


Schedule

Risk

Cost



Performance



BALANCING RELIABILITY AND COST

*Towards Fostering Greater Mission Assurance for University
CubeSats Projects*

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Discussion Topics

1  Project Funding

2  Mission Objectives and Types

3  University Research Philosophy

4  AIT Strategy

5  Review and Entire System Lifecycle

6  Project Management

7  Project Lifecycle

8  Export Controls

Project Funding

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Project Funding

- 1 **Leverage Large Mass of Students** (i.e., small contribution by large pool of students)
- 2 **Identify Private Investors** (e.g., philanthropists)
- 3 **Develop Joint University Projects** (e.g., IKUNS1)
- 4 **Leverage Crow-funding Platforms** (e.g., gofundme, kickstarter)
- 5 **Leverage Alumni Network**
- 6 **Reach Out to Business Incubators**
- 7 **Develop Communication Platform to Disseminate Information on Prizes and Competitions**

Mission Objectives and Types

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Mission Objectives and Types

- 1 Identify Mission Needs at Local, Regional and Global Levels
- 2 Ensure Accurate Definition at Kick-off
- 3 Perform Regular Iterations during Development Process
- 4 Ensure Accurate Documentation (e.g. Interface Control Document, Requirement Allocation Sheet)
- 5 Focus Work on Small Projects Before Aiming for Larger Ones
- 6 Define What Success Is

University Research Philosophy

1  Project Funding

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and Types

3  **University Research
Philosophy**

4  AIT Strategy

5  Review and Entire
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University Research Philosophy

- 1 Assess Internal University Capabilities** (i.e., workforce, equipment, facilities, network)
- 2 Aim for Small Viable Products First**
- 3 Ensure Project is Time Bound** (Research process is usually continuous vs. satellite project schedule)
- 4 Identify In-house Manufacturing of Components vs. Outsourced Components**

AIT Strategy

1  Project Funding

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4  **AIT Strategy**

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AIT Strategy

- 1 Ensure Streamlined Supply Chain of Components**
- 2 Coordinate with Testing Facilities to Reduce costs, Save time, and Test More Often (Location, Reqs, Bundling of University CubeSat Testing)**
- 3 Ensure Standardization of Components (i.e., Flight Heritage Components) as a Group of Universities**
- 4 Apply Best-Practices from Space Agencies and Private Space Companies**
- 5 Standardize Testing of Bus System (e.g., Communication, Power, E2E, Software, Deployment)**

Review and Entire System Lifecycle

1  Project Funding

2  Mission Objectives and Types

3  University Research Philosophy

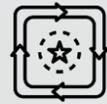
4  AIT Strategy

5  **Review and Entire System Lifecycle**

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Review and Entire System Lifecycle

- 1 Ensure ALL Steps and Reviews are Performed
- 2 Provide Proper Documentation of Changes
- 3 Invite Subject Matter Experts to Review Sessions (e.g., from Space Agencies)

Project Management & Lifecycle

1  Project Funding

2  Mission Objectives
and Types

3  University Research
Philosophy

4  AIT Strategy

5  Review and Entire
System Lifecycle

6  Project Management

7  Project Lifecycle

8  Export Controls



Project Management & Lifecycle

- 1 Provide Management Courses to Engineering Students
- 2 Ensure Proper Documentation (i.e., make it a culture to document)
- 3 Leverage Online Management Tools (e.g., Stackoverflow)

Export Controls

- 1  Project Funding
- 2  Mission Objectives and Types
- 3  University Research Philosophy
- 4  AIT Strategy

- 5  Review and Entire System Lifecycle
- 6  Project Management
- 7  Project Lifecycle
- 8  **Export Controls**



Export Controls

- 1 Set up Specialized Offices within Universities to Liaise with Policy Makers and Help Develop Policies**
- 2 Leverage Established Scientific Collaboration Frameworks in Certain Countries (e.g., South Africa)**
- 3 Reduce Complexity of Obtaining Student Visas**

Actionable Items

- 1 UNISEC Can Develop a Communication Platform to Disseminate Information on Prizes & Competitions**
- 2 Evaluate Best-Practices in Documentation from Industry and Adapt them to Universities**
- 3 Agree on What Mission Success**



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