



European
Automobile
Manufacturers
Association

Towards cooperated, connected and automated driving in Europe

Which connectivity ?

ITU FORUM ON 5G GIGABIT SOCIETY

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ATHENS, 12 OCTOBER 2018

Thursday, 11 October 2018



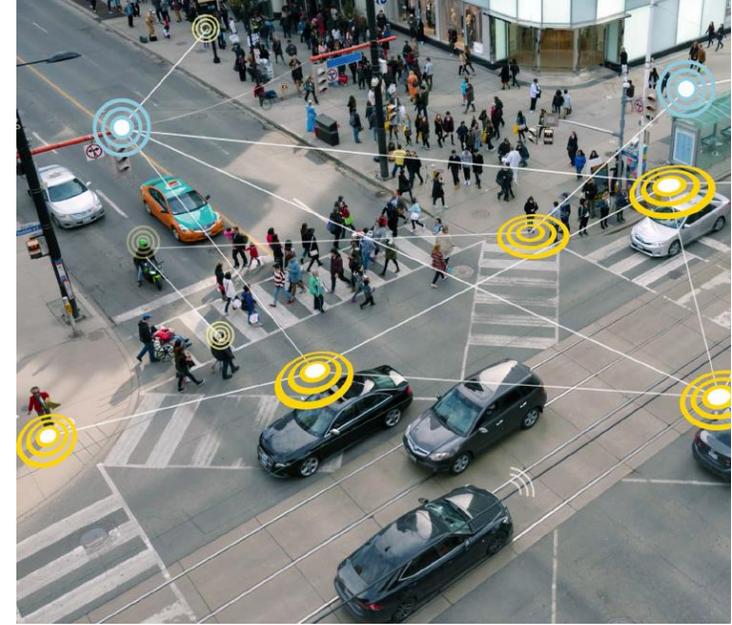
AGENDA

1.
EU momentum

2.
National momentum

3.
Connectivity as building block

4.
Conclusions



1. European momentum

FROM PAST TO FUTURE

Cooperative

Connected

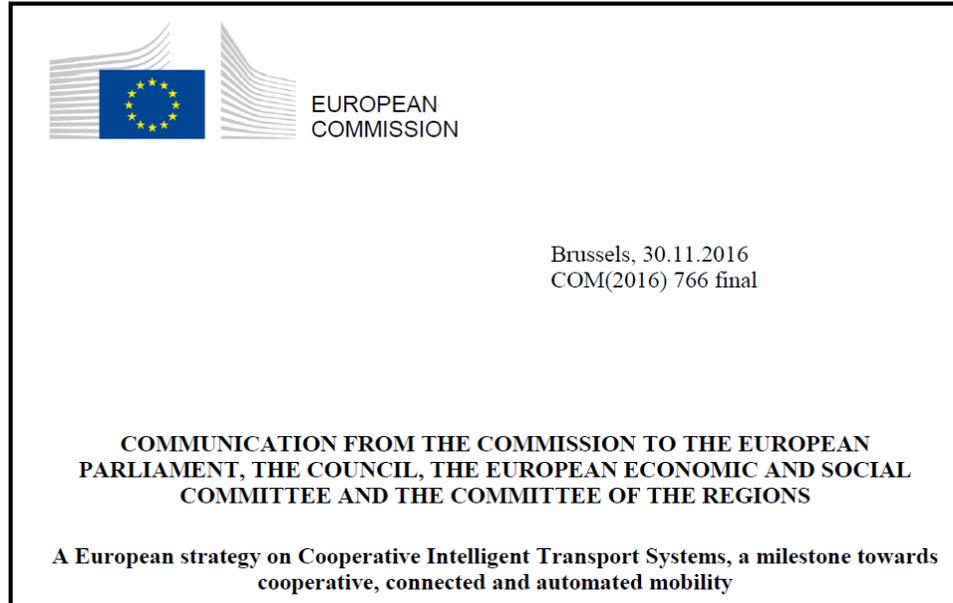
Automated

Cooperative, Connected and Automated

	Day 1 Awareness Starts	Day 2 Automation Starts	Day 3 Cooperation Starts	Day 4 Future Mobility
Cooperative	"I share where I am and what I hear"	"I share what I see"	"We share our intentions"	"We coordinate all manoeuvres"
Connected	Hybrid ITS G5/LTE-V + 3G/4G	Hybrid +5G	Hybrid + New technologies	Hybrid + new technologies
Automated	Advanced Driver Assistance System	Some Roads Human Back-up	Most Roads No Human Back-up	Fully Automated

Source: European Commission

EUROPEAN MOMENTUM



Nov. 2016: focus on cooperated and connected mobility

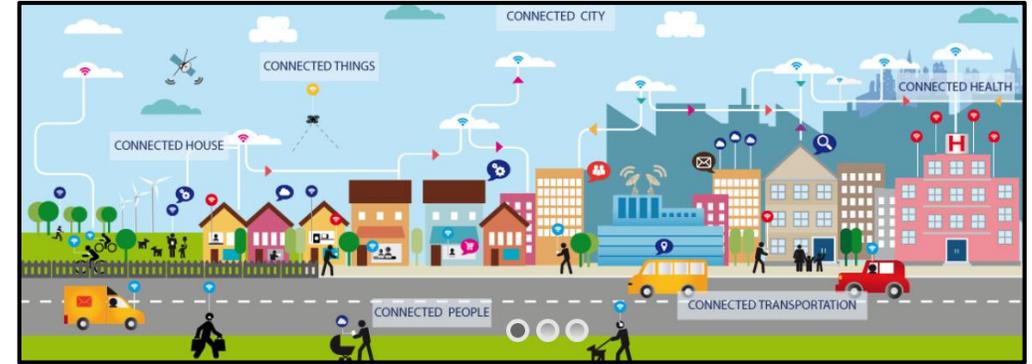
https://ec.europa.eu/transport/themes/its/c-its_en



May 2018: focus on automated mobility

https://ec.europa.eu/transport/themes/its/c-its_en

EUROPEAN MOMENTUM



5G PPP

<https://5g-ppp.eu/>

Sept 2016: 5G Action plan

<https://ec.europa.eu/digital-single-market/en/news/communication-5g-europe-action-plan-and-accompanying-staff-working-document>



STRIA roadmap



<https://ec.europa.eu/digital-single-market/en/connected-and-automated-mobility-europe>



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2. National momentum



NATIONAL MOMENTUM



Various LOI between member states for 5G cross-border corridors to test CCAM



Various Pilot projects



EUROPEAN COMMISSION, MEMBER STATES AND INDUSTRY

- ✓ Transport Ministers of the EU-28 member states + Commissioners + our industry
- ✓ Common agenda for connected and automated driving. Focus on policy and roll-out

Declaration of Amsterdam

Cooperation in the field of connected and automated driving

14-15 April 2016

EU
2016



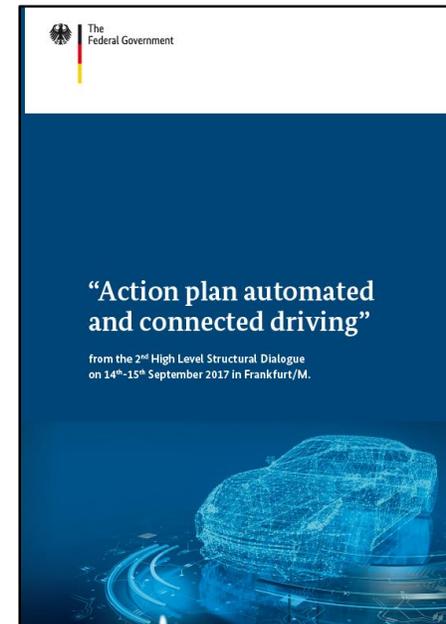

60 DIGITAL DAY

Letter of Intent on the testing and large scale demonstrations of Connected and Automated Driving (CAD)

Having regard, among other initiatives, to:

- Ongoing European Commission flagship initiatives in the field, namely the CAD Roundtable, the GEAR 2030 high level group and the C-ITS Platform chaired by the European Commission;
- The EU Framework Programme for Research and Innovation Horizon 2020, which supports CAD development and large scale demonstrations;
- The 14-15 April 2016 Declaration of Amsterdam on cooperation in the field of Connected and Automated Driving ("CAD");
- The European Industry Automotive-Telecom Alliance announced on 30 September 2016;
- The commitments made in the Memorandum of Understanding on enterprises in Eastern Central Europe for digitalization and connected and automated driving, signed at the Regional Digital Summit held in Budapest on 17-18 November 2016;
- The European Commission Communication on "A EU Strategy on Cooperative Intelligent Transport Systems"¹ that was published on 30 November 2016;
- The European Commission Communication on "Building a European data economy"² that was published on 10 January 2017;
- The conclusions of the High Level Meeting (HLM) on CAD that took place on 25 February 2017 at Schiphol (NL);
- The Commission's intention to elaborate a roadmap on CAD as presented in the HLM of 15 February 2017;
- The Commission's 2017 work program which announces that "the Commission will work in an integrated way on mobility, connectivity and

¹ http://ec.europa.eu/energy/sites/ener/files/documents/16_en_act_part1_v5.pdf
² <http://ec.europa.eu/digital-single-market/en/news/communication-building-european-data-economy>

The Federal Government

"Action plan automated and connected driving"

from the 2nd High Level Structural Dialogue on 14th-15th September 2017 in Frankfurt/M.




Government Offices of Sweden

Conclusions from the Third High-Level Meeting on Connected and Automated Driving

Gothenburg, 18-19 June 2018

3rd HLMCAD

Third High-Level Meeting on CONNECTED AND AUTOMATED DRIVING

18-19 JUNE 2018

<https://www.government.se/articles/2018/06/third-high-level-meeting-on-connected-and-automated-vehicles-led-to-common-conclusions/>

3. Connectivity as building block

CONNECTIVITY ≠ AUTOMATION

Connected vehicle

- Vehicle-to-vehicle
- Vehicle-to-infrastructure
- Vehicle-to-x

Communicates with nearby vehicles and infrastructure; Not automated



Connected Automated Vehicle

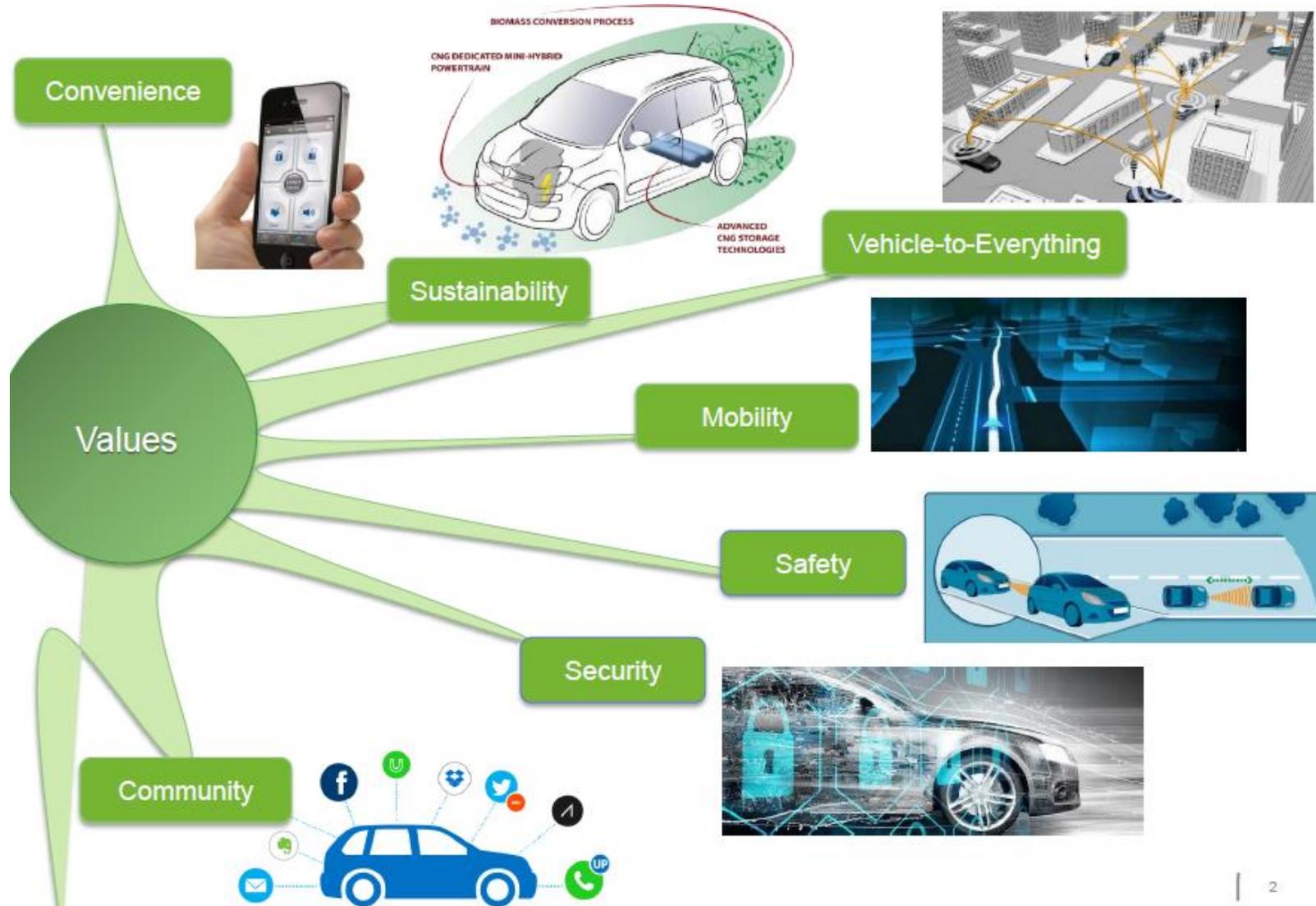


Automated vehicle

Operates in isolation from other vehicles using internal sensors



CONNECTIVITY POTENTIAL



Examples of C-ITS use cases

Road safety related

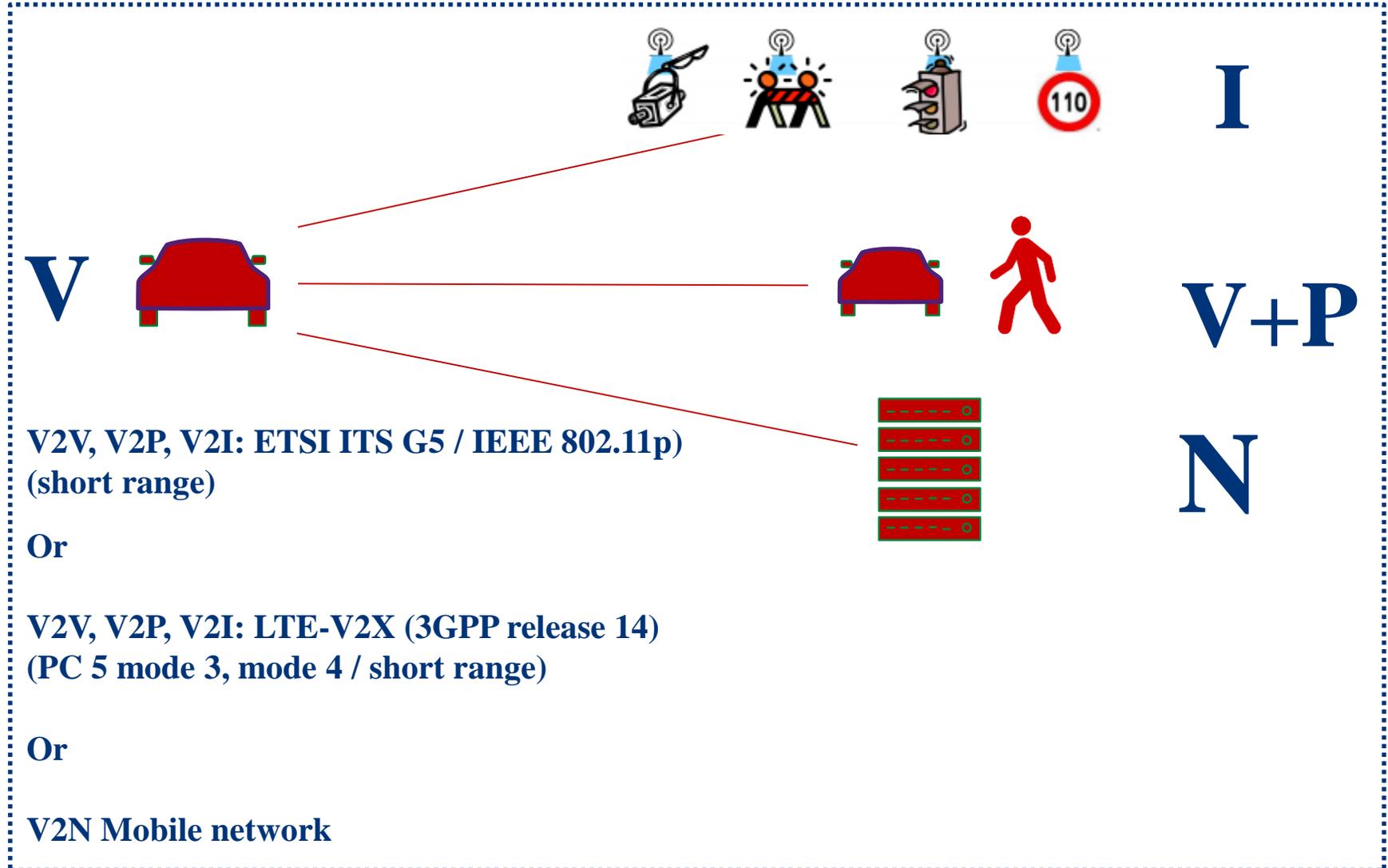
- Emergency vehicle approaching
- Slow or stationary vehicle(s)
- Traffic jam ahead warning
- Hazardous location notification

Cooperative traffic efficiency

- Traffic information and smart routing
- Traffic Light Assisoperative t
- Green Light Optimal Speed Advisory (GLOSA) / Time To Green (TTG)
- Road works warning
- Weather conditions

Cooperative local services

- Off street parking information
- Park & Ride information
- Information on AFV fueling & charging stations
- Zone access control for urban areas



CONNECTIVITY LINKED AUTOMATION

Enabling automation:

- Collaborative mode: example of platooning
- Perception and predication with non-line of sight sensing
- 3D maps/positioning: capital for automation where HMI takes over from driver
- Can add collective intelligence to the transport system

Different types of connectivity technologies each with their pros and cons:

- No one size fits all, depends on use case
- Direct (M2M) or indirect
- Depends also on choice made by the infrastructure manager/road authority/other third parties
- Coverage, speed/latency, security, price
- C-ITS area: interoperability and backward compatibility
- Possible harmful interference in the same spectrum band

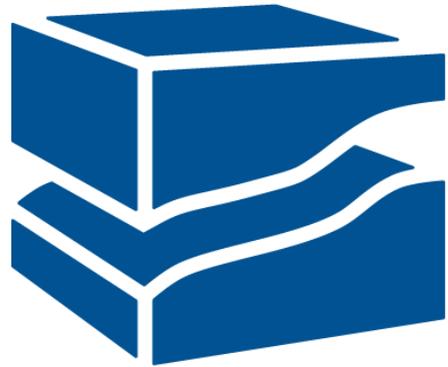
4. Conclusions

CONCLUSIONS

- ❖ CCAM clear potential as vertical for 5G
- ❖ Increased connected data flows/data economy approach
- ❖ Coverage and latency needs balanced in function of use case
- ❖ Enabler for automation
- ❖ Continued dialogue with telecoms/ IT sector (e.g. EATA, 5GAA)
- ❖ Price tag for 5G ?

<https://www.acea.be/industry-topics/tag/category/connected-and-automated-driving>

THANK YOU FOR YOUR ATTENTION



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GROUPE

**GROUPE
RENAULT**

TOYOTA

VOLKSWAGEN

AKTIENGESELLSCHAFT

VOLVO



KEY FIGURES ABOUT THE INDUSTRY

12.6 million Europeans work in the automotive sector

3.3 million jobs in automotive manufacturing

€396 billion in tax revenues (EU15)

€50.1 billion in R&D spending, largest private investor

€90 billion positive net trade contribution