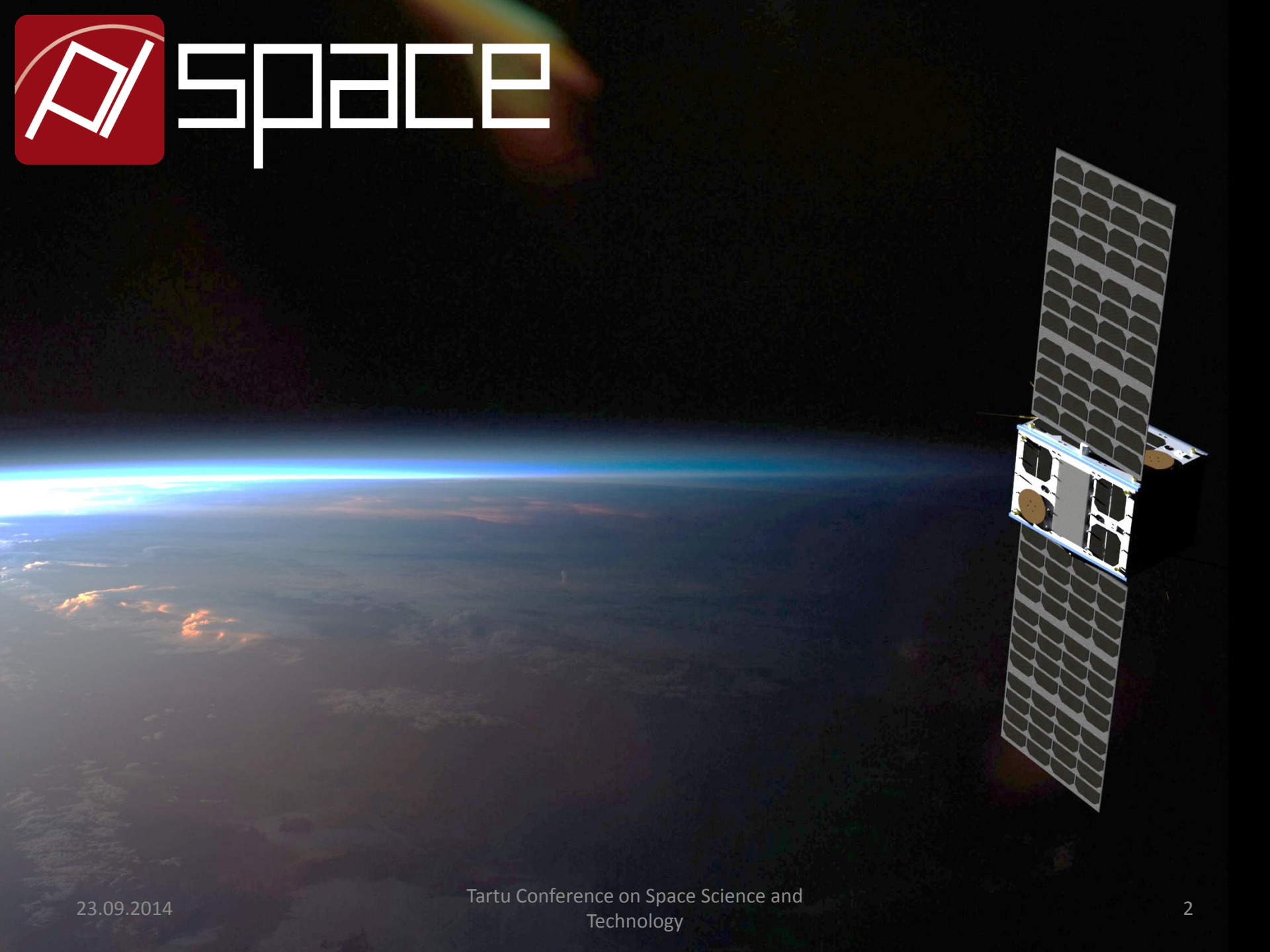
New CubeSat Structure and Mechanics Product Family

Paul Liias, Erik Kulu

pl Space oü


space

Agenda

1. pl space
2. Design and Development
3. CubeSat Structure Family
4. Antenna Deployment System
5. Solar Panel Deployment System
6. Testing

pl space

Spin-off from ESTCube

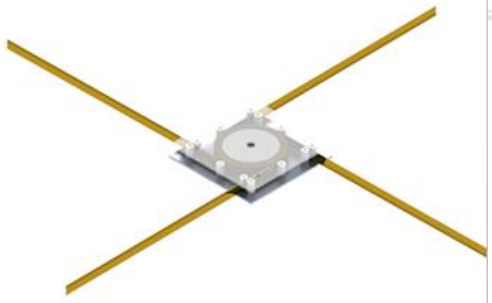
Founded in November 2013

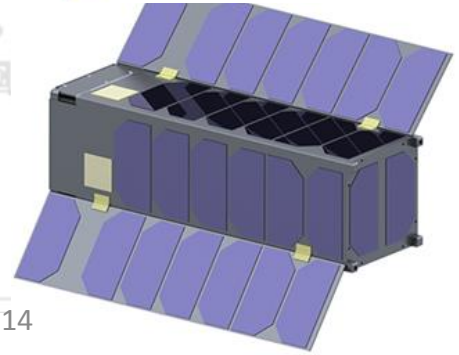
Vision - *pl space will be a recognized space systems developer for space upstream and downstream sectors.*

Supported by VEGA FOND

pl space

Products

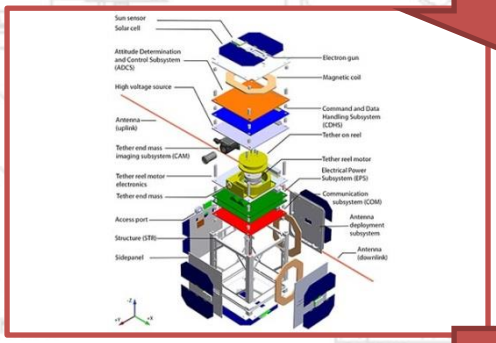


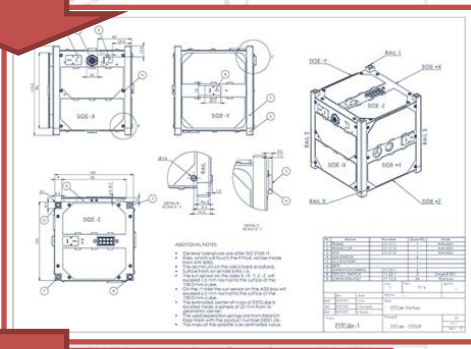


Services

4.2. Structure

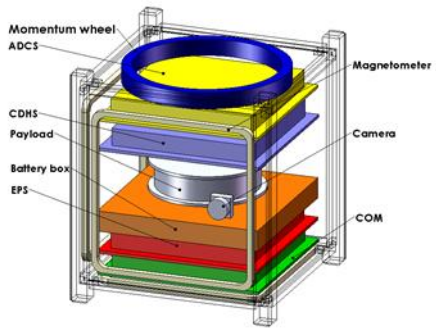
ESEO-SYS-REQ-1201	The mass of the system must not exceed 580 g
ESEO-SYS-REQ-1202	The optical payload must fit in a 1.7 liter volume
ESEO-SYS-REQ-1203	A minimum of 10 mm free space around connectors
ESEO-SYS-REQ-1204	Openings into the payload shall be covered on delivery
ESEO-SYS-REQ-1205	The payload shall have no mounting contacts with the bottom plate
ESEO-SYS-REQ-1206	A minimum of M4 grade A2-70 mounting bolts between the P/L and S/C
ESEO-SYS-REQ-1207	A minimum of 4 mounting bolts shall be used
ESEO-SYS-REQ-1208	All mounting points in a common plane shall be within 0.05 mm
ESEO-SYS-REQ-1209	Maximum contact area roughness of 3.2 µm
ESEO-SYS-REQ-1210	Minimum contact area of 250 mm^2
ESEO-SYS-REQ-1211	The contact surface shall be coated with Alodine 1200



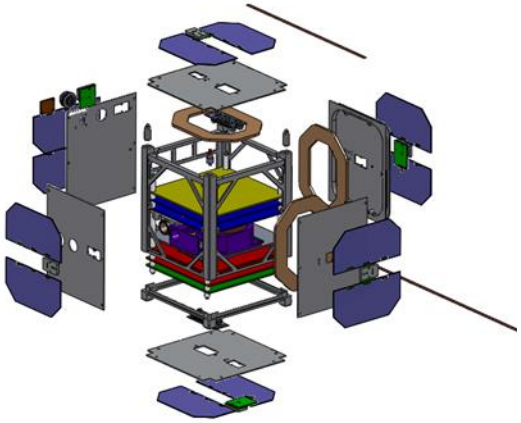


ESTCube-1 STR

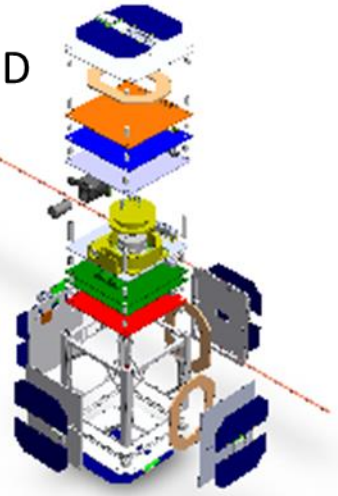
Phase 0/A

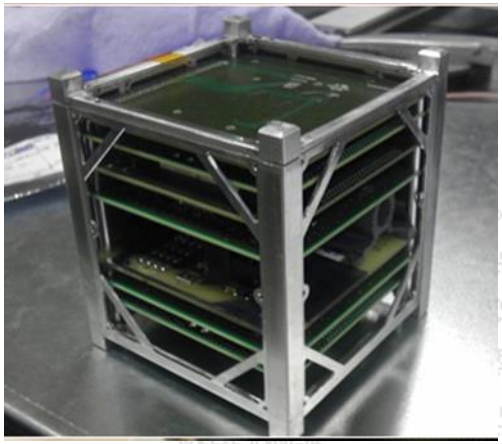


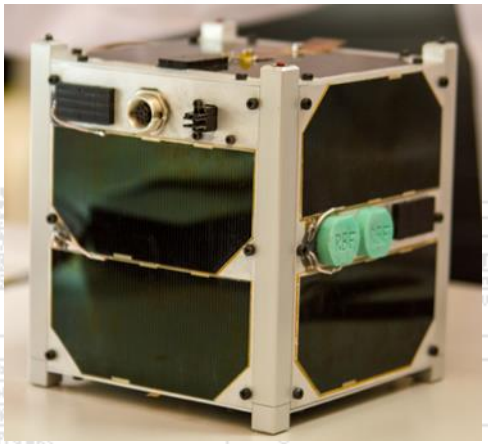
Phase C



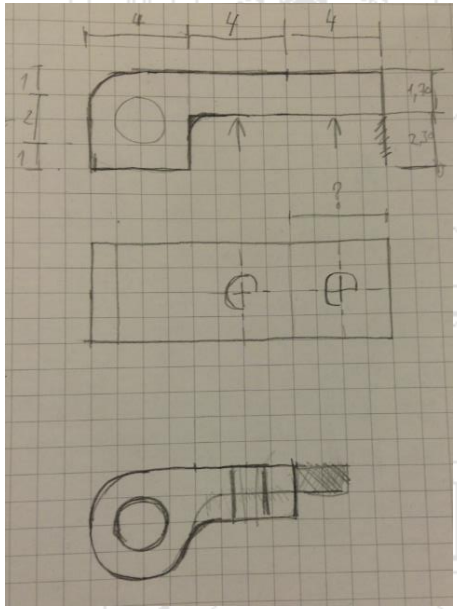
Phase D

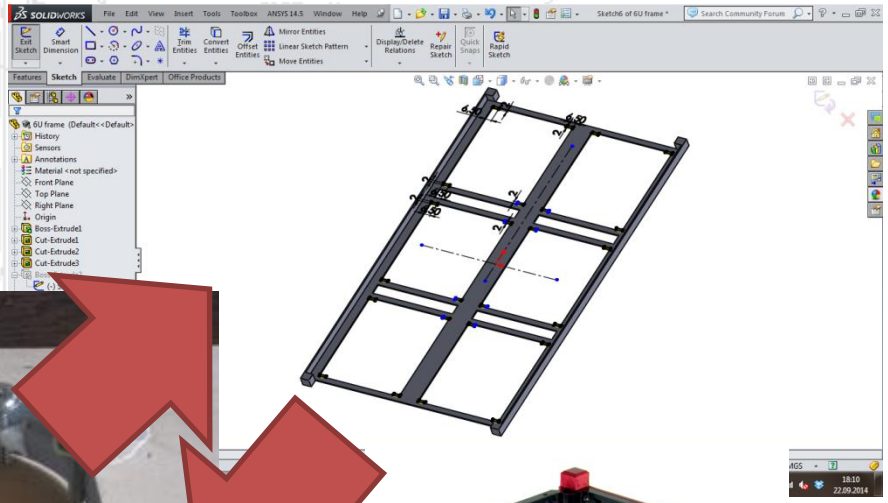


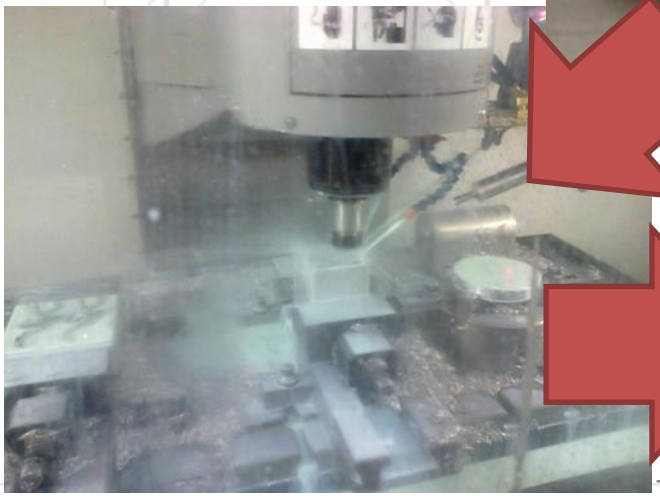


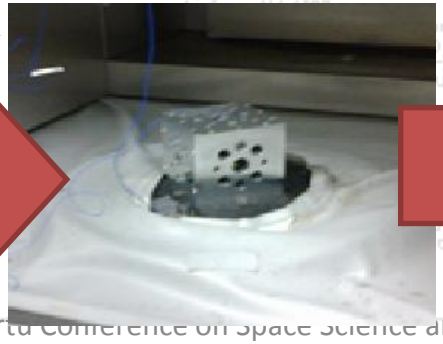


Design and Development



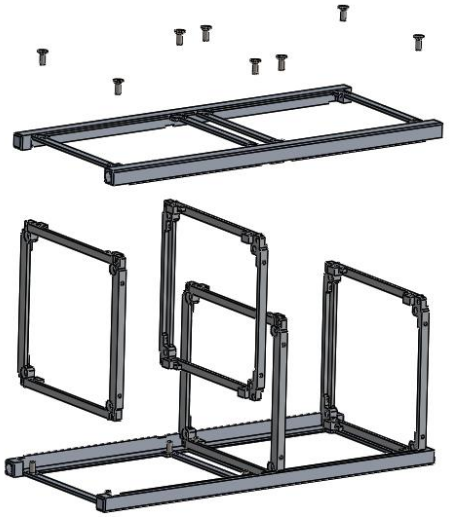




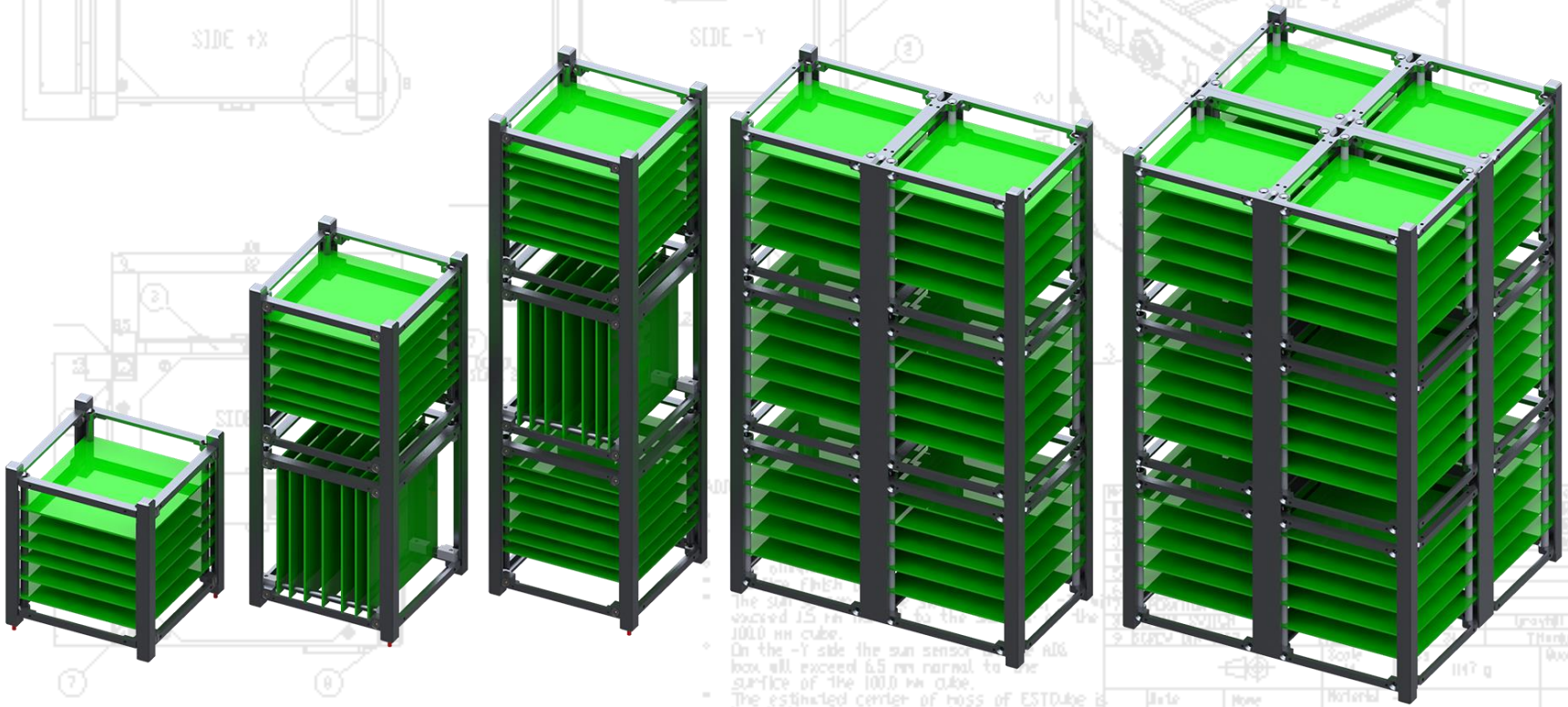


CubeSat Structure Family

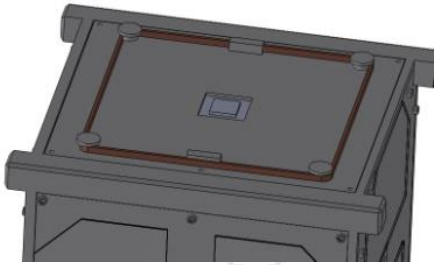
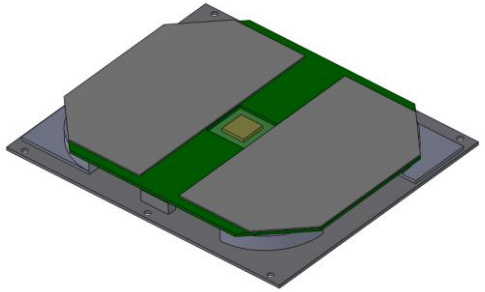
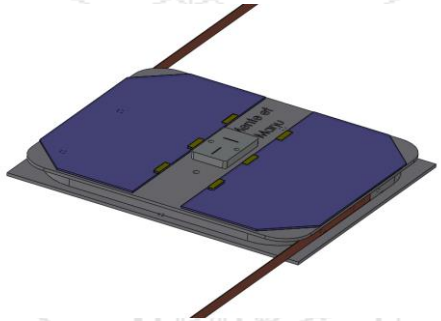
- From 1U to 12U
- Non-ferromagnetic
- Material AW 6082-T6 (EC1)
- Different coatings



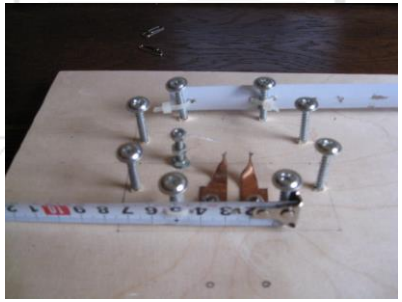
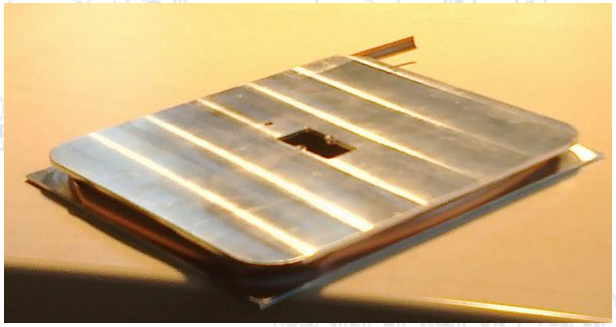
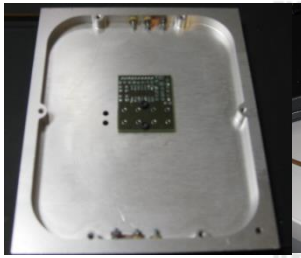
CubeSat Structure Family

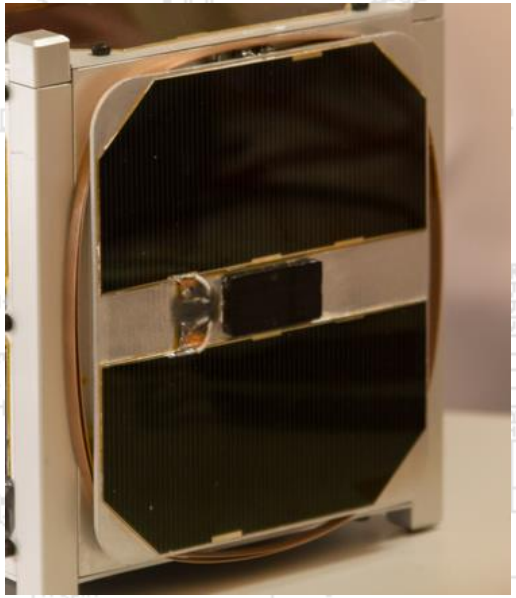


Antenna Deployment System

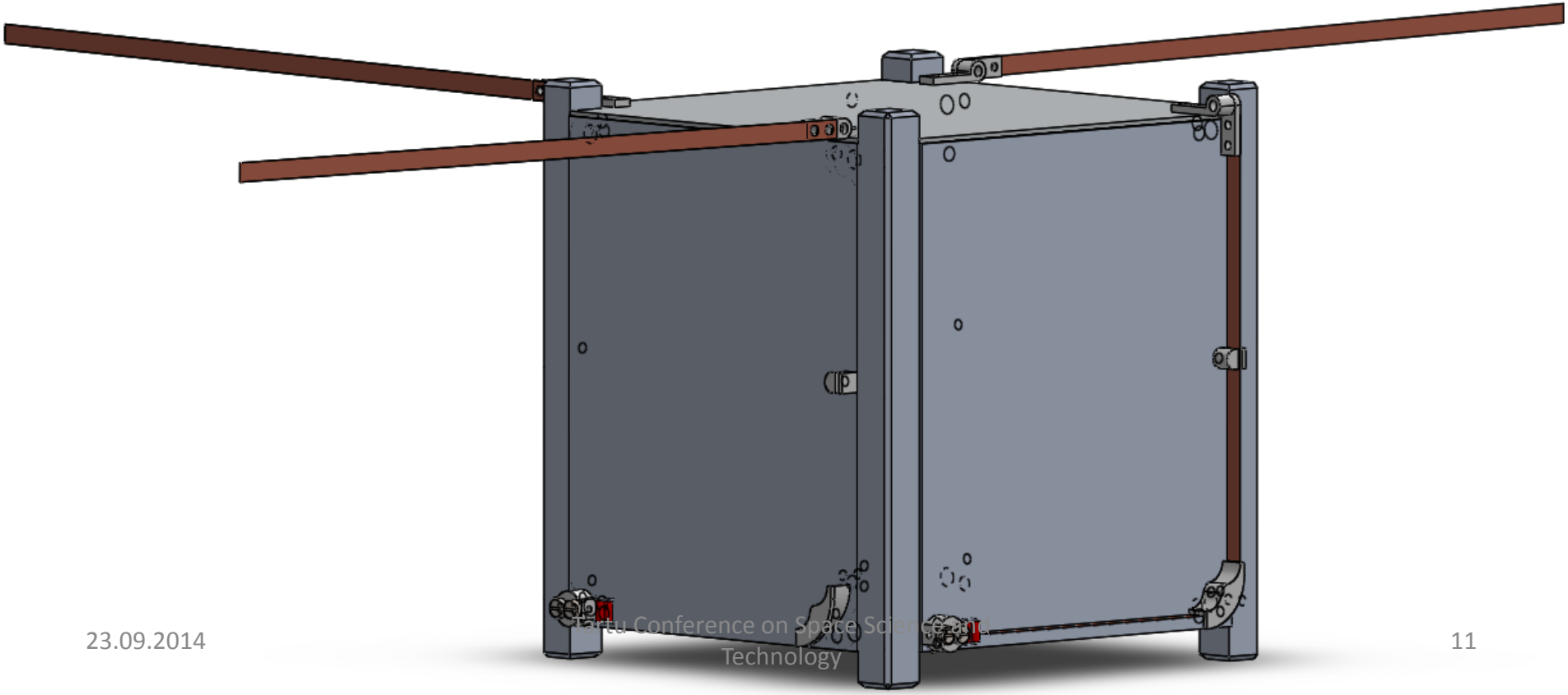
begin with tests early and try to keep the system simple!



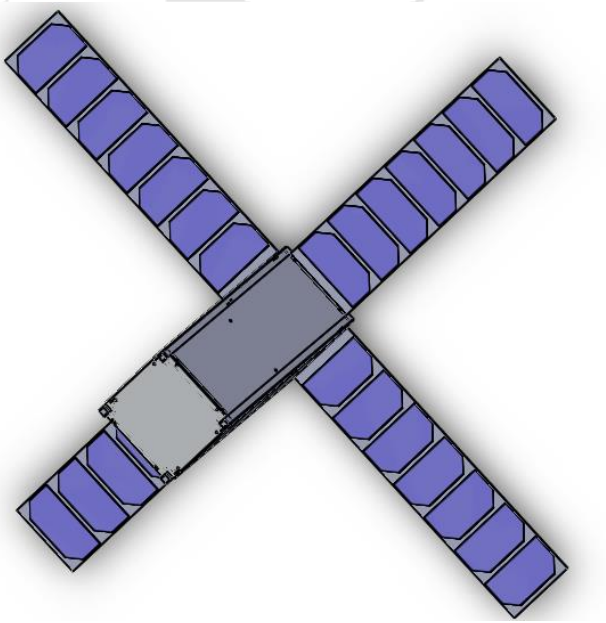
Antenna Deployment System

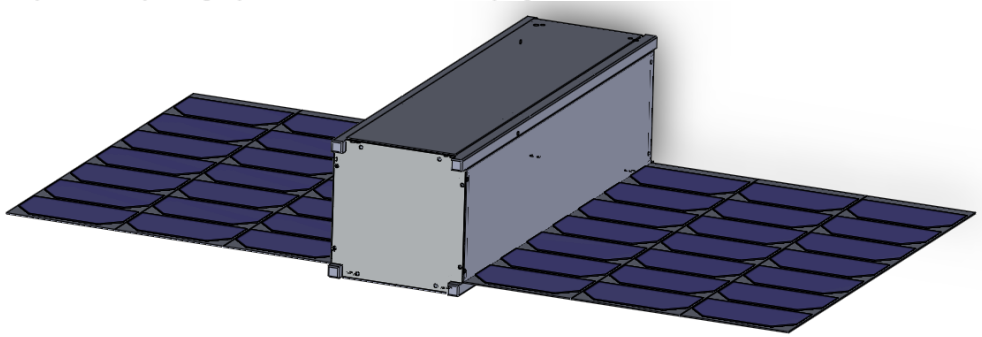
- UHF/VHF antennas
- profiled BeCu (EC1)
- more space inside SC
- mounted on the sides
- reusable melting mech.
- starting from 1U

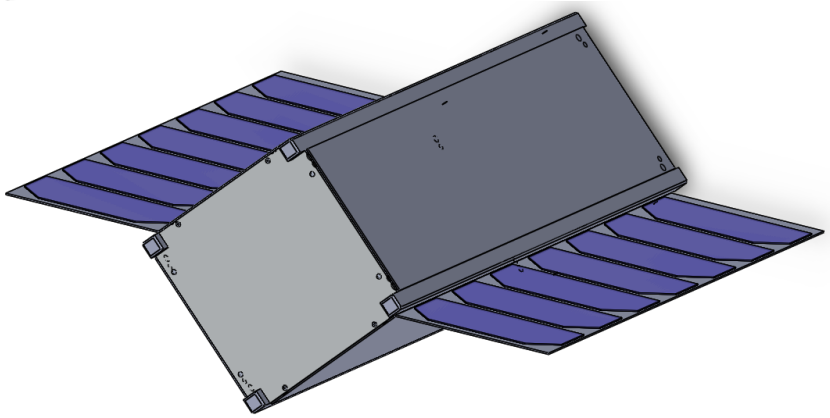


Solar Panel Deployment System

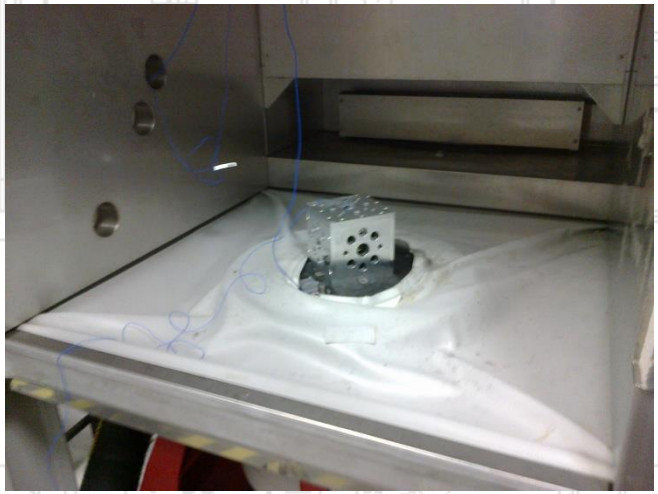
- 90° and 135°
- launch lock
- starting from 1U
- reusable melting mech.







Testing



Thank you for your attention

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