USER CONSULTATION PLATFORM 2020

MINUTES OF MEETING OF THE MARKET SEGMENT Road & Automotive PANEL

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>01.12.2020</th>
<th>Time</th>
<th>09:00-13:57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting Called By</td>
<td>GSA</td>
<td>Location</td>
<td>Online event</td>
</tr>
<tr>
<td>Minutes Taken By</td>
<td>Marco Bolchi (VVA)</td>
<td>Next Meeting Date</td>
<td>UCP 2022</td>
</tr>
</tbody>
</table>

Attendees
Alberto Fernández-Wyttenbach (GSA), Panel moderator
Marco Bolchi (VVA), Panel coordinator
cf. annex for list of attendees

Distribution (in addition to attendees)
UCP Plenary, GSA, Public

<table>
<thead>
<tr>
<th>Agenda Items</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Welcome of the Chair</td>
<td>Alberto Fernández-Wyttenbach (GSA) Fiametta Diani (GSA)</td>
</tr>
<tr>
<td>2. Update on EU regulations/standards</td>
<td>Alberto Fernández-Wyttenbach (GSA) Miguel Ortiz (Univ. Gustave Eiffel)</td>
</tr>
<tr>
<td>3. Update on new Galileo services features</td>
<td>Flavio Sbardellati (GSA) Eduard Escalona (GSA)</td>
</tr>
<tr>
<td>4. Update on EGNSS evolution studies</td>
<td>Hélène Défour (Thales Alenia Space) Javier Ostolaza (GSA)</td>
</tr>
<tr>
<td>5. Cooperative, connected and automated mobility (CCAM)</td>
<td>Dennis Kilian (Bosch) Roser Capdevila, Evgenii Filatov (Ficosa) Jean-Philippe Mechin (CEREMA)</td>
</tr>
<tr>
<td>6. eCall in Motorcycles</td>
<td>Alessandra Settin (Vitrociset) Martin Grzebellus (NavCert)</td>
</tr>
<tr>
<td>7. Copernicus data in road transport applications</td>
<td>Cristina Ananasso (EC) Sascha Klement (Bareways)</td>
</tr>
<tr>
<td>8. Review of the User Requirement Document for Road</td>
<td>Alberto Fernández-Wyttenbach (GSA)</td>
</tr>
<tr>
<td>9. Public consultation on EGNSS R&amp;D priorities</td>
<td>Alberto Fernández-Wyttenbach (GSA)</td>
</tr>
<tr>
<td>10. Conclusion</td>
<td>Alberto Fernández-Wyttenbach (GSA)</td>
</tr>
</tbody>
</table>

Summary
The Road panel of the third User Consultation Platform (UCP) took place on 1st December 2020 as an online event. The panel gathered 156 participants with comprehensive coverage in terms of value chain.

The presentations from the industry underlined once again that automated driving, being a safety-critical application, is demanding in terms of not only accuracy, but also availability and robustness. And robustness here addresses both the safety element (through integrity requirements) and the security one (through authentication). To address these needs, several commercial initiatives are
being brought to the market and the High Accuracy Service (HAS) will further support the fulfilment of user requirements. The panel also benefited from very fruitful discussions on standardization initiatives, such as DATEX II, the electronic language to exchange road traffic and road-related travel related information. To anticipate future needs, high precision referencing GNSS is implemented in the language.

In the road panel, new R&D projects for automotive GNSS antennas and eCall for motorcycles were also presented. While research on GNSS antennas addresses a gap and a need in the product chain, eCall for motorcycles is a great example of user requirements discussed in anticipation to future EU policies that might come in the future, similar to how eCall R&D did for passenger cars.

The panel hosted several informative presentations about the new Galileo services features and scheduling, as well as ongoing R&D on the evolution of European GNSS (EGNSS). In these presentations, it was clarified that the GSA is funding R&D projects and designing new Galileo features (Open Service Navigation Message Authentication (OS-NMA), Commercial Authentication Service (CAS), HAS,...) focussing on user’s and public interest, aiming to bring value added to the competitiveness of EU companies. These presentations saw a lot of interest and questions on the side of the different road users across the value chain. For OS-NMA, where technical details on the service were presented, users were eager to obtain information so to prepare to the upcoming public testing/observation phase. Considering the HAS, it was underlined the need to design new EGNSS services and to plan their evolution aligned with the market landscape, so to avoid entering into competition with commercial offers, while also meeting the requirements of users in terms of both performance and price.

### Minutes of Meeting

#### Topic 1: Update on EU regulations/standards

*EGNOS and Galileo adoption, new R&D projects and EU regulations* by Alberto Fernández-Wyttenbach (GSA)

The GSA updated participants on recent developments including, regulations, research projects, new and existing services and applications using EGNOS and Galileo services. Authentication was highlighted as an important feature (OS-NMA, CAS and PRS are EGNSS services with this capability). Attendees were invited to an open discussion on any additional trustable applications and involvement of users in such applications.

**Q&A:**

**QUESTION 1** asked whether GNSS authenticated signals will be available to support Autonomous Vehicles SAE L3 (and beyond) for applications such as Safe Stop in case of missing lane marking.  
A. Fernández-Wyttenbach (GSA) explained that UNECE (regulation 155) provides guidelines to deploy secure systems in autonomous driving in relation to cyber security threats and does not distinguish between levels of autonomy (3/4). Thus, the use of GNSS authentication is a must to combat potential attacks as of the aforementioned regulation.

**QUESTION 2** (ASI) asked to clarify the differentiation between CAS and PRS in automotive.  
A. Borg (GSA) explained that PRS is engineered to be more robust to spoofing and jamming than CAS. The service is not addressed for any use case but useful for specific use cases, e.g. the ones that need resistance against spoofing and jamming.
On the question regarding trusted applications, namely whether it is possible to develop law enforcement to prevent vehicle theft, A. Fernández-Wyttenbach (GSA) explained that it is always possible to develop new applications meeting enforcers’ needs (providing spoofing and jamming resistance).

**QUESTION 3** asked whether it is going to be feasible to manage the additional level of complexity of PRS for automotive purposes.

A. Borg (GSA) explained that PRS requires governmental access control, therefore one would lean towards governmental users. So one could look at what CAS can do and (to check that) whether it is sufficient to address user needs.

**CEN standards in GNSS for Road/Automotive by Miguel Ortiz (Univ. Gustave Eiffel)**

University Gustave Eiffel presented updates on GNSS standards (specifically EN16803). The main challenge of the ongoing standardisation activity of hybrid GNSS positioning systems is trying to define testing metrics distinguishing between requirements and needs. To this end, the standardization group CEN-TC5-WG1 proposed a methodology to assess performance is the Record and Replay/Play back. This methodology is the one used in the already published EN16803 (Parts 1,2,3) for GNSS based positioning terminal. The GPSTART 2 project aims to define test-scenarios, including an assessment of integrity, to achieve affordable and repeatable testing with the final objective to be used in certification framework.

**Q&A:**

**QUESTION 1** inquired on the way to choose the appropriate jamming and spoofing scenario to be tested (including defining which scenarios must be passed and which are acceptable to be failed considering that 100% robustness is not achievable)

M. Ortiz (University Gustave Eiffel) explained that the answer is part of the ongoing work investigated by the project. The approach should be a collaboration with authorities (EC,GSA, JRC) to define official datasets to be able to assess the device. (define clearly how to produce similar recorded scenarios and simulate them).

**QUESTION 2** asked which hybridization methodology is addressed by GPSTART 2 project,

M. Ortiz (University Gustave Eiffel) confirmed that focus is mainly on odometry and IMU sensors. He added that while at the moment video and LiDAR are not a priority for the project, given the wide use of AD camera and video stream, additional (separate) research may be required.

**QUESTION 3** asked clarifications regarding the certification of both geolocation and time for future applications related to ticketing, taxes and insurance.

A. Fernández-Wyttenbach (GSA) explained that a set of tests are available and will be standardised for the industry’s use. For those industry players that would like to learn more it was suggested to hold a separate more detailed discussion on testing.

M. Grzebellus (NavCert) added that the standard defines test procedures, but no certification nor calibration. For automotive the certificate issued is the type approval or for other goods the CE mark. This requires however harmonized standards and respective regulation. There is a faster way transferring standards into certification requirements. For this the a certification program has to be developed and submitted via a national accreditation authority to the European co-operation for Accreditation (EA). Together with JRC, NavCert developed in the past a procedure for calibration of agricultural measurement equipment documented by a certificate on voluntary basis, however given the lack of awareness about the EA at the time, this procedure was not submitted there. For eCall such a program was developed not only for GNSS but for the assessment of eCall capabilities in a dedicated PSAP. This is still used and certificates issued to the respective PSAP.

**Topic 2: Update on new Galileo services features**
OSNMA update and requirements on authentication by Flavio Sbardellati, GSA

The GSA provided an update on one of the three Galileo services to protect users against specific threats. The OSNMA authentication feature which protects one of the two components of the GNSS signal (navigation message/data), fundamental to PVT, detects specific threats and mitigates altering shape of signal (spoofing). GNSS authentication ensures that GNSS sensor is contributing in a trustable way. On the status of OSNMA, a roadmap presented whereby the current phase was introduced as final before opening to public observation. Finally an ongoing GSA project, Patrol, demonstrated that a commercial receiver is fully compatible with OSNMA implementation (with minor software and firmware update requirements).

QUESTION 1 Asked if OS-NMA warrants also the integrity of I/NAV message via Hashing

F. Sbardellati (GSA) explained that authentication and integrity are concepts which have to be treated separately. While integrity is about the confidence level of the ultimate position with respect to system related uncertainties, OS-NMA is meant to protect the navigation message from certain threats external to the system (spoofing attacks/events, both intentional and unintentional). In that respect, OS-NMA can certainly play a role in safety critical applications, as authentication is also fundamental to contribute to ensuring that the position is overall trustable;

QUESTION 2 asked whether the PATROL equipment is a GNSS receiver or a GNSS test bench.

F. Sbardellati (GSA) confirmed that PATROL developed an equipment, more specifically a close-to-market user terminal (not a test receiver) which integrates a commercial GNSS chipset/receiver and that it is compliant with potential commercialisation for smart tachograph. The project demonstrated that OS-NMA is fully compatible with commercial grade solutions.

QUESTION 3 asked more regarding the timeline, including the expected start of the public testing phase.

F. Sbardellati (GSA) clarified that the current phase concerns a final preparatory phase to get ready for an upcoming public observation phase open to all users.

QUESTION 4 asked about the availability of documentation online. F. Sbardellati (GSA) confirmed the objective to make available a public Note for Galileo users which will clarify several aspects related to the OS-NMA capability. It is underlined that the OS-NMA service definition will start with a testing phase, and therefore the technical baseline might evolve according to the feedbacks received by the users.

QUESTION 5 inquired how the public key be provided during testing phase.

F. Sbardellati (GSA) explained that the info note will also clarify this aspect. Expectation is to have various channels to be used both during the testing and operational phase to distribute public keys e.g. distributed over the GSC portal (main user interface).

Update on HAS: schedule, how they can test, support tools by Eduard Escalona, GSA

The GSA provided an overview of the 2 service levels of the future HAS service. The target accuracy of the final service is 20cm of Horizontal accuracy worldwide. It was highlighted that feedback is still collected from the user community to support service design and evolution adapting it to user needs, addressing both traditional and emerging markets and applications. For autonomous driving and other safety critical applications HAS can play a role as a contributor to the overall system.
hybridised with other sensors, or to be used as backup. In terms of timeline, the most immediate milestone is the opening of a testing campaign during the first half of 2021 to test the broadcasting capabilities of the Signal in Space (SiS) for HAS (mostly receiver manufacturers; call for expression of interest to be published soon). Finally, a survey linked to service under definition (QR code in ppt) was shared to collect additional feedback from the user community (https://ec.europa.eu/eusurvey/runner/HAS_SurveyUCP2020).

**Q&A**

**QUESTION 1 asked** to specify how many bits per second are available for atmospheric corrections within ECA.

*E. Escalona (GSA)* affirmed that for E6B 448 bits will be used in total to broadcast the corrections. The future publication of the HAS SiS ICD will define the message specification to receive the SiS corrections. A separate terrestrial distribution channel is also foreseen using NTRIP without the bandwidth limitations of the SiS message.

**QUESTION 2** wanted to clarify if the contribution of HAS to safety-critical apps on Road is due to the slow convergence time of PPP. He also suggests that latency of corrections and PVT has to be addressed in UCP report.

*E. Escalona (GSA)* explained that HAS is envisaged as a contributor for safety critical part of road/autonomous driving not because of the latency but rather because it does not provide integrity (a safety critical requirement) and thus it will have to be complemented by other sensors for back up and integrity. Accuracy will be received real-time but will depend on the rate at which the receiver can compute corrections and provide the PVT signal (this is an aspect which can be still included in the HAS survey, the GSA therefore encourages the participants to share their feedback).

**On the question about** how will corrections be disseminated, *E. Escalona (GSA)* clarifies that corrections will be disseminated directly through the satellites (SiS) and through internet connection (NTRIP terrestrial distribution). The terrestrial distribution model will be accessed either directly by the end users or through intermediate actors (integrators).

**On the question about** what users outside the European Area should expect, *E. Escalona (GSA)* explains that outside of the European Area the users will be able to access the Service Level 1 that will provide the same accuracy performance (20cm Horizontal) but with higher convergence time (around 300s) than Service Level 2.

**On the question regarding the number of ground stations, E. Escalona (GSA)** explains that for the HAS initial service, the current infrastructure of Ground Sensor Stations (GSS) will be used. The infrastructure will be augmented for the HAS final service. The final number of ground stations is under design but the implemented set-up will be sufficient for 20 cm to be reachable worldwide.

**Topic 3: Update on EGNSS evolution studies**

**EPICURE: study on EGNOS service for payment and liability road applications by Javier Ostolaza, GSA / Hélène Défour, Thales Alenia Space**
The GSA and Thales Alenia Space presented the principles of the integrity concept under development in the H2020 EPICURE project. This EGNOS mission evolution study analyses the benefit of an EGNOS-based service used in a multi-system/sensors On Board Unit for specific liability and payment-critical applications, i.e. road insurance telematics and road tolling, in the road sector in the timeframe 2025-2035.

**Q&A**

**QUESTION 1** agreed that security is an important capability for road applications and asked clarifications about the need to develop an integrity capability as well for road insurance telematics.

*H. Delfour (Thales Alenia Space)* explained that an integrity capability can allow insurance companies and other billing actors to get more reliability on the applied fares to their customers. EPICURE is validating this with the stakeholders.

**I4HAS: study on integrity service complementing EGNSS High Accuracy by Javier Ostolaza, GSA**

The GSA introduced an evolutionary study on an integrity service complementing EGNSS High Accuracy in the timeframe 2025-2035. With autonomous transportation being one of the key applications (cars, ships, trains), the objective of the feasibility study is to analyse under which conditions an integrity service complementing EGNSS High Accuracy can be beneficial. The ongoing procurement targets up to two projects which will tentatively start in Q1-Q2 2021 with a duration of 15 months. A central element is the involvement of a panel of experts to validate the main outcomes of the studies.

**Topic 4: Cooperative, connected and automated mobility (CCAM)**

**GNSS integrity and high accuracy in automotive by Dennis Kilian (Bosch)**

Bosch shared its views as a 1 Tier supplier for the automotive industry, on the development of the EGNSS product portfolio and its impact on the market. Regarding the EGNSS HAS service planned to reach full operation in 2030 with additional features and capabilities (improved accuracy, higher availability, low integrity risk), Bosch expressed its concern that *the introduction of a free of charge service can threaten the business model of commercial service providers (offering services with similar specifications on the market today in 2020).* Given this possibility of suspended developments/investments into development of services due to the unlikely coexistence of commercial and free of charge services, Bosch suggested that EGNSS HAS should be offered in line with market mechanisms (level playing field with commercial service providers in market to avoid distortion of competition). On the performance requirements for automated driving use cases, Bosch considers that the robustness and availability of Galileo core services must be improved to enable automotive use cases such as automated driving (improved security and safety). Suggestion is to improve collaboration with highly competitive commercial services with integrity.

**Q&A**

*(A. Fernández-Wyttenbach on behalf of the GSA)* thanked Bosch for sharing their view and explained that services designed are meant to complement solutions on the market, (rather than act as substitutes). The rationale behind the design is increase the benefits for European companies, and its competitiveness, taking into account the fierce competitive landscape. The UCP is a
communication platform where such concerns from the industry should be raised. He confirms that the message was received, to make sure that whatever we are designing in the future is not clashing with EU industry interest. The GSA is always available to collect and escalate any other feedback/views from the automotive industry on this point.

S. Porfili (GSA) clarified that the EGNSS service concept in the first slide of Bosch presentation is the result of a mission evolution study carried out in 2019 to assess the benefit of a future (2025+) EGNSS service for the whole autonomous driving value chain. The EGNSS service concept still needs consolidation and interested stakeholders are invited to get involved in the mission evolution study on integrity service complementing EGNSS High Accuracy, which will kick-off in Q1-Q2 2021.

D. Kilian (Bosch): confirmed this understanding and adds that target specifications and goals rendered by studies are already going in a direction of existing services, and therefore will drive decisions of service providers in terms of investment and innovation already today. Given that the industry needs the development of innovation for localisation services in the next 10 years - concern is that this will be impacted by presented future plans of commercial service providers already today.

(A. Fernández-Wyttenbach on behalf of the GSA) added that clear coordination, an open view of key players in the automotive market is essential to make sure design of technology is coordinated in the next years. Valorising developments the GSA does, including preparedness to design technology for the next years (launching evolutionary studies); and manufacturing of next generation satellites.

QUESTION 1 agreed that proposed services endanger correction services business model. On the one hand such services can be quite expensive, on the other hand today multiconstellation and multifrequency receivers are present on the market with no robustness issues.

QUESTION 2 inquired about Bosch’s evaluation of other services (.g. EGNOS v2 and/ or EGNOS v3) in addition to Galileo HAS Service D. Kilian and M. Baus (Bosch) confirmed they are looking at all relevant development and options. They are using several professional services which are already existing in the market today. Services are chosen for the specific needs of each application/customer.

QUESTION 3 asked about the perspective of tier1 on whether GNSS has to be regarded as a sensor among others like cameras and lidar particularly as well as integrity in multi sensors architecture.

D. Kilian and M. Baus (Bosch) confirmed it must be regarded as one sensor in an overall system. With regards to integrity, strongly depends on automation level whether you will need integrity or not: level 3 + certainly required.

QUESTION 4 inquired about the implementation of integrity alarms for HAS and link with bounding values for SBAS

S. Porfili (GSA) confirms open possibilities (foreseen but evolution studies yet to be launched). EGNOS is good at protecting from errors due to global component. Depending on requirements of the value chain will define the suitable kind of integrity.

QUESTION 5 asked to clarify whether Bosch view is affected by their involvement in SAPCORDA?
**M. Baus (Bosch)** explains that the raw performance of the GAL constellation is something that cannot be bought in the market. This is why elements such as the FOC declaration are major building blocks for them expected from the EU/EC.

**A. Fernández-Wyttenbach (GSA)** confirmed understanding that FOC declaration is required.

**A. Fernández-Wyttenbach (GSA)** asked for any additional comments and requirements and confirmed that MoM to be provided to formalise discussion.

**D. Kilian (Bosch)** appreciates the organisation of the forum to share and address concerns. He adds that continuous discussions with users such as Bosch from the automotive space, service providers and equipment manufacturers are required for views to get aligned. Also, to ensure that something new is created to help market innovate in the future.

**Multi-frequency GNSS antenna for automotive by FICOSA Roser, Capdevila/Evgenii Filatov**

Ficosa introduced MAGICA (Multi-frequency Automotive GNSS Integrated Cost effective Antenna) a project with the objective to develop a multi-frequency (including E6) multiconstellation antennas ready for commercialisation, for the mass market. Given that current antenna capabilities focus on cost and dimensions rather than performance of receivers, the expected outcome is a more accurate antennae to be used in autonomous cars (responding to demanding requirements of autonomous driving including adoption of advanced positioning techniques and safer positioning due to authenticated service).

**Q&A**

**A. Fernández-Wyttenbach (GSA)** was interested to find out the estimated time to market for such antennas, also taking into account the pandemic’s influence.

**R. Capdevila (Ficosa)** explained that taking into account that the project will continue for 2 years by the end of which antennae would be almost ready for commercialisation, an indication could be 3 years. While the pandemic could potentially affect development for a year, it is difficult to make predictions for the sector (situation changing very fast) but recovery of automotive sector is happening at a good pace.

**QUESTION 1 asked** whether L2 frequency will be taken into account and the possibility of one unique mass-market antenna to cover all the frequencies in the future (L1+L2+L5) **E. Filatov (Ficosa)** confirms that the goal to create a multiband antennae depends on isolating issues between bands/and other issues but there could be a possibility to cover all bands including L2; otherwise different antennae with different combinations. The best approach will become clearer with the project’s progress.

**QUESTION 2 asked about** the envisaged target size, **E. Filatov (Ficosa)** explains this is depending on the final environment (car) where antennae can be located, different environments. Current topology estimated 10 per 10 cm and height of 20 cm (current goal); next, aim to minimise topology as possible (maintaining performance). **Regarding price**, it was stated that it cannot be estimated at this stage.

**GNSS extension in Datex II Jean-Philippe Mechin, CEREMA**
CEREMA introduced its work on DATEX II, an electronic language to exchange road traffic, road-related and travel related information. Maintained by European stakeholder community, this work is with an CEN standard 16157, regulation (ITS directive 2010/14 and delegated implementing acts, UNECE dangerous goods regulation) and collaboration with C-ROADS for C-ITS deployment (enabling an efficient deployment of connected vehicles together with European cities and regions/ policy associations but also industry such as map makers and private parking operators). The importance of precise location referencing was highlighted, including the implementation of high precision referencing GNSS to anticipate future needs.

**Q&A**

**QUESTION 1 asked about the link between** the upcoming regulatory effort (on cabotage activity i.e. tachograph and EFTI regulation with deadlines for draft regulations in 2023) and the link with the work on DATEX II

*J-P Mechin (CEREMA)* explained that DATEX II was not foreseen for anything beyond road and traffic information. Nevertheless, the methodology took into account possibility of extension so that modernisation allows for electronic description of dangerous goods transport (which is the contribution of DATEX II to EFTI as part of DTLF).

**QUESTION 2 asked** to specify the timeline for connecting DATEX II and EFTI.

*J-P Mechin (CEREMA)* clarified that the timeline is designed by the EC whereas the role of DTLF is to identify all data required and streamline with the work performed in DATEX II. He added that deployment is ongoing in 5 countries for 2021 to have large capability to use DATEX II extension for dangerous goods (for companies willing to switch to electronic documents/format: UK, Germany, France, Italy, Austria)

**Topic 5: eCall in motorcycles**

**sAFE – After-Market eCall for Europe** Martin Grzebellus, NavCert

NavCert introduced the sAFE project the objective of which is to define standards and specifications for Aftermarket eCall devices. The certification scheme’s definition will be guided by existing type approval requirements/relevant directives and existing specifications. It was stressed that the long life cycle of replacement of cars can be responsible for a significant demand for such devices.

**H-GEAR: eCall and Anti-theft system based on Galileo for motorcycles** by Alessandra Settin (Vitrociset)

Vitrociset presented its project which aims to design an affordable eCall and Anti-theft system: Started in October 2019, the project will be following eCall 2017/79 regulation and tailoring requirements to L3 vehicles. To address the challenging operational environment (chassis of a small vehicle, battery consumption, antennae performance/size/lean angle, electromagnetic interference) the device is foreseen to be integrated with a mobile application and call centre (to resolve the issue of voice connection).

**Q&A**

**QUESTION 1 asked about** the decision behind the units’ location (lateral area of front line vs. rear),
**A. Settin (Vitrociset)** explained that location was identified based on technical needs i.e. given the set-up in which the user is not interacting with device, to provide best performance and survive crash. User interaction will happen via the smartphone application which is different from the aftermarket device design.

**Topic 6: Copernicus data in road transport applications**

**Synergies between GNSS and Copernicus. by Cristina Ananasso**

EC introduced Copernicus and its 6 operational services in different domains. Final users including policy makers, governmental institutions also business-oriented users benefit from this freely available and openly data source.

Two services were highlighted for Road applications namely the **Copernicus Atmosphere Monitoring service** (e.g. ATMOSYS toolboxes supporting city planners decision-making with road emission scenarios) and the **Copernicus Land monitoring service** (with diverse products that can be used for a range of users e.g. with the objective to preserve environment and biodiversity).

**Sascha Klement, Bareways**

Bareways introduced its platform for road condition information using Copernicus data to understand urban/rural mobility. This platform combines different data sources (e.g. ground sensors; sentinel data; historical data) to provide a unified view of a specific roads condition (risks, delays and avoiding fatal incidents), especially relevant for complex road conditions in rural areas affected by weather conditions. With an expected launch in Q1 2021, the service can complement e-mobility applications.

Closing meeting by host:
2 remaining points have been addressed after the meeting.
- UCP document. With the minutes of the meeting the GSA shared documents for the participant’s validation.
- Public consultation for R&D programmes design: 3 questions have been shared together with the minutes of meeting).

Following the communication, delivery of material to participants, offline comments on UR modifications have been received and integrated, with no comments provided on R&D programme design.

**New requirements to be added to the RUR (approved from the slides distributed among participants with the MoM):**
- **GSA-MKD-USR-REQ-ROA-0200**: The positioning system shall be available in urban canyons
- **GSA-MKD-USR-REQ-ROA-0220**: The positioning system shall be available indoors
- **GSA-MKD-USR-REQ-ROA-0210**: The positioning system shall be available under canopy
- **GSA-MKD-USR-REQ-ROA-0190**: The positioning system shall provide a worldwide coverage
- **GSA-MKD-USR-REQ-ROA-0190**: The positioning system shall provide a continuity of 99%
- **GSA-MKD-USR-REQ-ROA-0202**: The positioning system shall be available in urban canyons
- **GSA-MKD-USR-REQ-ROA-0222**: The positioning system shall be available indoors
- **GSA-MKD-USR-REQ-ROA-0212**: The positioning system shall be available under canopy
- **GSA-MKD-USR-REQ-ROA-0192**: The positioning system shall provide a worldwide coverage
- **GSA-MKD-USR-REQ-ROA-0152**: The positioning system shall provide an Integrity Risk $1E^{-7}/1E^{-8}$
• GSA-MKD-USR-REQ-ROA-0111: The positioning system shall be able to provide a fix rate of 1 Hz
• GSA-MKD-USR-REQ-ROA-0201: The positioning system shall be available in urban canyons
• GSA-MKD-USR-REQ-ROA-0221: The positioning system shall be available indoors
• GSA-MKD-USR-REQ-ROA-0211: The positioning system shall be available under canopy
• GSA-MKD-USR-REQ-ROA-0191: The positioning system shall provide a national coverage
• GSA-MKD-USR-REQ-ROA-0151: The positioning system shall provide an Integrity Risk $1 \times 10^{-4}$
• GSA-MKD-USR-REQ-ROA-0203: The positioning system shall be available in urban canyons
• GSA-MKD-USR-REQ-ROA-0223: The positioning system shall be available indoors
• GSA-MKD-USR-REQ-ROA-0213: The positioning system shall be available under canopy
• GSA-MKD-USR-REQ-ROA-0193: The positioning system shall provide an EU coverage
• GSA-MKD-USR-REQ-ROA-0153: The positioning system shall provide an Integrity Risk $1 \times 10^{-4}$
• GSA-MKD-USR-REQ-ROA-0114: The positioning system shall be able to provide a fix rate of 1 Hz
• GSA-MKD-USR-REQ-ROA-0204: The positioning system shall be available in urban canyons
• GSA-MKD-USR-REQ-ROA-0224: The positioning system shall be available indoors
• GSA-MKD-USR-REQ-ROA-0214: The positioning system shall be available under canopy
• GSA-MKD-USR-REQ-ROA-0234: The positioning system shall have a TTFF of less than 60 s
• GSA-MKD-USR-REQ-ROA-0194: The positioning system shall provide a regional coverage

In addition the UR on vertical accuracy for payment critical applications was validated as not applicable.

**Conclusions**

The third edition of the Market Segment Road UCP session is successfully closed by the GSA. Key results of this working session were highlighted during the plenary UCP session on December 7th, 2020 by Miguel Ortiz (nominated as rapporteur of the Road session).
### Other Notes & Information

With the contribution of:
Miguel Ortiz (Univ. Gustave Eiffel)
Hélène Défour (Thales Alenia Space)
Dennis Kilian (Bosch)
Roser Capdevila, Evgenii Filatov (Ficosa)
Jean-Philippe Mechin (CEREMA)
Alessandra Settin (Vitrociset)
Martin Grzebellus (NavCert)
Sascha Klement (Bareways)

### Annexes & Attachments

Att1_UCP_Full list of participants
Att2_UCP_GSA Intro
Att3_UCP_CEN-BNAE
Att4_UCP_GSA OSNMA
Att5_UCP_GSA HAS
Att6_UCP_GSA i4HA
Att7_UCP_EPICURE
Att8_UCP_BOSCH
Att9_UCP_FICOSA
Att10_UCP_CEREMA
Att11_UCP_H-GEAR
Att12_UCP_NAVCERT
Att13_UCP_ANANASSO
Att14_UCP_BAREWAYS
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