C-ITS Status in China
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Overview

• C-ITS Related Activities of Chinese Government
• C-ITS Standardization Progress in China
• C-ITS Projects in China
• C-ITS Roadmap in China
• Conclusions
C-ITS Related Activities of Chinese Government

- May, 2015: State Council released “Made in China 2025” [http://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm](http://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm)


Intelligent Connected Vehicles:
- 2020: Possess overall technology and key technologies for intelligent driver assistance
- 2025: Possess overall technology and key technologies for automatic driving


(State Council: to build Intelligent Connected Vehicles Pilot Area)
C-ITS Standardization Progress in China (1/2)

- In CCSA, TC5 (Wireless communications) is very active in ITS-related aspects:
  - In WG3: WLAN and Wireless Access WG
    » Dec. 2014 ~ Dec. 2015, work item on “General technical requirements of communication based on LTE for vehicle application”, lead by CAICT, CATT, Huawei
    » This study will address requirements and system architecture for LTE-V2X, taking inputs from 3GPP SA1 and SA2, as well as unique traffic characteristics in China.
    » Mar. 2016, a work item on LTE-based V2X air interface standard will be discussed and potentially approved.
  - In WG8: Frequency Workgroup
    » Mar. 2015 ~ Dec. 2016, “Study on frequency requirement and coexistence study on intelligent transportation system V2V/V2I active safety application”, lead by CMCC, CAICT, etc.
    » The study includes: application scenario study, spectrum requirement study, identification of candidate spectrum band, coexistence study
    » Currently, the application scenario study is done, spectrum requirement discussion is ongoing

- In TIAA (Telematics Industry Application Alliance)
  - V2V/V2I communication WG
    » Apr. 2014 ~ Sept. 2014, a white paper on “V2V/V2I communication industry white paper” was published.
  - Wireless spectrum and EMC WG
    » May 2015 ~ Oct. 2016, TIAA started spectrum related study, this work item has the similar scopes as CCSA
C-ITS Standardization Progress in China (2/2)

• C-ITS (China ITS Industry Alliance):
  › On-board Information Service and Safety WG
    » Jan. 2015 ~ Jun. 2016, work item on “General technical requirements of Communication Based on LTE for Vehicle Application”, led by Huawei, CAICT, CATT.
    » Study scope similar to CCSA and cooperation with CCSA has been ongoing during the study.
  › Cooperative ITS WG
    » Jan. 2015 ~ Nov. 2015, study item on “General Security Requirements of Cooperative ITS” completed, led by CATT.

• SAE China:
  › This study aims to standardize V2X message formats agnostic to lower-layer communication technology.
  › Message set dictionary similar to SAE J2735 will be taken as the basis, taking into account unique traffic characteristics in China.
  › Joint standard published in both C-ITS and SAE China.
Unique traffic characteristics in China

Relationships and Cooperation

Vehicle
- Equipment Industry Department, MIIT
- Electronic Information Department, MIIT

Road
- Research Institute of Highway (RIOH), MoT

Comm.
- CAICT, MIIT

V2X application layer message
- V2X requirement and architecture
- V2X spectrum
- V2X access layer technology

SA1/SA2
RAN
C-ITS Projects in China

- National Key Project: Standardization and prototyping for LTE-V wireless transmission technology (2016-2017)*, approved by MIIT
  - V2V/V2I requirement, traffic model, channel model
  - Develop communication protocol for LTE-based V2V/V2I
  - Standardize LTE-V in 3GPP
  - Develop prototype for LTE-V
  - Build lab and field test environment for inter-operability test

- Shanghai Intelligent Connected Vehicle Pilot Area, approved by MIIT, China. Initial plan released (2015-2019) **
  - Phase 1 (2015.10-2016.6): >40 connected vehicles (802.11p and LTE-V2X)
  - Phase 2 (2016.7-2017.12): >400 connected vehicles (802.11p and LTE-V2X)

* http://www.miit.gov.cn/n11293472/n11293832/n12843926/n13917072/16688014.html

** "Release of the General Scheme of Intelligent and Connected Vehicle (Shanghai) Demonstration Zone", Shanghai international automobile city, 2015 SAE-China Congress & Exhibition, October 2015
Pilot Area for Connected Vehicles

- **Another five pilot areas** for connected vehicles have started or under preparation with the lead of MIIT, considering different climate, landform, etc.
  - Hang Zhou (started)
  - Beijing (started)
  - Chongqing (started)
    [http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057643/n3057652/o4626544/content.html](http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057643/n3057652/o4626544/content.html)
  - Changchun (planning)
  - Shenzhen (planning)
Conclusions

• A plethora of C-ITS activities are ongoing in China, across standardization bodies, industry alliances, and national pilots projects.

• Close coordination and cooperation exist among CCSA, C-ITS, TIAA and SAE China.

• Clear links between China C-ITS standards and 3GPP LTE-V2X.
Thank you

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