



POLICY REPORTS

The U.A.E.'s Growing Space Sector

Dec 2024



The U.A.E.'s Growing Space Sector



The United Arab Emirates is making tremendous strides towards becoming a global leader in science and technology. Space exploration and related technologies are one set of avenues which they are pursuing to achieve this goal. The U.A.E. is building strong partnerships with the United States in this sector, relying on U.S. technology, innovation, and expertise to build and foster a space ecosystem in the U.A.E. On September 18, 2024, His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the U.A.E. and Ruler of Abu Dhabi, embarked on an historic visit to Washington, D.C. and held meetings with President Joe Biden and Vice President Kamala Harris. These meetings included discussion on U.S.-U.A.E. cooperation in space and human space exploration. As founding signatories of the Artemis Accords, the United States and the U.A.E. remain committed to peaceful exploration of outer space and continued strategic partnership on human spaceflight and deep space missions. The United States and the U.A.E. continue to promote STEM education among American and Emirati youth, and offer incentives and support to start-ups and innovators focused on technologies that support future space missions.

U.A.E. Space Program in-Focus

The U.A.E.'s interest in space and space science predates the formation of the U.A.E. Space Agency in 2014. In the 1970s, His Highness Sheikh Zayed bin Sultan Al Nahyan met with the NASA team responsible for the Apollo moon landing. Since that formative meeting, **the U.A.E. has steadily developed the key government institutions and commercial sectors necessary for the establishment of a national space program.** This included the establishment of the Mohammed bin Rashid Space Centre (MBRSC) in 2015, as well as the creation of an indigenous satellite communications industry headlined by Thuraya Communications Company and Yahsat (now both part of SPACE42). These satellite communications companies achieved early successes including the launch of Thuraya-1, the U.A.E.'s first mobile telecommunications satellite. Thuraya-1 became the first geostationary satellite owned and operated by an Arab country. Yahsat launched a series of satellites including Al Yah 1, in 2011, and Al Yah 2, launched in 2012, to serve markets in the Middle East, Africa, Europe and Central and Southwest Asia. The U.A.E.'s satellite communications, Earth observation, and telecommunication capabilities helped propel and foster the U.A.E.'s ambitious national space exploration plan. The development of indigenous capabilities in technologies critical for the space sector has made the U.A.E. the regional leader in space.

Alongside the development of satellite communications, the U.A.E. prioritized fostering indigenous space research as part of its emerging research and development (R&D) ecosystem. In 2006, the U.A.E. established the Emirates Institution for Advanced Science and Technology (EIAST). This research body included a space program focusing on Earth observation, satellite navigation, and satellite communications. The functions and responsibilities of EIAST have since been folded into the Mohammed Bin Rashid Space Centre (MBRSC).

The development of the U.A.E.'s space sector closely tracks with the country's economic diversification agenda, which has technology and innovation at its core. **Space exploration and the innovations stemming from space research emerged as focus areas as the country embarked on its diversification agenda.** In 2010, the U.A.E. launched its economic diversification agenda, Vision 2021, that aims to create a sustainable and diversified economy based on innovation and knowledge. One of the developments that emerged from Vision 2021 was the establishment of the U.A.E. Space Agency which set benchmarks for space exploration. The U.A.E. also wants to play a global leadership role in space technology and exploration by building and fostering international partnerships with government entities, academic and research institutions, and private sector companies. Building on these international partnerships, including with NASA, and its continued collaboration with U.S. corporations on artificial intelligence (AI) and advanced technologies, the U.A.E. will continue to seek and develop partnerships with U.S. institutions and private sector innovators to build and strengthen its space program.

The U.A.E.'s Space Strategy



U.A.E. Cabinet approves National Space Strategy 2030 - Source: WAM.ae

In 2019, the U.A.E. government adopted the **National Space Strategy 2030** to increase the space sector's contribution to the economy and position the country as a global leader in space exploration. The strategy sets out goals for space exploration, such as benchmarks for the U.A.E. Mars Mission, and outlines ways to develop the U.A.E.'s commercial space industry. **The National Space Strategy 2030 also focuses on creating the U.A.E.'s regulatory framework for space.** Another key aspect of the strategy is building on international partnerships, including with the United States, that will help the U.A.E. develop its space program. Overall, the strategy outlines six main objectives:

- Provision of competitive and leading space services
- Development of advanced local capacities in space technology manufacturing and R&D
- Launching inspiring space scientific and exploration missions
- Creating space culture and expertise
- Promoting effective local and global partnerships and investments in the space industry
- Ensuring a supportive legislative framework and infrastructure to match the future developments in the sector

To meet these goals, the U.A.E. is pursuing the following actions of the strategy:

Private Sector Collaboration and Investment: The U.A.E. listed the private sector as a vital stakeholder in the implementation of the National Space Strategy 2030. The U.A.E. seeks to attract private sector investment and interest in the space sector in order to build local capabilities. **U.A.E. private sector companies support technological innovation, R&D, and spearhead new projects. Mubadala, Thuraya, and Yahsat** are listed in the strategy as strategic companies directly contributing to the growth of the U.A.E. space sector (Yahsat has since joined SPACE42 in a merger with Bayanat and Thuraya is part of Yahsat). Recognizing the impact of international companies on the space sector, the strategy notes U.S. companies such as Lockheed Martin and Boeing as international companies that offer “more advanced capabilities.”

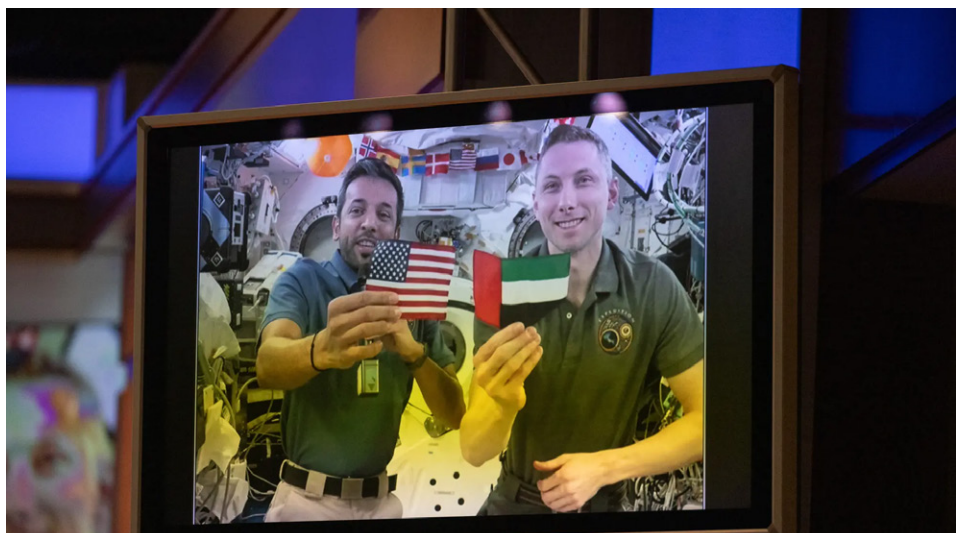
Finally, the U.A.E. is incentivizing, supporting, and incubating start-up projects, small and medium enterprises (SMEs), and innovative entrepreneurs in the space sector. MBRSC’s **Space Ventures** partners with U.A.E. startup companies to provide technology and regulatory know-how. Space Ventures is looking to incubate commercial partnerships in the upstream and downstream areas of the space sector. In 2022, the U.A.E. Space Agency launched the **National Space Fund**, a AED 3 billion (\$820 million) fund that supports international and Emirati companies co-operating in space sector engineering, sciences and research applications. The U.A.E.



The unmanned probe Al-Amal -- Hope in Arabic - Source: Arabian Business

has also launched the **Space Economic Zone Program**, an integrated program developed by the U.A.E. Space Agency to support start-ups and SMEs, particularly those in the space technology sector. One key incentive of this program is the creation of special economic zones, with the first space-focused economic zone established in Abu Dhabi in collaboration with Masdar. The U.A.E. Space Agency aims to establish additional zones in Dubai and Sharjah. SMEs gain access to space laboratories and working spaces as well as economic incentives such as funding opportunities and express permits. These U.A.E. government-led initiatives are helping to build a thriving space startup ecosystem in the U.A.E.

Building International Partnerships: The U.A.E. views international partnerships, including with the United States, as essential for the development of its national space program. The National Space Strategy 2030 notes that expertise and technical input from international partners such as NASA benefit the U.A.E. space program. In addition to cooperation with foreign government entities, the U.A.E. also identifies international universities and research institutions as stakeholders that can support the R&D goals of the strategy.



HE Dr. Sultan Saif AlNeyadi, received training alongside NASA astronauts at facilities across the United States, including NASA's Johnson Space Center and SpaceX HQ - Source: UAE USA United

3. Strengthening the Regulatory Framework:

The U.A.E. is developing a regulatory and legislative regime that will support and empower its space industry. The National Space Strategy 2030 outlines elements of the regulatory framework which also includes the U.A.E. Space Law, U.A.E. National Space Policy, and space sector regulations. The regulatory framework and governance aspect of this pillar also encompasses international agreements that establish norms in space such as the Artemis Accords. The U.A.E. is also signatory to international agreements on space including the Open Space Treaty of 1967, the Rescue Agreement of 1968, the Space Liability Convention of 1972, and the 1975 Convention on the Registration of Space Objects. U.A.E. space institutions, such as MBRSC, and government entities such as the U.A.E. Space Agency are the key institutions in the framework for creating an enabling environment for the sector to grow. For more information on these institutions, please see below.



U.A.E Space Law Workshop

U.A.E. Government Entities in Space



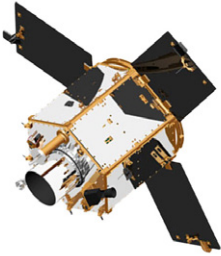
Mohammed bin Rashid Space Centre

Mohammed bin Rashid Space Centre

The MBRSC was established in 2006 by its predecessor organization, the Emirates Institution for Advanced Science and Technology (EIAST). EIAST was created with the goal of promoting scientific and technological research in the science of space in the U.A.E. In 2015, EIAST merged with the MBRSC. Since its inception, the MBRSC has developed a successful satellite program, conceived the Emirates Mars Mission, and created the U.A.E. Astronaut Program.

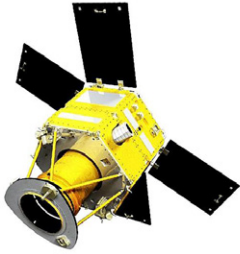
- **Satellite Program**

The MBRSC began developing Earth-sensing satellites in 2006, with contributions from Emirati engineers. So far, the MBRSC has created and/or deployed the following:



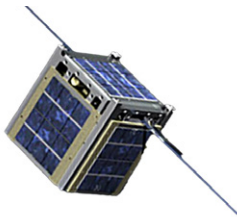
DubaiSat-1

Launched from Kazakhstan in 2009, DubaiSat-1 was the U.A.E.'s first Earth observation satellite. Emirati engineers were deployed to South Korea as part of a knowledge transfer program to develop DubaiSat-1.



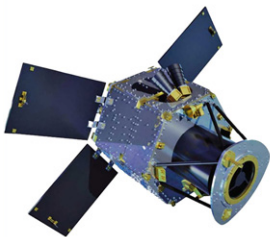
DubaiSat-2

Launched from Russia in 2013, DubaiSat-2 is another Earth observation satellite that was developed in partnership with MBRSC and South Korean engineers. DubaiSat-2 provides high-quality images to local and international governments and private clients for the study of environmental changes, urban planning, and infrastructure development projects.



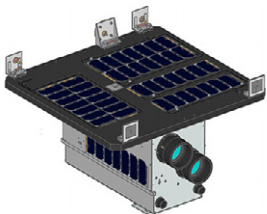
Nayif-1

Nayif-1 was the U.A.E.'s first nanosatellite. It was launched from India in 2013 and was developed in collaboration with educational institutions, primarily the American University of Sharjah (AUS).



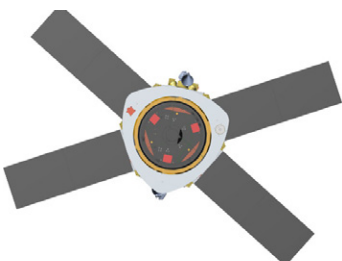
KhalifaSat

KhalifaSat was the first Earth observation satellite wholly designed and manufactured in the U.A.E. Launched from Japan in 2018, KhalifaSat enhanced the U.A.E.'s position among the world's leading space technology manufacturing countries.



DMSat-1

DMSat-1 is the U.A.E.'s second nanosatellite and the region's first nanometric environmental satellite, monitoring air pollutants and greenhouse gases. DMSat-1 was launched in 2021 and was commissioned by the MBRSC in collaboration with the Dubai Municipality.



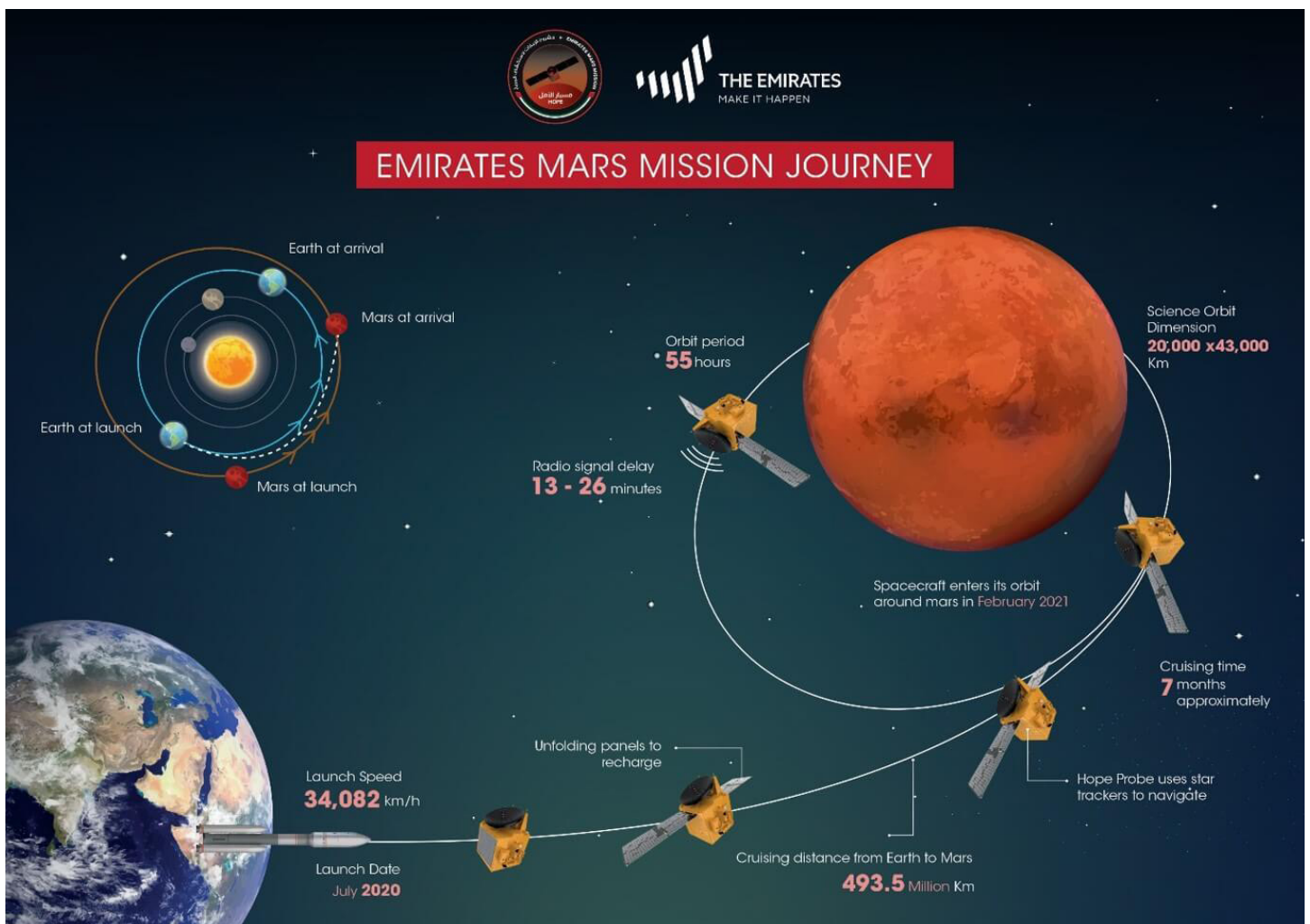
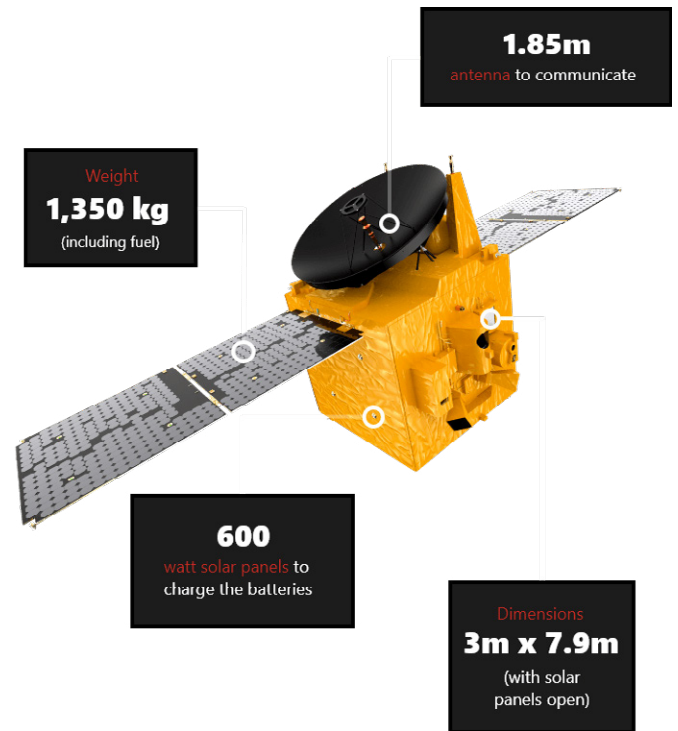
MBZ-Sat

Announced in October 2020, MBZ-Sat will be the second Earth observation satellite wholly designed and manufactured in the U.A.E. MBZ-Sat has advanced the localization of aerospace manufacturing in the region with over 90% of its mechanical structures and most of its electronic modules being manufactured by local companies. MBZ-Sat will be the most advanced commercial satellite in the region in the field of high-resolution satellite imagery and is slated to launch in January 2025 on a SpaceX rocket from the Vandenberg Space Base in California.

• **Emirates Mars Mission**

The Emirates Mars Mission (EMM), launched in July 2020, with the support of several U.S. academic institutions marked an historic milestone as it made the U.A.E. the fifth global entity to successfully reach Mars orbit. The Hope Probe embarked on a 307-million-mile journey over 7 months to Mars. There, the 2,970-pound probe, which is 24 feet wide and 9 feet tall when its solar panels are deployed, spent a Martian year (687 days) orbiting the planet from a large, oval-shaped high orbit varying from 12,400 miles to 27,000 miles above the surface.

The Hope Probe is providing a comprehensive understanding of the Martian atmosphere and climate, capturing data that will help scientists analyze the planet's weather dynamics and seasonal changes. The Emirates Mars Mission underscores the U.A.E.'s commitment to promoting international cooperation in science. The data collected by the Hope Probe is being shared with global researchers, broadening the collective understanding of Mars, and fostering partnerships with leading space agencies and academic institutions, including those in the United States.



Emirates Mars Mission

- **MARS2117**

MARS2117 is the U.A.E.'s project to establish the first inhabitable settlement on Mars by 2117. In order to accomplish this goal, the U.A.E. plans to develop capabilities in the fields of space science, research, AI, robotics, and advanced space technologies. As part of the preparatory phase of MARS2117, the MBRSC is building Mars Scientific City, a prototype in the U.A.E. desert designed to simulate the conditions of Mars. Mars Scientific City will include laboratories for research into food, water, and energy security. The U.A.E. is aiming to find solutions to the food, water, and energy challenges on Earth through the MARS2117 project.



His Highness Sheikh Mohamed bin Zayed and His Highness Sheikh Mohamed bin Rashid launch AED 500 million Mars Science City at U.A.E. Government Annual Meetings - Source: WAM.ae

- **Emirates Lunar Mission**

The Emirates Lunar Mission (ELM) is the U.A.E.'s national program for moon exploration. ELM's main component is the launch of a series of Emirati-crafted rovers called "Rashid." The first rover, Rashid 1, was launched successfully in 2022 but failed to land on the Moon. The U.A.E. is now attempting to launch a second Rashid Rover to the Moon in early 2026. Should the U.A.E. be successful in landing the Rashid Rover, the country would become just the fourth to land on the Moon and the first Arab country. The aim of the ELM is to make advances in space science research and explore areas of the moon that are unfamiliar to scientists. MBRSC also intends to link the ELM and Rashid Rover to Mars2117.



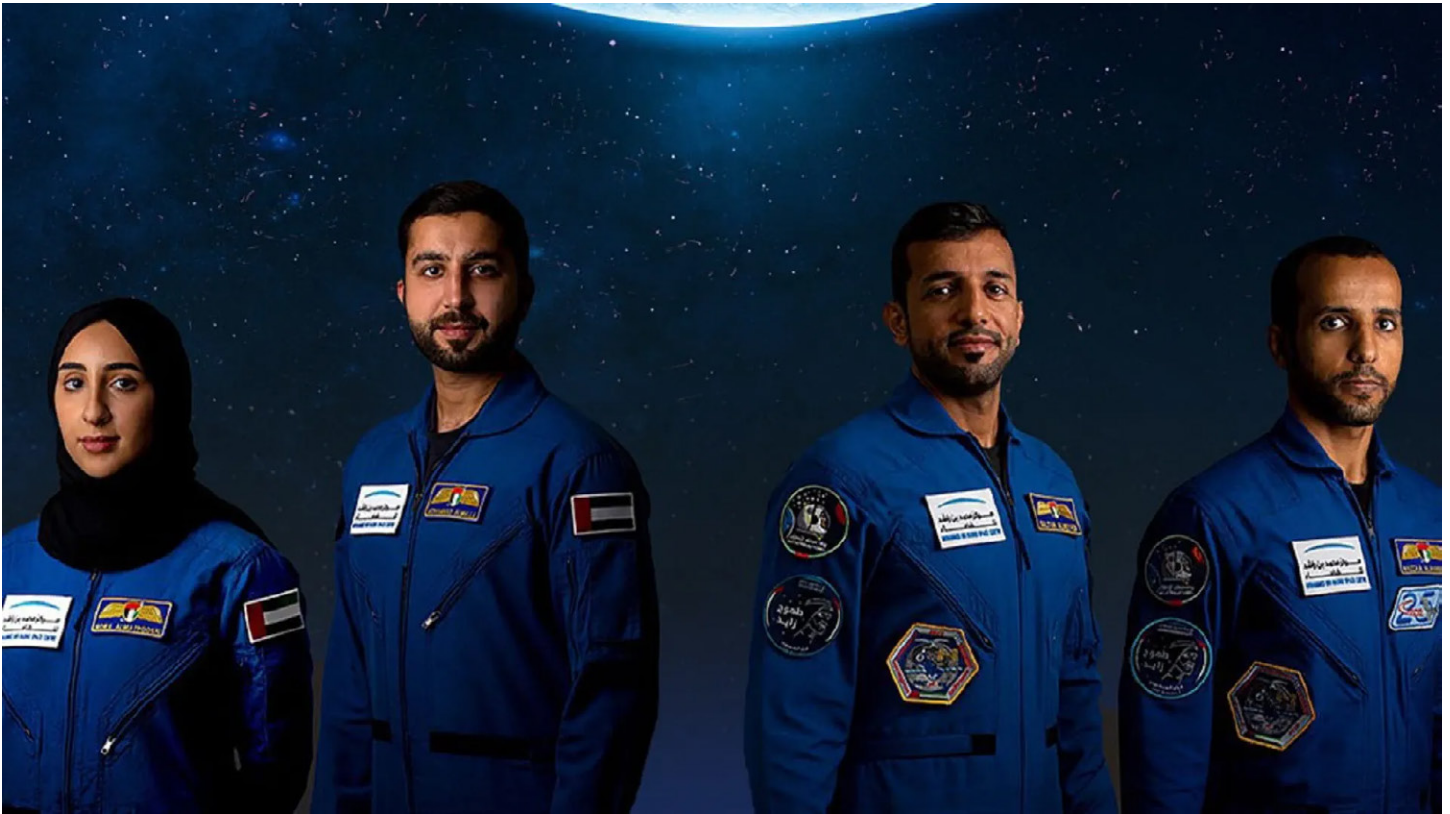
The first Rashid rover developed by MBRSC - Source: The National

According to the U.A.E. Space Agency, the Rashid Rover will conduct new exploration techniques which will help test the U.A.E.'s capabilities before embarking on manned missions to Mars.

- **U.A.E. Astronaut Program**

The U.A.E. Astronaut Program was initiated in 2017 with the goal of preparing an Emirati corps of astronauts for space missions, through the provision of necessary training, expertise, and qualifications. The objectives of the U.A.E. Astronaut Program include:

- Positioning the U.A.E. as an internationally recognized participant in human space flight
- Supporting the U.A.E.'s vision of a future dependent upon a knowledge-based economy
- Sending Emirati astronauts to space to carry out scientific missions
- Promoting a culture of scientific endeavor in the U.A.E. by inspiring new generations



(Left to Right) U.A.E. Astronaut Nora Al Matrooshi, U.A.E. Astronaut Mohammed Al Mulla, U.A.E. Astronaut Sultan Saif Al Neyadi, U.A.E. Astronaut Hazzaa Ali Al Mansoori

In 2018, H.E. Hazza Al Mansoori and H.E. Dr. Sultan Al Neyadi were selected to form the first batch of the U.A.E. Astronaut Program. On September 25, 2019, H.E. Hazza Al Mansoori, the first Emirati astronaut, carried out the first Emirati scientific mission on board the International Space Station (ISS). H.E. Al Mansoori carried out 31 scientific experiments during his time on the ISS, 15 of which involved schools in the U.A.E. as part of the MBRSC's Science in Space initiative.

In 2023 H.E. Dr. Sultan Al Neyadi became the first Emirati and first Arab to conduct a long duration mission on the ISS and also the first to conduct a spacewalk. H.E. Dr. Al Neyadi conducted over 200 scientific experiments during his six-month mission aboard the ISS. The research he conducted will help improve cardiac, respiratory, and immune system health during long space flights. Al Neyadi's research will also help improve health on earth, including growing protein crystals in microgravity to help researchers develop targeted treatments for diseases such as epilepsy, cardiac arrhythmias, and addiction, as well as 3D printing the first human tissue knee meniscus in space. H.E. Dr. Al Neyadi was a fixture on U.A.E. media during his mission, with a particular focus on inspiring students to consider STEM careers. He received a hero's welcome on his return to U.A.E. and was named U.A.E. Minister of Youth Affairs in January 2024.

In 2021, astronauts Nora Al Matrooshi and Mohammad Al Mulla were selected to form the second batch of the U.A.E. Astronaut Program. Nora Al Matrooshi is the first female Emirati and Arab astronaut and the first Arab woman to graduate from NASA's astronaut program. Both Nora and Mohammad are continuing their training in the United States.

U.A.E. Space Agency

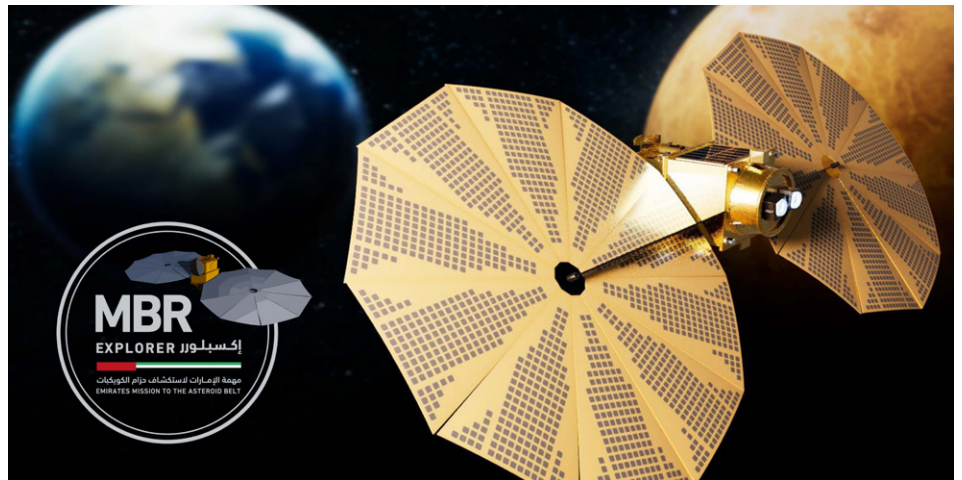


U.A.E. Space Agency in Abu Dhabi

The U.A.E. Space Agency was established by Federal Law by Decree No. 1 of 2014, with the aim of developing the U.A.E.'s national space sector. The agency is responsible for assisting academic programs, advancing national and regional space exploration, and investing in research, development, and commercial space projects as well as expanding international partnerships. The U.A.E. Space Agency partnered with the MBRSC on the Emirates Mars Mission.

- **Emirates Mission to the Asteroid Belt**

The Emirates Mission to the Asteroid Belt is scheduled for launch in 2028 as a follow up to the Emirates Mars Mission. This mission aims to study and analyze asteroids to gain insights into the early solar system and the building blocks of planetary formation. The spacecraft, named MBR Explorer, will arrive at Westerwald, a 1.4-mile-wide asteroid, in February 2030 and will continue to visit six other objects in the asteroid belt between Mars and Jupiter.



Emirates Mission to the Asteroid Belt

The U.A.E. Space Agency will work with the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado, Boulder on this mission. By collaborating with NASA and other international space organizations and educational institutions, the U.A.E. is leveraging advanced technologies and scientific expertise to ensure the mission's success.

In June 2023, as part of the Emirates Mission to the Asteroid Belt, the U.A.E. Space Agency launched its "Space Means Business" campaign geared towards generating private sector participation in the program, including from startup companies.

- **Abu Dhabi Space Debate**

The U.A.E. Space Agency is host of the Abu Dhabi Space Debate, a two-day conference aimed at fostering meaningful dialogue and collaboration to drive the growth of the new space economy. This event brings together officials from government, industry, and academia to address opportunities and challenges facing the space exploration sector. This year's iteration, the second edition of the conference, will take place from 10-11 December 2024 in Abu Dhabi.

U.A.E. Private Sector Players in Space

Key U.A.E. private sector companies in the space ecosystem include:



SPACE42: A new space technology company formally established in 2024 from a merger of Bayanat and Yahsat, and part of the G42 group of companies. The company is central to the U.A.E.'s aims to become a commercial leader in space through the deployment of AI. The new entity will offer a vertically integrated system that delivers geospatial analytics, including ownership in upstream and downstream infrastructure for remote sensing including satellite platforms.



Bayanat: Part of Space42, Bayanat is a provider of customized end-to-end geospatial intelligence products and services. The company has three core divisions: Artificial Intelligence Solutions, Smart Operations Solutions, and Smart Mobility Solutions. SPACE42 will leverage Bayanat's data acquisition capabilities which include satellite-based earth observation, synthetic aperture radar (SAR), and multi-spectrum imagery.



Yahsat: A satellite communications company and part of Space42. The company has five geostationary satellites that reach more than 80% of the world's population. Yahsat provides services in critical communications services including broadband, video broadcasting, backhauling, mobile voice, and data solutions.



EDGE Group: An advanced technology and defense conglomerate. The company has over 25 entities consolidated into five core clusters, one of which comprises Space & Cyber Technologies. **FADA**, a new entity of EDGE Group's space cluster, aims to accelerate the growth of the space sector in the U.A.E. by advancing the U.A.E.'s space capabilities, including satellite manufacturing in the U.A.E.

New Companies: As the U.A.E. space ecosystem has grown in the past few years, new commercial players have entered the market. One of the more significant commercial partnerships to emerge was the formation of **Orbitworks**, a U.A.E.-based satellite manufacturing company that specializes in developing advanced satellites. Orbitworks was formed through a joint venture of **Loft Orbital** and **Marlan Space**. Orbitworks aims to produce up to fifty 500 kg satellites annually. **Many new companies are focused on the intersection of AI and space** such as **Stellaria**, a geo-spatial solutions company founded in 2021. **Madari Space**, founded in 2023, is similarly focused on using AI to bolster space capabilities while also developing sustainable space technologies that reduce environmental impact. **Mira Aerospace**, now a subsidiary of Space42, is an Abu Dhabi-based aerospace company formed through a joint venture between U.S. firm **UAVOS** and Bayanat. The company specializes in High-Altitude Platform Station (HAPS) technology. **971Space and Sadeem Space Solutions** are new U.A.E. startups involved in spacecraft design and engineering for the Emirates Mission to the Asteroid Belt

U.A.E. Academic and Research Institutions in Space

Key U.A.E. Academic and Research Institutions in the space ecosystem include:



National Space Science & Technology Center (NSSTC): A research and development center. The center was established in 2016 by the United Arab Emirates University, the U.A.E. Space Agency, and the Telecommunications Regulatory Authority with the goal of promoting the U.A.E.'s national space vision. NSSTC incorporates multiple research units with the aim of innovative R&D in space science and technology while educating future U.A.E. space leaders.



Khalifa University Space Technology & Innovation Lab (KUSTIL): An educational laboratory and research center. KUSTIL aims to achieve the U.A.E.'s vision in the field of space exploration, technologies, and applications. It also hosts the Yahsat Space Lab, established to support the CubeSat programs at U.A.E. universities. The lab is the first of its kind in the region with the capability to design, build, and test small satellites up to 6U form factor.



NYU Abu Dhabi Center for Astrophysics and Space Science (CASS): An experimental physics lab. The center is composed of theorists, observers, and instrument builders dedicated to understanding the nature of the cosmos with research areas including sun and stellar physics, planetary science, galactic astrophysics, extragalactic astrophysics and cosmology, and astroparticle physics.



Sharjah Academy for Astronomy, Space Sciences, and Technology (SAASST): A research institution. SAASST aims to develop, promote, and contribute to education in astronomy and space sciences globally and the region. SAASST has seven fully functioning laboratories and houses the Sharjah Planetarium.



Technology Innovation Institute (TII): Abu Dhabi-based leading global advanced technology center that focuses on applied AI research. As part of TII, the Propulsion and Space Research Center (PSRC) drives research and education in the areas of propulsion and beyond Earth exploration.

U.S.-U.A.E. Collaboration in Space

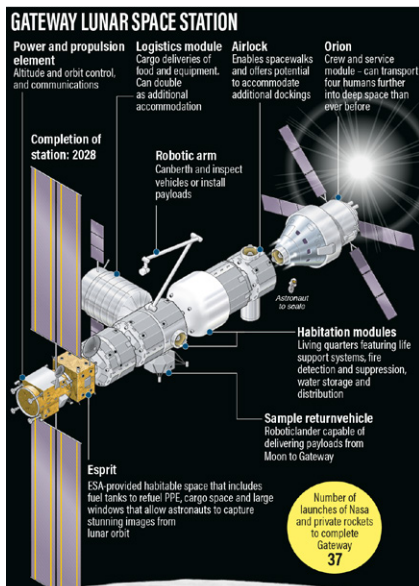


Artemis Accords

The U.A.E. is an original signatory to the Artemis Accords, a non-binding set of principles designed to guide civil space exploration and use in the 21st century. The Artemis Accords seek to promote peaceful, responsible, and productive cooperation in space affairs through initiatives like NASA's Artemis program. The Artemis Accords include the following key principles, among others:

- **Peaceful Exploration:** All activities conducted under the Artemis program must be for peaceful purposes
- **Transparency:** Artemis Accords signatories will conduct their activities in a transparent fashion to avoid confusion and conflicts
- **Interoperability:** Nations participating in the Artemis program will strive to support interoperable systems to enhance safety and sustainability

Crucially, the Artemis Accords also guide future cooperative activities in space. The Artemis Accords will help shape the future Moon and Mars missions planned for the next decade. The Artemis Accords will also provide opportunities for the private sector to contribute to space missions. Since the establishment of the Artemis Accords in 2020, nearly 50 countries have joined. This provides an opportunity for the U.A.E. to deepen its goals under the international cooperation pillar of the National Space Strategy.



Source: The National

Airlock on Lunar Gateway Space Station

Along with the Artemis Accords, one of the most significant U.S.-U.A.E. partnerships is the U.A.E.'s provision of the airlock to the NASA Gateway, humanity's first space station around the moon. In January 2024, NASA and the Mohammed Bin Rashid Space Centre announced that the MBRSC would provide the Crew and Science Airlock Module for NASA's Lunar Gateway Space Station, the first space station to orbit the Moon. The space station will provide essential support for long-term space exploration of the Moon through the Artemis Accords. The MBRSC will also provide engineering support for the life of the space station. U.S. private sector companies are actively competing to partner with the U.A.E. on this project.

Partnerships with U.S. Academic Institutions



The Emirates Mars Mission Hope Spacecraft prior to shipment to Dubai and the Tanegashima Launch site, with fully deployed solar panels and instruments visible (facing the floor) measuring nearly 5 meters across - Source: [LASP News](#)

The Emirates Mars Mission “Hope Probe” launched on July 20, 2020, on a journey to Mars and went into orbit in February 2021, making it one of only six active Mars probes. The MBRSC headed the design, development, and operations of the mission. The Hope Probe was built in the United States with “Knowledge Transfer partners” at three U.S. universities: the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado – Boulder, Arizona State University, and the University of California Berkeley. MBRSC also consulted with NASA when designing the Emirates Mars Mission.

The U.A.E. Space Agency is projected to launch its Emirates Mission to the Asteroid Belt in May 2028. This mission is being led in collaboration with the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado – Boulder, Arizona State University, Northern Arizona University, and Malin Space Science Systems in San Diego.



New York University (NYU) Abu Dhabi is supportive of the U.A.E. space program including both the EMM and EMA missions. In 2017, the U.A.E. Space Agency signed an MOU with NYU Abu Dhabi to support the space sector through collaboration in space science, education, research, technology, and applications. Subsequently, NYU Abu Dhabi built a data center for archiving and processing scientific datasets obtained during space missions and launched the NYUAD Astronomy Camp. NYU Abu Dhabi faculty participated in the development of the Rashid Rover’s instruments and relevant data processing procedures. For the EMM, NYU Abu Dhabi provides mapping and imaging services, such as producing the world’s first ever Mars Atlas in Arabic.

STEM Education and Training



U.A.E. Women Take the Lead in STEM - Source: USA UAE Untied

The U.A.E. is committed to international cooperation in space exploration and STEM education for Emirati youth. Organizations such as the **AI Worden Endeavor Scholarship Foundation** and **U.A.E. Solar Space youth initiative** provide opportunities for U.A.E. students to attend space camp in the United States. These programs inspire students to pursue STEM education and careers in space and empower future generations of Emirati and American youth. The AI Worden Endeavor program, run by Kallman Worldwide, offers Emirati students the chance to attend a week-long space camp in Huntsville, Alabama. During the immersive space camp, U.A.E. students participate in hands-on workshops and astronaut-like training sessions. Similarly, the U.A.E.'s Solar Space Youth Initiative focuses on engaging and empowering Emirati youth in the space sector, providing platforms for Emirati students to participate in projects, develop skills, and collaborate with experts in space-related fields. These educational programs not only help expand interest in space science amongst youth, but there is also a business case. Endeavor and Solar Space Youth Initiative students gain critical skills needed for employment in the space sector.

U.S. industry has long collaborated with the U.A.E. on space exploration education. **Boeing** has established partnerships with Khalifa University to support aerospace engineering education, as well as helping build and operate the Thuraya-3. **Lockheed Martin** established an internship program at the U.A.E.'s Center for Innovation and Security Solutions focused on space sciences, which has graduated



His Highness Sheikh Mohamed bin Zayed meets with Emirati students and NASA graduates in Washington Source: WAM

200 Emirati students over seven years. In 2016, Lockheed Martin signed an MoU with the U.A.E. Space Agency to launch a comprehensive dual-track space training program for students and early career professionals in space fundamentals.

During the U.S. visit of His Highness Sheikh Mohamed bin Zayed Al Nahyan, the U.A.E. Embassy in Washington D.C. arranged a meeting with Emirati STEM students and U.A.E. graduates of NASA's astronaut training program. The U.A.E. Embassy and H.E. Ambassador Yousef Al Otaiba continue to promote opportunities for young Emirati students to get involved in space. **Private companies, such as Redwire, are also interested in space camps** as a way to grow the talent pipeline in the space business ecosystem. **Sierra Space**, Amazon, **Jacobs**, and **L3Harris** are industry partners on a White House-led coalition focusing on the space industry's capacity to meet the rising demand for a skilled technical workforce.

U.S.-U.A.E. Private Sector Collaboration and Opportunities



The U.A.E.'s growing space sector and adjacent industries such as satellite communications, Earth observation, robotics, and AI offer numerous opportunities for U.S.-U.A.E. private sector collaboration. The National Space Strategy 2030 also recognizes that developing the space industry benefits the country's energy, technology, manufacturing, and healthcare verticals. The Joint Leaders Statement published during the visit of His Highness Sheikh Mohamed bin Zayed Al Nahyan identified space as a priority sector in the geo-economic relationship; commercial opportunities will flow from government-to-government cooperation and new capital investment. Whereas space exploration was once driven by national space agencies, almost all space exploration is done today with the support of the private sector. National space agencies, including NASA and the U.A.E. Space Agency, form commercial partnerships with private entities to build the rovers, shuttles, and probes necessary for space exploration missions. According to a report from Bank of America, the space economy will continue to grow due to record private investment, while Morgan Stanley estimates that the global space industry could generate revenue of more than \$1 trillion or more in 2040.

The U.A.E. partners with **Boeing**, **Northrop Grumman**, and **RTX** on satellite communications, monitoring capabilities, and technical expertise related to the space program. **Thuraya** is a long-standing partner of Boeing and operates 3 Boeing 702 satellites. U.S. companies **Planet Labs** and **Maxar Technologies** work with the U.A.E. Space Agency on Earth observation systems. In 2023, Planet Labs announced a partnership with the U.A.E. Space Agency to build a satellite data-driven atlas of regional climate loss and damage. The project aims to provide countries facing significant climate risk with data to help build climate resilience through policy decisions and financial programs. Maxar Technologies provides high-resolution imagery products and services for the U.A.E.

H.E. Dr. Al Neyadi supported preparations for the deployment of the sixth **Redwire**-built Roll-Out Solar Array on the International Space Station during his spacewalk in April 2023. He also assisted in the successful bioprinting of the first human knee meniscus in space using Redwire's BioFabrication Facility—a significant milestone for human health research.

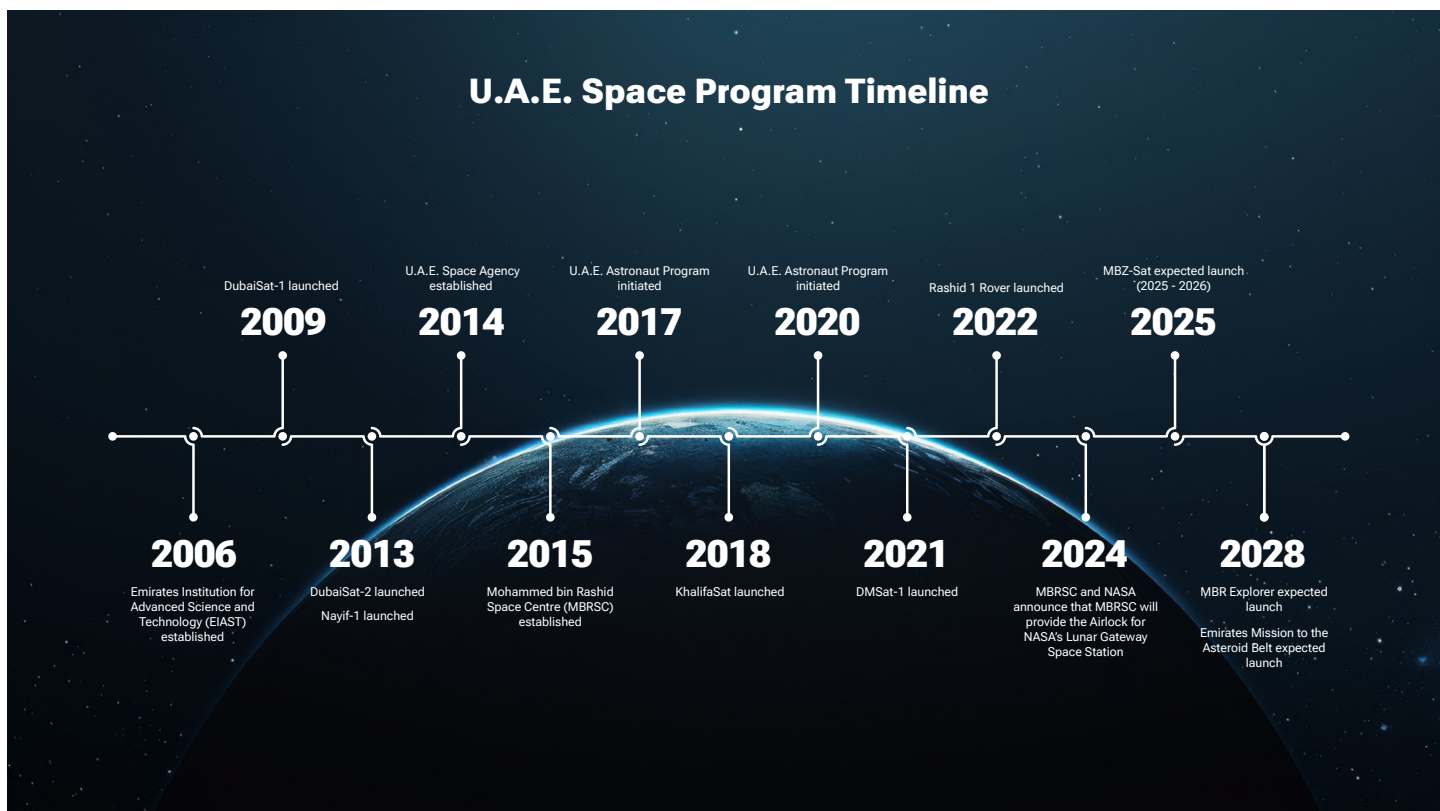
Crew-6, which included H.E. Dr. Sultan Al Neyadi, was launched into space on a **SpaceX** rocket. SpaceX has partnered with the U.A.E. to launch multiple satellites in the United States. In addition to SpaceX, the U.A.E. also partners with technology leaders such as Amazon Web Services (AWS) and smaller U.S.-based startups for data storage and satellite services.

Space tourism is another key area of collaboration as the U.A.E. has signed a Memorandum of Understanding (MoU) with **Virgin Galactic**, a British-American company, for future space tourism flights. Abu Dhabi is increasingly viewed as a strong marketplace for luxury space travel. In 2021, the U.A.E. entered into a space tourism partnership with **Amazon's Blue Origin**. The U.A.E. has also collaborated with SpaceX on conventional launch services. **SpaceX** launched the Al Yah 4 and Al Yah 5 satellites and could play a key future role as the U.A.E. ramps up its space exploration missions in the next decade. Finally, the U.A.E. has collaborated with SpaceX's Starlink service.

Space mining is another potential area for U.S.-U.A.E. commercial collaboration. Space, or asteroid mining, is still in its infancy but many scientists believe that asteroids hold valuable metals and minerals such as palladium, iron, nickel, and platinum. The U.A.E. Space Law grants permits for space activities like mining and extraction, and the regulation gives operators ownership rights over the resources. Private companies are therefore looking to invest and explore opportunities in this sector, including U.S.-based SpaceTIS, an asteroid mining company that established a U.A.E. branch in Sharjah.

In 2023, the U.A.E. launched the "Space Means Business" campaign to marshal private sector investment, including from U.S. companies, into its space sector. This initiative highlights business opportunities open to Emirati and international companies in the U.A.E. space sector, particularly in the Emirates Mission to the Asteroid Belt (EMA) project. **The U.A.E. Space Agency has pledged to award at least half of the EMA's total contractual mission to private sector businesses.** Space Means Business also includes outreach to start-up companies in addition to established industry players.

Overall, the space sector is a promising vertical for U.S.-U.A.E. commercial collaboration. Given the strategic nature of this sector and the linkages to advanced technology and AI, expect commercial opportunities to grow. Government-to-government cooperation and vehicles such as the Artemis Accords provide platforms for private sector engagement. U.S. private sector companies are able to engage with the U.A.E. space sector on not just space exploration itself, but also related services such as data storage, telecommunications, satellites, launch services, and Earth observation.



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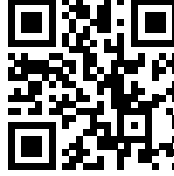
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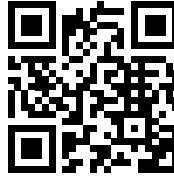
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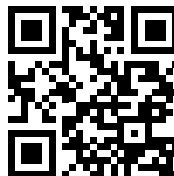
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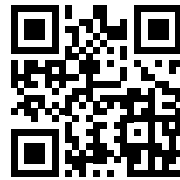
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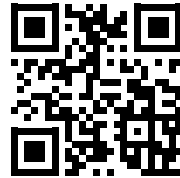
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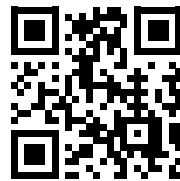


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