Call for Expression of Interest for High Accuracy Service Testing

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1 Introduction

The European Union Agency for the Space Programme (hereinafter 'EUSPA', 'the Agency') is launching a call for expression of interest (hereinafter referred to as ''the Call'') to invite external stakeholders (hereinafter referred to as 'Participant(s)') to participate in a testing campaign of the High accuracy Service (HAS) Signal in Space (SiS) broadcasting. This campaign prepares the HAS initial service operational phase.

2   Background

The EUSPA is the Agency formed by the European Union to accomplish specific tasks related to the European Union Space Programme programme as indicated in the Regulation Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU (available here https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2021.170.01.0069.01.ENG&toc=OJ%3AL%3A2021%3A170%3ATOC).

In particular for Galileo, Galileo is an autonomous European satellite radio navigation system which provides high quality and reliable navigation services. It is a civil system under civil control, which provides the following navigation services to users:

- **Open Service (OS)**: this service is implemented through three navigation signals separated in frequency (E1, E5a, E5b). The Open Service provides free of charge position and timing information for its users. Its performance is comparable and complementary to GPS enabling dual constellation usage. In the future evolution of the OS it is planned to provide a Navigation Message Authentication (NMA) feature;

- **Support to Search And Rescue (SAR)**: Galileo provides support to the international SAR satellite services by relaying distress signals from SAR beacons operating to COSPAS-SARSAT standards and will relay responses to those beacons equipped with Galileo receivers through the Galileo specific Return-Link service;

- **High Accuracy Service (HAS)**: This service consists of the delivery of high accuracy data in E6-B, providing better accuracy than OS and enabling users to achieve decimeter level positioning;

- **Commercial Authentication Service (CAS)**: This service is planned to be delivered through the encrypted E6 signal pilot component (E6-C), providing a controlled access and authentication function towards the users;

- **Public Regulated Services (PRS)**: this service is implemented through two navigation signals separated in frequency with encrypted ranging codes and data. The Public Regulated Service is restricted to government authorised users for sensitive applications which require a high level of service continuity.

With the declaration of Galileo Initial Services, Galileo moved from a testing phase to the provision of the initial Open Service capability. The users are already able to benefit from a significant improvement in terms of signal availability, especially in harsh environments, such as urban canyons, where chances to receive signals from GNSS satellites are limited due to the restricted visibility of the sky.

The Galileo High Accuracy Service is to be an open access and free of charge service based on the provision of precise corrections (orbit, clock, biases, atmospheric) transmitted in the Galileo E6 signal (E6-B, data component) from a subset of the Galileo satellites, allowing the user to achieve improved positioning performance.

The precise corrections provided by the Galileo High Accuracy Service will allow users of the service to reduce the error associated to the orbit and clocks provided through the Galileo Open Service broadcast navigation messages and the GPS Standard Positioning Service navigation data. These corrections, together with the biases provided by the service, will enable users to perform precise positioning decimetre level accuracy. Future evolutions of the service will include regional atmospheric corrections to improve convergence times.

As part of the HAS initial service, the corrections being broadcast through E6-B will also be delivered through a terrestrial interface, enabling access to the service to users not tracking E6-B and/or retrieval of corrections in environments where access to the SiS is more challenging. However, this capability will not be supported during the testing phase.

3   Purpose of the Call

The EUSPA is launching a call for expression of interest (hereinafter referred to as ''the Call'') to invite external stakeholders (hereinafter referred to as 'Participant(s)') to participate in a testing campaign of the High accuracy Service (HAS) Signal in Space (SiS) broadcasting. This campaign prepares the HAS initial service operational phase.

Subject to the terms and conditions provided herebelow, the Call targets receiver manufacturers developing Galileo E6-B/C receivers that will implement Precise Point Positioning (PPP) corrections based on Galileo HAS in their devices.

The selected Participants will be required to sign a Non-Disclosure Undertaking (hereinafter referred to as ''NDU'') (Annex I of the present Call) having as scope the HAS SiS ICD (***Galileo High Accuracy Service E6-B Signal-In-Space Message Specification***).

Moreover, pursuant to the signature of the NDU, the Participants shall:

- Share a summary document with the results of their tests;
- Provide feedback to the EUSPA:
  - o if any HAS SiS ICD implementation improvement areas are identified (e.g., refresh rates, processing impact, message definition)
  - o in case of failure or compatibility issue identified in the tracking, reception and processing of the HAS SiS subject to the testing activities.

The tests to be performed by the Participants may cover:

1. Tracking and processing of GPS and Galileo signals relevant for HAS, as well as decoding and processing of the HAS broadcast corrections

2. User positioning performance evaluation.

Although the testing campaign is an essential step towards the development of the HAS operational service phase, and considering that such campaign will be supported by a demonstrator which is not fully representative of the future operational service infrastructure, under no circumstances the tests performed and results obtained will represent the performance of the final service. Further, although the HAS SiS ICD is considered mature, its content may still further evolve. Note that, according to the HAS Information Note [2], the HAS SiS ICD will be published during 2021, after the conclusion of this testing campaing.

4 Assessment of applications

The EUSPA will assess the applications on the basis of the below-mentioned criteria and only if they are all met, the EUSPA will countersign the NDU submitted by the applicant, as per section 5 below.

4.1 Eligibility criteria

Participation conditions

Considering that the scope of the HAS Initial Service commitment (and thus the testing campaign scope) is expected to cover the European Region, participation in this call shall be open in equal terms to all economic operators (natural and legal persons) established in the territory of the Member States of the European Union.

Economic operators referred to above are considered established in the EU when they are formed in accordance with the law of an EU Member State and have their central administration or registered office or principal place of business in an EU Member State (if legal persons), or they are nationals of one of the EU Member States (if natural persons).

4.2 Exclusion criteria

Participation in this procedure is only open to interested parties who will be able to sign the Declaration of Honour (**Annex II** to the present Call).

Supporting evidence requested as part of the declaration of honour shall be submitted only upon request by the EUSPA.

4.3 Selection criteria

The assessment of expressions of interest will be based on selection criteria defined below.

1) For the tests targeting the tracking and processing of GPS and Galileo signals relevant for HAS, as well as decoding and processing of the HAS broadcast corrections the following criteria apply:

Ref.#	Professional Capacity Criteria	Evidenced by
P.1	Capability of tracking and processing:	Description of the proposed GNSS receivers

	• Galileo E6 signal[1].	
	• Galileo E1 - E5b signals.	
	• GPS L1 C/A - L2P(Y) signals -optional-.	
P.2	Capability to decode and process the HAS broadcast corrections. Desktop tools and/or experimental firmware versions of the selected receivers may serve this purpose.	Description of the proposed performance evaluation activities

2) For the tests targeting user positioning performance evaluation, in addition to P.1 and P.2, the following criterion also applies:

Ref.#	Professional Capacity Criteria	Evidenced by
P.3	Capability to compute a user positioning solution in real-time and/or post-processing based on the HAS broadcast corrections.	Description of the proposed performance evaluation activities, including the identification of the PPP engine.

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[1] Considering the envisaged provision scheme for the High Accuracy Service, tracking of E6-B alone, without E6-C support is recommended to be applied for the receivers to the used during the testing phase.

5   Submission of expression of interest

In order to be given access to the ICD as defined in section 2 the interested parties shall submit a request to the Agency via email to tenders@euspa.europa.eu including:

a) Filled and signed Legal Entity Form and the attachments requested in (available here: https://ec.europa.eu/info/publications/legal-entities_en);

b) Declaration of compliance with the eligibility and exclusion criteria (sections 4.1 and 4.2) and the , as dated and signed by the applicant's authorised representative as per Annex II;

c) Description of:

- the proposed GNSS receivers;

- the proposed performance evaluation activities;

- (if relevant) the proposed performance evaluation activities, including the identification of the PPP engine.

d) a duly dated and signed scan of the NDU according to the template provided in Annex I. The NDU may be also signed electronically with a qualified electronic signature (QES) of the interested party. This electronic signature must be provided by a provider which has a qualified status granted by a national competent authority of an EU Member State and which is listed in the national eIDAS Trusted Lists and the EU List of eIDAS Trusted Lists (LOTL) (available at https://webgate.ec.europa.eu/tl-browser/#/). Please note that in case the interested parties do not sign the NDU electronically with a QES, they shall send the original of the duly signed NDU by post to the following address:

Janovskeho 438/2

170 00 Prague 7

Holesovice, Czech Republic

Attention to: Legal and Procurement Department

e) Evidence proving that the person signed the documents under points a, b and d above is applicant's authorised representative (e.g. power of attorney, entity's extract from commercial registry etc.).

The deadline for submissions of expression of interest is 11 June 2021 (23:59, Prague local time, CZ).

Requests for clarification shall be submitted no later than 28 May 2021 (23:59, Prague local time, CZ). The last date on which clarifications are issued by the EUSPA is 4 June 2021 (23:59, Prague local time, CZ).

6 Reference Documents

[1] Galileo E6-B/C Codes Technical Note, v1.0, January 2019.

[2] Galileo Open Service Signal in Space Interface Control Document (OS SIS ICD v2.0), January 2021.

[3] Galileo High Accuracy Service (HAS) Info Note, March 2021.

7 Annexes

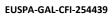| Document	Annex reference
Template Non-Disclosure Undertaking	Annex I
Template Declaration of honour on exclusion criteria	Annex II

8 Acronyms and Abbreviation

CAS	Commercial Authentication Service
EGNOS	European Geostationary Navigation Overlay Service
EU	European Union
GNSS	Global Navigation Satellite Syste,
GPS	Global Positioning System
HAS	High Accuracy service
ICD	Interface Control Document
NMA	Navigation Message Authentication
OS	Open Service
PPP	Precise Point Positioning
SAR	Search and Rescue
SBAS	Satellite Based Augmentation System
SiS	Signal in Space

Appendix A   **Non-Disclosure Undertaking**

Appendix B **Declaration of Honour**

End of Document