

NordicWay2 Norwegian showcase

Part 1 : 0900-1100:

Question	Answer
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Presentation 01 : NPRA – Services piloted
No questions

Presentation 02 : NPRA - Test sites	
What kind of technology are you using on the RSUs placed along the roads? is it DSRC?	The RSUs are standard ITS G5 stations, set up to receive CAM and DENM Messages.
What kind of suppliers of RSUs:	Cohda Wireless and Q-Free, tested cross brands.

Presentation 03: NPRA - Interchange	
Is data format not supposed to be using the datex 2 standard format by all providers used by the NPRA, or is that in the future?	NW2 supported both datex2v2 and datex2v3. The interchange supports different formats. In NW 3 the interchange will also support most of the ETSI/ISO message types used in ITS-G5.
What are the policies and business models governing which actors can and will run the interchanges? Do you foresee public or private hosting or both?	We think both private and public will host interchange nodes. There are several business models one can envision. E.g. one case that has already seen some traction is value-added services that can be provide for a price by the interchange operators such as message format translation (datex<->denm) or data quality validation services.
What is the assumption around the value of data: do all service providers provide data for free, or is there a payment/billing aspect built-in too?	We think there will see both scenarios. We might see that traffic safety data will be provided for free, but other datasets may incur a fee. It really depends on the business models provided by the operators.
When will the Interchange be available for the public?	<p data-bbox="810 1332 1380 1400">For National Road authorities and service providers, the interchange is already available.</p> <p data-bbox="810 1422 1380 1556">The interchange system is for back end systems, so a road user will not connect directly to the service, but they may get the information through a service provider like an OEM.</p> <p data-bbox="810 1579 1380 1668">So far much of the data have come from pilots and not deployed services but we think this will change a lot within the next few years.</p>
<p data-bbox="199 1668 774 1736">How do we ensure privacy and security in the interchange network?</p> <p data-bbox="199 1769 774 1836">How do we protect us from hacking and personal encroachment?</p>	<p data-bbox="810 1668 1380 1803">The service providers in NordicWay are prohibited from distributing personal data (no CAM messages for instance) using the interchange system.</p> <p data-bbox="810 1825 1380 2038">The security of the system is based on multiple layers of security. First, we have the DNS-based registry of approved interchanges. Next, we have a common chain of trust that is used for encrypting the transport layer and authenticating users. Finally, for the NordicWay3 version, the ETSI-based messages will keep their digital</p>

	signature that are used in ITS-G5 (other message types could also implement digital signatures if required). There is also the possibility to use revocation lists if all the other mechanisms are deemed to be insufficient.
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Presentation 04 - Bouvet - Automatic speed adaption	
Is the navigation data received by the cloud coming from the car telematics units or from the app in the mobile phone?	From the application in the mobile phone.
What happens in case one of the vehicles driver do not care to adjust speed but instead choose to accelerate. Does the other vehicle get an updated speed advise in that case?	There will be an updated speed advise.
How do you mitigate lack of GPS or very noisy GPS?	For short stretches one could extrapolate but if there are longer distances with lack of signal (in tunnels) one need to deploy extra equipment to follow the vehicles position.
Have you done any quantification of the savings in road build-out from this solution in Norway?	Not any calculations so far, but NPRA is looking at a strategy on how to invest in future road infrastructure where we foresee that technology will contribute to safety and mobility.

Presentation 05: ITS perception - Lidar technology	
Presentation 06: Q-Free - Sensor network for vehicle speed profiling	
Presentation 07: Triona - Smart road signs and weather stations	
This would require plenty of sensors along the roads. Have you assessed the technical virtues and the cost of this solution, compared with letting the vehicles themselves signal via cellular to the cloud when they are "slow moving" or 'badly positioned' ?	Have to look at the alternative costs, using sensors in the ground, lidar or cameras. For the IOT Narrow band there is no need of extra infrastructure. For future solutions, when we have more ITS infrastructure inside a vehicle, the need for roadside sensors might be reduced.

Part 2 : 1200-1400:

Question	Answer
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Presentation 08 - NPRA - Services Skibotndalen	
How do we know that a stopped vehicle is moving again?	The systems send a message when the vehicles start to move again. This could be verified by a manual inspection by using the cameras.
Did you secure the communication with electronically signed messages? Was it a security on test? PKI?	By using VPN. Not implemented any security system for the messages, this will be done when deploy the system to normal operation.
How is the MQTT protocol protected ?	For the pilots this was inside a closed internal network.

Presentation 09 - NPRA - Mobile Road Works and Traffic Ahead Warning	
Can slippery / icy roads be warned about? From cars with ABS antispin etc.?	Together with VOLVO, NPRA have tested this kind of data from the vehicle. NordicWay1 project describes this in detail. There was much work in verifying the quality of the data.
How frequent does the incident vehicle send a signal to the interexchange node?	Configurable, 3 sec seems to be a good solution, but depending on what kind of message it is.
Do you see a need to integrate these warnings into the general vehicle navigation/map system? A separate app was only for test purposes?	In the future we think that many of the services will have an HMI in the vehicle, some integrated with the navigation system.

Presentation 10 - NPRA - NordicTour route and technology	
Did you assemble data only from NordicWay-internal use case tests, or also already publicly published data?	Data from the National Access point was included.
What's the current legal situation if there is a difference between physical signs and "digital in vehicle signage" which is valid or relevant for tickets?	This is a very important issue that must be solved before deploying the services. This project has not addressed such questions.

Presentation 11 - NPRA - In vehicle speed limits	
No question	

Presentation 12 - Aveni - The Norwegian C-ITS testbeds E8 Borealis and E6 Patterød

<p>What is the additional benefit of the ITSG5 OBU when you have already a MQTT connection to the MQTT broker from the car cellular 4G interface? Was there any difference in reliability while transmitting via MQTT and ITS-G5?</p>	<p>ITS G5 super reliably and fast, always work. G5 could also be used as a positioning system, in tunnels.</p>
<p>Pros and cons of using MQTT vs AMQP?</p>	<p>AMQP perfect for backend systems, communicate large amount of data. AMQP is more useful for non-regular events.</p>
<p>Did you do this test yet in Wolfsburg?(Test of G5 protocol implemented in Volkswagen Golf)</p>	<p>Not so far, because of Covid19</p>
<p>Wrong Way Driving Warning Why can't you do the same configuration with the 4G data from the vehicle?</p>	<p>Could be used, but we regard the 4G solution to be not that reliable. This is a very safety critical situation that must use reliable technology.</p>