

# Satellite Industry in the GCC

# Foreword

The satellite Industry is an essential tool for the GCC region due to its unique geographical and economic characteristics. With vast expanses of desert and harsh climate, the region faces significant challenges in areas such as agriculture, infrastructure development, and disaster management. Satellites provide a reliable means of monitoring and managing these challenges, by offering real-time data and imagery that can be used to plan and execute effective solutions. Moreover, the GCC countries are the biggest exporters of oil and gas, which require robust communication and navigation infrastructure to operate efficiently. Satellites play a crucial role in facilitating communication and navigation in the region, enabling reliable and efficient transportation of goods and services.

The GCC countries have ambitious plans to develop a thriving SpaceTech industry, with a focus on satellite manufacturing and launch services. Satellites will therefore be critical to the success of this vision, providing the necessary infrastructure for a wide range of applications, including communications, remote sensing, and scientific research. Overall, satellites are essential to the economic and social development of the GCC region, enabling greater connectivity, efficiency, and resilience in a rapidly changing global landscape.

This report is an attempt to provide a landscape (history, main players, purposes and applications) of the Satellite Industry developed by the GCC countries.

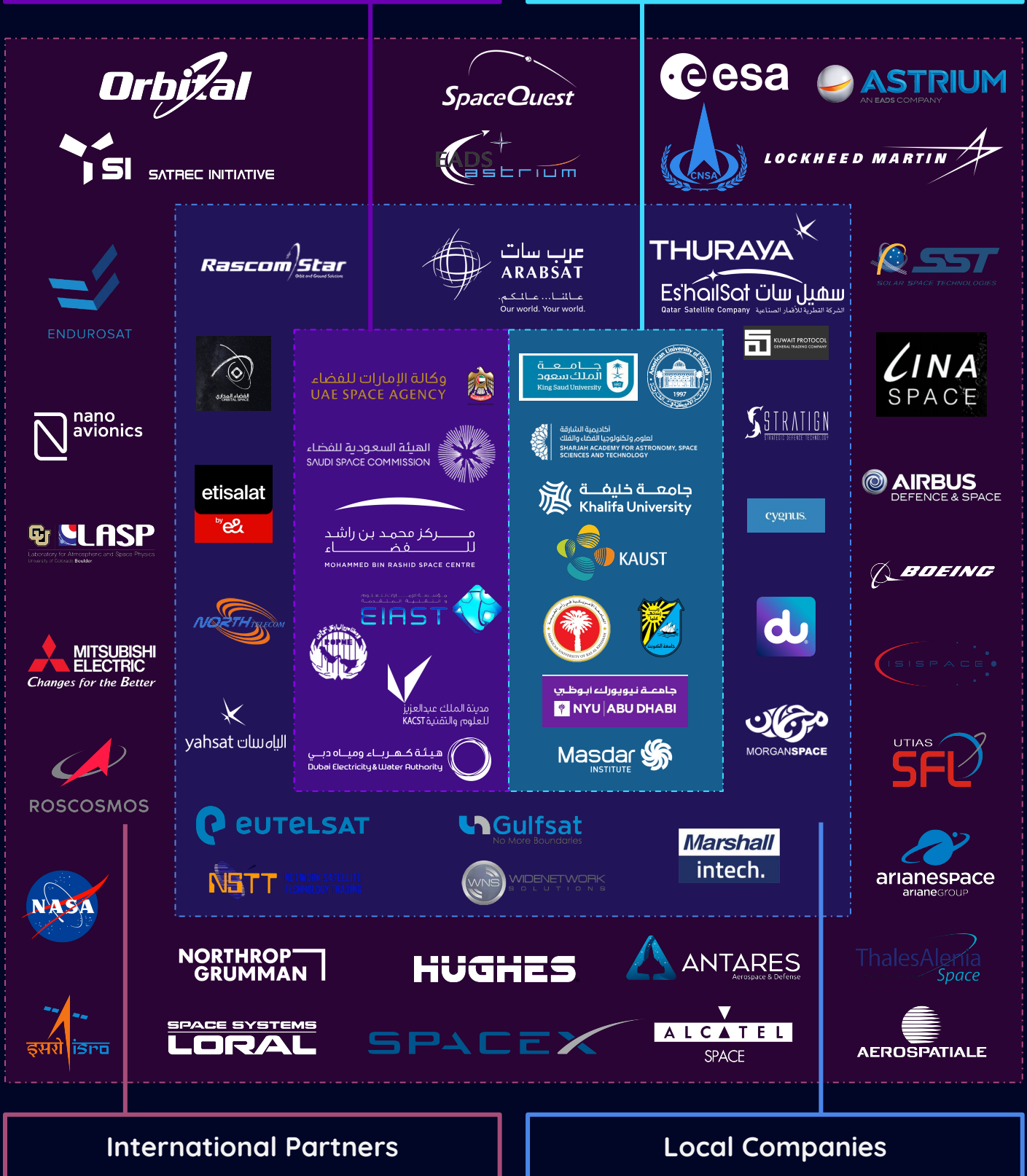


**Spacetech in Gulf** is a specialized advisory firm that provides strategic guidance and support to companies operating in the spacetech industry. With a particular focus on the GCC region, the company offers expertise and insights into the unique challenges and opportunities that exist within this 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.

# Satellite Industry Landscape

## Government Entities

## Universities





# Introduction

The satellite industry has been a key focus of the Gulf Cooperation Council (GCC) countries for several years now. This report aims to provide an analysis of the satellite industry in the GCC, with a focus on the history, main trends, and regional cooperation in the sector. The report is based on the data from about 60 satellites launched by the GCC countries. It includes an analysis of the types of satellites by

application, their detailed description, launch vehicles, actors (both regional and international, private and government) involved in the production. The report also provides trends and recommendations.

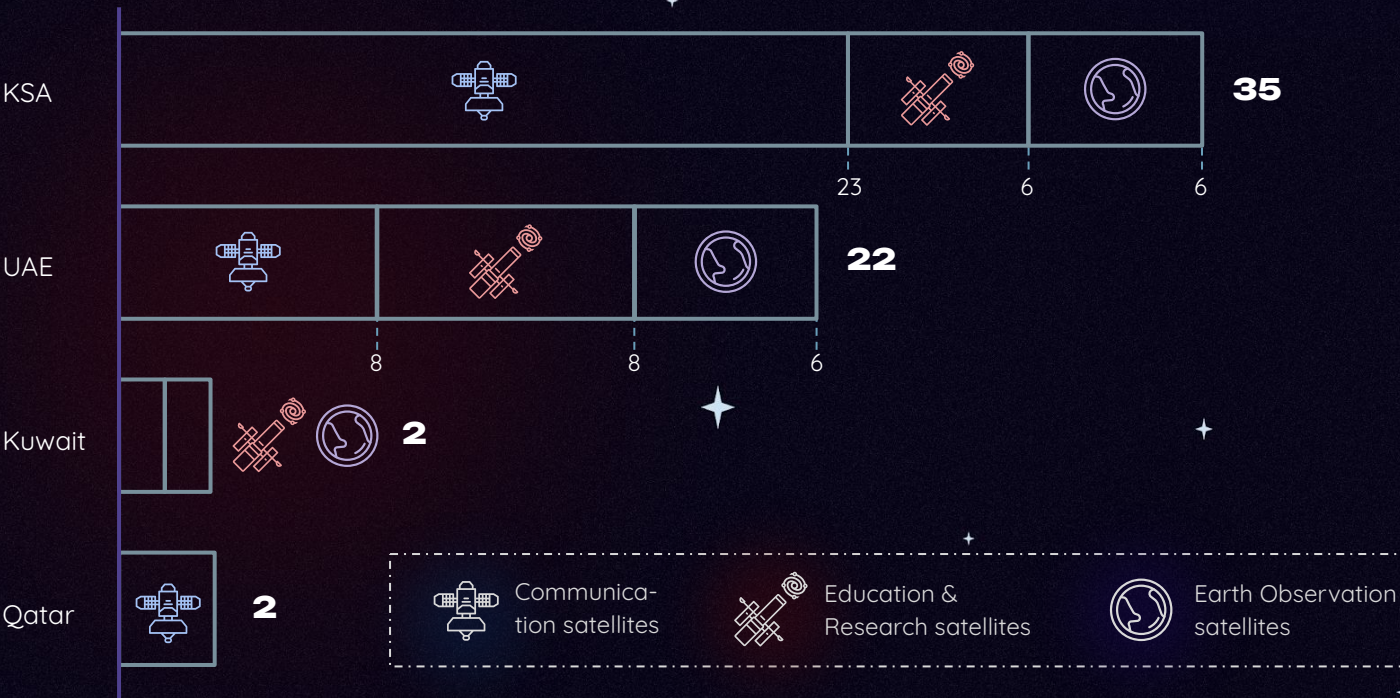
The data presented in the report highlights the GCC's keen interest in developing communication infrastructure, research capabilities, and environmental monitoring.

It also demonstrates the GCC countries' willingness to collaborate with international organizations and other countries to leverage expertise and technology to achieve their goals. Finally, the report proposes a possible direction for regional cooperation that could further boost the development of the satellite industry in the GCC.

## Satellite Industry Overview in the GCC region

The satellite industry in the GCC region has been developing rapidly over the past few years, driven by a growing interest in space exploration and a desire to leverage space technology to address various challenges faced by the region. The GCC countries, including the Kingdom of Saudi Arabia, the United Arab Emirates, Kuwait, Qatar and Bahrain, have invested heavily in the development of space technology, including the launch of various types of satellites.

## Number of Satellites by Countries





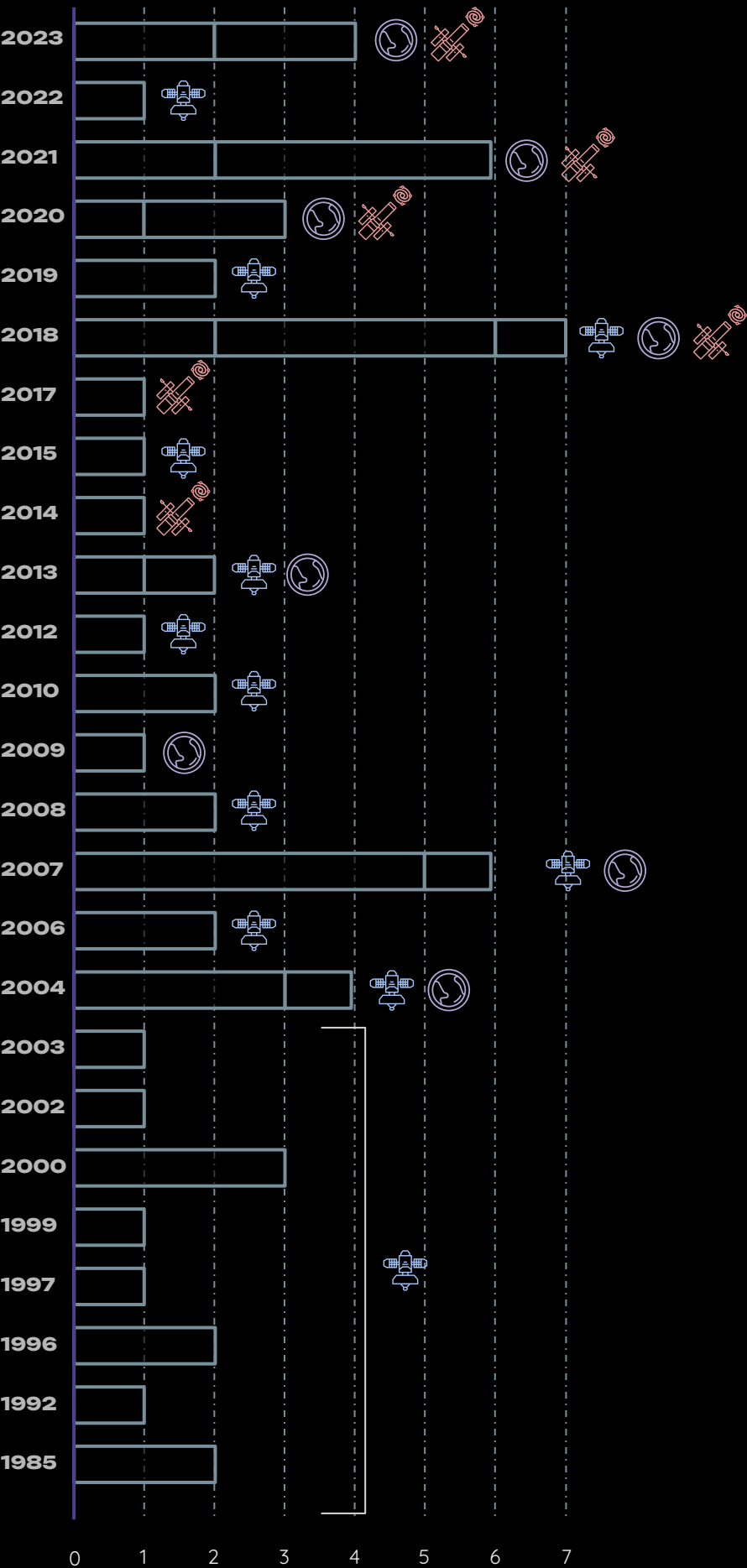
One of the key trends in the satellite industry in the GCC region is the increasing number of satellites launched for a range of applications, including Earth observation, communication, and educational and research purposes. The number of satellites launched by the GCC countries has been increasing in recent years as shown in the bar chart attached.

Moreover, the GCC countries have established partnerships with international space agencies, such as the European Space Agency (ESA), National Aeronautics and Space Administration (NASA), and the Russian Space Agency (Roscosmos). These partnerships have enabled the GCC countries to leverage the expertise of these agencies and gain access to cutting-edge space technology.

Regional cooperation is another notable trend in the satellite industry in the GCC region. One example of regional cooperation is the Light-1 Emirati-Bahraini project focused on measuring particles above thunderstorms. The project is a joint initiative between the UAE and Bahrain and involves the launch of a cubesat, which will collect data on lightning activity and help advance the understanding of lightning-related phenomena.

In conclusion, the satellite industry in the GCC region has been growing rapidly in recent years, with a focus on launching satellites for various applications, collaborating with international space agencies, and engaging in regional cooperation. With continued investment and focus on space technology, the GCC countries are well-positioned to become major players in the global space industry.

Number of Satellites by Application



# Satellites by application

The Communications satellite application has dominated the satellite industry in the GCC region over the past years, with more than 30 satellites launched to date. This highlights the increasing demand for advanced communication systems in the region, which can improve connectivity and facilitate communication across different sectors, including government, defense, and business.

The Earth Observation satellite application has also seen considerable growth over the past years, with 13 satellites launched to date. These satellites are primarily used to collect data on the Earth's surface and atmosphere, providing valuable insights into environmental changes, natural resource management, and disaster response planning.

The Educational & Research satellite application has been less dominant than the other two categories, with around 10 satellites launched to date. These satellites are primarily designed to support scientific research and education initiatives in the region.

Overall, the satellite industry in the GCC region has experienced significant growth and development over the past few decades. The focus has been primarily on Communications, Earth Observation, and Educational & Research satellites. There has been a notable spike in the number of launches in 2018, indicating that the GCC region is increasingly investing in space technology to improve its communication infrastructure, environmental monitoring, and scientific research capabilities.

## All Satellites



**65.7%**

**Communica-  
tions satellite**



**17.1%**

**Educational &  
Research satellite**



**17.1%**

**Earth  
Observation**

The Gulf Cooperation Council countries have been collaborating with various countries in the production of satellites, as well as in utilizing international launch vehicles to launch their satellites into orbit. Some of the countries that have collaborated with GCC countries in the satellite industry include the United States, South Korea, France, Lithuania, Canada, and the Netherlands.

The United States has been the most significant partner in satellite production with GCC countries, with more around 15 collaborations. This includes the partnership between the UAE and US-based Universities (University of Colorado Boulder, Arizona State University, University of California, Berkeley) to develop and launch the Emirates Mars Mission in 2020. The mission involved the launch of the Hope probe, which is designed to study the Martian atmosphere and climate.

South Korea has also been a significant partner in the satellite industry with GCC countries, with a total of six collaborations. In 2018, the UAE partnered with South Korea to launch the KhalifaSat satellite, which was designed and built by the UAE's Mohammed Bin Rashid Space Centre. The satellite is used for remote sensing and Earth observation applications.

Germany collaborated with GCC countries on 4 satellite projects. In 2021, the UAE launched the Falcon Eye-2 satellite in partnership with Germany's Airbus Defense and Space. The satellite is used for surveillance and reconnaissance purposes.

Additionally, GCC countries have utilized international launch vehicles to launch their satellites into orbit. Russia has been the most popular choice, with 19 launches (including 9 Dnepr rockets). The United States and the European Space Agency (ESA) have each been used 11 and 13 times accordingly. Ukrainian Zenit were used 3 times. Japan and India have each been used once, while China has been used twice.

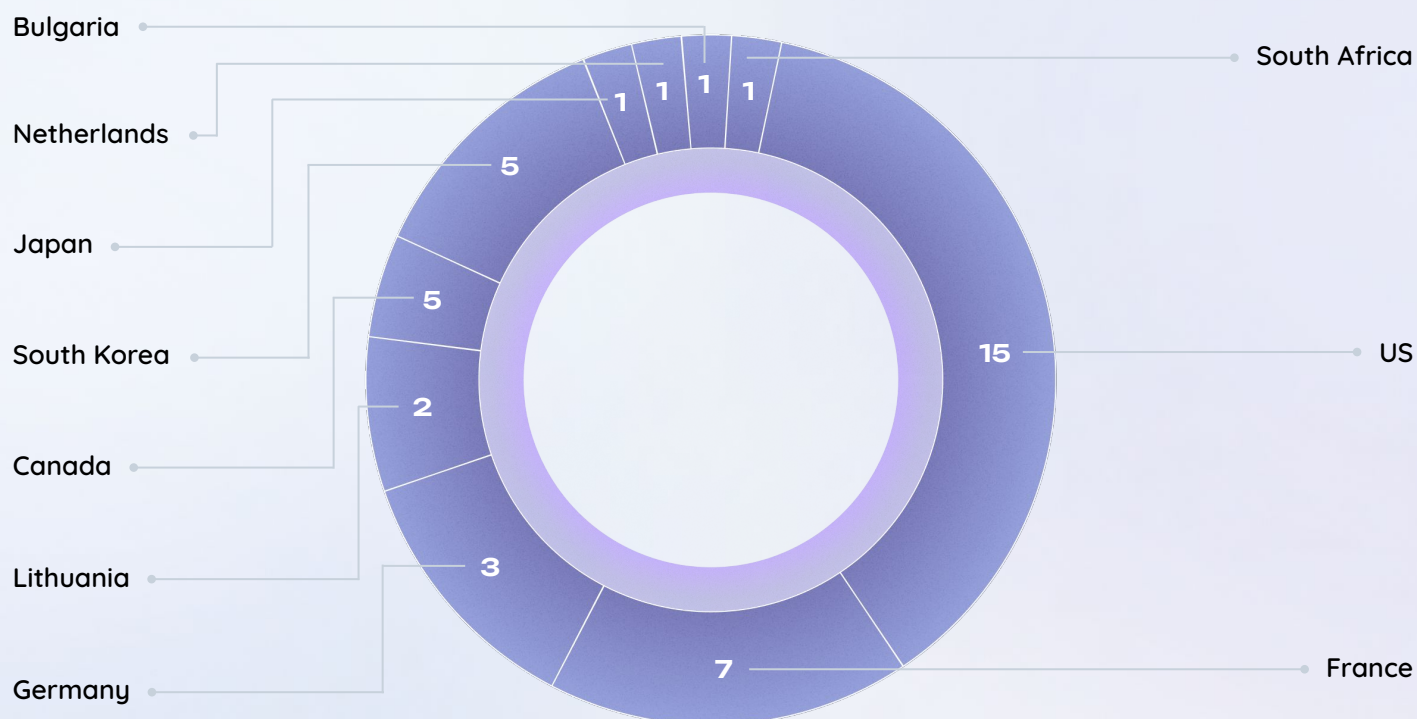
In conclusion, international cooperation has played a crucial role in the growth of the satellite industry in the GCC region. Collaboration with countries such as the United States, Germany, South Korea, France, Lithuania, Canada, Bulgaria and the Netherlands has enabled GCC countries to develop and launch their own satellites, as well as to enhance their capabilities in space. Additionally, the utilization of international launch vehicles has allowed GCC countries to effectively and efficiently launch their satellites into orbit.



# Satellite Industry in Gulf Region

## International Cooperation

**International cooperation / Countries assisted in Satellite production (by number of cases)**



## Launch Vehicles used for the GCC's Satellites delivery





## Satellite Industry Cooperation in the Gulf Region

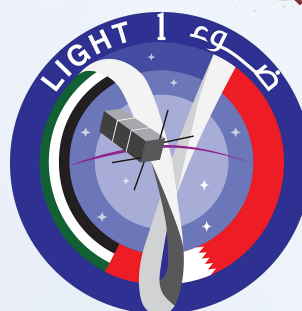
Light-1 is a collaborative satellite project between the United Arab Emirates (UAE) and Bahrain, aimed at measuring charged particles above thunderstorms. The satellite is designed to study the physical mechanisms behind lightning and thunderstorms and their effects on the Earth's atmosphere.

The satellite was launched in 2021, aboard a Falcon 9 rocket. The satellite was developed by the UAE's Mohammed Bin Rashid Space Centre and Bahrain's National Space Science Agency. It is equipped with a detector that measures gamma rays produced by lightning strikes, which can provide valuable information about the electrical and magnetic fields in the Earth's atmosphere.

The data collected by Light-1 will help scientists better understand the impact of lightning on the Earth's environment, including its effect on climate change, weather patterns, and the formation of the ozone layer. The satellite is also expected to provide valuable insights into the physical mechanisms behind lightning, which are still not fully understood.

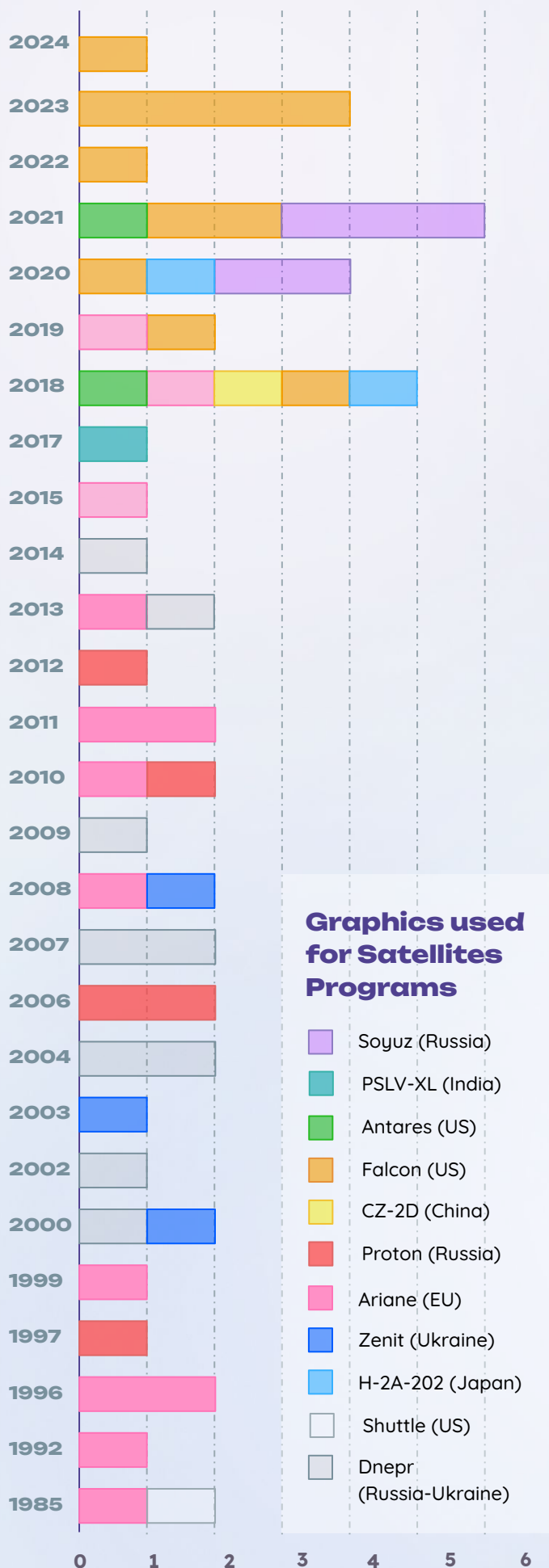
Overall, Light-1 represents a significant collaboration between the UAE and Bahrain in the field of space exploration and scientific research. The satellite is expected to make a significant contribution to our understanding of lightning and thunderstorms, and its impact on the Earth's atmosphere.

جامعة نيويورك أبوظبي  
NYU | ABU DHABI



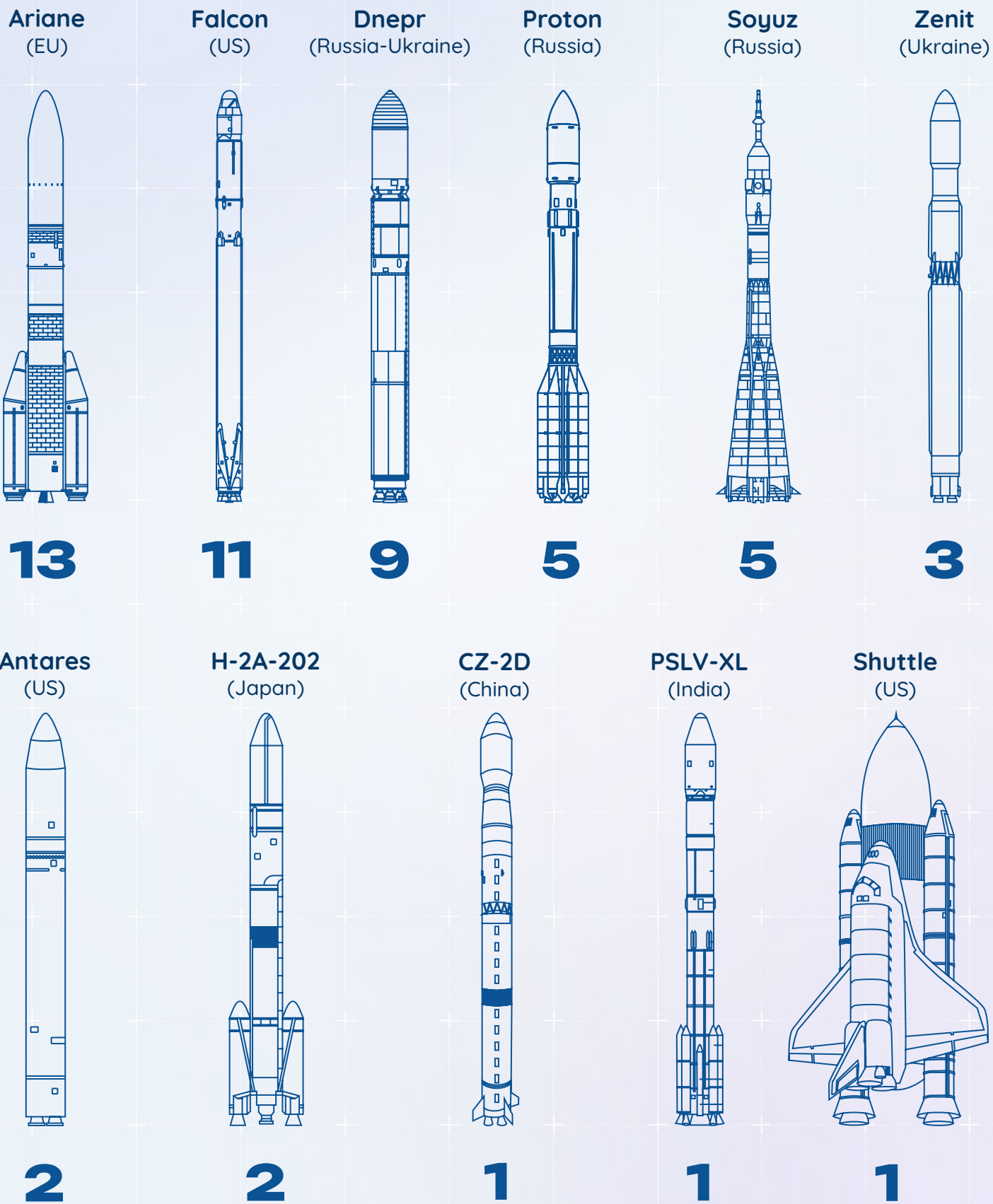
جامعة خليفة  
Khalifa University

وكالة الإمارات للفضاء  
UAE SPACE AGENCY





# Launch Vehicles Used for Satellite Programs by the GCC Countries (1985-2023+)





# **The Satellite Industry In Saudi Arabia**



# The Satellite Industry in Saudi Arabia

The Kingdom of Saudi Arabia (KSA) has been investing heavily in the satellite industry in recent years, with a focus on applications such as communications, education and research, and Earth observation. The country has launched around 35 satellites for these purposes, and has utilized a variety of launch vehicles from different countries.

Communications is one of the key applications of satellites in KSA, with 23 communications satellites launched. These satellites are used for a range of purposes, including telecommunications, broadcasting, and remote sensing. The most recent communications satellite launched by KSA is the Arabsat 6A, which was launched in 2019 on the US Falcon-Heavy rocket.

KSA has also launched 6 educational and research satellites, including the SaudiSat-4, which was launched in 2014 on a Russian-Ukrainian Dnepr rocket. This satellite provides hands-on experience to Saudi students in the field of space technology.

Earth observation is another key application of satellites in KSA, with a total of 5 Earth observation satellites launched.

## Satellites by application

**65.7%**

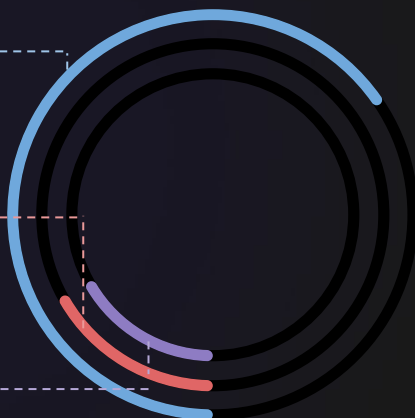
Communications satellite

**17.1%**

Educational & Research satellite

**17.1%**

Earth Observation



## Launch Vehicles

**38.5%**

Ariane (EU)

**26.9%**

Dnepr (Russia-Ukraine)

**15.4%**

Proton (Russia)

**7.7%**

Soyuz (Russia)

**3.8%**

Shuttle (US)

**3.8%**

Falcon (US)

**3.8%**

CZ-2D (China)



These satellites are used for environmental monitoring, disaster management, and other related purposes. The most recent Earth observation satellite launched by KSA is the ShaheenSat, which was launched in 2021 on a Soyuz-2-1a Fregat. This satellite is designed to provide high-resolution imagery for a range of applications, including vessel tracking.

In terms of launch vehicles, KSA has utilized a variety of rockets from different countries, including China, Russia, the United States, and the European Space Agency (ESA). The most frequently used launch vehicles by KSA include the Dnepr rocket from Russian-Ukrainian consortium, which has been used seven times, and the Ariane rocket, which has been used 10 times. KSA has also utilized the Soyuz rocket from Russia twice, and the Proton rocket from Russia 4 times.

Overall, the satellite industry in KSA is rapidly expanding, with a focus on a range of applications, including communications, education and research, and earth observation. The country has utilized launch vehicles from various countries to achieve its space exploration goals. As KSA continues to invest in its satellite industry, it is expected to play an increasingly important role in the field of space technology and exploration.

# The Satellite Industry in Saudi Arabia

## Main Actors (Local and International Partners)

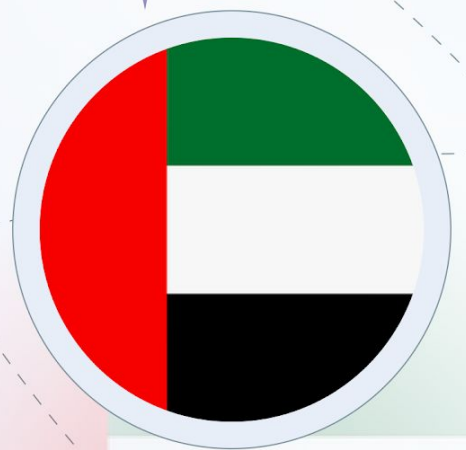
Local Agents	Satellite Name	International Partners
 <b>عرب سات</b> <b>ARABSAT</b> عالمنا... عالمكم. Our world. Your world.	Arabsat 1B	        
	Arabsat 2C	
	Arabsat 4A	
	Arabsat 4B	
	Arabsat 5B	
	Arabsat 6A	
	Arabsat 1A	
	Arabsat 1C	
	Arabsat 2A	
	Arabsat 2B	
	Arabsat 3A (Badr 3)	
	Arabsat 4AR	
	Arabsat 5A	
	Arabsat 5C	
	Arabsat 6B	
 مدينة الملك عبدالعزيز للعلوم والتقنية KACST	SaudiComsat 1-2	   
	SaudiComsat 3-7	
	SaudiSat 1A - 1B	
	SaudiSat 1C	
	SaudiSat 2	
	SaudiSat-3	
	SaudiSat-4	
	SaudiSat-5A - 5B	
 جامعة الملك سعود King Saud University	Saudi communications satellite SGS-1	
	ShaheenSat / Najim 1	
	Shaheen Sat 17 / CubeSat	



## Satellites launched by the KSA

Satellite Name	Purpose	Mass	Orbit	Launch Vehicle	Date
Cubesat	Earth Observation	1 kg	Low orbit	Falcon (US)	2023
ShaheenSat / Najim 1	Earth Observation	75 kg	Low orbit	Soyuz (Russia)	2021
Shaheen Sat 17 / CubeSat	Education & Research satellite	1 kg	Low orbit	Soyuz (Russia)	2021
Saudi communications satellite SGS-1	Communications satellite	6495 kg	GEO	Ariane (EU)	2019
Arabsat 6A	Communications satellite	6465 kg	GEO	Falcon (US)	2019
SaudiSat-5A - 5B	Earth Observation	425 kg	Low orbit	CZ-2D (China)	2018
Arabsat 6B	Communications satellite	6465 kg	GEO	Ariane (EU)	2015
SaudiSat-4	Education & Research satellite	100 kg	Low orbit	Dnepr (Russia-Ukraine)	2014
Arabsat 5C	Communications satellite	4630	GEO	Ariane (EU)	2011
Arabsat 5A	Communications satellite	4939	GEO	Ariane (EU)	2010
Arabsat 5B	Communications satellite	5420	GEO	Proton (Russia)	2010
Arabsat 4AR	Communications satellite	3400	GEO	Ariane (EU)	2008
SaudiSat-3	Earth Observation	200 kg	Low orbit	Dnepr (Russia-Ukraine)	2007
SaudiComsat 3-7	Communications satellite	12 kg	Low orbit	Dnepr (Russia-Ukraine)	2007
Arabsat 4A	Communications satellite	3350	GEO	Proton (Russia)	2006
Arabsat 4B	Communications satellite	3300	GEO	Proton (Russia)	2006
SaudiSat 2	Education & Research satellite	35 kg	Low orbit	Dnepr (Russia-Ukraine)	2004
SaudiComsat 1-2	Communications satellite	12 kg	Low orbit	Dnepr (Russia-Ukraine)	2004
SaudiSat 1C	Education & Research satellite	10 kg	Low orbit	Dnepr (Russia-Ukraine)	2002
SaudiSat 1A - 1B	Education & Research satellite	10 kg	Low orbit	Dnepr (Russia-Ukraine)	2000
Arabsat 3A (Badr 3)	Communications satellite	2708	GEO	Ariane (EU)	1999
Arabsat 2C	Communications satellite		GEO	Proton-K Blok-DM3	1997
Arabsat 2A	Communications satellite	2500	GEO	Ariane (EU)	1996
Arabsat 2B	Communications satellite	2500	GEO	Ariane (EU)	1996
Arabsat 1C	Communications satellite	1360	GEO	Ariane (EU)	1992
Arabsat 1A	Communications satellite	1170	GEO	Ariane (EU)	1985
Arabsat 1B	Communications satellite	1270	GEO	Shuttle (US)	1985

# **The Satellite Industry in United Arab Emirates**





# The Satellite Industry in United Arab Emirates

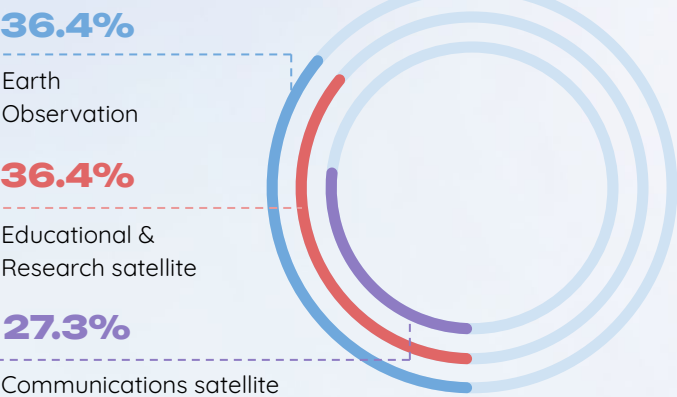
The United Arab Emirates (UAE) has made significant strides in the satellite industry in recent years, with a focus on developing its capabilities in communications, education and research, and Earth observation. The country has a number of main agencies and universities that are actively involved in satellite development, as well as a range of launch vehicles that have been used to launch its satellites into orbit.

The main agencies involved in the satellite industry in the UAE include the UAE Space Agency, Mohammed bin Rashid Space Centre, and the Yahsat Space Lab. These agencies work on a range of projects, including the development of satellites, the establishment of satellite infrastructure, and the promotion of space exploration and technology.

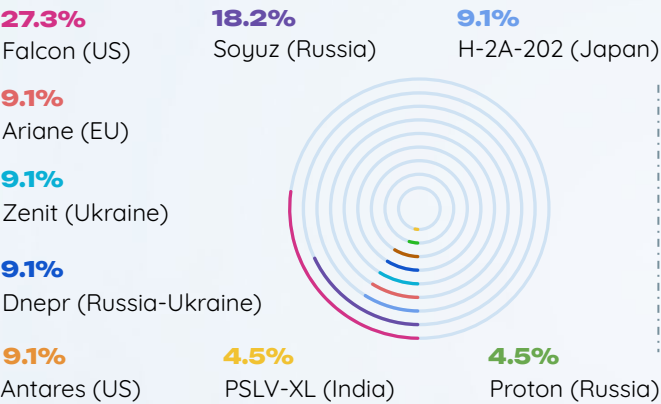
In addition to these agencies, a number of universities in the UAE are also involved in satellite development, including the University of Sharjah, Khalifa University of Science and Technology, American University of Sharjah, and the Emirates Institution for Advanced Science and Technology. These universities are focused on developing the skills and knowledge of the next generation of space scientists and engineers, and are working on a range of projects related to satellite technology.

The UAE has launched more than 20 satellites for a range of applications, including communications satellites, educational and research satellites, and Earth observation satellites.

## Satellites by application



## Launch Vehicles



The most recent communication satellite launched by the UAE is the Yahsat 1C, which was launched in 2018 on an Ariane rocket. This satellite is designed to provide high-speed broadband internet services to users in the UAE and other countries in the Middle East and Africa.

The UAE has also launched a number of educational and research satellites. These satellites are designed to provide hands-on experience to UAE students in the field of space technology, and have been used for a range of applications, including environmental monitoring and disaster management.

In terms of launch vehicles, the UAE has utilized a range of rockets from different countries, including the United States, Russia, Japan, India, China, and the European Space Agency (ESA). The most frequently used launch vehicles by the UAE include the Falcon rocket from the United States, which has been used six times, and the Soyuz rocket from Russia, which has been used four times. The UAE has also utilized the Ariane rocket, and the Antares rocket from the United States twice.

Overall, the satellite industry in the UAE is growing rapidly, with a focus on developing its capabilities in communications, education and research, and Earth observation. As the UAE continues to invest in its satellite industry, it is expected to play an increasingly important role in the field of space technology and exploration in the Middle East and beyond.

## The Satellite Industry in the UAE

### International Cooperation

Satellite Name	Local Agents	International Partners
Thuraya 4-NGS	Thuraya Satellite Telecommunications	
Falcon Eye 2	UAE's armed forces	 
DEWA-Sat 2	Dubai Electricity and Water Authority (Dewa)	
DEWA-Sat 1	Dubai Electricity and Water Authority (Dewa)	
Thuraya 3	Thuraya Satellite Telecommunications	
Thuraya 2	Thuraya Satellite Telecommunications	
KhalifaSat DUBAISAT 3	Mohammed bin Rashid Space Centre / Emirates Institution for Advanced Science and Technology	
DUBAISAT 2	Emirates Institution for Advanced Science and Technology	
DUBAISAT 1	Emirates Institution for Advanced Science and Technology	
YAHSAT 1B / Al Yah 2	Al Yah Satellite Communications Company	
YAHSAT 1A / Al Yah 1	Al Yah Satellite Communications Company	
DMSat 1	Space Flight Laboratory (SFL) for the Mohammed Bin Rashid Space Centre (MBRSC) in Dubai	
DhabiSat / MYSAT 2	Yahsat Space Lab and Khalifa University	
Ghalib	Marshall Intech	
YAHSAT 1C / Al Yah 3	Al Yah Satellite Communications Company	
Thuraya 1	Thuraya Satellite Telecommunications	
Sharjah Sat 1	University of Sharjah (SAASST).	
Light-1	UAE SA, Khalifa University, NYUAD	
MeznSat	UAE Space Agency / Khalifa University of Science and Technology (KUST) / American University of Ras Al Khaimah (AURAK)	
MYSAT 1	Khalifa University Space Technology And Innovation Center / Yahsat Space Lab / Masdar Institute of Science and Technology	
Nayif 1	ElAST / American University of Sharjah (AUS)	

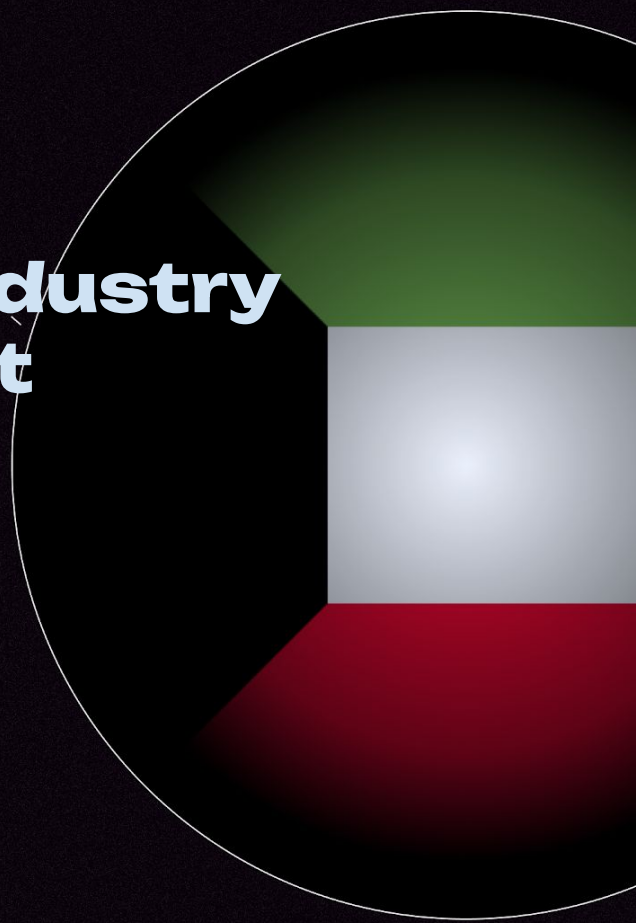


## Satellites launched by the UAE

Satellite Name	Purpose	Mass	Orbit	Launch Vehicle	Date
Thuraya 4-NGS	Communications satellite	N/A	N/A	Falcon (US)	2024
DEWA-Sat 2	Earth Observation	N/A	500km	Falcon (US)	2023
Sharjah Sat 1	Education & Research satellite	N/A	N/A	Falcon (US)	2023
DEWA-Sat 1	Communications satellite	N/A	525 km	Falcon (US)	2022
DhabiSat / MYSAT 2	Education & Research satellite	1 kg	low orbit	Antares (US)	2021
DMSat 1	Earth Observation	15 kg	low orbit	Soyuz (Russia)	2021
Light-1	Education & Research satellite	N/A	low orbit	Falcon (US)	2021
Al-Amal	Education & Research satellite	1350kg	N/A	H-2A-202 (Japan)	2020
Falcon Eye 2	Earth Observation	1500 kg	low orbit	Soyuz (Russia)	2020
Ghalib	Education & Research satellite	2 kg	low orbit	Falcon (US)	2020
MeznSat	Education & Research satellite	3 kg	low orbit	Soyuz (Russia)	2020
KhalifaSat DUBAISAT 3	Earth Observation	330 kg	low orbit	H-2A-202 (Japan)	2018
MYSAT 1	Education & Research satellite	1kg	low orbit	Antares (US)	2018
YAHSAT 1C / Al Yah 3	Communications satellite	3795 kg	GEO	Ariane (EU)	2018
Nayif 1	Education & Research satellite	1 kg	low orbit	PSLV-XL (India)	2017
DUBAISAT 2	Earth Observation	300 kg	low orbit	Dnepr (Russia-Ukraine)	2013
YAHSAT 1B / Al Yah 2	Communications satellite	6100 kg	GEO	Proton (Russia)	2012
YAHSAT 1A / Al Yah 1	Communications satellite	6000 kg	GEO	Ariane (EU)	2011
DUBAISAT 1	Earth Observation	190 kg	low orbit	Dnepr (Russia-Ukraine)	2009
Thuraya 3	Communications satellite	3200 kg	GEO	Zenit (Ukraine)	2008
Thuraya 2	Communications satellite	3200 kg	GEO	Zenit (Ukraine)	2003
Thuraya 1	Communications satellite	5100	GEO	Zenit (Ukraine)	2000



# **The Satellite Industry In Kuwait**





# Satellites Launched by Kuwait



## KuwaitSat 1

Local:



The satellite industry in Kuwait is still in its early stages of development, with limited investments and initiatives in this field. However, the Kuwait Institute for Scientific Research (KISR) has taken steps to establish a satellite research and development center, which aims to support the country's space program.

KISR has launched two small educational satellites, the first of which, called QMR-KWT, was launched in 2021. The satellite was designed to carry out scientific experiments and to provide educational opportunities for students. The second satellite, known as KWT-SAT 1, was launched in 2023 and was designed to provide a platform for testing and development of new technologies.

## QMR-KWT

Local:



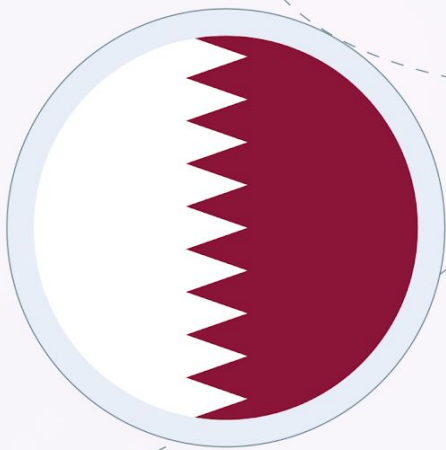
International Partner:



ENDUROSAT

In addition to its satellite research and development efforts, Kuwait has also invested in the development of a ground station for receiving and processing satellite data. The Kuwait National Remote Sensing and GIS Center operates a ground station that is capable of receiving data from various Earth observation satellites.

Despite these efforts, the satellite industry in Kuwait is still in its early stages of development, and the country lags behind other Gulf Cooperation Council (GCC) countries in this field. However, with growing interest in space exploration across the region, there is potential for Kuwait to increase its investment and involvement in the satellite industry in the future.



# **The Satellite Industry in Qatar**



# Satellites Launched by the Qatar



## Eutelsat 25B / Es'hail 1

## QMR-KWT

Local:



Local:



International Partner:



International Partner:



Qatar is a relatively new player in the satellite industry, but it has made significant strides in recent years. The country has invested heavily in its space program, with the aim of becoming a major player in the satellite industry.

Qatar's space agency, the Qatar National Space Institute (QNSI), was established to oversee the country's space program. The agency has focused on developing satellites for communications and Earth observation, as well as investing in research and development to advance the country's space capabilities.

In 2018, Qatar launched its first satellite, the Es'hail-2, which is primarily used for telecommunications and broadcasting.

The satellite was launched by a SpaceX Falcon 9 rocket, and has been hailed as a major achievement for the country's space program.

In addition to the Es'hail-2, Qatar has also invested in developing Earth observation satellites, with the aim of improving its ability to monitor its own territory and contribute to global environmental efforts. The country is also working to establish partnerships with other countries in the region and around the world to advance its space capabilities and collaborate on new projects.

Overall, Qatar is a relatively new player in the industry.



# Recommendations

**Foster** collaborations and partnerships between SpaceTech companies in the GCC region to maximize the potential of local talent and resources.

**Invest** in R&D to create innovative solutions that address the unique challenges faced by the GCC countries in their efforts to develop a sustainable SpaceTech industry.

**Develop** a supportive regulatory framework and regional cooperation mechanism to encourage government & private investment and entrepreneurship in the SpaceTech industry in the GCC region.

**Prioritize** the development of in-space technologies, such as space assembly, satellite servicing, propellant storage, in-space transportation (including nuclear propulsion), space solar power, rotating space facilities, lunar bases, and other things that low-cost access to orbit will allow.

**Explore** the potential of SpaceTech for non-space applications, such as remote sensing, precision agriculture, and telecommunications, to create new revenue streams and broaden the impact of the SpaceTech industry.

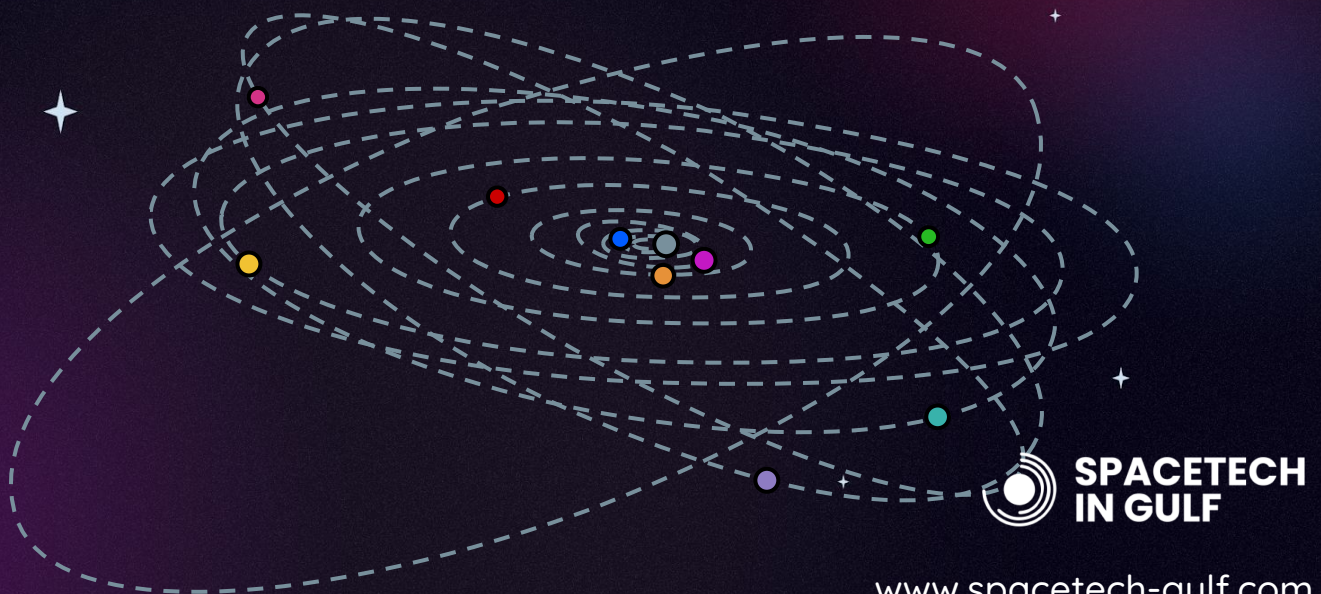
**Establish** academic and training programs to support the development of a skilled workforce for the SpaceTech industry, including vocational training and apprenticeships.

**Foster** public awareness and support for the SpaceTech industry in the GCC region, through public education initiatives, media campaigns, and outreach programs.

**Encourage** the development of indigenous SpaceTech capabilities, such as satellite manufacturing and launch services, to reduce dependence on foreign suppliers and increase the GCC's strategic autonomy in the field.

**Collaborate** with international SpaceTech organizations and initiatives to leverage global expertise and resources, and to position the GCC as a leading player in the global SpaceTech industry.

Finally, **create** an ecosystem of incubators, accelerators, and venture capitalists that can support SpaceTech startups and entrepreneurs to develop innovative products and services that can revolutionize the SpaceTech industry in the GCC region.





## About Spacetechnology in Gulf

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You can find more on: [www.spacetechnology-gulf.com](http://www.spacetechnology-gulf.com)

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### Editors



Rand Simberg is a recovering aerospace engineer with over four decades of experience in the space industry. Early in his career, he accumulated over a decade of experience in engineering and management at the Aerospace Corporation in El Segundo, California and Rockwell International in Downey, California. Since leaving Rockwell in 1993, he has been a consultant in space technology and business development as well as a technology entrepreneur. He also advises on regulatory and market issues pertaining to commercial and personal spaceflight.

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