

# Mission Idea Contest

Open the Door to A New Facet of  
Space Exploration and Exploitation



University Space Engineering Consortium  
(UNISEC)

Rei Kawashima

[rei@unisec.jp](mailto:rei@unisec.jp)

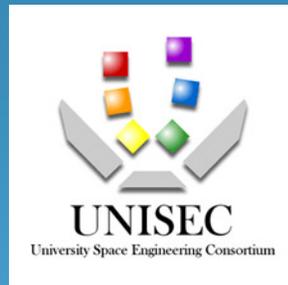


# Contents

- Introduction
  - Japanese Nano-satellite history and UNISEC
- Results of the 1<sup>st</sup> Mission Idea Contest (MIC)
  - Process and results
  - MIC's Merits for Capacity Building
- Call for Ideas at the 2<sup>nd</sup> Mission Idea Contest
- Other Capacity Building Programs that Japanese Nano-satellite Community offers
- Conclusion

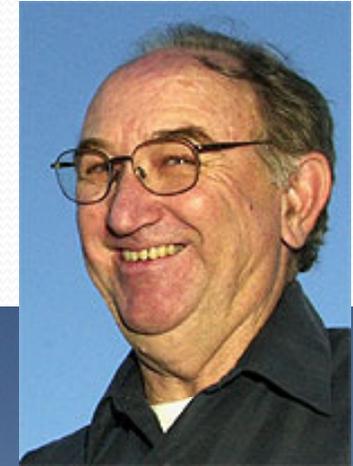
# Introduction

## Japanese Nano-satellite History and UNISEC



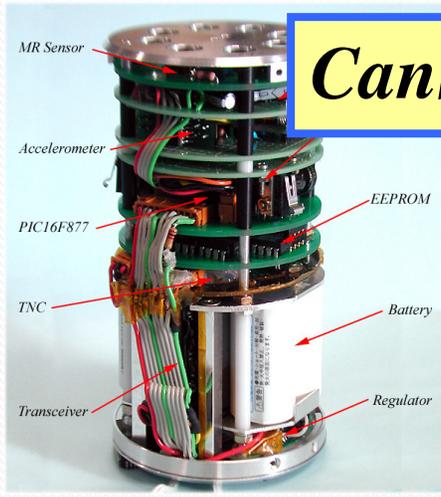
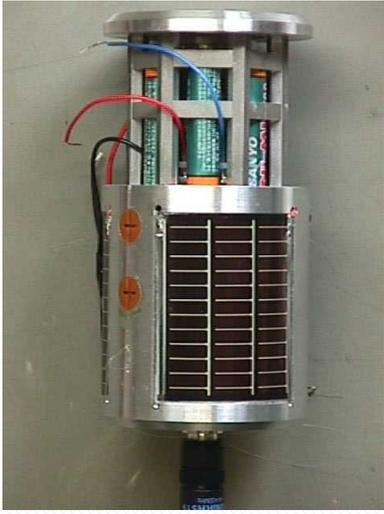
<http://www.unisec.jp>

# Background (1) CanSat 1998~

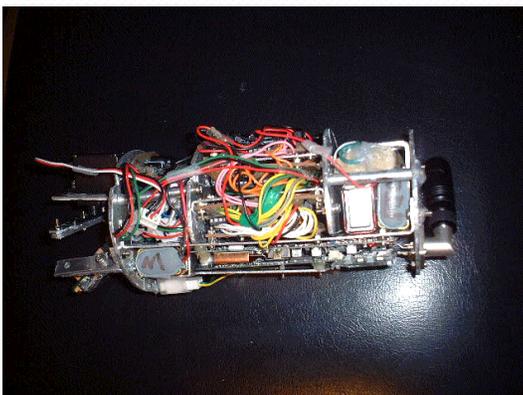


Thanks to  
Prof. Bob Twigg!





# CanSats 1999-



# ARLISS Suborbital Launch Experiment

Japan-US Joint experiment has been coordinated annually

- Rockets are provided by **amateur rocket group**
- CanSats are released at 4km altitude on Nevada desert
- **ARLISS 1999** : Sept. 11 (Univ.of Tokyo, Titech, Arizona State, etc.)
- **ARLISS 2000**: July 28-29 (Japan:4 univ, USA:3)
- **ARLISS 2001**: August 24-25 (Japan:5, USA:2)
  - 1<sup>st</sup> Come-back competition
- **ARLISS 2002**: August 2-3 (Japan:6, USA:3)
- **ARLISS 2003**: Sept.26-27 (Japan:6, USA:3)
- **ARLISS 2004**: Sept.24-25 (Japan:6, USA:3)
- **ARLISS 2005**: Sept.21-23 (Japan:7, USA:3 >100 students)
- **ARLISS 2006**: Sept.20-22 (Japan:10, USA:?)
- **ARLISS 2007**: Sept.12-14(Japan:10 Korea:1, USA:?)
- **ARLISS 2008**: Sept.15-20(Japan:13, Korea:1, USA:?)
- **ARLISS 2009**: Sept. 13-18(Japan13, USA:4, Korea 1)
- **ARLISS 2010**: Sept.12-17(Japan10, Korea:1, USA:2, Norway:1, France:1)



# UNISEC: University Space Engineering Consortium



- UNISEC is a non-profitable organization to facilitate and promote practical space development activities, such as designing, developing, manufacturing, and launching small satellites and hybrid rockets at university level.
- Established in 2002
- 55 laboratories/groups from 35 universities
- 470 student members and 220 supporters
- 3 pillars: Human resource development, Technological development, Outreach



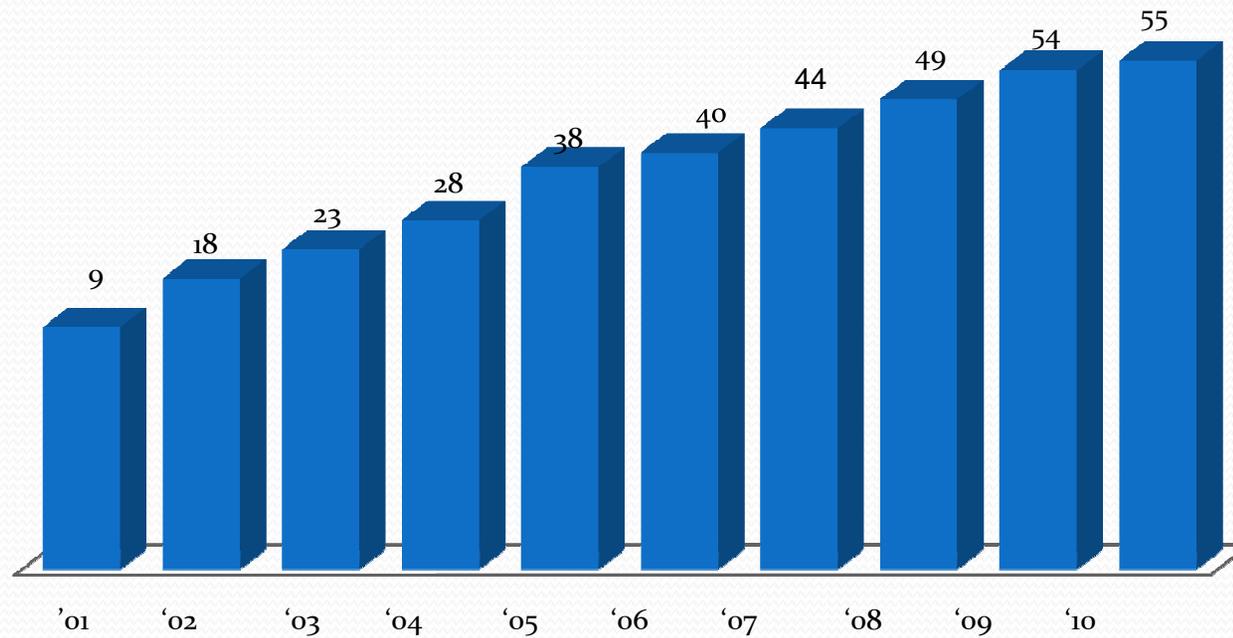


# UNISEC Activities – what we do

- Distribute R&D funds from space enterprise
- Engage UNISEC members with space companies (technical/component/facility support, consulting)
- Work on legal issues (frequency band, export license, etc.)
- Work on safety issues
- Find launch opportunities
- Technology exchange, joint development/purchase
- Symposium/workshop/study group, conference
- Local outreach activities

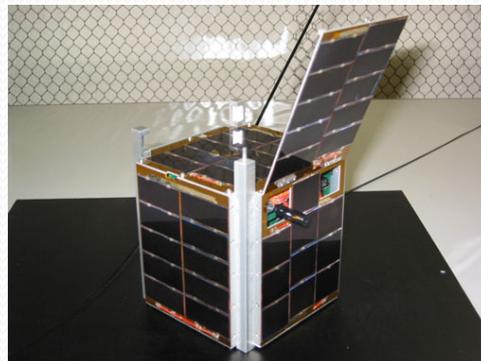
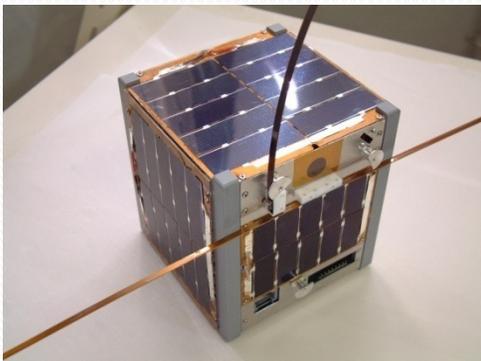
# UNISEC Development

Number of Member Laboratories



# Background (2) CubeSat 1999~

- First CubeSat launch (June 2003)
  - Only two Japanese CubeSats (one by Univ. of Tokyo, and the other by Tokyo Inst. of Tech.) worked well.
  - Both satellites are still very healthy in orbit (more than 8 years)
- A total of 15 Japanese university nano satellites were launched up to now.

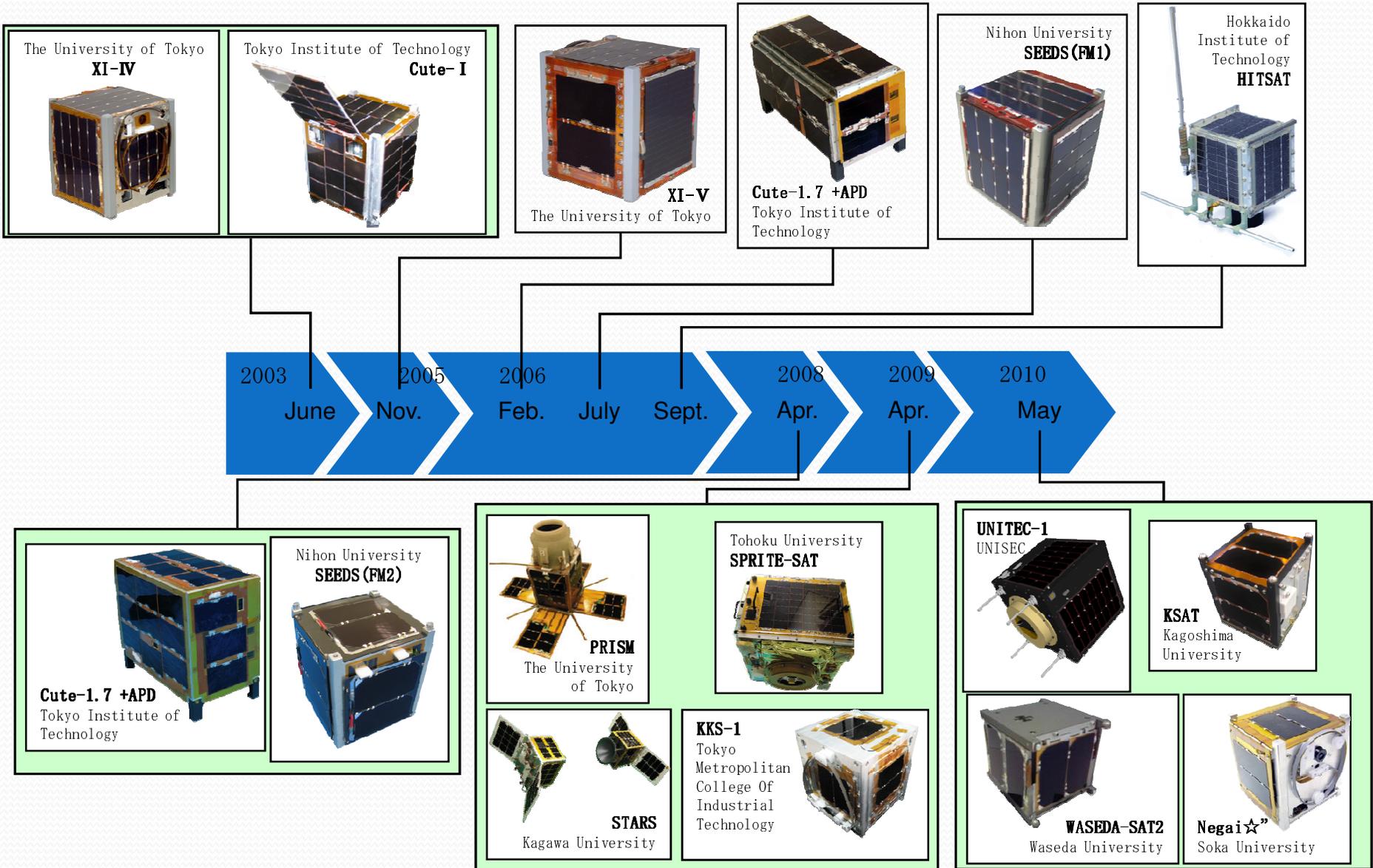


First CubeSat

Left: XI-IV by Univ. of Tokyo

Right: CUTE-I by Tokyo Inst. of Tech.

# UNISEC Satellites Development



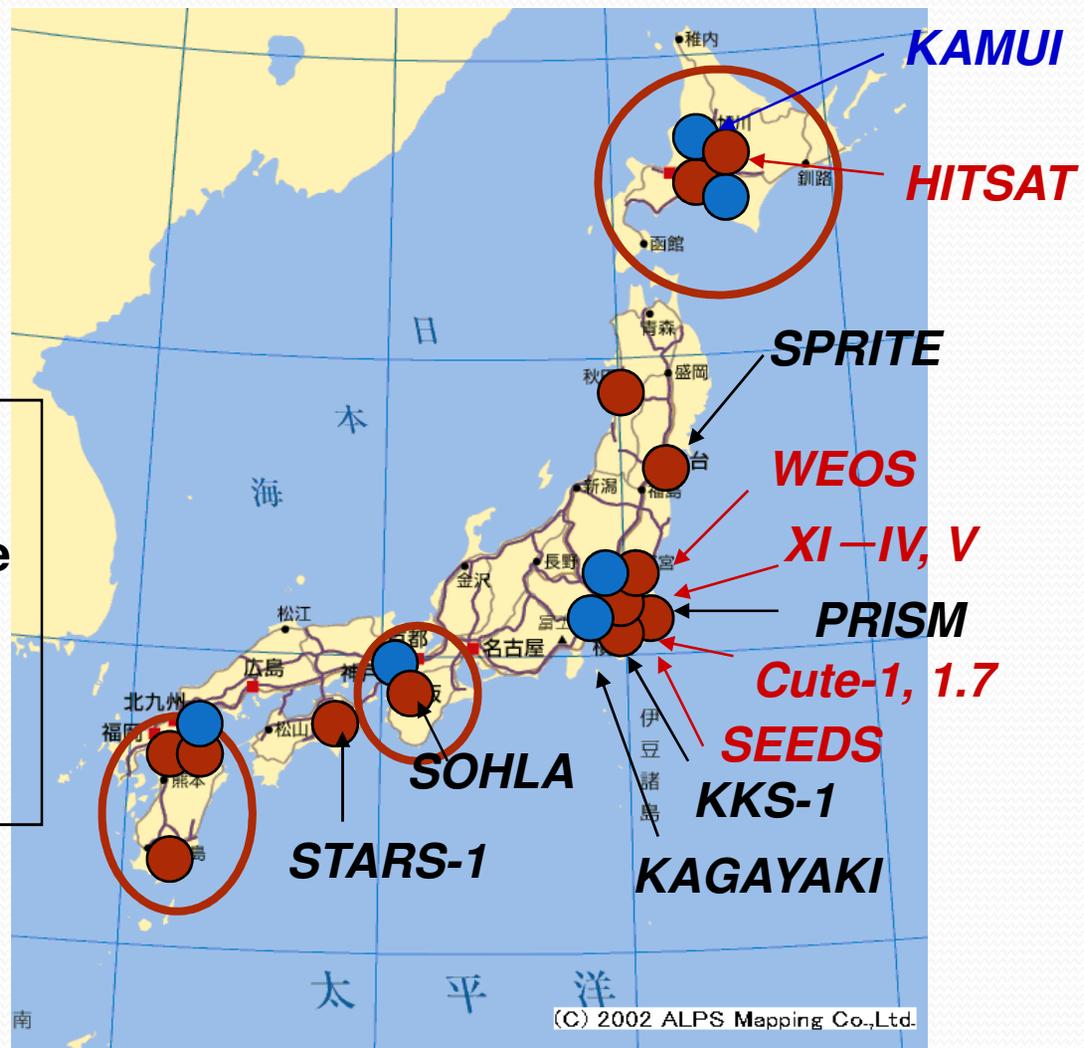
# UNISEC and Regional Small Satellite/Rocket Activities



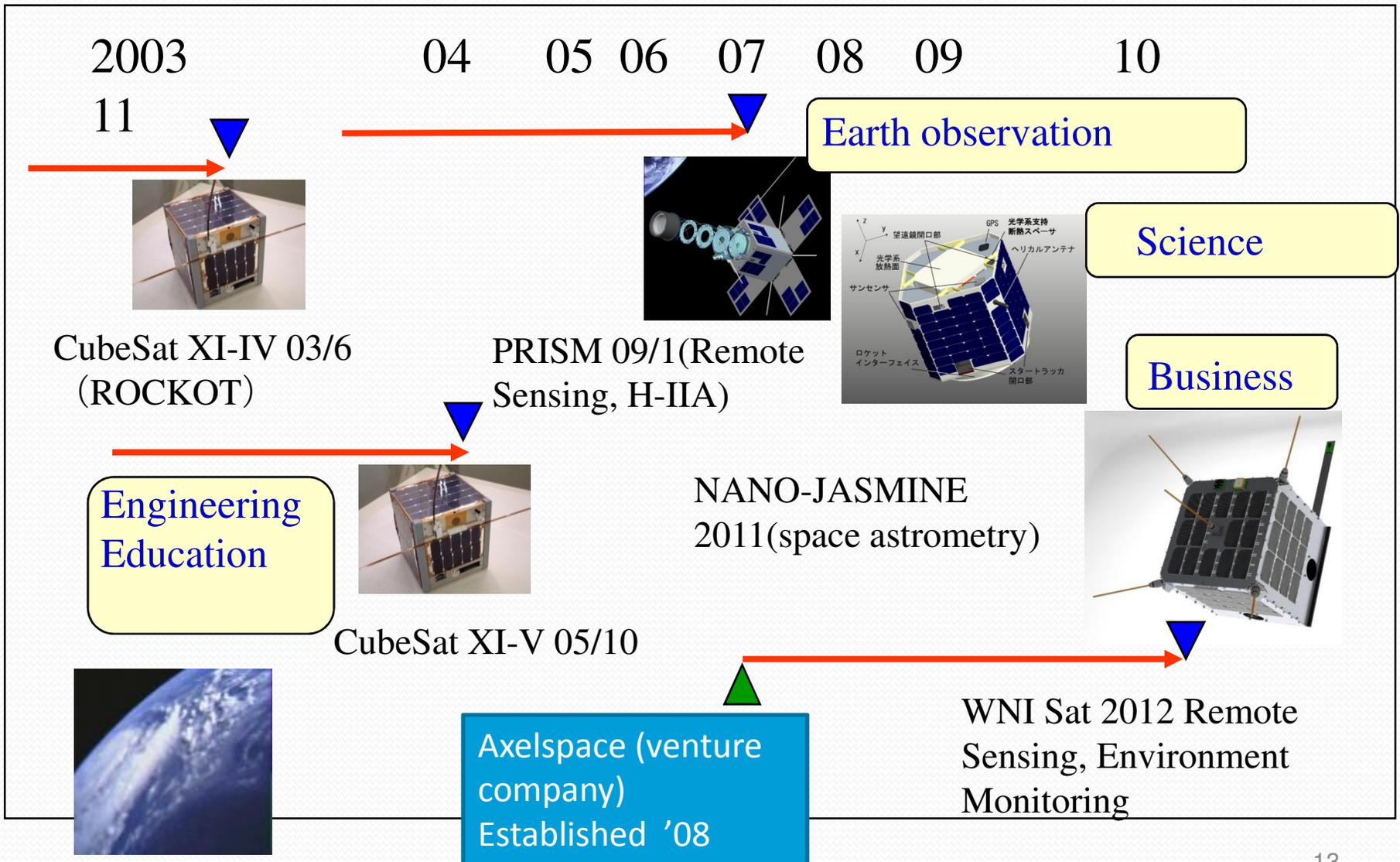
H-IIA Piggy-back Others

Launched with PLANET-C in 2010  
 WASEDASAT  
 KSAT  
 Negai  
 UNITEC-1

QSAT  
 Horyu  
 Nano-Jasmine  
 PROITERES  
 TSUBAME



# From Education at University to Real Mission



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