

# Developing Capabilities in Space Applications in the UAE

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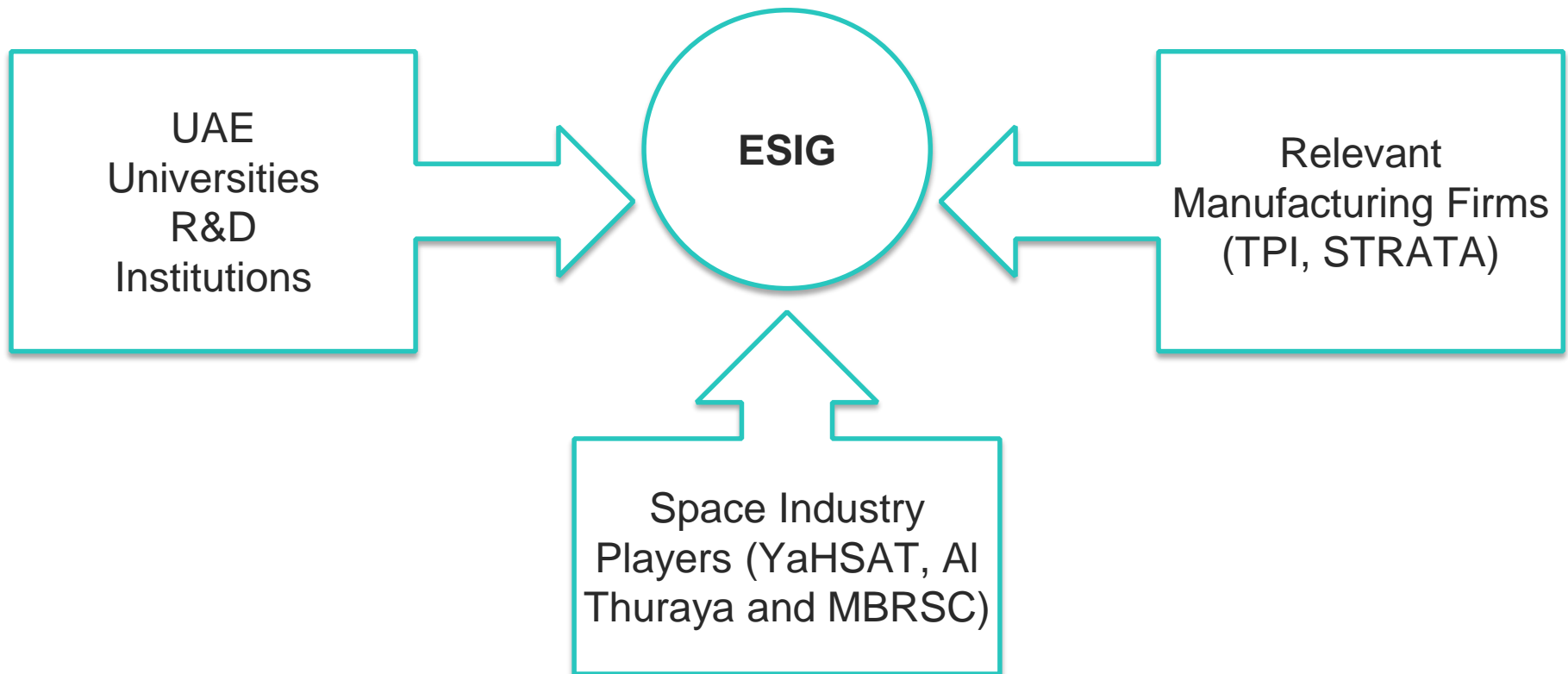
# Mission: Developing Capabilities in Space Applications in the UAE

- **UAE's Vision 2021** is transforming from an oil-based to a **knowledge based economy**.
- Build a **solid technical and scientific foundation** within the UAE that will ensure knowledge-based economy for the UAE Space Sector.
- UAE SA Primary Objectives:
  - Regulate the Space Sector
  - **Facilitate, Support & Fund space projects**
  - **Develop UAE Human Capital for the Space Sector**
  - Set-up National and International Partnerships
  - Help to position UAE as a regional hub for space technology, services & events



# Emirates Space Innovation Group (ESIG)

- The ESIG was established early 2016 to help align efforts to support the UAE national objectives set by its leadership.



# Emirates Space Innovation Group (ESIG)

- **Purpose of ESIG:**
  - Help the UAE Space Sector to:
    - Grow and flourish,
    - Align and consolidate their Space efforts.
  - Promote R&D, Spin-offs and Start-ups.
  - Provide a dialogue among local/global communities to help UAESA in planning and prioritizing future space activities.
  - Push forward UAE led innovation in the space sector.
  - Facilitate dissemination of UAESA Programs information among ESIG members.



# ESIG Results

- **R&D / Laboratory Development Projects** established with UAE Universities as a result of **ESIG**:

– Next Gen Lithium-Ion Space Battery Development

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– Radio Astronomy Research Laboratory

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– Ultra-Low Power Radiation Space Detectors

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– Lab to Develop Hyperspectral Data Processing Catalogue

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– UAE Meteor Monitoring Network

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# ESIG Results – Environmental Monitoring CubeSat

- **MeznSat** is a 3U CubeSat project that was launched by the UAE Space Agency in collaboration with Khalifa University of Science and Technology and the American University of Ras Al Khaimah (AURAK) as a result of **ESIG**.

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- **MeznSat** will host a visible camera and a SWIR spectrometer to **detect greenhouse gas emissions over the UAE**
  - Methane (CH<sub>4</sub>)
  - Carbon Dioxide (CO<sub>2</sub>)
- Potential users:
  - Local environmental agencies ( Abu Dhabi Environment Agency etc.)
  - Oil and gas industry





# ESIG Results – R&D in Collaboration with Environmental Agency

- **Land Use / Land Cover (LULC) mapping project** in collaboration with Khalifa University for Science and Technology

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- Phase 1: Developing a classification scheme for LULC spatial images
- Phase 2: Implementing the classification scheme for LULC on the UAE's map
- Phase 3: Expand this analysis further to develop satellite based monitoring systems that detect changes in surfaces.



*Courtesy of Environmental Agency – Abu Dhabi (EAD)*



# Summary & Conclusion

- **Take-away points:**
  - Building a solid foundation of **UAE capabilities in space applications** is vital to assist in achieving the **UAE 2021 vision** of transforming to a **knowledge based economy**.
  - **ESIG** represents an important tool in **building synergies, sharing expertise and resources** to build capacity in space applications
  - As a result of the **ESIG**, in 2 years:
    - More than **6 R&D projects** signed with **UAE Universities** (with more in the process).
    - **Environmental Monitoring Nanosatellite project** has been signed with two universities.

