Public Workshop “C-ITS Deployment is Underway!”

Jointly organised by the Amsterdam Group and CODECS

15 September 2015
Scandic Hotel
Roskilde, Denmark

CODECS has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No 653339.

Executive Summary

The full-day workshop “C-ITS Deployment is Underway!” was jointly organised by the Amsterdam Group and the CODECS project, both committed to network all relevant stakeholders for facilitating joint deployment of cooperative ITS in Europe. Corridor projects and pilots are currently arising all over Europe and form the first examples of real C-ITS deployment. The workshop gave these activities and further deployment related initiatives a platform to present their status, to declare first practical experiences and to address open issues for an aligned C-ITS implementation on vehicle and infrastructure side.

For the Amsterdam Group, the strategic alliance of CEDR, ASECAP, POLIS and the CAR 2 CAR Communication Consortium, this has been the second public workshop where it presented and interactively discussed its work on harmonising the C-ITS roll-out across Europe. CODECS is a Coordination and Support Action in the Horizon 2020 Research and Innovation Framework of the European Commission which took up its operation in May 2015. CODECS stands for **CO**perative ITS **DE**ployment **C**oordination **S**upport, and the project aims on coordinating initial deployment activities, aligning deployment road maps, giving strategy coordination support and raising the awareness for the idea of cooperative road traffic.

The workshop was attended by 42 stakeholders from 12 European countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Netherlands, Norway, Spain and United Kingdom).

Opening

On behalf of the organisers, Frans op de Beek, Chairman of the Amsterdam Group, and Sonja Eickmann, Coordinator of CODECS, opened the workshop. They both highlighted that the active contribution of the stakeholders to the discussion of deployment aspects is highly appreciated and inevitable to come to a concerted roll-out of systems and services across borders and across the different functional and regional deployment hot spots. Frans op de Beek outlined the achievements of the Amsterdam Group in supporting the information exchange among stakeholders, in jointly discussing open deployment issues and creating solution approaches. Sonja Eickmann provided an insight into the objectives and work approach of the CODECS project, acting as a nodal point pooling the interests and requirements of stakeholders involved in the consecutive C-ITS implementation phases.

Open issues identified by the Amsterdam Group

The first themed workshop session was set aside to present the work of the Amsterdam Group and the open issues for harmonised C-ITS deployment discussed in its working groups.

For introduction, Marko Jandrisits, Amsterdam Group Co-Chair on behalf of ASECAP, presented the self-conception of the umbrella organisation of road authorities and the infrastructure industry, vehicle manufacturers and their suppliers, cities and regions. The members use this platform to address open deployment issues, and with combined efforts, the Amsterdam Group develops solution approaches taking into account the requirements of all represented stakeholder groups. It herewith provides recommendations for the members progressing deployment in projects, pilots and corridors. The recommendations do not have prescribing character, but give guidance for C-ITS deployment and its main success factor, the interoperability of systems and services across borders.

Marko Jandrisits afterwards presented the ten open issues identified by the Amsterdam Group, and how the responsibility for them is split between the Amsterdam Group, the C-ITS Deployment of the European Commission, and the recently set-up CODECS project. He gave a short outline of the current status of each topic, presented the Amsterdam Group's support to the work of the standards setting organisations, and on White Papers specifying the use cases.

The follow-up discussion pointed out that standards are the basic precondition to guide near-term deployment. Parallel to ITS G5, other technologies are evolving, and a hybrid communication architecture like it is conceptualised by the CONVERGE project is also monitored by the Amsterdam Group. With respect to standards harmonisation, concerns were raised that waiting for actions by additional stakeholder groups could delay the Day One implementation. In environments with strong policies, like in the US, this processes much faster. The bottom-up approach pursued in Europe is suitable for developing the technical requirements, but clear standards and also policies for road authorities are needed to guide deployment.

Furthermore, it was discussed that it is important to develop communication-technology agnostic use cases, to be able to adapt to emerging technologies. And it should be clear if thin or thick client solutions are chosen before investments can start.

The next presentation highlighted one of the open issues the Amsterdam Group is working on, the Road map beyond Day One. Teodor Buburuzan from Volkswagen introduced this topic by first of all declaring the agreement of the vehicle manufacturers in the CAR 2 CAR Communication Consortium to start deployment with a not too complex system and basic information and warning services. With growing penetration rates and improvements in later innovation phases, systems and services get more complex. Road mapping beyond Day One prospects to these later deployment phases: It is important to align the preferences of different stakeholders on which applications shall be implemented at which point in time. He furthermore explained that for enabling cooperative road traffic, it is important to ensure that the provision of data on side of the sending ITS station follows fixed guidelines, that messages have an agreed format and content, and that they base on similar triggering conditions. This is ensured by standards and specifications. What is left up for competition is the receiver side, how the information is transformed into concrete services and what the specific applications look like.

In the current road map brought up for discussion in the Amsterdam Group, a basic set of V2X applications facilitated by the provision of status data will support the awareness of drivers for potential dangers and the behaviour of other traffic participants at Day One. It will be complemented by more complex applications: If sensor data from driver assistance systems are fed into the cooperative data basis, even more foresighted traffic behaviour can be supported and it enables ‘seeing what the others see’. For cooperative driving, it is beneficial if even data about intentional actions can be evaluated by cooperative systems. In a long-term vision, via fusing also with coordination data from accurate sources, synchronised cooperative driving and as a final step, automated driving functions can be supported. Further discussion items included the complexity of the car as moving sensor and the importance of traffic rules harmonisation which calls for ‘adaptive legislation’.

The discussion pointed out that stakeholders show a strong interest in applications for protecting vulnerable road users, which could be supported when sensor data could be evaluated by in-vehicle systems, e.g. if cameras at intersections detect pedestrians or cyclists and road side units provide this information to vehicles.

ITS Corridors

The following session opened the floor for corridor projects and pilots to present their current status, the conceptualised applications as well as the underlying technologies, standards, specifications as well as business cases. As introduction, Torsten Geißler (Bundesanstalt für Straßenwesen [BASt]) in his role as Amsterdam Group Co-Chair on behalf of CEDR presented the achievements of the Amsterdam Group in developing a road map for deployment with contribution of the automotive industry and infrastructure organisations. It forms a main step to overcome the so called chicken-and-egg problem: Stakeholders on both the vehicle and infrastructure side have to invest in implementing ITS stations to ensure that a basic set of information and warning services can be provided even at low penetration rates. The road map has no binding character and a permanent information exchange between the experts responsible for deployment in different hot spots is crucial to mitigate potential diverging approaches. The Amsterdam Group as well as CODECS commit themselves to this target.

Cooperative ITS Corridor from Rotterdam via Frankfurt/Main to Vienna

Torsten Geißler presented the status of the tri-national Cooperative ITS Corridor from Rotterdam via Frankfurt/Main to Vienna on behalf of the German Federal Ministry of Transport and Digital Infrastructure. It has been confirmed by a Memorandum of Understanding signed by the transport ministers of the Netherlands, Germany and Austria in 2013. The MoU foresees to implement the applications road works warning and probe vehicle data in a hybrid communication approach: ITS G5 wireless communication is used for short range communication between the vehicles and the road works warning trailer, while the connection to the ITS central station is realised with cellular communication. For a coordinated implementation in three different countries, the Corridor possesses a multi-level organisational structure: Strategy councils are formed on an international level while national working groups are treating the project management, system architecture, privacy and IT security, the ICS cooperative central station, the interlinking ICS, the IRS cooperative roadside infrastructure, the IVS cooperative vehicle systems, testing and compliance as well as operation and evaluation.

Torsten Geißler subsequently presented the progress in the working groups of the German part of the corridor. In spring 2016, the trial operation will start, and from 2017 onwards, the roll-out is envisaged. As an interim summary, the responsible parties state that the coordination between three different countries with their individual legacy systems is a huge challenge without a common European deployment strategy. Standards on their own do not guarantee interoperability, and profiling as well as conformance tests are essentially required.

SCOOP@F

As second example of initial C-ITS deployment activities being already in progress, Guy Frémont from SANEF presented the status of SCOOP@F. The French project carries out deployment in two phases, both selected for funding by the European Commission: Wave 1 from 2014 to 2017 focuses on the applications road works warning, probe vehicle data and hazardous location notification, facilitated by ITS G5 communication. The second phase will start in parallel in 2016, and in its framework, additional services will be conceptualised and pro-

vided in a hybrid communication architecture. For the implementation of the priority services in phase 1, five pilot sites in France are used (Ile-de-France, Bordeaux, Isère, Bretagne, and the East Corridor from Paris to Strassbourg). The specifications for realising these applications are in place and will be made publically available in the web. French vehicle manufacturers will provide C-ITS capable vehicles in these areas, the development on behalf of the private partners has already begun, and the public procurement for equipping infrastructure with ITS road side stations is on its way. First prototypes are expected to be available by end of 2015 when also the east corridor pilot side will be operational. In addition to further services and a hybrid communication architecture, cross-testing in Portuguese, Spanish and Austrian pilot sites is planned for the second SCOOP@F phase.

Discussion with the audience included the question if the road works warning service will have the same set up as the one for the Dutch/German/Austrian corridor. In principle it will be same, although the backend of the service includes some differences. Now is the time to align the deployment.

Czech Republic C-ITS pilots

The following presentation was given by Martin Volný on behalf of the Czech Ministry of Transport. It outlined the strong commitment of the Czech Republic to invest in innovative technologies like C-ITS to increase the safety and to enhance the travel time reliability on relevant road network. This strategy is strongly supported by stakeholders from the private sector, cities like Prague and Brno, and finds its expression also in supporting activities in research & development projects, a specific ITS action plan and live testing.

Through the BasIC project and the motorway D5 pilot side, city pilots and the project region-cross, the Czech Republic possesses and gains further valuable operational experience in providing V2V and V2I applications in different environments – road work warning, slow moving vehicle warning and probe vehicle data on the motorway, traffic light data provision, red light warning in cities – and spanning different means of transportation (warning of vehicles via I2V communication if a train is approaching a rail crossing). They have helped to identify requirements for deployment on technical, legal and operational level, and outstanding issues like mitigating spectrum issues, defining clear roles & responsibilities, and addressing security aspects. The operational experience leads the Czech Republic to further intensify pilot testing, to prepare an ITS corridor, large scale projects and cooperation for cross-border testing e.g. by linking the motorway D5 Prague – Pilsen to the German part of the C-ITS corridor.

In the discussion, Maria Alfayate expressed that the European Commission highly welcomes initiatives like this, linking new projects and corridor initiatives to already existing ones, and testing and proving the cross-border interoperability of systems and services.

NordicWay

Subsequently, Illka Kotilainen from the Finish Transport Agency presented NordicWay, a trans-border deployment initiative of Finland, Sweden, Norway and Denmark supported by the European Commission under the framework of the Connecting Europe Facility (CEF). NordicWay has started its operation in May 2015 and envisages to build a C-ITS corridor in which three core services shall be provided: hazardous location warning, weather and slippery road warning as well as probe data services. It is expected that about 2000 traffic participants in the four northern European countries will experience these services. A main difference of NordicWay to the previously presented pilot is that it builds up applications on cellular C-ITS using 3G and 4G/LTE communication. The main argument for this

technological focus is the existing wide spread and area-covering availability, while it is of course also linked to specific challenges, e.g. latency times and the need of a business concept for data roaming to ensure that the service does not end at the border of the countries. The architecture for the data exchange loop from the vehicle to the C-ITS server, from there to the national access point, back to the server and from there to the vehicles is complex. It includes the cellular application, the C-ITS server, the ITS server at the road authority, the cellular network operator, and last but not least the end user as stakeholder groups. The data exchange between vehicles and the C-ITS server follows the standardised message sets CAM and DEMN. The C-ITS server and the ITS server of the road authority exchange data via Datex II. The first technical tests and performance assessment went on successfully.

UK corridor

Graham Hanson from the UK Department of Transportation afterwards presented the road investment strategy in the United Kingdom. It expresses the clear ambition to invest in innovative technologies and cooperative services to provide solutions for the key societal challenges, and for handling the traffic density on strategic road networks which will decisively grow in the oncoming decades. V2V and V2I/I2V communication technologies shall herein play a decisive role and the UK wants to hold its positon as leading centre for developing and testing connected and autonomous vehicles. In this framework, the idea of a connected corridor from London to Dover is conceptualised, not only with the goal of optimising road transport, but of also linking the road users to rail and sea and of optimising the freight management operations at this strategically important junction. The corridor shall comprise urban as well as rural roads and motorway.

Cities perspective

The view on C-ITS deployment and the requirements for a successful roll-out formulated by different stakeholders was completed by a presentation of the city perspective given by Pablo Isusi on behalf of the City of Bilbao, Spain. He addressed the challenges cities are facing in serving the mobility needs of all different traffic participants, being motorised or non-motorised, including individual travel, public transport and logistics. This is closely related to the balance between ensuring the safety for all road users by at the same time optimising the traffic flow. No technical solution is suitable to solve all if the issues in one instance, but C-ITS should become a fixed part of the traffic management toolbox. Bilbao has already started investing in IT development and set up intelligent transport services like parking metres, systems for bus priorisation, red light detectors, waiting time information signals for buses. Conscious that cooperative applications and interoperability between the solutions found by individual cities need to be next steps, Bilbao is involved in projects like Co-Cities, concentrating on a standardised interface for a mobile journey planner. These activities

are embedded into the second phase of the Bilbao ITS plan focusing on standards implementation, public transportation, urban freight, smart mobility services and expanding an open data platform.

European Commission Perspective

In her presentation, Maria Alfayate from the Directorate General MOVE further detailed how the European Commission sustains C-ITS deployment in the phase where the implementation of Day One services starts. Monitoring the fast progress in deployment preparation in other regions of the world, a clear and shared vision on European level is required. The C-ITS Deployment platform set-up by the EC in 2014 facilitates the development of this vision as it closely looks at the initial deployment scenarios and finds ways to overcome identified hurdles for a concerted roll-out. Maria Alfayate briefly introduced this platform and further outlined the instruments of the European Commission to give financial support for innovation and coordination activities in the initial deployment phase, most prominent the H2020 research and innovation framework and the Connecting Europe Facility (CEF). Among the pilots presented in the workshop, some examples for CEF-funding have already been introduced. The next CEF call encouraging member states to apply for funding of C-ITS deployment activities will be published by end of the year 2015. It especially addresses actions demonstrating the interoperability of systems and services and creating a link to existing projects, corridors and pilots in terms of cross-site testing. It is not aiming at specific use cases/services.

Furthermore, Maria expressed that DG MOVE very much values the role of the Amsterdam Group in C-ITS deployment.

Deployment related initiatives

With regard to the international status in C-ITS deployment, Knut Evensen from Q-Free gave an overview on the current work of the EU-US harmonisation task force on C-ITS and its working groups. The EU-US Implementing Agreement for ITS Cooperation has been extended and in the international cooperation, Canada, Japan and also Korea are following. At the moment, eight harmonisation working groups are active under the agreement, and Knut Evensen outlined in more detail the work of the task groups on standards harmonisation. Harmonising standards is of public interest as it is a precondition for cross-region interoperability and eases the access of industry stakeholders to different markets. He further highlighted the harmonisation task groups on ITS Security Policy and stressed the challenge that policies have to regard the whole product lifecycle. Therefore, upgradeability must be part of the technology requirements, and updating specifications is inevitable to migrate to new versions with parallel operation.

Finally, Frans op de Beek on behalf of the Dutch Road Authority gave a prospect to the Netherlands holding the EU-Presidency in 2016, and aiming on promoting a strong European cooperation in the field of automated and connected driving. Similar to other European Countries, testing with self-driving vehicles catches high-attention in the Netherlands, and C-ITS is not a parallel world, but a crucial enabling and supporting technology. Facilitating testing on public roads evokes differences in the legislation framework of the EU member states, and avoiding a patchwork of legislation is therefore an important scope for the cooperation and for accelerating a

cross-border implementation of C-ITS. Key challenges to be addressed are ensuring adaptive and flexible legislation on an international, European and national level (traffic law, liability), securing public and private interests with respect to liability, data ownership and privacy as well as security, stimulating innovation and ensuring the compatibility of new systems and services. These are mainly organisational challenges rather than technical ones.

Closing

The official closing of the workshop was accompanied by a ceremony where Frans op de Beek handed over the Chairmanship of the Amsterdam Group to Torsten Geißler. Symbolically, he presented to him the seasonable equipment to be the new leader of the umbrella organisation: an umbrella, showing the logo of the Amsterdam Group. Torsten Geißler on his turn thanked Frans for his commitment to the Amsterdam Group from its natal hour up to today where it has established itself as a key and powerful player in C-ITS deployment preparation. He provided him with a book ('the second machine age'), containing a written-message and best wishes from Amsterdam Group members and workshop guests.

All presentations held at the workshop are available at the website of the CODECS project in the category "Library", and on the Amsterdam Group Website in the category "News".