EUROPEAN UNION’S 5G MOBILITY STRATEGY: HOW CAN 5GAA CONTRIBUTE?

Dr Johannes Springer
5GAA Director General
5GAA brings together automotive, technology and telecommunications companies to work closely together to develop end-to-end connectivity solutions for future mobility and transportation services.

5GAA unites today 118 members from around the world working together on all aspects of C-V2X including technology, standards, spectrum, policy, regulations, testing, business models and go-to-market.
September 2016

- “Audi, BMW Group, Daimler AG are teaming with Ericsson, Huawei, Intel, Nokia, and Qualcomm to create the 5G Automotive Association (5GAA), which will help develop, test, and promote 5G standards”

- “Scope of the alliance is focused on bringing connectivity solutions to market addressing technical, business, and regulatory challenges”

Q2 2019

5GAA unites 118 members working together to:

- Deliver innovation for road safety, connectivity and sustainability
- Accelerate cooperative, connected, automated mobility
- Develop 360° solutions for SMART mobility services
- Pave the way towards 5G mobility
5GAA Organisational Structure

- **Board**
  - **Executive Committee**

- **WG1**: Use Cases and Technical Requirements
- **WG2**: System Architecture and Solution Development
- **WG3**: Evaluation, Testbeds and Pilots
- **WG4**: Standards and Spectrum
- **WG5**: Business Models and Go-To-Market Strategies
- **WG6**: Regulatory and Public Affairs
- **WG7**: Security and Privacy

**CEPT TF**
CEPT Mandate to study the extension of ITS safety-related band at 5.9 GHz
C-V2X is a comprehensive road safety and traffic efficiency solution that allows vehicles to communicate with:

- Other vehicles (V2V),
- Pedestrians and Cyclists via smartphones (V2P),
- Road Infrastructure (V2I),

supported by the

- Mobile network (V2N, P2N, I2N)

to guarantee full coverage and continuity of services.
C-VX is a unified technology platform which integrates:

- **Short-range**, network-less, direct communications (LTE-V2X PC5 today)
- **Long-range** cellular network communications (LTE-V2X Uu today)

### Automotive Connectivity Landscape

- **NB-IOT**
- **LTE-M**
- **Traffic lights, roadside infrastructure**
- **LTE/5G V2I**
- **LTE/5G V2N**
- **LTE/5G V2V**
- **Local sensors**
- **Mobile Edge Computing**
- **Guaranteed QoS / Network Slicing**
- **LTE-V2X PC5 (→ NR-V2X)**
- **VRU & Smart Devices**
- **Vulnerable road users**
- **Mobile Edge Computing**
- **LTE-V2X PC5 (→ NR-V2X)**
- **Local sensors**
- **LTE/5G P2N**
Timeline for deployment of C-V2X (V2V/V2I)

- **3GPP LTE ADVANCED PRO RELEASE 14**
  - H1/2017: Chipsets for tests
  - H2/2017: Inter-Operability Tests
  - H1/2018: Mode 4 Chips and Modules

- **3GPP 5G RELEASE 15**
  - Integration, Validation Testing with OEMs (EU, China, US)
  - Testing
  - Availability of products

- **3GPP 5G RELEASE 16**
  - C-V2X (R14) RSUs and OBUs (EU, China, US)
  - 5.9 GHz Spectrum Target Availability
    - EU: Spectrum available
    - CHINA: Test Spectrum Available
    - US: (Spectrum for Deployment)
  - 2020: Start of vehicle deployment
  - C-V2X is real and ready with commercial chipsets now widely available
  - In-vehicle commercial deployment (i.e. type approved) is foreseen at the latest by 2020 globally

- CHINA: Test Spectrum Available
- EU: Spectrum available
- CHINA: Final CEPT report
- US: Spectrum available
- Start of vehicle deployment
- C-V2X is real and ready with commercial chipsets now widely available
- In-vehicle commercial deployment (i.e. type approved) is foreseen at the latest by 2020 globally
C-V2X: Evolution to 5G maintains backward compatibility

- **3GPP Rel. 8-13**
  - ... – March 2016
  - LTE V2N Uu
  - Hazard warning

- **3GPP Rel. 14**
  - March 2017
  - Direct Communication
  - LTE V2V/V2I (PC5)
  - V2V safety use case

- **3GPP Rel. 15**
  - June 2018
  - 5G NR V2N Uu
  - High bandwidth/low latency
  - Enhanced Navigation & Infotainment

- **3GPP Rel. 16**
  - December 2019
  - 5G NR Uu URLLC
  - Direct Communication 5G NR V2V/V2I
  - Cooperative automated driving

**5GAA**
5GAA Priority Areas and on-going Work Programme

New Radio
“Define the next step” - accelerate definition of 5G-V2X based on 5G New Radio

Joint Ecosystem
Create a joint eco system car – smartphone - home

Vehicle to Smart Device
V2X-based vehicle interface for smartphone controlled functions

Push V2N
Intense functional rollout of V2N based applications in order to reach broad penetration fast

Edge Computing
Mobile Edge Computing as one of the key elements of the connected future

Interoperability
Make sure that cross OEM cars and cross operator networks can „speak“ with each other

VRU

MEC4AUTO

NR-V2X

NR-V2X MEC4AUTO
C-V2X and its evolution to 5G V2X will foster synergies between the automotive industry and other verticals which are moving to 5G.
Driving innovation: Leveraging solutions together

• On-going dialogue between 5GAA and leading technology partner organisations to advance innovation in all world regions

• 5GAA to continue strengthen technical cooperation and maximise benefits with existing organisations or projects by reinforcing engagement via common members

• Develop new partnerships with relevant organisations on specific aspects e.g. vulnerable road users or road authorities