C-ROADS

C-ROADS PLATFORM

Martin Böhm
Secretary General

Co-financed by the European Union
Connecting Europe Facility

C-Roads Platform

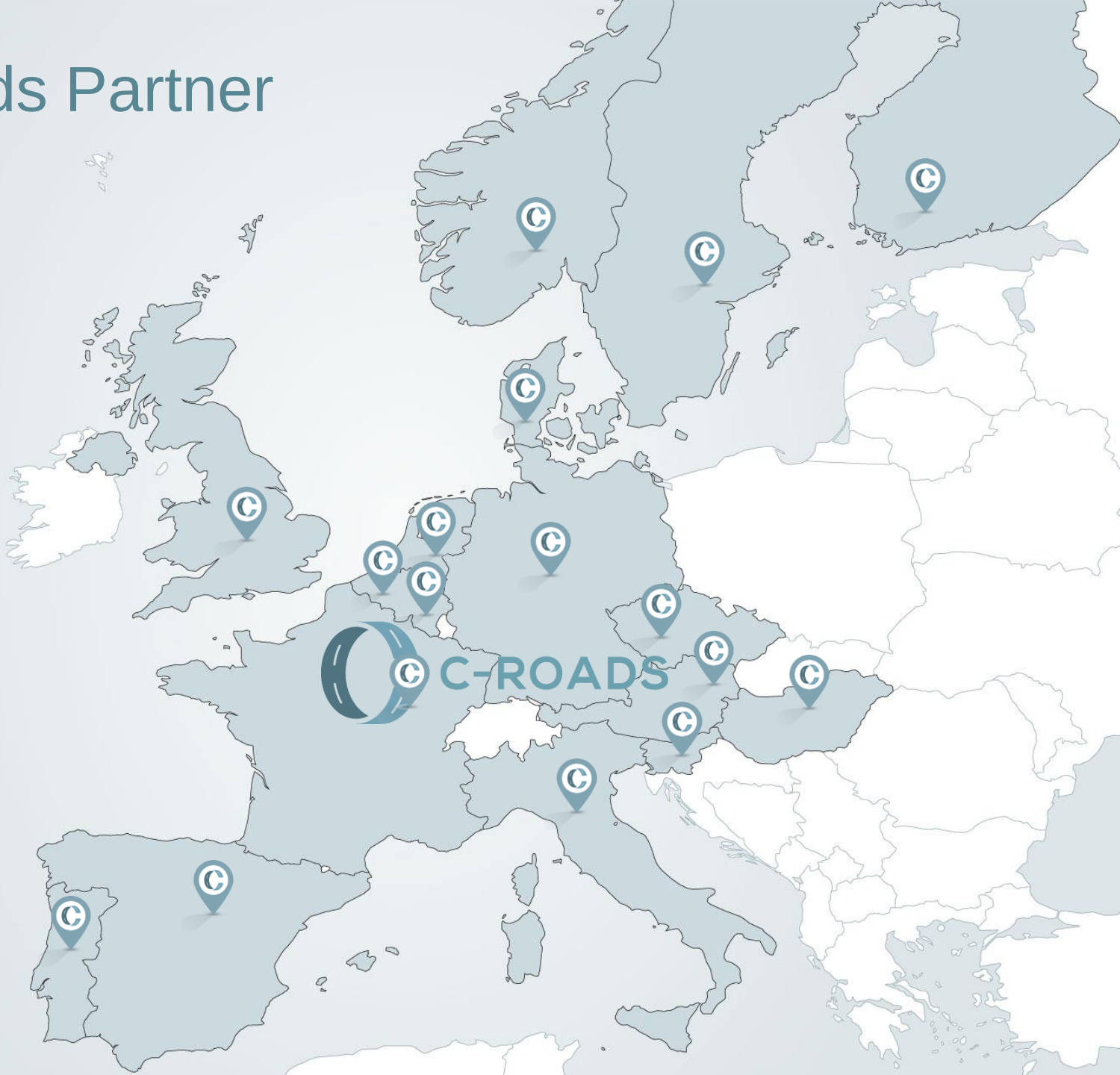
Violeta Bulc @Bulc_EU · 19h

I want to see cooperative vehicles on #EU roads in 2019. The C-ROADS platform will make it happen! #reallTS

EU Transport and INEA

C-Roads Platform

C-Roads Partner



C-Roads members

Core Members 2016

- Austria
- Belgium/Flanders
- Czech Republic
- France
- Germany
- Slovenia
- The Netherlands
- UK

Core Members 2017

- Belgium/Wallonia
- Denmark
- Finland
- Hungary
- Italy
- Norway
- Portugal
- Spain
- Sweden

Associated Members

- Ireland
- Switzerland

- Australia
- New Zealand

The aim of the C-Roads Platform

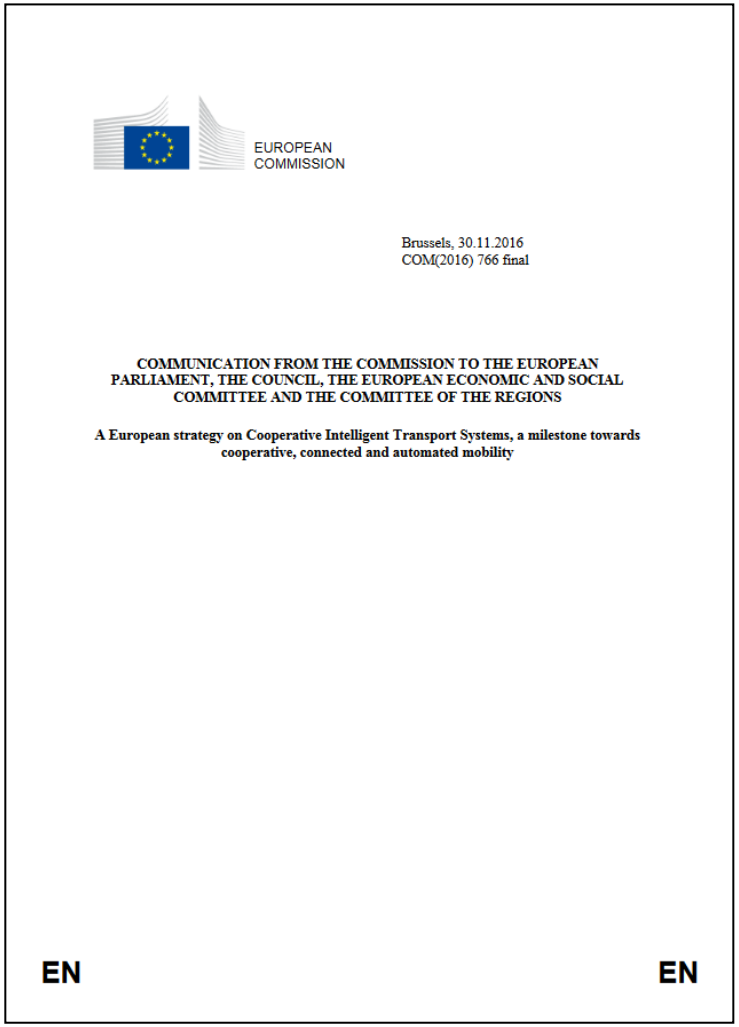
- linking all C-ITS deployments
- develop, share and publish common technical specifications (including the common communication profiles),
- planning intensive cross-testing to verify interoperability
- develop system tests based on the common communication profiles by focusing on hybrid communication mix, which is a combination of ETSI ITS-G5 and operational cellular networks.

➔ And by doing so C-Roads will pave the ground for making Cooperative, Connected and Automated Driving reality

Day 1 Services

Day-1 Servics

Day 1 C-ITS services list
Hazardous location notifications: • Slow or stationary vehicle(s) & traffic ahead warning; • Road works warning; • Weather conditions; • Emergency brake light; • Emergency vehicle approaching; • Other hazards. **Signage applications**: • In-vehicle signage; • In-vehicle speed limits; • Signal violation / intersection safety; • Traffic signal priority request by designated vehicles; • Green light optimal speed advisory; • Probe vehicle data; • Shockwave damping (falls under European Telecommunication Standards Institute (ETSI) category 'local hazard warning').
Day 1.5 C-ITS services list
• Information on fuelling & charging stations for alternative fuel vehicles; • Vulnerable road user protection; • On street parking management & information; • Off street parking information; • Park & ride information; • Connected & cooperative navigation into and out of the city (first and last mile, parking, route advice, coordinated traffic lights); • Traffic information & smart routing.



EUROPEAN COMMISSION

Brussels, 30.11.2016
COM(2016) 766 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European strategy on Cooperative Intelligent Transport Systems, a milestone towards cooperative, connected and automated mobility

EN **EN**

C-ROADS PLATFORM

Milestones

2016

- Kick-Off C-Roads Platform

2017

- Harmonised communication profile for C-ITS pilot services across Europe - ITS-G5
- Draft report on European security mechanism

2018

- Evaluation and Assessment Plan
- Harmonised communication profile for C-ITS pilot services across Europe - Hybrid
- Final report on European security mechanism
- Report legal structures C-ITS operation
- Recommendation on driver information through C-ITS services

2019

- Recommendation on harmonisation of future C-ITS services (Day 1.5 and later)
- EU-C-ITS Interoperability Report
- All pilots installations finalized and start of regular cross border pilot drives

2020

- C-ITS Road show

Close cooperation with C2C CC

CAR 2 CAR COMMUNICATION CONSORTIUM

C-ROADS

Administration of the Memorandum of Understanding

5. This MoU shall last until the end 2020. It may be renewed upon mutual written consent of both parties when new Rules of Procedure are adopted in either party, or when particular procedures are adopted at world-wide level. It may also be amended upon mutual written consent of both parties in the light of experience and technical developments.

   Notwithstanding the foregoing, this MoU may be terminated by either party upon 90 day's written notice to the other. Upon any termination or expiration of this MoU, all the rights granted pursuant to this MoU shall cease immediately and the parties shall cease from distributing any information received pursuant to this MoU. Notwithstanding anything in this MoU or otherwise to the contrary, the provisions of this MoU related to ownership of rights shall survive any termination or expiration of this MoU.

   Any difficulties arising shall be agreed wherever possible at the working level between the relevant Group Chairmen. Matters which cannot be resolved at working level shall be subject to discussion between the two organisations at the level of the General Manager of the **CAR 2 CAR Communication Consortium** and the **C-Roads Platform** chairperson of the Steering Committee.

   The MoU shall not be deemed or construed to be modified, amended or waived, in whole or in part, except by written agreement of both parties. Neither party may assign this MoU or any of its rights, obligations or duties hereunder, without the prior written consent of the other party.

   The relationship between the **CAR 2 CAR Communication Consortium** and the **C-Roads Platform** shall be that of independent signatories, and nothing in this MoU shall be construed to constitute either party as an employee, agent or member of the other party. Without limiting the foregoing, neither party shall have authority to act for or to bind the other party in any way, to make representations or warranties or to execute agreements on behalf of the other party, or to represent that it is in any way responsible for the acts or omissions of the other party.

6. The practical contacts and decisions for the application of this MoU will be taken by the General Manager of the **CAR 2 CAR Communication Consortium** and the Chairperson of the **C-Roads Platform** Steering Committee.

Dated: 20/07/17

Niels Peter Skov Andersen
General Manager
CAR 2 CAR Communication Consortium

Karl-Oskar Proskawetz
Administrator

Dated: 20/07/17

Eric Ollinger
Chairperson

Martin Böhm
General Secretary
Signed on behalf of the C-Roads Platform

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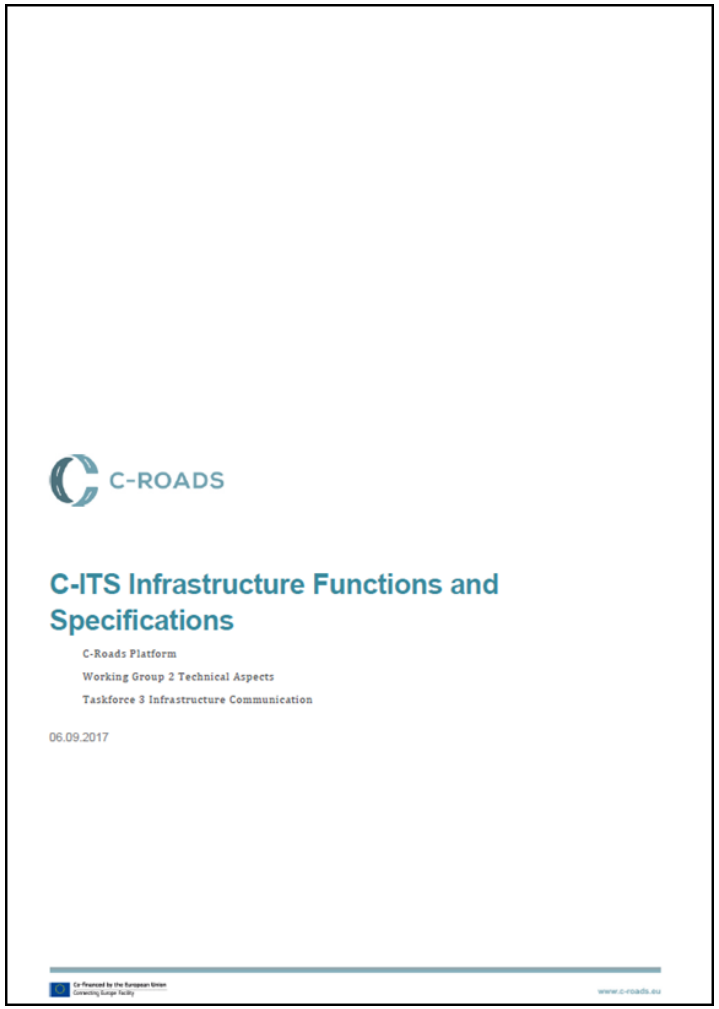
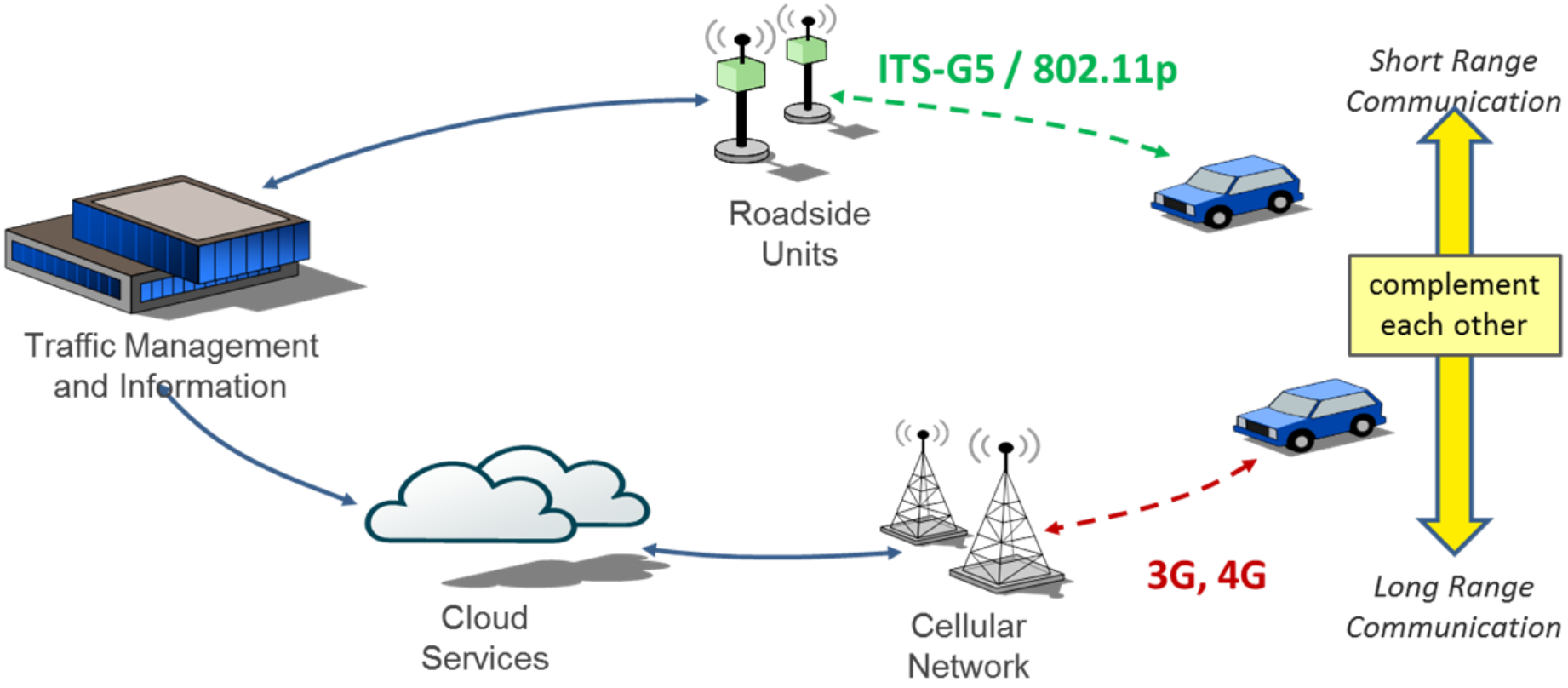
Publication of the Communication Profile for ITS-G5



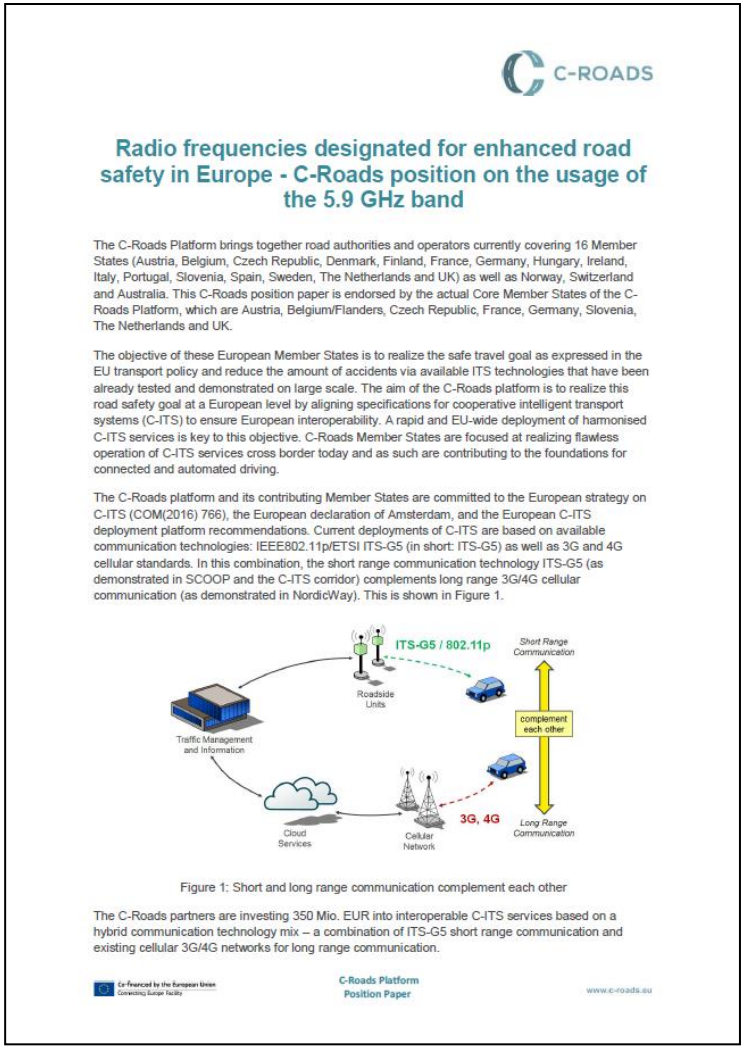
- Published on 14th of September 2017
- Covering
  - RWW – Road Works Warning
  - IVS – In Vehicle Signage
  - OHLN – Other Hazardous Location Notifications
  - GLOSA – Green Light Optimal Speed Advisory
- Available via www.c-roads.eu

C-ITS based on hybrid communication mix



Position Paper on the usage of the 5.9 GHz band

- **Interoperability is a must**: It is unacceptable that people would die on European roads because vehicles cannot "speak" to each other or implemented roadside units due to non-interoperable communication systems (e.g. non-interoperability of ITS-G5 and LTE-V2X).
- **Road authorities should not be forced to equip the roadside** with two or more competing technologies (ITS-G5, LTE-V2X, or potential future technologies) serving the same use cases or providing the same content to road users.
- Furthermore, C-Roads Member States are committed to the "**backwards compatibility**" criteria in the technological evolution: New C-ITS equipment beyond Day-1 needs to support and safeguard already deployed C-ITS services.
- Additionally, the evolution of **cellular communication standards towards 5G is expected to bring further improvements** to long range cellular communication (e.g. coverage improvements and signalling efficiency), providing benefits to the hybrid communication approach and complementing short range connectivity.
- And **road authorities need to have the choice how to provide connectivity** via a hybrid communication approach, including all suitable communication networks to vehicles also in the future.



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Radio frequencies designated for enhanced road safety in Europe - C-Roads position on the usage of the 5.9 GHz band

The C-Roads Platform brings together road authorities and operators currently covering 16 Member States (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Portugal, Slovenia, Spain, Sweden, The Netherlands and UK) as well as Norway, Switzerland and Australia. This C-Roads position paper is endorsed by the actual Core Member States of the C-Roads Platform, which are Austria, Belgium/Flanders, Czech Republic, France, Germany, Slovenia, The Netherlands and UK.

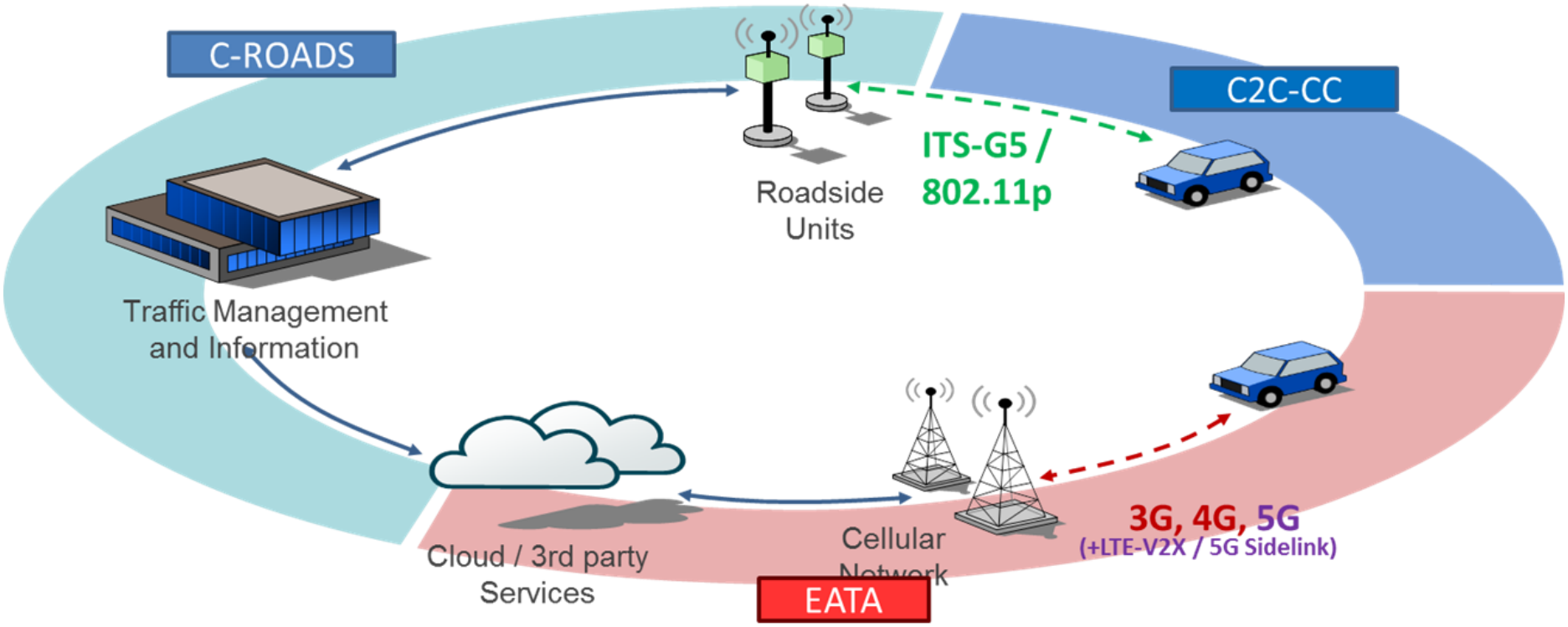
The objective of these European Member States is to realize the safe travel goal as expressed in the EU transport policy and reduce the amount of accidents via available ITS technologies that have been already tested and demonstrated on large scale. The aim of the C-Roads platform is to realize this road safety goal at a European level by aligning specifications for cooperative intelligent transport systems (C-ITS) to ensure European interoperability. A rapid and EU-wide deployment of harmonised C-ITS services is key to this objective. C-Roads Member States are focused at realizing flawless operation of C-ITS services cross border today and as such are contributing to the foundations for connected and automated driving.

The C-Roads platform and its contributing Member States are committed to the European strategy on C-ITS (COM(2016) 766), the European declaration of Amsterdam, and the European C-ITS deployment platform recommendations. Current deployments of C-ITS are based on available communication technologies: IEEE802.11p/ETSI ITS-G5 (in short: ITS-G5) as well as 3G and 4G cellular standards. In this combination, the short range communication technology ITS-G5 (as demonstrated in SCOOP and the C-ITS corridor) complements long range 3G/4G cellular communication (as demonstrated in NordicWay). This is shown in Figure 1.

Figure 1: Short and long range communication complement each other

The C-Roads partners are investing 350 Mio. EUR into interoperable C-ITS services based on a hybrid communication technology mix – a combination of ITS-G5 short range communication and existing cellular 3G/4G networks for long range communication.

C-ITS based on hybrid communication mix



Conclusio

- C-ITS deployment is on its way
- Safety is the driver!
- By 2019 C-ITS services will be available across Europe
- This will be achieved by a close cooperation between
  - Infrastructure operators (C-Roads)
  - OEMs (C2C-CC, EATA)

THANK YOU!

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