UPDATE OF SAE DEDICATED SHORT RANGE COMMUNICATION (DSRC) STANDARDIZATION ACTIVITIES

SAE-ITU Discussion of ITS Communication Requirements

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AGENDA

• Background and Context:
  – SAE standards within the implementation ‘stack’
  – Applications drivers
• Priorities for 2015
  – Focus on impending NHTSA rulemaking
• Committee interest: V2P / Vulnerable Road Users
• Key Takeaways
SAE ‘Applications’ Layer Standards are Built Upon Standardized Lower Layers: 802.11p WAVE

- Wi-Fi based technology, based on IEEE 802.11p standards
- Allows non-line of sight awareness
- Attributes
  - Broadcast
  - Half-clocked OFDM: optimized for mobility
  - High-accuracy, low-latency (HALL)
Deployment Concepts and Institutions are Important Identifies Standardization (Interoperability) Needs

Fundamental Differences Between Europe and United States

- Europe: Car-to-Car Communications Consortium (C2C-CC) and Amsterdam Group (vehicles) and European Committee for Standardization (CEN)/ISO
- United States: National Highway Traffic Safety Administration (NHTSA) and impending safety mandate(s) (?)
- Federal Highway Administration (FHWA) and American Association of State Highway Officials (AASHTO) guidelines

Definitions:

- IEEE 1609 (WSMP: Wave Short Message Protocol) *versus* ETSI (GeoNetworking)
- SPAT: Signal Phase and Timing
- MAP: Map Data
Europe: European Norm (EN) 453 mandates standardization
- First release 2013
- Issues in ‘mitigation’ / interference with 5.8 GHz tolling

North America: Impending Notice of Public Rulemaking (NPRM)
- NPRM in 2016, potential mandate 1 – 2 years afterward, widescale deployment
- Institute of Electrical and Electronic Engineering (IEEE) and Society of Automotive Engineers (SAE) issued letters to expedite and complete by end of 2015
  - IEEE 1609.2 (security), 1609.3 (networking)
  - SAE J2735 (message sets), 2945.1 (minimum performance, including congestion control)

Some convergence: ETSI ITS TC WG1 and SAE DSRC TC:
- Cooperative Adaptive Cruise Control/Platooning
- Vulnerable Road Users

Other Committee Interests
- V2P Vulnerable Road Users
- ISO 19091 Harmonization: Signal Request / Signal Priority Messages
- Eventual Inclusion of J3067 Information Report (FHWA Contract)
Key Technical Challenges Spawn Standardization Needs Undertaken by SAE DSRC TC Public Safety Task Force (J2945.x)
Some Considerations in VRU

- **Congestion control**
- Number of pedestrians is much larger → need effective control to not impact vehicular safety
- **Performance requirements for V2P use-cases (SAE J2945.x, ETSI ITS Working Group 1)**
- Understand the latency, range and signaling requirements for common use case → Standards for improving positioning through ranging
- **Certification: minimum performance requirements?**
Key Points, Redux

- Support of NHTSA rulemaking will drive near term SAE DSRC TC Standardization Activities
- VRU captures committee interest and focus
- Application of systems engineering process (SAE J3067) captures contract interest