ETSI STF 565
Specifications for the definition of the cooperative ITS Vulnerable Road Users (VRU) service

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Outline

- Motivation for the Specialist Task Force
- Objectives
- Presentation of the STF project
- First results
  - Use cases
  - Challenges to be solved
- Objective of the meeting

Motivation for the Specialist Task Force (STF)

- Technological developments and research activities in ITS have primarily focused on motorised transport to improve safety and environmental impacts by advancing equipment of vehicles and infrastructure. The uptake of ITS applications has assisted in the decrease of road traffic fatalities, particularly amongst passenger car occupants.
- However, Vulnerable Road Users (VRUs) [pedestrians, cyclists and motorcyclists] have not enjoyed the same decrease in fatalities. Together, they account for 68% of the fatalities in urban areas (CARE, 2009). Motorcyclists account for 16% of fatalities, which is much higher than their contribution to traffic (CARE 2009). Recent figures show that the situation is even degrading.
- In the context of C-ITS systems, VRUs have to be taken into account and therefore interoperability between vehicle-based and portable safety devices is of paramount importance for improving the overall safety and to decrease the fatalities in both urban and non-urban areas.
- There is therefore the need to develop VRU-related specifications in order to allow the deployment of VRU safety applications.

Objectives

- Produce a consistent set of specifications related to Vulnerable Road Users (VRU) in alignment with non-European developments on the same topic (for instance in the US) in response to M/453 (C-ITS systems) and M/546 (Urban ITS) and in accordance with ITS Actions 3 and 21 of the 2018 Rolling Plan for ICT Standardisation.
- Based on regulation (EU) No 168/2013 of 15 January 2013 [approval and market surveillance of two- or three-wheel vehicles and quadricycles], are considered as VRUs:
  - pedestrians (including children, elderly people, people with special needs and joggers);
  - emergency responders, safety workers, road workers;
  - wheelchair users and prams;
  - skateboards and segways;
  - cyclists, e-cyclists and motorcyclists;
  - animals such as horses, dogs down to wild animals

Project Description

- Work Item DTR/ITS-00165 (TR 103 300-1)
  - Vulnerable Road Users (VRU) awareness; Part 1: Use Cases definition
  - Description of the VRU system and use cases (stage 1)
- Work Item DTS/ITS-00186 (TS 103 300-2)
  - Vulnerable Road Users (VRU) awareness; Part 2: Functional Architecture and Requirements definition
  - The Technical Specification defines the VRU related requirements (stage 2); as well as the functional architecture of the VRU system (stage 3). In addition it analyses the impact on existing standards (for instance the CAM European Standard)
- Work Item DTS/ITS-00183 (TS 103 300-3)
  - Vulnerable Road Users (VRU) awareness; Part 3: Specification of VRU awareness basic service
  - This Technical Specification defines the communication protocols, message format, semantics and syntax as well as key interfaces and protocol operation for the VRU awareness service (stage 4)

Project Description (Cont.)

- Experts

Expert	Organisation
Michelle Wetterwald	Netellany SASU (STF Leader)
Friedbert Berens	FBConsulting S.A.R.L.
Gérard Segarra	VICI
Seung Yang	LG Electronics UK (volunteer)
William Whyte	OnBoard Security

- Reporting Committee :
  - ETSI ITS WG1
- This STF is funded by the EC/EFTA

Schedule and milestones

- Kick-off meeting held on December 21, 2018

Task Milest.		2019												2020					
	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
T1. Organization										D									J
T2. VRU use cases	St.					A		B	C										
T3. VRU functional requirements and architecture					St.							E		F	G				
T4. Specification of VRU service										St.							H	I	J

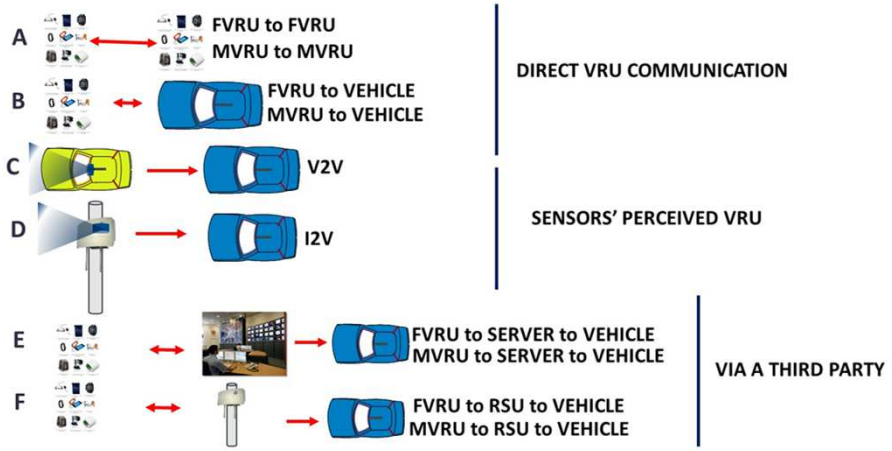
Analysis of previous work (from our ToR)

- ETSI WG1 standards, e.g. TS 101 539-1 for Road Hazard Signalling (RHS)
- Initial draft of TR 103 300-1 (V0.0.8)
- SAE J2945-9 “Vulnerable Road User Safety Message Minimum Performance Requirements”
- Research projects
  - VRUITS (improving the safety and mobility of Vulnerable Road Users through ITS applications),
  - PROSPECTS (Proactive Safety for Pedestrians and Cyclists),
  - XCYCLE (Advanced measures to reduce cyclists' fatalities and increase comfort in the interaction with motorised vehicles),
  - SafetyCube (Safety CaUsation, Benefits and Efficiency)
  - SENIORS (Safety ENhanced Innovations for Older Road userS).
- More references are welcome

Table of Content of current draft (TR 103 300-1)

Currently proposed use cases and classification (TR 103 300-1)

- Category A: VRU to VRU direct cooperation
  - UC-A1: Sharing pavement between pedestrian and cyclists
  - UC-A2: pedestrian crossing a road with a scooter approaching
- Category B: VRU to Vehicle direct cooperation
  - UC-B1: Active Roadwork
  - UC-B2: Crossroad
- Category C: V2V direct cooperation
  - UC-C1: Signalled VRU occulted by an obstacle
- Category D: I2V direct cooperation
  - UC-D1: Signalled few VRUs in a protected area
  - UC-D2: VRUs (Schoolboy) crossing in a zebra
  - UC-D3: VRUs crossing at a zebra protected by a traffic light
- Category E: Equipped VRU via a third-party Centre
  - UC-E1: Using IoT Platform
- Category F: Equipped VRU via a third party RSE
  - UC-F1: Signalled Many VRUs in a protected area
  - UC-F2: Detection of a pedestrian crossing the road



Identified challenges (TR 103 300-1)

- Heterogeneity of road vehicles
- Passive versus active collision avoidance action
- Security of the VRU system
- Network congestion control
- Performances of the VRU system (latency, positioning, position reference, data quality, …)
- Positioning aspects
- Impacts of unpredictable behavior
- Architecture to support progressive system deployment

Objective of the meeting

- The STF has the task to collect and take into account the results from relevant projects and organizations on VRU use cases and system architecture during its first weeks of activity.
- This meeting will help collect these inputs from previous works and share valuable opinions from interested stakeholders
- Target audience: This event is of particular interest to all parties interested in the standardization of VRU basic service from:
  - relevant research projects at national and European level,
  - other committees,
  - industrial organizations,
  - manufacturers, etc. (open to non-ETSI members)

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Questions to the audience

- VRU system description
- What would be the use cases of interest?
  - Do you see any other category?
- What would be the performance figures?
- VRU architecture from previous works?
- VRU system interactions with other road entities
- What main challenges do you envision on that topic?

Contact details

Thank you for your attention. Questions?

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