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The European Space Context
after ESA's 2025 Ministerial Council Meeting

Space has become an indispensable – and often unnoticed – element of everyday life. Modern societies would not work without space. Most citizens know about established applications like Earth observation, navigation and communication for purposes like environmental monitoring, climate change management, weather forecasts, disaster response, internet access, TV broadcasting or smart traffic. But space is also crucial for energy provision or financial transactions and many other vital functions of our society. According to the OECD, space technologies serve as the foundation for essential services in 11 out of the 16 most critical sectors in society.

All of this adds an important economic dimension to space and its utilization. The global space economy is already valued at around €550 billion, with projections from the World Economic Forum reaching as much as €1.8 trillion by 2035.

Last but not least there has been an inherent link between space and security from the outset: most space activities are dual use – they can serve both civilian purposes as well as resilience and defence related ones. Given the latest geopolitical shifts this aspect is increasingly recognized and accounted for at the European level.

The European Space Agency (ESA) is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and to ensure that investment in space delivers benefits to the citizens of Europe and the world. ESA works together with its 23 Member States to push the frontiers of science and technology, and to promote economic growth in Europe.

50TH ANNIVERSARY

In 2025 ESA celebrated its 50th anniversary. On 30 May 1975, the ESA Convention was signed by 10 founding Member States and has since then expanded to 23 Member States, three Associate Members, one Cooperating State and Cooperation Agreements with four other EU states. ESA is a showcase of what Europe can achieve when its nations unite to tackle complex challenges through technical ingenuity, science, and the power of bold ideas. Throughout ESA's existence, outstanding scientific, technological and industrial successes have been achieved, driven by programmes such as space science, space exploration, space transportation, space safety, space applications and space technology developments. ESA's programmes have brought benefits to citizens, the economy, the capabilities and the competitiveness of European industry, and to governmental policies during this past half century. ESA holds a fundamental role in promoting European technological excellence in all segments of the space industry and in building sustainable development. ESA has continuously been a key player in enabling programmes on a scale beyond that of individual Member States, and has continuously inspired all generations and, through its international cooperation, the global space community.

Since the late 1970s, the European space sector has quietly but steadily risen to create a renowned industrial landscape, demonstrating the power of strong European cooperation around a common vision. Spearheaded by ESA, Europe has transformed into a global player in

space science and technology, creating breakthroughs that not only expand our understanding of the Universe but also deliver tangible benefits for life on Earth. Key milestones include ESA's leadership in space science (e.g. missions like Giotto, Rosetta, and Gaia), Earth observation through Copernicus, Earth Explorers and meteorological missions, and in Positioning, Navigation and Timing (PNT) through the Galileo satellite navigation system. ESA's work in space exploration, such as its contributions to the ISS and the ExoMars mission, further demonstrates Europe's broad space expertise.

Despite these successes, the European space sector is facing significant challenges as the global space landscape shifts rapidly. Public investment in space is increasing worldwide, particularly in the U.S.A and China, while Europe's investment remains comparatively modest. As the space sector expands, Europe's share in it is shrinking. The United States commanded over 60% of the €122 billion in global public funding in 2024. Europe captured only 10% — a decline of five percentage points since 2019. The contrast is even starker for the domain of security: While defence accounts for more than half of all public space spending globally, in Europe that figure is just at 15%.

On top of this, the growing commercialisation of space, driven by private companies pursuing disruptive technologies and new business models (often referred to as 'New Space'), is profoundly reshaping the sector. These developments present both significant opportunities and challenges, as Europe risks losing ground to more competitive players in the space race.

STRATEGY 2040

Taking into account these boundary conditions and looking ahead, ESA has laid out Strategy 2040, a vision which aims to enhance Europe's space capabilities across several key areas. The strategy is designed to address pressing societal needs, such as sustainability, scientific leadership, resilience, and global cooperation. With Strategy 2040, ESA outlines a blueprint for its future priorities and activities, allowing ESA to:

- Guarantee that its space activities and programmes can optimally respond to the diverse societal needs and policy priorities at local, regional, national and European level.
- Ensure ESA remains and further grows as a top-tier global space actor through clearly defined objectives and corresponding leadership roles.
- Create a clear vision and coherent narrative for its programmes to facilitate strategic decision-making and programme implementation across multiple ESA funding cycles.

Strategy 2040 defines five overarching goals to guide its efforts through 2040. For each of these five goals specific objectives and the corresponding needs in terms of future technology advancements are identified.

These goals and objectives are deeply rooted in Europe's core values, emphasising the peaceful use of space, sustainability, stability, prosperity, strong public services, and the historic role of space in research and education. They also reflect a commitment to multilateral collaboration in addressing complex challenges and ensuring that space activities contribute positively to the well-being of future generations. While the strategy defines "what" the Agency aims to achieve over the next 15 years, equal importance is placed on "how" these goals will be realised. The five goals are introduced in more detail in the following.

GOAL 1 – PROTECT OUR PLANET

As humanity navigates the challenges of the 21st century, climate change will remain the most pressing issue, with a trend of increased extreme weather events, ecosystem collapse, and biodiversity loss continuing to escalate. The European Green Deal and similar national commitments aim to combat these challenges by achieving climate neutrality by mid-century. Space will play a vital role in addressing these priorities by advancing climate science, supporting Earth action, and implementing monitoring, adaptation measures and prediction systems. In parallel, the sustainable management of the near-Earth environment will become increasingly critical as satellite numbers are rising exponentially, raising the risk of collisions and space debris. ESA is committed to a net zero-debris approach by 2030 and advocates for the adoption of the

Zero Debris Charter. ESA will also pioneer technologies for active debris removal, ensuring that space remains a viable and safe environment for future missions.

Beyond Earth's atmosphere, ESA will focus on mitigating risks posed by space weather and Near-Earth Objects (NEOs). Solar storms will continue to threaten infrastructure, satellites, and navigation systems, while asteroid impacts, though rare, could pose catastrophic risks. ESA will enhance its space weather forecasting capabilities and conduct regular NEO observation campaigns to predict and mitigate potential impacts. This comprehensive focus will ensure ESA remains at the forefront of global efforts to protect the planet, leveraging space technologies to address Earth's most critical sustainability challenges while safeguarding the future use of space itself.

GOAL 2 – EXPLORE AND DISCOVER

The 'Explore and Discover' goal is focussed on shaping Europe's future as a leader in Earth science, space science, and exploration in space endeavours from Low Earth Orbit to the Moon and eventually Mars. By advancing excellence, innovation, and collaboration, ESA missions will continue to tackle the profound scientific questions of our time. This includes deepening our understanding of Earth's complex systems, to better understanding our Solar System, galaxy evolution, and the dynamics that shape our Universe.

In terms of exploration, ESA will enhance Europe's presence in Low Earth Orbit, establish sustainable lunar operations, and prepare for Mars exploration. This involves building infrastructure for cislunar space, advancing transportation, communication, and mobility technologies, and developing systems for sustainable lunar habitation. Collaborative international projects and participation in the ISS and future space stations will further solidify Europe's role in the new era of space exploration.

GOAL 3 – STRENGTHEN EUROPEAN RESILIENCE AND AUTONOMY

ESA is committed to enhancing Europe's resilience and autonomy in space, recognising these as essential for the future. By 2040, ESA aims to achieve significant advancements by integrating cutting-edge space solutions that reduce external dependencies and bolster Europe's ability to respond to challenges independently.

A key focus is on secure, resilient communication networks and autonomous space access, ESA seeks to protect European citizens, critical infrastructure, and vital supplies while reducing external dependencies. Space-based communication will be seamlessly integrated with terrestrial networks, ensuring robust and secure connections across land, air, and sea, even in disaster-affected areas. Advanced remote sensing, real-time data analytics, and robust connectivity will revolutionise disaster management, enabling faster, more precise crisis prevention and response. Such capabilities will ensure effective coordination across land, air, sea, and space, transforming Europe's ability to mitigate risks.

To secure Europe's autonomy in space, ESA will invest in scalable, state-of-the-art transportation systems, ensuring reliable and independent access to space. This will lay the foundation for a sustainable and self-reliant European presence in space, vital for its strategic interests and long-term resilience.

GOAL 4 – BOOST EUROPEAN GROWTH AND COMPETITIVENESS

ESA will drive Europe's economic growth and leadership in the global space economy by focusing on four strategic objectives. First, it will strengthen industrial capacity and competitiveness to unlock new markets, fostering a more prosperous society. Second, ESA will accelerate innovation by developing cutting-edge European space technologies in key strategic domains, ensuring Europe remains at the forefront of technological advancement. Third, ESA will position Europe as a commercial hub in the booming global space economy, attracting significant private investment through supportive policies and incentives. Lastly, ESA will establish Europe as the global hub for space research by leveraging world-class facilities and attracting top STEM talent, solidifying its reputation

as the premier destination for space expertise and innovation. Through these objectives, ESA will ensure Europe's resilience, competitiveness, and sustained growth in the space sector.

GOAL 5 – INSPIRE EUROPE

ESA's fifth goal is to establish a cohesive and effective European space ecosystem that brings the continent together through bold missions, pioneering discoveries, and impactful educational initiatives. The relationship between ESA and the European Union will continue to evolve, guided by the strategic input of ESA Member States and the established cooperation framework with the EU. Strengthening the relationship through a stable, inclusive, and long-term collaboration, with ESA serving as the sole implementing agency for EU space programs, is essential to achieving this vision. By promoting excellence, nurturing curiosity and ambition, and highlighting the strength of diversity, ESA aims to inspire future generations of scientists, engineers, and entrepreneurs. Like the Apollo programme, which established the U.S. as a global power, Europe can use space science and exploration to foster, advance technological innovation, and enhance the global influence of its Member States, national space agencies, and the EU.

ADAPTATION AND REFORMS

To achieve the ambitious objectives of ESA's Strategy 2040, the agency will continue to deliver successful ESA space programmes and activities while implementing structural reforms, embracing the commercialisation of space and strengthening ESA-EU cooperation. Building on 50 years of achievements, ESA will adapt its operational approaches through its Transformation initiative. This initiative modernises programme implementation, procurement, and internal processes to ensure effective delivery of an increasing number of programmes within schedule and budget. A cornerstone of this effort is the Independent Project Management Authority, which oversees compliance with managerial rules, monitors resource allocation, and mitigates risks, addressing challenges such as optimism bias and project delays. ESA will also update its procurement rules and geo-return frameworks, fostering a competitive, innovative European space industry that benefits all Member States.

ESA will embrace the growing commercialisation of space by transitioning from procuring hardware to purchasing services, supporting market growth through anchor tenancy, and fostering innovation via partnerships with NewSpace companies. These strategies aim to empower the private sector to drive commercialisation while ESA focuses on pioneering missions and addressing global challenges. By acting as an enabler and catalyst, ESA will ensure public investments in space deliver broad societal and economic benefits.

Deepening collaboration with the European Union is essential, as public sector demand drives 70% of the European space economy. ESA aims to strengthen partnerships with the EU on existing programmes like Galileo, Copernicus, and IRIS², while exploring new areas aligned with European priorities such as climate action, digital innovation, and strategic autonomy. By leveraging dual-use space assets, ESA will support disaster response, food security, and cybersecurity, contributing to Europe's resilience and reinforcing its leadership on the global stage. This cooperation will ensure Europe remains a strong player in the global space economy, while ESA continues to provide technical expertise and implementation for EU programmes and serves the interests of its Member States.

Complementing these efforts, the ESA Long-Term Plan will serve as the financial and operational backbone of this strategy, providing a cohesive roadmap for funding, resource allocation, and inter-directorate coordination. More than a planning tool, the Long-Term Plan will synchronise ESA's programmes with Member States' national priorities, fostering a unified and collaborative approach across Europe's space sector. For the space industry, the Long-Term Plan offers clarity and predictability, allowing for robust planning, innovation, and alignment with future ESA initiatives.

The Long-Term Plan and Strategy 2040 are designed as dynamic instruments to adapt to geopolitical,

technological, and environmental shifts. Together, they ensure ESA remains agile, responding effectively to unforeseen challenges while continuing to lead transformative advancements in space exploration, scientific discovery, applications and industry growth. These foundational frameworks will prepare ESA, Member States, and the European space industry to navigate the evolving global landscape, securing Europe's position as a leader in space innovation and resilience.

INCREASING SUBSCRIPTIONS

The first step in translating ESA's Strategy 2040 into reality was ESA's Council meeting at ministerial level (CM25) in Bremen, on 26 and 27 November 2025. At this meeting, ESA presented a meticulously crafted programme proposal that reflects Strategy 2040's priorities, ensuring a strong alignment between national investments and the agency's long-term vision.

While the proposal was structured around the five strategic goals of Strategy 2040, it is important to note that most ESA programmes contribute to several objectives and support the Strategy 2040 in a cross-cutting way.

The proposal presented at CM25 allows for a step change and sets the course for Europe's future in space – through a modernised and agile ESA, embracing a paradigm shift in the way space programmes are conceived, procured, and delivered. This was acknowledged by the Member States, who provided subscriptions of € 22.3 billion, equalling a 31% increase to the investments at the previous Ministerial Council meeting of ESA in 2022.

Among the oversubscribed elements of the proposal was science, which will receive a historic funding increase of 3.5% per year beyond inflation, and technology, which was granted a substantially strengthened budget for technology enablers, critical components, digitalisation and emerging technologies. This highlights that while taking up new challenges, ESA will also continue to cherish its core tasks.

EUROPEAN RESILIENCE FROM SPACE

It is worth pointing out that the programme package at CM25 also comprised an element called *European Resilience from Space (ERS)*. Europe features a strong capacity to manage emergencies and respond to disasters, thanks in large part to the success of space programmes that have provided Europe with world-leading capabilities in environmental monitoring, situational awareness, and crisis response.

Building on this strong foundation, ERS is a complementary initiative to ensure that Europe's resilience is maintained in a time of rapid geopolitical changes and increasingly complex and unpredictable crises. Member States subscribed to this approach.

ERS will address critical gaps in Europe's ability to manage crises, particularly those triggered by rapidly escalating geopolitical threats. It features an integrated system-of-systems architecture structured around three interconnected pillars.

The first pillar is the ERS Earth Observation (ERS EO) programme, which will provide high performance Earth observation capabilities for crisis monitoring and rapid response which are complementary to European commercial and national capacities. The programme will be user-driven and implemented in two elements: The first element will focus on preparation of the future Earth Observation Governmental Service (EOGS) system, proposed as part of the EU Space Programme, in terms of elaborating an overall system architecture including pooling and sharing of commercial and national capacities, designing future space missions, as well as maturing technologies and user services.

The second element will foster and federate capabilities through sovereign national or multinational clusters, each contributing to a common architecture while retaining national control, and helping to ensure access points to space capabilities for public safety, protection and disaster relief entities. With this approach, ESA offers a rapid and concrete way to act and deliver reliable satellite imagery via highly reactive space-based Earth Observation capabilities, ensuring

that space infrastructure can respond decisively to the realities of a more uncertain world.

The second pillar is the functional connection of the ERS constellation to the EU's upcoming secure communication multi-orbital secured connectivity constellation IRIS². The constellation established with this latter programme will serve as the communication backbone, ensuring that data can be transmitted quickly, securely, and reliably to users of existing and future Earth Observation and Navigation systems. The ESA programme will include an IRIS² Evolution Preparatory Activity which will enhance and add capabilities as well as enable connectivity to other systems (e.g. national missions of ESA/EU Member States) as well as non-space defence users (e.g. airplanes, or High-Altitude Pseudo-Satellites).

The third pillar is the accelerated and reinforced implementation of Celeste, the Low Earth Orbit (LEO) preparatory phase of the FutureNAV Programme. A complement to the backbone Galileo and European Geostationary Navigation Overlay System (EGNOS) infrastructures will significantly enhance their resilience and accuracy. This will support precise and robust PNT services, even in environments subject to jamming, interference, or degradation, thus ensuring reliable access to critical geolocation and timing information in any scenario.

Together, these three pillars form a strategic and sovereign European infrastructure that fuses sharp sensing, secure connectivity, and precise positioning. It needs to be stressed that ERS is built on the principle of pooling and sharing; national governments will retain full control of their assets while obtaining access to additional capabilities, thereby avoiding non-availability of services due to saturation in cases of high demand.

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CM25 marked the start of a marathon of budgetary and political milestones including ESA's Ministerial Council 2028 and the European Union's Multiannual Financial Framework (MFF) 2028-34 which will shape Europe's long-term space ambitions.

So, the first steps are taken and the way forward is clear. By addressing pressing global challenges, fostering innovation, and uniting Europe's space efforts, ESA aims to make sure that Europe remains competitive, resilient, and visionary, occupying a position in the global space community that is commensurate with Europe's political and economic weight.

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