



The EU is changing its approach towards space. A more geopolitical outlook, increased autonomy, and enhanced entrepreneurship are at the heart of the new direction. These ambitions are translating into greater funding and a focus on independent capabilities, impacting European R&D, industry and procurement policies, and are boosting Europe's New Space sector. At the same time, the EU remains a key advocate of multilateral space governance and the peaceful use of space. This more pro-active European approach offers new cooperation opportunities and challenges for others.

# HIGHLIGHTS

- In 2021, the EU adopted a new space program, running from 2021-2027, with a budget of €13 billion. This constitutes the largest budget ever allocated to space at the EU-level, complementing the budgets of the European Space Agency (ESA), which amounts to €7.15 in 2022, and those of individual EU member states.
- The French EU Presidency is planning to further facilitate EU ambitions in space. A <u>high-level space summit</u> will be held on 16 February 2022 in Toulouse, bringing together European leaders (EU, ESA, member states) to discuss strategies to build a global secure connectivity system and a space traffic management system.
- During the summit, leaders are expected to adopt decisions that will accelerate efforts to use space applications for sustainability to underpin amongst other things the "Green Deal" and crisis and disaster response. There will also be a new focus on the protection of space assets and ESA could announce a new mission to return samples from the moons of Jupiter or Saturn for the first time ever.
- As part of a EU space revamp, the European Global Navigation Satellite System Agency (GSA) has been upgraded to the European Union Agency for the Space Program (EUSPA). The Commission, EUSPA and ESA have set up a Joint Office to assist in managing Europe's global navigation satellite system (GNSS), Galileo.
- The new direction emphasizes a more geopolitical approach to space-related matters and an increased focus on "strategic" autonomy. Important elements thereof are efforts to foster "technological sovereignty" in areas such as quantum computing and satellite communications, space transport and launchers.
- The EU space program is largely relying on Ariane and Vega launchers. The EU has however understood the need to stand up to competition from both China and commercial actors such as SpaceX. A European Space Launcher Alliance will see the light most likely in February 2022, and a European launcher strategy has been proposed.
- The new approach also emphasizes more space entrepreneurship. To boost the New Space Sector, the Commission presented the Action Plan on Synergies between civil, defense, and space industries in February 2021 and launched a new Space Entrepreneurship Initiative (Cassini) in January 2022.





# **ANALYSIS**

## A (SLIGHT) CHANGE OF COURSE

Europe has long recognized Outer Space as a domain in which collaboration and the pooling and sharing of resources and knowledge is desirable. The European Space Agency (ESA) remains the most prominent European space-related entity. ESA operates outside of the framework of the EU, with the UK, Norway and Switzerland enjoying full membership. Third parties, for example Canada, also participate in its programs. True to its 1975 founding Convention, the purpose of ESA is to develop European space applications "for exclusively peaceful purposes". As a result, ESA is not supposed to be a (geo)political actor and has a predominantly scientific approach, focusing on research and activities such as growing food in space, searching for life on Mars, or finding ways to measure the impacts of climate change.

To operate, ESA nonetheless depends heavily on the support of the EU, which funds and in some cases manages specific programs. Under its new space program, the EU has allocated close to €9 billion to ESA. And while the EU initially approached space from a predominantly economic perspective, political and security aspects are gaining importance.

The EU is indeed looking for a response to the growing (security) activities and the rise of new space powers such as China and India. With the 2021 regulation approving a new EU space program, the European Union Agency for the Space Program (EUSPA) has been established, providing a counterweight to ESA's non-political practices.

EUSPA has taken the form of an upgrade of the existing GNSS Agency in Prague and the expansion of its mandate. The European Commission will be the overall program manager of the EU space program, with EUSPA managing Galileo and EGNOS, with ESA remaining responsible for research, space manufacturing and ground systems.

The slight change of direction might have caused frowns with ESA's staff. However, the new ESA Director General, Josef Aschbacher, seems to accommodate this new thinking and is willing to transform the agency towards at least achieving greater economic output from space activities. Something also foreseen in the ESA Agenda 2025.

### **STRONG FRENCH BACKING**

Of all EU member states, France is the country most strongly pushing for an EU role on space, while Germany is the largest funder of ESA. Thierry Breton, the French European Commissioner for Internal Market, is pushing the idea of the EU as a space power - partly driven by a desire to preserve the position of the French company Arianespace.

Not shy of any militarization of space, the French Space Forces Command was created in 2019; in March 2021, France launched its first military exercise in space and in November 2021, it launched its first operational constellation of communications and electronic intelligence satellites.

France is the largest contributor to the ESA budget, while the budget for the French space agency (CNES) grew in 2022 with 9.9%, compared to its 2021 budget.

4.9%



## **ESA BUDGET FUNDING 2022 BY** SOURCE

64.3%

## **EXPANDING ACTIVITIES OF THE EU SPACE PROGRAM**

The EU Space Program relies on more than 30 satellites in orbit, for communication, connectivity and navigation purposes. ESA's launching site is the European Spaceport in Korou, French Guyana, an overseas department of France located in South America. The satellite constellations empower a number of flagship programs codeveloped by ESA and the EU. EUSPA, acting on behalf of the European Commission, now manages the EU's European Global Navigation Satellite System (GNSS), which encompasses Galileo and EGNOS. EUSPA also supports the commercialization of Copernicus. The EU is eager to develop its GNSS towards the new norm of multi-constellation and the adoption of multi-frequency.

## COPERNICUS

## GALILEO

Europe's Earth Observation Program "Copernicus" is the third largest space data provider globally.

The data gathered is among many other things used for monitoring of land, sea and athmosphere, climate change, emergency management and security. 40-60% of the big data analytics industry in Europe relies on imagery captured by Copernicus.

Most data is globally available to anyone. The European Commission is expected to publish a modernization strategy for Copernicus in the first half of 2022. Europe's GNSS "Galileo" provides the EU with an independent global satellite navigation system and offers services worldwide.

It provides precise global positioning information, with an accuracy rate that is a game-changer for self-driving cars and commercial drones, as well as search and rescue. To keep up with competitors, the launch of a new generation of satellites has been accelerated and is expected in 2024.

Galileo is interoperable with other navigation systems such as the US' GPS, Russia's GLONASS and China's BeiDou.

## EGNOS

The European Geostationary Navigation Overlay Service "EGNOS" supplements Galileo's observations.

EGNOS verifies the accuracy of Galileo's positioning data and thus increases the precision and reliability of GNSS. It makes GNSS suitable for flying aircraft, navigating ships, and traffic management systems. EGNOSbased applications have become the standard for mapping and surveying.

It provides a robust time and space reference for financial transactions, energy grids and other EU critical infrastructures.

## TWO NEW COMPONENTS OF THE EU SPACE PROGRAM

TO INCREASE "STRATEGIC AUTONOMY" FOR THE EU AND ITS MEMBER STATES **Space Situational Awareness (SSA)**: Provide surveillance and tracking services to more than 200 satellites and offer a service warning for the growing number of Near Earth Objects. The aim is to better monitor space hazards, such as (in)active spacecraft, discarded launchers and space debris.

### Secure Satellite Communication Service (GOVSATCOM):

For crisis management, border management, military operations, maritime security and protection of critical infrastructure. In the future, this will be complemented with a quantum communication infrastructure ("EuroQCI").









## LINKING CIVIL, DEFENSE AND SPACE INDUSTRIES

As new technologies are often dual use, the EU is moving towards blending the insights of various initially more siloed industries. In 2019, the EU established a new Directorate-General for the Defense Industry and Space (DG DEFIS). In February 2021, the Commission presented an <u>Action Plan on Synergies between civil,</u> <u>defense and space industries</u>.

The Plan provides, amongst other things a list of designated critical technologies in which EU-level investments will be ramped up. It also foresees flagship projects around drone technologies, a space-based global secure communication system, and a space traffic management system. Plus, it paves the way for a large inorbit technology validation program, to allow for testing of promising technologies and innovations in space - a requirement for the adoption of new space products.

## STIMULATING SPACE ENTERPRENEURSHIP

The EU has the ambition to grow the so-called New Space Economy, focusing on space innovation and space start-ups. A recent audit of the EU's space program concluded that not enough is being done with the data and services generated. The Copernicus program, for example, gathers more than 16 TB of data per day, which can be used to train AI algorithms and enable big data analytics in many areas of application.

In January 2022, the EU launched its <u>new Space</u> <u>Entrepreneurship Initiative</u>, named "Cassini" and has put in place – together with the European Investment Bank and the European Investment Fund - a €1bn European Space Fund to boost start-ups and space innovation. Its aim is to enable companies operating in this area to better raise risk capital.

### MANAGING SPACE TRAFFIC AND SPACE DEBRIS

The EU plans to adopt a <u>communication on a space traffic management system</u> in the second quarter of 2022. The initiative is driven by the growing risk of collisions due to increasing space activity, the growing problem of space debris and the associated costs of potential damage to satellites. Europe already has a strong focus on "cleaning up" space debris and the new EU space program will provide better tracking of space objects. In this context, ESA has recently concluded a contract with a Swiss start-up for a rather limited though important mission in 2025 to capture and eliminate a piece of orbiting space junk.





The EU space program is characterized by new ambitions, a more strategic and geopolitical outlook, more autonomy, standard-setting and increased enterpreneurship. Understanding the new direction and the opportunities generated by it, is relevant for both public and private entities, large and small, inside and outside the EU.

#### RELEVANCE

With the new direction of the space program, the EU is trying to take steps towards being a more strategic space power. This is a direct reaction to emerging space ambitions elsewhere - China in particular.

The EU desires more "strategic autonomy" and "technological sovereignty". In the current context, the emphasis is on reducing critical dependencies on non-European commercial actors, including in key R&D areas, as some member states seek the EU to fence of its research programs on space and quantum computing.

While the new direction of the EU's space program is slightly more restrictive with regard to non-EU cooperation, several components (Copernicus, Galileo) remain largely open to associated countries. In 2021, Iceland joined the EGNOS Program and the European Commission has set aside close to € 8 million from the European Neighbourhood Instrument for the Eastern Partnership countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine) to expand the coverage of the EGNOS system to these territories.

The EU and ESA also keep providing space-related trainings across the world and have institutionalized space dialogues with international space partners (US, Russia, China, Japan, South Africa).

#### **OPPORTUNITIES**

- Space issues are being integrated in EU external action. To support "space diplomacy", the Commission has also launched a <u>Global Action on</u> <u>Space</u>, providing benefits from first hand insights in EU space programs, from access to market intelligence.
- The EU seeks cooperation at the bilateral and the multilateral level, which can take the form of partnership building, capacity building, data sharing, governance aspects and space dialogues with (emerging) space actors.
- Europe is taking a leading role on issues such as limiting and cleaning up space debris and thinking through a space traffic management system. With the numbers of satellites exponentially growing, these standard-setting activities are areas of global concern.
- Europe offers free of charge open source data generated by the Earth Observation program
  "Copernicus", which can lower the costs for marketentry for new companies in a large number of sectors.
- Europe offers support, seed-funding and precommercial procurement, including for start-ups and space innovators, in particular with an emphasis on the digital and green transformation. It also offers business coaching to non-EU companies.

#### **ABOUT MACROSCOPE STRATEGIES (M2S)**

MacroScope Strategies (M2S) is a boutique consultancy with offices in Abu Dhabi, Berlin, Brussels and The Hague, specialized in diplomatic services, governance affairs, market access, and regulatory risk. We help companies, governments, diplomatic missions, and international organizations navigate the new world of diplomacy and government affairs.



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