

# NATO's New Ambitions for Space

Béatrice HAINAUT

## ► Key Takeaways

- In 2024, NATO celebrates 75 years of existence. Its longevity can be attributed in part to its adaptability to international developments. The war in Ukraine has bolstered its legitimacy and appeal.
- The extensive use of space-based technologies in Ukraine raises the question of the Atlantic Alliance's involvement in the provision of space data and services to its member states. Though it has no space-based capabilities of its own, its deterrence strategy extends to space.
- Through extensive documentary resources, dedicated space centers and access to national capabilities, the Alliance is working to establish its vision of space as an operational domain.
- This operational domain aims to enable the integration and interoperability of different member states' space assets. At present, these are essentially U.S. assets.
- NATO's ambitions for space raise the question of how financial and human resources will be mobilized. Closer cooperation between NATO and the EU would, in principle, facilitate joint efforts.

## Introduction

On February 24, 2022, one hour before Russia invaded Ukraine, the Ukrainian army's communications terminals, operating through the American Via-Sat KA-SAT commercial satellite network, were disabled by a cyber-attack. Several member states of the North Atlantic Treaty Organization (NATO) also fell victim to this offensive action. Some have dubbed this conflict the "first two-sided space war",<sup>1</sup> given the many space applications that have been mobilized.

Nearly 9,000 subscribers to the NordNet broadband satellite service in France were affected, as well as over 10,000 BigBlu subscribers in Germany, France, Hungary, Greece, Italy, and Poland. Lastly, German energy company Enercon lost access to the monitoring and control systems for its 5,800 wind turbines, which operate over the KA-SAT network.<sup>2</sup> The attack targeted terminals rather than the satellite itself or ground stations. NATO and the European Union (EU) attributed it to Russia on May 10, 2022. Two conclusions can be drawn from this event. Firstly, Western economies and armies are dependent on space applications. Secondly, potential adversaries will take these vulnerabilities into account. As events unfolded, space applications continued to play a central role in planning and warfare for both sides.

Despite its limited role in this war, NATO has regained legitimacy and appeal.<sup>3</sup> The alliance serves to defend and deter. The credibility of NATO's deterrence rests on three pillars,<sup>4</sup> all of which are relevant to space: ability (capabilities, resilience and distribution among Member States), readiness (good space situational awareness, though the Alliance lacks planning and training) and political willingness. The war in Ukraine has brought the question of space's role in the Alliance's deterrence and defense strategy to the fore. Its ambitions for space, though they predate this war, were reasserted by its members. However, many challenges lie ahead.

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1. D. T. Burbach, "Early Lessons from the Russia-Ukraine War as Space Conflict", Atlantic Council, August 30, 2022, available at: [www.atlanticcouncil.org](http://www.atlanticcouncil.org).

2. "The War in Ukraine from a Space Cybersecurity Perspective", *Report*, No. 84, European Space Policy Institute (ESPI), 2022.

3. A. Zima, "NATO and the War in Ukraine. Limited Role but Reinforced Legitimacy?", *Research Paper*, IRSEM, August 2023.

4. NATO Academic Conference, Bertinoro, 2023.

## Ability

### ***Building a body of literature on the development of space as an operational domain***

NATO is gradually gathering extensive documentation to facilitate the development of space as an operational domain: concept of operations, training plan, information-sharing framework, capability requirements, doctrine, etc. The organization also published its first overarching space policy in 2019,<sup>5</sup> which was made public in January 2022. It describes space as an important environment for the Alliance's security and prosperity. It acknowledges that it brings new opportunities but also new risks and threats. In particular, it highlights the fact that the Allies' space capabilities "could become a high-priority target" for potential adversaries. Previously confined to support operations, space is now systematically factored into all aspects of the organization's work (operational planning, training and exercises, interoperability, strategic communications, etc.). The space policy does, however, reaffirm that the Atlantic Alliance "is not aiming to become an autonomous space actor" and, therefore, will not develop "space capabilities of its own".

The same year, in keeping with this logic, NATO recognized space as an "operational domain". However, this designation has no precise definition. It reflects a general intent to achieve integration and interoperability between member states' space assets.<sup>6</sup> This terminology drew strong reactions from Russia, which argued it paved the way for the weaponization of space,<sup>7</sup> adding fuel to the security dilemma.<sup>8</sup> The term "operational domain" may have been confused<sup>9</sup> with the term "warfighting domain", employed in U.S. Space Force doctrine,<sup>10</sup> which does not, in principle, carry the same implications. NATO's Secretary General has made it clear that the Alliance has no intention of "weaponizing" space.<sup>11</sup> NATO, therefore, places member states' capabilities, their availability and,

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Space: an important environment for the Alliance's security and prosperity

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5. "NATO's overarching Space Policy", January 2022, available at: [www.nato.int](http://www.nato.int).

6. A. Stickings, "Space as an Operational Domain: What Next for NATO?", *RUSI Newsbrief*, RUSI, October 2020.

7. H. Ellyatt, "Putin Fears the US and NATO Are Militarizing Space and Russia Is Right to Worry, Experts Say", CNBC, December 5, 2019, available at: [www.cnbc.com](http://www.cnbc.com).

8. "The security dilemma is an effect of anarchy in classical realism theory. It refers to the fact that any attempt by a state to take measures to defend itself is liable to be interpreted as a potential threat by other states, who are in turn compelled to arm themselves in defense of this anticipated threat, so creating a vicious cycle of defense and counter-defense, and thus an apparently intractable dilemma: how to safeguard one's survival without automatically stoking the fears of others and thereby provoking an arms race?" Read A. MacLeod and D. O'Meara (eds.), *Théories des relations internationales*, Quebec: Athéna Éditions, 2010, p.85.

9. This confusion may also be deliberately perpetuated by the Alliance's detractors, e.g., Russia.

10. "Spacepower: Doctrine for Space Forces", Washington, D.C., Space Capstone Publication, 2020, available at: [www.spaceforce.mil](http://www.spaceforce.mil).

11. M. Banks, "NATO Names Space as an "Operational Domain", But Without Plans to Weaponize It", *Defense News*, November 20, 2019.

therefore, their interoperability at the heart of its thinking.

## ***The question of capabilities***

### Space telecommunications (SATCOM)

In the past, the Alliance had its own satellite communications capabilities.<sup>12</sup> Since 2005, the organization has relied on military SATCOM services from France (SYRACUSE), Italy (SICRAL), the UK (SKYNET) and the United States (WGS). A new one-billion-euro agreement signed in 2020 commits the same countries to providing SATCOM services from their respective military programs for the next fifteen years. The NATO Communications and Information Agency (NCIA) is in charge of operating the SATCOM system on behalf of its members.

### Space surveillance

In an effort to diversify its space capabilities, NATO has accepted Luxembourg's offer to develop a space situational awareness system. The project has been named 3SAS for Strategic Space Situational Awareness System. It has received 6.7 million euros in funding from the Grand Duchy without drawing on NATO's common budget. At present, it is difficult to have a precise idea of this initiative's contents or to know which states will be involved.

### Space-based intelligence (ISR)

As part of its efforts to expand access to capabilities, NATO, with the help of 18 Alliance member states,<sup>13</sup> plans to establish the Alliance Persistent Surveillance from Space (APSS) initiative.<sup>14</sup> It will take advantage of Intelligence, Surveillance and Reconnaissance (ISR) capabilities. The aim is to develop a "virtual constellation" dubbed Aquila,<sup>15</sup> a joint platform (a "data-centric initiative")<sup>16</sup> designed to collect, share and analyze national and commercial spatial data. The project received substantial initial funding from

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12. "A total of eight satellites were launched, all using the codename 'NATO'. The first NATO satellite was launched on March 20, 1970, from Cape Kennedy, USA. The final two satellites, NATO IVA and NATO IVB, were launched in 1991 and 1993, respectively. In the early 2000s, NATO decided to replace these satellites with a new program called SATCOM 2000. Instead of owning and operating its own satellites, NATO would have direct access to national communications satellites from France, Italy and the UK." Read "Defence and Deterrence – NATO, We Have Lift Off!", NATO, available at: [www.nato.int](http://www.nato.int).

13. At this stage, only a Letter of Intent (LOI) has been signed by these 18 nations. This in no way confirms their participation in the APSS, which will depend on their signing the Memorandum of Understanding (MOU) during the NATO summit in Washington in July 2024. The following nations are involved: Belgium, Bulgaria, Canada, Finland, France, Greece, Hungary, Italy, Luxembourg, Netherlands, Norway, Poland, Romania, Spain, Turkey, United Kingdom, United States, and Sweden.

14. Launched in February 2023, this new initiative is led primarily by the NCIA, supported by Supreme Headquarters Allied Powers Europe (SHAPE) and NATO headquarters.

15. "16 Allies, Finland and Sweden Launch Largest Space Project in NATO's History", NATO, February 2023, available at: [www.nato.int](http://www.nato.int).

16. "Alliance Persistent Surveillance from Space (APSS)", NATO, February 2023, available at: [www.nato.int](http://www.nato.int).

Luxembourg, amounting to 16.5 million euros.<sup>17</sup> Until now, Luxembourg has concentrated primarily on telecommunications and is looking to diversify its investments in space and broaden its range of capabilities. All NATO members have been invited to contribute with data and/or funding.

### Innovation and R&D

In addition, since 2021, NATO has operated a program known as DIANA, or the NATO Defence Innovation Accelerator for the North Atlantic. It is designed to help innovators develop deep-tech dual-use technologies<sup>18</sup> to address critical defense and security challenges. This program focuses on emerging and disruptive technologies and aims to tackle critical issues in fields as diverse as artificial intelligence (AI), autonomous systems, quantum technologies, biotechnologies and space.<sup>19</sup>

## Readiness

### ***Establishing dedicated space centers***

#### The Ramstein Space Center in Germany

In order to implement these different initiatives, NATO opened a space center at the Allied Air Command in Ramstein (Germany) in 2020. Its mission is to coordinate the space activities of Alliance member states, support NATO activities and operations, help protect space infrastructures by sharing information on potential threats and prepare and consolidate space data obtained from member states for later dissemination (imagery, navigation, early warning).<sup>20</sup> The center aims to be operational seven days a week, 24 hours a day, by 2026.

#### The Toulouse center of excellence in France

The NATO Space Center of Excellence (CoE),<sup>21</sup> located in Toulouse, France, was also established. It is not strictly a NATO structure, but it has been accredited by the Alliance to contribute to its work. It is the 29<sup>th</sup> NATO Center of Excellence, which are “international military organizations that train and educate leaders and specialists from NATO member and partner countries. They assist in doctrine development, identify lessons learned, improve interoperability and capabilities, and test and validate concepts through experimentation. They offer recognized expertise and experience that is of benefit to the Alliance, and support the transformation of NATO

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17. Ibid.

18. This refers to disruptive technological innovations, primarily aimed at commercial markets, but with potential applications in the defense and security sector. “Defence Innovation Accelerator for the North Atlantic (DIANA)”, NATO, September 2023, available at: [www.nato.int](http://www.nato.int).

19. Ibid.

20. “We Coordinate NATO Space Matters”, NATO, available at: <https://ac.nato.int>.

21. NATO Space Center of Excellence website, available at: [www.space-coe.org](http://www.space-coe.org).

while avoiding the duplication of assets, resources and capabilities already present within the Alliance.”<sup>22</sup> Many countries have expressed interest in participating in the Space CoE by contributing personnel.<sup>23</sup> The United States, which has been involved in all the CoE's work from the outset, has expressed its desire to send a representative. Those states already present do not appear to have any specific strategic orientations to defend for the time being.<sup>24</sup> For most, the aim is, above all, to gain experience in the space domain and take part in discussions on the subject. For Germany, which was offered the position of deputy director at the Space CoE, the aim was to exert its influence (the position of director went to France).<sup>25</sup> France, for its part, should capitalize on its home advantage. It could, for example, influence NATO's space doctrine along the lines of its national joint doctrine of 2022. Validation of the NATO doctrine will require consensus among all members.

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## Partner nations must now move beyond declarations of intent

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NATO is currently in phase 3 of 5 of its space implementation plan, which began in 2021 and is due to be completed in 2026. This methodical action plan, which should schematically complete one phase per year, seems to be slowing down. Partner nations must now face the “reality principle”.<sup>26</sup> Indeed, they must now move beyond declarations of intent, and contribute human and financial resources.

### ***Sustainability of NATO's expansion in the space domain***

These developments suggest that NATO is firmly committed to space. Beyond their financial commitment, this will also demand sustained investment from member states in terms of human resources. Yet many of them<sup>27</sup> are also expanding their national presence in this field. Human resources in this field are scarce because they are highly specialized and are being captured by the private sector, which can offer high salaries. In this context, NATO's ambition to act as a forum for the space community, bringing together military, academic, commercial and industrial actors, may help to compensate for this constraint. Member states have made a number of commitments. They must provide personnel for the Toulouse Center of Excellence, which is attractive as it aims to foster the development of space expertise.<sup>28</sup>

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22. “Centres of Excellence”, February 2024, available at: [www.nato.int](http://www.nato.int).

23. Fourteen countries, namely Belgium, the Czech Republic, Germany, Greece, Italy, the Netherlands, Luxembourg, Poland, Portugal, Romania, Spain, Turkey, the UK and the Republic of Northern Macedonia.

24. Interview at the NATO Space Center of Excellence, January 2024.

25. Ibid.

26. Interview at the Ministry of Armed Forces, January 2024.

27. France, Germany, Italy and Spain, for example, have created specific entities dedicated to space, which may or may not be attached to their respective air forces.

28. Interview at the NATO Space Center of Excellence, January 2024.

They must also provide human resources for the Ramstein Space Center, which, for its part, requires trained personnel. It will be costly in terms of personnel, as its ambition is to operate continuously. This objective bears some debate, as most other national “Space” operations centers do not run around the clock.

Finally, the sheer number of initiatives – space center, center of excellence, APSS, 3SAS... – do not help to create a clear and coherent picture of NATO’s policy in this area. These entities do not seem to interact much with one another.<sup>29</sup>

## Political willingness

### *France’s positioning*

While all nations seem to agree that NATO should fully commit to space, few have a clear vision on the matter. Although all member states are involved in space to varying degrees, few have any real knowledge of the field. Their immediate priority is to familiarize themselves with the sector before potentially adopting a national stance.

France’s Space Defense Strategy was drafted in 2019, prior to the development of NATO’s overarching space policy and to the creation of the CoE, and therefore offers little guidance with regard to NATO. France now needs to clarify its ambitions in accordance with its national and European objectives, as well as with regard to its bilateral cooperation with the United States. France is currently in a period of reflection. Its choices should capitalize on NATO’s growing power to serve French interests. What will France’s contribution be to space-based surveillance (APSS), for example? And the EU’s? If France decides not to contribute, or only minimally, U.S. commercial operators could be the main beneficiaries.<sup>30</sup> Likewise, in terms of capabilities and training, duplication is the enemy of optimization. It could therefore be worthwhile, for instance, to arrange “functional transfers” to NATO and set “red lines”. This could mean defining inalienable sovereign capabilities, such as those associated with “active defense”, thus including space-based capabilities or national prerogatives, such as the attribution of offensive actions. It should be emphasized as well that NATO space capabilities are currently essentially limited to those of the United States.

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**NATO’s ambition is to act as a forum for the space community, bringing together military, academic, commercial and industrial actors**

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29. Interview at the Ministry of Armed Forces, January 2024.

30. Ibid.

## ***Is closer cooperation between NATO and the EU possible?***

Today, NATO regards the EU as a serious actor in the space sector (wide-ranging capabilities, space strategy).<sup>31</sup> The Alliance's publications regularly stress the importance of cooperation between the two entities, especially in the wake of the Russian invasion of Ukraine. It describes the EU as a "unique and essential partner".<sup>32</sup> The Joint Declaration on EU-NATO Cooperation, dated January 10, 2023, identifies space as a priority area for cooperation<sup>33</sup>. In its conclusions on the EU space strategy for security and defense, the EU Council also "reaffirms the need to further strengthen, deepen and expand cooperation with NATO on space".<sup>34</sup>

Some argue that European capabilities could serve as a "NATO backup system".<sup>35</sup> Of the 32 states in the Atlantic Alliance, 23 are EU members, and 7 are in Europe. The EU's capabilities could then benefit space actors like the U.S., Canada, Norway and the UK.

Capacity sharing is already in place but has its limitations. This is particularly true with regard to the exchange of classified information. Turkey systematically obstructs any cooperation between NATO and the EU on this matter.<sup>36</sup> Building an institutional partnership is, therefore, a complex undertaking. In their statements, EU and NATO actors still call for greater cooperation. For the time being, this may not include the protected (i.e., encrypted) capabilities of Galileo,<sup>37</sup> for example, but could, at the very least, involve a common understanding of space-based threats.

Both organizations have already set themselves the task of conducting this work internally.<sup>38</sup> This cooperation could draw inspiration from other initiatives. For example, a NATO-EU task force was set up in early 2023 on the resilience of critical infrastructures,

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### The EU: a "unique and essential partner"

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31. In addition to Galileo (navigation) and Copernicus (imagery), the EU is developing an IRIS<sup>2</sup> connectivity constellation and a space surveillance service dubbed EUSST (European Union Space Surveillance and Tracking).

32. "NATO 2022 Strategic Concept", June 29, 2022, Madrid, p. 10, available at: [www.nato.int](http://www.nato.int).

33. "Joint Declaration on EU-NATO Cooperation", January 10, 2023, available at: [www.consilium.europa.eu](http://www.consilium.europa.eu).

34. "Council Conclusions on the EU Space Strategy for Security and Defence", Brussels, November 13, 2023, available at: <https://data.consilium.europa.eu>.

35. NATO Academic Conference 2023, Bertinoro, Italy.

36. These repeated obstructions are due to the relationship between Turkey and Cyprus, Cyprus being a member of the EU but not of NATO. "Turkish authorities want to ensure that the European Union cannot be granted automatic access to NATO assets for an operation without the approval of all Alliance members. Moreover, Cyprus has no security agreement with NATO on the exchange of classified documents, yet, despite Turkey's opposition, it participates in official NATO-EU summits." Read A. Zima, *L'OTAN*, Paris: Presses Universitaires de France, "Que sais-je ?", 2023.

37. Through NATO, certain member states could gain access to Galileo's secure service in addition to American GPS. These include the United States and the United Kingdom, which was excluded from Galileo's secure service in the wake of Brexit.

38. Indeed, the EU space strategy for security and defense calls for an annual, classified analysis of space-based threats. Read Council of the European Union, "Space: Council Approves Conclusions on the EU Space Strategy for Security and Defence", November 2023, available at: [www.consilium.europa.eu](http://www.consilium.europa.eu).



which includes space-based infrastructures.<sup>39</sup> It delivered its report in June 2023. This initiative could serve as a model for future bilateral NATO-EU discussions on space. A joint assessment of space-based threats would be an essential step in determining potential NATO responses to a space-based attack against one of its members. This could ultimately serve to define which attacks to, from or within space are liable to trigger Article 5:<sup>40</sup>

“We consider that attacks to, from, or within space present a clear challenge to the security of the Alliance, the impact of which could threaten national and Euro-Atlantic prosperity, security, and stability and could be as harmful to modern societies as a conventional attack. Such attacks could lead to the invocation of Article 5. A decision as to when such attacks would lead to the invocation of Article 5 would be taken by the North Atlantic Council on a case-by-case basis.”<sup>41</sup>

This case-by-case approach avoids constraining the Alliance with a precise definition, which would undermine the very principle of deterrence. A joint threat assessment would also address the EU's desire to move forward in defining how the mutual assistance clause (Article 42(7) of the EU Treaty) applies to space. Indeed, the Council of the EU has acknowledged the possibility of invoking this clause in the event of attacks in the space domain:

“[The Council of the EU] underlines that attacks in the space domain could amount to armed aggression against one or several Member States on their territory and thus constitute grounds to invoke Article 42(7) of the Treaty on European Union.”<sup>42</sup>

## Conclusion

Despite some national hesitations,<sup>43</sup> today, NATO is undeniably establishing itself as an actor in space on behalf of its member states. The specter of a major conflict demands that France and Europe's role within this broader framework be considered more closely. NATO's expansion into space will then need to be coordinated with national and European build-up. The next NATO summit in Washington in July 2024 could be an opportunity for progress on this front.

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39. *EU-NATO Task Force on the Resilience of Critical Infrastructure – Final Assessment Report*, June 2023, available at: [www.nato.int](http://www.nato.int).

40. Article 5 provides that if a NATO Ally is the victim of an armed attack, each and every other member of the Alliance will consider this act of violence as an armed attack against all members and will take the actions it deems necessary to assist the Ally attacked. Cf. “Collective defence and Article 5”, July 2023, available at: [www.nato.int](http://www.nato.int).

41. “Brussels Summit Communiqué”, Brussels, June 14, 2021, available at: [www.nato.int](http://www.nato.int).

42. “Council Conclusions on the EU Space Strategy for Security and Defence”, Council of the European Union, November 2023.

43. Like France's deliberations over its contribution to the APSS, or those of member states over the human and financial resources to be allocated to the Ramstein space center.

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*Captain Béatrice Hainaut is a researcher on space policy at the Institute for Strategic Research (IRSEM). She holds a PhD in political science from Université Paris 2 Panthéon-Assas. She has previously served in a number of military space-related positions, including at the French Space Surveillance Center (COSMOS) and at the French Space Command (CDE).*

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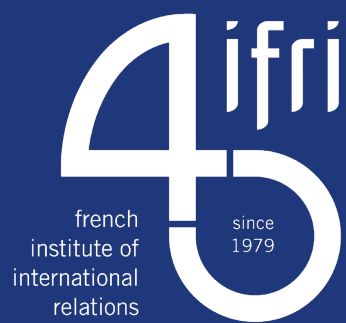
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27 rue de la Procession  
75740 Paris cedex 15 – France

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