

# Group Discussion #4 at the 1<sup>st</sup> UNISEC-Global Meeting

## Successfully Launching University Satellites: From Design to Orbit

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# Discussion Topics

- Open discussion!
- Hurdles for launching student satellites:
  - Technical?
  - Programmatic?
  - Regulatory?
  - Other hurdles?
- Learning from our mistakes
- Goal is to create affordable access to space for all student satellites
  - More than just launching satellites, it is a great learning experience for students of all ages!

# Technical Hurdles

- Understanding Launch Requirements
  - What do the Launch Vehicles expect?
- Simple vs Complex Payloads?
  - Understanding your technical objectives
  - Crawl -> Walk -> Run -> Orbit
- Analysis vs Testing?
  - What is the right balance for analysis and environmental testing?
- Systems engineering and satellite integration

# Programmatic Hurdles

- Funding
  - Traditional vs Non-Traditional Sources
- Satellite Lifecycle
  - Build, test, launch, operate a satellite in a student's academic career is the Goal
- Documentation and Procedures
  - Required by the launch vehicle
  - What is the right balance for building hardware and writing procedures?
  - Few students like documentation, however it is necessary for a sustainable program

# Regulatory Hurdles

- Country Ownership Declaration
  - What happens when your country does not have an official Space Agency
- Orbital Debris
- Radio Frequency Licensing
  - Can be very confusing

# Other Hurdles

- Any specific challenges

# Learning From Our Mistakes

- Underestimating Timelines
  - Our 1<sup>st</sup> satellite, we had our subsystems working in 1 year, took 1 more year to get all subsystems to work properly together
- Country Ownership Declaration
- Working through LV and Primary SC timelines
- Development without firm launch
  - Unknown orbit and environment, must be flexible
- Anything else?

# Goals for Discussion Group

- Understand issues facing university satellite programs
- Reduce challenges for universities through a collaborative environment
- End goal is to create affordable access to space for all student satellites
  - More than just launching satellites, it is a great learning experience for students of all ages!



# Vision of UNISEC-Global - 2020-100

- *“By the end of 2020, let’s create a world where university students can participate in practical space projects in more than 100 countries”*



**When several UNISEC-xxx have been established, let’s establish a new organization “UNISEC-Global” to support UNISEC-local chapters**