



The Evolution of the Spanish Space Sector

Spain joined the European space effort at the beginning of the space era, around 1957, when the first man-made satellite, Sputnik, was placed in orbit.¹ Since then, much has changed, particularly with the creation of a national space agency in 2023. OpenSpace speaks to Juan Carlos Cortés Pulido, Director of the Agencia Espacial Española (AEE – the Spanish Space Agency) to find out what the newly-formed agency has planned for Spain's future space business.

The early years of Spain's space activities were mainly supported by the efforts of a few government departments and a handful of private investors. It wasn't until 1988 that substantial financial support was granted by the Spanish Government. Since then, support has been maintained at a level unprecedented in Spain for any R&D activity.

In the beginning, Spain worked with NASA and the European Space Research Organisation (ESRO), which was later merged with the European Launcher Development Organisation (ELDO) to become the European Space Agency (ESA). The country played a crucial role in collaboration with NASA for the US Moon missions under the Apollo programme and subsequent crewed missions. The two ground stations it established provided vital ground tracking and communication support for manned flights that took place between 1967 and 1985.

The first Spanish satellite, Intasat, was developed by the National Institute of Aerospace Technology (INTA) and launched into orbit in 1974. Since then, Spain has been involved in the launch of more than

20 satellites, some with international collaboration, for telecommunications, Earth observation (EO) and communications. This development has been accompanied by the establishment of key European institutions such as SATCEN to support the European Union's (EU's) Common Foreign and Security Policy by providing geospatial intelligence derived from space assets.

Working with ESA

Spain was one of 10 ESA Member States that were the initial signatories of the ESA Founding Convention in 1975. It is currently the fifth largest contributor to ESA, providing €300 million per year (5.9% of the total Member State contributions) at the last Ministerial.²

Spain is home to ESA's European Space Astronomy Centre (ESAC), located near Madrid. This is the primary ESA hub for operating planetary and astronomy missions, with scientists in the areas of astronomy, planetary science, astrophysics and solar science. The archives for most of ESA's astronomy, planetary science and heliophysics missions are developed and maintained at ESAC by the ESAC Science Data Centre



Cebreros deep space ground station. Image © Cebreros

(ESDC) in coordination with the science operations centres, instrument teams and consortia of the various missions.

ESA has established several Business Incubation Centres (ESA BICs) in Spain to support space-related startups in different regions. These centres aim to foster innovation by providing entrepreneurs with resources, mentorship and access to space industry networks.

Spain is also part of the Deep Space Network of NASA and ESA, via ground stations at Robledo de Chavela and Cebreros.

Leading activities

Over the past 20 years, the Spanish space industry has progressed from a secondary role in the value chain to a leadership position in high-tech, value-added subsystems and the development and integration of instruments, platforms, satellite ground segments and complete systems.

Spain has been a leader in many significant activities³ as part of missions and programmes including AmerHis, SMOS, SmallGEO, Proba-3, CHEOPS, Metop-SG ICI instrument, Sentinel-3, Smile and the Galileo Ground Control Segment. Others include the European GNSS (global navigation satellite system) Evolution Programme and EGNOS, the SouthPAN System, low Earth orbit positioning, navigation and timing


(LEO-PNT), quantum key distribution (QKD), DRACO, space surveillance and tracking (SST) and civil security from space (CSS).

In 2019, ESA renewed its focus on the Canary Islands for laser space operations, thanks to the winning combination of high altitudes and clear skies, which make it one of the world's best locations for astronomy⁴ and SST telescopes. Building on these conditions, in 2022 the Caramuel project was started to provide the first QKD system implementation from geostationary orbit.⁵

2020 saw the first Spanish-led EU mission, Copernicus Land Surface Temperature Monitoring (LSTM), which provides long-duration daytime and nighttime land surface temperature measurements globally.

In 2022, work started on ARRAKHS, which became the first mission from ESA's Science Programme to be coordinated by Spain, studying dark matter.⁶ In addition, two new Spanish astronauts became part of ESA's astronaut corps. The following year, Miura made history as the first European private rocket to reach space. This instigated further planned launches: Miura 1, Miura 5 and Miura Next.

SpainSat Next Generation (NG) is considered the most ambitious space programme carried out by Spain so far. With one satellite launched successfully in January 2025 and another due for launch by end of October,



SpainSat NG will provide more cost-effective, adaptable and secure communications services to governments and emergency response teams in Europe, North and South America, Africa, the Middle East and Singapore.⁷

A new impulse

Within the space sector, Spain's focus has expanded from launchers and scientific development to satellites, paying attention to the need for telecommunications for institutions and civilians. TEDAE (Spain's Association of Defense, Aeronautical and Space Technologies) estimates that total sales in the Spanish space sector were around €1.01 billion in 2022 and €1.13 billion in 2023.⁸

In December 2020, the Spanish Government created a strategic project for Economic Recovery and Transformation (PERTE) aligned to the aerospace industry, which was supported by the European Recovery and Resilience Funding; €4.5 billion was allocated from 2021 to 2025, split between public (~€2.2 billion) and private (~€2.3 billion) investment. The objective was to position the aerospace industry as a key player in the face of the new challenges and opportunities associated with the major transformations planned at national and international levels, including the creation of the Spanish Space Agency. In addition to large multinationals, the plan was to attract many emerging New Space companies specialising in aerospace technologies to get onboard.

SpainSat NG-I satellite launch. Image © SpaceX

Spanish Satellites

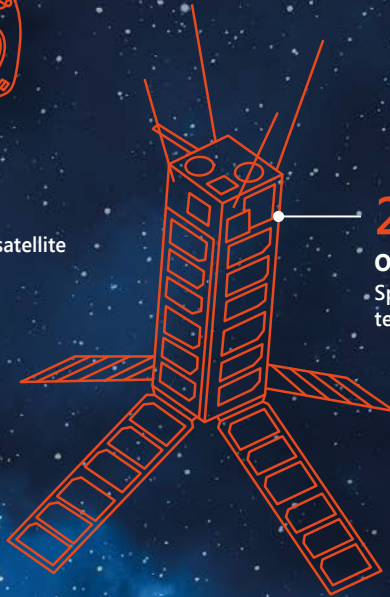


2014

Deimos-2
Remote sensing EO satellite

2018

Paz
EO and reconnaissance satellite



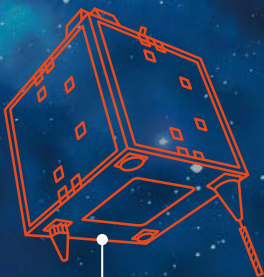
2013

OPTOS
Spanish low-cost
technology demonstrator



2013

HumSat-D
Spanish demonstrator for
educational training



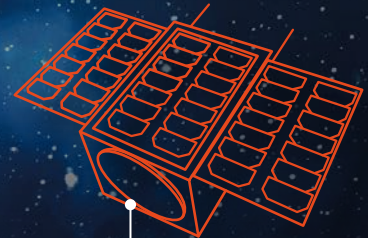
2009

Deimos
EO satellite



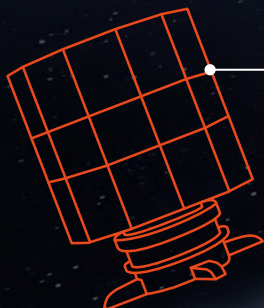
1992-2018

Hispasat IA, IB, IC, AG1 & 30W-6
First communications satellites
operated by a Spanish company



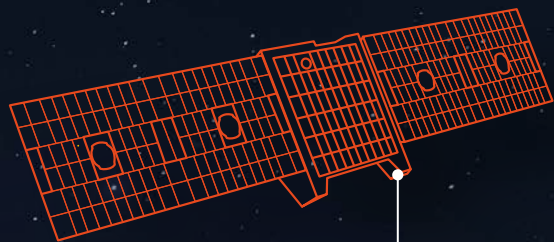
1995

UPM-Sat 1
Microsats for Spanish educational,
scientific and technology purposes



1974

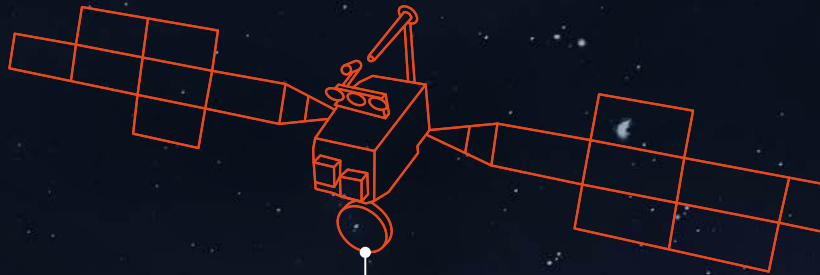
INTASAT
First Spanish satellite



2025

Startical IOD-1 and -2

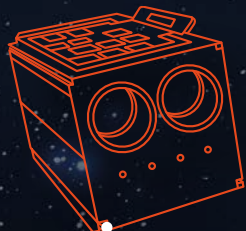
To explore instant communications between air traffic controllers and aircraft



2025

SpainSat

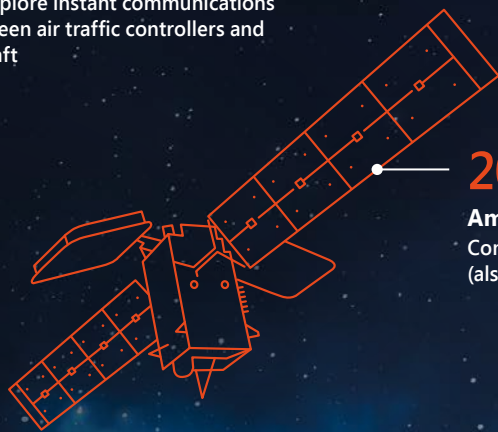
Telecommunications satellite



2022

Urdaneta-Armsat

Spanish-American research nanosats



2014

Amazonas 4A

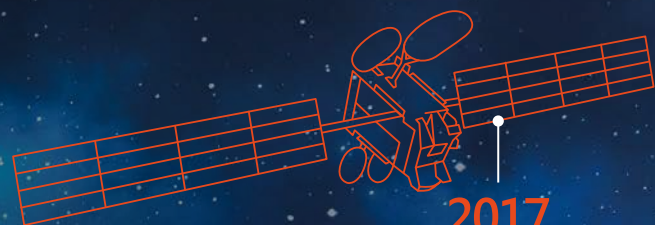
Commercial communications satellite (also known as Hispasat 74W-1)



2013

Amazonas 3

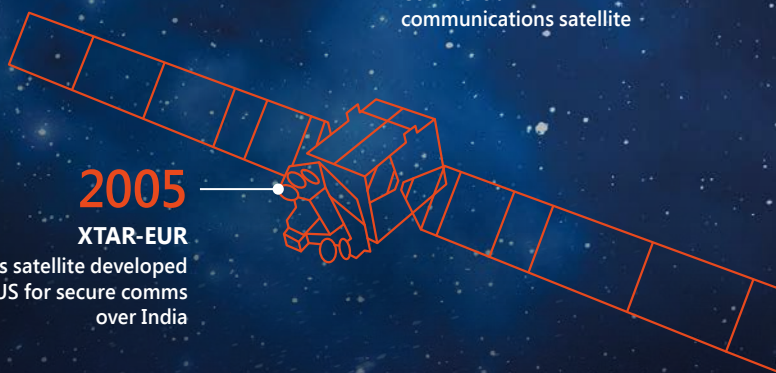
Communications satellite



2017

Amazonas 5

Commercial communications satellite



2005

XTAR-EUR

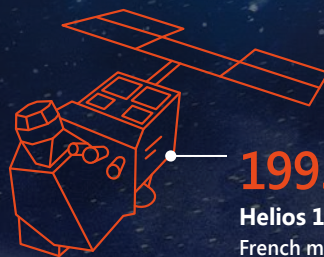
Communications satellite developed by Spain and US for secure comms over India



2004-2009

Nanosat 01 & 1B

Communications satellites



1995

Helios 1A & 1B

French military satellite with Spanish and Italian participation



Agencia Espacial Española (AEE) was inaugurated in Seville in 2023. The AEE has a dual mission: to coordinate national space activities and Spanish participation in international programmes. The Agency is establishing collaborations between all the ministerial departments with competences in the field of space. OpenSpace spoke to Juan Carlos Cortés Pulido, Director of AEE, to find out more.

What are the main objectives of AEE? And how is it structured?

The primary mission of AEE is to coordinate and integrate all space-related activities across Spain. Before its establishment, 17 different ministries were involved in the space sector, with overlapping responsibilities ranging from policy and management to industry and user engagement. This fragmentation made it necessary to create a unified structure. Today, the AEE leads national efforts in space industrial and scientific policy, bringing together industry, researchers, scientists, technology centres, academia and end-users under a comprehensive, integrated framework.

The founding of the AEE has driven a new era for Spain's space sector, enabling us to maximise the return on institutional investments in space. In addition to programmatic divisions focused on science, industry and user engagement, the Agency also includes a dedicated Security Directorate, headed by an Air Force General, and a unique Office for Space and Society. This outreach division is tasked with raising public awareness of the role space plays in

daily life. For instance, the average person relies on more than 100 satellites each day – demonstrating just how critical space technologies are to modern society.

Overall, the Agency is responsible for 29 areas of expertise and 15 clearly defined functions, all united by a single overarching goal: to enhance the wellbeing of citizens through space. Every initiative we undertake is driven by this purpose. The AEE also holds three strategic mandates: to develop a national Spanish space policy; to design and implement a long-term space strategy; and to draft a comprehensive space law. To date, we have launched over €580 million in programmes spanning a range of technologies and applications, and we have already surpassed 100% of our initial staffing goals.

What is AEE's position on synergies between defence and civil programmes?

The AEE operates under the oversight of the Ministry of Science and the Ministry of Defence, meaning we report to both. It's increasingly clear that space has a dual-purpose role, serving both civilian and

defence interests. When the Agency was established in 2023, it was decided that a dual structure was necessary. Given today's geopolitical climate, that decision has proven to be the right one.

Within the AEE, we manage a wide range of activities, both civil and military. We oversee programmes and applications across technologies, operations and launches, with security playing a crucial role. A business study published a few months ago revealed that 2 to 3 years ago, the main concern for society was sustainability; today, security has become the primary concern and focus. This report reinforces our activities for dual activities, but this is not new. During the Agency's creation, I was working on a space debris proposal with the Ministry of Defence where we were leading the technological heart of the programme.

Looking to the future, dual activities will be more evident. We will be working with the Ministry of Defence on programmes such as secure communications with quantum key distribution and will be reinforcing our space debris infrastructure.

We are also working on launching different initiatives, including satellite constellations to provide our armed forces with the information they need to carry out their policies. We are also working with organisations in Spain, especially in the regions, and have launched some committees where the regions can express their opinions. We are coordinating activities in different provinces to maximise the benefits of our investments.

How does AEE work with other national space agencies in Europe?

Cooperation is in our DNA. The AEE was founded by consolidating responsibilities, staff and budgets from various ministries, making cooperation an intrinsic part of our identity. Collaboration remains essential to achieving our strategic priorities. For this

reason, we have created a dedicated Directorate for International Relations.

Globally, we're observing a shift in space cooperation from multilateral frameworks to more multipolar dynamics. Since the invasion of Ukraine, this trend has become even more evident, with the focus of multipolar cooperation largely centred around the USA and China. In response, we are operating along two strategic axes. First, we are strengthening our partnerships with key European institutions such as ESA, the European Union Agency for the Space Programme (EUSPA) and EUMETSAT through the Agencia Estatal de Meteorología (AEMET), a state agency of the Government of Spain responsible for providing weather forecasts. Secondly, we are expanding our bilateral initiatives. Recently, we've signed new agreements with countries including Italy, Colombia, Turkey, Greece and Mexico, and we plan to continue pursuing such partnerships.



A notable example of bilateral cooperation is the Atlantic Constellation, a joint initiative with Portugal. This constellation currently includes eight satellites from each country, with the concept of an open constellation that enables shared data to reduce revisit times. It represents a significant step forward and we aim to continue strengthening similar collaborative efforts.

Our long-term goal is to establish a national satellite constellation providing different services and applications aimed at reducing revisit times. However, across all our efforts, cooperation and collaboration remain at the heart of what we do.

How are AEE's relationships with space agencies beyond Europe?

In the same spirit, international collaboration is a cornerstone of AEE's mission. We already have a cooperation agreement in place with NASA: for instance, all of the rovers in its Mars exploration programme contain Spanish technology. We are actively participating in the Mars exploration effort and

are eager to expand our involvement in future lunar and deep space missions.

Spain has also built a strong relationship with the China National Space Administration (CNSA), a major global player in the space sector. Through an ESA framework, we are already collaborating on the Smile mission⁹, and we aim to deepen this cooperation further.


Are there any collaborations with other agencies?

Interestingly, we are observing a new trend: the emergence of multilateral space organisations in various regions. In Latin America, for example, the Latin American and Caribbean Space Agency (ALCE) has recently been established. We are committed to becoming one of its founding members, recognising the strategic importance of this partnership for Spain.

Similarly, the creation of the African Space Agency marks a significant development. Fostering cooperation with our African partners in the space sector is a top priority for us.

What are Spain's priorities and budgetary expectations for the ESA Ministerial meeting in November?

Within Europe, Spain is the fifth largest contributor to ESA. I do not have a crystal ball, but this is the first Ministerial Meeting where the AEE is taking part, and

A large, white, dome-shaped observatory structure with a curved top, situated on a hillside. The sky is a mix of orange and blue, suggesting dusk or dawn. The foreground is covered in low-lying, dry vegetation.

Teide Observatory, Tenerife, Canary Islands. Image © IQOQI Vienna, Austrian Academy of Sciences

we hope this will entail a change in our contribution. Over the years, our Government has increased its investment and participation by 50%. Our ambition in this Ministerial is to reinforce our commitment, because ESA has been instrumental in the development of the Spanish space sector. We have already been in discussions with ESA relating to our potential investment, but everything needs to be approved by the Council of Ministers. We hope to have our final proposal by the end of October, and it is our priority is to reinforce our commitment to ESA.

It is important to note that the AEE is a management agency. We are more than 100 people developing the conditions to make the Spanish space sector grow. The execution of our programmes is done through industry, by scientists and by technology centres. We manage the programmes and sometimes we rely on ESA to execute some of our national programmes through third-party agreements; this is important for us.

We are advancing in the definition and consolidation of our priorities, and we want to launch powerful technology programme dealing with critical technologies such as quantum key distribution and artificial intelligence.

Other important areas for us include space transportation. We want to reinforce our role in the

domain of small launchers and, in particular, we want to look at the European launcher challenge. We are also focused on applications; for instance, we are interested in EO programmes and we are the leaders in low Earth orbit PNT, an initiative being led by a Spanish company. We want to launch an Atlantic Constellation Plus programme that will complement the Atlantic Constellation satellites – two EO satellites, each with a high resolution infrared optical system. We aim to build on this programme in years to come with Portugal.



AEE and ESA collaborate on satellite removal in-orbit demonstrator: CAPture Payload Bay (CAT). Image © ESA

Other key priorities for us are telecoms and space situational awareness (SSA). We are interested in launching secure telecoms initiatives, reinforcing inter-satellite communications and laser communications. And we want to be the first country to launch an active space debris removal to make a testbed for the re-entry of space debris. We are also working with



programmes looking at space sustainability. The more satellites that are launched, the more vulnerable space becomes. The situation with space weather and solar storms has been very prominent in recent years and we want to launch a space weather operational system to reinforce our SSA programme and space sustainability.

We need to protect space for generations to come and in that respect space law is also important. The current laws date back to 1967, so we need a new global law for everyone to work towards to protect the space domain for the future. We currently have over 14,000 satellites operational in orbit¹⁰, but with the explosion in the number of planned launches, this is expected to exceed 100,000 satellites by 2030! We are interested in the life cycle assessment of all space activities, and we need punishment measures globally for those who do not abide by these rules.

What investment initiatives is the Government implementing to support the growth of Spain's space sector?

We need to actively engage venture capital companies to help scale up our national space sector. Beyond providing grants to start-ups, it's essential to develop mechanisms for direct capital investment in companies, potentially through innovative financial instruments. Across Europe, we are observing consolidation efforts within the industrial sector, where companies are joining forces to enhance competitiveness. This is a strategic move. When comparing European and US companies, a significant difference in scale becomes evident, and collaboration is key to bridging that gap.

In Spain, we have already launched five space incubators that have supported approximately 120 companies developing advanced technologies. Notably, 80% of these firms are now consistently collaborating with the Agency. We are committed to expanding this effort, with plans to establish three additional incubators in the coming months.

Our overarching goal is to ensure that Spain has the capabilities and industrial base required to contribute meaningfully to future space programmes. We also aim to foster regional development, creating jobs and building technological expertise across the country. Spain is home to many high-tech companies with world-class capabilities: this strength enables us to play a critical role in European and international space initiatives. Ultimately, the wellbeing and prosperity of our country will increasingly be supported by the benefits of space technology.

What advice would you give to European companies with Spanish brands aiming to build relationships with national space agencies?

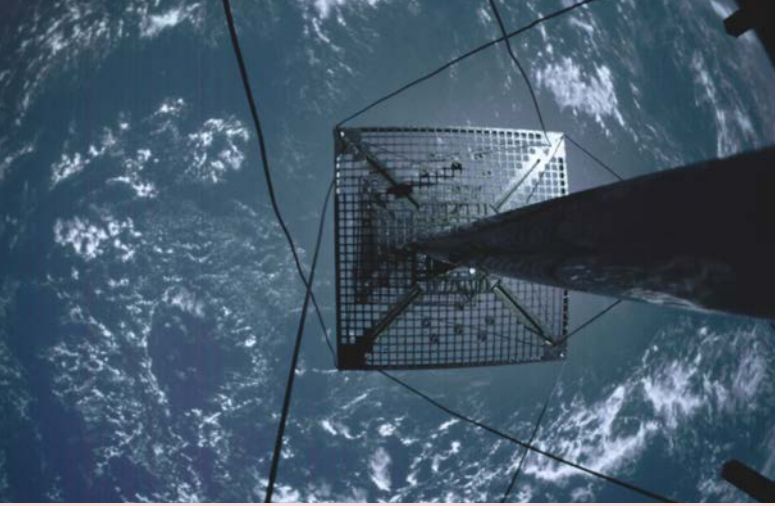
European companies for us are domestic companies. We make no differentiator where companies in Spain are part of an international group. All our activities are run by competition and we award each contract on the basis of merit. We don't mind if it's 100% Spanish or European.

In some countries it is far easier for start-ups to set up a company as their procedures are much simpler. We need to learn from these countries, especially if we want to expand further and build on our space technology capabilities.

Where do you see the Spanish space sector in the next 5 to 10 years?

We are already experiencing growth in both turnover and capabilities, and our focus now is on expanding and strengthening the entire space value chain. This requires agility, making strategic decisions in real time, often with incomplete information. Despite these challenges, we are advancing several key programmes with clear objectives.

One of our priorities is the development of EO constellations. A current focus in this area is improving



IOD-1 in orbit around Earth showing the 3 metre VHF antenna. Image © Startical

'revisit time to zero' and we aim to take an active role in such constellations. We are targeting missions with budgets of several million euros and satellite platforms in the 250-300kg range. In parallel, we are also committed to expanding Spain's capabilities in launch systems and technologies.

While we work to meet the technical requirements of these programmes, we are equally committed to addressing the broader needs of our institutions and society. It is critical that space becomes more integrated into our national mindset. To support this, we have established a User and Applications Directorate within the Agency, tasked with identifying and addressing user needs through space-based solutions.

One example of this is our collaboration with the Ministry of Infrastructure, which is seeking to modernise and streamline space-based traffic management systems. To meet this need, we launched Startical – a programme involving a constellation of 300 satellites designed to provide air traffic management data.


Our broader vision is to apply space solutions across other key societal sectors, such as water management, pollution monitoring, energy and fisheries. We are looking to replicate the UK's Catapult programme, an initiative that was set up to help organisations use space technologies and data in their activities and programmes as well as to support start-ups.

On the international front, we aim to deepen our relationships with global space actors. Whether through multilateral cooperation or bilateral partnerships, we are committed to reinforcing Spain's role on the world stage and contributing meaningfully to the global space community.

What inspired you to lead AEE? And what legacy would you like to leave behind?

For me, I am honoured to be the first Director of the Agency. In this role, my main challenge is to fulfil the expectations of the space sector. We are a mature sector with many programmes and we are the leader of many initiatives. We also have a responsibility to capitalise on all the Spanish experience in space from the past 60 years to reinforce and develop the sector.

I have a mandate of 5 years plus 2, and my goal in that time is to significantly strengthen the Spanish space sector: doubling or even tripling its turnover. I want to position us to play a leading role in international initiatives and, where appropriate, to lead major global space programmes. The AEE is not just shaping Spain's future in space but also ensuring that space delivers tangible benefits for every citizen. We are putting the boundary conditions for a smooth transition from current space activities to future commercial markets.

I often think of my 16-year-old son and what the space sector means for his generation. It's essential that the next generation understands the importance of space activities and the vast potential they hold. Space innovation is driven by people. That's why we must ensure that everyone is aware of the opportunities the space sector can offer, especially young people. Inspiring them today is how we build the future of space. 

Sources: See page 86