

- ❖ Please mute your microphones until the question time.
- ❖ If you have any questions during the seminar, please write those, including your name and affiliation, in the chatbox. We will answer them during the question time.
- ❖ For any technical issues that may arise during the webinar (sound problems, content not visible, etc.), please use the chat feature to contact the organisers.
- ❖ Please send questions on this procurement to the defis-gp2-call-for-tenders@ec.europa.eu.

2020/S 208-506573

Alternative Position, Navigation and Timing (PNT) Services
Pre-feasibility study and technological demonstration
Technical information session

Ignacio Alcantarilla Medina DEFIS.DDG.C.2

Lukasz K Bonenberg JRC E.2

4th November 2020

Tender Introduction

Alternative PNT service details

Demonstration activity details

JRC Ispra test site

Questions and AOB

Tender Introduction

- ❖ PNT services contribute to approximately 10% of the European GDP;
- ❖ GNSS is the back-bone of PNT services as well as hidden utility in many sectors. Its central role will only increase in the future;
- ❖ There is a need for the alternative PNT capacity, without a **common mode of failure** with GNSS.

To demonstrate alternative PNT (position and/or time) technologies that:

- ❑ Can deliver positioning, and/or timing information independently from GNSS;
- ❑ Act as the backup in the event of GNSS disruption;
- ❑ (If possible) extend PNT provision to the environments where GNSS cannot be delivered.

The tender specifications include:

- ❖ analysis, justification of the proposed services;
- ❖ its demonstration (preparation and execution);
- ❖ cost and schedule estimates for development and deployment of the service in the EU.

It **does not include** deployment or implementation of the proposed alternative PNT services in the EU in the EU¹.

- ❖ Maximum duration of the project is 7.5 months.
- ❖ Submission deadline is Wednesday 13th Jan 2021.

¹Beyond what is required for the successful demonstrations.

Provided all criteria are met and within the available budget, the European Commission will:

- Award a contract as a minimum to the seven highest-ranked tenders;
- Each of the selected tenders will be awarded a maximum of 70,000 €;
- A tenderer may submit more than one tender.

Alternative PNT service details

- ❖ Provide positioning and navigation, or timing services or combination of both;
- ❖ Act independent from GNSS and with no common points of failure;
- ❖ Resilient to GNSS failure modes and vulnerabilities²;
- ❖ Able to cover the EU European territory including in-land waters;
- ❖ $TRL^3 > 5$ for position/navigation OR > 6 for timing services;
- ❖ Minimum performance, for at least 1 day, upon GNSS loss:
 - ❖ Positioning Accuracy (Horizontal and/or Vertical 95%) $< 100m$
OR Timing Accuracy to UTC (3σ) $< 1\mu s^4$
 - ❖ Availability $> 99\%$.

²Including GNSS frequency jamming and spoofing or unintentional interference.

³Technology Readiness Level

⁴With traceability to UTC.

Work Package 1 Management

- ❖ Project Plan
- ❖ Executive Summary of the Alternative PNT Service

Work Package 2 Demonstration activities + description of the technology

- ❖ Demonstration activities - preparation, execution and results analysis
- ❖ Final Event - Demo Days
- ❖ Description of the alternative PNT technology

Work Package 3 Implementation Roadmap

Project Plan maximum 5 pages (excluding figures)

Technical Report maximum 20 pages (excluding figures)

- ❖ Technical descriptions
- ❖ Performance Parameters (see next slide)
- ❖ Draft Test Plan
- ❖ Any other information

Implementation Report maximum 10 pages (excluding figures)

- ❖ Service provision
- ❖ list non-EU critical components, technologies and patents
- ❖ implementation roadmap for EU
- ❖ compatibilities and interoperability with existing infrastructure
- ❖ Any assumptions made

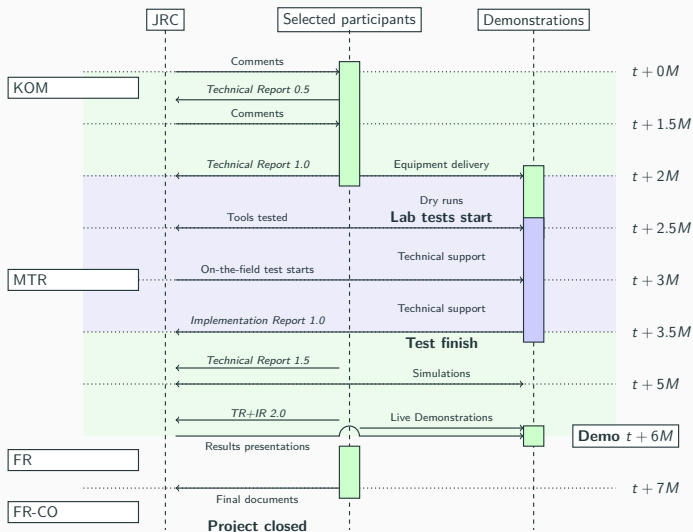
Performance Parameter (X days after GNSS outage)	1 day	14 days	100 days
Horizontal Accuracy (95%) m			
Vertical Accuracy (95%) m			
Availability (%)			
Continuity (per hour)			
Integrity (per hour)			
Time To Alarm (second)			
Timing Accuracy to UTC (3sigma)			
Time synchronisation (Allan Deviation / 3 sigma)			
Timing Stability (Allan Deviation)			
First time to provide services upon cold start-up (including system and receiver contributions)			

Ref.	Name	Issue	Delivery
D110	Project Plan	draft	Tender
		1.0 – Intermediate Report	T0 + 2 m
		2.0 – Final Report	T0+5.5 m
		2.1 – Final Report Close-out	T0 + 7 m
D120	Executive Summary of the Alternative PNT Service	1.0 – Initial Summary	T0 + 5.5 m
		1.1 – Final Summary	T0 + 7 m
D210	Technical Report	draft	Tender
		0.5 – Revised Test Plan	T0 + 1 m
		1.0 – Final Test Plan + Initial Description of technology	T0 + 2 m
		1.5 – Test Results	T0 + 4 m
		2.0 – Final Test Results + Final Description of technology	T0 + 5.5 m
		2.1 – Close-out	T0 + 7 m
D310	Implementation Report	draft	Tender
		1.0 – Initial version	T0 + 3.5 m
		2.0 – Updated version	T0 + 5.5 m
		2.1 – Close-out	T0 + 7 m

Project Review		Objective	Schedule
T0	Contract Signature	Contract signature by the Commission	T0
KOM	Kick-Off Meeting	Review of: <ul style="list-style-type: none"> • Draft Project Plan • Draft Technical Report, including the draft Test Plan • Draft Implementation Report 	T0 + 15 d at the latest
MTR	Mid-Term Review	Review of: <ul style="list-style-type: none"> • Project plan 1.0 – Intermediate Report • Technical Report 1.2 – Initial Description of Technology 	T0 + 3 m
Event	Test Results presentation + Live Demo	Presentation of Test Results and live demonstration of technologies	T0 + 6 m
FR	Final Review	Review of: <ul style="list-style-type: none"> • Project plan 2.0 – Final Report • Initial Executive Summary of the Alternative PNT Service • Final Technical Report v3.0 • Final Implementation Report. 	T0 + 6.5 m
FR-CO	Final Review close-out	Approval of: <ul style="list-style-type: none"> • Final Project Plan – close-out • Final Executive Summary of the Alternative PNT Service • Final Technical Report – close-out • Final Implementation Report – close-out 	T0 + 7.5 m

Demonstration activity details

Indicative demonstration schedule



- ❖ The objective is to demonstrate the performance of the alternative PNT services.
- ❖ To be performed at the JRC Ispra site (Italy). Justified use of the contractor's premises or other relevant locations in Europe is possible⁵.
- ❖ In such case as a minimum the following are expected to be conducted at the JRC:
 - ❖ Interference laboratory testing with a transmitter to a receiver (one or two ways);
 - ❖ Simulations.
- ❖ JRC will provide guidance, supervision and hardware support when possible.

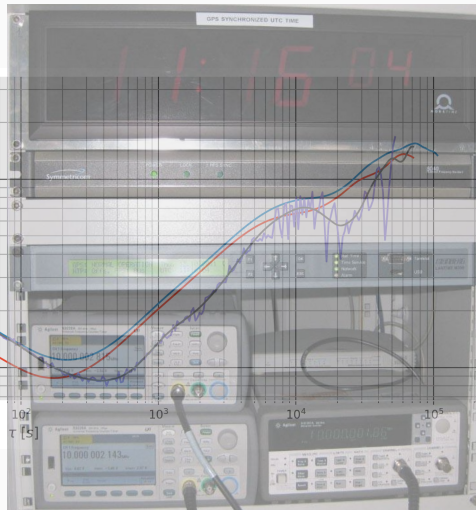
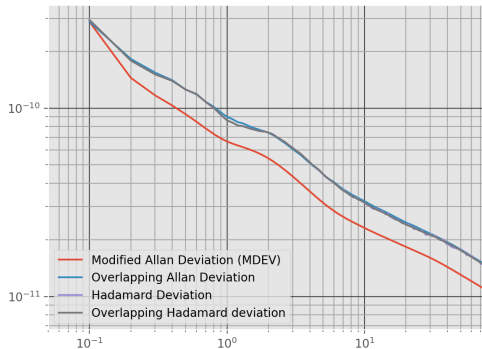
⁵The justification and the details will be assessed and agreed during the evaluation. Please take into consideration possible COVID restrictions.

- ❖ Held towards the end of the project at the JRC Ispra site.
- ❖ Two to three days duration and will consist of:
 - ❖ Technology presentation and demonstration - contractor.
 - ❖ Presentations of the test results - JRC.
 - ❖ Exhibition area - EC, contractors and guests.
- ❖ Presented systems/technology do not need to be fully operational during the event.

Test Scenario	KPI tested	Environment
Static	Horizontal accuracy Short term stability Time synchronisation, traceability to UTC	on-the-field
Kinematic	Horizontal accuracy Time synchronisation, traceability to UTC	on-the-field (e.g. van)
Kinematic 3D	Horizontal accuracy Vertical accuracy Time synchronisation, traceability to UTC	on-the-field, drone or other high dynamic platform
Indoor	Horizontal accuracy If possible: Time synchronisation, traceability to UTC	indoor
Interference	Horizontal accuracy Robustness to interference Signal Quality Time synchronisation	lab
Station long term test (14 – 21 days)	Horizontal accuracy Medium-term timing stability, traceability to UTC Availability Continuity	lab

JRC Ispra test site

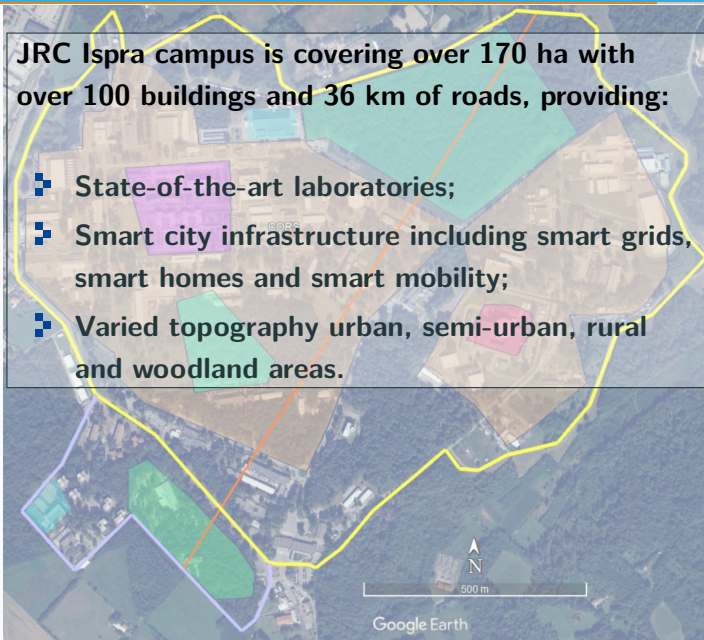






JRC Ispra campus is covering over 170 ha with over 100 buildings and 36 km of roads, providing:

- ❖ **State-of-the-art laboratories;**
- ❖ **Smart city infrastructure including smart grids, smart homes and smart mobility;**
- ❖ **Varied topography urban, semi-urban, rural and woodland areas.**



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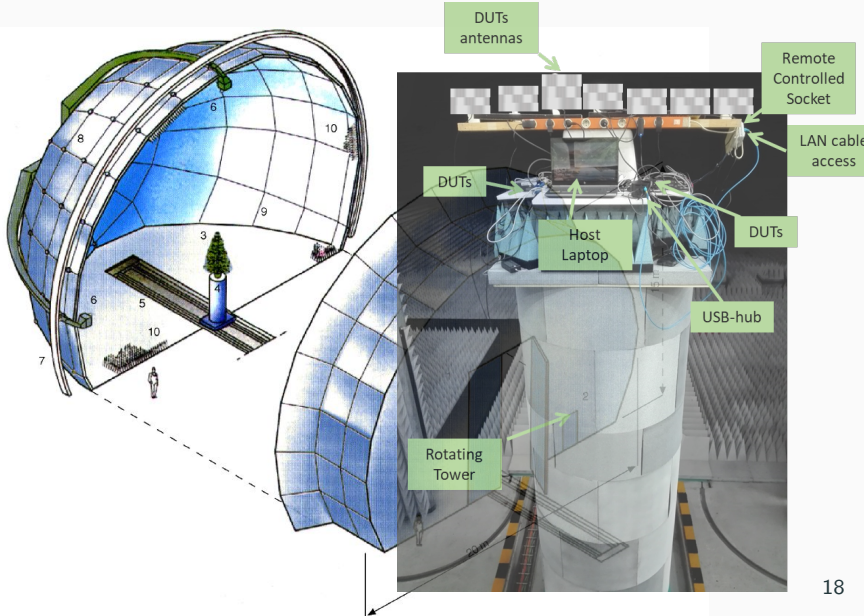
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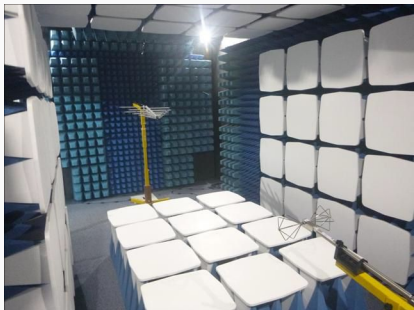


The hemispherical anechooic chamber



European
Commission







Questions and AOB

- ❖ Be as specific as possible and explain clearly the technology proposed and the activities.
- ❖ Justify the test plan details, especially if it is to be held outside of the JRC test site.
- ❖ Clearly explain what technical support you require from JRC.
- ❖ Do not forget to provide the CV's of all the proposed personnel and show the allocation of each team member to the tasks and duties allocated to him/her.
- ❖ Please do not submit at the very last moment and account for the delays caused by Christmas and New Year.