

1ST GALILEO USER ASSEMBLY - USER CONSULTATION PLATFORM - R&D

Meeting Date	28.11.2017	Time	10:15 – 16:00
Meeting Called By	GSA - Marta Krywanis-Brzostowska	Location	Madrid, INTA Dome
Minutes Taken By	Pascal Campagne	Next Meeting Date	N/A
Attendees	CVUT: Vaclav Navratil DEIMOS: Antonio Fernandez DLR: Simon Plum EC: Tina Mede EDA: Marco Detratti ESYEN: Leonardo Sulla FDC: Pascal Campagne GSA: Marta Krywanis-Brzostowska INDRA: Guillermo Monzon INECO: Ramon Hernandez INSIDE PARTNERS: Salvatore Bellomo ISDEFE: Francisco Gallardo Lopez ISMB: Gianluca Marucco Marco Fermi RINA: Clemente Fuggini SDFE: Brigitte Rosenkrantz THALES: Laurent Barrillon VCHZK: Nenad Sikirica		
Distribution (in addition to attendees)	UCP Plenary, GSA		

Organisation	Name	Signature
GSA	Marta Krywanis-Brzostowska	
FDC	Pascal Campagne	

Agenda Items	Presenter
1. Introduction to UCP and tour de table <ul style="list-style-type: none"> • Introduction and main objectives of the UCP- Why we are here? • Introduction of participants. • Where do we stand today? - EGNSS status update • Where do we stand today? - EGNSS applications funding 	Marta Krywanis-Brzostowska Tina Mede
2. Topic 1: What are the funding priorities by market segment	Salvatore Bellomo
3. Topic 2: What are the funding tools that will support the best the priorities	Pascal Campagne
4. Topic 3: How to shape the GNSS R&D programme in the best way?	Václav Navrátil

5. Conclusions and report to plenary session on 29/11	Marta Krywanis-Brzostowska
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Minutes of Meeting

The event was attended by 18 people, representing industry, SMEs, public institutions and universities.

1. INTRODUCTION:

The meeting started with the introduction to the UCP, given by Marta Krywanis-Brzostowska from the GSA. It was highlighted that UCP is a forum for interaction between end users, user associations and representatives of the value chain such as receiver and chipset manufacturers, application developers, and the organizations and institutions dealing, directly and indirectly, with Galileo and EGNOS. This platform is to give users a unique opportunity to address the full EGNSS programme management at once with any needs they have.

Where do we stand today? EGNSS status update

Short introduction given by the GSA was followed by the presentation from Tina Mede (EC) concerning the EGNSS status update. During the speech the following aspects were covered:

- Status of Galileo system
- EGNSS achievements in different market segments (e.g. 40% of receivers models are Galileo enabled)
- Contribution of EGNSS to EU policies (e.g. ecall, Digital Tacograph, eTolling)
- Overview of research and start-up activities

Introduction to the EGNSS applications R&D activities

Marta Krywanis-Brzostowska introduced the EGNSS applications funding tools: Horizon 2020, Fundamental Elements and other initiatives (e.g. aviation grants, ESNC, Farming by Satellite). During the presentation it was mentioned that after 2020 the situation will change as Galileo will be fully operational and all its differentiators will be available. Because of that she posed a question to the audience asking if new funding options will be needed. The question was discussed during the next parts of the session.

Topic 1: What are the funding priorities by market segment

Salvatore Bellomo from Inside Partners made an introductory presentation of the GNSS applications market, in the different market segments. (c.f. slides in annex for more details). Then Salvatore presented a list of promising/critical applications for each market segment to launch the debate. For a sake of consistency, they were mainly extracted from the User Requirements documents discussed in parallel in the other sessions of the User Consultation Platform.

For each domain, he suggested for discussion a list of challenges and issues to face and proposed a preliminary list of EGNSS services and particularities to address these challenges and issues. Trends and the contribution to EU policies were also addressed.

The need to address security and defense applications or at least dual-use user requirements (e.g. regarding Drones) has been stressed by the representative from EDA. It was explained that for this

first User Assembly, discussions were to stay at civil, Unclassified level and PRS was beyond the scope this year, but under these assumptions, dual use requirements could be addressed.

The main challenges identified by the experts were **Security and Safety**, leading to requirements on robustness and the need for mechanisms for authentication and integrity at system and user levels. **Certification and standardization** are consequently increasingly important. A complete independent **GNSS signals monitoring** (e.g. EGNOS), able to provide users with real time information on GNSS signals quality at user reception level could also contribute to satisfy user integrity concerns far beyond the aviation domain.

High Accuracy need is becoming increasingly common to applications in almost all domains. The need for **integrity** exists **also for High Accuracy** applications and services.

Multipath is an everlasting issue really detrimental in particular in urban environment, which still require a lot of R&D efforts. **Indoor** is another recurring issue.

Power consumption is a particular challenge for the LBS and IoT huge markets. **Acquisition time** must also be the shorter possible for many applications. This has to be in mind when designing GNSS signals.

A lot of improvement can still be done at **Antennae** level, especially for small low cost devices. R&D efforts should also support the penetration of **high accuracy and multifrequency in low cost** products.

Hybridization and Sensor fusion (gyros, accelerometers, cameras, signal of opportunity, etc) is now the baseline for the great majority of applications in all domains, and is often application or even product specific, so is key for today's R&D.

Non-technical issues must not be forgotten, as they can have a great impact on the technical design of an application or a service. Liability is a major one, but depending on the application, it could also include insurance policies, ethics, privacy, etc.

Demonstrations and pilot projects must be considered, in particular to present and confirm the added value of Galileo specific features to the final user (e.g. OS NMA, CS High Accuracy and Authentication) and demonstrate the robustness of Galileo.

Topic 2: What are the funding tools that will support the best the priorities

Pascal Campagne from FDC presented the most relevant tools, which have been used in FP7, H2020 and Fundamental Elements to support R&D and the development of EGNSS applications. Private instruments were also addressed for memory. New candidate funding tools under assessment by the GSA and the EC, and further potential ideas for potential funding instruments were also proposed for discussion (c.f. slides in annex for more details).

Grants format used in H2020 is working well, is appreciated and must be pursued.

In addition **PCP and PPI** seems very promising to foster EGNSS market penetration, support EU public buyers and contribute to EU policies, create a critical mass leading to price reduction/cost savings and provide unchallenged opportunities for small (but not only) companies to

commercialize the innovative application/service they have developed. However, it is recognized that the administrative burden of such project can discourage the public buyers not familiar with EU instruments to prepare a proposal and engage for managing an important multi-partner/multi-national project. It is therefore suggested to launch preparatory actions to promote PCP and/or PPI initiatives to public procurement agencies or buyer's groups from different countries, and create networks of public stakeholders ready for coordinated procurements. For example, the G-MOTIT project has developed an electric scooter sharing Service for sustainable urban mobility integrating an EGNSS-based location technology. Such a service could interest many cities around Europe. A preparatory action could identify the cities which could be interested, present them the advantage of PCP/PPI, help them to create a network of public buyers and to prepare an offer to the GSA, and propose a draft management plan and management tools. Such a PCP/PPI initiative could thus foster the uptake of EGNSS in many domains, such as fleet management of public vehicles, border control mobile radios, and could be particularly beneficial for PRS market uptake (difficulty to fully appraise the PRS environment and constraints refrain small countries to procure alone PRS equipment).

International cooperation projects provide a unique opportunity to extend the uptake of EGNSS and EU technologies in non-EU countries and to increase the business of EU industrialists. It is therefore recommended to call for projects partnering with non-EU stakeholders. Nevertheless, such a project could become detrimental in the longer term, notably in case of technology transfer. It is consequently crucial to well specify such a calls, e.g. considering the sole involvement of non-EU partners supporting EU interests such as public procurers, users, and avoid the participation of non-EU industrialists in technology domains where the competence exist in Europe, for which such a project could enhance their competitiveness vis à vis EU industrialists.

Innovation voucher is considered as a good idea, and would benefit of being **combined with incubation and/or accelerator**. Although the chance to concretize is relatively small, a budget around 20 k€ could provide a great opportunity for a researcher for a small investment of public money. For instance, even if 99% of the vouchers do not lead to any market development, the budget invested only corresponds to about 1% of an innovation action, so it is worth trying.

Venture capital is often necessary for the commercialization phase. But although Venture capitalists are interested by new technologies, for instance in the ICT domain representing huge markets and business, it is hard to interest them for relatively small domains such as EGNSS, and even harder when the industrialist or service provider is an SME (or a start-up). It is thus proposed to the GSA and the EC to organize an '**EGNSS applications financing workshop**' with Venture Capitalists to present a series of entrepreneurs and their application/product issued from H2020 projects, prize winners, hackathons, Galileo Masters etc.

It is also suggested to support the creation of a kind of **ecosystem** which would include incubators, accelerators, innovation vouchers, hackathons and contests and provide assistance to start-ups and entrepreneurs (e.g. in terms of Patent research and IP, to better define and promote their idea, to prepare their Business Plan).

Once an R&D project is successfully completed, the application developer is confronted to a huge challenge: concretize its development in a commercialized product or service and get a first procurement. This **first procurement** is a decisive step hard to get through as the industrialist (even worth in case of a start-up or SME) has no reference with this innovative application, and the risks are therefore considered substantial for the potential customer. Support to get this first procurement, and by the way good reference, would certainly be crucial for the marketing success

of the innovative application. It could be done through sharing risk/finance with a public (e.g. PPI) and/or renowned buyer. At least promotion actions towards user groups, procurement agencies but also private integrators for instance would help a lot.

It is also considered important not to forget very **low TRL research** on potential future breakthrough technologies on critical receiver aspects (e.g. clocks, correlation). Although not always leading to tangible results, it generally has a long term impact positioning on the market technologies and industrialists (e.g. royalties are today payed by EU industrialists manufacturing Galileo terminals to US industrialists who developed and patented the first GPS receivers).

Topic 3: How to shape the GNSS R&D programme in the best way?

Václav Navrátil from Czech Technical University in Prague presented desirable characteristics for EGNSS applications R&D programmes (c.f. slides in annex for more details).

Priority technical research themes have been proposed and confirmed from previous discussions.

The **rate for R&D calls** for proposal has been debated and the conclusion was to consider the domain specificity. A call every two years was considered sufficient for regulated domains, requiring big projects and budget, for which the user requirements are well defined are not supposed to evolve frequently (e.g. aviation, maritime). On the opposite, consumer markets (e.g. LBS) cannot wait for a couple of years and even more (2 years between calls, plus 9 months to award a contract, plus development time) to put on the market a promising application if they just missed a call. Yearly calls are important for a several domains.

Calls continuously open for the whole duration of a Framework Programme would be clearly beneficial for such application where time lapse between idea generation and market implementation is the main success factor, but also for low TRL research.

The experts would also recommend a drastic **reduction of the time to grant**, currently of nine months.

Application procedure should also be simplified. It is currently too difficult and time consuming, especially for SMEs (e.g. guidelines exceeding 700 pages are not realistic: they should not exceed 10 pages long to be worthwhile).

Negotiation of proposals was also debated. Today, no negotiation is envisaged for Grant agreements. On one hand it is appreciated not to waste more time for a negotiation phase. On another hand, a negotiation could help reinvesting budget from tasks not considered essential by the proposer and the evaluators/GSA/EC to other tasks considered more important (or lacking) to optimize project results and exploitation.

Exploitation of R&D project outcomes is often jeopardized by non-technical issues (e.g. liability, regulations, ethics). They could have huge technical impacts on the design of a product and must therefore be studied in parallel of the technical design. However, it may not be the ideal solution to force the project to address them directly as it necessitates very different skills. A solution could be to launch in parallel a **project focusing on these non-technical issues** (e.g. with lawyers). This non-technical project would be in charge of identifying the corresponding non-technical challenges



of several R&D projects, providing advice to these R&D projects, and meeting them periodically (e.g. specific working slot in the agenda of each R&D project bi-yearly progress meeting).

It is strongly recommended to **leave the IPRs in the Consortium** in the case of co-financed projects.

Conclusions

This meeting was well appreciated by the participating experts.
A white paper with Recommendation for future EGNSS R&D funding priorities will be prepared shortly. It will include the outputs from the domain specific sessions held in parallel.



Actions					
ID	Action Description	Responsible	Due Date	Status	Comments

[Include Reference if Actions are traced at another location]



Other Notes & Information

Annexes & Attachments



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