



Common C-ITS Service Definitions

Hazardous Location Notifications

Slow Vehicle

C-Roads Platform

Working Group 2 Technical Aspects

Taskforce 2 Service Harmonisation

Publication History

Version	Date	Description, updates and changes	Status
0.1	22.01.2020	Copied NordicWay input into template	Draft
0.2	07.02.2020	Improved after discussion at TF2 conference call	Draft
0.3	28.02.2020	Improved after WG2 review and comments	Draft
1.7.0.TF.4	08.05.2020	Integrated new template	Draft
1.7.0.TF.5	08.05.2020	Clean version of version 4	

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1 Functional Description of Hazardous Location Notifications

1.1 Hazardous Location Notifications service introduction

Service introduction	
Summary	Already existing
Background	Already existing
Objective	Already existing
Expected benefits	Already existing
Use Cases	Already existing

1.2 Slow Vehicle

Type of road network	All
Type of vehicle	All
Use case introduction	
Summary	Drivers receive information about nearby slow vehicles.
Background	In certain circumstances road users could encounter slow moving vehicles (e.g. trucks driving up hill) that pose a danger due to the speed difference or limited visibility. This circumstances could be very dangerous for road users, but also for the slow moving vehicle.
Objective	To enhance driver's awareness of nearby slow vehicles, allowing them to adapt their behaviour and decreasing the probability of collisions and other accidents. Depending on the road geometry, the warnings should be sent out to drivers in both directions (in the case of non-separated carriageways on which those driving in the opposite direction may encounter vehicles overtaking the slow vehicle) or only to users travelling in the same direction (in the case of separated carriageways).
Desired behaviour	Precisely and correctly informed drivers adapt their driving behaviour (e.g. reduce the approaching speed, drive more cautiously with increased awareness) before and during the passing of the slow vehicle.
Expected benefits	Improved traffic flow and decreased number of dangerous situations and accidents in relation with slow vehicles on the road network.
Use case description	
Situation	A slow driving vehicle is driving in fluid traffic conditions and is driving at a significantly lower speed than the maximum allowed speed. Other road users will be informed about this slow moving vehicle. This use case is about regular slow driving vehicles and does not apply to vehicles covered by other use cases such as slow moving maintenance vehicles, mobile roadworks or winter maintenance vehicles The threshold to send out a warning will depend on conditions such as type of vehicle, weather conditions, type of road, speed limits, density of traffic and type of detection. For example, what is considered a slow vehicle in some parts of Europe, is different from a slow vehicle in the Northern parts of Europe during winter. Decisions as to when warnings are made are therefore context-dependent. Another condition that could influence whether a warning is sent out is proximity of the vehicle to a junction.
Logic of transmission	I2V (V2I can be used as data source for the I2V communication)
Actors and relations	Road operator: validates warning, issues triggering information via different communication channels with one message ID Service provider: collects and ensures triggering information is correct, triggers I2V warning, and/or aggregates information in cloud service. Road user: is informed about dangerous weather conditions ahead in time to

	<p>adapt the driving behaviour</p> <p>Slow vehicle: may issue information about its status and location received by road operator and/or service provider;</p> <p>In-Vehicle-System: receives warnings and displays them to the driver, may detect and report slow vehicle;</p>
Scenario	<p>For this use case, three different sources for information about a slow vehicle have been identified so far: information from the vehicle itself, information detected by road users, and information detected by other vehicles.</p> <p>E.g. a vehicle (e.g. heavy goods vehicles) sends out information continuously about its current location and status to the involved road operators, who are responsible for the road network where the vehicle is travelling</p> <p>The road operator issues regular warnings with information about the type of vehicle, and its current location and status. The Road Operator can use various methods to distribute the warnings, including via service provider subscription models and back end systems, variable message signs and/or direct I2V roadside systems.</p>
Display / alert principle	<p>The display of the warning to the driver needs to be early enough to allow them to adapt their speed, and can be repeated when nearer the position of the slow moving vehicle to ensure the alert is not forgotten</p>
Functional Constraints / dependencies	<p>The slow vehicle is connected and can communicate its current location and status to road operators and other actors.</p> <p>The road operator is informed continuously about the current location and status of a slow vehicle, so it can update their slow vehicle warning to the road users.</p>
Interoperability requirements	
Message profile requirements	<p><i>To be received</i></p> <p><i>In current deployments in NordicWay2, backend communication is done using DATEX II, and communication with vehicles/cars is done using the communication protocols of the OEMs.</i></p> <p><i>Deployment following the TF3 specifications will be done in NordicWay3.</i></p>
Security and data protection requirements	
Communication technology requirements	
Test and validation requirements	