



Nordisk Transportforskning

Nordic Transport Research



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Proceedings of the NTF Seminar on
**Passenger Transport in the
Information Society**

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Keywords

Passenger transport, information society, dream society, intelligent transport system, ambient intelligence, mobility foresight

ABSTRACT

The proceedings of the NTF (Nordic Transport Research) seminar on Passenger Transport in the Information Society, organised on 10th and 11th December in Helsinki Finland, are presented in this report. The presentations of the speakers in various sessions, discussions and results of the working groups are included in this report.

PREFACE

This report presents the proceedings of the NTF seminar on Passenger Transport in the Information Society. The seminar was held on 10th and 11th December, 2003 in Helsinki, Finland. The Ministry of Transport and Communications in Finland had commissioned the preparation of the seminar from VTT Building and Transport. The group preparing the seminar programme and practical arrangements consisted of Research Manager Heikki Kanner and Chief Research Scientist Sirkka Heinonen from Finland, Head of Section Maria Meiner from the Danish Road Directorate and Adviser Inger-Lise Olsen from the Ministry of Transport and Communications of Norway.

The objective of this seminar was to look into the future and to identify the implications that the development of the information society will have on the transport sector, especially focusing on passenger transport from the Nordic perspective. This report includes summaries of 11 presentations, seminar papers or slides, notes of the discussion and the results of 5 working group sessions. A list of participants is also attached.

The contents of the report were edited at VTT by Chief Research Scientist Sirkka Heinonen and Research Scientist Saija Niskanen. Other writers and contributors to the seminar report were Research Manager Heikki Kanner, Senior Research Scientists Tuuli Järvi and Pirkko Rämä as well as Research Scientist Anu Tuominen. Secretary of the research group on Urban Studies Sirkka-Liisa Malmikumpu was responsible for the technical editing of the report.

Heikki Kanner
Member of the NTF Board

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1 Introduction



NTF - Nordisk Transport Forskning in Swedish and Nordic Transport Research in English - is a Nordic co-operative organisation promoting transport research in the Nordic region. This is being done through increased co-operation of the Nordic countries and the Baltic States. In 2003 NTF wanted to host a research seminar on how the information society will influence the transport sector. The seminar on Passenger Transport in the Information Society was therefore organised on 10th and 11th December in Helsinki Finland at Marina Congress Centre. By organising this seminar NTF aims to assist in the exchange of information between Nordic and Baltic scientists and to assist in establishing contacts for research co-operation on specific projects. Accordingly, NTF hopes that this seminar would be a starting point for a Nordic or Nordic and Baltic group or groups first preparing proposals and then carrying out research concerning passenger transport and information society.

This seminar was intended to look into the future and identify what implications the development of the information society will have on the transport sector, especially focusing on passenger transport from the Nordic perspective. The seminar was directed to researchers, as well as to all those interested in keeping pace with the trends and future prospects of the passenger transport sector in the information society.

The objective of the seminar was to discuss the interrelations between information society and transport system, as well as to highlight the implications arising from these interrelations. Current knowledge on the basis of research results and strategies/policies in the field was presented in various sessions and working groups. Main conclusions were also made concerning what should be done in passenger transport in the information society, facing various driving forces and challenges.

Altogether more than 60 persons from seven countries attended this two-day seminar. Director of Traffic Safety Unit Matti Roine from the Ministry of Transport and Communications chaired the seminar on the first seminar day. Research Manager Heikki Kanner from VTT Building and Technology chaired the second seminar day, and also welcomed the participants at the beginning of the seminar on behalf of the NTF Board. The audience took lively part in the discussion on both days. The time reserved for the workshops seems ever too brief, since the debate and exchange of ideas could have easily continued for a few more hours in the groups. This report aims at disseminating not only the presentations but also the core of the discussions and working group results. The challenges as well as research & needs as identified in each working group provide the concrete outcome of the seminar as a preliminary agenda of the next steps. As already mentioned, the aim is to further elaborate the seminar material and subsequently launch some focused research projects to be carried out in Nordic co-operation.

2 Key Note Session 1: How will the information society evolve?

2.1 Dream Society

when travelling becomes emotional – primarily

The Dream Society and Passenger Transport

Rolf Jensen, Chief Imagination Officer, Dream Company



Born on the 21st of February 1942

Education: 1970, Cand.scient.pol. (Political Scientist) from the University of Aarhus, Denmark

Working Experience: August 1970 – 1984. Employed by the Ministry of Defence, including short term employment in the Ministry of Fisheries and the Royal Danish Ministry of Foreign Affairs.

November 1984: Employed as project manager at the Copenhagen Institute for Future Studies (CIFS), and from 1986 as Director of research.

The 2nd of April 9 AM 2001 Rolf Jensen launched his own company: Dream Company A/S. Rolf Jensen is currently a consultant for companies in Scandinavia, Europe, USA and Asia and in addition to this he gives lectures on the trends of Society. He is also the author of the book, “The Dream Society”, describing how the shift from information to imagination society will transform the business and its conditions. The book was published in the United States in the spring of 1999 and since then translated into 7 languages and sold in several editions. In October 2002 his second book, Heartstorm[®] I was published in Denmark and in 2003 it was translated into the Slovenian and Serbian language. This book is about storytelling with regard to the company and its products and with regard to private life. Privately Rolf Jensen collects antiquarian books about travellers’ tales.

Summary

The Dream Society is a general theory for the future in the rich part of the world. It says that the consumer today is standing with one foot in the rational and technological information society but with the other foot in the dream society, where you appeal not to the brain, but to the heart. The dream society is about emotions and values. One example: watches are sold mainly on style, design and signals, because function has become trivial, is taken for granted. All watches are precise thanks to quartz technology. The same is happening with mobile phones. The trend toward emotionalising more and more products and services takes place in one industry after another. Just now it is happening with detergents.

This means that that appeals must be emotional (when the consumer is confident that the product works). These are the suggested emotions: love, control, freedom, change/conflict, care, recognition, great answers (religion), and tradition.

Is the dream society relevant for passenger transport? YES. How?

- ∄ When we are talking about tourism, cruise ships are already not transport but it is about love, romance, recognition and freedom. It started in the fifties. The “Titanic’s” passengers were actually traveling to the US, it was transport – for some in style though. The cruise ship business is growing fast with adventure added with tall ships and historic ships like the “Endevour” and the “Göteborg”.
- ∄ Trains: the various scenic or historic trains and routes in Europe, South Africa and in Thailand. Retro trains will become more popular – a safe bet.
- ∄ Cars: when driving becomes automated in 10 years time a new opportunity opens. What to do while driving? Entertainment, business? And I foresee a lot of open spaces in less populated areas where SUVs can roam and drivers can play (80% of male drivers drive better than average).
- ∄ Airplanes: they are becoming roomier allowing for bars, sleep, business and entertainment. Almost traveling in the same luxury as passengers did in the zeppelins until the Hindenburg disaster.

OK, this was about the longer term. In the next 5 years the trend – as I see it – will be like this: Transport is taken for granted, the passenger will ask, what else do you have to offer? Even though the discount airlines today are increasing their market share – next step will be to add experiences for all passengers, perhaps beginning with a glass of champagne. Then the competition will offer something more. Because traveling is becoming less transport, and more and more something else. We do not want to waste time on transport, that’s why we will want something more, entertainment, work, sleep, love and romance, freedom and.....

Dream Society

when travelling becomes emotional - primarily

- Dream Society is additional society, it adds something to the existing information society, creating a new type of society in rich countries.
- From the rational, logical information age, we are going towards the dream society.
- Good quality doesn’t cost so much any more as in the 50’s (for example a watch). Another example is a lemon squeezer. The new design makes it cost a lot, because it includes a “lifestyle”.
- Emotional perspective should be taken into account. For example, how much emotions are involved in buying a car?
- Has there been any reduction in the car traffic in the course of information society? In our time the car traffic won’t disappear - it only becomes the mobile part of our lives.
- The rational side of a human being is approaching the emotional side of him. We must find a better balance between the rational parts and the emotional parts. There is also a third part of the brain, where the instincts are located (the limbic system).
- Material and immaterial needs both need to be fulfilled.
- We also have a need for control in our lives.

- The detergent as an example: it is a question of cleanliness, but “love and traditions” have been included in it (for example Lotus tablets). Detergent becomes a part of life, which is no more as dull as the matter of detergent is as itself.
- Transport and love: the example of a cruise trip demonstrates that traveling has become the destination. The cruise customer of today doesn’t go actually anywhere, he or she doesn’t make a trip from place A to place B for rational reasons, but he or she makes the trip for emotional reasons.
- Traffic and tradition: for example Christmas trips, retro roads (taking emotions into account in a form of different pavements of old style).
- Traffic and freedom: within 10 years there are places, to which one can travel with a SUV, to hills and deserts etc. There may even be constructed antiregulatory roads for the Drivers' World.
- Brainstorming vs. heartstorming: after or instead of a brainstorming session, you should arrange a heartstorming session, where it can be found out what people really think and feel about a specific issue. Things should be made personal.
- A book of change management: Johnson, Spencer: Who Moved My Cheese?
- The six actors, a true passenger story depicts the passenger as protagonist (see slide).
- A main challenge and a possible research topic is how to create a better balance between the rational aspects of travel and emotional aspects of travel.
- "Create the future before the future creates you..."

Questions and comments:

Psychologists are in the centre as regards these questions of emotions. How do you define what emotion is? It is difficult to define, but it is a driving force in consumer life. We can take again the example of a cruise trip, where the trip is not made on the rational basis, it is made on the emotional basis. Many decisions are made based on emotions, even though when asked people give rational arguments only.

Jensen was also asked what he thinks right now about travelling with and without emotions? It depends on what we think. For example, the trend in aviation companies is changing. When there is price competition or if there were not any, we could find ourselves in a flight of any aviation company. We even tell jokes about safety. Instead of a glass of juice you will have a glass of champagne.

Jensen’s presentation:



[nordic transport, dec 2003.ppt](#)

2.2 Cyber Society

mobility enabled for Mr. Globetrotter: workforce needs – service solutions

Antti Vastela, Product Marketing Manager, TeliaSonera Finland



Antti Vastela is a Product Marketing Manager in the TeliaSonera Finland plc. His unit is responsible for developing and marketing data products in Pan-Nordic market area. His main objective is in developing and marketing mobile data services.

Summary

Key word "wirelessness"

Business principles are rewritten at an accelerating pace. The customers' requirements increase: better products and more flexible service are desired. Sharpening competition forces to closer follow-up of the costs and to streamlining of operations. Also mobility increases.

Sonera mobile solutions intensify the operations of a company, create new business and save in costs. The key word is wirelessness. For the personnel of the company it means freedom to move and possibility to take care of business wherever they happen to be. Sonera mBusiness -solutions adapt to the changing needs and suit to all-sized companies.

At the beginning of December, TeliaSonera Finland will start pre-commercial operation in the UMTS network together with the companies that need the network for their own service development. The network is opened for all users on a commercial basis, when the feedback from the first users and the service development experiences match the user experience and quality that Sonera's customers are accustomed to.

TeliaSonera Finland has a goal according to which the services that are used via networks should be easy to use whatever the underlying technology. At first, the terminal devices to be brought out on the market will support either GPRS/EDGE or GPRS/UMTS. TeliaSonera Finland will offer EDGE even in its future UMTS areas, so that the customers can use Sonera's services flexibly even in future, irrespective of the terminal devices they have.

Cyber Society

mobility enabled for Mr. Globetrotter: workforce needs - service solutions

Antti Vastela gave an example of the trip of Mike Globetrotter from Stockholm to Helsinki. He leaves from Stockholm by ferry and travels to Helsinki via Turku, wherefrom he will take a train to Helsinki. His meeting has ended and he takes a taxi to the harbour. While he is travelling in the taxi, he has the opportunity to do his business at the same time. This includes business which he could not do during the meeting. He opens the e-mail connection from his mobile phone. He has a connection to a mobile network, which is an open connection to the internet 24 hours per day, 7 days per week.

He also has an access to the calendar and address book. Mike is interested in new messages. He looks more deeply at one message and its attachment, which he has waited for. The attachment is in video format, which cannot be watched through a mobile phone. Maybe this will be possible in the future. Attachments, which are in powerpoint-format, he can watch, but without pictures.

There appears an intermediate phone call. When he answers it, he can see immediately that he cannot help in the matter the caller has (he sees a specific code on the screen informing about this) and turns the phone call to his colleague. He doesn't need to ask the person who has called to make the phonecall him/herself. He looks at the other messages in the inbox more deeply. It is also possible to answer the messages. The speed of the answering depends on the quality and the interface of the phone.

Mike arrives at the harbour and goes into the ferry. He travels with the Silja Lines ferry, because it has special communication services. With their help he is able to work with his laptop. He can have a separate WLAN-card or it can be readily attached into his laptop. The speed of the Homerun-service is the same as in your local country. He can also upload the video. There are 600 hotspots where you can have access to internet.

He arrives at Turku and takes a train to Helsinki. He can work in a mobile mode also in the train. PDA-device takes the connection. First he enters his username and the password. After that he has an immediate access to the intranet of his workplace and to all information which is accessible to this user.

He arrives at Helsinki and his office. One of the most important things that he has achieved when working mobile is the time-save, when reading messages during the trip and answering to them. Nowadays in the information society it is very common to work during the working trip.

Sonera services for such purposes include Sonera mobileoffice- e-mail- and calender to mobile terminal, and Sonera Mobicentrex- PBX features to mobilephones, as well as Sonera HomeRun - wireless broadband access to Internet, Sonera Secure User - security to mobile terminals, and Sonera DataNet - reliable mobile access to LAN.

Questions and comments

What the future will look like in 15 years? Communication and the easiness to use it will expand in everyday life. The possibility to be connected to anybody and anywhere will be available for all. There will be technology for that. In 15 years' time horizon it will happen so many things, that it is difficult to imagine in detail. Virtual conversations face to face could be an example. It should be remembered that at the same time the world is changing into a more complex one.

What is the ceiling in all this technological development? There might be counteraction as well, many people do not want to receive so many messages to be answered during one day. This may create new needs for technological development, how these things will be solved. One evitable thing is, that markets will be fragmented. There will be such services, which include more intelligence. Also networks should include intelligence.

Whether it is possible to choose, which e-mails come through, depends on the technology that you have chosen. It is always possible to choose not to be connected. It is also possible that the amount of e-mails will go down due, but this depends primarily on the national features and the people's needs.

Vastela's presentation:



[MobileDevelopment 04en.ppt](#)

2.3 Eco-Society new lifestyles, mobility and time

Tarja Cronberg, Member of the Finnish Parliament



Green Parliamentary Group
MP since 19.3.2003 –

Constituency:
Pohjois-Karjala constituency 19.3.2003 –

Parliamentary career

€ Present memberships in committees:

€ Agriculture and Forestry Committee (deputy member)
4.11.2003 –

€ Defence Committee (member) 2.4.2003

€ Committee for the Future (deputy member) 2.4.2003 –

€ Finnish Delegation to the Nordic Council (member)
2.4.2003 –

€ Finnish Delegation to the Conference of Parliamentarians of the Arctic Region
(member) 9.5.2003 –

Earlier memberships in committees:

€ Social Affairs and Health Committee (member) 2.4.2003 – 13.6.2003, (deputy
member) 17.6.2003 – 24.10.2003

Parliamentary groups:

€ Green Parliamentary Group 19.3.2003 -

Cronberg's presentation:



Technology and society are the starting points for how you see the transport. Transport becomes the mobile part of your life.

Mobility vs. immobility

Besides mobility, there is of course also an immobile part in our lives. It is worth reasoning about this stationary world as well. At this perspective, you can stay at home and do all kinds of things (with or without the aid of technology). Thus, there are

fundamentally both mobile and immobile parts in our lives. We could also think about the concept of total immobility. Lifestyles are connected to this context and to this issue of mobility vs. immobility. There is tension between total mobility and total stationary. A portable computer can even be seen as "a home". How do these new lifestyles affect children? Alvin Toffler has written already long ago about the electronic cottage. He envisioned that in an electronic cottage where both parents can stay at home, the children would have no problems. Technology definitely changes our lives. Many visions indicate, however, that these visions are not the right way to look at the future, because none of the big visions concerning homes of the future has come true. With the invention of the telephone it was predicted that you need not travel any more now that you were able to use the phone. Also the wishes of reducing the transport and moving in the cities by means of technology have not come true. Transport is increasing all the time. The videoconferencing technology inspired the same kind of forecasts that were made for the telephone. It is important to grasp to what extent technology and society are connected to each other, in order to avoid unrealistic forecasts.

Societal change is also rapid as is technological change. At the European level 10 new countries are connecting to the EU. Integration goes further as long as we are interested in travelling. This also means that the taxi queues are becoming more and more crowded and difficult to handle in Brussels. Meetings used to be arranged mainly in Brussels in the 80s, the Greek islands were found to be attractive conference sites in the 90s and now new meeting places are being sought on the borderlines of Poland, for example. Travelling costs and environmental impacts of such meetings are huge.

Globalisation of economy is another thing, which we have to keep in mind when taking social impacts into consideration. The question of local food can be illustrated here. How many kilometres food is travelling before it enters our plates? Ingredients, for example for a cup of youghurt, can be transported tens of thousands of kilometres. Besides, the security of food products is more endangered the more they travel. The sources and quality of local food is easier to trace. This has given rise to a growing trend where consumers want to know the origin of food to be able to control the kind of alimentation they are eating. The globalisation also accelerates such deviations as sex tourism in Bangkok for example, as well as dissemination of the SARS epidemic.

Time

In a mobile information society you will be on the move all the time. At the opposite side of total immobility is this mobility when you are doing other things at the same time you are travelling. There is hope prevailing that technology saves time, generates freetime for you. Actually we get more of the same in the information society: we receive more and more e-mails, so in fact we are not saving time. Besides, more than half the emails today are spam. Working time becomes transportation time, since commuting times get longer and while at work a lion's share of time is consumed in reading virtually transported emails. The case is the same with washing machines. With their invention, it was expected that this technology would save much time for us. Instead, the washing machine produced cleaner clothes, but did not give more leisure.

The tempo of life has been accelerated. We have a pressure to put things into smaller time scales. We are approaching the limits, not of technology, but of what we as human

beings can subscribe. The present working life with its burn-outs is a clear indication of this. However, such acceleration of tempo cannot go on forever. The same development goes on in cities: they become more crowded and hectic. The question is whether people want a slower-tempoed life with more leisure time. For example, in Northern Karelia in Finland a lot of people are doing this. People with small children are looking for such a lifestyle. Therefore, people start moving more and more to the countryside, towards the lifestyles, where they can have peace, quietness and still nature. They have a higher tolerance for difficult transport if they receive the above mentioned things as compensation. People will be seeking for new ways of organising life.

Community

The information society has too long been focusing on technology and on how to use technology. Technology and access to technology is important, because you need a ticket of entry to the information society. The whole emergence of information society requires considerations on how people can have access to it. There are several EU initiatives emphasising the "information society for all". People need a driving licence in order to be able to connect. In Finland we have further taken national initiatives on how to increase access by participation in communities. What kind of communities are emerging, will also define the needs of transport and what kind of means of transportation we need in the future. "Where do I belong?" is a relevant question in information society. The Japanese futurist Yoneji Masuda already long ago raised the question of communities. He highlighted the growing importance of individualised communities, not necessarily based on geographical proximity but on shared values, interests and hobbies. Nevertheless, local communities can be just as important as virtual communities and realities that are now progressing. The question of local communities (raising children and taking care of the elderly) is important. There is emerging a combination of local and virtual communities. The initiatives of the people in the Northern Karelia have created a network of active citizens. This is based on the fact that these networks are both local and virtual. They are locally organised virtual networks, combining local and global activities.

2.4 Discussion

Fragmentation is taking place. Different people in different ages will seek for different lifestyles and different solutions. The willingness to move to the countryside has increased. The demand for garden cities is still valid. Ageing of the population will also create a need for more tranquil living environments. It is interesting to see, what the Finnish government is doing for its "more children" policy. It will not succeed unless we support slower forms of life. Career stress and accelerating tempo of life will hinder such policy.

The idea of slowing down is interesting. The level of applications should be brought to this point of view. It is a kind of retreat when you close down all ICT and for example start reading a book. You can choose if you want to slow down: these are new challenges, how you organise your different aspects of life. Lengthening the opening times of shops is an illustrative example of double impact. This is good for the customer, but bad for the one who is working in the shop. It is, however, not always a

matter of more time. Availability all the time compels us to try controlling time. You have to make some fundamental choices over your life. Pick up places to go to concentrate.

How do we deal with this time rebound effect? We have reached the human limits. Who's responsibility for this - individuals, organisations, or society and authorities? We all have a say, but especially the organisation has the responsibility. What kind of production is sensible when people are seeking slower forms of life? On the other hand, we must remember that we buy a lot of things that we really don't need - rationally viewed. Many purchases are based on emotional reasons. When we play chess, we don't laugh and it entertains us anyway. The same with these purchases: they are not rationally made but please us. The number of daily working hours are in reality increasing, even though based on legislation they are decreasing. The stressing situation in working life is getting worse with growing demands of efficiency. Therefore, time spent at workplace should be more "entertaining" to compensate the burden. It seems that the stressing situation is still getting a little worse before it starts to get better. We have to make adjustments in the working life, especially if the age of retirement will be raised. The present accelerated model of the career height at 40 will be no more sustainable.

The change of lifestyles have happened during the 1990's all over Europe. We work more, but there are natural limits to it. Within one hundred years the materialistic side will disappear gradually. In the Nordic regions we have enough food to eat, place to sleep and work to do. The next thing will be to look at the emotional side of life. This will create whole new markets - products to appeal to emotions. The emotional side will take its place.

The concepts of freedom and control have been mentioned many times during this session. Does one really believe that people will accomplish to have more freedom and control over time? People can learn to organise their time and control their lives in many ways. There must exist a balance in the time budget of using technology. In an ideal case, technology gives the freedom to choose our lifestyle. For example, Sonera doesn't sell more time, but a better control over it. When we are talking about choices, maybe next time "Mike Globetrotter" will spend his spare time that is saved, thanks to ict, more creatively.

One important further element is the political dimension. What is the role of the free market and the role of the state? Due to terrorism we have now less space to individual freedom. Due to security reasons we have to close down some of the public space and networks, both physical and virtual. This is a very worrying phenomenon. Transport of information is hindered, as well as free mobility. Safety and security of transport of people, goods and information should be maintained. Transport is at the vulnerable crossroads of technological developments and social change.

3 Session 2: Transport Sector in the Future

3.1 Driving forces in the transport sector

Driving force in the transport sector

Farideh Ramjerdi, TØI



Farideh Ramjerdi, Ph.D. in Regional Planning, The Royal Institute of Technology, Stockholm, Sweden, where she has also taken up a position as Associate Professor in Regional Planning at the Department of Infrastructure and Planning. She is currently a Senior Research officer at Institute of Transport Economics, Oslo, Norway. She is a member of different national and international research organizations. She has wide experience with European research projects, under EU's 4th and 5th Frameworks, COST, and OECD. She has experience with a wide range of research and planning projects, including road pricing and toll financing, transport demand analysis,

development of transport model systems at national and regional level for Norway, car ownership and value of time study. She has been adviser to doctoral and graduate students as well as teaching different graduate level courses.

Summary

Transport and communications are fundamental for almost all activities in a society. In my presentation I go through the different factors that have shaped the spatial organization of economic activities at urban, regional and global levels. Transport and communication infrastructures connect the locations of economic activities and the intensities of the economic activities determine the demand for these infrastructures. I describe the driving force in the transport sector and address the role of the new information and communication technologies in the development in the transport sector. Much research has been devoted to the understanding of how the new information and communication technologies are going to shape our societies. I suggest that much more research is needed to focus on how the new information and communications technologies interact with transport to reshape the spatial organization of activities at urban, regional and international levels and how these interactions will affect the flow of passenger and freight at different levels.

The one single factor with the greatest influence on the structure of urban travel over the past 40 years has the five-fold increase in the rate of car ownership and use. Car has shaped the geographical layout of urban area. The dispersal of housing around the outskirts of towns took place as a result of the more general use of car. The expansion has been at a cost to the use of public transport

- Demographic and social behaviour
- Economic trends
- Infrastructure capacity and network access

- Technological developments
- Environment
- Mobility, movements of people and
- Characteristics of travel, spatial and temporal
- Higher purchasing power
- Higher car ownership
- Increase in mobility largely attributed to private car
- Growth in surface transport attribute to road traffic
- Car ownership rate and mobility
- Differences between urban and interurban travel
- The number of motorised trips (car and public transport) per person per day more than doubles according to whether the household lacks a car or has two cars
- As the number of cars in a household increase, public transport gives way to car for mobility
- Limits to car ownership (what is the saturation level)
- Car ownership rate is strongly correlated with per capita income (exceptions Japan and the Netherlands)
- Demographic trends
- Ageing of population in the developed countries
- Age effect in mobility, vehicle –kms decline about 20 percent from age 40 to age 60.
- Generation effect produces an increase in the number of vehicles, Over time the generation effect.

Driving forces in the transport sector

Many aspects and dimensions of society involved in transport sector: production, consumption, economy, location, demographics, social and equity issues etc.

∅ very difficult for both planners and decision makers

∅ predictions are not deterministic

Main subjects:

- transport, communication and economic development
- socio-economic and demographic trends
- urban - interregional travel
- internet, telematics, ITC, IS
- life style, demand for physical movement

Ramjerdi's presentation:



[trends in transport.ppt](#)

3.2 Weak signals in the transport sector

Veli Himanen, Relate Partnership



Veli Himanen received M.Sc. in Civil Engineering 1961 and Doctor in Engineering in 1975 at Helsinki University of Technology. He worked as a Planning Engineer in the Finnish National Road Administration and Helsinki City Planning Office until, in 1970, he became the director of the Bureau for Transport Planning Coordination in the Helsinki Metropolitan Area. In 1981 he joined

Technical Research Centre of Finland (VTT). As of 2001 he works as a project manager in JP-Transplan Ltd and as a president in Relate Partnership.

Dr. Himanen has participated in thirteen research projects since 1989 funded by the European Commission. Therefore his recent research activities include assessment methodologies, impacts of ICT on travelling, intelligence in intelligent technical systems, transportation policy, transportation economics, environmental impacts, sustainability and public transportation.

Summary

Passenger transport is influenced by many driving forces, which in principle have stayed the same for very long time, because human activities basically have remained as before. However, during the Information Society, the resources of production – financing, human and physical – are completed with the resource of knowledge. In addition, demand for the sustainable transport has brought a new multifaceted element in transport policy.

The presentation will start with a few observations on transport trends in relation to some demographic features and human activities.

One way to search for weak signals is to arrange the studied phenomenon into a system. Therefore some basic facts on knowledge and intelligence will be presented and a (intelligent) transport system is described. Two weak points in this system – sustainability discourse and acceptability of transport measures - are then studied. Therefore transport policy is looked from two different viewpoints: reality and virtual reality. It is claimed that the reality and virtual reality in transport policy do not coincide. If any person happens to be in this kind of situation, he is usually considered to be schizophrenic.

In the end, three weak signals on the technological sector – air travel substitution by ICT, hydrogen economy and Skycar - are discussed.

Weak signals in the transport sector

- Development from Stone Age to modern days
- Railroad and car changed the world - information technology changes the pattern
- Using transport is an intelligent action
- Problems in transport policy:
 - o demand for sustainability (earlier care of environment), accessibility, affordability
 - o willingness to pay, acceptability
 - o cultural differences in transport policy within EU / with US
- Information and dreaming society – waiting and dreaming => wisdom society
- IS is transparent – in demography fooling for long isn't possible!

Himanen's presentation:



Weak signals in passenger transport; text related to the figures

Characteristics of weak signals



(http://surix.internetix.fi/fi/content/futuoppi/2_metodit/signalix)

Characteristics of weak signals.

Weak signals in passenger transport



Weak signals in passenger transport.

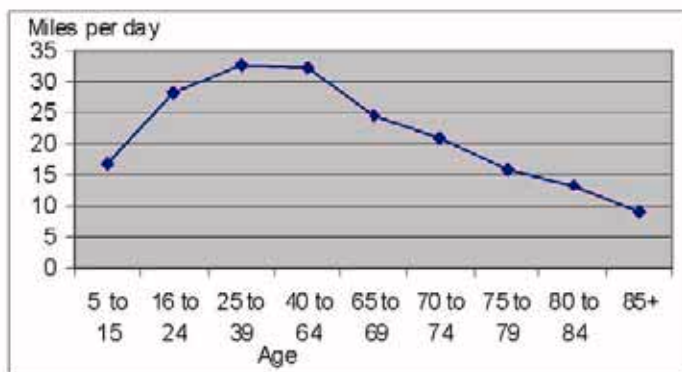


People

- € Global population is still expanding; this means more problems with sustainability and of course also more travelling
- € The number of European population is stabilising, which have diminishing impact on travelling
- € Also European population is getting older.

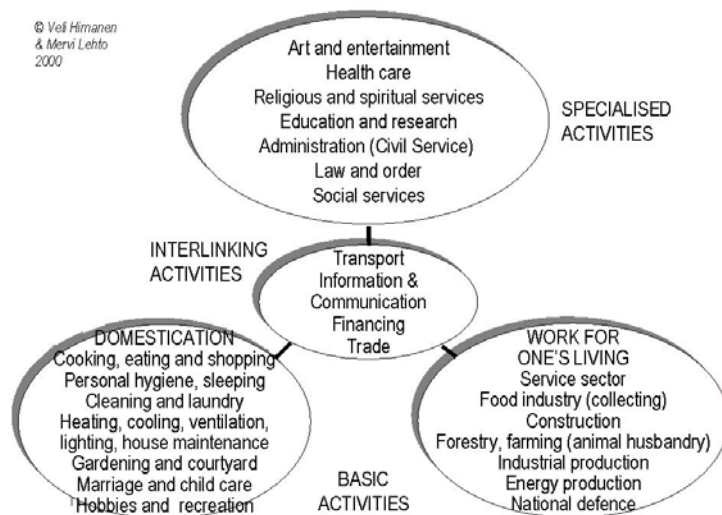
Impact of age on mobility

(2001 National Household Travel Survey, US, urban travel)



Impact of age on mobility

It is often supposed that in the future elderly people will be active and travel a lot, however if we look statistics from American elderly people we see that it is not true, travelling decreases as people get older. We can suppose that current American elderly represent our own future, and therefore aged people mean less travelling.



Human activities

- € Human activities can in principle be divided into three major groups: basic, interlinking and specialised activities, actually one third of employed people currently work in each group.
- € Basic activities can further be divided into domestication and into work for one's living. Transport is of course one of the interlinking activities.
- € In the Information Society it is information and communication sector, which dominates the social evolution.
- € It is often supposed that increased human activities seen as an increase in GDP, will mean corresponding increase in travelling.

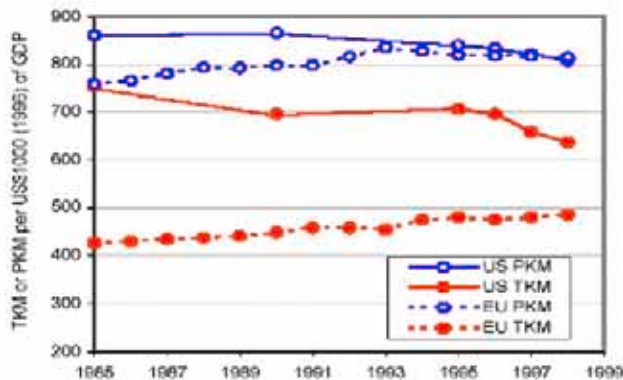
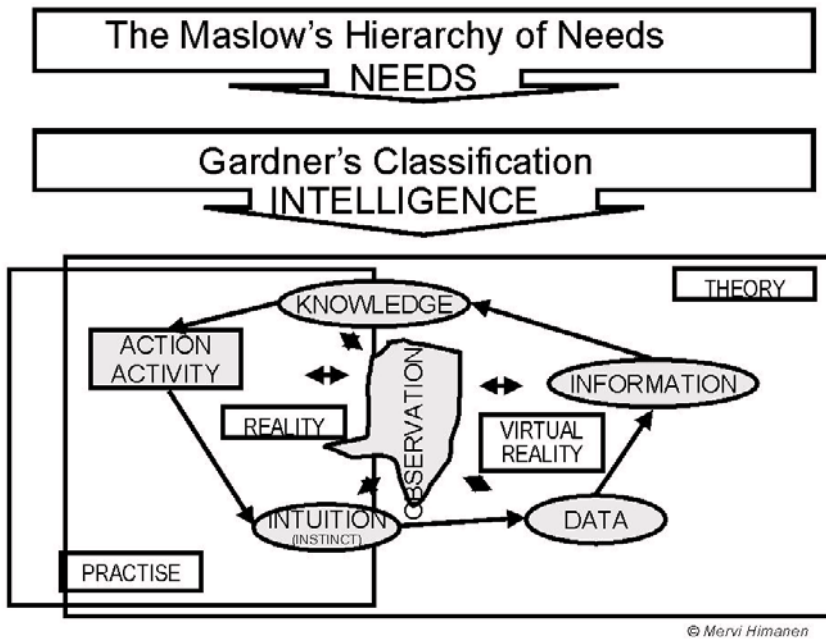


Figure 1 Transport Intensities in the US and the EU between 1985 and 1998

Note: GDP has been adjusted for Purchasing Power Parity (PPP)

(Gilbert, R. and Hudeau, K. (2002). Decoupling economic growth and transport demand: A requirement for sustainability. Paper to be presented at the Conference on Transportation and Economic Development, Transportation Research Board, Portland Oregon (May 2002).)

- € **Decoupling**
- € However, we can see that since 1993 less personkilometres are needed for a fixed sum of GDP in the EU.
- € In the US this has been true since late 80s.
- € Even, when considering freight transport less tonkm have been needed since 1995 in the US
- € At the same year the number of tonkm per a fixed sum of GDP stabilised also in the EU and could follow in the future the same trend as the US.



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Intelligent actions

- ⊘ *Human actions normally start from a need and are executed with the aid of human intelligence and other resources available.*
- ⊘ *All actions are preceded by knowledge transformation, the more complicated the action is the more complicated is also the preceding knowledge transformation.*
- ⊘ *Actions usually change reality, and knowledge is mainly transformed inside the virtual reality.*
- ⊘ *The major driving forces for any transport system are, of course, users's needs – needs for mobility and safety. Mobility do not belong to the original needs presented by Maslow, but is derived from them.*
- ⊘ *Producers use their intelligence to transform their knowledge and other resources into actions, which produce the transport system.*
- ⊘ *The users are connected to the transport system and use their intelligence in order to satisfy their needs.*
- ⊘ *The users also give feedback to the producers and possibly participate in the planning process.*
- ⊘ *The producers get, in addition to the users's feedback, also many other impulses and face some limitations in their actions.*
- ⊘ *Technology push in the Information Age means, of course, use of information and communication devices, but also other technological sectors provide their inputs.*
- ⊘ *Demand for sustainability is the toughest requirement the producers face today.*
- ⊘ *When a plan is made, the producers have to decide if it will be affordable and acceptable.*

Differences between the EU and the US

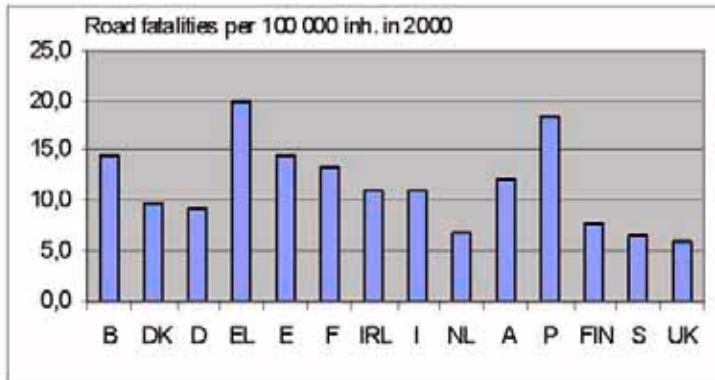
Road transport emissions and fatalities per year in the EU and the US in the 1990s

	NO _x per capita (kg)		VOCs per capita (kg)		Fatalities per 100 000 inhabitants	
	Mid 90s	Late 90s	Mid 90s	Late 90s	Mid 90s	Late 90s
EU	16	12	14	9	12	11
US	29	30	21	19	16	15

Differences between the EU and the US

- € *It can be seen that transport policy has been totally different between the EU and the US.*
- € *All indicators – emissions as well as fatalities – are much higher in the US, and even NO_x have been increasing.*

Road traffic safety in the EU



Road traffic safety in the EU

When looking at road fatalities, we can see that even inside the EU transport policy can be totally different.

How it can be that quite different transport policies exist in developed countries?

According to my understanding the answer lies in transport policy discourse, which have some schizophrenic features.

Sustainable discourse

(Eran Feitelson & Ilan Salomon in NECTAR Conference, Helsinki 2001)

The discourse on sustainable transport includes two processes:

- **The rhetoric of sustainability** as an instrument in the political discourse is important in the political arena.
- **The actual policy making** which can, and should, be addressing real politics.

Virtual reality in transport policy does not coincide with the reality.

Sustainable discourse

A person with clear difference between his thinking and acting is not usually considered quite wise.

Acceptability of policy measures

(Feitelson, E., Salomon, I. (2004) Factors that Affect Adopting of Innovations: A brief Review. In: Beuthe, M., Himanen, V., Reggiani, A., Zamparini, L. (eds) Transport Developments and Innovations in an Evolving World. Springer, Berlin, 11-23).

In practice those transport measures will be implemented which suit the sustainable discourse, get support from some groups but do not raise too much opposition.

Acceptability of policy measures

Rail and road pricing

- **Expansion of rail network** is supported by many groups, it does not raise much opposition, but affordability and limited impacts may form a hinder.
- **Road pricing** is not supported by many groups –except experts and financial departments – but it raises much opposition.

Rail and road pricing

Waiting, waiting and waiting

•How long the experts will wait for a final solution from road pricing?

•Shall stringent measures ever be implemented in a democratic society in a wide scale?

Usually people stop hopeless waiting in some stage and then their virtual reality will start to near the reality.

Waiting, waiting, and waiting

Weak signals in this point are based mainly on the theory of human behaviour.

Travel substitution and mitigation by ICT

Decreases in the number of air passengers during

- Gulf war
- 11. September
- Iraq war
- SARS

Travel substitution and mitigation by ICT

There are quite clear signals that air travelling can be substituted by ICT if necessary, in this case safety needs overrun needs for face-to-face contacts.

Hydrogen economy

(see Tromp, T.K., Shia, R-L., Allen, M, Eiler, J.M., Yung, Y.L. (2003), Potential Environmental Impact of a Hydrogen Economy on the Stratosphere. Science, Vol. 300, 13th June 2003, pp. 1740-1742.)

- Hydrogen is currently produced from natural gas and therefore the process emits carbon dioxide.
- Environmental problems related to the large-scale use of hydrogen.

Hydrogen economy

A major feature in many future scenarios has been the use of hydrogen as a fuel. However, there can be some hinders for it.

Skycar

- Cruising speed: max 600 km/h
- Cruising altitude: max 8,8 km
- Speed on road: max 56 km/h
- Weight: 1 100 kg
- Net load: 340 kg
- Price: €500 000 current, €60 000 future
- First "flight" by Skycar M400 of Moller International in 2002
- Commercial production 2006
(Rantanen, K. (2003) Auto oppii lentämään. Tiede 8/2003)

Skycar

3.3 How will ICT affect mobility?

Peter Arnfalk, Lund University



Peter Arnfalk is Assistant Professor at Lund University, the International Institute for Industrial Environmental Economics. He has carried out projects concerning IT & the Environment. The title of his dissertation was "Virtual Mobility and Pollution Prevention: The emerging role of ICT based communication in organisations and its impact on travel" (IIIEE Dissertation 2002:1).

Summary

Information and Communication Technologies change the way we work and communicate, enabling us to telework and to have virtual meetings – collaborating without a physical meeting. This can influence the need for commuting and business travel by provision of access to an activity without mobility – virtual mobility. The large environmental impact of travel makes this phenomenon interesting. However, these technology applications do not necessarily lead to travel substitution and have also other environmental implications, as they change our need for technical equipment, building space and so forth.

Can telework and virtual meetings reduce travel and associated environmental impacts in an organisation? If this is the case, is promotion of these applications justifiable, taking other environmental implications into account? What factors influence the outcome? How can the adoption of telework and virtual meetings be environmentally improved? What does this tell us regarding other virtual mobility applications such as Telemedicine?

These questions are addressed through the analysis of travel and environmental implications for telework and virtual meetings in several organisations. Drivers and barriers to environmental enhancement are identified, and pathways to 'greening' the applications are created.

How will ICT affect mobility?

Many aspects and subjects of ICT already covered earlier today

- When constructing an environmental model he found out the vast context of sustainability: environmental, economic and social
- Possible effects of ICT: substitution, supplementary, inductive
- Telework, virtual meetings, e-business, telemedicine, telebanking, on-line info and booking, e-learning, etc.
- Types of effects:
 - o direct effects (1st order effects)
 - o indirect effects (2nd order effects)
 - o system effects, and rebound effects (an effective transport system creates more transport)

Arnfolk's presentation:



[Peter Arnfolk pres Helsingfors 0311210.ppt](#)

3.4 Discussion

Audio/video conference, virtual telephone

- Arnfolk has studied the subject and found out that there was a 30% cut of air travel – two thirds substituted by audio/video conferences
- There will be a generation shift of young generation – used to virtual life and cameras
- Change in communication patterns – maximum social presence
- 10-70% of free time emailing
- The channel theory: first use, people fascinated – 100 % use, normal use
- Rebound effect of ICT: writing skills

Veli Himanen pointed out that travelling and communication have their own roads. In-transport policy, they do not do enough.

Farideh Ramjerdi emphasised that it is the question of will: If you want, you can make transport so expensive that people stay at home! When we think about freight transport – economic growth – social sustainability – environmental sustainability – tourism – we realise that during the growth of transport is not easy. Besides, More money is needed to satisfy demand.

One of the key issues is: Politicians – researchers – how to make them understand each other?

4 Session 3: Mode specific long-term plans and technological breakthroughs

4.1 Rail transport

Anne Herneoja, Finnish Rail Administration



Anne Herneoja is a director in the Finnish Rail Administration. Her unit is responsible for passenger information and traffic control in the Finnish railways. Previously she has been involved in developing passenger information in the Helsinki region while she was employed by the Helsinki Metropolitan Area Council. Ms. Herneoja is M.Sc. (Civ. Eng.).

Rail Transport

Journey time is very important aspect in rail transport, more important than in other transport modes.

- ø How do we want to use the journey time?
- ø What needs should be met in trains?

Facilities to arrange meetings are not as important in rail transport as in air transport (you don't need to wait very long time in railway stations)

New idea: would it be nicer to buy tickets on the trains rather than in advance?

Vision of the Finnish Rail Administration for 2020 (some ideas):

- ø To provide door-to-door service (ITS included)
- ø To prepare to open rail markets
- ø All future operators should have equal access to rail data
- ø Safety is important (80% of tracks in Finland have only one track)
- ø Development work in efficiency and safety issues goes on

Herneoja's presentation:



Questions

When will there be more operators in the Finnish market?

Answer: 2006-2008 at the earliest.

What is the view of the Finnish Government to the Rail Baltic?

Answer: Quite Ok, there are no objections anyway.

Are there any plans for nation wide info system for rail transport?

Answer: Yes, MTC is about to launch a project on the issue.

[presentation,Herneoja.ppt](#)

4.2 Maritime transport

Bornholm ferries: From “stone age” to pioneer – the case of Bornholm ferries

Mads Kofod, Bornholm Ferries



Born on 14th June 1951.

1983 **B. Sc. Nav., Technical University of Denmark (DTU)**

2000 – **Managing director, BornholmsTrafikken**

Head of activities with a turnover of DKK 400 million. The staff of employees has recently been reduced by 33% from about 600 to 400 by introducing new integrated technology for economy control, booking system, accountancy and budget, more effective work procedures in operation of ferries as well as modernised

agreements with crew on ferries followed by substantial reductions in staff. The turnover is in the same period increased by about 35% as a consequence of introducing differentiated price structure as well as yield management for all groups of customers combined with goal oriented marketing.

Member of the concern management group for Ministry of Transport's direct activities, from where the Ministry's policy and strategy is formulated and firmly laid down.

1988 – 1999 **Deputy managing director, Dansk Management Forum**

The primary task was to assist a physical multiple handicapped managing director. Special tasks were developing strategies and goals for the company product portfolio. Implementation of business development and sales concerning organisation- and management development for major Danish companies.

1996 – 1998 **Parcels director, DSB Parcels**

1993 – 1996 **Managing director, DanRail A/S**

1990 – 1993 **International director, DSB international department**

The primary task was with reference to the general manager of DSB to run the international activities in DSB. Responsible for formulation and firmly lay down of a common strategy for business development for 40 European National Railway Authorities through close co-operation with the general managers for the different railways. Further responsible for negotiations in EU concerning liberalising and internationalising of the railway services. Reporting to the Danish Minister of Transport concerning all political EU subjects.

1988 – 1990 **Head of planning, DSB Shipping Company (now Scandlines A/S)**

1984 – 1988 **Principal, Ministry of Industry**

1980 – 1984 **Teacher in navigation, Directory of Sea Trade Education**

1968 – 1979 **Head of Education, chief officer and chief engineer, shipping company J. Lauritzen.**

Maritime Transport

- User needs and economic efficiency are key ideas in achieving the objectives.
- The development of service delivery system (SDS) was the starting point for the whole development work within Bornholm Ferries.
- In April 2003 the new system was fully operational
 - ō Automatic check-in (self-service in internet pages)
 - ō Identification from fingerprint, reliability of the service is now 95%
 - ō 600 customers have made an agreement to use the new system (50% discount on ferry fares)
- Implications for the transport system (see slide!):
- These implications are only a tip of an icebergà We must always remember: *How will the customer benefit from the new technology ?*
- One major challenge is how to deal with the re-employment question (the jobs lost by the new technology)?

Kofod's presentation:



[mkhelsinki.ppt](#)

BORNHOLM FERRIES: FROM "STONE AGE" TO PIONEER – THE CASE OF BORNHOLM FERRIES.

Introduction.

Ladies and gentleman,

My name is Mads Kofod, and I am the managing director of Bornholm Ferries. I would like to thank the NTF and the Finnish Ministry of Transport and Communications for giving me the opportunity to present the case of Bornholm Ferries to you. To clarify the background for Bornholm Ferries' interest in the information society I will start by briefly presenting Bornholm Ferries.

Bornholm ferries

Bornholm Ferries has serviced Bornholm since 1866, and in 1973 Bornholm Ferries was taken over by the Danish State. It has since then been defined by law, that the purpose of Bornholm Ferries is to service the community of Bornholm.

Bornholm Ferries is a ferry company owned and operated by the Danish State. We receive an annual amount from the State Budget to operate the routes from Rønne to Copenhagen and from Rønne to Ystad in Sweden. We operate the company with our own board and with reference directly to the Danish Ministry of Transport. In 1999 the tax-free sale on board our ferries stopped. In May 2000 Bornholm Ferries started operating a fast ferry between Rønne and Ystad (Sweden). Furthermore the Øresund Bridge was opened in July 2000.

The annulment of the tax-free sale and the operation of a fast ferry decreased the profitability of the operation significantly. This caused a reorganisation of Bornholm Ferries. It has also lead to, that the Danish State has invited for tenders for the routes, that Bornholm Ferries is presently operating. We are now in the process of preparing an offer for the ongoing public tender for the Danish State. In 2002 Bornholm Ferries transported a total of 1.350.000 passengers, 250.000 cars and 31.600 trailers.

Traffic volumes 2002

The goals Bornholm Ferries has pursued the past 3-4 years has been: **Slide: Goals of Bornholm ferries**

- To reorganise the organisation in order to be competitive and to prepare for a privatisation of Bornholm Ferries (to become a limited company)
- To win the ongoing public tender.

We are convinced, that one of the ways to obtain these goals has been to increase focus on the customer and at the same time increase the economic efficiency of Bornholm Ferries.

Market segmentation: Slide: Market segments

Our passengers can be divided into two main categories: Holidaymakers and "Ethnic" Traffic generated from residents of Bornholm and their families and/or business relations.

The majority of our passengers are tourists, who travel mainly in the summer. In the low season the majority of our passengers are residents of Bornholm or passengers with family- or business relations to Bornholm. The residents of Bornholm are highly frequent travellers, as Bornholm is only reachable by air or sea. Many define themselves as pendlers. The tourists are typically just visiting Bornholm. Some tourists with a summer cottage on Bornholm are visiting the island several times a year.

Bornholm Ferries: From "Stone Age"-actor to "pioneer" in the Information Society within two years.

Redefinition of the service delivery system.

One of the efforts, that we have made in order to pursue the overall aims of Bornholm Ferries has been to redefine our entire service delivery system in order to make this system more efficient. Our starting point was that the service delivery system was build up around old technologies and with a high proportion of man-power build into the system.

The main processes of Bornholm Ferries service delivery system are: **Slide: The service delivery system (SDS)**

- Booking
- Issuance of tickets
- Payment of tickets
- Check-in on vessels
 - o Cars
 - o "Foot"-Passengers (a passenger traveling without a vehicle entering the vessel by foot)
- Transportation/On Board Experience
- Check-out of vessels

In late 2001 and in 2002 we planned the new service delivery system. The aim was to minimise the use of manpower spend by Bornholm Ferries. One of the ways of doing this was to analyse each process in the service delivery system and identify the possible rationalizations in each process.

We reached the following conclusions in our analysis of the service delivery system: **Slide: Redefinition of the SDS**

1. Our booking facility on the internet had to be improved, so ticket issuance and payment was made possible on-line
2. The check-in process for both cars and footpassengers should be automated as much as possible.
3. The need for a physical ticket should be minimised
4. Our booking system and our financial systems should be much more integrated

Introduction of a new reservation system.

The first step we made was to look for a more modern bookingsystem, that was prepared for handling the processes we wanted to introduce in our new service delivery system. Our old system, AFOS, needed adjustments in order to comply with our new demands. This would have been very costly to do.

We therefore chose to invest in a new reservation system "CarRes" (provided by Carus, which is now a part of the Anite Corporation) system in May 2002, and the system was implemented in October 2002 for bookings of travel in 2003. In the beginning of April 2003 we introduced our new internet booking facility, which made it possible to book

and pay for the ticket on-line. The reservation system is also fully integrated with our financial system.

Automated check in of "footpassengers".

In order to make the check-in procedure of foot passengers more efficient we decided to establish automated check-in of foot passengers.

The automated check-in is based on the equipment shown in this slide: **Slide: Med billede**

Bornholm Ferries has a separate product for pendlers without vehicles named "BornholmerKort". The technology is known as Mifare from Precise Biometrics. The product is aimed at pendlers and by entering an agreement with Bornholm Ferries with a down payment of DKK 250 a discount of 50% on our standard fares are obtained for a year. Approximately 8.300 persons have entered into such an agreement in 2003.

Bornholm Ferries has designed a service delivery system especially for these customers. **Slide: Self-service check-in for passengers without cars**

The booking can be made via the internet. All customers has a unique account number at Bornholm Ferries. By using this and a pin code, the customer is able to book their travel on the internet on a specially designed website. It is also possible to book the travel via phone. This month we also plan to implement a voice respons booking facility for these customers as well.

In order to minimise the resources spend for check-in of these customers Bornholm Ferries require, that each person is storing the print of one of their fingers on a chip card. The storing is made at hardware owned by Bornholm Ferries, but the fingerprint is only stored on the chip card, which is kept by the customer. This is a very important point. It would be very difficult to be allowed to store the fingerprint in our database. When the client has booked their travel, the customer goes to the check-in terminal, scans the chip card, then scans the finger. If the physical fingerprint matches the fingerprint on the card, payment is processed via the customers preregistered credit card, and the customer is checked in.

The benefits for Bornholm Ferries are: **Slide: Fingerprints**

- The customer is serving himself
- There is a 100% reliable identification of the customer
- The payment is processed automatically and with no risk (if there is no money on the credit card, you can not check in)
- Fraud is impossible

The benefits for the customer is:

- Big discount
- High security: Fraud with stolen or lost cards is impossible.
- Easy booking

When introducing the "BornholmerKort" we experienced scepticism from some of our customers regarding the use of the fingerprint. But most scepticism vanished, when the customers understood, that the fingerprint only is stored on their own chip card and not in one of the databases of Bornholm Ferries.

Automated check-in of cars.

In order to make the check-in procedure of cars more efficient we decided to establish automated check-in of cars. The automated check-in is based on the equipment shown in this slide: **Slide: Med billede**

Bornholm Ferries has a separate product for pendlers named "BornholmerBizz". The technology is provided by Kapsch Traffic Com AB (formerly known as Combitech). The product is aimed at pendlers and by entering an agreement with Bornholm Ferries with a down payment of DKK 950 a discount of approximately 50% on our standard fares are obtained for a year. Approximately 5.700 persons have entered into such an agreement in 2003.

Bornholm Ferries has designed a service delivery system especially for these customers. The booking can be made as described for the "BornholmerKort".

In order to minimise the resources spend for check-in of these customers Bornholm Ferries supply the customers with a transponder (Bizz) which is a radio transmitter with a unique ID number for fast and reliable identification of customers. When a car with a Bizz drives to an automated check in station the Bizz is "read" by a radar and the reservation system is checking if the customer has a booking for the departure. If so, the payment is processed via the customers preregistered credit card, and the customer is checked in. Furthermore the license plate of the car is checked to see if it matches the car registered for the pendler agreement. This is done by OCR-technology (Optical Character Recognition).

The benefits for Bornholm Ferries are: **Slide: Bizz**

- The customer is serving himself
- There is a very reliable identification of the customer
- The payment is processed automatically and with no risk (if there is no money on the card, you can not check in)

The benefits for the customer is:

- Big discount
- High security.
- Easy booking

Implications for the transport sector.

Slide: Implications for the transport system

Bornholm Ferries has pioneered in the commercial use of biometric data by using the fingerprint in the service delivery system. We are also in the frontline regarding auto-

mated check in of cars by using the "Bizz"-technology based on transponders in cars, so that each car has a unique identity.

All this has been driven by the desire to minimise cost by designing a more efficient service delivery system. In my point of view all this is only the tip of the iceberg. We have only seen the beginning of the use of biometric data. Our solution has attracted a lot of attention from other ferry operators and from companies outside the transportation sector.

We have tried to apply new technologies in order to be more efficient for ourselves. But how does this comply with the needs of our customers? Are they interested in one solution for their travel arrangements with Bornholm ferries, another with the airlines and another when crossing a bridge? In order to benefit fully from the use of new technologies we must not forget the customer. How will he benefit from the technology? If there is no incentive for both the transportation industry and the customers of the industry I foresee, that it will be difficult to fully implement the use of the new technologies of the information society.

Another problem we experienced during the implementation of the new service delivery system was, that we at the same time had to downsize – to lay off staff. This has been a managerial challenge because the staff of Bornholm Ferries has regarded the new technology as a competitor and therefore to a certain extent opposed the implementation of new technology.

Finally I see the use of biometric data as a possibility for increasing the security in the transportation industry. To conclude my presentation I find that the major challenges we are facing are: **Slide: The major challenges**

1. To establish industry standards for new technologies
2. To use the new possibilities to optimise operations by adapting the possibilities of the new technologies in pricing and service delivery systems.
3. To secure, that the development is driven by the desire to accommodate the needs of the customers and not by the desire to implement new technology! In other words the technology shall be used to solve problems for the customers or for the suppliers or improve the service. The technology – new or old – is not by itself the solution of all problems but a mean to pursue a goal.

Required Research and development: **Slide: Need for research and development**

1. How is the consumer behavior affected by new technology? Can new technology substitute personal service?
2. How do the employees react to implementation of new technology? Can they adapt to a new role?
3. Definition of technology standards in the use of biometric data.

4.3 Air transport

What IT can do for the passenger?

Pirjo Lähteelä, Finnish Civil Aviation Administration, Helsinki-Vantaa Airport



Helsinki-Vantaa Airport is an organisation of 600 employees, one of 24 airports operated by the Finnish Civil Aviation Administration (FCAA), with about 10 million annual passengers. Ms. Lähteelä is a member of the Airport Management Group and responsible for the management of Helsinki-Vantaa Airport Passenger Terminals and services in the terminals to the passengers. The services follow the passengers' route from the airport access roads through terminals to the aircraft seat including services that are outsourced or produced by own staff. One major area is wayfinding and information to the public which requires various kinds of solutions from light boxes to software solutions and personal guidance.

Summary

In aviation, time is of the essence in every respect. The passenger chooses flying in order to save time. In terminal buildings, our job is to find ways to make the passengers' route as smooth and effortless as possible. An airport terminal is full of different players with different needs and purposes. My brief for this presentation is to describe where the passengers see the information technology, but also **to hand the problems to you** instead of telling you what the solutions are.

My topics in relation to the passengers' route within a terminal are:

1. way-finding and signage
2. handling and displaying information and
3. flow management

The static signs with good layout, good fonts and easily understandable pictograms and good colouring (i.e. contrast) are fairly easy, but the problem with static signs is that they **are static** and it is an effort to keep them up-to-date and in good conditions. Also the signs are usually fairly large and thus require heavy structures to keep them up. The use of modern technology starting from lights to mobile technology to RFID or even biometrics is still to be fully explored. What is the best method for distributing information to a great number of people in a huge building with a lot of choices? Does one need to insert a chip in the person travelling in order to tag him on his way to the aircraft and who should be able to see this information?

How many people need to go through a certain point within a time period and what do we need to do within that time. This may vary from processing a bag through from check in through security to the aircraft, security control to passengers to serving coffee to a lot of people as quickly as possible. How do we prepare our rosters so that every-

thing can be taken into account - including the snowstorm that disturbs the traffic flow and causes new procedures to be included in the daily routines?

From the airports' point of view the flow management in daily operations is one of the most important systems. The problem with the planning procedure is that most of the information is "owned" by different owners. The airlines do not like sharing e.g. their reservation system information with competitors. This makes it quite hard for an airport to get exact information beforehand in order to plan properly. We have to have a very good off-the-sleeve prediction for many things. Is there an easy-to-use affordable tool available that would take all the different items of data in and sort them out for us?

The operation around an aircraft while it turns around is also vital. The aircraft is cleaned, maintained, refuelled, catering and loading take place, boarded, de-iced, there are numerous tasks to be done before the aircraft is ready to go. We have video equipment, telephones, radios and sometimes and more often than not these are all again owned and operated by different organisations. How would we be able to tick all the items as ready?

Time, punctuality, seamless co-operation of different players partly in competition with each other are challenges which the airport has to face every day in order to have satisfied customers, either on a B to B basis or as individuals. We are presently planning to establish an terminal operations centre that needs new tools for flow management of the terminals.

The need is for a tool that combines information including blueprints already available from different systems and sources (slot co-ordination by seasons, rostering, FIDS, usability and counting tools, reporting tools) and shows the results to a co-ordinator in a very simple and graphic form, but also provides information to the airport management for decision making e.g. in long term planning of buildings and other facilities. This is actually not a unique or new idea - the problem is to use modern and new solutions without being involved in a long planning process and getting an easy-to-use tool for everyday use.

Air Transport

- Airport is like a small city: The important task is to lead the customers through the airport to the right plane, concurrently giving them time enough time for shopping, dining, etc à A lot of information from different sources is needed to succeed in this.
- There are information needs at three different levels:
 - ō Customers
 - ō Operators
 - ō Aviation administration
- Critical question within the airports is how to manage the exceptional circumstances of:
 - ō Weather
 - ō Accidents
 - ō Computer black-outs

ð Etc.

- Punctuality, seamless working together with each other is of very much importance every day to make the system work!
- Are there tools for processing and utilizing large data/information sets from airports? Currently it looks like there aren't.
- There is not so much need for visions for 2020, the improvements for the current services for customers are the most important challenge.

Questions and comments

What do you think about the self-service concept?

Answer: It is a big question. We have no specific plans for the moment, though.

Have you plans for new kinds of services for the customers in the airport?

Answer: The last year in the entire aviation business was in a turning point. At the current turbulent situation only slight improvement is expected. Therefore, it has not been considered appropriate or sensible to launch any radically new services. Airlines under severe cost pressures are not willing to pay for any new services, instead they are seeking for savings from airport services. The service level of airports may thus even be too high at the moment. Besides, surveys reveal that passengers just like to go through the airports as quickly as possible.

Have you taken into account families with small children, the growing group of elderly people, disabled people etc when planning your airport services?

Answer: Yes we have. Services for special groups are taken in special consideration today because of several EU initiatives as well. Therefore, services for persons with restricted mobility - starting from the ageing population to various groups of handicapped persons - will be among the priority issues for the next few years.

Lähteelä's presentation:



[Pirjo Lähteelä.ppt](#)

4.4 Road transport

The Strategy of the Swedish National Road Administration for IT in Traffic (ITS)

Torbjörn Biding, Sweden National Road Administration



Torbjörn Biding has been employed at the Swedish National Road Administration since 1991, initially as project manager, and later as co-ordinator for a number of projects carried out within the European ITS research programme. All these projects were conducted in close co-operation between the Swedish National Road Administration, the automotive and telecom industries, research institutes and universities.

Mr Biding was the head of the Road and Traffic Management Division at the Western Region of the Swedish National Road Administration until spring 2003.

Mr Biding is currently head of the Research Programme IVSS (Intelligent Vehicle Safety Systems)

Summary

In the context of traffic, IT is called Intelligent Transport Systems (ITS), meaning that information technology constitutes a support for vehicles, people and roads in interaction. ITS constitutes a cost-effective and strategic future area as an alternative to other measures. By using ITS correctly, society can profit in the future from an attractive road transport system, which satisfies the requirements of industry and commerce and of the citizens for efficient, safe and comfortable travel.

- è ITS contributes to new possibilities for planning, control, measures, automation, information and interaction between vehicles-people-roads.
- è ITS contributes to saving lives, saving time and money, and improving existence in traffic.

In recent years and in an international and national perspective, public participants and the IT, vehicle and transport industries, have made considerable progress in research and development within ITS. On a national basis, the Swedish National Road Administration has, together with other public participants, built up road traffic management centres and introduced various traffic information services, and in the urban areas has introduced various systems for road traffic management. Despite investment in increased use, the use of ITS is generally modest. National and international evaluations show that ITS is, as yet, not associated with high costs at individual level, considered in relation to perceived benefit. At the same time, the same evaluations show that social benefit is great in comparison with traditional measures. ITS is now ready to take the critical step from establishment phase to reaching a wider market.

The ITS strategy means that the Swedish National Road Administration is taking a considerably greater customer-oriented proactive role, to create an attractive, broad usage, and develop Sweden's position within ITS in collaboration with the right forces. The Swedish National Road Administration considers that it is important that Government authorities actively contribute to securing Sweden's leading position within the vehicle industry and IT/telecoms, through increased goal-oriented investment. The goal orientation of the Swedish National Road Administration is to contribute to creating a long-term, economically sound use of ITS and simultaneously carry through activities which will quickly make evident the Swedish National Road Administration's investment in road users.

The decisive factors for getting broad usage started are that the service suppliers shall have access to a qualitative digital infrastructure as a basis for cost-effective development of services, and functioning win-win co-operation both between public participants and between public and private participants.

Up until 2007, the Swedish National Road Administration intends to achieve the following, together with other public and private participants:

- € Get concrete co-operation started, and jointly develop business models focusing on participants within the public sector and industry and commerce that have the driving forces required to strengthen the ITS area.
- € Intensify work with making the digital infrastructure accessible.
- € Improve road traffic management in the urban areas.
- € Ensure that ISA systems achieve broad usage by implementing primarily ISA for specific groups of customers.
- € Ensure that collection of travel time contributes to a systematic analysis of the effects of improved measures as regards the road transport system.
- € Create a national traffic portal.
- € Ensure that ITS is integrated into all parts of the four-step principle.

Road Transport

- The technology is there (ITS), but how to use it in favour of safety, traffic management, etc.à this is the next step.
- New planning model is needed (how to divide transport between different modes)
- Basic requirements:
 - ð The role of different organizations
 - ð Customer education
 - ð Co-operation with different stakeholders (it takes time, but at length it will succeed)

Questions

Have you been in co-operation with cities in ITC issues?

Answer: Yes, we belong to a consortium, which several cities have built up to decide who takes care of what ICT issues.

How does the customer-customer connection work within IT?

Answer: It has, and it will be taken into account. National platform is however needed for the overall control over IT.

Biding's presentation:



[ITS-strategi TB 031106 ENG.ppt](#)

4.5 Personal navigation

Antti Rainio, Navinova Ltd



Year of Birth: 1957
Education: M.Sc., Helsinki University of Technology, 1984
Languages: Finnish (native), English, Swedish, some French
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Present position:

Coordinator

Antti Rainio is working as an independent consultant in Navinova Ltd (since May 2000). He has the contract with the Ministry of Transport and Communications in Finland to coordinate the three year ITS Finland project establishing the national network for intelligent transport systems and telematics services (www.its-finland.fi).

Career Summary:

In 2000-2003 he worked as a coordinator for the national Personal Navigation NAVI programme (www.navi-ohjelma.fi) contracted by the Ministry of Transport and Communications in Finland. He continues as the coordinator for the NAVI Network (www.naviverkosto.org).

In 1999-2000 he worked as a project director at VTT Information Technology (www.vtt.fi) being responsible for the planning project of national programme of personal navigation.

In 1997-1999 he worked as a project director at Finnish National Fund for Research and Development Sitra (www.sitra.fi) being responsible for the revision project of the national information society strategy.

In 1996-1997 he worked as a councillor at the Ministry of Finance and in 1996-1998 as the secretary of the National Committee for the Information Society and the secretary of the National Information Society Forum.

In 1995-1996 he worked as the development director of VTKK Corporation (a state owned computing service centre, nowadays part of TietoEnator).

In 1985-1995 he worked at the National Land Survey developing the national concept of shared use of geographic information and its implementation as EDI-based data services.

In 1992-1995 he participated in the international standardisation (CEN/TC 287, ISO/TC 211 Geographic Information).

Personal Navigation

- We need different kind of services because of different kinds of users and their capabilities.
- The use culture is developing when new products are taken in use.
- Safety and security are important.

Rainio's presentation:



[NAVI_english_031211.ppt](#)

5 Working groups

5.1 Working group 1: Ecological sustainability

Chaired by Adriaan Perrels, VATT (Government Institute for Economic Research)



Challenges

- € How to ensure that ICT realises its ecological potential
 - ♥ check the incentive systems
- € completeness of alternatives, effective, efficient without overload
 - ♥ labelling? benchmarking?
- € transport impacts monitoring incomplete

R&D needs

- € Transport impact assessment as default in urban planning
- € TIA – monitoring as default for companies -> product/service assessment for customer
- € offer as much as possible relevant ICT facilities in all public transport modes
- € how to change incentive structure in airports so that timegains in TAT are handed to travellers instead of retain shopping time
- € teleservices and their function to:
 - € keep up rural g.o.l?
 - € extend customer choice?
 - € security, safety?
 - € educate/inform/etc.?
 - ♥ ecological balance, transport effects vs. optimal production effects

Points of departure

- € emissions (air, water)
- € noise
- € space (fragm./isol./dist.)
- € waste
- € Transport volume diminishes
- € Cleanliness increases
- € ITC
 - ♥ efficiency
 - ♥ precision (potentially positive.. but)

5.2 Working group 2: Safety

Chaired by Pirkko Rämä, VTT Building and Transport



Challenges and R&D needs

- ∄ security (maritime, air, rail)
- ∄ safe traffic for ageing people
- ∄ driver work load, information overflow
- ∄ increased mobility
- ∄ risk for faster traffic
- ∄ road pricing
- ∄ 24 h
- ∄ coordinate urban planning and traffic planning to get a safe urban mobility
- ∄ weather changes: slippery roads
- ∄ railway accidents, level crossings, signal system, control centres
- ∄ early user involvement in design of ICT/transport planning

Discussion

Firstly, increased mobility in the information society was being we discussed. The presentation of Arnfalk showed that mobility tends to increase in the information society. The group made a difference between ICT and ITS. ICT (Intelligent Communication Technologies)¹ in the society tend to increase mobility by increasing globality, connections between people, new way of life. It is a general trend in society which we cannot control by the traffic policy measures. ITS (Intelligent Transport Systems) are on one hand applications of ICT and part of this general phenomenon. On the other hand, ITS is a measure to manage and control the increased mobility.

Increased mobility makes a great challenge for safety. Both the amount of traveling and the changes in timing of traveling pose a challenge to traffic safety. One of the main questions of traffic policy seems to be how to provide public transport services for the new society. A framework to analyse these problems, the French ‘flower model’, was presented by Bertil Carstam. The framework used in the Predit 3 project includes two central services: mobility and cargo, and two central political aims: safety and the environment. Their relationship to other political aims and measures is then described.

¹ Normally, ICT is the acronym for Information and Communication Technologies. Here, it is used in a more specific meaning as Intelligent Communication Technologies.

PREDIT 3 has eleven groups:

∄ The national policy and society have four big challenges:

1. Mobility and territories (urban planning)
2. Safety and security
3. Goods traffic
4. Energy and environment

Each of them has two themes:

- One for the knowledge and recommendations to the state/authorities; *the outer ring*
- One for the development of technology and services; *the inner ring* i.e. 8 groups.

∄ Technological integration has two groups; *the centre*

- One for the information- and communication technology
- One for the complex vehicle projects

∄ One group is for the policy integration: analysis, estimation, sustainability, conditions for dissemination of innovations, futures studies; *the propel*

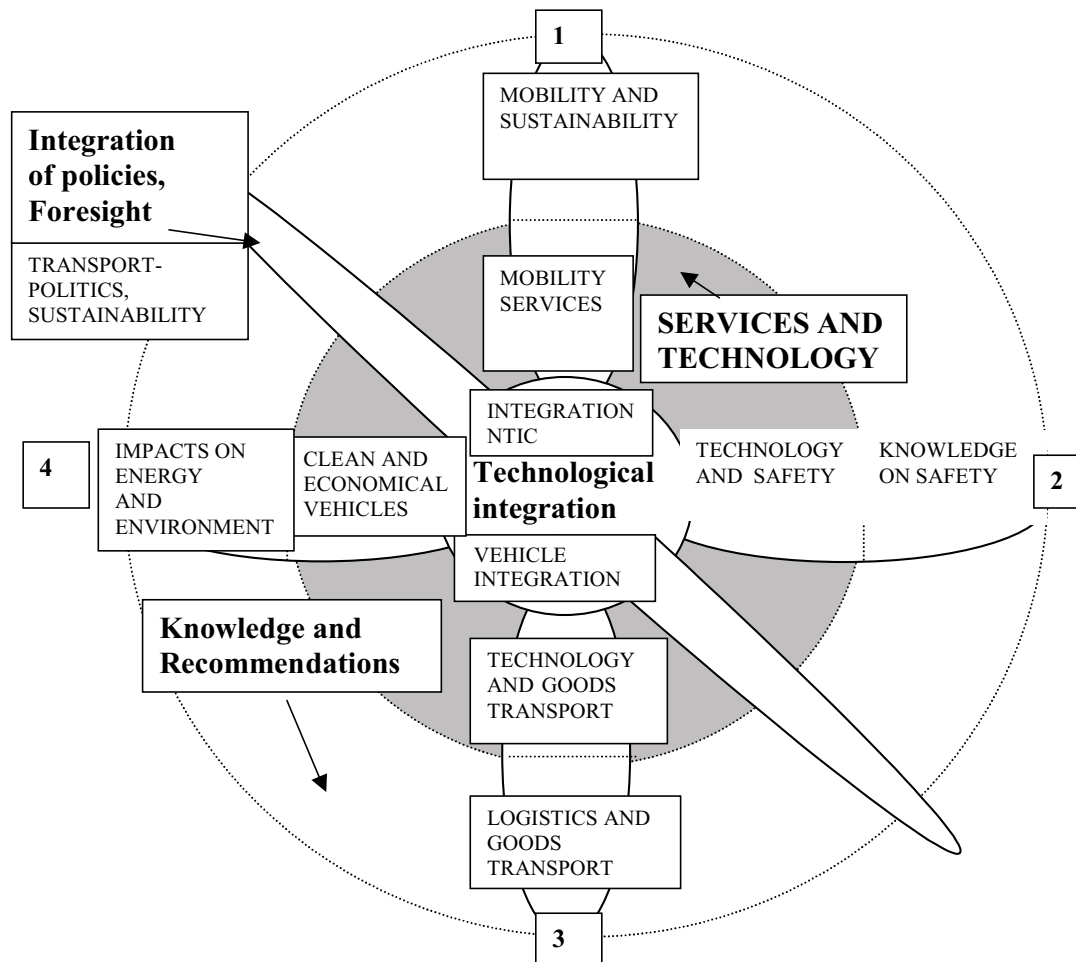


Figure. The flower model of the PREDIT 3 project.

Globality puts new demands on security. It has been shown out that terrorism is a threat in the society with high mobility, fast connections and possibly vulnerable global networks. Security is closely connected with safety. Security is especially important in international traffic, maritime, air and railway traffic.

In the society the number of ageing people is increasing. This is a general trend. This group of people may demand special measures to take care of their safety.

The general development towards the information society will also change the structure of towns. This highlights the importance of the coordination of urban planning and traffic planning.

ITS means for example, better use of the road network with the aid of navigation devices. In practice, this may mean for example the use of an electronic map or other services during driving. A challenge is to manage the driver's work load and to prevent information overflow.

Both road pricing and shift to the 24 hours day rhythm imply that traffic becomes less congested. This may mean faster traffic and consequently more severe accidents.

General changes in climate may cause more changing circumstances and more slippery roads.

There have been severe railway accidents. It is a challenge to prevent these. Relevant issues in such prevention may be to decrease the number or better take care of level crossings, to develop the signal system at railways and to study the action and human behavior of the operators at the control centres.

In general, a big challenge in the information society is to take the human needs and action into consideration, and for example to guarantee early user involvement in design of ICT and transport planning. It is crucial to understand the user action, develop intelligent systems to real needs of people, and create high quality interactive systems in which safety aspects are taken into consideration.

Many transport telematics applications are capable to speed up the traffic flow by enhancing traffic control, levelling of demand peaks, etc. The safety effects can be undesirable, however. The use of variable message signs seems to have positive effects both on the safety and the traffic flow. More ITS research should be focused on developing countermeasures that help in attaining more than one transport policy goal.

5.3 Working group 3: Ambient Intelligence

Chaired by Merja Penttinen, VTT Building and Transport



Challenges

- € to develop easy-to-use and useful services
 - ♥ intelligence of User vs. Developer
- € to develop economically efficient services
 - ♥ why to pay for the service,
 - ♥ attractiveness
- € how much will people trust on technology
 - ♥ privacy, security,
 - ♥ driver off-the-loop
- € behavioral adaptation
 - ♥ user, non-user, drives
- € co-operation
 - ♥ public, private,
 - ♥ business models
- € preferences do change!

R&D needs

- € user needs and requirements for different services (info+device)
- € business models
 - ♥ pricing of the public data bases (direct and non-direct impacts)
- € “grey area” in technology
 - ♥ information... control how much do people trust on technology

Discussion

Passengers have variety of needs depending both on their background and travelling situation. Services that fulfil these needs are varying. When designing new services we have to keep in mind different user groups with dissimilar needs (design for all in transport telematics, devices and services). Concerning a new service, who will implement and maintain it? This is a field of various operators including both the public and private organisations.

Traditional cost-benefit analyses are not sufficient when estimating the profitability of e.g. new traveller services. For instance, the changes in travelling comfort are difficult to estimate. Therefore, new tools to estimate the overall profitability are needed.

Due to existing ambivalence in the market the ability to take risks has reduced. One has not the courage to implement a new service if there is total uncertainty of the amount of users of the service. In addition, the great amount of people is possibly not aware of the existence of new electronic devices and especially services, because the lack of marketing efforts. The private companies do the marketing but it is still not very common for public authorities to do that. Public awareness should be therefore enhanced. The transfer of public services into the internet is still immature. What would be the best way of pricing the public services and public data bases?

Financing is a problem in transportation system. The number of passengers in public transport is decreasing and the usage of private cars is increasing. Funds from taxation of traffic and transportation are not directed into public transport. Severe actions should be taken in order to increase the share of public transport.

How much people actually trust on technology? For example, how much one trusts on the lane keeping support when driving? Another example could be the threats from hackers to the electricity system of an organisation. In future homes the system for identification (e.g. from eye) can get broken. What happens then? Humans can teach a machine, but the machine doesn't have a mind of its own. It can follow only those instructions that it has been taught. There can emerge certain conflicts for this reason.

In the future we are depending more and more on different electronic devices with an access to different information and data bases. But how much information can be put in the same device, and is the mobile phone the right terminal equipment for using this information? There is also a problem with the diversity of devices for different kind of services/information. A problem of seamless compatibility emerges.

People are willing to pay for real-time information and new technology, but how much? At the beginning there are only few users. How to reach the mass market?

The world has a huge amount of possibilities and everything cannot be foreseen. Complexity grows all the time. The system is as intelligent as the producer of it has made it to be.

Demand activated transport service. Every house has a number, but 60% of people don't know, what their exact address is.

Intelligence framing, where is the intelligence?

There are two trends, which are going in the same direction – bringing the user closer to the system: the systems and services are becoming more user-friendly (user centered) and users are becoming more system-friendly. Of these, the earlier should be the goal whereas the latter, however, is still more common. The systems and services must be easy-to-use for the elderly, for example.

5.4 Working group 4: Social Sustainability

Chaired by Kalle Toiskallio, Helsinki University of Technology



Challenges:

- € Baltic vs. Scandinavian (surface...) (sociality in traffic) (access for all and of all ages)
- € optimizing modal split (train from Berlin – St. Petersburg)
- € education?
- € active transport policy?
- € social engineering?
- € traffic guide in the Internet: (public transport)
 - ♥ needs easily forecasted traffic

R&D needs:

- € ITS-“gurus” + social “gurus”
- € interdisciplinary collaboration (technical/economical/social//political)
- € Scandinavian experiences + mistakes, this could help Baltic countries
- € comparative study of traffic cultures

Discussion

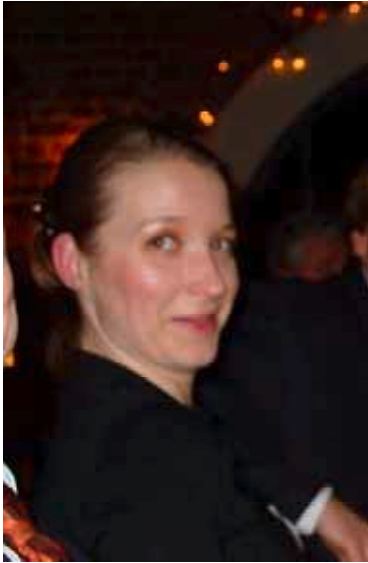
In order to avoid problems of understanding, it was decided to use all languages of the participants: German, English, Russian and Lithuania in the discussion.

The interests and the backgrounds of the participants were quite different:

- € Baltic countries were mainly interested in the growing car traffic and in safety, lack of proper public transport and lanes for biking & walking
- € Toiskallio would have been mainly interested in social aspects while driving i.e. being a part of the transport system
- € Järvi was interested in social equity of person groups in transport.
- € Von Konow presented his specific ideas, e.g. the garden city model, in all languages.
- € Discussion turned to the Baltic interests. It was stated that they face the same problems that Scandinavian has had, but much stronger and faster accelerating because of the rapidly growing number of cars.

5.5 Mobility Foresight

Chaired by Maria Meiner, Vejdirektoratet, Denmark



Challenges:

- € to understand what causes people to move? (how to understand the human elements in transport)
- € how to cope with the complexity
- € how can we make public transport accessible
- € how can we make public transport attractive
- € demography, ageing/changing of the population
- € to use ICT for personal needs/services

R&D needs:

- € what could be the attraction for different people, regarding public transport

Discussion

Mobility Management is an important approach. It will cover the whole framework of changing trends and attempts to keep pace of change and manage it to a degree that is possible. Trends are always breaking other trends - those that are currently in the forefront. Mobility management also requires holistic and interdisciplinary analyses. Expertise on technology should be combined with that on biology and society at large. Technological applications will involve several scientific fields (e.g. bioengineering, nanotechnology).

Logistics is another crucial factor that should be more emphasised. The seminar is focused on Passenger transport, but the transportation of people and of goods takes place in the same overall field of transport. How the logistics is taken into consideration in transport planning and in urban planning, greatly affects the impacts of transport on economic (efficiency), environmental and social level. Technical solutions and systems can ideally promote positive impacts. The decisions on mobility of goods and of people are, however, totally different. The motives etc. may differ a lot. On the other hand, they

are closely connected and intertwined. We can take an example of a bus, where there are passengers with their luggage and possibly with extra goods to be transported at the same time.

Do we want to deal with mobility or transport? You have to be careful with the semantics. In the strictest sense, mobility can be defined as the ability to move. Earlier in the seminar there was also discussion about the difference between the meanings of transport and traffic. To be precise, transport refers to moving - changes of addresses to put it blankly, traffic on the other hand refers to change of flows, change of platforms etc.

By mobility foresight we should also try to tie the analysis to certain periods of time, whether we discuss the 10, 20 or 30 years term. We should also foresee what will the regulatory framework be at the time of our foresight analyses. When we think for example the CO2 emissions trade, we should consider the possible extensions of the trade in the future.

One of the major issues from the passenger's point of view is how to create an unbreakable travel chain. If the bus is late or if there should occur some changes, the passenger should have immediate and sufficiently ample information how to proceed. Moreover, the development of the demand-responsive transport should be taken more seriously. Especially the ageing of the population and diversifying lifestyles create more need for various solutions.

Problems arise simply because the current transport planning models used are outdated. There is a need for new models where the new situation, new demands and options are taken into consideration.

How to understand the needs of the dream transport? The concept of dream transport should be analysed as one stream in the overall concept of transport.

6 Conclusions



by Veli Himanen

If a transport system itself is not very clever or intelligent, and we put some intelligence in it, this would not help. In other words: what will be the result when you put *intelligence* into a stupid system.

Another not so intelligent phenomenon is the *financing of public transport*. People are buying more and more cars and driving cars to an increasing degree. Therefore, public transport is going down because there are no more customers left due to this car driving trend. The government gains much money from private cars, but it is not, however, going to support public transport.

There has been much talk about the limits in this seminar - limits to the human capacity to adopt and use technology, for example. There are also limits to the growth of car driving, but what are the limits and what should be done? In principle, we could prevent the car driving trend. However, in a democracy we cannot do it. We cannot categorically ban or restrict severely car driving.

One of the major challenges for the future of transport is *sustainability*. If our transport system is not sustainable, it cannot become sustainable if you put certain intelligence (ICT) in it. Here, the co-operation is the key. It is important that everybody can give his or her opinion and the "evolution" goes on. It must be born in mind, that we can't expect more of ICT than it can function.

We need to know more of the complexity of the surrounding world. It needs a lot of efforts to look at the impacts of such complexity and at the resulting interconnections. *Increasing complexity* and increasing and *constant change* compose the world where we have to live. We have also to consider big differences in behaviour between genders.

We can also see that there are big differences in transport segments, systems and policies in different countries. In the Nordic countries there are similarities. We can even talk about the "trust culture" in Finland and in Scandinavia at large. This is not the case in the USA, though. This also sets the framework when we want to take measures affecting transport.

A clear and strong message of the seminar is that the users have to be listened to when planning transport and subsequent technologies. Users' involvement should be the guiding principle in transport planning.

Appendix

List of participants

Arnfolk Peter	Lund University	Sweden
Biding Torbjörn	Swedish National Road Administration	Sweden
Briem Valdimar	Department of Psychology, Lund University	Sweden
Butkevicius Jonas	VILNIUS GEDIMINAS TECHNICAL UNIVERSITY	Lithuanian
Carstam Bertil	Bcons	Sweden
Cronberg Tarja	Parliament of Finland	Finland
Deruka Lubova	JSC "Pasazieru vilciens"	Latvia
Deruks Vladimirs	JSC "Pasazieru vilciens"	Latvia
Farideh Ramjerdi	TØI	Norway
Folkestad Ole	Avinor A/S	Norway
Franzén Stig	FRANCON-ARISE (associated with CIT - Chalmers Industriteknik)	Sweden
Harju-Autti Pekka	Ministry of the Environment	Finland
Heinonen Sirkka	VTT Building and Transport	Finland
Herneoja Anne	Finnish Rail Administration	Finland
Jarasuniene Aldona	VILNIUS GEDIMINAS TECHNICAL UNIVERSITY	Lithuanian
Jensen Rolf	Dream Company a/s	Denmark
Johansson Anna	Swedish Institute for Transport and Communications Analysis	Sweden
Juvonen Pekka	Federation of Special Service and Clerial Employees ERTO	Finland
Järvi Tuuli	VTT Building and Transport	Finland
Kalliomäki Antti	Municipality of Tuusula	Finland
Kanner Heikki	VTT Building and Transport	Finland
Kofod Mads	Bornholmstrafikken	Denmark
Kokkarinen Veijo	Finnish Road Administration	Finland
Koskinen Martti	Hyvinkään Techvilla Ltd	Finland
Leskinen Matti	Finnish Road Administration	Finland
Lähteelä Pirjo	CAA Finland	Finland
Meiner Maria	Vejdirektoratet	Denmark
Murole Pentti	LT Consultants Ltd	Finland
Mustonen Jyri	Finnra Uusimaa Region	Finland
Myllärniemi Katariina	Ministry of Transport and Communications	Finland
Niskanen Saija	VTT Building and Transport	Finland
Oilinki-Nenonen Pirkko	Employment and Economic Development Centre fo Northern Ostrobothnia	Finland
Olsen Inger-Lise	Ministry of transport	Norway
Paturi Pertti	Intermarketing Oy	Finland
Penttinen Merja	VTT Building and Transport	Finland
Perrels Adriaan	VATT (Government Institute for Economic Research)	Finland
Poropudas Olli	Ministry of Education	Finland
Rainio Antti	Navinova Ltd	Finland
Roine Matti	Ministry of Transport and Communications	Finland
Rämä Pirkko	VTT Building and Transport	Finland
Sahala Sami	Novo Group Oyj	Finland
Saukkonen Lea	Finnish Meteorological Institute	Finland
Scholliers Johan	VTT Industrial Systems	Finland
Siikonen Janne	Novo Group Oyj	Finland
Sprince Dagnija	JSC "Pasazieru vilciens"	Latvia
Tenhunen Juhani	Finlands Trafikförbund SuLi rf	Finland
Toiskallio Kalle	Helsinki University of Technology	Finland
Tuominen Anu	VTT Building and Transport	Finland
Upite Anete	JSC "Pasazieru vilciens"	Latvia
Uustalu Aare-Maldus	Tallinn Technical University	Estonia

Vastela Antti	TeliaSonera Finland	Finland
Veli Himanen	Relate Partnership	Finland
Viinikainen Tytti	Finnish Road Administration	Finland
Von Konow Ossian	EKO-SAFA, Oy Arkart Ab	Finland
Väyrynen Erja	VTT Technology Studies	Finland