. According to Castells and Himanen (2001) in many other countries the parliament or ministries organise this type of promotion as TEKES implements. The strength of TEKES is that being an autonomous and independent agency it is possible to make more long-term decisions than political parties in general tend to do.

Another important investor of R&D is the Finnish National Fund for Research and Development -Sitra. Sitra is an independent public foundation under the supervision of the Finnish Parliament. The Fund aims to promote Finland's economic prosperity by encouraging research, backing innovative projects, organising training programmes and

providing venture capital (see: http://www.sitra.fi/eng/index.asp). Sitra is especially the public promoter financing risk investments e.g. promoting start-up companies.

1.3 Welfare policy

Welfare society has been in a key position in Finland's developmental process from industrial society towards knowledge society. This process has been based on investments in knowledge such as good basic education system. Also investments in R&D, equal division of income and high economic growth have been key drivers of successful development. Finnish government has been able to promote right strategies creating a situation that has inhibited the increase of inequality and polarisation process. Until the end of 1990s Finland has been able to avoid the increase of social exclusion, in which some other countries have failed.

Finnish welfare policy has guaranteed public services such as libraries, schools and other services also in the periphery. In fact Finland has started to utilise ICT as recourse to maintain services in peripheral areas and in this way helping to maintain living countryside. As an example of these new types of services using ICT are e.g. virtual health centres. The thought of generating and maintaining high quality infrastructure in every part of Finland has been based on the idea of welfare society. These investments have been profitable, since by creating good basic services and educational possibilities for all citizens Finland has created a good foundation for the socio-economical development, where all potential resources and innovations from core to periphery can be utilised as promoters of competitiveness and welfare.

The equality does not mean only equal regional development. Finland's policy has also been to provide same possibilities to different social groups. For instance the TIKAS-project that aims at encouraging special groups to study and improve their skills to use ICT. Better skills to utilise ICT eases the use of services and ensures participation in all activities in the knowledge society. TIKAS is directed to groups having difficulties in learning in conventional school environment and/or for those having difficulties to understand Finnish, for instance: elderly, immigrants, disabled and dyslectic people.

Several welfare state researchers have emphasised the systematic nature of Nordic welfare society; it is a question of different institutional aspects reinforcing each other and this has driven the development to the positive direction. This policy line has turned out to be very successful, since after the Second World War Nordic countries have jumped to the group of wealthiest nations. Finland and other Nordic countries have succeeded to combine demands for economic efficiency, social security and political democracy into a very unique and functioning unity.

2. Economy and labour market

2.1 General economic development

In the early 1990s Finland was in state of stagnation. This was a consequence of both collapse of the Soviet Union that was an important trade partner of Finland, and due to depression of the early 1990s. Seriousness of the situation can be seen as we study the GDP rate of Finland. At the beginning of the 1990s Finland's GDP was even lower than during the so-called Great Depression in the 1930s. Because of this situation Finland was forced to find a new economic model.

Due to the depression Finland was again in a situation where it had to find another strategy to survive. Earlier struggle happened during the Second World War, when Finland had to gather up all the strength and resources to fight for its freedom and later in order to pay back the war indemnities for the Soviet Union. Finland succeeded in this because despite the different social classes and genders all citizens were motivated to work hard together in order to find the way to survive. The events of the II World War created in Finland a collective positive spirit that became well known as "the spirit of Winter War".

Finland had faced severe difficulties also earlier, but had always found a way to survive. And this happened again in the situation of 1990s depression - some people have compared the 1990s situation with “the spirit of the Winter War”. The new strategy of Finland was the new economic model - Finnish model of knowledge society. Finland started to reorganise its free resources and started to follow the path where increase of exports and development of high technology were in a major role.

The strategy moving towards the new economy was a success. Nowadays Finland is in a situation of being at the top group in studies measuring international competitiveness of nations. Despite success Finland has also weaknesses. For instance the new economy in Finland is very limited. It is mainly based on ICT-cluster producing information technology. Finland has a challenge to jump to a new era, where new economy is based on the usage of ICT in production instead of just producing ICT. Continuance of current situation can be a threat because productivity of labour is not very high in Finland despite the ICT sector. Only in the field of telecommunications productivity level is high. But in the basic industries similar productivity rate growth has not come true (see also Pohjola, 2002).

2.2 Labour market and social partners

2.2.1 Labour resources

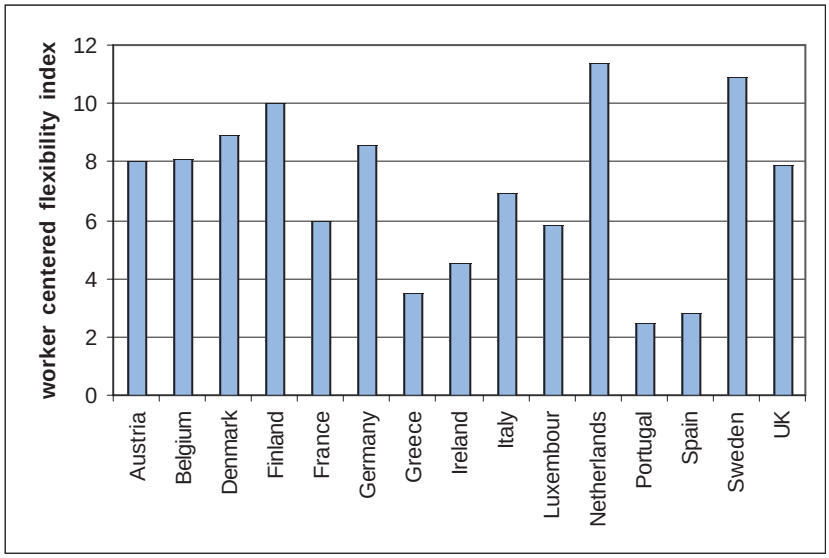
One main problem of the Finnish knowledge society is the high unemployment rate. The demand and supply of labour resources do not converge regionally, since many citizens are not willing to move from one place to another just because of better potentials for work. New skill requirement of the knowledge society also causes a situation that it is hard to employ a long-term unemployed who has reduced working capacity.

On the other hand there is already labour shortage of certain skilled experts and of low-paid workforce such as cleaners. This phenomenon will strengthen as the baby boom generation retires in the near future. The increase of women’s participation in work is not going to be a solution to this in the same way as in many other Western European countries since in Finland the ratio of female employed persons is already very high. Thereby the increasing labour shortage may become a major social political problem in Finland in the long run. Thus there is a great pressure to find means to raise the average age of retirement for instance by means of flexible working hours, enhancement of occupational health and prevention of age discrimination in recruiting. The future increase of foreign workforce may slightly improve the situation, but Finland needs also alternative ways to solve the threatening labour shortage.

2.2.2 Workplace development and flexibility

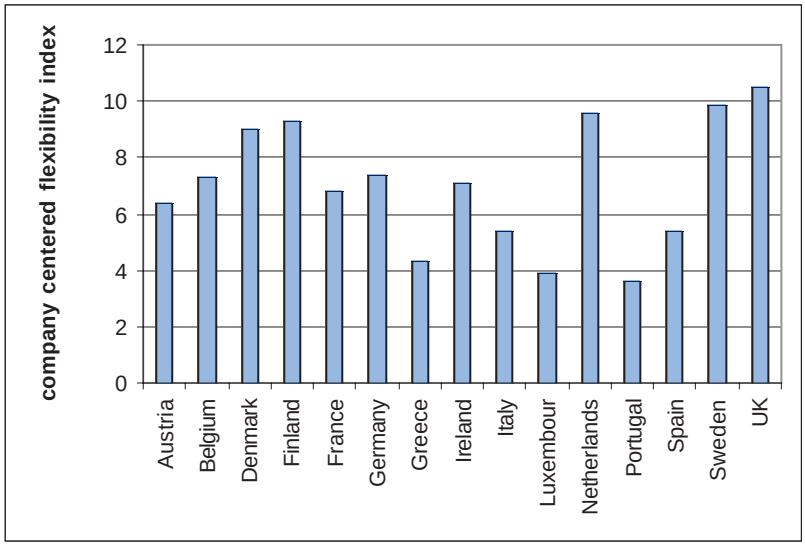
According to the indicator data based on comparative statistical data on the advancement of the knowledge society in Finland flexible work is widely spread; in other words Finnish labour market is flexible. The statistical data shows that both worker centred flexibility and company centred flexibility is high (see Figures 4, 5 and Table 2). Also another indicator - number of teleworkers - describes the good Finnish workplace development and flexibility. As Figure 6 shows Finland is among the top countries using the potential for telework.

Figure 4: *Country profile of worker-centred flexibility*



Source: *Empirica (2003), Advancement of the knowledge society in the European Union*

Figure 5: *Country profile of company-centred flexibility*



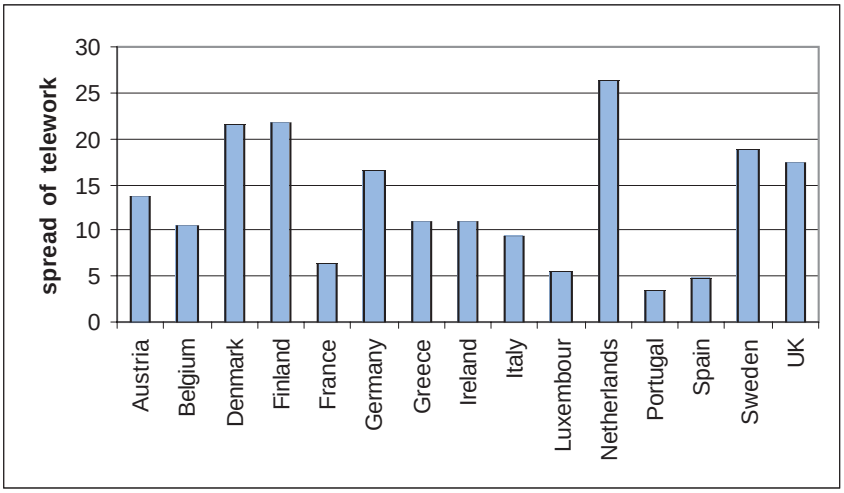
Source: *Empirica (2003), Advancement of the knowledge society in the European Union*

Table 2: *Indicators for measuring adaptability of work arrangements*

Dimension	Indicator (source)	
	Worker-centred flexibility	***Company-centred flexibility***
Time	Voluntary part-time working (LFS)	Part-time working (LFS)
Time	Temporal autonomy in job (SIBIS)	Workers with atypical working times (evening, night, weekend work and working long hours) (ESWCs)
Place	Home-based teleworking (excluding self-employed) (SIBIS)	Tele-cooperation (SIBIS)
Place	Telework feasibility (SIBIS)	Mobile teleworking (SIBIS)
Contract	Self-reported job security (SIBIS)	Employment Protection Legislation Indicator (OECD)
Contract	Average job tenure (OECD/LFS)	Workers with temporary work contracts (excluding voluntary and contracts for training) (LFS)
Content	Participating in work-related training (lifelong learning) (SIBIS)	Enterprises offering training (CVTS)
Content	Participation in decision-making concerning changes at workplace (ESWCs)	Management by objectives (ESWCs)

Source: *Empirica (2003), Advancement of the knowledge society in the European Union*

Figure 6: *Spread of telework in 2002*



Source: *Empirica (2003), Advancement of the knowledge society in the European Union*

2.2.3 Social partners

Compared with other EU countries the Finnish labour market is very unionised. Labour unions and employer organisations have created a very institutionalised co-operational relationship that has been beneficiary when the sides have for instance agreed on terms of employment.

In Finnish welfare society different institutional aspects have reinforced each other and the consensus policy has aimed at general welfare. This has been one factor that has driven the development to the positive direction. One example of the well functioning consensus policy in Finland is the general incomes policy settlement known as TUPO. In the incomes policy negotiation process government, trade unions and employer organizations try to find a consensus on

incomes policy by negotiating together of the rate of rises in salary, taxation, social costs etc. According to Pekkarinen et al. (1992) this corporatist institutional framework has created equal development of national economy and prevented the excessive rise of cost- and price level.

Labour market organisations have pushed through common pay policy that has restrained the increase of income differences between different population groups. The rate of unionisation has been very high, since workers have felt that unionisation has been valuable and equalising and that trade unions attend to the affairs of employees. However, in the future the role of wage earner organisations may change and meet challenges, because in the knowledge society terms of employment are changing into more individual.

3. Culture

Partly also cultural factors have had influence on the development of the Finnish knowledge society model. For instance the share of female labour force in working life has been higher in Finland than on the average. Finland is known as the model country of gender equality and in Finland women are nowadays more highly educated than men. The historical reason for the high female participation in paid work is that Finland had been a poor country that could not afford to hold women at home. In the early times female participation in working life was not thought to be a progress, but female's working at factories was seen as poverty and a social problem. General assumption was that as Finland becomes more prosperous, Finnish women will stay home and start to be full-time mothers as in Western European family model. But this did not occur. At the 1960s and 1970s feminism and equality policy strengthened and female participation in working life was seen as a condition to women's economical and social independence. Furthermore systems related to social policy supported women's wage labour and enabled to combine work and parenthood.

Also Protestant ethic of Finland can be seen as one driver of Finnish knowledge society. Due to Protestantism workers are committed to their work and work is highly valued. Work being an important value in Finland may not be seen if we compare working hours of Finland and other EU countries, but the appreciation of work is reflected to Finnish work moral. Work is considered as a commitment that has to be accomplished as good as possible. Finnish workers are also accurate. Finnish language describes very well Finnish characteristics; Finnish is an exact language in which there are many words and synonyms.

One example of the Finnish accuracy is the strong agreement culture that has been one very common element of Finnish labour market. This means that agreements should be formulated carefully and thoroughly. Nothing should be reckoned just on guessing and regulations. If something is possible to agree on then the terms of agreement should be formulated.

Finland is culturally a very homogenous nation, which may explain the good community spirit and rareness of conflicts. Historical events such as the Second World War has even emphasised this common willpower of nation. For instance the battles of the 1939-1940 Winter War created "the Spirit of Winter War" describing that at that time from peasant to upper class the community was seen as one very important element in order to fight together and survive from the heavy war events. These events have opened the nation to realise that juxtaposition of different social groups is not supporting.

One cultural driver of Finland is also the young culture. Finnish are to some degree fearless and even uncritical towards new things. This is the reason why for younger generation ICT has become a matter of course. Because of the young national culture in Finland there is no cultural arrogance. Finnish national culture easily absorbs foreign influences and there is no opposition against new technologies. Instead, there is a will to utilise new technological innovations. Another aspect of the uncriticalness towards new things may be a geographical reason. Finland is sparsely populated country with a harsh climate. All new technological innovations have been truly helping to survive in the difficult northern environment. If a new innovation has been in a help to survive from the daily life, people have started to use the innovation without criticism. Finns have also strong interest towards futures studies. Characterising is for instance that

the Finnish parliament has even the Committee for the Future. Castells & Himanen have summarised this by saying: Finnish people are future oriented, since they have only a short history to build on their identity.

Knowledge society in Finland

1. National knowledge society model

The Workshop results show that Finnish knowledge society model is based on highly skilled population, equal division of prosperity, high investments in infrastructure and functioning social and healthcare sectors. Another major issue is that Finland has invested extensively in R&D and offered high quality infrastructure. All these factors have created conditions for Finnish competitiveness through innovativeness and at the same time enabled the extensive public services in every region (see Figure 7).

Finnish business life is competitive, because there are good resources for highly educated workforce. Also the active labour and income policy of Finnish trade unions and employer organisations has been in a key role, because their processes have adjusted the supply and demand of workforce and has created equitable pay policy (see also Pekkarinen et al 1992). Labour market has been very organised and parties of trade unions, employer organisations and the government have had good co-operation, which has helped in the processes of working life development and technological reforms.

Figure 7: *Finnish knowledge society model*

2. Problems of Finnish knowledge society

Despite the economic growth one of the main problems of Finland is the high unemployment rate (see EUFORIA indicators report, 2003) increasing the threat of social exclusion and poverty. Regardless of government's active labour policy Finland has been unable to decrease unemployment rate. According to Kasvio (1999) especially high taxation of work has complicated to create new jobs especially to private service sector. Also the active role of Finnish society and large social benefits has brought bureaucracy and exploitation of social benefits.

On the other hand also the availability of workforce will be problematic in the future. Already there are some signals of the labour shortage of some skilled expert and low-paid employees. As baby boom generation retires in the near future

the labour shortage will be even more problematic. One weakness of Finnish working life is also the low mobility of workforce. As an example of this is that in Finland workers are loyal to their employer. Instead in Silicon Valley workers are loyal to their customers.

Another problem is the low rate of entrepreneurship. Bureaucracy is not the explaining factor to this situation, since in Finland starting a new business is very easy and not time consuming (see Porter et al 2001). The factor for the low rate of entrepreneurship is originated in the lack of entrepreneurship culture. Especially the lack of academic entrepreneurship is a weakness (see Table 3). Finnish culture largely stresses the necessity to succeed. In other words fear of failure - the heavy shame of bankruptcy - inhibits entrepreneurship. Aaltonen (1998) has also indicated that the low rate of entrepreneurship arises from thin interface between university and industry and because universities' administrative and decision making processes are not created for the needs of academic entrepreneurs.

Table 3: *Academic entrepreneurship activities*

Academic entrepreneurship activities	**Sweden**	**Spain**	**Portugal**	**Finland**	**Northern Ireland**	**Wales**	**Ireland**
Contracted research	45%	70%	43%	50%	56%	58%	69%
Consulting	51%	61%	54%	44%	51%	54%	68%
Large scale science projects	44%	82%	36%	42%	50%	45%	68%
External teaching	40%	67%	60%	37%	42%	29%	73%
Testing	15%	22%	29%	25%	35%	24%	40%
Patenting/licensing	12%	7%	2%	20%	17%	14%	26%
Other	8%	15%	4%	9%	20%	11%	26%
Spin-offs	12%	7%	4%	11%	13%	7%	19%
Sales	6%	5%	6%	8%	6%	6%	6%

Source: *Aaltonen, Mika (1998), Academic entrepreneurship, technology transfer, and spin-offs companies in different European regions, Turku School of Economics and Business Administration, Series A1/1998*

Also we always have to remember that Finland is a small country with small resources. The "edge" of innovativeness and success is very narrow. For instance in Finland new economy is based on ICT production instead of ICT utilization as in the USA. Also population ageing and retirement of baby boon generation may cause bottlenecks in the availability of Finnish knowledge capital.

One potential threat is also that while boasting about the successful knowledge society development of Finland Finnish may forget to maintain and to develop their international connections and networking. There are already some weak signals that Finland lacks self-criticism. For instance Finland regards itself as the forerunner of biotechnology even though Finland is in fact two years behind in the biotechnology development (see Appendix III).

One of the future challenges is also the lack of marketing and selling skills. It is not enough that Finnish are good at creating innovations. They should also know how to exploit them commercially. Low marketing and sales skills are greatly explained by the low rate of business and marketing education and training at schools in Finland.

It is essential that Finnish society for instance take care of disadvantaged people by maintaining competent basic services. But some structural reforms of social security and welfare systems are necessary to take place. Otherwise the

Finnish welfare society may be in crisis in the future. Social security and taxation reforms are essential, because payments into social security system and pension funds can not increase steadily. Also ageing of population makes the reforms obligatory.

" The straw theory" explains abundantly of the Finnish knowledge society's success. As Finland was among the first catching the "straw" of knowledge society development, the move was beneficial. The future challenge is how to find another straw - the new innovative business cluster - before the big main group of countries also catches the same straw. If there are two many countries taking advantage of the straw, the straw might snap and break off leading to the depression of Finland. Therefore Finland has to catch another lively straw. A possibility is that Finland succeeds for instance in the development of social innovations and these innovations would form the new international, successful cluster.

3. SWOT of Finnish knowledge society model

Based on the analysis of Finnish knowledge society special characteristics a SWOT of Finnish knowledge society was formulated and it is summarised in Table 4.

Table 4: *SWOT of Finnish knowledge society model based on results of national centre's activities*

Strengths	**Weaknesses**
- Good new media tradition is a good basis in the knowledge society. - Good training possibilities. Both training provision and participation in training are high. - High innovativeness ability. - High general standard of living. - Flexible work market. - High educational level, highs skills in reading mathematical and scientific literacy. - High engineering skills. - Good efforts to make all citizens ICT literate, even special groups have been taken into consideration - High equality (regional, gender, social groups)	-High unemployment rate. - Low entrepreneurship rate. - PC availability at schools is low. - Low rate of business education (lack of marketing and selling) and apprenticeship contract training. - Working life stressful; early retirements and sick leaves increasing.
Opportunities	**Threats**
- Investments in R&D, innovative and highly educated workforce will be in a key role also in the future development. - Social innovations may be a future innovative business cluster. - Immigration and emigration increase mobility of workforce and multicultural life. - A will to maintain welfare society hinders the increase of social exclusion and polarisation and this enables that Finland can utilise all its potential social capital. - Government has a will to accomplish taxation and social security reforms in order to maintain Finnish competitiveness. - User-friendlier ICT might ease daily work and prevent special groups from dropping outside the KS. - Strong signals that knowledge social aspects are likely to be taken into account in every field in the near future.	- If unemployment rate is not decreasing, social exclusion will increase. - Increasing labour shortage as baby boom generation retires. - Finnish have very narrow edge of innovativeness. Competitiveness is nowadays based on ICT production. - The crash of welfare society will be a risk, if reforms of taxation system and social security are not accomplished. - Productivity increase is mainly in the hands of ICT sector. In the near future many industries may face severe problems. - Rising risk of vulnerability, because of the increasing use of technology. - Continuous compulsory investments in updating ICT may become a very high expense for the Finnish society.

Trends of Finnish knowledge society

1. General

The following chapter describes the future national trends towards the knowledge society in Finland. The trends were formulated by the EUFORIA experts in the EUFORIA workshop that took place on 3rd February 2003 in Helsinki. The trend statements were categorised as subjects under STEEPV framework. The number of issues was not predetermined, but the number of STEEPV trends was allowed to evolve in the workshop.

2. Social trends

Life fragmented into series of projects
The world is becoming more and more project oriented. This situation cuts both private life and working life into many pieces and reduces possibility to long-term planning.

Growing significance of education
Basic education and life-long learning are becoming more and more important. Education will be more important, since skill requirements increase and it is becoming more necessary for people to undertake several career paths.

Mobility
Immigration and emigration will boom. This increases multiculturalism.

Stress-induced diseases increase
Effectiveness requirements are being emphasised both in working life as well as in leisure time. This is increasing stress-induced diseases leading on to situation, where burnout and depression are becoming more general.

Social inequality
Social inequality will increase in the future. This leads to polarisation: On one hand there are successful high-income, highly educated workers and on the other hand there are poorly educated low-income workers, who can easily drop out.

Flexibility
Flexibility increases both in working life as well as in family-life. Flexibility arises from employees needs.

3. Technological trends

Citizens and network society
Finnish society is changing more and more into network society. Common people take more advantage of the Internet. Internet will be used e.g. as a general source of information and distribution channel in daily life.

ICT usage common in all sectors
ICT usage will be normal and skills to use ICT will become very common. Use of ICT will become a part of all work. Information and communication technology will be used for instance in building trade, cleaning branch as well as in expert tasks.

4. Economic trends

Ageing population
Ageing of population structure will bring new changes and challenges in working life such as labour shortage and longer careers. Population ageing increases also the demand of services.

Production sector still an important factor in the knowledge society
Also in the knowledge society there will be a branch of economy that is based on production. Production sector is just widely utilising information and communication technology.

Networks and globalisation
Networks between different economic actors and product chains increase. This is a consequence of globalisation. Though it is not just multinational companies that emphasise networking, but also small and medium-sized enterprises appreciate that networking brings competitive advantage.

New types of hierarchies
Networking leads to the development of new types of hierarchies in working life. Hierarchies will also rise, since owing to networking the need for control and supervision from a distance increases. This may lead on to the use of electronic networks for remote supervision of new kinds of work (teleworking, mobile working), and new atypical forms of work.

Diversified organisation of work
Organisation of work will become more multiform. Teleworking and other forms of atypical work will be more common. Term - atypical work - will lose its original meaning.

Innovation and competitive advantage
Innovation will be one of the most important factors bringing competitive advantage. Not only product innovations will play a major role in bringing competitive advantage, but also service, managerial and organisation innovations will be very important.

Crisis of management system
On the one hand need for democratic dialogue will grow. But on the other hand these new ways of governance face old, authoritarian management system. This generates friction in the development process of management systems.

Polarisation of labour force
In the economy labour force will be more polarised. Labour force is divided into two groups: highly skilled experts and low-skilled workforce performing physical work.

Enlargement of the European Union
The enlargement of the European Union has an effect on working life. The enlargement increases the number of immigrants and thereby multiplies the quantity of the labour force.

New occupational structure decreases polarisation
Change of occupational structure can be a factor increasing more equal division of work. For instance constantly growing service sector will be dependent on the whole working population of Finnish society.

New Finnish model of working life
Finland is capable of creating its own new model of working life. This model assists Finnish working life to utilise all reserves of talented workforce.

Increasing workforce availability problems
The availability of workforce will become more problematic. On one hand there is a shortage of skilled experts, but also recruiting of low-paid workforce will be difficult.

Strengthened role of trade unions
Since work will be decentralised by changing nature of work, the role of trade unions becomes more important than earlier. The reason for this development is that trade unions have foreseen, what changes in their operations are needed. For instance trade unions have started to offer new types of social security and other services.

5. Ecological trends

Strongly expanding environmental ideology
Environmental issues are being emphasised in every field of operation. Principles of sustainable development will accompany community planning and production etc. Citizens get more welfare from less use of material products and less environmental outlets in consumption.

6. Political trends

Welfare society will be sustained
It is still very important to sustain the welfare society of Finland. It is very important to prevent a development where information society has control over everything. It is essential that Finnish society for instance take care of disadvantaged people by maintaining competent basic services.

New political emphasis - a response to an ageing society
Transition of age structure is causing changes in values of Finnish society. This leads to political re-emphasis. Changes in population structure require e.g. effective retirement income policies and new health care reform. Owing to the reform service society and information society exists simultaneously.

Local politics and democratisation
The potential for totalitarian regulations diminishes. Instead local democracy is increasing. Power is more and more devolved to regional governments and local associations.

Rationalisation of administrative structures
Rationalisation of administrative structures increase. In the transformation process a sustainable regime will be the optimum and this increases the role of communities. For instance co-operation between sub-regions is a prime example of this rationalisation process.

Two alternative development paths of Finnish regional policy

- Centralisation process strengthening

  Finland centralises more and more to urban cores (so-called technology centres). On the other hand the situation of sparsely populated areas becomes weaker. Periphery for example undergoes negative growth of population and decline of services.

- Sustainable regional development

  Finland -including periphery - must be populated in every possible way. This is a policy that will be carried out also in the knowledge society. Therefore it is very important to maintain social infrastructure also in the countryside, since social capital of countryside's adolescents involves potential of innovations.

7. Values

More emphasis on ethical aspects
Emphasis on ethical aspects increases in working life and business. For instance justice and equality are becoming significant values. Humane social life is becoming more and more important part of development

Heterogeneity of Finnish culture
Heterogeneity of Finnish culture and values is growing. Finns are not culturally as homogenous as earlier.

8. Desirability and likelihood of knowledge society trends

At the EUFORIA workshop I the invited experts discussed the desirability and importance of driving forces and trends of the knowledge society in Finland. The participants were asked to indicate the most desirable and likely trends. The results are presented in Table 5.

The results show that desirability and likelihood of the trends vary. There are for instance some trends such as "increasing ethical aspects in the society" and "the new Finnish model of working life" that experts thought to be very desirable but not likely. On the other hand there are also negative trends that were thought likely such as increasing stress and the feature that life will be consisted of several fragmented series of projects.

The results also indicate that Finnish knowledge society is likely to become a society, where all the citizens will ICT literate and their life will be more flexible than these days. It seems that also in the future innovations will be one of the most powerful creators of competitiveness. Also good basic education and increasing usage of networks and widespread environmental ideology in every field of business will be strengths of Finnish knowledge society. In Finland is will also be probable that immigration and emigration increase creating multicultural life and mobility of workforce.

Table 5: *Desirability and likelihood ratings of Finnish Knowledge Society trends*

Theme	Nr	Trend	Desirability (% of votes)	Likelihood (% of votes)
Social	1.1	Life fragmented into series of projects	0	4
	1.2	Growing significance of education	5	2
	1.3	Mobility	5	6
	1.4	Stress-induced diseases increase	0	6
	1.5	Social inequality	0	4
	1.6	Flexibility	5	6
Technological	2.1	Citizens and network society	0	2
	2.2	ICT usage common in all sectors	7	9
Economic	3.1	Population ageing	0	4
	3.2	Production sector still important factor in KS	0	2
	3.3	Networks and globalisation	2	6
	3.4	Hierarchies	0	2
	3.5	Diversified organisation of work	2	2
	3.6	Innovations and competitive advantage	7	4
	3.7	Crisis of management systems	2	2
	3.8	Polarisation of labour force	0	4
	3.9	Enlargement of the European Union	2	6
	3.10	New occupational structure decreases polarisation	5	0
	3.11	New Finnish model of working life	12	0
	3.12	Increasing workforce availability problems	0	6
	3.13	Role of trade unions strengthens	5	0
Ecological	4.1	Strongly expanding environmental ideology	12	6
Political	5.1	Ensuring welfare society	5	0
	5.2	New political emphasis – a response to ageing society	0	6
	5.3	Local politics and democratisation	2	2
	5.4	Rationalisation of administrative structures	0	0
	5.5.a	Centralisation process strengthening	2	0
	5.5.b	Sustainable regional development	3	0
Values	6.1	Ethical aspects in society	14	0
	6.2	Heterogeneity of Finnish culture	0	4

Source: *Finnish EUFORIA experts*

Note: *Desirability and likelihood values are percentage values of the votes for each specific trend*

Scenarios

1. Scenarios for the evolution of a knowledge society in Finland

Three Finnish knowledge society scenarios were developed at the national workshop II. The scenarios have been developed according to the trends, drivers and wild cards characterising the direction of Finnish knowledge society development. Also the preliminary Delphi study results functioned as background material during the scenario building process.

At the scenario building process three groups started to talk about alternative scenarios. Experts were given a tabular structure, where all the three groups started to build their own scenario. At the workshop was applied a framework, in which "business as usual", "good case" and "problems" scenarios were build. The same framework allowed the three groups to represent each scenario to a large extent within the same headings.

The scenarios that were built are:

- Problems scenario: King of misery - stagnation
- Business as usual: Realistic model
- Good case: Utopia - dolce vita for everybody

The "Realistic model" describes the development of Finland, where the major trends and drivers occur and the course of Finland will not change. "Utopia - dolce vita for everybody" scenario is based on the presumption that Finland will manage to resolve all threats and weaknesses that it now has. The third scenario "King of misery - stagnation" is dependent upon the basis that a major change in values towards individuality within the wider environment occurs. Results of this scenario building process by the experts are shown in Table 6.

Table 6: *Results of the Finnish workshop II scenario building process*

Headline Description	**King of misery - stagnation**	**Realistic model**	**Utopia- Dolce Vita for everybody**
Specific features of pathway, main trends, events and turning points	• Solidarity has been crumbled and values have become harder emphasizing individuality. • Finland has crashed down into the 2nd league outside the networks of international economy in consequence of self-satisfaction. • Technology is not in control, because solutions are not compatible.	• Investments in R&D still in important role. • Maintenance of year 2003 model of economical, political and social development • The EU has more strength and national development is less and less in the control of Finnish	• Finland has managed to resolve all the treats that are presented in chapter "*Problems of Finnish knowledge society*", page 17. This has been the main turning point in the Finnish knowledge society development. • The old welfare society model undergone some transformation but it still prevents social exclusion and contributes to equality. • Interaction and networking in the processing of knowledge an important feature of competitiveness. • Values: Wisdom of the society: participatory management systems, equality. • Knowledge society infrastructure in the hands of everybody (internet connections and machines are either free or very cheap). • Countryside utilises ICT in order to prevent the stagnation of periphery and as a tool to develop the periphery to become a vital place to live and work.

Table 6: *Results of the Finnish workshop II scenario building process (cont.)*

Headline Description	**King of misery - stagnation**	**Realistic model**	**Utopia- Dolce Vita for everybody**
Economic Structure and Performance	• Knowledge-intensive operations have been removed away from Finland owing to lack of skilled, professional workers.	• Finnish economy has at least one internationally growing cluster. Limited business circles are not sufficient. Therefore networking has become a necessity. • Finally efforts to promote entrepreneurship result in the increase of entrepreneurship in Finland. • Relative growth in service sector.	• Economic growth steady. • Risk of entrepreneurship lower (everybody -including entrepreneurs -is legitimated to small ”citizen salary”
Social and Political Circumstances	• Income inequality and inequality in all aspects is increasing • Welfare society is in chaos leading to increase of social exclusion • One part of poor people has moved to countryside living there self-sustainingly. Other part of poor people lives in deteriorating suburbs.	• Centralisation process has ceased. Instead there is a balance between countryside and cities. • Social security still as a tool to prevent social exclusion and polarisation process.	• Equal regional development as ICT infrastructure available in every region. ICT has become a basic infrastructure (like water pipes and sewerage) • Welfare society guarantees everybody’s basic well-being.
Living Conditions: - Family structures, household composition - Child- and elder-care - Domestic division of labour - Living standards - Time use - Work-life balance - Social and political participation - Access to public services	• Inequality is sharply increasing. • Divorces have become acceptable. Therefore families have less opportunity to take care of children, but also the society refuses to provide for the children. • Broken family structures have increased insecurity. • Increasing income gap has lead to situation, where only rich can afford to have personal services (to buy human touch). Poor people can not afford this and are forced to utilize technology (e.g. poor elderly in feeders)	• Work-life balance is not in balance. Workers have to be flexible because of the negative flexibility (working long hours deteriorates the family relationship of labour markets. • Multiform family structures. Nuclear family more exceptional than in the early 21st century. • Living standard is high but polarisation increasing: the income gap between those in work and those without work widening. • Different trends in consumption and consumers more individual. • People consider the work-life balance to be more and more important seeking to find new forms of work.	• Finland has managed to reduce the unemployment rate. And the employment rate is around 75% • The usage of technology does not require expertise. User interfaces are user-friendlier than in the year 2003. • Everybody has still right for minimum income. And basic services are available in every region from south to north. Knowledge society citizenship rights have been defined and guaranteed.

Table 6: *Results of the Finnish workshop II scenario building process (cont.)*

Headline Description	**King of misery - stagnation**	**Realistic model**	**Utopia- Dolce Vita for everybody**
Working Conditions: - Levels of employment and unemployment - Skills and training required at work - Quality of working environment - Part-time working - New forms of work	• Flexibility of the labour markets not worker centered. This has increased insecure employment and longer working hours are a reality for those who still have work. • Work-life balance has blurred and the situation is reflected as increasing sick-leaves. • New skill requirements are: seeking only own interest and standing ones ground.	• Work hours more individual. • The line between work and life blurring. • In the networked society social skills are emphasised. • Increased challenge towards decentralised management. • Lower hierarchies • Divide between those in work and those without work maintains • Regional differences: even though centralization process has stopped there are still some regional differences in the placing of work.	• More equal division of labour. Flexible labour market means more worker centered flexibility and individual needs are taken into consideration. • Networks replaced hierarchies • Interaction skills emphasized.
Industrial Relations - Strengths and strategy of trade unions - Participation in decision making concerning organisational and technological change	• Both increasing immigration and emigration shake conventional trade union activities.	• Many challenges in industrial relations. Trade unions are forced to find new strategies. • Besides trade unions there are new ways of participation. • Due to flexible labour markets work laws have faced changes.	• Individual contracts between workers and employers increasing. • Trade unions' role is more international and trade unions look after workers' basic rights. • Team organisations create real participatory management • The EU dictates international norms of work laws
Policy Implications: For example: economic, employment, education, social services, pensions, innovations, general governance	• Deterioration of all aspects (education, economy, welfare society etc.). • There is a strong lack of confidence and disinterest in politics. • Income gap is widening increasing extremism	• Economy in a major role in the knowledge society. • Part-time working is common. • Economy has more influence on the societal change than policy decisions. • E-governance is both a challenge and an opportunity.	• The society supports possibilities to lifelong learning. • Social and health services available (free or cheap) for everybody. • Flexible retirement arrangements. • Heavy investments in R&D: R&D is the most strategic area in the knowledge society. • Governmental model more networked and stresses local democracy.
Key Social Innovations Required: State, Economy, Civil society	• In order to avoid this scenario it is important to support skills and capabilities to work in international arenas and to build networks between experts.	• Investments in R&D	• Reform of the early 21st century taxation model • Safe ICT systems.

2. Scenario analysis

Special reference to living and working conditions and industrial relations

Chapters 2.1.1 to 2.1.3 are summarising the main results that were produced during the scenario analysis process that have specific reference to working conditions, living conditions and industrial relations.

2.1.1Working conditions

Results of the scenario analysis process indicate that flexibility will be a very welcomed feature in the knowledge society. It for instance enables individual working hours. But there is always a risk that flexibility will not be worker centred, which is development that should be avoided. Knowledge society development is also going to have influence on management systems. Management is going to be more decentralised and have lower hierarchies.

Results of the scenario process also address that there are some signals of the possibility that polarisation process increases in Finnish working life. If the high unemployment rate of Finland will not decrease in the future, this leads to polarisation. This kind of development would mean that those who have work have to do longer working hours, but also social exclusion will increase. This situation would surely not help the labour shortage that Finland is going to face in the near future as the baby boom generation retires. Also one evitable problem of working life causing labour shortage and dissatisfaction at work will be the increasing stress at work. It increases sick-leaves but the stress also induce ageing workforce to early retirement.

2.1.2 Living conditions

The experts thought that also in the future the living standard of Finland will be high. But they saw that in the knowledge society development process there is a major risk that polarisation increases and the income gap starts to widen.

Another uncertainty in the future development will be the lack of work-life balance. Rediscovery of this balance will be very important and therefore workforce will start to seek new forms of work. If for instance flexible work arrangements and individual work arrangements will not increase, this would cause increased divorce rates and insecurity.

One major technological change in the future may be that the usage of technology will not require expertise. ICT will be user-friendlier and very cheap to use. In fact ICT becomes one element of basic infrastructure of Finnish society.

2.1.3 Industrial relations

The main point of industrial relations that occurred in the scenario analysis process was issues concerning trade unions and labour laws. General opinion was that trade unions are forced to make some strategic changes and their role will me more international. And besides trade unions new ways of participation will be developed.

The role of European Union was thought to be in dictating international norms of work laws. Generally work laws have to face changes, because labour market will be more flexible and individual contracts between workers and employees will increase.

Key social innovations feasible by 2015 and role of key players

The scenario analysis draws up some issues and questions that are concerned about some major issues in the future development and the role of key players in that process. The issues presented in following chapters were seen to be very important factors to be discussed and resolved in the future in order to follow the positive development path and to avoid the negative path.

2.2.1 Value discussion

Already now the Finnish government invests heavily in the advancement of knowledge society development. In order to remain as an advanced knowledge society country Finland has to foresee and increase research among the issues and factors of uncertainty presented in chapter Problems of Finnish knowledge society. Furthermore discussion about values is needed in the Finnish society to determine, what is actually the desirable future of Finland. What are those special features that we want to pertain and where do we need further development? For instance it is essential to study taxation in order to preserve the welfare society without losing the profitability of Finnish business life. Also studies related to entrepreneurship promotion will be important.

2.2.2 Continuous investment in R&D

One basis of the economic cycle is that all innovations go through certain stages of growth - graphically called an S-curve. Therefore also in the future it is essential to maintain high level of R&D investments. The R&D investments will help Finland to move from one innovation S-curve to another. It is important for Finland to jump from ICT-cluster to another innovation cluster, before the growth of current s-curve shifts to the stage of maturity.

2.2.3 Educational challenges

Today Finnish education system is of high quality, but this level must also try to be maintained. Future challenge is to invest more in education emphasising marketing and sales skills.

2.2.4 Technological problems

Increasing implementation of technology increases vulnerability of a society. Due to rising risk of crisis safe backup systems must be developed. In technology field also visualisation studies will become more and more important. ICT should be user-friendlier. Visualisation research would increase user-friendliness of ICT facilitating daily work and even preventing special groups from dropping outside the knowledge society.

2.2.5 Accelerators and ramps

Finland has to attend to the societal development so that there are always some elements of “accelerators” and “ramps” in the developmental process. Accelerators are essential in the creation of innovation that guarantees the economic growth and welfare. On the other hand ramps are also important element that prevents the fatal speeding of development such as excessive increase of cost- and price levers that decrease Finnish competitiveness.

2.2.6 Knowledge society aspects in all fields

Knowledge society issues should not be centralised only to some principal committees and key players. Instead knowledge society aspects should be taken into account in every field. Co-operation is mainly needed in the creation of technological standards, because in the future it becomes more important to increase technological compatibility.

Bibliography

Aaltonen, Mika (1998). *Academic entrepreneurship, technology transfer and spin-offs companies in different European regions*. Turku School of Economics and Business Administration. Series A1/1998.

Castells, Manuel & Pekka Himanen (2001). *The Finnish model of the information society*. WSOY, Helsinki. pp 201.

Empirica (2003). *Advancement of the knowledge society in the European Union*.

Kasvio, Antti (1999). *Competition for the work*. Tampere University Press. pp 397.

Ministry of Finance (1998). *Benchmarking Finland*. Helsinki.pp 143.

Pekkarinen, J., M. Pohjola & B Rowthorn (eds) (1992). social corporatism: A superior economic system? Oxford: Clarendon Press.

Pohjola, Matti (2002) The new economy: facts, impacts and policies. *Information Economics and Policy*, Vol 14.

World Economic Forum. (2002). *The global competitiveness report*. Oxford University Press, Geneva. pp 446.

Appendix

List of experts

- Etelä-Suomen sosiaalialan osaamiskeskus [Centre of Expertise on Social Welfare in Southern Finland] / Timo Kopomaa
- KTV [Trade Union for the Municipal]/ Marja-Riitta Vehviläinen
- Palvelutyönantajat [Employers' Federation of Service Industries] / Nina Pärssinen
- SAK [Central Organisation of Finnish Trade Unions] / Jyrki Hélin
- SITRA [Government Economic Research Institute /Osmo Kuusi
- STAKES [National Research and Development Centre for Welfare and Health / Ani Kajander
- Tilastokeskus [Statistics Finland] / Marko Ylitalo
- TT [The Confederation of Finnish Industry and Employers] / Marita Aho
- TT [The Confederation of Finnish Industry and Employers] / Katja Leppänen
- Työministeriö [Ministry of Labour] / Tiina Hanhike
- Työministeriö [Ministry of Labour] / Tuomo Alasoini
- Työministeriö [Ministry of Labour] / Juha Antila
- Uudenmaan Liitto [Uusimaa Regional Council] / Jan Henrik Johansson
- Uudenmaan TE-keskus [Employment and Economic Development Centre] / Jouko Nieminen

I. Ahokas, J. Kaivo-oja, Finland Futures Research Centre

EF/04/05/EN