Space Intelligence lab.

SPACETECH IN GULF

SPACE MARKETPLACE

Space Industry in Oman:

Current Trends and Perspectives

First Edition
Oman, 2025

سلطنة عُمان
وزارة النقل والاتصالات وتقنية المعلومات
Sultanate of Oman
Ministry of Transport, Communications and Information Technology

SatMENA

ETLAS

الجمعية العُمانية للفلك والفضاء
Oman Society of Astronomy and Space

تقنيات الاتصالات الفضائية
Space Communication Technologies
COMMITMENT TO EXCELLENCE

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UKLSL

ART
Advanced Rocket Technologies

Website —
www.spacetech-gulf.com

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info@spacetech-gulf.com

Dear Space Enthusiasts,

We are happy to present our first magazine focused on the space industry in Oman. This publication marks the first comprehensive look at the space industry in Oman, and we are proud to lead the way in bringing this paper to life.

We extend our sincere gratitude to all contributors for their valuable insights and unwavering support, which have been instrumental in the development of this edition.

We invite your feedback and perspectives, which will be vital in shaping this publication into a meaningful and enduring resource for the region's growing space community.

Stay tuned for more!

Best regards,

Alexei Cresniov

Alex Cresniov,
CEO and Co-Founder at SpaceTech in Gulf

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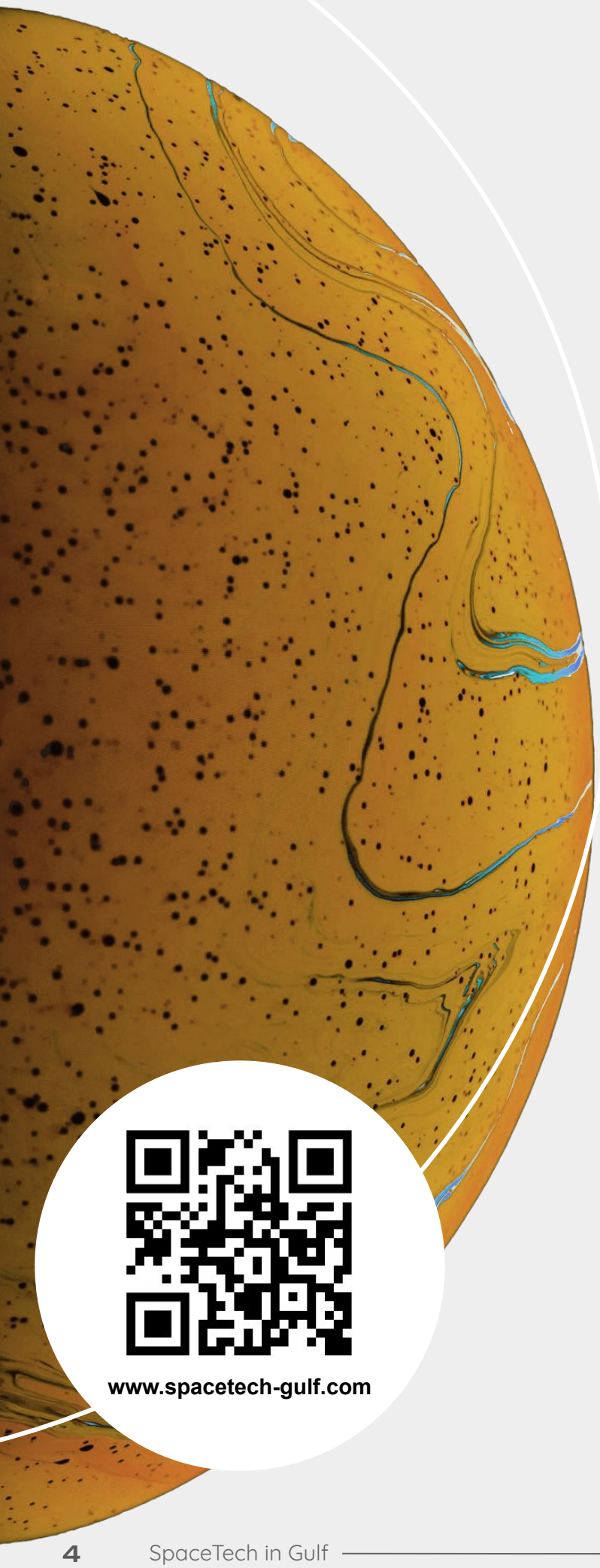


SPACETECH IN GULF

Foreword

About this Magazine

The purpose of this magazine is to analyze Oman's emerging space industry ecosystem. We aimed to compile a comprehensive list of entities involved in the Omani space industry, directly or indirectly. This ranges from those directly engaged in space technology development to satellite communications departments. This report serves as a starting point, with the vision to continuously gather more data and insights, capturing the evolving landscape of the Omani space ecosystem. Subsequent editions will build upon this foundation, offering a dynamic view of Oman's contributions to the global space arena. Our aim is to contribute to a thorough understanding of the Omani space industry, aiding informed decision-making and fostering growth in this promising frontier.

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

www.spacetech-gulf.com

SPACE MARKETPLACE

Space Intelligence lab.

About Space Intelligence Lab

As the space economy rapidly evolves, decision-makers need sharper insights and strategic guidance. Space Intelligence Lab is developing a future-focused Analytics & Advisory offering that redefines how we track and act on space sector growth.

Our services span upstream infrastructure, downstream applications, ecosystem planning, and commercialization strategy—tailored for governments, investors, and companies.

Next, we're launching a unified intelligence hub—starting with the Middle East and expanding globally—to deliver the metrics that matter most.

Email: info@spaceintellab.com

About Space Marketplace

Space Marketplace is a content platform where space companies can publish and showcase their services through real-world use cases.

Designed to bridge the gap between the space sector and traditional industries, the platform highlights how space technologies—such as satellite data, navigation, and communications—can solve practical challenges across agriculture, energy, logistics, and more. The goal is to promote space applications and clearly explain how space can drive innovation and impact in non-space industries.

Email: info@space-marketplace.com

www.spaceintellab.com

www.space-marketplace.com

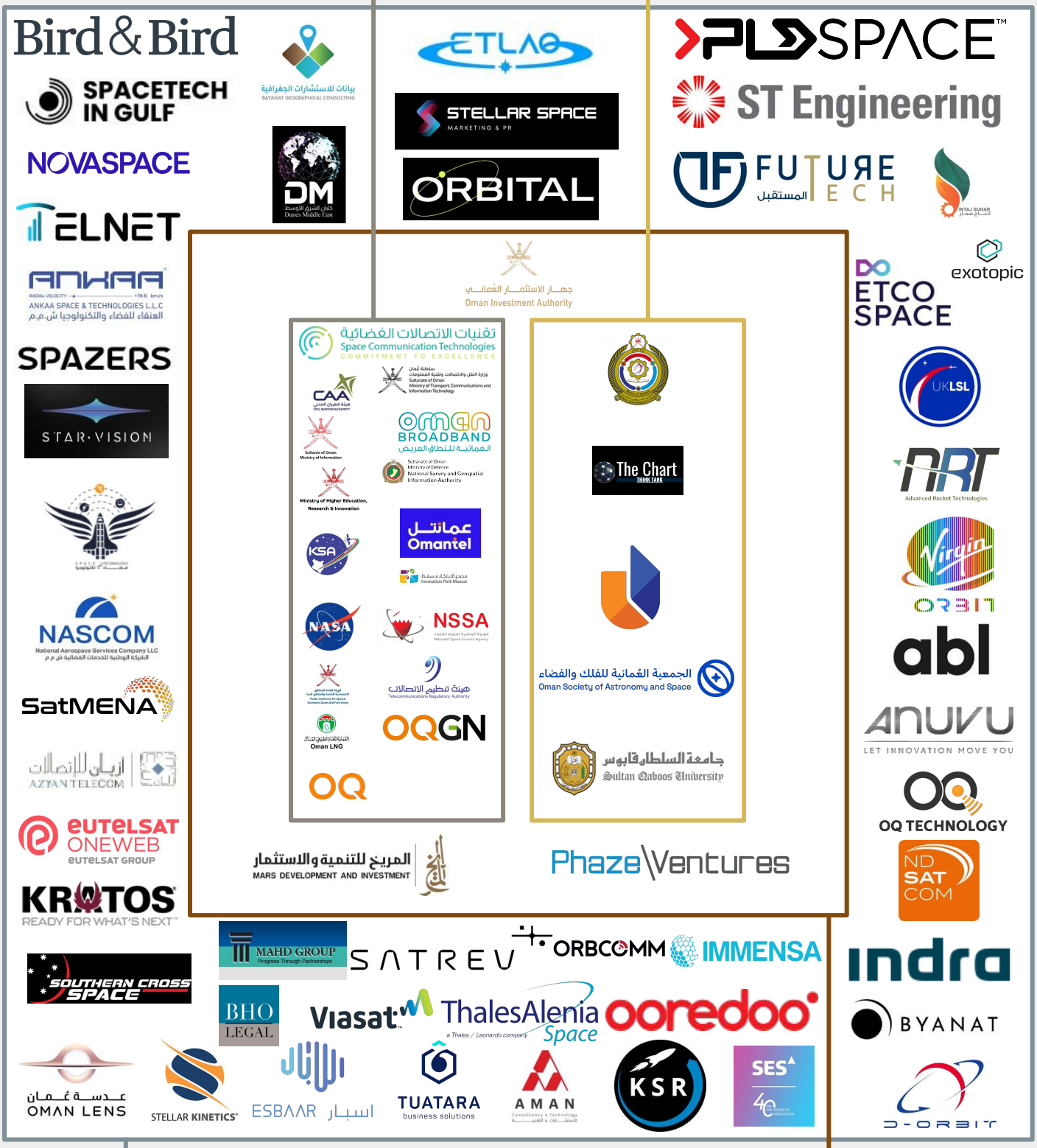
Space Industry in Oman

75+ Organizations

SPACETECH IN GULF

Government Entities

Education & Research



Private Companies

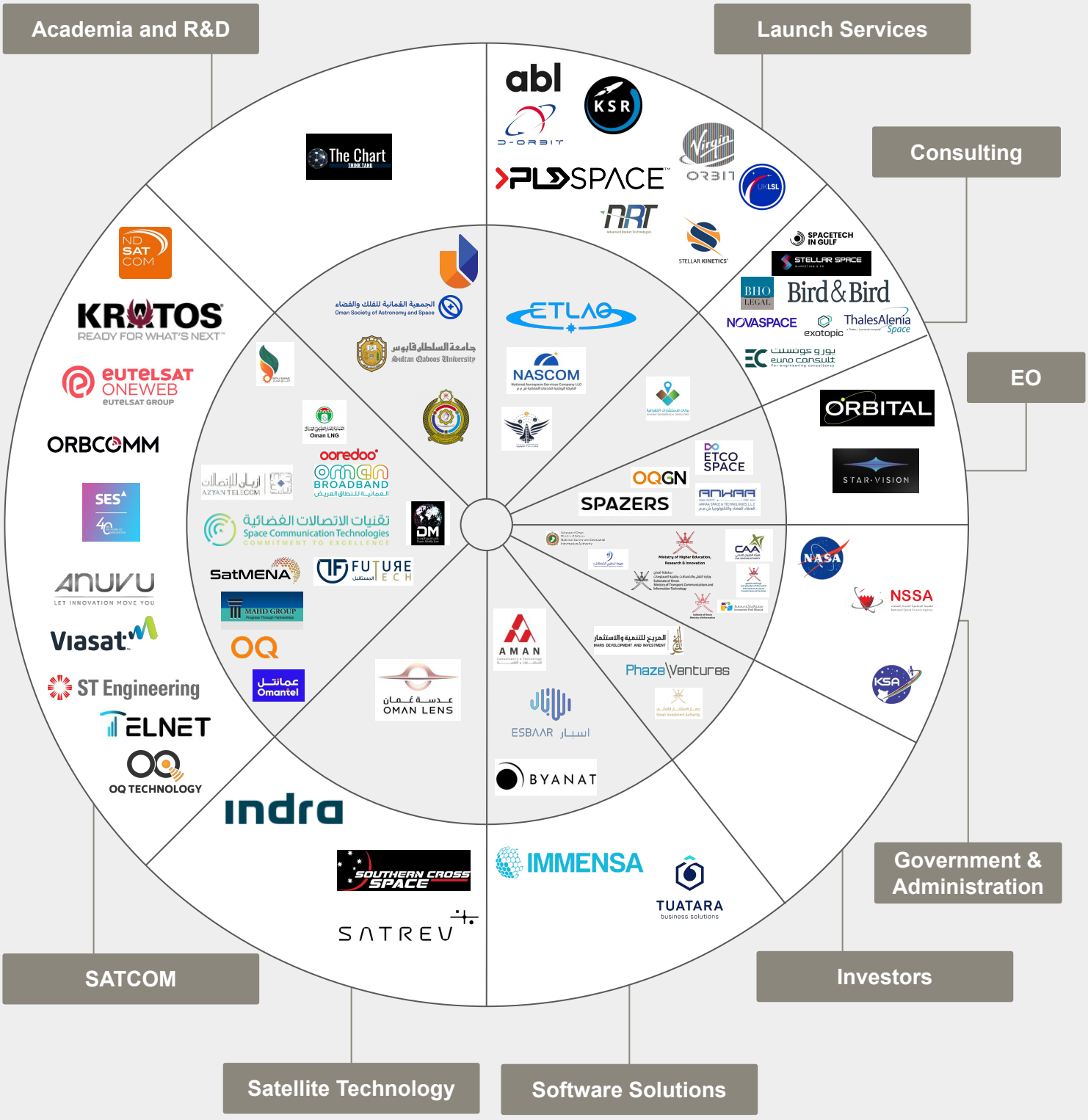
Investors

Space Industry in Oman

75+ Organizations

International

Local



Space Industry in Oman

75+ Organizations

SPACETECH IN GULF

International (35+ Organizations)

US

ORBCOMM
abl
Virgin Orbit
ANUVU
LET INNOVATION MOVE YOU
ELNET
KRATOS
READY FOR WHAT'S NEXT
NASA

UK

STELLAR SPACE
MARKETING & PR
ART
Advanced Rocket Technologies
The Chart
THINK TANK
eutelsat ONEWEB
eutelsat GROUP
UKLSL
exotopic

EU

ThalesAlenia Space
PLDSPACE
NOVASPACE
ORBITAL
SATREV
Bird & Bird
indra
OQ TECHNOLOGY
BHO LEGAL
D-ORBIT
TUATARA
business solutions
ND SATCOM
SES

GCC

NSSA
National Space Science Agency
يورو كونسلت
For engineering consultancy
SPACETECH IN GULF
KSR
IMMENSA

Others

ST Engineering
KSA
STAR·VISION
SOUTHERN CROSS SPACE
STELLAR KINETICS

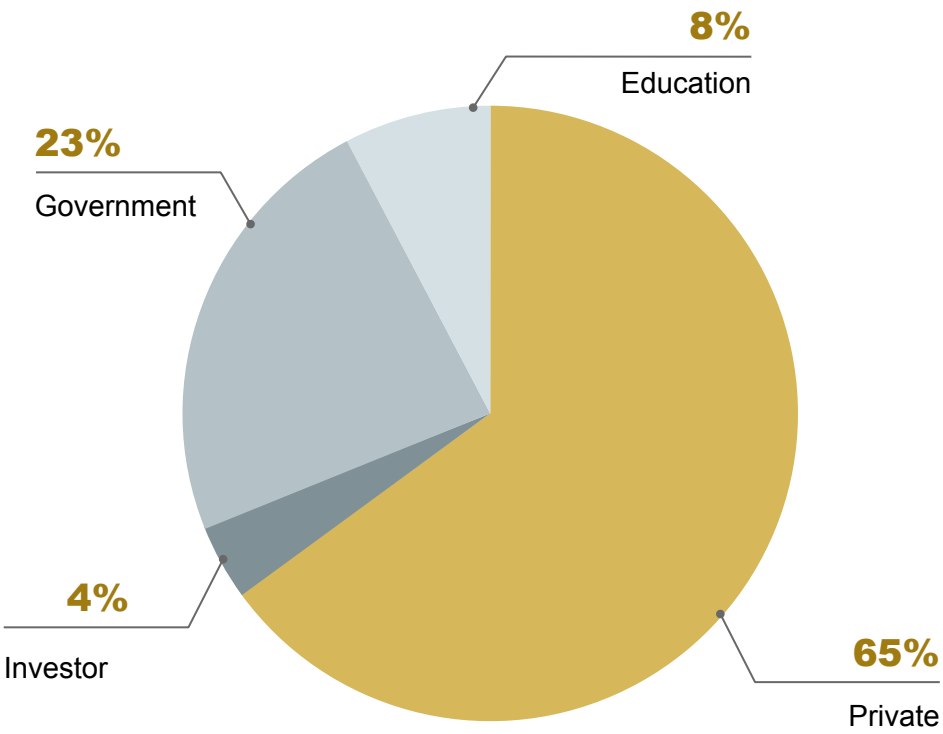
Oman (40+ Organizations)

عمانتل
Omantel
تقنيات الاتصالات الفضائية
Space Communication Technologies
COMMITMENT TO EXCELLENCE
Phaze Ventures
هيئة تنظيم الاتصالات
Telecommunications Regulatory Authority
المريخ للتنمية والاستثمار
MARS DEVELOPMENT AND INVESTMENT
ETLAS
جامعة السلطان قابوس
Sultan Qaboos University
oman BROADBAND
العمانية للنطاق العريض
Sultanate of Oman
Ministry of Defence
National Survey and Geospatial Information Authority
ANKAA
ANKAA SPACE & TECHNOLOGIES LLC
العنقاء للفضاء والتكنولوجيا ش.م.م
Ministry of Higher Education, Research & Innovation
سلطنة عمان
وزارة النقل والاتصالات وتقنية المعلومات
Sultanate of Oman
Ministry of Transport, Communications and Information Technology
OQ
Sultanate of Oman
Ministry of Information
NASCOM
Oman Investment Authority
ETCO SPACE
الجمعية العُمانية للفلك والفضاء
Oman Society of Astronomy and Space
Oman LNG
OQGN
مجمع الابتكار مسقط
Innovation Park Muscat
SPAZERS
CAA
CIVIL AVIATION AUTHORITY
Public Authority for Special Economic Zones and Free Zones
ooredoo
AZYAN TELECOM
SatMENA
Viasat
FUTURE TECH
المستقبل
BYANAT
MAHD GROUP
DM
Dunes Middle East
بيانات للاستشارات الجغرافية
BAYANAT GEOGRAPHICAL CONSULTING
INTAJ SUHAR
ESBAAR
اسبار
عدسة عمان
OMAN LENS
AMAN
Consultancy & Technology

Oman's Space Ecosystem: 75+ Key Organizations Driving Growth

Oman’s space ecosystem is emerging, with a strong private sector presence (50 organizations), reflecting a commercially driven growth approach. The government sector (17 organizations) provides strategic support aligned with Oman Vision 2040, while education (6) and investors (3) remain limited but essential for long-term development. To accelerate growth, Oman should focus on expanding R&D, talent pipelines, and investment readiness.

Organizations by Type



"Space is a frontier that thrives on collaboration, and Oman is committed to forging strong international partnerships to accelerate its space ambitions. By engaging with global space agencies, research institutions, and private sector innovators, Oman is positioning itself as a key partner in satellite technology, Earth observation, and AI-driven space solutions. These collaborations will not only bring technological advancements to the region but also foster knowledge-sharing, investment, and joint missions that will propel Oman into the global space economy."

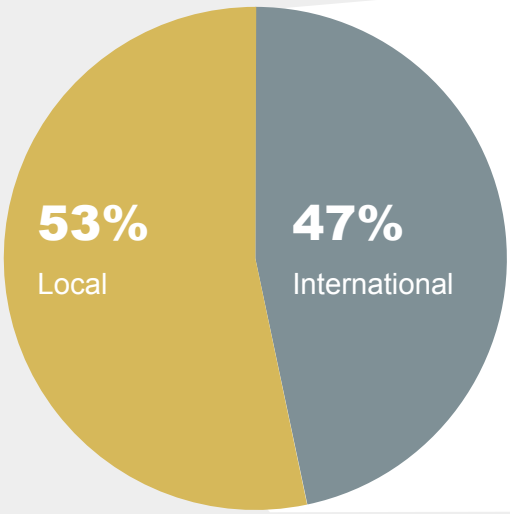
Alexei Cresniov, CEO
Co-Founder at SpaceTech in Gulf

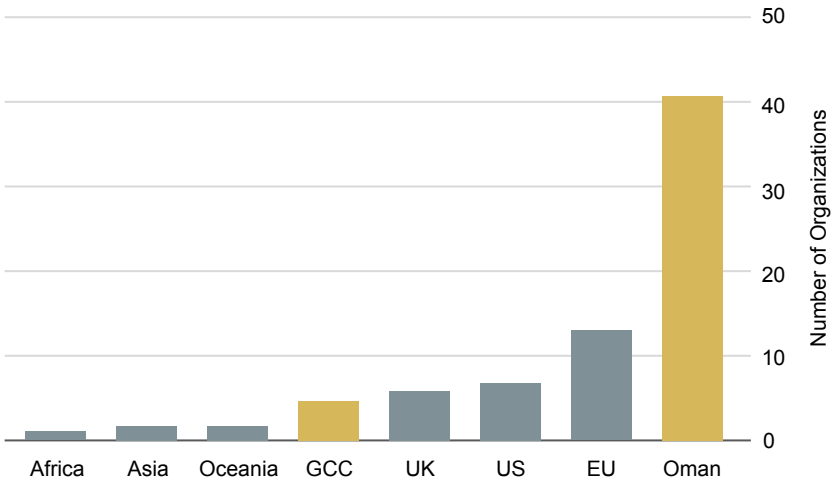
The Distribution of 75+ Local Entities in Oman

Oman's space sector is gaining momentum, with 53% of organizations based locally (41 out of 77), showing strong national engagement. International partnerships are growing, led by the EU (13), US (7), UK (6), and GCC (5). The presence of organizations from Asia, Oceania, and Africa reflects Oman's intent to position itself as a regional and global collaborator in space innovation.

The ecosystem is focused on SatCom, space education, and satellite technology, positioning Oman as a regional player in the space economy with global connections.

Country Distribution





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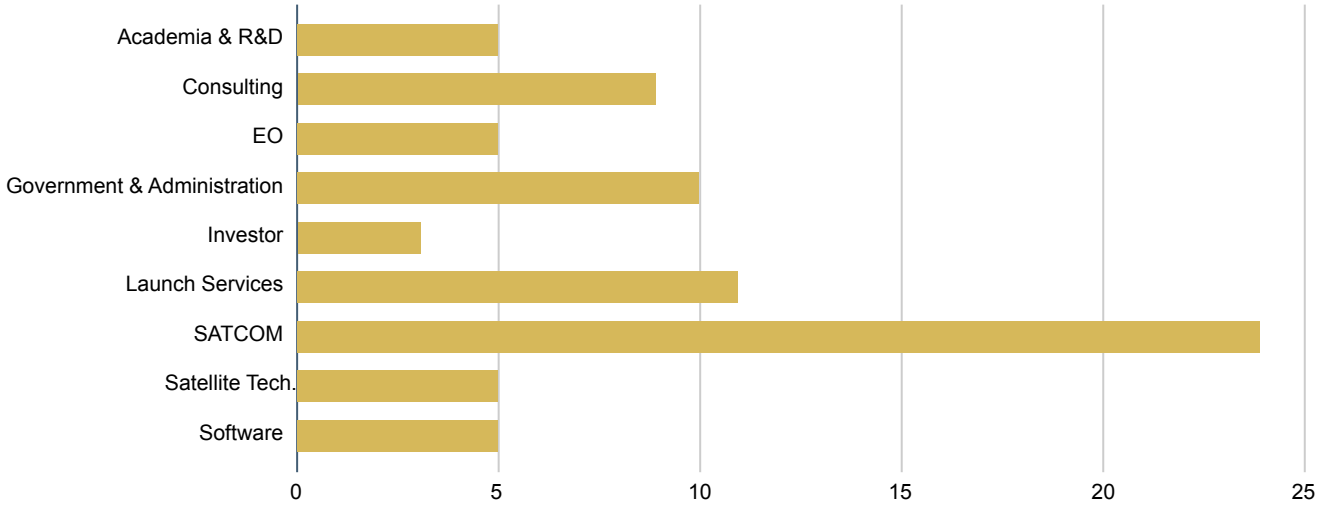
"Oman's government is taking decisive steps to establish a strong and sustainable space sector, recognizing its strategic value for economic growth, technological innovation, and national development. Through dedicated policies, investment in research, and the promotion of SpaceTech startups, the Sultanate is laying the groundwork for a thriving space industry. By integrating space into its long-term vision, Oman is unlocking new opportunities in satellite technology, data analytics, and space exploration, ensuring its place in the evolving global space economy."

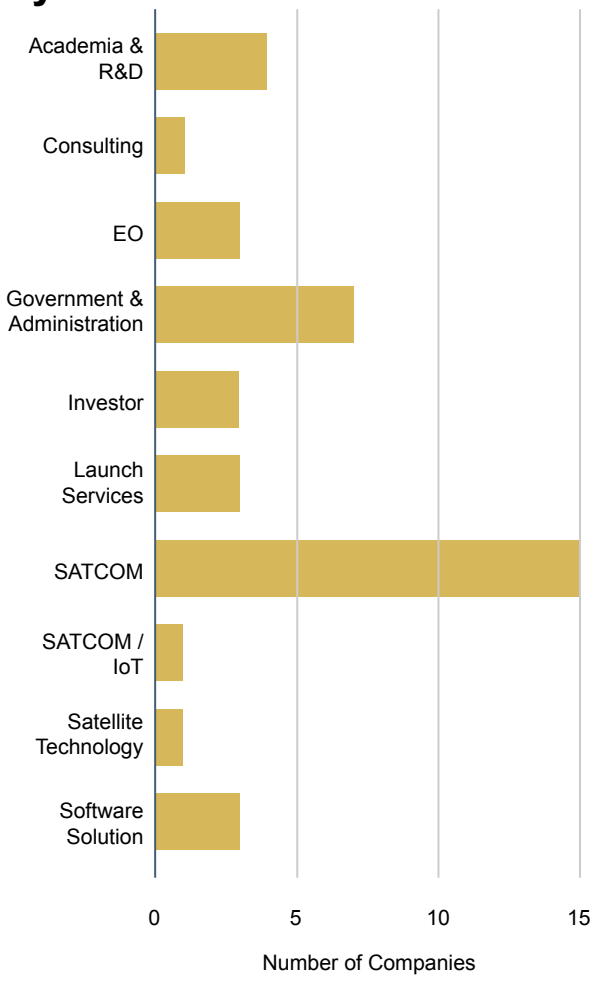
Abdullah AlGharrash, COO
Co-Founder at SpaceTech in Gulf

Oman's Space Ecosystem: 75+ Organizations Driving Growth

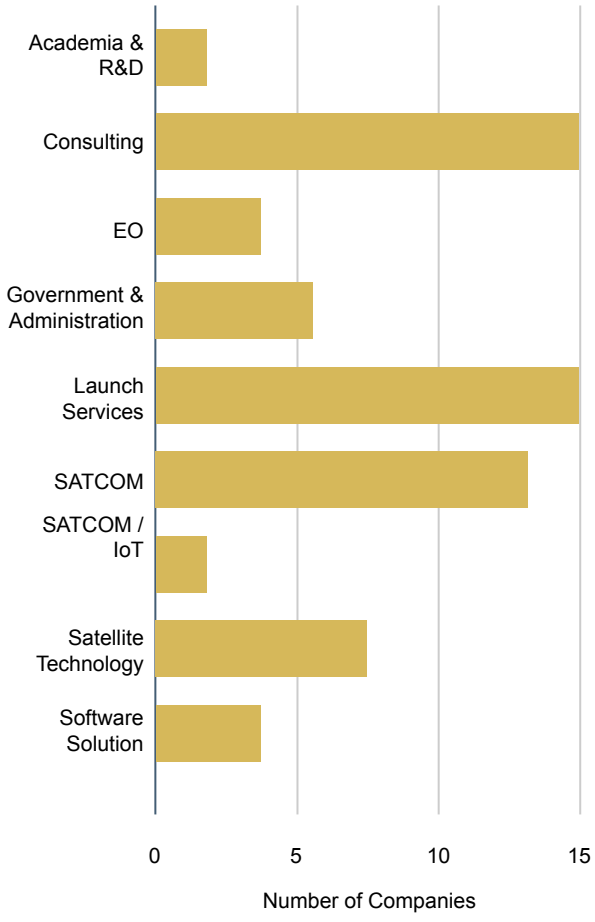
Total Number of Organizations by Industries



Local Organizations by Industries



International Organizations by Industries



National Space Program of Oman

The Policy Structure

سلطنة عُمان
وزارة النقل والاتصالات وتقنية المعلومات
Sultanate of Oman
Ministry of Transport, Communications and Information Technology

Economic Diversification

Space to generate commercial opportunities in a digital economy

Capacity Building

Space to boost innovation in a knowledge-based society

National Security

Space to safeguard sovereignty for a secured country

Environment & Natural Resources

Space to support sustainable exploration and use of resources

Vision of the National policy and its executive program for Oman space sector 2023-2033.

Oman will prioritize the downstream segment of the space economy, focusing on ground services and space applications. Several projects have been identified, including six investment opportunities open to foreign direct investment. The aim is to establish Oman as a regional hub for space services and applications — to become the regional gateway for space applications, empowering economic diversification and unlocking future opportunities.

National Space Program Website

Space Economy of Oman

Key Figures (Projected)

Space Economy	Oman	Global
2025 Estimate	USD 230M	USD 748B
CAGR	-13%	-9%
2035 Projection	USD 900M	USD 1.7T

Space Market	Oman	Global
2025 Estimate	USD 110M	USD 188B
CAGR	-12%	-7%
2035 Projection	USD 400M	USD 370B

As the global space economy accelerates toward a projected USD 1.77 trillion by 2035, Oman is carving its own path with bold national initiatives and strategic investments. From launching its first satellite to developing the Etlaq Spaceport and building local ground station capabilities, Oman's projects reflect a microcosm of the global space race - scaled to its ambitions, yet aligned with frontier innovation. This infographic contrasts Oman's fast-growing space efforts against broader global trajectories, showcasing how targeted national strategies are helping Oman stake its claim in the new space economy.

> In a universe of giants, Oman is proving that ambition, focus, and partnerships can build a space economy from the ground up.

Rajeeshwaran Moorthy
Space Investor, Author, Board Member,
Keynote Speaker

Meet the

Voices

SPACETECH IN GULF

ETLAQ

H.H. Sayyid Azzan Al Said

CEO of Etlaq Spaceport

H.H. Azzan Qais Al Said, CEO of Etlaq Spaceport, is revolutionizing access to space by developing the Middle East's first commercial spaceport. Under his leadership, Etlaq 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, Azzan has cultivated expertise in fintech, high-performance computing, and material science. 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.

How does Etlaq Spaceport's 18° latitude position enhance its ability to support various orbital launches, including SSO, MEO, and GTO?

Etlaq's 18° latitude offers a critical and natural advantage by allowing rockets to harness more of Earth's rotational speed, which is greatest at the equator. This directly reduces fuel usage and launch costs to orbits like GTO. The coastal setting of Etlaq Spaceport in Duqm also enables safe, flexible launch paths over the Arabian Sea and Indian Ocean, supporting access to SSO, MEO, and a broad range of commercial, scientific, and government missions.

What facilities and services does Etlaq offer to satellite operators, payload providers, and launch companies?

The master plan of Etlaq Spaceport includes a comprehensive suite of facilities and services tailored to the needs of satellite manufacturers, payload integrators, and launch service providers. Etlaq supports a spectrum of launch systems with three dedicated launch complexes: LC1 for heavy-lift vehicles, LC2 for medium-class, and LC3A/LC3B for micro, small and suborbital launches. Each is equipped with tailored ground systems and launch vehicle integration facilities.

Photo: The Genesis Program at Etlaq Spaceport, Duqm

The business park extends mission support with secure access to mission control centers, clean rooms, storage, range control, and propellant handling. Etlaq also provides logistics coordination, regulatory support, provisions of propellants, oxidizers, and pressurant gasses as required, and on-site accommodations to support operational personnel.

How does the Genesis Program facilitate the transition from experimental launches like Duqm-1 to full-scale commercial operations?

The Genesis Program occupies approximately 10% of the spaceport premises, and it is designed to enable rapid deployment of experimental missions, allowing launchers to move from pre-mission planning to launch day within 14 weeks. With each launch, we are building capacity and collecting data to improve our operating structure and commercializing the spaceport before full-scale operations. It provides a low risk approach to validating our technologies, processes and operations as we scale up to commercial orbital operations.

What are the key criteria for selecting launch partners for the Genesis Program, and how do you support companies like Stellar Kinetics, ART, and KSR in their missions?

The Genesis Program welcomes a broad range of launch partners from non-US sanctioned countries, from university-led teams to emerging micro and small launch companies. We reduce the barrier to entry for upcoming launchers by offering technical expertise and supporting them to navigate logistics and licensing, in addition to offering affordable commercial terms. Our support in mission planning and operations provides launchers the opportunity to complete their full R&D cycles by conducting safe launches under qualified supervision.

What steps has Etlaq taken to streamline regulatory approvals and attract international commercial launch providers?

We worked closely with Oman's National Space Program and Civil Aviation Authority to shape a commercially attractive regulatory framework that aligns with international standards for operations and safety. As the implementation of the regulations is progressing, we worked with the regulator to establish a protocol for approving experimental launches for the Genesis Program today, enabling global launchers to test and validate systems. The National Aerospace Services Company (NASCOM) is the government-appointed Qualified Entity (QE) that commands the mission and is responsible for communicating with the regulator to apply for launch windows. Etlaq, as the spaceport operator, manages all on-site operations, including range and safety, coordination with mission stakeholders, and provision of spaceport services for the launchers.

The launch company's main focus is to prepare the launch vehicle and conduct the launch in adherence to the safety requirements set out by NASCOM and the regulator.

Can you elaborate on the eco-conscious energy solutions and environmental protocols implemented at Etlaq Spaceport?

Sustainability is a core pillar of our long term vision. We are committed to integrating green energy solutions and environmentally responsible practices to ensure a sustainable future for our operations and community. Today, we are installing solar panels and batteries to supply 100% of the electricity requirements of Camp Genesis facilities and we are building a culture of conservation to preserve natural resources and minimize waste.

Photo: Duqm-1 mission: Etlaq's first experimental suborbital launch

Is Etlaq Spaceport exploring partnerships to enhance Oman's role in satellite-based services, such as EO data processing or telecom infrastructure?

While Etlaq primarily focuses on ground infrastructure for launch, we actively support the development and growth of satellite-based services through partnerships with companies specialized in satellite operations. A recent development is the MoU signed with SatMENA to unlock new opportunities in satellite communications, space-based connectivity, and mission support services. We have also partnered with ETCO Space to utilize launch services to launch payloads from Etlaq, in addition to sharing knowledge to build capacity and maximize local value within the nation's space sector.

How is Etlaq fostering local talent and raising awareness of space launch operations?

Etlaq is committed to cultivating local talent and inspiring the next generation of space leaders through initiatives like the Etlaq Fan Experience (FX). Held during active launch windows, Etlaq FX offers the public a close-up opportunity to learn about rocketry, space science, and launch operations. The inaugural 3-day event, concluded on April 30, 2025, featured educational workshops led by industry partners and cultural showcases from local artisans. This initiative bridges community engagement with scientific curiosity; laying the foundation for a future workforce equipped to lead Oman's space ambitions.

Photo: The first annual Etlaq Launch Conference

Photo: MTCIT and NASCOM sign MoU to recognize NASCOM as a qualified entity for spaceports

SPACETECH IN GULF

سلطنة عُمان
وزارة النقل والاتصالات وتقنية المعلومات
Sultanate of Oman
Ministry of Transport, Communications and Information Technology

Dr. Saoud Humaid Al Shoaili

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

Dr. Saoud is a renowned national executive leader with a professional experience over 23 years in the ICT (ICT, Post, and Space) sectors. He is a professional management consultant & Advisor to the ministry on the ICT, Post & Space fields. His professional experience includes sector legislation and regulations, policy, strategic planning and execution, governance and compliance. He represents the sector at various regional and international events. Dr. Saoud has led various legislative, policy and strategic initiatives that has impacted the sectors including ICT law, Personal data protection law, national ICT strategy, National Cloud 1st Policy, National Space Policy & Executive Strategy, Regulatory Framework for Managing and Governing National Data, Postal Sector Policy & Executive Strategy beside others. He has been invited as a Guest of Honor and keynote speaker in various forums.

Dr. Saoud also chairing the PMO for the execution of the design, manufacturing and launching the national Telecommunication satellite as a national flagship project. In this role, Dr. Saoud leads a national team to ensure the achievement of national objectives from the project.

Dr. Saoud is a board member in various local and international BoDs including the UPU, ArabSAt Co, ITHCA- ICT Holding CO and UN-Regional Centre for the Space Science & Technology Education. He is also the country representative in the ITU. Dr. Saoud holds PhD/MSc in Public Policies for Science, Technology & Innovation, besides MEng/BEng in Electrical & Computer Engineering. He is among the graduate of the first cohort of the National Leadership & Competitiveness Program (Diwan Royal Court/University of Oxford).

Oman recently announced plans to acquire its first national telecommunications satellite. What are the main goals of this project?

Oman is in the process of acquiring its first national telecommunications satellite. This initiative aims to fulfill the national requirements of telecommunication services as well as to build local capabilities in the space sector.

The focus is on developing Omani expertise in satellite telecommunications throughout the entire process, from acquisition to operation, ensuring long-term capability development.

The Etlaq Spaceport in Duqm is a major step for Oman. What is the timeline for its development, and what role will it play in the global space industry?

The Etlaq Spaceport project commenced in January 2023 with the signing of an agreement for a launch site in Duqm. The first experimental rocket launch, Duqm-1, took place in December 5th, 2024.

This year Etlaq has a plan for 3-4 launches. Strategically located near the equator, Etlaq offers advantageous launch trajectories, making it an attractive site for global launch companies aiming to enter various orbits. Its worth mentioning that Etlaq got an exclusivity from the government for the launch service as the only allowed company for this services – qualified company.

We believe that the Oman space port will be a key hub for the Omani and regional space sector. It is the best place in Arabia for developing a space port and can service the launch requirements of the ambitious space ports around the region.

Oman successfully launched its first experimental rocket, Duqm-1. What lessons were learned from that mission, and what are the next steps?

The successful launch of Oman's first experimental rocket, Duqm-1 provided valuable insights into rocket engineering and spaceport operations.

A team of Omani engineers and technicians participated in all stages of the project, enhancing their skills through direct collaboration with international partners. A successful launch requires co-ordination and collaboration between a large range of government and private stakeholders The Etlaq team also worked closely with different parts of the Omani Government ensuring alignment while building institutional knowledge of spaceport operations.

This experience has laid the foundation for future missions, with plans for three additional rocket launches from Etlaq Spaceport in 2025.

How does Oman collaborate with other countries and international space agencies to advance its space program?

Oman has established strategic partnerships with international space agencies/centers and firms to advance its space initiatives. The National Space Program started its international collaboration since the development of the national space policy and executive strategy in which we worked with Novaspace (Ex-Euroconsult) as a strategic consultancy partner. Recently, the Oman Lens Company (a local EO company) collaborated with StarVision Aerospace to launch its first EO satellite equipped with advanced remote sensing and AI technology. These collaborations provide necessary resources, expertise, and technical support, enabling Oman to benefit from the latest technologies and meet the growing demand for space data

In 2016 Oman joined UNOOSA as a member state, and in 2021 Oman has ratified the 4 international space related treaties. In 2025 Oman joined the International Astronautical Federation (IAF), The IAF is the world’s largest international space advocacy organization and gives Oman a global platform to engage with international space agencies and international companies.

What role do public-private partnerships play in Oman's space sector, and are there opportunities for foreign investments?

Public-private partnerships play a crucial role in Oman's space sector. The government supports initiatives like the Etlaq Spaceport by facilitating technology transfer and fostering collaborations with international companies. This approach not only builds national capacity but also creates opportunities for foreign investments, as global launch companies are attracted to Oman's strategic location and developing infrastructure.

The National Space Program is also working to attract international space companies who wish to expand their business to the Sultanate. Oman is a strategic location for Ground Stations or Space Domain Awareness facilitates to service the growing space industry.

Given Oman's strategic location, how do you see the country positioning itself as a regional hub for space applications?

Oman's strategic location, coupled with its extensive undersea cable networks, clear skies, and geopolitical neutrality, positions it as an ideal regional hub for space applications. The country's well-established undersea cable infrastructure enhances its ability to support satellite communications and data transmission, making it a key player in global connectivity.

Its cloud-free skies provide optimal conditions for ground stations to track and communicate with satellites, ensuring reliable space-based services such as Earth observation, weather forecasting, and remote sensing.

Additionally, Oman's policy of geopolitical neutrality makes it a trusted partner for international collaborations in space research and technology, attracting investment and fostering partnerships with global space agencies and private enterprises. By leveraging these advantages, Oman can play a central role in advancing regional space capabilities and supporting critical industries reliant on satellite data

How is Oman investing in local talent and research to build a sustainable space industry?

Oman has the personal talent and the Universities in country with the clear potential to deliver and sustain a space industry. The national space program is working closely with Sultan Qaboos University to develop the Oman Space Engineering Laboratory. This is an important national project for developing domestic capability and building space skills for the Omani populations.

Oman has many excellent universities producing graduates in relevant science subjects. The National program is working with private companies and universities to understand how we can further integrate space specific elements into existing courses such as engineers, data science, and GIS.

Photo: Ministry of Transport, Communications, and Information Technology (MTCIT)

What new technologies or innovations are being developed in Oman’s space sector?

Oman's space sector is embracing new technologies, particularly in satellite development. The Oman Lens Company's recent launch of a satellite equipped with advanced remote sensing and AI capabilities exemplifies this innovation. The satellite can detect changes, classify land cover, and monitor environmental conditions with high accuracy, providing actionable data to various sectors.

How do you see space technologies benefiting non-space industries in Oman, such as agriculture, energy, and logistics?

Space technologies have the potential to significantly benefit non-space industries in Oman.

The space sector is overwhelming about collecting data on earth, which can be used to monitor and respond to challenges.

For example, data from satellites can be used to monitor and track gas networks, enhancing efficiency in the energy sector. Additionally, remote sensing capabilities can support agriculture by providing insights into crop health and land use, while logistics can be optimized through improved navigation and communication systems

What are the biggest challenges Oman faces in developing a competitive space industry?

The space sector is globally competitive one. It is a capital intensive industry and the fund is a realistic challenge. Moreover, the regional competition to attract foreign direct investments. The national space program is working hard to create an incentive package to attract space companies to come to Oman.

We also see more countries seeking to invest and engage with the global space industry. Oman is focusing on areas where is has unique advantages and significant potential.

The Oman National Space policy is focused on the downstream space applications which are growing significantly around the world and Oman is well positioned to compete in this field.

How do you see the global space industry evolving in the next decade, and where does Oman fit into this landscape?

Over the next decade, the global space industry is expected to see increased commercialization, technological advancements, and greater international collaboration.

There is significant increase forecast in the demand for launch provision around the world.

Oman's strategic initiatives, such as developing the Etlaq Spaceport will be in an excellent position to accommodate this demand and build complimentary services around the spaceport.

There will also be an increasing demand for global network of ground station and ground based space-domain awareness facilities. Oman is well position to accommodate these. Oman is investing in satellite technology, position it to become a significant player in this evolving landscape, contributing to regional and global space activities.

What are the key trends shaping the commercial space industry, and how can Oman leverage these trends?

Key trends shaping the commercial space industry include:

- the continued rise of small satellite deployments in low earth orbit;
- advancements in reusable launch vehicles;
- the increasing role of private companies.

Oman can leverage these trends by developing infrastructure that supports small satellite launches, fostering public-private partnerships, and investing in research and development to stay abreast of technological advancements.

How does Oman plan to integrate artificial intelligence and big data analytics into its space initiatives?

The Oman national space policy is focused on downstream analytics – we are working to improve and increase the use of space data in the Omani Economy, to create jobs and solve challenges here on earth.

Effective use of artificial intelligence will be essential in taking advantage of all the potential benefits which space data can offer. Omani private companies like Omanlens are operating satellite which use on-board AI to process data to improve the speed and the efficiency of delivering actionable data.

Oman also has a national program for artificial intelligence and big data. The government will ensure that these programs are aligned to maximize commercial benefit for the Omani space and AI sector.

What lessons can Oman learn from other countries that have successfully built a thriving space industry?

The Oman national space program is still relatively new, and we are learning from the experience of our friend and partners around the world.

Countries like the United States, Russia, China, and more recently India and the UAE, have built successful space programs through a combination of government funding, international collaboration, and private sector involvement. Oman can learn from their emphasis on innovation, long-term investment, and fostering local talent.

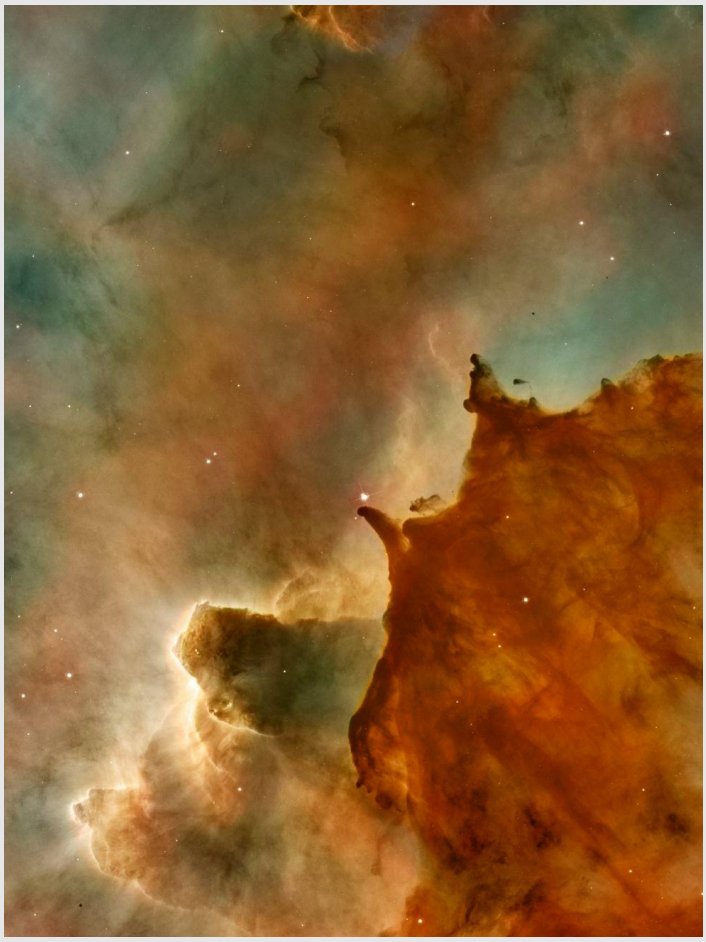
Additionally, these countries have developed strong public-private partnerships, enabling them to grow their space sectors while ensuring sustainability and addressing the global demand for space services.

Oman can benefit from building similar structures, collaborating with established space powers, and diversifying its investments to develop a competitive industry.

Finally we have seen that countries must clearly communicate the importance and benefits of space technology to citizens on earth, not just as means to explore the universe. Countries who effectively do this see greater public buy-in, interest from young people and see wider benefits in the economy.

How do you see space-based infrastructure, such as satellite internet, transforming industries in Oman and the region?

The expansion of space-based infrastructure, such as satellite internet, has the potential to revolutionize industries in Oman and the wider region. Satellite connected internet could help bridge the digital divide, particularly in remote or rural areas, providing high-speed connectivity for businesses and individuals. This could boost sectors like education, healthcare, and e-commerce. For energy, remote monitoring of infrastructure via satellites can improve operational efficiency, while logistics can be enhanced through satellite navigation and tracking systems, improving supply chain management

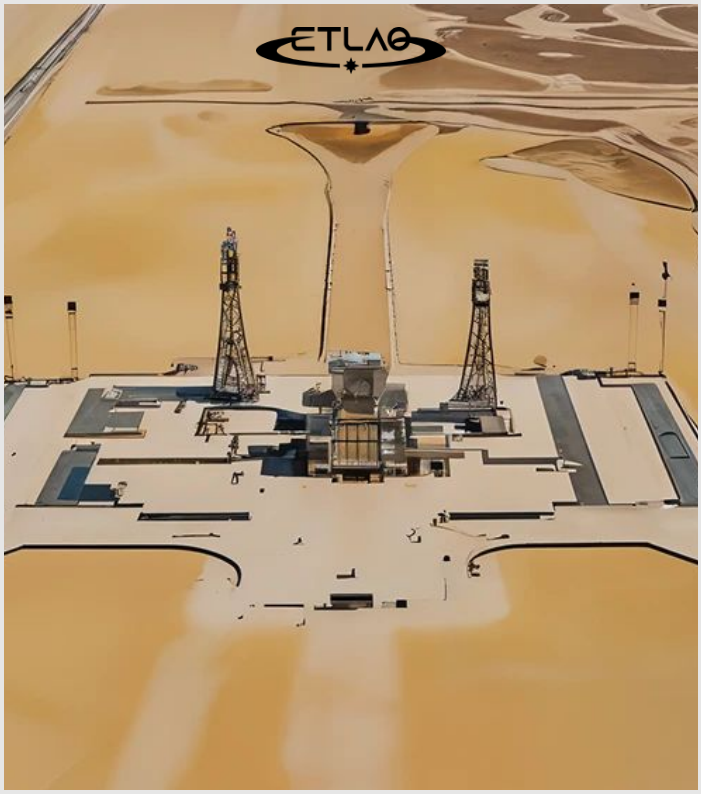


Looking ahead, where do you see Oman's space program in the next 10 years, and what legacy do you hope to leave in this sector?

In the next decade, Oman's space program is expected to grow into a significant regional player for space applications and satellite services.

With projects like the Etlaq Spaceport and satellite launches, Oman aims to become a leader in space-related infrastructure, building a sustainable space industry, and enhancing local expertise. The space program is establishing the country as a regional player especially in space data analytics for different use cases.

The legacy of Oman's space program could be one of innovation, international collaboration, and sustainable development, transforming the country into a key regional player for space applications, ground segments and the launch provision.



Picture: Etlaq Spaceport Launch Complexes

Photo: Oman's Etlaq Spaceport Announces Plans for Five Test Launches

SPACETECH IN GULF

SatMENA

Ammar Al Rawahi

Chief Commercial Officer at SatMENA

A senior results-driven executive with over 18 years of experience in space, technology, and telecom sectors, specializing in strategic partnerships, business development, and commercial strategy. As Chief Commercial Officer at SatMENA, he leads efforts to position the company as a regional space and satellite leader. Previously, he served as Space Projects Consultant at MTCIT and Director of Space Technologies at ETCO Space.

Ammar has led multimillion-dollar space projects and advanced observatory and satellite technologies. He is a founding member and former Chairman of the Oman Society of Astronomy and Space, where he led 80+ professionals in driving innovation.

Holding an MBA (with Distinction) from the University of Wolverhampton and a qualification in the New Space Economy from MIT, Ammar focuses on attracting international space investments to Oman and strengthening its role in the regional space economy.

Can you elaborate on SatMENA Oman's vision for the future of satellite communication in Oman and the region?

SatMENA Oman envisions a future where satellite communication transforms the landscape of connectivity in Oman and the broader MENA region. Our vision includes providing seamless, high-speed connectivity access to all, particularly in remote and underserved areas. By leveraging advanced satellite technologies, we aim to bridge the digital divide, supporting digital transformation and economic growth aligning with Oman Space Policy and Executive Program as well as Oman 2040 vision. We see ourselves as a pivotal player in enabling smarter, more connected communities, enhancing the quality of life, and driving innovation in various sectors including education, healthcare, and commerce. Our goal is to become a leader in satellite communication, setting benchmarks for reliability, efficiency, and customer satisfaction in the region.

What is your growth strategy for the next few years?

SatMENA's growth strategy for the next few years focuses on several key areas:

- **Expanding Coverage and Capacity**: Leveraging the extensive coverage of the Astra 2F satellite to deliver high-speed connectivity across Oman, UAE, and parts of KSA and Yemen.
- **Innovative Solutions:** Developing tailored solutions for businesses, government institutions, and the armed forces to meet their unique connectivity needs.
- **Strategic Partnerships:** Strengthening relationships with leading satellite operators like SES and utilizing advanced infrastructure, such as the SatMENA Teleport, data center and NOC.
- **Affordability and Accessibility:** Implementing cost-effective strategies to make satellite connectivity more affordable and accessible, especially in remote and underserved areas.
- **Regional Expansion:** Targeting key markets in the wider MENA region for expansion, guided by a strategic roadmap.

How does SatMENA Oman differentiate itself from other telecom providers, especially in remote areas where both satellite and terrestrial options might exist?

SatMENA differentiates itself from other telecom providers through several key aspects:

- **Comprehensive Coverage:** A single beam covering a wide area ensures seamless connectivity across Oman and neighboring regions, even in remote locations.
- **High-Speed Connectivity:** Offering speeds up to 1 Gbps on a single terminal, significantly higher than many terrestrial and other satellite options.
- Reliability: A track record of uninterrupted connectivity since inception, supported by a state-of-the-art data center, NOC and robust infrastructure.
- **Flexible Solutions:** Customizable bandwidth management, allowing clients to allocate resources as per their needs with guaranteed SLAs.
- **Competitive Pricing:** Cost-effective Ka-band services that provide significant savings for customers.

Photo: Muscat Teleport is equipped with a 6.3-meter auto-tracking antenna and advanced NewTec HUB technology

What are some of the most innovative solutions SatMENA Oman offers to cater to the diverse needs of businesses and individuals in Oman?

SatMENA offers a range of innovative solutions, including:

- **High-Speed Connectivity Access:** Providing unprecedented speeds up to 1 Gbps over satellite, which is particularly beneficial for high-demand applications.
- **Customizable Bandwidth Management:** Offering flexible options for pooled or separate bandwidth allocations with guaranteed minimum SLAs, allowing businesses to optimize their connectivity based on their specific needs.
- **State-of-the-Art Infrastructure:** Utilizing advanced satellite hubs (NewTec and iDirect) and a robust data center, along with a dedicated electrical station with backups two UPS and generator for extended power outages, ensuring high availability and fully redundancy of all the technologies in the teleport (1+1).
- **Enhanced Security:** Implementing comprehensive security measures at the SatMENA Teleport, including 24/7 CCTV monitoring and secure fencing, ensuring maximum protection for critical infrastructure.

How is SatMENA Oman preparing for and integrating emerging technologies like Low Earth Orbit (LEO) constellations into its service offerings?

SatMENA is preparing to integrate Medium Earth Orbit (MEO) constellations into its service offerings to enhance the quality and range of satellite connectivity services. These constellations provide lower latency and higher throughput compared to GEO satellites. Key preparations and integrations include:

- **Reducing Latency:** MEO constellations offer significantly lower latency, improving the performance of real-time applications such as video conferencing and online gaming.
- **Increasing Capacity:** MEO technology provides higher capacity, supporting more capacity and higher data rates, which is crucial for bandwidth-intensive applications.
- **Broadened Reach:** Expanding coverage to more remote and underserved areas, ensuring that even the most isolated regions have access to high-speed connectivity.
- **Technical Upgrades:** Investing in the necessary ground infrastructure and technology upgrades to seamlessly integrate MEO constellations with existing services.

How is SatMENA Oman working towards making satellite connectivity more affordable and accessible for all segments of the Omani population, particularly in remote areas?

SatMENA is committed to making satellite connectivity more affordable and accessible through various initiatives:

- **Competitive Pricing Models:** Offering cost-effective Ka-band services that lower the cost barrier for consumers and businesses, making high-speed connectivity more accessible.
- **Government Collaboration:** Partnering with the Omani government to deliver connectivity in remote areas and support national connectivity goals, ensuring that even the most isolated communities have access to reliable connectivity.
- **Flexible Service Plans:** Providing a range of service plans tailored to different needs and budgets, ensuring broad accessibility across various segments of the population.
- **Community Outreach:** Engaging in community outreach programs to educate and promote the benefits of satellite connectivity, encouraging adoption in remote and underserved areas.

Photo: MoU between SatMENA and Etlaq to collaborate on Ground Station Services and Operations

How is SatMENA Oman collaborating with the Omani government to achieve national connectivity goals, especially in underserved regions?

SatMENA collaborates closely with the Omani government to achieve national connectivity goals through several key initiatives:

- **Expanding Infrastructure:** Partnering on initiatives to build and expand satellite infrastructure in underserved regions, ensuring comprehensive coverage and reliable connectivity.
- **Public-Private Partnerships:** Engaging in public-private partnerships (PPPs) to leverage resources and expertise for broader connectivity solutions, enhancing the reach and impact of satellite services.
- **Policy Advocacy:** Working with regulatory bodies to create favorable policies that support the growth and accessibility of satellite communication services, fostering an environment conducive to technological advancement and digital inclusion.
- **Subsidized Services:** Collaborating with government programs to provide subsidized services to low-income and remote communities, ensuring that everyone has access to high-speed connectivity regardless of their location or financial situation.

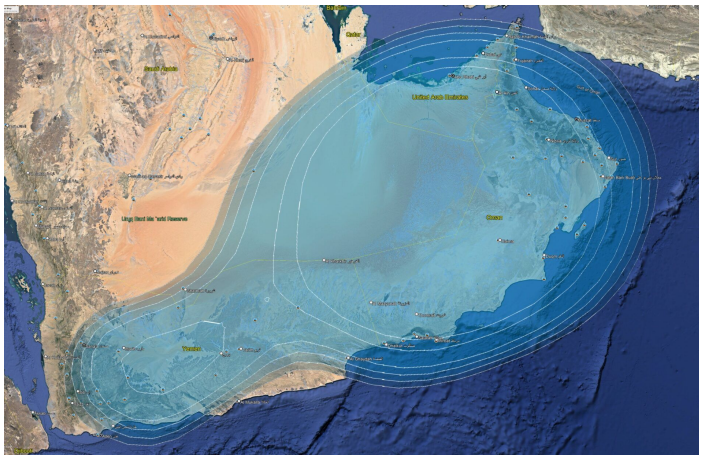


Photo: SatMENA Oman has ambitious to be the satellite ground station hub for leading satellite operators in the region and plans to expand its services beyond Oman into the wider MENA region.

Does SatMENA Oman have any plans to expand its services beyond Oman and into the wider MENA region? If so, what are the key markets you're targeting?

Yes, SatMENA Oman has ambitious to be the satellite ground station hub for leading satellite operators in the region and plans to expand its services beyond Oman into the wider MENA region. Our expansion strategy focuses on several key markets:

- **Gulf Cooperation Council (GCC) Countries:** We aim to extend our services to neighboring GCC countries, leveraging our existing infrastructure and expertise to provide regional connectivity solutions.
- **North Africa:** Exploring opportunities in North African countries where there is a significant demand for reliable and high-speed connectivity. Our goal is to address the connectivity challenges faced by these regions.
- **Emerging Markets:** Identifying and targeting emerging markets in the MENA region with high growth potential. These markets present opportunities for us to introduce our innovative solutions and expand our customer base.
- **Strategic Alliances:** Forming partnerships with local telecom operators, governments, and businesses to facilitate our entry into new markets. These alliances help us navigate regulatory environments and tailor our services to meet local needs.
- **Scalable Solutions:** Developing scalable solutions that can be easily adapted and deployed in different markets. This ensures that we can quickly respond to market demands and provide reliable connectivity services.

Can you elaborate on the benefits of SatMENA Oman being the first SES partnered MENA commercially open geostationary (GEO) satellite gateway and hub?

As the first SES-partnered commercially open geostationary (GEO) satellite gateway and hub in the MENA region, SatMENA enjoys several significant benefits:

- **Advanced Technology Access:** Leveraging SES's cutting-edge satellite technology and infrastructure to provide high-quality and reliable connectivity services.
- **Extended Coverage:** Enhanced coverage and capacity across the region, enabling SatMENA to offer comprehensive connectivity solutions to a wider range of customers.
- **Market Leadership:** Strengthening its position as a market leader in satellite communications, benefiting from SES's expertise and reputation in the industry.
- **Improved Service Offerings:** Ability to offer differentiated and advanced services, such as high-speed connectivity and flexible bandwidth management, that meet the evolving needs of customers in the region.
- **Strategic Advantage:** Gaining a strategic advantage in the MENA market by being at the forefront of satellite communication advancements, positioning SatMENA as a preferred provider for businesses, and government institutions.

Photo: SatMENA signed a cooperation program with the Oman Broadband in communications services and smart solutions over satellites.

What are some of the biggest trends you see impacting the satellite communication industry in the coming years? How is SatMENA Oman preparing to adapt and thrive in this evolving landscape?

Some of the biggest trends impacting the satellite communication industry in the coming years include:

- **Emergence of MEO Constellations:** Providing higher speed and lower latency, transforming the satellite connectivity landscape and expanding market opportunities.
- **5G Integration:** Combining satellite and 5G technologies for seamless and ubiquitous connectivity, supporting a wide range of applications from urban to remote areas.
- **IoT Growth:** Supporting the expansion of Internet of Things (IoT) applications, requiring reliable and widespread connectivity to facilitate smart devices and systems.
- **Increased Demand for High-Speed Connectivity:** Growing demand for high-speed and reliable connectivity access, driven by the digital transformation of businesses and the increasing reliance on online services.

SatMENA is preparing to adapt and thrive in this evolving landscape by:

- **Investing in New Technologies:** Continuously upgrading its infrastructure to integrate new advancements, such as MEO constellations and 5G technology, ensuring that it remains at the forefront of the industry.
- **Expanding Service Offerings:** Diversifying services to meet emerging market demands, including high-speed connectivity, IoT connectivity, and tailored solutions for various sectors.
- **Enhancing Customer Experience:** Focusing on customer-centric solutions and high-quality service delivery, ensuring that clients receive reliable, flexible, and cost-effective connectivity.
- **Strategic Partnerships:** Strengthening partnerships with leading technology providers and industry players, leveraging their expertise and resources to enhance service capabilities and market reach.

Does SatMENA Oman have any sustainability initiatives in place, either in terms of its technology or operations?

Yes, SatMENA Oman has several sustainability initiatives in place, focusing on both technology and operations:

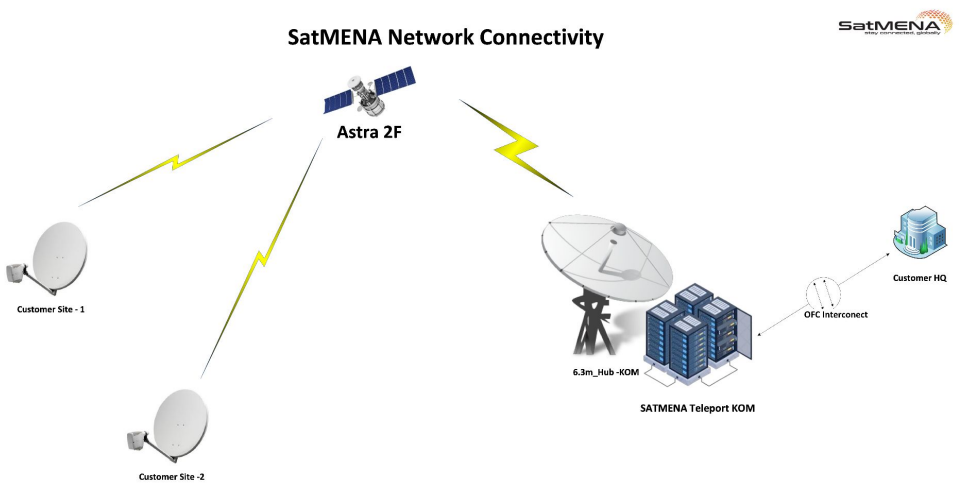
- **Eco-Friendly Operations:** Implementing energy-efficient technologies and practices in its teleport and NOC, reducing the environmental footprint of its operations.
- **Green Energy:** Exploring the use of renewable energy sources, such as solar power, to power its facilities and reduce reliance on non-renewable energy.
- **Waste Reduction:** Adopting waste reduction practices, including recycling and proper disposal of electronic waste, to minimize environmental impact.
- **Corporate Social Responsibility:** Engaging in CSR activities that promote digital inclusion, environmental sustainability, and community development, contributing to the overall well-being of society.
- **Sustainable Infrastructure:** Designing and maintaining infrastructure with sustainability in mind, ensuring long-term durability and minimal environmental impact.

How do you see satellite connectivity impacting the way people work and businesses operate in Oman, particularly in remote areas?

Satellite connectivity is transforming the way people work and businesses operate in Oman, particularly in remote areas, by:

- **Enabling Remote Work:** Providing reliable connectivity access that supports telecommuting and remote work, allowing individuals to work from anywhere and businesses to maintain productivity and flexibility.
- **Supporting Local Businesses:** Offering high-speed connectivity that enables local businesses to expand their reach, improve operations, and compete in the digital economy, driving economic growth and development.
- **Enhancing Education and Healthcare:** Facilitating access to online education and telemedicine services, improving the quality of life and economic opportunities in remote regions by bridging the gap in essential services.
- **Promoting Innovation:** Encouraging innovation and entrepreneurship by providing the necessary connectivity for new and emerging technologies, fostering a vibrant and dynamic business environment.

In summary, satellite connectivity is playing a pivotal role in driving digital transformation, economic growth, and social development in Oman, particularly in remote and underserved areas. SatMENA Oman is at the forefront of this transformation, providing the necessary infrastructure and services to support these advancements.



SPACETECH IN GULF

تقنيات الاتصالات الفضائية
Space Communication Technologies
COMMITMENT TO EXCELLENCE

Salim Al Alawi

Executive Director at Space Communication Technologies

Salim is a telecommunications engineer with more than 30 years of experience in the telecom industry. He worked in different sectors in the telecom field starting from Oman Telecommunications Company and then, Ministry of Transport and Communications as Telecom projects manager. Then, Operation Manager of fiber network in Haya Water. After that he was one of the main establishment team in Oman Broadband Company works as G.M Operation and Projects respectively. In November 2018 he was the head of the establishment team for Space Communication technologies Company and then he was appointed as Executive Director of the company.

Salim holds a BSc. In Telecommunications Engineering from Sultan Qaboos University and EMBA in Space Business from International Space University, Strasburg, France. Also he holds Diploma in Telecommunication Management Studies from British Telecom, UK.

What are the strategic goals of Space Communication Technologies in the next 5 to 10 years?

To be one of the Regional Key players in Satellite communications, and becoming a leading space solutions services company providing solutions that are Robust, Integrated and Secure by providing secure integrated space solutions that would cater the needs of its clients and proactively initiate and innovative means to solve problems faced today by the users. With establishing a culture embedded with our core values, we invest in our human capital to deliver our clients the optimal solutions”

How does SCT plan to position OmanSat in the regional and global satellite communications market?

With the introduction of the latest technologies in Satellite communications, such as High Throughput Satellites with flexibility in beam shaping (SDS), and focus in providing Solutions where the In County Gateways is required to secure the communications per each country, in addition to introducing cost effective managed solutions to those markets, and complying to the regulatory requirements per each country. Furthermore, SCT is committed to positioning itself as a regional hub for hosting ground stations, leveraging Oman’s robust fiber-optic infrastructure and seamless global connectivity.

What infrastructure is being developed under the national satellite program, and what are its core capabilities?

Under the national satellite program, SCT has developed a comprehensive infrastructure that includes advanced ground stations of 9-meter antenna and a fully operational Network Operation Center (NOC) to ensure seamless connectivity. The core capabilities of this infrastructure include satellite payload control, high-throughput data transmission and secure communications. . Additionally, SCT oversees a range of satellite terminals, including fixed, portable, on-the-pause (OTP), on-the-move (OTM), and marine terminals. This foundation enables reliable, sovereign satellite services that support defense, disaster recovery, rural connectivity, and national digital transformation objectives.

Core Capabilities of SCT: SCT currently offers space segment services across the C, Ku, and Ka frequency bands. Notably, the organization provides high data throughput over the Ka-band, along with managed services such as secure and resilient communications and backhauling solutions for 4G and 5G networks.

Beyond the communications sector, SCT is also expanding its capabilities into complementary technologies in Earth Observation, remote sensing, and Internet of Things (IoT) applications via satellite

Photo: Analysis of VSAT and Internet of Things applications via satellite

Is SCT planning to adopt new satellite technologies such as high-throughput satellites or LEO constellations?

In fact SCT has already decided to introduce the latest technologies such as HTS SDS. And to address the LEO constellation market access, SCT is planning to complement the services provided by LEO. There several discussions with LEO constellations ongoing, and SCT will reveal once those discussions becomes more mature and permitted to be published.

How is SCT working with public and private sectors to address their telecommunications needs?

SCT has already addressed the local Omani market, by providing services since 2020. SCT has acquired a Ka band payload from Arabsat covering Oman and its economic waters, and built its own Earth Station and full platform. These services addresses Government and private sectors, and provided services to all the verticals in Oman, including (but not limited to) Government, Mobile Back-hauling, Mobility, National Broadband, Banking, Oil & Gas and more).

What role do local Omani companies and SMEs play in SCT's operations and value chain?

As part of SCT strategy, SCT is collaborating with SME's by system integration work to those SME's , which helps the organic grow for those SMEs and build more capabilities indirectly.

Are there any active or upcoming international partnerships to enhance SCT's technical capacity?

SCT is actively pursuing strategic international partnerships aimed at enhancing its technical capabilities in the field of satellite communications. Ongoing discussions are taking place with leading global satellite operators and technology providers to establish collaboration frameworks that support capacity building, joint development initiatives, and the integration of advanced satellite technologies.

How is SCT contributing to building national talent and workforce development in the space sector?

That was one of the major objectives in the company. All the technical operations are run by Omani workforce, where all the engineers have started their career in SCT, and conducted heavy trainings, which produced a number that we are proudly say there are experts in this field. In addition, SCT is an active member in "Tamkeen program" created by ITHCA group, to train talented Omani graduates, in different field, to empower them accessing the Omani job market, not only in Satellite, but even in other roles.

What measures is SCT taking to promote space sustainability and responsible satellite operations?

SCT is committed to space sustainability through adherence to international guidelines, responsible satellite end-of-life planning, and efficient spectrum use. The company promotes environmentally responsible ground operations, engages in regional and international collaboration, and invests in capacity building to ensure long-term, responsible satellite operations aligned with global best practices. These efforts position SCT as a responsible player in the global space community, dedicated to the safe and sustainable use of outer space.

Photo: International partnership

SPACETECH IN GULF

الجمعية العُمانية للفلك والفضاء
Oman Society of Astronomy and Space

Dr. Ishaq Al Shuaili

Chairman of the Board of Directors at the Oman Society of Astronomy and Space

Dr. Ishaq Al Shuaili is the Chairman of the Board of Directors at the Oman Society of Astronomy and Space, where he leads strategic planning, educational outreach, and public engagement initiatives to advance astronomy and space science in the region. With over two decades of experience in science education, Dr. Al Shuaili previously served as a senior physics teacher and has made significant contributions to science communication and curriculum development. He holds a PhD in Astronomy and Astrophysics from Universiti Sains Malaysia, a Master's from King AbdulAziz University, and a Bachelor's in Physics from the College of Education in Nizwa. His research focuses on machine learning applications in astrophysics, particularly in photometric redshift estimation. Dr. Al Shuaili is also a skilled communicator and leader with strong ties to educational institutions and government bodies.

Oman Society of Astronomy and Space

Leadership and excellence in the fields of astronomy and space, both culturally and scientifically.

Who Are We?

A voluntary scientific society based in Muscat Governorate, established by a ministerial decision on June 7, 2008. It is concerned with astronomy and space sciences and aims to gather enthusiasts of these sciences in the Sultanate to promote knowledge exchange and participation. The Society also focuses on observing and following astronomical events of scientific significance and educating the public about them, while encouraging interest in astronomy and space sciences in educational institutions and grounding space sciences within the community.

Jabal Shams Programs & Activities – Key Facts:

129 members in total

Males: 75 **Females: 54**

Family Astronomy Camps:

15	camps organized since 2009
Up to 200	participants took part in each camp

Youth Astronomy Camps:

2016	(**1st edition** 60 participants, organizers & speakers
2018	**(2nd edition)** 66 participants, organizers & speakers

Our Mission:

- Building a generation that shapes the future through spreading scientific and cultural awareness in the field of astronomy and space sciences.
- Promoting community interest and involvement in these sciences.
- Establishing a community-driven knowledge base that keeps pace with global developments in the field.
- Strengthening partnerships and cooperation with local, regional, and international institutions.

Activities and Events of the Oman Society for Astronomy and Space:

- Organizing public astronomical observations that offer the community an opportunity to observe celestial bodies using telescopes.
- Conducting specialized training workshops and scientific lectures in astronomy and space sciences.
- Participating in local and international events such as “World Space Week” and “International Astronomy Day”.
- Hosting the “International Astronomy Camp – Oman” to raise awareness about astronomy in a fun and educational environment for families.
- Organizing the “Omani Youth Astronomy Camp” to develop astronomy skills among youth and connect them with scientists.
- Organizing the “Arab Forum for Astronomy and Space Sciences” as a platform for knowledge exchange among Arab experts.
- Hosting the Gulf Astronomy Meeting to enhance astronomical cooperation among GCC countries through the Gulf Astronomy Council.
- Supporting and activating local partnerships to enable the community to engage in creative astronomy activities and enrich scientific culture locally.

OSAS@FALAK.OM @FALAKOMAN +968 98080775

Can you share the vision and mission of the Oman Society of Astronomy and Space, and how they have evolved since its founding in 2008?

The Oman Society of Astronomy and Space, founded in 2008, initially aimed to promote astronomy in Oman through education and public engagement. Over time, its mission expanded to include space research and development, aligning with Oman's Vision 2040. The society now focuses on fostering research in both astronomy and space, collaborating internationally, preserving Oman's astronomical heritage, and supporting the growth of space-related industries. It aims to position Oman as a leader in space science and technology.

What were the key challenges in establishing the society, and how did the founding members overcome them?

The key challenges in establishing the Oman Society of Astronomy and Space included limited public interest in astronomy, lack of infrastructure, securing funding, and building expertise. The founding members overcame these by organizing educational events, partnering with international organizations, securing support from government and private sectors, and offering training programs to build local expertise.

What are the main programs and initiatives the society is currently working on to promote astronomy and space science in Oman?

The Oman Society of Astronomy and Space is engaged in numerous initiatives to promote astronomy and space science in the Sultanate of Oman. These include a project to preserve and document the Omani astronomical heritage, and efforts to integrate astronomy into the national curriculum in collaboration with the Ministry of Education. Additionally, the society is working on the establishment of a radio observatory and a station for data reception and analysis. In the field of space, there is ongoing collaboration with universities and the Ministry of Transport and Communications to form a national youth team for the development of CubeSats.

How does the society engage with the public, students, and researchers to foster interest in space and astronomy?

By facilitating access to and search for information, and by establishing channels of communication between researchers and institutions concerned with astronomy and space sciences—whether local or international.

The society also organizes observation nights, workshops, and specialized courses in astronomy and space sciences for enthusiasts and students of all levels.

Could you highlight some of the most significant achievements of the society over the past 15 years?

Hosting the Mars analog simulation program in the Sultanate of Oman is considered one of the most significant achievements accomplished by the society in recent years. The society has also hosted several regional conferences focused on astronomy and space sciences, and a group of its members was sent to the United States National Aeronautics and Space Administration (NASA) for training in the design and assembly of CubeSats.

Does the society collaborate with regional or international space agencies and organizations? If so, can you share some examples?

There is ongoing collaboration between the Oman Society of Astronomy and Space and various regional and international organizations, such as the Arab Union for Astronomy and Space Sciences and NASA. Most recently, we collaborated with NASA to verify the observation of the aurora borealis from Jebel Shams in the Sultanate of Oman. Additionally, trainees have been sent to the United States for training on CubeSats. The Society also actively participates in the celebration of World Space Week in cooperation with various international institutions.

Are there any plans to expand into space-related research, satellite technology, or space industry development in Oman?

The role of the Oman Society of Astronomy and Space complements the governmental efforts and the national direction toward space. Therefore, any expansion in this field will be strongly supported by us through training and the sharing of expertise.

What are the biggest challenges in promoting astronomy and space exploration in Oman, and how do you address them?

The biggest challenges in promoting astronomy and space exploration in Oman include a lack of infrastructure and resources, a shortage of specialized training, financial support, and geographic challenges. To address these, we can increase public outreach through educational programs and digital engagement, collaborate with international organizations to share resources and knowledge, offer scholarships and training programs for students, seek public-private partnerships for funding, and establish observatories in remote locations to minimize light pollution. Additionally, mobile observatories and global collaboration can overcome logistical issues in reaching remote areas.

What is your vision for the society's role in the future of Oman's space sector, and how can the government and private sector support its growth?

We strive for integration between public and private sector institutions to foster the growth of the space sector in the Sultanate of Oman and to create a capable research community in this field, supported by strong investments that can provide the necessary backing to achieve the Sultanate's goals in Vision 2040 towards leadership in the space sector.

SPACETECH IN GULF

ANKAA
RADIAL VELOCITY +74.6 km/s
ANKAA SPACE & TECHNOLOGIES L.L.C
العنقاء للفضاء والتكنولوجيا ش.م.م

Ghayadah Al Jabri

Space Executive at Ankaa Space & Technologies

Ghayadah Al Jabri is a Space Executive 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.

How was Ankaa Space & Technologies founded, and what is its core mission?

Ankaa Space & Technologies was founded with a clear ambition: to be at the forefront of AI, robotics, and advanced technology, driving innovation and transforming industries across Oman and the region. Our mission is deeply rooted in excellence, collaboration, and ethical advancement.

We began our journey in drone technology, offering specialized services in surveying, inspection, and monitoring for sectors like agriculture, infrastructure, and energy. These early successes laid the groundwork for something bigger. We soon recognized the growing demand for data-driven solutions and the untapped potential of space technologies, especially in Earth observation and satellite image analytics.

That realization led us to expand into the space sector. Today, Ankaa integrates drone technology, satellite imagery, and artificial intelligence to deliver end-to-end solutions for government, commercial, and research partners. From flying drones over farms to deploying AI models on satellite data, our growth reflects a commitment to building a sustainable, tech-driven future.

What have been some of Ankaa's key milestones since its founding?

Ankaa's journey began in 2021 with a clear goal: to build a locally rooted yet globally connected space and technology company. In our early stages, we launched with drone-based services, starting with agricultural spraying and monitoring. By 2022, we expanded our partnerships and introduced advanced drone technologies to support national efforts in agriculture and environmental monitoring.

A major technical milestone was the Hyperspectral Project. This initiative used hyperspectral sensors mounted on drones to detect palm tree infestations, like the Red Palm Weevil and Dubas bug, at an early stage. It demonstrated our ability to integrate AI and remote sensing for highly precise, field-level agricultural health assessment.

In 2023, we entered our Expansion Phase, scaling services across space, GIS, and smart cities, and strengthening our presence through exhibitions and local collaborations. By 2024, we moved into a Strategic Expansion phase, entering new markets such as Saudi Arabia, partnering with global leaders like Thales.

Looking ahead to 2025 and beyond, Ankaa enters the Renewal Phase, refining our services while laying the foundation for long-term sustainability and innovation. From 2026 to 2030, our focus is on continuous advancement, expanding into emerging sectors, advancing AI integration in downstream space services.

As part of our internal evaluation, we remain committed to agile strategy, local value creation, and ecosystem leadership. Each phase of our growth has been shaped by measured risks, community engagement, and an unwavering belief that Oman can be a pioneer in downstream space applications.

What is Ankaa Space currently doing in the space sector, and what is its broader vision?

Ankaa is actively contributing to the growth of Oman's space sector through a range of initiatives that reflect both our current focus and long-term vision.

For example, we are leading efforts in space awareness with a Mobile Space Awareness Unit, which brings interactive space education to schools, events, and communities across Oman. We're also organizing cultural trips to NASA, giving students and young professionals the chance to connect with recent technologies in space and be inspired by real-world exploration.

In parallel, we're delivering specialized workshops as capacity building led by local and international experts. We're also advancing AI-driven space data solutions, applies artificial intelligence to analyze satellite and drone imagery. Which supports decision-making in sectors like agriculture, infrastructure, and environmental monitoring.

Our broader vision is to build the foundation for a dynamic downstream space ecosystem that integrates Earth observation, AI-driven analytics, and satellite-based services to deliver real value across key sectors such as agriculture, infrastructure, environment, and national planning.

What differentiates Ankaa Space from other space and technology companies in the region?

Ankaa's strength lies in creating its own blue ocean, we're not here to compete, but to collaborate. Rather than replicating existing models, we focus on building a unique value space where innovation meets integration. We bring together Ankaa's resources with international collaborations to deliver end-to-end solutions tailored to our clients' needs.

Can you elaborate on your collaboration with the Ministry of Agriculture to protect palm trees using drones?

Since 2022, Ankaa has engaged in an active partnership with the Ministry to support efforts in combating agricultural pests that threaten date palms, such as the Red Palm Weevil and the Dubas bug. This collaboration was exemplified through the Hyperspectral Project, which utilized advanced hyperspectral sensors mounted on drones to detect early-stage infestations, before any visible symptoms appeared.

This initiative integrated AI technologies with remote sensing, enabling highly accurate, field-level analysis of palm tree health. This significantly improved response time and reduced reliance on traditional inspection methods.

Building on this foundation, the Ministry of Agricultural, Fisheries and Water Resources signed a contract with Ankaa Space and Technologies LLC to establish a Research and Development Center specialized in drones, robotics, and AI applications in agriculture. The center aims to enhance innovation and create smart solutions that support food security and align with the sector's digital transformation goals.

This partnership marks a major milestone in the use of technology for sustainable agriculture in Oman, demonstrating the effectiveness of local solutions in addressing food and environmental challenges. We remain committed to developing these initiatives and strengthening our collaboration with national institutions to maximize positive impact across the country.

Tell us about your partnership with Thales in the Muscat airport runway project.

Our partnership with Thales was centered on the rehabilitation of the Instrument Landing System (ILS) for the southern runway at Muscat International Airport. The project covered all phases, from the technical assessment of the existing systems, through the supply and installation of the new systems, to the final testing and full integration with the airport's current infrastructure. The implementation was carried out according to the highest international standards, ensuring enhanced efficiency and accuracy of landing operations under various weather conditions, while maintaining uninterrupted air traffic operations.

How is Ankaa Space leveraging downstream space applications to support national development goals?

At Ankaa, we view downstream space applications, such as Earth observation, AI-driven analytics, and geospatial intelligence, as essential tools for enabling smarter, more sustainable development. Our focus is on translating satellite data into actionable insights that can guide decisions in key sectors like agriculture, infrastructure, environment, and public services.

A strong example of this is our contribution to the Smart Urban Observatory led by the Ministry of Housing and Urban Planning. In this project, we are helping build a data-driven system that automates the collection, analysis, and visualization of spatial indicators. The platform enables planners, policymakers, investors, and citizens to assess optimal land use based on factors such as service proximity, population density, and demographic patterns, ultimately supporting knowledge-based development and improving quality of life.

Photo: Preparing for drone spraying operation for agricultural

How does Ankaa Space engage with the community and raise awareness about space?

At Ankaa, we believe that space is for everyone, not just scientists and engineers. Community engagement is one of the most important pillars of our work.

To bring space awareness directly to the public, we launched the Space Mobile Van. This van has participated in over 3 national exhibitions and has reached thousands of participants across Oman. We've also conducted more than 10 specialized workshops with students, educators, and aspiring professionals, covering topics like satellite data, remote sensing, drones, and the future of space technologies.

Recognizing the impact of this work, we are now developing the next version—a fully equipped Mobile Space Awareness Unit. This upgraded platform will feature digital learning stations, immersive demonstrations, and real-time mission simulations to engage people of all ages.

We also work closely with the Oman Society for Astronomy and Space (OSAS) to align our initiatives with national education and outreach goals. Together, we co-organize events, public talks, and campaigns aimed at making space science more accessible and inspiring.

To date, Ankaa has been involved in 13 space-related initiatives, and community outreach remains a strategic focus as we continue to grow. We don't just build technology—we build trust, curiosity, and a shared vision for the future.

What are some of the key lessons Ankaa Space has learned throughout its journey so far?

One of the key lessons Ankaa has learned throughout its journey is the immense value of collaboration with major international companies. These partnerships have significantly contributed to the development of our local technical expertise as well as our administrative capabilities. Moreover, working closely with global leaders has emphasized the importance of adhering to international standards, which has become a cornerstone of our approach in delivering high-quality, competitive solutions.

What advice would you give to young Omanis interested in working in space or technology?

Space is not out of reach. Whether you're interested in engineering, science, business, or design, there's a role for you. The space sector is growing fast, and Oman needs young minds to shape its future. Be curious, stay committed, and believe that your ideas can lead to real change.

Photo: Drone spaying operation for agricultural

SPACETECH IN GULF

UKLSL

Victoria Montag

CEO at UKLSL

A physicist by training, Victoria has spent her entire career in science and technology. She began as a research scientist at the UK's National Physical Laboratory before transitioning into project management, where she oversaw projects for major clients, including Thales Alenia, Airbus, ESA, the National Health Service, and RAL Space. By the time she left in 2016, she had risen to the role of Senior Project Manager and Divisional PMO Lead.

Victoria then became Sector Head for Industrial Automation at GAMBICA before joining UK Launch Services in 2019 as General Manager and Senior Engineer. She played a key role in shaping UKLSL's operational success and driving several strategic programs, leading to her appointment as COO in 2023. In January 2025, she took charge of UKLSL as CEO. In addition to her executive leadership, Victoria has served as a non-executive director for multiple start-up companies, contributing her expertise to the growth and development of emerging ventures in the industry.

What are the core services that UKLSL provides to the space industry?

We strive to harness our extensive knowledge and experience to help organizations enter, grow, and succeed in the space sector. Our support spans a wide range of services, including feasibility studies, spaceport siting, functional and operational spaceport design, training, regulatory compliance, and licensing support. We also guide new market entrants through the complexities of the industry, ensuring they have the expertise and strategic insight needed to establish a strong foothold and thrive in this rapidly evolving sector. (full list of services can be found at uklsl.space.)

How does UKLSL differentiate itself from other space consultancy firms?

I think our commitment to honesty sets us apart. While integrity is a given in any reputable consultancy, we go beyond that - we won't take on work I don't think we can do and we aren't afraid to tell the customer what they need to hear, not just what they want to hear – even at the risk of losing business. I would rather see a client approach an endeavour with full awareness of the risks, even if it means forfeiting a contract, than take on work that may be doomed to fail.

Naturally, I will do everything I can to help our clients succeed but I think that is best done when everyone is operating openly and honestly.

Can you give us an overview of UKLSL's mission and how it has evolved since its founding? (can be deleted)

UKLSL was founded with a clear mission: to support and advance the development of a native UK launch capability. Our founders, Andy and Adam, were passionate advocates for this vision, and that commitment remains at the heart of what we do today.

However, as the space industry has evolved, so have we. While launch remains a key focus, we now work across the entire space sector and have extended our expertise beyond the UK to support international clients – most notably here in the Middle East. Our mission has grown into something even more ambitious—to promote a diverse, resilient, and globally connected space industry, ensuring that emerging and established players alike have the resources and expertise they need to thrive.

What unique expertise does UKLSL bring to the global space industry, particularly in the development of spaceports?

Though we now work across the whole space industry, spaceport development has been at the core of our work from the very beginning. Since our founding in 2017, we have leveraged our deep industry expertise to collaborated with organizations worldwide, helping them explore and create commercially viable spaceports.

What sets us apart is the breadth of our expertise, we bring together top specialists in system integration, safety, cybersecurity, security, environmental compliance, space law, and more. This comprehensive approach ensures that our support goes beyond infrastructure, but rather equipping spaceports with the necessary capabilities to enable efficient and sustainable future operations.

Picture: Victoria at the New Space Economy Congress in Catalonia

How do you see the role of private space consultancy firms like UKLSL in shaping the future of space exploration?

Private space consultancy firms like UKLSL play a crucial role in accelerating the growth of the space sector. We provide specialized expertise that allows companies tackling the biggest challenges of space exploration to focus on their core innovations—let's face it, the fun stuff—while we manage critical non-technical aspects that organizations may lack the resources or experience to handle.

What are some of the most significant projects UKLSL has worked on globally?

It might sound cliché, but every project we take on is meaningful to me because each one contributes to our core mission. While our work with spaceports stands out as a flagship effort, I'm equally proud of our smaller initiatives. For example, we've had projects exploring the feasibility and practical applications of emerging space technologies—one of my favourites being the development of a regulatory roadmap for achieving Space-Based Solar Power, a concept I find absolutely fascinating. Ultimately, the most significant projects are always those where we help a company take its first steps into the space sector.

What led UKLSL to collaborate with NASCOM on the Etlaq Spaceport project in Oman?

Our partnership with NASCOM came about through a fortunate alignment of vision and opportunity. Oman had long been on our radar as a promising launch location due to its geographic advantages and diplomatic standing. Our introduction was actually facilitated by a representative from the UK Government's Department for Business and Trade (DBT) who recognized the potential for collaboration and facilitated an introduction. Our initial discussions with NASCOM in early 2023 immediately resonated with us—their passion and determination to establish a launch capability in Oman reflected the same drive that inspired the founders of UKLSL.

Later that year, a UKLSL colleague visited the region, and a face-to-face meeting in Muscat reinforced what we already believed: Oman had both the vision and the commitment to make this project a reality. From that point on, our collaboration gained momentum, and we are honoured to be supporting the development of the Etlaq Spaceport.

What are the key objectives of the Etlaq Spaceport, and how does it compare to other emerging spaceports globally?

I don' think there is the one perfect spaceport either in existence or emerging, nor will there ever be, which is why we need a few spaceports dotted around to ensure a resilient global launch industry.

What makes Etlaq Spaceport stand out is a combination of Oman's unique advantages and the drive to make things happen.

Oman's location provides valuable launch opportunities, offering access to key orbital trajectories. The country also benefits from vast, open spaces suitable for safe launch operations and a well-established reputation as "friend to all".

However, I think the key differentiator has been the speed and decisiveness with which NASCOM gets things done. The achievement of First Launch in 2024 is a testament to this. Their proactive approach is positioning Etlaq as a serious contender in the global space industry.

What were the results of your project with NASCOM?

The project is ongoing, and we are currently acting as the system integrator for the initial development of the Etlaq Spaceport. Our role is to ensure that all the complex elements—regulatory compliance, infrastructure, safety, supply chain, technical integration etc.—come together to create a functional and sustainable launch facility.

We are excited about the progress so far and look forward to seeing Oman emerge as a key player in the global space industry.

Where do you see UKLSL and the global spaceport industry in the next 10 years?

The space industry is rapidly evolving, and naturally opportunities to establish new launch sites will become more limited. Which is why at UKLSL we see our role evolving alongside these spaceport. As they transition to full-scale operations, our focus shall shift towards supporting their long-terms sustainability – helping them and the wider space industry adapt to new technologies and mission profiles, regulatory changes and the growing demands of the commercial space sector.

More broadly, we expect the global spaceport industry to become more interconnected, with regional launch

Picture: HH Azzan Kais Al Said, the Chairman of NASCOM, and Andy Bradford, founder and ex-CEO of UKLSL formalised the relationship between the two companies during a signing ceremony at the British Embassy in Muscat. Also pictured Helena Carré, Institut d'Estudis Espacials de Catalunya - IEEC, Eduard Diez, GTD, Xavier Llairó, Pangea Aerospace

SPACETECH IN GULF

ART
Advanced Rocket Technologies

Seif Eldein Zahran

CEO at Advanced Rocket Technologies

Seif Eldein Zahran is the Founder and CEO of Advanced Rocket Technologies (A.R.T), where he leads a dynamic team of 20 engineers dedicated to making rocketry more accessible across the Middle East and Africa. Under his leadership, A.R.T is pioneering the development of innovative reusable rockets and advancing toward becoming a key regional launch provider.

With a background in aeronautical engineering and a Master's degree in Astrodynamics and Satellite Engineering from the University of Surrey, Seif brings a strong technical foundation and a strategic vision to the forefront of his work.

Seif founded A.R.T in 2022 with a vision to democratize space development and education in the Middle East and Africa with reusable and quick reaction launch services for commercial and scientific use.

"(A.R.T) is built to address critical gaps in the Middle East space ecosystem. Our mission is to enable affordable, and reliable launch services that Africa and the Middle East can rely on. At the core of our efforts is the Horus 4 prototype—a reusable test vehicle designed to validate our guidance, navigation, and control concepts, execute live tracking, and demonstrate safe recovery for rapid turnaround between flights. Complementing our launch services, the A.R.T Academy offers hands-on educational programs—ranging from CubeSat development kits to courses in rocketry, spacecraft systems, and systems thinking—aimed at closing the workforce skill gap and nurturing the next generation of space engineers." Said Seif Zahran

Why did A.R.T choose Oman—and specifically Etlaq Spaceport in Duqm—as the site for its inaugural launch? What makes Oman a strategic partner for your operations in the region?

The Omani and UK history of co-operation dates back decades with Sultan Kaboos firmly cementing our relationship. As a UK limited company, we are proud to say that Oman and A.R.T were a perfect match from day one. We incorporated around the same time as Etlaq Spaceport in 2022, and their vision for accessible space launches aligned perfectly with our mission. Duqm's geographic advantages—open skies, equatorial proximity, and streamlined regulations—let us skip years of red tape and start launching quickly. But what really sealed the deal was Oman's collaborative approach; they didn't just give us a launch site—they became active partners in building the region's space ecosystem. That's why our Horus 4 tests happened there, and why Oman remains central to our plans.

How did your collaboration with the Etlaq team begin, and what has your experience been like working with them in preparation for this milestone launch?

From the start, their team impressed us with deep operational expertise—they'd already navigated complex logistics and regulations, which let us fast-track our launch preparations and future rocket supply chain. Working side by side, we've turned that groundwork into a seamless template for future launches. Every challenge we've tackled together, from licensing to logistics, hasn't just made this inaugural launch possible—it's built a playbook for scaling access to space across the region.

Tell us more about Etlaq FX. How did the idea for a fan experience come about, and what role do you see it playing in raising public interest in space initiatives across the Middle East?

Etlaq FX isn't just about one launch nor to just see rockets fly up —it's a catalyst for regional change. By normalizing public access to space activities, Oman is:

1. Building a Pipeline: Engaging youth early fosters homegrown talent for future missions.
2. Showcasing Collaboration: The fan zone highlights partnerships with international firms, proving the MENA region can be a global player.
3. Redefining Risk: Even when weather delayed the Horus-4 launch, Etlaq FX proceeded—demonstrating resilience and adaptability, key traits for a burgeoning space ecosystem.

Photo: A.R.T Team at Etlaq FX. Right to left: Seif Zahran (CEO), Saif Elderini (Senior Structure Engineer), Mrwan Mohey (COO), Anoop Singh Bamrah FRAeS (Board Advisor & N.E.D)

How is A.R.T preparing for its first-ever rocket launch in 2025, and what key milestones are you focusing on in the lead-up to the launch?

With our inaugural launch window approaching, A.R.T is in the final stages of preparing Horus 4—a reusable prototype designed to validate our guidance, propulsion, and landing systems at Etlaq Spaceport in Oman. This payload-free 'hop test' will reach 75 meters altitude, focusing on key milestones like thrust vector control, in-flight maneuvers, and propulsive landing—critical steps toward our orbital ambitions. Our team has spent years refining every component, from the GNC system to structure integrity, and we're now conducting last-minute checks with Etlaq's team to ensure seamless operations. This launch isn't just a technical demo; it's the foundation for affordable, sustainable access to space across the Middle East and Africa.

What challenges do you anticipate in providing low-cost rocket launches, especially in emerging markets, and how is A.R.T addressing those challenges?

While our inaugural Horus 4 test vehicle may stand at just one meter tall, its modest stature belies its strategic significance. At A.R.T, we adhere to a philosophy of incremental, evidence-based development — a methodology that has proven successful for industry leaders.

This compact platform allows us to rigorously validate our core technologies, particularly reusability systems and flight control algorithms, with significantly reduced risk and cost compared to full-scale prototypes.

Our approach mirrors the proven development pathways of established aerospace players, where subscale testing has consistently preceded orbital-class vehicles. By focusing first on perfecting landing precision and rapid turnaround with Horus 4, we're building the technological foundation for our future orbital launch system—one that will deliver the reliability and affordability our regional partners require. In the high-stakes arena of space launch, patience and precision in these early stages ultimately determine long-term success.

In terms of safety measures, what protocols and systems has A.R.T put in place to ensure the safe execution of rocket launches, especially for a first-time spaceport like Etlaq?

Currently, Horus 4 is using pre-existing components that have already been tested and used by others. Therefore, we follow strict work safety measures and protocols throughout our workflow operations.

In addition, the Etlaq team is providing us with the highest industrial standards of safety practices to ensure the safety of the mission, the site, and all teams involved.

Photo: A.R.T Presentation at Etlaq Launch Conference 2025

A.R.T has emphasized supporting scientific research and education. How are you engaging with universities, research institutions, and STEM programs to promote the use of your rockets for experimental payloads?

Through our A.R.T Educational Academy, we are actively promoting space sciences and hands-on space projects—such as our ready-to-fly CubeSatellites (a.k.a. Cube Sat) —while offering ambitious student projects and companies the opportunity to launch their payloads on our inaugural suborbital flights. To encourage space research across the region and support the next generation of innovators.

What types of experiments or research missions do you envision launching in the near future, and how can schools or universities get involved?

We aim to launch all types of suborbital payloads, including scientific experiments, CubeSats or CanSats, and new space systems that need testing in a real space environment using our upcoming rocket vehicles.

Through this special magazine edition, we would like to invite any university, research institute, startup, or school from the Arab world that wants to send a suborbital payload to take part in our inaugural launch.

How does A.R.T plan to expand its market presence in Africa and the Middle East? What steps are being taken to attract scientific and educational customers in these regions?

Using our established A.R.T academy to provide affordable, high-quality courses and practical project experiences to universities and students around the world. Not only do we aim to provide educational content, but we also strive to nurture and support what we've started. Currently, we are building a community of space enthusiasts in the region and about to launch rocketry clubs to share the dream of going to space with younger generations, alongside our esteemed partners Knowledge Grid Academy "Oman" and Race 2 Space "UK".

Beyond the 2025 launch, what are A.R.T's long-term plans for scaling operations—both in terms of launch frequency and geographic footprint?

Our long-term goal is to reach Low Earth Orbit (LEO) on a regular basis using reusability-focused technology, while ensuring the entire system is developed and manufactured 100% in the Middle East. Over time we look to train and upskill existing Omani talent to become assets to the Omani Space industry and local economy. The hope is that being a UK company we will bridge the gap for Space Access whilst incorporating best practice from across the globe. We believe that our region has the talent, infrastructure, and determination to make this vision a reality.

Photo: Signing Pact with KGA

Photo: Signing MOU with SpacePoint

SPACETECH IN GULF

Bird & Bird

Willy Mikalef

Partner, Space and Satellites Group
at Bird & Bird

Willy Mikalef is a Technology Partner at Bird & Bird and a leading expert in Space and Satellite regulation, recognized by Who's Who Legal since 2022. He has worked with top law firms in Paris and London, as well as major space institutions like the European Space Agency and Eutelsat. Willy advises space businesses on regulatory and commercial issues including licensing, debris mitigation, and cybersecurity, and teaches Space Law at Paris-Saclay University.

Elie Badawi

Associate for Aviation, Space &
Defence Activities at Bird & Bird

Elie Badawi is an Associate at Bird & Bird in the Aviation, Space & Defence team (Space & Satellites Group), his experience includes advising different clients (public and private entities) on a variety of commercial matters. He assists in drafting agreements and providing advice in several fields of expertise such as aerospace projects, export control regulations, cyber-security, telecoms, etc., in Europe and in the Middle East. Elie also delivers trainings for professionals and courses in academic institutions.

He is finishing a Ph.D. thesis at Université Paris-Saclay specializing in comparative Space Law with a focus on the Gulf region. His research is part of the Institute of Space and Telecommunications Law. He studied International and European Law with a background in Economics. Elie is fluent in French, English, Arabic and has advanced knowledge in Spanish.

Bird & Bird is known for its expertise in technology and innovation sectors. How has the firm adapted to the rapid changes in space and satellite law?

WM: The key to our success is our constantly evolving sector-focused approach. As one of the first law firms to organize its expertise along sector lines our lawyers can build up considerable knowledge of the commercial drivers unique to the space and satellite industry, enabling us to deliver more targeted advice in a commercial context.

Bird & Bird is a global law firm with technology at its heart. Satellites and space are at the cutting edge of communications and aerospace technology, as well as being an enabler of other technological innovations. We therefore actively developed our expertise in this area. Bird & Bird has now a market leading practice, and regularly works with all kinds of satellite operators, manufacturers, businesses offering satellite-related or space technology products/services and governmental institutions and investors seeking to enter the industry.

EB: Our Space & Satellite group comprises a talented team of international specialists with a unique reputation and track record in the industry. Through many years of experience working in-house at regulators, in international institutions (like the European Commission, ESA) and in private practice, we have built an extensive footprint of expertise, with top-notch knowledge in areas like space and telecom regulations, export control and cybersecurity law.

Our industry focus has been consistently recognized by the main international legal directories over the years: for 2025 alone, our team is leading the Legal 500 tables for Telecoms, Data privacy and protection, and Aviation Finance, and Chambers has named us TMT Law Firm of the Year in France as well as Global Market Leader in AI. We are also one of the very few law firms recognized and ranked by the Lexology Index (Who's Who Legal) as leading in Space & Satellite practice with specialists like Willy Mikalef, Thomas Jones, Marjolein Geus or Sven-Erik Heun.

WM: Bird & Bird continuously invests in the next generation of lawyers. Elie Badawi, for instance, is finishing a Ph.D. in comparative space law focused on Gulf countries. We have also hired Hayley Blyth who worked as in-house legal counsel for a national space regulator, and Roxane Olivier who worked for the European Commission.

What are the biggest legal challenges companies face when entering the space economy?

WM: Companies must navigate a complex and fragmented web of national, regional, and international regulations covering licensing, orbital slot allocation, spectrum usage, liability, export controls, and more. Spectrum management and ITU filings are particularly dynamic areas, as competition for orbital slots and radiofrequencies continues to intensify.

EB: We have been involved recently in the Gulf region in the negotiation of complex international agreements relating to the leasing of frequency assignments and orbital position and the review of ITU and national filings.

Economic conditions can make it difficult for new entrants to secure funding. Investors may be cautious due to the high-risk nature of space ventures. Financing and contractual arrangements therefore play an important role, often underpinning the viability of satellite projects and influencing the structure of cross-border collaborations.

WM: Data regulation is another focus, especially in the context of Earth observation and satellite-derived data. Here, legal and technical teams must address concerns around privacy, cross-border data transfers, cybersecurity, and the potential dual-use nature of sensitive information.

Currently, client requests are typically highly specific and tailored to projects intended to stand out in a competitive market. This evolution demonstrates that the space sector is dynamic and reflects societal development. It also shows how law progresses in tandem with society.

Given the increasing commercialization of space, how is Bird & Bird advising clients on different scenarios and partnership models for innovative projects in the industry?

WM: The space & satellites sector is in a dynamic phase – with traditional market players seeking growth and expansion and new entrepreneurial entrants disrupting the industry like never before. This change is being driven by the lower costs of capital and tech thresholds required to participate, as well as the removal of administrative barriers that have traditionally posed significant barriers to entry.

In this context, we have advised on a broad range of partnerships between well established market players and New Space companies, public and private companies, providers of innovative space-based services and users. To do so, we combine space & satellite commercial and regulatory specialists, with other lawyers in corporate, M&A, IP, competition or finance.

EB: In the Middle East, we have advised companies in relation to the procurement and financing of different telecommunication satellites. Our legal guidance encompasses the full life cycle of such partnerships from initial feasibility studies, key legal, governance and procurement considerations to financing arrangements and operational contracts.

The firm's involvement typically includes drafting commercial agreements, defining risk allocation mechanisms, securing regulatory approvals, and advising on other requested aspects of our clients, including negotiations. Per example, we are today part of the Bird & Bird/OXYGY team advising as a member of the consortium led by OHB System AG which has been selected by the European Commission Directorate-General for Defence Industry and Space to conduct a study aimed at developing reconnaissance capabilities at a European level.

What trends do you see in international collaboration in space law and governance?

EB: As space activities become more accessible and widespread, national space legislation has emerged as a key tool for states to assert sovereignty and manage the increasing involvement of private actors. International dialogue plays a vital role in helping countries strengthen their space governance frameworks. The UAE, for instance, updates on a regular basis its space legislation to stay aligned with technological advancements, demonstrating its commitment to a dynamic, forward-thinking, and well-regulated space sector.

The space industry stands out for its multidimensional nature. It operates at the crossroads of legal, economic, civil, military, strategic, and infrastructural considerations. In this context, the concept of common investment and shared use of infrastructure, such as satellite constellations or launch facilities, has become increasingly important, encouraging cooperation and reducing duplication of efforts. It is not just a field of technological exploration, but a central hub of intersecting national and international interests making it both exciting and complex. Space has become a critical arena where numerous global challenges and ambitions converge.

This complexity underlines the importance of proactive international engagement. Countries must stay informed, contribute to global discussions, and align themselves with emerging trends to shape outcomes (we can think of the Artemis Accords…) rather than merely adapt to them. What was once discussed as globalization is now simply the reality, and space where economics, security, diplomacy, and innovation meet is one of its most telling expressions.

What do you think of disputes related to satellite contracts, spectrum allocation, or intellectual property in the space industry?

WM: There are different types of disputes. commercial disputes between private companies or subjects, regulatory disputes and state-to-state disputes. We have experience assisting space companies in high-profile disputes, of a commercial nature or of a regulatory nature (legal actions aimed at challenging regulatory approvals for instance).

Disputes are rarer in the space sector than in other sectors. The high costs and risks associated with space missions incentivize parties to avoid disputes that could delay or jeopardize projects. Many space operations involve cross-waivers of liability, where parties agree to bear their own risks and not sue each other for damages. These cross-waivers are formally recognized by certain national space laws (like the US and French space laws). The space industry also often involves international collaboration and partnerships. The cooperative spirit and mutual interests in successful missions encourage parties to resolve issues amicably. These factors contribute to a relatively low incidence of disputes in the space sector. This being said we observe a slight change of paradigm given the transformations that the space industry faced.

EB: With increased commercialization and the complexity of satellite projects, arbitration is preferred due to its confidentiality and flexibility, cases around the word already per example exist involving satellite malfunctions (Insurers of Thuraya Satellite Telecommunications v. Boeing Satellite Systems), spectrum coordination/allocation (the Devas disputes or Eutelsat v. Mexico), and cross-border regulatory challenges (ABSG v. KT and KTSAT). We are fully engaged in monitoring developments from forums like the Permanent Court of Arbitration and the DIFC Courts' "Courts of Space" initiative, which aim to offer specialized tools for space-related dispute resolution in a near future.

The UAE, Oman and Saudi Arabia are pushing for more private-sector participation in space. How is Bird & Bird helping companies navigate these evolving regulatory frameworks?

WM and EB: We advise both government bodies and private entities across the Gulf region, in Europe, on the African continent.

EB: With offices in the region and local teams on the ground, we're able to hold meetings, coordinate directly with stakeholders, and provide hands-on support when needed. One of the key strengths of being part of an international law firm is our flexibility and responsiveness. While I am based in Paris, I travel regularly to the Gulf, over the past year alone, I've worked on-site in the UAE, Saudi Arabia, Qatar, and Oman.

WM: This presence enables us to stay closely connected to the region's developments, participate in key industry events and discussions, and respond swiftly to client needs. Our clients appreciate not only our legal expertise but also our proximity and understanding of the local context. Our clients also value our ability to provide support for business and organization modelling and transformation together with OXYGY, Bird & Bird's consulting arm. We have supported the development of national space legislation, providing benchmarking insights and helping shape frameworks that align with each country's strategic vision and international requirements. We also helped private entities navigate complex regulatory landscapes, securing authorizations, ensuring compliance, and structuring investments.

Are you seeing a growing demand from Gulf-based clients for legal support in satellite communications, Earth observation, or space-based data services?

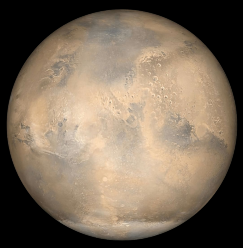
EB: Yes, we are witnessing a clear and growing demand for legal support in the space sector from both public and private clients across the Gulf region. This is largely driven by national strategies that position space as a key pillar for economic leadership and diversification. Most GCC countries are excellent examples of emerging, ambitious space actors with rapidly expanding markets.

Oman stands out with several recent milestones: the launch of its National Space Programme (2023–2033), its first satellite Aman-1 (2023), and the inauguration of the Etlaq Spaceport (2024). Further satellite launches should also be planned soon. The Etlaq Spaceport, strategically located near the equator, offers significant technical advantages for satellite launches and is well-positioned to become a regional hub for micro-launchers and commercial satellite activity.

WM: Oman's space strategy has four key pillars: economic diversification (aligned with Vision 2040), national security, local capacity building, and environmental sustainability. These priorities are generating increasing legal needs in areas such as satellite procurement, space-based data usage, cybersecurity, launching agreements, and the development of regulatory and licensing frameworks.

Overall, the space industry in the region is experiencing rapid growth, and with that comes a parallel increase in demand for specialized legal services. Gulf-based stakeholders are keen not only to participate in the evolving global space economy but also to be at the forefront of innovation, backed by robust legal and regulatory support.

SPACETECH IN GULF



Opinion Articles

Oman’s Space Sector Lifts Off with Government Investment

Rajeeshwaran Moorthy
Space Investor, Author, Board Member, Keynote Speaker

Oman’s Ambitions in the Growing Global Space Economy

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SPACETECH IN GULF

Oman's Space Sector Lifts Off with Government Investment

Rajeeshwaran Moorthy

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Launching a National Vision in Space

Over the past five years, Oman's space sector has transformed from a nascent idea into a fast-growing industry. This rapid evolution is no accident—it has been **driven chiefly by government investment and policy**. In 2019, Oman outlined its first satellite ambitions, and by 2023 the Sultanate **successfully launched its inaugural satellite, Aman-1**, into orbit. This progression is part of a broader national vision: under Oman Vision 2040, the government has designated space technology as a strategic sector for economic diversification and digital growth. The **Ministry of Transport, Communications and Information Technology (MTCIT)** unveiled a comprehensive National Space Policy in early 2023 to position Oman as a regional gateway for space applications. In alignment with Vision 2040's goals, Oman aims to boost its digital economy's GDP contribution from 2% today to 10% by 2040, and the space sector is a key part of that growth strategy.

Photo Source:How to find your spot in the space economy | Rajeeshwaran Moorthy | TEDxSwinburneVietNamDanang

Investment-Fueled Growth: Beyond Simple CAGR

Oman's space sector expansion is best described as **exponential and piecewise**, rather than a steady linear climb. Official figures highlight a **dramatic surge in investment after 2021**, coinciding with new government programs. In 2021, the entire Omani space market was valued around **$155 million**, a mere **0.05% of GDP** – essentially just a flicker in the economy. But following the launch of the Executive Space Programme in 2023, **the sector attracted over OMR 20 million (≈$52 million) in new investments within two years**. This jump-start, spurred by government backing, far outpaces any earlier growth rate. Instead of a modest compound annual growth rate (CAGR), Oman is seeing **accelerating year-on-year growth** – a pattern akin to an exponential curve. The data suggests a piecewise trajectory: a slow incubation phase up to 2020, then a sharp growth phase from 2021 onward as major projects and funding came online.

This robust growth model is evident in the numbers and initiatives. For instance, at the 2024 COMEX technology exhibition in Muscat, **new digital and space-related projects worth over OMR 40 million were announced** – a single event showcasing investments that eclipse the entire sector's value from just a few years prior. Overall, since the start of Oman's National Digital Economy Program, government-led investments in ICT (including space technology) have exceeded **OMR 1 billion**. Such infusions of capital, guided by strategic policy, illustrate how Oman's space market is expanding at a **far more rapid clip than a simple CAGR would suggest**. In effect, government spending has created a multiplier effect: each new project (a satellite, a spaceport, a research program) attracts follow-on investments and partnerships, further steepening the growth curve. This virtuous cycle points toward an **S-curve trajectory**, where Oman is now in the steep ascent phase of space sector development, with plenty of headroom before any saturation point.

Government at the Helm of Expansion

Government investment has been the catalyst at every step of Oman's space sector growth. The MTCIT's National Space Policy (2023) laid out 14 major projects and opportunities to build a domestic downstream space industry. Rather than leaving it to chance, the government actively prioritized these areas and backed them with funding and infrastructure support. Key focus areas include:

1 Local Ecosystem Growth:

Heavy emphasis is placed on nurturing Omani talent and companies. The government is establishing conditions for a *"vibrant, sustainable and competitive space ecosystem,"* offering sustained support for local startups and research institutions. For example, Oman's national telecom operator Omantel has branched into space ventures, and a new **Space Accelerator programme** was tendered in 2024 to incubate homegrown space-tech firms.

2 International Partnerships:

Oman actively seeks international collaborations to accelerate its space sector through technology transfer and strategic partnerships. The country's National Space Policy explicitly encourages Foreign Direct Investment (FDI) as a tool to fast-track capability development. Notably, **a UK-based firm was awarded the contract to master-plan the Etlaq Spaceport in Duqm**, laying the groundwork for one of the Middle East's most advanced launch facilities. In parallel, Oman has forged strategic ties with Asia - **China's Star.Vision became the first private aerospace company in China to deliver a complete satellite and ground station system for a foreign customer**. The partnership includes setting up satellite ground stations in Oman, training local staff, and providing full lifecycle support, significantly enhancing Oman's aerospace infrastructure and autonomy. These global collaborations ensure Oman not only acquires the technology but also builds the local expertise to sustain and expand its space ambitions.

3 Downstream Services:

Oman concentrates on satellite applications (communication, navigation, Earth observation) – the **90% share of the global space economy** – to quickly reap economic benefits. In fact, about 95% of Oman's current space market revolves around services like satellite telecom and GPS applications, which the government is upgrading with better ground stations and data platforms.

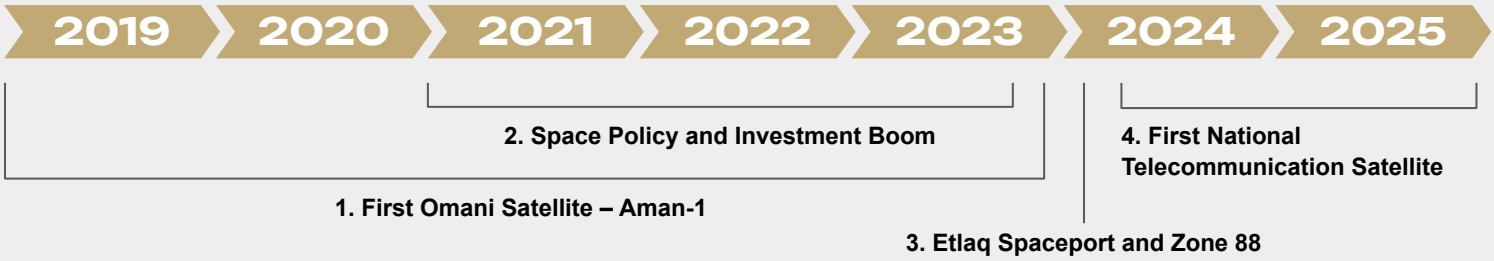
4 Strategic Infrastructure:

The government is investing in physical infrastructure critical to the space industry. This includes satellite ground stations (the first Omani ground station license was issued in 2023) and even launch facilities. Most notably, Oman is building **Etlaq Spaceport in Duqm**, the first commercial spaceport in the Middle East, through the state-backed National Aerospace Services Company (NASCOM). The spaceport project, launched in 2024, has government support to provide a launchpad for small rockets and to host R&D in rocketry. Its location near the equator will allow more efficient launches, and the first test rocket launches are slated for late 2024 and 2025. The government also designated a **"Space Economic Zone" (Zone 88 in Duqm)** in 2023, complete with a planned space research center, rocket assembly areas, and an AI and drone testing range – signaling long-term commitment to space infrastructure.

All these initiatives are funded or facilitated by the state. Oman's approach is holistic: invest public funds to build core capacities, attract private and foreign investment on top of that, and ensure that Omani engineers and scientists are involved at every stage. As Dr. Saoud Al Shoaili, head of Oman's National Space Programme, noted, *"We're not interested in a company that will sell us the satellite and launch it without our involvement. We want to develop our own expertise throughout the entire process."* This ethos underlines each OMR the government spends on space – it's an investment in *Omani* capabilities as much as in hardware.

Milestones of a Five-Year Journey

In concrete terms, Oman's government-led push has resulted in several **milestone achievements between 2019 and 2024**:



First Omani Satellite – Aman-1 (2019–2023):

What began as a vision to launch a small satellite to monitor light pollution evolved into the Aman-1 mission. The project, initially spearheaded by the Oman Astronomical Society and later taken over by MTCIT and Oman's ETCO Space company, benefitted from government sponsorship and international expertise. After years of development (a cooperation agreement was signed in late 2021), Aman-1 was launched into orbit on November 11, 2023 aboard a SpaceX Falcon 9 rocket. This made Oman one of the few countries in the region with an indigenous satellite in space. Aman-1 is a 3U CubeSat packed with an Earth observation camera, set to deliver multispectral images for uses like energy infrastructure monitoring and agriculture. Significantly, Oman plans to utilize Aman-1's data to monitor its national gas pipeline network in partnership with OQ Gas Networks, highlighting how space investment feeds back into economic and security benefits on the ground. *(Notably, the first launch attempt of Aman-1 on a Virgin Orbit rocket from the UK in early 2023 failed due to a launch anomaly, but Oman's persistence paid off with the successful SpaceX launch later that year.)*

Etlaq Spaceport and Zone 88 (2024):

One of the most ambitious government-backed projects is the creation of a domestic launch capability. In 2024, Oman announced **Etlaq Spaceport** at Duqm, a coastal city, with the first suborbital test launches planned by the end of that year. This project exemplifies how government investment drives growth: by building launch infrastructure now, Oman is positioning itself to capture a share of the burgeoning small satellite launch market in coming years. The spaceport is part of **Zone 88**, a dedicated space and advanced technology zone in the Duqm Special Economic Zone, launched with government support in July 2023. Zone 88 will include training facilities (a space habitat center for simulations), integration labs, and a commercial launch pad – all funded through public-private partnerships encouraged by Oman's policy. The expected **OMR 40+ million in contracts signed at Zone 88's launch** event and related forums reflect how the government's initial spending is drawing in further investment to populate this space ecosystem.

Space Policy and Investment Boom (2021–2023):

With the groundwork laid, Oman formally rolled out its National Space Policy and a detailed Executive Programme in January 2023. This policy identifies **14 priority projects** – from a Space Data Platform to a Satellite R&D program and a launch site – sending a clear signal to investors and partners about where Oman is heading. Within months of this announcement, momentum built rapidly. By late 2023, Oman had attracted **OMR 20 million in space-sector investments** over just two years, establishing several startups and joint ventures. For example, **ETCO Space (Oman)** and SatRev (Poland) launched a joint venture called "Spacerz" in 2024 to manufacture satellites in Oman. This means the next Omani satellites could be "Made in Oman," an outcome of strategic investment and knowledge transfer. Furthermore, Oman held its first Middle East Space Conference in Muscat in early 2024, drawing over 400 international experts and showcasing dozens of space companies – an event funded and hosted by the government to put Oman on the space industry map.

First National Telecommunication Satellite (2024 ongoing):

As the next step, Oman is now **acquiring its first large national satellite**, a telecommunications satellite for secure communications. Rather than leasing capacity from foreign satellites, Oman's government decided to own its orbital asset – a move that requires a substantial investment likely in the tens of millions of rials. Dr. Saoud Al Shoaili emphasized this isn't just about buying a satellite; it's about involving Omani engineers in its development and operation to build local expertise. This project, once realized in the coming few years, will mark another exponential leap in the sector's value (telecom satellites typically cost a significant sum) and further solidify the industry's base in Oman.

Each of these milestones was underwritten by government vision and funds, and together they tell a story of **piecewise growth**: a slow start with planning and training (2018–2020), a rapid build-up with policy and initial projects (2021–2023), and a leap into major infrastructure and higher budgets (2024 and beyond). The sector's expansion has been **measured not just in rials, but in capabilities** gained: a cadre of trained Omani space professionals, new companies and jobs, and tangible assets like satellites and launch sites.

A New Space Economy for Oman

What makes Oman's space sector rise remarkable is that it happened in such a short span, **without direct comparisons or rivalry** – purely by focusing on Oman's own goals. Five years ago, Oman had no satellites, no space law or policy, and only a handful of enthusiasts planning a cubesat. Today, thanks to steady government backing, Oman has a national space program in motion, an emerging space industry cluster in Duqm, and strong ties to international space players. The growth has truly been **government-led**, proving the adage that *"if you build it, they will come."* By investing public funds into building infrastructure and confidence in the sector, Oman's government attracted companies and talent to participate in this new market.

Oman Space Market:

Key Figures (Projected)

Space Economy

2025 Estimate	GAGR	2035 Projection
USD 230M	~13%	USD 900M

Space Market

2025 Estimate	CAGR	2035 Projection
USD 110M	~12%	USD 400M

Details & Justification

Starting Point (2025 Estimates):

The 2025 figures reflect the cumulative effect of Oman's policy, infrastructure, and partnership developments since 2021. The **space economy** estimate of **USD 230 million** accounts for downstream services, infrastructure investments (e.g., Zone 88, Etlaq Spaceport), and the growing role of private-sector and foreign-led partnerships. The **space market** figure of **USD 110 million** focuses more narrowly on commercial activities, such as satellite operations, EO services, and emerging supply chains.

From a market perspective, Oman's space sector appears to be following an **upward exponential trajectory**, with the government ensuring the curve keeps rising. Projections in the Middle East suggest regional space spending could nearly double in the next decade, and Oman is set to be a prime beneficiary of that trend. The Sultanate's approach may eventually yield an **S-curve** of growth – rapid expansion now, and a potential levelling off by the time the industry matures around 2040 – but for now, Oman is firmly on the steep incline of that curve.

In summary, **Oman's space sector growth story is one of bold vision backed by concrete investment**. Clear policies, major investments, and local enterprise support have transformed a fledgling idea into a thriving high-tech sector.

2035 Projections:

Projected values of **USD 900 million (space economy)** and **USD 400 million (space market)** align with a steady yet optimistic expansion, driven by additional satellite launches, operationalization of Etlaq, and greater participation of local firms. These projections assume Oman matures into a regional downstream services hub, supported by targeted FDI and high-skill job creation.

CAGR Assumptions:

The **13.2% CAGR (space economy)** and **12.7% CAGR (space market)** reflect a **moderate-exponential growth path**, avoiding earlier overestimates. This modelling assumes Oman moves from its current early-growth phase into a more stable scale-up period, with recurring government and private investments.

Comparative Context:

For reference, Oman's national GDP is projected to grow at **~3.0% CAGR**. The space sector's CAGR is therefore nearly **4x higher**, making it one of the country's most dynamic emerging industries. However, this is an **upper-bound scenario**, contingent on continued momentum in policy, infrastructure, and foreign collaboration.

While Oman's broader economy is projected to grow at a modest compound annual growth rate (CAGR) of approximately **3.0%** through 2035, the space sector is modelled on a significantly steeper trajectory. With an estimated CAGR of **13.2%** for the space economy and **12.7%** for the space market, Oman's investment-driven approach is positioned to yield returns nearly **four times the pace of national GDP growth**. However, these projections represent an **optimistic scenario**, assuming sustained government backing, successful project execution, and continued international partnerships. As such, while the outlook is promising, it should be viewed as a high-side estimate subject to adjustments based on future policy, market uptake, and regional competition.

Oman’s Ambitions in the Growing Global Space Economy

Ammar Al Rawahi

Expert in Oman Space Industry

The Space Economy: Definition and Overview

The space economy refers to the full range of activities and resources that generate value and benefits from the exploration, research, understanding, management, and utilization of space. The space economy activities is broadly divided into two segments. The space segment includes activities such as satellite manufacturing, launch services, space exploration, and crewed missions. On the other hand, the ground segment involves systems, data analytics, and applications that use space-derived information to benefit industries like telecommunications, environment, agriculture, energy, disaster management, and national security.

The space industry is undergoing transformative growth, with technological advancements unlocking new opportunities across diverse sectors. Beyond traditional rocket science, space technology has become foundational to human development. Rapid expansion in satellite communications, Earth observation, space applications, and space tourism is reshaping economies and societies. Satellites now play a crucial role in global connectivity via GEO, MEO, and LEO networks, with applications for positioning, tracking, and data management—benefiting areas like agriculture, environmental monitoring, and urban planning.

A recent World Economic Forum report projects that the global space economy will soar to US$1.8 trillion by 2035, a substantial leap from US$670 billion in 2024. This far exceeds earlier forecasts made in 2020, which estimated the space science economy would reach US$640 billion by 2030 and US$1 trillion by 2040.

The rapid acceleration reflects a growing global dependence on space-based solutions, which has in turn led to a significant increase in investor interest—doubling by the end of 2021 alone.

This surge is driving transformative impacts across various development sectors—from agriculture and logistics to healthcare and retail. However, the space sector is not without its challenges. Regulatory complexities, sustainability concerns, and the demand for robust infrastructure continue to pose hurdles. In this context, sovereign wealth funds, private equity, and venture capital firms are playing a vital role in advancing innovation, funding new technologies, and championing sustainable practices to build a resilient and future-ready space economy.

In parallel, the Middle East and Africa (MEA) region is emerging as a dynamic force in the global space landscape, driven by two defining trends: growth and partnerships. The 2024 white paper “Beyond the Stars”, launched at the Middle East Space Conference in Oman by Novaspace, described the Middle East as a "global hotspot for space activities."

Over the past decade, the MEA space economy has tripled in value, reaching an estimated US$25 billion in 2023. Projections suggest this figure will rise to US$75 billion by the next decade, powered by increasing space-sector investments, regional and international collaborations, and a strategic focus on space as a pillar of technological and economic development. The region's growing engagement in international space ventures positions it as a key contributor to the global space economy’s future trajectory.

Space activities are not limited to outer space but also include ground-based infrastructure, such as satellite control centers, data processing hubs, and distribution networks. This interconnected ecosystem enables space technologies to address global challenges, from bridging the digital divide to enhancing climate resilience and driving economic growth.

Investment Opportunities in the Space Sector

The space sector provides a wealth of investment opportunities across multiple domains, reflecting its dynamic and expanding nature:

Satellite Manufacturing and Operations

The demand for satellites, especially small satellites and mega-constellations in low Earth orbit (LEO), has grown exponentially. Companies and governments require satellites for purposes such as communication, Earth observation, navigation, and scientific research. Innovations in modular satellite designs and cost-effective launch solutions have further lowered barriers to entry, creating a competitive landscape for manufacturers and operators.

Earth Observation (EO)

Earth observation satellites collect high-resolution data critical for applications in precision agriculture, environmental monitoring, urban planning, and disaster management. As data analytics tools become more sophisticated, EO-based services have become indispensable for businesses and governments alike, offering lucrative investment prospects in both hardware and analytics platforms.

Telecommunications

Satellite communication services address the global need for connectivity, particularly in remote and underserved regions. High-throughput satellites GEO, MEO and LEO constellations, are key to expanding broadband access. This sector remains one of the most promising areas for investment, given the rising demand for reliable and high-speed communication networks.

Space Tourism and Exploration

The commercialization of space exploration and tourism is an emerging market, attracting investments from visionary entrepreneurs and institutional stakeholders. Companies are developing vehicles and habitats for suborbital, orbital, and even lunar missions, offering opportunities to create a new frontier for travel and research.

Space Debris Management

As the number of satellites in orbit grows, managing space debris has become critical. Technologies for tracking, mitigating, and removing debris offer a nascent but vital investment area, ensuring sustainable use of space.

Launching Services

The increasing demand for small satellites and commercial space missions has driven the need for reliable and cost-effective launch services. Innovations in reusable rocket technology and dedicated small satellite launch vehicles are opening new opportunities for investment in launch infrastructure, vehicle development, and associated support services.

Ground Segment Development

Ground-based infrastructure, including teleports, satellite control centers, and data processing facilities, supports the operational lifecycle of satellites. Investments in these facilities are essential for ensuring seamless data transmission, command, and control capabilities.

Advanced Manufacturing and Technologies

Emerging technologies such as robotics, artificial intelligence, and additive manufacturing (3D printing) are revolutionizing space systems, making them more efficient and cost-effective. These advancements reduce financial barriers to entry, enabling more countries and private entities to participate in space activities. Space exploration has historically been a driver of advanced technologies, fostering innovations such as AI and robotics, which were instrumental even during the advancements in Mars exploration and other outer space missions over the past two decades long before their widespread application in other industries.

The Future of the Space Sector: Global Economic Impact

The space sector is on the cusp of a transformative era, promising substantial economic and societal benefits.

Driving Innovation

Space exploration and utilization spur technological advancements that ripple across various industries. Innovations in materials science, propulsion systems, and AI-powered analytics often originate from space research and subsequently benefit sectors such as healthcare, transportation, and renewable energy.

Economic Development

By fostering the development of new industries and enhancing productivity in existing ones, space technologies contribute significantly to global economic growth. Satellites play a vital role in sectors such as finance, logistics, and agriculture, enabling better resource management and decision-making.

Cost Reductions and Accessibility

Technological advancements like reusable rockets and modular spacecraft designs are driving down costs, making space more accessible to smaller nations and private companies. This democratization of space has opened up new opportunities for innovation and collaboration.

Addressing Global Challenges

Satellites and space-based services play a pivotal role in addressing critical global challenges, including climate change, natural disaster management, and food security. Their ability to provide real-time data and connectivity fosters resilience and adaptability in the face of complex challenges.

Oman's Role in the Space Sector

The Sultanate of Oman has recently recognized space as a cornerstone of its digital economy which diversify the strategy under Oman Vision 2040. Through a well-defined space policy and an ambitious executive program, led by the Ministry of Transport, Communications, and Information Technology (MTCIT), aim to establish itself as a key player in the regional space economy where it will integrate space technologies into critical sectors like education, healthcare, agriculture, and energy. Through these initiatives, Oman seeks to enhance its disaster management capabilities and improve the quality of life for its citizens while driving economic growth.

To achieve its goals, Oman has actively forged partnerships with international organizations and private companies. These collaborations facilitate the exchange of knowledge and expertise, ensuring that Oman adopts cutting-edge technologies suited to its unique needs. Through such efforts, Oman not only advances its space ambitions but also contributes to the development of a robust, interconnected global space ecosystem.

One of Oman's key strategic advantages is its geographic location. Positioned at the crossroads of East and West, Oman's location is enhanced by its advanced infrastructure, including submarine cables that ensure global connectivity. This makes Oman an ideal hub for satellite communications and Earth observation operations, offering unparalleled opportunities for international partnerships and investments.

Investment Opportunities in Oman's Space Sector

Globally, we're witnessing an explosion of interest and investment in space, driven by trends like commercial satellite constellations, miniaturized payloads, Earth observation analytics, and even space tourism. Regionally, countries like Saudi Arabia and the UAE are investing heavily in space capabilities, and Oman is wisely carving its own path.

Locally, Oman's Space Policy and Executive Program have laid the groundwork for structured growth. We are seeing regulatory progress, academic engagement, and infrastructure development. Oman's potential as a gateway for space applications is realistic—we have geographic advantages, political stability, and a vision aligned with economic diversification.

We're not trying to copy other models—we're focusing on what serves Oman best. This includes secure, affordable satellite services, ground segment infrastructure, and regional cooperation.

Oman offers numerous opportunities for domestic and international investors seeking to participate in the thriving space economy.

The Sultanate's investments in ground-based infrastructure, such as satellite control centers and teleport stations, are vital to supporting the operational lifecycle of satellites. These facilities ensure seamless data transmission and provide command and control capabilities essential for global connectivity. Oman's strategic infrastructure and policy frameworks make it an ideal partner for investors seeking to expand their presence in the region.

In addition, Oman is exploring future possibilities for spaceports and upstream investments in space technology manufacturing and assembly. These initiatives align with Oman's broader goal of creating a logistics and innovation hub for the Middle East, supporting not just regional but global space activities.

The Future of Oman's Space Economy

The rapid growth of the global space economy presents Oman with a unique opportunity to cement its place as a regional leader. By focusing on talent development, Oman is ensuring a skilled workforce to drive the sector forward. Training programs and partnerships with global experts are building local capacity while fostering an environment of innovation and sustainability.

Oman's space policy aligns with international standards, providing clear guidelines for industry stakeholders. This regulatory clarity encourages investments and facilitates long-term planning. Oman needs in the future to establish a robust, independent space sector that aligns with Oman Vision 2040 by catalyzing development in key areas. A flexible regulatory framework is essential for enhancing the space sector, enabling efficient and effective improvements in Oman's space policy. Attracting new investment requires capital, but agile regulations are even more crucial—they must be adaptable enough to effectively manage and oversee the operations of these investments and initiatives. Additionally, by facilitating private sector involvement with strategic guidance, Oman can expedite economic growth, attract global expertise and technology, and foster an innovative ecosystem. This, in turn, will cultivate local talent, create jobs, increase in-country value, and strengthen Oman's position within the global space economy.

Through the National Space Program and pioneering companies and projects like Space Communications Technologies, SatMENA, Oman Lens, ETCO Space, Etlaq, Ankaa Space and Technologies and Global Space and Technology Company and other space-related companies, Oman is not just participating in the space economy—it is shaping its future. With its strategic vision, collaborative approach, and pioneering projects, Oman is poised to become a key player in the global space landscape, driving innovation, fostering partnerships, and addressing global challenges through the transformative power of space technology.

Oman and the Rise of the Arab Space Industry: A New Era for the Middle East

Abdullah AlGharrash

Co-Founder at
SpaceTech in Gulf

The **global space economy** is expanding at an unprecedented rate, projected to surpass **$1 trillion by 2040**, according to leading industry estimates. While traditional space powers such as the United States, Europe, and China dominate much of this growth, **emerging markets are now making their mark**, with the **Middle East at the forefront of this transformation**.

The Arab world has historically been a **consumer of space technology**, relying on external providers for satellite communication, navigation, and Earth observation services.

However, a **new era is unfolding** — one where Middle Eastern nation are not only **investing in space capabilities** but actively **shaping the industry** through **homegrown innovation, infrastructure development, and strategic international partnerships**. At the heart of this transformation is Oman, quietly yet strategically emerging as a rising space power in the Gulf and broader MENA region.

With its geographical advantages, investment in technology, and commitment to global collaboration, Oman is not just following the trend — it is setting new standards for the region's space ambitions.

Oman's Strategic Entry into the Space Sector

Oman's growing influence in the space industry is no accident—it is a **carefully orchestrated strategy** aligned with **Vision 2040**, the country's blueprint for economic diversification and technological advancement. Under the leadership of the **Ministry of Transport, Communications, and Information Technology (MTCIT)**, Oman has placed **space technology at the core** of its **digital economy strategy**, aiming to **position itself as a regional hub for space innovation and commercial space activities**.

A key component of this strategy is the **Digital Economy Program**, launched in 2021, which seeks to elevate **Oman's ICT and space technology contributions to 10% of the country's GDP by 2040**. This ambitious target highlights the government's recognition of **space as a critical sector for national growth, job creation, and technological competitiveness**.

The foundation of Oman's space ambitions is **its strategic location**. The coastal city of **Duqm**, situated along the Arabian Sea, provides **one of the world's fastest launch velocities**, making it an **ideal site for rocket launches to Low Earth Orbit (LEO) and beyond**. This natural advantage has enabled Oman to develop **Etlaq Spaceport**—the first **commercial launch facility in the MENA region**, set to become a **key player in global space transportation services**.

Etlaq Spaceport: The Gateway to Space for the Arab World

One of the most significant developments in the region's space industry is the establishment of **Etlaq Spaceport**, a facility that is set to **redefine Oman's role in the global space economy**. Etlaq has already **secured partnerships with international space companies**, including **Advanced Propulsion Technologies (UK), launch providers from New Zealand, and aerospace firms from Kuwait**.

Its **first experimental rocket launch, UNITY-1, is scheduled for April 2025**, with four additional launches planned throughout the year. The significance of Etlaq extends beyond **technical capability**—it represents **Oman's ambition to become a leader in space launch services, creating a viable alternative to traditional launch sites in the U.S., Europe, and Asia**. The spaceport's **strategic location**, combined with Oman's commitment to **establishing industry best practices**, makes it **an attractive launch destination for commercial space operators worldwide.**

Julanda Al Riyami, Chief Commercial Officer of Etlaq, emphasized Oman's vision, stating:

> *"We're excited to unveil five missions this year, featuring international collaborations with partners from the UK, New Zealand, and Kuwait… The goal is to establish a cadence, enabling multiple planned launches in parallel. This will help us achieve an ideal rate of 10, 20, or even 30+ launches per year."*

With **Etlaq's long-term goal of supporting 30+ launches per year**, Oman is not only creating **a new commercial space hub** but **laying the groundwork for a regional ecosystem that supports satellite deployments, deep-space missions, and emerging aerospace industries**.

Deep-Space Ambitions: Oman's Role in Lunar Exploration

Oman is not limiting itself to **launch services**—it is also entering the **global deep-space race**. In **late 2024, Oman signed a groundbreaking agreement with China's Deep Space Exploration Laboratory (DSEL)** to participate in the **International Lunar Research Station (ILRS)**. This moves places Oman **alongside global space leaders** in shaping the **next generation of lunar exploration**.

Ali Al Wahaibi, Oman Lens' signatory to the ILRS partnership, stated:

> *"This collaboration signifies a pivotal step for Oman's role in lunar research and sustainable space exploration. The development of the ILRS isn't just about creating a state-of-the-art facility on the Moon; it's about pushing boundaries in scientific discovery, resource utilization, and technological innovation."*

The partnership with DSEL includes **joint research on lunar geology, in-situ resource utilization (ISRU), and the development of autonomous robotic systems** for future lunar missions. This initiative places **Oman at the forefront of scientific discovery**, contributing to the advancement of **planetary exploration and sustainable space technologies**.

Building a Comprehensive Space Ecosystem

Oman's space ambitions go **beyond launch facilities and lunar research**—the country is actively building **a complete space ecosystem** that includes:

A National Space Settlement Center:

A **18,000-square-meter research facility** in Duqm, designed for **analog space missions and habitat simulation**.

Satellite Programs:

The successful **launch of Aman-1**, Oman's **first commercial satellite**, in collaboration with **SpaceX, SatRev, and TUATARA**.

Earth Observation and AI Integration:

The establishment of **a satellite image processing and AI-powered analytics center** in Muscat, in partnership with Spanish technology firm **Indra**.

Regional Space Policy & Investment Initiatives:

Hosting the **Middle East Space Conference**, which gathered **government officials, investors, and international space agencies** to discuss **the future of Arab space innovation**.

By developing **R&D infrastructure, satellite technologies, and regulatory frameworks**, Oman is **laying the foundation for a sustainable, long-term space industry**.

Regional Space Development: The Middle East's Collective Ascent

Oman's space endeavors are part of a **larger regional movement**, with Arab nations collectively recognizing **the strategic importance of space technology**.

United Arab Emirates: A Pioneer in Planetary Exploration

The **UAE Space Agency** has firmly established itself as a **leader in planetary exploration and space technology innovation**. With **over $5.4 billion** invested in its space sector, the UAE has successfully positioned itself as **the most advanced space power in the Arab world**.

- **Emirates Mars Mission (Hope Probe):** In 2020, the UAE became the **first Arab nation** to reach **Mars**, successfully deploying the **Hope Probe** to study the planet's atmosphere.
- **Lunar Exploration:** The **Rashid-2 Lunar Rover** is set to launch in **2026**, reinforcing the UAE's commitment to deep-space exploration.
- **Mars 2117 Initiative:** The UAE has an **ambitious goal** to **build a human settlement on Mars** by 2117, making it **one of the few nations with a long-term interplanetary vision**.
- **Commercial Space Initiatives:** UAE-based companies like **Yahsat and Thuraya** dominate **satellite communications**, while startups such as **KhalifaSat and Orbital Space** are expanding the country's **satellite manufacturing and payload deployment capabilities**.

The UAE's investments in **spaceports, space science education, and commercial launch partnerships** make it a **regional space leader and an emerging player in global space governance**.

Saudi Arabia: A Rising Space Power with National Vision

Saudi Arabia's space strategy is **rooted in Vision 2030**, with an emphasis on **satellite development, space exploration, and commercial space activities**. The **Saudi Space Agency (SSA)** is actively working on multiple high-impact projects, including:

- **Astronaut Missions:** In **2023, Saudi Arabia sent astronauts Ali Alqarni and Rayyanah Barnawi to the ISS**, marking its **entry into human spaceflight** and advancing its **biological space research programs**.
- **Neo Space Group (NSG):** Backed by **the Public Investment Fund (PIF)**, NSG is **building Saudi Arabia's commercial space ecosystem**, investing in **startups, satellites, and deep-space technologies**.
- **Satellite Development:** Saudi Arabia is expanding its **Earth observation and communication satellite programs**, including the launch of **SGS-1** and the upcoming **SGS-2** satellite.
- **Regulatory & Policy Leadership:** The **Communications, Space & Technology Commission (CST)** is streamlining **space regulations**, making Saudi Arabia a **more attractive destination for space businesses**.

With its **large economy and strategic investments**, Saudi Arabia is **on track to becoming a major space player in both commercial and government-led initiatives**.

Egypt: The Historic Space Player Expanding Its Footprint

Egypt has a **long-standing space heritage**, having launched **the first Arab satellite (Nilesat-101) in 1998**. Today, **the Egyptian Space Agency (EgSA)** is advancing its position in:

- **African & Regional Space Leadership:** Egypt **hosts the African Space Agency headquarters**, positioning itself as a **key player in regional space policy and development**.
- **Satellite Manufacturing & Earth Observation:** Egypt launched **NExSat-1**, its **first domestically built satellite**, in 2022, with plans for **future satellites focusing on environmental monitoring and defense applications**.
- **Strategic Collaborations:** Egypt has signed **multiple agreements with China, Russia, and European agencies** to enhance **space technology transfer and research capabilities**.

Kuwait: Entering the Space Industry Through Private Initiatives

Kuwait is **slowly entering the space sector**, driven primarily by **private-sector involvement** rather than a dedicated government space program. Key initiatives include:

- **KuwaitSat-1:** Launched in 2023, this is **Kuwait's first indigenous CubeSat**, developed by **Kuwait University students and researchers**.
- **Commercial Space Interest:** Kuwaiti firms are exploring **investment opportunities in space startups and satellite services**.

Though Kuwait is **at an early stage**, its **investment-friendly ecosystem** could drive future partnerships in commercial space ventures.

Bahrain: Developing Space Capabilities through Regional Partnerships

Bahrain's **National Space Science Agency (NSSA)** is focused on **space applications and remote sensing** to support national development. Recent initiatives include:

- **First Bahraini Satellite (Light-1):** Developed in partnership with the UAE, **Light-1 was launched to study radiation in space**.
- **Space Science & AI Integration:** Bahrain is investing in **artificial intelligence (AI) applications for space data analysis**.
- **Collaboration with the UAE & Saudi Arabia:** Bahrain is **leveraging regional expertise** to expand its capabilities in **Earth observation and disaster monitoring**.

The Middle East's space ambitions are accelerating, with each nation playing a distinct yet interconnected role in building a strong regional space ecosystem.

- **The UAE is leading in planetary exploration and commercial space investment.**
- **Saudi Arabia is developing astronaut programs, commercial space companies, and cutting-edge regulations.**
- **Oman is emerging as the region's leading launch hub with Etlaq Spaceport.**
- **Egypt is strengthening its leadership in satellite technology and African space initiatives.**
- **Bahrain, Kuwait, and Jordan are integrating AI, research, and commercial partnerships to expand space capabilities.**

With **growing investments, regional cooperation, and strategic global partnerships**, the Arab world is set to become a **leading force in space exploration, technology development, and commercial space industries** in the coming decades.

About SpaceTech in Gulf

SpaceTech in Gulf is the premier marketing, analytics, and space market intelligence company in the MENA region. We are dedicated to fostering a vibrant space community by providing strategic communication services and AI-driven market intelligence solutions. Our mission is to connect the rapidly expanding space ecosystem in the Gulf and MENA regions with local and international space communities, research centres and investments bodies through our advanced AI-powered data platform, empowering stakeholders to make informed, data-driven decisions and drive growth in the space sector.

Our services include proprietary analytics, comprehensive marketing support, and partnership management to help companies navigate the evolving space industry landscape. With deep insights into market trends and advanced data analytics, we enable our clients to make strategic decisions that drive growth and competitiveness. Additionally, our tailored marketing solutions ensure impactful brand positioning and visibility, while our partnership management services foster valuable connections across the space ecosystem, linking businesses with investors, research institutions, and other key stakeholders in the Gulf and MENA regions.

Alexei Cresniov, CEO

Founder at SpaceTech in Gulf

United Arab Emirates / Moldova

Serial entrepreneur with six years of experience in managing companies, building IT and AI products, and extensive expertise in B2B sales and partnerships. Ten years of teaching experience.

Abdullah I. AlGharrash, COO

Co-Founder at SpaceTech in Gulf

Saudi Arabia

Dedicated Saudi aerospace engineer and entrepreneur with extensive experience in the space and jet engines industries. Experienced in collaboration with national and international space organizations, committed researcher, and a published author in space applications.

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About Space Intelligence Lab

Space Intelligence lab.

Introducing a New Lens into the Space Economy: Analytics & Advisory for the Next Frontier

As the global space economy continues its rapid evolution, the need for deeper intelligence and tailored advisory support has never been more pressing. In response, we are developing a future-focused **Analytics & Advisory** offering - one that redefines how we track, interpret, and act on growth in the space economy.

Our Advisory services will continue to provide strategic guidance across the full spectrum of space activities — from upstream infrastructure to downstream applications, national ecosystem planning to commercialization strategy. These services are tailored to governments, investors, and companies entering or scaling within the space sector.

But what's coming next is transformative.

We are building a unified **space economy analytics capability** —- a one-stop intelligence hub that goes beyond the traditional. Starting with a regional focus across the Middle East and expanding to APAC and Europe, this platform will capture the metrics that truly matter:

- Growth in satellite constellations and launch systems
- Government and private sector investments
- Accelerator and incubator activity across key markets
- Cross-sector applications of space data in energy, agriculture, mobility, and sustainability
- Regulatory shifts and national space priorities

By aggregating, analyzing, and visualizing these indicators, we aim to quantify how space activities contribute not only to the sector's internal growth but also to broader socioeconomic development in non-space sectors. This includes tracking how EO data powers climate solutions, how satellite broadband fuels digital inclusion, and how space-derived insights optimize urban infrastructure.

The analytics platform will feature interactive dashboards, growth indices, and sectoral impact models - giving policymakers, investors, and business leaders a real-time view into where the space economy is headed, and why it matters.

This is not just a data product - it's a strategic intelligence engine designed to shape smarter decisions in a complex, fast-moving domain.

As the space economy grows, so must our understanding of its impact. Something new is on the horizon and it's built to see further.

www.spaceintellab.com

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About Space Marketplace

Space Marketplace is a content platform where space companies can publish and showcase their services through real-world use cases. Designed to bridge the gap between the space sector and traditional industries, the platform highlights how space technologies—such as satellite data, navigation, and communications—can solve practical challenges across agriculture, energy, logistics, and more. The goal is to promote space applications and clearly explain how space can drive innovation and impact in non-space industries.

We inspire SpaceTech Applications

Link to the Platform

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Previous Editions

SpaceTech in Gulf, a Saudi analytics and space market intel company, is proud to announce the publication of its groundbreaking report, a magazine dedicated to exploring Saudi Arabia's burgeoning space industry ecosystem. This publication marks a pivotal moment in understanding the nation's growing contributions to the global space sector.

SPACETECH IN GULF

Link to the Magazine

The magazine is an exploration of the Saudi Arabian space industry, this edition features exclusive **interviews with key stakeholders** who are shaping the future of the Kingdom's space ambitions, including:

January 2025

May 2025

September 2025

December 2025

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

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