

Mohammed Bin Rashid Space Centre

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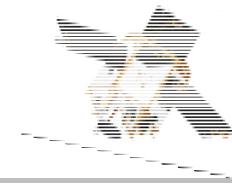
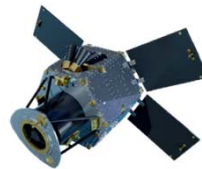
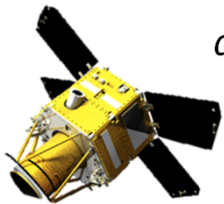
- UAE's situation in Space
- MBRSC overview
- Current and Future Space missions
- Products, services and space applications
- The UAE's current international role
- Space Security and Sustainability Issues
- The UAE's future role

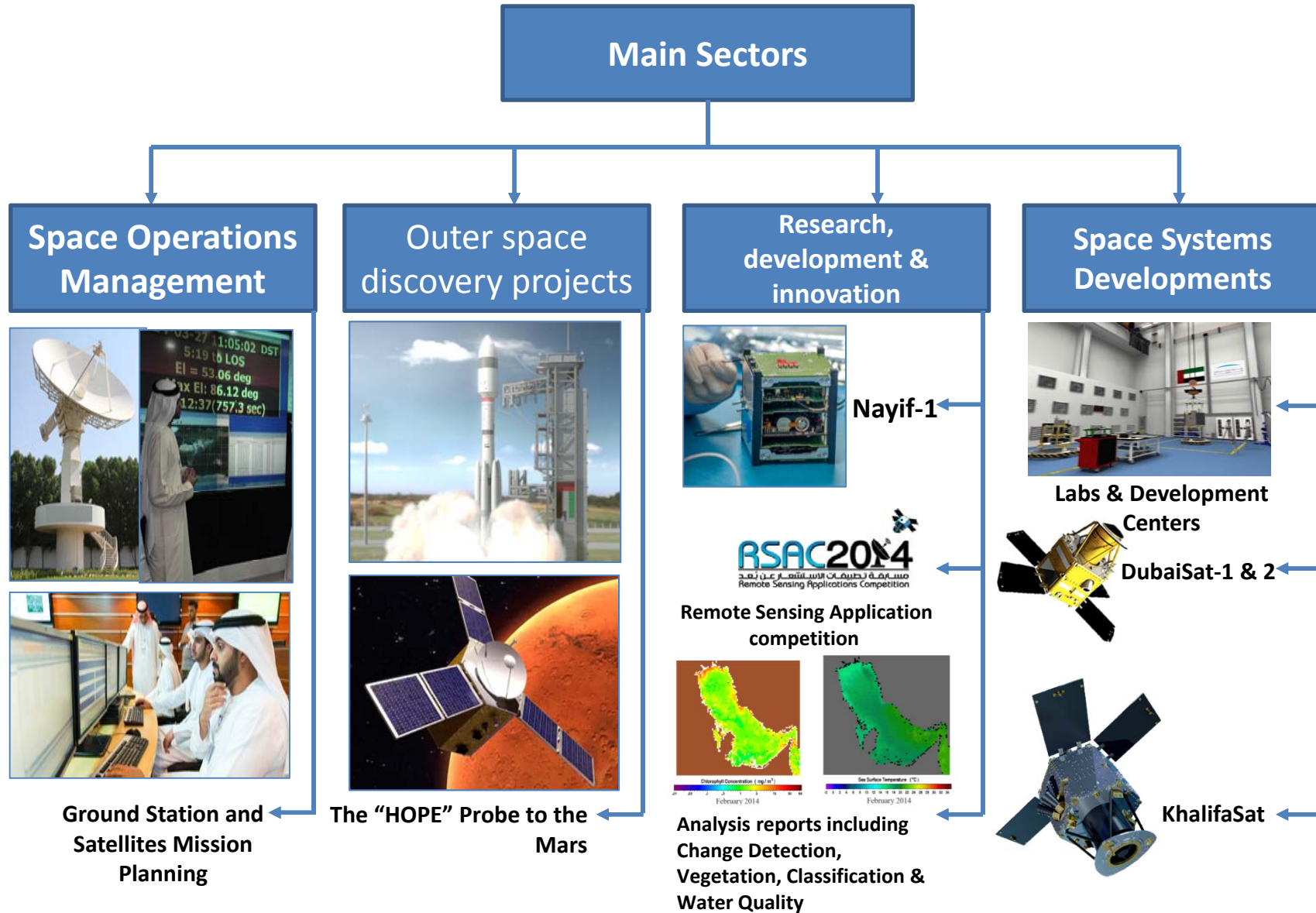
- Government:
 - UAE Space Agency:
 - Federal Government Est 2014
 - MBRSC:
 - Dubai Government Est 2006.
- Private:
 - Thuraya: 1997 commercial mobile services.
 - YahSat: 2006 commercial dual-use communication and internet broadband.

- Emirates Institution for Advanced Science and Technology (EIAST) was established in February 2006.
- On April 18th, 2015: a decree has been issued to incorporate EIAST in the newly established:
 - **Mohamed Bin Rashid Space Center (MBRSC)**



- **Vision:**
 - *“To be recognized globally as a center of excellence in the field of space science and technological innovation.”*
- **Mission:**
 - *“To enable the UAE to effectively create, use and exploit space science technologies and applications.”*



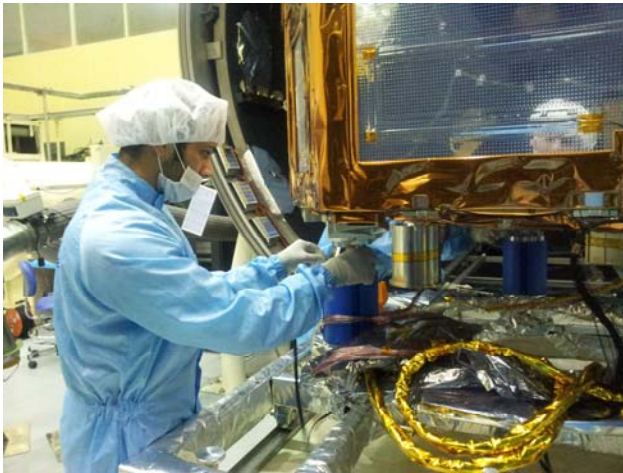
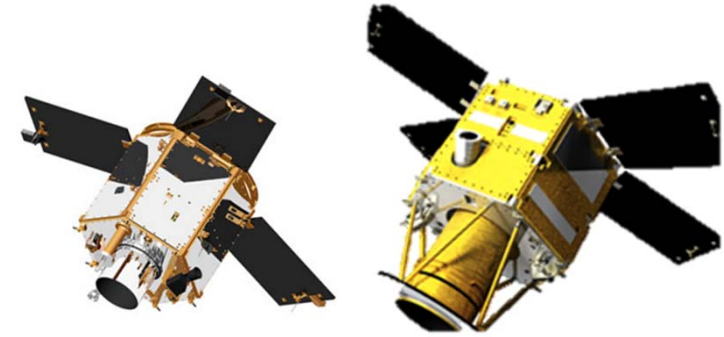




Current and Future Missions

Main Objectives:

- Tech and Know-How Transfer for satellite Development
- Continuous Manpower Development
- Meeting the continuous need of spatial information and EO data of the UAE



	DubaiSat-1	DubaiSat-2
Altitude (km)	680	600
Mass	~ 200 kg	< 300 Kg
Spatial Resolution	PAN 2.5m, MS 5m	PAN 1M, MS 4m
Data Quantization	8-bits	10-bits
Mass Storage	64 Gbits	256 Gbits
Imaging Modes	Single Strip	Single Strip Fast Multi-Strip Single Pass Stereo
Data Download Speed	30Mbps	160Mbps
Swath Width (km)	20	12
Launch date	29 th July 2009	21 st Nov 2013

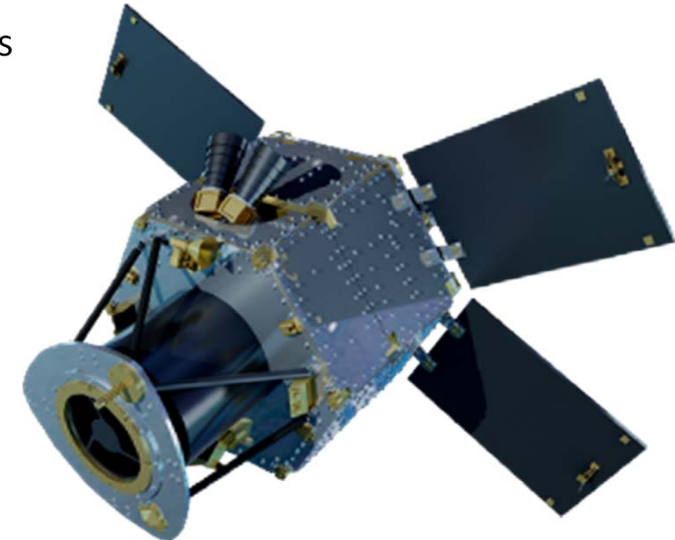
Next Mission: **KhalifaSat**

- Official Kick off April 2013
- Two Phases:
 - 1st phase → Daejeon, South Korea
 - 2nd Phase → Dubai, UAE
- Optical Image data at 0.5m GSD
- Complete Responsibility on MBRSC for programme Success
- Expected launch in 2018



Ongoing Project: **Satellite Manufacturing Facilities in Dubai**

- Project over Two Phases from Aug 2014 to Feb 2016:
- 1st phase: Primary facility consisting of Clean Room, electrical labs, and mechanical labs
- 2nd phase: Satellite Manufacturing and Testing facility



- **Nayif-1 (CubeSat):**

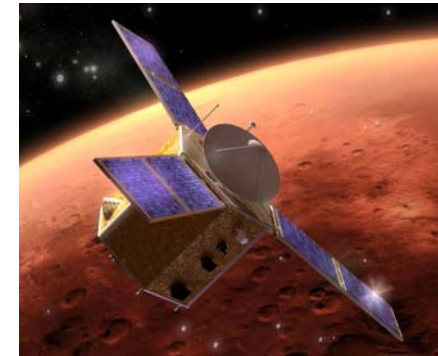
- Nayif-1 is considered UAE's first CubeSat Mission that will be launched by 2015
- It will be built in partnership with the American University of Sharjah (AUS) and the implementation partner "Innovative Solutions in Space"
- A Nanosatellite that offers hands-on experience to engineering students in the design, integration, testing, and operation of a communications satellite



- **Key Technical Specifications:**

Mission	Amateur Radio
Satellite Class	CubeSat 1U
Dimensions	10x10x11.35 cm ³
Mass	1.32 kg
Power	Max ~2.35W
Communication Footprint	~5000 km
Orbit	Elliptical 400 to 750 km
Launch	Late 2015 – Early 2016

- The **UAE Space Agency** and **MBRSC** signed an agreement in October 20th, 2014; to build the first Arabic-Islamic Mars space probe.
- Main Objective is “to build Emirati technical and intellectual capabilities in the fields of aerospace and space exploration, to enter the space industry, and to make use of space technology in a way that enhances the country’s development plans”
- The mission will be launched in 2020 and the mission is scheduled to arrive in 2021 to coincide with the 50th anniversary of the establishment of the UAE.
- **Programme Partners:**





MBRSC Products, Services and Space applications

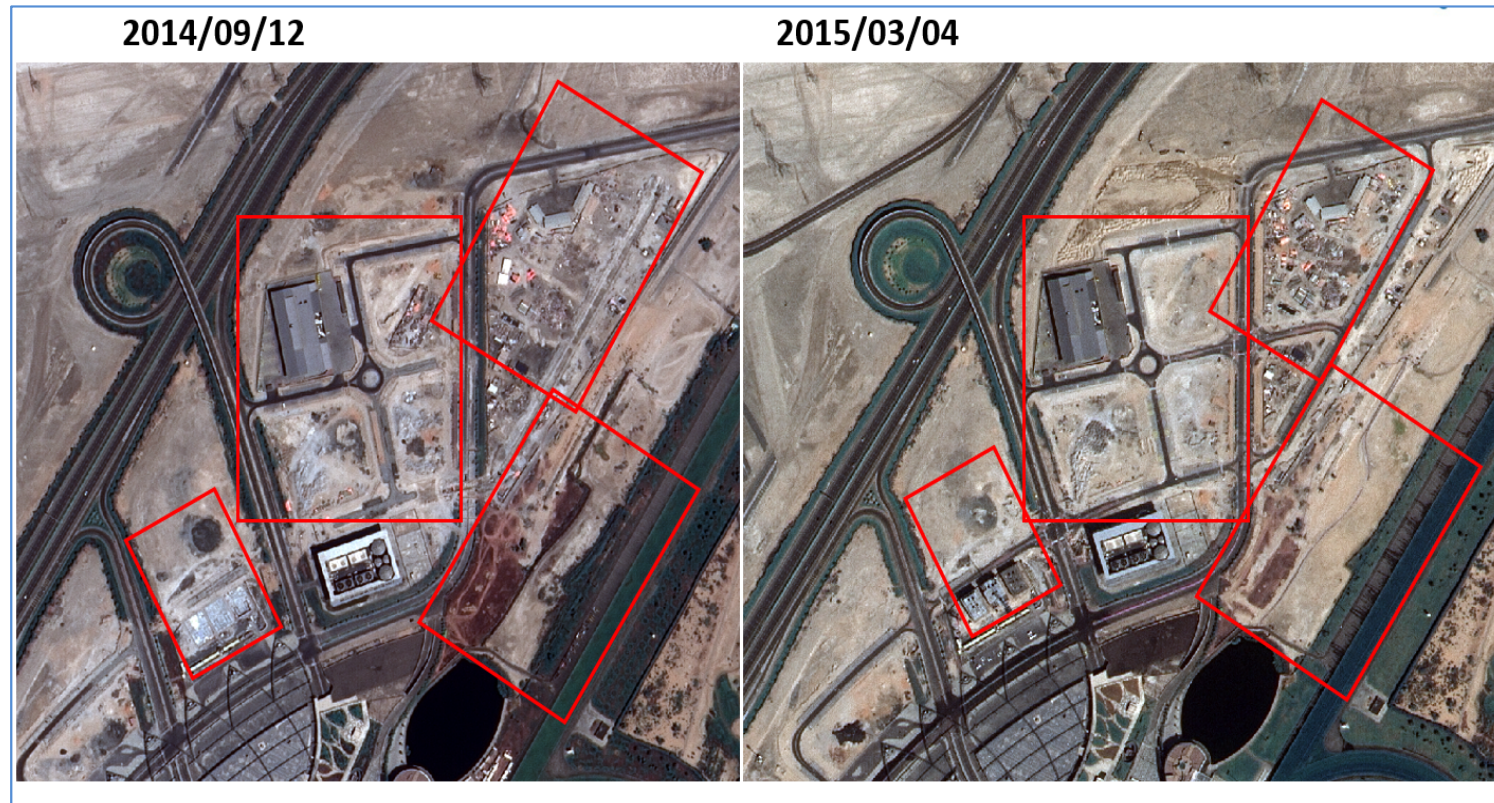
- Satellite Images



DubaiSat-1 Image - Vegetation in Abu Dhabi detected by NIR band



- Added value services



Providing change detection reports that includes NDVI and Classifications up to 20 features along with providing specific studies as per requirement



The UAE's role internationally and Space
Security and sustainability issues



- As you can see the UAE is active in space, we depend on space applications for many of our key economic drivers:
 - The UAE is an international aviation hub with major airlines and one of the busiest international airport in the world, aviation represents over a quarter of Dubai's economy.
 - The UAE is a major shipping and re-export hub
 - Our cities are some of the fastest growing in the world.
- Active observer in UNCOPUOS since 2010.
- Applied for membership to the UNCOPUOS this year.
- Supported various OOSA initiatives through cash and in kind contributions.
- The UAE has ratified 3 of the 5 UN treaties.

- Hosted multiple UN workshops on Space Navigation, Basic Space Technology and ICG 8.
- Plan to host a High Level Forum named UNISPACE+50 Space as a Driver for Socioeconomic Sustainable Development, a three year event starting next November in Dubai.
- Working with entities such as UNSPIDER, APRSAF etc.
- As a new space player and an active regional player:
 - The UAE is taking a strong role in promoting the use of space applications for its citizens.
 - Focusing on education and youth development.
 - Sharing data and analysis regionally for peaceful purposes.
 - Regional capacity building.

- We are going to Mars and we are going responsibly:
 - The UAE is working closely with the international community and COSPAR to follow the planetary protection guidelines for Mars.
- We have five Geosynchronous Satellites in orbit:
 - The UAE is following all international guidelines on the responsible utilization of the Geosynchronous orbit.
- We have two Low Earth Orbiting Satellites and many more to come:
 - The UAE is working towards ensuring that these satellites don't orbit for more than 20 years and have deorbit mechanisms in place.

- The general major threats:
 - Weapons in outer space.
 - Space weather.
 - Space debris.
 - Limiting or affecting the usage of outer space eg. Interference.
- More recently the players have changed:
 - A few decades ago, space was an advanced nations domain.
 - Smaller developing nations are becoming very active in space.
 - Space is increasingly becoming a domain for private companies, university students and even in the online crowd funding domain.
- This changes the playing field dramatically, and new and old nations must have clear policies and strategies in place to deal with this.

- Looking at the issues facing smaller nations such as the UAE:
 - Access to space.
 - Technology knowhow and knowledge transfer.
 - Space debris (more active nations have contributed more, affecting new players harder as they usually start with CubeSat's which are stating to be a major source of debris).
- New space nations are sometimes in a rush to get to space that sustainability issues may not be important to them
- Lack of transparency, can lead to mistrust and can lead to more difficult access to space, which affects their space aspirations and equal access.

- As a potential new member in UNCOPUOS the UAE will be contributing actively to achieve the committee's goals.
- As a regional leader:
 - Work towards adhering to the guidelines for space debris mitigation, removal and reduction.
 - Contributing to shaping policies for the sustainable use of outer space.
 - Enhancing knowledge regionally about the issues facing space security and sustainability, so that new regional entrants enter responsibly.
 - Capacity building in space law and space technology through educational programme, regional workshops and events.

An aerial photograph of a city, likely Dubai, showing a complex network of roads, buildings, and a large artificial lake. The image is dominated by a large, semi-transparent white rectangular box in the upper center, which contains the text "Thank You" in a black, serif font. The city below is densely packed with buildings and infrastructure, with a prominent highway interchange on the right side. The overall scene is a high-angle, top-down view of an urban landscape.

Thank You