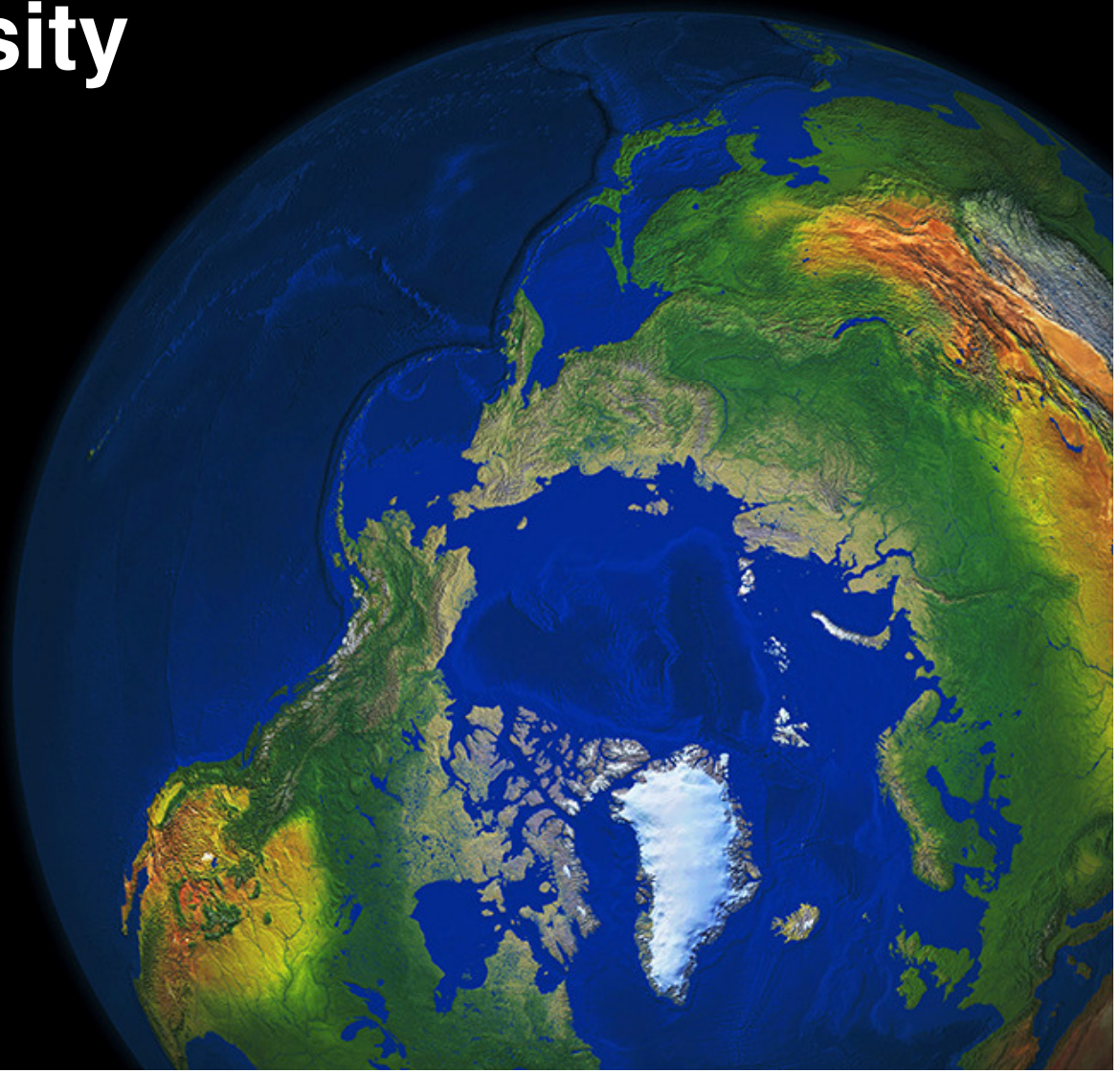
Microwave remote sensing at Aalto University

Jaan Praks, Dr.Sc.
Assistant Professor

Aalto University



Organization

Department of Radio Science and Engineering

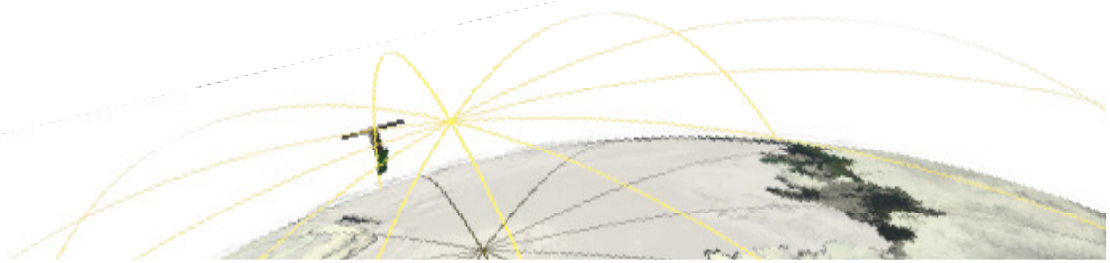
~**100** workers

- **11** professors
  - (including one dean and one vice president)
- **20** senior researchers
- **40** post graduate students

Aalto-yliopisto
Sähkötekniikan korkeakoulu

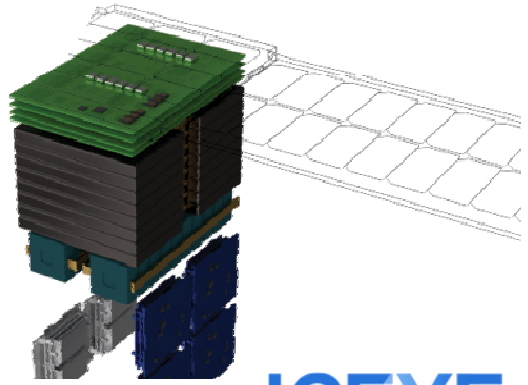
Strategy:
Develop locally, apply globally

- Concentration on local and small scale studies
- Instrument development , concept level, technology demonstrations
- Active spin-off activities
- Global projects with partners

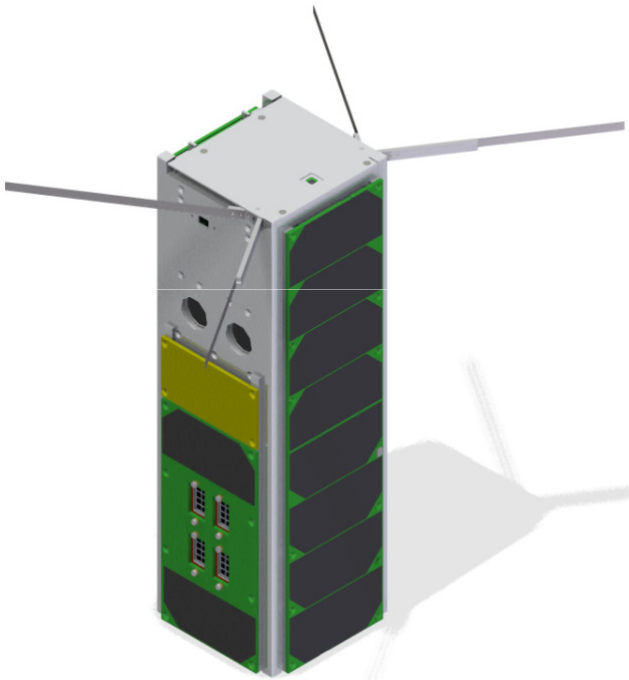


Current projects

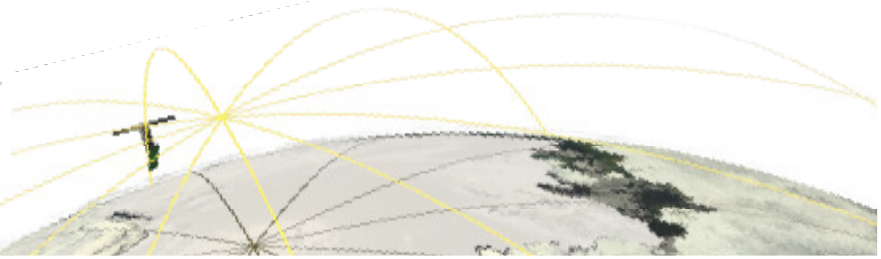
- Aalto-1 student satellite
- Aalto-2 satellite
- MMEA
- Infra Investment
- Skyvan Flying Lab
- ICEYE spin-off project
- Novel concepts
- Urban mapping
- SAR PolInSAR



ICEYE
Arctic Intel

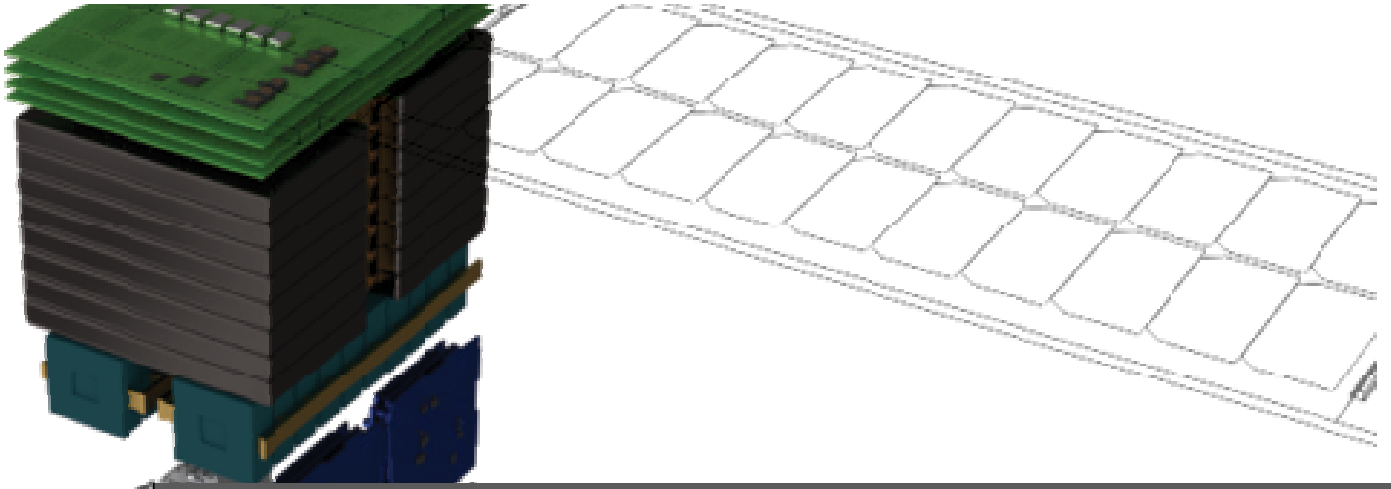


Aalto-1
The Finnish Student Satellite



Aalto-yliopisto
Sähkötekniikan korkeakoulu

ICEYE
Arctic Intel



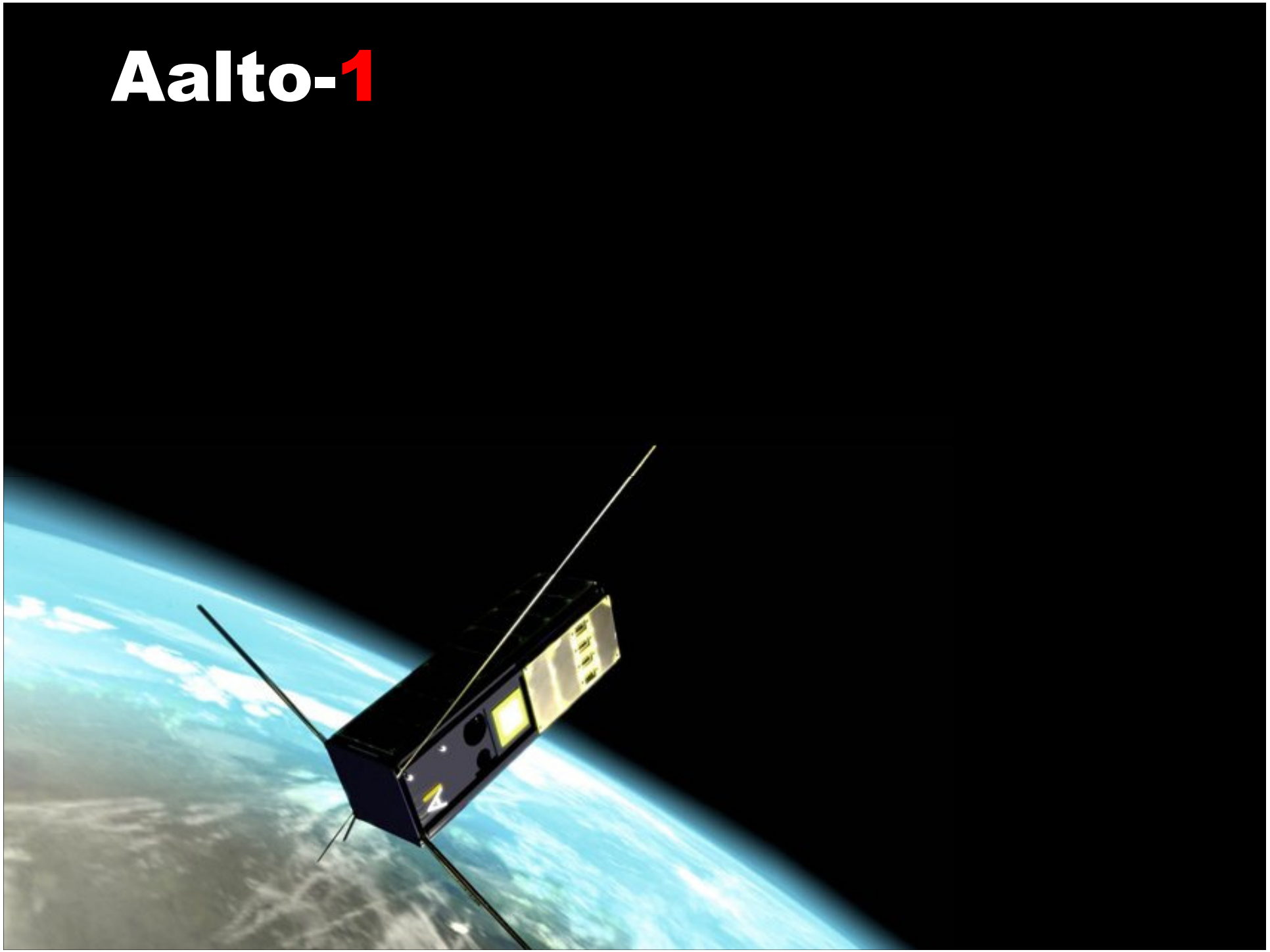
ICEYE

Arctic Intel

Aalto University

Aalto University

Aalto-1



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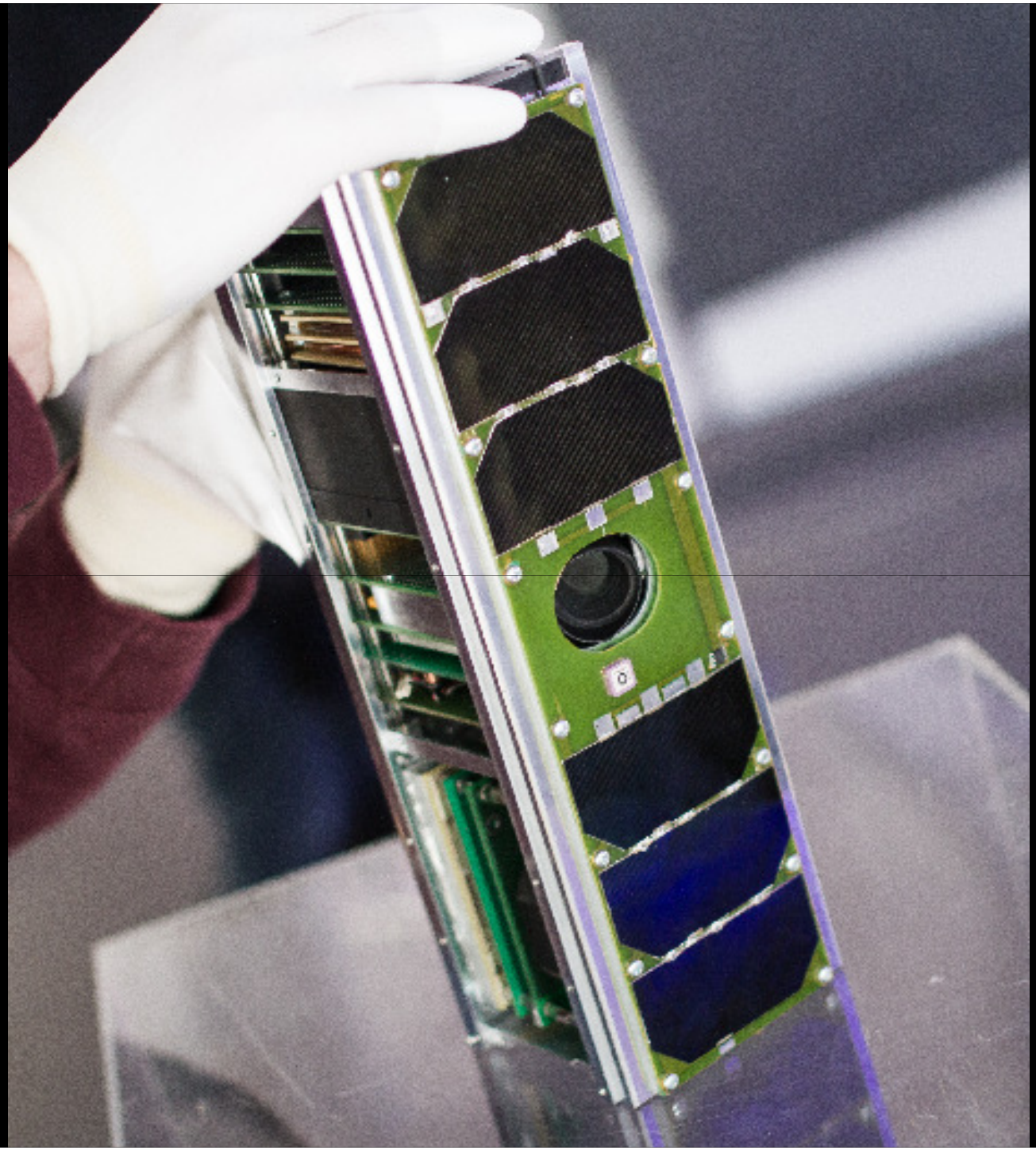

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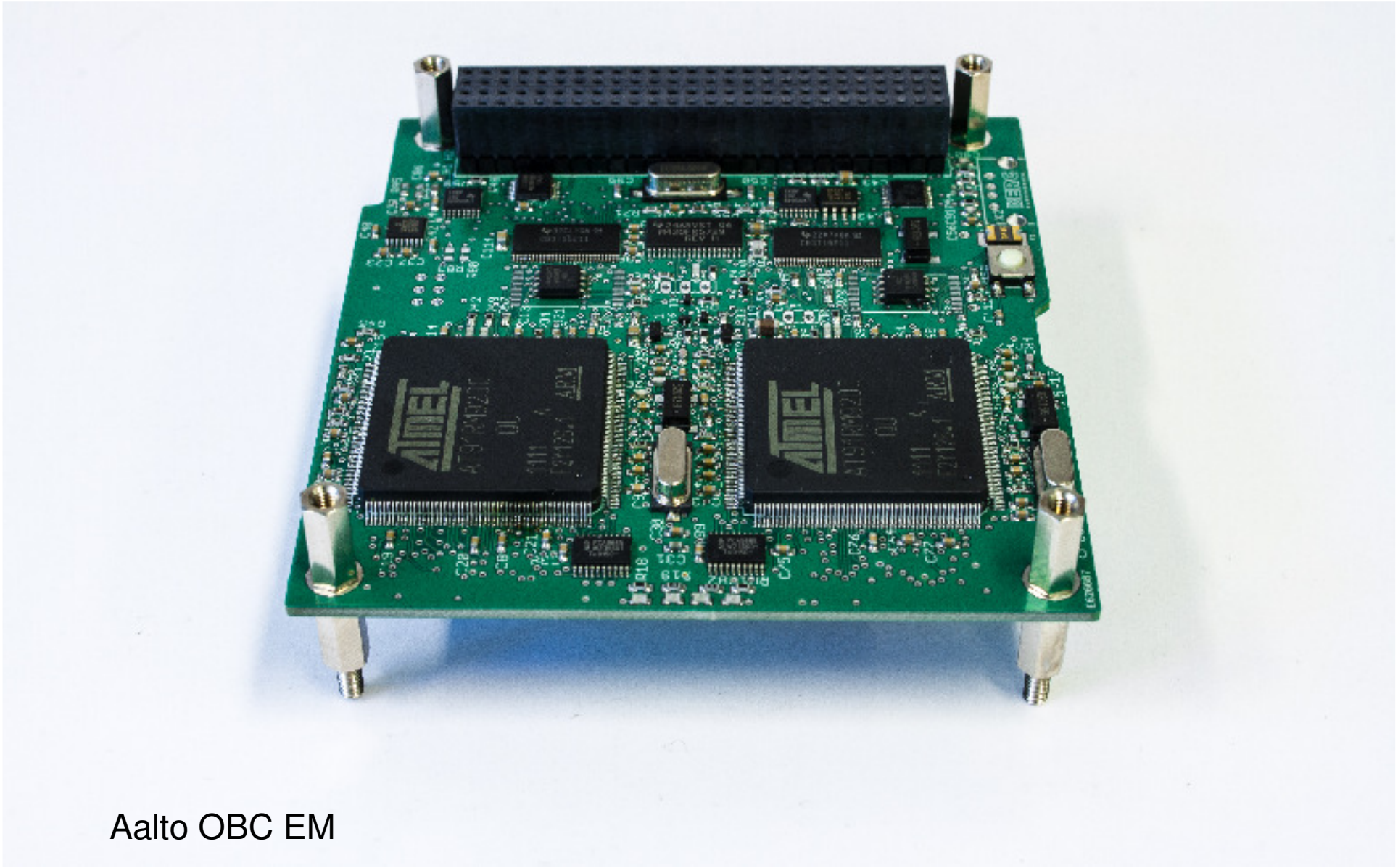
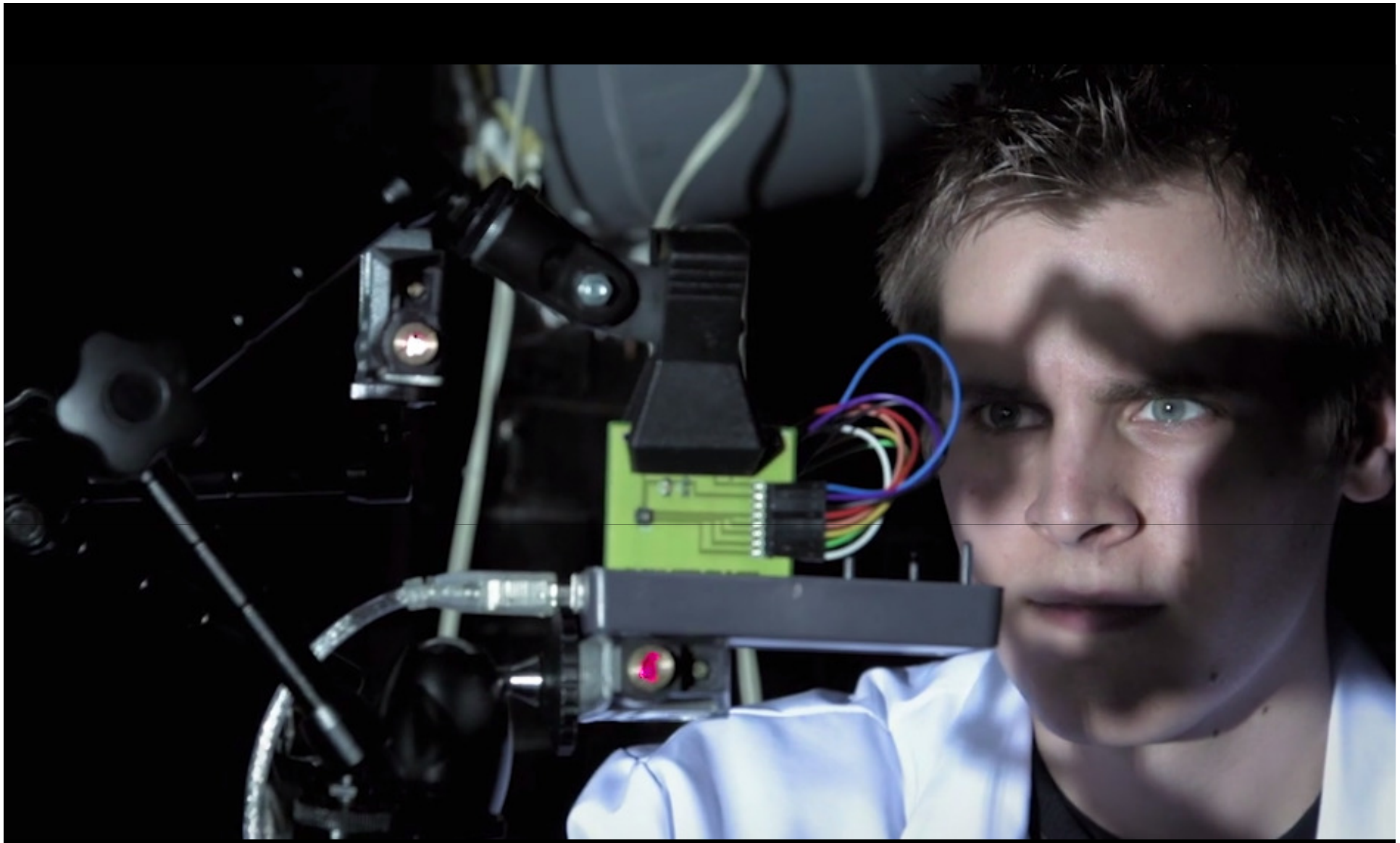


Aalto OBC EM

Aalto University
School of Electrical
Engineering

Aalto-1
The Finnish Student Satellite



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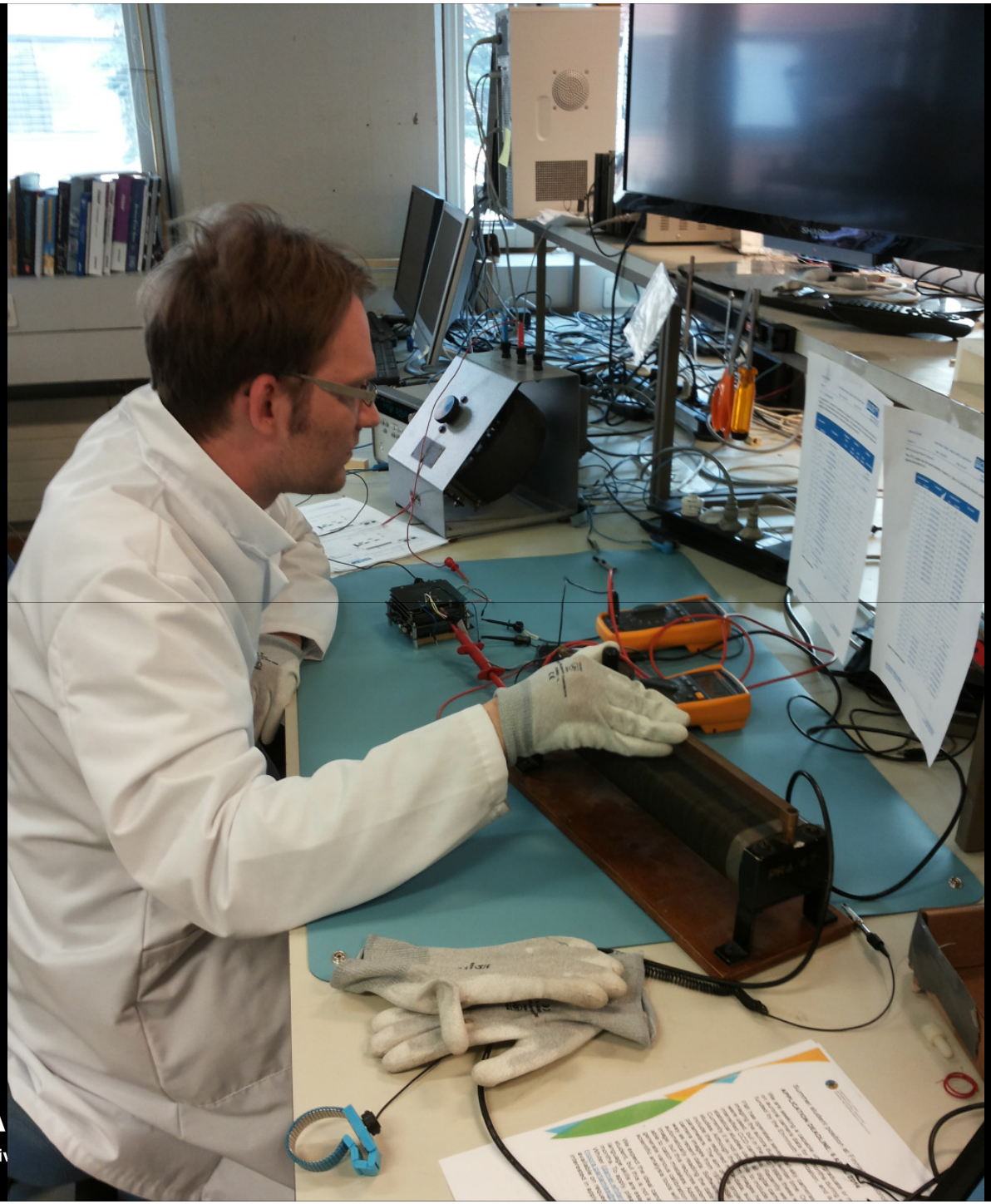
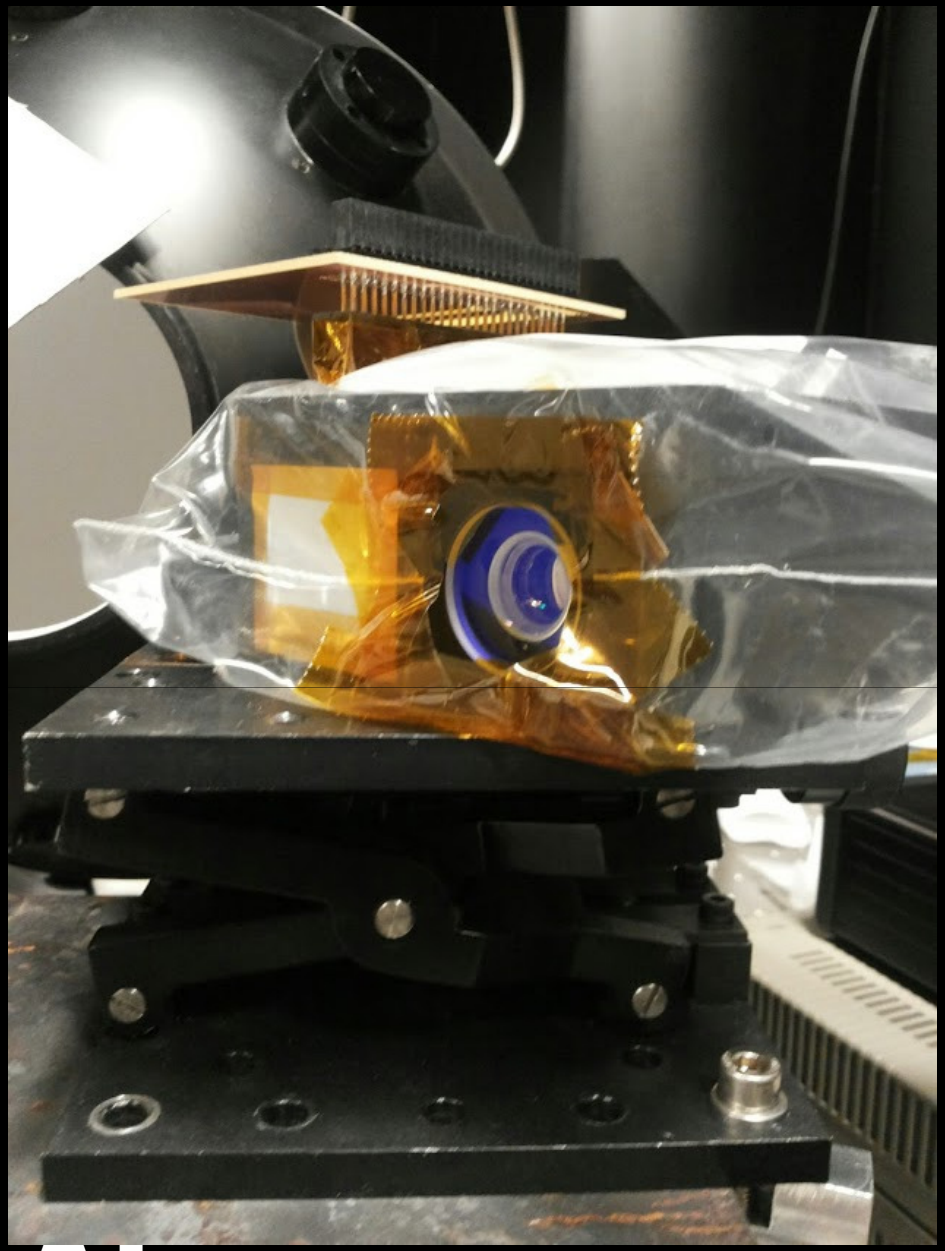
Sun sensor calibration measurements



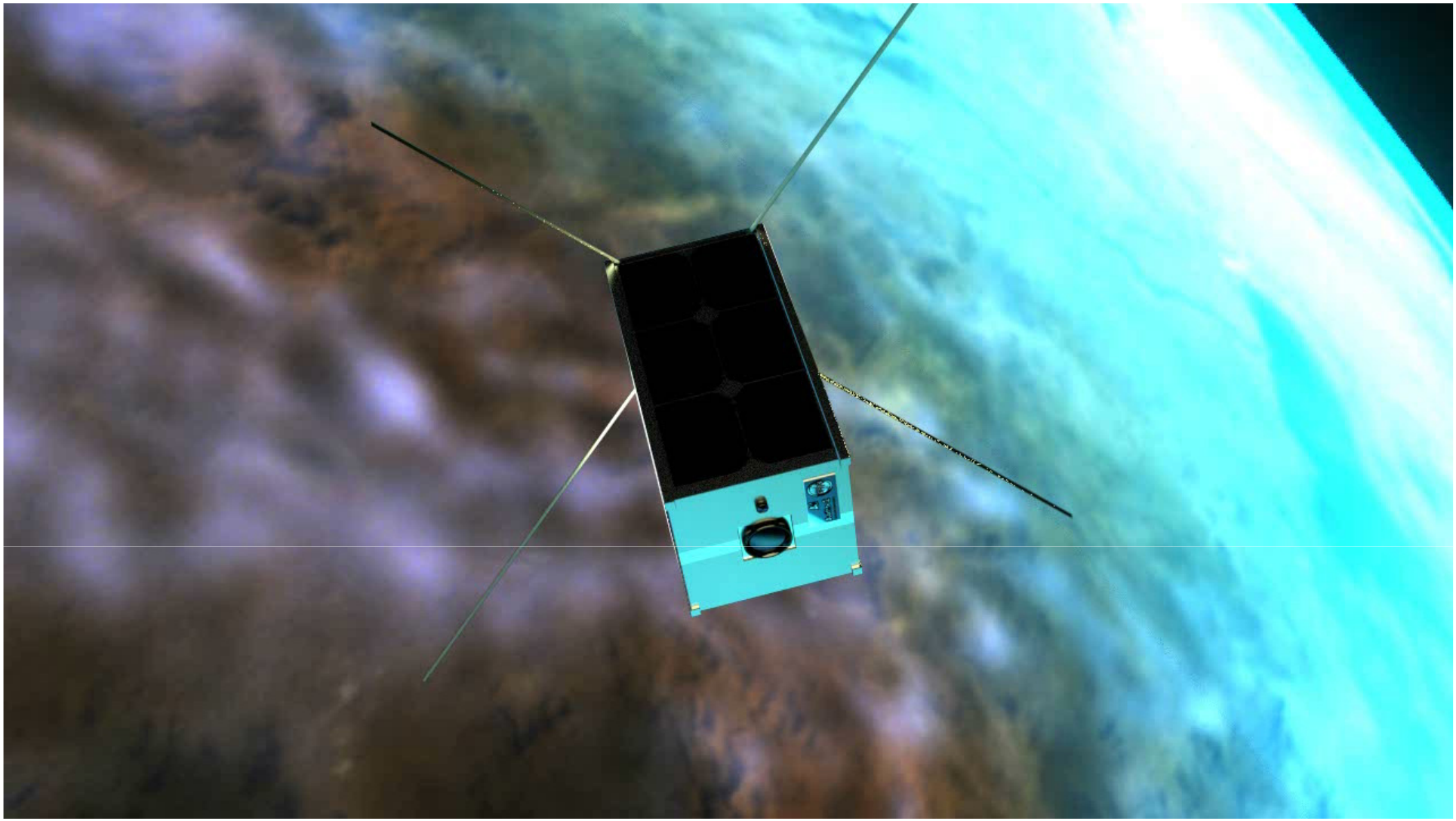
Aalto Univ



AaSI
Spactral Imager
EM

EM-model under tests

Aalto University



Aalto-2

VKI

QB50

COOPERATION

Directions

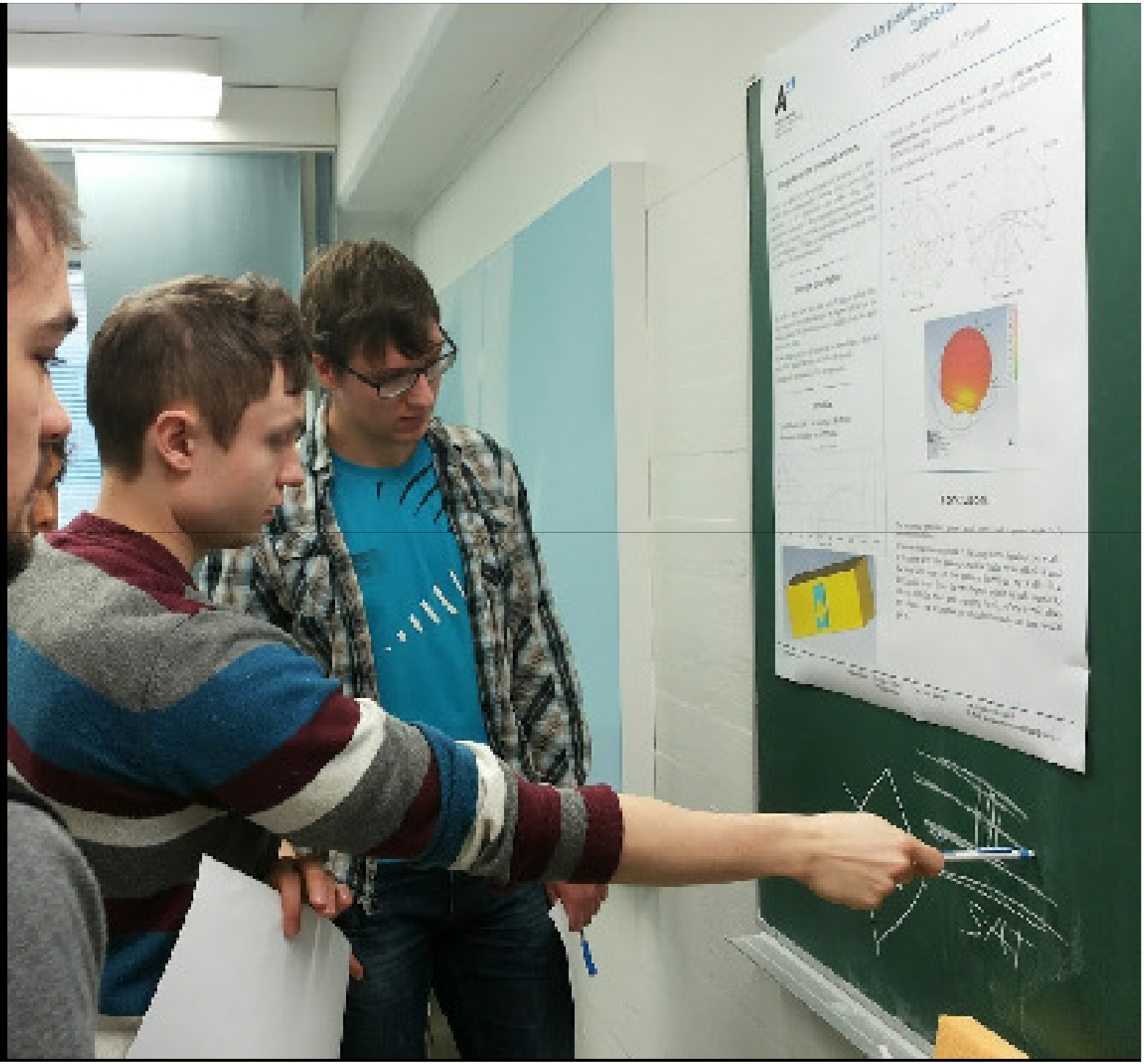
- Combining microwave remote sensing and small space platforms (RFI CubeSat study)
- Direction towards active systems and coherent data analysis methods (SAR, scatterometers)
- Following the trend in available spaceborne data in near future (Biomass, Saocom, Smap)
- Assimilation of passive and active multiband microwave data

Topics

- SMOS, RFI
- Boreal Forest, PolInSAR, tomography
- Grasslands
- Ice
- Urban mapping
- Instrument development

Education

Education



Aalto University

Aalto starts new Master programmes in 2015

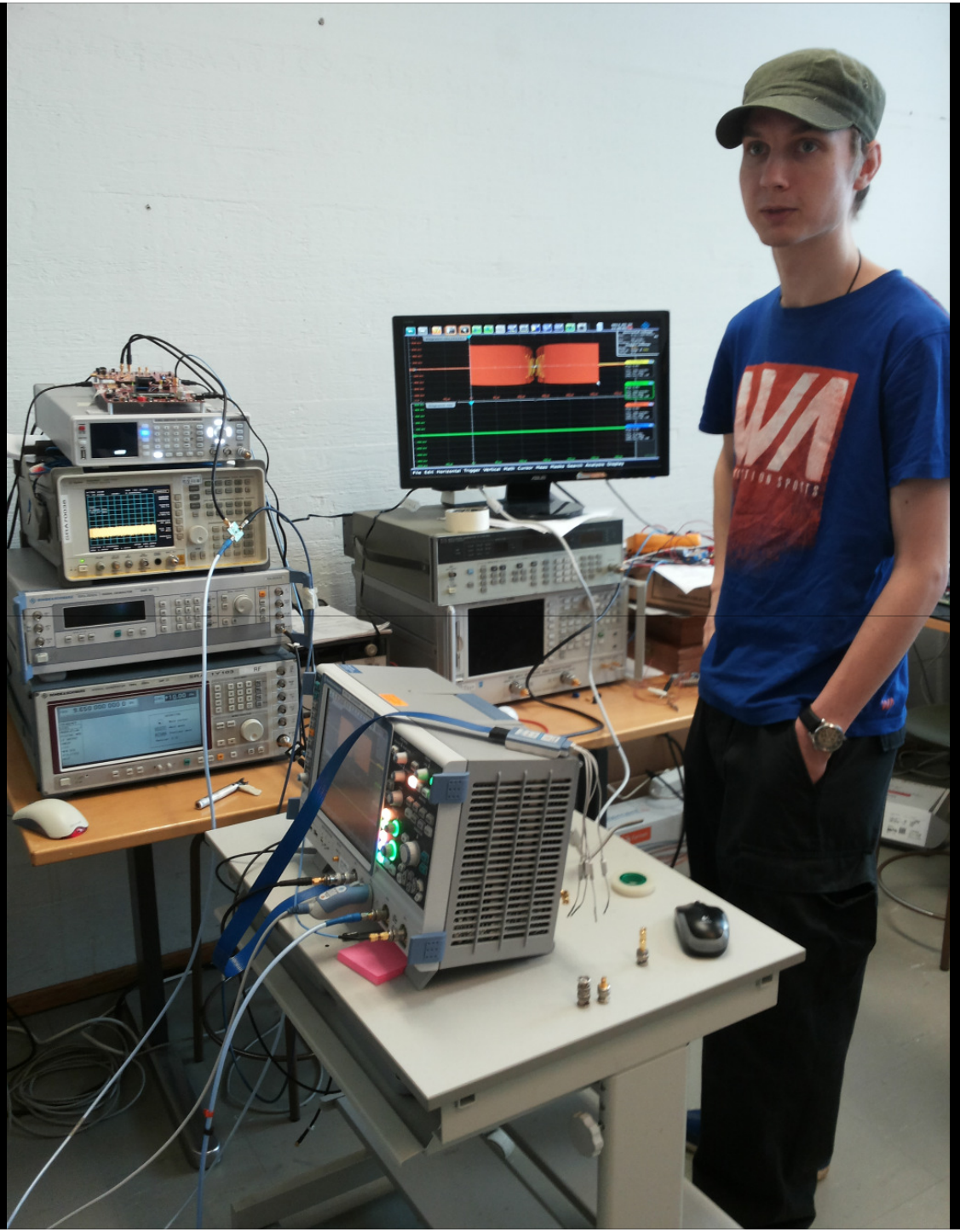
A new Master programme on **Nano and Radio Sciences** starts in autumn **2015**.

- New **Space Sciences and Technology** Major.
- Tight integration with radio- and nanosciences.
- Collaboration with Joint European ERASMUS MUNDUS Space Master programme.
- Collaboration with Nordic Five Tech.

Aalto-1
The Finnish Student Satellite

Infrastructure

Upgrading Microwave LAB equipment



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Building Small Sat Test lab

Cleanroom
Thermal
Vacuum
Hardware In Loop

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Short Skyvan aircraft

Open for collaboration in scientific domain!
Developing new instrumentation.

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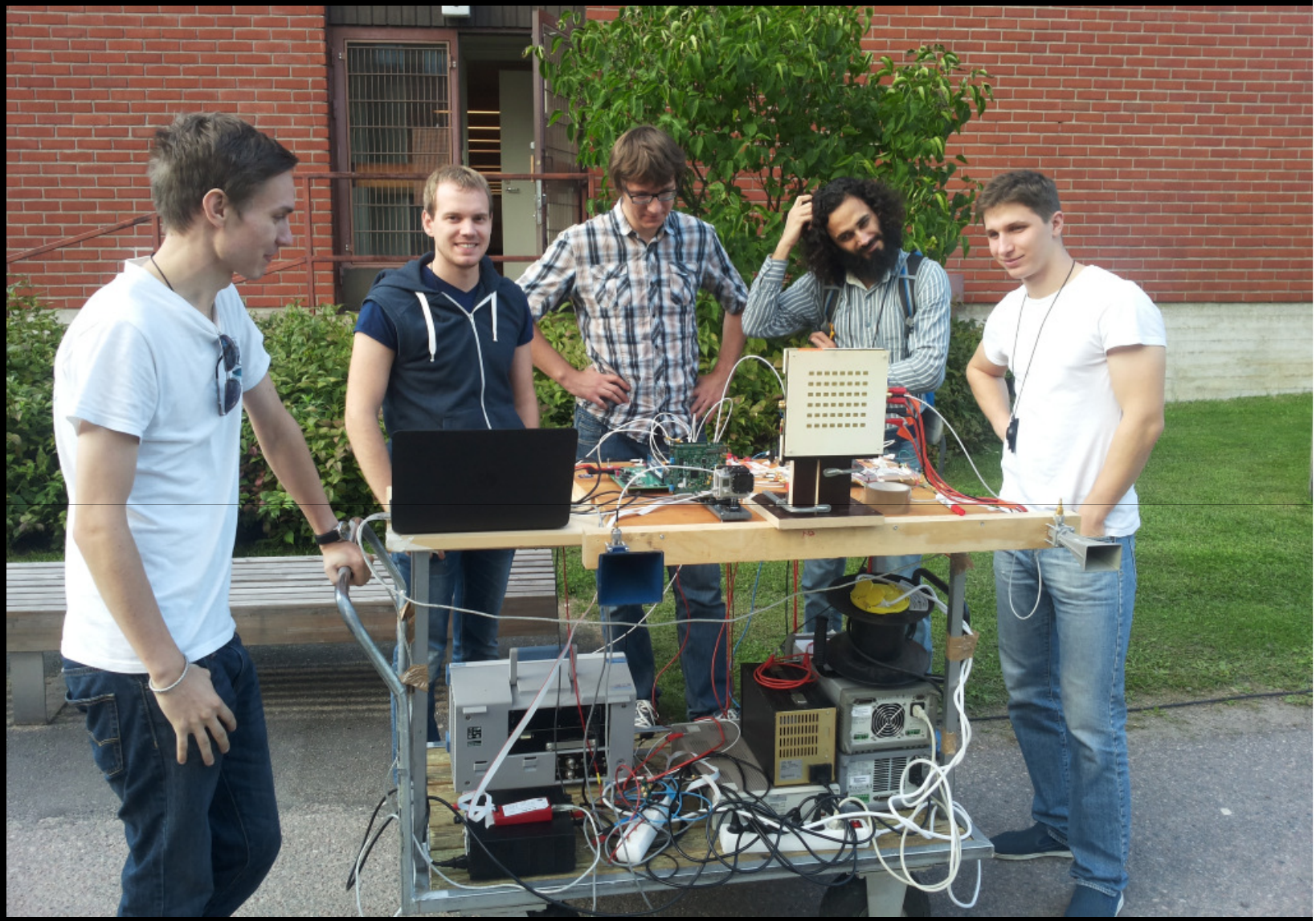
Novel Concepts



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Novel concepts

Airborne
L-band scatterometer
C-band scatterometer

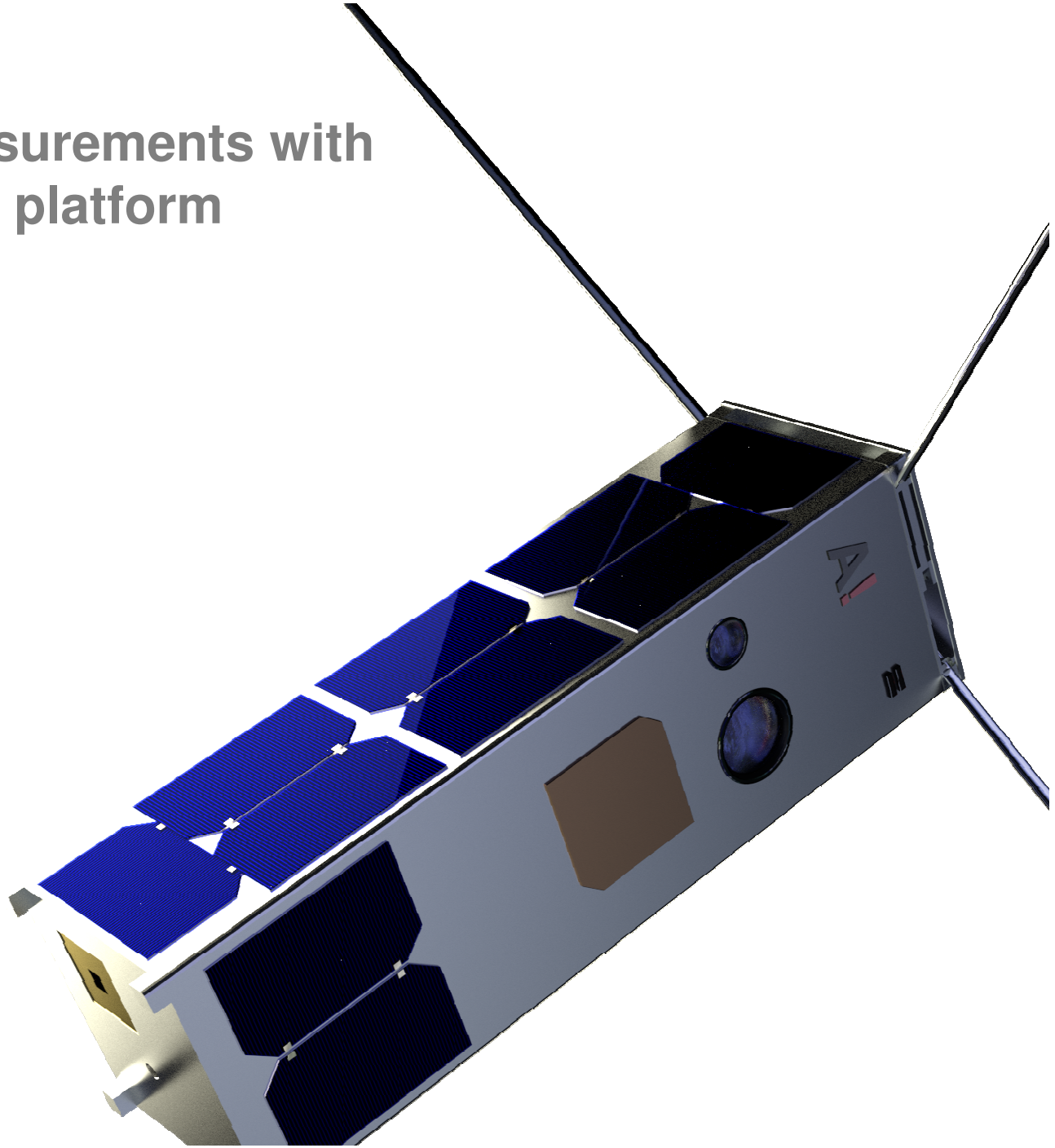
Aalto-yliopisto
Sähkötekniikan
korkeakoulu

Novel concepts

New satellite communication and radio astronomy antennas to Metsähovi

Novel concepts

RFI measurements with CubeSat platform



Aalto-yliopisto
Sähkötekniikan korkeakoulu

Co-operation

Looking for partners

Assets

- Steady stream of young talented scientists and engineers!

- SkyVan Airborne Lab
- Heritage Instrumentation HUT2D, HUTRAD, HUTSCAT, AISA
- Flexibility for various airborne instrument accommodation
- Modern Microwave Laboratory
- Cleanroom and test facilities
- CubeSat platform