



# The UH Small-Satellite Program

*A Vision of Becoming the World's First University to Design, Fabricate, Launch, and Control Small Satellites*

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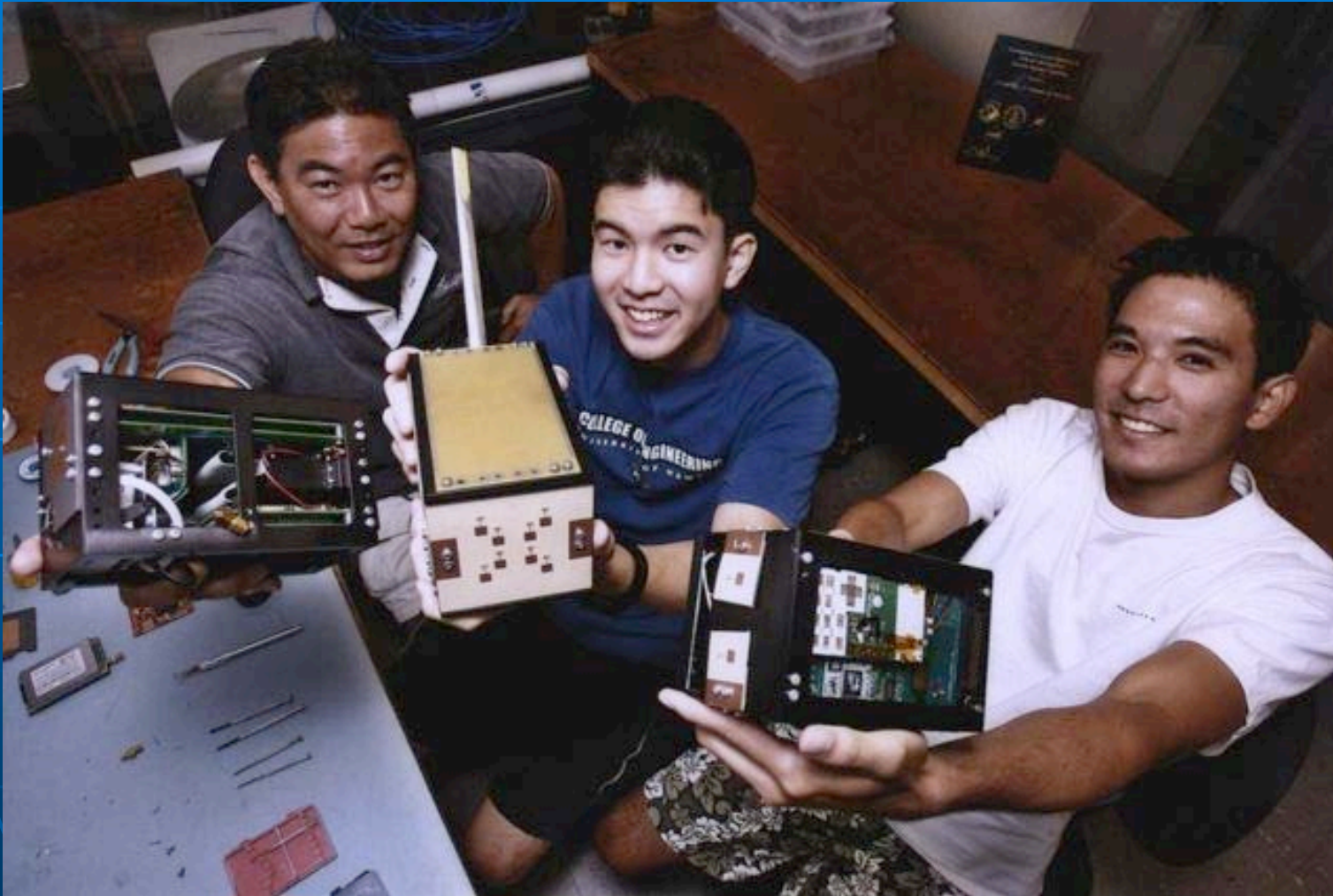
University of Hawaii

**Aerospace Briefing to Hawaii Legislature**

**August 21, 2008**



# Small Satellites





# Educational Paradigm

**Crawl** → **Walk** → **Run** → **Fly**

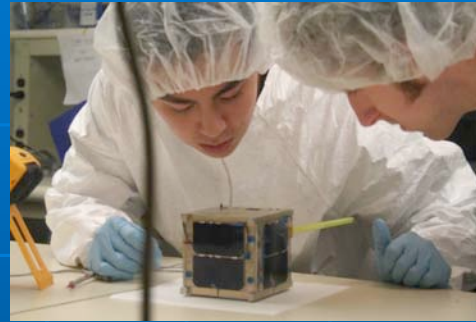


BalloonSat

Suborbital

A few weeks

High School



CubeSat (1 kg)

Low-Earth orbit

1 year

Undergraduate



Nanosat (10 kg)  
Microsat (100 kg)

Low-Earth orbit

1-2 years

Undergraduate  
Graduate  
Post-graduate



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# BalloonSat



## Participating High School Juniors

- Mililani
- Waipahu
- Kalani
- Iolani
- Mid Pac
- Kamehameha



# Hawaii Kai BalloonSat Launch – July 2008





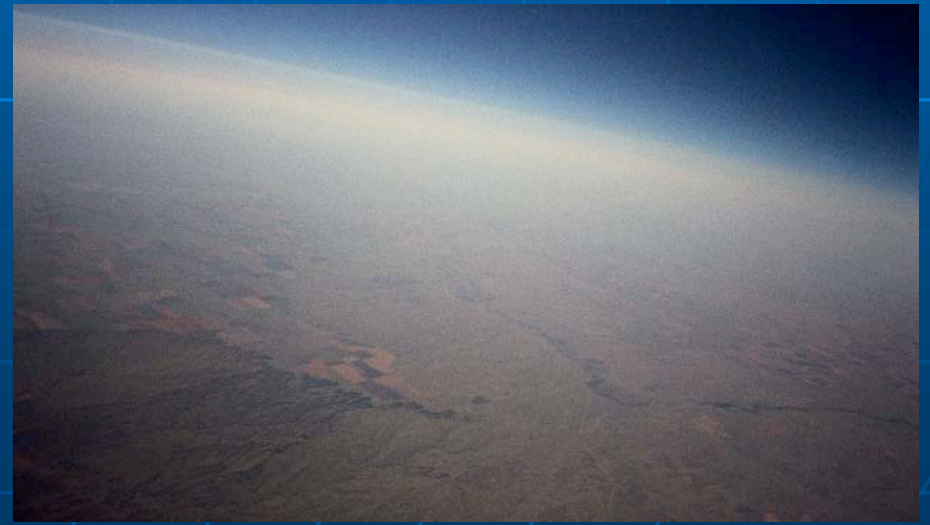
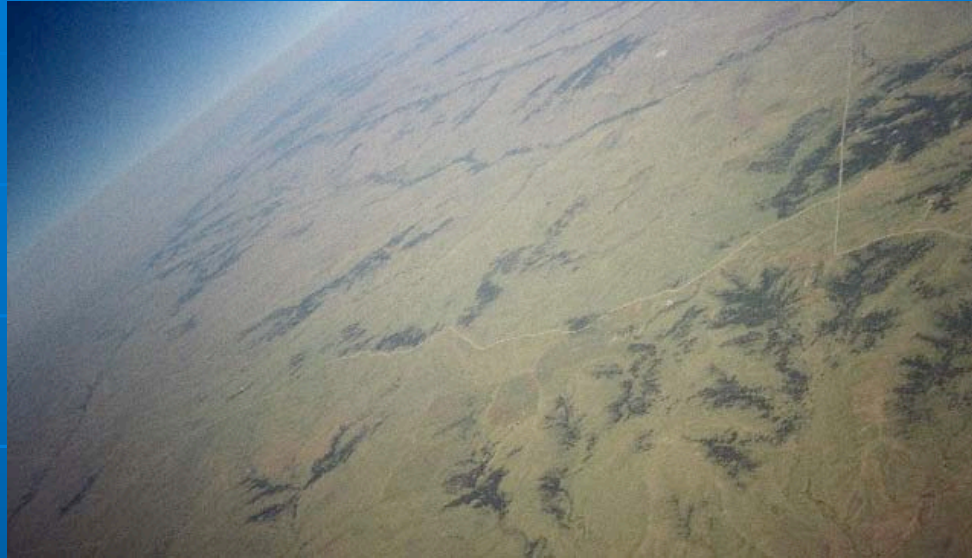
## Hawaii Kai BalloonSat Launch – July 2008





# BalloonSat - 100,000 feet

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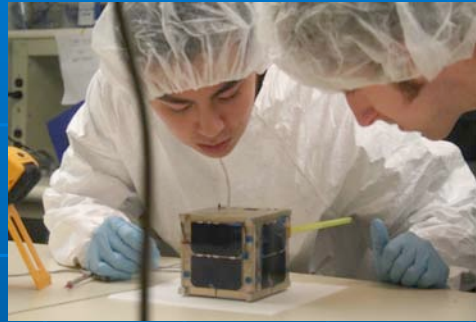


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# CubeSat Projects

2002

2003

2004

2005

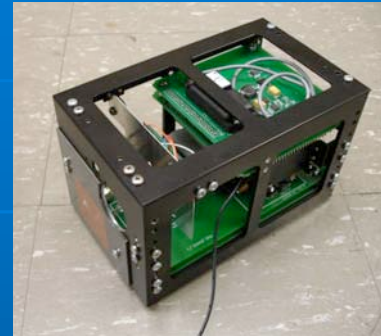
2006

2007

2008



Mea Huaka`i (Voyager)



Ho`okele (Way Finder)

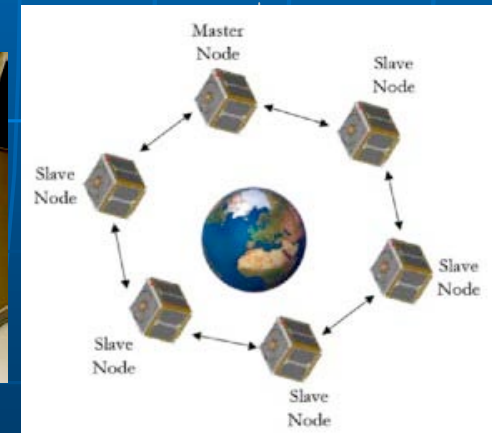


Kumu a`o  
(Source of Learning)

## Program Sponsors



Hokulua (Twin Stars)



Ho`okia`i (Watchman)



## Student Outcomes

- 150 students trained since 2001
- 8 in PhD programs, > 20 in MS programs
- Current team composed of 50% Native Hawaiians
- Three of our students recognized as *Most Outstanding EE Student in the Nation* (EE National Honor Society Award) in 2001, 2003, 2005. Honorable mention in 2007. All four from Oahu or Maui public high schools.
- 1 patent awarded
- \$500,000 in funding, including student-solicited proposals
- > 20 undergraduate publications
- Northrop Grumman, Boeing, Raytheon, Lockheed Martin, Oceanit, SPAWAR, ...







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# Launching Small Satellites



Video courtesy of One Stop Satellite Solutions, Ogden, UT



# Workforce Development



## Aaron Ohta

- Kalani 1999, UH BS 2003, UCLA MS 2004, Berkeley PhD 2008
- *Most Outstanding EE Student in the Nation, 2003*
- Will join UH engineering faculty in 2009

## Blaine Murakami

- Mililani 2001, UH BS 2005
- *Most Outstanding EE Student in the Nation, 2005*
- Co-founder, Pipeline Communications and Tech.

## Justin Akagi

- Kailua 2001, UH BS 2005, UH MS 2008
- Secured over \$500K in funding for UH
- Student Lead, UH Small-Sat Program

## Jason Akagi

- Kailua 1999, UH BS 2003
- NovaSol, Archinoetics, HSFL
- Leads UH BalloonSat Program