Group 4: Successfully launching university satellites: From design to orbit

3rd UNISEC Global Meeting

July 04, Tokyo, Japan

University Wuerzburg Experimental Satellite UWE-3

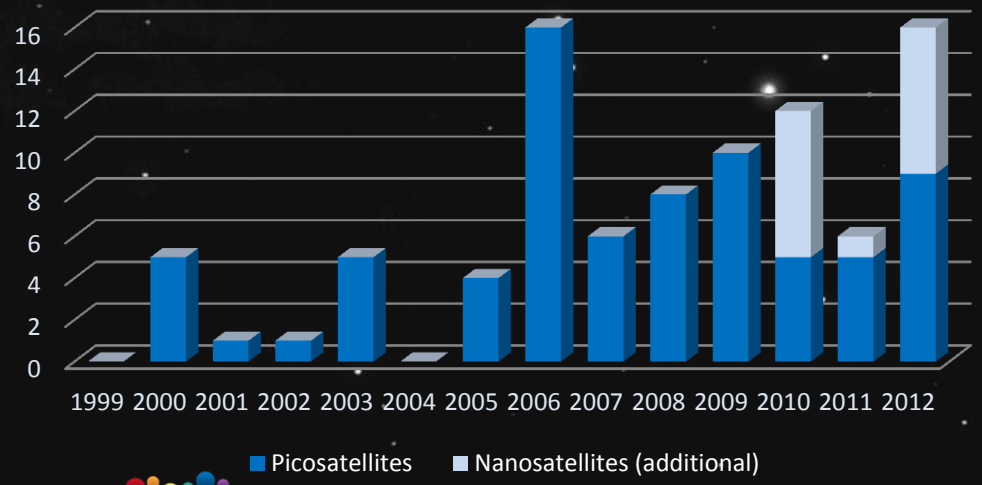
Cubesat Projects

Chances

- more than 80 educational institutions world wide
- flexible and cost efficient access to space
- push research in small satellites & unique training platform

Challenges

- not all missions could demonstrate successful operation in orbit



[Bouwmeester and Guo, 2010]

Typical Goals of University Satellite Projects

System Engineering

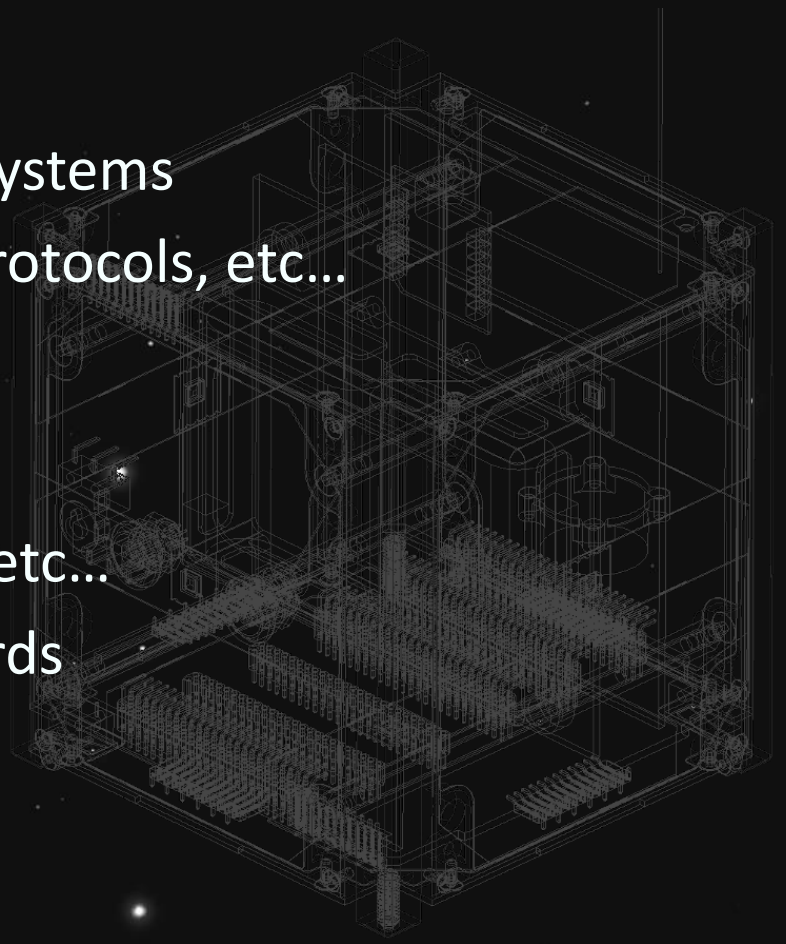
- Design, development and test of subsystems
- Control algorithms, communication protocols, etc…
- Payload and scientific sensors

Project Management

- Project timelines, team organization, etc…
- Documentation, International Standards

Satellite Operations

- Operation procedures and planning



Typical Problems of University Satellite Projects

High Student Fluctuations

- student participation in the order of a few months only
- loss of expertise and responsibility

UWE-3 Flight Model Integration

Typical Problems of University Satellite Projects

Significant Launch Delays

- Need for easy maintenance, extension and replacement of subsystems even after integration
- Changes in the student team

DNEPR launch Nov. 2013

Typical Problems of University Satellite Projects

Limited Financial Budgets

- Limited access to complete set of test facilities during development phase
- Limited access to test hardware and models (engineering model and flight model only?)
- needed support for reusability and easy manufacturing of components

UWE Satellite Components lined up with Engineering, Structural, and Flight Model

Typical Problems of University Satellite Projects

Regulatory Issues

- Frequency allocation
- Launch negotiations
- Money procurement

https://fluix.io/how-to-streamline-the-contract-document-management-process/

Goals for Discussion

Open discussion about (but not limited to):

- The issues University CubeSats are facing
- What can we do in order to reduce risks for these missions?
- How can cooperations between Universities facilitate missions?
- Can Standards be established to help and cooperate?
- What should be considered in planning an University CubeSat project?

https://isegenesis.wordpress.com/2015/03/14/code-%E0%A4%AF%E0%A5%81%E0%A4%A6%E0%A5%8D%E0%A4%A7-coding-week-2015/