



#EUSpaceResearch

EGNSS AND COPERNICUS APPLICATIONS

CREATING VALUE-ADDED
APPLICATIONS THROUGH
**INNOVATIVE
SPACE R&I**



Horizon Europe,
a programme of the
European Union



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Creating value-added applications
through innovative space R&I

Strengthening European space assets and services

with the European Space
Programme

The EU Space Programme provides Europe with cutting-edge space-based services in Earth Observation (EO), Navigation and in the future Secure Communication. The programme consists of different components, including:

- The **European Global Navigation Satellite System (EGNSS)**, which allows users with compatible devices to determine their position, velocity and time through satellite signals. It is made up of two elements, **Galileo**, a state-of-the-art global satellite navigation system and **EGNOS**, a satellite-based augmentation system used to improve the performance of global navigation systems, with essential applications mainly in aviation.
- **Copernicus**, the European Union's Earth Observation and Monitoring programme, which relies on its own set of satellites and a variety of technologies and measurement systems.

Providing benefits through applications

of EGNSS and Copernicus

Copernicus services acquire and analyse Copernicus satellite and in situ data and transform it into value-added and user-friendly information used in different domains, including **atmosphere monitoring, marine environment monitoring, land monitoring, climate change monitoring, security and emergency management**. Navigation systems also provide many benefits, such as guiding us to our desired destination, supporting the stock exchanges to apply timestamps to the trades they execute, aiding farmers to work their fields efficiently, serving the energy operators as an accurate time source to monitor the flow of their networks or speed up rescue operations.

Thanks to further R&I activities, **EGNSS and Copernicus services and data will lead to innovations** in many areas of applications, such as:

- **Agriculture:** Navigation and EO technologies can help optimise fertiliser, fuel, pesticide and water use. EU research funds are being used to develop applications based on EGNSS and Copernicus, which ensure food security and traceability across significant parts of the supply chain, valorising what is "made in Europe".
- **Security & Emergency:** Timely and accurate geospatial data can provide crucial information in case of floods, fires, or earthquakes, optimising the emergency response while also assisting in disaster mitigation, preparedness and recovery with the development of tools and applications that exploit synergies among EGNSS and Copernicus data.
- **Digital innovations:** EGNSS and Copernicus can be used in applications supporting smart cities, urban planning, smart waste management etc.
- **Climate change:** EGNSS and Copernicus-based solutions can support the supply of clean, affordable and secure renewable energy. EU-funded research projects focus on improving data assimilation methods to help Europe study and further help mitigate, manage and adapt to climate change.
- **Health:** By effectively forecasting UV radiation or air pollution levels, Copernicus applications help decrease risks to health. In the same way, EGNSS can enable the use of autonomous robots in support of humans. EU research funds are being used to improve such applications.

Why funding EGNSS and Copernicus applications is needed

to solve our global challenges

Copernicus's core services should evolve and improve to **continue responding to today's evolving challenges**, from continuing the push to climate change mitigation and adaptation to food security and protection of natural resources. Copernicus also needs to continue contributing to the ambitions outlined in the European Green Deal and other EU policies. Similarly, the Galileo applications portfolio should meet evolving user needs and market trends, for instance, with emerging technologies like 5G, Artificial Intelligence and autonomous vehicles. Research will ensure both EGNSS and Copernicus take full advantage of digital opportunities including artificial intelligence and cloud computing.

Introducing current space R&I projects

Examples of Horizon 2020 projects

Project JULIA fosters the uptake of EU Space services and data in the long lead public transport market at the global scale, ultimately unlocking significant, measurable, and durable impacts. It will do so by advancing existing, mature public transport-oriented, user-centric applications.

Project CoCO2 built a prototype systems for a European Monitoring and Verification Support capacity for anthropogenic CO2 emissions by bringing together expertise, existing capacities and innovative ideas from European and international players.



Boosting innovative R&I

€115.2 million in 2021-2023 through Horizon Europe for the development of innovative space downstream applications



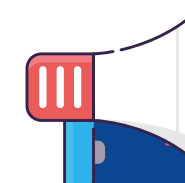
Use of space on Earth

Provide space-based secure communication, navigation and Earth observation services for the benefits of the whole society. Additionally, manufacture, operate, and evolve the EU space infrastructure



Supporting EU objectives

Leveraging Copernicus and EGNSS data to support the European Green Deal and other important EU priorities



Be part of the EU-funded space R&I

Horizon Europe is the EU's key funding programme for research and innovation, with a budget of around €95 billion over 2021-2027, of which close to €1.6 billion is dedicated to space research. The space R&I is managed by the **Health and Digital Executive Agency (HaDEA)**, the **EU Agency for the Space Programme (EUSPA)**, the **European Space Agency (ESA)** and the **European Commission** itself. Most calls are also published on the **EC Funding and Tenders participant portal**.

