مـــــــركز محمـد بن راشـد
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MOHAMMED BIN RASHID SPACE CENTRE

Introduction to MBRSC:

2006

Emirates Institution for Advanced Science and Technology (EIAST) was established in February 2006.

مؤسسة الإمارات للعلوم والتقنية المتقدمة
EIAST

2015

On April 18th, 2015: a decree has been issued to incorporate EIAST in the newly established Mohammed Bin Rashid Space Centre

مركز محمد بن راشد للفضاء
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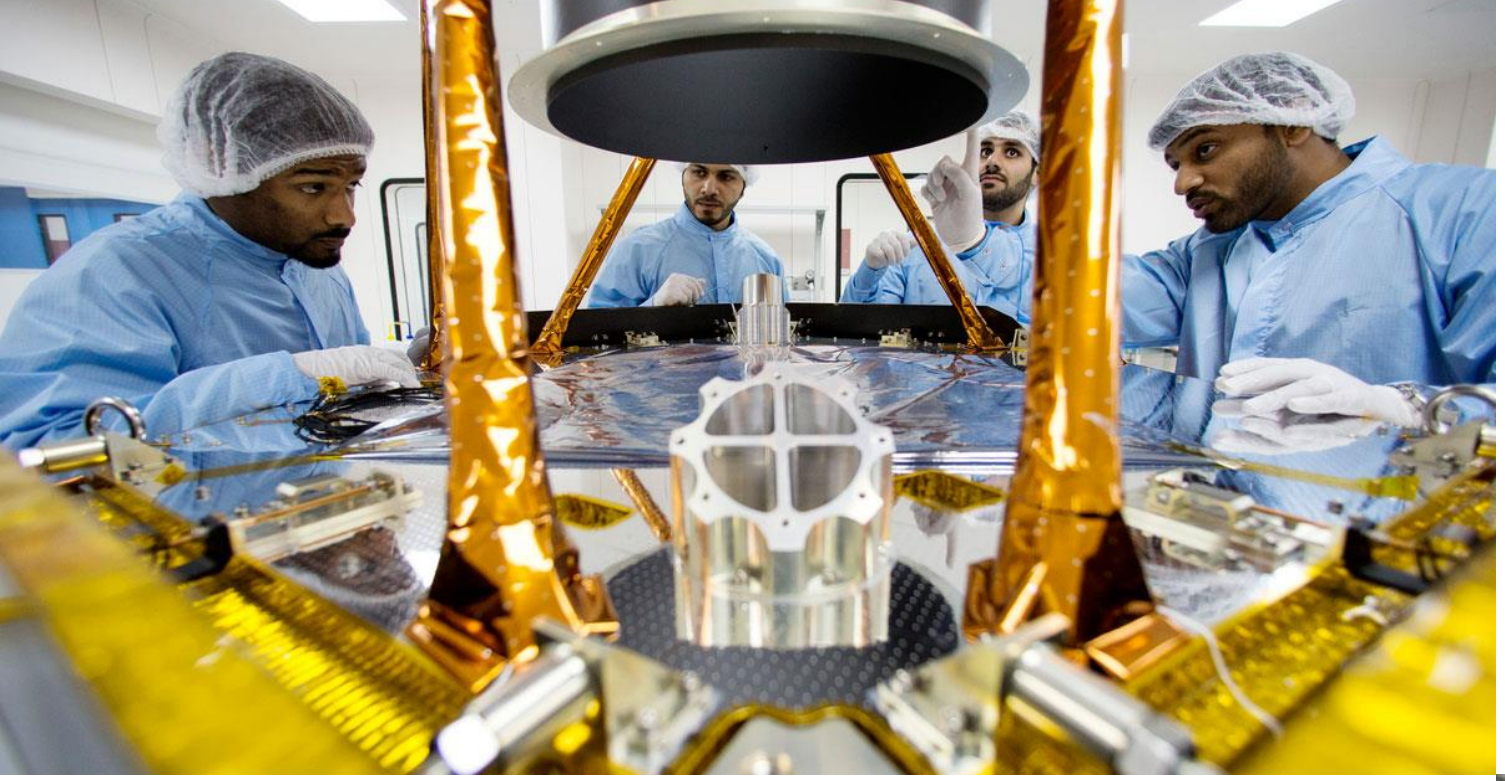


Vision:

“To be recognized globally as a center of excellence in the field of space science and technological innovation.”

Mission:

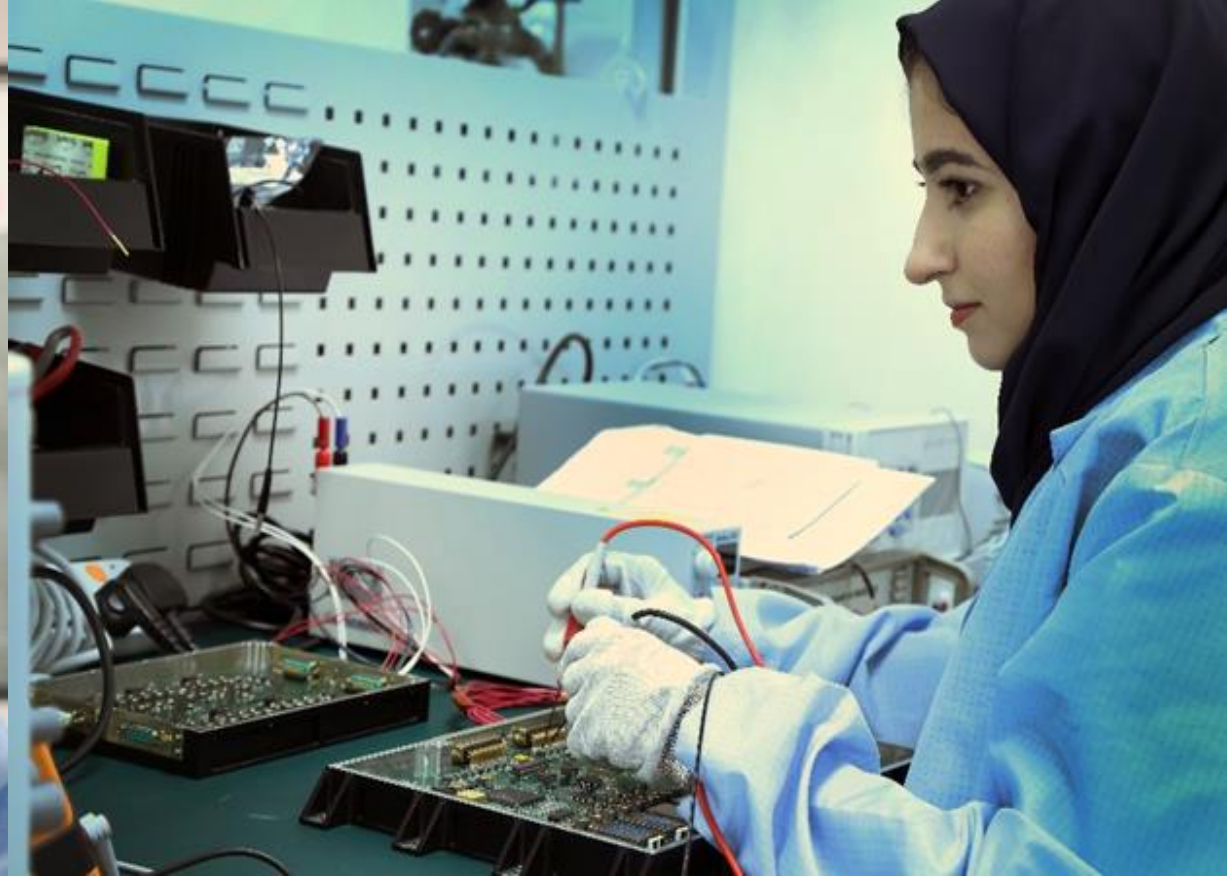
“To build a sustainable Science and Technology sector that contributes to the national knowledge based economy, through the launch and implementation of advanced space projects, and prepare a generation of Emirati scientists, to take our country towards a brighter future.”

The Team:

200+ members

Avg. Age:

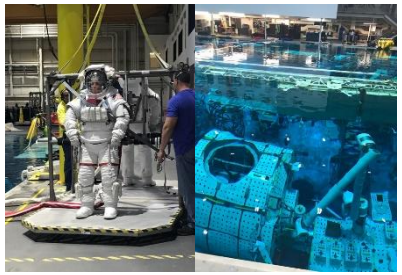
27 Years



Female Engineering Participation: **40%**

The UAE National Space Programme

UAE Human Space Flight Programme

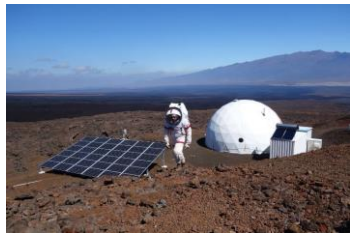


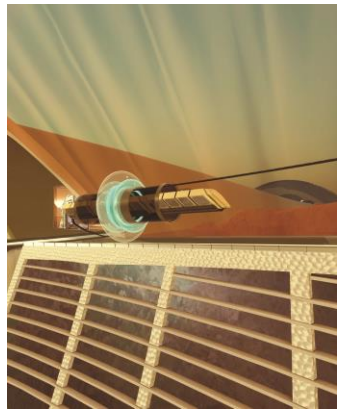
Training and Space Fight Missions

Emirates Mars Mission

The “HOPE” Probe to the Mars

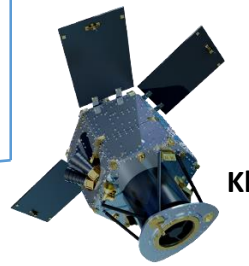
Mars 2117 Initiative





Satellite Development Programme

DubaiSat-1 & 2



KhalifaSat

مركز محمد بن راشد للفضاء

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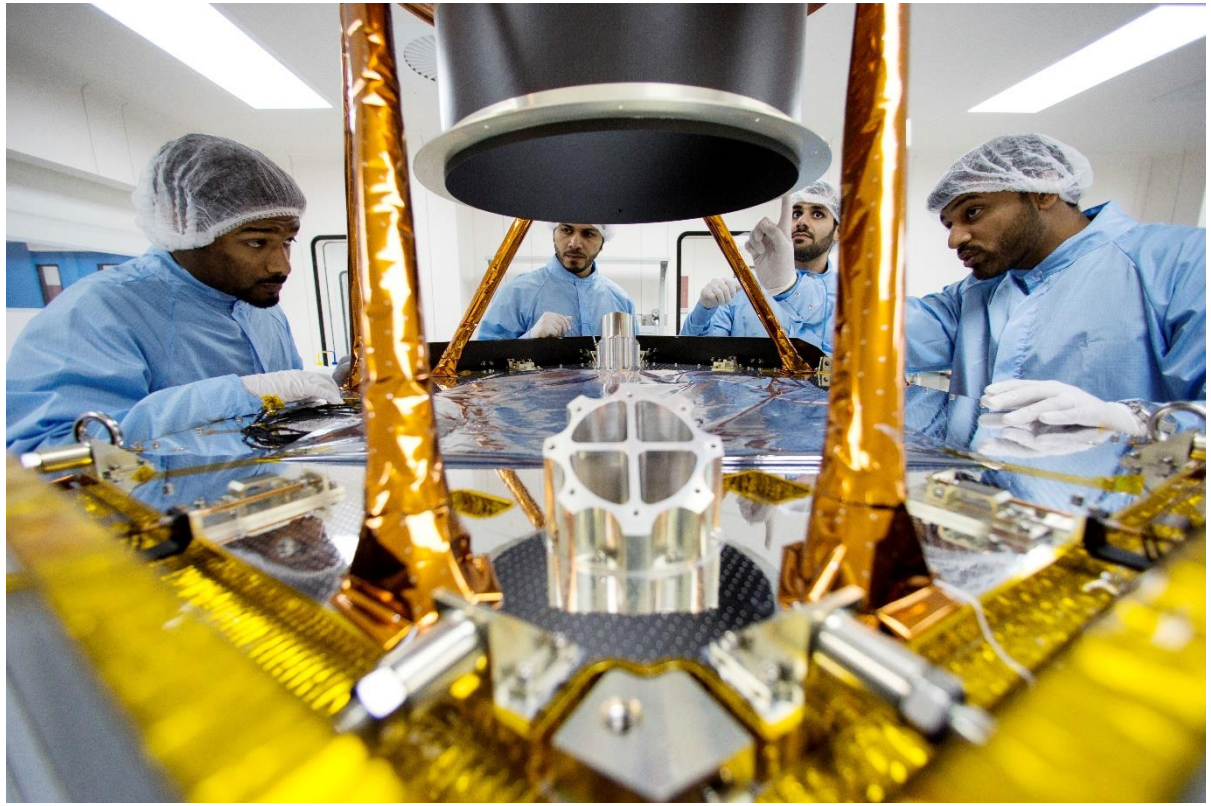
1 Satellite Development Program

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



	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	29th July 2009	21st Nov 2013

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 Q2 2018.
- Current Status: Manufacturing Flight Model, ready byQ3 2017.

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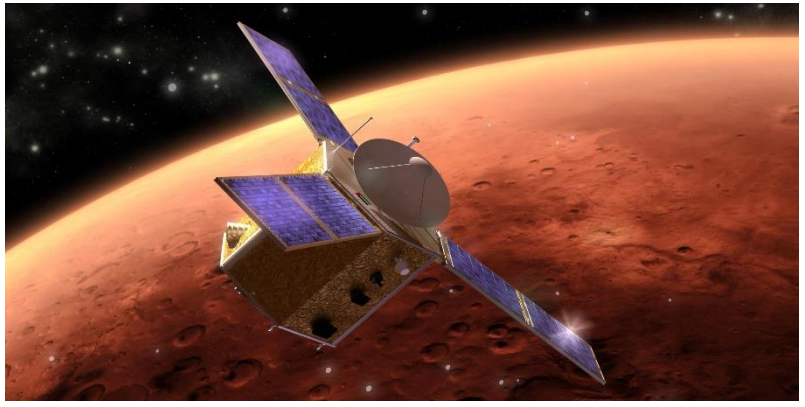
2 Emirates Mars Mission: Al-Amal Probe

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 engineering and scientific capabilities in the fields of aerospace and space exploration”
- Scientific Objective: “EMM will, for the first time, explore the dynamics in the atmosphere of Mars on a global scale. It will provide a holistic, global and diurnal understanding of the atmospheric dynamics of Mars”
- **Current Status:** CDR finished in May 17



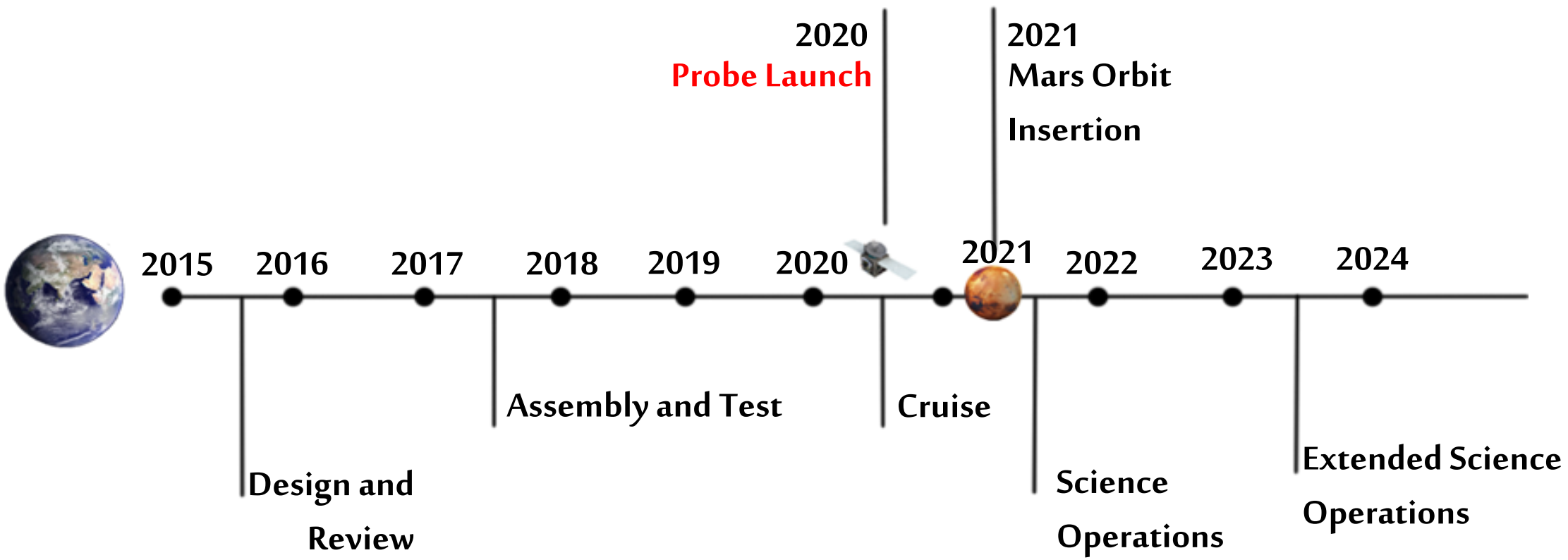
Programme Partners:

Laboratory for Atmospheric and Space Physics
University of Colorado **Boulder**

SSL
UC Berkeley

ASU
ARIZONA STATE UNIVERSITY

Mission Timeline



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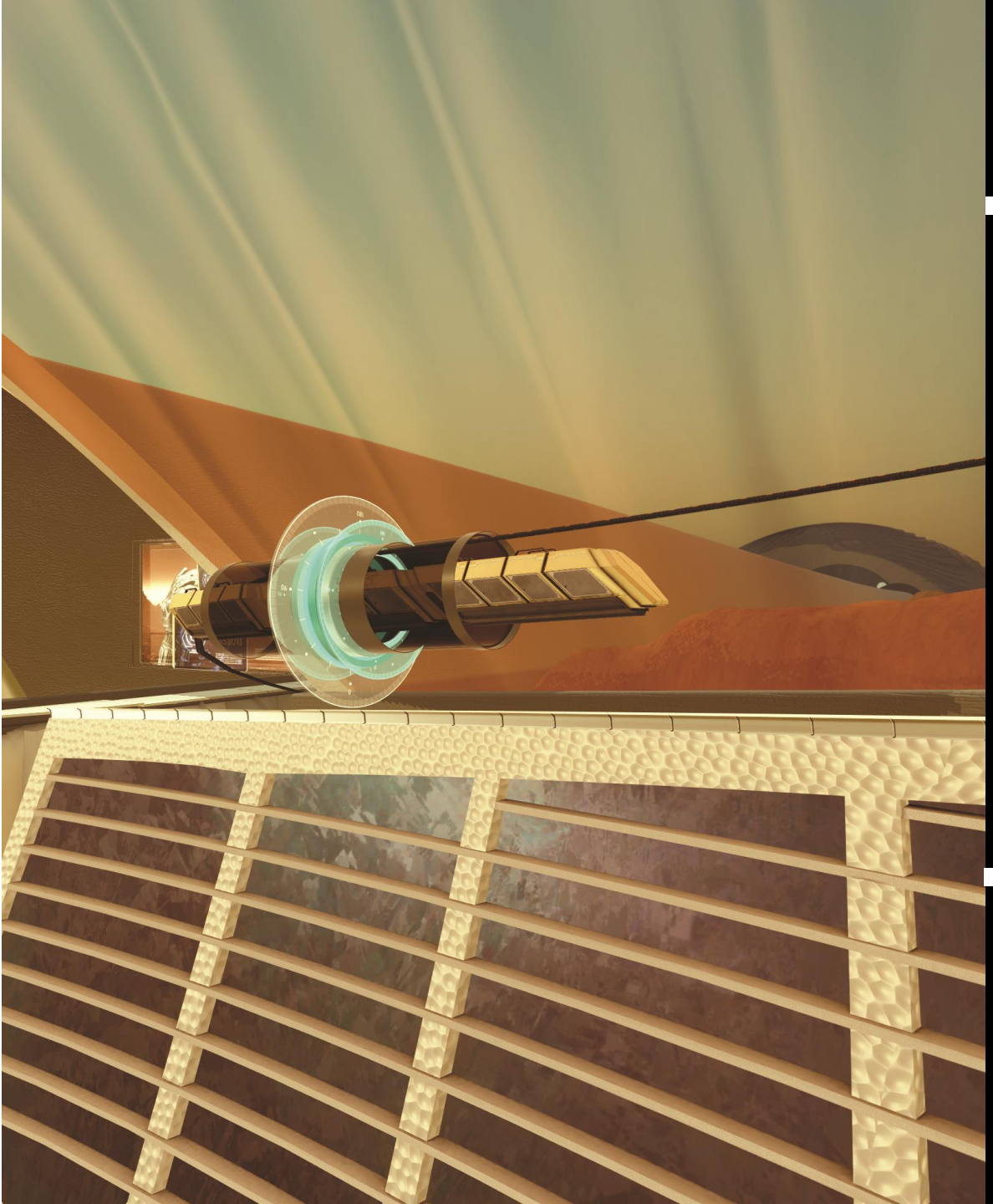
3

Mars 2117 Project



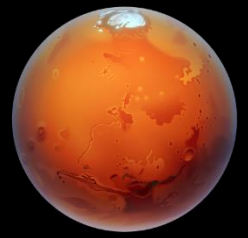
Mission

To enable the UAE to contribute to humanity's interplanetary endeavors.

Vision

To establish a lasting colony on Mars by 2117.

Importance of the Programme to the UAE

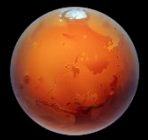


Challenges facing Humans living on Mars

- Energy Security
- Food Security
- Water Security

National Challenges the United Arab Emirates is facing

- Energy Security
- Food Security
- Water Security



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Mars Science City Project

- Part of the Mars 2117 Strategy
- 1.9 million square feet
- Largest space stimulation city ever built
- Objectives- Lead to innovation around self-sufficiency in energy, water and food

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Mars Science City Project

Incorporate a realistic simulation environment replicating the conditions on the surface of Mars

Will involve a team living in the simulated red planet city for one year

A reference model for future innovation around sustaining life in a hostile planetary environment

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4 UAE Astronauts Program

The Goal : An Emirati Astronauts Corps capable of contributing to Human Space Flight Missions

More to follow !!!

Importance of space

- What is the rationale for emerging Space Programs, specifically the UAE?
  - Economic diversity
  - Post oil economy
  - National pride
  - National capability development and creating high tech jobs.

- What are the opportunities and challenges that emerging players face?
  - Usually starting later and can learn from the success and failures of others
  - In the UAE's case we are open to cooperate with all which can speed up our activities
  - Some challenges:
    - Technology transfer and restrictions.
    - Space debris – small sats, cube sats, incorporation of sustainable measures
    - Regional cooperation in the Arab World or between emerging actors.

- Thoughts for UNISPACE +50:
  - Should be one of the most important space summits in the 21st century
  - Must be fully inclusive of smaller developing space nations
  - Leverage the emergence of new space industry.
  - Take advantage of the new space and emerging space nations synergies and similarities to the benefit of all.

- More Space Actors = Space becoming a limited resrouce

  - Emerging and established actors need to agree on what constitutes acceptable behavior in space, or their combined activities may threaten its the long term usage.

  - UNOOSA, COPOUS, LTS etc are essential bodies, going forward they should further emphasize the importance of Cooperation and partnerships between the two, to support best practices and the responsible use of outer space.

- Main Challenges in space by Space2030:
  - Space Debris and protecting the outer space environment for future use is key
    - Need effective enforceable measures
    - Government commitments to comply with debris reduction guidelines
    - Launching states control
  - Inclusion of all the new players in a global cooperative goal, eg Moon Base or Mars Colony
    - A big political, economical and logistical challenge
    - Need all involved if we want to achieve such a large project
  - Gender balance and Youth involvement in space by 2030

Thank you!