



CAR 2 CAR
COMMUNICATION CONSORTIUM

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European vehicle manufacturers work towards bringing Vehicle-to-X Communication onto European roads

The 16 vehicle manufacturers organised in the CAR 2 CAR Communication Consortium adhere to their agreement to jointly bring cooperative Intelligent Transport Systems and Services to the European market. In discussion with international stakeholders, the Consortium addresses open issues for the earliest possible production and deployment of Vehicle-to-X communication systems based on the European and US market standards: ETSI ITS-G5 and IEEE 802.11p (WLANp), respectively. Intelligent Transport Systems and Services will make traffic and transport safer, more sustainable and more comfortable in the near future.

Wireless communications between vehicles, traffic infrastructure and service providers, summarised by the acronym V2X, is an integral part of future mobility. With the Memorandum of Understanding, signed in 2012, the leading European vehicle manufacturers organised as the CAR 2 CAR Communication Consortium have expressed their intention to jointly bring these Cooperative Intelligent Transport Systems and Services (C-ITS) onto European Roads. While the Consortium working groups have concentrated all efforts on meeting this ambitious goal, external factors have resulted in modifications to the planned framework in order to ensure a timely deployment.

General Manager of the CAR 2 CAR Communication Consortium, Niels Peter Skov Andersen explains “The CAR 2 CAR members have analysed issues that urgently need to be addressed before serial deployment can start”. The Consortium members are now heavily engaged in finding solutions for these open issues in order to adhere to the impending C-ITS market introduction. Working under the assumption that the open issues can be resolved with all the required standards in place by 2016, initial deployment of cooperative vehicles could begin as soon as 2019.

The allocation of the 5.9 GHz spectrum for safety-relevant Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communications in 2008, standardised as ITS-G5 communication, has primarily been driven by the CAR 2 CAR Communication Consortium. Following on from this, one of the most significant work streams undertaken by the Consortium members has involved working to guarantee that the introduction of V2X communications within the assigned frequency band will not interfere with road tolling using an adjacent frequency. Another substantial task in this field is studies of proposals for allowing WiFi to share the 5.9 GHz band with V2X communications. Substantial efforts are put in to this study, as stated by Andersen “this might have an influence on future vehicle safety”.

Further to the above, the Consortium has identified aspects of the system standardisation that could cause additional issues and delays with the deployment of the technology. Firstly, security and privacy policies that have already been completed in terms of the European Commission Mandate M/453 may need to be modified in order to compensate for the additional requirements of the infrastructure and national stakeholders. Andersen explains that “The spectrum and security issues might influence the current hardware design, which was developed in a harmonised way to cover both the European and US markets”. Secondly, some infrastructure related standards, planned to be developed within the Mandate M/453 are still not yet in place.

The CAR 2 CAR Communication Consortium members are in interactive discussions with stakeholders in national initiatives (e.g. BSI, ANSSI, VDA) and on a European level highlighted the open issues in the C-ITS Deployment Platform of the European Commission. Furthermore, international initiatives (e.g. with CAMP) have been initiated in order to develop harmonised solutions. In addition to the continuous support for the Standards Setting Organisations, a significant level of work has been completed concerning compliance assessment and testing of C-ITS to guarantee European-wide interoperability.

Background: Clear focus on ITS-G5

The CAR 2 CAR Communication Consortium focuses on wireless Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication based on the ITS-G5 standard. The ITS-G5 communication standards enable vehicles and roadside ITS stations to cooperate and locally share information amongst each other in an ad-hoc network. On this basis, cooperative systems inform the driver about current traffic conditions and provide immediate warnings regarding potential dangers relevant for the individual vehicle and driving route. These so-called Cooperative Intelligent Transport Systems and Services (C-ITS) provide forewarning and therefore contribute to enhanced traffic safety, efficiency and driving comfort. Situations where drivers significantly benefit from this support are, for example, when they approach the end of a traffic jam, if road works block their route or if a vehicle in front of them suddenly undertakes harsh braking.

For these purposes, a low-latency point-to-multi-point broadcast is used to transmit information via standardised message sets to the ITS stations of cooperative vehicles and road infrastructure units present in the vicinity (a communication range of approximately 300 to 500 metres).

As the local broadcast with low latency does not require installed infrastructure, the cooperative ITS-G5 system is well designed for safety-related applications. Compared to point-to-point communication, ITS-G5 provides important features such as locally self-organising ad-hoc networks, free data transmission and infrastructure robustness. For communication processes in a wider area, other types of communication networks may provide other advantages.

The standardisation of ITS-G5 focuses on the transmission and sender side, meaning that message sets and triggering conditions are well defined. However, to stimulate competition, freedom is left to the implementers of C-ITS applications to design innovative and well-functioning applications using the received information, potentially in combination with other inputs (e.g. from on-board sensors). No guidelines are specified on how the information received needs to be used and whether this is complemented by other information.

About the CAR 2 CAR Communication Consortium

Enhancing road safety and traffic efficiency by means of Cooperative Intelligent Transport Systems and Services (C-ITS) – is the dedicated goal of the CAR 2 CAR Communication Consortium. The industrial driven, non-commercial association was founded in 2002 by vehicle manufacturers affiliated with the idea of cooperative road traffic with Vehicle-to-Vehicle Communications (V2V) supported by Vehicle-to-Infrastructure Communications (V2I). Today, the Consortium comprises 80 members, with 16 vehicle manufacturers, 36 equipment suppliers and 28 research organisations.

Over the years, the CAR 2 CAR Communication Consortium has evolved to be one of the key players in preparing the initial deployment of C-ITS in Europe and the subsequent innovation phases. CAR 2 CAR members focus on wireless V2V communication applications based on ITS-G5 and concentrate all efforts on creating standards to ensure the interoperability of cooperative systems, spanning all vehicle classes across borders and brands. As a key contributor, the CAR 2 CAR Communication Consortium works in close cooperation with the European and international standardisation organisations such as ETSI and CEN.

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