Directive 2010/40/EU – The ITS Directive
Report from NORWAY

Prepared by:

Norwegian Public Roads Administration (NPRA) in cooperation with the Ministry of Transport and Communications.

Edited by:

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Oslo, August 2014

Innhold

1 Introduction

The positive effects of ITS have been documented through research and implementation projects for the last 10-15 years. Nevertheless, the introduction and utilisation of ITS has taken a long time and been characterised by fragmented development. Insufficient attention has been given to coordination between different systems and stakeholders. Thus the European Commission (EC) has adopted an ITS Action Plan and the ITS Directive to accelerate the development of ITS and contribute to common European solutions. The ITS Directive has been incorporated in the EEA Agreement. Norway is obliged to comply with the Directive, which emphasises implementation of ITS in accordance with common European specifications to ensure cross-border interoperability. Norway has a high level of ICT expertise, and is among the countries in the world with the highest percentage of people using the Internet, smartphones and tablets. Norwegian technology companies and research communities are at the forefront internationally, and deliver advanced technology and expertise to the world market. The conditions for development of efficient ITS systems are thus present in Norway. We should aim for Norwegian road traffic to have the best possible ITS support and the smartest transport solutions. Due to our geographical location the Norwegian business sector has certain transport disadvantages compared to many of our European competitors. However, the development of transport infrastructure, combined with increased efficiency and good comprehensive logistic solutions, can reduce some of these challenges. ITS development is thus important for the competitive strength of Norwegian industry. Norway's commitment to ITS will make it possible for Norwegian companies and competence communities to exploit the opportunities and markets that are created.

The NPRA wishes to contribute to this both through our own use and development of ITS for efficient traffic management and control, and by facilitating commercial services that make use of public source data. Additionally, ITS will be used for improving the NPRA's internal systems and services. ITS is a priority area that will provide new tools for improved achievement of the agency's main objectives, and that will strengthen and support our traditional tasks within planning, construction, operation and maintenance.

ITS Policy – National Transport Plan (NTP)

The challenges facing the Norwegian transport sector are extensively described in the National Transport Plan, NTP. The main conclusion is that the current development with a continuous increase in car traffic cannot be allowed to continue, especially not in urban areas. We must expect a large population growth in urban areas, and the goal is to cover the increased demand for transport with public transport, walking and cycling. In addition, there are major challenges with regard to facilitating road use, public transport and for vulnerable road users. Environmental friendly and efficient freight transport is also a major challenge.

The NTP 2014-2023 recognises that ITS and new technology will play an increasingly prominent role in the transport system. ITS and the introduction of new technological solutions, allowing for a better exploitation of available infrastructure, will contribute significantly to reaching the goals for traffic flow, traffic safety, environmental impact and accessibility.

On order from the Ministry of Transport and Communications, the NPRA is responsible for the realisation of the ITS Directive in Norway.

2 Current status of ITS in the road sector

The NPRA works actively to develop new ITS solutions in line with national transport policy and EU guidelines. One of our objectives is to strengthen the relation between ITS work in the NPRA, the ITS strategy of the Ministry of Transport and Communications, and the ITS Directive. Thus, the NPRA adopted a revised ITS Strategy in early 2013, where it is concluded that the NPRA's commitment to ITS shall contribute significantly to:

- Improved traffic safety for all groups of travellers
- Efficient measures to make road transport more climate and environmental friendly
- Improved prioritisation and attractiveness of public transport
- Optimal use of transport capacity
- Robust, dependable and effective traffic management
- Improved accessibility and mobility for all based on universal design

We will achieve this through cooperation, service development and innovation, systems design and development, and by facilitating the use of the NPRA's source data by external stakeholders. In order to achieve the above mentioned goals, ITS must also be included in the NPRA's strategies for specific areas, such as traffic safety, public transport, goods transport and traffic data in the future.

In addition, the ITS Strategy was succeeded by the NPRA's Action Plan for ITS in 2014, which was developed to describe the planned measures more in detail. The purpose of the Action Plan is moreover that it should be a steering document for future-oriented, comprehensive and targeted use of ITS in line with the NTP and the ITS Directive. It shall contribute to the success of ITS as an instrument by providing improved knowledge of and expertise in ITS and contribute to a closer connection between ITS and the NPRA's traditional specialist areas, and ensure that ITS becomes an integral part of all NPRA activity. In order to ensure an up-to-date action plan that is simple to follow up, the aim is to have annual rollovers and reporting in the work with the measures. This will contain status and reveal variances and work backlogs. It is also important to introduce new measures that are demanded nationally and internationally.

Together with the EU ITS Directive, the ITS Action Plan and the NPRA's ITS strategy and ITS Action Plan, the Norwegian Ministry of Transport and Communication's "Report on national ITS action envisaged over the following five year period[1]" to the European Commission provides important guidelines for the NPRA's further ITS work. The ITS Action Plan is the follow-up of and transformation into concrete terms of the ITS Strategy and is to be a management document for future-oriented, comprehensive and targeted use of ITS in line with the National Transport Plan. It aims for gradual development of the NPRA's use of ITS to achieve its goals in a manner that stresses the importance of the whole rather than the individual action. The Action Plan is intended to prompt the drawing up of regional ITS action plans, with prioritisation of specific actions in each region.

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[1] The report describes the ITS actions that Norway is to follow up internationally over the next five years.

2.1 ITS expertise and recruitment

ITS creates a need for multi-disciplinary knowledge where traditional road and traffic expertise is combined with ICT and other areas of expertise such as behavioural science, law and economics. In light of both the NPRA needs and international and national guidelines, the NPRA is focusing more than ever on ITS expertise and recruitment.

A fundamental requirement for the implementation of the action plan is that NPRA employees have ITS expertise. The development of this knowledge and expertise must therefore receive high priority for the next few years. ITS should be a topic in all stages of planning, from concept evaluation report to construction specifications.

The traffic operator study

The NPRA management meeting decided in 2011 that a training and authorisation system should be established for traffic operators at traffic management centres (TMCs). The study consists of different types of learning methods and topics. All existing operators will have completed the study in the course of 2014. After this the study will be continued in an operations phase. The competence requirements of the TMCs are to be developed in pace with new tasks and new technology. In 2013 a study was made of the structure, costs and organisation of the TMCs in the future. This will form the basis for activities designed to improve coordination, technical redundancy and robustness in relation to civil protection and emergency preparedness for the Norwegian TMCs.

ITS professional network

The ITS network consists of representatives from the Directorate of Public Roads and all the NPRA's regions. The ITS network is to contribute to closer technical cooperation and development of competencies across the NPRA.

Continuing professional education

The Norwegian University of Science and Technology (NTNU) is the university environment from which the NPRA recruits most of its master's candidates. The NPRA has a special cooperative agreement with the university on master's degrees, PhDs and research work. By means of this agreement, a good collaboration has been established with several faculties in both roads and transport and ICT. The necessary development of competence and recruitment for the NPRA and for the Norwegian ITS industry is thereby assured. In addition to the NTNU, the NPRA also supports several colleges with training options that are relevant for ITS.

The international research collaboration among universities, colleges and research institutes is important for ITS and assures the development of a common European transport infrastructure.

2.2 National and international cooperation

The Ministry of Transport and Communications represents Norway as an observer in the European ITS Committee associated with the ITS Directive. In technical expert groups and standardising bodies we are partners on an equal footing with the EU countries. An ITS Advisory Group has also been established, with broad participation from the business sector and organisations in Europe. Norway does not participate here, but we make use of the

participation of CEDR and ERTICO. These are important arenas for promoting Norwegian interests.

Below is a list of cooperation platforms at national and international level that Norway participates in.

National cooperation platforms	
The Norwegian ITS Advisory Board (ITS Rådet)	Established to monitor national work with the ITS Directive with broad participation from national organisations and interest groups. The purpose is to create an arena for discussions about prioritisation and implementation of ITS in Norway, and to encourage relevant industries and companies to take a more active interest in ITS. The NPRA and the Ministry of Transport and Communications are to contribute jointly to making the Committee an important provider of premises with respect to needs and priorities associated with the development of ITS for the roads transport sector in Norway.
ITS Norway	ITS Norway is a national specialist organisation for government agencies and business. All the transport agencies have played a central part with regard to the establishment of ITS Norway. The members represent state-of-the-art expertise and capacity in the development and implementation of multimodal ITS.
K175	Reference group (mirror committee) for standardisation of ITS in CEN, ISO and ETSI
ITSConference, ITS Forum, ITS Committee seminar, topic conferences, technology days etc.	National conferences which focuses on ITS.

International cooperative platforms	
EasyWay	The extension of the European cooperation that was established through the EasyWay project (2007–2013). EasyWay responds to ITS Calls and is applying for EU funding of projects aimed at establishing coordination of ITS services and universal solutions for road traffic in Europe. Norway is not included in the subsidy schemes, but is otherwise an equal participant. We are participating, together with the EU members among the Nordic and Baltic countries and Northern Germany, in the regional sub-project called VIKING. The work contributes to joint recommendations and guidelines which according to plan are to be used as a basis for implementing the ITS Action Plan.
Nordic Roads Association	The Nordic Roads Association, a collaboration with members from both the public and the private sector, and that has a total of around 320 member organisations in the Nordic countries.
ERTICO	ERTICO – ITS Europe is a European ITS organisation that organises many sectors. The NPRA, SINTEF and Q-Free are Norwegian participants. These networks are important for harmonisation, technological development and international standardisation.
TISA	Traveller Information Services Association. An association with the focus on proactive implementation of traffic and travel information services and products based on existing standards.
POLIS	A network of European cities and regions working together to develop innovative technologies and guidelines for local transport.
PIARC	World Road Association. PIARC's objective is to promote the exchange of knowledge in the roads and road transport sector. The secretariat is in Paris, and the organisation has members in over 140 countries.
ERTRAC	The European Road Transport Research Advisory Council. A European technology platform for road transport.
ERANET	The purpose of ERA-NET is to coordinate the national research programmes and activities of different countries. The participants are the research-funded organisations in Europe.
The Amsterdam Group	A strategic alliance consisting of ASECAP, CEDR, POLIS and C2C-CC, the purpose of which is to contribute to and facilitate the deployment of cooperative ITS in Europe. It includes the most important organisations that are affected by cooperative ITS solutions. The NPRA participates in its capacity as both POLIS and CEDR member.
CEDR	A cooperative forum for the European directors of roads
FEHRL	The Forum of European National Highway Research Laboratories. The goal of FEHRL is to promote and facilitate cooperation on roads research
CEN/ISO/ ETSI	International standardisation organisations
ITS World Congress, ITS in Europe, TRA, TRB, ITS Conference (EU)	International conferences with the focus on ITS. Most conferences are arranged annually.

2.3 National ITS legislation

The Ministry of Transport and Communications has seen the need for an ITS law in Norway, and the task of drafting the law has been given to the NPRA. In addition to ensuring the implementation of the ITS Directive and priority actions, the law will also provide the legal authority to ensure national coordination of ITS applications and services within the roads sector and covering the interfaces to other modes of transport. The ITS law is expected to be up for discussion and decision in the Norwegian Parliament during the first 6 months of 2015.

2.4 Public transport

It is part of the NPRA's responsibility to be the national coordinator and driving force for an attractive public transport system. In 2011, the Ministry of Transport and Communications delegated to the NPRA the responsibility for a national database for all public transport schedules and deviations. The work to specify and organise data collection is done in cooperation with the county administrations and other public transport stakeholders. The objective is for the database to include all scheduled public transport and to facilitate travel planning and payment. It will be operated by a public company, called Rutebanken AS. The specifications for data delivery is included in the NPRA manual V820.

A similar cooperation project also exists with regard to payment solutions, where the NPRA is responsible for the national coordination of electronic ticketing for public transport. These efforts have resulted in NPRA Manual V821, Electronic ticketing, which contains the national standard and the basis for interoperability and consistent ticketing for travellers.

ITS can provide significant contributions within travel planning, ticket booking and payment for the various modes of public transport. The NPRA will strive for such services to be based on the principles of universal design.

2.5 Cooperative ITS

Priority area IV emphasises the necessary measures to integrate different ITS applications on an open in-vehicle platform and to further progress the development and implementation of cooperative (vehicle-vehicle, vehicle-infrastructure, infrastructure-infrastructure) systems.

The NPRA has its own R&D strategy which specifies that technical R&D must be carried out in NPRA programmes. Rapid technological development makes new ITS solutions possible. R&D is therefore a particularly important element in the development of ITS and the testing of new technology.

The Research Council of Norway is in the final stage of a long term research program called SMARTRANS where ITS has been an important topic. This program is expected to be succeeded by a new transport research programme prominently featuring ITS-related research challenges. NPRA has an internal ongoing ITS research program in which one of the main topics is cooperative systems as described in the ITS Directive and Action plan. The theme of the research programme "Smarter road traffic with ITS" (SMITS) is fully in line with the vision of cooperative systems.

A main objective for the programme is to prepare for the future evolution of C-ITS, the role of the NPRA in this respect and how to meet the challenge of "Big data".

3   National ITS Advisory Board – ITS Rådet

To follow up on the work being done with the ITS Directive in Norway and on national ITS progress, the National ITS Advisory Board, ITS Rådet, was established in 2011. The board has members from authorities, industry, business areas and non-governmental organisations, and is chaired by the NPRA's Director General. ITS Rådet serves as an arena for discussion of needs and prioritisation in Norwegian ITS development. In fall 2014 ITS Rådet will adopt their development plan, which gives insight into both national and international guidelines on the ITS field. With these as a starting point, ITS Rådet describes important steps for achieving the desired national ITS development. The desire is to have clear political prioritisation that is rooted in the National Transport Plan.

It has become a tradition for the National ITS Advisory Board to invite interested actors to a ITS seminar once a year. Each year with a different theme based on ITS topics.

4   National ITS Association – ITS Norway

ITS Norway is the national ITS organisation for Norway partly funded by the government with an annual grant through the national budget. The association is a public-private platform for cooperation with approximately 60 member entities. ITS Norway works to promote ITS for all modes and to create awareness and more ambitious policies for ITS. They also have activities to build competence, initiate research and stimulate business opportunities from ITS. ITS Norway is a member of ITS Nationals and is an active player on the international ITS arena

5 Priority area I – Optimal use of road, traffic and travel data

Priority area I: Optimal use of road, traffic and travel data			
Activities or projects concerned with the optimal use of road, traffic and travel data	X Implemented	☐ Planned	☐ Not planned
Responsible person in administration	*Mr Ivar Christiansen* *Director, Traffic Management Section, NPRA* *ivar.christiansen@vegvesen.no, +47 900 43 195*		
Comments			
If activities/projects are implemented or planned in this priority area, please specify further:			
Map-based travel information	☐Implemented	X Planned	☐ Not planned
	The project is working on offering a map-based traffic information system to users of www.vegvesen.no . In the longer term, the intention is to offer users, and in particular users of heavy transport, a new travel planner. The service will be adapted to PCs, tablets and smartphones.		
Real-time travel information services	X Implemented	☐ Planned	☐ Not planned
	Automatic travel time registration has been implemented in Norway's four largest cities in addition to the E18 from Asker to the Aust-Agder border in the course of 2014. There is need to expand travel time registrations around the major urban areas and on important road routes. The NPRA is working on an implementation plan for priority action b) in the ITS Directive. Please consult the attachment for detailed information.		
Availability of road, traffic and transport services data used for digital maps	X Implemented	☐ Planned	☐ Not planned
	Regular service for service providers as cooperation between national mapping authority and NPRA		
New integrated user interface for Traffic operators in TMCs	☐ Implemented	X Planned	☐ Not planned
	Develop and implement new system to integrate interfaces for traffic operators in TMCs.		
Road safety related traffic information provided free of charge	X Implemented	☐ Planned	☐ Not planned
	The NPRA already operates an existing traffic information service which includes traffic safety related information, and is working on the implementation plan for deployment of a service as described in priority action c) in the ITS Directive in order to adapt the existing service to be in line with the delegated act		
Public transport travel data	☐ Implemented	X Planned	☐ Not planned
	A timetable database is to be the foundation for a countrywide, competitively neutral information system with travel planning for all types of scheduled public transport. Prerequisites are that all service providers should have equal access to the database. In principle, data from the database shall be offered free of charge. A national public transport schedule database, including a register of stops, is established. The national manual for data acquisition from public transport companies was established in 2011. This data base is to supply data to all stakeholders and service providers, for example travel planning		

	and information services. A national, multimodal travel planner is also under construction		
Road weather data and prognosis	X Implemented	☐ Planned	☐ Not planned
	The road weather information system is implemented and under continuous development. Further development of information dissemination is on-going. The system is called Vegvær, and will be established as the decision-making support system for contractors and for road user information of road weather.		
Datex node	X Implemented	☐ Planned	☐ Not planned
	Status 2014: In February 2014 the NPRA started using DATEX II version 2.0 as the standard exchange format for real time weather data, travel times, camera images and traffic information reports containing information about incidents, roadworks and driving conditions.		
Web camera service	X Implemented	☐ Planned	☐ Not planned
	Status 2014: The web camera service is a self-operated service road-users can use to form a picture of the traffic situation. There is great interest in the camera images, and the work load of the TMC personnel is greatly reduced when the media and road users can see pictures of critical points themselves. The images make it possible to see the amount of traffic, queuing, the weather situation and driving conditions.		
NVDB data for ITS	X Implemented	☐ Planned	☐ Not planned
	Status 2014: ITS requires relevant statistical data on the road infrastructure and on stopping places, height restrictions, weight restrictions, guardrails and parapets and various other features. The data are available as a service that makes frequent updating possible in order to ensure that operational ITS systems have correct, high quality underlying data.		
Action plan for traffic data	X Implemented	☐ Planned	☐ Not planned
	In 2011 a traffic data action plan was adopted by an NPRA management meeting. The implementation started in 2012, and will continue until 2019.		
New ITS out-station register	X Implemented	☐ Planned	☐ Not planned
	The ITS out-station register covers all types of ITS stations along the road for which the Norwegian Public Roads Administration is responsible. The register contains all characteristics and meta data necessary for the operation. One of the needs is to expand its functionality by means of a management system to ensure that error alarms and error situations are handled efficiently, with the shortest possible downtime. Implementation started 2014.		
Traffic incident management	X Implemented	☐ Planned	☐ Not planned
	The manual for implementation of improved traffic incident management and preparedness in the NPRA will be updated in 2014. It includes identifying needs for upgrading of systems and procedures in relevant units within the NPRA, its TMCs and the interaction with the police, rescue services and others.		

6 Priority area II – Continuity of traffic and freight management ITS services

<table>
<tr><td colspan="4">Priority area II: Continuity of traffic and freight management ITS services</td></tr>
<tr><td>Activities or projects concerned with continuity of traffic and freight management ITS services</td><td>X Implemented</td><td>☐ Planned</td><td>☐ Not planned</td></tr>
<tr><td>Responsible person in administration</td><td colspan="3">Mr Ivar Christiansen

Director, Traffic Management Section, NPRA

ivar.christiansen@vegvesen.no, +47 900 43 195</td></tr>
<tr><td>Comments</td><td colspan="3"></td></tr>
<tr><td colspan="4">If activities/projects are implemented or planned in this priority area, please specify further:</td></tr>
<tr><td rowspan="2">ITS Framework Architecture</td><td>X Implemented</td><td>☐ Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">ARKTRANS is the official ITS framework architecture for Norway. The architecture is further developed in cooperation with EU projects, in particular EasyWay and EIP.</td></tr>
<tr><td rowspan="2">Management of passenger transport across different modes</td><td>X Implemented</td><td>X Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">Status 2014: No new development</td></tr>
<tr><td rowspan="2">Management of freight along transport corridors</td><td>X Implemented</td><td>☐ Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">Status 2014: No new development</td></tr>
<tr><td rowspan="2">Tracking and tracing of freight across all modes of transport (freight transport logistics, eFreight)</td><td>☐ Implemented</td><td>X Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">Status 2014: No new development</td></tr>
<tr><td rowspan="2">Urban ITS architecture</td><td>☐ Implemented</td><td>X Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">Status 2014: No new development</td></tr>
<tr><td rowspan="2">Road traffic management centers (TMCs)</td><td>X Implemented</td><td>☐ Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">An external TMC report (2013) recommends making procurements to ensure interoperability between control systems for all TMCs. In general, traffic operators require a more functional and effective work surface that offers minimal chances of error. Therefore, the NPRA are to develop a new integrated user interface for traffic operators.</td></tr>
<tr><td rowspan="2">Electronic ticketing for public transport</td><td>X Implemented</td><td>☐ Planned</td><td>☐ Not planned</td></tr>
<tr><td colspan="3">In December 2012, a standard for the use of mobile apps and two-dimensional bar codes for ticketing was published. In 2014, a standard and infrastructure for the use of telephones with Near Field communication (NFC) technology was established for the distribution of tickets to travel cards, and for information on the contents of travel cards.</td></tr>
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Motorway control system	☐ Implemented	X Planned	☐ Not planned
	Needs analysis, goal formulation, planning of sections and a pilot on one or more sections will be conducted in 2014 and 2015		
Variable speed limits	☐ Implemented	X Planned	☐ Not planned
	Policy and criteria are under development. The NPRA will in 2015 conduct a pilot on sections of motorway E18, where variable speed sign are already installed.		

7   Priority area III – ITS Road safety and security application

Priority area III: ITS road safety and security applications			
Activities or projects concerned with ITS road safety and security applications	X Implemented	☐ Planned	☐ Not planned
Responsible person in administration	*Mr Ivar Christiansen* *Director, Traffic Management Section, NPRA* *ivar.christiansen@vegvesen.no, +47 900 43 195*		
Comments			
Automatic emergency call (eCall)	☐ Implemented	X Planned	☐ Not planned
	Study and implement an answering service for emergency calls from the eCall system. The pan European eCall service is to be deployed from 1 October 2017. The Norwegian Government has not yet incorporated Decision no 585/2014/EU of the European Parliament and of the Council into the EEA agreement.		
Information services for safe and secure parking places for trucks and commercial vehicles	☐ Implemented	☐ Planned	X Not planned
	The government aims to build 35 new rest places in the NTP period 2014-23. Norway has no plans for starting an information service based on the ITS Directive priority action e) at the moment. Information about rest places, number of parking places and the services provided are available in the NVDB and printed maps.		
Reservation services for safe and secure parking places for trucks and commercial vehicles	☐ Implemented	☐ Planned	X Not planned
	Status 2014: No new development		
Safety of road users with respect to their on-board HMI	☐ Implemented	☐ Planned	X Not planned
	Status 2014: No new development		
Nomadic devices to support driving task and/or the transport operation	☐ Implemented	☐ Planned	X Not planned
	Status 2014: No new development		
Security of in-vehicle communications	☐ Implemented	☐ Planned	X Not planned
	Status 2014: No new development		
Safety and comfort of vulnerable road users	☐ Implemented	X Planned	☐ Not planned
	Status 2014: Implementation is according to national plans.		
Advanced driver assistance systems integrated into vehicles and road infrastructure	X Implemented	☐ Planned	☐ Not planned
	Status 2014: No new development		
Automatic speed enforcement	X Implemented	☐ Planned	☐ Not planned
	Evaluation of average speed enforcement will be conducted in 2014.		

Automatic incident detection	X Implemented	☐ Planned	☐ Not planned
	AID is implemented in high volume road tunnels in combination with video monitoring. Testing of new technologies for AID is also on-going. AID is a mandatory requirement according to the security level, traffic volume and length of the tunnel explained in the NPRA manuals		

8   Priority area IV – Linking the vehicle with the transport infrastructure

Priority area IV: Linking the vehicle with the transport infrastructure			
Activities or projects concerned with linking the vehicle with the transport infrastructure	X Implemented	☐ Planned	☐ Not planned
Responsible person in administration	*Mr Anders Godal Holt* *Director, ITS Section, NPRA* *Anders-godal.holt@vegvesen.no, +47 900 12 351*		
Comments			
If activities/projects are implemented or planned in this priority area, please specify further:			
Integration of different ITS in an open in-vehicle platform	☐ Implemented	X Planned	☐ Not planned
	Test Site Norway in Trondheim is equipped for testing of such communication platforms		
Cooperative systems (vehicle-vehicle, vehicle-infrastructure, infrastructure-infrastructure)	☐ Implemented	X Planned	☐ Not planned
	Tests run in the SMARTFREIGHT and CVIS projects.		
DSRC-based multi-purpose infrastructure	X Implemented	☐ Planned	☐ Not planned
	The AutoPASS tolling system is fully interoperable, also cross-border. Tags are used to measure travel times in real-time. Other piggy-back applications are under discussion		
Test site for ITS and cooperative driving	X Implemented	☐ Planned	☐ Not planned
	National full scale test site equipped for cooperative mobility systems including simulator operational in Trondheim. The test site is fully compliant with ETSI/ISO specifications		
Ongoing development of a cooperative ITS Station for NPRA with Norwegian industry.	☒ Implemented	☐ Planned	☐ Not planned
	The ITS Station will be fully compliant with ETSI/ISO specifications.		
Cooperative weight in motion for trucks	☒ Implemented	☐ Planned	☐ Not planned
	Implemented through the national project NonStop and expanded with C-ITS solutions through EU project MOBiNET.		
Road Status Information test	☐ Implemented	☒ Planned	☐ Not planned
	Car-2-x communication on road conditions by using the vehicles own sensors. This is of special interest for Nordic winter conditions. The project is a collaboration project together with the Swedish Transport Administration.		
Participation in the Amsterdam Group (https://amsterdamgroup.mett.nl)	☒ Implemented	☐ Planned	☐ Not planned
	The Amsterdam Group is a strategic alliance of committed key stakeholders with the objective to facilitate joint deployment of		

	cooperative ITS in Europe. It includes the umbrella organisations CEDR, ASECAP, POLIS and C2C-CC		
Cooperation with POLIS on the usage of cooperative ITS in European cities	☐ Implemented	☒ Planned	☐ Not planned
	An attempt to strengthen the awareness in European cities on cooperative systems potential.		
C-ITS Public transport priority in traffic signalling in Trondheim	☒ Implemented	☐ Planned	☐ Not planned
Participation in a number of FP7 EU projects like eMaPS, Instant Mobility, MOBiNET.	☒ Implemented	☐ Planned	☐ Not planned
Participation in a number of Horizon 2020 project proposals on deployment of cooperative ITS.	☐ Implemented	☒ Planned	☐ Not planned
Nordic C-ITS cooperative	☐ Implemented	☒ Planned	☐ Not planned
	The NPRA wants to establish a cooperative ITS corridor from Norway through the west coast of Sweden to Denmark together with the other Nordic countries. A Nordic cooperative ITS corridor will help to develop a future transportation system that effectively support transport policy objectives and European Union ITS Directives. Further it will promote Nordic industry and research as an arena for testing cooperative ITS solutions for highways and cities.		
Smarter road traffic with ITS - SMITS	☒ Implemented	☐ Planned	☐ Not planned
	The NPRA's research programme for ITS, which is researching how ITS can help the NPRA achieve better mobility, environment, accessibility and traffic safety for all road users. Running until 2017.		
Promotion of open specifications and standards for ITS and traffic management	☒ Implemented	☐ Planned	☐ Not planned
	Through the INTERREG supported POSSE project		