

## EO-1 Excellence

### 1.1 Clarity and pertinence of the **objectives**

...**foster market development exploiting the added value of ... foster market development exploiting the added value of integration of EO observation technologies** ...with positioning ones and ICT ... across different market segments through the development of applications,

The **outcome** of this innovation project should be a **commercial service platform**, sustained by a production process capable to deliver to the user a product which is **validated and accepted as a marketable product**

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

This needs to be achieved in an environment **integrated at the level of the user**, in order for users to accept the innovative potential which the product promises. This will require also specific attention to be given to the various **processes in place in the users' workflows** which incorporate the EO information.

**Copernicus** should be considered as **part of the solution** which may include other space or non-space inputs. The choice of **EO application is left to the proposer**.

### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e. g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

... and encourage their **insertion into the market**.

### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

For such applications and developments to succeed in the market, the **product needs to be shaped according to users' needs and their value to users must be openly demonstrated** to the wider user community.

**Service level models** are to be developed, with appropriate quality of service definitions for the application.

## Impact

### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

- Establish sustainable supply chains for innovative EO value added products and services with **demonstrated commercial value** with **targeted client communities**. Complete integration, based on international standards, into the customer's existing business processes and processing chains, as well as the **economic viability of the application is to be demonstrated**;
- Enhance the **European industry's** potential to take advantage of market opportunities and establish leadership in the field, and to boost business activity;
- Lead to **new or improved products, processes or services on the market**, by industry including SMEs, **which are capable of generating, after the end of public funding, turnover and thus create new jobs**.

2.2 *Quality of the proposed measures to **exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant and to **communicate the project activities** to different target audiences*

A **business model**, and a value chain market analysis, which includes the phase of the project following the end of the public funding, **should be part of the proposal**.

**Transnational collaboration** has a key role to play in this context, as it enhances access to markets beyond the national borders, ...

Corresponding **validations and customisations** are to be undertaken, and the **business case for the application is to be demonstrated**.

Application products are expected to adopt **open standards** for data documentation, data models and services including data processing, visualization and cataloguing.

## EO-2

### Excellence

#### 1.1 Clarity and pertinence of the *objectives*

Activities are expected to address **adaptation of big data technologies to Copernicus** user scenarios and should concentrate on the **intermediate layers** described above.

[...] **enable Copernicus services, public and intermediate commercial users** to engage with and serve their constituency with localized/specialized higher value services.

[...] without having to build up storage and processing capacities for Copernicus data and information but benefiting from the storage and processing services provided by ICT companies.

#### 1.2 Soundness of the *concept*, and credibility of the proposed *methodology*

Activities should include the **development of tools** allowing for the chaining of different value adding activities increasing incrementally the information and knowledge content of EO and non EO data

Activities should address **any relevant aspect of the data lifecycle which can solve EO big data challenges**, in particular **data management activities** [...] and **usage activities** [...].

Big Data, activities shall **bridge the gap between Earth observation and information technology sectors** ... and aiming at **developing innovative solutions** taking into account the needs of

- 1) **non-expert users like policy makers involved in societal challenges,**
- 2) **experts involved, and**
- 3) **small and medium innovative enterprises.**

Activities shall rely on **open source software/tools/modules/plugin-ins** and shall **include small-scale demonstrations**.

#### 1.4 *Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge*

Activities shall be **complementary to activities enabled by the ICT and research infrastructures** work programmes which address generic challenges in the area of data mining, open linked data, web ontology, digital earth.

### Impact

#### 2.1 *The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the work programme under the relevant topic*

- Enable value adding services on generic data and information storage and processing facilities which can **allow public and commercial users effective production environment** to interact with and serve their user base without deploying their own storage and processing facilities.
- Make **access to the Copernicus data and information easy and user friendly through scalable dissemination and exploitation software** based on international standards.
- Foster the establishment of **interoperable access facilities** to all EU Member States.
- Link with other big data initiatives.
- Provide **user community tools** including best-practices.
- Ensure **resilience of the overall dissemination and exploitation system**.
- Optimise the use of Copernicus data by **non-traditional user communities to meet societal challenges**.

## EO-3

### Excellence

#### 1.1 Clarity and pertinence of the *objectives*

... **independent European capacity for CO<sub>2</sub> anthropogenic emissions**, which includes space-borne observation.

The following **four areas need to be coordinated** to prepare a suitable and operational European approach:

1. **Reconciling top down and bottom up estimates**
2. **Library of simulations for emissions and atmospheric transport**
3. **Uncertainty trade-off for fossil fuel emissions**
4. **Attributing CO<sub>2</sub> emissions from in-situ measurements**

#### 1.2 Soundness of the *concept*, and credibility of the proposed *methodology*

... the CSA is expected **to act as an accompanying scientific and technical support to the CO<sub>2</sub> monitoring task force**, which in turn will provide the necessary programmatic guidance.

... it has **to build on past activities of the European Space Agency (ESA) and will be coordinated with the ESA's on-going and future programmes**

Activities will encompass **the coordination of ongoing efforts**, include mutual **identification of research and infrastructural gaps**, and facilitate a **cooperation of further research and development** to be undertaken...

#### 1.3 Quality of the proposed coordination and/or support measures

Initiating the **establishment of this community** while delivering first concrete elements is at the heart of this action to **cluster all relevant existing competences within Europe** on the CO<sub>2</sub> emissions topic and thus reach the critical mass required for addressing such a challenging endeavor.

... will need the involvement of various players, such as **space agencies, operators of in-situ measurements stations and of numerical weather prediction, leading experts for modelling and data assimilation.**

### Impact

#### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the *work programme under the relevant topic*

The proposal is expected to **lay the mature foundation** for an independent space-borne observation capacity for CO<sub>2</sub> in the context of Europe's Climate Change challenges.

Coordination and networking efforts are expected to lay the **foundation for the operational integration of all relevant European capacities** as a subsequent step.

- Make a **significant contribution** to addressing the unresolved issue of **ground-based versus space derived estimates of CO<sub>2</sub> fluxes**.
- **Generate a large database of CO<sub>2</sub> sources, sinks and atmospheric transport processes** to help dimensioning the various elements to develop an operational EU anthropogenic CO<sub>2</sub> emission monitoring capacity.
- **Establish a set of requirements regarding the accuracy as well as spatial and temporal resolutions for anthropogenic CO<sub>2</sub> emissions estimates**, such that the policymakers can be provided with reliable CO<sub>2</sub> emission trends to evaluate the impact of (I)NDCs.
- **Shape the appropriate dimension and distribution of the surface network** to separate biogenic from anthropogenic CO<sub>2</sub> emissions.

## Implementation

### 3.3 *Complementarity of the participants and extent to which the consortium as whole brings together the necessary expertise*

...have the ability to **network with suitable research actors to fill the knowledge gaps**, and have the required **expertise to assess the needs for an end-to-end operational system**, with due **attention to potential international cooperation opportunities** for tackling this global challenge.

## COMPET-1 Excellence

Please consider to select the technology line correctly.

**Your Proposal**

Please choose an acronym for your proposal. It will appear also in the "General Information" section of the submission form Part A and can also be updated there.

Acronym\*  Please restrict acronym to latin characters only

Short Summary (max. 2000 characters)\*   
Character count: 0

Technology lines\*

next >>

### 1.1 Clarity and pertinence of the **objectives**

Activities shall address technologies identified on the list of Actions for 2015/2017 "Critical Space Technologies for European Strategic Non-Dependence–Actions for 2015/2017" (<http://ec.europa.eu/growth/sectors/space/research/horizon-2020>)

- U09 – Cost effective multi-junction solar cells for space applications.
- U16 – Space qualified GaN components and demonstrators.
- U17 – High density (up to 1000 pins and beyond) assemblies on PCB and PCBs.
- U21 – Very high speed serial interfaces.
- U23 – Development of large deployable structures for antennas.
- U26 – Space qualified carbon fibre and pre-impregnated material sources for launchers and satellite subsystems.

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

High level specifications and key requirements can be found in the list of actions for 2015-2017.

1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

... go **beyond the present state-of-the-art** or, preferably, the expected state of the art at the time of completion if alternative technologies are being developed outside Europe.

1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

**Technological spin in and/or bilateral collaborations** should be enhanced between **European non-space and space industries** and proposals are expected to provide advanced critical technologies that are of common interest to different space application domains (e.g. telecom, Earth observation, science, etc.), or even with applicability to terrestrial domains.

## Impact

2.1 *The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic*

- **Reduce the dependence on critical technologies** and capabilities from outside Europe for future space applications ...  
... by developing in a timely manner **reliable and affordable space technologies** that in some cases may already exist outside Europe or in European terrestrial applications;
- **Enhance the technical capabilities and overall competitiveness** of European space industry satellite vendors on the worldwide market;
- **Open new competition opportunities for European manufacturers** ...
- Enable the European industry to **get non-restricted access to high performance technologies** ...

2.2 *Quality of the proposed measures to **exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant and to **communicate the project activities** to different target audiences*

Proposals should include **a work package dedicated to the development of a commercial evaluation of the technology**, and should address how to **access the commercial market with a full range (preload) of recurring products**.

## COMPET-2

### Excellence

#### 1.1 Clarity and pertinence of the **objectives**

The specific challenge, for the mid-term is to bring the Technology Readiness Levels (TRL) forward for a number of Earth observation technologies and to ensure the readiness of European solutions to ensure the readiness of European solutions to propose and support new mission **concepts taking advantage of nano-, micro- and mini-satellites.**

The aim of this topic is to **demonstrate, in a relevant environment, technologies, systems and sub-systems for Earth observation.**

Proposals are sought with relevance in the domain of technology development for space in the fields of:

- **Optical technologies for high precision sensing**
- **Detector technology and complete detection chain enhancement in the domains of CMOS and Infrared for Earth observations**
- **Sensors and mission concepts** delivering high accuracy parameters **for emission measurements**
- **Active antennas for radar, digital beam-forming and waveform generation, large deployable reflectors.**
- **Sensors, actuators and control technologies** for high precision Attitude and Orbital Control Systems (AOCS), in particular for small satellites, and Guidance, Navigation and Control (GNC).
- Technologies to advance in **fractionated systems and formation flying** for Earth Observation.

#### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Proposals should **address and demonstrate significant improvements** in such areas as miniaturization, power reduction, efficiency, versatility, and/or increased functionality... Proposals that develop technologies **targeting TRL 6, or lower TRLs**, are welcome.

#### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

Substantially **improved in-depth state-of-the-art technologies** in key areas such as optical and radar systems, sounders, lidars and detectors for Earth observation.

#### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

... should **demonstrate complementarity to activities already funded** by Member States and the European Space Agency.

## Impact

#### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

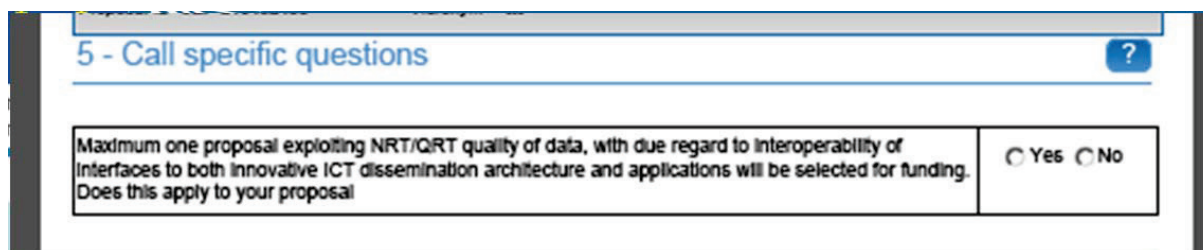
- The proposals must describe how the proposed developments will contribute to **strengthening Europe's position in industrial competitiveness in technologies for Earth observation payloads and mission**, despite the target platform size and scalability.
- The technologies to be addressed in the proposals should represent **significant improvements compared to existing Earth observation missions** in terms of capability, precision, efficiency or other characteristics, **opening new avenues for future space systems.**



- **Greater industrial relevance of research actions** and output as demonstrated by deeper involvement of industry, including SMEs, and **stronger take-up of research results**.
- Fostering links between academia and industry, **accelerating and broadening technology transfer**.

## COMPET-3 Excellence

Please consider the call specific question in the participant portal.



The screenshot shows a question box with the following text: "Maximum one proposal exploiting NRT/QRT quality of data, with due regard to interoperability of interfaces to both innovative ICT dissemination architecture and applications will be selected for funding. Does this apply to your proposal". To the right of the text are two radio buttons labeled "Yes" and "No". The question is titled "5 - Call specific questions" and has a question mark icon in the top right corner.

### 1.1 Clarity and pertinence of the **objectives**

Activities shall aim at providing **advanced on-board data handling and transfer** for Earth observation and Telecommunication systems, **and its management and exploitation and mission ground segment.**

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

**A** ... proposals **addressing the full data chain** (processing and compression, storage and transmission), **or a coherent part of it** ...:

- Re-configurable **high data rate links** [...]
- **On-board data processing**, implementation of complex data algorithms [...]
- **On-board data compression** systems to improve on-board data **storage** [...]
- **High data rate image** (optical and/or radar) **and video processing** [...]
- Improved **on-board data storage** ensuring efficiency and reliability [...]
- Anticipate how the **ground segment** will cope with higher data rates to improve the overall data throughput [...]

**B** Anticipate the need to link innovative ground segment architectures based on new ICT technologies, including cloud, in the “Big Data” domain and the rise in user demand for wide access to **Near Real Time (NRT) and Quasi Real Time (QRT) data in social media and mobile applications.**

*1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)*

**Faster processing, larger storage, and high bandwidth** transmissions to users will be needed. Moreover, **smart on-board data compression and optimisation** will become a growing necessity. All these improvements will be required to efficiently support the next generation of data intensive missions. To support this future scenario, innovations must be brought to the **payload data management system** (including data optimization processes), to **inter-satellite links**, to **satellite-ground communication**, and to the **ground segment data handling system.**

## Impact

*2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic*

- To provide elements for the **high speed data chain management** (including processing and compression, storage and transmission) and to support technologies for **data intensive next generation of Telecommunications and Earth observation systems**.
- Greater industrial relevance of research actions and output as demonstrated by **deeper involvement of industry**, including SMEs, and **stronger take-up of research results including support to standardisation** (CCSDS34).
- Fostering links between academia and industry, accelerating and broadening technology transfer.

## COMPET-4

### Excellence

#### 1.1 Clarity and pertinence of the **objectives**

This topic will cover the **exploitation of all acquired and available data provided by space missions** in their operative, post-operative or data exploitation phase **focusing on astrophysics (including exoplanets), heliophysics and the Solar System exploration, including the Moon.**

#### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Projects selected under this call may rely on the **data available through all the available ESA Space Science Archives** when possible or other means (e. g. instrumentation teams).

**Combination and correlation** of this data with **international scientific mission data**, as well as with relevant data produced by **ground-based infrastructures** all over the world, is encouraged...

#### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e. g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

... to further **increase the scientific return and to enable new research activities using existing data sets.**

## Impact

#### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

- [i] **higher number of scientific publications** based on Europe's space data,
- [ii] **high-level data products** made available through appropriate archives,
- [iii] **tools developed** for the advanced processing of data.
- [iv] **add value to existing activities** on European and international levels,
- [v] **enhance and broaden research partnerships.**

#### 2.2 Any substantial impacts not mentioned in the work programme, that would enhance innovation capacity, create new market opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, or bring other important benefits for society

Resulting analyses should help **preparing future European and international missions.**

#### 2.3 Quality of the proposed measures to **exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant and to **communicate the project activities** to different target audiences

When possible, **enhanced data products** should be suitable for **feeding back into the ESA archives.**

## Implementation

#### 3.3 Complementarity of the participants and extent to which the consortium as whole brings together the necessary expertise

**International cooperation is encouraged** in particular with countries active in space exploration and science, or where their participation is deemed essential for carrying out the activities of this topic.

## COMPET-5

### Excellence

#### *1.1 Clarity and pertinence of the **objectives***

Exploratory work studying **space weather with a view to enhancing the understanding of space weather and its impact**. Proposals can cover **the full range of space weather phenomena** from the solar cycle, flares and coronal mass ejections to the effects of the solar wind in the near-earth environment and the evolution in between.

#### *1.2 Soundness of the **concept**, and credibility of the proposed **methodology***

The activity shall address **space weather and its effects, impacts and mitigation techniques with application to aerospace and ground systems**.

### Impact

#### *2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic*

Proposals are expected to improve the

- i **understanding of Space Weather phenomena** and
- ii their **impact on space systems and terrestrial infrastructure**, and
- iii are also expected to **analyse viable mitigation strategies**, and
- iv to **demonstrate how these add value compared to existing mitigation strategies**.

### Implementation

#### *3.3 Complementarity of the participants and extent to which the **consortium** as whole brings together the necessary expertise*

There is scope for **cooperation with international partners with relevant expertise** (entities from third countries could benefit from EU funding under this topic).

## COMPET-6

### Excellence

#### 1.1 Clarity and pertinence of the **objectives**

... [a] single space web portal for space research in Europe to act as **archive and outreach tool of research institutionally funded** and **promote European results and publications towards professionals and citizens alike**.

#### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Provide **a repository of all relevant information regarding FP6, FP7, Horizon 2020 funded space projects (including public deliverables, data, software tools where possible)**.

Implementation of an effective space web portal for Europe, **able to point to relevant resources as required** and depending on the type of queries... The space portal should act as a platform to **access appropriate information** on research projects leading to personalized networks of projects with common interests.

#### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

Provide a one stop-shop **user-friendly** and **visually appealing knowledge oriented project** ...

... to become the **main reference and entry point** for **European citizens and professionals** interested in space research activities.

It should be **complementary to initiatives of NCP networks**.

## Impact

#### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

The centralization of projects will allow

- i the **easy search for projects** that fall **under a particular domain, cluster of theme** and
- ii serve **as archive from a scientific and technological angle**.
- iii It will also allow to **identify potential partners and showcase European results and publications**.
- iv It would also provide European citizens and professionals with a **single entry point for space research activities** related information.

#### 2.2 Any substantial impacts not mentioned in the work programme, that would enhance innovation capacity, create new market opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, or bring other important benefits for society

The proposal should present **a realistic plan for the sustained operations of the portal** after the end of the EU-funded project period.

... **European citizens and professionals**...

## COMPET-7

### Excellence

#### 1.1 Clarity and pertinence of the **objectives**

This activity ... **should assist entrepreneurs and other innovation agents overcoming financial, administrative and networking barriers to innovation.**

#### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

In particular, it should **contribute to access public funding opportunities**, such as the SME instrument of the **European Union**, as well as potentially other funding opportunities from **Member States, ESA and regional authorities**.

**The take up of applications developed in the context of Galileo, EGNOS and Copernicus** is encouraged.

#### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

This action should be **complementary to the ESA BICs** (that already offer space-specific support) **and the European Enterprise network (EEN) approach**, and should **encompass other incubation centres that support space-related companies**, particularly those exploiting the **applications of space data and services**.

## Impact

#### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

**Creating opportunities for new and existing start-ups** coming from space and non-space sectors by:

- Facilitating **access to finance** through outreach and networking;
- Maximizing opportunities offered by the SME instrument for space;
- Assisting the **development of viable business cases**;
- **Accompanying start-ups in commercial phases.**



## Galileo-1 Excellence

### 1.1 Clarity and pertinence of the **objectives**

Objectives should be clear, measurable, realistic and achievable within the duration of the project. They should be consistent with the expected exploitation and impact of the project.

The main objective is to develop innovative **EGNSS based applications** in aviation, road, maritime and rail that will **make EGNSS more available to transport users and enable new end-to-end solutions** that require accurate and resilient positioning and navigation. Detailed objectives by market segment described in the WP.

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Innovation activities within this topic should build on:

- Exploitation of the **features of EGNOS and Galileo** signals and operational advantages in downstream applications;
- Implementation of **EGNSS based pilot projects and end-to-end solutions**, ready for use by private or public sector;
- **Standards, certification, legal and societal acceptance**, which will foster EGNSS adoption; and
- Exploitation of **synergies with other positioning and navigation systems and techniques**, with focus in valorizing EGNOS and Galileo in the frame of multi-constellation and multi-frequency environment.

The focus is on development of **innovative applications, with commercial impact and clear market uptake perspective**.

More details in WP.

### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

Describe **the innovation of the proposed offering in the context of the competition and the market segment's needs**.

### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

**EGNSS should be part and parcel of the envisaged solution(s)**. However, where a **combination of EGNSS with other technologies** is required to make the application(s) work, this is not excluded from the scope.

## Impact

### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

Activities should:

- build on **specific features and differentiators of Galileo and EGNOS**, demonstrating the advantage of their use in transport.
- **contribute to the modern, efficient and user-friendly transport system**
- be **complemented with a systems' approach, taking care of infrastructure and regulatory requirements**
- **lead to commercialisation of the products and services** developed

2.3 *Quality of the proposed measures to **exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant and to **communicate the project activities** to different target audiences*

Activities should promote innovation in order to **maximise the potential of the EGNSS and its adoption in transport**. They should consider coordination of multiple actors and pilot projects to **encourage market take-up**.

**Preliminary business plan** is requested as an Annex to Part B.

The purpose of the preliminary business plan is to demonstrate the **commercial potential of the product and/or service** (offering) and describe how this potential will be realised.

Provide:

- draft **plan for the dissemination and exploitation** of the project's results'
- information on the **knowledge management and protection**
- definition on measures to provide open access (free on-line access, such as the 'green' or 'gold' model) to peer reviewed scientific publications which might result from the project

Describe the proposed **communication measures** for promoting the project and its findings during the period of the grant

## Galileo-2 Excellence

### 1.1 Clarity and pertinence of the **objectives**

Objectives should be clear, measurable, realistic and achievable within the duration of the project. They should be consistent with the expected exploitation and impact of the project.

The main objective is to exploit availability of GNSS enabled mass market devices, **developing innovative EGNSS applications that will:**

- Foster the **adoption of EGNSS in mass markets** and ensure that the **benefits will be captured by the users.**
- Create applications that will make best use of **EGNSS innovative features**
- Contribute to **competitiveness of the EGNSS industry** in the area of mobile applications, with special focus on SMEs.
- Maximise **public benefits** by supporting the development of applications that will address major societal challenges in focus areas such as health, citizen safety, mobility, smart cities, sustainable resources monitoring and management, regional growth, low-carbon energy infrastructure planning and protection, climate action.

Especially promising areas: **Mobility as a service and Smart Cities, Internet of things, Commercial and social LBS**

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Proposals should aim at **developing innovative applications**, with commercial impact and market uptake perspective. For all the mass market areas, the development and innovation should build on:

- Galileo features **that improve performances** in urban environment ;
- **Multi-constellation, fusion** with other positioning techniques, including sensor and innovative network fusion techniques;
- **Authentication** services that will be provided by Galileo; and
- Techniques to optimise **power consumption.**

### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

Describe the **innovation of the proposed offering in the context of the competition and the market segment's needs.**

Attention should be paid to socio-economic considerations such as **consumer needs** and behaviour, lifestyles, as well legal frameworks and ethical issues such as privacy and data protection

### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

**EGNSS should be part and parcel of the envisaged solution(s).** However, where a **combination of EGNSS with other technologies** is required to make the application(s) work, this is not excluded from the scope.

## Impact

*2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic*

Build **logical structure** of the project and the stages in which it is to be carried out.

Include details of the **resources to be allocated to each work package**.

The number of work packages should be **proportionate to the scale and complexity of the project**.

**Resources** assigned to work packages should be in line with their **objectives and deliverables**.

*2.3 Quality of the proposed measures to:*

*- **Exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant*

*- **Communicate** the project activities to different target audiences*

**Preliminary business plan** is requested as an Annex to Part B.

The purpose of the preliminary business plan is to demonstrate the **commercial potential of the product and/or service** (offering) and describe how this potential will be realised.

Provide:

- draft **plan for the dissemination and exploitation** of the project's results'
- information on the **knowledge management and protection**
- definition on measures to provide **open access** (free on-line access, such as the 'green' or 'gold' model) to peer reviewed scientific publications which might result from the project
- **Preliminary Business Plan** that is mandatory Describe the proposed **communication measures** for promoting the project and its findings during the period of the grant

## Galileo-3 Excellence

### 1.1 Clarity and pertinence of the **objectives**

The main objectives are to:

- Develop innovative **professional applications with market uptake** perspective
- Professional applications (agriculture, mapping, surveying) **empowered by EGNSS**
- When valuable, **combine EGNSS with other solutions** and technologies, for example EO
- Develop high performing, reliable and EU independent **leveraging Galileo differentiators**

Especially promising areas for further EGNSS application development: **Agriculture; Surveying and Mapping; Timing and Synchronisation; Other professional applications**

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

For all the professional areas, the development and innovation should build on:

- Multiple-frequencies E1, E5 and E6;
- Galileo specific signal modulation, e.g. AltBOC;
- High precision and authentication services that will be provided by Galileo, i.e. in the frame of the commercial service;
- Fusion with other data, such as from earth observation satellites or other in-situ sensors. The focus is on development of **innovative applications, with commercial impact and clear market uptake perspective**.

### 1.3 Extent that the proposed work is beyond the **state of the art**, and demonstrates **innovation potential** (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organizational models)

Describe **the innovation of the proposed offering in the context of the competition and the market segment's needs**.

### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

**EGNSS should be part and parcel of the envisaged solution(s)**. However, where a **combination of EGNSS with other technologies** is required to make the application(s) work, this is not excluded from the scope.

## Impact

### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

Expected impacts are to:

- **develop innovative applications** taking advantage of EGNSS
- decrease the barriers to access professional applications, in term **of price and easiness to use**
- increase the **number of users** and explore new innovative use of GNSS.
- **For agriculture**: to improve the productivity and decrease the environmental impact.
- **For timing and synchronisation**: to contribute to cope with emerging network synchronisation needs in terms of accuracy and robustness, while contributing to improve EU dependency from other GNSS.

2.3 Quality of the proposed measures to: - **Exploit and disseminate** the project results (including management of IPR), and to manage research data where relevant - **Communicate** the project activities to different target audiences

**Preliminary business plan** is requested as an Annex to Part B.

The purpose of the preliminary business plan is to demonstrate the **commercial potential of the product and/or service** (offering) and describe how this potential will be realised.

Provide:

- draft **plan for the dissemination and exploitation** of the project's results'
- information on the **knowledge management and protection**
- definition on measures to provide **open access** (free on-line access, such as the 'green' or 'gold' model) to peer reviewed scientific publications which might result from the project

**Preliminary Business Plan** that is mandatory Describe the proposed **communication measures** for promoting the project and its findings during the period of the grant

## Galileo-4 Excellence

### 1.1 Clarity and pertinence of the **objectives**

Objectives should be clear, measurable, realistic and achievable within the duration of the project. They should be consistent with the expected exploitation and impact of the project.

Main objectives are to:

- build capacity, increase awareness of EGNSS solutions
- provide networking opportunities of centres of excellence and other relevant actors
- achieve a critical mass of EGNSS applications success stories, making it an attractive option for private investors in Europe and also globally.

### 1.2 Soundness of the **concept**, and credibility of the proposed **methodology**

Activities may also contribute to **cooperation schemes**, which have been established with partner countries worldwide.

Technology promotion activities can include **incentive schemes** in the form of financial support to third parties for EGNSS applications developed by companies and entrepreneurs.

Promote **the uptake of satellite navigation** downstream applications across Europe and beyond.

### 1.3 Quality of the proposed coordination and/or support measures

Describe and explain the overall approach, distinguishing, as appropriate, coordination and support activities

### 1.4 Appropriate consideration of **interdisciplinary approaches** and, where relevant, use of **stakeholder knowledge**

**EGNSS should be part and parcel of the envisaged solution(s)**. However, where a **combination of EGNSS with other technologies** is required to make the application(s) work, this is not excluded from the scope.

## Impact

### 2.1 The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the **work programme** under the relevant topic

- The main aim of this topic is to support **building of industrial relationships** by gathering private and public institutions around services offered by EGNSS and related applications. This topic should **support the competitiveness** of EU industry by identifying strategic partners and by developing **market opportunities**.
- The **support to incentive schemes** should foster the emergence of new downstream applications based on either Galileo and/or EGNOS and therefore to **support the EU GNSS industry**.

### 2.3 Quality of the proposed measures to: - **Exploit and disseminate the project results** (including management of IPR), and to manage research data where relevant - **Communicate the project activities to different target audiences**

Provide:

- draft **plan for the dissemination and exploitation** of the project's results'
- information on the **knowledge management and protection**

- definition on measures to provide **open access** (free on-line access, such as the 'green' or 'gold' model) to peer reviewed scientific publications which might result from the project Describe the proposed **communication measures** for promoting the project and its findings during the period of the grant



