

Space Industry in Oman:

Current Trends and Perspectives



Contributors:



Second Edition
Oman, 2026



Dear Readers,

We are pleased to present the 2d edition of our magazine, "**Space Industry in Oman: Current Trends and Perspectives.**" Following the success of our first publication, this new edition continues our effort to provide comprehensive insights into the rapidly evolving Omani space sector.

We extend our heartfelt thanks to all our contributors for their invaluable support, expertise, and collaboration in bringing this publication to life.

Please don't hesitate to let us know if you spot any errors or typos. We highly value your feedback and suggestions as we continue building a valuable resource for the growing space community.

Stay tuned for more exciting initiatives and future editions!
Best regards,

Alex Cresniov
CEO and Co-Founder
SpaceTech in Gulf

Website —
www.spacetechn-gulf.com

Email —
info@spacetechn-gulf.com

Table of Content

4	Foreword
6	Space Industry in Oman Mindmaps
10	Meet the Voices
12	H.H. Sayyid Azzan Al Said. CEO of Etlaq Spaceport.
14	Dr. Saoud Humaid Al Shoaili. Head of the National Space Program Ministry of Transport, Communications, and Information Technology (MTCIT).
18	Dr. Junayd Miah. Chief Space Systems Engineer at Access Partnership.
22	Ammar Al Rawahi. General Manager at MBSAT.
26	Azan Al Maamari. Commercial Director at Oman Lens.
30	Mohammed Al Alawi. Founder & CEO @ RE&T Aerospace Engineer Computer Science.
32	Christelle Astorg-Lepine. Space Counselor to the French Embassy in Abu Dhabi.
34	Mrwan Mohey. Advanced Rocket Technologies.
36	Ghayadah Al Jabri. Head of Space Department at Ankaa Space & Technologies.
40	Dr. Fawziya Nasser Al-Wahaibi. Professor Assistant Engineering and Technology College UTAS-Muscat
42	Ahmed Hadidi. Assistant Professor at German University of Technology
44	Dr. Fatma Nasser Massoud Al-Harthi. Senior Academic Administrator at the UTAS
46	Dr. Yaseen Al-Mulla. Associate Professor of Biosystems Engineering at Sultan Qaboos University
48	Quentin Verspieren. Head of Space Safety Programme Coordination Office at European Space Agency
50	Dr. Dawood S. Al-Yahyai. Director General of Fisheries Researches at Ministry of Agricultural, Fisheries and Water Resources (Oman)
53	About Us

Foreword

About this Magazine

The 2nd edition of Space Industry in Oman: Current Trends and Perspectives explores Oman's emerging space industry ecosystem, featuring a comprehensive overview of organizations involved in the sector, from space technology developers to satellite communications departments, alongside interviews and articles by key stakeholders.

This edition provides a foundation for understanding Oman's evolving space landscape, highlighting key developments, opportunities, and contributions from across the industry. Future editions will build on these insights, capturing new developments and expanding coverage of Oman's growing space ecosystem to support informed decision-making and sustainable industry growth.



www.spacetech-gulf.com



About SpaceTech in Gulf

SpaceTech in Gulf has solidified its position as the leading analytics and space market intel company in the Middle East and North Africa (MENA) specializing in strategic communications and market intelligence within the space domain.

With a particular focus on the MENA region, the company offers expertise and insights into the unique challenges and opportunities that exist within this rapidly evolving sector. By leveraging its extensive knowledge and network, SpaceTech in Gulf helps its clients navigate the complexities of the SpaceTech landscape and develop successful business strategies that drive growth and innovation.

Contact us to learn more about how we can help you achieve your goals in the SpaceTech industry.



Email: info@spacetech-gulf.com



Space Industry in Oman

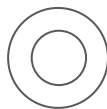
120+ Organizations



Disclaimer: This mind map is intended for demonstrative purposes only. If your organization's logo is missing or has been placed under an incorrect category, please do not hesitate to contact us and we will address it promptly.

120+ Organizations

120+ Organizations



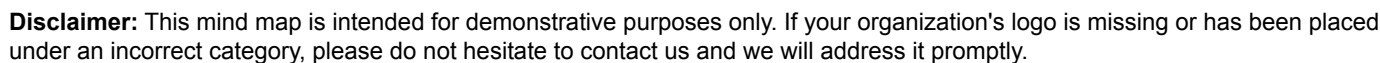
International



Local

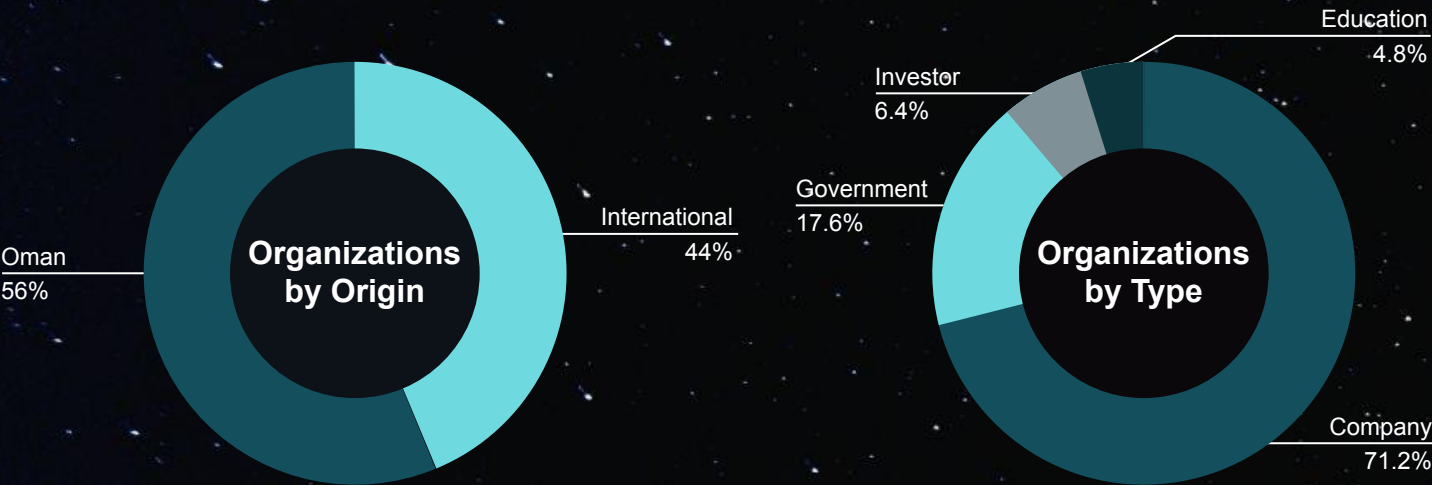


SPACETECH IN GULF

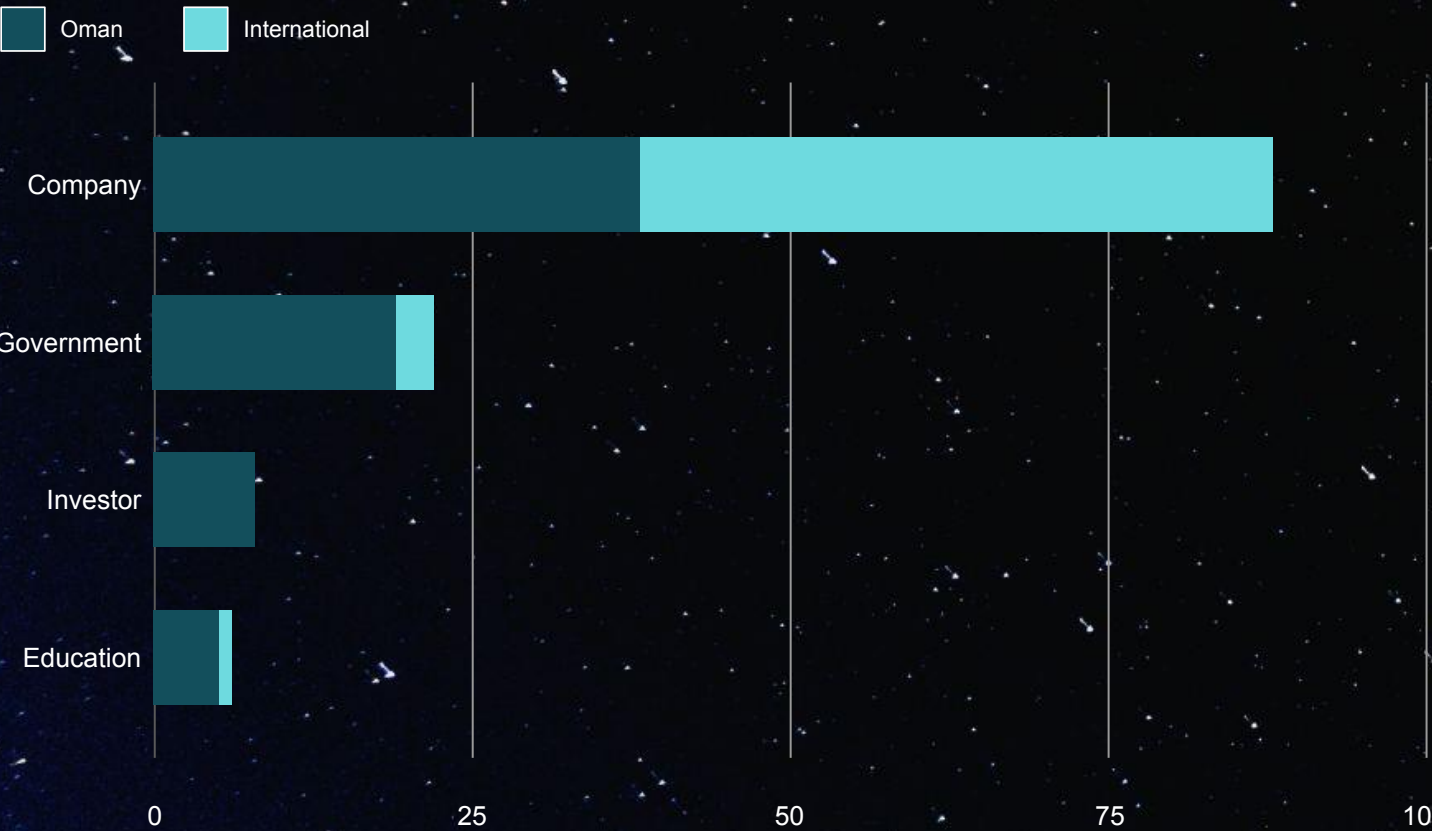


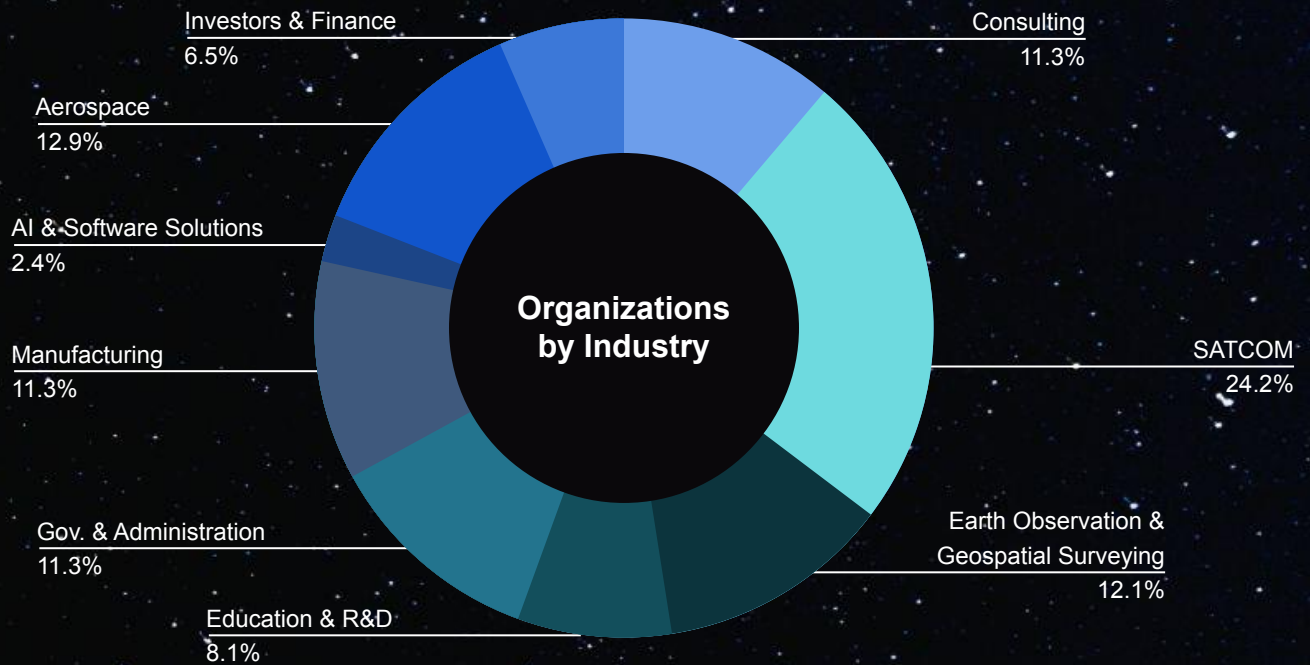
Space Industry in Oman

120+ Organizations

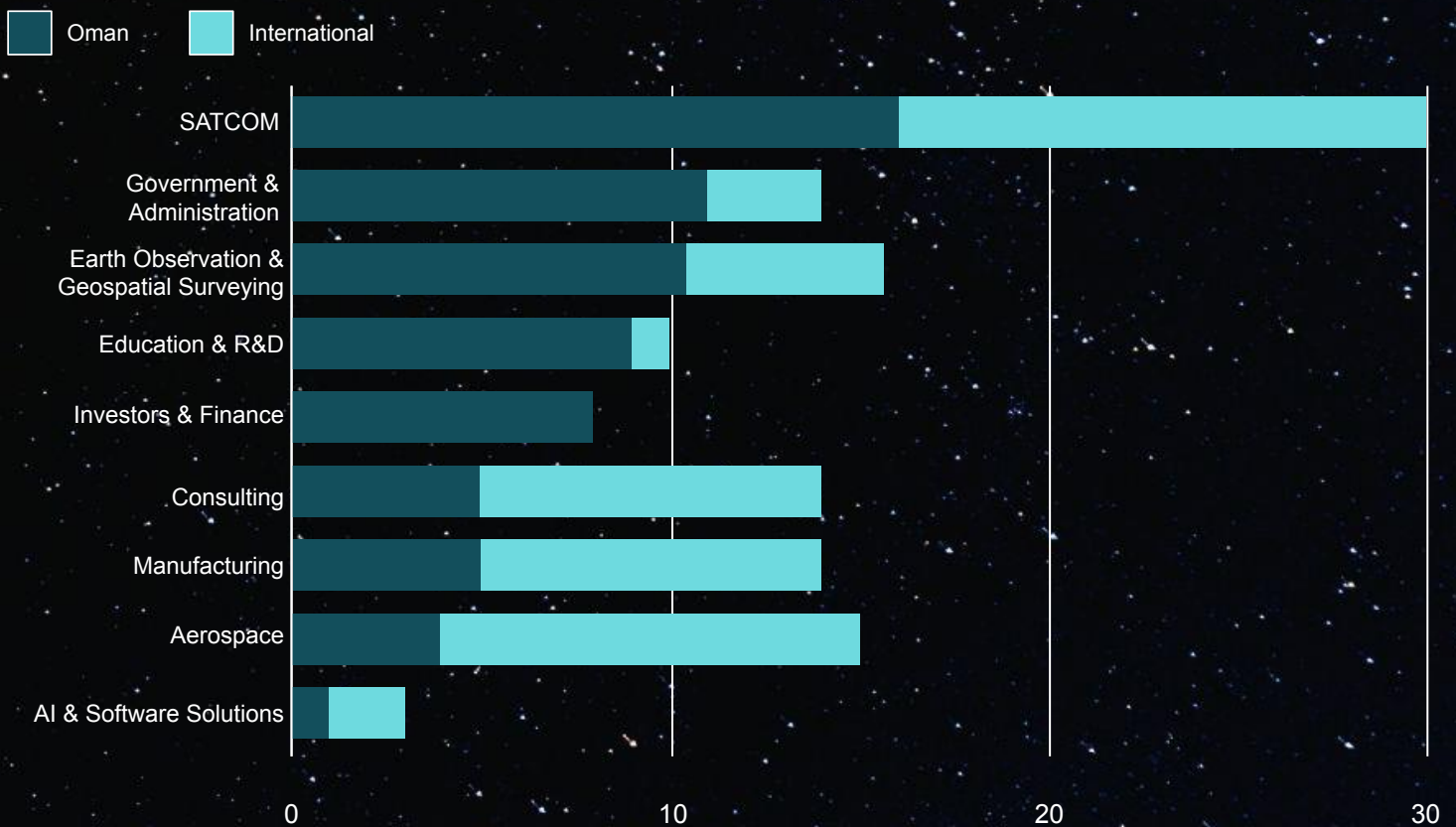


Organizations by Type and Origin





Organizations by Industry and Origin



Disclaimer: These charts are based on data collected by SpaceTech in Gulf from publicly available sources and are intended for demonstration purposes only. The data includes both local and international organisations that have interacted with Oman's space industry through mechanisms such as MoUs or direct contracts. Inclusion does not imply an ongoing relationship or endorsement.

Meet the



H.H. Sayyid Azzan Al Said
CEO of Etlaq Spaceport

12



Dr. Saoud Humaid Al Shoaili
Head of the National Space Program, Ministry of Transport,
Communications, and Information Technology (MTCIT)

14



Dr. Junayd Miah
Chief Space Systems Engineer at Access Partnership

18



Ammar Al Rawahi
General Manager at MBSAT

22



Azan Al Maamari
Commercial Director
at Oman Lens

26



Mohammed Al Alawi
Founder and CEO of RE&T

30



Christelle Astorg-Lepine
Space Counselor to the French Embassy in Abu Dhabi

32



Mrwan Mohey
Advanced Rocket Technologies

34

Voices



Ghayadah Al Jabri

Head of Space Department at Ankaa Space & Technologies

36



Dr. Fawziya Nasser Al-Wahaibi

Professor Assistant | Engineering and Technology |
College UTAS-Muscat

40



Ahmed Hadidi

Assistant Professor at German University of
Technology

42



Dr. Fatma Nasser Massoud Al-Harthi

Senior Academic Administrator at the UTAS

44



Dr. Yaseen Al-Mulla

Associate Professor of Biosystems Engineering
at Sultan Qaboos University

46



Quentin Verspieren

Head of Space Safety Programme Coordination Office
at European Space Agency

48



Dr. Dawood S. Al-Yahyai

Director General of Fisheries Researches at Ministry of
Agricultural, Fisheries and Water Resources (Oman)

50



**H.H. Sayyid
Azzan Al Said**
CEO of Etlag Spaceport

H.H. Azzan Qais Al Said, CEO of Etlag Spaceport, is revolutionizing access to space by developing the Middle East's first commercial spaceport. Under his leadership, Etlag is positioning Oman as a competitive and agile hub for global launch service providers, satellite operators, and space-tech innovators. With a career spanning technology ventures and startups since 2014, H.H. Azzan has cultivated expertise in fintech, high-performance computing, and material science. H.H. Azzan also serves as the Chairman of the Oman Olympic Committee.

His passion for strategic innovation led him to advise Oman's National Space Program (2021) and founded the National Aerospace Services Company (NASCOM) the same year, accelerating the Sultanate's capabilities in space infrastructure and regulatory frameworks. Under his leadership, NASCOM has spearheaded Oman's spaceport initiative, positioning the nation as a competitive player in the global commercial space industry. H.H. Azzan Al Said's ability to merge operational discipline, entrepreneurial vision, and national strategy is accelerating Oman's role in the new space economy.

Interview

Etlag Spaceport vision has been described as becoming a trusted gateway to space. Now that agreements are in place with several international launch providers, how has that vision evolved?

Etlag's vision itself remains constant, but it now stands on a firmer foundation of demonstrated commitments. We aim for Etlag to be the destination international providers select because our geography, our regulatory environment, and our partnerships all work in their favor. Just as important, we want Oman recognized globally as a credible, dependable participant in the space economy.

Since its establishment, Etlag has achieved several important milestones. What have been the most significant achievements so far, and what key developments can the industry expect in the coming years?

Establishing the Genesis Program in 2024 and launching Duqm-1 stand as our most significant milestones to date. The maiden launch was conducted from Omani soil and it demonstrated that our ground systems, safety protocols, and mission coordination function reliably from planning through liftoff. Since then, we have expanded the Genesis Program and have newly established agreements with European partners. Looking ahead, the industry should expect the development of our orbital launch complexes, moving Etlag from experimental missions into full scale commercial operations between 2027 and 2028.

How does Etlag's location in Duqm strengthen its competitiveness as a future regional and international launch hub for launch providers evaluating Etlag?

Our coastline provides safe, open downrange access over the Arabian Sea, and our position at 18° latitude positions us favorably for a wide range of orbital trajectories once our orbital complexes become operational. Combined with close proximity to Duqm's airport, seaport, and free zone, the logistics of transporting vehicles and personnel become considerably more efficient than at most comparable sites.

How has the Genesis Program expanded this year, and how does that growth connect to the construction of the full orbital spaceport targeting 2027 to 2028?

We have added a second launchpad and brought the Launch Vehicle Integration Hangar into operation,

enabling integration and testing operations to proceed in parallel rather than sequentially. Alongside the structural expansion, Genesis has focused on gathering customer requirements and preparing the existing facilities for upcoming missions. Every system we validate now is the same system that will scale into the orbital complexes, so by the time the full spaceport reaches completion, we will be building upon an operating model already tested and refined through every Genesis mission.

What does Etlaq's full spaceport masterplan look like in terms of physical capacity?

Our masterplan centers on four launch complexes, encompassing everything from micro class to heavy lift vehicles, allowing us to support the full spectrum of launch providers within a single facility. Ground systems and integration infrastructure are being developed in parallel with each complex, ensuring capacity expands in step with demand.

Etlaq's roster of international partners continues to grow, with Latitude and HyImpulse both signing Letters of Intent this year alone. What does this expanding roster say about where Etlaq stands today, and what does each provider bring to the roadmap?

Our agreements with two established European launch service providers reflect genuine confidence in our infrastructure and our operational record under the Genesis Program. Each partnership contributes differently: Latitude expands the diversity of vehicles we support and will start to operate from 2027, while HyImpulse introduces both suborbital and orbital capability through its SR75 and SL1 vehicles, allowing these partnerships to mature alongside us as we progress toward full orbital operations. Together, these agreements strengthen our position within the European market, where demand for launch capacity continues to grow.

What role has Oman's government played in supporting Etlaq's growth this year, and what did it mean for the Latitude agreement to be signed during His Majesty Sultan Haitham bin Tarik's state visit to France?

Beyond the continued regulatory collaboration with the National Space Program and the Civil Aviation Authority, being invited to attend the Omani-Franco Business Forum as part of His Majesty Sultan Haitham bin Tarik's state visit to France, at the invitation of President Macron, was a genuine honor, and one we take real pride in.

It placed Etlaq in the room for one of Oman's most significant international engagements, a clear signal that our work is viewed as central to the nation's ambitions, not a peripheral initiative. That level of recognition carries as much weight as any regulatory milestone.

Where does the regulatory framework stand today, and what should launch providers expect next?

The Civil Aviation Authority directive CAD 5-01 established a functioning launch approval pathway, and the National Space Law represents the next significant step, formalizing that framework at the national level. Our objective is an environment that meets international safety standards without the delays providers often encounter elsewhere, and we are constructing it deliberately so that it remains robust as we scale.

Beyond launch services, how do you envision Etlaq contributing to the wider development of Oman's space ecosystem, including local talent development?

Talent is a central part of how we think about Etlaq's role beyond launch itself. We are launching a training course that combines theoretical grounding with hands-on experience for professionals building a career in this industry, and we are also looking at how the spaceport can support applied research and provide opportunities for local companies to grow into the wider space value chain over time.

Looking ahead, what do you want Etlaq, and Oman, to be known for in the global space industry?

We want Etlaq to be recognized as a spaceport that delivers on its commitments: reliable, responsive, and straightforward to work with. And we want Oman to be recognized as a nation that identified this opportunity early and built the foundation necessary to support it seriously. Achieve that, and the launches, the partnerships, and the broader growth follow as a natural consequence.



Dr. Saoud Humaid Al Shoaili

Head of the National Space Program
Ministry of Transport,
Communications, and Information
Technology (MTCIT)

Dr. Saoud is a senior national executive leader with over 24 years of experience across Oman's ICT, postal, and space sectors. He advises the Ministry on policy, regulation, strategy, governance, and sector development, and has led major initiatives including Oman's National Space Policy and Executive Strategy, ICT Law, Personal Data Protection Law, and National Cloud Policy.

He currently chairs the PMO overseeing the design, manufacturing, and launch of Oman's national telecommunications satellite, leading a national team to deliver the project's strategic objectives. Dr. Saoud serves on several local and international boards, including Arabsat and the UN Regional Centre for Space Science and Technology Education. He holds a PhD/MSc in Public Policies for Science, Technology & Innovation and engineering degrees in Electrical and Computer Engineering.

In recent years, Oman has made significant progress in developing its national space ecosystem. Which achievements during 2025–2026 do you consider the most significant, and how have they contributed to advancing the objectives of Oman Vision 2040?

The most significant achievement has been the transition of Oman's space sector from an early ecosystem-building phase towards a more structured and economically oriented national space program.

A major milestone was the signing, in November 2025, of the agreement for the design, manufacturing and launch of OmanSat-1, Oman's national telecommunications satellite. This followed other important achievements, including Oman's first experimental space launch from Duqm, the deployment of privately owned Earth observation satellites, and significant growth in companies, employment and private investment across the sector.

By the end of 2025, the number of companies operating in the sector had reached 26, with more than 400 people employed across government and private-sector space activities. Private-sector investment had also grown substantially. These indicators demonstrate that we are moving beyond individual projects towards the creation of an integrated national ecosystem.

This directly supports Oman Vision 2040 by contributing to economic diversification, developing knowledge-based industries, creating specialized employment opportunities, strengthening national capabilities and promoting private-sector participation. The space program is therefore not only about space assets; it is about using space technologies, data and services as instruments for economic and technological development.

The implementation of Oman's National Space Policy and Executive Program continues to gather momentum. Which strategic initiatives have made the greatest progress over the past year, and what key priorities will shape the next phase of implementation?

The first phase established the foundations of Oman's space sector. The second phase, covering 2026–2030, is fundamentally about converting those foundations into economic and operational value. Several strategic initiatives are now central to this transition.

These include OmanSat-1, the development of commercial launch capabilities in Duqm, satellite ground-station infrastructure, the space cloud partnership, Earth observation data and innovation programs, CubeSat development, national capacity building, and space accelerators. Our priority during the next phase is therefore not simply to add more projects, but to create stronger integration between infrastructure, data, technology, talent and commercial opportunities.

We are particularly focused on six areas: completing critical space infrastructure; maximising the economic utilisation of space assets and data; increasing private-sector participation; strengthening research, development and localisation; developing national talent; and enhancing governance and international partnerships. The ultimate objective is to move from establishing a space sector to building a competitive and sustainable space market in Oman.

Oman is steadily building a competitive commercial space ecosystem. What initiatives has MTCIT introduced to encourage greater private-sector participation, and what opportunities do you see for Omani startups and international companies looking to establish a presence in the Sultanate?

Private-sector participation is at the heart of the second phase of the National Space Program. Our approach is deliberately based on partnership rather than government building and operating every component of the ecosystem. For example, we are encouraging private investment in commercial launch infrastructure, ground stations, Ground Station as a Service, space cloud services, satellite data applications, manufacturing and assembly, research and development, and other parts of the space value chain.

For startups, we are continuing the Space Accelerator initiative, which provides support, mentorship and market linkages to help entrepreneurs move from innovative ideas towards commercially viable products and services. The first phase already supported the growth of seven local startups.

For international companies, Oman offers opportunities in launch services, satellite operations, ground infrastructure, Earth observation, cloud-based space services, manufacturing and assembly, and space situational awareness. The program specifically seeks partnerships that bring investment while also contributing to knowledge transfer, localisation and the development of national capabilities.

Our ambition is for Oman to become not only a user of space services, but an increasingly active regional platform for developing and delivering them.

Earth observation is becoming increasingly important for environmental monitoring, agriculture, maritime operations, urban planning, and disaster management. How is MTCIT driving the adoption of satellite data across government, and which sectors are currently seeing the greatest impact?

Our approach is centered on transforming satellite data from a technical resource into practical solutions that government entities, businesses, researchers and innovators can use.

One of the key initiatives in the second phase is the National Space Data and Innovation Initiative. It is designed to provide researchers, innovators and entrepreneurs with access to space data and advanced analytical tools and to encourage the development of applications addressing national and sectoral priorities.

We are also developing an experimental environment for space applications, where government entities, developers and service providers can develop proof-of-concept projects, test solutions and evaluate their value before moving towards wider implementation.

The program identifies applications across areas such as environmental and natural-resource management, planning and development, as well as broader economic and public-sector decision-making.

The objective is therefore to create sustainable demand for satellite data and, importantly, to enable Omani companies and researchers to develop value-added services around that demand.

Major infrastructure initiatives—including satellite ground infrastructure and the development of Etlaq Spaceport—are laying the foundation for Oman's future space economy. How do these investments strengthen the country's long-term competitiveness, and what further infrastructure developments are planned in the coming years?

Infrastructure is important because it provides the foundation upon which commercial services, innovation and national capabilities can develop.

The Duqm launch initiative is particularly significant because Oman's geographic position and access to open sea provide favorable conditions for developing commercial launch activities. Our objective is to encourage private-sector investment in a commercial launch platform and gradually develop an ecosystem around launch operations, payload integration, tracking, communications, logistics and supporting services.

At the same time, we are developing the wider ground segment. This includes attracting international satellite operators and private investors to establish ground stations in Oman, developing Ground Station as a Service capabilities, and exploring a space cloud environment for receiving, processing, storing and analysing satellite data. Oman's location, telecommunications infrastructure and international submarine cable connectivity can collectively support the country's development as a regional gateway for satellite data and services. Looking ahead to 2030, infrastructure priorities also include OmanSat-1, regional satellite-based navigation augmentation capabilities, space observation infrastructure and progressively more advanced national satellite engineering and R&D capabilities.

Developing national talent remains fundamental to building a sustainable space sector. What progress has been made in strengthening education, research, and workforce development, and how is MTCIT working with universities and industry to prepare the next generation of Omani space professionals?

Human capital is one of the fundamental pillars of Oman's space program because infrastructure alone cannot create a sustainable national space sector.

During the first phase, more than 300 employees, graduates and job seekers participated in specialised space training programs delivered in cooperation with local and international organisations. We also established a partnership with Sultan Qaboos University to develop a Space Engineering Laboratory.

The second phase takes this further. We are linking academic education, professional training, research and development, and practical involvement in national projects. The CubeSat initiative, for example, will build practical national capabilities in satellite design, manufacturing, launch and data utilisation. It also includes specialised training for ten Omanis through the Oman national satellite project at the University of Montpellier in France.

Our longer-term objective is to develop Omani expertise across the entire lifecycle—from using satellite data to designing, manufacturing, testing and ultimately operating increasingly sophisticated space systems.

International collaboration continues to play an important role in Oman's space strategy. Which partnerships established during 2025–2026 do you believe will have the greatest long-term impact, and in which areas is Oman seeking new international cooperation?

International cooperation is an important enabler of Oman's space program, particularly for technology transfer, capability development, research, investment and access to international expertise. Etlaq spaceport and The OmanSat-1 program are an important example because it combines the development of a strategic national asset with knowledge transfer and the development of Omani capabilities.

More broadly, Oman is seeking deeper cooperation with space agencies, academic institutions, technology companies and international research centres. Our priorities include satellite engineering, Earth observation and data analytics, launch services, ground infrastructure, navigation technologies, space observation, research and development, and specialised capacity building.

Oman's international engagement is also being strengthened through participation in international space organisations and frameworks and through specialised conferences and forums. The program specifically identifies space diplomacy and international events as mechanisms for building partnerships and enhancing Oman's position in the global space ecosystem.

The principle guiding these partnerships is clear: international cooperation should contribute not only to accessing technology, but also to transferring knowledge, building national capabilities and creating sustainable economic opportunities in Oman.

As space technologies increasingly converge with artificial intelligence, digital infrastructure, and advanced connectivity, how is MTCIT ensuring these sectors evolve together to support innovation and economic diversification?

This convergence is actually embedded in the way Oman has structured its space program.

The National Space Program is not designed as an isolated sectoral program. It is one of the executive programs of Oman's National Digital Economy Program. This allows us to connect space development directly with digital infrastructure, artificial intelligence, cybersecurity, data and advanced digital technologies.

For example, satellite data requires advanced communications infrastructure for transmission, cloud infrastructure for storage and processing, artificial intelligence for analysis, and cybersecurity capabilities for protecting critical data and systems.

Our space cloud initiative reflects this convergence by bringing together satellite data, cloud computing, big-data processing and artificial intelligence. Similarly, our data and innovation initiatives are intended to enable developers and entrepreneurs to build new digital products and services using satellite data. We therefore see space as both an economic sector in its own right and an enabling layer within the wider digital economy.

The Omani space ecosystem has expanded significantly in recent years, bringing together government institutions, academia, startups, and industry. What do you see as the ecosystem's greatest strengths today, and what challenges remain to accelerate its growth?

One of Oman's greatest strengths is that we now have the essential components of an emerging ecosystem rather than isolated space activities. We have national strategic direction, growing government commitment, private companies and startups, academic and research institutions, developing infrastructure, increasing investment, national talent and growing international partnerships.

The figures from the first phase demonstrate this momentum: 26 companies were operating in the sector by the end of 2025, employment exceeded 400, and private investment had grown significantly compared with 2023.

Another important strength is Oman's geographic position, which creates opportunities in launch services, satellite ground infrastructure and space observation.

The next challenge is to connect these components more effectively and move from ecosystem formation to market development. This means creating stronger commercial demand, increasing utilisation of space data, strengthening coordination between institutions,

developing specialised skills, attracting more investment and ensuring that research and innovation are translated into commercially scalable products and services. This is precisely why the second phase focuses on market development, commercial operation, localisation, private-sector participation and stronger governance.

Looking ahead, what are MTCIT's key priorities for 2027 and beyond? Which emerging technologies or strategic areas do you believe will define Oman's next phase of space development, and what message would you like to share with international partners considering collaboration with Oman?

Our priority from 2027 onwards is to accelerate the transition from building the foundations of the sector towards generating measurable economic, technological and strategic value. This includes progressing OmanSat-1 towards operation, developing commercial launch capabilities in Duqm, expanding ground-station and space-cloud infrastructure, increasing the utilisation of satellite data, strengthening national R&D and satellite engineering capabilities, developing Omani talent, and supporting the growth of startups and private companies.

Artificial intelligence and advanced data analytics will be particularly important because much of the future value of space will come not simply from collecting data, but from our ability to transform that data into intelligence, applications and services. We will also increasingly focus on localisation—moving progressively from the utilisation of space technologies towards their design, development, testing and, where commercially and strategically appropriate, manufacturing in Oman.

*Our message to international partners is that **Oman is building its space sector with a long-term perspective and is open to serious partnerships.** We offer geographic advantages, strong digital and telecommunications infrastructure, an emerging commercial ecosystem and a national program that actively encourages investment and international collaboration.*

*We are looking for partners who do not simply see Oman as a market, but as a platform for **joint investment, technology development, knowledge transfer and regional growth.** Our objective by 2030 is to establish a more mature and sustainable space sector capable of generating economic and technological value for Oman while contributing meaningfully to the regional and global space economy.*



Dr. Junayd Miah

Chief Space Systems Engineer at
Access Partnership

Dr Junayd Miah has led major programmes and advised government partners on space operations, resilient communications, Space Situational Awareness and Earth Observation, working closely with academic, commercial and international collaborators.

Before joining the private sector, Junayd served as Science Adviser for UK Space Command, where he led the MINERVA programme – an over GBP 120M effort to define future UK space architecture – and oversaw the delivery of the UK Government's first owned and operated Mission Operations Centre in over 17 years. He also contributed to multiple international missions including the US-UK CIRCE space weather satellite and the UK-owned Prometheus-2 EO and SSA mission.

Junayd holds a Bachelor's degree from Southampton University, a Master's from Harvard University, and a PhD from Durham University. He is a Chartered Physicist and Fellow of the Institute of Physics.

Building a Regional Gateway to the Stars

Oman has emerged as one of the Gulf's most credible new space players, moving in barely three years from a standing start to a functioning commercial ecosystem anchored by a spaceport, a first national satellite, and a fast-growing base of private companies. Rather than chasing prestige exploration missions, the Sultanate has pursued a pragmatic, commercially oriented strategy that treats space as an extension of Oman Vision 2040's push to diversify the economy away from hydrocarbons.

From Policy to Market-Building

Oman's space ambitions trace to Royal Decree 90/2020 and crystallized in 2023 with the National Space Policy and Executive Program, a ten-year framework (2023–2033) administered by the Ministry of Transport, Communications and Information Technology (MTCIT). The policy's stated aim is for Oman to become "the regional gateway for space applications to empower economic diversification and unlock future opportunities," built on four pillars: economic diversification, capacity building, national security, and environment and natural resources.

The sector's own leadership frames its progress in market terms. Speaking at the Middle East Space Conference in Muscat in January 2026, Saoud Al Shoaili, head of Oman's National Space Program, said the sector had moved "from the establishment phase to the market-building phase," with the number of active space companies rising from 11 in 2023 to 25 by the end of 2025. Investment reportedly grew by 200 percent between January 2023 and December 2025, and the sector had generated roughly 400 direct and indirect jobs by that point, according to Omani officials. Investment during the earlier 2023–2024 window alone was valued at around OMR 20 million.

This growth is not accidental. Oman's downstream focus reflects a deliberate reading of global market economics. Downstream activity – Earth observation, satellite communications, and navigation services – accounts for roughly 90 percent of the global space market, valued at USD 303.3 billion in 2021 and forecast to grow at around 6 percent annually through the decade.

Upstream manufacturing and launch are far smaller and far more capital-intensive. Oman's own pre-policy market base reinforced this logic: as of 2021, satellite communications and navigation services already represented some 95 percent of the country's roughly USD 155 million space market.

A Three-Phase Roadmap

The National Space Program sequences development through three phases designed to build capability from the ground up before advancing into more complex upstream activity:

-  **1 → Ignition (2023–2026):** Foundation-laying, covering legal frameworks, ecosystem incubation, a national space data platform, a ground stations hub, a direct receiving station, and a national CubeSat program.
-  **2 → Lift-Off (2026–2030):** The current phase, centered on the national Satellite Communications (Satcom) initiative and a national space observatory.
-  **3 → Orbiting (2030–2033):** The most advanced phase, targeting a regional Satnav augmentation system, launch site partnerships, and a domestic satellite R&D program.

The framework further translates into 14 identified investment opportunities, split between 11 "core" projects deemed essential and 3 "non-core" projects that would accelerate growth, with 8 flagged as achievable "quick wins." Officials describe the approach as gradual and calculated by design: build downstream applications first, then progressively move upstream as domestic capability and capital allow.

Flagship Projects and Milestones

Concrete delivery now backs the policy framework. Aman-1, Oman's first satellite, has moved into operational use, with its data already applied to monitor the country's gas pipeline network for OQ Gas Networks, alongside broader applications in border security, disaster prediction, and maritime vessel identification. Oman Lens, a local company, has separately launched OL-1, an AI-powered Earth observation satellite for monitoring landscapes, infrastructure, and natural resources, and has announced plans for a further advanced satellite in 2026. Oman's national satellite operator, Space Communication Technologies Company, has also contracted Airbus to build OmanSat-1, a communications satellite intended to support broadband connectivity and secure government networks.

On infrastructure, the Etlaq Spaceport near the Duqm Special Economic Zone is the centerpiece of Oman's ambition to become the Middle East's first commercial launch hub. Positioned at a low latitude with open Indian Ocean downrange corridors, Etlaq is designed to host suborbital and orbital launches across micro, small, medium, and heavy-lift vehicles targeting equatorial, polar, and sun-synchronous orbits. The site conducted its first suborbital mission, NASCOM's Duqm-1 rocket, in December 2024, validating range safety systems and local regulatory coordination. A planned follow-up, Duqm-2, was scrapped in July 2025 after a technical fault was found in the rocket, a reminder that Oman's launch ambitions still face real engineering hurdles. International operators are nonetheless committing to Etlaq: Spanish startup PLD Space plans to fly its MIURA 5 micro-launcher there, and French startup Latitude has signed a letter of intent for an experimental first launch of its small launch vehicle in late 2027, with full-scale commercial operations targeted by the end of 2027.

Beyond satellites and launch, Oman is building out an integrated space economic zone: Zone 88 in Al Duqm, now under construction, will house a space settlement center and advanced technology facilities, while Spazers, a multinational joint venture, aims to localize small-satellite manufacturing inside the country.

Regulatory Foundations

Oman has paired infrastructure investment with fast-moving regulatory reform designed to attract foreign capital. In 2024, Oman Lens became the first company to obtain a Telecommunications Regulatory Authority license to establish a satellite ground station in the country. In 2025, the Civil Aviation Authority introduced Civil Aviation Directive CAD 5-01, a commercial spaceflight framework that can fast-track launch license approvals within 45 days and imposes no cap on the number of launches, among the swiftest such regimes globally, if honored consistently in practice. A dedicated Omani Space Law, expected in 2026, is set to further formalize the sector's legal architecture. The overall regulatory posture emphasizes clear licensing and liability rules aligned with international space law, streamlined approvals, and minimal localization or ownership requirements in the sector's early stages – a deliberate strategy to make Oman easy to invest in.

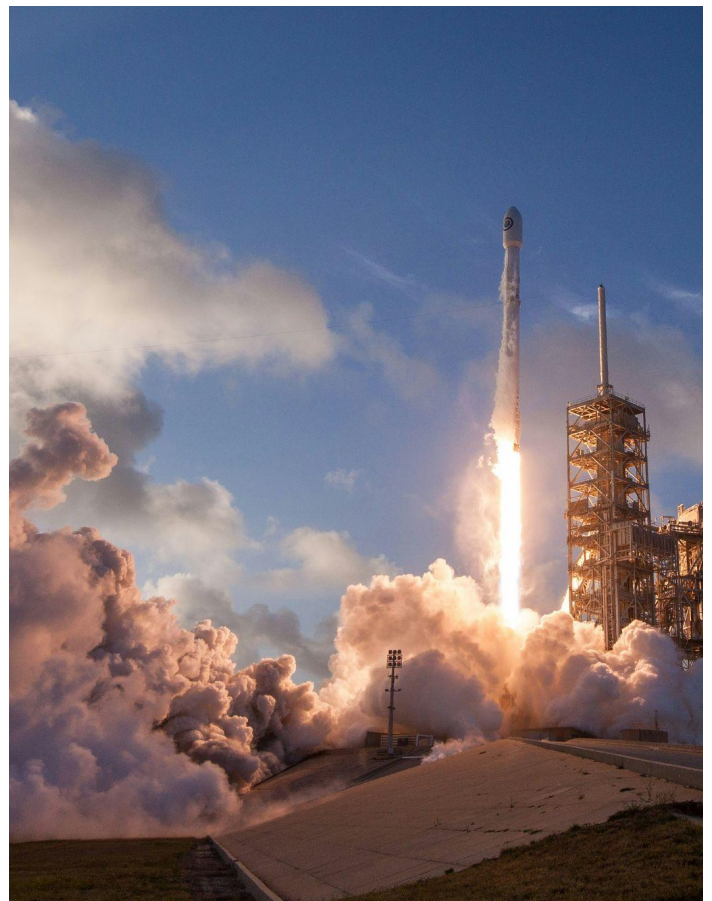
Capacity Building and International Partnerships

Human capital development runs alongside the infrastructure build-out. The Space Accelerators Programme, launched in 2025, is Oman's first initiative dedicated to nurturing space startups, offering training in entrepreneurship, prototyping, and investment readiness. The National Capability Building Programme in Space Technology trains Omani engineers in satellite systems, with some participants receiving specialized instruction in China.

Internationally, Oman signed the Artemis Accords with the United States during the second Middle East Space Conference in Muscat in early 2026, signaling its intent to be recognized as a credible, rules-based partner in global space governance. Muscat has now hosted the Middle East Space Conference twice, positioning itself as a regional platform for dialogue, partnerships, and investment. However, U.S. export-control regimes – the International Traffic in Arms Regulations and Export Administration Regulations – continue to shape the limits of that cooperation, channeling U.S.-Oman collaboration toward civil, non-military activity such as Earth-observation data sharing, climate and maritime monitoring, and capacity building, while constraining deeper hardware and technical integration. This constraint has, if anything, reinforced Oman's strategic tilt toward downstream services and space governance rather than hardware-intensive upstream programs.

Oman's Competitive Position in the Gulf

Oman's model is distinct from, and complementary to, its larger Gulf neighbors. U.S.-UAE space cooperation has centered on high-visibility scientific missions and institutional capacity building, while Saudi Arabia is building one of the region's fastest-growing space industries as a strategic pillar of Vision 2030. Oman, by contrast, is positioning itself more narrowly as a host, regulator, and service provider embedded within the global space economy – a strategy analysts describe as a "pragmatic Gulf model" that trades visibility for sustainability. Its core competitive assets are geographic (a low-latitude coastline with sparsely populated downrange corridors ideal for launch safety), diplomatic (a long-standing reputation for political neutrality that appeals to commercial operators wary of geopolitical entanglement), and regulatory (a light-touch, internationally aligned licensing regime). Notably, more than half of the world's active launch sites remain concentrated in the United States, Russia, and China, and none currently operate commercially in the Middle East or Africa – a gap Etlaq is explicitly designed to fill amid a global orbital launch market that saw 329 attempts in 2025 and continued growth in commercially owned satellites.



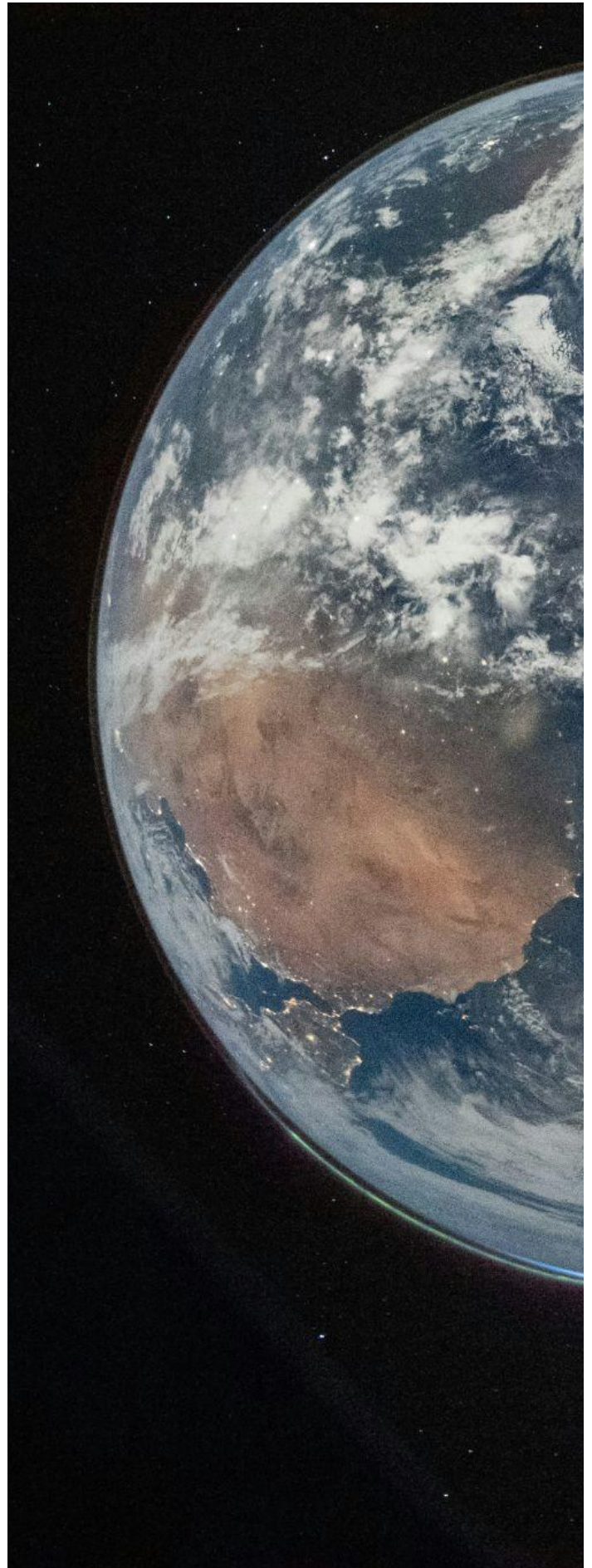
Notably, more than half of the world's active launch sites remain concentrated in the United States, Russia, and China, and none currently operate commercially in the Middle East or Africa – a gap Etlaq is explicitly designed to fill amid a global orbital launch market that saw 329 attempts in 2025 and continued growth in commercially owned satellites.

Priorities and Opportunities Ahead

The clearest near-term opportunities remain concentrated in application-led, downstream activity rather than capital-intensive manufacturing:

- **Satellite communications and ground networks:** Scaling the national Satcom initiative and ground stations hub to strengthen digital sovereignty and reduce reliance on foreign providers.
- **Earth observation and analytics:** Expanding applications already proven through Aman-1 and OL-1, from gas-pipeline and oil-field monitoring to agriculture, disaster prediction, and maritime domain awareness.
- **Commercial launch services:** Converting Etlaq's early experimental launches into a reliable cadence of commercial missions ahead of the 2027 full-operations target, capturing demand from a launch market with no existing commercial competitor in the Middle East or Africa.
- **Domestic manufacturing:** Growing ventures like Spazers to localize small-satellite production and reduce dependence on imported hardware over time.
- **Startup ecosystem growth:** Scaling the Space Accelerators Programme to expand the private-sector base beyond its current roughly 25 companies.

The central risk is execution, not ambition. The scrapped Duqm-2 launch illustrates that translating regulatory speed and policy momentum into a dependable operational track record is harder than issuing licenses, and export-control constraints will continue to limit how deeply Oman can integrate with Western hardware suppliers. As the program transitions from "Ignition" into "Lift-Off," the coming years, particularly the maturation of the national Satcom initiative and Etlaq's progress toward full commercial launch operations, will determine whether Oman's early momentum converts into a durable, revenue-generating space economy rather than a well-regulated but underutilized platform.





**Ammar
Al Rawahi**

General Manager at MBSAT

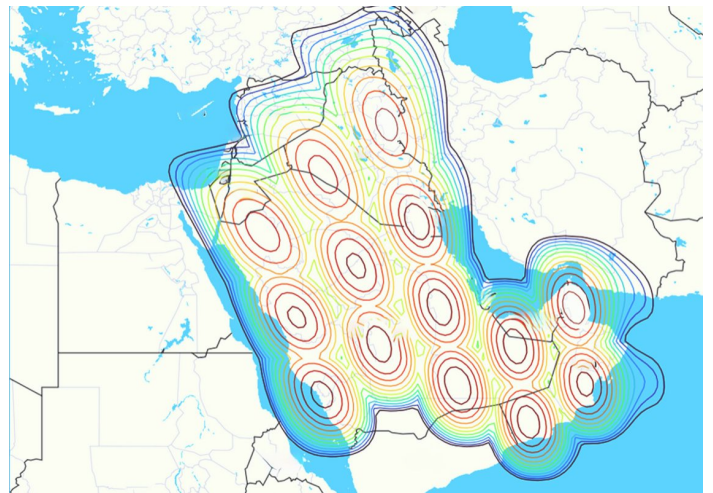
Ammar Al Rawahi is an Omani space and technology executive with over 18 years of experience spanning key areas of the space sector, from astronomy and space technologies to Earth Observation (EO), satellite communications (SATCOM), space policies and strategies, and space investment. His career combines technical expertise with commercial, strategic, and executive leadership, giving him broad experience across the space value chain.

He currently serves as General Manager of MBSAT, leading its development as an integrated satellite operator. Previously, he served as Chief Commercial Officer at SatMENA, Space Projects Consultant with Oman's National Space Program at MTCIT, and Director of Space Technologies at ETCO Space. Earlier in his career, he led Astronomical Affairs in Oman and played a longstanding leadership role in the Oman Astronomical Society, progressing from Board Member to former Chairman and contributing to astronomy and space awareness in Oman.

What was the vision behind establishing MBSAT, and what role do you see the company playing in Oman's emerging space ecosystem?

MBSAT was established with a vision to contribute to Oman's digital transformation by developing sovereign satellite communications capabilities and supporting the goals of Oman Vision 2040. As the first space-focused arm of MB Group, MBSAT represents a long-term commitment to the space sector and serves as the foundation for MB Group's future investments and strategic initiatives across the space value chain.

Our ambition extends beyond providing connectivity services. We aim to support the development of a sustainable space ecosystem by creating local expertise, attracting strategic partnerships, facilitating technology transfer, and supporting the growth of a knowledge-based economy. Through MBSAT-1, we are undertaking one of the largest private investments in the space sector in the GCC and wider region, reinforcing our belief that space infrastructure will be a key enabler of economic diversification and digital resilience.



MBSAT-1 is a major investment in Oman's satellite communications infrastructure. What specific connectivity gaps is the satellite designed to address?

MBSAT-1 is designed to address connectivity challenges across remote and underserved locations where terrestrial networks may be difficult, costly, or impractical to deploy. This includes offshore energy assets, maritime routes, aviation applications, government facilities, critical infrastructure, remote communities, and enterprise operations located beyond the reach of traditional communications infrastructure.

A key differentiator is that MBSAT-1 is expected to provide the largest dedicated Ka-band capacity and the first software-defined coverage in the region. This substantial increase in available bandwidth will enable high-performance connectivity services capable of supporting cloud applications, IoT networks, AI-enabled solutions, enterprise communications, and next-generation digital services. By bringing this level of capacity to the market, MBSAT-1 will help bridge connectivity gaps while improving resilience, reliability, and service quality across Oman and neighboring markets.

What will MBSAT-1 enable for Oman that is not currently possible through existing satellite communications infrastructure?

The most significant advantage of MBSAT-1 is that it provides dedicated satellite capacity aligned specifically with Oman's national priorities. Rather than relying solely on shared international satellite resources, Oman will benefit from enhanced operational flexibility, increased security, better service customization, and a stronger degree of sovereign control over critical communications infrastructure.

In addition, the satellite's significant Ka-band capacity will provide levels of dedicated broadband capability that have not previously been available through Omani-owned infrastructure. This enables new possibilities for government communications, digital transformation initiatives, smart infrastructure, remote industrial operations, maritime and aviation connectivity, AI applications, and future digital services that require high-capacity, reliable, always-on connectivity.

You are working with international partners such as Astranis and Telespazio France. What capabilities and expertise do these partnerships bring to MBSAT, and how important are international partnerships to your strategy?

International partnerships are central to our strategy. Astranis brings advanced expertise in MicroGEO satellite technology and dedicated sovereign communications networks, while Telespazio France contributes decades of experience in satellite applications and services in Oman and the region. The MoU was signed as part of His Majesty Sultan Haitham bin Tarik's state visit to the French Republic. These partnerships provide access to world-class technical capabilities, operational excellence, and industry best practices while delivering maximum value to our stakeholders.

Equally important is the knowledge transfer these partnerships enable. Our goal is not simply to acquire technology, but to build local expertise and strengthen Oman's long-term capabilities in satellite operations, service delivery, and space-sector development. The combination of international expertise and local capability building is essential to creating a sustainable and competitive space ecosystem.

How do you see the balance between commercial satellite services and Oman's longer-term ambition to develop sovereign space and communications capabilities?

We view commercial success and sovereign capability development as complementary goals. Commercial satellite services provide the revenue base and market experience needed to sustain long-term investment, innovation, and operational excellence. At the same time, sovereign communications infrastructure strengthens national resilience, security, and digital independence.

Our investment in MBSAT-1 demonstrates this philosophy. As one of the largest private investments in space infrastructure in the region, the project is designed to deliver immediate commercial value while simultaneously contributing to Oman's broader strategic ambitions in communications, technology, and space development. By combining commercial viability with national priorities, we can create lasting value for both customers and the country.

What ground infrastructure and operational capabilities is MBSAT developing in Oman, and how much of the satellite's operations will be managed locally?

Our investment extends well beyond the satellite itself. MBSAT is developing the supporting ground infrastructure required to operate and manage advanced satellite communications services, including ground stations, network management capabilities, and operational facilities within Oman.

A core objective is to progressively increase the level of local participation in satellite operations and service management. Through partnerships, training, and knowledge transfer, we aim to build a highly skilled Omani workforce capable of managing critical aspects of satellite operations locally, ensuring long-term sustainability and national capability development.

Beyond telecommunications, which sectors in Oman do you expect to benefit most from MBSAT-1 — for example, energy, maritime, government, remote communities, or critical infrastructure?

The impact of MBSAT-1 will extend well beyond traditional telecommunications. We expect significant benefits across several strategic sectors, including:

- *Energy and utilities, through reliable communications for remote assets and operations.*
- *Maritime and logistics, through enhanced connectivity across shipping routes, ports, and offshore activities.*
- *Government and public services, through secure and resilient communications networks.*
- *Aviation, including support for in-flight connectivity and operational communications.*
- *Remote communities, through improved access to broadband services.*
- *Critical infrastructure operators, where uninterrupted connectivity is essential for operational continuity and resilience.*

These sectors are fundamental to Oman's economy and are increasingly dependent on reliable, high-capacity communications infrastructure.

Looking beyond MBSAT-1, does MBSAT envision expanding its satellite fleet or developing additional regional connectivity services?

MBSAT-1 is a major milestone, but it is only the beginning of our journey. As the first space venture within MB Group, it establishes the foundation for broader ambitions in satellite communications, space-enabled services, and future space-related investments. It is not the final destination, but rather the first step in a much larger long-term strategy.

As market demand evolves, we will evaluate opportunities to expand capacity, introduce additional services, and explore complementary segments of the space economy. Our objective is to build a scalable platform capable of supporting Oman and regional markets while creating long-term value through innovation, partnerships, and continuous investment.



MBSAT signs an MoU with Telespazio France to Advance Satellite Communications Solutions and Services Capabilities

Oman is increasingly positioning itself as a regional space hub, with companies working across launch, satellite communications, Earth observation, and space services. Where do you see the biggest opportunities for private-sector companies in this ecosystem?

The most promising opportunities lie in satellite communications, Earth observation applications, geospatial analytics, downstream space data services, space-enabled IoT solutions, cybersecurity, and advanced digital infrastructure. There are also significant opportunities in developing specialized services that support both government and commercial customers across the broader space value chain.

Private-sector companies have an important role to play in accelerating innovation, attracting investment, commercializing new technologies, and developing practical applications that deliver economic and societal value. By working closely with government, academia, and international partners, the private sector can help position Oman as a leading space applications and logistics hub in the region.

Looking ahead to 2030, what would success look like for MBSAT, and what role would you like the company to play in Oman's and the wider GCC's space economy?

By 2030, success would mean establishing MBSAT as a leading regional space and satellite communications company with a strong operational presence in Oman, a highly skilled local workforce, and trusted partnerships with global industry leaders.

We would like MBSAT to be recognized for delivering the region's largest dedicated Ka-band communications capacity and software-defined beams, for executing one of the largest private-sector space investments in the GCC and wider region, and for helping strengthen Oman's position within the regional and global space economy.

Beyond commercial achievements, success would mean contributing to Oman's digital sovereignty, developing local technical capabilities, attracting further investment into the national space sector, and supporting the growth of a sustainable space ecosystem. Ultimately, we aspire for MBSAT to become a key enabler of Oman's space ambitions and a platform from which MB Group expands its participation across multiple segments of the space economy. MBSAT-1 is the first step in that journey, not the last.





Azan Al Maamari

Commercial Director at Oman Lens

Azan Al Maamari is the Commercial Director at Oman Lens LLC, Oman's national satellite and Earth observation initiative. With 16 years of experience in commercial and business development, he drives strategic partnerships across energy, infrastructure, and government sectors, helping expand the reach of Oman's growing space ecosystem.

Interview

What was the vision behind establishing Oman Lens, and what opportunity did you see for Oman in the Earth observation and Space AI market?

Our vision from the beginning was to contribute to building Oman's capabilities in Earth observation and space technologies, and to position the Sultanate as an active participant in the rapidly growing global space economy. We saw an opportunity to combine Earth observation with artificial intelligence to transform satellite data into practical, decision-ready intelligence. At the same time, Oman Vision 2040's focus on innovation, technology, and a knowledge-based economy created a strong foundation for developing a national space industry.

Our ambition is therefore not simply to operate satellites, but to build an integrated space-AI capability from Oman — supported by Omani talent, international partnerships, and technologies that can serve Oman, the GCC, and the wider MENA region.

OL-1 was an important milestone for Oman's space sector. What have you learned from operating the satellite so far, and what capabilities has it demonstrated?

OL-1 represents an important milestone in Oman's journey into space. It is Oman's first satellite and the first registered under Oman's name with the International Telecommunication Union (ITU).

The mission has provided us with valuable practical experience across satellite tasking, mission operations, data acquisition, downlinking, and ground operations. More importantly, it has allowed us to translate this experience into local capabilities and practical applications in areas such as land surveying, urban planning, environmental monitoring, and disaster response.

One of the most important outcomes has also been the development of Omani human capital. Through the programme, more than 20 Omani engineers have gained experience and exposure to satellite technologies and operations, contributing to the growth of the national space ecosystem.

OL-1 was therefore not only a satellite mission; it was an important step in building knowledge, experience, and confidence for the next generation of Oman's space capabilities.

Oman Lens is combining Earth observation with onboard AI computing. Why is processing data in orbit important, and what advantages does it provide to customers?

Traditional satellite missions can generate significant volumes of data that must be transmitted to the ground before analysis. By introducing AI processing capabilities onboard the satellite, we can begin analysing information while it is still in orbit.

This allows the satellite to identify and prioritize useful information before transmitting it, reducing unnecessary data transmission and enabling faster access to meaningful insights.

For our customers, the objective is not simply to provide an image. It is to provide information that can support a decision — such as identifying a flood-affected area, monitoring changes in vegetation, or detecting developments in infrastructure.

Our next-generation satellite is designed with significantly greater onboard AI computing capability, enabling more sophisticated processing and analysis in orbit.

Ultimately, our ambition is to move from delivering an image to delivering a solution.

You have announced ambitions to develop a constellation of up to 20 intelligent satellites. What is the roadmap for building this constellation, and what will it enable that OL-1 cannot provide on its own?

OL-1 was an important proof of concept and a foundation for the next stage of our development. Our roadmap is designed to progressively scale our capabilities toward a constellation of up to 20 intelligent satellites.

The next generation will introduce higher imaging resolution and significantly greater onboard AI capabilities. As we expand the constellation, we will also be able to increase revisit frequency and provide more continuous monitoring of areas of interest.

A single satellite provides valuable observations, but a constellation fundamentally changes what can be achieved. It allows us to move from periodic observations toward more frequent and persistent monitoring, which is particularly important for applications such as infrastructure monitoring, environmental change detection, agriculture, disaster management, and resource monitoring.

Our objective is to build a scalable space-based infrastructure that can continuously generate actionable intelligence for Oman and regional markets.

Your next-generation satellites are expected to significantly increase both imaging resolution and onboard AI computing capacity. What new applications will these capabilities unlock?

The move from OL-1's 1-metre resolution toward 50-centimetre resolution, combined with significantly greater onboard AI computing capacity, represents an important step forward in our capabilities.

Higher-resolution imagery can support more detailed applications in urban planning, infrastructure monitoring, environmental assessment, and resource management. At the same time, onboard AI allows us to process information more efficiently and identify relevant patterns and changes much faster.

These capabilities can support applications including flood monitoring and prediction, vegetation and crop-health assessment, infrastructure development monitoring, environmental change detection, and faster response to natural disasters.

The combination of higher-resolution Earth observation and intelligent processing allows us to move beyond simply collecting data toward creating timely, actionable intelligence.



Oman Lens welcomed the delegation of the United Republic of Tanzania to explore future partnerships in space and AI

Which sectors do you see as the biggest commercial opportunities for Oman Lens — agriculture, environmental monitoring, urban planning, energy, disaster management, or others?

We see opportunities across multiple sectors rather than focusing on a single industry.

Environmental and natural-resource monitoring are important areas, particularly given Oman's diverse geography and natural resources. Urban planning and infrastructure monitoring are also significant opportunities as Oman and the wider GCC continue to develop.

Agriculture and vegetation monitoring can benefit from frequent Earth observation and AI-based analysis, while disaster management — particularly flood monitoring and assessment — is another important application.

Energy, including oil, gas, and mining, represents a major opportunity where satellite intelligence can support monitoring, planning, and operational decision-making.

Over time, we also see opportunities to support national resilience and security-related applications, while maintaining a broader focus on commercial, environmental, and developmental uses of Earth observation.

Our approach is to develop solutions around real customer challenges and transform satellite data into practical intelligence that can create measurable value.

How do you plan to turn satellite imagery and AI capabilities into commercially scalable products rather than simply selling raw Earth observation data?

High-quality imagery will remain an important foundation of our business, but our ambition is to move further up the value chain by transforming imagery into decision-ready intelligence.

Instead of simply delivering raw data, we are developing opportunities around AI-powered analytics, monitoring platforms, automated alerts, sector-specific intelligence, and API-based data services.

This approach allows customers to access information in a form that is directly relevant to their operations and decision-making.

As our satellite capabilities and constellation expand, we see recurring monitoring and analytics services becoming increasingly important to our business model. This creates a more scalable relationship with customers, where the value comes not from a single image, but from continuous monitoring and actionable insights over time.



Making History: First Omani Engineer Working on an Omani Satellite Project

Oman Lens is working with international partners and other Omani space companies. How important is international cooperation to your growth, and what capabilities do you want to develop locally?

International cooperation has been fundamental to our development. Our work with international partners has allowed us to accelerate access to advanced technologies, expertise, launch opportunities, and technical knowledge.

At the same time, every international partnership should contribute to building capabilities within Oman. Our focus is therefore not only on acquiring technology, but on developing people, knowledge, and expertise that can remain within the country.

We have already supported the development of Omani engineering capabilities, with more than 20 Omani engineers gaining experience through our satellite programme, alongside research and academic collaboration.

Looking ahead, we aim to progressively localize capabilities across spacecraft AI, mission operations, data analytics, and satellite engineering. Over the longer term, our ambition is to develop the capabilities required for satellite assembly and, eventually, satellite manufacturing in Oman.

We believe the strongest model is one where Oman works internationally while continuously strengthening its own capabilities and value chain at home.

Oman is developing a diverse private space ecosystem, from Earth observation and satellite communications to launch services. What do you think Oman needs to do next to turn these individual companies into a competitive national space industry?

Oman has already taken important steps toward establishing a diverse private space ecosystem, with companies working across Earth observation, satellite communications, launch-related services, and other space technologies.

The next step is to strengthen the connections between these capabilities and create an ecosystem in which Omani companies complement one another rather than developing every capability independently.

This requires continued investment in talent, research and development, testing and ground infrastructure, as well as clear and supportive regulatory frameworks. It also requires stronger collaboration between private companies, universities, government institutions, and international partners.

No single company needs to build the entire space value chain alone. By connecting capabilities across Earth observation, AI, communications, engineering, launch services, and data analytics, Oman can create a more competitive and sustainable national space industry.

For Oman Lens, we see ourselves as one part of that ecosystem and believe that the success of the wider industry is ultimately as important as the success of any individual company.

Looking toward 2030, what would success look like for Oman Lens, and what role do you want the company to play in the wider GCC and MENA Earth observation market?

By 2030, we aim to have a substantial part of our intelligent satellite constellation operational, providing frequent Earth observation and AI-powered intelligence across Oman, the GCC, and the wider MENA region.

For us, success goes beyond the growth of the company. It means building strong Omani capabilities in satellite engineering, AI, mission operations, and data analytics, with a long-term ambition to develop satellite assembly and manufacturing capabilities in Oman.

The National Space Programme plays an important role in enabling this growth by supporting local space companies, developing national talent, and strengthening Oman's wider space ecosystem. Our ambition is to grow alongside this ecosystem and establish Oman Lens as a leading regional space-AI company, while contributing to Oman's position in the global space industry.



Mohammed Al Alawi

Founder and CEO of RE&T

Mohammed Al Alawi is the Founder and CEO of RE&T. An aerospace engineer, he earned his bachelor's degree from the University of Colorado Boulder in May 2025. After graduation, he moved back to Oman and founded RE&T through the Oman Space Accelerator Program (OSAP) in August 2025. He is currently developing high-pressure turbopumps for rocket engines, working to close the gap in space access through innovation and engineering.

What inspired you to launch RE&T, and why did you choose turbopump technology as the company's initial core focus? What opportunity did you identify in the global space transportation market?

RE&T was inspired by the idea of Oman becoming a global hub for launching rockets into space. Propulsion is the foundation of a space rocket launch. Oman has no access to rocket engines, constraining what can be achieved from Omani soil. RE&T explored acquiring rocket engines, but encountered export controls and prices so high that they compromised Oman's sovereignty and commercial feasibility. This left one solution: to innovate and build. That was the start of RE&T. RE&T began its operations with turbopump technology. A rocket engine is a cluster of subsystems, of which turbopumps dominate in complexity and cost. With turbopump capability secured, the rest of the engine follows naturally. Additionally, through RE&T innovative solutions, significant cost reductions in turbopump development can benefit both local and global space transportation markets.

RE&T's vision is to make space transportation more economic "in and through Oman." What does this vision mean in practice, and how do you see the company contributing to the development of Oman's space industry?

RE&T's vision is centered around rocket systems affordability and accessibility. "In Oman" means it prioritizes national resources and capabilities, such as human capital, manufacturing, and local supply chains. "Through Oman" means it is open to regional and international collaboration to sustain the development process through technology transfer, infrastructure establishment, and global supply chains. That will support Oman's space industry: existing and new players in the industry will leverage what has been established to develop related systems, and the space ecosystem will become mature enough to build space rockets, achieving upstream sovereignty. Additionally, Oman is taking steps toward establishing rocket launch spaceports and attracting international launchers, which can benefit from what RE&T develops alongside the space ecosystem. RE&T's rocket systems and capabilities close the technological gap in commercial space access by supplying advanced systems to space launchers.

RE&T recently secured investment from FFO. What does this milestone mean for the company, and what are your key priorities and development goals over the next 12 months?

RE&T received its first investment from FFO, through R&D Capital, closing its first investment round. RE&T has moved from turbopump PoC design to turbopump product design, and has launched its first product: an 80-bar liquid methane turbopump. It has also built a team that is not only innovating and building a product, but also developing the tools that support that development. We continue working with our partners and customers to ensure we build fast and reliably.

How did participation in the Oman Space Accelerator Program influence RE&T's development journey? What role did the program play in supporting the company's growth, validation, and connections within the space ecosystem?

The Oman Space Accelerator Program (OSAP) was the kickstart for RE&T. The National Space Program, Ankaa Space and Technologies, and Exotopic supported 10 companies in finding their way into the space industry. During OSAP, RE&T succeeded in designing a Proof-of-Concept for an 800-bar liquid hydrogen turbopump. This milestone was important, as it allowed RE&T to spotlight its mission on local and global avenues. Additionally, RE&T interacted reliably with the four pillars of the space ecosystem to sustain RE&T's current and future operations. OSAP also helped evaluate the target market by facilitating interaction with potential partners and customers and by supporting the implementation of market studies. OSAP's core value lay in mentorships that guided, connected, and supported RE&T as it leapt into the local and global space market.



RE&T's 80-bar liquid methane turbopump, the startup's first product, built to deliver affordable, sovereign turbopump technology free from export-control constraints.



RE&T's Proof-of-Concept, a 3D-printed model of its 800-bar liquid hydrogen turbopump.

RE&T focuses on developing affordable and accessible turbopump solutions without the limitations often associated with export-controlled systems. Why is this capability important for the global space industry, and which customers or markets do you believe will benefit the most?

Export-controlled systems are not sustainable in many respects. Technology development is restricted by "black boxes" that leave no room for further innovation. Furthermore, commercial feasibility breaks down due to incredibly high prices and long lead times. These systems also often compromise the sovereignty of the country of origin, creating a dependency chain with the countries seeking to acquire them through that country of origin. As RE&T brings affordability to its turbopumps and accessibility to local and global space markets, the industry will achieve breakthroughs in space access with lower costs. Additionally, nations with sovereignty goals will also be able to innovate. Collective innovation in rocket technology will benefit everyone, as many comparative advantages will shape the future of space technology.

Looking ahead, what partnerships and collaborations is RE&T pursuing — both within Oman and internationally — and what role do you see strategic partnerships playing in accelerating the company's growth?

RE&T wants to move fast in a fast industry. To achieve that, RE&T must collaborate with like-minded partners, locally and internationally, to establish full operational capability in Oman for turbopump and rocket engine development. That includes design, manufacturing, and testing capabilities. Additionally, fast R&D operations are a must: designs should be manufactured quickly and tested quickly to validate, iterate, and qualify them. RE&T leverages its collaborations to empower its team to accelerate its innovations within the industry.



Christelle Astorg-Lepine

Space Counselor to the French
Embassy in Abu Dhabi

French Space Agency
Representative (CNES) in the Middle
East

Christelle Astorg-Lepine is an aerospace engineer who joined CNES, the French Space Agency, in 1995. She began in the Launchers Directorate, managing major projects including the Ariane 5 Cryogenic Main Stage and Vinci engine, before leading future launcher projects and innovative initiatives. In 2008, she joined the French delegation to ESA as a Future Launchers and Orbital Infrastructures Specialist. From 2010, she focused on digital transformation and internal communications at CNES. In 2019, she led the Connect by CNES innovation program, connecting CNES expertise with startups and industry. From 2021 to 2024, she was General Manager of Starburst France and directed the BLAST program. Since 2024, she has been back at CNES, where she founded the Space Foundation.

Since January 2025, she has also served as Space Advisor at the French Embassy in the UAE, representing CNES across the UAE, Saudi Arabia, Oman, Qatar, Jordan and Egypt and promoting civil and commercial space cooperation.

Interview

How would you describe the strategic importance of space cooperation between France and Oman, particularly following the recent Declaration of Intent on cooperation in the space sector?

Space cooperation is becoming an important new dimension of the broader strategic relationship between France and Oman. The Declaration of Intent signed on 29 June 2026 provides a political and institutional framework through which our two countries can identify shared priorities and progressively develop concrete initiatives. It can help align institutional discussions with industrial developments already underway.

What makes Oman an important partner for France in the development of the Gulf and wider regional space ecosystem?

Oman is relevant because it is developing a national space strategy linked to economic diversification and infrastructure development. Its geographic position, including Duqm, may support regional connectivity, logistics and launch-related activities. The country is also seeking to strengthen its role in satellite communications and space applications. For France, Oman represents a partner with specific industrial and operational interests. The relationship should therefore focus on areas where both sides have practical capabilities and needs.

France has a strong space industry, while Oman is developing its national space capabilities. Where do you see the greatest opportunities for complementary cooperation between the two countries?

The strongest opportunities are in satellite communications, ground infrastructure, Earth observation and launch services. OmanSat-1 illustrates the potential for cooperation on telecommunications systems and associated ground capabilities. In launch services, Latitude, the French startup could be a potential customer and user of Etlaq Spaceport. This type of cooperation can help Etlaq test and develop its operational, regulatory and logistical environment. The objective should be to combine commercial projects with gradual development of local capabilities.

How can French companies and institutions contribute to Oman's ambition to develop a competitive and internationally connected space sector?

French companies can contribute through concrete industrial partnerships in satellites, ground systems, launch services and space-data applications.

French institutions may support dialogue on technical standards, safety, training and international cooperation, where requested. The emphasis should remain on projects with a clear operational or economic purpose. It is important that partnerships include local implementation and skills development. France can also facilitate contacts with European industrial, academic and research networks.

Recent agreements involving Airbus, Etlq–Latitude and MBsat–Telespazio demonstrate growing commercial cooperation. How does the Embassy view the potential for further French private-sector involvement in Oman’s space sector?

The Airbus, Etlq–Latitude and MBSAT–Telespazio initiatives show that cooperation is developing across different segments of the value chain. They involve, respectively, satellite systems, launch-site access and ground-station or satellite-service activities. These examples provide a basis for further French private-sector engagement, but each project has a different legal and commercial status. The Embassy can support dialogue and connections between relevant stakeholders. The implementation of existing agreements will be the main indicator of future potential.

To what extent could cooperation in areas such as satellite communications, Earth observation, launch services and ground infrastructure contribute to Oman’s economic diversification goals?

Satellite communications, Earth observation, launch activities and ground infrastructure can support sectors beyond space itself. They may contribute to maritime services, environmental monitoring, logistics, connectivity, data processing and engineering. Their economic impact will depend on the development of local operators, trained personnel and viable commercial demand. Industrial partnerships can help create this ecosystem if they include local participation and long-term operational activity. Space should therefore be considered as enabling infrastructure for the wider economy.

How important is knowledge transfer and capacity building in the France–Oman space relationship? Are there opportunities for joint training, research or university cooperation?

Capacity building is essential if cooperation is to produce lasting benefits beyond individual contracts. Training should be linked to concrete projects such as OmanSat-1, ground infrastructure or Etlq operations. There may also be scope for university links, internships and joint research initiatives. Such activities should be defined jointly and based on Oman’s identified requirements.

Could Oman potentially become a strategic platform for French and European companies seeking access to the wider Middle Eastern and regional space markets?

Oman could become a useful platform for some French and European companies seeking access to Gulf, Indian Ocean and East African markets. Duqm’s logistics infrastructure and Etlq’s development are relevant in this regard. Companies such as Telespazio or Space Dreams can bring valuable expertise in launch ground systems. However, this potential will depend on predictable regulation, licensing, safety standards and access to qualified personnel. It will also depend on the ability to generate sustained regional demand. France can support this evolution through industrial connections, rather than through broad commitments.

What role do you see for France in supporting the development of Oman’s emerging spaceport and commercial launch ecosystem?

France has relevant experience in launch operations, range safety, mission preparation and regulatory practices. The Etlq–Latitude Letter of Intent offers a practical case through which operational cooperation can be explored. Latitude’s role is that of a prospective launch customer using Etlq’s facilities for its own launch campaigns. Technical exchanges could therefore focus on interfaces, logistics, safety procedures and operational readiness. Any institutional support would need to respond to Oman’s requests and remain consistent with its sovereign responsibilities.

Looking ahead to the next five to ten years, what would success look like for France–Oman cooperation in space, and which areas do you believe have the greatest potential for deeper partnership?

Success would mean that current industrial agreements lead to operational and sustainable projects. This could include progress on OmanSat-1, ground infrastructure, satellite services and launch campaigns from Etlq. It should also include the development of Omani technical skills and local industrial participation. The most credible areas for deeper cooperation are telecommunications, launch-site services, ground systems and Earth-observation applications.

A regular institutional dialogue can help keep these projects aligned with industrial and national priorities.



Mrwan Mohey

COO at Advanced Rocket Technologies

Mrwan Mohey is the Co-Founder and Chief Operating Officer of Advanced Rocket Technologies, the first private space rocket company in the Middle East and Africa. Since founding A.R.T. in 2022, he has led the company's operations and international partnerships, negotiating agreements with organizations across the Gulf, Europe, and Asia, while also overseeing ART Academy's aerospace education programs across the region in partnership with institutions such as Sultan Qaboos University and Al-Hussein Technical University. A physics graduate of Ain Shams University, he was named a Young Arab Pioneer in Space & Technology in 2025 and selected for the Misk Foundation's 20 Under 30 program the same year and served as a judge for the inaugural Global Space Awards. He is widely recognized as one of the region's leading voices in building a homegrown Middle East and Africa space ecosystem—from launch technology to engineering talent.

Interview

Advanced Rocket Technologies has recently conducted engine testing in Oman. Could you tell us more about the test, its objectives, and the key results achieved?

On July 21st, we ran the first static-fire test of our locally designed and built solid rocket motor, and the first commercially developed solid motor to be tested in Oman. It's a critical validation step on our roadmap toward our next vehicle launch from Oman. We went in with clear objectives: achieve a full 4-second burn, validate the structural design and safety performance of our own test stand, and prove out our in-country propulsion manufacturing and testing capability from the ground up.

We got clean, reliable ignition and a stable, well-characterized burn for 2.6 of the planned 4 seconds — before the motor case failed. What matters most to us is what happened next: our test stand performed as designed, containing all debris within a 30-meter radius, a strong result for a motor producing over 1.5 kN of thrust. A first test's real job is to tell you the truth about your hardware, and this one did that. We walked away with real burn data, a validated test-stand safety and material architecture, and a precise understanding of where to strengthen the motor for the next iteration.

What are the next steps following the recent test? Are you planning additional static-fire tests, flight tests, or further development of the propulsion system in Oman?

We're here to execute our roadmap to orbit, and that roadmap doesn't pause for a single test result, good or bad. Depending on when this interview is published, we'll either have just completed or be about to run our second static-fire test on the same motor line — with design improvements drawn from the lessons of July 21st, and new objectives to match.

Every test we run is built to teach us something new and sharpen our edge over the field — we're not repeating the same test twice, we're compounding what we learn each time. Once the second static fire validates the motor, we move straight into full vehicle ground testing and integration ahead of launch. This motor isn't a one-off: it's the propulsion foundation we're building on for our next generation of vehicles, and for the larger testing and launch infrastructure we're establishing in Oman.

How important was Oman's infrastructure and geographic location for conducting these tests, and what advantages does Oman offer for future testing?

Essential — not just useful, essential. Etlaq Spaceport gave us a place to test real hardware safely and quickly, without the queues, import delays, or bureaucracy that slow down new entrants. That speed matters in this industry: the faster we can test, learn, and re-test, the faster we compound engineering knowledge relative to companies still waiting for range time or approvals elsewhere.

Combined with the government's clear, sustained commitment to building a national space sector, and Oman's strategic geography for launch operations, we have something most companies spend years trying to secure: a home base where the development wheel never has to stop turning.

How does this recent engine test fit into Advanced Rocket Technologies' broader plans for developing launch capabilities in Oman and building a regional commercial space ecosystem?

This test was about more than validating one motor — it proved out an entire in-country capability: propulsion design, manufacturing, and testing, done with regional partners, on Omani soil. That's the real milestone. It also mapped exactly where our supply chain is already strong and where we need to keep investing, ahead of the bigger, more complex campaigns still to come.

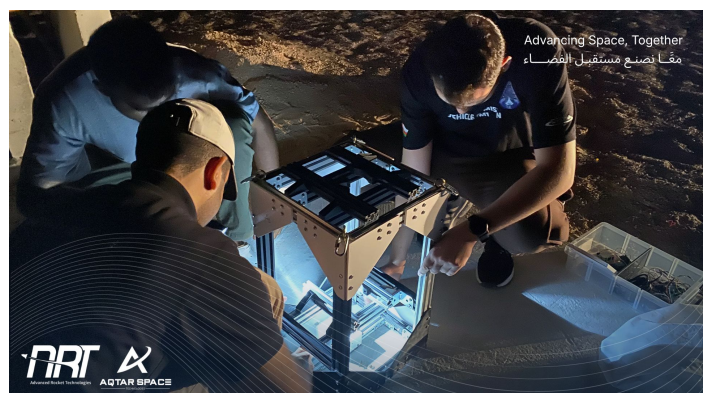
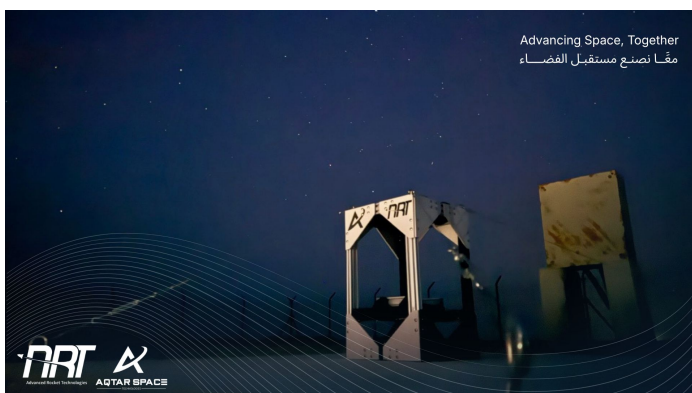
Every lesson from a test like this compounds: it shortens the timeline and lowers the cost of everything that follows. That's the model we're building — not a single company chasing a single launch, but the foundation of a regional space ecosystem where testing, manufacturing, and launch all happen closer to home, on a timeline nobody importing a rocket from outside the region can match.



As Advanced Rocket Technologies moves toward its first vehicle launch, what do you want investors, partners, and the broader region to understand about what you're building here in Oman?

That this is just the beginning — and that we're building it the right way: methodically, transparently, and on the ground in Oman, rather than importing a finished product and calling it regional. Every test we run, is public proof that we're doing real engineering, not just slides.

We've shown we can design, build, and test propulsion hardware locally; contain and learn from an anomaly safely; and move straight into our next test within weeks, not months. That's the pace and the discipline it takes to get a company to orbit — and it's exactly the track record we want investors and partners to judge us on: not promises, but tests we've actually run, data we've actually collected, and a roadmap we're visibly executing, month by month. If you want to back the team building the Middle East and Africa's sovereign path to space, this is what that looks like in practice — not just in a pitch deck.





Ghayadah Al Jabri

Head of Space Department at Ankaa
 Space & Technologies

Ghayadah Al Jabri is Head of Space Department at Ankaa Space & Technologies where she plays a leading role in the development and execution of strategic space projects at Ankaa. With a Bachelor's degree in Physics.

Interview

Ankaa Space has rapidly established itself as one of the key players in Oman's emerging space ecosystem. What is the company's long-term vision, and what role do you aspire to play in shaping the future of Oman's and the region's space industry?

Ankaa's long-term vision is to be a cornerstone of Oman's space and advanced-technology ecosystem, not simply a service provider, but a builder of sovereign national capability. We see our role as an integrator, one that brings earth observation, artificial intelligence, unmanned systems, and cybersecurity together into a coherent national capability rather than a set of disconnected technologies. In practical terms, that means continuing to grow a 100% Omani workforce, developing local manufacturing capacity for satellites, sensors, and drones, and ensuring that the value generated by space activity in Oman is captured locally rather than imported.

We aspire to help position Oman as a credible, competitive player in the regional space economy, in direct support of Oman Vision 2040's goals around economic diversification and a knowledge-based economy. Ultimately, our ambition is for Ankaa to be remembered not only for the technology we build, but for the ecosystem we helped create: the startups we mentored, the engineers we trained, and the policy and investment confidence we helped build around Oman's space sector. The Oman Space Accelerator Program's first cohort, seven graduated companies, over 25 partnerships, and more than OMR 90,000 in confirmed investment inside six months is the clearest early proof of what that role can look like in practice.

Over the past year, what have been Ankaa Space's most significant achievements and milestones? Which projects do you believe will have the greatest long-term impact on the Omani space ecosystem?

If I'm honest, the single achievement I'm proudest of this year is seeing OSAP's first cohort through to graduation. OSAP is a national initiative launched by the Ministry of Transport, Communications and Information Technology, represented by the National Space Program, with Ankaa as the executing partner responsible for programme delivery and Exotopic as our international commercialisation and accelerator-design partner.

From 34 applications, we shortlisted 15 and selected 10 companies for a 15-week programme combining technical training, business and finance modules, 600 hours of one-to-one mentorship, a Dubai Airshow trade mission for six companies, and a UK trade mission to Harwell Space Campus, Airbus Defence & Space, and Imperial College London for three companies. Seven companies graduated in January 2026, and all seven presented at the Middle East Space Conference, where OSAP had a booth and winning companies were announced.

By the numbers: more than OMR 90,000 in confirmed investment, with additional amounts under negotiation. Beyond OSAP, we also signed our air traffic surveillance radar agreement with Thales, announced during His Majesty Sultan Haitham bin Tarik's state visit to France in the presence of President Emmanuel Macron, were honoured with the Youth Excellence Award 2025 in the Digital Economy category, and entered a strategic green hydrogen partnership with Hydrom.

If I had to single out the project with the greatest long-term impact, it is OSAP without question, it is the first hard evidence that Oman can take a founder from an idea to an investable, revenue-facing company within a single national programme.

Ankaa Space has been a key partner in launching the Oman Space Accelerator Program (OSAP). What motivated your involvement in this initiative, and what are its primary objectives?

When I was asked to lead OSAP's delivery for Ankaa, I did not have all the answers, if anything, I had more questions than answers. How do you build a space ecosystem in a country where the industry is still emerging? How do you support startups in a sector that is complex and expensive, and not yet fully understood locally? And, most importantly, how do you make sure this is not just another programme, but something that creates real impact?

On paper, the objectives were straightforward: from a pool of 34 applications, select around ten Omani startups, SMEs, and academic teams; run an intensive 15-week curriculum covering both the technical and commercial sides of building a space venture; and connect participants with mentorship from local and international experts and access to investor networks. In reality, it became something closer to a responsibility, to build something new, to create opportunities for founders who often started with little more than an idea, and to prove that a space sector can genuinely exist here.



The launch of the Oman Space Accelerator Program, July 2025.

OSAP's first cohort has now graduated. What did that class actually go on to achieve?

Seven of the ten companies that graduated in January 2026, and each of them has a concrete story. Smart Manufacturing, our Smart Manufacturing Centre graduate, is building Oman's first space-grade 3D printing facility and has already finalised a joint venture with a Chinese aerospace manufacturer along with pre-orders from major clients. Elyoun Drone paired satellite analytics with drone-based field verification for oil and gas exploration and safety monitoring, and engaged five oil and gas operators around pilot commitments. Astronomical Solutions Company, trading as Dar Al-Falak, is building what would be one of the world's few dual-revenue dark-sky observatory and astro-tourism campuses, and came out of the programme with eleven formal registrations of interest from clients across eight countries. AR Technology built Oman's first licensed hybrid IoT network, combining LoRaWAN and LEO satellite connectivity, secured Oman's first LoRaWAN network ID, and received investment from the Oman Future Fund. RE&T started the programme as a single aerospace engineer with a proof-of-concept idea for rocket turbopumps and left it as a five-person team with a signed manufacturing MoU and pre-seed backing from the Oman Investment Authority. IntelliEast, an AI-powered satellite analytics platform for desert solar plants, is now revenue-ready and in conversation with pilot customers. GeoWatSpace, which builds geospatial intelligence for groundwater and agriculture, completed its proof of concept and is close to finalising a government grant from the Ministry of Agriculture, Fisheries and Water Resources.

Across the cohort, one hundred percent of graduates ended the programme either fundraising, holding confirmed investor interest, or already generating revenue, which is exactly the signal we needed that this model works.



Participants during one of OSAP's technical and business training sessions.

Following the first edition of the Oman Space Accelerator Program, what insights have you gained about Oman's startup ecosystem? What qualities and technologies have stood out among the participating startups?

The honest answer is that we followed up individually with each of the ten companies, not just as participants but as founders trying to build something real: understanding where they were stuck, what they needed, and who they needed to meet.

Three of the ten companies did not make it to graduation, a 30 percent attrition rate. I see that as a sign of selective advancement rather than programme failure not every idea is ready to become a company in fifteen weeks, and it is better to learn that during an accelerator than after raising capital. The clearest lesson from that is the need for a preparatory stage: half of our 34 applications came from early-stage entrepreneurs and academic teams whose ideas were strong but not yet investment-ready, which is exactly why we are now designing a Pre-OSAP pipeline in partnership with universities.

Technologically, demand clustered heavily downstream: AI and data analytics and earth observation together accounted for over 40 percent of all applications, while upstream hardware and propulsion made up under 12 percent a rational reflection of where capital, capability, and commercialisation timelines currently sit in Oman. In terms of qualities, the founders who progressed fastest were the ones comfortable with uncertainty and quick to adjust based on feedback, rather than the ones who arrived with the most polished pitch. The biggest personal lesson for me was that success is not Demo Day; it is what happens in the months after the programme ends, which is why structured post-acceleration support is now one of our top priorities for the next cohort.

Collaboration is essential for building a sustainable space economy. How is Ankaa working with government entities, academia, and international partners to strengthen Oman's space capabilities?

Collaboration sits at the centre of how we operate, and OSAP is the clearest illustration of that. On the government side, we worked with the Ministry of Transport, Communications and Information Technology and the National Space Program as the programme owner, alongside the Civil Aviation Authority, the SME Authority, and the Oman Society of Astronomy and Space, each contributing sessions or outreach activities. Makeen, MTCIT's platform, handled applications and onboarding, and Innovation Park Muscat hosted our workshops.

On the academic side, Sultan Qaboos University supported student outreach on space entrepreneurship, and three OSAP companies represented Oman at the NASA Space Apps Hackathon. Internationally, our UK trade mission gave three companies direct exposure to ESA BIC, Orbit Fab, and Oxford Space Systems at Harwell Space Campus, to Mott MacDonald and Imperial College London in London, and to Airbus Defence & Space in Stevenage; and six companies represented Oman at the Dubai Airshow, with SpaceTech in Gulf acting as our official media and press partner throughout.

On the investment side, Sharakah and the Oman Investment Authority both delivered dedicated funding sessions during the programme, which is part of why every one of our seven graduates left OSAP either fundraising, holding investor interest, or generating revenue. No single organisation could have built any part of that on its own it took government, academia, industry, and international partners working to the same fifteen-week clock.



Official signing ceremony: Thales and Ankaa Space & Technologies partner to modernise Oman's air traffic management system.

What are the biggest opportunities and challenges facing Oman's space sector today, and what steps should be taken to further strengthen the national ecosystem?

The biggest opportunity is one OSAP has already started proving out: using space-enabled data and infrastructure to solve problems Oman already cares about water security, agriculture, energy, and logistics rather than treating space as disconnected from national priorities. The biggest challenges are the ones our own first cohort surfaced directly. Entry-level readiness varied enormously half our applicants were early-stage entrepreneurs or academic teams whose ideas were not yet investment-ready. There was no direct link between OSAP graduates, investment funds, and government customers, so promising companies still had to build that bridge themselves. And most graduates still need a proof-of-concept or MVP, along with access to training data and development facilities, before they can convert investor or government interest into signed contracts.

Looking to the future, what are Ankaa's and OSAP's strategic priorities, and what message would you like to share with organizations and investors considering entering Oman's growing space sector?

Our immediate priority is turning OSAP from a single successful pilot into a sustained national capability. That means launching a Pre-Accelerator pipeline with university partners such as Sultan Qaboos University, establishing an incubator facility so graduates have a professional home and government-funded support after Demo Day, building a structured pipeline of government demonstration and pilot projects, and working with government and private investors toward a dedicated space and deep-tech venture investment mechanism. We are also continuing to scale Ankaa's own capabilities from our Drone & Robotics R&D Centre to our advanced manufacturing partnerships so the infrastructure exists to support the companies OSAP produces.

To organisations and investors considering Oman's space sector, our message is straightforward: this is no longer a speculative bet on potential. Oman's space sector now has a proof point. We would encourage anyone evaluating the region to engage with it directly, and we are glad to be the partner that helps them do that.



Stakeholders from government, academia, and industry at OSAP's Oman Space Ecosystem Workshop, mapping priorities for a national space roadmap.



Dr. Fawziya Nasser Al-Wahaibi

Professor Assistant
Engineering and Technology
College UTAS-Muscat

Dr. Fawziya Al Wahaibi is a Senior Lecturer and Researcher in Electronics and Communication Engineering, holding a Ph.D. in Electrical and Electronic Engineering from Brunel University London. Her expertise spans advanced wireless and optical communications, 5G/6G networks, millimeter-wave and Terahertz (THz) technologies, Radio-over-Fiber (RoF), Free-Space Optical (FSO) communication, satellite communications, IoT, and integrated space-terrestrial networks. Her research focuses on emerging intelligent and space-enabled communication technologies, including satellite-enabled IoT, CubeSat applications, drone-enabled 5G/IoT networks for disaster recovery, and IoT-based optical fiber fault detection. Beyond research, she is actively involved in building national capacity in Oman's emerging space sector through education, technical initiatives, student development, and collaboration with industry and national stakeholders.

Through integrating advanced communications, electronics, IoT, and space technologies, her work contributes to developing future-ready national capabilities and strengthening academia-industry collaboration in alignment with Oman Vision 2040 and Oman's growing ambitions in the space sector.

Interview

How do you see satellite communications contributing to Oman's digital transformation and the development of space-enabled infrastructure?

I see satellite communications as an important part of Oman's digital transformation, especially when they work alongside our existing fiber and mobile networks. They can help extend connectivity to remote areas, maritime environments, and locations where terrestrial networks may be difficult or costly to deploy. They can also provide reliable backup communication during emergencies, natural disasters, or network disruptions. Looking ahead, one of the most exciting developments is the integration of satellites with 5G and future 6G networks through Non-Terrestrial Networks (NTN). This will bring satellite and terrestrial networks closer together, creating more seamless, intelligent, and resilient connectivity. For Oman, this opens opportunities for IoT applications, smart infrastructure, maritime services, environmental monitoring, oil and gas operations, logistics, and disaster response. This direction is closely aligned with Oman Vision 2040, particularly its goals of accelerating digital transformation, strengthening innovation and research capabilities, developing national talent, and building a diversified, knowledge-based economy.

How is the integration of satellite, optical, and terrestrial communication systems being explored to improve connectivity across Oman's remote and rural regions?

In Oman, I believe the best approach is not to depend on one communication technology, but to bring different technologies together based on where each one works best. Optical fiber can provide the high capacity backbone, while 4G and 5G networks serve communities and populated areas. Satellite communication can then extend connectivity to remote, mountainous, desert, and maritime areas where deploying fiber or terrestrial infrastructure may be difficult or expensive. What is particularly interesting from a research perspective is how we can make these networks work together as one connected system. Technologies such as 5G/6G Non-Terrestrial Networks (NTN), satellite backhaul, IoT, and hybrid fiber-satellite networks are making this increasingly possible. For Oman, this approach is especially relevant because of our geography and widely distributed communities.

The aim is not to replace fiber or mobile networks with satellites, but to use each technology where it adds the most value in extending coverage, improving resilience, and ensuring connectivity when terrestrial networks are unavailable.

This direction is already part of the broader ambitions of Oman Vision 2040, which emphasizes digital transformation, advanced infrastructure, innovation, and inclusive access to technology across the Sultanate. By integrating terrestrial and space-based communication systems, we can contribute to building the resilient and future-ready digital infrastructure envisioned for Oman.

How can satellite-enabled IoT systems, as studied and developed within UTAS academic programs, support real-time monitoring in sectors such as agriculture, fisheries, water management, and environmental protection?

Satellite IoT systems can collect and send information in real time. They help farmers check crops, fishermen monitor the sea, manage water resources, and protect the environment

In agriculture, sensors can monitor soil moisture, temperature, humidity, and crop conditions to support precision irrigation. In fisheries, IoT devices can track vessels and monitor sea conditions and marine resources. For water management, sensors can measure water level, quality, flow rate, salinity, and leakage. For environmental protection, sensors can monitor air and water quality, marine pollution, weather conditions, and changes in ecosystems.



The main technical researchers and students can focus in areas where low-power IoT devices, satellite IoT connectivity, sensor networks, edge computing, data analytics, and energy-efficient communication protocols. Combining these technologies allows data from remote locations to be transmitted in near real time, enabling faster detection of problems and better decision-making.

What are the main technological challenges that UTAS and Oman as a whole need to overcome to strengthen national capabilities in satellite communications and space-based connectivity?

The main challenges are developing specialized skills, research facilities, and strong industry collaboration. UTAS could offer more courses covering different areas of space and satellite technology and provide dedicated laboratories where students and researchers can develop and test satellite communication and IoT systems. More collaboration with terrestrial network operators and the space industry is also important to increase applied research and develop solutions for Oman's connectivity needs. In addition, It needs more investment in research, infrastructure, skilled people, and access to satellite technologies to build strong national capabilities in space-based connectivity.

From your perspective at UTAS, how do you see the evolution of satellite communication technologies shaping the next generation of digital services and space-enabled applications in Oman?

Satellite communications will increasingly integrate with terrestrial networks, IoT, AI, optical networks, and future 6G systems. These technologies can support smart agriculture, maritime services, environmental monitoring, disaster management, and smart cities. From my perspective, I see satellite technology playing a major role in global network connectivity in space, rather than relying on undersea or underwater (oceanic) connectivity systems. UTAS can contribute through education, research, student projects, and industry collaboration. This supports Oman Vision 2040 and the National Space Program by helping Oman move from being a user of space technologies toward developing its own space-enabled solutions and national capabilities.



Ahmed Hadidi, PhD

Assistant Professor in the Department of
Applied Geosciences at the German
University of Technology in Oman

Dr. Ahmed Hadidi is an Assistant Professor of Applied Geosciences at the German University of Technology in Oman, where he works at the intersection of satellite remote sensing and water security in the Gulf. Holding a PhD in Applied Geology from Technische Universität Berlin, he specializes in using space-borne radar and satellite imagery to track flash floods, map groundwater recharge zones, and study alluvial plains across arid regions. His research has applied tools like Sentinel-1 satellite radar to detect flood channels in Oman and harnessed space-based precipitation data for flood modeling in wadi systems throughout the GCC and Egypt. He has authored over 30 scientific publications on these methods and has advised national projects, including Oman's Flash Flood Guidance System and aquifer recovery studies, bringing space-derived data into real-world water management decisions.

How is GUtech integrating space technologies and geospatial data into its engineering and applied science programs?

Since its establishment in 2007, GUtech has implemented GIS across most of its programmes. Applications of geospatial data have been taught since then in Geosciences, Environmental Engineering, Sustainable Tourism, and Urban Planning. In addition, Remote Sensing is also offered within Applied Geosciences.

Recently, we joined the EUMETCast service offered by EUMETSAT to gain access to near-real-time raw data captured by several Earth observation satellites, including geostationary satellites such as Meteosat, and polar-orbiting satellites such as Metop, Jason, and Sentinel-3. This data will be used in student projects and graduation theses.

What role does international collaboration, particularly with German and European institutions, play in advancing Oman's capabilities in Earth observation and space applications?

As mentioned, we've received generous support from EUMETSAT to access their excellent EUMETCast service. In addition, we have a strong collaboration with ZfT (Zentrum für Telematik e. V.) in Würzburg, and AGH University of Krakow.

Cooperation with institutions that have decades of deeply rooted experience helps facilitate knowledge transfer, enabling us to deliver state-of-the-art solutions in research and to develop training programmes.

Beyond data access, our researchers are actively developing advanced frameworks using Sentinel-1 Synthetic Aperture Radar (SAR) data provided by European Space Agency, leveraging its all-weather, day-and-night imaging capabilities to bypass cloud-cover limitations and monitor surface changes with high precision.

How can satellite data and geospatial technologies contribute to addressing sustainability challenges such as water scarcity, urban planning, and environmental protection in Oman?

This is actually a hot topic. Given the country's expanded land area of over three hundred thousand square kilometers, combined with a relatively limited population, data related to these vast desert regions can only be collected efficiently via satellites.

For example, although this is an arid region, flash floods do occur even in uninhabited areas. Detailed information about these events can provide access to water as a vital natural resource, allowing the estimation of runoff volumes and the identification of potential areas for groundwater recharge. Many satellites, such as GPM, observe the atmosphere while also estimating precipitation for all such events. Other satellites, like GRACE, help observe gravity changes caused by groundwater recharge.

Delineation of active wadis is very important for urban planning. In addition, changes in Digital Elevation Models (DEMs) due to urbanization can be captured more efficiently through careful analysis of EO satellite data. This also helps distinguish between passive/dormant and active wadis, supporting urban planners in their decision-making.

Regarding environmental applications, they cannot all be listed here. However, one example is algae plumes in the Gulf of Oman, which pose a serious danger to Reverse Osmosis desalination plants, the source of most domestic water production. Another example is methane leakage from gas networks, which span hundreds of kilometers and are strongly affected cracks caused by land subsidence, especially due to oil and gas exploitation. This aligns with GUtech's established research track record in Wadi Flash Flood (WFF) management. Through field investigations, drone surveys, and rainfall-runoff modeling, our researchers analyze sediment dynamics and infiltration processes to mitigate flood risks and maximize water retention in arid urban environments.

What opportunities exist for GUtech students and researchers to engage in applied innovation projects related to space technologies?

At GUtech, we try to get involved with all student initiatives in Oman. For example, our students are currently being prepared for two projects: the Race 2 Space competition, organized by A.R.T. and Etlaq; and the first Omani CubeSat with AI, built by students in cooperation with the Oman Space Programme, OmanLens, SQU, UTAS, and MTC.

Furthermore, our students already have two student clubs: the Astronomy Club and the Space Club. We support both clubs in realizing projects that address students' passion for space. For example, the Space Club at GUtech organized a workshop on how to build and programme HiptaSat in the lab recently.

We also offer courses through our partnership with edX to teach students about space technology. For example, GUtech offered the course "Space Mission Design and Operation" taught by Prof. Claude Nicollier, earlier this year to 50+ students..

How do you see GUtech contributing to Oman's broader Vision 2040 goals through innovation and research in emerging technologies?

GUtech is guided by the commitment of the Sultanate of Oman and its Vision 2040, which is itself aligned with the Sustainable Development Goals. As part of its mission, GUtech fosters creative and critical thinking to advance research and innovation.

In the space sector, we strive to follow all space technology-related events, regionally and internationally, to stay up to date on technical and business developments. With its agile management approach, GUtech continuously works on revising its current programmes, participating in initiatives, and sharing business opportunities with our alumni and graduate students.



Dr. Fatma Nasser Massoud Al-Harthi

Senior Academic Administrator
at the UTAS

Dr. Fatma Nasser Massoud Al-Harthi is a senior academic administrator and leadership scholar at the University of Technology and Applied Sciences (UTAS), Oman. She currently serves as Deputy Assistant Vice Chancellor for Electronic Systems and Student Services, bringing over two decades of experience in higher education administration, student affairs, and academic leadership. She holds a PhD in Leadership from Universiti Sains Malaysia and an MBA from Victoria University, Australia. Dr. Al-Harthi has played a pivotal role in advancing innovation and experiential learning initiatives, including leading the NASA Space Apps Hackathon in Oman for three consecutive years (2023–2025) and supervised international innovation programs at NASA centers in the United States. Her research focuses on leadership, innovation, organizational performance, economics, and entrepreneurship, with publications in leading international journals and publishers. She actively contributes to academic committees and supports the goals of Oman Vision 2040.

Interview

How can universities like UTAS play a stronger role in preparing Oman's future workforce for emerging fields such as space technologies, geospatial intelligence, and data-driven decision-making?

Universities like UTAS have a vital role in preparing Oman's future workforce for emerging fields such as space technologies, geospatial intelligence, and data-driven decision-making. This starts with equipping students with strong technical knowledge in areas such as artificial intelligence, remote sensing, GIS, and data analytics, while also developing critical thinking, teamwork, and innovation skills. A great example is UTAS's role in hosting the NASA Space Apps Challenge each year. This global hackathon brings together not only students but also professionals, entrepreneurs, school students, and members of the wider community to collaborate on real-world challenges provided by NASA. By working in multidisciplinary teams, participants develop innovative solutions using space and Earth observation data, gaining valuable hands-on experience in solving complex problems. This initiative demonstrates how universities can extend learning beyond the classroom by creating opportunities for innovation, collaboration, and community engagement. It also helps inspire young people to pursue careers in STEM and exposes them to emerging technologies and global challenges.

What skills do you believe are most critical for students entering sectors related to Earth observation, remote sensing, and AI-based analytics?

The future of Earth observation, remote sensing, and AI-based analytics requires graduates who combine strong technical expertise with adaptability and an innovation-driven mindset. Students must develop a solid foundation in artificial intelligence, data science, programming, geographic information systems (GIS), remote sensing, and cloud computing to effectively analyze and transform complex data into actionable insights. Equally important are transferable skills such as critical thinking, problem-solving, communication, teamwork, and ethical decision-making. As technologies evolve rapidly, graduates must also embrace lifelong learning, creativity, and entrepreneurship to remain competitive and contribute to national priorities. At UTAS, we are committed to developing these competencies through applied learning, industry partnerships, research opportunities, and innovation initiatives, ensuring our graduates are well prepared to lead Oman's digital transformation.

How can Higher Education Institutions further align its academic programs and applied research with Oman's national priorities in digital transformation, industrial innovation, renewable energy, logistics, and environmental sustainability?

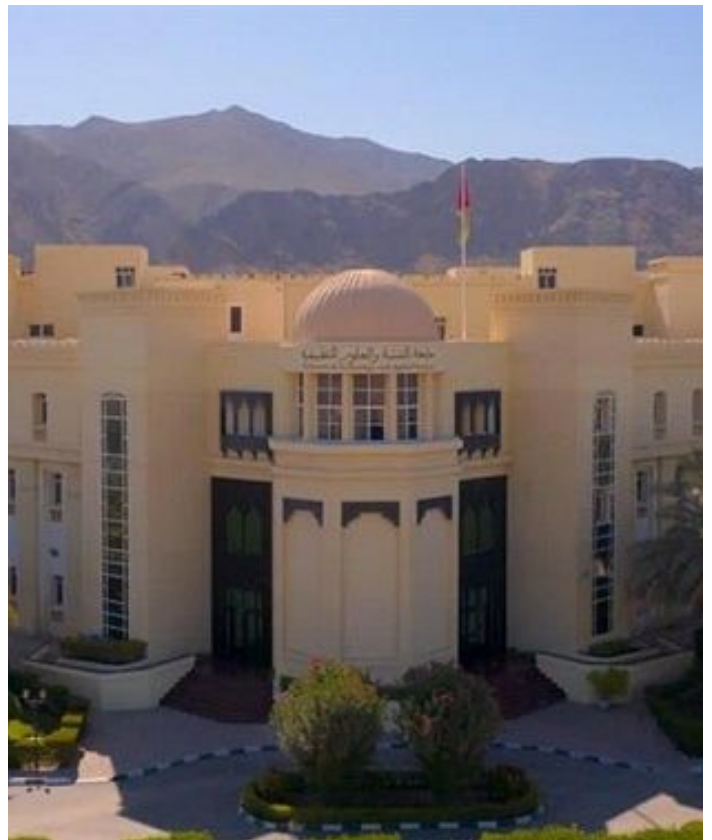
Higher Education Institutions can better align their academic programs and applied research with Oman's national priorities by strengthening collaboration with government, industry, and community partners to ensure graduates have the skills needed for the future workforce. Expanding project-based learning, applied research, and innovation in areas such as digital transformation, industrial innovation, renewable energy, logistics, healthcare, and environmental sustainability will enable students to address real-world challenges. At UTAS, this approach is supported through industry partnerships, research collaboration, and experiential learning, ensuring graduates are well prepared to contribute to Oman Vision 2040 and the country's transition to a knowledge-based economy.

What role does academic leadership play in fostering innovation, entrepreneurship, and applied research culture among students?

Academic leadership plays a key role in advancing innovation, entrepreneurship, and applied research in support of Oman Vision 2040. Through strategic leadership, innovation and entrepreneurship are integrated into academic programs and research activities, creating an environment that encourages students to develop practical solutions to real-world challenges. Initiatives led by the Partnership and Entrepreneurship Department and the Innovation and Technology Transfer Department provide opportunities for entrepreneurship, mentorship, innovation competitions, startup incubation, and applied research. UTAS also works closely with industry, government, and community partners to ensure education and research address national priorities and labor market needs. These collaborations offer students internships, applied research projects, and practical learning experiences while supporting faculty in interdisciplinary research, technology transfer, and innovation commercialization. UTAS develops graduates with strong technical knowledge, critical thinking, leadership, and entrepreneurial skills, enabling them to contribute to Oman's transition toward a knowledge-based, innovation-driven economy.

How can UTAS strengthen collaboration with government and industry to ensure research outputs translate into real-world impact?

UTAS can enhance the impact of its research by strengthening technology transfer, startup incubation, intellectual property support, and industry mentorship. Connecting researchers and student innovators with investors and government innovation programs will help transform research into market-ready solutions that address national priorities. Sustained collaboration through innovation councils, industry advisory boards, and regular innovation challenges will foster continuous engagement between academia, government, and industry. This collaborative ecosystem will accelerate applied research, support Oman Vision 2040, and generate lasting economic and societal impact. UTAS can further strengthen these efforts by establishing challenge-driven partnerships where students, researchers, government entities, and private companies work together to solve real national challenges. Building on successful models such as hackathons, these partnerships can evolve into long-term collaborations through funded research, internships, and pilot projects.



University of Technology and Applied Sciences (UTAS)



Dr. Yaseen Al-Mulla

Associate Professor of Biosystems
Engineering at Sultan Qaboos University

Dr. Yaseen Al-Mulla is an Associate Professor of Biosystems Engineering and ICESCO Chair of Remote Sensing & Machine Learning at Sultan Qaboos University (SQU), Oman. He serves as the Director of the Remote Sensing & GIS Research Center, Founder and Chair of the IEEE Geoscience and Remote Sensing Society (GRSS) Oman Chapter, and Chair of the Artificial Intelligence in Remote Sensing & GIS Research Group at SQU. His research focuses on remote sensing, Geographic Information Systems (GIS), Earth observation, geospatial artificial intelligence (GeoAI), environmental monitoring, precision agriculture, and the integration of UAVs, IoT, and advanced sensing technologies for real-time environmental assessment and decision support. He has established research collaborations with more than 50 institutions across 26 countries and has led numerous nationally and internationally funded research projects. Dr. Al-Mulla has organized and contributed to numerous international conferences, workshops, and scientific initiatives, and has served on the editorial boards and technical committees of leading journals and conferences. His work has been recognized through multiple national and international awards for excellence in research, leadership, and professional service.

Earth Observation for National Resilience: Transforming Earth Observation into Actionable Solutions for Oman

The View from Space Begins on the Ground

Nations make decisions that produce lasting impacts on their citizens year after year and decade after decade, such as securing freshwater, ensuring food supply, safeguarding infrastructure, and preparing for natural threats, among many others. All of those decisions rely on one important aspect: understanding a changing world. Field observations will always be important but will not tell the whole story. Timely, reliable, and objective information over large areas and across coastlines and oceans is increasingly needed by decision-makers. Earth observation can meet this need. For many years, Earth observation was associated mainly with interpreting images to map and studying the Earth's surface. Satellite data, in combination with AI, GIS, UAS, environmental models, and field observations, can now identify changing conditions, assess impacts, and provide the context in which rational decisions need to be made. For Oman, the wise management of natural resources and smart, sustainable development do not exclude the use of advanced technologies for Earth observation. Instead, they increasingly include their use as a strategic resource for the nation.

From Observation to National Resilience

Advances in satellite technology are not the only factor driving the advancement of Earth observation systems. More significant is the integrating satellite observations with ground data. By integrating satellite, field, UAV, and GIS data with environmental modeling and AI, we can answer four critical questions: What is changing? Why is it changing? What will change? And where will it change?" The potential for Earth observation in Oman is substantial. Many opportunities exist for better management of crops and irrigation, improving the water-use-efficiency, evaluating the impact of droughts and floods, studying groundwater, and managing biodiversity, as well as monitoring the coastline.

Earth observation can also assess risks to transportation and energy corridors from flooding, coastal erosion, sand dune movement, changing land conditions, and urban development. Timely observations during tropical cyclones and other emergencies can help assess the impact of the disturbance and improve the response and recovery. The Earth observation system fosters a spatial approach to problem solving and integrates systems that are dependent on one another. The most significant advancement is the move from reactive to a proactive approach.

From Data to Action

The abundance of available Earth observation data is unprecedented. However, data does not build resilience. Observations only gain value when they are transformed into usable information. AI is great at finding patterns in data and spotting anomalies. GIS can put these patterns and anomalies in context among the surrounding environmental and infrastructural data. UAVs and field measurements can supplement this information and allow for more in-depth analysis. Digital platforms can then deliver the results to the decision-makers who need them.

Observation → Understanding → Decision → Action

Academic leadership plays a key role in advancing innovation, entrepreneurship, and applied research in support of Oman Vision 2040. Through strategic leadership, innovation and entrepreneurship are integrated into academic programs and research activities, creating an environment that encourages students to develop practical solutions to real-world challenges. Initiatives led by the Partnership and Entrepreneurship Department and the Innovation and Technology Transfer Department provide opportunities for entrepreneurship, mentorship, innovation competitions, startup incubation, and applied research. UTAS also works closely with industry, government, and community partners to ensure education and research address national priorities and labor market needs. These collaborations offer students internships, applied research projects, and practical learning experiences while supporting faculty in interdisciplinary research, technology transfer, and innovation commercialization. UTAS develops graduates with strong technical knowledge, critical thinking, leadership, and entrepreneurial skills, enabling them to contribute to Oman's transition toward a knowledge-based, innovation-driven economy.



Sultan Qaboos University (SQU)



Quentin Verspieren, PhD

Head of Space Safety Programme
Coordination Office at European Space
Agency

Quentin Verspieren is the Head of the Space Safety Programme Coordination Office at the European Space Agency. Dr Verspieren is also a visiting Assistant Professor at the Graduate School of Public Policy, The University of Tokyo. Previously, he held the positions of Associate Research Fellow at the European Space Policy Institute, Assistant Professor at the University of Tokyo, External Adviser to the National Space Policy Secretariat of Japan, and Head of Global Strategy at ArkEdge Space Inc. He has two master's degrees in aerospace engineering (ISAE-SUPAERO and The University of Tokyo) and a PhD in public policy (The University of Tokyo).

Join the Zero Debris Community and contribute to a sustainable future for space

The global space sector is entering a period of unprecedented growth. Governments and private investors are funding new launch capabilities, satellite constellations, communications networks and space-based services at a pace never seen before.

But as the number of objects orbiting Earth skyrockets, so does the risk of space debris collisions. Ensuring a safe and sustainable orbital environment has become a priority.

Space Sustainability Cannot Wait

More satellites have been launched in the last few years than in the first six decades of space exploration. An estimated 130 million pieces of space debris orbit Earth, threatening current and future satellites.

According to the OECD, spacecraft worth USD 191.3 billion are at risk because of the presence of debris in Earth orbit.

The latest ESA Space Environment Report highlights a concerning trend. Although compliance with debris mitigation measures is gradually improving worldwide, current efforts remain far below the level required to ensure long-term sustainability. In a business-as-usual scenario, increasing launch activity, satellite constellations and fragmentation events could drive orbital risk far beyond sustainable levels.

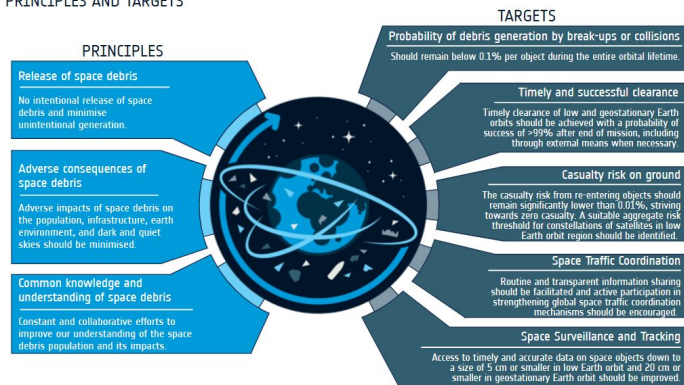
The Zero Debris Charter

Recognising the urgency of the situation, more than forty organisations from across the space sector joined forces to develop the Zero Debris Charter in 2023.

Drafted through an open and collaborative multi-stakeholder process facilitated by the European Space Agency (ESA), the Zero Debris Charter is a non-legally binding initiative that brings together a broad range of organisations committed to achieving a zero debris future by 2030.

The Charter outlines ambitious yet measurable targets to drastically reduce the creation of debris in orbit. Beyond being a set of targets, it aims to build a global community dedicated to space safety and sustainability, fostering collaboration and capacity-building activities.

ZERO DEBRIS CHARTER PRINCIPLES AND TARGETS



A Growing Global Community

The initiative was announced at the Paris Air Show in June 2023 by the ESA Director General along with senior executives from Airbus Defence and Space, OHB and Thales Alenia Space, who recognised ESA's Zero Debris approach as a meaningful contribution towards space safety and sustainability and announced their companies' participation in the co-development of the Zero Debris Charter.

Since its publication in November 2023, the Zero Debris Charter has attracted remarkable attention across the space sector. Today, more than 250 organisations from 35 countries have joined the initiative.

The community is organised around two complementary forums. The Zero Debris Technical Forum brings together signatories and supporters to develop technical recommendations, tools and solutions. The Zero Debris Policy Forum focuses on policy, regulatory and governance issues that support a more sustainable space environment.

What Does It Mean to Join?

While the Zero Debris Charter itself is non-binding, it represents a strong collective ambition. By signing, organisations acknowledge the importance of the Zero Debris challenge and express their willingness to collectively contribute to achieving the 2030 targets.

Signing does not mean committing to achieve every target within an organisation's own activities. Rather, it means contributing to the collective effort through technology development, research, policy advocacy, funding, outreach or other initiatives. Every contribution, large or small, helps advance the shared objective.

Why Join?

Joining the Zero Debris Community means becoming part of a dedicated and active network committed to space safety and sustainability, with opportunities to attend leading events, engage in policy and technical working groups, and contribute to shaping the future of Zero Debris.

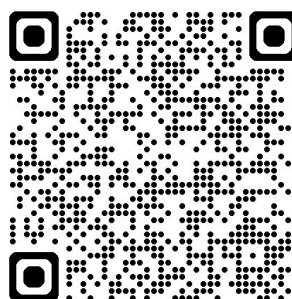
Technical Working Groups support the development of the Zero Debris Technical Booklet, a crowd-sourced portfolio of technical needs, solutions and key enablers to achieve the 2030 targets, while Policy Working Groups provide decision-makers with policy and regulatory advice.

Signatories also benefit from community events such as conferences, webinars, and the annual Zero Debris Week, valuable networking opportunities with like-minded organisations and strategic influence through participation in various community activities.

Looking Ahead

As humanity's presence in space grows, protecting the orbital environment is essential to preserving the economic, scientific and societal benefits that space provides. The Zero Debris Charter offers a practical, collaborative framework that brings together organisations committed to a sustainable space future. Since every satellite operator, space agency, investor and commercial actor depends on a safe and accessible orbital environment, space sustainability is both a technical necessity and a shared responsibility. By working together today, we can help ensure that space remains safe and accessible to all.

Should you have any questions, please contact the Zero Debris Charter Secretariat at protect@esa.int.



**Flash this QR code to
join the Zero Debris
Community!**



Dr. Dawood S. Al-Yahyai

Director General of Fisheries
Researches at Ministry of Agricultural,
Fisheries and Water Resources (Oman)

Dr. Dawood S. Al-Yahyai is the Director General of Fisheries Research at the Ministry of Agriculture, Fisheries and Water Resources of the Sultanate of Oman, and serves as Director of the Fisheries Support Unit of the Indian Ocean Rim Association (IORA). He holds a Ph.D. in Marine Sciences and Fisheries and has more than 20 years of experience in the fisheries and aquaculture sectors in Oman.

Throughout his career, Dr. Al-Yahyai has held a range of leadership positions across aquaculture development, fisheries research, fisheries extension, training, and education. He has played a key role in the formulation of national strategic plans for fisheries and aquaculture development and has contributed extensively to both scientific and applied research in these fields.

Dr. Al-Yahyai is a member of the Executive Council of the Intergovernmental Oceanographic Commission (IOC) of UNESCO and serves as a Bureau Member of the Committee on Fisheries Sub-Committee on Aquaculture of the Food and Agriculture Organization (FAO) of the United Nations. His work focuses on advancing sustainable fisheries and aquaculture development, strengthening marine research, and promoting regional and international cooperation in ocean and fisheries governance.

Interview

How are satellite technologies currently being used in Oman to support sustainable fisheries management and improve monitoring of marine resources?

Satellite technologies are becoming an integral part of modern fisheries management by providing continuous, large-scale observations of the marine environment that complement traditional field surveys and scientific monitoring.

One of the most significant initiatives taken by Ministry of Agriculture, Fisheries and Water Resources is the Decision and Information System for the Coastal Waters of Oman. This project was funded by Ministry of Agriculture, Fisheries and water Resources and Research & Innovation Authority through Strategic Research Program. In this project, the system integrates Earth observation data from satellites with ocean circulation models, ecological forecasting, meteorological information, and field measurements collected by the Ministry's Marine Science and Fisheries Centre. By combining these diverse datasets into a single decision-support platform, the system provides a comprehensive understanding of Oman's coastal and marine environment.

The platform supports several critical applications, including the early detection and forecasting of harmful algal blooms (red tides), monitoring changes in water quality and marine ecosystem conditions.

Satellite-derived information such as sea surface temperature, ocean colour, and chlorophyll concentration provides valuable environmental indicators that, when integrated with scientific surveys and fisheries data, enhance our understanding of marine productivity and ecosystem dynamics. These technologies enable the Ministry to make more informed, evidence-based decisions for the sustainable management of fisheries resources.

Looking ahead, the Ministry sees satellite technologies as an increasingly important component of digital fisheries management. Combined with artificial intelligence, geospatial analytics, and in-situ observations, they will strengthen our ability to monitor marine resources in near real time, anticipate environmental changes, improve operational planning, and support the long-term sustainability and resilience of Oman's fisheries sector.

What are the main opportunities for using satellite and geospatial technologies to improve fisheries monitoring and marine resource management in Oman?

The main opportunity is to move toward more timely, spatially informed decision-making. Satellite and geospatial technologies can help identify productive fishing areas, monitor changes in marine conditions, assess coastal and habitat changes, and support early warning for harmful algal blooms, extreme weather, and other environmental risks, and supporting sustainable aquaculture planning

They can also support better planning of fisheries infrastructure, landing sites, aquaculture zones, marine protected areas, and coastal development. By integrating satellite data with GIS platforms, fisheries statistics, vessel monitoring, and AI-based analytics, the Ministry can develop clearer operational insights for both policy and field-level management.

The priority should be practical use cases: improving sustainability, reducing risk, protecting marine ecosystems, supporting fishers, and improving the efficiency of fisheries and aquaculture development.

In what areas of fisheries and aquaculture management do you see the highest potential for future application of satellite-enabled or geospatial solutions?

The highest potential is in four areas. First, risk management, including harmful algal blooms. Second, aquaculture site selection and monitoring, where geospatial tools can support decisions on water quality, environmental suitability, coastal conditions, and biosecurity risks. Third, fisheries monitoring and forecasting, where satellite data can help assess oceanographic conditions linked to fish distribution and productivity.

There is also strong potential in integrating satellite data with AI to generate decision-support products that are easier for managers, researchers, and operators to use.

How can geospatial technologies contribute to the protection and sustainable management of marine ecosystems and coastal zones in Oman?

Geospatial technologies provide a clearer picture of where marine and coastal pressures are occurring and how they are changing over time. They can support mapping of sensitive habitats, monitoring of coastal erosion, identification of land-sea interactions, tracking of pollution risks, and assessment of climate-related changes.

For marine ecosystems, these tools can help improve planning and management by showing the relationship between fishing activity, habitat conditions, aquaculture development, coastal infrastructure, and environmental protection areas.

For coastal zones, GIS and remote sensing can support integrated coastal zone management by helping decision-makers balance economic development with ecosystem protection. This is especially important for Oman, where fisheries, tourism, ports, aquaculture, biodiversity, and coastal communities all depend on healthy marine and coastal environments.

What opportunities do you see for closer collaboration between the Ministry and private companies developing satellite services, geospatial platforms, AI applications, and other space-enabled technologies?

There are strong opportunities for collaboration, particularly where private-sector solutions can solve clearly defined operational challenges. These may include fisheries intelligence platforms, aquaculture monitoring systems, harmful algal bloom alerts, coastal change detection, marine habitat mapping, environmental risk dashboards, and AI models that convert satellite data into practical recommendations.

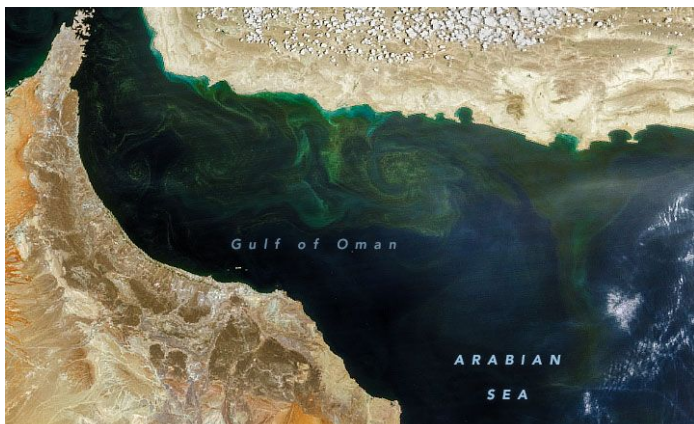
The most effective partnerships will be problem-led. The starting point should not be the technology itself, but a national priority such as sustainable fisheries, aquaculture growth, marine ecosystem protection, food security, or blue economy development.

Private companies can contribute advanced analytics, platforms, cloud infrastructure, AI tools, and specialized satellite services. The Ministry can contribute sector knowledge, field validation, regulatory context. This combination can help develop solutions that are technically strong, locally relevant, and scalable.

How is the Ministry supporting capacity building in remote sensing, GIS, Earth observation, and data analytics among professionals working in fisheries and marine resource management?

Capacity building is essential because satellite data only becomes valuable when professionals can interpret it, validate it, and use it in decision-making. The Ministry's approach is to strengthen technical skills in GIS, remote sensing, spatial analysis, marine data management, and applied analytics through higher education, training workshops, participating in international related conferences.

Capacity building also depends on collaboration with universities, research institutions, national space-sector entities, and private technology providers. Training should not be limited to software use; it should include applied projects where teams learn by addressing real challenges such as habitat monitoring, aquaculture zoning, fisheries forecasting, and coastal risk assessment.



A satellite view of Iran, Pakistan and the Gulf of Oman

Looking ahead to Oman Vision 2040, what role do you envision space technologies playing in strengthening sustainable fisheries, aquaculture development, marine ecosystem protection, and the broader blue economy?

Looking toward Oman Vision 2040, space technologies can become part of the national digital infrastructure supporting sustainable fisheries, aquaculture, marine protection, and the blue economy.

For sustainable fisheries, they can improve monitoring of marine conditions, fishing zones, and ecosystem pressures. For aquaculture, they can support site selection, environmental monitoring, and operational risk management. For marine ecosystem protection, they can provide continuous insight into coastal change, sensitive habitats, water quality indicators, and climate-related risks. The broader opportunity is economic as well as environmental. Space-enabled services can support new local capabilities in geospatial analytics, AI, marine intelligence, environmental monitoring, and blue economy investment.

This is aligned with Oman Vision 2040's focus on sustainable economic development, food security, environmental sustainability, technology adoption, and economic diversification. It is also consistent with Oman's national space direction, including the development of space applications and open satellite data platforms. The Ministry's role is to ensure these technologies are applied to practical national priorities and combined with field expertise, scientific evidence, and sound resource management.



About Us



About Us

About SpaceTech in Gulf

SpaceTech in Gulf has solidified its position as the leading analytics and space market intel company in the Middle East and North Africa (MENA) specializing in strategic communications and market intelligence within the space domain.

With a particular focus on the MENA region, the company offers expertise and insights into the unique challenges and opportunities that exist within this rapidly evolving sector. By leveraging its extensive knowledge and network, SpaceTech in Gulf helps its clients navigate the complexities of the SpaceTech landscape and develop successful business strategies that drive growth and innovation.

Contact us to learn more about how we can help you achieve your goals in the SpaceTech industry.

Email: info@spacotech-gulf.com



www.spacotech-gulf.com

How we can help your space business?

Market Intelligence & Strategy.

We provide data-driven analysis of the regional and international space landscape, anticipate market trends, and make informed strategic decisions.

Visibility & Outreach.

We support businesses in effectively communicating their value to non-space industries, investors, and policymakers. This includes branding, targeted campaigns, and media positioning tailored to the unique needs of the space sector.

Business Development & Partnerships.

Leveraging our ecosystem knowledge, we connect companies with potential partners, clients, and collaborators across the Gulf region and beyond.

Education & Engagement.

We design and deliver webinars, events, and thought leadership initiatives that raise awareness of your solutions and position your company at the forefront of industry discussions.

Previous Editions (2025)



Our Services

Marketing

Helping space and deep-tech organizations across the GCC build visibility, authority, and audience.

- **Content Strategy & Creation**
Editorial calendars, articles, and multimedia content tailored to space, defense, and deep-tech audiences.
- **Website & Platform Development**
Custom websites, web platforms, and digital experiences designed and built for space and deep-tech brands.
- **SEO Optimization**
Technical and content SEO to improve search rankings, visibility, and organic reach within niche industry searches.
- **Social Media Management**
Day-to-day management of digital and social channels to grow an engaged, industry-relevant audience.
- **Brand Positioning & Design**
Messaging frameworks, visual identity, and campaign assets that differentiate clients in a crowded sector.
- **Event & Sponsorship Marketing**
Promotion, coverage, and activation support for leading regional industry conferences and forums.
- **Newsletter & Community Growth**
Curated newsletters and community initiatives that keep regional stakeholders informed and engaged.

Analysis

Tracking the GCC space economy end-to-end and turning fragmented signals into decision-ready intelligence.

- **GCC Space Market Intelligence**
Country-level tracking of programs, policy, and infrastructure investment across Saudi Arabia, UAE, Oman, Qatar, Kuwait, and Bahrain.
- **Investment & Funding Tracking**
Ongoing monitoring of venture rounds, M&A activity, and government funding flowing into regional space ventures.
- **Industry Reports & Publications**
In-depth quarterly and annual magazines analyzing sector trends, key players, and market outlook.
- **Data Platform & Analytics**
A structured dataset of companies, missions, and satellites accessible for benchmarking and due diligence.
- **Competitive Landscape Research**
Mapping of players, partnerships, and gaps across upstream and downstream space segments.
- **Social Research & Surveys**
Surveys, polls, and stakeholder interviews that capture sentiment, priorities, and perceptions across the regional space community.



About the Platform

The Space & Defence Data Platform by SpaceTech in Gulf delivers data-driven insights on space, defence, and dual-use technologies across the Gulf region. It integrates market intelligence and advanced data analytics to support informed decision-making for governments, industry leaders, and investors.



**If you want to see your interview
in the upcoming magazines contact us:**



info@spacetech-gulf.com



Disclaimer: The data and information presented in this magazine are the results of research conducted by SpaceTech in Gulf. Unauthorized reproduction, distribution, or copying of any portion of this publication is strictly prohibited and may result in penalties under Saudi Arabian law.



www.spacetech-gulf.com
info@spacetech-gulf.com