Innovation in Space with University Programs

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NASA National University Satellite Program

Prof. Robert Twiggs
Stanford University

Presentation Outline

- **Innovation in space**
- **Fostering innovation**
- **Program Participants**
- **Why space**
- **Challenge**
- **Future Programs**
- **Conclusion**

Why do we want innovation in space?

- Develop or test new products in space
- Reduce costs for space exploration and commercialization
- Get general public interested in space again

Fostering innovation?

- Make Easy Access – for a large diverse group of participants
- Low Cost – will reduce barriers to participate

Fostering innovation?

- Challenge – to do something <u>you</u> have not done before

- Make Failure – an ability to fail without being a failure

Fostering innovation?

- Short – project life cycle – less than one year

- No Experience – don't need previous experience – "don't know it can't be done"

Program Participants

- The non-space community

- Students – K-Postdoc
  - Adults who want to be students
  - Amateurs
  - Hobbyists

Program Participants

- For those interested in education, experience, fun, motivation

- Those that want to do exciting, cool, things – in minds of innovators

Why Space?

- Challenging – can't rework on the table
- Final product – has to meet demanding requirements

  - final product, not prototype

Why Space?

- Mystique about space
- Stretches imagination

Why Space?

- Needs broad spectrum of disciplines
- Technical products today make space projects easier to do
- Get association with dedicated, bright people - "Nerd is Good "

Define a "Program"

- Who – any group that has a majority of students that want to do a space project – CubeSat
- Objective – to build devices that can utilize the assets of space.
- Form Factor – something like CubeSat – standard size,weight to work within.

Challenge to Run Program

- Let State NASA Space Grant Consortium manage program.
  - Have to fund a minimum of 5 programs/state
- Make program project grants for $50k
  - Must accept mentor – not part of $50k
- Condition of Grant – No institution overhead

Challenge to Run Program

- Proposal 2-pages accepted, any time – annual award or more often if funds available.
  - Who are we
  - What do we want to do
  - Why do we think we can do it
  - How will grant be spent

Challenge to Run Program

- Grant has to pay for launch - $30k - $35k, less for balloon.
- Consortium provide $5k for another university to mentor.
- Mentor selected by proposal to grant recipient.
- Do not restrict launch to US launchers.

Challenge to Run Program

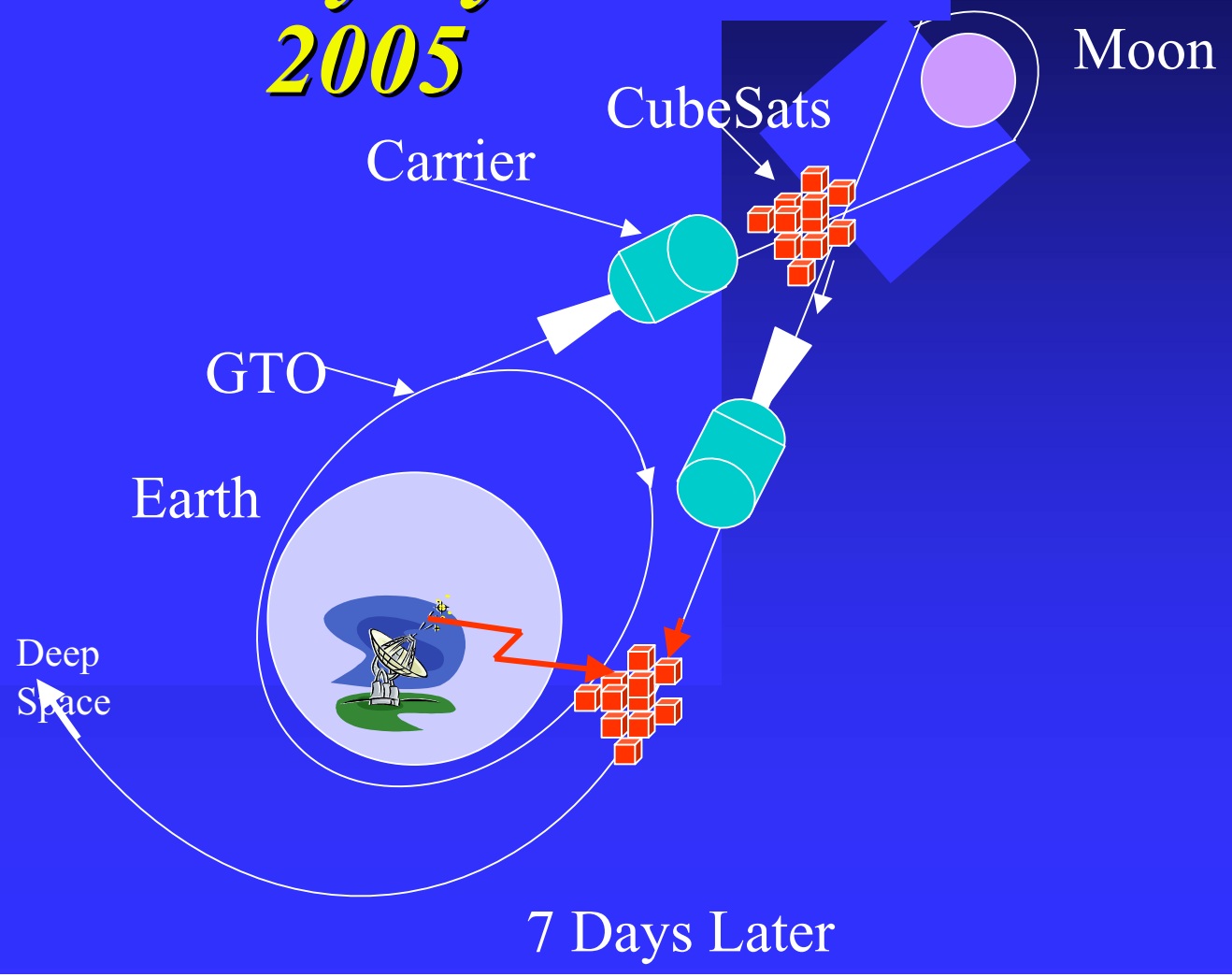
- Try to get customer for grant recipient, if they want one.
- Must finish with one year.
- Can fly on high altitude, long duration balloon.

Challenge to Run Program

- Provide continuing funding to grant recipients on an annual proposal competition.
- Keep project time lines one year.
- Plan major collaborative program goals.

Future Programs

CubeSats for Lunar Fly By & Return 2005



CubeSats to Mars

2009

Conclusion

Does it motivate?

Jeff:

Thank you for providing the information on your company. We are very pleased to hear about your affordable rates, and the Spring 2003 launch date is consistent with our timeline.

Our CubeSat project got started last November at the University Space Systems Symposium in Kona. We now have 56 undergraduates in engineering working on the project, which is generally regarded as the most ambitious, most exciting project going on at the University of Hawaii College of Engineering.

The local media has been very interested as well, and even got us on the front page of the local newspaper, a TV news story, and a resolution in our State Legislature!

I will ask our student project director, Aaron Ohta, to provide you with more information on the specifics of our CubeSat Project.

Best regards, Wayne Shiroma

The University of Hawaii CubeSat Project

Thank You