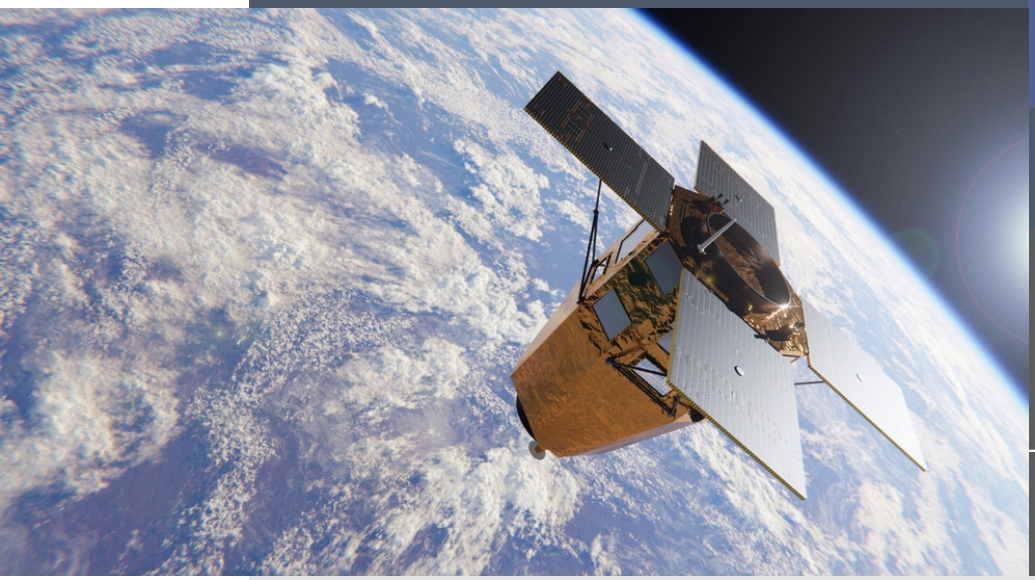
IFRI
MEMOS

Space Program



MARCH 17,
2025

The European Space Model:
Renewing Ambition in a Changing Strategic Landscape

Paul WOHRER

Key Takeaways

- The European space model is based on three pillars: science, cooperation and trade.
- These three pillars have been severely eroded by changing international relations and the economic upheavals introduced by New Space.
- The current geopolitical context, marked by the war in Ukraine and US disengagement, requires a rethinking of the European space model and the introduction of a fourth pillar of activities devoted to defense.
- Such an initiative would help rebalance the historical model of European space activities and discourage future armed aggression against the continent.

Introduction

In a time of geostrategic upheaval, Ariane 6's first operational launch of a military satellite provided some relief for the European space program whose model has faced serious challenges in recent years.

A "space model" may refer to the set of principles, strategies, institutional and industrial structures that guide the development of space activities. It embodies a specific approach, shaped by political, economic and scientific history, as well as the ambitions of states and supranational institutions in a constantly changing international context. The strategies underpinning the European space model are thus very different from other space powers like the United States (US) or Russia.

This unique model has proven its worth over its sixty years of existence,[1] establishing a space policy geared towards civilian development and founded on three main pillars: science, cooperation and trade. European advances in space have turned the continent into one of the world's leading space powers, with a dynamic and innovative sector.

However, recent events have weakened these three pillars. International developments have called into question long-standing cooperation efforts. In the commercial sector, the emergence of New Space has severely affected the European industry, causing a deep crisis that is still unfolding. Science is also suffering from these developments, as well as from weakening multilateralism on climate issues.[2]

The emergence of New Space has severely affected the European industry

In the wake of the brutal decisions taken by the Trump administration regarding support for Ukraine, Europe needs to consider whether a fourth pillar, dedicated to the defense of the continent, should be established. Such an initiative would help to address the existential emergency caused by US disengagement in the face of Russian aggression and, in the longer term, to guard against over-dependence on an unpredictable partner. This endeavor would serve to stabilize the European space model and strengthen its historical foundations.

1. Although there is some debate about exactly when Europe first got involved in space, we have settled on 1965, the year the first European satellite (Astérix-Diamant) was sent into orbit by a European launcher.
2. As evidenced by the COP29 outcomes, which were considered disappointing, or the United States' withdrawal from the Paris Agreement.

The European space model in an era of change

The three historical pillars of the European space model

After more than six decades of European space activities, some key features of Europe's approach can be identified, forming the basis of its three-pillar model.

The first pillar is cooperation, both between European nations and with external partners. It has been a fundamental feature of the European project[3] and has led to the creation of institutions dedicated to the development of space capabilities through shared technical and financial resources. In 1975, the European Space Agency (ESA) was founded as an intergovernmental organization bringing together the human and technical resources of 22 European countries. Beginning in the 1990s, the growing power of the European Union (EU) gave rise to two, then three, major space programs: the Copernicus program for Earth observation, the Galileo program for navigation, and more recently the IRIS² program for satellite communications. In 2007, the Treaty of Lisbon formalized the relationship between ESA and the EU.[4] In addition to these intra-European partnerships, cooperation with the other space powers, particularly the US and Russia, also proved very fruitful. Major projects were thus carried out, whether in the field of science, manned flights or satellite launches.[5]

The second pillar of the European space model is its scientific ambition, through the work of the various European space agencies. Whether through national agencies such as the Centre national d'études spatiales (CNES) in France, the Agenzia Spaziale Italiana (ASI) in Italy and the Deutsches Zentrum für Luft- und Raumfahrt (DLR) in Germany, the European agencies with ESA and its iconic space missions (Rosetta, Planck, JUICE, Euclid, Bepi-Colombo), and the EU with its Copernicus program dedicated to climate monitoring and ecosystem management, science is at the heart of the European space program. This pillar is especially apparent in these institutions' funding mechanisms, particularly in the ESA's, whose Mandatory Scientific Programme requires each Member State to contribute funds in proportion to its gross domestic product (GDP).

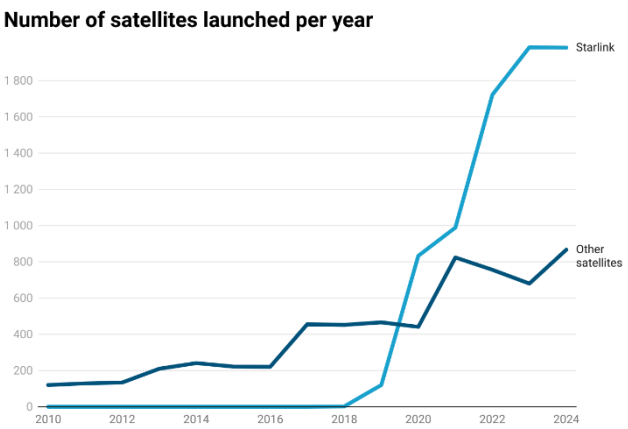
The third pillar focuses on the development of innovative commercial services since the 1980s, with the introduction of the Ariane launch vehicle program and advances in satellite telecommunications. Europe has pioneered many innovative commercial services, such as space launches, satellite telecommunications and the marketing of Earth observation images.

3. X. Pasco, *La Ruée vers l'espace*, Paris: Tallandier, 2024, p. 116.
4. Article 189 of the Treaty on the Functioning of the European Union (TFEU).
5. These include the International Space Station for manned flight, Europe's launch of the James Webb Space Telescope (JWST) observatory, and, cooperation with Russia on space launchers, until 2022.

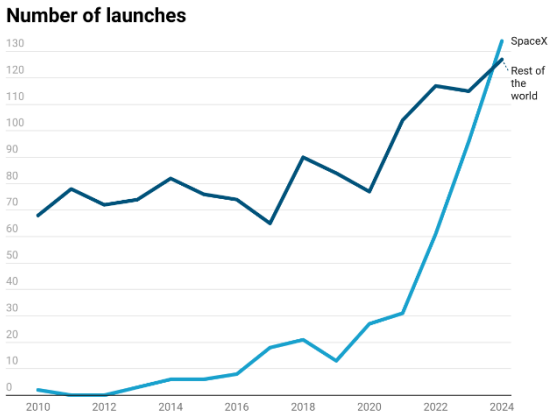
In recent years, several emerging factors have weakened the foundations of the European space model.

The erosion of the three pillars

Three recent reports have drawn attention to the challenges faced by the European space model. The Draghi Report focuses on the European space industry's loss of competitiveness.[6] The Letta report on the common market concludes that its space industry suffers from a lack of private investment and that its defense market is too narrow.[7] The Niinistö report on European defense capabilities examines the unique challenges posed by the growing competition for space and the need to ensure its defense, as well as the importance of space in the European defense architecture.[8]



© Graph created by Paul Wohrer on Datawrapper, Ifri.



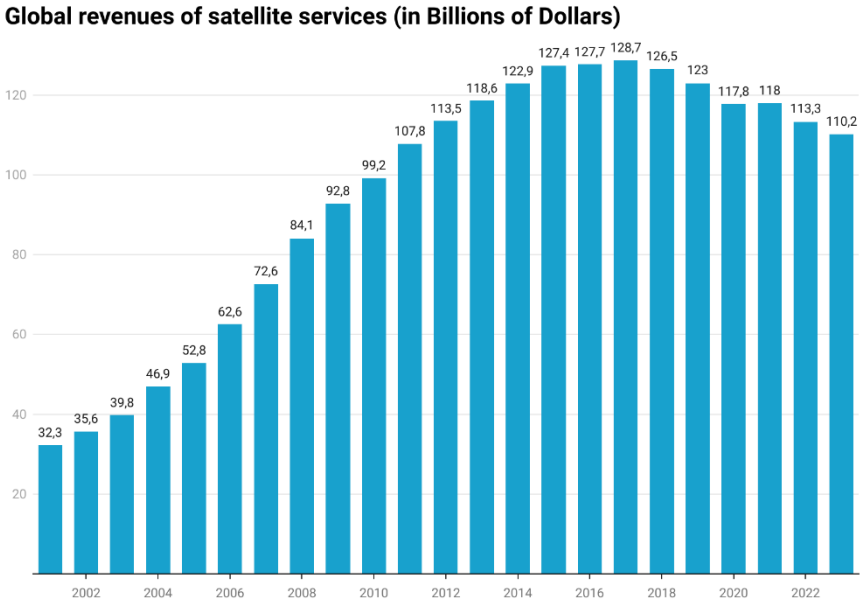
© Graph created by Paul Wohrer on Datawrapper, Ifri.

The first pillar to be affected is Europe's commercial domination in space. Its erosion can be attributed to two major developments. The first is the emergence of SpaceX, which has emerged as a competitor to European space activity. In the space of ten years, Elon Musk's company has become the dominant player in the space sector, launching, building and operating more satellites than all other players on the planet combined, including entire countries. The second development is the decline of the satellite television market, which heavily impacts the entire European space industry. Since the 1980s, a substantial part of its development had in fact relied on the growth of geostationary telecommunications, with television broadcasting being the most profitable segment. Its decline led to the European space industry rapidly losing its competitive edge, the effects

6. M. Draghi (Rapporteur), *The Draghi Report: In-depth Analysis and Recommendations (Part B)*, Brussels: European Commission, September 2024, p. 172.
7. E. Letta (Rapporteur), *Much More Than a Market*, Brussels: European Commission, April 2024, p. 76.
8. S. Niinistö (Rapporteur), *Safer Together*, Brussels: European Commission, October 2024, p. 35.

of which can already be seen in the sector's business revenues and job market, thousands of positions recently being cut among major European satellite manufacturers.[9]

The second pillar to be affected is cooperation. While the other space powers have also established international partnerships, none has developed them to the extent that Europe has. However, this exceptional degree of collaboration has resulted in weaknesses that are now proving to be structural, due to the dependencies it entails.



Source: Statista © Graph created by Paul Wohrer on Datawrapper, Ifri.

One of the first major cooperative ventures to be jeopardized by the war in Ukraine is with Russia in the field of space launches. The Soyuz launcher played a strategic role in the deployment of European satellites, both civilian and military.[10] Its sudden disappearance, and Russia's withdrawal from the production line of the Vega small launch vehicle, contributed to the "launcher crisis" that Europe experienced for a few months in 2023.[11]

9. A. Bauer, "Spatial: Thales, Airbus et Leonardo 'explorent' un avenir commun", *Les Échos*, December 5, 2024, available at: www.lesechos.fr.
10. C. Maire, "Premier bilan des conséquences de la guerre en Ukraine sur les liens de l'Europe avec l'Ukraine et la Russie dans le spatial", *Notes de la FRS*, Fondation pour la recherche stratégique, March 2, 2022.
11. N. Le Clerre, "Lanceurs européens : retour sur une année catastrophique après le dernier et 3e lancement de 2023", BFM TV, October 9, 2023, available at: www.bfmtv.com.

The United States, a long-standing partner of Europe, is also distancing itself from European affairs, marking a major turning point. The most critical aspect of this disengagement concerns Ukraine, the US withholding intelligence and threatening to cut off its Starlink system, which the Ukrainian military has described as the "blood of our entire communication infrastructure".[12] At the same time, Elon Musk, now an influential figure in Donald Trump's administration, is calling for several cooperation projects to be abandoned, including the International Space Station and the Artemis program to return to the Moon.[13] Europe, which is heavily invested in these initiatives, could see its endeavors jeopardized by the US unilateral decisions. Should such developments prevail, they could also derail scientific cooperation and human space exploration.

The ESA's investment model is shifting from an approach based on cooperation to one based on competition

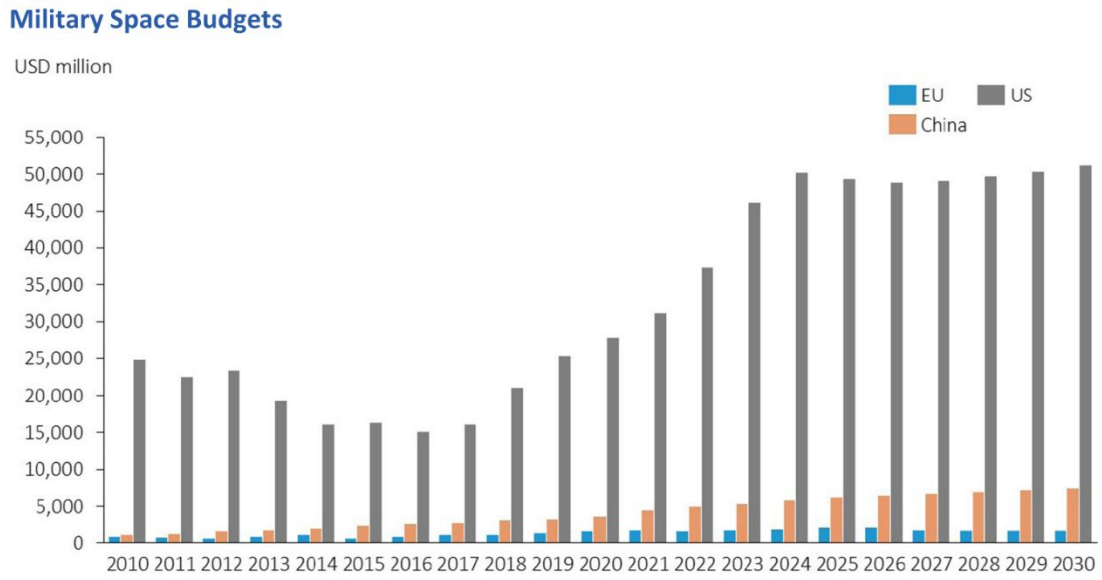
In Europe, the ESA's investment model has gradually changed in recent years, moving from an approach based on cooperation to one based on competition. Such a reassessment of a founding pillar of European space development can in part be explained by the disruption of New Space and the hope that greater competition will boost the sector's competitiveness. It can also be attributed to a deterioration in relations between European countries, in particular between France and Germany.[14]

The third pillar, science, stands relatively firm. European scientific expertise is very high, and missions launched by Europe remain world-class. The EU's Copernicus program also continues to provide environmental data to the rest of the world free of charge, cementing Europe's role as "Earth's guardian angel".[15] However, cutbacks in international cooperation have already jeopardized European scientific missions,[16] and this trend could continue, particularly in the field of human space flight where Europe is entirely dependent on its partners.

12. R. Gurantz, *Satellites in the Russia-Ukraine War*, Carlisle Barracks (PA): US Army War College Press, 2024, available at: https://press.armywarcollege.edu.
13. Elon Musk has stated on his X account (formerly Twitter) that he wants to take the International Space Station out of orbit and has called the American lunar program a "distraction".
14. A. Charnay, "Energie, aérospatiale… le couple franco-allemand au bord de la rupture", *Capital*, June 1, 2023, available at: www.capital.fr.
15. X. Pasco, *La Ruée vers l'espace*, op. cit.
16. This includes the European Mars Rover Rosalind Franklin, which was due to be launched by Russia and has still not left Earth.

The absence of a fourth pillar focused on defense

While the European space model is remarkable in many respects, it is especially unique in its almost exclusively civilian nature. Europe's history in space has mirrored European construction, which has always considered military development with suspicion. The ESA, like the EU, was never intended to develop military capabilities, a prerogative reserved for Member States.[17]



Source: Euroconsult, 2023 in M. Draghi (Rapporteur), The Draghi Report: In-depth Analysis and Recommendations (Part B), Brussels: European Commission, September 2024, p. 181.

This contrasts sharply with the US, Russian and Chinese space programs, initially developed for military purposes and later for civilian applications. The lack of a reliable space launcher until 1979 and the birth of Ariane delayed European military space ambitions. The first military optical reconnaissance satellite project, developed for use in French nuclear deterrence, was canceled in 1982 due to budget constraints and a shift in national defense priorities.[18] It was not until 1995, with Helios 1, that the first European military satellite was developed and launched, to support French defense. This program and those that followed therefore postdate the end of the Cold War, at a time when the prospect of the "end of history"[19] loomed large and European nations hoped to gain peace dividend.[20] Military space expenditures were therefore not a priority as at the same time,

17. X. Pasco, *La Ruée vers l'espace*, op. cit., p. 115.
18. J. Dechezelles, "Le programme SAMRO, 1977-1982 : premier programme militaire spatial de reconnaissance", *Stratégique*, Vol. 126-127, No. 2, 2021, pp. 89-96, available at: https://doi.org/10.3917.
19. F. Fukuyama, *The End of History and the Last Man*, New York: Free Press, 1992.
20. The 1990s were still however marked by numerous conflicts, including the Yugoslav wars and the Gulf War, which showcased the value of space capabilities in military operations, and is sometimes referred to as the "first space war".

Europe dominated the commercial space sector, launched ambitious scientific missions, and developed international cooperation.

The war in Ukraine has, however, revealed Europe's shortcomings in terms of military space capabilities. It has showcased the importance of satellite data for conducting operations, whether by providing real-time images, monitoring troop movements or ensuring reliable and jamming-resistant communications.[21] European military space capabilities are also extremely limited on a purely quantitative level. Today, European states only operate 41 military satellites, compared to 263 for the US, 267 for China and 101 for Russia.[22]

Necessary resurgence in the face of US disengagement

Recent events are causing geopolitical shifts that could redefine the strategic role of space in Europe. In the short term, the challenges mainly relate to managing the consequences of the war in Ukraine. The new US presidency has clearly stated its intention to leave Europe responsible for its own defense.[23] This administration's behavior suggests that US disengagement could be much more sudden than anticipated.[24] Consequently, calls for European rearmament are multiplying. These developments call for renewed reflection on European strategic autonomy in space.

The war in Ukraine has revealed the shortcomings of Europe's military space capabilities

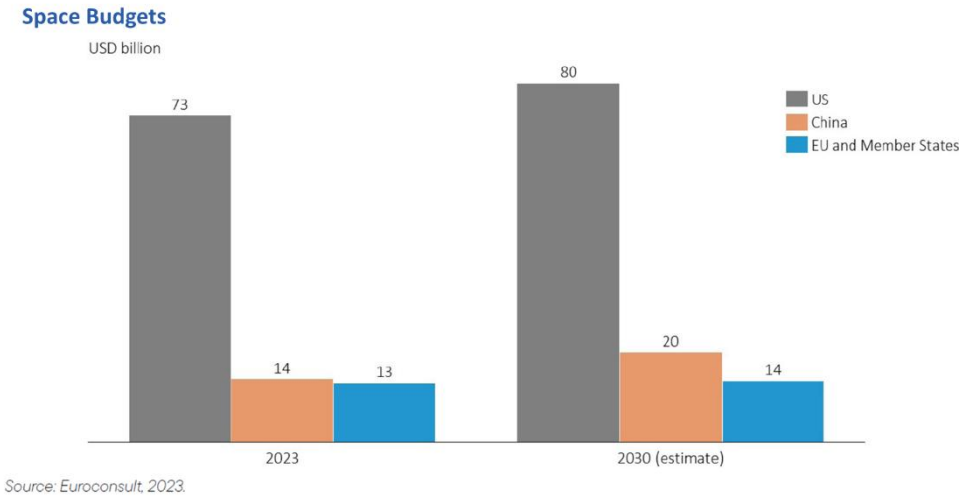
In the coming years, Europe must focus on securing its eastern flank, which will have consequences in terms of doctrine and of capabilities.[25] The space sector will necessarily feature in these new strategies, as armed forces are increasingly dependent on the communication, navigation and intelligence capabilities made possible by space.[26]

Deterring Russia from attacking Europe[27] would require a profound transformation of Europe's industrial architecture. Its space defense infrastructure should be made more resilient by increasing the number of available satellites. Such an effort would help to compensate for any potential losses, whether from technical failures or attacks.[28]

21. R. Gurantz, *Satellites in the Russia-Ukraine War*, op. cit.
22. "The Military Balance 2025", International Institute for Strategic Studies, 2025.
23. P. Hesgeth, "Opening Remarks by Secretary of Defense Pete Hegseth at Ukraine Defense Contact Group", U.S. Department of Defense, February 12, 2025, available at: www.defense.gov.
24. D. Minic, "Trump-Poutine : logiques et perspectives d'une négociation sur l'Ukraine", *Briefings de l'Ifri*, Ifri, February 2025.
25. É. Tenenbaum, "Return to the East: the Russian Threat and the French Pivot to Europe's Eastern Flank", *Focus stratégique*, No. 119, Ifri, June 2024.
26. M. Friedling, "L'Espace : un enjeu stratégique et un nouveau champ de confrontation militaire", in *Le Bourget 2019 – L'Air et l'Espace, enjeux de souveraineté et de liberté d'action de la France*, 2019, available at: www.defnat.com.
27. É. Tenenbaum and L. Litra, "Ukraine's Security Now Depends on Europe", *Foreign Affairs*, December 3, 2024, available at: www.foreignaffairs.com.
28. One example is the German military SARah radar satellites, which suffered in-orbit failure after launch.

Budgetary and governance challenges

Implementing a fourth pillar for the European space model will involve financial constraints. Today, the public budget set aside for European space programs amounts to approximately 13 billion dollars per year, compared to 73 billion for the US. This budgetary asymmetry represents a growing threat to Europe's autonomy and its ability to assert itself as a leading actor in space. Additionally, space programs focusing on research and development (R&D) suffer from a lack of resources and struggle to keep pace with American and Chinese innovations. Innovative start-ups and small and medium-sized enterprises (SMEs) in the space sector, which could drive growth, receive limited public support when compared to the massive investments by the United States in New Space.[29]



Source: Euroconsult, 2023 in M. Draghi (Rapporteur), The Draghi Report, op. cit., p. 177.

European space sector funding is also made more complex by the allocation of budgets among a plethora of agencies and programs, with European governance split into three levels: Community (EU), intergovernmental (ESA) and national (CNES, ASI, DLR and ministries of defense). The Draghi report indicates that this profusion of decision-making bodies causes redundancies, the dispersion of resources and, occasionally, internal competition for funding.[30] A defense pillar would need efficient governance, with due consideration for the demands of military operations.

29. "Start-up Space", Bryce, 2023, available at: https://brycetech.com.
30. M. Draghi (Rapporteur), *The Draghi Report*, op. cit., p. 178.

Strengths of the European space model

Building on its three historic pillars, the European space sector has developed spectacularly since the 1980s. This strategy gives Europe complete control over the space systems production chain, from launch vehicles to space data analysis, satellite manufacturing and space surveillance. European space training programs are internationally renowned, and the level of expertise remains very high. Thus, though it has a smaller space budget than other world powers, Europe today benefits from a world-class space sector.[31]

In recent years, Europe has also developed an "intellectual arsenal" allowing it to keep ahead of the upheavals now unfolding. The publication of France's Space Defense Strategy in 2019,[32] for example, set out an original doctrine capable of addressing today's new strategic context. The creation of military structures such as the Space Command in France, as well as similar entities in other European countries, has helped to prepare for the challenges presented by the increasing militarization of space.[33] Furthermore, the new European Commission has integrated space into the portfolio of the Commissioner for Defense, Andrius Kubilius, who is responsible, in particular, for implementing the EU space strategy for security and defense.

Though it has a smaller space budget than other world powers, Europe today has a world-class space sector

Though Europe lags behind in terms of military space capabilities,[34] many of its satellites have the capacity to carry out dual missions. Among these, the EU's flagship programs could form an initial pool of available capabilities. The Galileo navigation satellites are equipped to transmit a specific signal designed for use by security and defense forces,[35] and the satellites of the Copernicus program, although not designed for military use, can contribute to certain intelligence missions. The IRIS² program aims to deploy a constellation specifically dedicated to security by 2030. Finally, a large number of so-called "trusted" European companies are able to provide services relevant to defense activities.[36]

Over the decades, Europe has thus developed a cutting-edge space sector. Its capabilities can now be mobilized in the service of the continent's defense. The example of Ukraine shows that a country without national military satellites can still make effective use of available space capabilities, sometimes even more effectively than established powers like

31. "France et Europe : quelles politiques spatiales ?", *Vie publique*, September 20, 2022, available at: www.vie-publique.fr.
32. X. Pasco and P. Wohrer, "Implementing the French Space Defence Strategy: Towards Space Control?", *Note de la FRS*, Fondation pour la recherche stratégique, 2023, available at: www.frstrategie.org.
33. Since 2019, space military commands have been established in Italy, Germany and the United Kingdom.
34. E. Grynszpan and E. Vincent, "Kiev et ses alliés au défi de la pause du renseignement américain", *Le Monde*, March 8, 2025.
35. The interference-resistant Public Regulated Services (PRS) signal is specifically intended for government users in the fields of security and defense.
36. Operator Eutelsat has announced that its OneWeb constellation could be used in Ukraine in the event of a Starlink outage.

Russia. With its technological expertise, innovative industry and its established infrastructures, Europe today has all the right tools to make space a central pillar of its defense. France, Europe's leading space power, would have a key role to play in this strategic transformation.

Rebalancing the European space model

European leaders have recently expressed their desire to rearm the continent, and the EU has unveiled an ambitious defense investment financing plan. Among other positive signals, the European Commissioner for Defense has called for the establishment of a "space shield",[37] and the French Prime Minister will soon unveil a national space strategy.[38] It would thus appear the time is right for the introduction of this fourth pillar.

> Adopting a defense pillar is a strategic necessity in the face of this existential threat

The integration of a defense pillar into the European space model would not simply amount to a functional addition, but would act as a catalyst, helping to strengthen its three historical pillars. It would create new opportunities for cooperation between European nations, by joining forces and organizing more resilient space governance. It would also breathe new life into the narrative of Europe's rightful place in space, asserting the continent's strategic autonomy. Finally, it would create crucial industrial opportunities, especially in a context where the erosion of traditional space markets jeopardizes its stakeholders' competitive edge. Such a policy would therefore involve more than just defense: it would act as a driving force for the entire European space sector.

Beyond industrial and institutional considerations, adopting a defense pillar is a strategic necessity in the face of the existential threat Russia presents to the security of the continent. Space is now a battleground where the resilience of critical infrastructures, communications sovereignty and informational superiority will be put to the test. As it faces this reality, Europe must acquire the means to protect its interests and free itself from its dependencies, which create many vulnerabilities. Only by combining technological autonomy with greater European cooperation would it be possible to ensure the continent's security and establish Europe as a leading player in space, not only commercially and scientifically, but also in the defense of its sovereignty.

37. J. Barigazzi, "EU Space Commissioner Calls for 'European Space Shield'", *Politico*, January 28, 2025, available at: www.politico.eu.
38. "Stratégie spatiale nationale", press release from the Prime Minister's communications department, March 2025, available at: www.info.gouv.fr.

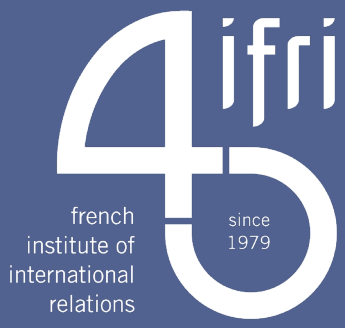
Paul Wohrer *is a Research Fellow at Ifri's Space Program. His research focuses on geopolitical and strategic issues, as well as technological and industrial developments in the space sector.*

How to cite this publication:

Paul Wohrer, "The European Space Model: Renewing Ambition in a Changing Strategic Landscape", *Briefings de l'Ifri*, Ifri, March 17, 2025.

ISBN: 979-10-373-1032-3

Cover: Illustration of a low-orbit Earth observation satellite



27 rue de la Procession
75740 Paris cedex 15 – France

Ifri.org