



Where did all those Launches come from?  
Or  
What can we do now that we have launches?

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Can we keep up with the new launch opportunities?

What will happen if Garrett can't fill his ELaNa launch slots?

How can we make better use of space?



# Overview

- What about launches?
- What about payloads?
- Some work on small sats smaller than CubeSat
- An additional approach
- Developing Apps for Space Experiments

■ What about launches?



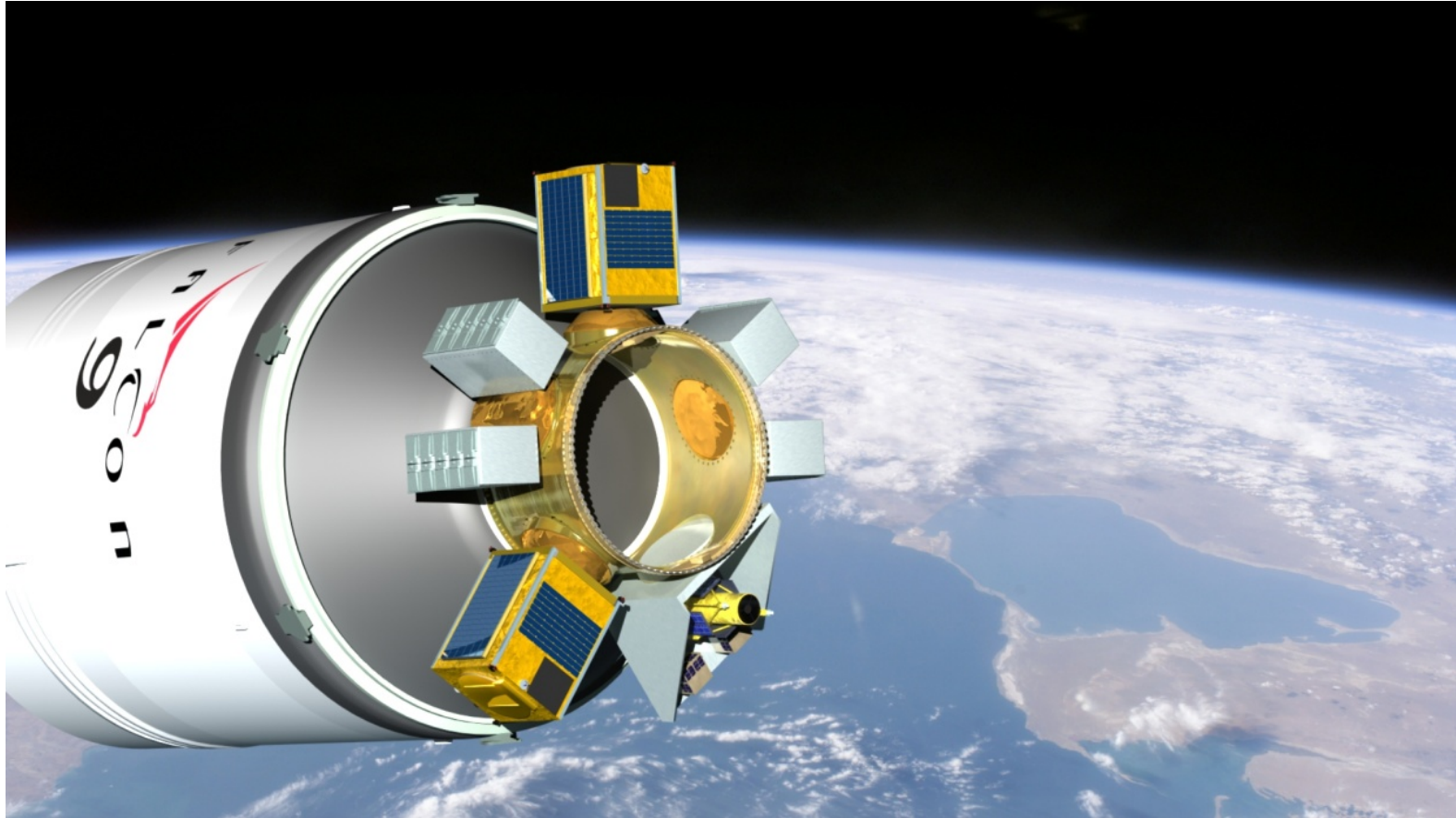
- What about launches?



Dream Chaser

- What about launches?

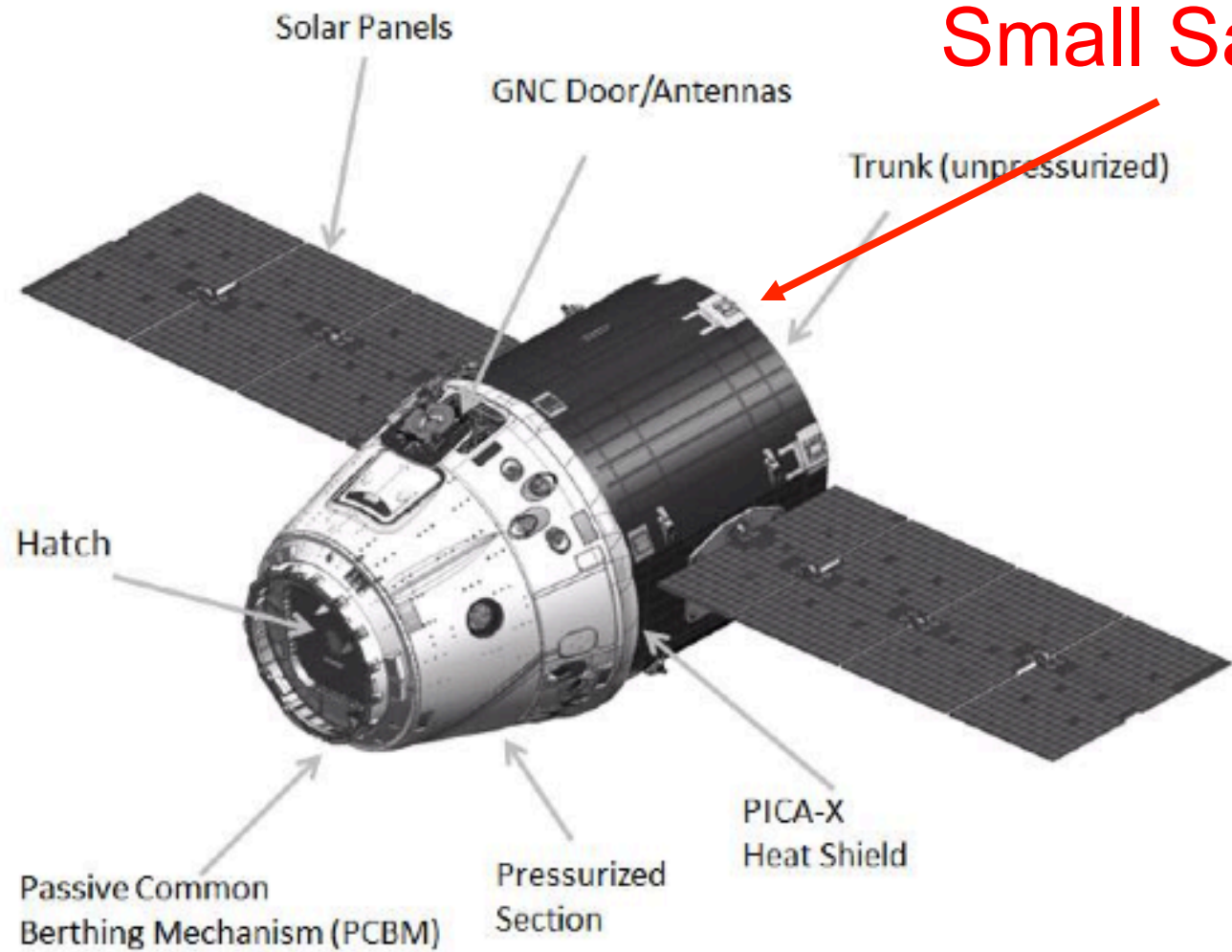
### ESPA Ring



- What about launches?

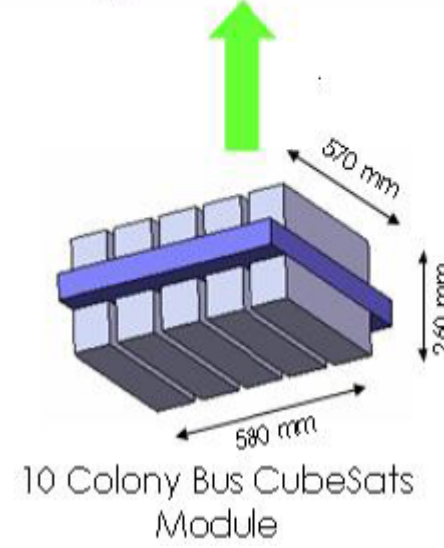
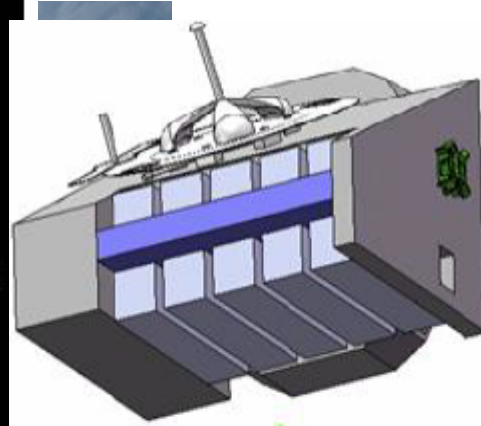
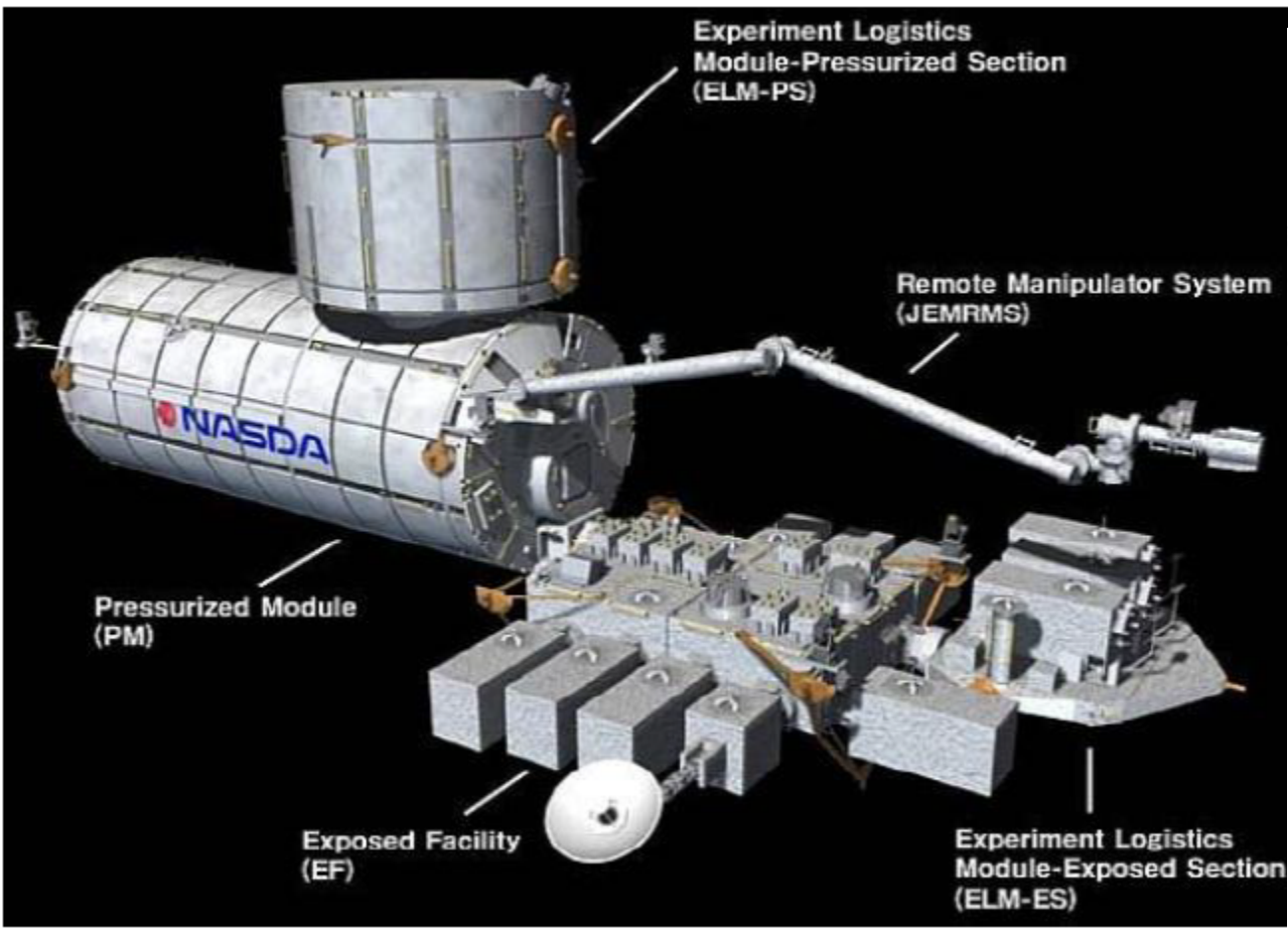
### Dragon Capsule

Small Sats?



# What about launches?

## Introduction to the NanoRacks and Astrium NA External Platform Program

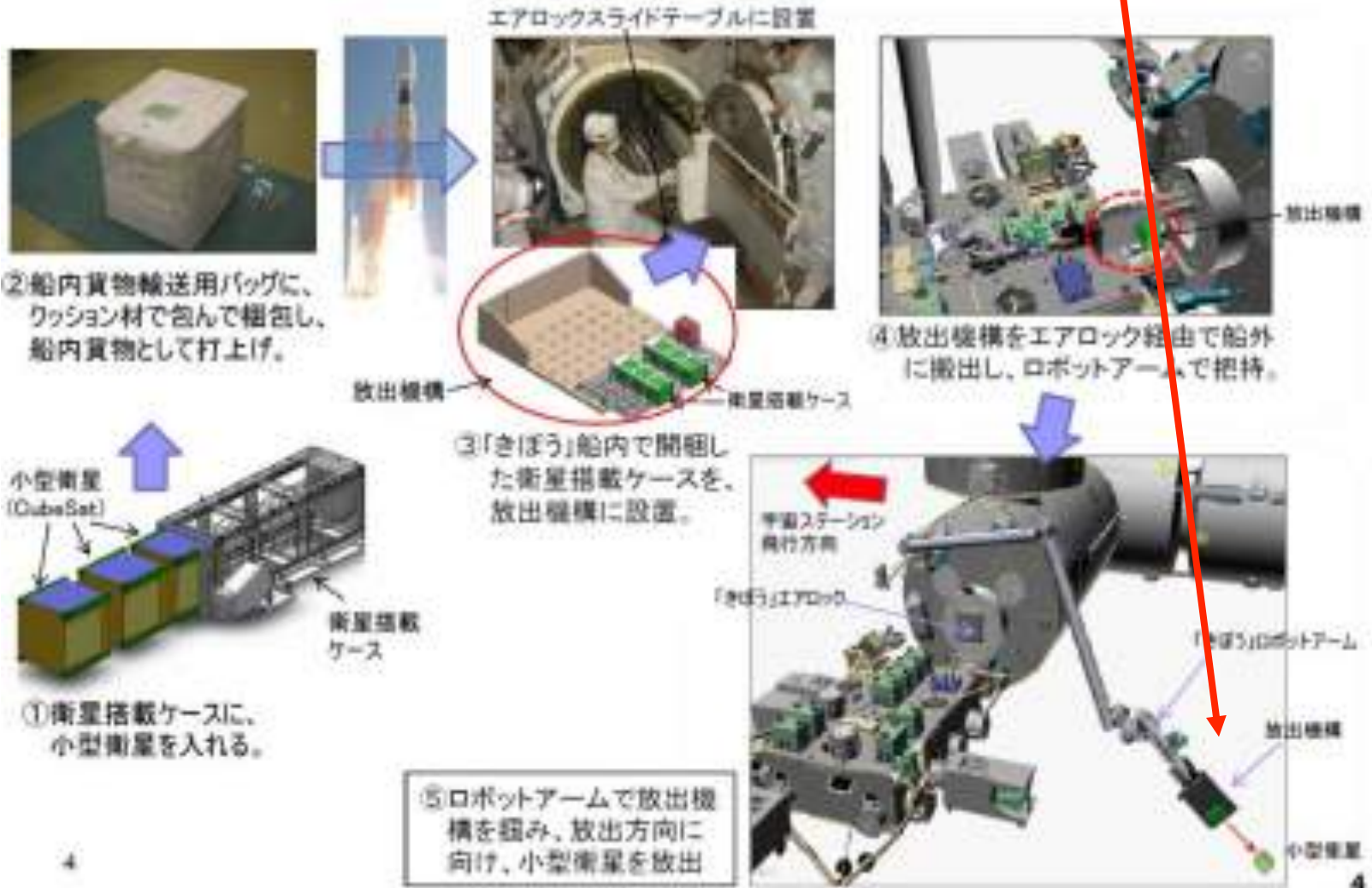




# What about launches?

CubeSats

## NanoRacks External Platform Program



## ISS JEM Module Launches



- What about payloads?

## Present Payloads?

- Space Weather – NSF
- Military applications
- Technology developments
  - More power
  - High Comm rates
  - Attitude control
  - Propulsion
  - .
  - .
  - .



- Some work on small sats smaller than CubeSats

Proposed at Cal Poly April, 2009

# Making it Small

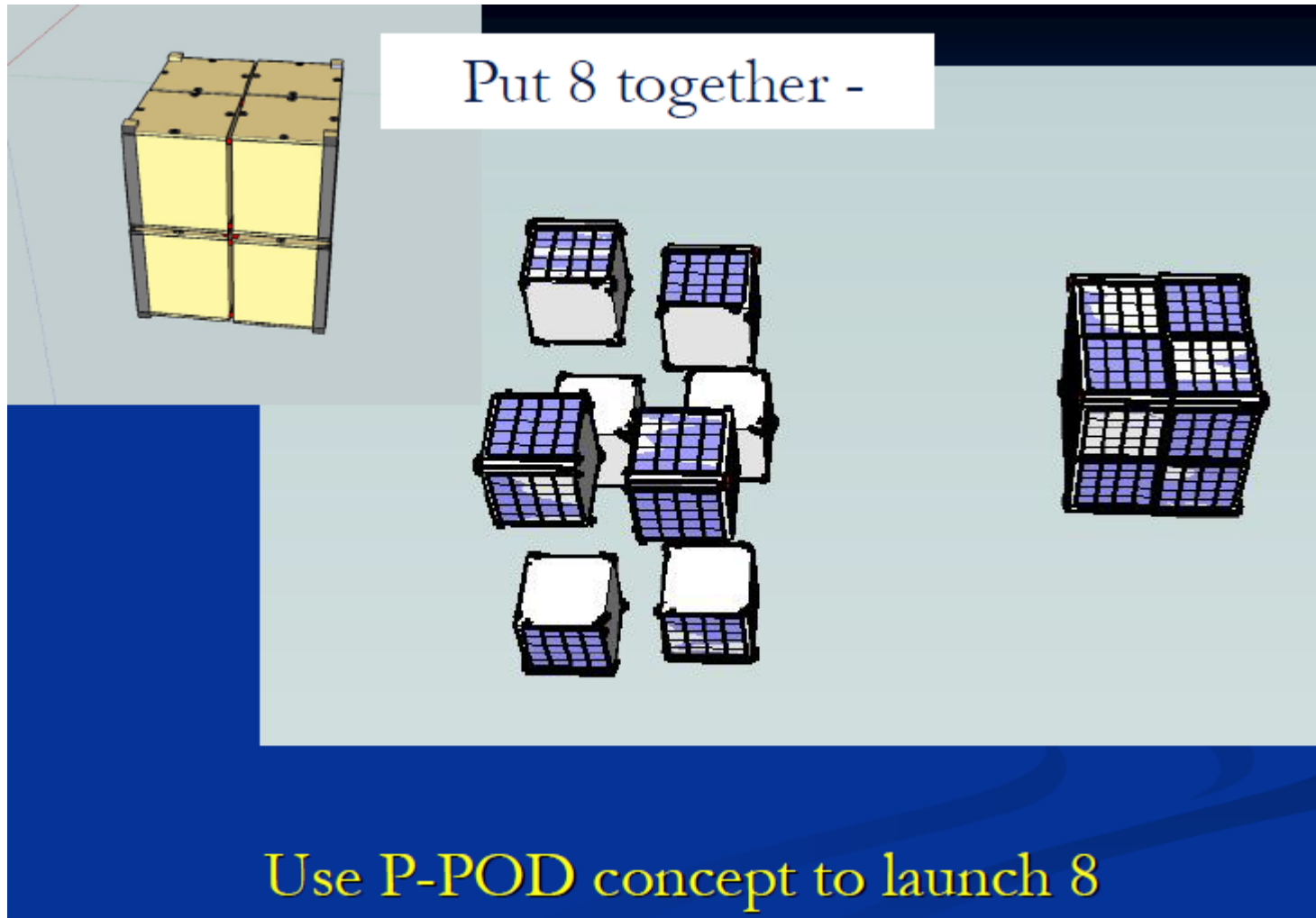
*April 22-24, 2009*

**2009 Cal Poly Developers' Workshop  
California State Polytechnic University  
San Luis Obispo, CA**

**Prof. Bob Twiggs  
Bob.Twiggs@Stanford.Edu**

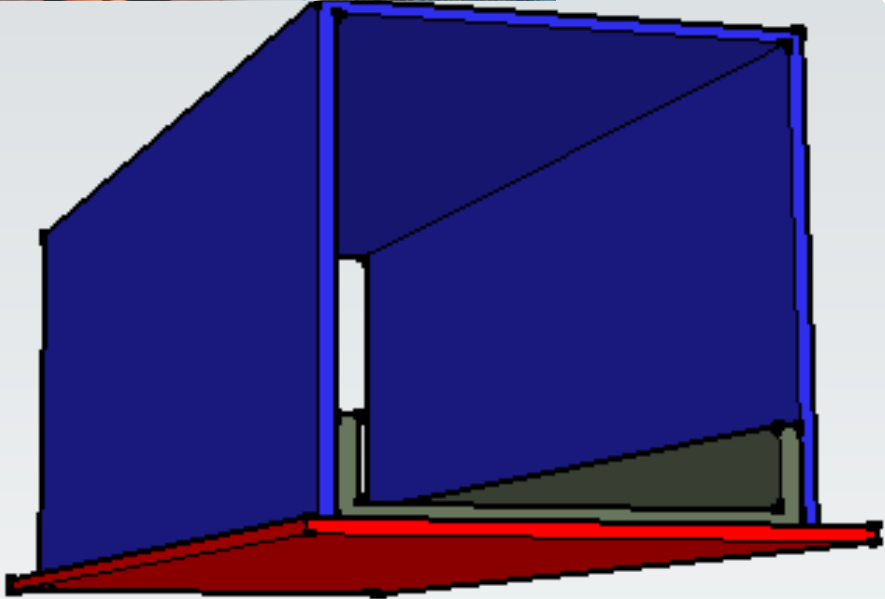
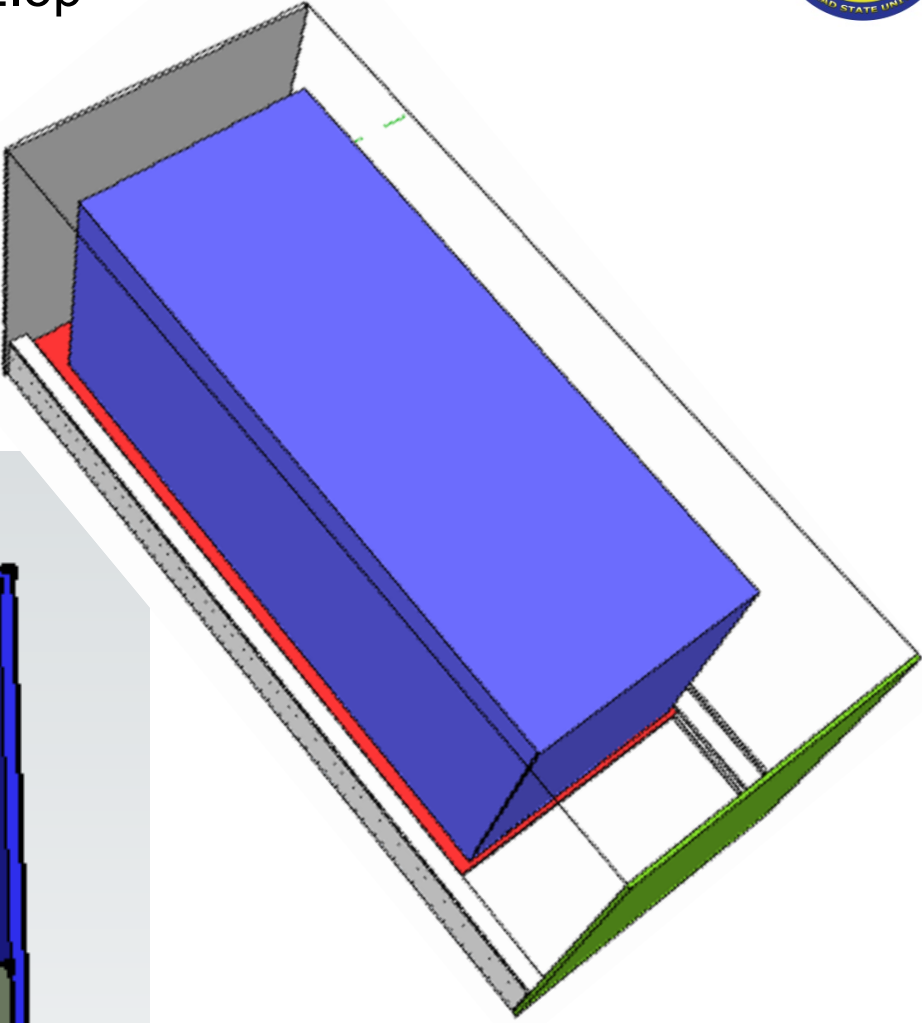
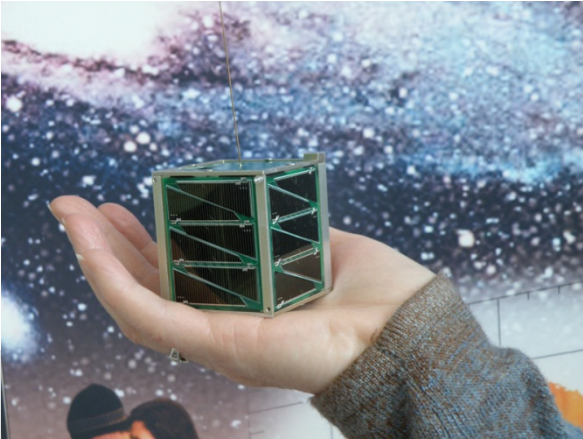
- Some work on small sats smaller than CubeSats

Reduce Launch Costs!!!!!!!



- Some work on small sats smaller than CubeSats

Evolution to a 2.5p  
PocketQube



- Some work on small sats smaller than CubeSats

Evolution to a 2.5p

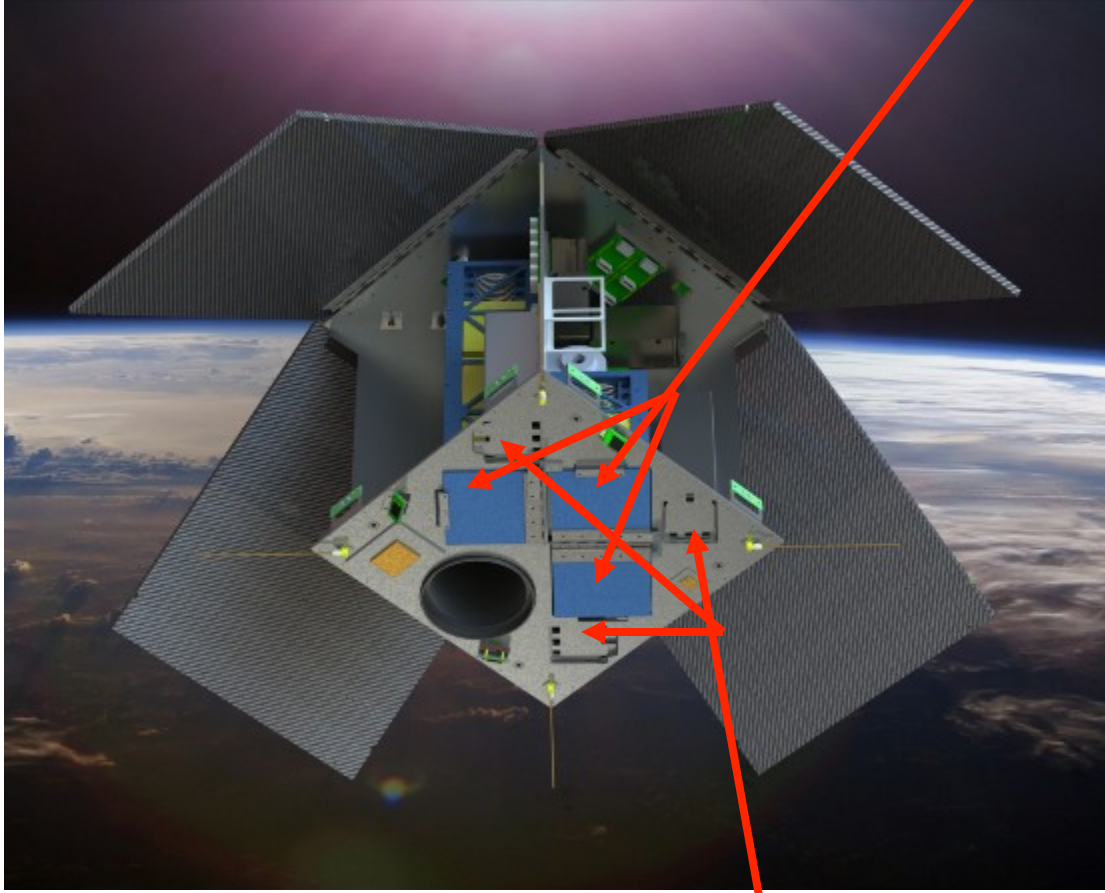


Some work on small sats smaller than CubeSats



UniSat-5

CubeSats Launchers



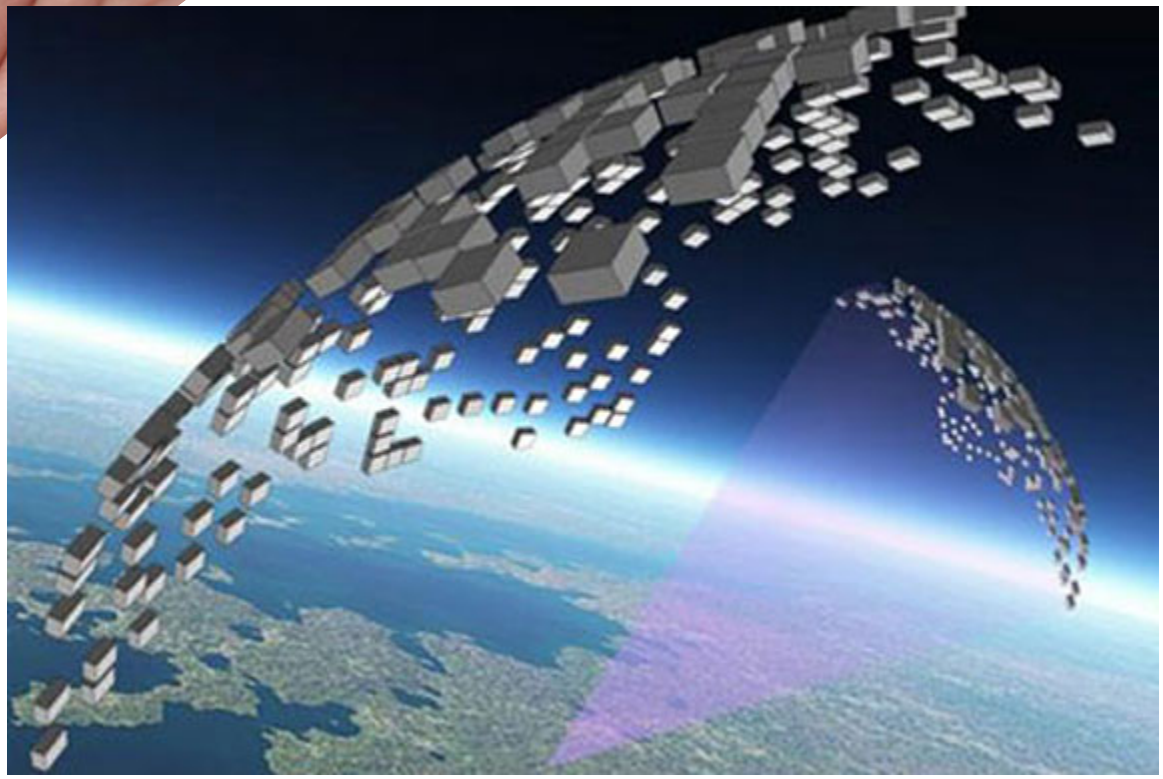
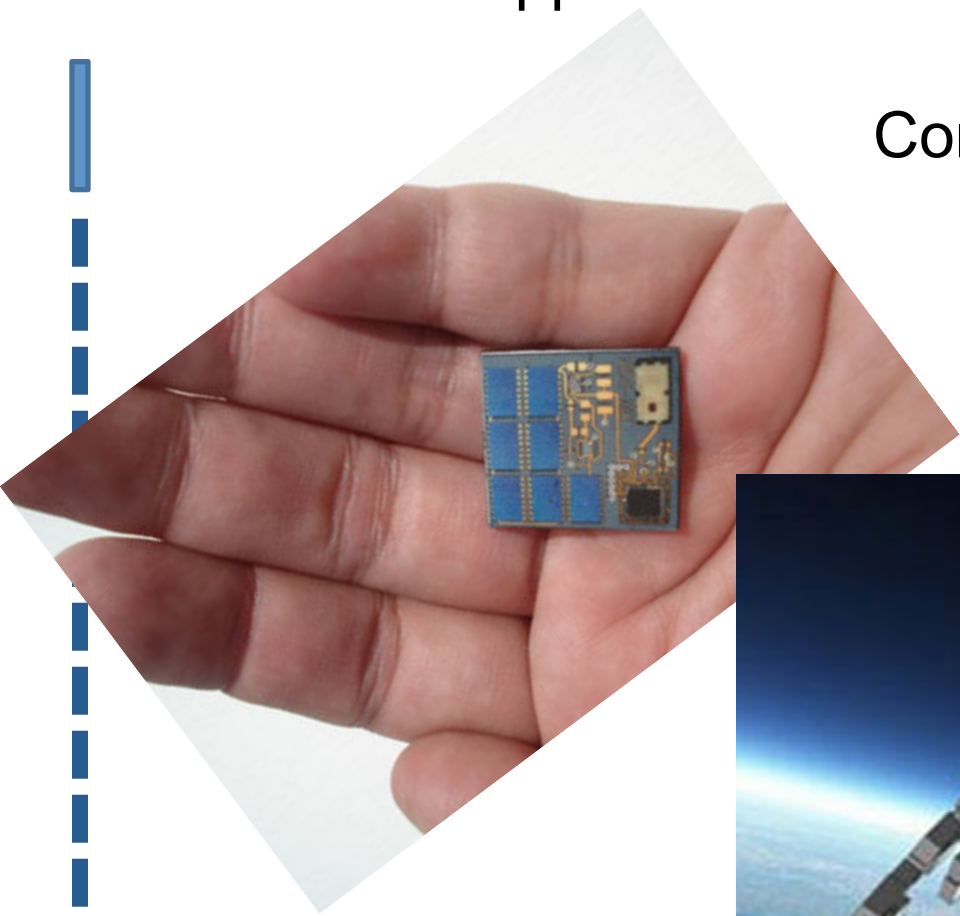
PocketQube Launchers

Dnepr Launch  
November, 2012



- An additional approach

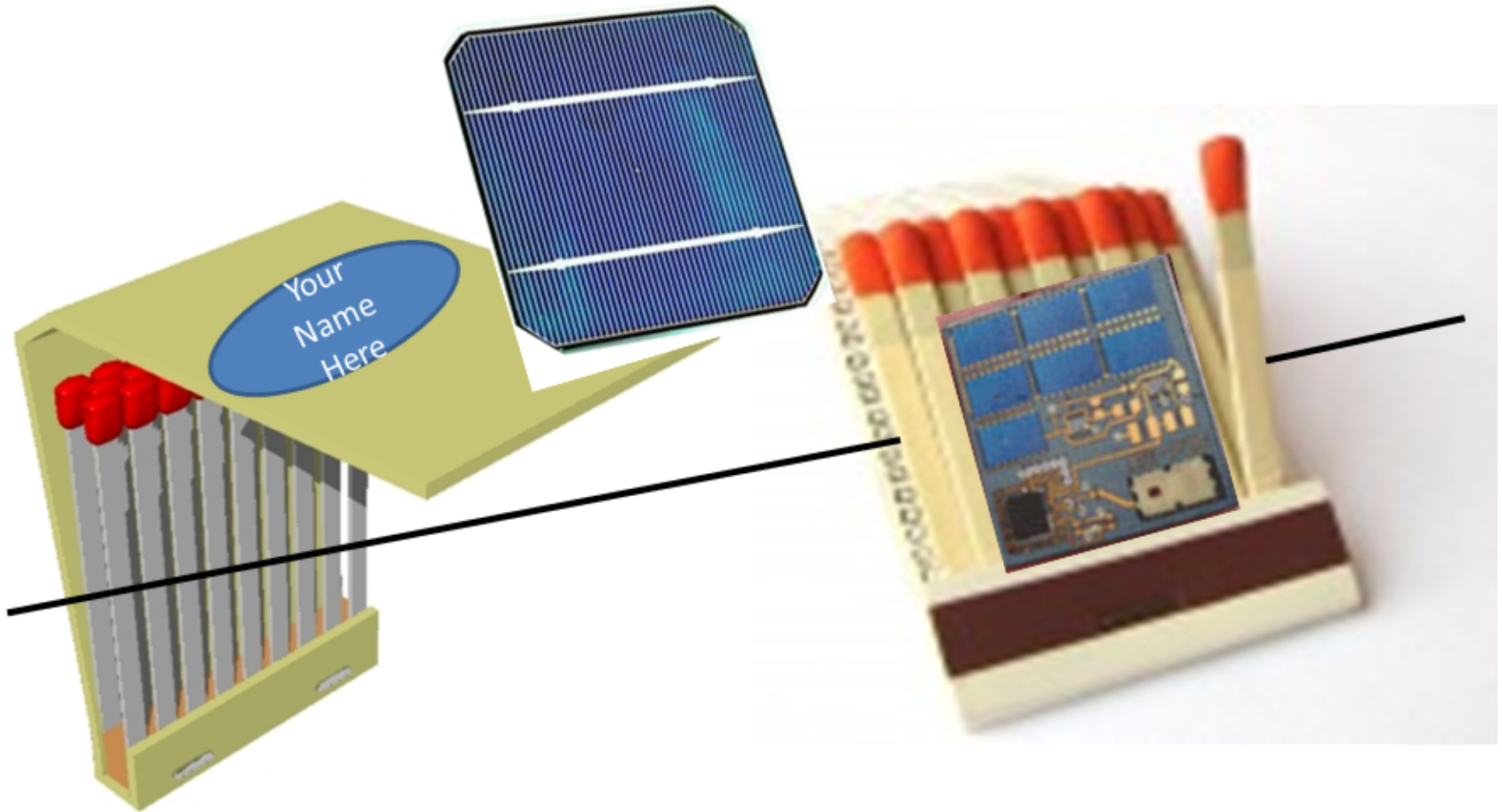
# Cornell's ChipSat





- An additional approach

# MatchBookSat



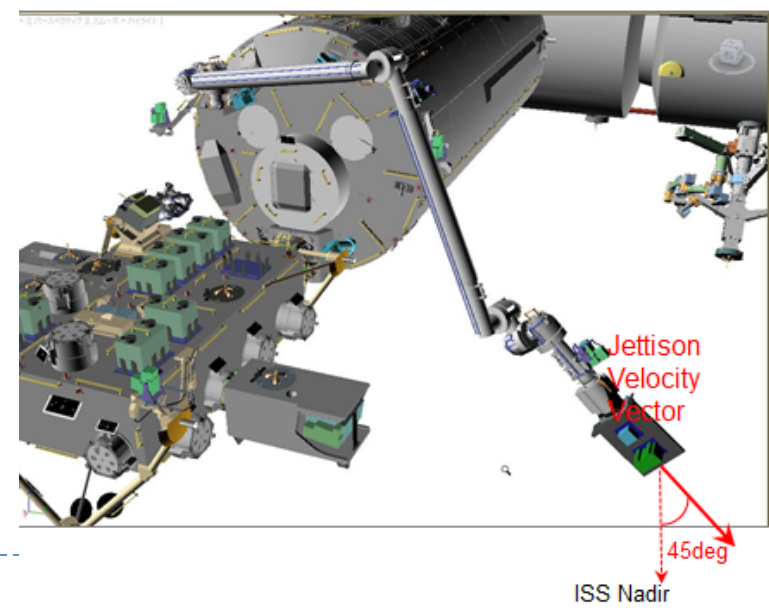
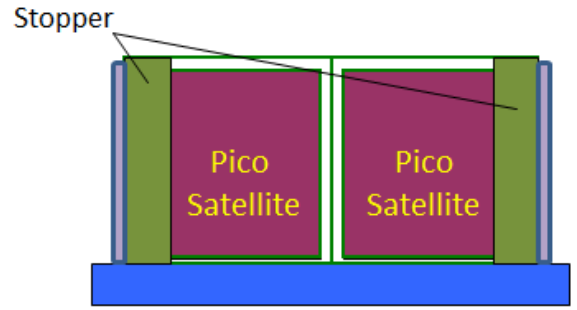
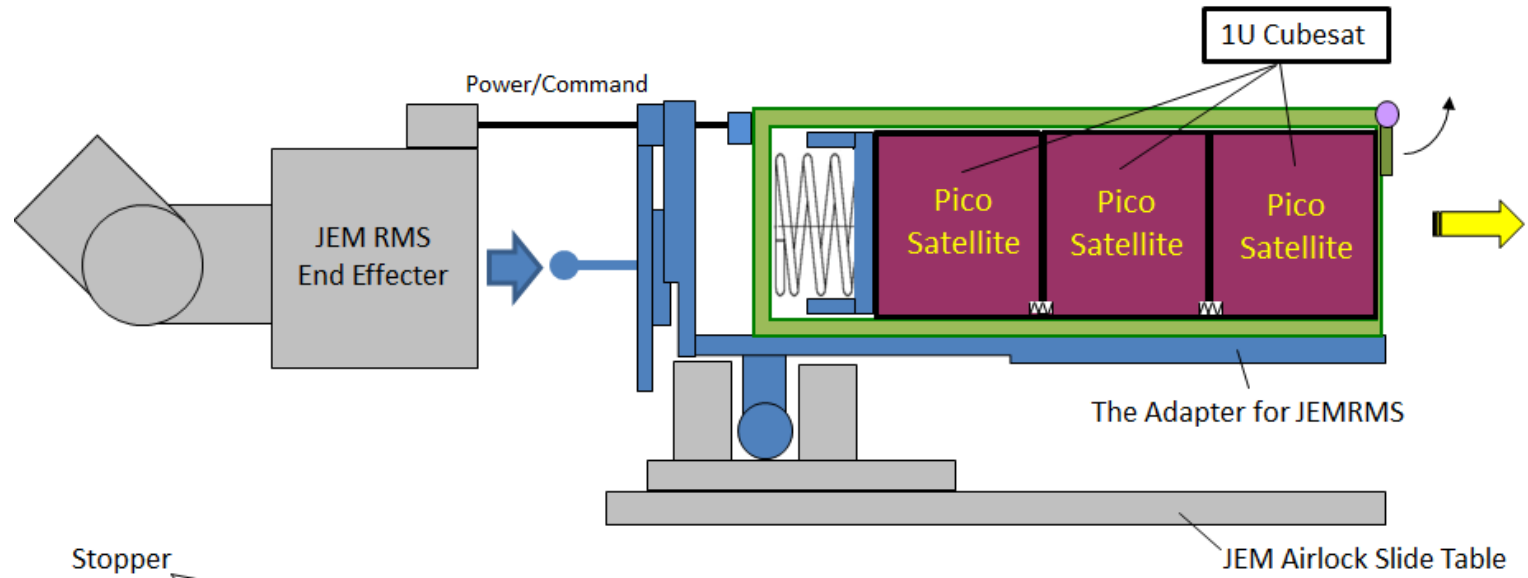


- An additional approach

You get your own  
MatchBookSat Now

Launch from ISS JEM  
Module

# An additional approach





- An additional approach

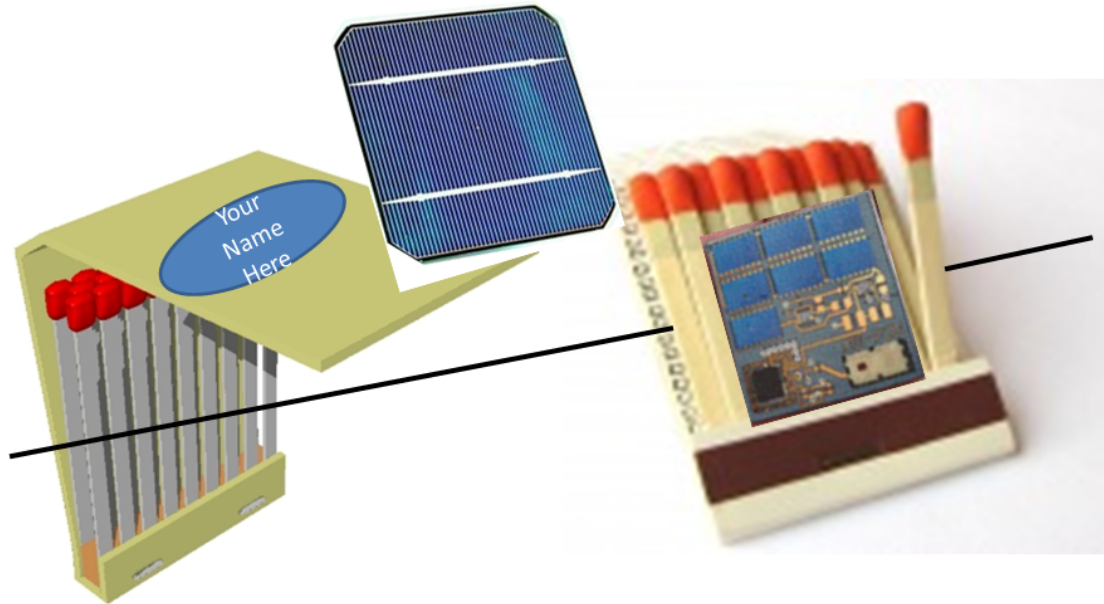
One CubeSat now  
Reserved for MatchBookSat  
launch on the ISS for mid 2014

Launch your own personal  
MatchBookSat

- Developing Apps for Space Experiments

# Your Personal Spacecraft

## MatchBookSat



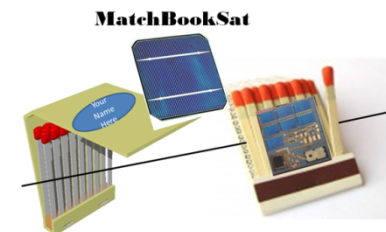


- Developing Apps for Space Experiments

# Your Personal Spacecraft

**Your Personal Spacecraft**

Who wants their own  
Personal Spacecraft?



Now do space research for the  
Common Man!



## ■ Developing Apps for Space Experiments

Do biological experiments.

Use space for the benefit of the  
Common Man

Use the space environment to find  
cures for:

Cancer

Alzheimer's

Muscular Dystrophy

- 
- 
-



- An additional approach

## Proposed MatchBookSat Specs

Solar cell ops only – no battery

Transmit Morse code, on UHF

Use microlabs for experiments

Data format:

Call sign, time, X one bit

0 – no change

1 – change detected

**Binary Spacecraft**





- Developing Apps for Space Experiments

If we could do 300 biological experiments each 6 months, what can we learn?

With Your Personal Spacecraft?



How many want a personal MatchBookSat of your own?

You got one now.

Would you support MatchBookSats launches for 2014?



Give me your thoughts on how you would make a and use a MatchBookSat. (take business card & give me yours in notebook on table)

Want to have presentations on MatchBookSats at Cal Poly Workshop in April 2013?



Thanks

Questions?