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ETSI, Sophia Antipolis

Qualcomm

STF 565 workshop

Qualcomm UK Ltd

Short presentation of your organization.

- Qualcomm is a multinational semiconductor and telecommunications equipment company
- Qualcomm is an ETSI member (9 countries)
- Qualcomm is active in ETSI TC ITS, particularly for Cellular-V2X
- Qualcomm has expertise in wireless communication and related system know how from standardization, development and deployment

Why you are attending this meeting and your interest in standardization of VRU in Cooperative ITS?

- Qualcomm wishes to participate in VRU standardisation, in particular:
 - smartphone for VRUs,
 - standards for cellular 4G and 5G based VRU services,
 - interaction and impact on the other road users (vehicles) and road infrastructure.
- Cellular V2X is of special relevance for smartphone VRU (single chip, ease of deployment).

Inputs / documents you wish to bring to the standardisation work and other activities you may have on this topic

1. Understand the use cases for smartphone VRU

- Differing needs of each VRU category - motorcyclist, cyclist, pedestrian, etc
- How to discover/distinguish each VRU type
- What are the most dangerous situations
- Location accuracy needs (absolute and relative)
- Resource requirements (e.g. transmit rate, bandwidth)
- When/how to give warnings to the VRU

2. Identify the main challenges

- Congestion control: when to transmit?
- Legal: who is liable if things go wrong?
- Certification: minimum performance requirement?
- Security/privacy: would the introduction of smartphones for VRU compromise anything?
- Location and ranging technologies with sufficient accuracy.
- Trajectory prediction, particularly for pedestrians.
- VRU discovery; how to know that a user is a pedestrian, cyclist, whatever.
- Reliability of detection algorithms.
- Detection that a VRU has changed category.
- Deployment aspects for cellular & WiFi (e.g. bandwidth, MAC synergies)

3. Identify key aspects for standardisation

- A thorough standard for VRUs may touch all layers
- Spectrum and PHY layer issues
 - Regulations for allowing smartphones as mobile safety devices
- Formal study of requirements for VRU use-cases
 - Understand the latency, range and signaling requirements for common use cases
 - Messaging/ Data dictionaries for new use cases
- Standards for improving positioning through ranging
- Security and privacy considerations for smartphones
 - should the same or similar privacy rules be established for vehicles and pedestrians?
- Impact on and influence of car type-approval regulations.
- Congestion control
 - Number of pedestrians is much larger; need effective control to not impact vehicular safety