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Italy in Space: Collaborations and Future Prospects

by Ottavia Credi and Maria Vittoria Massarin

ABSTRACT

Since the 1960s, space has played a fundamental role in Italy for both civil and military purposes. International collaborations allow the country to access advanced technologies and expertise, and to share knowledge and resources. In this context, Rome boasts bilateral and multilateral partnerships, in Europe and beyond. Implementing the new EU Space Strategy for Security and Defence presents major challenges and opportunities for Italy. By working proactively and promptly with its European partners and leveraging its space expertise, Italy will be able to ensure that the initiatives to be developed within the Strategy are as in line as possible with national needs and ambitions, consolidating its technological, industrial and scientific role, and fostering dialogue among European countries.

keywords

Space | *Italy* | *European Union* | *Technology* | *Defence* | *Security* | *UN* | *European Space Agency* | *NATO*

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by Ottavia Credi and Maria Vittoria Massarin*

Introduction

Since the beginning of the space race, Italy has played a key role in the space sector, which is shaped by a strong and ever-increasing dynamism that requires an ongoing effort from states to keep up with the changing trends.

An exchange of skills and knowledge between countries has increasingly characterised the space domain. Indeed, international cooperation in space has enabled humankind to achieve some of the most important milestones in history, such as the US Space Agency (National Aeronautics and Space Administration, NASA)'s Apollo missions and the International Space Station (ISS), where the United States, Russia, Europe, Japan, and many countries cooperate.

Rome has a long tradition of international space collaborations, which is articulated in bilateral and multilateral agreements, at European and international levels. This is demonstrated, for instance, by its active participation in the European Space Agency (ESA) and the United Nations' Committee on the Peaceful Uses of Outer Space (COPUOS), as well as the numerous partnerships that the Italian Space Agency (*Agenzia Spaziale Italiana*, ASI) pursues with other national space agencies. Overseas, Italy is engaged in ambitious collaborations that promote the exchange of technological and scientific capabilities and affirm the country's pioneering role in space – first and foremost, with NASA.

The European Union is not only one of the most important international players on the space scene but also an important forum for multilateral dialogue between its member states. With a competitive space industry and a wide range of activities

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successfully carried out, the Union is a spokesperson for the will of countries, thus positioning itself firmly among the so-called "big players" of space. Italy is one of the most active states in the sector, with a diversified industry and a significant contribution to EU activities.

In March 2023, the EU adopted its first Space Strategy for Security and Defence (EU Space Strategy for Security and Defence, EUSSSD). Given Italy's significant European and international commitment to the space sector, implementing it presents important challenges and opportunities.

Cooperation between countries is one of the cornerstones of the EUSSSD, which encourages member states to work in synergy to achieve a robust and resilient space security framework. Drawing on its own experience in international collaborations, Italy can contribute by providing consolidated expertise and capitalising on its infrastructures in the space sector.

1. International partnerships

1.1 The participation in the global legal framework

Italy has always been present in the international space sector, playing a relevant role both in the development of space technologies and in relations with other European and non-European countries. The country's first attempt at international cooperation in space matters was in 1958, when Italy joined COPUOS.[1] Since then, Rome has always contributed to the work of the committee, its sub-committees and working groups.

In 1967, Italy ratified the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (OST). In addition to the OST, the international legal framework in space also includes the Convention on Registration of Objects Launched into Outer Space, the Convention on International Liability for Damage Caused by Space Objects, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

Of these five agreements, Italy ratified the first four, thus joining the large group of countries that have not signed nor ratified the last treaty, also known as the Moon Agreement.[2] Among the reasons for this lack of consensus is the fact that

[1] UN General Assembly, *Question of the Peaceful Use of Outer Space* (A/RES/1348(XIII)), 13 December 1958, https://digitallibrary.un.org/record/206866; website of the United Nations Office for Outer Space Affairs: *Committee on the Peaceful Uses of Outer Space: Membership Evolution*, https://www.unoosa.org/oosa/en/ourwork/copuos/members/evolution.html.

[2] To date, the Moon Agreement has been ratified by Australia, Austria, Belgium, Chile, Kazakhstan, Lebanon, Mexico, Morocco, the Netherlands, Pakistan, Peru, the Philippines and Uruguay. France,

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this agreement recognises the Moon and celestial bodies as common heritage of humankind, the use and exploitation of which should be regulated by an international authority. An authority similar to the International Seabed Authority (ISA), which regulates the law of the sea and was established by the Montego Bay Convention, that has never been created for space.[3] Attributing to space resources the characteristic of common heritage of humankind, as for the seabed in international waters, is however in clear contradiction with the definition given by the OST, in which the same resources are recognised as *res communes omnium*, thus leaving greater freedom of use to states. With the non-ratification of the Moon Agreement, therefore, countries have expressed their desire for greater freedom in the use of celestial bodies.[4] Australia is one of the few countries party to the Moon agreement that also signed the Artemis Accords. The two instruments, although having a different legal nature, are almost at odds with each other. The Moon Agreement promotes a multilateral approach in the development of a legal regime for lunar activities, while the Artemis Accords mention a multilateral approach based on the countries' willingness to collaborate. Australia's accession to both instruments and the impossibility for them to coexist now requires the country to decide whether to reconsider joining the Moon Agreement or having signed the Artemis Accords.[5]

In April 2023, Italy also became the thirteenth country to commit not to conduct direct-ascent anti-satellite (DA-ASAT) tests after having signed the resolution on destructive direct-ascent anti-satellite missile testing passed in 2022 by the United Nations (UN) General Assembly.[6] Anti-satellite (ASAT) tests, which have so far only been carried out by the United States, Russia, China and India, are currently the focus of the discussions of the Open-Ended Working Group on Multilateral Nuclear Disarmament Negotiations, which was created within the framework of the Geneva Disarmament Conference.

1.2 Bilateral, multilateral accords and agreements

Over the years, Italy has concluded numerous scientific, technological and industrial cooperation agreements with other European space agencies, sometimes with significant strategic implications.

The Italian interaction with France in space is very active on both a bilateral and multilateral level. In 2021 the two countries signed the so-called Quirinal Treaty for enhanced bilateral cooperation, in which they included art. 7, entirely

Guatemala, India and Romania have signed it without subsequently proceeding to ratification.

[3] Sergio Marchisio, *The Law of Outer Space Activities*, Rome, Nuova Cultura, 2022, p. 35-37.

[4] Ibid., p. 71-79.

[5] Fabio Tronchetti and Hao Liu, "Australia Between the Moon Agreement and the Artemis Accords", in *Australian Outlook*, 3 June 2021, https://www.internationalaffairs.org.au/australianoutlook/australia-between-the-moon-agreement-and-the-artemis-accords.

[6] UN General Assembly, *Destructive Direct-Ascent Anti-Satellite Missile Testing* (A/Res/77/41), 12 December 2022, https://digitallibrary.un.org/record/3997622.

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dedicated to collaboration on space matters in the security and defence sectors.[7] That same year, France and Italy also signed a joint declaration on launchers.[8] At the operational level, in 2020, ASI and the French Space Agency (*Centre National d'Etudes Spatiales*, CNES) signed a Memorandum of Understanding (MoU) to work on Majis, a spectrometer operating on Juice, an ESA probe that will study Jupiter.[9] A year later, the memorandum was followed by a joint declaration on the launchers to be supplied by Avio and Arianespace between 2023 and 2024.[10] Finally, during the last ESA Council Ministerial meeting, ASI, CNES and the German Space Agency (*Deutsches Zentrum für Luft-und Raumfahrt*, DLR) signed a joint declaration on the future of launchers.[11] The first framework agreement between ASI and DLR dates back to 2007 and the two countries pledged to collaborate on Egnos and Galileo, respectively the European telecommunications programme and the global navigation satellite system.[12]

At the EU level, Italy participates in the development of the second generation of Galileo satellites and plays a minor role in the consortium for the European constellation Iris^2, which is expected to be operational by 2027.[13] Iris^2 will establish a secure connectivity system and ensure the provision of commercial services at various levels.[14] In the constellation development process, 30 per cent of the space infrastructure will be delivered by small and medium-sized enterprises (SMEs) and innovative start-ups.[15] This not only reinforces the European Union's commitment to ensure resilience, sustainability and digital capacity within the space sector, but also represents an opportunity for countries that have a fully developed an operational supply chain, largely made up of SMEs and start-ups.[16]

[7] Italy and France, *Trattato tra la Repubblica Italiana e la Repubblica Francese per una cooperazione bilaterale rafforzata*, Rome, 26 November 2021, https://www.governo.it/sites/governo.it/files/Trattato_del_Quirinale.pdf.

[8] French Ministry of Economics, *Finance and Italian Minister for Technology Innovation and Digital Transition, Italy-France Space Agreement*, 26 November 2021, https://innovazione.gov.it/notizie/comunicati-stampa/italy-france-space-agreement.

[9] French Embassy in Italy, *Cooperazione spaziale*, 23 November 2021, https://it.ambafrance.org/Cooperazione-spaziale-11211.

[10] ASI, *Italia-Francia, rafforzata la cooperazione nel settore spaziale*, 22 March 2021, https://www.asi.it/2021/03/italia-francia-rafforzata-la-cooperazione-nel-settore-spaziale.

[11] Italian Ministry of Enterprises and Made in Italy, *Spazio: Urso, intesa con Francia e Germania sul futuro dei lanciatori europei*, 22 November 2022, https://www.mise.gov.it/it/notizie-stampa/urso-parigi-esa.

[12] Alberto Zampieron, "Firmato l'accordo quadro Asi-Dlr", in *AstronautiNews*, 21 November 2007, https://www.astronautinews.it/?p=12876.

[13] Karolina Muti, Ottavia Credi and Giancarlo La Rocca, "Italy and the Challenges of Space: Between Space Economy, International Cooperation and Cybersecurity", in *Documenti IAI*, No. 23|15en (July 2023), https://www.iai.it/en/node/17272.

[14] Gaia Ravazzolo, "Connettività sicura in Ue con Iris^2. Le prospettive per l'industria italiana all'evento Icsa", in *Formiche*, 21 March 2023, https://formiche.net/?p=1541453.

[15] Thierry Breton, "#StrategicAutonomics: M...for Medium", in *LinkedIn*, 30 August 2023, https://www.linkedin.com/pulse/strategicautonomics-m-medium-thierry-breton.

[16] Ibid.

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Italy's participation in the strategic discussions on space at the European level is also mirrored in the role it plays in ESA activities. Since the agency was established in 1975, Rome has been contributing to its navigation and Earth Observation (EO) programmes and to the development of satellites and launchers. During the Ministerial meeting held in November 2022, Italy allocated the third highest budget to ESA, closely following Germany and France's lead. It was also the first member state for contributions to the agency's optional programmes.[17] This milestone ensures a significant "geo-return" for the country, which translates into the further consolidation of the Italian space sector.[18]

Among the most recent developments in the field of international space collaborations, on 13 October 2020 Rome was among the first eight signatories of the Artemis Accords: a non-binding multilateral agreement promoted by NASA that brings together all the countries participating in the Artemis programme, which is aimed at restoring a human presence on the Moon by 2025.[19] Within the framework of the programme, Italy will contribute to the outline of the Moon-Mars exploration strategy and to the development of the Lunar Gateway and the European Service Module, two fundamental components of the mission.[20] The strong and stable relationship between Rome and Washington also paved the way for an agreement between ASI and NASA that allows Italy to conduct experiments on the ISS in the fields of medicine, physics and biology.[21]

In 2022, from the Cape Canaveral launch base in Florida, the second satellite of the COSMO-SkyMed constellation was launched on board a Falcon 9 launcher belonging to the American company SpaceX. This collaboration consolidated Italy's position at an international level, as well as allowing the country to reach a broader market.[22] The Italian action on COSMO-SkyMed has in fact brought benefits to national industries, allowing numerous companies to access the project and thus open their horizons to different markets.[23] The strategic relationship with

[17] ASI, *Piano integrato di attività e organizzazione 2023-2025*, 28 February 2023, https://www.asi.it/wp-content/uploads/2023/02/PIAO-2023_2025.pdf.

[18] Interview, 28 July 2023.

[19] ASI, *International Partners Advance Cooperation with First Signings of the Artemis Accords*, 13 October 2022, https://www.asi.it/en/2020/10/international-partners-advance-cooperation-with-first-signings-of-the-artemis-accords; US State Department website: *Artemis Accords*, https://www.state.gov/artemis-accords. To date, Artemis Accords have been signed by Argentina, Australia, Bahrain, Brazil, Canada, Colombia, Ecuador, France, Germany, Iceland, India, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Nigeria, Poland, Romania, Rwanda, Saudi Arabia, Singapore, South Korea, Spain, Ukraine, the United Arab Emirates, the United Kingdom, the United States of America.

[20] "Thales Alenia Space: la missione Artemis I della Nasa verso la luna", in *Report Difesa*, 16 November 2022, https://www.reportdifesa.it/zigy.

[21] Telespazio website: *International Space Station*, https://www.telespazio.com/en/business/space-programmes/iss.

[22] Interview, 31 July 2023 (b). See: ASI, *COSMO-SkyMed Second Generation Second Satellite Takes Flight*, 1 February 2022, https://www.asi.it/en/2022/02/cosmo-skymed-second-generation-second-satellite-takes-flight.

[23] Karolina Muti, Ottavia Credi and Giancarlo La Rocca, "Italy and the Challenges of Space", cit.

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the United States perfectly shows the Italian will to complementarily balance the country's existing strong cooperation in Europe.

As far as NATO is concerned, Italy contributes to the Alliance's space activities through the "pooling and sharing" of its space assets, which takes place through the Italian System for Secured Communications and Alerts (SICRAL).[24] In June 2022, the Space Alliance, formed by Telespazio and Thales Alenia Space, signed a contract with the Ministry of Defence for the construction of SICRAL 3, with the launch of SICRAL 3A scheduled to take place by no later than 2026.[25] As proof of its role in the military and dual satellite telecommunications sector, the Space Alliance also contributed to the development of Athena-Fidus and SatCom BW, for respectively France and Italy, and Germany.

Considering its active engagement in the EU and NATO, Italy could easily foster a more effective cooperation also in space.[26] With this objective in mind, in 2020 the government signed a MoU with France, the United Kingdom and the United States to provide NATO with its secure satellite communication services.[27] The MoU follows the Alliance's decision to declare space the fifth "operational domain"[28] and the adoption of the 2019 NATO Space Policy[29] – a clear signal of the strategic nature of space and its increasingly strong link with the defence sector.

Further evidence of the growing nexus between space and defence is the Alliance Persistent Surveillance from Space (APSS), which was established by NATO in February 2023. Along with Italy, the APSS counts sixteen NATO members and Sweden.[30] Its aim is to make it easier for NATO to access satellite images and it shows the Alliance's willingness to concretise cooperation to make data from nations' space assets usable. The nature of the APSS is open and data-based, and cooperation will take place on several levels, bringing together the individual national capabilities of member countries.[31] Once again, Italy has the opportunity to play an active and proactive role in European and transatlantic defence

[24] Telespazio website: *SICRAL*, https://www.telespazio.com/en/business/space-programmes/sicral.

[25] Thales Alenia Space, Telespazio and General Secretariat of Defence, *Thales Alenia Space and Telespazio Sign Follow-on Contract with Italian Ministry of Defense to Develop the SICRAL 3 Satcom System*, 17 June 2022, https://www.telespazio.com/en/press-release-detail/-/detail/sicral-3-pr-1.

[26] Interview, 1 August 2023.

[27] NATO, *NATO Begins Using Enhanced Satellite Services*, 12 February 2020, https://www.nato.int/cps/en/natohq/news_173310.htm.

[28] The Alliance has thus opened up to the possibility of activating the collective defence clause in Article 5 of the Treaty also in the event of attacks in, from or into space. See in this regard Alessandro Marrone and Michele Nones (eds), "The Expanding Nexus between Space and Defence", in *Documenti IAI*, No. 22|01 (February 2022), https://www.iai.it/en/node/14669.

[29] NATO, *NATO's Overarching Space Policy*, 17 January 2022, https://www.nato.int/cps/en/natohq/official_texts_190862.htm.

[30] NATO, "Alliance Persistent Surveillance from Space (APSS)", in *NATO Factsheets*, February 2023, https://www.nato.int/nato_static_fl2014/assets/pdf/2023/2/pdf/230215-factsheet-apss.pdf.

[31] Alessandro Marrone and Karolina Muti, "Spazio: a Vilnius un piccolo passo per la Nato", in *AffarInternazionali*, 27 July 2023, https://www.affarinternazionali.it/?p=104580.

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frameworks in the space field, alongside countries such as France and Germany.[32]

Beyond the Euro-Atlantic framework, as part of COSMO-SkyMed, ASI also worked with the Argentine National Commission for Space Activities (*Comisión Nacional de Actividades Espaciales*, CONAE) for the development of the Italian-Argentinean Satellite System for Emergency Management (*Sistema Italo Argentino de Satélites para la Gestión de Emergencias*, SIASGE), which exploits the instruments of the Italian constellation, combining them with SaoCom, an Argentinean satellite constellation.

Further proof of Italy's key role in the international debate on space its candidature and subsequent victory of Milan as the host city for the seventy-fifth edition of the International Astronautical Congress (IAC)[33] to be held in 2024. The event, which takes place annually, represents an opportunity for the country to assert its position as a key player in the space policy landscape.[34] It will bring together more than 8,000 experts in the field who will discuss the issue of sustainability in space.[35]

1.3 Space projects in PESCO and EDF

Italy is actively involved in the main initiatives promoted by the EU in the defence field that also have space implications, namely the Permanent Structured Cooperation (PESCO) and the European Defence Fund (EDF), launched in 2017 and 2020 respectively. The commitment to the space sector can be seen in both initiatives, which open up valuable intra-European collaboration opportunities for Italy.

Within the PESCO framework, Italy led the European Military Space Surveillance Awareness Network (EU-SSA-N) project, aimed at developing an autonomous and interoperable military Space Situational Awareness (SSA) capability compared to the US model.[36] Rome also participates in the two PESCO projects: Defence of Space Assets (DOSA)[37] and EU Radio Navigation Solution (EURAS),[38] respectively aimed at increasing European operational efficiency in the space sector, and the development of military positioning, navigation and timing (PNT) capabilities.

[32] Interview, 8 September 2023.

[33] International Astronautical Federation website: *International Astronautical Congress 2024*, https://www.iafastro.org/events/iac/international-astronautical-congress-2024.

[34] This will be the fifth time the country will host the international congress, the first edition of which was held in Rome in 1956.

[35] Ibid.

[36] PESCO website: *European Military Space Surveillance Awareness Network (EU-SSA-N)*, https://www.pesco.europa.eu/?p=816.

[37] PESCO website: *Defence of Space Assets (DOSA)*, https://www.pesco.europa.eu/?p=2793.

[38] PESCO website: *EU Radio Navigation Solution (EURAS)*, https://www.pesco.europa.eu/?p=814.

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In its first two years,[39] the EDF has already allocated 200 million for space projects including, among others, Navigation Warfare (NAVWAR), satellite communications, and intelligence, surveillance and reconnaissance (ISR) capabilities.[40] It was also announced that, for its third year, the Fund aims to finance projects on space data processing, early warning systems, and Space Domain Awareness (SDA), among others.[41]

2. The EUSSSD strategy: Lights, shadows and implications for Italy

2.1 A new strategy

On 21 March 2023, the European Commission and the European External Action Service (EEAS) published the EUSSSD.[42] Building on the foundations outlined in the 2022 Strategic Compass, in which EU leaders recognised the strategic importance of space,[43] the EUSSSD aims to define a comprehensive framework for addressing security and defence challenges in the space sector. The change in the global scenario forced a reflection at the European level on the concept of countering threats from space.[44] The document highlights the commitment to protect the EU's security interests by accelerating synergies between space, security and defence.[45]

The Strategy is divided into five key points:
(1) ensuring a shared understanding of space threats;
(2) strengthening the collective capacity to respond to attacks and threats;
(3) improving the resilience and protection of space systems;
(4) enhancing dual-use space capabilities;
(5) promoting international partnerships.

The aim to establish an Information Sharing and Analysis Centre (ISAC) based on the US model by 2024 is among the most important innovations introduced by the EUSSSD. With the support of the European Union Agency for the Space Programme (EUSPA), the Commission and the High Representative for Foreign Affairs and

[39] European Commission, *EDF Calls 2021 Factsheet*, 30 June 2021, https://defence-industry-space.ec.europa.eu/node/199_en.

[40] European Commission, *EDF Calls 2022 Factsheet*, 25 May 2022, https://defence-industry-space.ec.europa.eu/node/354_en.

[41] European Commission, *European Defence Fund Indicative Multiannual Perspective 2021-2027*, 29 March 2023, https://defence-industry-space.ec.europa.eu/system/files/2023-03/EDF%20Indicative%20multiannual%20perspective.pdf.

[42] European Commission, *European Union Space Strategy for Security and Defence* (JOIN/2023/9), 10 March 2023, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52023JC0009.

[43] European Council, *A Strategic Compass for a Stronger EU Security and Defence in the Next Decade*, 21 March 2022, https://europa.eu/!myp9Q8.

[44] Interview, 31 July 2023.

[45] European Commission, *European Union Space Strategy for Security and Defence*, cit.

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Security Policy intend to share best practices and support measures through the direct involvement of industry and the public sector. This will enable countries with a complete production chain such as Italy to carry out a strategic reflection on the positioning of their companies in the newly established information centre.[46]

The EUSSSD also states its intention to draft a new EU space law that, building on the existing regulatory structure, will provide a common safety, security and resilience framework for European space systems. After an initial consultation phase with member states, the Commission will direct its efforts towards identifying space systems and services considered to be essential at the national level. The objective is the definition and implementation of the first common resilience layer for critical space services, as well as the development of coordinated preparedness and resilience plans. The Commission is also committed to implementing non-specific space legislation in this area, such as the Directive on measures for a high common level of cybersecurity throughout the Union (better known as NIS2) and the so-called Cyber Resilience Act.[47]

The drafting of an EU space law is particularly delicate, as it involves finding a shared balance between different national approaches to the sector in the main European countries, covering both security and defence as well as industrial and technological policies. Indeed, cooperation represents one of the cornerstones of the EUSSD, which encourages member states to work in synergy to achieve a robust and resilient space security infrastructure. Building on this, the Strategy puts particular emphasis on EU partnerships with the United Nations, the United States, non-member countries and the North Atlantic Alliance.[48]

2.2 Space threats and Italian expertise

The strategy introduces two pilot projects: the provision of SDA services for the monitoring, tracking and subsequent identification of objects in space, and the development of a new government service as part of Copernicus, namely the EO component of the EU space programme. According to an initial estimate, the SDA services will be provided by the end of 2024, in conjunction with the Space Surveillance and Tracking (SST) component of the EU space programme, which needs to be improved in terms of the accuracy of advanced anti-collision manoeuvres. The Strategy also specifies that member states developing SST that

[46] Interview, 25 July 2023.

[47] For more information on NIS2 and the Cyber Resilience Act, see respectively: European Parliament and Council of the European Union, *Directive (EU) 2022/2555 of 14 December 2022 on Measures for a High Common Level of Cybersecurity across the Union*, http://data.europa.eu/eli/dir/2022/2555/oj; European Commission, *Proposal for a Regulation on Horizontal Cybersecurity Requirements for Products with Digital Elements* (COM/2022/454), 15 September 2022, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52022PC0454.

[48] The most recent foundations of the EU-NATO space relationship were laid in the Joint Declaration of January 2023, in which space is identified as an area of mutual cooperation. See: *Joint Declaration on EU-NATO Cooperation*, 10 January 2023, https://europa.eu/!C9TWXG.

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are part of the European SST Consortium, will benefit from enhanced tracking resources through the use of additional sensors and analysis capabilities for defence and intelligence.[49] The European emphasis on EO represents an advantage for the country, which, through its investments in the context of the National Recovery and Resilience Plan, and thanks to its industrial presence in the Copernicus programme, is a major player at the European level. At the same time, the in-orbit servicing sector, which is also among Italy's main space objectives, and includes all the processes required to maintain spacecrafts while they are in orbit, is particularly relevant in the Strategy.

Shortly before the official publication of the EUSSSD, the EU conducted its annual Space Threat Response Architecture (STRA) exercise, during which a cybersecurity incident affected the Galileo global navigation satellite system. This triggered the activation of the European Space Threat Response Mechanism. As the host nation of the Galileo Control Centre at Fucino (L'Aquila), Italy activated the chain of command to deal with the incident and support the measures necessary to counter the attack, in accordance with the Strategy.[50] This readiness reinforces Italy's position in the implementation of the EUSSSD, which recognises the importance of monitoring capabilities and acting promptly against threats to the Union's space assets.

The EUSSSD also recognises that, although still very performant, Copernicus may soon be unable to satisfy the Defence's demand for high-resolution imagery, as it is equipped to meet mainly security needs. Leveraging the complementary roles of the European Union Satellite Centre (SATCEN) and EUSPA, the Commission will therefore work to ensure a gradual implementation of the necessary upgrades, leading to a more reliable, resilient and accessible European governmental EO service.[51] This development is aimed at ensuring EO capabilities for national defence and security purposes, also considering the importance of the space domain during Russia's invasion of Ukraine, the new role played by both public and private actors, and the need to recognise the Defence sector as a key player in the space field, as opposed to a mere user of services.[52]

2.3 Implementation of the Strategy and future prospects

The implementation of the Strategy will be jointly driven by the Commission – particularly important for legal and regulatory leverage, industrial and

[49] Italy is part of the Consortium because of an agreement signed between ASI, the Ministry of Defence and the National Institute for Astrophysics. See: Italian Air Force General Staff-General Office for Space, *Spazio: l'Italian SST Operation Center monitora oggetti spaziali con elevata probabilità di collisione*, 9 April 2021, https://www.aeronautica.difesa.it/2021/04/09/spazio-litalian-sst-operations-center-monitora-oggetti-spaziali-con-elevata-probabilita-di-collisione.

[50] EEAS, *EU Tests Its Response Mechanism to Threats*, 15 March 2023, https://www.eeas.europa.eu/node/427136_en.

[51] European Commission, *European Union Space Strategy for Security and Defence*, cit.

[52] On this last aspect, see: Giancarlo La Rocca, "Il fronte spaziale della guerra in Ucraina", in *AffarInternazionali*, 27 May 2022, https://www.affarinternazionali.it/?p=98311; Interview, 2 August 2023.

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technology policy, and the development of EU space programmes – and the High Representative, who will present the deployment plan to the member states and annually update the Council on progress made and possible further actions.[53] At the same time, a systematic implementation of the Strategy by national governments will be necessary to ensure that the document achieves its intended objectives.

Italy can make a significant contribution to the implementation of the EUSSSD by providing the Union with its established expertise in fields like satellite technologies, EO, telecommunications and navigation, and access to space. Italy's geographical position and infrastructure, including tracking stations and radar systems, could also be exploited to contribute to the EU's space surveillance, tracking and navigation capabilities. Through a concrete engagement in the implementation of the Strategy, Rome has the opportunity to strengthen its role in European space programmes.[54]

The interaction between European institutions represents a fundamental dynamic that Italy will have to consider if it is to assert its intentions regarding the EUSSSD and its implementation. It will therefore be crucial for the country to continue to work in synergy with its European partners, seeking to safeguard its role in the key sectors of the space industry. An objective that can only be achieved by ensuring the involvement of all the players at the national level to define the country's strategy. This will allow Italy to play a role in the negotiations on a European scale and anticipate the innovations introduced by law.[55]

Conclusions

The change in global scenarios and the foreseeable evolution of space as an operational domain call for a change of pace in Europe and Italy. Both in the NATO framework about deterrence and collective defence, and in the EU framework, Defence is called upon to assume a more proactive role, in synergy with all Italian institutional actors. In particular, in the EU framework, there is a need for a change of approach whereby Defence is not only considered as a mere "user" of space services – a recurring term in the EUSSSD – but as a full-fledged actor, as is already the case at the national level as well as in the NATO framework. In this context, the aforementioned PESCO and EDF space projects represent important tools to be exploited to strengthen both European cooperation between space and defence, and the Italian role in this context.[56]

[53] EDA, *EU Space Strategy for Security and Defence to Ensure a Stronger and More Resilient EU*, 10 March 2023, https://eda.europa.eu/news-and-events/news/2023/03/10/eu-space-strategy-for-security-and-defence-to-ensure-a-stronger-and-more-resilient-eu.

[54] F. Me, "Spazio, ecco la strategia italiana 2021-2027: priorità a Tlc e osservazione della Terra", in *SpaceEconomy 360*, 16 February 2021, https://www.spaceconomy360.it/?p=190721.

[55] Interview, 2 August 2023.

[56] Alessandro Marrone and Michele Nones (eds), "The Expanding Nexus between Space and Defence", cit.

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At the same time, as highlighted in the Strategic Vision Document for Space 2020-2029 published by ASI, it is fundamental that the Italian presence continues to expand within European and international forums to strengthen its role in the space field, generate know-how, and promote an economic return that benefits various sectors of the industry.[57] This will allow for the integration of capabilities with partner countries to the greater benefit of all, given the scale of the challenges in the space field, while at the same time favouring the achievement of a certain degree of national technological autonomy that is sustainable over time.

Italy must be more incisive in developing and promoting collaborations with its main partner countries, starting with the bilateral relations already established with France – by developing the full potential of the Quirinal Treaty – and Germany. It is clear that collaborations between governments are the most fruitful in terms of return for the country, including its industries. By further promoting European and transatlantic space cooperation, Italy will not only consolidate its foreign and defence policy, but it will also ensure the harmonisation of sectors that have repeatedly shown a high level of complementarity. Awareness of the growing link between Space and Defence will be necessary to harmonise cooperation between the two sectors and promote the mutual exchange of know-how. In this context, the fact that the latest 2023 NATO-EU Joint Declaration identifies space as a new area of cooperation is a step in the right direction for Italy and an opportunity to be seized.[58]

It is no coincidence that cooperation is the cornerstone of the EUSSSD, the implementation of which constitutes a driving force for cooperative activities within the EU, fuelling a European dynamism in the space field that has important spin-offs for the countrywide system. Italy has the opportunity to make a significant contribution to the implementation of the Strategy, through the experience it has acquired in industrial collaborations, space diplomacy, civil-military cooperation, and in the military field. Through a more proactive engagement in the implementation of the EUSSSD, Rome can influence both decision-making and executive activities, protecting and promoting national interests in a constructive and proactive manner within the European framework.

In this context, Italy's contribution to the development of the EUSSSD could be articulated along three lines: space threat landscape, SST and SSA competencies, and international norms of responsible behaviour.[59] Rome could also play a pioneering role in the drafting of the European space law, using its experience in the field of space diplomacy collaborations, exploiting the advanced skills of the Defence in this operational domain, and involving the many national companies,

[57] ASI, *Documento di visione strategica per lo spazio 2020-2029*, April 2020, https://www.asi.it/wp-content/uploads/2020/04/DVSS-2020-2022-Finale_compressed_compressed.pdf.

[58] EU and NATO, *Joint Declaration on EU-NATO Cooperation*, cit.

[59] Interview, 28 July 2023.

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universities and research centres active in the sector. In this perspective, it will be crucial to involve all stakeholders, including those within the industrial sector.

The space sector is one of the few high-tech sectors in which Italy is able to maintain a leadership position, albeit with difficulty given the growing international competition, and one that represents an important driver for the country's economic development. It must therefore be guarded against with adequate investments aimed at maintaining technological leadership in certain segments of the space sector on the one hand, and at ensuring its participation in cooperative programmes on the other, thus ensuring balanced and win-win international collaborations. According to some experts, the current situation reflects a redundancy of funding sources for space programmes, and therefore calls for a much-needed centralisation of efforts.[60] This could be achieved through the establishment of a multi-fund, i.e. an instrument managed by the Presidency of the Council of Ministers, bringing together the main funds for space, capable of ensuring the ability to plan in a stable manner over a period of at least ten years.[61] In devising solutions for a more stable and efficient financial planning, it will however be essential to ensure an equally stable political management of the Italian space framework, perfecting the institutional relations between the parties involved.[62]

In conclusion, the strategic framework sees a renewed centrality of space in terms of both cooperation and competition, with greater dynamism at the bilateral level with the main European countries as well as in the EU, ESA, NATO and transatlantic spheres. This presents challenges and opportunities for Italy's international projection and the protection of its national interests, which the country must face and seize by playing a more active role. As highlighted by the EUSSSD, there is a greater awareness in Europe related to risks and threats to space assets, and the implementation of the Strategy will be an important opportunity to bring national positions to the European table. For Italy, the challenge is therefore to maintain a primary role in the international space scene through appropriate policies and investments.

updated 31 October 2023

[60] Interview, 25 July 2023.
[61] Interviews, 27 July 2023 and 3 August 2023 (a).
[62] Interview, 27 July 2023.

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Acronyms

APSS	Alliance Persistent Surveillance from Space
ASAT	Anti-Satellite tests
ASI	Italian Space Agency
CNES	Centre National d'Etudes Spatiales
CONAE	Comisión Nacional de Actividades Espaciales
COPUOS	Committee on the Peaceful Uses of Outer Space
DA-ASAT	Direct-Ascent Anti-Satellite tests
DLR	Deutsches Zentrum für Luft und Raumfahrt
DOSA	Defence of Space Assets
EDF	European Defence Fund
EO	Earth Observation
ESA	European Space Agency
EURAS	EU Radio Navigation Solution
EUSPA	European Union Agency for the Space Programme
EU-SSA-N	European Military Space Surveillance Awareness Network
EUSSSD	EU Space Strategy for Security and Defence
IAC	International Astronautical Congress
ISAC	Information Sharing and Analysis Centre
ISR	Intelligence, Surveillance and Reconnaissance
ISS	International Space Station
MoU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration
NAVWAR	Navigation Warfare
OST	Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies
PESCO	Permanent Structured Cooperation
SME	Small and medium-sized enterprise
PNT	Positioning, Navigation, and Timing
SATCEN	European Union Satellite Centre
SDA	Space Domain Awareness
EEAS	European External Action Service
SIASGE	Sistema Italo Argentino de Satélites para la Gestión de Emergencias
SICRAL	Italian System for Secure Communications and Alerts
SSA	Space Situational Awareness
SST	Space Surveillance and Tracking
STRA	Space Threat Response Architecture
UN	United Nations

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