The UAE is one of the most ambitious countries in space and is a major player in the Gulf and Arab World.

The UAE is very active and is developing:
- Interplanetary missions
- Geostationary satellite communications
- Remote sensing missions
- Educational missions

The UAE is developing the infrastructure necessary to have a sustainable space programme in the country.
The UAE space programme is diverse and includes:

**Government:**

**Commercial/Private:**

**Universities:**

![Government Logos](image1)

![Commercial Logos](image2)

![University Logos](image3)
• 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)**

• Main Goal:
  “Nationalize the development of space systems and contribute to the field internationally”
DubaiSat-1 & DubaiSat-2 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

<table>
<thead>
<tr>
<th></th>
<th>DubaiSat-1</th>
<th>DubaiSat-2</th>
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</thead>
<tbody>
<tr>
<td>Altitude (km)</td>
<td>680</td>
<td>600</td>
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<tr>
<td>Mass</td>
<td>~ 200 kg</td>
<td>&lt; 300 Kg</td>
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<tr>
<td>Spatial Resolution</td>
<td>PAN 2.5m, MS 5m</td>
<td>PAN 1M, MS 4m</td>
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<tr>
<td>Data Quantization</td>
<td>8-bits</td>
<td>10-bits</td>
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<tr>
<td>Mass Storage</td>
<td>64 Gbits</td>
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<td>Imaging Modes</td>
<td>Single Strip</td>
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<td></td>
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<td>Fast Multi-Strip</td>
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<td></td>
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<td>Single Pass Stereo</td>
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<tr>
<td>Data Download Speed</td>
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<td>160Mbps</td>
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<tr>
<td>Swath Width (km)</td>
<td>20</td>
<td>12</td>
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<tr>
<td>Launch date</td>
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<td>21st Nov 2013</td>
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</table>
KhalifaSat

- KhalifaSat is MBRSC’s 3rd Earth Observation Satellite.
- 100 engineers working on it
- The four year programme to develop KhalifaSat began in 2013.
- 0.70 cm resolution
- Signed launch agreement with Mitsubishi Heavy Industries, Ltd (MHI); to launch KhalifaSat together with GOSAT-2 onboard H-IIA launch vehicle in Q1 2018.
- Current Status: Manufacturing Flight Model, should be completed by Q3 2017.
Emirates Mars Mission: Al-Amal Probe

- The UAE Space Agency and MBRSC signed an agreement in October 20th, 2014; to build the first Arabic-Islamic Mars space probe.

- Strategic Objective: “to build Emirati technical and intellectual capabilities in the fields of aerospace and space exploration to make use of space technology in a way that enhances the country’s development plans”

- Scientific Objective: “EMM will, for the first time, explore the dynamics in the atmosphere of Mars on a global scale. It will provide holistic, global and diurnal understanding of the atmospheric dynamics of Mars

- Current Status: CDR in May

Programme Partners:
MBRSC Facilities

- Completed Phase 1 and 2 which comprise a clean room for the manufacture of satellites, an electrical laboratory, a mechanical lab and the high-bay area.

- MBRSC Manufacturing Facility can accommodate all manufacturing activities for our earth observation satellites and the Emirates Mars Mission.

- Phase 3 will include the complete satellite testing facilities that will be operational by 2019
New Actors in Space

• What is the rationale for emerging Space Programmes, specifically the UAE?
• Why is the UAE investing over 5 billion USD in its Space Activities?

• Economic diversity
• Post oil economy
• Education and outreach
• National capability development through Technology and knowhow transfer
• SME eco system development around government space programme
• Manufacturing taking place in the UAE
• Creating high tech jobs
• National pride
Challenges and opportunities facing new actors?

Challenges:

- Technology transfer restrictions
- Export licenses and ITAR
- Private sector partnership – TRUE partnership, linked to the first two points
- Space debris – more small sats, more congestions = space security and sustainability issues which can = more restrictions or resistance to these activities by emerging space players
- Cooperation in-between emerging state actors is lacking
Challenges and opportunities facing new actors?

Opportunities:
- Successful technology transfer programmes can promote best practices in the space domain.
- Usually starting later and can learn from the success and failures that came before.
- Cooperation can increase the benefits to all, we would be able to achieve larger more expensive projects eg ISS 2.0 with emerging nations participation.
- New space entities have many synergies with emerging government space actors and this can be an opportunity for both.
- In the UAE’s case we are open to cooperate with all nations which can speed up our activities and goals.
Emerging and established actors need to agree on what constitutes acceptable behavior in space, or their combined activities may threaten the long term usage of space.

Cooperation and partnerships are very helpful to support best practices and support the responsible use of outer space as they build trust and strong relationships.

A Question: The UAE’s mars 2117 plan, could this be the start of an ISS 2.0? Could this be a partnership of all nations new and old?
Thank you!