Overview of the AeroCube Program and Applicability to Capacity Building

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Aerospace was created in 1960 as a California Non-Profit Corporation.
Growth in satellite launches

Last five years of activity show exciting growth

Boom in launches in 2017 shows the beginning of a new era of space activities

Source: Seradata SpaceTrak Database
CubeSat Paradigm

CubeSat Paradigm enables rapid technology development

Aerospace Corporation has been building CubeSats for over 15 years


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Aerospace Corp history with SmallSats/CubeSats

AeroCube Program

- 28 small satellites constructed and launched by Aerospace
- 12 orbiting CubeSats currently operating
- 7 CubeSats currently in development
- Ground System and operations
  - Three ground sites
  - Automated satellite operations

Example Mission:
- Optical Communication and Sensor Demonstration (OCSD) is a demonstration mission for laser communications, proximity operations and a steam thruster

The NASA-supported Optical Communication and Sensor Demonstration (OCSD), launched in September 2015, and demonstrates laser downlinks from LEO to ground at up to 200 Mb/s, an improvement of a factor of 10 to 100 over existing CubeSat-scale communication systems.

AeroCube program leverages the CubeSat paradigm for rapid technology development
Capacity Building Around A New Paradigm
Long-term foundational planning for sustainable development

Space Enterprise

Policy & Strategy

Workforce

Infrastructure

Space Technical Activities

Plan for Growth, Speed, and Evolution!
Policy and Strategy should anticipate future growth
Workforce

Space sector sustainability is driven by an educated and experienced workforce.
Infrastructure

Development

Manufacturing Facilities
- Ground Stations
- Spacecraft
- Payloads
- Launch Systems
- Integration
- Software
- Computing Resources

Testing Facilities
- Nominal Operations
- Environmental
- Reliability
- Lifetime
- Survivability
- Shock/Impact
- Vibration

Launch & Operations

Launch Facilities
- Integration Facility
- Fueling Facility
- Launch Pad
- Range Control
- Command & Control

Operations Facilities
- Ground Stations
- Communications
- Command & Control
- Telemetry Analysis
- Data Pipeline
- Software

It’s more than just satellites!
Space Technical Activities

These are the activities that make the headlines and inspire the imagination!
Capacity Building for Sustainable Development
Start small but keep the big picture in mind

• There are many affordable entry points to space activities
  – Data analysis and interpretation
  – Mission Collaborations
  – CubeSats
  – Ground Stations

• Small steps can lead to big accomplishments
  – A national space strategy will guide space activities toward national long-term goals
  – This ensures that each small investment advances long-term sustainable growth

• Persistence and commitment is essential
  – Space is hard!
  – There will be failures and setbacks, but these are learning opportunities
  – Keep the long-term strategy in mind when faced with these setbacks

• Be adaptable
  – The space sector is rapidly changing
  – Future developments cannot always be predicted but should be leveraged

Plan for Growth, Speed, and Evolution!
Thank you
Obrigada
Gracias

Questions?

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