Open Call for Tenders for:

A set of studies including 4 (four) Work Packages and 15 (fifteen) Tasks for the development of 7 Technical Reports and 4 Technical Specifications that are necessary to address four standardization gaps identified by CEN-TC5-WG1 and EC. The topics covered by those productions are:

- Record & Replay scenario as defined by EN16803,

- Improved PVT error modelling which can handle challenging scenario,

- Integrity management on road applications, from its definition to the way to verify or assess it,

- Assessment of hybridized GNSS device in laboratory in a certification framework.

Content

1. INTRODUCTION

1.1 Background

This call for tenders addresses part of the response to EC mandate M/496 ("Mandate addressed to CEN, CENELEC and ETSI to develop standardization regarding space industry) and more specifically part of the dossier 1 "Navigation and Positioning (NP) Receivers for Road Applications" of mandate M/496 (exclusion made of airport services).

The M/496 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. This mandate emphasizes that "a special care should be taken to treat as a priority […] sectorial dossiers linked with the programs Galileo and GMES (now Copernicus)".

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". The work related to Navigation and Positioning receivers has been allocated to CEN/CLC TC5 Working Group 1.

WG1 conducted a first evaluation of the Sectorial Dossier 1 of the mandate and agreed on a reassessment of the work program. The main topics addressed are in line with the scope of WG1 which reads as follows:

WG1 develops technology-independent standards for performance definition and testing of the GNSS-based positioning terminals outputs that will:

- facilitate multiple implementations,
- certify fair competition between suppliers,
- ensure interoperability between different systems implementations,
- enable the integration of research results into the standards.

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. BNAE is responsible of the secretariat of CEN/CLC TC5/WG1.

The mandate work related to dossier sectorial 1, especially regarding the topics mentioned above, will be carried out by CEN/CLC TC5/WG1 and BNAE will deal with administrative management of the standardization work.

1.2 Context of the work

Autonomous driving is seen by many as a coming technology disruption that will have profound impacts on industry, society, and the economy. One of the great hopes of autonomous driving proponents is the realization of huge safety improvements. According to the World Health Organization, road accidents account for 3.400 deaths every day around the world. This is more deaths than those caused, for example, by HIV-related illnesses. By reducing or even removing entirely the element of human error, autonomous driving has the potential to transform road transport to unprecedented safety levels.

Furthermore, due to the efficiency gains possible when road vehicles do not require drivers, autonomous driving may bring about cost savings, as well as environmental savings through more efficient use of resources.

One of the key enabling technologies for autonomous driving is accurate and reliable PNT. According to some experts, autonomous driving requires positioning accuracy of 30 cm or even better, a level which cannot be attained by standalone GNSS positioning methods.

Perhaps even more demanding are the requirements for reliability and integrity, and the only way to meet these demands is by integrating dissimilar and redundant technologies.

At present, autonomous vehicles are being tested in many test environments and on public roads in different parts of the world. Many of the key developers in autonomous driving are based in Silicon Valley in the US (e.g. Google), whereas others are based, for example, in central Europe.

Together with advanced algorithms, they can allow achieving an Integrity Risk suitable for APVs. However, it must be considered that FE and DA have an implicit risk caused by incorrect associations (mistaking one landmark for another). The target level of Integrity is very demanding, considering that alert limits range between 0.5m and 1m (to avoid entering the adjacent lane). The target integrity risk is in the order of 1 fatal accident over 100 million miles driven.

1.2.1 Market considerations
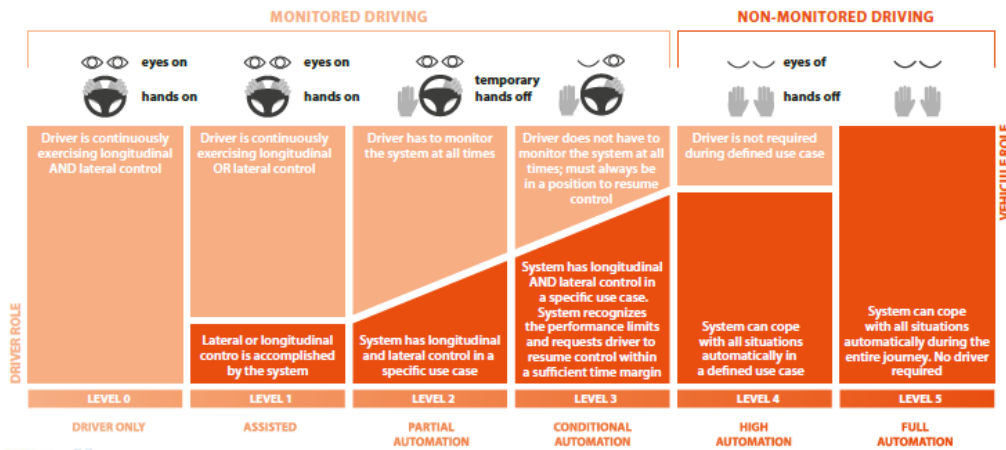
Extracted from « GSA – GNSS user technology report »

ADAS and Autonomous cars are becoming a reality.

Nowadays, the car industry is able to reach SAE levels 1 and 2, which are seen as the ADAS applications whereas autonomous driving is considered from level 3 onwards. It is expected that AD level 3 will become very common from 2023/2024 onwards.

SAE levels 4-5 is not expected to be reached with GNSS technology only, but it is expected to play an important role in complementing other PNT technologies, in particular by providing absolute position information to initialize the autonomous driving system (e.g. digital map matching), and by improving positioning verification, redundancy and safety capacity.
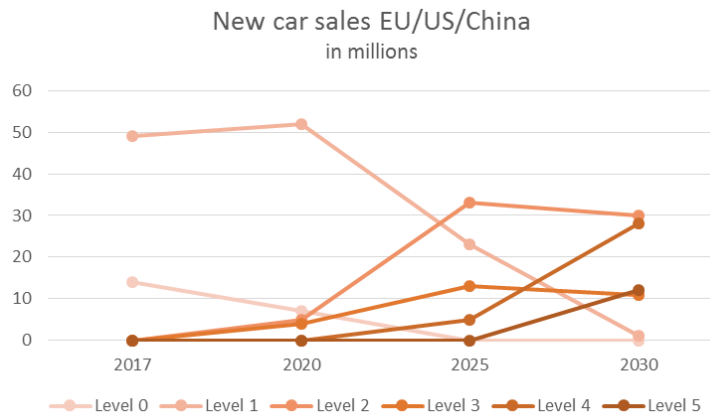
Extracted from « PWC 2017 Digital Auto Report »

Related emerging applications are very demanding in terms of location accuracy and integrity, and such performances need to be duly proven. Safety needs for Road will imply certification of the necessary items, probably at different levels of the corresponding system architectures.

New products are already entering into the market while safety standards for autonomous are still under preparation.

As standardization and certification development process are very long, standardization activities must be initiated as earlier as possible.

1.2.2 Integrity and hybridization standards: challenges

The integrity functionality is particularly worthy in safety critical or liability critical operations. Its main interest relies on the ability of detection and of exclusion of positioning process faulty behaviors, caused by unexpected situations (feared events) susceptible to lead with the highest probability (with regard to normal operations) towards an accident (safety) or disputable operations like undue payment (liability). In domains such as aeronautics, integrity has already been taken into account considering the safety critical issue of passenger transportation over the air. For road or land domains, integrity is not as the same level of maturity. Two reasons are identified for justifying the gap between this 2 domains. First, the automation level in aeronautic is higher than in automotive field. But this trend is less and less true because autonomous vehicles are already in the roadmap of every car manufacturer. And an autonomous vehicle shall prove its guidance system respects high level of integrity. Second, where RTCA MOPS DO-229-C "Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System airborne equipment" is fully applicable in the air domain, it is not on land domain, or at least with not the same confidence. And this, because environmental conditions are largely different: for instance, hypothesis of Gaussian error are not true anymore with road applications. But things are currently moving, some companies develop integrity algorithm for such applications. From a standardization point of view, next question is: how to assess integrity aspect of GNSS-based positioning systems? How modelling rare events? How assessing integrity risk? For instance, an integrity risk of 1E-6 with a confidence of 95% assumes about 3 million tests. Even if field tests are not applicable, how to achieve such test in lab with help of simulation / modelling?

This issue is all the more important as GNSS systems become more and more hybrid. Integrity of a pure GNSS device is one thing, integrity of GNSS hybridized device is another.

Hybridization raises also some issues for standardization activities. Nowadays, standardization bodies like CEN or ETSI address some norms to assess GNSS based device; EN16803 for CEN, TS103246 for ETSI. Both are based on GNSS-only device assessment. Current trends on design of new guidance or location systems are clearly focused on hybridization, e.g. the use of several other sensors in addition with the GNSS receiver. For instance, some GNSS manufacturers already sell hybridized GNSS chip containing an IMU (Inertial Measurement Unit). And applying current standards based on replay of GNSS signal in lab, makes the device enter in a safe anti-spoofing mode; and so, with no position to evaluate. This can be workaround by disabling the hybridization feature of the device; but needs to be fully address in future standards. Questions are: how assessing a GNSS hybridized system in a normative context? Which kind of hybridization need to be addressed? Which kind of sensors? How to produce standard that allow in-lab assessment of such systems? Among potential ideas, the one of the "grey box" could be pushed: instead of considering as a "full black box" the GNSS device to assess, one has to consider one "white part" for interfaces and another part still "black" relative to the embedded algorithms (data fusion). This should allow test laboratory to inject some calibrated signals (Accelerometer/Odometer/Video/...) into the GNSS device so that internal hybridization process could be assessed. Then, this raise new issues about sensor modelling and the need for standard interfaces for everybody.

1.2.3 Current work at CEN-TC5-WG1; "Navigation and positioning receivers for road applications" group

- WG1 of CEN-CLC TC5 has already produced the EN16803-1 standard that has been published in October 2016. A revision is currently under process. The title and the content of this standard are given below:

EN 16803-1: Use of GNSS-based positioning for road Intelligent Transport Systems (ITS). Part 1: Definitions and system engineering procedures for the establishment and assessment of performances.

The EN proposes an overall framework and operational procedures for the management of the end-to-end performances of road transport systems based on GNSS, which performances depend on both performances of the positioning system and of the application processing algorithm.

First, the EN describes the architecture of a Road ITS system based on GNSS, as it is intended in this set of standards, and gives definition of the most important terms used all along the document. It gives also definitions of the main parameters that shall be considered when specifying an Operational scenario and provides a method to compare finely two environments at different locations with respect to their effects on GNSS positioning performance.

Then, it identifies and defines the positioning performance features and metrics that shall be used in the definition of the GNSS-based positioning terminal (GBPT) performance requirements. These definitions will be re-used and refined in EN 16803-2 and EN 16803-3 but were necessary to be defined in this first standard.

Finally, EN 16803-1 addresses the assessment of the whole Road ITS system performance equipped with a given GBPT, using the "Sensitivity analysis" method which allows the assessment of performances expressed with very low probabilities needing a high number of tests which cannot be carried out in real conditions on the field and have to be carried out using simulated trajectories.

- The 2 following parts EN16803-2 and EN16803-3 are currently under the CEN enquiry. That means they should be published by the end of 2019. Here are a summary of their content:

EN 16803-2: Use of GNSS-based positioning for road Intelligent Transport Systems (ITS). Part 2: Assessment of basis performances of GNSS-based positioning terminals.

This EN will propose "Record and Replay" test procedures to assess the basic performances of a GBPT for a given use case described by a generic operational scenario. These tests will address performance features *Availability*, *Continuity*, *Accuracy* and *Integrity* of the positioning information, using adequate metrics, and considering that there is no particular security attack during the operation. The tests shall allow the classification of the GBPT performance into different performance classes.

Specifications will be given for the design and the execution of the tests, including the choice of the facilities and the choice of the real operational scenarios which will have to be representative of the chosen generic scenarios.

EN 16803-3: Use of GNSS-based positioning for road Intelligent Transport Systems (ITS). Part 3: Assessment of security performances of GNSS-based positioning terminals.

This EN will be equivalent to EN 16803-2 for performance features such as robustness to interferences, jamming or spoofing. It will define, analyse and model the different security attacks and propose a complete testing methodology to evaluate the robustness features of the positioning terminal to these different attacks, with respect to different performances classes. Information Technology security at the whole transport system level is out of the scope of this EN.

2. OBJECTIVES

2.1 Overall objective

The overall objective of this standardization activity is to facilitate large-scale deployment of GNSS-based ITS in Europe (especially liability-critical and safety-critical systems), and in particular the systems based upon the added values of European GNSS EGNOS and Galileo, those added values lying particularly on the robustness of the signal and the authentication capabilities.

Large deployment of these GNSS-based road transport systems is expected to:

- Increase economic activity in transport and mobility with the creation of new services based on EGNOS and Galileo,
- Make new markets emerge for the European industry,
- Save costs and energy with travel time and energy consumption reductions,
- Improve safety of the citizens,
- Strengthen the EU scientific position on the global GNSS market.

2.2 Specific objective of the studies

The studies shall produce the 14 following deliverables needed to address the 4 above mentioned gaps among which there is the future EN standard. As a reminder, these gaps are listed below:

- production of 1 European Norms in the domain of Navigation and Positioning (NP) Receivers for Road Applications, in the frame of the European Commission Mandate M/496 "Standardization regarding space industry" dedicated to the production of Record & Replay scenario as defined by EN16803,

- Improving PVT error modelling in challenging scenario,

- Integrity management on road applications, from its definition to the way to verify or assess it,

- Assessment of hybridized GNSS device in laboratory in a certification framework.

The detailed content of all expected deliverables is described in the chapter "Description of the work". The list of all expected deliverables is summarized in the chapter "Summary of expected deliverables".

3. TECHNICAL SPECIFICATION

3.1   General organisation

The execution of the present work will be split into four 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 WG1)
- 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/WG1
- 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/WG1
- 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 four work packages. The steering committee will be constituted by:

- CEN-CENELEC TC5 WG1 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.

3.2 Description of the work

The objective for the work is to develop a series of 7 (Seven) Technical Reports and 4 (four) Technical Specifications as described in 2.2. This section describes the work to be done under the form of Work Package sheets.

3.2.1 WP1: Methodology for the recording of relevant data sets

The activities to be conducted within this WP1 include fist the definition of the certification process of R&R assessment of GNSS based devices. Then it will also address the definition of the full methodology to build dataset (record scenario) that will be used in EN16803-2.

Work package Title	Methodology for the recording of relevant data sets	WP Number	1
		Start Event / date	T0
		End Date / Event	T0+24

Objectives

- **Task 1** will identify the possible stakeholders who shall be involved in the certification process. This industrial organization shall be anticipated to well define the respective roles of each.
  The works shall introduce the process leading to the certification of GNSS terminals, by starting with the identification of the key elements needed for planning data collections. The datasets issued from test campaigns shall enable to design scenarios (selected data to carry out tests on benches).

- **Task 2** will describe the specifications and documentation required to design a scenario. The planned scenario must be defined according to metrics covering the data collected. These dimensional data collections must be planned.
  The data collection planning shall finish with a technical note indicating all the features required for successful scenarios.

- **Task 3** will consist to list the successful conditions to collect the expected datasets in environments similar to those of the aimed application sets. The scenarios issued from collected data shall be organized later to address more specific applications.
  The data collection campaigns are quite complex. They shall require a characterization of the test areas and the implementation of a cutting edge instrumentation dedicated to

  (1)   compute the reference trajectory (ground true),

  (2)   record GNSS signals and sensor measurements such as those output from odometers (DMI) or inertial units (INS).

- **Task 4** will consist to define the minimum conditions to validate the data sets required to design scenarios dedicated to certification purposes. The collected datasets shall be organized, studied

and documented to constitute a scenario easily exploitable by third parties, having potentially limited knowledge in the field of GNSS.

- **Task 5** will consist to list the successful conditions to perform tests on replay benches and to obtain reliable outcomes. Methods described in EN16803-2 to replay step by step a scenario shall be validated. This task will be used to update if necessary EN16803-2.

Inputs

- EN16803-1 ;EN16803-2 ; ISO17025
- Results from previous European projects

Description of work

Task 1: Objectives and Organisation

- Writing up the suitable documentation

Task 2: Planning and Documentation FOR designing Scenarios

- Scenario specifications
- Applicability of the scenario to DUT categories
- Planning - Selection of useful testing facilities
- Verification of coverage about the EN16803-2
- Technical note characterizing scenarios

Task 3: Requirements for Collecting Data

- Installation and calibration of the Instrumentation to collect data
- Requirements to collect IQ data related to field tests
- Requirements to collect IQ data from Simulators
- Requirements to collect IQ data from Noise and Interference generators
- Dataset sample collected for a demonstration purpose

Task 4: requirements For Data Validation

- Validation of scenarios
- Representativeness IQ data collected in situ
- Representativeness of the IQ data collected on constellation generators
- Preparation of Data and Documentations
- Design a scenario for a demonstration purpose

Task 5: Requirement for Replaying Data (Part 2 consolidation)

- Validation and calibration of the instrumentation to replay data
- Requirement to test through coaxial cables
- Requirement to tests inside anechoide chambers
- Requirement to perform replay procedures

- Validation of Data processing tools
- Implementation a replay test for a demonstration purpose

Output & Deliverables (brief description & month of delivery)

		Delivery date
D1	**Recommendations on the certification process based on the use of EN16803 series (Task1)**	$T_0 + 6$ months
D2	**Technical Report on how to define a record scenario (Task2)**	$T_0 + 6$ months
D3	**Technical Specification on requirements needed to collect dataset in the context of EN16803 series (Task3)**	$T_0 + 12$ months
D4	**Technical Specification on requirements needed to validate dataset in the context of EN16803 series (Task4)**	$T_0 + 18$ months
D5	**Technical Specification on requirements needed to replay dataset in the context of EN16803 series (Task5)**	$T_0 + 24$ months

All deliverables shall be written according to CEN regulations part 3.

3.2.2 WP2: Refinement of the PVT error model for the sensitivity analysis method standardized in EN 16803-1

The objective of Work Package 2 is to refine the PVT error model for the Sensitivity analysis method standardized in EN 16803-1. Two approaches, drastically different, will be followed in parallel, in order to optimize research and maximize the achievement of sound results:

•	An analytic approach, aiming at pursuing work performed during GP-START project, by defining new model parameters to characterize the PVT errors.

•	And, an approach based on "Machine Learning" technics, which have shown very promising results in other domains and seems particularly relevant to characterize PVT errors.

Both models will be then validated and compared thanks to cross-validation technics.

The WP2 will first address GNSS model errors and analyse how these approaches can be extended to other sensors (such as, inertial measurement units (IMU), odometers, steering wheel positions, radars…).

Workpackage Title	Refinement of the PVT error model for the sensitivity analysis method standardized in EN 16803-1	WP Number		2
		Start Event / date		T0
		End Date / event		T0+24

Objectives

- **Task1** will consist to improve the current analytic PVT error model. Weakness will be identified and solutions will be proposed to correct them.

- **Task2** will consist to implement neural networks to model the PVT errors. Choice of modelling will be argued ; implementation will be realized on identified dataset

- **Task3** will consist to validate and compare the different models (analytic / ML supervised / ML unsupervised) to decide which one better fits the reality and is good enough for the sensitivity analysis.

Inputs

- EN16803-1
- Results from previous European projects

Description of work

Task 1: PVT error model refinement using an analytic approach

- Context definition in order to limit the cases to be studied
- Definition new performance indicators
- Improvement the PVT error model

Task 2: PVT error model refinement using an approach based on "Machine Learning" technics

- Training a Generative Adversarial Network (GAN)
- Derive environment variables from given error time series

Task 3: Validation and comparison of Analytic and Machine-learning approaches

- Metrics definition
- Models' comparison
- List of potential improvements to the chosen model, based on metrics analysis

Output & Deliverables (brief description & month of delivery)

		Delivery date
D1	**Technical Report on analytic PVT error model improvement (Task1)**	T_0 + 15 months
D2	**Technical Report on PVT error model based on "Machine Learning" technics (Task2)**	T_0 + 15 months
D3	**Technical Report on comparison of Analytic and Machine-learning approaches (Task3)**	T_0 + 24 months

3.2.3 WP3: GNSS integrity for the Road applications

The activities to be conducted with this WP3 include first the best definition of integrity for road application, then a suitable methodology to assess integrity delivered by GBPT having this feature. And finally a real test case will be setup to confirm the relevance of the methodology. It is advised to keep in mind this last subtask to avoid issues at the end of the WP.

Workpackage Title	GNSS integrity for the Road applications	WP Number	3
		Start Event / date	T0
		End Date / event	T0+36

Objectives

- **Task 1** will define the concept of integrity for road domain. Several definitions are currently used depending on the application. Objective is to propose a generic one that could cover all the road applications.
- **Task 2:** Identification / definition of a methodology able to assess integrity concept including the analysis of feared errors ("System" Errors and "Local" Errors)
- **Task 3** will conduct a real assessment process on an identified GBPT in a road application context.

Inputs

- EN16803-1
- EN 16803-2

Description of work

Task 1: Scope of GNSS Integrity for Road application

- Bibliographical task to gather definitions
- Definition of integrity concept for road applications

Task 2: Identification / definition of a methodology able to assess integrity concept

- State of the art of current method used in other domains
- Study on adaptation needed for road domain
- Proposition of a methodology able to assess integrity concept including but limited to feared events simulation

Task 3: Assessment demonstration of integrity concept

- Identification of the most suitable GBPT
- Assessment of integrity concept of the pre-identified GBPT based on proposed procedures

Output & Deliverables (brief description & month of delivery)	
	Delivery date
D1 **Technical Report on a methodology to assess an integrity concept (task1 and task2)**	T_0 + 18 months
D2 **Technical Report on assessment results of the integrity concept (task 3)**	T_0 + 36 months
All deliverables shall be written according to CEN regulations part 3.	

3.2.4 WP4: Methodology for assessment of performances of Hybrid GNSS based positions terminal (GBPT)

The activities to be conducted with this WP4 include first the definition of a suitable methodology to assess Hybrid-GNSS device. The design of an open source algorithm is requested to be able to share a standardized data fusion algorithm fitted to road applications. Standardized interfaces issue shall also be addressed so that laboratory test could be realized. And finally a real test case will be setup to confirm the appropriateness of the methodology. It is advised to keep in mind this last subtask to avoid issues at the end of the WP.

Workpackage Title	Methodology for assessment of performances of Hybrid GNSS based positions terminal (GBPT)	WP Number	4
		Start Event / date	**T0**
		End Date / event	**T0+36**

Objectives

- **Task 1 –** Identification of a methodology, based on R&R scenarios, able to produce a pre-assessment of the Hybrid-GBPT performances (accuracy and availability).
- **Task 2 –** identification and/or definition of an open-source data fusion algorithm. This reference algorithm is intended to be used to hybridize the GNSS data of the H-GBPT, with the reference inertial measurements collected during the "scenario" creation.
- **Task 3–** requirements for data structure/format/synchronization needed to assess H-GBPT in laboratory. This task will study what should be defined to be able to replay additional sensors in lab. Data stream format, physical interface and synchronization with GNSS are the minimum key-enabler to be able to achieve this challenge.
- **Task 4 –** Implementation a replay test for a demonstration purpose.

Inputs

- EN16803-1 ;EN16803-2 ; ISO17025
- Inputs from WP-1 (R&R scenarios definition)
- Results from previous European projects

Description of work

Task 1: Definition of a test methodology for H-GBPT

- Specifications of R&R Scenarios dedicated to GNSS receivers intended to be hybridized (ie H-GBPT setup in GNSS only)

- Definition of installation requirements to mount H-GBPT aboard suitable carriers to perform validation tests.
- Interpretation of measurement ratios issued from comparisons between H-GBPT, H-GBPT setup in GNSS only and reference GNSS receivers to validate H-GBPT assessments.
- Metrics coverage analysis with respect to EN16803-1

Task 2: Identification/Development of a an open-source algorithm

- Definition of the state of art of hybridization algorithm, including advantages and drawbacks
- Selection of one algorithm at least, per hybridization type as reference
- Analysis of performances of the selected algorithms with different kind of IMU to assess capabilities

Task 3: standard interfaces needed for assessment of H-GPBT in lab

- State of the art of most suitable data format standards and identification of potential gaps.
- Identification of potential physical interfaces that could cover the need

Task 4: Assessment demonstration of a H-GBPT

- Identification of the most suitable H-GBPT
- Comparison and analysis between GNSS-only assessment and Field test assessment
- Assessment in laboratory with GNSS & additional sensor data replay

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Output & Deliverables (brief description & month of delivery)

		Delivery date
D1	**Technical specification for the test method of hybridized GBPT (Task1)**	T_0 + 18 months
D2	**Publication of an open-source algorithm used to hybridize GNSS and other sensors (at least IMU, odometer) (Task2)**	T_0 + 36 months
D3	**Technical report on standard interfaces needed for the assessment of H-GBPT in lab (Task3)**	T_0 + 36 months
D4	**Technical Report on test results of the H-GBPT (Task4)**	T_0 + 36 months
	All deliverables shall be written according to CEN regulations part 3.	

3.3   Summary of expected deliverables

Work package number	Deliverable ref.	Title of CEN/CENELEC Deliverables	Start Date	End Date
WP1 Methodology for the recording of relevant data sets	D1	Recommendations on the certification process based on the use of EN16803 series*	T_0	T_0+6
	D2	TR1 : definition of a record scenario	T_0	T_0+6
	D3	TS1 : datasets collection requirements in the context of EN 16803 series	T_0	T_0+12
	D4	TS2 : datasets validation requirements in the context of EN 16803 series	T_0	T_0+18
	D5	TS3 : datasets replay requirements in the context of EN 16803 series	T_0	T_0+24
WP2 Refinement of the PVT error model for the sensitivity analysis	D1	TR2 : Analytic PVT error model improvement	T_0	T_0+15
	D2	TR3 : PVT error model based on "Machine Learning" technics	T_0	T_0+15
	D3	comparison of Analytic and Machine-learning approaches*	T_0	T_0+24
WP3 GNSS integrity for the Road applications	D1	TR4 : methodology to assess an integrity concept	T_0	T_0+18
	D2	TR5 : test results of the integrity concept	T_0	T_0+36
WP4 Methodology for assessment of performances of Hybrid GNSS based positions terminal	D1	TS4 : test method of hybridized GBPT	T_0	T_0+18
	D2	Publication of an open-source algorithm used to hybridize GNSS and other sensors (at least IMU, odometer)*	T_0	T_0+36
	D3	TR6 : standard interfaces needed for assessment of H-GPBT in lab	T_0	T_0+36
	D4	TR7 : Test results of the H-GBPT	T_0	T_0+36

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

3.4   Work plan

For coordination and monitoring purposes, the following reporting scheme is required:

- Two Progress report (T_0 + 12 months and T_0 + 24 months). The reports will describe the work which has been carried out and will present the remaining issues to resolve. Will be attached to the first report, the proof that the Annex III organizations were invited to participate to the project.
- Final report (T_0 + 38 months), including the technical data/reports for developing TR's and TS to be prepared by CEN/CENELEC TC5/WG1 for Enquiry
- A dashboard will be updated every 6 months from T_0. This tool will be used to monitor the activity of the project from a high-level view for general purposes.

Globally, the timeline will follow the below table (S = T_0):

Work item Title	Expected realization date
Progress report n°1	S+12
Progress report n°2	S+24
Final report including:	S+38
TR 1 : Definition of a record scenario	S+6
TS1 : datasets collection requirements in the context of EN 16803 series	S+12
TS2 : datasets validation requirements in the context of EN 16803 series	S+18
TS3 : datasets replay requirements in the context of EN 16803 series	S+24
TR2 : Analytic PVT error model improvement	S+15
TR3 : PVT error model based on "Machine Learning" technics	S+15
TR4 : methodology to assess an integrity concept	S+18
TR5 : Test results of the integrity concept	S+36
TS4 : test method of hybridized GBPT	S+12
TR6 : standard interfaces needed for assessment of H-GPBT in lab	S+24
TR7 : Test results of the H-GBPT	S+36

4. FINANCIAL SUPPORT

There will be a financial support from the European Commission and EFTA for the implementation of the four 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/496/2018-12.

5. CRITERIA FOR TECHNICAL AND PROFESSIONAL CAPACITY

5.1 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.

5.2 Specific criteria for technical and professional capacity

5.2.1 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,
- GNSS positioning and hybridised positioning,
- Road transport applications and ITS,
- Signal processing,
- Radio-frequency signals,
- Software development
- Knowledge of Deep learning algorithm at implementation level, especially dealing with temporal series.
- Mathematics, probabilities and statistics

5.2.2 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				
	Good	Excellent	Task 1	Task 2	Task 3	Task 4	Task 5
Market and certification process knowledge			Excellent	Good	Good	Good	Good
System engineering			Excellent	Excellent	Excellent	Excellent	Good
Test specifications, test protocols design, test execution			Good	Excellent	Excellent	Excellent	Excellent
GNSS signals and receivers			Excellent	Excellent	Excellent	Excellent	Excellent
GNSS positioning and hybridised positioning			Excellent	Excellent	Excellent	Excellent	Good
Road transport applications and ITS			Excellent	Excellent	Excellent	Excellent	Good
Signal processing			Good	Good	Excellent	Excellent	Excellent
Radio-frequency signals			Good	Good	Excellent	Excellent	Excellent
Knowledge of Deep learning algorithm at implementation level, especially dealing with temporal series.			Good	Good	Good	Good	Good
Mathematics, probabilities and statistics			Good	Good	Good	Good	Excellent

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

Required fields of expertise			WP2		
	Good	Excellent	Task 1	Task 2	Task 3
System engineering			Good	Good	Good
Test specifications, test protocols design, test			Good	Good	Excellent
GNSS signals and receivers			Excellent	Excellent	Good
GNSS positioning and hybridised positioning			Good	Good	Good
Road transport applications and ITS			Good	Good	Good
Signal processing			Excellent	Excellent	Excellent
Software development			Good	Good	Excellent
Radio-frequency signals			Excellent	Excellent	Good
Knowledge of Deep learning algorithm at implementation level, especially dealing with temporal series.			Good	Excellent	Excellent
Mathematics, probabilities and statistics			Excellent	Excellent	Excellent

Table 3. Required fields of expertise of task leaders for Work Package 3

Required fields of expertise			WP3		
	Good	Excellent	Task 1	Task 2	Task 3
System engineering			Excellent	Excellent	Excellent
Test specifications, test protocols design, test			Good	Excellent	Excellent
GNSS signals and receivers			Excellent	Excellent	Good
GNSS positioning and hybridised positioning			Excellent	Excellent	Good
Road transport applications and ITS			Excellent	Excellent	Good
Signal processing			Excellent	Excellent	Excellent
Software development			Good	Good	Excellent
Radio-frequency signals			Good	Good	Good
Knowledge of Deep learning algorithm at implementation level, especially dealing with temporal series.					
Mathematics, probabilities and statistics			Excellent	Good	Good

Table 4. Required fields of expertise of task leaders for Work Package 4

Required fields of expertise			WP4			
	Good	Excellent	Task 1	Task 2	Task 3	Task 4
System engineering			Excellent	Good	Excellent	Excellent
Test specifications, test protocols design, test			Excellent	Good	Excellent	Excellent
Software development (open source)			Good	Excellent	Good	Good
GNSS signals and receivers			Good	Good	Good	Good
GNSS positioning and hybridised positioning			Excellent	Good	Good	Excellent
Road transport applications and ITS			Excellent	Good	Excellent	Excellent
Signal processing			Good	Excellent	Good	Good
Radio-frequency signals			Excellent	Good	Good	Excellent
Knowledge of Deep learning algorithm at implementation level, especially dealing with temporal series.						
Mathematics, probabilities and statistics			Excellent	Excellent	Good	Excellent

5.3 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

6. SUBMISSION OF TENDERS

6.1   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.

6.2   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.

6.3 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.

6.4 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 authorized 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 authorization to sign in name of the tenderer;
- The name of a contact person in relation to the submission of the bid.

6.5 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

6.6 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)

6.6.1 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.

6.6.2 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.

6.6.3 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:

Price component	Unit price	Quantity	Total
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.

6.7 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.

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

6.7.1.1 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.

6.7.1.2 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.

6.7.2 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.

6.7.2.1 Selection criteria

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

6.7.2.2 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).

6.7.2.3 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.

6.7.3 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.	*Expertise evidence in the main technical fields*	3 (15)
2.	*Adequacy of the proposed resources to achieve the tasks with their respective complexity (e.g. access to testing facilities…)*	3 (15)
3.	*Experience in the past 5 years in relevant projects*	2 (10)
4.	*Availability of relevant datasets with proper description to be used for WP 2 task 2*	2(10)
5.	*Consistency and complementarity of the consortium (in case of joint tenders)*	2 (10)
6.	*Experience in project management*	1 (5)
7.	*Experience in standardization activities*	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
Total Quality Points/Price

Tenders should elaborate on all points addressed by these specifications in order 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.

6.8   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.

6.9   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.

6.10   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.

6.11   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/496/2018-12)

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 operator[1])*

   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:

---

[1] 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 above[2].

> *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

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[2] 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/496/2018-12)[3]

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

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[3] 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.

NET RESULT			