

Welcome IRIS²: EU's new communication satellite infrastructure



The European Union (EU) has chosen the name and gave a green light for the new satellite constellation initiative, which will provide EU government bodies with space-based communications: resilient, interconnected and secure. It should be operational by the end of 2024.

Acknowledging the changing nature of the space ecosystem, the European Commission tabled a proposal for a Regulation of the European Parliament and the Council establishing the Union Secure Connectivity Programme for the period 2023-2027. On Thursday the 17th after nine months of negotiations - a record time in EU policy-making history-the co-legislators reached an agreement on this new critical infrastructure for the EU.

This multi-orbital constellation will combine the benefits offered by Low Earth (LEO), Geostationary (GEO), and Medium Earth Orbit (MEO) satellites. It is set to provide secure communication services to the EU and its Member States as well as broadband connectivity for European citizens, private companies and governmental authorities. This new component of the EU Space Programme will put an end to dead zones in Europe as well as the whole of Africa using the constellation's North-South orbits through a resilient and ultra-secure space and ground-based system. It may include

the development and launch of up to 170 LEO satellites between 2025 and 2027.

EU SPACE-BASED SECURE CONNECTIVITY SYSTEM
A RELIABLE, SECURE AND COST EFFECTIVE GOVERNMENTAL COMMUNICATION SERVICE

Connecting key infrastructures

- Command and control of smart grids (energy, finance, health, data centres...)
- Management of Infrastructures air, rail, road, traffic management)
- Galileo (augmentation), Copernicus (data relay)
- Institutional communications (Embassies, EUROPOL,...)
- Telemedicine

Crisis Management and external actions

- Civil protection
- CFSP - CSDP
- Humanitarian aid
- Maritime emergencies (search and rescue)

Surveillance

- Border and remote areas surveillance
- Remote Piloted
- Aircraft systems
- Maritime surveillance
- Arctic region coverage
- Complement to military missions

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Boosting EU satellite-based connectivity

Our world is moving into a new digital era, thus making our economy and security increasingly depending on secure and resilient connectivity.

Characterised by ever-increasing needs for hyper-connectivity, major technological transformations and the quest for digital sovereignty, the current decade has seen secure connectivity becoming a public commodity, with an unprecedented increase of demand for satcom services.

In a geopolitical context where cyber and hybrid threats are multiplying, security and resilience concerns are growing and call for a quantitative and qualitative improvement of EU governmental satcom capacities, moving towards higher security solutions, low latency and higher bandwidth.

Tackling current and future challenges, while supporting the autonomy and digital sovereignty of the continent, the Europe Union has put forward an ambitious plan for the development of IRIS²: the new space-based Secure Connectivity system.

IRIS² (Infrastructure for Resilience, Interconnectivity and Security by Satellite) will constitute a new space-based pillar for a digital, resilient and safer Europe and will foster European competitiveness and societal progress.

A space-based secure communication system for the benefit of EU citizens

With the development of a state-of-the-art connectivity system, Europe will offer enhanced communication capacities to governmental users as well as to business users.

The system will support a large variety of governmental applications, mainly in the domains of surveillance (e.g. border surveillance), crisis management (e.g. humanitarian aid) and connection and protection of key infrastructures (e.g. secure communications for EU embassies).

The system will also allow mass-market applications including mobile and fixed broadband satellite access, satellite trunking for B2B services, satellite access for transportation, reinforced networks by satellite and satellite broadband and cloud-based services.

Relying on disruptive technologies, including quantum, the multi-orbital EU secure connectivity system will ensure the long-term availability of reliable, secure and cost-effective satellite communications services at a global scale. It will allow further development of high-speed broadband and seamless connectivity throughout the Union, removing communication dead zones and increasing cohesion across Member State territories, and allow connectivity over geographical areas of strategic interest outside of the Union.

It will also incentivise the deployment of innovative and disruptive technologies, leveraging in particular the "New Space" ecosystem.

Acting now, with an incremental approach

As global satellite connectivity is rapidly becoming a strategic asset for security, safety and resilience, the EU needs to urgently act in order to ensure guaranteed access in an unrestricted manner.

The implementation of IRIS² will follow an incremental approach with the ambition to deliver initial services in 2024 to reach full operational capability by 2027.

Joining forces of the public and private sectors

An important role is expected from the private sector. The Programme allows for the setting up of a concession for the implementation of IRIS².

Beyond the optimisation of costs it offers (e.g. sharing the design, development and deployment risks with the private sector) while guaranteeing the security and availability of governmental services (the Union will own the part of the system infrastructure related to security), the establishment of a concession will create a favourable environment to the development innovative solutions, notably through the involvement of actors from the "New Space" ecosystem.

The Programme will of course also draw on the expertise of our trusted partners EUSPA and ESA.

A technology setter, not a follower

IRIS² supports the economic and societal growth of the EU, while supporting social cohesion through the reduction of the digital divide.

Relying on quantum cryptography through the European Quantum Communication Infrastructure (EuroQCI), and enhanced cybersecurity through a secure-by-design approach for the infrastructure, the system will bring an unprecedented security level to its users.

Integrating innovative technologies, derived from both established space industry players with proven technology as well as the disruptive "New Space" ecosystem, it will also offer scalability capacities for future needs, thanks to a multi-orbital (Low, Medium and Geosynchronous Orbits) approach.

Finally, dedicated payloads on-board the envisaged system are expected to improve and expand the capabilities and services of other components of the Union Space Programme.

Here's what we can expect from this new flagship programme:

- **Cutting-edge EU communications services:** By developing and operating a multi-orbital connectivity infrastructure the Union will be able to continuously adapt to the evolving user needs and develop new tailor-made applications and services. Fusing MEO and LEO satellite capabilities

allows for solutions that vary in coverage, throughput and latency.

- **Resilience against cyberthreats:** IRIS² will integrate the space and related ground segment of the European Quantum Communication Infrastructure to enable secure transmission of cryptographic keys.
- **Synergies with other EU Space Programme components:** Complementing Copernicus, Galileo and EGNOS the system will also open more opportunities for synergies between already existing components of the EU Space Programme. For instance, the synergies between Earth Observation, SatNav and SatCom can be useful among others for addressing maritime emergencies and supporting natural disasters management.
- **New disruptive technologies:** Our continent is gifted with a satellite communications industry that has the capacity to make the necessary technological leap and bring Europe to the forefront. New Space actors are able to think outside the box and create new services that can benefit users.
- **High-speed broadband everywhere:** With the addition of the Secure Connectivity Programme, the European Union is ramping up digitisation of European society and its economy while looking to make space data more accessible and scalable to all interested entities. The combination of MEO and LEO capabilities will enable the provision seamless internet connectivity throughout the Union, removing communication dead zones and increasing cohesion across Member State territories.

The EU Agency for the Space Programme is already actively involved in building secure satellite communication infrastructure for Europe through the coordination of the first phase of GOVSATCOM on which IRIS² will be based.

Certain tasks linked to the operational management of the governmental infrastructure of the Programme, provision of governmental services, through the GOVSATCOM hub and the coordination of user-related aspects of these services will therefore be entrusted to EUSPA. The Security Accreditation Board (SAB) established within the Agency, where Member States take accreditation decisions, shall become the IRIS² security accreditation authority. It will enlarge SAB areas of responsibilities currently covering today all components of the EU space programme, providing security assurance to the users with regards to IRIS² service and infrastructure.

For more information:

- Press release
- Factsheets

- DG DEFIS

Source: EUSPA, DG DEFIS