Common C-ITS Service Definitions

Hazardous Locations Notification Public Transport Vehicle Crossing (HLN-PTVC)

C-Roads Platform

Working Group 2 Technical Aspects

Taskforce 2 Service Harmonisation

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Publication History

Version	Date	Description, updates and changes	Status
0.1	05.09.2019	Copied available harmonized description into separate document	Draft
0.2	17.10.2019	Minor improvements	Draft

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1 Functional Description of Hazardous Locations Notification

1.1 Hazardous Locations Notification service introduction

Service introduction	
Summary	N/A
Background	N/A
Objective	N/A
Expected benefits	N/A
Use Cases	N/A

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1.2 Public Transport Vehicle Crossing (HLN-PTVC) – $V_{PT}2V$

HLN – UC – PTVC Public Transport Vehicle Crossing (V2V)	
Type of road network	Road, urban road
Type of vehicle	All vehicles
Use case introduction	
Summary	Vehicle is approaching a location of a high risk of collision with PT vehicles. The driver is informed about this situation via in-car information and warning.
Background	Mainly in the cities, there are many places where tram tracks cross a road for other vehicles and these places are not equipped with traffic lights. Mainly during the turning manoeuvre, the driver doesn't expect to cross with tram tracks which often leads to the accident with trams.   Other dangerous locations are places where buses merge from a reserved lane with lanes for mixed traffic. Buses have priority, however, many drivers don't give way which often causes accidents. 
Objective	The driver gets warned about the presence of locations with a risk of collision with PT vehicle, i.e. where tram tracks cross a road (or in the connection from reserved lane). The aim of the service is raising the driver's attention and reminding him/her to "Give way!" when approaching the location.
Desired behaviour	• Increased driver attention • Adaptation of the driving speed
Expected benefits	• Reducing the risk of accident with PT vehicles • Increased driving comfort

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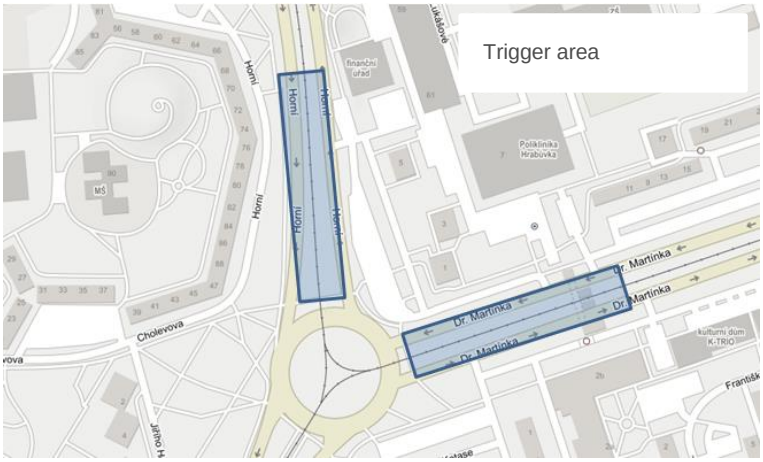
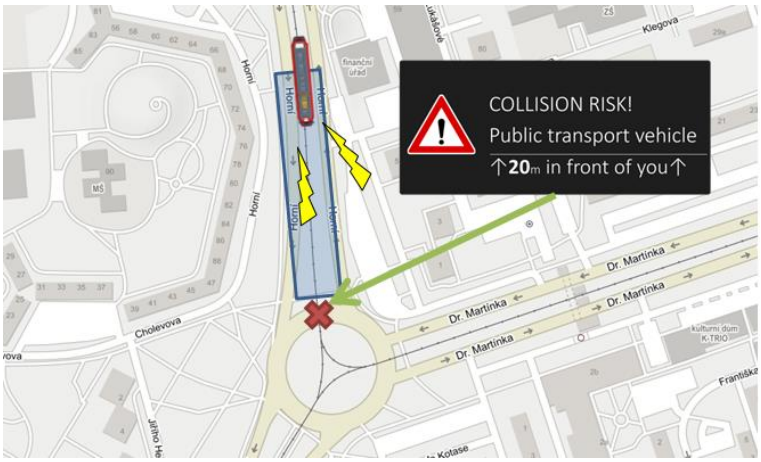
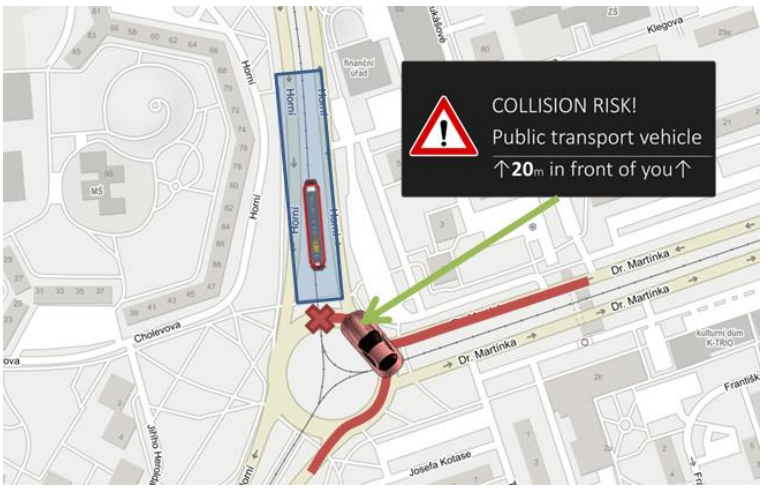
Use case description	
Situation	Vehicle is approaching a location with a high risk of collision with PT vehicles. All these dangerous locations are known, pre-selected and saved in the database. In the same time, the PT vehicle enters the trigger area of this location and begins to generate and transmit prepared warning message. The database of the dangerous locations and related pre-prepared warning messages are saved in the vehicle's OBU.   

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Logic of transmission	V_{PT}2V
Actors and relations Scenario	• **Public transport operator** is the origin of the information of the message. The direct source are OBUs in their vehicles. • **End-user** receives the warnings in the vicinity PT vehicle crossing. • The PT vehicle enters a trigger area of a dangerous location. • Warning message about a potential collision is generated and transmitted by an OBU in the PT vehicle. • Transfer of information into vehicles equipped with an OBU. • The vehicle receives the information and displays it to the driver. • The driver adapts his/her behaviour.
Display / alert principle	• The warning to the driver needs to be displayed early enough for him/her to adapt his driving. However, since he/she should not forget about the alert, it could be repeated closer to the location.
Functional Constraints / dependencies Relation to C-Roads C-ITS Infrastructure Functions and Specifications	- The DENM message for HLN-PTVC is profiled in chapter 3.1.1.1 and 3.1.1.3 of the C-ITS Infrastructure Functions and Specifications document. For this use-case, causeCode is 97 (collision risk) and subCauseCode is 2 (crossing collision risk) + stationType is 6 (bus) or 11 (tram) → indicator of PT vehicles

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