ITS DEPLOYMENT IN NORTHERN EUROPE

Summary Report on MIP 1 results (2001-2007)

Project co-funded by the European Commission DG TREN
INTRODUCTION - VIKING IN MIP 1

Besides giving support to investment in the Trans European Network for Transport, the European Union also supports projects that develop management of the networks concerned. For the road network, the TERN, these projects have formed the TEMPO ITS programme during the budget period 2001-2006. In all, seven Euro-regional ITS projects were included in TEMPO, and countries in Northern Europe (Sweden, Denmark, Finland, Northern Germany and Norway) formed the VIKING project.

The total budget of VIKING in TEMPO was approximately 200 M€, where of 30 M€ was granted as support from the European Union. With this support, the partners in VIKING have developed and implemented ITS – Intelligent Transport Systems and Services – for the travellers and road users in Northern Europe, aiming at a sustainable transport system.

This booklet presents a summary of the results of VIKING in 2001-2007. It consists of three parts: First, an overview of results from each of the technical domains in VIKING, secondly a presentation of a set of success stories representing different aspects of benefits from international cooperation, and finally a look ahead – VIKING in EasyWay. We hope that the reader will find inspiration, and we welcome you to take part of the results from the cooperation in VIKING – past and future!

June 2007

VIKING Project Management Board
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROAD AND TRAFFIC MONITORING (RMI)</td>
<td>4</td>
</tr>
<tr>
<td>EUROPEAN NETWORK OF TRAFFIC CENTERS (TIC)</td>
<td>6</td>
</tr>
<tr>
<td>TRAFFIC MANAGEMENT AND CONTROL (TMC)</td>
<td>8</td>
</tr>
<tr>
<td>TRAVELLER INFORMATION SERVICES (TIS)</td>
<td>10</td>
</tr>
<tr>
<td>HORIZONTAL ISSUES</td>
<td>12</td>
</tr>
<tr>
<td>VIKING - SUCCESS STORIES</td>
<td>15</td>
</tr>
<tr>
<td>VIKING MONITORING GUIDELINES</td>
<td>16</td>
</tr>
<tr>
<td>SALT SPREADER MONITORING AND CONTROL</td>
<td>18</td>
</tr>
<tr>
<td>HARD SHOULDER IN NORTHERN GERMANY</td>
<td>20</td>
</tr>
<tr>
<td>TRAVELLER INFORMATION SERVICES</td>
<td>22</td>
</tr>
<tr>
<td>NORITS</td>
<td>24</td>
</tr>
<tr>
<td>TRANSPORTXXL</td>
<td>26</td>
</tr>
<tr>
<td>FUTURE DEVELOPMENT - VIKING IN EASYWAY</td>
<td>27</td>
</tr>
</tbody>
</table>
Monitoring is a prerequisite for the provision of all ITS services using dynamic information as input. During the span of the VIKING action, Domain 1 has systematically worked towards the goal of enabling harmonised traffic management on the TERN on the basis of harmonised monitoring information of sufficient quality, and working actively towards European co-operation and harmonisation.

A number of specific issues and technologies have been studied in consideration for implementation on the VIKING network. These studies dealt, among others, with:

- multipurpose monitoring stations
- monitoring of winter maintenance actions
- travel time estimation via mobile phone network positioning
- use of probe vehicles (FCD) for travel time assessment and road surface friction estimation
- automated salt spreader control
- image processing applications for monitoring
- large animal detection and warning systems
- air quality monitoring
- weighing in motion (WIM)

VIKING has led the European cooperation and cross-fertilisation within monitoring and chaired the related expert group. VIKING has also arranged every two years a workshop on best practices in monitoring deployment. These have been extremely successful and attracted an increasing number of experts and practitioners.

The monitoring infrastructure deployments in VIKING have been made on the basis of VIKING Monitoring Guidelines specifying the recommended quality levels for monitoring by the various common traffic management and information services provided on the TERN.

The figures illustrate the percentage of the VIKING road network (ca 19 500 km) equipped with traffic status monitoring and road weather monitoring of appropriate level of quality.

The level of traffic status monitoring deployment is quite low in the Nordic VIKING regions due to
concentration of traffic flow related problems to large urban areas and the network surrounding these. Much more severe problems are caused by adverse weather and road surface conditions. The monitoring deployments in the past have thus concentrated heavily on road weather monitoring. In all, road weather stations were updated and installed in the MIP on ca 12 500 km. The continuing need of road weather station related deployments is due to outdated or insufficient software and hardware as well as increasing quality requirements from ITS services.

In incident detection, automatic incident detection systems have been installed primarily in tunnels. Travel time monitoring has also advanced in VIKING MIP and new systems have been deployed on more than 600 km.

Good results have been obtained on GSM network based travel time monitoring, whereas Floating Car Data based travel time monitoring has advanced much slower than expected in the beginning of the MIP. Advanced systems for winter maintenance monitoring have been deployed and mobile monitoring of road surface condition has made valuable progress.
Introduction
Exchange of data and information between traffic management and information centres has been identified as a key issue at the European level through the MoU on DATEX. It has been acknowledged that cross-border services require an efficient and harmonised method for exchanging information.

Objectives
Work in Domain 2 established a network for the exchange of traffic information relating to the TERN roads in the VIKING area, including design and implementation of the necessary information management tools. These activities ensured that developments in the VIKING area have been harmonised with other pan European developments.

Achievements
During MIP I the VIKING countries have mainly been working in the area of TCC/TIC upgrading, cross-border information exchange systems (e.g. DATEX) and Interconnection with other centres (e.g. local, regional, public transport).

Germany
The Free Hanseatic City of Bremen established a traffic management centre (TMC) for realising traffic management, traffic control and exchange of traffic information. The most important systems for traffic control and management were integrated in the TMC: Traffic computer, parking guidance system (PILS), road work co-ordination and traffic control facilities. Subsystems necessary for displaying traffic situation, congestions, parking space and car parks were integrated into the TMC. A characteristic of the TMC Bremen is the fact that not only incoming data are being processed and implemented but that the subsystems can be controlled from the TMC.

Denmark
The national Traffic Information Centre (T.I.C.) in Denmark is situated at the Danish Road Directorate in Copenhagen. In order to facilitate the collection of incident data, a system called RTS, Registration of Traffic Situations, for remote entering of data has been developed. T.I.C. depend on information sent from various sources. One of these sources is the police. The police are often called to a site, where an accident for example has taken place.
The police can forget to call T.I.C., and in order to assist the police, the RTS system was developed and installed at one police station. The RTS system has been supplemented with additional systems/applications like events such as road works and planned events such as demonstrations or sports events. The messages are sent to the central IT system in T.I.C. and thereby distributed through all the information channels in use for traffic messages.

**Sweden**

Sweden has participated and accomplished work in the area of Traffic Information Exchange based on DATEX on the European Union level during the whole MIP period. The work has focused on development and standardisation efforts managed by the EC and CEN as well as work on the national level. The aim was to implement and make the DATEX standard an accepted standard for exchange of traffic information cross-border and for Service Providers and other interested parties in the area of refinement and use of traffic information.

On the initiative of the EC a project started during 2003 with the aim to develop DATEX further to a next generation taking into account demands, needs and experiences from the current versions. The DATEX Technical Committee (TC) finalised the work and released the first version of the DATEX II specifications (v1.0) in December 2006. SRA has during 2007 started implementation of DATEX II in the DATEX node. This is planned to be SRA new standard from 2008.

**Finland**

During the MIP period Finnish National Road Administration (Finnra) has analyzed and renewed some of its strategic policies also concerning traffic management. The major change will be that Finnra is no longer mainly developing own data systems but buying the needed functionalities as services from the service providers. The results of this policy have been further investigated and implemented at the Finnra’s traffic management architecture work and projects at the VIKING level. However some of the core traffic management systems will remain Finnra’s property. An example of this is the incident data management system.
TRAFFIC MANAGEMENT AND CONTROL (TMC)

The activities of Domain 3 have contributed to improved traffic flow, increase of safety and improvement of environmental effects on the TERN in the VIKING area.

Common studies
A major achievement has been the creation of a functional network for continuous exchange of know-how and information between the VIKING partners. This network was a major asset for the performance of the common activities including the following major priorities:

- Formed consensus on the views on national and cross-border Traffic Management and Control.
- Established a platform for the harmonized use of VMS for speed and lane control in the VIKING area.
- Initiated the creation of Long Distance Corridors in VIKING with harmonized supply of services and traffic control measures.
- Organised an extensive programme of workshops on issues like VMS, safety issues, tunnel traffic control and incident and emergency handling.

Traffic Management Plans
Traffic Management Plans have been developed in selected areas on TERN. Focus has been given to the metropolitan areas since our traffic problems are mainly located to these parts of the road network. Another issue of importance has been specific cross-border areas like the Öresund region and the border between Niedersachsen and the Netherlands.

Urban/Interurban Interfaces
Parking guidance systems with suitable multi-modal alternatives for long distance traffic have been developed and implemented. The most important project has been related to Hamburg Airport.

Decision Support Systems
Simulation and prediction models have been studied and developed as platform for traffic management planning and for implementation of efficient traffic management tools. Road weather forecast models and short term traffic prognosis models have been some of the most important achievements.
Tactical Management and Control
This subactivity included the development and deployment of advanced MCS systems with integrated use of VMS, lane control, ramp metering, queue warning systems, speed limit systems etc.

Traffic improvements have been achieved on most motorways in northern Germany, not least by lane control through the extended use of the emergency lane, the “hard shoulder”.

Rerouting systems and queue warning systems have been installed in several condensed areas of Scandinavia.

Systems and services for tunnel safety have been extended, and knowledge dissemination has been a key issue.

Electronic Fee Collection
Following the success of the national Norwegian interoperable EFC system, Sweden, Norway and Denmark now have established a fully interoperable EFC-service in the VIKING area. The service EASYGO (earlier NORITS) is further presented as a success story.

M 3 Copenhagen
In conjunction with the construction works carried out to widen the M3 motorway around Copenhagen, the Danish Road Directorate planned and performed a comprehensive use of traffic management systems in order to achieve better traffic safety and traffic flow quality.

Deployment of integrated advanced MCS systems
TRAVELLER INFORMATION SERVICES (TIS)

The provision of Traveller Information Services is the part of ITS where cooperation between actors is the most important. The quality of a service is directly related to its extension, as well geographically as to its content. For the purpose of stimulation and facilitation of a fruitful cooperation process, Domain 4 has held a series of meetings, seminars and workshops and has established several permanent work groups. The work groups played a key role in the management of common activities like the joint “Internet Information Service” and the joint “Data Pool for Baltic Sea Ferries”. Domain 4 has also actively contributed to the work of the European TIS Expert Group.

Studies and implementation were related to six thematic fields: “Journey time prediction across modes and borders”, “Roadside information and fixed points of Information”, “In-vehicle information and navigation systems”, “Internet and telecommunications based services”, “Mobility management and multi-modal services” and “Freight and Fleet information”. In these fields, pilots and operational services for pre- and on-trip information have been initiated all over the VIKING territory. The development and establishment of the services has been carried out systematically in accordance with deployment plans developed in the beginning of the MIP.

Under the umbrella of NEMIS (Northern Europe Mobility Information Service) several projects have been studied and piloted which aimed to overcome political and geographical borders as well as barriers of language, technical standards and organisational handling. NEMIS has become one of the most exciting activities within VIKING Domain 4.

Provision of information services for the road users has been extended along several lines, e.g. guidance systems at motorways in metropolitan areas, internet portals accessible from anywhere, in-vehicle information systems etc. At the end of 2003 the technical infrastructure for RDS-TMC services was implemented in the whole VIKING area.

Several studies have been carried out preparing the development of in-vehicle information systems which improved traffic safety and emergency services.
In the field of roadside information systems different kinds of hard- and software have been implemented. After operation of test equipment regional and national deployment plans were set up, such as Info kiosks with internet access along the motorway network, dynamic passenger information systems at public transport interchanges and Information on Traffic Situation through POI.

The main focus of Domain 4 lay on studying and initiation of new developments in the field of Internet and telecommunication based services. Within the scope of the MIP many projects have been invented and progressed focusing on the specification, development and upgrading of Internet based information services. Meanwhile in all VIKING countries national and regional Internet services are in operation, mostly in advanced generations.

In the field of mobility management and multimodal services projects in a wide range of tasks have been developed and piloted related to different radius of action and different areas of influence: local, regional and national. Cooperation with organisations representing different modes of traffic have been established, covering actions by both authorities and private actors. Work focused on the development of innovative multimodal travel planner systems and of the integration of these systems into existing services.
System Architecture

The aim
The aim during MIP 1 has been to facilitate road authorities with a reference work for systems architecture. The approach taken have made interoperability with other modes easier (co-modality).

The approach
The VIKING countries have a common goal towards systems architecture for new project implementations. The KAREN User Needs are identified as a useful common starting point for creation of systems architecture for ITS projects. Important steps towards harmonization of the use of a common basic set of User Needs have been taken. The user needs represents a formal expert expression of the stakeholders aspirations and enables a functional viewpoint of an intended system.

The achievement
Based on the nationally identified user needs a common functional viewpoint of Traffic Management Centre functions in the VIKING Area has been produced with the help of the FRAME Selection Tool.

The following high level Context diagram describes system boundaries that has been derived from the information provided from the VIKING countries and can be regarded as a common Context diagram for the VIKING countries:
Project evaluation

Making reliable and consistent European evaluation results available is essential for the cost-effective deployment of ITS in Europe.

Evaluation is required in VIKING and other Euro-regional projects, in order to:

- Increase understanding of the impacts of ITS systems and services.
- Justify EU and National Government expenditure on the projects
- Demonstrate the benefits (financial and socio-economic) of individual applications
- Demonstrate the benefits of the Euro-regional project as a whole

All countries in VIKING have participated in the common work of establishing the VIKING Evaluation Package. The package is a toolbox which addresses the need for an overview of impacts, ex-ante and ex-post evaluations as well as feedback from finalised evaluations. The package consists of guidelines with the aim of supporting ITS evaluations and harmonising the reporting of evaluation results.

Evaluation overview

With the objective to provide an overview of ITS evaluations in the VIKING area, an evaluation overview report has been produced. The report covers the results and reports produced during the MIP period and from earlier evaluations regarded as important key evaluations. It also list ongoing evaluation studies in the VIKING area.

The overview may be used as a supporting tool for ITS decision makers and professionals in order to find ITS evaluation results achieved by others and to inform about what have actually been conducted in the field of ITS evaluation in the VIKING area.

Synthesis of results

To be highlighted is a compilation and synthesis of evaluation results of some selected ITS systems and services within the VIKING area.

The synthesis analysis has looked at four application areas:

- Traffic status and travel time information
- Public transport information systems
c. Motorway control systems (MCS), variable speed limits (VSL) and queue warning
d. Electronic payment facilities

Within each application area some key evaluations from the VIKING countries have been selected. The facts and results are presented in a form making it easy to compare the various evaluations. Furthermore a “VIKING Evaluation Group assessment” concludes every evaluation, presenting an overall view on a specific evaluation as well as the type of system being evaluated.

Legal and Organisational Issues
Various national studies were accomplished with main focus on

a. integration of traffic information and logistic freight transport information
b. multi-modal and inter-modal services for freight operators
c. specific information and measures for abnormal transports and dangerous goods

c. Motorway control systems (MCS), variable speed limits (VSL) and queue warning
d. Electronic payment facilities

The results showed first that the increasing freight transport on the TERN will create more over-loading effects and more problems in safety and load on the environment than expected. Thus the redistribution of freight from road to rail and from road to sea remains an urgent task in all Viking countries.

Main emphasis with a good common feedback was put on the multi-annual study “Internet based Information management for rules and regulations for special road transports on road in the VIKING region”. This resulted in the internet information system www.TransportXXL, which is separately reported as a success story.

The German partners (ministries) were predominant in eligible investigations for the promotion of goods traffic centres and ports as well as in “Baltic Sea road-port/sea-road corridor” studies.

Concerning the items a) and b), changes in organisational structures in the beginning (selection of engaged partners, involvement of private organizations and trade associations) seem recommendable for the future to guarantee higher European added values from the supported projects.
The first section in this booklet gave an overall introduction to results achieved in VIKING, presented through the order of technical domains applied in TEMPO. But there are other, and perhaps better, ways to present results from international cooperation where other keys are used: Interoperability, cross-border, corridor, innovation and European are examples of buzz-words that can be used to describe the characteristics of Euro-regional ITS deployment activities.

In this section we have tried to collect examples of deployment activities representing specific aspects of the value of Euro-regional and European co-operation:

- Transportxxl – a cross-border internet service for HGV, a first step towards interoperability?
- Hard shoulder driving – ITS for extra capacity on transport corridors during peak hour
- EasyGo – Interoperable EFC in three countries, a milestone in the European development
- Salt Spreaders Control – Efficiency and healthier environment from innovative ITS
- Monitoring guidelines – A first step towards common European services?
- TTIS – A comprehensive co-modal traveller information service on internet

The development of a sustainable European transport system will require as well cross-border and corridor solutions as the use of innovations. This is why ITS deployment activities must contain as well examples of international deployments as examples of projects where innovation stands in focus. Here the element of “dissemination of best practise” is the core value of European cooperation.

More information on results from VIKING activities can be found on our web-site: www.viking.ten-t.com
Harmonised effective traffic management and information services across borders require harmonised monitoring information of sufficiently good quality. For this reason, VIKING very early identified the need for harmonised monitoring quality requirements for whole VIKING.

The VIKING monitoring guidelines build on the TELTEN-2 guidelines, existing national guidelines and those developed within the VIKING actions as well as the data quality requirements as defined in the results and deliverables of the Monitoring and Information Services Expert Groups.

The development of guidelines for monitoring has been a slow and long process, requiring consensus formation in its various steps from all stakeholders involved as well as feedback from other VIKING Domains and Euroregional Projects.

The development started before the MIP and has continued throughout the MIP. The VIKING Monitoring Guidelines now contains set of validated common minimum quality requirements for:

- cross-section traffic information
- incident information
- road weather and road surface condition information

For these, data quality requirements are specified along with quality requirements for monitoring stations and their operation and maintenance. After the MIP, the guidelines also include description of quality aspects and requirements for the following:
monitoring for travel time estimation
- air quality monitoring
- individual speed monitoring
- monitoring during road works
- short-term prediction models
- local climate models
- maintenance procedures for monitoring infrastructure

The Guidelines have been used for identifying the status of existing monitoring infrastructure and any gaps in the infrastructure (Monitoring State of the Art reports) as well as for planning the monitoring deployments including their benefits and costs, and required studies (Monitoring Plan reports). The Guidelines are used widely in the VIKING partner organisations as a basis for their own monitoring guidelines. The Monitoring Guidelines will be continuously updated also in the future.
The project Salt Spreader Control started back in 2003 when the Vinterman group in Denmark took initiative to define a vision for GPS Controlled Spreading. The vision was that it must be possible for a salt spreader to act in a proper manner if the driver just can stay on an already planned route. The Vinterman group developed the Danish winter management system and accepted this challenge supported by VIKING.

Background
On-line data collection from salt spreaders was established based on a common standard for delivering data. The standard made it possible to present spreader data from different manufacturers within Vinterman. At first some effort was spent on evaluating the quality of the salting actions on the salting routes.

The main result was that it is difficult to operate a spreader control box and drive 50-60 km/h under different traffic conditions. The general conclusion was:

- Handling spreading width is a problem from time to time. A good driver normally has no problems with this.

- Spreading symmetry should be used more frequently by the drivers.

- Change in dosage due to e.g. sections with porous asphalt is also used very rarely.

Even experienced drivers, who have followed a comprehensive training programme, face the latter two issues.

GPS Controlled Spreading
The salt spreader manufacturers in the Danish market were invited to participate in a work to define a standard for implementation of GPS Controlled Spreading. The manufacturers came from Sweden, Holland, Denmark and later a German company joined the group. The overall demands on the system were defined:

- The salt spreader shall be able to act adequately by itself while the driver follows a route.

- Dosage settings, spreading width, spreading symmetry and beacon light must be handled automatically.

- The driver must always be able to override the automatic system.
After the winter 2006-07 the result was that all four manufacturers were ready with systems which met the systems requirements. Two are in operation, one has just passed the testing period and the last is in one testing phase.

The results are very positive and experienced drivers state that automatic spreading works far better than the previous manual system.

**The way forward**

At the moment more than 40 routes in Denmark are using GPS Controlled Spreading and implementation of a new route just takes a half day. The benefits of using this technology are:

- Salt ends where it should be spread
- Improved traffic safety – the driver can focus more on driving and less on making changes at the spreader control box

Until now the goal has not been to save salt – just to ensure that it ends up where it should.

GPS Controlled Spreading also benefits from section based forecasts. The Danish Metrological Institute is working with section based forecasts for slipperiness. Depending on the situation there can be a large difference in what the road temperature is and will be along a salting route. The goal was to receive prognoses and integrate them into the salt spreader control file, which was uploaded to the spreader when starting. By this technology it is possible to save salt due to changes in dosage along the route and thereby to get a positive effect on the environment.

**Example of changes in spreader settings during a route**

- Spreading OFF
- Spreading ON 10 g/m² 6 m width Symmetry neutral Prewetting ON
- Spreading ON 15 g/m² 9 m width Symmetry right Prewetting ON
HARD SHOULDER DRIVING IN GERMANY

Summary
The temporary use of hard shoulders has been proven as an adequate measure to relieve the traffic situation temporarily, at times when traffic volume is critically high (rush hours, holiday periods, events etc). In Germany hard shoulder running has been made available for use under specific conditions since 2002. In general the implementation of this measure was of limited extent to improve the traffic situation for the time until new infrastructure (additional lanes) was built. Before opening the hard shoulder for use, it was equipped with variable message signs, inductive loops and usually a video surveillance system.

All experiences have shown that hard shoulder running is an efficient instrument for rapidly achieving a significant improvement of traffic flow at reasonable financial costs. Furthermore this measure contributes to the reduction of road accidents, less travel times and reduced air pollution.

Projects
During MIP I projects were carried out in Niedersachsen and Schleswig-Holstein. Since the feasibility study and cost-benefit analysis in both federal states had shown positive results, a traffic dependant opening of the hard shoulder was set up.

Besides the IT-related instruments, small additional road constructional measures of the free route were required. This refers to a complete relocation of all existing marking lines by creating sufficient lane widths in favour of the hard shoulder use and certain cross-section extensions. Small attachments to the acceleration and the deceleration lane were sufficient as constructional completion. Besides these measures, emergency bays were set up at a distance of approx. 1km.
Results

Experience with temporary use of the hard shoulder has shown that this measure significantly improves the situation without a significant change in the accident rate.

The main objectives standing behind the idea of temporarily using the hard shoulder have all been achieved by the measures taken. This concerns the

- reduction of the susceptibility to congestion during traffic peak times
- optimal use of the existing capacity on relevant sections aiming at a steady traffic flow
- significant increase of the capacity of the carriageway
- reduction of travel time
- Minimisation of the environmental impact due to pollution and noise.

For traffic control, the sections were equipped with remote-controlled variable message signs and for data collection double inductive loops were set up. In order to monitor the hard shoulder for broken down vehicles, video cameras have been installed.

European Added Value

The experiences with the temporary use of the hard shoulders met the interests of many partners in the Euro regional projects. Meanwhile this efficient measure has been transferred to many other countries and is a good example for the international acceptance and comprehensibility of systems and measures like this. Besides it is a good example for the distinctive co-operation within the Euro regional projects.

Cross-section extension at the deceleration lane
In Domain 4 one of the focus items during MIP I was the development and the provision of comprehensive, cross-border and multi-modal travel information. Out of national and regional initiatives and projects have – in strong cooperation between the national and regional road authorities and other stakeholders – emerged three common projects, which contribute decisively to the above mentioned aim. Additionally they are a very good example on inter-regional cooperation between several stakeholders both from public and private side.

With the traffic information portal TTIS www.travel-and-transport.com availability and accessibility of traffic information for the whole of Northern Europe has been improved. The website has been developed continuously since test operation started in year 2000 and offers information on:

- Countries (general information, e.g. population, distance tables, maps, vacations, bank holidays)
- Road traffic (e.g. traffic regulations such as compulsory use of snow tires, road network, routing service, car ferries, congestion warning, road weather information, roadwork sites, petrol prices, tolling for roads, bridges and tunnels)
- Goods traffic (e.g. speed limits, parking lots, heavy goods ferries, closed roads, combined transport, freight traffic management centres, dangerous goods transport)
- Public transport (e.g. network, timetables for trains, interregional and regional busses, air traffic, ferries, local public transport, car-sharing)

Consulting the TTIS-website on “ferry-information” finds the user a link to the route planner www.ferry-routing.com. The website offers optimal car and ferry route planning within the VIKING area when a trip requires crossing of the Baltic Sea. For long distance travellers to or from Scandinavia this is often necessary. Before the introduction of this service the user had to, in a time consuming and exhausting procedure, consult a car route planner and additionally search for various ferry companies’ websites or ferry portals. The new service
provides ferry timetables, check-in and check-out times and presents several trip options to the users including toll bridges, ferries of different companies and types (fast, long-running/overnight, normal ferries).

Between October and November 2006 users gave their first feedback on the car and ferry route planner: Most of the users considered the service as helpful (48%) and very helpful (34%).

The aim of providing multi-modal travel information was further extended by a project that advances timetable information systems in public transport to cross-national travel information systems. The underlying idea was to give the traveller a decision base for what kind of transport mode he should use when making a local, regional and even an international, cross-border trip.

The exchange of regional timetable data started between two neighbouring regions near the Danish border. It had been developed to an exchange of timetable data between Northern Germany and the EU-Spirit regions in Sweden and Denmark. The first integration of the Viking partner Northern Germany into the EU-Spirit network had been realised in the year of 2004. In 2005 and 2006 the interfaces between the Northern German states and the EU-Spirit system and the user friendliness were improved.

To achieve this, the ministries and road administrations in Scandinavia and Northern Germany had set up a common ferry data pool (FDP).

The service started as a pilot in May 2006. By December about 35,000 trips had been requested (4,000 requests/month). Since beginning of January 2007 the requests are constantly increasing (5,700 requests in March 2007).
Objectives
The NORITS project was finalised in June 2007. The result from the project is the EasyGo service, which is offered to all existing and new users of toll collection systems in the Scandinavian countries. The service makes it possible for any user to pay the toll fee at any EasyGo toll operator with the on-board unit the user has received from a local issuer. The EasyGo service was made available from 1 March 2007 and includes toll operators, ferry companies and some parking companies.

More than 1.500.000 on-board units are already in use in the Scandinavian countries and the EasyGo service is available at approximately 30 toll operators in Denmark, Sweden and Norway.

Results
The NORITS project resulted in a comprehensive package of agreed contracts, specifications and procedures concerning interoperable EFC.

The specification package and its implementation, enable reading of all active DSRC transponders (approx 1,5 million) at all toll lanes (approx 320) in Sweden, Denmark and Norway. All toll stations have been equipped with new software to allow reading of all transponders.

A comprehensive set of procedures have been developed and applied for the management of black lists, toll station tables, lists of heavy goods vehicles etc. All lists are exchanged between all toll stations every day.

Contracts have been developed for all involved actors, regulating roles and responsibilities of all operators and issuers concerned. The EasyGo service include as well combined issuer and operators, as operators only, which means that financial agreements have been put in place to regulate risk exposure, transaction management costs etc.

The agreements in NORITS and the specifications developed are key examples of European best practise, and forerunners to the implementation of the European Electronic Toll Service (EETS).

Impact on Safety/
Mobility/Environment
Already in the first three months of operation (June 2007) 150 000 users benefited from the EasyGo service. They could drive without stop-
ping through a toll station, where they earlier had to stop and perform a manual payment operation to a cashier or an automatic machine.

The smoothing of the traffic flow through the toll stations brings reduced emissions (noise and exhaust) and improved safety.

**European Added Value**
The NORITS project made a full implementation of the results from the PISTA and CESARE II projects, and is also fully compliant with the CEN standard for microwave DSRC.

It is indeed cross-border, as the EasyGo service has been implemented on as well the Norwegian-Swedish as the Swedish-Danish border crossings. It is also implemented on ferry lines between Sweden and Denmark. With the EasyGo service, a vehicle can drive from the north of Norway to the German border, and also use parking facilities and ferry transport, with the same transponder and get all toll charges on the same bill from his favoured issuer.
Introduction
This international cross-border project focused on the different permission procedures for abnormal transports in the VIKING area.

An abnormal transport is a transport of a vehicle or vehicle combination, being too large or heavy itself or carrying an indivisible load, which exceeds at least one authorized dimension or weight allowed in normal road traffic in EC partner states.

Project
The common VIKING project www.TransportXXL.com is an internet information service system concerning the different rules and regulations for permission, which are treated differently in the European countries.

Hauliers, which carry out transports crossing several countries can check whether their transports are classified as abnormal transports in the specific countries and directly find the authorities and responsible persons to be contacted. The haulier is also informed about any additional requirements that may apply (e.g., vehicle length restrictions, type of suspension). Furthermore, the hauliers can download the respective application forms. The Web service also includes a Forum Platform for the exchange of information between and within the user and operator groups.

The web service is multilingual, i.e. available in Danish, Finnish, German, Norwegian, Swedish and English.

European Added Value and Vision
www.TransportXXL.com has been finalised and is currently running as a pilot. It should be a starting step within the vision of a comprehensive pan-European internet platform for the forwarding companies for information about the different rules and regulations and, mainly, for a complete internet permission procedure with the components:

- online-input to the applications forms
- treatment and permission in the background in national agencies within 24 hours
- results (=permissions) are available in digital online-format for a “paper-less transport”
The TEMPO Programme and VIKING have demonstrated the high value of European and Euro-regional co-operation. Today, ITS deployment on European roads takes place in a European context, and experiences, knowledge and best practice solutions are disseminated through well working and efficient networks of people and organisations.

The partners in VIKING have decided to participate in the EasyWay co-operation planned for 2007-2013 to take advantage of the solid working structure that has been established. At this moment also Lithuania has decided to join VIKING, and we can expect also other countries to join in the coming years. One of our visions is to see the Baltic Sea as an integral part of North European transport corridors, and VIKING as the mechanism for seamless and interoperable transport and travel in the Baltic Sea region.

The purpose of EasyWay is closely linked to the European Transport Policy as it is expressed in the White Paper Review – Keep Europe Moving. This means that there will be less focus on European motorways – the TERN – and more focus on sustainable mobility. EasyWay will address new areas like urban traveller needs, including public transport, and Freight and Logistics issues with the aim of facilitating intermodality. Ports and other interfaces between transport modes will be of great importance.

Furthermore, in EasyWay the approach will be shifted towards deployment of services rather than systems. Our aim is to establish a set of core European services with harmonised content, where we have defined appropriate levels of service for different parts of the road network. In this new phase of European ITS deployment co-operation with a wide range of stakeholders is required. Road authorities and operators in EasyWay will have to work together with for example the vehicle industry, cities and public transport operators. In the first phase of EasyWay, 2007-2009, a Road Map for European ITS deployment will be developed and we expect VIKING to be an active partner in this work.

Also with this wider scope of European ITS deployment, Euro-regional partners in VIKING are well prepared to go ahead as a leading regional co-operation in Europe.
VIKING contact information:
VIKING Chairman: Christer Karlsson, christer.karlsson@its-sweden.se
VIKING Project Office: Jonas Sundberg, jonas.sundberg@sweco.se

www.viking.ten-t.com