

Guide to European GNSS Funding Mechanisms





Introduction

The European satellite navigation infrastructure, consisting of EGNOS and Galileo, is among the most advanced system of its kind. As a system developed by a civilian agency with civilian application intended as its primary use; the EGNOS/Galileo system offers numerous differentiating features that can be exploited in applications for large societal benefit.

As such, it is in the interest of the European public to encourage the exploitation of EGNOS/Galileo to its fullest, and to foster European innovation that leverages the system. In achievement of this, various funding mechanisms in Europe offer financial and techincal support to entities that run innovative projects that can help realise the full potential of the EGNOS/Galileo infrastructure.

How to use this funding guide

This funding guide is provides a snapshot of the various funding mechanisms available to any team or individual working on an EGNOS/Galileo technology or application. The guide illustrates the nature of the various funding mechanisms, explaining their target applicant, the markets in which they operate, and the funding envelopes they can be expected to provide, as well as the eligibility criteria - if any - and the additional support mechanisms per project.

To use this guide, a potential applicant can consult with the series of tables starting overleaf. These tables will help the potential applicant get an idea of which funding mechanisms are most appropriate for their project based on certain criteria such as the current technology readiness level of their solution, the size of their organisation, the amount of funding they need, etc.

After browsing through the tables, the potential applicant should have a few funding instruments that correspond to their requirements. They may then check the catalog of funding instruments that follow the tables for a more specific look at each of the funding instruments.

If there are some funding instruments that strongly correspond to the potential applicants requirement, they may then check the website of the funding mechanism to get a deeper understanding of the tool, as the guide is only intended to introduce potential applicants to the funding mechanisms. To fully understand whether a funding mechanism is suitable to the potential applicant and their project, it is strongly recommended that they perform further research on the website of the tool.

This document was prepared by the PwC Space Practice for the European GNSS Agency.



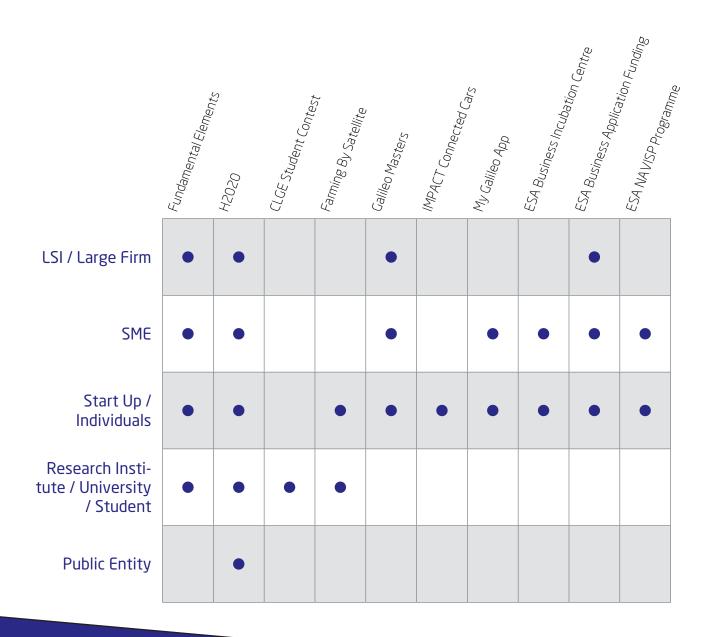
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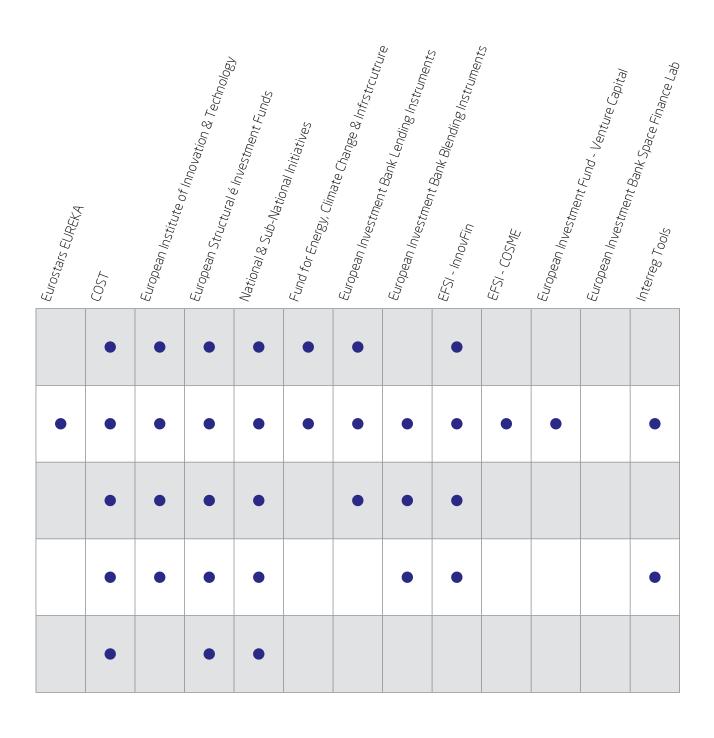
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How would you classify your organisation?

Different funding instruments are targeted at different entities. Some are well suited to smaller and younger entities such as SMEs and start ups. such instruments aim at supporting innovation and may provide additional technical or managerial support. Others favour larger entities like well established large scale integrators. Some funds may specifically look for small teams from research institutions, while others may seek large, diverse consortia.

Many funding tools do not have strict requirements on applicant organisations. Nevertheless, you may use this table to get a high level overview of which funding elements can suit your needs based on the type of organisation you represent.

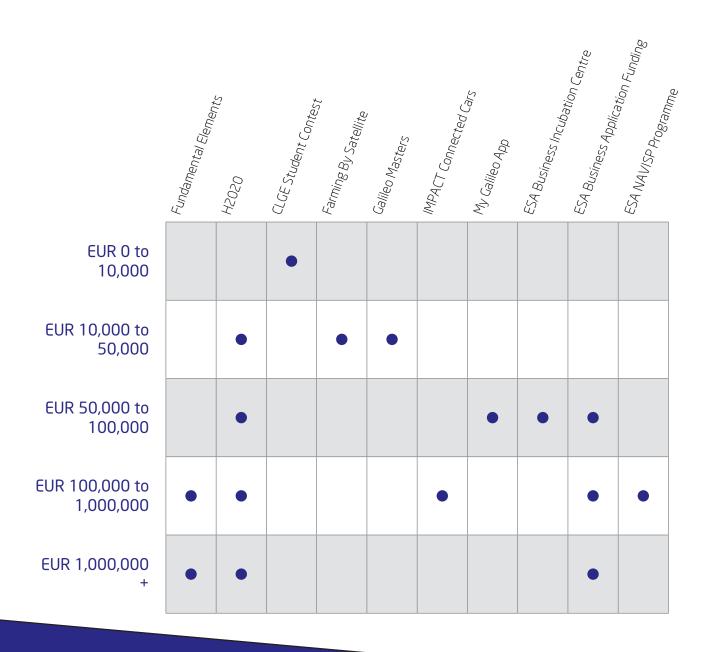


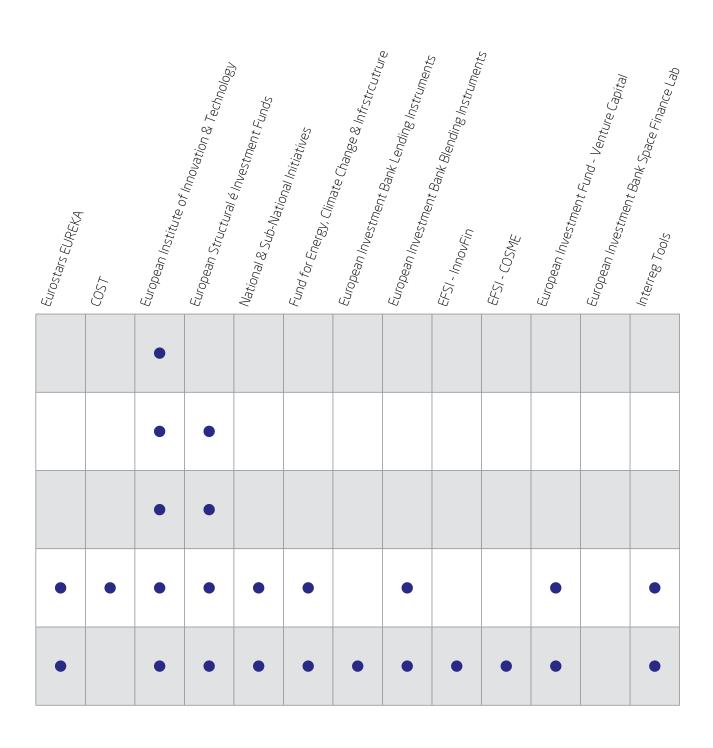


How much funding would your project require?

There is a range of funding envelopes available from the different tools, ranging from prizes offering thousands of Euros to large funding that can finance in the millions of Euros. Depending on your project, you can check what tools best correspond to the amount you need with this table.

It is worthwhile to note, however, that different tools may offer other non financial services as well such as technical and managerial support, as well as potentially having effects on the teams network or reputation.

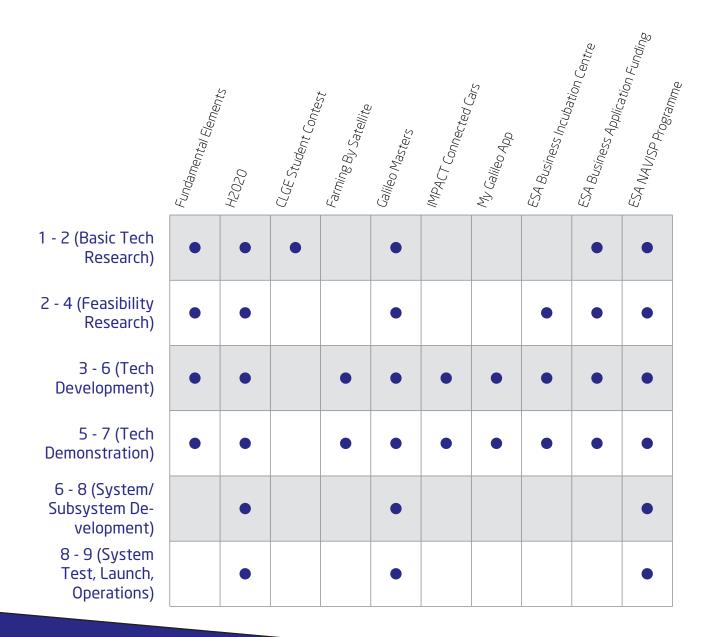


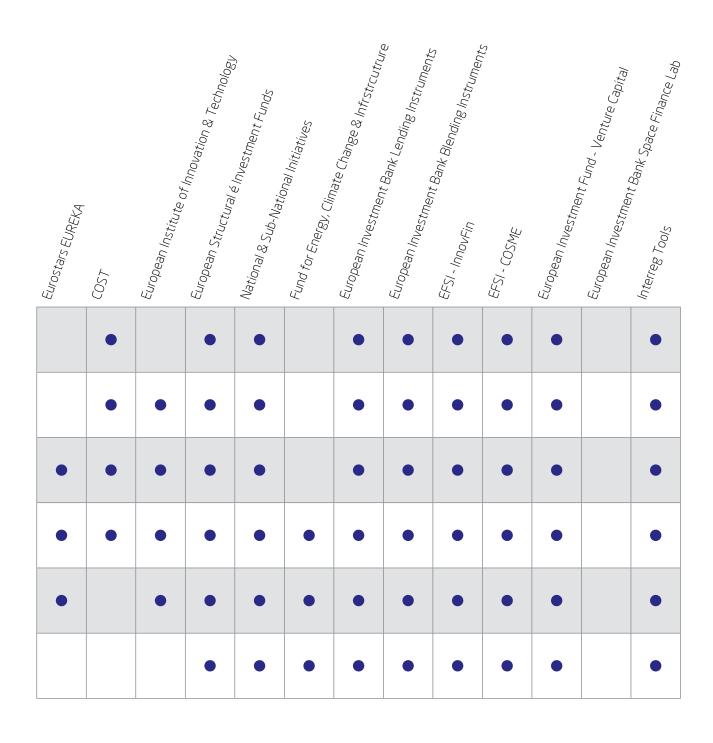


Currently, at what TRL (tech readiness level) is your solution?

The Technology Readiness Level (TRL) scale is a measure of how close a technical product is to commericalisation that is widely used in the space industry. TRL 1 roughly corresponds to early research and concept design, while TRL 9 would correspond to a product that is ready for commericalisation.

Some tools focus on financing more abstract and conceptual ideas, while others aim at bringing an existing product closer to widespread commercialisation. It should be noted that the TRL in this instance is the starting TRL,. The different tools may aim at greatly increasing TRL (1 to 7) or marginally increasing it, or even just awarding an innovative idea without raising TRL.

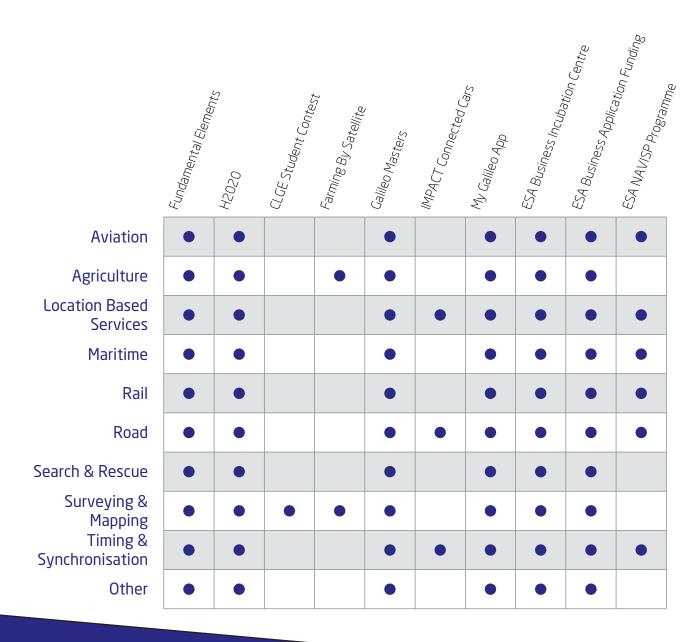


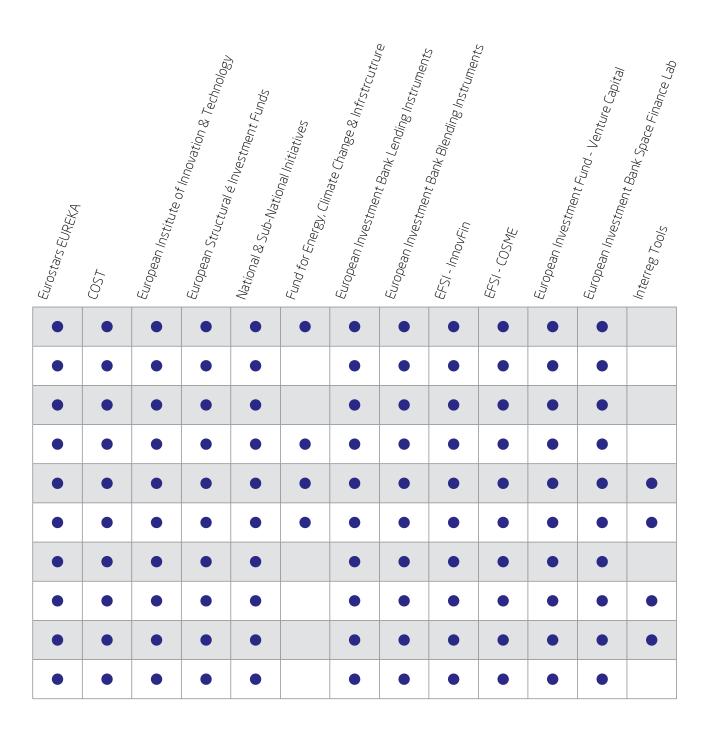


To what field(s) of application is your project related?

GNSS is naturally important to a diverse field of applications. The table below outlines some of the more common activities, but it should be noted that there is an others field for the diverse range of applications not covered here. Some tools may focus on specific fields, others mayy focus on macro-thematics like mobility which can encompass fields like road, rail, aviation and even LBS.

It should be noted that there is often significant overlap between different thematics: a smart-phone application for drivers could be considered road or LBS, a beacon could be maritime, aviation or search and rescue, etc. An applicant should consider this when reviewing potential funding tools.

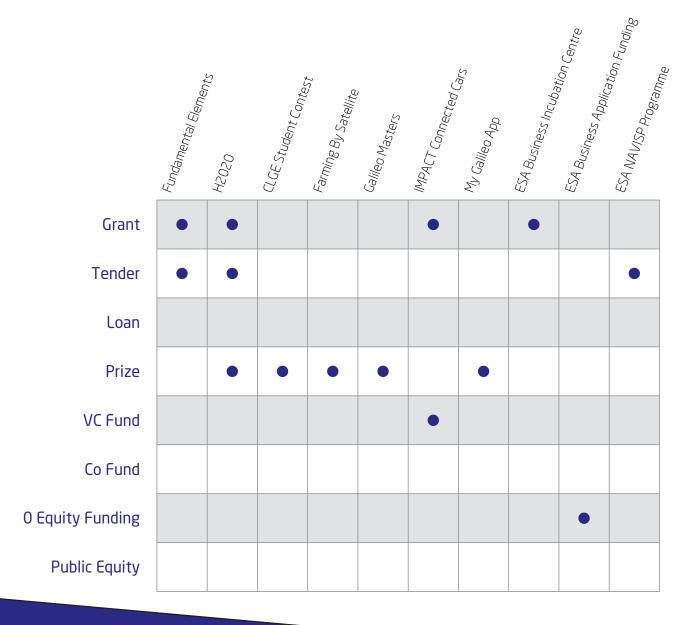


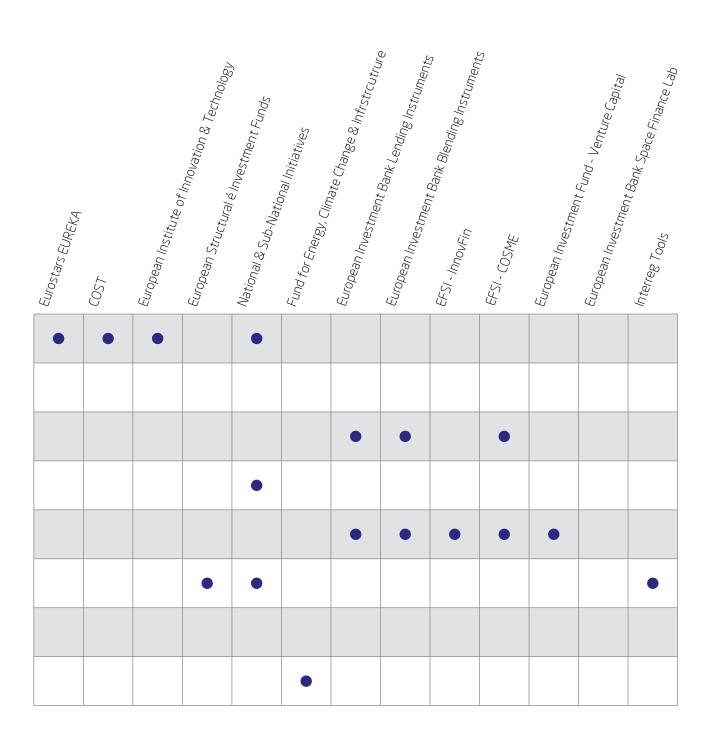


What kind(s) of funding would you require?

There is a diverse range of financial instruments available to applicants, each of which can be very different. A prize may involve a simple transfer of cash to the applicant with no further development required, while a tender might require an applicant to complete a certain project like raising the TRL of a technology to a certain level.

Some instruments could involve open calls, where the applicant receives funding to respond to a problem, while others may require more specific solutions. Some funding instruments would require a transfer of equity or intellectual property, depending on the project. An applicant should know exactly what are the terms of the funding instrument to ensure that the instrument suits their needs appropirately.

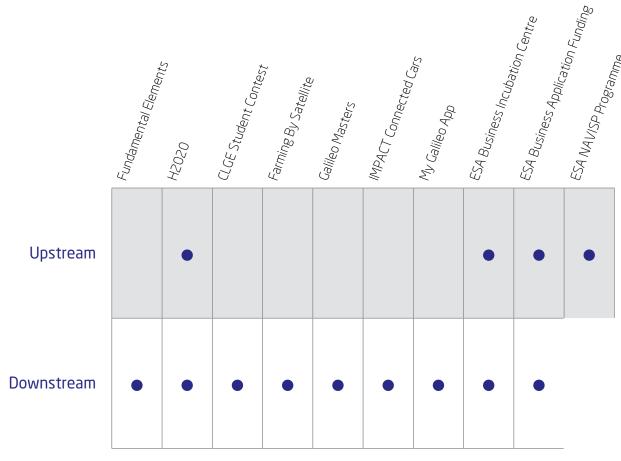


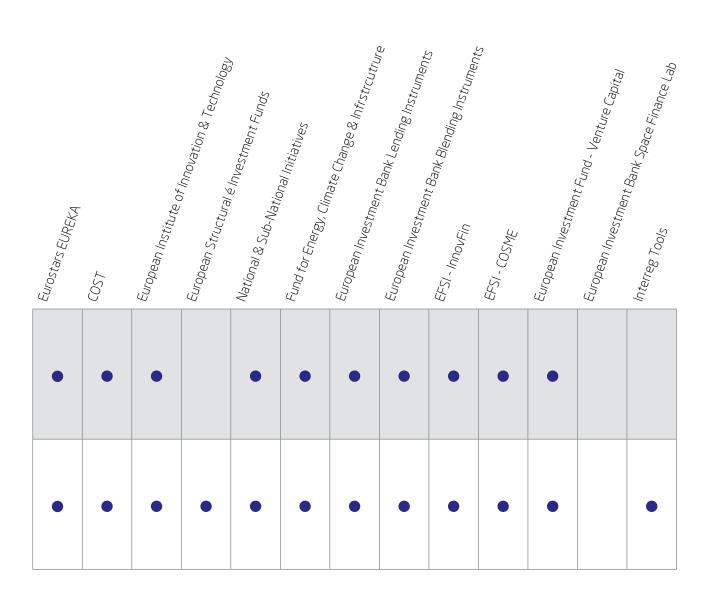


What market segment would you target?

The value chain is generally divided into 3 segments, the upstream, the midstream and the down-stream. The upstream deals with the development of space hardware, while the midstream deals with technology used in the operation of the space infrastrucutre (maintenance, monitoring), and the downstream deals with the end user level technology, such as the applications and services provided. Therefore, firms interested in the downstream would include component manufacturers, system integrators, value added serives providers)

Entities may operate in just one of the areas of the value chain, or may be more vertical. Similarly, there are projects that that may clearly deal with one part, and others that are also more vertical. Different funding instruments may discriminate based on where in the value chain a project aims to target.







H2020 & Fundamental Elements

Introduction

In preparation of the roll-out of EGNOS (first) and Galileo (afterward), the GSA has focused activity on fostering the development of solutions around the European GNSS infrastructure. Starting with the early framework programmes like FP5, FP6 and FP7, and more recently the H2O2O and Fundamental Elements programme, the GSA has helped provide financial and technical assistance to teams that help fully realise the potential of EGNOS and Galileo.

H2020 is a large programme that crosses multiple different sectors, aiming to foster research and development across Europe. A portion of H2020 funding is dedicated to the space sector, and the European GNSS Agency (GSA) was mandated to allocate funding for applications that foster the uptake of EGNOS & Galileo, while generating large social bewnefits.

The Fundamental Elements programme is a younger programme and is positioned earlier in the downstream of the value chain, developing the fundamental technology that will drive the uptake of EGNOS & Galileo, like the receivers, chipsets and antennae that are integral to satellite navigation. In particular, Fundamental Elements aims to allocate resources to where the free market is less likely to, therein ensuring that awareness is raised and applications are created for the European GNSS infrastructure.

H2020 and Fundamental Elements are complementary programmes by design. H2020 deals with fostering downstream uptake of EGNOS & Galileo derived solutions, and with integrating these solutions into systems outside the realm of GNSS. A GNSS subsystem may be integrated into a precision agriculture solution, or a disaster management solution for example.

This would be impossible, however, without the development of the fundamental GNSS subsystems themselves. And this is why Fundamental Elements was created; it encourages the development of the subsystems that can then be used in projects such as the ones in H2020.

By allocating resources to the two programmes, Europe can cover more of the downstream value chain and ensure that developments are supported, while avoiding bottlenecks where a solution is built on a conceptual technology, or a technology is developed without an application.

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H2020

Horizon 2020 is the biggest funding tool ever financed by the EU to foster R&D. 70€B are available. Horizon 2020 enjoys the political support of European leaders and members of the European Parliament, who agreed that the investment on R&I is essential for the future of Europe and they have it therefore placed at the centre of the Europe 2020 strategy for intelligent, sustainable and inclusive growth.

Horizon 2020 contributes to the achievement of this goal by combining research with innovation and focusing on three key areas: scientific excellence, leadership industrial and societal challenges. The goal is to ensure that Europe produces world-class science and technology capable of stimulating economic growth.

H2020 EGNSS Calls

GNSS-wise, H2020 provides several opportunities for the development of Galileo and EGNOS application in the downstream market. These applications fall under H2020 Space Theme, which is synergic with societal challenges such as transportation, maritime, agriculture, energy and climate change. Under the GNSS field, there have been several calls between 2014 and 2020, some of which are expressed below:

GALILEO-1-2014-2015: EGNSS applications

Budget: €1.5 to €4M

Objective: Develop new innovative applications with future commercial impacts across all EGNSS market segments. Use of EGNOS and Galileo Early Warning Serivces was deemed a priority.

GALILEO-2-2014-2015: Small and Medium Enterprise (SME) based EGNSS applications

Budget: €0.5M to €1M

Objective: Address new applicatiosn in niche market setors and business models. Emphasis on technology breakthrough into viable products, and on SMEs.

GALILEO-3-2014-2015: Releasing the potential of EGNSS applications through international cooperation

Budget: €0.5M to €1.5M

Objective: Enable development of innovative aplications and of standards on an international level, supporting global acknowledgement and uptake of EGNSS.

GALILEO-4-2014-2015: EGNSS awareness raising, capacity building and/or promotion activities, inside or outside of the European Union

Budget: €1M to €2M

Objective: Encourage capacity building, raise awareness on EGNSS solutions and provide neworking opportunities for actors interested in EGNSS. Support the building of industrial relationships and strategic partnerships.



GALILEO-1-2017: EGNSS Transport applications:

Budget: €1M to €3M

Objective: Develop innovative EGNSS applications across the transport domain to increase the availability of the system to transport users seeking highly accurate and resilient positioning.

GALILEO-2-2017: EGNSS mass market applications

Budget: €1M to €3M

Objective: Develop competitive mass market applications utilising EGNSS for added resilience, fostering EGNSS uptake while also supporting applications that maximise public benefit.

GALILEO-3-2017: EGNSS professional applications

Budget: €1M to €3M

Objective: Leverage differentiating features of Galileo to develop new generations of high performing professional tools, also combining Copernicus services for added benefits.

GALILEO-4-2017: EGNSS awareness raising and capacity building

Budget: €0.5M to €1M

Objective: Encourage capacity building, raise awareness on EGNSS soltuions, and provide network opportunities for relevant entities. Encouraging partnerships and relationships building.

LC-SPACE-EGNSS-1-2019-2020: EGNSS applications fostering green, safe and smart mobility

Budget: €1M to €3M

Objective: Develop innovative EGNSS applications in the frame of low emission, safe, secure, affordable and high performance mobility, based on exploitation of EGNSS differentiators.

DT-SPACE-EGNSS-2-2019-2020: EGNSS applications fostering digitisation

Budget: €1M to €3M

Objective: Develop innovative EGNSS applications that integrate novel digital technologies like IoT, cloud computing, big data or robotics, where EGNSS improves performance or resilience. An area of focus for this call could be the smart city.

SU-SPACE-EGNSS-3-2019-2020: EGNSS applications fostering societal resilience and protecting the environment

Budget: €1M to €3M

Objective: Make applications that foster societal resilience more affordable, handy and integrated with other solutions and technologies, including EO Copernicus services, to enable targeted innovative solutions.

SPACE-EGNSS-4-2019: Awareness Raising and capacity building

Budget: €0.5M to €1M

Objective: Encourage capacity building, raise awareness on EGNSS soltuions, and provide network opportunities for relevant entities. Encouraging partnerships and relationships building.

H2020

Tools & Mechanisms

H2020 Grants

H2020 offers a range of grants supporting research and innovation. Each call listen on the funding and tenders opportunities website comes with information on areas the Commission requires the applicants to address. Instructions on participation are found on the H2020 Online Manual, and all proposals are to be submitted online. It should be noted that certain calls require a team of at least three, all proposals are evaluated by a panel of scientists based on a list of criteria. The final grant agreement is agreed upon by the Commission, and details teh scope, duration, budget, contribution of the commission, rates, costs, rights of the project and more.

H2020 Prizes

These are challenge prizes that award cash to the appliant who can most closely meet the target. The prizes aim to stimulate innovation and procure solutions to problems relevant for European citizens. In the space sector, the first European Innovation Council (EIC) Horizon prize opened in 2018. With a prize of EUR 10 M, aimed to provide low cost access to space for light satellites.

The SME Instrument

This is a dedicated tool to fund high-potential innovation, by SMEs. The total funding over the 2014 – 2020 period is about EUR 3bn. It supports close to market activities with aim to boost to breakthrough innovations. Applicants may receive:

- Business innovation grants for feasibility of up to EUR 50k (70% of project)
- Business innovation grants for innovation development and demonstration of around EUR 500k to EUR 2.5 M (70% of project)
- Free of charge business coaching to support the firms innovation capacity and aligh strategic business needs
- Acccess to innovation support services and faciliated access to risk finance to facilitae the commercial exploitation of the project

Support for Research Intensive SMEs

The Eurostars Joint Programme (2014-2020) undertaken by several Member States and Associated countries in the framework of Eureka, with the participation of the Union, promotes market-oriented transnational research activities of research performing SMEs in any field.

By pooling together national resources, Eurostars was aimed at strengthening integration and synchronization of national research programmes contributing to the achievement of the Europe-



an Research Area. Moreover, SMEs are also be encouraged to participate in other parts of Horizon 2020, such as the Marie Skłodowska-Curie actions or the activity on Future and Emerging Technologies. In addition initiatives were set up with the aim of developing and providing better innovation support services to SMEs, in fields like cluster and internationalization support.

Financial Intruments (equity/debt) support for SMEs

Horizon 2020 allocates a budget of € 2.84 billion for financial instrument facilities and accompanying measures for R&I. At least one-third of this was meant to be absorbed by SMEs and small mid-caps, which would in turn translate into over EUR 10 billion in finance for R&I-driven SMEs.

Two financing facilities are available for SMEs and small midcaps as part of a set of financial instruments InnovFin – EU Finance for Innovators under Horizon 2020:

- InnovFin SME Guarantee enables loans, guarantees and other forms of debt finance to be extended to entities of all forms and sizes, notably research and innovation-driven SMEs, by selected financial intermediaries;
- InnovFin SME Venture Capital provides finance for mainly early-stage investments, with a particular focus on early-stage SMEs with the potential to carry out innovation and grow rapidly, through investment in selected funds.

Their aim is to support the achievement of the R&I objectives of all sectors and policy areas crucial for tackling societal challenges, enhancing innovation and fostering sustainable growth. They are implemented by the European Investment Fund.

Horizon 2020 facilities operate in conjunction with the financial instrument facilities of COSME, the Programme for the Competitiveness of Enterprises and SMEs, where € 1.38 billion is allocated to debt and equity financing in support of SMEs. Fast Track to Innovation pilot action (FTI) is to support 100 close-to-market innovation actions with a budget of €200 million. Open to any type of legal entities, the FTI pilot is administered as a single, continuously open call until the last cut-off date on 25 October, 2016. Proposals must be under the specific objective «Leadership enabling and industrial technologies» and/or the «Societal Challenges». There is a total of three cut-off dates in 2016. Time-to-grant following each cut-off date is set at six months.

Horizon Europe

Horizon Europe is a proposed EUR 100 B funding programme for the 2021 to 2027 period, aimed at being the next research and innovation framework programme. The programme will focus on transforming leadership in science to leadership in entrepreneurship, and is built around 3 pillars. The first, Open Science, aims to reinforce and extend the EU science base. The second, Global Challenges and Industrial Competitiveness, aims to boost key technologies and solutions in EU policies and sustianable development goals. The third, Open Innovation, aims at stimulating market creating breakthroughs and ecosystems conducive to innovation. More information on the proposed programme is available on the Horizon Europe webpage.

Fundamental Elements

Fundamental Elements funding specifically focuses on the development of EGNSS enabled chipsets, receivers and antennas. The markets targeted by these end-products comprise, in varying proportions, end-users from all segments.

Roughly 54% of the total FE projects are on Mobility, respectively on Aviation (31%), Road (15%) and Maritime (8%). Finally, the Search and Rescue category accounts for another 38%. In principle, however, Fundamental Elements project can cover any project depending on the calls.

Unlike H2020, Fundamental Elements seldom directly encourages the uptake of EGNOS/Galileo through the development of applications and content, but instead fosters the critical technologies that would support the uptake of EGNOS/Galileo. Specifically, Fundamental Elements supports the technologies that the free market is unlikely to develop on its own.

It can be seen as something that is more technology push than H2020, as through the technology, the market is expected to integrate EGNOS/Galileo into market ready devices. Unlike typical technology push models, however, Fundamental Elements performs market research so that their projects respond to a gap in the market, therefore its projects can be considered "user driven."

The objectives of the Fundamental Elements programme can be summarised:

- Facilitate adoption of EGNOS/Galileo, building on their innovative services & differentiators;
- Improve the competitiveness of EU industry;
- Address user needs in priority market segments;
- Maximise benefits to European citizens

Since Fundamental Elements targets midstream technologies, it is not conceived to be a facilitator for start-ups and small companies, but rather to foster the collaboration between excellence in terms of SMEs and R&D institutions operating in Europe, market leaders and end-product manufacturers (carmakers, ship manufacturers, railway companies).

A large amount of Fundamental Elements projects deal with much lower TRLs, generally helping a project go from TRL 1 all the way to commericalisation. However, this is not a hard and fast rule, as there are projects that start at a much higher TRL and undergo some modifications to respond to the problem posed in the Fundamental Elements call.

Tools & Mechanisms

Fundamental elements is a funding mechanism with a budget of EUR 101 million between 2015 and 2020. It relies on grants and tenders as its financial instruments. The preferred financial instrument would be the grants, which will be financed by the European Union for 60-70% of total



value, tenders (procurement) will be financed 100%.

It should be noted that in the case of tenders, which are financed 100%, the intellectual property rights associated with the project are owned by the GSA, not by the consortium. On the other hand, with the grants (which are financed partially and are not procurement), the intellectural propoerty rights remain with the consortium mebers.

Generally, only consortia are eligible. Any relevant players in the value chain may apply to each project. The ideal consortium is composed by stable and consolidated market players, possibly also active in the field of R&D, and includes the end product manufacturers in it, in order to facilitate the development and marketing of a given device.

There is a wide range of funding envelopes within Fundamental Elements, with funding being provided in the order of millions of Euros down to the order of hundreds of thousands.

Support Mechanisms

As already mentioned, Fundamental Elements is not conceived to be a downstream applications market facilitator; as such, scarce efforts have been put in commercialising this funding tool. Since it is meant to be rather a niche funding tool than a market opener, it is supposed to attract and involved players that are already experts about the GNSS value chain, and that have stable and consolidated businesses, with a good level of awareness.

The technical complexity of these projects also lends themselves more towards the larger companies, who will have more resources to progress towards commercialization. However, the challenge still remains to ensure a willingness to work together within the consortium, and also to find a market if creating products that are primarily aimed at supporting governmental actors (e.g. search and rescue).



GNSS R&D Prizes

Introduction

Fundamental Elements and H2020 are substantial funding instruments coming from the European Union, but they are not the only funding mechanisms. The GNSS R&D prizes are unlike the Fundamental Elements and H2020 in that they are prizes awarded to small teams for conceptual ideas with low TRLs, these prizes can be seen as an effective way to kickstart small enterprises based on innovative ideas.

The prizes are often smaller, in the range of tens of thousands to hundreds of thousands per applicant, and with a smaller overall budget. While H2020 and FE may finance multiple projects with the order of millions of Euros, the prizes are allocated to significantly fewer applicants.

Many of these prizes target a wider audience, including small teams of students and professionals interested by GNSS, while the larger tools target consortia of entities highly specialised in the industry.

The prizes respond to a niche where larger tools like H2020 and Fundamental Elements probably cannot go. Some of the prizes target students as young as those in their bachelor's degrees, meaning that not only do they provide financial incentives, but they also encourage students to think about GNSS based solutions, therein raising awareness of EGNOS and Galileo.

Additionally, many prizes offer additional non financial support, such as helping incubate ideas into companies and helping teams get in touch with important players in the industry. Therein, it can be said that these GNSS prizes offer smaller, less specialised players a way to enter the GNSS industry, something not covered by H2O2O or FE.

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CLGE Student Contest

The CLGE Student Contest targets the downstream segment of the GNSS value chained, being aimed at encouraging research "in the field of practical application of the European efforts in Galileo, EGNOS, Copernicus".

Only **Bachelor and Master students** are allowed to participate to the CLGE Student Contest as of 2019, despite there being discussions on opening the prize to a wider audience including PhD students.

The CLGE does not reward business projects per se, but rewards papers submitted by students and therefore rewards projects that are still in their burgeoning phase. students submit a paper they are working on or that they have submitted as a University project or a Bachelor/ Master's thesis.

Type of funding	Type of organisation	TRL Level	Amount per applicant	Field(s) of application	Find out More
Prize	Student Projects	1	EUR 1,000	Mapping & Surveying	https://www.gsa.europa.eu/clge-stu- dent-contest

Eligibility Criteria

- Exclusively for Universities. Only Bachelor or Master level students may apply
- Submissions be in English and must not exceed 4,000 words including an abstract of 300 words
- Five categories are open to submission:
 - Geodesy & Topography
 - Galileo, EGNOS, Copernicus
 - GIS & Mapping
 - Cadastre & Property Surveying
 - Student & Youngster Engagement

Support Mechanisms

The support provided by the CLGE Student Contest to GNSS-based technologies is limited. The contest is not about commercialisation of GNSS-based projects or the development of GNSS-based technologies or equipment. Rather, it aims at spreading awareness of the potential of GNSS among European students, and at raising interest in the potential business applications of ideas that are still at a burgeoning state through the means of research papers.



Farming by Satellite

The Farming by Satellite prize targets downstream GNSS applications, focusing on how it is possible to use **GNSS-based services to enhance agriculture**. The prize is **targeted at students and young farmers in Europe** who have innovative ideas on how to use GNSS and Copernicus-based technologies in order to enhance agricultural production, efficiency and profit but also on how such technologies can **improve the agricultural sector's environmental impact**. On an occasional basis, special prizes can be created in order to tackle a specific element, like the 2013 edition that was expanded in order to include a special prize for ideas that address the challenges of farmers in Africa.

The competition revolves around the submission of **case studies**, technical proposals for equipment or systems applied to farming, or ideas that rely on the EGNOS or Galileo ideas, but it is important to note that the prize is also **open to Copernicus-based use cases and ideas**. The prize is an initiative of the GSA and support from other private players, institutions or European agencies is possible, like the 2018 edition where the European Environment Agency (EEA) was involved as a co-sponsor of the prize.

Type of funding	Type of organisation	TRL Level	Amount per applicant	Field(s) of application	Find out More
Prize	Student Projects; Startups	4 - 7	EUR 13,000	Agriculture Mapping & Surveying	https://www.gsa.europa.eu/farm- ing-satellite-prize

Eligibility Criteria

- Open only to individuals younger than 32 years old
- Ideas must rely on EGNOS or Galileo, but the prize is also poen to Copernicus based use cases
- Submissions must be in English and submitted electronically with visual material like videos or PowerPoint

Support Mechanisms

Support brought by the Farming by Satellite prize comes at a very early stage. If some prizes can be won by actual business ideas presented by businesses including mostly startups, other contestants can come from universities and submit an idea that will suggest a potential usage of GNSS-based services more than an actual business idea based on GNSS-technologies.

Galileo Masters

The Galileo Masters prizes target ideas that apply GNSS in services. Applications respond to two distinct types of prizes: **special prizes** and **regional prizes**. A third prize, the Galileo Masters overall prize, is awarded to one of the projects that won either a special prize or a regional prize. Indeed, the overall prize is awarded for **two categories:** "startup of the year" and "idea of the year". Different criteria are used to rank the projects, including maturity and feasibility, benefits and market potential, degree of innovation, among others.

Special prizes are awarded by institutional/resarch-focused stakeholders seeking innovation in response to their immediate needs. The scheme encourages cooperation between the applicants and the awarding stakeholder. Examples of prizes can be **found on the website**.

The regional prizes are awareded by local partners like space agencies, governments, etc. There are currently 18 regional challenges presented by entities at regional and national levels. Examples can be found on the website.

The winner of the overall prize benefits from **incubation** in the centre of its choice in one of the EU28 countries for 6 months with a potential 6 months extension. The project will also benefit from communication events through the GSA's campaigns, websites and event invitations.

Type of funding	Type of organisation	TRL Level	Amount per applicant	Field(s) of application	Find out More
Prize	Start Up, SME, Large	1 - 7	Variable per prize (EUR 10k to 50k)	All fields	https://www.galileo-masters.eu/

Eligibility Criteria

• No specific eligibility criteria other than that projects must deal with leveraging GNSS.

Support Mechanisms

The Galileo Masters supports the commercialisation of GNSS-based projects. The partnerships built by the special prizes with institutions active in the space sector and with technical and business expertise facilitate the maturation of projects and their go-to-market strategies. This is true for the participation of the German DLR, the UK Space Agency or the GSA in some of the special prizes. It is also true of the regional prizes, for which many candidates prepare projects for ESA BIC selection programs, which are designed as steps towards commercialization.



IMPACT Connected Car

The IMPACT Connected Car funding tool targets **startup companies** providing technological solutions as well as services to the automobile industry. The tool can therefore intervene both at the **across the entire downstream GNSS value chain**, depending on the applications considered. In particular, IMPACT Connected Car is looking for startups in specific subfields of the automobile industry where GNSS-based technologies and services can intervene. These include safety & security, driver assistance, mobility management, and vehicle management.

The IMPACT Connected Car program offers not only funding to start-ups but also a proper **acceleration program** that lasts 6 months. The accelerator partners with major players in the industry and will help start-ups learn from experts in business and corporations, technology-intensive sectors and funding. Selected start-ups can also benefit from an access to up to $\leq 110,000$ in **equity-free financing** as well as a final round of up to $\leq 200,000$ from collaborating venture capital funds.

Type of funding	Type of organisation	TRL Level	Amount per applicant	Field(s) of application	Find out More
Grant, VC fund- ing	Start Ups	4 - 7	€310,000	LBS, Road, Timing & Syn- chronisation	https://iccar-opencall2.fundingbox. com/

Eligibility Criteria

• Applicants should be start ups and must work on technological solutions related to the automotive sector.

Support Mechanisms

IMPACT Connected car represents an important boost in the commercialization process of start-up projects that are accelerated and who receive funding by the program. Both the access to experienced professionals and the specialisation on the automobile industry the program represents help start-ups reach a more advanced TRL level in a specific industry which potentially maximizes market outlets.

My Galileo App

The MyGalileo App Award targets **mobile application** developers that use GNSS-based technologies and services as an input for the application thus only targets the downstream segment of the value chain. Teams must propose an application that targets one of 11 GNSS-intensive areas (can be **found on the website**.)

The program is based on a yearly intake with a selection process that start in January, with successive selection phases based on two "development phases" where app developing teams present projects in order to be selected and hopefully present their app project at the Competition Final in November.

30 teams are initially selected to enter the competition, and are further selected through the process that leads to the competition's final pitch. Several criteria are considered for assessment of projects. Those criteria include the degree of innovation of the project, its market potential, the Galileo-relevance of the solution proposed as well as the technical feasibility of the project,

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Prize	Startups, SMEs, Students	4 to 7	EUR 100k (first prize)	All	https://www.gsa.europa.eu/mygalile- oapp

and evaluations are made by a GSA Evaluation Board. The **1st prize consists in a €100,000 award**, the 2nd prize is of €50,000 and the 3rd prize is of €30,000.

Criteria

- Anybody can apply to the contest, including students, researchers, entrepreneurs or developers.
- The contest is open to teams from 1 to 7 people, this upper-bound number being a recommended maximum but not a fixed limitation.

Support Mechanisms

The MyGalileoApp challenge facilitates the commercialization of applications offering GNSS-based services by accelerating the development of mobile applications that can potentially reach millions of customers not only in Europe but around the globe. It is important to note that the award does not, per se, facilitate the commercialization of GNSS technologies, but only of GNSS-based services and therefore intervenes at the very end of the GNSS value chain (downstream).





European Space Agency (ESA) Funding

Introduction

The European Space Agency (ESA) has been heavily involved in the development of EGNOS & Galileo since the conception of the projects. ESA is responsible for the development of the space segement, as well as for future upgrades of it. Despite the agency's involvement in the far upstream of the space segment value chain, they do have some tools that are aimed at fostering the development of business ideas around space. Many ESA tools are targeted to the general space sector

ESA tools are diverse in their scope and scale, and as such applicants can benefit from more available funding tools. A key synergetic point for the ESA funding tools is that they often offer much more than simple financial support. ESA tools can help incubate businesses and provide technical support for projects. Such projects also can range in size from tens of thousands of Euros to millions of Euros.

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ESA Business Incubation Centres

ESA BICs target **startups** that are involved in both the **upstream and the downstream** of the space sector. Eligibility conditions might include residency in the region of location of the selected ESA BIC, or registration of the startup in the chamber of commerce of the country of the BIC. Applicants must select an ESA BIC in which they would like to be incubated based on the type of expertise they would benefit the most from receiving.

The selection process of ESA BICs is based on ESA processes, where a tender opening board will meet, generally 3 weeks after the submissions deadline, and evaluate applications received. Pre-selected projects will receive an invitation to pitch their business to a jury that will make a final decision after that. Selected applicants are generally rewarded with a €50,000 grant as **zero equity funding** from ESA.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Grant	Startups, SMEs	2 to 7	€50,000 + €50,000 (varies with BIC cho- sen)	All	http://www.esa.int/Our_Activities/ Telecommunications_Integrated_Ap- plications/Business_Incubation/ESA_ Business_Incubation_Centres12

Criteria

- Start-ups generally younger than 5 years.
- Candidates must provide a cover letter, a business plan and an incubation proposal
- May be restrictions based on residency applications must consider local eligability criteria

Support Mechanisms

The funding tool offered by selected candidates that join an ESA BIC generally act as seed money. As such, they are a solution for kick-starting activities for startups and contribute to the development of initial prototypes or services. ESA BIC funding should thus not be considered as funding for a stage close to commercialization of GNSS-based solutions or services but rather as a kick-start funding intervening in earlier stages. It should however be noted that the proximity of ESA BICs with major players from the business environment facilitates startups and projects developments and accelerate the reaching of a commercialization stage.



ESA Business Application Funding

The ESA Business Applications funding targets any **individual or company** that is willing to use space-based solutions in the provision of new services, conditional on the entity being from one of the ESA Member States.

Candidates can apply through two means:

- **The Open Call for Proposals** allow businesses to propose their own ideas to ESA. Applicants should complete an acitivity pitch questionnaire and send it to ESA. Funding is limited to 50% of the total cost of projects submitted. The funding limit is EUR 500K.
- **The Competitive Tenders** target problems identitified by ESA. Applicants provide proposals and are selected on a competitive basis. These receive funding up to 100% for fesaibility studies, 50% for demonstration, and 75% for kick start activities with a limit of EUR 60K

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Zero Equi- ty Funding	Startups, SMEs, Large	1 to 7	EUR 60k to 2 M	All	https://business.esa.int/funding

Criteria

- Candidates must be from one of the ESA member states
- Candidates must be registered in the ESA-STAR system
- Candidates must have received authorisation from their national delegation

Support Mechanisms

The ESA Business Applications funding is a flexible tool that can target a wide variety of businesses, in the entire value chain as well as for various TRL levels. As such, the tool can be seen as a strong commercialization facilitator, an assessment that is reinforced by the provision, for winning candidates, of support from a personalised ESA consultant, from technical & commercial guidance, access to ESA network of partners and the credibility of the ESA brand. In addition, the program is particularly appealing to startups, with a zero-equity funding scheme that allows entrepreneurs not to lose any equity in the process of funding their company's development.

ESA NAVISP Programme

The ESA NAVISP program aims at supporting projects that innovate in the positioning, navigation and timing (PNT) sector, independently on the positioning in the value chain. The programme is not only targeted at GNSS components but at **other PNT technologies as well**, in order to foster **synergies** between GNSS and non-GNSS PNT technologies. ESA issues calls for tender based on areas of interest and can include topics like "GNSS Science with Commercial Aircraft" or "Advanced concept for chip-scale atomic clocks".

Invitations to tender are annualized trough yearly workplans in coordination with the European Commission and the GSA, which means that several tenders open each year. Once the tenders open, applicants may apply after securing a letter of engagement from their originating country and informing ESA in parallel.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Tenders	Startups, SMEs	1 to 7	Usually €200k - €500k	Martime, Rail, Road, Aviation, Timing & Synchronisation, LBS	https://navisp.esa.int/ele- ment/innovation

Criteria

- For some tenders, only organizations originating from countries listed on the call shall participate.
- Applicants should describe their idea and submit a 1-page description to navisp@esa.int containing the following elements:
 - Background;
 - Objectives;
 - Tasks to be performed;
 - Expected Results;
 - Proposed duration and cost.

Support Mechanisms

ESA NAVISP tenders allow access to financing possibilities for companies that are developing GNSS-based technologies. Depending on the tenders considered, workplans help develop technologies to higher levels of TRL, thus facilitating, if not the commercialization itself, the path to business application of the GNSS-based technologies that are being developed.





EU Backed Tools

Introduction

Outside of H2020 and Fundamental Elements, the European Union bas backed several other financial tools that target R&D and R&I. Like with the ESA tools, these tools have a diverse range of targeted applicants and a diverse range of eligibility criteria. These tools can be seen as complimentary to H2020 and Fundamental Elements as they tend to address issues that are not covered by the other two.

Many of the tools described in this section are involved in R&D, rather than being as application driven as H2020 and Fundamental Elements. As such, they tend to target applicants who are more conducive to innovation and research, such as SMEs and research institutions.

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Eurostars EUREKA

The Eurostar grant exists in support of **R&D intensive, innovative projects** from international-level SMEs. Eurostars offers a **bottom-up** approach in support of products that are **innovative and rapidly marketable**, as well as processes and services that help in daily life. Eurostars is not GNSS exclusive and can address any technological field for any given market. However, funded projects must bear **civilian applications**. Eurostars is backed by $\le 861 \, \text{M}$ of national funding from its countries. It is further supported by $\le 287 \, \text{M}$ of EU funds, for a total of $\le 1.14 \, \text{bn}$.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Grant	All (project leader must be an R&D SME)	5 to 8	Variable, up to EUR 1M+	All	https://www.eurostars-eureka.eu

Criteria

- The project is led by an R&D SME hailing from a Eurostars country
- The project contains at least two separate legal entities hailing from at least two different
- Eurostars countries, where at least one is an EUREKA full member country
- The budget (excluding subcontracting) of the R&D-performing SME(s) located in Eurostars
- Participating state(s) or Partner Country(ies) is equal to at least 50.00% of the total project budget
- No single entity nor participants from a single country is responsible for more than 75.00 % of the project budget
- The project duration is 36 months or less with market introduction within 24 months of completion
- The project meets EUREKA criteria and must have a civilian purpose
- Each of the participating organisations is a legal entity in thier host country
- None of the entities have convictions for illegal business practitices, or have been or are in the process of being declared bankrupt.

Support Mechanisms

Eurostar provides grant to help the R&D performing SMEs to reach the market with the projects and ideas. The amount of support provided to projects is dependent on the national guidelines from every EU Member States. As an example Germany provides up to EUR 500K, France up to EUR 100K, Italy up to EUR 200K and Romania up to EUR 150K per year.



Cooperation in Science & Technology (COST)

COST provides **international research funding** for researchers and innovators to set up **interdisciplinary research networks** in Europe and beyond, this can include all fields of science and technology. Researchers and innovators from universities, public and private institutions, NGOs, industry and SMEs. Particular emphasis is placed on activities involving researchers from less-research intensive COST Member countries with a view to increasing their participation.

COST publishes announcements of Open Calls on the website with the collection date, schedule, description of procedure, and evaluation criteria. Following evaluation, a shortlost of proposals will be selected and submitted to the COST Committee of Senior Officials for approval. Proposals are selected on a competitive basis, and COST reserves teh right to involve observers to assess, provide feedback and to evaluate the proposals.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Grant	All (target SME, Research Institu- tions)	1 to 5	EUR 130k	All	https://www.cost.eu/funding/how-to- get-funding

Criteria

- The project must be an R&D project with a relatively low TRL
- Open to all organisations types, all fields, all career stages.

Support Mechanisms

COST provides international research funding for researchers to set up their international interdisciplinary research networks. These bottom-up networks run for 4 years and help to build capacity. Through these networks, the so-called COST Actions, COST provides funds for organising meetings, training schools, short term scientific missions or other networking activities in a wide range of scientific topics. This way it promotes global networking of national-funded research.

The COST Action support is EUR 130K per annum (dependent on budget availability) for participation by typically 25 COST Members. COST invites researchers across Europe to submit proposals for Actions through a continuous open call and invites researchers to join existing networks

European Institute of Innovation & Technology (EIT)

To support Research and Innovation actions, the EIT supports the creation of, and funds specific communities gathering these actors, called **Knowledge and Innovation Communities (KICs).** One of the main purposes of the EIT is to create **ecosystems that can breed businesses** that could answer to global needs. The KICs are anchored in regional and local communities via their several centres (Co-location Centres) **linking education, research and businesses** across Europe. The EIT refers to this tryptic as the "knowledge triangle". The "knowledge triangle" concept highlights the positive benefits that can be derived from strong links between these 3 groups of stakeholders. The knowledge triangle has also been strongly embedded in the 2020 Vision for the European Research Area.

Each KIC benefits from funding to perofrm the three main types of activities:

- Developing innovative products and services
- Starting new companies
- Training a new generalton of entrepreneurs

The EIT principles for financing promising projects are common to all KICs. However, due to their unique nature, their different thematic areas and their different degree of maturity, the implementation of those principles may be **adapted between each KIC**. As set in the EIT Regulation, the EIT funding for each KIC may not exceed 25% of the KIC overall funding, which means that the remaining minimum 75% must come from non-EIT sources. The non-EIT funding may include the financial resources of KIC partners, public funding at national, regional and EU level, such as, in particular, the – current and future – Structural Funds and the Framework Programme for Research and Innovation. The EIT requires and verifies that the KIC's internal provisions prevent double funding of activities.

A KIC will implement two categories of activities:

KIC added value activities (KAVA). These are KIC activities contributing to the integration of the knowledge triangle of research, innovation and higher education, including establishment, administrative and coordination activities of the KICs, and contributing to the overall objectives of the EIT. The KIC added-value activities may be funded up to 100% by the EIT financial contribution. The cost of KIC added value activities must meet the criteria defined in the EIT Financial Regulation, the relevant provisions of the EU Financial Regulation and the Rules for Participation of Horizon 2020. The distribution of EIT funding between different activities, as well as co-financing rates, is under each KIC's responsibility. The EIT sets the amount of its financial contribution for the proposed KIC Business Plan.



KIC complementary activities (KCA). These are KIC activities having a link with at least one KAVA and not financed from the EIT contribution. They are funded from other sources than the EIT. The cost of KIC complementary activities must:

- Be incurred by a KIC Legal Entity / partner
- Be proportionate to the cost of the KAVA and/or to the expected impact in furthering the mission of a KIC
- Be sustained after the designation date of a KIC and shall be identifiable and verifiable

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Grant	Universities, Start- ups, SMEs, Large	3 to 8	Up to 25% of project	Depending on the KICs thematic	https://eit.europa.eu/our-communi- ties/eit-innovation-communities

Criteria

• Depending on the different scopes of activities for the KICs, see above

Support Mechanisms

To develop innovated sevices and products, facilitate the creation of innovative businesses and train new entrepreneurs, most KICs either manage educational programmes (such as summer programmes, or master's, doctoral, professional programmes) or organise open calls for proposals to select promising firms and ideas. The supported companies generally benefit from the advice and support of a team for facilitating their access to market, creating networking opportunities and facilitating the access to investors. KICs can also support innovative projects through incubators, scalers or demonstrators or competitions for selecting new business models



Regional Funds

Introduction

Regional funds refer to the EU structural and investment funds that have traditionally existed in support of the regional development of the European Union and its Member States. 3 funds were specifically retained for their GNSS compatibility in the targets they aim at: the Agriculture and Rural Development Fund (EAFRD), the European Maritime and Fisheries Fund (EMFF) and the European Regional Development Fund. In addition, the Marguerite Fund dedicated to energy and climate change was considered as well.

Those funds were retained for the synergies study because they target specific needs of development the European Union and its citizens, in line with GNSS's ultimate goal of improving the EU citizen's lives. In addition to EU Regional funds, national and sub-national funding initiatives were characterized in order to see how GNSS-based technologies and services are financed by EU Member States at both national and sub-national levels.

As mentioned above, these funding instruments do not directly target GNSS, but instead target infrastructure development in the frame of 21st century Europe. GNSS can have a role to play in these solutions, which is why potential applicants should consider such funding tools.

Other tools like H2020 deal with developing more technical solutions to more abstract or general problems, while projects funded under the regional tools generally deal with responding to specific problems apparent at a regional level.

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European Structural & Investment Funds

Over half of EU funding is channelled through the 5 European structural and investment funds (ESIF), managed jointly by the European Commission and EU countries to invest in job creation and the European environment & economy.

Various entities can benefit from ESIF, including public entities, private entities (specifically small businesses), universities, associations, NGOs and other voluntary organisations. **Foreign firms** with a base in the region covered by the relevant programme can also apply if they meet European public procurement rules.

In most cases, funding is **granted to projects**, so applicants need to develop a project to be eligible for funding, which will then receive at different stages of the process. Three main funds have been identified in the framework of regional investment funds, specifically:

Agriculture and Rural Development Fund (EAFRD): Deals with projects addressing at least four of the following six common EU priorities:

- Fostering knowledge transfer and innovation in agriculture, forestry and rural areas;
- Enhancing the viability and competitiveness of all types of agriculture, and promoting innovative farm technologies and sustainable forest management;
- Promoting food chain organisation, animal welfare and risk management in agriculture;
- Restoring, preserving and enhancing ecosystems related to agriculture and forestry;
- Promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors;
- Promoting social inclusion, poverty reduction and economic development in rural areas.

The rural development priorities are broken down into «focus areas». For example, the priority on resource efficiency includes focus areas «reducing greenhouse gas and ammonia emissions from agriculture» and «fostering carbon conservation and sequestration in agriculture and forestry».

EAFRD focuses on the Agriculture downstream application, even though some application of LBS (i.e. locating beacons application can be useful in forest fire location). As part of the European Structural and Investment fund, it is meant to serve as a market enabler for SMEs.

European Maritime and Fisheries Fund: Seeks to promote a growth and job based recovery in Europe. Its targets are the following:

- Sustainable Fisheries: Helps fisheries & aquaculture in the transition to sustainable practice
- Control and Enforcement: Monitors compliance with the European Common Fisheries Policy



- Data Collection: Supports collection of the data the scientists need to improve knowledge of the seas and the long term management of fisheries
- Blue Economy: Supports coastal communities in diversifying their economies and sustainable aquaculture developments

EMFF mainly supports maritime applications involving fisheries and maritime trade. As part of the European Structural and Investment fund, it is meant to serve as a market enabler for SMEs.

European Regional Development Fund (ERDF): The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. The ERDF focuses its investments on several key priority areas, known as 'thematic concentration'. These areas are namely:

- Innovation and research;
- The digital agenda;
- Support for small and medium-sized enterprises (SMEs);
- The low-carbon economy.

Under the European Territorial Cooperation programmes, at least 80 % of funds will be concentrated on these four priority areas. Remote or otherwise disadvantaged regions will be prioritised in funding.

ERDF tackles the economic, environmental, climate, demographic and social challenges affecting urban areas. In this sense, the fund supports both the Midstream and Downstream applications concerning road and rail mobility, Mapping and Surveying and LBS.

Type of funding	Type of organisation	TRL Level	Amount per applicant	Field(s) of application	Find out More
Co fund- nig	All	All	Case by Case (EUR 10K - EUR 1M+)	EAFRD: Agriculture EMFF: Maritime ERDF: All	https://ec.europa.eu/region- al_policy/index.cfm/en/

Criteria

• Applicants must meet European public procurement rules

Support Mechanisms

As large investment projects, there is not much direct support from the funding agency and the recipient. As mentioned earlier, these projects can serve as a market enabler for SMEs and smaller businesses.

National & Subnational Initiatives

In this category of funding tools, we have mapped samples of national and sub-national initiatives from a set of 5 EU Member States. Countries were selected based on the ranking of the country in terms of R&D efforts. Initiatives mapped are from nation-wide (national) funding tools, that might also be open to foreign Member State countries, as well as sub-national (region-level).

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Co funding, Grants, Prizes	All	All	Variable per project (100K to 1M+)	All	https://ec.europa.eu

FRANCE - National Project of French Agence Nationale de la Recherche (ANR)

The ANR mission is to promote French project-based R&I by promoting the emergence of collaborative multidisciplinary projects and encouraging collaboration between the public and private sectors. It also aims to strengthen the position of French research at European and global level.

The ANR's activities are thus designed to support the excellence of French research at a variety of technological readiness levels (TRL), support basic research, encourage academic and public-private scientific partnerships and promote European and international cooperation.

In order to facilitate and support early stage research, three instruments for funding collaborative research projects are made available:

- Between public entities in a national or international context (PRC and PRCI respectively),
- Between one and more academic or public-sector research laboratories and one or more companies involved in R&D (PRCE).

These instruments pool the skills and resources to accelerate development of research. As the ANR's main funding instrument by volume of projects funded and grants awarded, PRC can be used to finance basic research covering all scientific fields and stimulate inter- and multidisciplinary approaches;

Furthermore, initiatives such as LabCom and LabCom Consolidation support the creation of labo-



ratories through the joint effort of public research laboratories and a microbusiness. They aim to develop academic research players' potential for industrial partnerships and knowledge transfer, and help to set-up long-term partnerships.

Industrial chairs instrument supports the creation of chairs in public laboratories, established jointly with companies, on ambitious, innovative research programmes with industrial applications. The chair is co-funded equally by the ANR and the partner companies.

The Challenge programmes finance several teams simultaneously to explore multiple research approaches to the same problem with the aim of overcoming scientific, technological or methodological obstacles that may have major social implications.

The Carnot programme, aims at recognizing and supporting French laboratories, engaged in positioning partnership-based research at the heart of their strategy. To support public research institutions with the "Carnot institute" label and bring them closer to private stakeholders, the ANR makes an annual contribution to these bodies based on their partnership revenues.

The ANR also offers two specific calls for proposals to facilitate access by French researchers to large-scale European or international funding programmes and strengthen their leadership:

- MRSEI, to help researchers constitute a scientific network to submit a project to a European (such as Horizon 2020) or international call for proposals;
- T-ERC, which offers a further chance of success to young researchers from French public research organisations who have not been awarded funding under the European Research Council (ERC) Starting Grant or Consolidator Grant schemes.

GERMANY - National Federal Funding Advisory Service on Research and Innovation

The German government provides SMEs with a wide range of programs to promote R&D, with a special focus on knowledge transfer. Funding is provided through technology-neutral and technology-specific programs, either granted directly to SMEs or used to finance the SME-specific research infrastructure. Besides the Federal Government has created a framework that improves start-ups' access to financing and advising.

The German government has been providing substantial support for innovative SMEs, through the implementation of two programmes:

- KMU-innovativ: Priority for Cutting-Edge Research in SMEs: The Federal Ministry of Education and Research (BMBF) has opened specialised programmes of research funding especially for cutting-edge research performed by SMEs.
- Central Innovation Programme SMEs (ZIM): ZIM is the basic programme by the Federal Ministry of Economics and Energy (BMWi) for market-oriented technology funding of innovative SMEs in Germany. The programme offers SMEs a transparent funding opportunity with coordinated uniform funding conditions.

ITALY - National Operational Programme on Metropolitan Cities

The multi-fund National Operational Programme «Città Metropolitane» (NOP Metropolitan Cities) is part of the Italian national Urban Agenda and Sustainable Urban Development. The main focus of the programme will be as follows:

- Metropolitan Digital Agenda (EUR 98€M ERDF, 16.7%)
- Sustainability of public services and urban mobility (EUR 210.8€M ERDF, 35.9%)
- Services for social inclusion (EUR 142.4€M ESF, 24%)
- Infrastructures for social inclusion (EUR 113.3€M ERDF, 19.2%)
- Technical Assistance (EUR 23.5€M ERDF, 4.0%)

NETHERLANDS - National Programmes

The NL Government supports innovative companies through tax benefits, innovation credit and grants. Specifically, the Netherlands' innovative top sectors are among the world's best, thus the Government seeks to further strengthen its international position in its top sectors The Regional Development Fund (ERDF) is one of such funds, and will promote business investment in Research and Investment (R&I); develop links and synergies between enterprises, research and development centres, knowledge institutions and the higher education sector; and encourage innovation through smart specialisation strategies.

SPAIN - SME Initiative ERDF 2014-20 OP

The objective of the SME Initiative in Spain is to reduce the financial gap for SMEs. According to the ex-ante assessment by EIB, the estimated interval for SME loan financing gap (2011-2012) is 6€B – 26€B. This project is conducted to facilitate the following:

- Uncapped guarantees providing capital relief to financial intermediaries for new portfolios of debt finance to eligible SMEs;
- Securitisation of: a) existing portfolios of debt finance to SMEs and other enterprises with less than 500 employees and b) new portfolios of debt finance to SMEs.

ERDF funding will be combined with a small amount of funding from the EU instrument 'Horizon 2020' managed by the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs of the European Commission, and with senior risk coverage by the EIB group.

Criteria

• Different criteria per different funding tool



EU Fund for Energy, Climate Change & Infrastructure

The 2020 European Fund for Climate Change and Infrastructure (also known as the Marguerite Fund) is a Luxembourg-based equity fund, whose primary investment focus is renewables, energy and transport. The Marguerite Fund was established in 2010 by five member states public entities, together with the European Investment Bank and the European Commission, with 710€M of commitments, to make capital-intensive infrastructure investments within the EU.

The Marguerite Fund has invested in a number of European Infrastructure projects, categorized according to the following scheme:

- **Greenfield**: new projects and facilities, with typical development risks largely mitigated (minimum of 65% of the Fund)
- **Brownfield**: replacement, modernisation and capacity enhancement of existing assets (maximum of 35% of the Fund)

As for target companies, the fund is **open to every size**, **i**n both **Western Europe and CEE**. However, for the magnitude and nature of the projects involved, the preferred targets are **institutions and big companies**, in the up/midstream of the value chain. Still, there is space for downstream applications for the optimisation of some kind of application (i.e., brownfield).

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Equity, Quasi Equity	SMEs, Large	7 to 9	Variable (EUR 100k - 1M+)	Rail, Road, Maritime, Aviation	http://www.marguerite.com

Criteria

• No specific criteria, but the tool is aimed at larger firms.

Support Mechanisms

The Fund's investment policy is geared towards financing projects, which contribute to achieving European key priorities in the transport and energy sectors; it will also seek to invest as broadly as possible throughout the EU, subject to the intrinsic quality and expected economic and financial returns of the projects. As such, it would mainly support the earlier stages of the downstream GNSS value chain, with some possible spill-overs to the later ones.



Introduction

The European Investment Bank (EIB) Group was founded in 1958 to be the lending arm of the European Union. This organisation mainly focuses on four topics (i.e. innovation, small businesses, climate and infrastructure) and supports a high variety of entities, spanning from public and private sectors (including mid-caps and small companies, via intermediaries).

EIB lending encompasses various instruments: project loans, intermediated loans, venture capital, venture debt, micro financing, equity and fund investment, co-investment facilities. This large set of instruments is managed by two different bodies: the European Investment Bank (EIB) that focuses more on lending and venture debt, and the European Investment Fund (EIF) that is more specialized in venture capital and equity.

Unlike other funding mechanisms, the instruments of the EIB group do not seek to fund projects. In general, they seek to offer significant sums of money for the development of enterprises. Thus they play an important role in the European funding infrastructure as they help businesses, not specific projects. These businesses can then focus on development and technology with less resources dedicated to acquiring funding.

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EIB Lending Instruments

EIB lending instruments target various types of organisations, either public or private, in order to alleviate them from financing problems and help them focus on developing their projects. Different types of loans are available, below are some relevant to non public entities:

EIB **project loans** target large projects typically in the order of EUR 25 M. Financing conditions depend on the investment type and third party securities. For some midcaps, EIB itself can provide direct loans. Normally, EIB will finance around 50% of the project cost.

ElB **intermediate loans** target somewhat smaller investments, making them more conducive to SMEs and midcaps, however there is no hard restriction on organisation type. SMEs may use this tool to finance assets (purchase/renovation).

Aside from the long term loans, EIB offers equity instruments, notably **venture debt**. This is a unique financing instrument that supports **highly innovative** and **early stage** SMEs and midcaps. Such companies must be in **cutting edge** tech sectors like biotech, automation and renewables. The venture debt product is backed by the European Fund for Strategic Investments (EFSI) that acts as a financial guarantor. Venture debt is also in the **order of millions of Euros**.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Loan, Ven- ture Debt	Start Ups, SMEs, Large	ALL	Variable (order of millions)	All	https://www.eib.org/en/products/ loans

Criteria

- For Project Loans, applicants must match EIB lending objectives and must be economically & financially stable.
- For Venture Debt, the applicants must be in a cutting edge technological sector

Support Mechanisms

EIB helps organisations alleviate problems stemming from lack of funding so they can focus on development. Additionally, EIB funding has reputational effects which can attract other investors. The venture debt is particularly interesting for early stage SMEs and mid-cap that seek accelerate their growth and invest in R&D, while benefiting from long tenors of 5 to 7 years.



EIB Blending Instruments - InnovFin

EIB has a variety of sophisticated tools to help European entities to blend their financing with additional sources of investment. Among the multiple tools, **InnovFin for Corporates** is particularly relevant for GNSS companies. Under this tool, EIB does not cirectly finance the beneficiaries, but is supported by thoroughly selected financial intermediaries (e.g. banks, etc.) that then select the companies they seek to invest in. The communication of EIB on this instrument is thus targeting financial intermediaries more than final beneficiaries. The tool can fund various sums of money (starting \in 0.25m) to SMEs, but always below 50% of the total investment cost..

There are various InnovFin tools including **InnovFin for Emerging Innovators** (for fast growing R&D enterprises that meet special criteria), **InnovFin MidCap guarantee** (for MidCaps), and **InnovFin Corporate Research Facility** (for MidCaps and SMEs with specific criteria).

Note that InnovFin is divided into two sets of tools, those managed by the EIB (discussed here) and those managed by the EIF (discussed overleaf).

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Loan, Equity, VC	SMEs, Large, Re- search Inst.	ALL	Variable (EUR 100K - 1M+)	All	https://www.eib.org/en/products/ blending/innovfin/products

Criteria

- Must be in EU Member State or associated country
- InnovFin: applicants must seek to finance research and innovation (R&I) projects.
- InnovFln for Emerging Innovators & Corporate Research Facility: See website

Support Mechanisms

The EIB Group and the European Commission launched InnovFin to facilitate access to finance for innovative public and private entities in Europe, in order to boost investment in research and innovation (R&I). The financing instruments cover the entire value chain of R&I investment. For fast-growing and/or innovation-driven SMEs or mid-caps, the products are made available through financial intermediaries.

European Fund for Strategic Investment - InnovFin

EIB has a variety of sophisticated tools to help European entities to blend their financing with additional sources of investment. Among the multiple tools, **InnovFin Equity** is particularly relevant for GNSS companies. This tool is comprised of two offers, InnovFin for Early Stage Enterprises, and InnovFin for SMEs.

The former provides startups, SMEs and midcaps with intermediated equity financing through four offers: **technology transfer** (for projects that support tech transfer), **business angels** (funds pooled by business angels), **venture capital** (VC funding for firms in the very early stage) and fund of funds. These are aimed at enterprises in innovative sectors covered by H2020.

The latter is InnovFin SME Guarantee. Managed by EIF, the SME guarantee is an **intermediated debt financing tool,** in which financial intermediaries (e.g. local banks, leasing companies, guarantee institutions, etc.) are guaranteed or counter-guaranteed by EIF against a portion of their potential losses. These guarantees push the selected financial intermediaries to provide debt financing on more favourable terms and to finance R&I projects at a reduced interest rate.

Note that InnovFin is divided into two sets of tools, those managed by the EIB (discussed on the previous page) and those managed by the EIF (discussed here).

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
VC	Start Up, SME, Large (< 3000), Research Inst.	All	EUR 1M+	All	https://www.eib.org/en/products/ blending/innovfin/products

Criteria

- Must be in EU Member State or associated country
- Different tools may have different criteria

Support Mechanisms

InnovFin Technology Transfer aims at accelerating technological innovations by maturing technologies and supporting the commercialisation of research results stemming from TT projects or technology rights. Under InnovFin BA and VC, EIF provides organisations with risk capital financing to support them reaching their next stage of development.



European Fund for Strategic Investment - COSME

Under the Competitiveness of SMEs (COSME) Programme, EIF offers two different financial instruments to financial intermediaries: the **Equity Facility for Growth** ("EFG") and the Loan Guarantee Facility ("LGF"). Both focus on SMEs in all sectors and eligibility criteria lie into the financial intermediaries. COSME communication is thus mainly targeting these financial intermediaries.

The Equity Facility for Growth ("EFG") predominantly **targets SMEs** in their expansion and growth stages, established and operating in at least one EU Member States and COSME Participating Countries. Financial intermediaries are required to invest in SMEs with the greatest potential. While the COSME LGF provides financial intermediaries with guarantees and counter guarantees, in order to convince them to provide financing (e.g. loans, leases and debt) to SMEs, which they would otherwise not support. This financing tool **enables SMEs to reach their next development stage.**

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Loan, Equity	SME	All	EUR 1M+	All	https://www.eif.org/what_we_do/ equity/single_eu_equity_instru- ment/cosme_efg/index.htm

Criteria

• Must be SME in an EU Member State or Iceland or Montenegro

Support Mechanisms

Via its selected financial intermediaries (e.g. financial institutions or private equity funds), EIF provides risk capital financing. COSME was created to support SMEs in the creation of growth and employment overcoming difficulties accessing finance. COSME aims at allowing SMEs to reach their next development stage.

European Investment Fund - VC Instruments

EIF venture capital tools aim at boosting the European Venture Capital ecosystem to make it sustainable and capable of offering alternative financing to SMEs, midcaps and other organisation types in Europe, in order to support them in their development. EIF does not invest directly in final beneficiaries, but goes through financial intermediaries (e.g. venture capital funds, etc.) that select the organisations they accept to finance. The EIF communication on their venture capital tools is thus targeting financial intermediaries more than final beneficiaries.

The **European Angels Fund** aims at indirectly financing innovative SMEs thanks to financial intermediaries (e.g. Business Angels) that select the SMEs they seek to finance. The EAF tool is thus not directly targeting SMEs, but rather Business Angels located in 7 European countries. There are seven funds in Europe located across Europe in Austria, Denmark, Finland, Germany, Ireland, Netherlands and Spain that support entities that are mostly located in their home country.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More					
VC	SMEs	All	EUR 100K - EUR 1M+	All	https://www.eif.org/what_we_do/ equity					

Criteria

Must be SMEs

Support Mechanisms

Technology companies usually face financing challenges but also provide remarkable investment opportunities. In order to bridge this gap, EIF's goal is to support private sector Venture Capital infrastructure (both established and emerging teams) and enable them to address market gaps and opportunities. EIF intends to enhance the attractiveness of VC as an alternative asset class, and build a sustainable Venture Capital Ecosystem in Europe.

The European Angels Fund (EAF) initiative consists in co-investment framework agreements (CFAs) signed directly between EAFs and Business Angels and other non-institutional investors. The objective of CFAs is to increase Business Angels' investment capacity (between € 0.25m and € 5m) in order to finance innovative companies. As of today, among the € 320m investment volume of EAF, more than € 200m are already committed to 80 Business Angels that built a portfolio of more than 340 SMEs co-investments.



EIB Space Finance Lab

In 2018, EIB and the European Commission jointly conducted a study on access to **finance for space actors**. The study notably advises the creation of an **EIB Space Finance Lab**. The latter would gather representatives from the finance community, academia, policymakers and industry.

The EIB Space Finance Lab would target companies in the space sector that have difficulties to access finance. Indeed, the space sector is inherently a risky sector with an immature downstream market. The upstream of the value chain is characterized by highly technologic and complex systems, that require high capital and long development lead-times. In the downstream, the market is often still immature and the demand still uncertain.

Indeed, such a tool would be a **large boon to firms dealing with GNSS** as it would be specifically tailored to the needs of the space sector. As the tool is still in development the amount available with these financing instruments are still not disclosed.

Criteria

None disclosed, but should be limited to firms in the space sector

Support Mechanisms

As of today, there are no financial tools that are dedicated to space sector companies. The EIB Space Finance Lab aims at helping investors in investing in the space sector. Today, investors usually lack background or investment expertise in space, as well as risk appetite. Their important concern on the market maturity, the lack of exit opportunities and the number of early IPOs are not incentives for them to invest in space. In order to boost private investing and convince investors to invest, public entities are capable of unlocking private capital (i.e. a majority of companies benefit from EU/national programmes before raising private capital), stimulating the development of space dedicated VC funds and developing innovative models of public intervention to mitigate the market risks.

Thus, the EIB Space Finance Lab mission aims at bridging the innovation and funding gaps that space companies are confronted with, designing specific financial instruments dedicated to space organisations.



Introduction

Interreg programs are multifarious and cover variable regional areas. They are targeted at projects that involve partners from multiple regions of the European Union as well as Norway and Switzerland in configurations that can be interregional, transnational or cross-border. While some of them can target no more than 2 countries, most of them will encompass the interactions between an entire subset of countries like the "Interreg Central Europe" program or the "Central Baltic Programme" to name just a couple of examples

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Interreg Calls

Project partners that can apply to Interreg vary between the programs, but most are generally open to **startups and SMEs**, while big companies are generally excluded from the calls for proposals. The projects themselves must comply with the area of focus of the interreg call, an area that can vary but are generally limited to a series of prioritives that include:

- Competitiveness of SMEs
- Environment and resource efficiency
- Sustainable transport
- Better education & training

Note that these are general categories; within each some Interreg calls **may have more specfic areas of interest and priorities.** For example, Interreg Central Eurioe focuses on more GNSS friendly topics including connected health, smart mobility and transport management among others.

Type of funding	Type of organisation	TRL Level	Total amount available	Field(s) of application	Find out More
Co-fund- ing	SMEs, Research Institutions	All	Usually 75% - 85% total project cost	Rail, Mapping & Surveying, Road, Timing & Synchroni- sation	https://interreg.eu

Criteria

- Most calls are open to startups and SMEs, big companies are generally excluded.
- Candidates apply through calls for proposals that have specific deadlines or are open calls.
- Candidates should select calls for which they answer to both the geographic (cross regional) and area of interest criteria.

Support Mechanisms

Interreg provides support to the entire value chain of GNSS-based technologies and applications, across the downstream GNSS value chain, conditional on the project meeting above mentioned criteria of field of interest and cross regional dimensions. However, Interreg is solely a co-financing tool and does not as such provide business support to selected projects and as such is less active in the commercialization and go-to-market push for GNSS-based startups.



For further information...

Potential applicants should check the websites of the various different funding instruments to find out more information on application processes and updates to the funding procedures. Some additional information can be found at the following websites

European Commission

https://ec.europa.eu/

European GNSS Agency

https://www.gsa.europa.eu/

European Space Agency

https://www.esa.int/ESA

Horizon 2020

https://ec.europa.eu/programmes/horizon2020/en

European Investment Bank

https://www.eib.org/en/index.htm

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