



Open Call for Tenders for:

A set of studies including 2 (two) Work Packages for the development of 5 CEN Technical Reports and 1 Technical Note that are necessary to address standardization gaps identified by CEN-CLC-TC5 and EC :

- Definition of minimum performances for SBAS L1 on GNSS maritime receivers**
- Definition a testing method and technical implementation of the tests**



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1. INTRODUCTION

1.2 Background

This proposal addresses part of the response to EC mandate M/496 ("Mandate addressed to CEN, CENELEC and ETSI to develop standardization regarding space industry).

This mandate underlines that "the technological support for GALILEO will continue through applications research and a coherent system evolution programme. In order to provide safe and guaranteed applications, the necessary framework in terms of certified services and products, global standards and interference monitoring capabilities has to be implemented". Also, mandate M/496 stressed European standards organizations to make assessment of necessary future standardization in support of the regulatory framework.

Through resolution BT C121/2011, and D140/C011 to C013, CEN and CENELEC technical boards accepted M/496 standardization mandate addressed to CEN, CENELEC and ETSI for standardization related to space industry. In response to the mandate M/496, CEN and CENELEC BTs following the President Committee's decision, agreed on the creation of the CEN/CENELEC TC5 "Space".

Established in 1991, CEN (European Standardization Committee) operates on a decentralized system covering a network of 32 national members with a central secretariat, the CEN/CENELEC Management Center (CCMC). CEN is a business facilitator in Europe, removing trade barriers for European Industry and consumers. Its mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through its services, it provides a platform for the development of European Standards and other technical specifications.

AFNOR is the French member of the National Standardization Bodies represented at the European and International level. As a monopolistic subcontractor of AFNOR, BNAE is the French standardization office for Aeronautics and Space standardization.

1.1 Context of the work

1.1.1 Satellite Based augmentation systems (SBAS)

Satellite Based Augmentation Systems complements the existing satellite navigation services provided by GPS. There are several SBAS developed or under development, such as:

- European Geostationary Navigation Overlay Service (EGNOS)
- Wide Area Augmentation System (WAAS) in USA,
- Multi-functional Satellite Augmentation System (MSAS), in Japan,
- System for Differential Corrections and Monitoring (SDCM), in Russia,
- the GPS and GEO Augmented Navigation (GAGAN) system in India,
- Satellite Navigation Augmentation System (SNAS) in China, and
- Korea Augmentation Satellite System (KASS) in Republic of Korea.



To guarantee seamless and worldwide system provision, the existing systems meet common standards and interoperability requirements. SBAS broadcasts on the GPS L1 frequency a GPS-like signal with embedded corrections, providing improved accuracy over GPS and are being fully interoperable with each other. In addition, they provide integrity information in real-time, providing information on the health of the GPS constellation. Although widely used for Safety of Life application in Aviation, SBAS are not yet formally used in maritime.

In maritime, SBAS SiS¹ provide a complementary service to marine radio beacon DGNSS for the provision of enhanced accuracy and integrity information. Vessels sailing under the IMO SOLAS Convention are currently unable to consider SBAS as a candidate for augmentation system to be conform to IMO requirements (A.1046), however mariners exempt from SOLAS (predominately leisure craft) can use SBAS.

Therefore, part of maritime users has de-facto been using SBAS for several years, and nowadays SBAS functionality is supported by most of the maritime GNSS receivers used in the recreational and professional (both unregulated and regulated) sectors.

As milestones to reach an SBAS compliance for IMO SOLAS Vessels there are at least two key points needs to be addressed:

- SBAS Service provision compliant with maritime requirements
- SBAS Standard for shipborne SBAS/GNSS L1 Maritime Receivers

This project aims at providing the technical content needed to develop an SBAS receiver performance standard, which can be used in the Maritime domain.

1.1.2 SBAS services compliant with Maritime: status & expectations

In Europe, EGNOS aims to provide in few years an SBAS L1 Maritime Service compliant with maritime requirements. This service will use existing EGNOS V2 signal processed by IEC standardized receivers onboard the vessels. The EGNOS maritime service will be defined in a Service Definition Document (SDD). Notice to mariners and navigational warnings will be made available to mariners to inform about predicted EGNOS outage and relevant performances degradations.

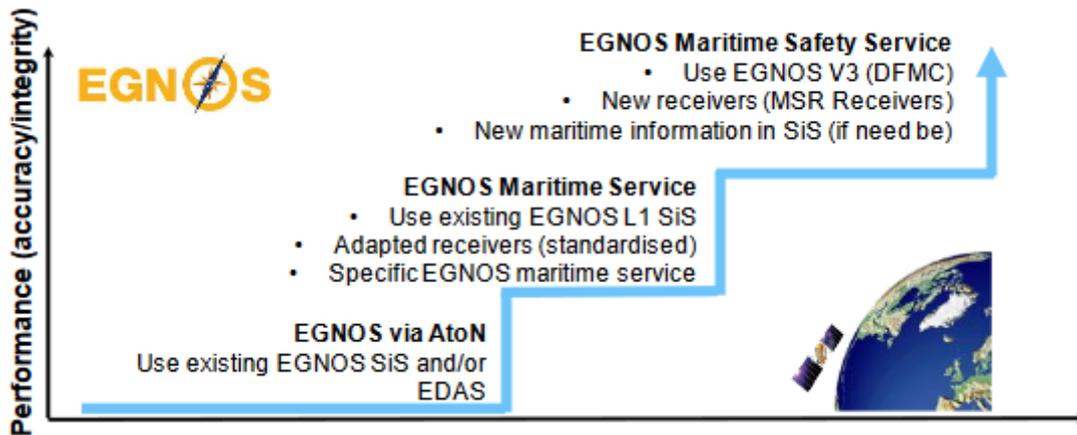
On 3 April 2019, the service concept review organised by EC/GSA for the potential provision of a new service for maritime based on SBAS L1 was passed successfully. The service requirements review is planned in Q2 2020. The Service declaration is expected in 2022.

Such EGNOS V2 Maritime Service is the second phase of a three-step process conducted by Europe (GSA) to foster usage of SBAS in Maritime. The first step, using EGNOS data as an input to be broadcasted over Maritime terrestrial DGPS by Aids to Navigation operators is already available to be implemented and compliant with international maritime requirements (See IALA Guideline G1129). The second step is not yet being enabled for maritime community but some stakeholders including national & coastal authorities already consider that SBAS would contribute to maritime (See IALA

¹ Unless mentioned otherwise, SBAS refers to SBAS Signal in Space



Guideline G1152). The third step would be the development of an EGNOS V3 dual frequency multi-constellation-based service for Maritime.



Although the EGNOS maritime service project is likely the most advanced initiative among SBAS providers to declare a maritime service, it is expected in the future from other SBAS providers to make available SBAS Maritime compliance services in their coverage area. This would enlarge the benefits of such services to maritime stakeholders the most globally, as it is for aviation SoL SBAS services.

1.1.3 Need for maritime GNSS L1/ SBAS Standardized receivers

Standardisation of shipborne receivers remains a prerequisite for SBAS services to be safely and formally used by mariners, mainly IMO SOLAS Vessels. Such a standard will further enable vessels to benefit from SBAS when sailing in an area covered by the service.

There are milestones remaining to reach an integrated cost-effective SBAS L1 receiver ready to market, and both institutional and industrial stakeholders could participate to this innovation. Finally, the SBAS L1 receiver innovation activities could also be linked to the development of multi-system multi constellation PNT receivers, as it will contribute as a part of the future solution.

SBAS L1 introduction in maritime GNSS receiver is challenging both in the field of innovation and regulations.

In the field of innovation in relation to the GNSS/SBAS L1 shipborne receiver, it is worth noting the following activities:

- **SBAS L1 Guidelines** for shipborne manufacturers: EC/GSA/ESA with the support of ESSP and GMV prepared Guidance material for the implementation of SBAS L1 in shipborne receivers. The Guidelines defined the minimum set of SBAS messages that have to be used in order to fulfil the operational requirements in IMO resolution A.1046.
- **EGUS** project: Implemented Guidelines in a software receiver (gLab), defined tests specifications and executed the tests. The project verified that tests are well defined so that it is possible to check whether an implementation is ok or not ok. In the same project the Guidelines were updated with the definition of the tests and included at the end of the document.
- **Fundamental Elements:** “SBAS Maritime Receiver Development, Test and Validation”. Main objectives are to implement SBAS following Guidelines for manufacturers already discussed in



RTCM, perform a testing campaign and to support the standardisation process within IEC. Deliverables received Analysed the current Guidelines, discussed how to integrate together SBAS and IALA DGNS, and proposed the next steps in standardisation at IEC and its inclusion in MED. More details in Annex 1.

Considering all the above, there is a strong need to get a standard for SBAS Maritime GNSS L1 receiver that would benefit the whole Maritime community.

1.1.4 Market considerations

SBAS are operating or being developed all around the world and are fully interoperable. Hence, Maritime GNSS/SBAS L1 receiver will be finally requested and compatible for all the ships. European manufacturers that first get ready to market SBAS L1 receiver can take benefits of this technologies out of Europe boundaries.

Introduction of SBAS L1 in maritime standards would also lead to an opportunity for receiver manufacturers to increase their sale streams. Indeed, it is very likely that shipowners would replace their receivers in the following years after the standard issue to comply with these new standards and get benefits on the SBAS L1 for their applications.

1.1.5 Social & environmental benefits expected

The improvement of accuracy allows a better efficiency of the vessel route that can on one hand, reduce the duration of the trip from berth to berth. this contribute to the improvement of the efficiency of the supply chain. On the other hand, it is also good for environment by decreasing the fuel consumption, therefore decreasing SO_x, NO_x, CO_x emissions.

Further than accuracy, SBAS usage will also improve and integrity and mitigate some threats related to usage of GNSS standalone. The coverage of SBAS is wider than terrestrial DGNS systems that already provides augmentation services. Therefore, it can be expected an improvement of maritime safety leading to decrease the number of accidents (grounding, collisions for instance). This will directly benefit by reduce human injuries or lost and pollution disasters.

1.1.6 Challenges to be overcome to reach a standard (challenges techniques)

SBAS were originally design for aviation Safety of Life applications where standardization of integrity algorithms has been a core subject for decades. Moreover, there are also more stringent requirements on the standardisation of navigation equipment carried by aircrafts. For instance in maritime, DGNS receiver is not a carriage requirements for IMO SOLAS Vessels.

Although **it is recognized by the maritime community for years that SBAS standard would be a key benefits**, there were for now **some challenges that slow down the process from now and other to overcome** to get it:

SBAS regulations:



In Maritime, the common DGNSS source is terrestrial IALA DGPS Beacon shore stations that are design for coastal navigation compliant with IMO resolution A.1046. This DGPS signal is commonly processed by a specific receiver that is interfaced with the GPS receiver providing enhanced accuracy and integrity warnings. This usage has been considered for years in the IMO regulations and standardized for both service provision and receiver sides.

However, since SBAS are known to deliver a satisfying DGNSS service to aviation, Maritime receiver manufacturers widely consider SBAS as a signal of opportunity to be used and already implement SBAS capability in their devices out of any standard nor specific maritime SBAS Services.

It appears recently Guidelines at IALA on how maritime shore authorities can consider SBAS for maritime use and also in IMO there are some work in progress regarding multi-system multiconstellations shipborne receivers on which SBAS is considered to contribute.

SBAS service provision:

Maritime User needs are very different than in aviation and SBAS should be proved to be compliant with prior to **develop a maritime SBAS standard receiver that is also compliant with specific maritime requirements.** In maritime, the current requirements consider integrity at system level and defines some required performances for key parameters (Availability, Continuity, Accuracy, Integrity....). In addition, there are also other specific needs like Maritime safety Information broadcasting to inform users on expected or unplanned service outages.

These service provision challenges had been considered for years and a several works has been carried out in IALA and EMRF but also within different projects funded and managed by Europe (ESA, GSA,ESSP).

These should lead to **a maritime service available in Europe in 2022 then the availability of a standard for maritime SBAS receiver became even more valuable.**

SBAS algorithms processing:

In Maritime, there is no international authority that is committed to type approved processing algorithms for navigation receivers. IMO requirements defined the performances expected for DGNSS receivers and for DGNSS Service but not defined the way that signal should be processed.

As we set before, maritime needs are not similar than aviation needs. So **specific algorithms should be developed to process SBAS in maritime receivers and proved to result in performances compliant with maritime requirements.** These algorithms are also expected to be approved by the maritime community and also but it is challenging since there is not a single organisation to do so.

Again, European GNSS stakeholders mainly GSA, fostering EGNOS adoption in Maritime by leading some activities and discussions groups to gather user needs, advices and opinion on the way to process SBAS in maritime receivers. The outcomes of such consultation was mapped into a guideline for SBAS processing in receivers that is implemented to perform some tests on real data. These **tests campaigns highlights that an SBAS maritime compliant receiver is achievable. This pave the way to start a work to an IEC performance standard that could certify some receivers.**

Remaining concerns to explore:



Considering all the above mentioned that are already addressed, at least partially. There are some remaining technical points to be explored when aiming to develop a standard for maritime SBAS receiver:

- How to comply with IMO receiver performances standards including the multi-system radio-navigation shipborne navigation receiver approach.
- How to deal with other differential and integrity methods already implemented on receivers as RAIM and DGPS.
- Consider the tests results and not the implemented algorithms
- Consider to develop a solution that is cost effective to be finally sustainable to the ship-owners
- How to push the European related outcomes to an international level mainly IEC.
- Don't forget to consider the real cases implementation & equipment installation on-board that are not always "perfect" as record & replay.

1.1.7 Current work at IEC

The IEC is one of three global sister organizations (IEC, ISO, ITU) that develop International Standards for the world. Founded in 1906, the IEC (International Electrotechnical Commission) is the world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies. All IEC International Standards are fully consensus-based and represent the needs of key stakeholders of every nation participating in IEC work. Every member country, no matter how large or small, has one vote and a say in what goes into an IEC International Standard.

Many thousand experts carry out standardization work in the IEC in TCs (technical committees) and SCs (subcommittees), in hundreds of working groups, project and maintenance teams. IEC TCs and SCs prepare technical documents on specific subjects within their respective scopes.

TC80 Scope thanks to IEC Website is "To prepare standards for maritime navigation and radiocommunication equipment and systems making use of electrotechnical, electronic, electroacoustic, electro-optical and data processing techniques." The customers for TC 80 standards are the manufacturers of the navigation and communication systems, the test houses which provide the test reports and Administrations which use the standards for type approval purposes which is for example required by the IMO International Convention for the Safety of Life at Sea (SOLAS).

From 1996 to now, the IEC TC80 develops a series of standards for maritime GNSS radio-navigation receivers. These IEC 61108-1 to 61108-4 are in force currently and describes performance standards, methods of testing and required test results for GNSS and DGNSS in maritime.

The 61108-1 refers to GPS, the 61108-2 to GLONASS, the 61108-3 to GALILEO and the 61108-4 to DGPS and DGLONASS marine radio beacons. It is worth noted that a project team is currently working on the expected 61108-5 which will add Beidou to the series.

Each of these standards develops a similar approach but address either one specific GNSS or maritime radio DGPS/DGLONASS beacons. It refers to IMO relevant resolutions such as those which define



maritime shipborne radio-navigation receiver standards and also resolution on the world wide radio navigation system that describes the requirements for different navigation phases.

The approach followed by the 4th standards is quite similar by dividing the standards in two main parts:

- Minimum performance: This part describes the receiver requirements and several specifications to consider for receiver performances such as input/output, signal to process, installation on-board including antennas, electro-magnetic protections...
- Methods of testing and required results: this part includes several information and specifications related to the test sites, sequence, signal and conditions that should be set when carry out standardization test of a receiver. This part also describes in detail the test process and the expected results.

As we already said above, there is a strong need to get a standard for SBAS Maritime GNSS L1 receiver. The operational benefits for mariners will be finally reached when an IEC standard will be issued and implemented in purchasable receivers.

Yet, it is important to note that this project aims to foster SBAS standardization process by gathering and putting in place, at a European level, the material and knowledge that could be promoted further as input for IEC activities.

The consortium will actually be selected to actively contribute to activities that will be carried out in the frame of a working group of the TC5 of CEN/CENELEC not at IEC level.

1.1 Overall objective

The proposed action aims to complete the 61108 series for considering the standardisation of SBAS L1 service for the maritime segment. This work will be done in close cooperation with IEC.

1.2 Specific objective of the studies

The specific objectives for this project is to produce the content needed for the development of a new standard in the 61108 series that will focus on SBAS L1 receivers for maritime applications. The work will be split into two work packages (WP) which cover:

- the definition of minimum performances for SBAS L1 on GNSS maritime receivers (WP1).
- the definition of test methods and a technical implementation of the tests.



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2. TECHNICAL SPECIFICATION

2.1 General organisation

The execution of the present work will be split into two work packages comprising several tasks. In order to carry the work, the selection of a team composed of a work package leader and several task leaders, is requested.

The work package sheets in in section 3.2 give, for each of them:

- The objectives,
- The inputs,
- The description of work,
- The expected deliverables with the time line.

Below are given the responsibilities for the work package (WP) leaders and the task leaders.

WP leaders

The WP leader is acting as a project leader. His duties are:

- Managing the time schedule for the respect of the deadlines
- Organizing the collaborative studies (with the task leaders and WGX)
- Supporting the task leaders in the execution of their work
- Organizing the meetings with the task leaders and attending the meetings with CEN/CENELEC TC5/WGX
- Elaborating and delivering the deliverables which are the final outputs of the WP, from the deliverables produced by the task leaders
- Discussing the results of the work with CEN/CENELEC TC5/WGX
- Contributing to the preparation of interim and final reports to the European Commission

Task leaders

The task leader is placed under the supervision of the WP leader and is fully responsible of the task he his leading. His duties are:

- Organising and carrying out the work placed under his responsibility, under the supervision of the WP leader
- Elaborating the deliverables expected as outputs of their task
- Answering to the requests expressed by the WP leader
- Attending the meetings organized by the WP leader
- If needed, attending the WG1 meetings

A steering committee will be created to coordinate and monitor the works in the two workpackages. The steering committee will be constituted by:

- CEN-CENELEC TC5 WGX convenor
- Representatives from the European Commission (Space policy and Galileo Unit)
- A representative from the European GNSS Agency



- A representative from the French Aerospace Standardization Organization (Bureau de Normalisation de l'Aéronautique et de l'Espace).

A work package leader, responsible for coordinating the work done within a work package, will report to the steering committee according to the plan described in section 3.3.

2.2 Framework

This call for Tenders is part of a Specific Agreement (SA 2019/13) signed between the European Commission and CEN/CENELEC under the Framework Partnership Agreement 2014 program. This specific agreement has been signed on the 1st of April 2020, which is the starting date for the Specific Agreement.

This call for Tenders aims at selecting technical experts which will implement the work programme developed in section 2.3 of this document in a secondary project named MARESS (MARitime REceiver Sbas Standardisation). MARESS will have its own timeline as incorporated into the SA 2019/13 timeline. It means that the starting date of the MARESS project and the SA 2019/13 are different, although the end dates are the same.

Note: this difference in planning has also an impact on the payment related to the MARESS project. All payments are made after validation of the 1st progress and Final Report (as indicated in Table x). This will be three to four months after the MARESS delivery.

Note 2 : the selected entities will be subject to a contract with AFNOR (main partner of CEN for the SA 2019/13) which delegates to BNAE the technical and administrative management of the MARESS project. The template of such a contract can be found in annex C.

2.3 Description of the work

The objective for the work is to develop a series of 5 (five) Technical Reports (TR1 to TR5) and 1 (one) Technical Analysis (D1) as described in 2.2. This section describes the work to be done under the form of Work Package sheets.

In the tables below, the T0 corresponds to the date of the validation by the European Commission of the selection report of this call for Tenders.

2.3.1 WP1: Definition of minimum performances for SBAS L1 on GNSS maritime receivers

WP1 aims to define the better way to organise the additional 61108 which will include SBAS L1, considering the 61108 series already approved and existing documents relative to the topic. Once that task is completed, a framework of structure of document will be proposed to IEC/CEN/CENELEC.

Task 2 of WP1 also aims to define the Minimum Operational Performance Standard to be achieved for SBAS L1.



Work package Title	Define minimum performances for SBAS L1 on GNSS maritime receivers	WP Number	1
		Start Event / date	T0
		End Date / Event	T0+8

Objectives

- **Task 1 : Definition of the structure of the future 61108 to include SBAS L1.** 61108 is divided in 4 parts to address GPS, GLONASS, GALILEO and DGPS & DGLONASS. Addressing SBAS L1 in this standard for maritime GNSS receivers would be done in different ways. This WP aims to provide recommendation on the structure to be selected and finally proposed to IEC/CEN/CENELEC.
- **Task 2 : Define minimum performances for SBAS L1 on maritime GNSS receivers.** Each part of the existing standard defines for the systems they address, the minimum performance that need to be reached. It is needed to provide the same information for SBAS L1 on maritime GNSS receivers. Based on our current understanding of the existing 61108 standard the performances to be achieved need to be defined and not the exact definition of the algorithm implementation on the receiver.

Inputs

- IEC 61108 Part 1;2;3;4
- SBAS L1 **Guidelines** for shipborne manufacturers: EC/GSA/ESA
- **EGUS** project

Description of work

Task 1: Definition of the structure of the future 61108 to include SBAS L1

- Review of Analysis performed by other stakeholders (GMV...)
- Analysis of the 61108
- Identify potential scenarios of expected structure
- Assess advantages/drawbacks for each scenario
- Provide a report with conclusions & recommendations

Task 2: Define minimum performances for SBAS L1 on GNSS maritime receivers

- Provide minimum performances on the Signal & Data Acquisition of SBAS L1
- Provide minimum performances on the SBAS Data processing to compute PVT solution
- Provide minimum performances on the SBAS Data Processing to provide integrity



Output & Deliverables (brief description & month of delivery)

		Delivery date
D1	Detailed structure of the new IEC 61108	$T_0 + 6$ months
D2	Report on the definition of minimum performances for SBAS L1 maritime GNSS receivers	$T_0 + 8$ months

2.3.2 WP2: Definition a testing method and technical implementation of the tests

WP2 aims to define methods of testing and results expected for signal and data acquisition, for SBAS data processing to compute PVT and to provide integrity.

WP2 also aims to check the technical implementation of tests which are been defined below. For that task, real data acquired during trials campaigns should be used.

Work package Title	Define methods of testing and technical implementation of the tests	WP Number	2
		Start Event / date	T0
		End Date / Event	T0+18

Objectives

Each part of the existing standard defines for the systems they address, the methods of testing and required results. It is needed to provide the same information for SBAS L1 on maritime GNSS receivers.

- **Task 1 : Provide methods of testing and required results on the Signal & Data Acquisition of SBAS L1.** This test has to check the capability of the receiver to achieve requested performances to acquire and process the SBAS Signal and decode requested SBAS messages.
- **Task 2 : Provide methods of testing and required results on the SBAS Data processing to compute PVT solution.** This test has to check the capability of the receiver to achieve requested performances to use defined SBAS messages to compute a PVT solution with the expected accuracy level.
- **Task 3 : Provide methods of testing and required results on the SBAS Data Processing to provide integrity** This test has to check the capability of the receiver to provide the requested level of integrity to the maritime user.
- **Task 4 : Technical implementation testing of the standard project :** to realize lab testing to check that the proposal of the standards is realistic and implementable without technical issues. We assume that raw GNSS data is already collected by previous project and be available for this activity. Hence it is not expected to conduct data acquisition and record within this project.



Inputs

Fundamental Elements MAREC Project

Description of work

Task 1: methods of testing and required results on the Signal & Data Acquisition of SBAS L1

- Define the key parameters of the SBAS signal that need to be used for the tests
- Define the methods and experimental environment for the tests
- Define the expected results requested to declare a conformity

Task 2: methods of testing and required results on the SBAS Data processing to compute PVT solution

- Define the key parameters of the GNSS Signal that need to be used for the tests
- Define the methods and experimental environment for the tests
- Define the expected results requested to declare a conformity

Task 3: methods of testing and required results on the Integrity

- Define the key scenarios that need to be played to simulate integrity events
- Define the methods and experimental environment for the tests
- Define the expected results requested to declare a conformity

Task 4: Technical implementation testing of the standard project

- Perform a process of certification as it is described on the output of task project on at least one maritime GNSS/SBAS L1 receiver (even prototype).

If multiple ways of algorithms implementation are proposed by receiver manufacturers, the process can be repeated to trade-off the different proposal

Output & Deliverables (brief description & month of delivery)

		Delivery date
D1	Report on methods of testing and required results on the Signal & Data Acquisition of SBAS L1 .	$T_0 + 12$ months
D2	Report on methods of testing and required results on the SBAS Data processing to compute PVT solution.	$T_0 + 13$ months
D3	Report on methods of testing and required results on the Integrity.	$T_0 + 15$ months
D4	Report on testing that has been performed including experimental set-up and results.	$T_0 + 18$ months

2.4 Summary of expected deliverables



It is important to emphasize that the T0 in the table below and in section 2.3 corresponds to the date of the validation by the European Commission of the selection report of this call for Tenders.

Work package number	Deliverable ref.	Title of CEN/CENELEC Deliverables	Start Date	End Date
WP1 Definition of minimum performances for SBAS L1 on GNSS maritime receivers	D1	Detailed structure of the new IEC 61108*	T ₀	T ₀ +6
	D2	Report on the definition of minimum performances for SBAS L1 maritime GNSS receivers	T ₀	T ₀ +8
WP2 Definition a testing method and technical implementation of the tests	D1	Report on methods of testing and required results on the Signal & Data Acquisition of SBAS L1	T ₀	T ₀ +12
	D2	Report on methods of testing and required results on the SBAS Data processing to compute PVT solution.	T ₀	T ₀ +13
	D3	Report on methods of testing and required results on the Integrity.	T ₀	T ₀ +15
	D4	Report on testing that has been performed including experimental set-up and results.	T ₀	T ₀ +18

*: Will not be transformed into a CEN/CENELEC deliverable



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3. FINANCIAL SUPPORT

There will be a financial support from the European Commission and EFTA for the implementation of the two work packages as described in part 3 of this call for tenders.

The WP leaders' and task leaders' costs shall be justified with copies of the relevant invoices. All relevant evidence shall be kept in view of future payments.

The financial support from the EC and EFTA is based on the FPA 2014. The subcontractor shall fulfil the conditions of the FPA 2014.

Costs incurred before the contract is signed will not be eligible for funding.

The assignment of the task and execution of the work will be dependent upon European Commission/EFTA funding release.

The financial steps are defined in the Specific grant agreement SA/CEN/ENTR/EFTA/496/2019-13.



4. CRITERIA FOR TECHNICAL AND PROFESSIONAL CAPACITY

4.1 General criteria for both WP leaders and task leaders

The tenderer shall demonstrate:

- Reliability in terms of technical resources and quality control
- Reliability in terms of sufficient resources to perform the tasks within the period of tasks foreseen by the contract
- Expertise in the field of drafting reports, surveying techniques, collection of data, statistical editing, quantitative analyses, conducting data analysis and drafting recommendations
- Capacity to carry on analytical reporting
- Linguistic abilities to draft reports in English Language
- Proven experience in organizing technical and coordination meetings
- Tenderers must demonstrate sufficient ability and means available to carry out their tasks, notably in terms of human and technical resources available and of quality systems in place
- The tenderer must have a proven successful track record of projects relevant to this call in the last 5 years.

4.2 Specific criteria for technical and professional capacity

4.2.1 For WP leaders

WP leaders must have a long experience of cooperative R&D projects management and also be familiar with standards specification and generation.

They must also have a good expertise in the following technical fields:

- System engineering,
- Test specifications, test protocols design, test execution,
- GNSS signals and receivers,
- Maritime transport applications or services,
- GNSS/DGNSS/SBAS Signal processing,
- Radio-frequency signals,
- Software development,
- Mathematics, probabilities and statistics
- Maritime radionavigation & radiocommunication standardization activities
- Maritime navigation integrity concepts & algorithms

4.2.2 Task leaders

The task leaders must prove good or excellent expertise in the fields illustrated by table 2.



Table 1. Required fields of expertise of task leaders for Work Package 1

Required fields of expertise					WP1		
	N/A		Good		Excellent	Task1	Task2
System engineering							
Test specifications, test protocols design, test execution							
GNSS signals and receivers							
Maritime transport applications							
SBAS Signal processing							
Radio-frequency signals							
Software development							
Mathematics, probabilities and statistics							
Knowledge on IEC 61108							
Knowledge on SBAS integrity concept							

Table 2. Required fields of expertise of task leaders for Work Package 2

Required fields of expertise					WP2				
	N/A		Good		Excellent	Task1	Task2	Task3	Task4
System engineering									
Test specifications, test protocols design, test execution									
GNSS signals and receivers									
Maritime transport applications									
SBAS Signal processing									
Radio-frequency signals									
Software development									
Mathematics, probabilities and statistics									
Knowledge on IEC 61108									
Knowledge on SBAS integrity concept									

4.3 Criteria for financial and economic capacity

Tenderers shall demonstrate:

- a) Sufficient economic and financial capacity to guarantee continuous and satisfactory performance throughout the envisaged lifetime of the contract.
- b) Sufficient financial capacity in relation to the pre-financing foreseen under the contract (where relevant)
- c) Reliability of the mitigating measures presented to cover possible deficiencies in the evidence presented for the above criteria.

In addition, the tenderers shall provide:

- a) Sufficient turnover in relation to the volume of tasks under this contract
- b) Positive equity or at least a guarantee of a third party to cover the problem of negative equity



5. SUBMISSION OF TENDERS

5.1 General Terms and conditions for the submission of tenders

Tenders shall cover all tasks described in work packages sheet (section 3.2).

A selection committee will be constituted in order to evaluate the tenders, select the tenderers and award the contract(s).

The selection committee will be constituted by:

- CEN-CENELEC TC5 WG1 convenor
- A representative from the French Aerospace Standardization Organization (Bureau de Normalisation de l'Aéronautique et de l'Espace).
- A representative from CEN-CENELEC Management Center

Participation in tendering procedures is open on equal terms to all natural and legal persons from one of the EU Member States and to all natural and legal persons in a third country which has a special agreement with the Communities in the field of public procurement on the conditions laid down in that agreement.

Operators in third countries which have signed a bilateral or multilateral agreement with the Communities in the field of public procurement must be allowed to take part in the tendering procedure on the conditions laid down in this agreement. The selection committee refuses tenders submitted by operators in third countries which have not signed such agreements for the present call for tender.

Submission of a tender implies acceptance of the terms and conditions set out in this invitation to tender, in the tendering specifications and in the draft contract and, where appropriate, waiver of the tenderer's own general or specific terms and conditions. It is binding on the tenderer to whom the contract is awarded for the duration of the contract.

Once the tender has been accepted, it shall become the property of the Selection Committee and the Selection Committee shall treat it confidentially.

Expenses incurred in preparing and submitting tenders shall not be reimbursed.

Variants are not allowed.

5.2 No obligation to award the contract

This invitation to tenders is in no way binding on AFNOR. AFNOR's contractual obligation commences only upon signature of the contract with the successful tenderer.

Up to the point of signature, the contracting authority may either abandon the procurement or cancel the award procedure. This decision must be substantiated and the candidates or tenderers notified.

No compensation may be claimed by tenderers whose tender has not been accepted, including when the Selection Committee decides not to award the contract.



BNAE

5.3 Joint Offers

A joint offer is a situation where an offer is submitted by a group of tenderers. If awarded the contract, the tenderers of the group will have an equal standing towards AFNOR in executing a supply, service or works contract.

A joint offer shall explicitly specify the different responsibilities of each member of the group with respect to the different tasks described in this specification.

AFNOR will not request consortia to have a given legal form in order to be allowed to submit a tender, but reserves the right to require a consortium to adopt a given legal form before the contract is signed if this change is necessary for proper performance of the contract. This can take the form of an entity with or without legal personality but offering sufficient protection of the AFNOR's contractual interests (depending on the Member State concerned, this may be, for example, a consortium or a temporary association).

The documents required and listed in the present specifications must be supplied by every member of the grouping.

The offer has to be signed by all members of the group.

Each member of the group will have a separate contract with AFNOR covering the tasks he is responsible for in the joint offer. BNAE will be responsible for verifying the correct execution of the contracts.

5.4 Form and content of the tender: general

Tenders must be signed by the tenderer(s) or his (their) duly authorized representative(s). Tenders must be perfectly legible so that there can be no doubt as to words and figures.

Tenders must be clear and concise, with continuous page numbering, and assembled in a coherent fashion (e.g. bound or stapled, etc.).

Tenders must be written in English language.

Tenders must include the following information:

- All the information and documents requested by AFNOR in order to assess the tender. In order to help tenderers presenting a complete tender, a checklist of the documents to submit is provided in section 6.6. This checklist does not need to be included in the tender but we encourage to use it in order to ease the assessment of the tenders;
- The price in euros;
- One specimen signature of an authorised representative on the legal entity form and a statement confirming the validity of the tender (preferably in blue ink), the tender must provide evidence of the authorisation to sign in name of the tenderer;
- The name of a contact person in relation to the submission of the bid.



5.5 How to submit a tender

Evidence of timely submission by post or courier service will be constituted by the date of dispatch, the postmark or the date of the deposit slip. In the case of hand-delivery, the signed and dated receipt will serve as evidence.

Late delivery will lead to the non-admissibility of the tender and its rejection from the award procedure for this contract. Offers sent by e-mail or by fax will also be non-admissible. Envelopes found open at the opening session will also lead to non-admissibility of the tender. Consequently, tenderers must ensure that their bids are packed in such a way as to prevent any accidental opening during its mailing.

Tenders are to be sent to, no later than 60 calendar days after the publication notice of this invitation to tender:

Bureau de Normalisation de l'Aéronautique et de l'Espace
M. BENMEZIANE Karim
199 rue Jean-Jacques Rousseau
92138 Issy les Moulineaux
benmeziane@bnae.asso.fr

5.6 Structure of the tender

All tenders must be presented in five sections:

- Section one: Administrative information – Presentation of the tender (see 6.4 & 6.6.1)
- Section two: Evidence relating to the exclusion criteria (see 6.7.1)
- Section three: Evidence relating to the selection criteria (see 6.7.2 & 6.7.3)
- Section four: Technical Proposal – Addressing technical specifications and award criteria (see 3.2, 6.6.2, 6.7.3)
- Section five: Financial Proposal (see 6.6.3)

5.6.1 Administrative information

Whichever type of bid is chosen (joint bid or sole contractor), the tender must stipulate the legal status and role of each legal entity in the tender proposed and the monitoring arrangements that exist between them and, failing this, the arrangement they foresee to establish if they are awarded the contract.

A **Legal Entity Form** is to be signed by a representative of the tenderer authorised to sign contracts with third parties. There is one form for individuals, one for private entities and one for public entities.

A **Financial identification form** shall be duly filled in and signed by an authorised representative of the tenderer and his or her banker.

The Legal Entity Form **must be accompanied by all the information** indicated in the form.

All tenderers must provide their legal entity files as well as the necessary evidence.



BNAE

5.6.2 Technical proposal

Tenderers must include in their bids the technical proposal addressing all aspects detailed in the specifications set out in section 3.2 above.

The technical proposal must respond to these technical specifications and provide, as a minimum, all the information needed for the purpose of awarding the contract.

Please note that, to grant equal treatment of all tenders, it is not possible to modify offers after their submission in relation to the technical and financial proposals. As a consequence, incompleteness in this section can only result in negative impact for the evaluation of award criteria. Please note also, that proposals deviating from the technical specifications may be rejected for non-conformity.

The technical specifications and the tenderer's bid shall be integral parts of the contract and will constitute annexes to the contract.

5.6.3 Financial proposal

The tenderer's attention is drawn to the following points:

- prices must be expressed in euros;
- prices should be quoted free of all duties, taxes and other charges, i.e. also free of VAT
- since this invitation to tender relates to several lots (tasks within Work packages), tenderers must indicate a separate price for each of the lots they propose providing. They may indicate any price reduction they are prepared to grant in the event of being awarded a contract either for all the lots or for a specified group of lots, this reduction will, however, not be taken into account to award the contracts in each lot but will be taken into account for establishing the contract when relevant
- Prices shall not be conditional and be directly applicable by following the technical specifications.
- Prices shall be fixed and not subject to revision

The reference price for the award of the contract shall consist of two amounts:

a) The amount in payment of the tasks executed

For each category of staff to be involved in the project, the tenderer must specify:

- The total labour costs;
- The daily rates and total number of days (man-days) each member of staff will contribute to the project
- Other categories of costs, except for the costs specified under point b) below, indicating the nature of the cost, the total amount, the unit price and the quantity. Flat-rate amounts should be avoided. If, exceptionally, they are used, specimen quotations for the flat-rate amounts must be provided

b) The amount corresponding to the reimbursable expenses.

NOT APPLICABLE

Bids involving more than one legal entity must specify the amounts under a) for each legal entity.



Tenderers must use the following format to formulate their financial proposal:

<i>Price component</i>	<i>Unit price</i>	<i>Quantity</i>	<i>Total</i>
Human resources			
Person X (role)			
Person Y (role)			
.....			
Subtotal (1)			
Other			
Item X			
Item Y			
.....			
Subtotal (2)			
TOTAL a) (1+2)			

Tenders where no technical offers or financial offers are proposed will be rejected

Non-conformity with the technical specifications in section 3 will also result in rejection from award.

AFNOR reserves the right, however, to request clarification or additional evidence in relation to the exclusion and selection stages after the opening within a time-limit stipulated in its request.

5.7 Assessment and Award of contract

The assessment will be based on the information provided in the tender. AFNOR and the selection committee reserves the right to use any other information from public or specialist sources.

This assessment will be performed by applying the criteria set out in these specifications. To award of the contract, the assessment of admissible bids will be carried out in three successive stages. Only bids meeting the requirements of one stage will be examined in the next stage.

The aim of each of these stages is:

- To check, in the first stage (exclusion criteria), whether tenderers can take part in the tendering procedure and, where applicable, be awarded the contract;
- To check, in the second stage (selection criteria), the technical and professional capacity and economic and financial capacity of each tenderer who has passed the exclusion stage;
- To assess on the basis of the award criteria the technical and financial offers and establish a ranking list, by order of merit, of all tenders having passed the exclusion and selection stages, as well as the quality thresholds set for the assessment of the award criteria.



5.7.1 Stage 1: application of exclusion criteria and exclusion of tenderers

5.7.1.1 Declaration

Tenderers or their representatives shall provide a declaration on their honour, duly signed and dated in which they:

- State whether or not they are in one or more of the situations referred to in Articles 93 and 94 of the Financial Regulation and detailed in the form;
- Undertake to submit to the Commission any additional document relating to the exclusion criteria, that the Commission considers necessary to perform its checks, within seven calendar days following the receipt of the Commission's request.

To this end, tenderers must fill in and sign the form in Annex A to these specifications.

Where the bid involves more than one legal entity (including subcontractors), each entity must provide the form.

5.7.1.2 Grounds for disqualification

The tenderer to whom the contract is to be awarded shall provide, within the 15 days following the receipt of the letter informing him of the proposed award of the contract and preceding the signature of the contract, the following evidence confirming the declaration referred to in paragraph 6.7.1.1:

- a) AFNOR shall accept as satisfactory evidence that the tenderer to whom the contract is to be awarded is not in one of the situations described in point (a), (b) or (e) of Article 93(1) of the Financial Regulation, a recent extract from the judicial record or, failing that, an equivalent document recently issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied;
- b) AFNOR shall accept, as satisfactory evidence that the tenderer is not in the situation described in point (d) of Article 93(1) of the Financial Regulation, a recent certificate issued by the competent authority of the State.
- c) Where the document or certificate referred to in paragraph a & b is not issued in the country concerned and for the other cases of exclusion referred to in Article 93 of the Financial Regulation, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance.
- d) Depending on the national legislation of the country in which the tenderer is established, the documents referred to in paragraphs a, b, c and 6.7.1.1 shall relate to legal persons and/or natural persons including, where necessary, company directors or any person with power of representation, decision-making or control in relation to the candidate or tenderer. This would be the case when the national legislation concerned gives juridical responsibility of the acts committed by a legal entity (moral persons) to their legal representatives. The tenderer shall provide information on the ownership or on the management, control and power of representation of the legal entity whenever necessary for the proper understanding of the evidence submitted or whenever AFNOR requests it.



- e) Where they have doubts as to whether tenderers are in one of the situations of exclusion, AFNOR may itself apply to the competent authorities to obtain any information they consider necessary about that situation.

5.7.2 Stage 2: application of selection criteria

This part of the tender concerns the criteria and evidence relating to the technical and professional capacity and economic and financial capacity of the service provider(s) involved in the bid. It should also contain any other document that the tenderer(s) wish(es) to include by way of clarification.

An economic operator may rely on the capacities of other entities, regardless of the legal nature of the links which it has with them. In that case, evidence must be provided that it will have at its disposal the resources necessary for performance of the contract, for example by producing a clear undertaking on the part of those entities to place those resources at its disposal.

If several service providers are involved in the bid, each of them must have the professional and technical capacity to perform the tasks assigned to them in the tender and the necessary economic and financial capacity.

This rule applies to all legal entities once they have chosen to be tenderers.

5.7.2.1 Selection criteria

SELECTION CRITERIA
1. FINANCIAL AND ECONOMIC CAPACITY (evidences to provide : section 6.7.2.2)
<p><i>1.1 Sufficient economic and financial capacity to guarantee continuous and satisfactory performance throughout the envisaged lifetime of the contract.</i></p> <p><i>1.2 Sufficient financial capacity in relation to the pre-financing foreseen under the contract</i></p> <p><i>1.3 Reliability of the mitigating measures presented to cover possible deficiencies in the evidence presented for the above criteria.</i></p>
2. TECHNICAL AND PROFESSIONAL CAPACITY (evidences to provide : section 6.7.2.3)
<i>See section 5</i>

5.7.2.2 Evidence of the economic and financial capacity

All tenderers must provide proof of their economic and financial capacity by submitting the following documents:



- a) Filled Annex B, consisting of an extract of the concerned legal entities' annual accounts (balance sheet, profit and loss account, notes on the accounts and auditors' remarks when applicable) of the last two years, as approved by the general assembly of the company and, where applicable, audited and/or published. These documents must be signed by the authorised representative of the tenderer.
- b) A statement of overall turnover and turnover concerning the tasks, supplies or services covered by this contract for the last three financial years;
- c) Appropriate statements from banks or evidence of professional risk indemnity insurance, for legal entities facing the impossibility to fully present evidence a).

5.7.2.3 Evidence of the technical and professional capacity

The ability of service providers to perform services will be assessed in particular with regard to their know-how, efficiency, experience and reliability.

Evidence of the technical and professional capacity of the providers involved in the tender may, be furnished on the basis of the following documents:

- a) The educational and professional qualifications of the service provider or contractor and/or those of the firm's managerial staff and, in particular, those of the person or persons responsible for providing the services or carrying out the tasks; The Europass curriculum vitae format (http://europass.cedefop.europa.eu/europass/preview.action?locale_id=1) shall be filled in and signed, by each person involved in the execution of the tasks foreseen in the tender. The precise contractual link with the tenderer will also be described.
- b) A list of the principal services provided and supplies delivered in the past three years, with the sums, dates and recipients, public or private.
- c) A description of the measures employed to ensure the quality of supplies and services, and a description of the firm's study and research facilities.

By submitting a tender, each legal entity involved therein accepts the possibility of a check being carried out by AFNOR on its technical capacities and, if necessary, on its research facilities and quality control measures.

In addition, all tenderers are informed that they may be asked to prove that they are authorised to perform the contract under national law, as evidenced by inclusion in a professional or trade register or a sworn declaration or certificate, membership of a specific organisation, express authorisation, or entry in the VAT register.

5.7.3 Stage 3: Application of award criteria

The contract will be awarded to the most cost-effective tender. The following award criteria will be applied:

- 1) Qualitative award criteria concern only the quality of the services proposed.
- 2) Price criteria



No	Qualitative award criteria	Weighting (maximum points)
1.	<i>Expertise evidence in the main technical fields</i>	3 (15)
2.	<i>Adequacy of the proposed resources to achieve the tasks with their respective complexity (e.g. access to testing facilities...)</i>	3 (15)
3.	<i>Experience in the past 5 years in relevant projects</i>	2 (10)
4.	<i>Availability of relevant datasets with proper description to be used for WP 2 task 2</i>	2(10)
5.	<i>Consistency and complementarity of the consortium (in case of joint tenders)</i>	2 (10)
6.	<i>Experience in project management</i>	1 (5)
7.	<i>Experience in standardization activities</i>	1 (5)
Total number of points		70

Score for each criterion are in the range of 0 to 5.

The selected tender is assessed according to the above qualitative award criteria and the weighting applicable to each criterion along with the price criterion.

Tenders scoring less than 50 % in the overall points total or less than 3 out of 5 in the unweighted points awarded for a single criterion will be excluded from the rest of the assessment procedure.

The contract will be awarded to the tender which is the most cost-effective (offers the best value for money) on the basis of the ratio between the total points scored and the price.

Final Evaluation	
	<i>Total Quality Points/Price</i>

Tenders should elaborate on all points addressed by these specifications to score as many points as possible. The mere repetition of mandatory requirements set out in these specifications, without going into details or without giving any added value, will only result in a very low score.

5.8 Information for tenderers

AFNOR will inform tenderers of decisions reached concerning the award of the contract, including the grounds for any decision not to award a contract or to recommence the procedure.



If a written request is received, AFNOR will inform all rejected tenderers of the reasons for their rejection and all tenderers submitting an admissible tender of the characteristics and relative advantages of the selected tender and the name of the successful tenderer.

However, certain information may be withheld where its release would impede law enforcement or otherwise be contrary to the public interest or would prejudice the legitimate commercial interests of economic operators, public or private, or might prejudice fair competition between them.

5.9 Award of the contract

The procurement procedure is concluded by a contract signed by the parties. In this case, the General Terms and Conditions applicable to service contracts referred to above shall apply.

After the period of validity of the tender has expired, conclusion of the contract shall be subject to the tenderer's agreement in writing.

AFNOR shall not sign the contract or framework contract with the successful tenderer until a standstill period of 14 calendar days has elapsed, running from the day after the simultaneous dispatch of the award decisions and decisions to reject.

After the award, during standstill period, AFNOR will request to the tenderer proposed for award the evidence on exclusion criteria defined in section 6.7.1. If this evidence was not provided or proved to be unsatisfactory AFNOR reserves the right to cancel the award procedure or to change the award decision to the benefit of the next best ranked tenderer on condition that he satisfies with the provision of the evidence on exclusion.

5.10 Data protection

The follow up of your response to the invitation to tender will require the recording and further processing of personal data (name, address, CV, for example). This data will be processed in accordance with the requirements of Regulation (CE) 45/2001 on the protection of individuals with regard to the processing of personal data.

5.11 Specific rules to be applied

AFNOR policy on travel will apply. It will be made available on request.

The selection and appointment of WP leaders and task leaders will be conducted by a Selection Panel constituted by the members of the Steering Committee mentioned in section 3.1.



ANNEXES

A / Exclusion criteria form (Invitation to tender No SA/CEN/ENTR/EFTA/496/2019-13)

The undersigned [*name of the signatory of this form, to be completed*]:

1. in his/her own name (*if the economic operator is a natural person or in case of own declaration of a director or person with powers of representation, decision making or control over the economic operator²*)
or
2. representing (*if the economic operator is a legal person*)

official name in full (*only for legal person*):

official legal form (*only for legal person*):

official address in full:

VAT registration number:

declares that the company or organisation that he/she represents / he/she:

- a) is not bankrupt or being wound up, is not having its affairs administered by the courts, has not entered into an arrangement with creditors, has not suspended business activities, is not the subject of proceedings concerning those matters, and is not in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
- b) has not been convicted of an offence concerning professional conduct by a judgment which has the force of *res judicata*;
- c) has not been guilty of grave professional misconduct proven by any means which the contracting authorities can justify;
- d) has fulfilled all its obligations relating to the payment of social security contributions and the payment of taxes in accordance with the legal provisions of the country in which it is established, with those of the country of the contracting authority and those of the country where the contract is to be carried out;
- e) has not been the subject of a judgement which has the force of *res judicata* for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Communities' financial interests;
- f) is not a subject of the administrative penalty for being guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the procurement procedure or failing to supply an information, or being declared to be in serious breach of his obligation under contract covered by the budget.

In addition, the undersigned declares on their honour:

² To be used depending on the national legislation of the country in which the candidate or tenderer is established and where considered necessary by the contracting authority (see art. 134(4) of the Implementing Rules).



- g) they have no conflict of interest in connection with the contract; a conflict of interest could arise in particular as a result of economic interests, political or national affinities, family or emotional ties or any other relevant connection or shared interest;
- h) they will inform the contracting authority, without delay, of any situation considered a conflict of interest or which could give rise to a conflict of interest;
- i) they have not made and will not make any offer of any type whatsoever from which an advantage can be derived under the contract;
- j) they have not granted and will not grant, have not sought and will not seek, have not attempted and will not attempt to obtain, and have not accepted and will not accept any advantage, financial or in kind, to or from any party whatsoever, constituting an illegal practice or involving corruption, either directly or indirectly, as an incentive or reward relating to award of the contract.
- k) that the information provided to AFNOR within the context of this invitation to tender is accurate, sincere and complete.
- l) that in case of award of contract, they shall provide the evidence that they are not in any of the situations described in points a, b, d, e above³.

For situations described in (a), (b) and (e), production of a recent extract from the judicial record is required or, failing that, a recent equivalent document issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied. Where the Tenderer is a legal person and the national legislation of the country in which the Tenderer is established does not allow the provision of such documents for legal persons, the documents should be provided for natural persons, such as the company directors or any person with powers of representation, decision making or control in relation to the Tenderer.

For the situation described in point (d) above, recent certificates or letters issued by the competent authorities of the State concerned are required. These documents must provide evidence covering all taxes and social security contributions for which the Tenderer is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions.

For any of the situations (a), (b), (d) or (e), where any document described in two paragraphs above is not issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance.]

By signing this form, the undersigned acknowledges that they have been acquainted with the administrative and financial penalties described under art 133 and 134 b of the Implementing Rules (Commission Regulation 2342/2002 of 23/12/02), which may be applied if any of the declarations or information provided prove to be false.

Full name Date Signature

³ Mandatory for contracts of value above €133 000 only (see art. 134(2) of the Implementing Rules). The contracting authority can nevertheless request such evidence for contracts with a lower value.



B / Financial and Economic Capacity Overview Form (Invitation to tender No SA/CEN/ENTR/EFTA/496/2019-13)⁴

Financial and Economic Capacity Overview			
Currency : EURO		Figures (000)	
	N* (* most recent figures available)	N-1	N-2
Total Balance Sheet			
TRADE DEBTORS <i>Amounts due by commercial customers</i>			
CAPITAL and RESERVES (Equity) <i>Amounts owned by the company</i>			
TRADE CREDITORS <i>Amounts due to commercial suppliers</i>			
SHORT TERM DEBT			
LONG TERM DEBT			
LIQUIDITY <i>Bank accounts, cash at hand</i>			
<u>About PROFIT & LOSS</u>			
TURNOVER			
ORDINARY RESULT			
EXTRAORDINARY RESULT			
INCOME TAX			
NET RESULT			

⁴ You may add any data that you would consider of vital relevance for your organisation and for the understanding of the above figures.

Comments: Please explain BRIEFLY important variations from one year to another if appropriate. In case of negative equity or repeated losses, please explain how the future of the organisation will be ensured.



C / EXAMPLE CONTRACT CONTENT BETWEEN AFNOR and A SELECTED TENDERER

BETWEEN, party of the first part,

The French Standards Association (AFNOR), an association governed by the law of 1 July 1901, a state-recognised non-profit association, with its registered office at 11 rue Francis de Pressensé - La Plaine Saint Denis (93571), duly represented by Mr Olivier Peyrat in his capacity as Managing Director

Hereinafter referred to as "AFNOR"

AND, party of the second part,

[*RAISON SOCIALE*], [*FORME DE LA SOCIETE EN ANGLAIS*] with a registered capital of [*MONTANT DU CAPITAL SOCIAL*] €, registered with the register of companies of [*VILLE D'IMMATRICULATION DU RCS EN ANGLAIS*] under the no. [*NUMERO D'IMMATRICULATION DU REGISTRE DES SOCIETES*], whose registered office is located [*ADRESSE DU SIEGE SOCIAL DU PRESTATAIRE*], duly represented by [*PRENOM DU REPRESENTANT HABILITE*] [*NOM DU REPRESENTANT HABILITE*], in his/her capacity as [*FONCTION DU REPRESENTANT HABILITE EN ANGLAIS*]

Hereinafter referred to as "the Contractor",

Or severally referred to as the "Party" and jointly as the "Parties".

Whereas:

Seeking to pursue their partnership, the subject matter of which is to contribute to the attainment of EU policy objectives in the area of standardisation, the European Commission and the European Committee of Standardisation ("CEN") signed the "2014 CEN Framework Partnership Agreement" on 26 June 2014. When the European Commission decides to grant a subsidy for the performance of a specific task, it requires the CEN to sign a Specific Agreement.



It is within this context that the European Commission and the CEN concluded the "Specific Agreement, No. CEN/[*REFERENCE DU SA*], attached in the appendix hereof (hereinafter referred to as the "SA") entrusting the completion of the works to AFNOR, the technical specifications of which are set out in the invitation to tender documents "[*TITRE DE L'APPEL D'OFFRE EN ANGLAIS*] » launched on [*DATE DE PUBLICATION DE L'APPEL D'OFFRE EN ANGLAIS*] (hereinafter referred to as the "Invitation to tender"), to which the Contractor has made a bid.

The Contractor, selected following an invitation to tender, that has read the FPA, the SA and the tender documents, represented having the expertise and experience required as well as the organisation, material and human resources needed to fulfil the required service.

The contractual documents governing the relations between the parties were declared in the following decreasing order:

- SA
- Service contract and any amendments

Now, therefore, the parties hereto agree as follows:

Article 1. Subject matter

AFNOR hereby engages the Contractor, which accepts, to perform, in accordance with a performance requirement, the project management of all the operations needed to complete the tasks assigned to it and which are set out in appendix 1 of the SA and the invitation to tender (hereinafter referred to as the "Services").

Article 2. Obligations of the Contractor

2.1. The Contractor agrees to use its best efforts in performing the Services in accordance with the SA and the best practices of its profession.

2.2. The Contractor agrees to:

- comply with a general obligation to give advice, information and warning regardless of AFNOR's expertise or level of knowledge;
- assign qualified staff with the time and resources needed to perform the Services perfectly;



- give AFNOR the name and job title of the person directly responsible for the performance of the Services;

- send AFNOR all the deliverables set out in the SA within the set time limits;

- draw up and send AFNOR, at each of the key stages of the project set out in the appendix of the SA, a report setting out the state of progress of the services performed, i.e. an interim report and a final report drafted in accordance with the requirements set out in the SA;

- draw up and send AFNOR a progress report regarding the Services on 31 December of each year;

- notify AFNOR of any modification pertaining to the organisation and performance of the tasks such as changes to the structure or the people responsible for the performance of the contract.

2.3. The Contractor agrees, under penalty provided hereof, to comply with the agreed deadlines in accordance with the calendar set out in the SA.

2.4. Given that this contract forms part of a programme of the European Commission, the Contractor agrees to be audited regarding the performance of the services and the use of the sums paid by AFNOR. It consequently agrees to allow AFNOR and/or an audit company appointed by AFNOR and/or the European Commission to enter its premises and consult any documents dealing with the performance of the contract, on request.

2.5. The Contractor must maintain and keep, for a period of 7 years from the last payment received, a file including the reports, minutes of the tasks undertaken within the context hereof, the time sheets of the person/people involved in the performance of the service, the assignment's expenses statement and the payments made to any authorised sub-contractors.

Article 3. Obligations of AFNOR

AFNOR shall give the Contractor the information needed to effectively fulfil the Services.

AFNOR shall appoint a primary point of contact in order to maintain dialogue throughout the different stages of the services entrusted.

Should the SA be modified by an amendment, AFNOR agrees to notify the Contractor of such an amendment.

Article 4. Remuneration

The price and payment terms are set out in Appendix 2 ("Financial Terms") hereof.

Article 5. Penalties



When the Contractor fails to meet a contractual deadline or in the event of a serious failure attributable to the Contractor, the latter shall incur, simply by virtue of the lateness or failure being observed, financial penalties the amount of which will be set by the European Commission in proportion to the seriousness of the lateness or the failure concerned. The maximal rate applied when setting these penalties is equal to 20% of the total pre-tax amount hereof.

The penalties shall be applied independently of any other sanctions arising from the lateness or failure, including the possible termination of the contract and the terms set out in article 6 without the exclusion of a claim for damages.

Article 6. Term – Termination

6.1. Term

This contract shall take effect on [*DATE DE DEBUT DU SA*] and shall end on the date set out in appendix 1 of the SA (Art. 6.3).

6.2. Termination

This contract may be automatically terminated early by either Party by recorded letter with acknowledgement of receipt, in the following instances:

- in the event of a serious failure of either Party to fulfil its obligations without remedy within fifteen (15) calendar days of the reception of the notification of the failures in question sent by recorded letter with acknowledgement of receipt, the other Party shall automatically be entitled to terminate the contract without prejudice to any claim for damages.
- in the event of the Contractor going into receivership without the contract being pursued by the receiver or the termination of its commercial activities, this contract shall automatically be terminated on the date of the adjudication of the receivership of the assets or on the day of the effective termination of the commercial activities if this contract is not pursued by the receiver;
- in the event of the termination of the SA by the CEN or the European Commission.

Article 7. Intellectual Property

Pursuant to the FPA (art. II.8.3), the CEN must transfer to the European Commission all the intellectual property rights pertaining to the results arising from the Services, regardless of their nature, format or medium (hereinafter referred to as the "Results") such that the latter will be free to use them as it wishes.

To this end, the Contractor shall transfer all the intellectual property rights held for the Results to AFNOR that the latter will subsequently exclusively transfer to CEN as and when they are created. Accordingly, the Contractor shall transfer the following rights to AFNOR:

- use for its own needs



- reproduction in whole or in part for any use whatsoever by any process whatsoever and on any medium whatsoever;
- representation, circulation or publication of any kind whatsoever on any medium whatsoever;
- adaptation, modification, correction, development, integration, transcription and translation.

This transfer shall be concluded for the entire world and shall produce its effects throughout the entire legal term of the protection of the intellectual property rights. The remuneration set out in this contract includes the transfer of the intellectual property rights.

The Contractor warrants and represents that AFNOR has free, full and undisturbed use of all easements of the transferred rights against any disturbances, claims and evictions. In particular, the Contractor warrants and represents that it has obtained the prior transfer of the intellectual property rights regarding the Results from its employee(s) or any authorised agents.

Article 8. Non-disclosure

Each party agrees not to disclose the data, information and various documents sent by the other party or to which it becomes exposed, even by coincidence, in the performance hereof. Each party agrees to enforce these provisions upon its agents and employees.

The data, information and various communicated documents to which the Parties are exposed may not be used for any other purposes than for the due and proper performance hereof.

This clause shall survive the termination or expiration of this contract and shall apply to the parties throughout the term of the contract and for an additional five (5) years.

Article 9. Transferability and sub-contracting

This contract is entered into by virtue of the personality of the other party. The Contractor shall not, without the prior express written consent of AFNOR, entrust the completion, in whole or in part, of the Services, for which it is responsible, to a third party. In any case, the Contractor shall be exclusively responsible for paying the sub-contractor and shall assume full responsibility for any failure attributable to this sub-contractor, without AFNOR incurring any liability whatsoever.

Article 10. Liability, Insurance, Compliance with legislation

10.1 The Contractor shall assume full liability for the performance of all the obligations entrusted to it by this contract and shall indemnify AFNOR for any losses caused by itself, its employees or any of its agents.



10.2 The Contractor warrants and represents that it has taken out a business liability insurance policy with a well-known reputable company, whose certificate, which is valid for the year on which the contract is signed, shall be sent to AFNOR. AFNOR reserves the right to request a valid insurance certificate for each year during which the contract is performed.

10.3 Whatever the circumstances, the Contractor shall act in accordance with currently applicable laws and regulations.

10.4 The Contractor shall provide AFNOR with the following information pursuant to article D 8222-5 of the French employment code:

- documentary evidence of the company's registration on concluding the Contract: e.g. an extract of the registration with the Trade and Companies Register (K or K bis); an identification card proving registration with the directory of trades; a receipt for the submission of a declaration to a business formalities centre for natural persons or legal entities whose registration is in progress;
- on concluding the Contract and for an additional six (6) months, a certificate from the social welfare authorities for the recovery of contributions declaring that the corporate declarations have been submitted and the Social Security contributions have been paid;
- on concluding the Contract, the list of the names of the foreign employees requiring work permits assigned to carrying out the Services within Europe. This list shall provide the following information for each employee concerned: recruitment date (1st), nationality (2nd), type and order number of the work permit document (3rd).

Article 11. Miscellaneous provisions

11.1. Legal nature of the agreement

The relationship formed between the parties and that of independent and autonomous businesses. None of the clauses in this contract may be construed as granting either party the power to govern the activities of the other party. Nothing in the form or intention of this contract shall imply the constitution of a company de jure or de facto.

11.2. Invalidity

Should any of the causes of this contract be deemed contrary to applicable regulations, it shall be deemed invalid, but shall not lead to the invalidity of the rest of the contract. Each party shall strive to replace the clause with a similar provision that does not modify the economic balance of the contract.

11.3. Modification of the contract

This contract may only be modified by a written amendment that is signed by the representatives of the parties who have been duly authorised to this end.

Consequently, if the SA is modified by an amendment, the parties shall agree to sign a corresponding amendment.



Article 12. Governing law and the settlement of disputes

This contract, along with all the acts resulting from it, is governed by French law. In the event of a dispute arising from the interpretation, formation or execution of the contract, the parties undertake to seek an amicable solution. If such a solution cannot be reached, the dispute will be brought before the exclusive jurisdiction of the courts of Bobigny, including in the event of the introduction of third parties, several defendants or summary proceedings.



Call for candidate for the convenorship of CEN/CENELEC TC5/WG8 (SBAS L1 receiver performances for maritime applications)

1. INTRODUCTION

1.1. Background

This proposal addresses part of the response to EC mandate M/496 ("Mandate addressed to CEN, CENELEC and ETSI to develop standardization regarding space industry).

This mandate underlines that "the technological support for GALILEO will continue through applications research and a coherent system evolution programme. In order to provide safe and guaranteed applications, the necessary framework in terms of certified services and products, global standards and interference monitoring capabilities has to be implemented". Also, mandate M/496 stressed European standards organizations to make assessment of necessary future standardization in support of the regulatory framework.

Through resolution BT C121/2011, and D140/C011 to C013, CEN and CENELEC technical boards accepted M/496 standardization mandate addressed to CEN, CENELEC and ETSI for standardization related to space industry. In response to the mandate M/496, CEN and CENELEC BTs following the President Committee's decision, agreed on the creation of the CEN/CENELEC TC5 "Space".

Established in 1991, CEN (European Standardization Committee) operates on a decentralized system covering a network of 32 national members with a central secretariat, the CEN/CENELEC Management Center (CCMC). CEN is a business facilitator in Europe, removing trade barriers for European Industry and consumers. Its mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through its services, it provides a platform for the development of European Standards and other technical specifications. AFNOR is the French member of the National Standardization Bodies represented at the European and International level. As a monopolistic subcontractor of AFNOR, BNAE is the French standardization office for Aeronautics and Space standardization.

1.2. Context of the work

1.2.1. Satellite Based augmentation systems (SBAS)

Satellite Based Augmentation Systems complements the existing satellite navigation services provided by GPS. There are several SBAS developed or under development, such as:

- European Geostationary Navigation Overlay Service (EGNOS)
- Wide Area Augmentation System (WAAS) in USA,
- Multi-functional Satellite Augmentation System (MSAS), in Japan,
- System for Differential Corrections and Monitoring (SDCM), in Russia,
- the GPS and GEO Augmented Navigation (GAGAN) system in India,
- Satellite Navigation Augmentation System (SNAS) in China, and
- Korea Augmentation Satellite System (KASS) in Republic of Korea.



To guarantee seamless and worldwide system provision, the existing systems meet common standards and interoperability requirements. SBAS broadcasts on the GPS L1 frequency a GPS-like signal with embedded corrections, providing improved accuracy over GPS and are being fully interoperable with each other. In addition, they provide integrity information in real-time, providing information on the health of the GPS constellation. Although widely used for Safety of Life application in Aviation, SBAS are not yet formally used in maritime.

In maritime, SBAS SiS¹ provide a complementary service to marine radio beacon DGNSS for the provision of enhanced accuracy and integrity information. Vessels sailing under the IMO SOLAS Convention are currently unable to consider SBAS as a candidate for augmentation system to be conform to IMO requirements (A.1046), however mariners exempt from SOLAS (predominately leisure craft) can use SBAS.

Therefore, part of maritime users has de-facto been using SBAS for several years, and nowadays SBAS functionality is supported by most of the maritime GNSS receivers used in the recreational and professional (both unregulated and regulated) sectors.

As milestones to reach an SBAS compliance for IMO SOLAS Vessels there are at least two key points needs to be addressed:

- SBAS Service provision compliant with maritime requirements
- SBAS Standard for shipborne SBAS/GNSS L1 Maritime Receivers

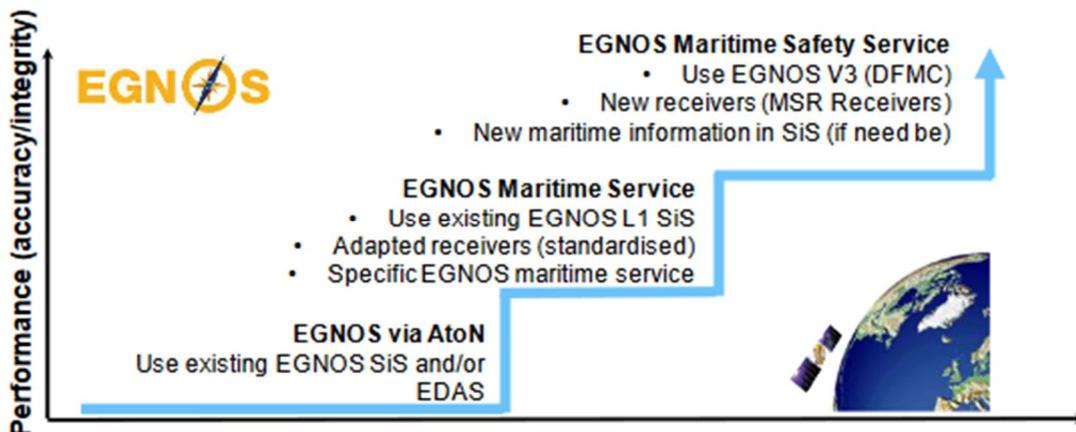
This project aims at providing the technical content needed to develop an SBAS receiver performance standard, which can be used in the Maritime domain.

1.2.2. SBAS services compliant with Maritime: status & expectations

In Europe, EGNOS aims to provide in few years an SBAS L1 Maritime Service compliant with maritime requirements. This service will use existing EGNOS V2 signal processed by IEC standardized receivers onboard the vessels. The EGNOS maritime service will be defined in a Service Definition Document (SDD). Notice to mariners and navigational warnings will be made available to mariners to inform about predicted EGNOS outage and relevant performances degradations.

On 3 April 2019, the service concept review organised by EC/GSA for the potential provision of a new service for maritime based on SBAS L1 was passed successfully. The service requirements review is planned in Q2 2020. The Service declaration is expected in 2022.

Such EGNOS V2 Maritime Service is the second phase of a three-step process conducted by Europe (GSA) to foster usage of SBAS in Maritime. The first step, using EGNOS data as an input to be broadcasted over Maritime terrestrial DGPS by Aids to Navigation operators is already available to be implemented and compliant with international maritime requirements (See IALA Guideline G1129). The second step is not yet being enabled for maritime community but some stakeholders including national & coastal authorities already consider that SBAS would contribute to maritime (See IALA Guideline G1152). The third step would be the development of an EGNOS V3 dual frequency multi-constellation-based service for Maritime.



¹ Unless mentioned otherwise, SBAS refers to SBAS Signal in Space



Although the EGNOS maritime service project is likely the most advanced initiative among SBAS providers to declare a maritime service, it is expected in the future from other SBAS providers to make available SBAS Maritime compliance services in their coverage area. This would enlarge the benefits of such services to maritime stakeholders the most globally, as it is for aviation SoL SBAS services.

1.2.3. Need for maritime GNSS L1/ SBAS Standardized receivers

Standardisation of shipborne receivers remains a prerequisite for SBAS services to be safely and formally used by mariners, mainly IMO SOLAS Vessels. Such a standard will further enable vessels to benefit from SBAS when sailing in an area covered by the service.

There are milestones remaining to reach an integrated cost-effective SBAS L1 receiver ready to market, and both institutional and industrial stakeholders could participate to this innovation. Finally, the SBAS L1 receiver innovation activities could also be linked to the development of multi-system multi constellation PNT receivers, as it will contribute as a part of the future solution.

SBAS L1 introduction in maritime GNSS receiver is challenging both in the field of innovation and regulations. In the field of innovation in relation to the GNSS/SBAS L1 shipborne receiver, it is worth noting the following activities:

- **SBAS L1 Guidelines** for shipborne manufacturers: EC/GSA/ESA with the support of ESSP and GMV prepared Guidance material for the implementation of SBAS L1 in shipborne receivers. The Guidelines defined the minimum set of SBAS messages that have to be used in order to fulfil the operational requirements in IMO resolution A.1046.
- **EGUS project:** Implemented Guidelines in a software receiver (gLab), defined tests specifications and executed the tests. The project verified that tests are well defined so that it is possible to check whether an implementation is ok or not ok. In the same project the Guidelines were updated with the definition of the tests and included at the end of the document.
- **Fundamental Elements:** “SBAS Maritime Receiver Development, Test and Validation”. Main objectives are to implement SBAS following Guidelines for manufacturers already discussed in RTCM, perform a testing campaign and to support the standardisation process within IEC. Deliverables received: Analysed the current Guidelines, discussed how to integrate together SBAS and IALA DGNSS, and proposed the next steps in standardisation at IEC and its inclusion in MED. More details in Annex 1.

Considering all the above, there is a strong need to get a standard for SBAS Maritime GNSS L1 receiver that would benefit the whole Maritime community.

1.2.4. Market considerations

SBAS are operating or being developed all around the world and are fully interoperable. Hence, Maritime GNSS/SBAS L1 receiver will be finally requested and compatible for all the ships. European manufacturers that first get ready to market SBAS L1 receiver can take benefits of this technologies out of Europe boundaries.

Introduction of SBAS L1 in maritime standards would also lead to an opportunity for receiver manufacturers to increase their sale streams. Indeed, it is very likely that shipowners would replace their receivers in the following years after the standard issue to comply with these new standards and get benefits on the SBAS L1 for their applications.

1.2.5. Social & environmental benefits expected

The improvement of accuracy allows a better efficiency of the vessel route that can on one hand, reduce the duration of the trip from berth to berth. This contributes to the improvement of the efficiency of the supply chain. On the other hand, it is also good for environment by decreasing the fuel consumption, therefore decreasing SO_x, NO_x, CO_x emissions.

Further than accuracy, SBAS usage will also improve integrity and mitigate some threats related to usage of GNSS standalone. The coverage of SBAS is wider than terrestrial DGNSS systems that already provides augmentation services. Therefore, it can be expected an improvement of maritime safety leading to decrease the



number of accidents (grounding, collisions for instance). This will directly benefit by reduce human injuries or lost and pollution disasters.

1.2.6. Challenges to be overcome to reach a standard

SBAS were originally design for aviation Safety of Life applications where standardization of integrity algorithms has been a core subject for decades. Moreover, there are also more stringent requirements on the standardisation of navigation equipment carried by aircrafts. For instance in maritime, DGNSS receiver is not a carriage requirements for IMO SOLAS Vessels.

Although **it is recognized by the maritime community for years that SBAS standard would be a key benefits**, there were for now **some challenges that slow down the process from now and other to overcome** to get it:

SBAS regulations:

In Maritime, the common DGNSS source is terrestrial IALA DGPS Beacon shore stations that are design for coastal navigation compliant with IMO resolution A.1046. This DGPS signal is commonly processed by a specific receiver that is interfaced with the GPS receiver providing enhanced accuracy and integrity warnings. This usage has been considered for years in the IMO regulations and standardized for both service provision and receiver sides.

However, since SBAS are known to deliver a satisfying DGNSS service to aviation, Maritime receiver manufacturers widely consider SBAS as a signal of opportunity to be used and already implement SBAS capability in their devices out of any standard nor specific maritime SBAS Services.

It appears recently Guidelines at IALA on how maritime shore authorities can consider SBAS for maritime use and also in IMO there are some work in progress regarding multi-system multiconstellations shipborne receivers on which SBAS is considered to contribute.

SBAS service provision:

Maritime User needs are very different than in aviation and SBAS should be proved to be compliant with prior to **develop a maritime SBAS standard receiver that is also compliant with specific maritime requirements**. In maritime, the current requirements consider integrity at system level and defines some required performances for key parameters (Availability, Continuity, Accuracy, Integrity...). In addition, there are also other specific needs like Maritime safety Information broadcasting to inform users on expected or unplanned service outages.

These service provision challenges had been considered for years and a several works has been carried out in IALA and EMRF but also within different projects funded and managed by Europe (ESA, GSA,ESSP).

These should lead to **a maritime service available in Europe in 2022 then the availability of a standard for maritime SBAS receiver became even more valuable**.

SBAS algorithms processing:

In Maritime, there is no international authority that is committed to type approved processing algorithms for navigation receivers. IMO requirements defined the performances expected for DGNSS receivers and for DGNSS Service but not defined the way that signal should be processed.

As we set before, maritime needs are not similar than aviation needs. So **specific algorithms should be developed to process SBAS in maritime receivers and proved to result in performances compliant with maritime requirements**. These algorithms are also expected to be approved by the maritime community and also but it is challenging since there is not a single organisation to do so.

Again, European GNSS stakeholders mainly GSA, fostering EGNOS adoption in Maritime by leading some activities and discussions groups to gather user needs, advices and opinion on the way to process SBAS in maritime receivers. The outcomes of such consultation was mapped into a guideline for SBAS processing in receivers that is implemented to perform some tests on real data. These **tests campaigns highlights that an SBAS maritime compliant receiver is achievable. This pave the way to start a work to an IEC performance standard that could certify some receivers**.

Remaining concerns to explore:

Considering all the above mentioned that are already addressed, at least partially. There are some remaining technical points to be explored when aiming to develop a standard for maritime SBAS receiver:

- How to comply with IMO receiver performances standards including the mutli-system radio-navigation shipborne navigation receiver approach.



- How to deal with other differential and integrity methods already implemented on receivers as RAIM and DGPS.
- Consider the tests results and not the implemented algorithms
- Consider to develop a solution that is cost effective to be finally sustainable to the ship-owners
- How to push the European related outcomes to an international level mainly IEC.
- Don't forget to consider the real cases implementation & equipment installation on-board that are not always "perfect" as record & replay.

1.2.7. Current work at IEC

The IEC is one of three global sister organizations (IEC, ISO, ITU) that develop International Standards for the world. Founded in 1906, the IEC (International Electrotechnical Commission) is the world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies. All IEC International Standards are fully consensus-based and represent the needs of key stakeholders of every nation participating in IEC work. Every member country, no matter how large or small, has one vote and a say in what goes into an IEC International Standard.

Many thousand experts carry out standardization work in the IEC in TCs (technical committees) and SCs (subcommittees), in hundreds of working groups, project and maintenance teams. IEC TCs and SCs prepare technical documents on specific subjects within their respective scopes.

TC80 Scope thanks to IEC Website is "To prepare standards for maritime navigation and radiocommunication equipment and systems making use of electrotechnical, electronic, electroacoustic, electro-optical and data processing techniques." The customers for TC 80 standards are the manufacturers of the navigation and communication systems, the test houses which provide the test reports and Administrations which use the standards for type approval purposes which is for example required by the IMO International Convention for the Safety of Life at Sea (SOLAS).

From 1996 to now, the IEC TC80 develops a series of standards for maritime GNSS radio-navigation receivers. These IEC 61108-1 to 61108-4 are in force currently and describes performance standards, methods of testing and required test results for GNSS and DGNSS in maritime.

The 61108-1 refers to GPS, the 61108-2 to GLONASS, the 61108-3 to GALILEO and the 61108-4 to DGPS and DGLONASS marine radio beacons. It is worth noted that a project team is currently working on the expected 61108-5 which will add Beidou to the series.

Each of these standards develops a similar approach but address either one specific GNSS or maritime radio DGPS/DGLONASS beacons. It refers to IMO relevant resolutions such as those which define maritime shipborne radio-navigation receiver standards and also resolution on the world wide radio navigation system that describes the requirements for different navigation phases.

The approach followed by the 4th standards is quite similar by dividing the standards in two main parts:

- Minimum performance: This part describes the receiver requirements and several specifications to consider for receiver performances such as input/output, signal to process, installation on-board including antennas, electro-magnetic protections...
- Methods of testing and required results: this part includes several information and specifications related to the test sites, sequence, signal and conditions that should be set when carry out standardization test of a receiver. This part also describes in detail the test process and the expected results.

As we already said above, there is a strong need to get a standard for SBAS Maritime GNSS L1 receiver. The operational benefits for mariners will be finally reached when an IEC standard will be issued and implemented in purchasable receivers.

Yet, it is important to note that this project aims to foster SBAS standardization process by gathering and putting in place, at a European level, the material and knowledge that could be promoted further as input for IEC activities. The drafting of the technical content will be executed by the subject matter experts selected in the MARESS project.



2. OBJECTIVES

This call aims at the recruitment of the convenor of CEN/CENELEC TC5/WG8 which will coordinate the technical work for the delivery of European inputs to IEC TC80. The tasks of the convenor are described in section 3.2. The expected technical expertise and criteria for selection are described in section 5, 6 and 7.

The timeframe of the project is indicated in section 3.3. Financial support is described in section 4.

The candidates are expected to submit their application according to the requirements laid out in section 8.

3. EXECUTION

3.1. General

This call for candidate is part of a Specific Agreement (SA 2019/13) signed between the European Commission and CEN/CENELEC under the Framework Partnership Agreement 2014 program. This specific agreement has been signed on the 25th of March 2020, which is the starting date for the Specific Agreement.

This call for candidates aims at selecting the convenor who which will coordinate the work programme developed in a secondary project named MARESS (MARitime REceiver Sbas Standardisation). The objective of the MARESS project is the production of 5 Technical Reports and 1 Technical Analysis related to the definition of minimum performances for SBAS L1 receivers for maritime application and the definition of test methods and their implementation.

3.2. Tasks of the convenor

The WG Convenor is responsible for the activities of WG8 (SBAS L1 receiver performances for maritime applications) established by CEN/CENELEC TC5. For this purpose, and with the support of BNAE as support secretariat, the convenor will:

- ensure the coordination of the activities of the MARESS project
- review the reports provided by the MARESS project participants according to the timeframe laid out in section 3.3.
- be responsible for the delivery of the interim and final report of the MARESS project according to the Specific Agreement 2019/13 between CEN/CENELEC and the European Commission.

The WG Convenor will also convene WG8 meetings, report to the parent committee (CEN/CENELEC TC5) and ensure proper coordination with IEC TC80 by participating to their meetings in the frame of the development of IEC 61108-x standard described in section 1.2.7.

3.3. Time frame

The project shall be finalized within the period starting upon signature of the contract until the 30th of March 2022.

3.4. Joint offers

A joint offer is a situation where an offer is submitted by a group of tenderers. If awarded the contract, the tenderers of the group will have an equal standing towards AFNOR in executing a supply, service or works contract.

A joint offer shall explicitly specify the different responsibilities of each member of the group with respect to the different tasks described in this document.

AFNOR will not request consortia to have a given legal form in order to be allowed to submit a tender, but reserves the right to require a consortium to adopt a given legal form before the contract is signed if this change is necessary for proper performance of the contract. This can take the form of an entity with or without legal personality but offering sufficient protection of the AFNOR's contractual interests (depending on the Member State concerned, this may be, for example, a consortium or a temporary association).

The documents required and listed in the present specifications must be supplied by every member of the grouping. The offer must be signed by all members of the group.



Each member of the group will have a separate contract with AFNOR covering the tasks he is responsible for in the joint offer. BNAE will be responsible for verifying the correct execution of the contracts.

4. FINANCIAL SUPPORT

The reimbursement rate for accepted experts is to be communicated by the candidates. Travels and lodging costs incurred by the selected candidate in the context of the work of CEN/CENELEC TC5/WG8, the MARESS project or IEC TC80 meetings will be reimbursed up for the entire duration of the project. It is expected that the expert provide a list of travel expenses.

5. CHARACTERISTICS OF THE EXPERTISE AND CRITERIA FOR SELECTION OF CANDIDATES

The convenor shall demonstrate capabilities and/or knowledge in the following areas:

- Technical content and planning of the MARESS project (according to SA 2019/13)
- Capacity to carry on analytical reporting
- Linguistic abilities to draft reports in English Language
- Proven experience in organizing technical and coordination meetings

The foreseen required expertise is as follows:

- System engineering
- Test specifications, test protocols design, test execution
- GNSS signals and receivers
- GNSS positioning
- Maritime Applications
- Signal processing
- Radio-frequency signals
- Mathematics, probabilities and statistics

The candidates must provide a CV which underlines the possession of relevant expertise. Candidate experts must describe in their offer the expertise that they will bring for the convenorship. Selection, follow-up of and retribution of the experts will be done by BNAE and AFNOR, in cooperation with CEN/CENELEC.

6. AWARD CRITERIA

The selection of the experts will be made based on the following criteria:

- i. Practical technical project management skills and technical skills (10%)
- ii. Knowledge within European or International standardization work or in related requirement defining organization in the Maritime Domain (e.g. IMO, IALA...) (10%)
- iii. Experience in the Maritime Domain, on topics related to E-GNSS receivers performances definition and tests (35%)
- iv. Planning and organization of the support in the development and validation of the content of the deliverables of the MARESS project (20%)
- v. Ability to lead meetings at working group level (20%)
- vi. English language skills (5%)

Candidates scoring less than 70% of the overall total points or less than 50% of the points awarded for a single criterion will be excluded from the remaining selection procedure.

The contract will be awarded to the candidacy which is the most cost-effective based on the ratio between the total points scored and the price/1000.

7. EXCLUSION/ELIGIBILITY CRITERIA



The following candidates will be excluded:

- Candidates who are not citizen of the European Union
- Candidates who were the subject of a non-likely judgment or recourse for a professional infringement
- Candidates who are in an irregular tax situation or in an irregular special taxation situation
- Candidates who provide incomplete or erroneous information.

8. APPLICATION FORM

Applications shall be made by email to BNAE by 2020-09-15:

Attn: M. Benmeziane Karim (secretariat CEN/TC5/WG8) karim.benmeziane@bnae.fr

The required information are as follows:

- Contact details of the candidate expert
- CV: the resume shall mention experience in the required areas covered by section 5.
- Any further documents to prove the qualification required in the above section on Selection and Award Criteria
- A signed declaration, by which the candidate(s) certifies not to be subject to one of the exclusion criteria as described in section 7.

Note on the employee status of the selected candidate:

- For the entire duration of the project the selected candidate shall remain an employee of the contractor (organization for which the candidate is an employee) and shall not be deemed to be an employee of either CEN/CENELEC, AFNOR or BNAE.



ANNEX I: GENERAL TERMS OF THE CONTRACT BETWEEN AFNOR and the CONVENOR's ORGANIZATION (hereafter the "CONTRACTOR")

Article 1. Subject matter

AFNOR hereby engages the Contractor, which accepts, to perform, in accordance with a performance requirement, the project management of all the operations needed to complete the tasks assigned to it and which are set out in appendix 1 of the SA and the invitation to tender (hereinafter referred to as the "Services").

Article 2. Obligations of the Contractor

2.1. The Contractor agrees to use its best efforts in performing the Services in accordance with the SA and the best practices of its profession.

2.2. The Contractor agrees to:

- comply with a general obligation to give advice, information and warning regardless of AFNOR's expertise or level of knowledge;
- assign qualified staff with the time and resources needed to perform the Services perfectly;
- give AFNOR the name and job title of the person directly responsible for the performance of the Services;
- send AFNOR all the deliverables set out in the SA within the set time limits;
- draw up and send AFNOR, at each of the key stages of the project set out in the appendix of the SA, a report setting out the state of progress of the services performed, i.e. an interim report and a final report drafted in accordance with the requirements set out in the SA;
- draw up and send AFNOR a progress report regarding the Services on 31 December of each year;
- notify AFNOR of any modification pertaining to the organisation and performance of the tasks such as changes to the structure or the people responsible for the performance of the contract.

2.3. The Contractor agrees, under penalty provided hereof, to comply with the agreed deadlines in accordance with the calendar set out in the SA.

2.4. Given that this contract forms part of a programme of the European Commission, the Contractor agrees to be audited regarding the performance of the services and the use of the sums paid by AFNOR. It consequently agrees to allow AFNOR and/or an audit company appointed by AFNOR and/or the European Commission to enter its premises and consult any documents dealing with the performance of the contract, on request.

2.5. The Contractor must maintain and keep, for a period of 7 years from the last payment received, a file including the reports, minutes of the tasks undertaken within the context hereof, the time sheets of the person/people involved in the performance of the service, the assignment's expenses statement and the payments made to any authorised sub-contractors.

Article 3. Obligations of AFNOR

AFNOR shall give the Contractor the information needed to effectively fulfil the Services.

AFNOR shall appoint a primary point of contact in order to maintain dialogue throughout the different stages of the services entrusted.

Should the SA be modified by an amendment, AFNOR agrees to notify the Contractor of such an amendment.

Article 4. Remuneration

The price and payment terms are set out in Appendix 2 ("Financial Terms") hereof.

Article 5. Penalties



When the Contractor fails to meet a contractual deadline or in the event of a serious failure attributable to the Contractor, the latter shall incur, simply by virtue of the lateness or failure being observed, financial penalties the amount of which will be set by the European Commission in proportion to the seriousness of the lateness or the failure concerned. The maximal rate applied when setting these penalties is equal to 20% of the total pre-tax amount hereof.

The penalties shall be applied independently of any other sanctions arising from the lateness or failure, including the possible termination of the contract and the terms set out in article 6 without the exclusion of a claim for damages.

Article 6. Term – Termination

6.1. Term

This contract shall take effect on [*DATE DE DEBUT DU SA*] and shall end on the date set out in appendix 1 of the SA (Art. 6.3).

6.2. Termination

This contract may be automatically terminated early by either Party by recorded letter with acknowledgement of receipt, in the following instances:

- in the event of a serious failure of either Party to fulfil its obligations without remedy within fifteen (15) calendar days of the reception of the notification of the failures in question sent by recorded letter with acknowledgement of receipt, the other Party shall automatically be entitled to terminate the contract without prejudice to any claim for damages.
- in the event of the Contractor going into receivership without the contract being pursued by the receiver or the termination of its commercial activities, this contract shall automatically be terminated on the date of the adjudication of the receivership of the assets or on the day of the effective termination of the commercial activities if this contract is not pursued by the receiver;
- in the event of the termination of the SA by the CEN or the European Commission.

Article 7. Intellectual Property

Pursuant to the FPA (art. II.8.3), the CEN must transfer to the European Commission all the intellectual property rights pertaining to the results arising from the Services, regardless of their nature, format or medium (hereinafter referred to as the "Results") such that the latter will be free to use them as it wishes.

To this end, the Contractor shall transfer all the intellectual property rights held for the Results to AFNOR that the latter will subsequently exclusively transfer to CEN as and when they are created. Accordingly, the Contractor shall transfer the following rights to AFNOR:

- use for its own needs
- reproduction in whole or in part for any use whatsoever by any process whatsoever and on any medium whatsoever;
- representation, circulation or publication of any kind whatsoever on any medium whatsoever;
- adaptation, modification, correction, development, integration, transcription and translation.

This transfer shall be concluded for the entire world and shall produce its effects throughout the entire legal term of the protection of the intellectual property rights. The remuneration set out in this contract includes the transfer of the intellectual property rights.

The Contractor warrants and represents that AFNOR has free, full and undisturbed use of all easements of the transferred rights against any disturbances, claims and evictions. In particular, the Contractor warrants and represents that it has obtained the prior transfer of the intellectual property rights regarding the Results from its employee(s) or any authorised agents.

Article 8. Non-disclosure



Each party agrees not to disclose the data, information and various documents sent by the other party or to which it becomes exposed, even by coincidence, in the performance hereof. Each party agrees to enforce these provisions upon its agents and employees.

The data, information and various communicated documents to which the Parties are exposed may not be used for any other purposes than for the due and proper performance hereof.

This clause shall survive the termination or expiration of this contract and shall apply to the parties throughout the term of the contract and for an additional five (5) years.

Article 9. Transferability and sub-contracting

This contract is entered into by virtue of the personality of the other party. The Contractor shall not, without the prior express written consent of AFNOR, entrust the completion, in whole or in part, of the Services, for which it is responsible, to a third party. In any case, the Contractor shall be exclusively responsible for paying the sub-contractor and shall assume full responsibility for any failure attributable to this sub-contractor, without AFNOR incurring any liability whatsoever.

Article 10. Liability, Insurance, Compliance with legislation

10.1 The Contractor shall assume full liability for the performance of all the obligations entrusted to it by this contract and shall indemnify AFNOR for any losses caused by itself, its employees or any of its agents.

10.2 The Contractor warrants and represents that it has taken out a business liability insurance policy with a well-known reputable company, whose certificate, which is valid for the year on which the contract is signed, shall be sent to AFNOR. AFNOR reserves the right to request a valid insurance certificate for each year during which the contract is performed.

10.3 Whatever the circumstances, the Contractor shall act in accordance with currently applicable laws and regulations.

10.4 The Contractor shall provide AFNOR with the following information pursuant to article D 8222-5 of the French employment code:

- documentary evidence of the company's registration on concluding the Contract: e.g. an extract of the registration with the Trade and Companies Register (K or K bis); an identification card proving registration with the directory of trades; a receipt for the submission of a declaration to a business formalities centre for natural persons or legal entities whose registration is in progress;
- on concluding the Contract and for an additional six (6) months, a certificate from the social welfare authorities for the recovery of contributions declaring that the corporate declarations have been submitted and the Social Security contributions have been paid;
- on concluding the Contract, the list of the names of the foreign employees requiring work permits assigned to carrying out the Services within Europe. This list shall provide the following information for each employee concerned: recruitment date (1st), nationality (2nd), type and order number of the work permit document (3rd).

Article 11. Miscellaneous provisions

11.1. Legal nature of the agreement

The relationship formed between the parties and that of independent and autonomous businesses. None of the clauses in this contract may be construed as granting either party the power to govern the activities of the other party. Nothing in the form or intention of this contract shall imply the constitution of a company de jure or de facto.

11.2. Invalidity

Should any of the causes of this contract be deemed contrary to applicable regulations, it shall be deemed invalid, but shall not lead to the invalidity of the rest of the contract. Each party shall strive to replace the clause with a similar provision that does not modify the economic balance of the contract.



11.3. Modification of the contract

This contract may only be modified by a written amendment that is signed by the representatives of the parties who have been duly authorised to this end.

Consequently, if the SA is modified by an amendment, the parties shall agree to sign a corresponding amendment.

Article 12. Governing law and the settlement of disputes

This contract, along with all the acts resulting from it, is governed by French law. In the event of a dispute arising from the interpretation, formation or execution of the contract, the parties undertake to seek an amicable solution. If such a solution cannot be reached, the dispute will be brought before the exclusive jurisdiction of the courts of Bobigny, including in the event of the introduction of third parties, several defendants or summary proceedings.