



Road Works Warning test with lane closure trailers



From Monday 14 to Wednesday 16 November 2016, Rijkswaterstaat will perform a test of the Road Works Warning service during road works on the A16 motorway near Rotterdam. During this test, part of the Cooperative ITS Corridor project, Rijkswaterstaat lane closure trailers will be fitted with WiFi-P beacons. The beacons use a secure WiFi connection to send detailed information about the road works ahead (e.g. available lanes) to passing test vehicles.

Across much of the Netherlands there are variable message displays across motorways. These displays are used to present messages or information, on current traffic conditions like maximum speed or closed lanes. The Road Works Warning service means that in future drivers in the Netherlands will see the same information displayed in their car, via a WiFi-P link. The real-time provision of data to road users should increase safety on the roads, not just for road users but also for road workers.

Provision of warnings on roads without displays

Road works warnings are also useful on roads without variable message displays. In this case, information about road works is not transmitted to the vehicles from roadside systems, but from WiFi beacons on the mobile lane closure trailers. This solution is similar to that used in the Corridor German project. Rijkswaterstaat will test this Road Works Warning service from 14 tot 16 November on the A16 near Rotterdam.

Cross-border intelligent mobility

With the Cooperative ITS Corridor project, road operators in the Netherlands, Germany and Austria, working with industrial partners, are now taking the first step towards the introduction of cooperative services in Europe. Initially, two services will be provided:

- Road Works Warning service
- Sensor data from vehicles (Probe Vehicle Data)

A further service being developed in the Netherlands:

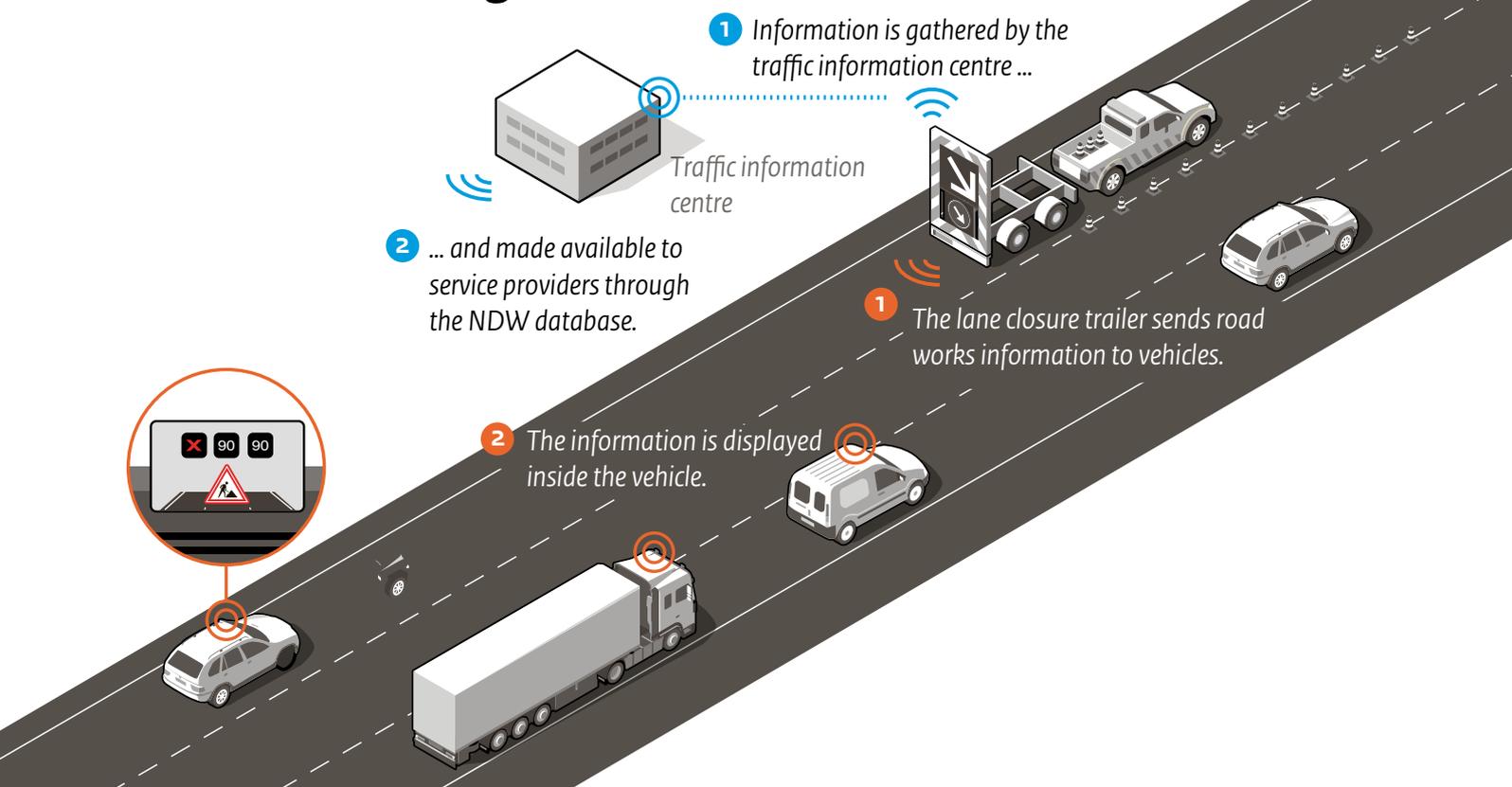
- Collision Risk Warning (stationary vehicles warning)

Through to mid-2017 there will be four large-scale tests on different stretches of the Dutch section of the international ITS Corridor. These tests will provide the project team with input to finalise the technical specifications of the services.

Test design

Temporary traffic management measures are scheduled during actual road works on the A16. One lane will be closed for the purpose of maintenance. During the test period, test vehicles will pass the road works site several times. Displays in the vehicles will accurately indicate the location of the road works and temporary changes to the lane layout. The operation of the system can be summarised as follows:

Road Works Warning



- A WiFi-beacon on a lane closure trailer transmits a DENM message (Decentralized Environmental Notification Message) over WiFi-P, containing information about the road works.
- The On Board Units (OBUs) in the test vehicles receive the message and present the corresponding information to the driver of the vehicle.



Hardware: Central Unit

The Central Unit (CU) composes the DENM message, based on information from several sources. The Rijkswaterstaat network then relays the message to the WiFi beacon on the safety trailer near the road works. Road works are unique and often dynamic. Hence the situation at any time is not known to the traffic information centre in advance. Therefore the message is always generated specifically for the conditions at the time, based on the Dutch Profile specification developed by Rijkswaterstaat.

Hardware: beacon on the trailer

Warning drivers on possibly dangerous traffic conditions is particularly important on roads and motorways without variable message displays. It is expected that in the longer term fixed roadside units will be installed along most of the Dutch primary road network. These units will deliver both Road Works Warning and many other services. However, such beacons will probably not be installed along some less busy roads. These include roads managed by provincial and municipal authorities. Trailers with mobile roadside units can provide an effective solution along these roads. This will make it possible to provide the Road Works Warning service anywhere.

Hardware: On Board Unit

For the test, basic, flexible On Board Units will be used to display the messages in the cars. This makes it possible to demonstrate the entire system during the test. It is expected that in the next few years new vehicles will be equipped with OBUs (by the car manufacturer or after-market suppliers) to receive and transmit information using WiFi-P. Specially equipped test vehicles will be used for this test. They are common European models fitted with On Board Units and peripherals like antennas.

Participants in the project

- Rijkswaterstaat (management and development)
- Compass Infrastructuur
- Swarco
- Beijer Automotive
- EBO van Weel
- Vermeulen Groep

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For further information visit
www.its-corridor.nl or www.rijkswaterstaat.nl
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