



European GNSS Supervisory Authority

Seventh Framework Programme of the European Community for Research, Technological Development and Demonstration Activities (2007 to 2013)

'Cooperation' Specific Programme

Theme: Transport (including Aeronautics)

Sub-theme: Support to the European Global Navigation Satellite System (Galileo) and EGNOS

Activity: 7.4.1. EXPLOITING THE FULL POTENTIAL

Area 7.4.1.4 Safety-of-Life Applications

Funding Scheme: Collaborative Project

DESCRIPTION OF TOPIC Galileo.2011.1.4-1

Use of EGNOS and Galileo for SoL applications for all transport modes

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Caveat: Final availability of budget for this Call is subject to Commission Decision to delegate the management of the Call to GSA. Whilst this is considered a technical formality, potential applicants are informed that, in the absence of such a Decision, the GSA will not be in a position to award any grant. Therefore, the potential applicants are kindly requested to take this into account in the assessment of their investment in any preparatory work. The GSA expects to get notified of the Commission Decision early next year. As soon as this is the case, a notice of information will be published on the Cordis and Participant Portal websites.

I. INTRODUCTION

I.1. Context

Satellite navigation is a large and growing market. As a key enabler in applications in many transport and other domains, it is benefiting business, governments and citizens. To fully take advantage of these opportunities, Europe has decided to embark on its own satellite navigation programmes. The European Global Navigation Satellite System (GNSS) programmes include Galileo and EGNOS.

EGNOS is an SBAS system that is operational for non SOL applications and will be certified for SOL in 2010. EGNOS service is available through geostationary satellites or terrestrial links (EDAS). More information on EGNOS can be found on: <http://www.egnos-portal.eu/>.

Galileo is a global positioning and timing system, complementing and co-existing with current GNSS like GPS. More information on Galileo can be found on: http://ec.europa.eu/enterprise/policies/space/galileo/index_en.htm.

In parallel to the development of the GNSS systems, Europe has launched an ambitious R&D programme to stimulate so-called downstream markets. In 2011 the R&D activities related to Galileo will be implemented by both the European Commission and the GNSS Supervisory Authority (GSA, on behalf of the European Commission).

The programme covers GNSS applications development, GNSS receiver's development, international cooperation, education, innovation and enabling activities.

The objectives for this topic and other topics dealing with applications are:

- € Stimulate adoption of EGNOS and EDAS;
- € Prepare markets for Galileo introduction;
- € Stimulate EU GNSS industry competitiveness.

This topic is targeted mainly to SMEs, universities and research institutes. SME participation is an EU priority and a priority in FP7. Large companies may participate under certain conditions (see below).

The approach taken in this 3rd call is broadly similar to the 1st and 2nd call. However, the requirements have been updated. Furthermore SME proposals will be evaluated in 2 stages.

I.2. Special conditions

None

I.3. List of Acronyms

ACI	Airport Council International
AENA	Aeropuertos Españoles y Navegación Aérea
CAP	Common Agricultural Policy
COTS	Commercial Off The Shelf
DFS	Deutsche FlugSicherung GmbH
DNA	Direction de la Navigation Aérienne
DSRC	Dedicated Short Range Communications

EASA	European Aviation Safety Agency
EDAS	EGNOS Data Access System
EGNOS	European Geostationary Navigation Overlay Service
ENAV	Società Nazionale per l'Assistenza al Volo S.p.A
ERA	European Regions Airlines Association
ESA	European Space Agency
ESSP	European Satellite Services Provider
EU	European Union
EUROCAE	European Organization for Civil Aviation Equipment
EUROCONTROL	European Organisation for Safety of Air Navigation
FP6	6 th European Framework Programme for Research and Development
FP6, FP7	6 th , 7 th Research Framework Programmes
GKMF	Galileo Knowledge Management Facility
GNSS	Global Navigation Satellite Service
GPS	Global Positioning System
GSA	European GNSS Supervisory Authority
IAOPA	International Aircraft Owners and Pilots Association
NATS	National Air Traffic Services
NAV-EP	Navegação Aérea de Portugal E.P.
RIMS	Ranging and Integrity Monitoring Stations
SBAS	Satellite Based Augmentation System
SESAR	Single European Sky ATM Research
SIS	Signal In Space
SME	Small or Medium Enterprise
SoL	Safety of Life
TMA	Terminal Control Area
WAAS	Wide Area Augmentation System

1.4. Note on terms used

The word *shall* is used to indicate mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall equals is required to*). The word *should* is used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain course of action is deprecated but not prohibited (*should equals is recommended that*). The word *may* is used to indicate a course of action permissible within the limits of the standard (*may equals is permitted to*).

II. TOPIC DESCRIPTION

II.1. Scope

Participating consortia are expected to make a proposal on how EGNOS adoption in transport can be accelerated. They should take into account the results of FP6 projects and complement the projects issued from the Call GALILEO 2007 of FP7.

The objective of the proposed project should be to *contribute to the development* of innovative Safety Of Life applications in any mode of transport. The application should contribute to the adoption of EGNOS or to the introduction of Galileo. Application development should be seen in a broad context. It includes the development, adaptation and/or integration of new software, hardware, services, datasets, detection and mitigation of radio-interferences, etc.

Examples of applications

- aviation: accelerated EGNOS adoption (focus on underserved areas), advanced RNP operations (both in final approach and TMA), time-based operations using GNSS timing, multi-constellation synchronisation issues, enhanced VFR, safe VFR, airport ground operations, UAV, high profile demonstrations
- maritime: inland waterways navigation, development of RIS, portal and coastal operations, maritime mapping
- rail: signalling for e.g., low density lines
- road: ADAS, monitoring of specialized transports, cargoes and container management, all applications where a guarantee of positioning is required

II.2. Recommendations

The projects will be evaluated against the standard criteria applicable to Collaborative Projects in FP7. The sections below describe how these criteria should be interpreted given the specific topics and objectives of the GNSS activities in the Transport Work Programme.

II.2.1. S/T QUALITY

“SCIENTIFIC AND/OR TECHNOLOGICAL EXCELLENCE (RELEVANT TO THE TOPICS ADDRESSED BY THE CALL)”

- SOUNDNESS OF CONCEPT, AND QUALITY OF OBJECTIVES
- PROGRESS BEYOND THE STATE-OF-THE-ART
- QUALITY AND EFFECTIVENESS OF THE S/T METHODOLOGY AND ASSOCIATED WORK PLAN

Within the context of this topic, the proposal should aim to be innovative, going beyond the state of the art, especially in the use of GNSS. This could mean the application of technologies such as Galileo, EGNOS or EDAS to new markets, applications or business models. It should also aim to be built on already fairly mature application or business concepts, leading to products and/or services at the end of the project that can be brought to the market quickly.

II.2.2. IMPLEMENTATION

“QUALITY AND EFFICIENCY OF THE IMPLEMENTATION AND THE MANAGEMENT”

- APPROPRIATENESS OF THE MANAGEMENT STRUCTURE AND PROCEDURES
- QUALITY AND RELEVANT EXPERIENCE OF THE INDIVIDUAL PARTICIPANTS
- QUALITY OF THE CONSORTIUM AS A WHOLE (INCLUDING COMPLEMENTARITY, BALANCE)
- APPROPRIATENESS OF THE ALLOCATION AND JUSTIFICATION OF THE RESOURCES TO BE COMMITTED (BUDGET, STAFF, EQUIPMENT)

Within the context of this topic, the quality of the consortium refers not only to the scientific and technical abilities but also to market understanding and business expertise. The consortium should aim to gather proven experience and expertise in the market segment of the application(s) developed in the project in its ranks. Ideally, the project coordinator would have a leading position in the specific market. The consortium should have a demonstrable capability to commercialise the products and services developed in the project.

11.2.3. IMPACT

“POTENTIAL IMPACT THROUGH THE DEVELOPMENT, DISSEMINATION AND USE OF PROJECT RESULTS”

- CONTRIBUTION, AT THE EUROPEAN [AND/OR INTERNATIONAL] LEVEL, TO THE EXPECTED IMPACTS LISTED IN THE DESCRIPTION OF TOPICS UNDER THE RELEVANT TOPIC/ACTIVITY
- APPROPRIATENESS OF MEASURES FOR THE DISSEMINATION AND/OR EXPLOITATION OF PROJECT RESULTS, AND MANAGEMENT OF INTELLECTUAL PROPERTY.

In this topic, focus is primarily on impact through the use and exploitation of project results. The consortium should have a clear intention to commercialise the products and services developed in the project. Hence there is a requirement to provide a convincing market entry plan in the proposal. The consortium should also highlight previous achievements in the specific market of the application developed.

The project should also contribute to the adoption of Galileo, EGNOS or EDAS e.g., early Galileo signals are used, EGNOS or EDAS technologies are applied in new ways, the application facilitates wide adoption of EGNOS, the application leads to an increased understanding of the market or user requirements in fields that are particularly relevant for Galileo, the project contributes to the identification and resolution of obstacles for the adoption of Galileo and EGNOS.

Furthermore the project should aim to create impact in terms of public benefits (e.g., reducing carbon emissions, increasing safety, improving detection or mitigation of radio-frequency interference).

Regarding impact through dissemination, the release of practical tools to the GNSS developer community (function libraries, sample code, algorithms etc.), ideally with free open source license – are a particular area of interest.

11.2.4. Additional Recommendations

- € The project should take into account, to the extent feasible, relevant standards and regulations on safety, security and other aspects.
- € For aviation projects, the consortium should obtain an endorsement from Eurocontrol and SESAR JU i.e. their proposal shall have the official acknowledgement from these organisations as being effective and beneficial for the aviation community at large and as being consistent with other activities endorsed by these organisations. This endorsement may also involve partial funding.
- € The project should use, to the extent feasible, iterative/incremental development methodologies which enable early demonstration of results.
- € The consortium may employ *PhD students* to carry out RTD activities.

II.3. Deliverables

The project shall provide at least the following outputs during its lifetime.

Nr.	Description	Status ¹	Dissemination ²
1	Detailed project plan including team organisation, contacts;	M	CO
2	Quarterly progress reports based on a template to be supplied by the GSA;	M	CO
3	Meeting minutes of all review meetings;	M	CO
4	Technical feasibility study;	R	PU + CO
5	Commercial feasibility study including market potential assessment (when relevant) and expected economics (relevant cost and revenues);	R	PU + CO
6	Dissemination plan containing an overview of all events, conferences and exhibitions that will be attended as well as workshops and presentations that will be organised. For each of these the consortium should indicate the relevance of the event, activity of the consortium at the event, target audience and the objectives to be achieved.	M	PU
7	Presentation/slide show, report, poster and animated audiovisual presentation on project outcomes that can be disseminated to the general public. These deliverables should be provided in electronic format. Furthermore a project website should be established and gather all public project outcomes. ;	M	PU
8	Report on market trial including technical and user-experience;	M	PU + CO
9	Rough business and exploitation plan. Building upon the previous deliverables and project outcome, the plan constitutes an assessment of the business potential of the application and how this potential can be captured. Such a plan should contain the following elements: <ul style="list-style-type: none"> a. Concept or product description; b. Assessment of market potential; c. Competition analysis, product positioning and marketing strategy; d. Business model (e.g. make vs. buy, sources of revenues, pricing strategy) and exploitation economics (e.g. break-even analysis); e. Organisation and team; f. High-level implementation plan; g. Rough projected financials (i.e. profit and loss) including assumptions; h. Identification and discussion of main risks. 	M	CO
10	Analysis of specific aspects : <ul style="list-style-type: none"> a. Value added by EGNOS/EDAS; b. Value added by Galileo, in particular the Commercial 	R	PU + CO

¹ M: Mandatory, R: Recommended, O: optional

² Recommended dissemination level: PU = Public; PP = Restricted to other programme participants (including the GSA); RE = Restricted to a group specified by the Consortium (including the GSA); CO = Confidential, only for members of the Consortium (including the GSA). In some cases it is recommended to have at least part of a CO deliverable be adapted for public dissemination.

Nr.	Description	Status ¹	Dissemination ²
	and Public Regulated Services; c. Report on the identification and proposes solutions to obstacles for the adoption of Galileo and EGNOS; d. Regulatory and legal aspects of the application; e. Standardisation aspects.		
11	Final report based on GSA template. It should cover all project activities including R&D and exploitation activities; activities related to dissemination, knowledge contribution, FP7 coordination and user fora. The report should include an executive summary.	M	PU + CO
12	Source code and related documentation of main developments	R	PU

II.4. Schedule and milestones

The total duration of the project shall be less than 24 months. The project shall be split in several phases and several milestones shall be identified.

As a minimum, the following milestones shall be foreseen:

- Kick-off meeting covering at least deliverable 1;
- First review meeting covering e.g., deliverables 4-6
- Second review meeting covering e.g., deliverables 7-10;
- Final review meeting covering deliverables 11-12.

In addition to the above milestones more frequent interactions will most likely be needed. At least once every 3 months an interaction will take place possibly using a conferencing facility.

II.5. Interaction with GSA and the European Commission

The consortium shall appoint one person to be the single point of contact towards the GSA. The consortium should report to GSA whenever requested. The consortium is responsible for organising meetings. Any deviations from the workplan should be communicated to GSA as soon as possible.

The GSA will appoint one or more external experts as project reviewers. One person in the GSA will act as Project Officer and be the first point of contact for technical and general matters. Finally, the GSA Contracts Officer will be responsible for administrative, financial and legal aspects of the grant agreement.

The GSA and the European Commission or their experts may also provide assistance in the following areas:

- € Technical support in e.g. review of project deliverables, provision of Galileo and EGNOS documentation;
- € Support in networking with other SMEs and participants in other projects of the Galileo Calls;
- € Access to GNSS documentation via GSA's GKMF. The GKMF is the Galileo Knowledge Management Facility that is hosted by the GSA. It contains documents and results from the research activities on Galileo, and allows users to search and retrieve public information on GNSS. The GKMF may also serve as documentation management system and dissemination tool for the projects funded under the Galileo FP7;
- € Facilitating access to GNSS simulators.

III. RECOMMENDATIONS FOR WRITING THE PROPOSAL

Proposals should follow the guidelines as they are explained in the Guide for Applicants for this topic. Note that there are several guides; for this topic it is the guide that covers the funding scheme collaborative projects and describes the default single stage evaluation process. Consortia are expected to complete both a part A with administrative and financial information and a part B with the technical proposal. The guide for applicants has clear instructions on both part A and part B.

For this topic we propose some additional recommendations for part B that should be followed as well. In particular we expect an assessment of market potential, competing technologies and a high level business plan to be part of the proposal. It will be critical for the evaluation.

- € Consortia are encouraged to write in a concise and factual style and keep within the page limits mentioned in the guide for applicants.
- € Any classified information should be included in a separate annex that is not included in the main proposal submitted via EPSS. See Guide for Applicants for more information.
- € Section 1.1 – S/T objectives refers to the project objectives and should be included in sufficient level of detail. These project objectives should be measurable and verifiable e.g., objective: develop application prototype delivering specified functionality, verification: trial. Include a table that summarises the objectives. Note that this section is critical for the evaluation
- € Section 1.2 - describe both state-of-the art R&D as found e.g., in scientific journals as well as actual commercial or pre-commercial activities. Describe what is unique or innovative about this proposal. If relevant, describe any links with other programmes in particular Eurocontrol and SESAR JU. Include supporting material for this in an annex.
- € Section 1.3 - clearly show what is concretely available at each stage e.g., demonstrator, prototype, pre-commercial product. Note also our recommendation regarding iterative development. In addition, indicate flexibility in the work plan e.g. depending on the outcome of the trial, earlier steps may be revisited or later steps may be tackled in different ways.
- € Section 2.1 - additionally describe how the organisational structure allows for flexibility and fast and efficient decision making. Explain how the interface with GSA is managed. Also explain how the consortium will ensure quality control of the deliverables.
- € Section 3.1 – we would recommend to focus on 4 categories of impact:
 1. The impact resulting from the (commercial) exploitation of the research. Briefly describe how each consortium member is intending to exploit project results commercially. Include a brief description of the market potential and the consortium's positioning. Note that this section is critical for the evaluation.
 2. The benefits for the European GNSS programmes and the adoption of EGNOS and Galileo.
 3. The contribution to the GNSS developer community e.g., via free open source software libraries, knowledge sharing.
 4. The creation of public benefits (e.g., environment, safety).
- € Section 3.2 – this section is linked to the previous one. For each type of impact, you should describe the actions that are planned to achieve this.
 1. Exploitation of the research: include a high level business plan with a brief concept description including possible business model, technical architecture, assessment of the current state of technology and the innovation proposed; a preliminary assessment of market potential; a preliminary analysis of competing offers and technologies; Note that this section is critical for the evaluation.
 2. Benefits for the European GNSS programmes: explain the actions planned to maximise the benefits to the European GNSS programmes.
 3. Contribution to the GNSS developer community: dissemination plan, tools and software to be shared, other relevant activities.
 4. Public benefits: any specific activities to increase public benefits.