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# A bold new frontier:

## the EU's venture in space security



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This Food for Thought paper is a document that gives an initial reflection on the theme. The content is not reflecting the positions of the member states but consists of elements that can initiate and feed the discussions and analyses in the domain of the theme. All our studies are available on [www.finabel.org](http://www.finabel.org)

## **DIRECTOR'S EDITORIAL**

The Treaty of Rome identified space as a key sector of action for the European Union as its Member States allowed the Union to regulate the matter on a dual-legal basis, that is, together with and in respect of each Member State's competence to regulate the matter. For years, this system seemed to work, as the European Union became one of the world's most relevant global actors in space, with the world's most precise and efficient Global Navigation Satellite System (GNSS).

However, in the past two decades, growing threats, rising tensions between global superpowers, and rapidly evolving technologies in space have put the EU's security at risk. Individually, countries like France, feeling threatened by foreign action, are now expressing the wish to develop military capabilities capable of providing them with security in space. Meanwhile, the European Union collectively struggles to find the right course of action to compete with powers like the United States of America, China, and Russia, and it looks more fragmented than ever.

Studying legal and practical developments carried out by the European Union to further space security is essential for understanding where the Union stands today and what direction it could and should take for its own benefit. From the Treaty on the Functioning of the European Union (TFEU or Treaty of Rome) and its principle of conferral to the creation of its very own European Union Agency for the Space Programme (EUSPA), and the management of programmes like Galileo, EGNOS, Copernicus, SSA, and GOVSATCOM, we observe a great potential for the EU and its ambition to strive for greatness, but also many obstacles.

Our team at FINABEL saw it fit to discuss these issues, as space is set to play an immense role in our citizens' daily lives and security. This calls for a long-lasting and well-established EU policy, which would pull all the Union's and its Member States' efforts together. Our paper, therefore, provides an insight into the strengths and weaknesses of the EU's vast legal framework and its diverse programmes in space and takes the opportunity to outline the present challenges the European Union must overcome in the future. Only by doing so can the European Union assess its place among the stars and the correct course of action to become a true contender in space security.



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## **ABBREVIATIONS**

<b>ARPA</b>	US Advance Research Project Agency
<b>ASAT</b>	Anti-Satellite weapon
<b>CA</b>	Collision Avoidance
<b>CARD</b>	Coordinated Annual Review on Defence
<b>CDP</b>	Capability Development Plan
<b>CEF</b>	Connecting Europe Facility
<b>CMC</b>	Country Map Coverage
<b>COHGI</b>	Common Hub for Governmental Imagery
<b>CSDP</b>	Common Security and Defence Policy
<b>DG DEFIS</b>	Directorate General for Defence Industry and Space
<b>DOSA</b>	Defence of Space Assets
<b>EC</b>	European Commission
<b>EDA</b>	European Defence Agency
<b>EDF</b>	European Defence Fund
<b>EDTIB</b>	European Defence Technological and Industrial Base
<b>EEA</b>	European Economic Area
<b>EEAS</b>	European External Action Service
<b>EGNOS</b>	European Geostationary Navigation Overlay Service
<b>EGNSS</b>	European Global Navigation Satellite System
<b>EP</b>	European Parliament
<b>ESA</b>	European Space Agency
<b>EU</b>	European Union
<b>EU SatCen</b>	EU Satellite Centre
<b>EUMC</b>	European Union Military Committee
<b>EURAS</b>	EU Radio Navigation Solution
<b>EUSPA</b>	European Union Agency for the Space Programme
<b>EU-SSA-N</b>	European Military Space Surveillance Awareness Network
<b>FG</b>	Fragmentation Analysis
<b>GLONASS</b>	Global Navigation Satellite System
<b>GMES</b>	Global Monitoring for Environmental Security
<b>GOVSATCOM</b>	Governmental Satellite Communications

<b>GPS</b>	Global Positioning System
<b>GSA</b>	European GNSS Agency
<b>MEO</b>	Medium Earth Orbit
<b>MFF</b>	Multi-Annual Financial Framework
<b>OLP</b>	Ordinary Legislative Procedure
<b>PADR</b>	Preparatory Action on Defence Research
<b>PAROS</b>	Prevention of an Arms Race in Space
<b>PESCO</b>	Permanent Structured Cooperation
<b>PRS</b>	Public Regulated Service
<b>RE</b>	Re-entry Analysis
<b>SBAS</b>	satellite-based augmentation system
<b>SSA</b>	Space Situational Awareness
<b>SSO</b>	Space Support of operations
<b>SST</b>	Space Surveillance and Tracking
<b>TEU</b>	Treaty on the European Union
<b>TFEU</b>	Treaty on the Functioning of the European Union
<b>TRP</b>	Technology Reinvestment Project
<b>UN COPUOS</b>	United Nations Office for Outer Space Affairs

## INTRODUCTION

Sixty years have passed since humans have slipped the bounds of gravity and made our way to the new frontier of outer space. Great strides have since been made, new technologies devised, and seemingly insurmountable obstacles overcome. This rapid advance beyond the atmosphere has created a world that is largely dependent on space for its ability to function. Many aspects of our daily lives are rendered possible by our presence in space, a trend that shows no sign of decreasing, as

more and more satellites are put into orbit. Interestingly, these are not the only application of these technologies, as it is a consistent theme throughout the sector that almost all technology is inherently dual-use. In other words, the way the space presence has evolved makes it intrinsically valuable to both civilian and military users in ways rarely seen on earth. At this point, one must clarify that space security can be divided into two distinct but complementary segments. The first

is called defence in space and refers to space assets in terrestrial defence. More specifically, it refers to any space technology or physical asset being wholly or partly used in a way that positively impacts the defence capabilities outside of the space of the entity deploying it. In contrast, the second is called defence from space and refers to protecting space assets against external threats. More precisely, it can be defined as any technology or physical asset used to lower the risk of damage or destruction of assets in space by intentional human action.

While the security dimension of space exploitation is certainly nothing new – after all,

most technological leaps in that field have a military origin – the European Union (EU) is in somewhat of a special situation with regards to it. Despite some early challenges, the EU space security policy has begun to make inroads and is now entering a critical phase of its development with the growth of EU defence policy and the very recent creation of the European Union Space Programme. Therefore, it is critical to examine the efforts made by the EU on that front, their impact on space security in Europe, and the path that remains to be travelled. This paper will first consider the legal framework of space security of the EU (part 1), including the relevant



*Rendering of the space debris problem which creates the civilian need for space tracking*

*Date: 03 December 2014*

*Picture by: Johan63*

Source: <https://www.flickrphono.com/fr/photos/pollution-espace-publicite-en-orbite-attonic-de-la-ecere-am326471083-52770540>

agencies and international agreements. Then, the current efforts of the EU in terms of space security will be assessed (part 2), considering both the financial resources assigned to it and the specific projects that have been undertaken. Finally, the last section will consider potential limitations of the EU space security

policy (part 3). In particular, this section will focus on three potential limiting factors: international law, the lack of political cohesion, and the lack of integration. We will then give concluding remarks and recommendations as to how to proceed going forward.

## **SPACE SECURITY AND THE EU: SETTING THE SCENE**

The security of outer space has proven to be quite a complex and rapidly evolving policy field, requiring a similarly prompt response from nations around the globe. In the European Union, the problem is compounded by the vertical separation of power between the EU and its Member States, including the principle of conferral, which hinders the creation of a unified policy. It, therefore, seems prudent to pre-empt any analysis of the EU's effort in that area with a brief introductory look at the legal framework. This chapter will consider the principle of conferral and its impact on the EU's ability to develop a capacity in space security. Then, it will consider the agencies that have been created at the EU level which play a role in the development of EU security, which is of particular interest. Finally, this chapter will consider a key relationship in developing the EU security in space policy, namely with the European Space Agency (ESA), which remains an international organ-

isation distinct from the European Union.

### **1.1 Legal basis**

One of the most fundamental principles of EU law must be considered: the principle of conferral. This requires an EU act to be justified by a specific provision of the treaties<sup>1</sup> and thus defines the scope of application of the EU's actions. Although, even if competence does exist, determining upon which an act should be based can be more complex than it appears. It is based on both the aim and content of the act, the correct legal basis needing to fit both of these aspects<sup>2</sup>. However, acts often contain provisions that fall under several legal bases, which would intuitively require passages under their respective bases, and therefore separate from the rest of the act. However, it is possible to include elements within an act that do not fall within the broader legal basis if those provisions are incidental

1. Article 5, Consolidated version of the Treaty on the European Union (2016), Official Journal C 202/2016 (hereafter TEU), 18

2. ECJ, Kingdom of Spain v European Parliament and Council of the European Union, C-146/13 (5 May 2015), ECLI:EU:C:2015:298, paragraph 39



to the aim of the act and are meant to assist its larger objective<sup>3</sup>. This incidental doctrine can be of great use to increase the flexibility of the EU legal order to cover complex policy areas which do not explicitly fit into one category, such as space security. Finally, when more than one legal basis in an act cannot be seen as incidental, the act can be passed under a dual legal basis, on the condition that the two bases rely on the same legislative procedure<sup>4</sup>, which is not possible in the context of space security, as the relevant legal bases are reliant on radically different procedures, making any dual legal basis impossible. From this point, the logical question is: what legal basis is relevant to the development of EU space security?

### 1.1.1 *The Common Security and Defence Policy*

In the context of space security, the correct legal basis upon which to rely might, at first glance, appear to be quite clear. After all, the EU has adopted a Common Security and Defence Policy (CSDP) in the treaty of Amsterdam in 1997 (Rehrl, 2010, 56) and therefore would be expected to cover the defence of the EU in space as well. The CSDP, as outlined in articles 42<sup>5</sup> to 46 TEU,<sup>6</sup> is aimed broadly at “peace-keeping, conflict prevention and strengthening international security in accordance with the principles of the United Nations Charter”<sup>7</sup>. This is a unique aspect of EU law for several reasons, the first being that it is not found in the Treaty on the Functioning of the European Union (TFEU), where

traditional EU competence resides. More significantly, its mode of governance is vastly different, relying on Council dominance and an intergovernmental approach requiring unanimity for decisions to pass<sup>8</sup>. In addition, whilst traditional competence is specified to be either exclusive, shared, or supporting, the CSDP does not explicitly fit within one of these categories (Wessel, 2013, 339), leaving room for considerable doubt and uncertainty as to the exact balance between Member States and the EU’s authority on the matter. It is to be noted that the CSDP is a field where only minimal integration can occur, leading to cooperation but not harmonisation. Indeed, while traditional competence often – but by no means always – relies on the EU’s ability to harmonise practice and integrate the various national efforts into a centralised EU policy, this is not the case with the CSDP. This, of course, has its benefits, particularly in ensuring the political salience of the EU’s efforts in that field, as it allows for significant progress to be achieved as a bloc while leaving the politically sensitive issue of military sovereignty intact.

### **Relevance for space security**

The CSDP’s objectives are vague and allow for interpretation. Indeed, many policies could be construed as pertaining to conflict prevention and strengthening international security. Are these objectives to be interpreted narrowly only to include actions with the direct consequence of improving security, or should

3. ECJ, *Federal Republic of Germany v European Parliament and Council of the European Union*, C-376/98 (5 October 2000), EU:C:2000:544.

4. ECJ, *Commission of the European Communities v Council of the European Union*, C-91/05 (20 May 2008), EU:C:2008:288 (hereafter ECJ), *European Communities v Council of the EU*.

5. Article 42, Consolidated version of the Treaty on European Union (2008), Official Journal 115/08, 38 (hereafter art. 42 TEU)

6. Article 46, Consolidated version of the Treaty on European Union (2016), Official Journal C 202/16, 40

7. Article 42(1) TEU.

8. Article 42(2) TEU.

they have a broader set of actions that might, in turn, lead to a more secure and peaceful world? A hint to what the treaties might be intended to allow comes in the tools made available to the EU to achieve those goals. Indeed, article 43(1) TEU mentions that the pursuit of these objectives may justify the use of the following “joint disarmament operations, humanitarian and rescue tasks, military advice and assistance tasks, conflict prevention and peacekeeping tasks, tasks of combat forces in crisis management, including peace-making and post-conflict stabilisation. All these tasks may contribute to the fight against terrorism, including by supporting third countries in combating terrorism in their territories”<sup>9</sup>. Thus, the EU is intended to limit the use of the CSDP to those actions that truly have a direct connection to the security of the Union, except humanitarian aid, which has an indirect impact on security by improving the living conditions abroad. While space security is not explicitly mentioned in the treaties, it is hard not to see how it might fall under this definition of security. Indeed, the development of defence in space – the presence of defence-related assets in outer space aimed at improving terrestrial defence – and defence of space – the tools used to keep space assets safe – are both useful to the general task of strengthening international security and promoting peace. Indeed, the first allows the earth-bound assets of EU defence to be more efficient in their task, which directly improves the objectives of the CSDP. As for the second, the defence of all space-bound assets against malicious intervention remains a security

matter, well within the treaty's objective to protect peace and international security.

### **1.1.2 The space policy**

However, there is also a side of this that can be attributed to the EU space policy in regular competence. After all, satellites used for defence in space also have a civilian application, and the defence of space is mainly used to protect space assets from accidental collisions. Therefore, it cannot be said that the EU simply can adopt the entirety of its policy through the CSDP, and because of that, this section must also consider regular competence. The relevant provision of the TFEU on space policy is article 189 TFEU<sup>10</sup>, which broadly gives the EU competence on matters of space research and exploitation. This is a shared competence; thus, the Member States retain the ability to develop their own space policy despite having granted similar powers to the Union. It is worth pointing out that when a policy is shared, it is frequently the case that the EU acts on a specific issue, ‘pre-empts’ that area, and thus prevents the Member States from addressing it entirely (Klamert, 2014, 116). However, in the context of space policy, the treaty expressly stipulates that any action on the EU’s part could not prevent the Member States from acting in the same area<sup>11</sup>, highlighting the importance of national space programmes for some Member States. In terms of procedure, the legislative process under this legal basis differs greatly from the CSDP. It is mandated that measures adopted under that provision are passed following the Ordinary Legislative Procedure (OLP), which dictates

9. Article 43(1), Consolidated version of the Treaty on European Union (2016), Official Journal C 202/16, 39.

10. Article 189, Consolidated version of the Treaty on the Functioning of the European Union (2016), Official Journal C 202/16, 131 (hereafter art. 189 TFEU).

11. Article 4(3), Consolidated version of the Treaty on the Functioning of the European Union (2008), Official Journal 115/08, 51.

an equal role for the European Parliament and the Council of Ministers as co-legislators, acting upon a proposal from the European Commission<sup>12</sup>. In article 189(2) TFEU, the EU is given a broad mandate to take any measure necessary to attain and succeed in the EU's space ambition, including creating agencies<sup>13</sup>. Indeed, rather than restrict the use of that competence to a particular set of actions, it calls for any measure necessary for the success of its primary objective. Of course, there are reasonable constraints on that principle, particularly the existence of other competencies, and the principles of subsidiarity<sup>14</sup> and proportionality<sup>15</sup>. In effect, these principles prevent the EU from acting on its competence if certain conditions are not fulfilled, particularly regarding the ability of Member States to achieve the desired outcome independently from the EU and the necessity of an EU measure to achieve the aim. As far as the first is concerned, it seems clear that the EU is better positioned to develop such infrastructure, due to the absence of space programmes in many Member States and the costs associated with their creation. Now, the question of necessity is a bit more contestable. One could argue that the measures required for a strong space security policy are not necessary to attain the EU's space policy. However, when one considers the actual language of that legal basis, it is clear that such concerns do not present an insurmountable obstacle. Indeed, article 189(1) TFEU includes "the efforts needed for the exploration and exploitation of space" as part of the ambitions of the EU, and attain-

ing those goals inherently require the development of dual-use satellites and the technology to protect them in a crowded outer-space.

### *1.1.3 Dual-use and incidental integration*

This is a debatable point, and exactly how much of the EU defence of space policy can realistically be developed under the regular competence is yet to be fully determined. There is, to this date, no case of the Court of Justice clarifying where exactly the boundary may lie between those neighbouring policies<sup>16</sup>. The truth is that due to the inherent dual-use nature of these tools, any progress in either the CSDP or article 189 TFEU will have repercussions for the other. This opens the possibility for incidental integration, which leans on the dual-use nature of relevant technology to develop a capacity in one of the two spheres while having an incidental integrative impact on the other. In that sense, one could build a sturdy space defence infrastructure in the regular competence, which allows for the creation of true EU assets, which can be used ad hoc under the CSDP competence in a relevant manner. It is to be noted that the CSDP's capacity is to be supplied by the Member States as per the treaties<sup>17</sup> and therefore cannot be the basis for creating a centralised EU force, including in terms of space defence. Thus, the only option for creating a true EU capacity is the regular competence found in article 189 TFEU and for the CSDP to create the appropriate legal framework to access the existing civilian technology when necessary.

12. Article 294, Consolidated version of the Treaty on the Functioning of the European Union, (2012), Official Journal C 326/12, 173.

13. Art. 189(2) TFEU.

14. Article 5(3), Consolidated version of the Treaty on European Union (2008), Official Journal 115/08, 18 (hereafter art. 5 TEU).

15. Art. 5 TEU.

16. Based on a search on the eur-lex website as of the 15th of November 2021

17. Art. 42 TEU

## 1.2 EU space security and agencies

As the previous part demonstrates, developing an EU space security policy is a complex endeavour, imperfectly covered by a mixture of defence policy and regular EU competence. Despite the complexity of this situation, some progress has been successfully made, most notably at the agency level. Broadly speaking, this area of EU policy is covered by two agencies, each with its specific function, goal, and legal basis.

### 1.2.1 The European Defence Agency

First, the European Defence Agency (EDA) is the main agency tasked with developing European military capability and acting as an EU military platform. Although some attempts had already been made at increasing EU cooperation in the field of defence, they were rather lacklustre and led to disappointing results, particularly in innovation and the development of EU technologies<sup>18</sup>. In contrast, the US forged ahead with increased spending on defence, prompting the EU industry to ask for a similar push at the EU level. This, combined with the increased push for more integration during that time, led to the establishment of this agency. This was originally established under the European Security and Defence Policy, the CSDP's predecessor, under Council Joint Action 2004/551/CFSP<sup>19</sup>, to improve the EU's crisis management and sustain the development of the ESDP. This goal shows both the early stage of develop-

ment of the EDA and the priorities of the period, where threats appeared more distant. Today, the EDA is regulated by Council Decision 2015/1835/CFSP<sup>20</sup> and has grown to include many aspects of EU defence, but with a remaining focus on developing EU capability. In its earlier days, outer space was not a dimension that was included within the aims of the EDA, which was limited to more traditional environments of defence such as air, sea, and land forces. However, by 2011, this new dimension was officially added to the EDA's mission, showing the critical development of space security in today's world<sup>21</sup>.

In contrast to the unanimity requirement in the rest of the CSDP<sup>22</sup>, the EDA is based on qualified majority voting. Despite that, this agency remains one of cooperation, with Member States' assets being used and encouraged to act in concert rather than creating an integrated force at the EU level. The EDA does not include Denmark, but the other Member States are part of the agency and are thus all represented in the agency's decision-making body: the Steering Board. In addition, that Steering Board includes a representative from the Commission, which has voting power alongside a representative from each Member State<sup>23</sup>. Therefore, although the EDA has retained intergovernmental governance, it is further integrated within the EU framework, as shown by the Commission's role in the process. In addition to the voting members, the Steering Board includes observing members without voting power but who are

18. European Defence Agency, "Our History", available at: <https://eda.europa.eu/our-history/our-history.html> [accessed: 13/11/2021].

19. Council of the EU, "Council Joint Action 2004/551/CFSP of 12 July 2004 on the establishment of the European Defence Agency", OJEU L 245/04.

20. Council of the EU, "Council Decision (CFSP) 2015/1835 of 12 October 2015 defining the statute, seat and operational rules of the European Defence Agency", OJEU L 266/15 (hereafter EDA decision).

21. Oikonomou, Iraklis, "The European Defence Agency and EU military space policy: Whose space odyssey?" Space Policy 28, no. 2 (1 May 2012).

22. Art. 42 TEU

23. Article 8, EDA decision.

represented in the decision-making process. This is the case of concerned parties such as a representative of the European External Action Service (EEAS) and the European Union Military Committee (EUMC), and also the Chief Executive of the EDA who, although not in a position to directly influence the decisions taken by the Steering Board, is directly affected by any vote. The EDA is something of a hybrid in terms of governance. On the one hand, it integrates some voice for the EU through the Commission and recognises the larger EU architecture by allowing other bodies such as the EEAS to attend meetings. On the other, it is an unmissable reality of that agency that it remains decidedly grounded in the CSDP governance, with Member States remaining the primary decision-making authority of any EDA policy.

### **1.2.2 European Union Agency for the Space Programme**

In contrast, the EUSPA is a traditional EU agency grounded in the regular competence of the Union under the TFEU. Its legal framework is EU regulation 2021/696<sup>24</sup>, which is based on Article 189(2) TFEU and therefore is rooted in the civilian dimension of space policy. It is important to note that the core of EUSPA existed before this year, under the name of European Global Navigation Satellite System (EGNSS) but was converted to the space programme recently as the EU's ambition on the matter has grown. This new agency regroups what had previously been five separate agencies into one, thus consolidating EU space policy and concen-

trating talents and resources. Unsurprisingly, this resulted in an agency with five principal objectives, a direct descendant from these five original policies: Galileo, EGNOS, Copernicus, SSA, and GOVSATCOM. These programmes will be detailed further in part 2 but represent the various dimensions of civilian policy with a potential military application. Seemingly, all the programmes on which the EUSPA has been granted authority have large defence implications in addition to the civilian dimension under which the EUSPA has natural control. This is a perfect illustration of the dual-use dimension of space assets and of the way these assets can be developed in an otherwise fragmented EU legal order. It is also to be noted that the EUSPA's legislative framework provides for all assets developed under the agency to be the property of the EU, which allows the development of a true EU policy on the matter rather than being dependent on assets shared by the Member States. It is still too early to understand how this agency will contribute to the EU space security policy or interact with the other relevant bodies. Still, it seems likely to be the conduit for sizeable developments in that field and a promising avenue through which the development of a strong, centralised defence dimension to space could be built.

The EUSPA is headed by an administrative board responsible for developing budgetary and work programme policy in governance. It is composed of a representative of each Member State, the European Commission, and the European Parliament (EP). The presence of the EP in this board is a clear contrast to

24. European Parliament and Council of the EU, "Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU", OJ L 170/21, 69.

the EDA, which adheres more closely to the CSDP model, and the more traditional mode of governance where the representatives of the people in the EP are granted increasingly significant roles. However, it is to be noted that the administrative board is meant to meet twice a year and thus cannot be said to make daily decisions regarding the space programme. This task is left to the executive director and their administrative organisation, without much interference, so long as they abide by the administrative board's decision.

### 1.3 The European Space Agency

While this chapter has so far considered the role of EU primary law and agencies on space security, one must also consider the impact of a non-EU body on this policy, namely the European Space Agency (ESA). Contrary to what the name might suggest, this is not an EU body but an unrelated international organisation that arose formally in the 1970s in response to the developing importance and technological advancement provided by space in the US and the Soviet Union<sup>25</sup>. At that time, the European Community had no competence to legislate on space policy, and therefore this development occurred outside of the EU framework. Currently, the ESA is adhered to by EU Member States, partner countries under the European Economic Area (EEA), and the United Kingdom<sup>26</sup>. However, other states with no formal membership can participate fully in some ESA projects, including Canada. The EU and the ESA have

a somewhat similar but crucially distinct membership, making any possible integration within the EU more complicated. There have been sustained efforts to do just that for several decades, but recent developments in the EUSPA make it seem like they are unlikely to succeed or even be a priority on the part of the Commission. The ESA is a significant organisation, with some estimates putting it only behind NASA in the field, which makes it one of the most consequential space agencies in the world (Cross, 2021, 31). This naturally attracted the attention of the EU, leading to a framework agreement to be formalised between the two, which took effect in 2004<sup>27</sup>, creating the environment for cooperation between the two organisations, through the exchange of information and technology, as well as cooperation in some projects. However, the EU was, and remains, interested in space policy from a primarily defence and security point of view, informed by the need for autonomy from our allies. In contrast, the ESA is almost exclusively interested in scientific developments and explicitly commits to the peaceful development of outer space in its treaty<sup>28</sup>. As a response to the slow start to cooperate, a Space Council was established by the Council of Ministers and the governance of the ESA to discuss plans for future developments in space to promote more meaningful exchanges and lessen duplication. This led to the adoption of a joint European Space Policy in 2007<sup>29</sup>, which codified the relationship between the two institutions and included a defence and security dimension for the first time. It was

25. European Space Agency, "History of Europe in space", available at: [https://www.esa.int/About\\_Us/ESA\\_history/History\\_of\\_Europe\\_in\\_space](https://www.esa.int/About_Us/ESA_history/History_of_Europe_in_space) [Accessed: 19/11/2021].

26. European Space Agency, "ESA Member States, Canada, Latvia, Lithuania and Slovenia", available at [https://www.esa.int/Education/ESA\\_Member\\_States\\_Canada\\_Latvia\\_Lithuania\\_and\\_Slovenia](https://www.esa.int/Education/ESA_Member_States_Canada_Latvia_Lithuania_and_Slovenia), [accessed: 19/11/2021].

27. Framework Agreement between the European Community and the European Space Agency (6 August 2004), Official Journal L 261/04, 64–68.

28. ESA Convention and Council Rules of Procedure (31 December 1975), SP-1337

29. Resolution on the European Space Policy (21 May 2007), Official Journal C 136/07, 1-5 (hereafter the space policy).

limited to proclaiming an interest in developing synergies between the civilian programme and defence. In fact, during that time, the joint efforts in that field were constantly described as civilian programmes under civilian leadership<sup>30</sup>, with acknowledged possible usefulness for the EU's defence policy. However, in the past decade, the relationship between began to sour, with the EU focusing ever more on the security perspective and growing in assertiveness in the process (Cross, 2021, 31). This translated to the end of the Space Council in 2010, the eventual creation of a new EU space policy independently from the

ESA in 2016 and culminating in the creation of the EUSPA in 2020. However, despite the growing distance between the two institutions, the remaining dialogue has led to another significant international agreement, the Framework Agreement between the ESA and the EDA, which came into force in 2011<sup>31</sup>. This agreement is particularly significant in light of the ESA's reluctance towards the defence dimension of space exploration and the inherent security function of the EDA. This agreement also included a dimension requiring the protection of classified information by the respective parties, allowing for the safe



*satellite floating through space above Europe at night*

*Date: 05 April 2018*

*Picture by: Tifonimages*

<sup>30</sup>. The space policy

<sup>31</sup>. Administrative arrangement between the European Defence Agency and the European Space Agency concerning the establishment of their cooperation (20 June 2011), <https://eda.europa.eu/docs/default-source/documents/aa---eda---esa-20-06-11.pdf>

sharing of sensitive, defence-related information. Interestingly, this agreement restated the importance of the synergy between civilian technology and military use instead of searching for deeper cooperation and integration of the ESA into the EU's defence aspiration. This may be why the EU has taken the path of dissociating itself from its partner, deciding to shape its own policy on space security, purely within the EU framework. Today, the EU seems to regard the ESA's role simply as technological and scientific developments<sup>32</sup> rather than a true partner in developing a security dimension for European space ambition.

## Conclusion

The EU space security policy combines its defence and space competence, creating a patchwork of different policies, agencies, and programmes relevant to the field. Indeed, although the natural dimension must be that

of the CSDP, the dual use of any relevant technology makes it particularly prone to the civilian approach under article 189 TFEU. Because of that, there is the potential for developing a true EU system, rather than the mere cooperation of Member States' forces under the defence policy. It has been argued that the EU should continue to integrate through civilian policy, which will allow it to develop a sturdy defence apparatus oriented towards space without relying on cooperation between distinct and sometimes incapable Member States. This approach can somewhat already be seen by the recent direction taken by the EU, with its disassociation from the ESA and the turn to an EU-only policy through the EUSPA. In the end, however, the foreseeable future will always include some function for the EDA and the CSDP, as is readily demonstrated by the current projects being undertaken at the EU level in space security.

## CURRENT POLICIES AND PROGRAMMES

As we mentioned in the first chapter, the legal boundaries for the EU's action in the field of space are ductile due to the nature itself of the sector concerned: space, above all the other security-related areas of action of the European Union, underpins on the concept of dual-use. In the present case, dual-use could thus be approached from two distinct perspectives: first, the implications of innovation in the Space sector bear an ambivalent relevance for the

military and commercial industries, so that the developments of one strand are inherently linked to the destinies of the other (one can consider the crucial innovations in earth observation systems, benefitting the commercial and military sectors equally); on the other hand, assets that are not explicitly meant to be used as military tools, can be easily deviated from their initially intended use and employed as an unconventional instrument

32. Mai'a K. Davis Cross, "United Space in Europe? The European Space Agency and the EU Space Program," *European Foreign Affairs Review* (2021): 14, <http://www.kluwerlawonline.com/api/Product/CitationPDFURL?file=Journals/EERR/EERR2021025.pdf>.



of disruption (creating space debris through in-orbit-collisions, for instance, could be taken as a simple and still very effective example). Hence, the analysis of the EU's policies in this area cannot disregard the concept. The structure itself of the institutional apparatuses and initiatives that the Union has put in place during the years confirm the clear consideration of such elements, as we will see later in this chapter.

Once the underlying element of dual-use has been clarified, another crucial distinction shall be traced to better frame the action of the Union and understand the current trends of the space industry: that between 'Security in space' and 'Security from space'. As it will be

possible to notice in the following sections of this study, all the space programmes bearing a security relevance that international actors are currently operating can be referred either to the necessity to provide support or strategically enable on-earth operations, as in the case of observation satellites, secured telecommunication, early awareness systems – the so-called 'space support of operations' (SSO)<sup>33</sup> –, or operations directly in space, both to defend and menace space-based assets – operating 'Security in space' through anti-satellites weapons, countermeasures to contain it, etc.<sup>33</sup>

After having focused on the blurred borders of the EU's competencies, it will be interesting to consider how the Union has materially



*Soldier using satellite technology to communicate and coordinate attacks, demonstrating the value of GOVSATCOM*

*Date: 03 December 2017*

*Picture by: Gorodenkoff*

33. EEAS, Press release, "Remarks by the High Representative/Vice-President Josep Borrell at the 13th European Space Conference", [online], Available at: <https://www.pressclub.be/press-releases/eeas-space-remarks-by-the-high-representative-vice-president-josep-borrell-at-the-13th-european-space-conference/>.

Source: Stockbrand, <https://www.istockphoto.com/fr/photo/gp8tC3%41vration-militaire-action-les-soldats-%C3%A0-l'idee-de-grade-militaire-portable-gm8290130090-245205517>

intervened to foster its space capabilities and nurture the space industrial base throughout the territory of Member States. A first paragraph will thus be dedicated to the sources of financing that the Union has set up to fuel research and development programmes in the space sector, with a specific accent on the European Defence Fund. After having pointed out how the Union is investing in new projects while aiming at maintaining a first-row position in the space industry, we will consider the projects having an impact on European security and defence capabilities that are currently operated and are expected to be launched in the next years by the Union; this will include the successful programmes Galileo and EGNOS, the Copernicus programme, the recent GOVCOMSAT for secured telecommunication, in addition to the relevant programmes that Member States are developing in the frame of reference of Permanent Structured Cooperation.

## Financing EU space policy

The logical premise to analyse the sources of funding for EU's space activities is the consideration of the structures that have been authorised to administrate such resources.

The frame in which the Union operates was renewed in 2019, when the European Commission decided to set up the new Directorate-General for Defence Industry and Space (DG DEFIS), giving special relevance to all the topics related to the sector, previously

managed under DG GROW.<sup>34</sup>

The creation of DG DEFIS did not only correspond to a formal recognition of the importance of the themes linked to the competitiveness of the space and defence industries in Europe: the implementation of a new managing structure was about to be followed by a systematic re-organisation of the policy initiatives, and the opening of a new season of strong commitment of the EU in the sector; above all, the creation of the European Defence Fund (EDF) and the launch of the European Union Space Programme 2021, deserve a special mention.

The European Union Space Programme 2021 shall be considered the backbone of the reorganisation process that the Union has been pursuing since the launch of the Space Strategy for Europe of 2016;<sup>35</sup> It answers the necessity to attenuate the complexities that have been described in chapter one, bringing under a single structure most of the space initiatives that the Union has undertaken. For this reason, the European Space Programme, launched in 2021, has been accompanied by the creation of the EU Agency for the Space Programme (EUSPA), bringing together the European GNSS Agency (GSA) – responsible for the Galileo and EGNOS programmes' operations –, the management of the Copernicus programme, and the new European Union Governmental Satellite Communications (GOVSATCOM) programme, proposed under the EU Global Strategy 2016 to boost EU's Crisis Management capabilities

34. Nicolas Gros-Verheyde, (2019), "The creation of a DG Defence and Space: a cultural revolution", B2, [online], Available at: <http://www.bruxelles2.eu/2019/12/the-creation-of-a-dg-defence-and-space-a-cultural-revolution/?lang=en>.

35. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 26/10/2016, COM(2016)705, Available at: [https://ec.europa.eu/transparency/documents-register/detail?ref=COM\(2016\)705&lang=en](https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2016)705&lang=en).

and enhance secured communication assets.<sup>36</sup> The EUSPA falls under the political direction of the Commissioner for the internal market. It is considered an integral part of the DG DEFIS, even though, as we have remarked, most of the space assets controlled by the agency can be employed for dual-uses, meaning that the EUSPA often operates assets that are employed to pursue the objectives of EU's policies other than safeguarding and developing the internal market (e.g. the earth observations derived from Copernicus may be employed to provide critical data for the management of a crisis in the frame of CSDP or facilitate FRONTEX's activity in monitoring the borders of the Union).<sup>37</sup>

The launch of the European Space Programme 2021, besides bringing coherence to the management of EU's space assets, as we have anticipated, also corresponded to the allocation of new, substantial resources.

With the agreement of the Parliament and the Council, in April 2020, the European Commission has allocated for the seven years of the budgetary cycle 2021-2027 a total of EUR 14.8 billion, operating an increase of almost EUR 3.5 billion in comparison to the 2014-2020 Multiannual Financial Framework (MFF), and providing the necessary resources for both the management of the existing flagships (Galileo and EGNOS, in the field satellite navigation, Copernicus for earth observation, and the EU Space Surveillance and

Tracking activity) and the launch of a new initiative in the field of secured communication – the GOVSATCOM.<sup>38</sup>

As we will see more thoroughly in the last chapter of this study, the European Space Programme 2021 can be compared neither in terms of budget allocations nor in terms of goals, to the level of ambition that other key players, such as the United States, have set for their own space programmes. The annual allocation for NASA's activity for 2020, for instance, amounts to roughly USD 23 billion, which does not include the additional annual budget allocated for the US Space Force activities and programmes.<sup>39</sup>

Notwithstanding these macroscopic differences in terms of financial availability, the inherent multi-level fragmentation of the European Space sector referred to in the first chapter shall be recalled to see how significant such reorganisation is for the EU's ambition in space.

The EU space programme 2021 represents one of the many tiles of EU's action in this area, namely the one aimed at operating existing assets and programmes; for all aspects related to innovation and development of ground-breaking technologies that may benefit both the European space economy and European military capabilities, we should turn our eyes towards the Horizon Europe programme and the European Defence Fund, where the concept of dual-use shows its cen-

36. Juan Pons, (2021), "Ursula von der Leyen gets the EU Space Agency off the ground with 14.8 billion euros", Atalayar, [online], Available at: <https://atalayar.com/en/content/ursula-von-der-leyen-gets-eu-space-agency-ground-148-billion-euros>.

European Union Space Programme Agency, (2019), "From GSA to EUSPA: space transforming business and the economy", [online], Available at: <https://www.euspa.europa.eu/newsroom/news/gsa-euspa-space-transforming-business-and-economy>.

37. Frontex, "Situational awareness and monitoring", [online], Available at: <https://frontex.europa.eu/what-we-know/situational-awareness-and-monitoring/information-management/>.

38. European Commission, "Funding programmes - Heading 1a: Competitiveness for growth and jobs", [online], Available at: [https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2014-2020/funding-programmes/heading-1a-competitiveness-growth-and-jobs\\_en#european-fund-for-strategic-investments-efsi-european-investment-advisory-hub-dial-eu-ropean-in-Regulation-\(EU\)-No-377/2014-establishing-the-Copernicus-Programme](https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2014-2020/funding-programmes/heading-1a-competitiveness-growth-and-jobs_en#european-fund-for-strategic-investments-efsi-european-investment-advisory-hub-dial-eu-ropean-in-Regulation-(EU)-No-377/2014-establishing-the-Copernicus-Programme), [online], Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014R0377>.

Regulation (EU) No 1285/2013 on the implementation and exploitation of European satellite navigation systems, [online], Available at: <https://eur-lex.europa.eu/eli/reg/2013/1285/oj/locale-en>; Fondation Robert Schuman, (2021), "EU Space policy: an underestimated success", European Issue No. 611, [online], Available at: <https://www.robert-schuman.eu/en/european-issues/0611-eu-space-policy-an-underestimated-success>.

39. National Aeronautics and Space Administration (NASA), (2020), "FY 2020 Budget Request", [online], Available at: <https://www.nasa.gov/content/fy-2020-budget-request>.

trality.

With a budget of EUR 95.5 billion – coming from both the MFF and the Next Gen EU – for the 2021-2027 period, Horizon Europe represents the main EU fund aimed at bolstering innovation in the territory of the Union and the support to the space sector, together with digital and industrial ones, is reckoned in Horizon Europe Strategic Plan as crucial to maintaining the EU competitive and autonomous while facing major global challenges.<sup>40</sup>

The EUSPA has launched the first call for proposals of EUR 32.6 million in November 2021. It will provide financing for projects developing innovative applications for the data derived from existing EUSPA programmes (EGNOS, Galileo, Copernicus).<sup>41</sup>

The strategic plan 2021-2024 for Horizon Europe itself, in a clear acknowledgement of the positive impact of private-sector innovations on the Defence capabilities, foresees the combination of its resources with other sources aimed specifically at co-financing security and defence research and development, such as the European Defence Fund.<sup>42</sup>

In this respect, the difference between these two tools at the disposal of the Commission is clear: whilst Horizon Europe only aims at supporting – with funding rates that could cover up to 100% of the project costs – all civilian actors proposing innovative applications or programmes, be it of commercial, scientific or security relevance, the actions

eligible for financing under the European Defence Fund are only those that can support cutting-edge technologies bringing added value to the security and defence sector.

The European Defence Fund (EDF) is thus the second sectorial leg of the EU's fiscal stimulus to bolster its technological competitiveness. The European Commission will integrally manage the fund through the new DG DEFIS, and the resources dedicated to it by the MFF have significantly been decreased in comparison to the initial Commission's proposal of EUR 13 billion for the 2021-2027 budgetary cycle, going down to EUR 7.953 billion in current prices.<sup>43</sup>

Many have criticised the very limited impact that such a financial envelope could have on EU's security and defence industry, even though it should be noted how the EDF is the first EU initiative of this kind – except for its 'Preparatory Action on Defence Research (PADR) – dedicated integrally to the often-neglected industrial dimension of security and defence integration. On top of this, the nature of the EDF makes it a scalable instrument, and its first budgetary cycle will likely be seen as a test-run to assess the capacity of the EU's fiscal stimulus to bring innovation to the European Defence Technological and Industrial Base (EDTIB).

Finally, to better frame the EDF and its *raison d'être* in the context of EU's space policy, it will be of interest to notice the peculiar connection that has been established between

40. European Commission, (2020), "Horizon Europe", [online], Available at: [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe\\_en?European\\_Commission\\_12021](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en?European_Commission_12021), "Horizon Europe Strategic plan 2021-2024", pp. 66-67, [online], Available at: <https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/3c6ff074-8ac3-11eb-b85c-01aa75cd71a1>.

41. European Union Space Programme Agency (EUSPA), Press Release, EUSPA/PR/21/04, (2021), "EUSPA launches Horizon Europe call to transform the digital economy, increase the Union's resilience and support the Green Deal", [online], Available at: [https://www.euspa.europa.eu/sites/default/files/content/press\\_releases/euspa\\_horizon\\_call.pdf](https://www.euspa.europa.eu/sites/default/files/content/press_releases/euspa_horizon_call.pdf).

42. European Commission, (2021), "Horizon Europe Strategic plan 2021-2024", p. 9, [online], Available at: <https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/3c6ff074-8ac3-11eb-b85c-01aa75cd71a1>.

43. European Parliamentary Research Service (EPRS), (2021), "The European Defence Fund", [online], Available at: [https://www.europarl.europa.eu/RegData/etudes/ATAG/2021/690558/EPRS\\_ATAG\(2021\)690558\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2021/690558/EPRS_ATAG(2021)690558_EN.pdf).

the European Defence Fund and another pivotal initiative that the Union has introduced in its Security and Defence toolbox since the launch of its 2016 Global Strategy – the Permanent Structured Cooperation (PESCO). Indeed, the EDF and PESCO are expected to create a powerful collaboration aimed at facilitating cooperation among Member States' industrial actors for the research and development of relevant security and defence innovations, including in the field of Space technologies. The link between the two lies in the more advantageous financing conditions that the EDF accords to eligible programmes developed under PESCO, for which an additional 10% of funding is assured (the so-called 'PESCO Bonus').<sup>44</sup>

From the brief description provided above, the picture appears to be dotted by intertwined sources of financing, each one targeting a specific aspect of space industrial basis. To maximise the advantages of dual-use and make the best out of the possible interactions between two or more sources of financing, the European Commission's 'Action Plan on Synergies between civil, defence and space industries' – tabled in February 2021 – has thus set the ambitious goal of giving a coherent direction to the entire bundle of funds, while promoting the cross-fertilisation of commercial/civil and security sectors.<sup>45</sup>

To this end, the Action Plan also considers the Connecting Europe Facility (CEF), or other EU's cohesion policies programmes, that could be employed to support R&D of defence-related projects throughout the Union.

It thus elaborates a series of actions to pursue coherence, ranging from enhancing the Commission's internal programmes to promote synergies, launching technology roadmaps to develop disruptive innovations, and promoting existing standards to facilitate interoperability.<sup>46</sup>

In conclusion, it appears hard to materially quantify the financial pledging that the Union is planning to pump in the space sector – through one channel or the other – over the next few years, given the transversal use that could be made of space assets and the relevance that these can have for the cohesion, industrial, infrastructural, security and defence policies. It would be even more difficult to give a measure of the overall level of investments in the European Union if we not only had to consider the stimulus coming from the EU, but also the financial commitments of every Member State, which conducts their own space policy and follow their own policy preferences.

As for many other policies falling within shared competencies, fragmentation prevents maximising advantages. The initiatives that we have considered so far – the European Union Space Programme 2020, the European Defence Fund, Horizon Europe, and the Action Plan on Synergies – go in the direction of filling this gap and identifying the baskets in which the Union and Member States should put their eggs with an eye to the global trends and the mutual strengthening of commercial and defence sectors.

It does not come as a surprise to see how other

44. Edouard Simon, Alessandro Marrone, (2021), "Linking PESCO and the EDF - Institutional Mechanisms and Political Choices", Armament Industry European Research Group (ARES), Report No. 66, p. 24.

45. European Commission, (2021), COM(2021) 70 final, "Action Plan on Synergies between civil, defence and space Industries", [online], Available at: [https://ec.europa.eu/info/sites/default/files/action\\_plan\\_on\\_synergies\\_en\\_1.pdf](https://ec.europa.eu/info/sites/default/files/action_plan_on_synergies_en_1.pdf).

46. Ibid. pp. 5-17.

policy initiatives, recalling the main features of the ones we have analysed so far, have already been adopted by other actors to avoid dispersion of resources: the Technology Reinvestment Project (TRP), implemented under the US Advanced Research Project Agency (ARPA) in the mid-nineties, went down the road of both leveraging commercial investments in technology for the Department of Defence and providing new commercial applications to defence technologies so that the sectors could be more and more integrated while making the most efficient use possible of research and development investments.<sup>47</sup> Now that Union's space policy has taken the direction of defragmentation and the re-organisation of resources, the ball is in the Member States' court: the EU can steer its resources to follow its strategic direction, but a truly competitive and innovative space industry – entailing a cutting-edge defence space sector – needs the reconciliation of Member States' priorities and resources. Therefore, if the Action Plan on synergies aims at giving coherence to the centralised funds managed by the Commission, other programmes that are part of the EU's Common Security and Defence Policy (CSDP) may potentially intervene. The European Defence Agency (EDA), for instance, facilitates cooperation in the frame of Permanent Structured Cooperation and identification of priorities through the periodical drafting of a Capability Development Plan (CDP) and the new Coordinated Annual Review on Defence (CARD).<sup>48</sup>

It thus appears clear that a successful European space policy can only rely on strong commitment of Member States under these programmes, a coherent interaction between the tools adopted in industrial development and innovation and the ones falling within the area of the CSDP.

## 2.2 The EU's current initiative: the keystone of dual-use

### 2.2.1 The European Union Space Programme

The EU action in the space sector is commonly considered a successful experience and a positive effective integration model.<sup>49</sup>

As a general remark, however, it is necessary to clarify that all efforts of the Union in this area have targeted the building of economic and strategic enablers that could benefit the internal market and consumers while maintaining the independence of the Union and its Member States from other actors. In this sense, concerning the security dimension, we can say that the Union has focused entirely on 'Security from Space', according to the definition we have given to this concept in the introductory part of this chapter.

In the first chapter of the study, we have remarked how the provisions of the Treaties are rather clear on the possibility for the EU to acquire and operate military assets – necessary premise to the building of a 'security in space' dimension of EU's space policy: Article 42 par. 1 of the Treaty on the European Union, when regulating the conduct of

47. Nunzia Paradiso, (2013), "The EU Dual Approach to Security and Space - Twenty Years of European Policy Making", European Space Policy Institute (ESPI), Report No. 45, pp.13-15.

48. Sven Biscop, (2020), "European Defence and PESCO: Don't Waste the Chance", EU Integration and Differentiation for Effectiveness and Accountability (EUIDEA), Policy paper No. 1.

49. Fondation Robert Schuman, (2021), "EU Space policy: an underestimated success", European Issue No. 611, [online], Available at: <https://www.robert-schuman.eu/en/european-issues/0611-eu-space-policy-an-underestimated-success>.

military operations falling in the area of the Common Security and Defence Policy, provides that “performance of these tasks shall be undertaken using capabilities provided by the Member States”. The rule has universally been interpreted as an interdiction for the EU to acquire military assets and an obligation to rely entirely on Member States’ capacities.

As current events show us, military drills and operations in space have become a common occurrence: the Anti-Satellite weapon (ASAT) test conducted by the Russian Armed forces in November 2021 has exposed, once again, the fragile equilibrium underpinning the access to space and the threat that can be easily posed to it.<sup>50</sup>

Thus, even if the Union cannot dispose of any land-based or space-based tool to contain or neutralise purely military threats as the abovementioned, and it has to rely completely on Member States capabilities for the active protection of its infrastructure, it can, however, monitor and assure the safety of assets through its Space Situational Awareness (SSA) capability.

European SSA is a key part of the European space policy, and it shows very well the multi-level and interlinked landscape of actors that has been represented previously. Division of labour characterises its structure: the European Space Agency, for instance, has been engaged since 2009 in the development of the technological capabilities that could provide its Member States with all necessary means to be independent and effective, focusing on those items necessary to predict and mitigate the effects of space weather (Space

Weather Segment), to observe asteroids and comets whose orbital trajectory passes by heart (Near-earth object Segment), and to detect and predict the direction of man-made debris in orbit around Earth (Space Surveillance and Tracking Segment).<sup>51</sup>

Traditionally, the Space Surveillance and Tracking (SST) has been the most developed among the three strands mentioned, and the European Union plays a determining role in operating Europe’s SST capabilities.

Since 2014, pursuant to Decision No 541/2014/EU, a consortium of seven Member States of the European Union – France, Germany, Italy, Poland, Portugal, Romania and Spain – was constituted to achieve the highest level of cooperation possible through information and data sharing, whilst with the conclusion of the ‘SST Implementation agreement’ in 2015, the ‘SST cooperation’ or ‘EUSST’ was created between this consortium and the EU Satellite Centre (EU SatCen).

The EUSST is now the principal leg of the EU space programme Space Situational Awareness capacity, and it is tasked in particular of:

- 1) Collision Avoidance (CA), providing a risk assessment of collision between spacecraft or between spacecraft and space debris;
- 2) Re-entry Analysis (RE), assessing uncontrolled re-entry of man-made space objects into the Earth’s atmosphere and generating related information; and
- 3) Fragmentation Analysis (FG), detecting and characterizing in-orbit fragmentations, break-ups, or collisions.

The tasks are crucial: be the collisions averted accidental or the product of aggressive

50. Chelsea Gohd, (2021), “Russian anti-satellite missile test was the first of its kind”, Space.com, [online], Available at: <https://www.space.com/russia-anti-satellite-missile-test-first-of-its-kind>.

51. European Space Agency (ESA), “SSA Programme overview”, [online], Available at: [https://www.esa.int/Safety\\_Security/SSA\\_Programme\\_overview](https://www.esa.int/Safety_Security/SSA_Programme_overview).

manoeuvres, the necessity of securing space infrastructure from in-orbit incidents has become progressively more central in the last years due to the increasing pollution of earth orbits and the risks of collision cascading (also called Kessler effect).<sup>52</sup>

EUSST's early awareness, for instance, has been determinant in March 2021, when the EUSPA was forced to reposition its Galileo's GSAT0219, at risk of collision with an inert Ariane 4 upper stage launched in 1989.<sup>53</sup>

Thus, Space Surveillance and Tracking have two main functions which are worth recalling once again:

- 1) maintaining an accessible and secure outer space, which is continuously endangered as human activity increases; and
- 2) as demonstrated by the latter example, the protection of EU's satellites with a fundamental utility for consumers in the Internal Market and the everyday functioning of the European Union's and Member States' Institutions.

In the latter instance, the Galileo programme has no rivals of strategic and economic relevance.

Galileo – also called Europe's Global Navigation Satellite System (GNSS) – is a constellation of 22 Satellites, as of 2021, positioned in Medium Earth Orbit (MEO) and aimed at providing high accuracy positioning data. The project was launched in 1999 by the Europe-

an Union, in collaboration with the European Space Agency, and has had an estimated cost of development of around EUR 10 billion.<sup>54</sup>

The security implications of Galileo's services could be ascribed to two different categories:

- First, the maintaining of independence from other State-actors as the United States and Russia, which could count on the Global Positioning System (GPS) the first, and the Global Navigation Satellite System (GLONASS) the second to have accurate positioning and navigation data. Relying entirely on GPS and GLONASS has evident implications for the security of the Union and its Member States which, in case of political tension or conflict, could be cut off from these services by the States providing for it; and<sup>55</sup>

Second, high accuracy navigation and positioning is an important enabler for military and civilian missions and operations. The GNSS, thanks to its state-of-the-art technology and its Public Regulated Service (PRS) – an encrypted navigation service more robust and resilient to malicious interferences – can now provide Member States and the Union with precious data for the conduct of these activities.<sup>56</sup>

The services provided by Galileo can also benefit from an increased accuracy thanks to the European Geostationary Navigation Overlay Service (EGNOS), Europe's regional satel-

52. European Union Space Surveillance and Tracking (EUSST), "EU SST ready to be part of the new EU Space Programme", [online], Available at: <https://www.eusst.eu/newsroom/eusst-ready-new-eu-space-programme/>.

Decision No 541/2014/EU of the European Parliament and of the Council of 16 April 2014 establishing a Framework for Space Surveillance and Tracking Support, [online], Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014D0541>.

Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme, [online], Available at: [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2021.170.01.0069.01.ENG\\_](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2021.170.01.0069.01.ENG_).

53. European Union Space Programme Agency (EUSPA), (2021), "Galileo satellite performs collision avoidance manoeuvre", [online], Available at: <https://www.euspa.europa.eu/news-room/news/galileo-satellite-performs-collision-avoidance-manoevrue>.

54. European Parliament Research Service (EPRS), (2017), "Galileo: Overcoming obstacles History of EU global navigation satellite systems", Briefing, [online], Available at: [https://www.europarl.europa.eu/RegData/etudes/BRIEF/2017/599406/EPRS\\_BRIEF\\_282017%29599406\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIEF/2017/599406/EPRS_BRIEF_282017%29599406_EN.pdf).

55. Laurence Nardon, Christophe Vener, "Galileo: the long road to European autonomy", Institut français des relations internationales (IFRI), [online], Available at: <https://www.ifri.org/sites/default/files/atoms/files/galileo%20long%20road%20to%20european%20autonomy.pdf>.

56. European Union Space Programme Agency (EUSPA), "Public Regulated Service (PRS) equals public security", [online], Available at: <https://www.gsc.europa.eu/news/public-regulated-service-prs-equals-public-security-3>.



lite-based augmentation system (SBAS).

The EGNOS programme is inherently linked to the Global Navigation Satellite System, as it consists of a series of transponders installed on some of the Galileo Satellites to improve the performance of GNSS in a determined geographic area, namely the European continent. EGNOS signals are also expected to be extended to the European Neighbourhood, as the European Commission has already destined resources for this purpose through its European Neighbourhood Instrument – another demonstration of the various sources of financing that the European Space policy can have access to.<sup>57</sup>

Even though EGNOS is mainly employed for commercial use – improved accuracy and reliability of GNSS positioning information, used for navigation services to aviation, maritime and land-based users –, the enhanced continuity and availability of the signal provided results to be a precious asset in the occurrence of a crisis in the European territory and soon, in its close neighbourhood.<sup>58</sup>

The capacity of maintaining an uninterrupted flow of information and assuring business continuity in a period of instability is the underlying objective of another EU initiative, which is also the most recent programme launched in the frame of the EU Space Programme: the European Union Governmental Satellite Communications (GOVSATCOM). In comparison with the projects that we have briefly analysed in this section, the GOV-

SACOM bears limited importance for the commercial sector but is a crucial security function for both Member States and the European Union.

The European Council of December 2013 officially launched the political input to the development of the next generation of secure Satellite Communication for the Union and Member States, whilst the Global Strategy 2016 identified the necessity for an updated secure and resilient communication system as part of the Union's effort in the domain of Common Foreign and Security Policy).<sup>59</sup>

To corroborate the security relevance of GOVSATCOM, it will be interesting to notice how the European Defence Agency has determined the technological and operational requirements for the project and, in 2017, the Agency's steering board launched a GOVSATCOM-demo that is currently demonstrating the services that could be delivered through the programme while relying on existing SATCOM resources.<sup>60</sup>

Hence, in this phase, the programme relies on the 'pooling & sharing' of those assets put at the disposal of Member States, with an eye to defragmentation of secure SATCOM in Europe. The European Space Agency also plays a role in this sense through its 'GOVSATCOM precursor' programme, which is expected to introduce technological innovation to the sector and assure a good level of non-dependence from foreign technologies and assets.<sup>61</sup>

Ultimately, the EU Space Programme 2020

57. Council Decision authorising the opening of negotiations on an agreement between the European Union and each individual European Neighbourhood Policy South country for the purpose of agreeing the terms and conditions for extending the provision of the European Geostationary Navigation Overlay Service (EGNOS) over European Neighbourhood Policy, COM(2018) 776 final, [online], Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018PC0776&from=EN>.

58. European Union Space Programme Agency (EUSPA), (2021), "What is EGNOS?", [online], Available at: <https://www.euspa.europa.eu/european-space/egnos/what-egnos>.

59. European Council Conclusions, 19/20 December 2013, EUCO 217/13, [online], Available at: <https://data.consilium.europa.eu/doc/document/ST-217-2013-INIT/en/pdf>; European Union External Action Service (EEAS), (2016), "European Union Global Strategy 2016 (EUGS 2016) - Shared Vision, Common Action: A Stronger Europe", p. 45, [online], Available at: [https://ec.europa.eu/archives/docs/top\\_stories/pdf/eugs\\_review\\_web.pdf](https://ec.europa.eu/archives/docs/top_stories/pdf/eugs_review_web.pdf).

60. Rafał Borek, Kaja Hojce, Paweł Chodostewicz, (2020), "GOVSATCOM makes the EU stronger on security and defence" Security & Defence quarterly, Vol. 28.

61. Sophie Pireaux, (2020), "GovSatcom - Practical and technical information", BELSPO, [online], Available at: [https://www.belspo.be/belspo/space/euGovSatcom\\_tech\\_en.stm](https://www.belspo.be/belspo/space/euGovSatcom_tech_en.stm).

recognises three main macro-areas of employment for the GOVSATCOM:

- Surveillance (borders, maritime areas, for specific military operations of both the EU and Member States);
- Crisis management, when these activities require secure and resilient communication; and

Support to key infrastructures (diplomatic services, transport, and space infrastructures). Given the range of applications that results from the options proposed, one can foresee an extensive use of these communication services, be it to respond to specific threats or support the Union in the implementation of other strategic actions (among other, the EU Arctic policy or its Maritime Strategy, as envisaged by EUSPA).<sup>62</sup>

The European Earth Observation Programme, also called Copernicus, concludes our brief recapitulation of the Union's programmes currently operating under its Space Programme. As for the previous cases, Copernicus covers a broad range of policy areas, and its data have a transversal application to six thematic areas: land, marine, atmospheric, climate change, emergency, and security observations.

In the previous sections of this study, the data derived from earth observation were often taken as an example of the indispensable importance of space activity to on-earth, security-related operations. Indeed, the data derived from Copernicus' observation can display an impressively complex number of uses for EU's and Member States' security and defence pol-

icies, ranging from the monitoring of critical infrastructures, support to evacuation operations, assessing conflict damages, gathering crucial military intelligence data.

The programme, however, originates from a more sectoral environmental observation project, the 'Global Monitoring for Environmental Security (GMES)', developed by the European Commission and the ESA starting from 1998 to monitor the effects of climate change and later transformed in 2014, with Regulation (EU) No 377/2014, in today's Copernicus.<sup>63</sup> According to the European Commission estimations, since the beginning of the development, in 1998, the programme's total cost has been around EUR 6.7 billion, the majority of which has been borne by the European Union.<sup>64</sup>

Copernicus now consists of two segments: the earth-based one, composed of a series of sensors and ground stations, and the space-based segment, composed of a constellation of dedicated satellites – the Sentinels – and a series of third-party satellites normally identified as Copernicus Contributing Missions.

Since signing a delegation agreement between the SatCen Director and the Director-General for Internal Market in 2016, the EU SatCen has operated a Copernicus satellite fleet to conduct activities relevant to the Union's external action. The SatCen then collects the observations and elaborates the information, delivering a set of different analytical products – ranging from one-page 'quick reports' or 'Briefing notes' to the more exhaustive 'Map

62. European Union Space Programme Agency (EUSPA), (2021), "GOVSATCOM", [online], Available at: <https://www.euspa.europa.eu/european-space/govsatcom>.

63. Regulation (EU) No 377/2014 of the European Parliament and of the Council of 3 April 2014 establishing the Copernicus Programme, [online], Available at: <https://op.europa.eu/en/publication-detail/-/publication/976616c8-c67c-11e3-b74c-01aa75ed71a1>.

64. European Commission, (2021), "Heading 1A: Competitiveness for growth and jobs - European Earth Observation Programme (Copernicus)", Programme Statements, [online], Available at: [https://ec.europa.eu/info/sites/default/files/about\\_the\\_european\\_commission/eu\\_budget/db\\_2021\\_programme\\_statement\\_european\\_earth\\_observation\\_programme\\_copernicus.pdf](https://ec.europa.eu/info/sites/default/files/about_the_european_commission/eu_budget/db_2021_programme_statement_european_earth_observation_programme_copernicus.pdf).

books' and 'Country map coverage' (CMC).<sup>65</sup> Based on this, it is worth noticing how the services provided by Copernicus continuously inform the EU's decision-making in the field of external relations, providing it with a reliable and efficient source of intelligence that may be critical for the conduct of EU's Common Foreign and Security Policy on one side, and for the planning of all set of missions and operations that could be undertaken under CSDP on the other.

In November 2021, regarding the tensions between the EU, Belarus, and Russia, Copernicus has shown to be a decisive source of information for the EU and Member States, in particular thanks to the delivery of timely information on the aggressive manoeuvres conducted by Russia on the Ukrainian border.<sup>66</sup>

### 2.2.2 Permanent Structured Cooperation and the advantages of enhanced cooperation.

To conclude the chapter on the current security-related programmes operated by the European Union and Member States, it appears appropriate to consider the cooperative initiatives currently being developed by Member States as part of the Permanent Structured Cooperation (PESCO).

PESCO is a peculiar form of enhanced cooperation that the Treaty of the European Union envisages in Security and Defence Policies. Article 42 Par. 6, 46 and Protocol No. 10 attached to the Treaty of the European Union regulate the access to what has been designed to be the most flexible form of enhanced co-

operation, articulated to equip Member States with joint Training, Land, Maritime, Air, Cyber, Enabling and Space capabilities or technologies.<sup>67</sup>

Based on the decision establishing the process, adopted by the Council in December 2017, Member States participating in PESCO – currently, 25 out of the 27 – can now group-up in more or less small consortia developing a specific capability or technology falling within one of the categories mentioned before;<sup>68</sup> the number of EU Member States participating in a project could vary from two – as in the case of the Rotorcraft Docking Station for Drones – to 25 – as in the case of the Military Mobility programme.

One reason for treating PESCO and EU Space Programme's projects separately lies in the fact that the European Commission, in the instance of the first represented in PESCO Secretariat by the High Representative and, indirectly, by the European Defence Agency, does not intervene directly in the management or development of these programmes, which are entirely subject to the intergovernmental logics and decisions adopted by participating Member States. So, whilst the management of the EU Space Programme hinges on the 'Community method', in the frame of Permanent Structured Cooperation, the Commission is only entitled to monitor the progress realised by Member States in the development of the PESCO projects in which they participate. Still, it can by no means operate or make use of the resulting assets as in

65. Copernicus Service in Support to EU External Action, "Products", [online], Available at: <https://sca.security.copernicus.eu/products/>.

66. Howard Altman, (2021), "Russian troop movements show wider conflict is possible, top Ukraine official says", Military Times, Flash Point, [online], Available at: <https://www.militarytimes.com/flashpoints/2021/11/10/russian-troop-movements-show-wider-conflict-is-possible-top-ukraine-official-says/>.

67. Steven Blockmans, Dylan Macchiarini Crosson, (2019), "Differentiated integration within PESCO – clusters and convergence in EU defence", CEPS Research Report No. 2019/04.

68. Council Decision establishing Permanent Structured Cooperation (PESCO) and determining the list of Participating Member States, 8 December 2017, CFSP14866/17, [online], Available at: <https://www.consilium.europa.eu/media/32000/st14866en17.pdf>.

the case of Copernicus, Galileo or EGNOS.<sup>69</sup> The second reason for dedicating PESCO to a different section stems from the nature of the capabilities and technologies it aims at developing, which cannot but benefit defence apparatuses. For most of the EU Space Programme's projects, the main goal is that of enabling and strengthening the internal market, but with PESCO, Member States only aim at the development of capabilities that primarily have a security and defence dimension. The dual-use relation is thus inverted in this case, where security exigencies precede the commercial implications of a specific technology. Finally, PESCO is the only mechanism within the juridical and institutional borders of the European Union, through which the capabilities necessary to operate 'Security in space' could be developed. As we have previously mentioned, the European Union cannot directly acquire assets or capabilities that are specifically destined for the military use. With PESCO, Member States are in charge of developing such capabilities, as in the case of the 'Defence of Space Assets' (DOSA) PESCO project, whose description reads as follows:

*"The objective of this project is to increase the EU's operational efficiency in the space domain by making the best use of current and future space assets through cross-cutting space functions of reactive access to space and in-space manoeuvrability, space resilience and training for space military operations."*

France (the project coordinator), Austria, Germany, Italy, Poland, Portugal, and Romania currently participate in DOSA.

In the present case, one can easily see that, even though PESCO does not equip the Union itself with security and defence space capabilities, the overall capacity of the Union to act in the frame of CSDP is bolstered thanks to the capacity of participating Member States – which are also the most capable in EU security scenario – to operate jointly in outer space.

Among the seven thematic areas within which Member States can develop capabilities and technologies, space counts the lowest number of programmes, with a total of four active projects and only 12 out of 25 Member States engaged in the development of at least one project.<sup>70</sup>

The four active projects are – as of November 2021 – in the central phase of their development, and Member States have provided no update on their status; the only considerations possible, based on the information available, concerns the nature of the projects and the characteristics of the States participating in it: First, three out of the four projects developed in the space strand are entirely devoted to the enhancement of existing capabilities or pooling of resources; this is particularly true for the EU Radio Navigation Solution (EURAS), promoting the EU military positioning, navigation and timing capabilities by mean of Galileo and its Public Regulated Service; the European Military Space Surveillance Awareness Network (EU-SSA-N), similarly, pools together Member States' existing resources to fill the gap in EU's SSA capabilities; finally, the Common Hub for Governmental Imagery (COHGI), aims at facilitating the exchange of classified satellite imagery, both

69. Mathias Jopp, Jana Schubert, (2019), "PESCO and New Methods of Intergovernmental Integration", L'Europe en Formation, Vol. 2, No. 389, pp. 121-139.

70. Permanent Structured Cooperation (PESCO) website, [online], Available at: <https://pesco.europa.eu/project/defence-of-space-assets-dosa/>.

among Member States and the Union, while exploiting to the maximum extent possible the potential of the EU SatCen. Only the DOSA project appears to go in the direction of complementing the existing tools with new assets.

Second, cooperation in the space sector takes the direction of an *avant-garde* of States advancing on behalf of the entire Union. Indeed, France, Germany, Italy – the most capable among all Member States – are represented in all projects either as coordinators or as simple participating Member States. It seems that the trend of Space PESCO is that of creating poles of excellence and specialisation in a limited number of Member States, entrusted with the protection of all the others, instead

of promoting the establishment of diffused capabilities throughout the Union.

In concrete terms, we cannot assess the impacts of these new programmes on the European capacity to operate in space. Still, the latter considerations offer us the background to remark, once again, the complexity and multi-layer character of the European space environment.

Although PESCO could be considered a further element of complexity in an already fragmented scenario, one should recognise the crucial function in a context where, like it or not, Member States are the main characters. Indeed, as we have lengthily presented in this section, the European Union plays a prominent role in identifying the priorities and



*Satellite destroying an enemy's satellite in demonstration of what weaponization in space looks like*

*Date: 24 August 2020*

*Picture by: 3Dsculpt*

Source: <https://www.iStockphoto.com/fr/photoof/here-common-in-space/03C386A9-satellite-en-militaire-pescom126511446-370774689>

the financing of impactful, new technologies. Still, it is bound by the legal constraints provided in Article 42, which prevent it from acquiring any military capability, including those that could be operated in space.

Facilitating cooperation of Member States in this sector – through the combination of PESCO and the European Defence Fund –, while bringing as many cooperative projects as possible under the same roof is the real added value that PESCO can deploy. This way, even though the Commission cannot operate the resulting assets directly nor set the priorities for the new programmes to be developed under PESCO, it can at least steer the preferences of Member States by providing for more advantageous financing options through the EDF.

On the other side, a tighter linkage with other European Defence Agency initiatives aimed at exposing shortfalls and opportunities for Member States – i.e. the previously men-

tioned Capability Development Plan (CDP) and the Coordinated Annual Review on Defence (CARD) – could further help achieve the underlying objective of harmonisation and, ultimately, result in an increased capability of the EU to operate as a security provider in space.

Realistically, however, complete defragmentation of the landscape is improbable. Many other ingredients are missing to achieve such a result, the first of which is a common understanding and strategic perspective on security-related activities in space.

The existence of sometimes conflicting strategic priorities among Member States – as will be pointed out in the last chapter of this study – constitutes an inherent limit to the centralisation and harmonisation of the European action in space and makes PESCO projects, at best, a good way to achieve homogeneity of equipment and interoperability of European assets.

## LIMITS TO EU EFFORTS IN SPACE.

Achieving homogeneity and enhancing European interoperability in space requires the Union to break barriers, which for now limit its impact in space. Indeed, there are concrete reasons why the EU struggles to compete with other international space powers, despite its best efforts to enhance world-renowned programmes such as Copernicus and Galileo. This chapter focuses on international and internal constraints to the European Union's efforts in space. When the Union designs programmes and strategies for its involvement in space, it

must respect both the wish of the international community to keep space a safe place and its Member States' desires to conduct their own activity in outer space. Regarding the former of these two main constraints, the European Union's ability to act in space is conditioned on its respect for international law.

### 3.1 International agreements

Outer space and access to it is governed by international law. Indeed, the Outer Space

Treaty (1967) qualifies it as the “province of all mankind”, highlighting the need for an effective international legal framework in space. According to article I, “the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development”.

However, low compliance with international standards and best practices underlines the difficulties that international governance bodies have when keeping up with technological advances and changes in the global space sector. Achieving security and peace in space cannot be done in a context of growing tension, armament, and appropriation by nations. The previously mentioned efforts made by the European Union to further its security and defence capabilities in space cannot have a lasting impact if the international legal framework that regulates space security is too weak.

Indeed, outer space’s legal framework is dominated by national regulations (whose respect for mandatory international measures is dubious) and soft law instruments.

In fact, at present, only the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, constitutes the mandatory framework according to which states may conduct their security and defence activity in space. So far, 105 countries have either signed or ratified the treaty, making them subject to the following main clauses:

- According to article 2, signatories like the EU’s Member States cannot nation-

ally appropriate themselves space, the Moon and other celestial bodies, or parts of it.

- According to article 3, states are compelled to use space solely for international peace and security and international cooperation purposes.
- Most notably, the EU’s Member States are limited by this treaty in the defence capabilities they may place in space. Article 4 prohibits all its signatories from using nuclear weapons or any weapon of mass destruction in space.

Unfortunately, compliance with these standards is questionable at the very least. It is true that in its soon-to-be 50 years of life, the treaty has never been violated by countries not wishing to undermine it, at least completely. But such an achievement is partly due to flaws and ambiguity found in the treaty itself, which leaves room for countries to conduct an amount of dubious activity in space. As pointed out before, a great part of space’s international legal framework comprises individual national space regulations, like, for example, the USA’s SPACE Act of 2015. Said act allows US citizens to engage in the commercial exploration and exploitation of resources in space. But at the same time, “by the enactment of this Act, the United States does not thereby assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body”. The exploitation of loopholes within the treaty is not all that uncommon, and the fact that the US may appropriate its resources (parts of space) without claiming any type of spatial sovereignty constitutes a point of key debate at present.

The other great part of space's legal framework is made up of international soft-law instruments, like the IADC Space Debris Mitigation Guidelines from 2007, the Space Debris Mitigation Guidelines of the United Nations Office for Outer Space Affairs (UN COPUOS) from 2010 or the recent Guidelines for the long-term sustainability of outer space activities drafted in 2020. These guidelines aim to enhance the sustainability of the space environment and mitigate space debris. For example, guideline 4 established by the UN COPUOS advise governments and other stakeholders to avoid intentional destruction and other harmful activities. Indeed, "recognizing that an increased risk of collision could pose a threat to space operations, the intentional destruction of any on-orbit spacecraft and launch vehicle orbital stages or other harmful activities that generate long-lived debris should be avoided". The objectives set forth by these guidelines are crucial to space security and national space infrastructure, including, for example, satellites.

Nevertheless, these remain soft law instruments, for which respect is mitigated. Previous and current activity conducted by nations in space highlight this and the shortcomings of mandatory measures like the Outer Space Treaty. For example, in January 2007, China launched a ballistic missile from Xichang Space Launch Centre to destroy one of its non-operational weather satellites. This caused a lot of controversy as China was believed to have violated the treaty and produced a great

amount of space debris. However, said conduct did not fall under article 4 of the Outer Space treaty, as the missiles used were not considered weapons of mass destruction.<sup>71</sup> In March, India successfully hit a satellite at an altitude of about 300 kilometres using a specially developed missile in a test mission.

Low compliance persists and has recently increased, with countries like the United States identifying space as a fighting domain and other countries even questioning the authority of the UN to regulate on mitigating space threats, like with Russia in November 2020.<sup>72</sup> The motion was a minor cause of worry but demonstrated the will of certain countries to exploit legal loopholes and turn space into a battleground and weaponisation racetrack.

Russia is notorious for disrupting foreign satellite systems. In 2020, France accused Moscow of trying to spy on its communications. In response to ever-growing threats, French President Macron counts on placing laser weapons on its satellites for self-defence, perhaps contravening international regulations.<sup>73</sup>

The key takeaway from this is that there is a worldwide need for a stronger legal framework in outer space to prevent an arms race among other growing spatial threats. International regulations do not truly limit the EU's Member States to conduct defence and security activity in space, but that is not necessarily good. How will the EU ever feel secure in a space environment where what provides security today isn't guaranteed to do the same thing the week, month, or year after? That is

71. BBC "China confirms satellite downed", Available at: <http://news.bbc.co.uk/1/hi/world/asia-pacific/6289519.stm>.

72. UN General Assembly Press Release. GA/DIS/3658. Available at: <https://www.un.org/press/en/2020/gadis3658.doc.htm>

73. Joshua Posaner. and Saim Saeed, "France lists laser weapons, surveillance satellites in space defense plan", Politico. Available at: <https://www.politico.eu/article/france-lists-laser-weapons-surveillance-satellites-in-space-defense-plan/>.



why the EU should play a central role and become a diplomatic leader in advancing international space regulations.

In its in-depth analysis entitled “The European space sector as an enabler of EU strategic autonomy”<sup>74</sup>, requested by the European Parliament’s Subcommittee on Security and Defence, the EU Parliament recognises that “space diplomacy is a critical component of the Union’s strategy for autonomy in space”. In this sense, the European Union needs to develop its space diplomacy and partnerships to support multilateralism in outer space. The Union’s Space Task Force already plays a key role in bringing the ESA, EDA, and SatCen together. “With the correct level of resources, the Space Task Force would be in a better position to promote the responsible use of space internationally, and it could build on its positive contributions to the 2030 Space Agenda and the UN Committee on the Peaceful Uses of Outer Space (COPUOS)”<sup>75</sup>.

New legal developments under discussion constitute a great opportunity for the EU to further its Space Diplomacy. The Proposed Prevention of an Arms Race in Space (PAROS) Treaty is among said developments. Currently being discussed in the Conference on Disarmament (which counts 66 Member States including the USA, the greater part of EU countries, Russia, India, and China), it aims to fill gaps left by previous treaties. Under the draft treaty submitted to the CD by Russia in 2008, State Parties would commit to refrain from placing objects carrying any

type of weapon into orbit, installing weapons on celestial bodies, and threatening to use force against objects in outer space. State Parties would also agree to practice agreed confidence-building measures.<sup>76</sup> As can be seen, this Treaty would be more restrictive than the 1967 Outer Space Treaty, preventing Member States of the Conference on Disarmament from conducting a great part of defence activities in space. The EU needs to be on the right side of this treaty, to further its Space Diplomacy strategies and not see its efforts in space security limited.

### 3.2 Political tensions.

However, EU Space Diplomacy can only be as strong as unity between its Member States and has been hard to develop given existing inner tensions. The Union’s divided response to the Artemis Accords is a great illustration of how differently Member States view space. The Artemis Accords are an international agreement between governments participating in the Artemis Program, an American-led effort to return humans to the Moon by 2024, to expand space exploration. To this date, only three Member States have signed the agreements (Italy, Luxembourg, and Poland), exposing inner tensions regarding perceptions of the use of outer space.

The cause of these inner tensions can be pinpointed to opposing perspectives between France and Germany. While France sees space as an opportunity to expand its diplomatic and geopolitical sphere, Germany only sees

74. European Parliament, IN-DEPTH ANALYSIS “The European space sector as an enabler of EU strategic autonomy”. Available at: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/653620/EXPO\\_IDA\(2020\)653620\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/653620/EXPO_IDA(2020)653620_EN.pdf)

75. European Parliament, “The European space sector as an enabler of EU strategic autonomy”, 35.

76. Conference on Disarmament (September 2020), CD/2193 Statement on the PAROS Treaty. Available at: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G20/224/29/PDF/G2022429.pdf?OpenElement>.

space as a way to serve its own civil and economic interests. In other words, for Germany, outer space should only be used to maximise a country's economic potential and does not need militarisation. This can be seen in Germany's negative reaction in 2019 when France announced the deployment of its space task force. President Macron unveiled said plans on France's national Bastille Day, announcing that a "Space High Command" would help the country better protect its satellites. Thomas Jarzombek, the German government's coordinator on aerospace policy, pronounced himself on the matter back in July 2019: "These days a lot of people are talking about space defence, but I'm a little bit uncertain if that is the right way. The main challenge is not in space, the challenge is ground stations and cybersecurity".<sup>77</sup>

Indeed, these diverging opinions have shaped the two countries' views on engaging with space and with states expanding their presence there, especially the United States. Indeed, the real issue is determining whether Europe is willing to compete with the US and which European body should determine the EU's course of action: the ESA or the European Commission?

For France, the European Union should accept the challenge and concentrate on remaining a relevant geopolitical power in space. Ursula von der Leyen's geopolitical EU Commission thus has a crucial role in achieving this, given its competence in the area. However, competing with the US's NASA and private companies like SpaceX would require the Union and its Member States to make substantial subsi-

dies, risking financial losses and stifling free competition within the spatial industry. These are the reasons why Germany avoids engaging in external competition and rather opts for fostering internal competition within the European Union.<sup>78</sup> To this end, the European Space Agency, as previously discussed, is the go-to institution, even though its members are not all EU Member States.

Indeed, the ESA operates based on the "geographical return" principle. This means that with its overall EUR 6.5 billion, the Agency invests in each member country, through industrial contracts for space programmes, an amount equivalent to each country's contribution.<sup>79</sup> By trusting the ESA to develop its space capabilities, Germany essentially prevents its investments from benefiting any other country in the EU, effectively encouraging internal competition between Member States. Moreover, this system means that Germany ensures that said investments satisfy its own civil and economic interests.

Both countries, therefore, often clash over militarising space. These tensions have expanded to form two coalitions that cannot see eye to eye on the topic. Germany is backed by supporters of unfettered competition of the space industry, featuring the Netherlands, Sweden, Denmark, and Luxembourg. On the other side, the French coalition is formed by countries particularly in favour of "*strategic autonomy*" like Portugal, Italy, and Spain. The latter countries support the EU in developing its infrastructure and technologies to reduce critical dependencies to external countries. These countries continually push the Union

77. Joshua Posner, "Germany wary of Macron's space force", POLITICO. Available at: <https://www.politico.eu/article/germany-wary-emmanuel-macron-space-force/>

78. KHAN Simon, "L'Union européenne, puissance spatiale ? Entre influences et autonomie : la mise en œuvre de la compétence spatiale communautaire" (2021) : p.13-15.

79. European Space Agency. Consult at: [https://www.esa.int/About\\_US/Corporate\\_news/ESA\\_facts](https://www.esa.int/About_US/Corporate_news/ESA_facts)

to gain a more relevant geopolitical and military role in space through the European Commission.

Fervent supporters of free competition cannot prevent the European Commission (EC) from gaining relevance in the space sector. Indeed, the EC's legitimacy in the field is now indisputable, setting it on the perfect path to shape the European Union's global spatial role. In turn, rising spatial threats exposed previously might soften Germany and other nations' views on developing military capabilities in outer space. In July of this year, the German Defence Minister Annegret Kramp-Karrenbauer announced the creation of a new military space command in response "to the increasing significance of space for our state's ability to function, the prosperity of our population, and the increasing dependency of the armed forces on space-supported data, services and products".<sup>80</sup> Almost simultaneously, another long-standing disagreement was resolved. On 21 July 2021, the Ministers of Economy Bruno Le Maire on the west side of the Rhine and Peter Altmaier on the east side announced that both countries would ramp up spending for Europe's new space launcher Ariane 6. They also agreed to give Ariane 6 a preferential status for public and institutional launches,<sup>81</sup> perhaps showing a willingness to compete with third states.

Could the EU be close to resolving long-standing differences in the use of space? While it is too soon to tell, it is a step in the right direction. Steps like these could finally signal the

willingness of the two opposing coalitions to work together to reduce the gap between the EU and other powers when it comes to military presence in space. To do so, Member States and EU institutions will need to pull their efforts together and overcome problems related to lack of integration and develop a common EU Space Diplomacy.

### 3.3 Lack of integration

Imagine that EU Member States, divided on 'defence of space' for decades, now see eye to eye on the issue. Imagine that the recent agreements concluded between France and Germany show a willingness of all EU Member States to join forces in reaffirming Europe's presence in outer space. Countries may well be ready to work together in reducing the gap that has formed between the EU and other powers when it comes to military presence in space. After all, these shifts in attitude come when the European Union finalises a previously mentioned EUR14.8 billion seven-year EU space programme, which seeks to unify the EU's different space programmes under one agency.<sup>82</sup>

But this doesn't change the fact that the EU has been divided on how it understands outer space should be used for decades. Thus, we now observe a lack of integration and harmony between Member States' approaches to space defence. Every country has its space programme, with its priorities and ambitions, parallel to space programmes and capabilities being developed by the European Union.

80. Vivienne Machi, "Germany establishes new military space command", Defense News. Available at: <https://www.defensenews.com/space/2021/07/13/germany-establishes-new-military-space-command/>

81. "France and Germany agree to ramp up Ariane 6 support", Space Watch Europe. Available at: <https://spacewatch.global/2021/07/france-and-germany-agree-to-ramp-up-ariane-6-support/>

82. European Commission, "European Space Programme - Performance". Available at: [https://ec.europa.eu/info/strategy/eu-budget/performance-and-reporting/programmes-performance/european-space-programme-performance\\_en](https://ec.europa.eu/info/strategy/eu-budget/performance-and-reporting/programmes-performance/european-space-programme-performance_en)

When establishing the EU framework for space security, we saw how the EU launched several successful outer space initiatives in our previous chapters. Copernicus, Galileo or GOVSATCOM are examples of success that the Union now seeks to capitalise on by bringing them under one common programme: the new EU Space Programme. For example, EUR 9.1 billion will fund the Galileo satellite navigation system and the European Geostationary Navigation Overlay Service (EGNOS), which enhances the accuracy of Galileo's observations between 2021 and 2027. For the same period, another EUR 5.42 billion is destined for the Copernicus earth observation system to contribute to European security and defence: border surveillance, maritime surveillance, and support to EU External Action.<sup>83</sup>

Notwithstanding, this EUR14.8 billion seven-year budget is tiny compared to the US' whopping USD 48 billion destined budget for space in 2020 alone (NASA and US Space Force confused). If we look at its annual budget of around EUR 2 billion, the European Union also trails behind Russia (USD 2.77 billion) and Chinese (USD11 billion) space programmes. Meanwhile, France has increased its space budget, becoming the third-largest investor with a USD 4 billion budget envelope dedicated to space in 2020. Likewise, Germany spent around EUR 2.4 billion on its space programme in 2020, while Italy's space expenditure for the same year was estimated to be a bit over EUR 1 billion.<sup>84</sup> We observe a lot of frag-

mentation hampering unified progress and preventing the EU from unlocking its full potential in space security.

Indeed, when evaluating the legal framework of EU space security, we saw that article 189 of the Treaty on the Functioning of the European Union (TFEU) establishes development in space as a shared competence between the Union and its Member States. As a result, Member States have kept a firm grip on their competence for development and security in space. Eleven Member States have developed their defence space programmes, including France, Italy, Germany, Spain, Poland, Norway, Greece, Luxembourg, The Netherlands, Belgium, and Denmark.<sup>85</sup>

In this way, these countries have developed their own national defence capabilities, space security strategies, and very own priorities. This allows them to proceed individually or partner up with other Member States on the side-lines. But it also means that there is no clear-cut space security priority for the Union and its Member States to follow.

In its 2019 Defence Space Strategy, France emphasised improving its space defence capabilities' resilience and protecting French space assets. To further said national priority, its new armament programme "Maîtrise de l'Espace" ("Space Control") will enhance active defence mechanisms and its surveillance networks. France, therefore, relies on already existent international agreements and its national space capabilities. For example, the fifth republic has greatly relied on cooperation with Italy to develop its Syracuse satellites: Si-

83. Goda Naujojiatyė "Parliament finalises €15B EU unified space programme". Available at: <https://sciencebusiness.net/news/parliament-finalises-eu15b-eu-unified-space-programme>

84. Figures extracted from Euroconsult. Available at: <https://www.geospatialworld.net/news/euroconsults-flagship-research-shows-government-space-program-budgets-have-main-tained-growth-trajectories/>

85. Papadimitriou, Angeliki, et al. "Perspective on space and security policy, programmes and governance in Europe" Volume 161, August 2019, Pages 183-191. Available at: <https://doi.org/10.1016/j.aerastro.2019.05.015>

cral 2 and Athena-Fidus. Emmanuel Macron and his successors will now seek to enhance the defence aspect of these satellite communications, for example, by placing cameras on its Syracuse satellites together with patrolling nanosatellites in space.

Secondly, as explained, France is seeking to enhance its surveillance networks. Following this desire, its Space High Command plans to renovate the country's national space surveillance system, GRAVES, dedicated to monitoring and detecting objects in Low Earth Orbit, between 2021 and 2025.<sup>86</sup>

Similarly, other Member States like Italy and Spain count on pursuing their space priorities for the years to come. Among them is the importance of securing access to national space capabilities.

Italy's 2019 National Security Strategy for Space emphasises the strategic importance of developing Space Situational Awareness/Space Surveillance and Tracking capabilities to counter ever-growing threats. In this spirit, the country is developing its optical radars and laser sensors.<sup>87</sup> Additionally, it is an important member of the EU SST Consortium (established in 2015), currently composed of seven EU Member States, an EU Commission created network of sensors that survey and track space objects. While cooperation is always welcomed, Italy's membership to the EU SST highlights its will to cooperate with other Member States while keeping a firm grip on its competence to regulate its own space security. Additionally, it is worth highlighting that the Consortium is only formed of seven Member States, despite all EU coun-

tries being welcome to join.

Lastly, as part of their respective security strategies for space, Spain and Italy seek to expand their international and diplomatic presence. Multilateral bodies such as the G7, the ESA, NATO, and the EU will be key to expanding their presence.

Such efforts, with countries pulling in their direction to gain political support, hamper the EU's efforts to set forth a common space vision. While cooperation between some Member States is very present, each country has its space strategy, supporting its national priorities through its very own budget. Meanwhile, the Union has its space programme and moderately sized budget as it seeks to develop its objectives and space capabilities. It is not surprising to observe overlapping projects and missed opportunities for a bigger share of security in space with such a fragmented framework.

In the end, the issue all comes down to one thing: the political will of Member States to give up their competence regarding development in space in favour of the EU. However, this is hardly worth mentioning, given how unrealistic it sounds. At present, the 27 Member States do not have much to gain from loosening their grip on said competence. Why would France, for example, hand over a competence which it judges it can do a better job of at present? After all, the French Republic has clear cut-out military priorities both on earth and in space, a crucial element that the Union lacks. The same goes for an important number of states within the EU. Unless it can propose a clear-cut defence strategy both

86. European Space Policy Institute (ESPI), "ESPI Report 75 - European Space Strategy in a Global Context - Full Report" page 57. Available at: European Space Strategy in a Global Context - Full Report

87. ESPI, "ESPI Report 75 - European Space Strategy in a Global Context - Full Report", 68.

on earth and in outer space, not much will change in the near future.

If the EU wishes to close the gap on other spatial powers, further its space capabilities, and further its diplomatic interests, a shift in policy is needed. In short, defence and space must be better integrated into the EU's long-

term strategy. Therefore, the EU's imminent Strategic Compass comes at a crucial time. It could allow the EU to better integrate space into its Common Defence and Security Policy and determine which defence space capabilities are needed in a geopolitical context of ever-growing space threats.

## **CONCLUSION & RECOMMENDATIONS**

This study aimed to present a precise picture of the juridical boundaries within which the European Union is called to operate when acting to nurture its capacity as a security provider in the space sector.

The first chapter of the study presented the general juridical coordinates that primary law lays to this activity, and it exposed the ambivalent nature of EU space policy; the analysis of EU's competencies for space exploration and research, stated by Article 189 of the Treaty on the European Union, together with the considerations on the EU's competences for the Common Security and Defence Policy, set the background for the observation of the concrete initiatives that have been adopted by the EU throughout the years, while exposing the inherent complexity deriving from the 'dual-use' character of space assets.

The complexity also manifested itself in consideration of the actors intervening in the European space environment: we were able to note how the European Union has to contend the role of the main character in the space sector both with its Member States – and in particular France, Germany, Italy and Spain –, and with the European Space Agency which,

throughout the years, has affirmed itself as a reliable and respected player in the field of space research and exploration.

Given the current legal framework and limitations deriving from the limited role granted by treaties to the EU in the field of security and defence, it appeared clear, from a pragmatic perspective, to seek the development of its security space capacities through the pursuit of the industrial and commercial dimension of the space sector. This consideration matches with the EU's initiatives since creating the Directorate-General for Defence Industry and Space, and the European Defence Fund, the European Union Space Programme, and the Horizon Europe fund represent the most prominent example.

The rationale emerging from this set of initiatives and commitments lies on the possibility of stimulating synergies and cross-fertilisations between the civilian space industry and the security and defence industry, as it is enounced in EU's 'Action Plan on Synergies between civil, defence and space industries', tabled in 2021.

However positive the Action plan may be for the defragmentation of EU initiatives

and directing EU funding in a more targeted manner to produce as much impact as possible, other elements intervene to dampen the Union's efforts.

As section 3 underlines, relevant differences still exist among Member States in how space and its potential are perceived from a strategic perspective. The existence of an opposite strategic vision between France and Germany, for instance, cannot but impact the European space environment negatively by scattering resources and political attention on different and sometimes conflicting priorities.

For these reasons and for the crucial role that Member States play in the arena of security and defence policies, it seemed relevant to pair the analysis of EU's main space projects under the EU Space Programme – Galileo, EGNOS, Copernicus etc. – with a brief consideration of the Permanent Structured Cooperation.

PESCO, as underlined before, is the main forum under the EU institutional system within which Member States can cooperate to establish joint capabilities or research and develop technologies that are relevant for their security and defence apparatuses, including in the space sector. The function that PESCO may serve in the landscape of the EU's security space policies stems from the fact that it could offer the structure within which collaborative projects and joint capabilities could be nurtured, thus decreasing the number of initia-

tives carried out by individual Member States. The only way forward to pursue a European security space policy that could live up to the level of ambition of other international actors passes through a coherent and effective interaction of the tools presented above. In the absence of a treaty revision that would confer to the Union more competence both vis-à-vis security and defence and the space sector, the defragmentation efforts should be targeted on multiple levels, and a deep and comprehensive commitment by Member States would be an indispensable condition to achieve this goal.

This means that, even before favouring the pooling of resources for developing joint capabilities and technologies within PESCO, it would be vital to determine a common strategic vision for space – for which the Strategic Compass shall play a significant role.

Once a common understanding and vision are set, and the priorities of Member States for space will be – at least partially – reconciled, it will be possible to make complete and extensive use of the tools and processes that are currently available to the Union: this means that the focus should be shifted to the interaction between the EDF and PESCO, between PESCO, CARD, and CDP and, no less importantly, between those tools bolstering the civilian and commercial sector and those that are instead aimed at the security and defence sector.

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Created in 1953, the Finabel committee is the oldest military organisation for cooperation between European Armies: it was conceived as a forum for reflections, exchange studies, and proposals on common interest topics for the future of its members. Finabel, the only organisation at this level, strives at:

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