



EU SPACE

FOR EMERGENCY MANAGEMENT AND HUMANITARIAN AID

Safeguarding citizens and the environment

#EUSpace 





The EU Space Programme supporting Emergency Management and Humanitarian Aid



When disaster strikes, communication, information and location are key. The EU Space Programme provides all three.

Copernicus is used by civil protection authorities and first responders in all phases of disaster management cycle: from prevention and preparedness -where it helps to map and monitor hazard prone areas- to response and recovery, where it is used to quantify the impact to the environment, human safety and the economy. In humanitarian aid operations, Copernicus is a critical asset for monitoring vulnerabilities associated with conflicts, disasters and climate change, and assists in anticipating crises by supporting informed decision making. It can also be a useful tool for public health authorities to identify areas prone to the emergence and spread of epidemics by providing information on such pertinent environmental factors as water, sanitation, food and air quality.

Galileo/EGNOS, on the other hand, plays a key role in locating personnel and vehicles during response operations, but also mitigating the impact of geohazards, through accurate monitoring of areas prone to subsidence and landslides. In addition, Galileo is enabling search and rescue at sea or over land. Galileo-enabled beacons decrease the time it takes to detect and localise a distress signal, speeding up rescue response time and increasing the chance of survival. Galileo is also the only system offering a Return Link Service, a feature that provides users in distress with an acknowledgement indication on their beacon that the distress signal was received and their position is located.

Although Copernicus, Galileo and EGNOS offer emergency responders a unique tool set, EU Space offers even more benefits when these components are used in synergy. For example, during wildfires, public authorities rely on Copernicus' Earth Observation services to monitor the evolving situation, while on the ground, firefighters and emergency first responders use Galileo/EGNOS to safely guide themselves through the smoke, fog and flames.

But what if the end users require secure communication, as is the case during cyber-attacks and other security-related incidents? For situations like these, there's the upcoming GOVSATCOM, which provides secure, cost-efficient communication capabilities to security and safety-critical missions, operations and infrastructure.

Whether used separately or synergistically, Galileo, EGNOS, Copernicus and GOVSATCOM further enhance the EU Space Programme's ability to protect the environment and keep European citizens safe and secure.



This image, acquired by one of the Copernicus Sentinel-2 satellites on 13 January 2022, shows flooded areas near the city of Larissa, the largest city in the Thessaly region of Greece.

The EU Space Programme's direct benefits to emergency management and humanitarian aid missions:



The added value of EU Space

Copernicus provides useful Earth Observation data and services for performing risk assessments of crisis scenarios, monitoring hazards and mapping the impact of disasters on infrastructure and the environment.

Galileo and EGNOS enabled receivers can accurately detect earthquakes, landslides, land deformations and tsunamis. Their use improves the safety and efficiency of first responders, providing the authenticated signals needed by emergency situation rooms to properly manage personnel and other assets on the ground. In the maritime domain, Galileo-enabled beacons are a key component to Search and Rescue operations.

GOVSATCOM bridges the gap between the need for assured and secure communication and the capabilities already offered by Copernicus, Galileo and EGNOS. In doing so, it delivers connectivity to first responders and humanitarian aid actors, enabling secure and resilient communication and data transmission services.

Copernicus, Galileo, EGNOS and GOVSATCOM synergies

While Emergency Management and Humanitarian Aid may seem like a sector exclusively reserved for public entities, this couldn't be further from the truth. The sector is in fact comprised of many different players, including private companies and Non-Governmental Organizations (NGOs).

Private companies provide the services, applications and devices that public authorities, NGOs and other stakeholders depend on, when conducting emergency response and humanitarian missions. By combining the different technologies offered by the EU Space Programme, these businesses and organisations are creating innovative, value-adding – and often life-saving – applications capable of supporting actors both in the field and behind the desk at coordination centres across the world. Examples include:

- Integrated applications that fuse Galileo/EGNOS signals from in-situ receivers, with data coming from Copernicus satellites, provide improved accuracy and wider, more timely coverage when monitoring landslides.
- Applications that combine satellite imagery with geo-enabled crowdsourced data enhance the ability of humanitarian aid actors to respond to food security crises by ensuring that funds and resources are allocated in advance and are available when and where they are needed most.
- The addition of secure connectivity ensures resilient communication, including between Galileo/EGNOS-based drone operations and Copernicus data, in situations where land networks and infrastructure are damaged or non-existent – often the case in humanitarian missions.
- Following a disaster, Galileo/EGNOS-enabled data gathering systems can be used in conjunction with Copernicus imagery and products to properly plan and monitor recovery actions (e.g. reforestation, re-building of infrastructure etc).



EU Space and the UN Sustainable Development Goals

The emergency management capabilities of both GNSS and Earth Observation play an important role in achieving the United Nation's Sustainable Development Goals (UN SDGs), including SDGs 11 – Sustainable Cities and Communities and 13 – Climate Action.



Urban planners rely on European GNSS to make cities safer, smarter and more sustainable. This includes detecting structural risks and improving services for the 3.5 billion people living in the world's cities.

City authorities also use Copernicus to monitor and forecast extreme weather events and prepare for the natural disasters that often follow. With climate change set to exaggerate such events, EGNSS and Copernicus will be a key tool that Emergency First Responders use for Search and Rescue and disaster relief and recovery missions.

EU Agency for the Space Programme

EUSPA provides safe and secure European satellite navigation services and promotes the commercialisation of Galileo, EGNOS, and Copernicus data and services. It also coordinates GOVSATCOM, the EU's governmental satellite communications programme, and is responsible for the Programme's Space Surveillance and Tracking (SST) Front Desk operations service. By fostering the development of an innovative and competitive space sector and engaging with the entire EU Space community, EUSPA contributes to the European Green Deal and digital transition, the safety and security of the Union and its citizens while reinforcing its autonomy and resilience.

The EU Space Programme

The EU Space Programme, composed of Galileo, EGNOS, Copernicus, GOVSATCOM, Space Situational Awareness and IRIS², is the first integrated space programme created by the European Union to support its space policy, address societal challenges such as climate change and technological innovation, support the EU internal market – and more.

Galileo

Galileo is Europe's Global Navigation Satellite System. It provides accurate, reliable and precise positioning, navigation, timing and safety services. Galileo is designed to provide Europe and European citizens with independence and sovereignty while creating a multitude of services and applications across sectors, ranging from aviation and maritime to agriculture and location-based services.

EGNOS

The European Geostationary Navigation Overlay Service (EGNOS) is Europe's regional satellite-based augmentation system (SBAS) used to improve the performance of global navigation satellite systems like GPS and soon, Galileo. EGNOS uses a set of geostationary satellites and a network of ground stations to increase the accuracy of existing Global Navigation Satellite Systems.

Copernicus

Copernicus is the European Union's Earth Observation programme, looking at our planet and its environment to benefit all European citizens. It offers information services that draw from satellite Earth Observation and in-situ (non-space) data.

IRIS²

The IRIS² Satellite Constellation is the European Union's answer to the pressing challenges of tomorrow, offering enhanced communication capacities to governmental users and businesses while also ensuring high-speed internet broadband to cope with connectivity dead zones.

GOVSATCOM

The EU GOVSATCOM initiative will ensure the long-term availability of reliable, secure and cost-effective governmental satellite communications services for EU and national public authorities managing security critical missions and infrastructures.

Space Situational Awareness

To mitigate collision risks between EU Space satellites and other spacecraft and debris, the EU established a set of capabilities through the Space Situational Awareness (SSA) component of the EU Space Programme. An integral part of SSA is Space Surveillance and Tracking (SST). SST uses a network of ground- and space-based sensors and other infrastructure to survey, track and protect EU Space assets from artificial space objects orbiting Earth (mostly debris from launchers or satellites).

Interested in learning more about EU Space for emergency management and humanitarian aid?

Download the EUSPA EO and GNSS Market Report here:



Linking space to user needs

www.euspa.europa.eu

 EUSPA

 @space4eu

 EUSPA