5G-MOBIX 3rd Webinar

"5G-MOBIX: Presentation of the Greek-Turkish cross border corridor: Activities & Objectives"

June 29, 2020

Questions & Answers

Q: Any simulations for scalability issues implemented?

A (Kostas Trichias): This is part of our planned work in our Evaluation WP (WP5). Simulators will be calibrated using real measurements from the 5G network at the ES-PT corridor and based on the real traffic patterns and volume measured per vehicle.

Q: What's the total latency (ms) in 5G NR + 5G Core?

A (Ioannis Masmanidis): It depends on a lot of factors and the actual configuration of RAN and Core. On the RAN site NSA is using LTE as anchor layer, which adds additional delays versus an SA architecture especially on control plane. As shown in one of the pictures for a similar configuration based on the scheduling we got on the RAN SIte 11ms or 6ms delay on UL and 3.5ms on DL. Those where trial measurements though. On the Core Network Site it depends also on a number of factors, on the actual distribution of the nodes and the proximity to the applications (if we take the end-user perspective). Also if the Service Based Architecture (Stand Alone) or a NSA architecture is used and which virtualization acceleration techniques are used e.g. SR-IOV etc.

Q: Did you succeed to have a zero-disconnect of a vehicle?

A (Kostas Trichias): Trials have not started yet (they are planned to start at Q4 of 2020), However zero disconnection is extremely ambitious. Extremely low disconnection time (in the order of ms or few tens of ms) is more realistic when talking about an NSA architecture.

Q: What's the chipset (4G or 5G) you did use in OBU?

A (Kostas Trichias): 5G chipset: Quectel RM500Q

Q: What frequencies are supported in Quectel chipset?

A (Kostas Trichias): Several bands are supported (please look at Quectel documentation). At the GR-TR we will use the 3.5 GHz band.

Q: How many ethernet ports does your OBU (using 5G Quectel) support?

A (IMEC): The OBU has 4 available ethernet ports apart of the ports used to connect other related components like MicroAutobox and Jetson.

Q: Did you deploy Edge servers in both border sides?

A (Kostas Trichias): Yes, edge servers will be deployed on both sides of GR-TR.

Q: How many APN did you configure for the trial(s)?

A (Ioannis Masmanidis): We can define a separate APN per service + the Internet APN.

Q: The remote driving UC seems the most challenging, can you tell us more about? And what is its feasability?

A (Tahir Sari): Vehicles will not have expensive sensors such as Lidar, stereo cameras, many radars etc. Instead of vehicles, facility will be equipped with such sensors. Vehicles have conventional radar and camera sensors due to current regulations (AEBS, LDWS). Sensors on the facility will be connected to cloud with the help of RSUs that have 5G modem and will transmit their raw sensor data to cloud. Vehicles on the other hand will send their location and speed information to same cloud with their 5G connected OBUs. Cloud will process this data and send back safe waypoints to trucks, again through 5G. Latency requirement is 100ms E2E. UL is 100Mbps.

Q: I noticed that Ericsson is MNO provider on both side, what is the impact of such situation, is the proposed solution easily adaptable to cross-border with different providers?

A (Ioannis Masmanidis): The solutions provided are based on the 3GPP standards, thus should support multivendor set-up. Of course each vendor can use optimization in the own E2E network but what we deploy here is based on standardized functionalities to support all the eco system.

Q: Since our main concerns is latency, is it not better to use FDMA for UL & DL? Instead of TDMA?

A (Ioannis Masmanidis): This is discussed as an item in 3GPP rel 16. Not yet in the standards. FDMA on the other site may have limitations on the bandwidth.

Q: What is the incentive for joining a platoon / for letting other trucks joining, instead going on my own?

A (Tahir Sari): Fuel consumption will be reduced up to 12% according to latest studies. This comes from wind resistance, friction reduction because of close following. Additionally, with the help of the platooning, your vehicle will do autonomous maneuvers. Hence you will have some time to rest to read, look your phone, surf on the web etc.

Q: Who is the OBU / RSU hw manufacturer?

A (Nazli Guney): It is IMEC and WINGS for the OBU, and IMEC for the RSU.

Q: Where is the CO2 sensor placed?

A (Kostas Trichias): The CO2 sensor is placed within the cargo haul of the truck, to detect any "breathing" in the cargo haul.

Q: You mentioned there are gaps regarding cybersecurity concerns; could you speak to the scope of ongoing efforts as well as whether or not this effort is primarily in-house?

A (Tahir Sari): Cyber-security is out of scope for this project. We will follow IP white listing for cloud connectivity. Only a known IP will be able to join cloud to use defined applications. Security depended developments will be done by cloud owner partners in our consortium.

Q: Can you give more detail about the required flexibility and scalability? Scalability with respect to what? Flexibility with respect to what?

A (Ioannis Masmanidis): Flexibility to reconfigure the deployment to support additional functions e.g. (evolution to 5GCore and include network exposure and service exposure functions) to support more advanced services. Also to be able to support different business model by deploying it as a full private network expanded to other sites, keeping e.g. Use Management on 2 sites while distributing control/user plane on more sites). Scalability means do deploy it on a global/large scale on a high number of border sites e.g. across all corridors between Turkey and Western Europe.

Q: What are the architectural provisions to handle flexibility and scalability?

A (Ioannis Masmanidis): Virtualized, Distributed architecture, adding CUPS/LBO capabilities, can both fit to compact edge deployments as well as larger MNO distributed infrastructure.

Q: Do you plan on using the European CCMS or do you have a partner who is going to create a separate CCMS just for this project?

A (Kostas Trichias): EU-CCMS will be mainly used by 5G-MOBIX partners for the CCAM trials, however certain proprietary security and privacy solutions will also be tested, in some of the trials.
