5G-CARMEN NEWSLETTER #3

Last technical results

Dear Readers,

During this period, 5G-CARMEN partners have taken the lessons learned from their first simulation and implementation activities and reflected them in the use case overall definition; thus, continuing the refinement process, especially in the context of cross-border scenarios. One example is the Cooperative Maneuvering use case with its flagship Cooperative Lane Merge application, where the role of the network Multi-access Edge Computing (MEC) within the overall scenario has been redefined. Another example is the Situation Awareness use case with its Approaching Emergency Vehicle application, where concept and system integration activities with the Cooperative, Connected and Automated Mobility (CCAM) platform solutions have progressed. Similar refinement actions have been carried out in the rest of 5G-CARMEN´s use cases: Vehicle Sensors and State Sharing application, Green Driving with its Environmental Speed Limit and Electric Zones and Video Streaming. All these activities are aligned with the consortium´s goal of proposing an overall 5G-CARMEN system architecture which, with the close collaboration and input from the 5G Enabling Technologies and the 5G-CARMEN service-oriented, federated, and secure platforms for CCAM working group, will support service provisioning and continuation across borders.

The enabling platforms and services have been transitioning from laboratory stage to real production environments, including the installation of edge cloud infrastructure in the networks and MEC platforms running on these servers. Although the physical installation of the MEC in Italy has been a challenge so far due to the Covid-19 situation, 5G-Carmen is now close to having all necessary infrastructure in place.

The 5G-CARMEN services GeoService and AMQP Broker are currently being installed, further network configurations and connectivity tests are ongoing. We are confident to have the C-ITS and cloud systems integrated soon in order to start local end-to-end tests. While the Predictive Quality of Service enabler activities have suffered some delay due to changed priorities in context of Covid-19 , the development of the Precise Positioning service and related vehicle integration is progressing as planned.

After the publication of the "Functional architecture and operational aspects of the secure CCAM platform", software design and development of the associated components have progressed.

The secure platform for CCAM comprises interaction between mobile edge platform and its control components, NFV Management and Orchestration, Data Plane control and the 5G System leveraging well-defined reference points. Solutions to identified gaps in standards, OSS and prototypical implementations associated with various CCAM platform components, such as support for integration and interaction of MEC systems with a 5G system, have been specified and contributed to relevant standards tracks via the project's dissemination activities. This includes an adopted contribution to the ETSI ISG MEC about a solution for MEC-5G integration.

KEY FACTORS

The 5G-CARMEN use cases are now visible!

5G-CARMEN Security of Emergency vehicle

5G-CARMEN Demonstration of Green Driving use case

5G-CARMEN Visualization Tool

Developed components follow the defined functionality required for the integration with the pilot and the associated production networks, incl. cross-border operation and support for Back Situation Awareness deployment on different operator networks and the required interaction on Orchestration and MEC level. A procedure for a stepwise integration of the CCAM platform into the MNOs' production network has been agreed upon. The development of modular extensions for Identity Management Module (IMM) and an Intrusion Detection System (IDS) for the CCAM have reached a mature level. The IMM will be released as an open source software once the pilots demonstration takes place.

Associated software has been tested and its deployment with the CCAM platform and services, such as the use of IMM for Video Streaming, is currently being defined.

Additional CCAM platform functions are being developed for experimental proof and KPI evaluation, such as MEC-5G system coupling for service continuity during vehicles' mobility, as well as experimental MEC services, such as the Radio Network Information Service (RNIS). Complementary system simulations have been developed and are carried out in the view of anticipatory mobility and resources usage.

Involvement of external SMEs

5G-CARMEN is going to launch a specific initiative to attract external SMEs.

Business talks between SMEs and 5G-CARMEN Consortium Members will be triggered by a workshop based on the "Call for Ideas" concept, in which the applying SMEs will be able to propose their Product/Service concept that may be applied in the 5G use cases. These idea will be managed with the aim to collect and evaluate best ideas to be presented in specific event to

the 5G PPP community and to 5G-CARMEN project members.

SME involvement will be primarily focused to interact with SMEs and Startups who already have a working solution, and which should see 5G-CARMEN more as a market opportunity and are really interested in:

● develop a competitive advantage on 5G technology applied to Autonomous Driving

● concrete opportunity to meet new potential customers

● increase market visibility in 5G field

● opportunity to promote their business.

Ideas and concept application will be managed by an online platform.

Ideas selected will give the proposing SME the opportunity to pitch their solution in front of the 5G PPP community, including potential customers and will have the opportunity to a preliminary one-to-one meeting with interested 5G-CARMEN Consortium Partners.

White Paper and 5G PPP collaboration

During this time of limited travelling, several 5G-CARMEN partners are also engaged in cross-project key discussions - in particular with 5GCroCo and 5G-MOBIX - and are participating in the preparation of joint whitepapers that will be released as a part of the 5G PPP initiative. These whitepapers will focus on fundamental topics, strictly connected with 5G-CARMEN activities, concerning the challenges of CCAM deployments at the cross-border, the role of 5G

on vertical industries, and the importance of edge computing for 5G networks.

5G-CARMEN was also involved on a Workshop for the 5G PPP Technical Board, presenting its results during the "Automotive projects: Progress and key achievements" session with 5GCroCo and 5G-MOBIX. The session was recorded and will be available online.

5G Data Management Plan is now ready!

The project defined a knowledge protection strategy. We briefly analyse the information flow within the project focusing on the project use cases. Following that we make an extended analysis on the outward information flow indicating communication targets that could possibly display an interest in the data generated by 5G-CARMEN project. Moreover, we define the main channels of communication along with the phases that the sharing of the project's data will occur. Finally, we refer to the Ethics and IPR frameworks that will be used by 5G-CARMEN. We address the Open Access Policy (OAP) framework by initially defining it and then referring to its benefits and structure. The basis of this discussion is the European Commission's wider H2020 framework and the relevant OA policies. The Document may be visible at: https://5gcarmen.eu/wp-content/uploads/2020/03/5G_CARMEN_D6.1_FINAL.pdf

CONTRIBUTION TO MAJOR EVENTS

5GAA Conference

The 5G Automotive Association (5GAA) organised a conference bringing together EU representatives and the connected automotive ecosystem to the heart of Europe, to officialise its public-private partnerships with several European authorities. In parallel to the Conference, 5GAA hosted an exposition of C-V2X technology to demonstrate readiness and showcase the most recent test, trials and deployment projects.

5G-CARMEN has been invited to the exposition to demonstrate its use cases and discuss its plans for the deployment of compelling cross-border pilots for Cooperative, Connected and Automated Mobility (CCAM) services in the Bologna-Munich highway corridor.

Future Mobility Expoforum

The second edition of the Future Mobility Expoforum has attracted 2500+ visitors representing the industrial and service sectors for the transport of people and goods. The halls of the Lingotto Congress Center hosted 13 congress and 3 National Conferences, animated by 143 speakers. 5G-CARMEN has been presented in the "Smart Road & Smart Traffic" session, and was also present with its own booth in the exhibition organized in parallel to the conference, demonstrating its use cases and solutions. Here the presentation made during the event and the website of the event. https://5gcarmen.eu/wp-content/uploads/2020/04/5G-CARMEN-FMW2019-Executive-Summary-1.pdf

EUCNC 2020 (Virtual)

5G CARMEN results will be also presented during the EUCNC 2020 Week:

5G-CARMEN Security of Emergency vehicle

5G-CARMEN Demonstration of Green Driving use case

5G-CARMEN Visualization Tool

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