

## **Preliminary Market Consultation**

**On**

**DFMC GNSS Civil Aviation Airborne Equipment Development**

## **1 Introduction**

EGNOS (European Geostationary Navigation Overlay Service) is Europe's first concrete venture into satellite navigation. EGNOS uses geostationary satellites and a network of ground stations to receive, analyse and augment GPS, and in the next version (EGNOS V3) Galileo signals, allowing the using of DFMC (Dual Frequency Multi Constellation). EGNOS increases the accuracy of existing satellite positioning signals while providing a crucial 'integrity message', informing users with timely warnings, in the event of an out of tolerance condition of the Signal in Space. It also transmits an accurate universal time signal.

EGNOS makes existing satellite navigation signals suitable for safety critical applications and was certified for use in civil aviation in 2011.

The Galileo programme is Europe's initiative for a state-of-the-art Global Navigation Satellite System (GNSS) completely independently of other existing or potential systems. Galileo is the largest industrial project organised by the EU, and the first public infrastructure owned by the EU. Galileo allows users to know their exact position with high and reliable precision. The Galileo system, once fully operational, will offer four high-performance services worldwide (Open Service (OS), High Accuracy Service (HAS), Public Regulated Service (PRS), and Search and Rescue (SAR)). The OS shall be used in the civil aviation domain, and will be provided in both Single Frequency (SF) usage mode and Dual Frequency (DF) usage mode and it allows users to continuously estimate their distance to the satellite. DF usage mode is characterized by higher accuracy of the range measurement. The use of two frequencies allows better compensation of the disturbing effect of the ionosphere on the SIS, thus providing better performance to the end user. The Galileo OS Ranging Service is interoperable with GPS ranging services and therefore it provides a direct benefit to users who are able to exploit both Galileo and GPS constellations, by increasing the number of available Signal in Space (SIS).

Under the Tri-partite Financial Framework Partnership Agreement (FFPA) signed in June 2021 between the European Union, represented by the European Commission, European Space Agency (ESA), and EUSPA, on the Exploitation of the EGNOS Programme, the European Commission has entrusted EUSPA with a specific budget implementation tasks related to the standardisation of GNSS DFMC (Dual Frequency Multi Constellation) in the civil aviation domain in compliance with the ICAO standards, and the DFMC Minimum Operating Performance Standards (MOPS).

## 2 Acronyms and Abbreviations

Abbreviation	Definition
ABAS	Aircraft Based Augmentation System
ARAIM	Advanced Receiver Autonomous Integrity Monitoring
DFMC	Dual Frequency Multi Constellation
EASA	European Aviation Safety Agency
EGNOS	European Geostationary Overlay Service
EC	European Commission
ETSO	European Technical Standard Order
EU	European Union
EUSPA	European Union Space Programme Agency
FAA	Federal Aviation Administration
FFPA	Financial Framework Partnership Agreement
GBAS	Ground Based Augmentation System
GEO	Geostationary Orbit
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HAS	High Accuracy Service
MOPS	Minimum Operational Performance Standard
OS	Open Service
PRS	Public Regulated Service
SAR	Search and Rescue
SARPs	Standards and Recommended Practices
SBAS	Satellite Based Augmentation System
SoL	Safety of Life
TSO	Technical Standard Order

### 3 Target Group

All organizations and economic operators involved, or wishing to be involved, in the design, development, delivery and maintenance of DFMC GNSS aviation airborne receivers, are invited.

### 4 Purpose of the Preliminary Market Consultation

The purpose of this Preliminary Market Consultation is to acquire information regarding the status of development of airborne DFMC GNSS aviation receivers. In particular, the consultation aims at:

- i. gathering of information on the interest of the industrial aviation market, in making use of the DFMC technology and in particular of SBAS;
- ii. gathering of information on which augmentation systems are being preferred (i.e. SBAS, ABAS, GBAS, combined augmentation systems, others) by the industrial aviation market;
- iii. Understanding the role of EU public funding (e.g. what investment share should be envisaged between private and public funding), and which factors could foster the development of DFMC airborne user terminals by the aviation industry in the civil domain.

The feedback received in the frame of the consultation will be used to support EUSPA in the future DFMC GNSS airborne receiver prototype procurement preparations, including in taking decisions on the procurement procedure to be used, and the level of investment to be foreseen.

**Please note that:**

- i. **EUSPA reserves at its sole discretion to decide whether and when it will launch an actual procurement for the development of DFMC GNSS aviation airborne receiver.**
- ii. **the descriptive part of the present consultation is intended solely for the purpose of providing the broader context information to the market.**
- i. **neither the present consultation nor the answers to it are in any way binding on EUSPA in its preparation of the potential procurement documentation – no expectation shall be created or derived whatsoever.**

EUSPA will also take measures to ensure that the opinions expressed in the replies will not unduly bias its procurement and the resulting tender specifications will ensure as wide competition as possible.

#### 4.1 Main procurement needs

The subject of the procurement(s) is to design, develop and test a civil aviation DFMC GNSS prototype receiver, that will enable industrialisation and certification of the Receiver in the shortest possible time. Greater priority is given to those receivers implementing SBAS navigation modes. The procurement shall:

- support of the development of the DFMC MOPS;
- foster availability of DFMC SBAS civil aviation receivers in the market;
- target a high maturity level of the receiver implementation (TRL7);
- facilitating the development of the last steps to reach a certified receiver needed for flight.

#### 4.2 Expected feedback from the participants in the Market Consultation

On the basis of the information provided above, the participants are invited to answer the following questions:

1. Please describe shortly your organisation's business activities in the aviation market related to Global Navigation Satellite Systems (GNSS) technology.
  - a. Target airspace users and aircraft types
  - b. Regional / national / continental / global operations
  - c. Weight of this business line versus the overall business of your organization
  - d. If applicable, have you developed GNSS related certified product(s) according to FAA TSO and/or EASA ETSO
2. Please describe your on-going activities, if any, targeting the development of, or contributing to the development of, a Dual Frequency Multi Constellation (DFMC) GNSS aviation airborne receiver and/or related avionics.
  - a. Which type of GNSS receiver are you developing and/or have developed:
    - i. Satellite Base Augmentation System (SBAS)
    - ii. Advanced Receiver Autonomous Integrity Monitoring (ARAIM)
    - iii. Ground Base Augmentation System (GBAS)
    - iv. Others
  - b. Please specify the maturity level of the GNSS receiver developed, if any
  - c. In case that your organization has developed or is in the process of developing a DFMC GNSS aviation airborne receiver, please specify what is your target date for its completion/commissioning
  - d. Please identify the main barriers and difficulties that you are facing to progress on the development of a DFMC GNSS aviation airborne receiver, if any
  - e. Please specify if you have participated in R&D projects, either in-house or in the frame of an EU funding program
3. Are you currently working or planning to work in the development of a DFMC SBAS civil aviation receiver or integration in your products?
  - a. In case not:
    - i. please describe the difficulties being faced, if any, or the factors that are preventing you to start the development of a DFMC SBAS civil aviation receiver

- ii. what is the level of investment that you estimate it is needed for the development of a DFMC SBAS receiver? What should be the role of public funding?
- b. In case yes:
  - i. please describe the difficulties, if any, being faced in the development of the DFMC SBAS civil aviation receiver
  - ii. what is the level of investment being used for the development of a DFMC SBAS receiver? Would you envisage the relevance of public funding to continue with the development?

The participants should note that the investment cost range information will be used solely and confidentiality for the purpose of the Market Consultation.

## Data protection section

Any personal data that may be included in the replies to the present consultation will be processed in accordance with (1) the applicable rules on the protection of natural persons with regard to the processing of personal data by the EU institutions, bodies, offices and agencies (currently Regulation (EU) 2018/1725) and (2) the modalities of the following privacy statement:

### Identity of the controller:

- **Controller:** European Union Agency for the Space Programme (EUSPA), Head of EGNOS Exploitation Department, Janovskeho 438/2 170 00 Prague 7, Czech Republic, [EGNOS.data.protection@euspa.europa.eu](mailto:EGNOS.data.protection@euspa.europa.eu)
- **Data Protection Officer:** EUSPA Data Protection Officer, Janovskeho 438/2 170 00 Prague 7, Czech Republic, [dpo@euspa.europa.eu](mailto:dpo@euspa.europa.eu)

**Purpose of the processing:** The management and administration of the Preliminary Market Consultation and the follow up procurement as needed;

**Data concerned:** Contact information of participants, e.g. name and last name of authorised representatives, email address, postal address, telephone numbers, company/agency/body and department, country of establishment, position;

**Legal basis:** Article 5(1)(a) of Regulation (EU) 2018/1725

### Lawfulness of the processing:

Article 5(1)(a): the processing is necessary for the performance of a task carried out in the public interest, specifically the management and functioning of EUSPA through the launching of tender procedures.

**Recipients of the data processed:** for the purpose detailed above, access to your personal data is given to EUSPA staff and contractors of the EUSPA without prejudice to a possible transmission to the bodies in charge of a monitoring or inspection task in accordance with European Union law.

**Information on the retention period of personal data:** responses to the stakeholder consultation, including personal data, will be retained by EUSPA for a period of 10 years following the closure of the stakeholder consultation.

### Data subject's rights and contact data:

- Data subjects have the right of access, rectification and erasure of their personal data or restriction of processing at any time, provided that there are grounds for the exercise of this right, as per the applicable rules
- Data subjects have the right to object, on grounds relating to his or her particular situation, at any time to the processing of personal data concerning him or her. Requests shall be addressed to EUSPA EGNOS Exploitation Department at [EGNOS.data.protection@euspa.europa.eu](mailto:EGNOS.data.protection@euspa.europa.eu) by describing the request explicitly. It is noted that pursuant to such a request, the Controller shall no longer process the personal data unless the Controller demonstrates compelling legitimate grounds for the processing which override the interests, rights and freedoms of the data subject or for the establishment, exercise or defence of legal claims

- Data subjects may obtain their personal data, submitted to EUSPA, in a structured, commonly used and machine-readable format and transmit them to another controller, provided that there are grounds for the exercise of this right, as per the applicable rules
- Data subjects are entitled to lodge a complaint at any time with the European Data Protection Supervisor (<http://www.edps.europa.eu>; [EDPS@edps.europa.eu](mailto:EDPS@edps.europa.eu)) if they consider that their rights under the applicable rules on the protection of individuals with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data have been infringed as a result of the processing of their personal data by EUSPA

Any request for the exercise of any of the abovementioned rights shall be addressed to EUSPA EGNOS Exploitation Department at [EGNOS.data.protection@euspa.europa.eu](mailto:EGNOS.data.protection@euspa.europa.eu); data subjects are kindly requested to describe their requests explicitly.



## 5 Submission of Responses

Submission of a response implies acceptance of the conditions of the Market Consultation.

The participants shall answer the question listed in section **Error! Reference source not found.**, with a reference to the information provided in section **Error! Reference source not found.**.

The responses to this Preliminary Market Consultation should be sent in English in electronic format by email to the following address: [tenders@euspa.europa.eu](mailto:tenders@euspa.europa.eu).

The deadline for submission of responses is 27 May 2022 (at the latest).

EUSPA shall treat the provided information as confidential and use it only for the purpose of the Market consultation, reserving the right to share the information received from the participants with the European Commission – within the framework of existing confidentiality obligations between EUSPA and such parties.