25th Virtual UNISEC-Global meeting

Theme: “Impacting space through capacity building activities”

CLTP 11 briefing session

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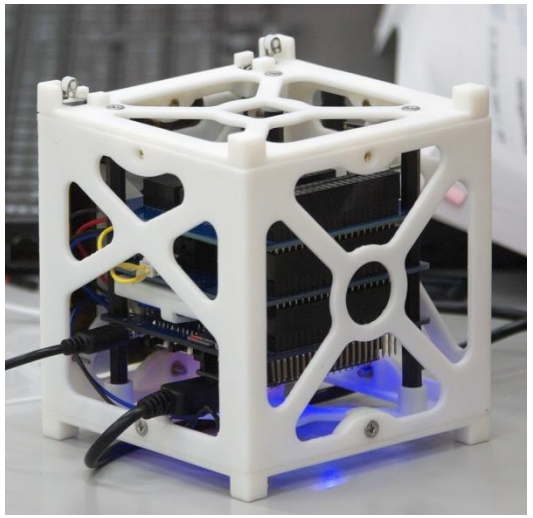
CLTP 11 Graduate

September 17,2022

CLTP 11 was organized in Nihon University(Chiba, Japan) and AOTS (Tokyo, Japan)

Preliminary online-Lectures: August 1-15, 2022

Date: August 18-31, 2022



Toolkit:
HEPTA-Sat (**H**ands-on **E**ducation **P**rogram
for **T**echnical **A**dvancement)

The training consists of a hands-on learning steps with CubeSat type classroom satellite kit.

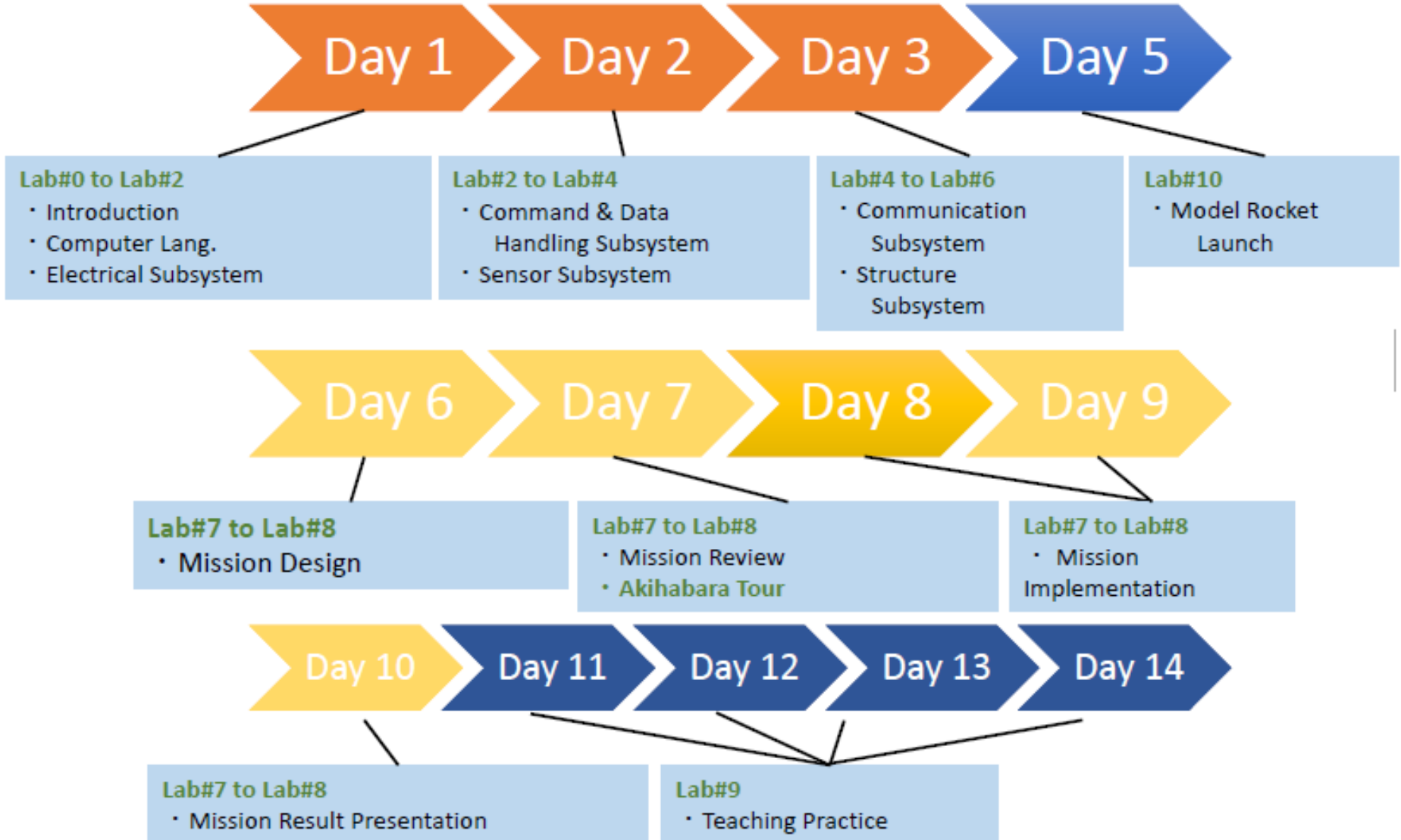
It is equipped with six primary subsystems: .

- Electrical Power Supply
- Command and Data Handling
- Communication
- Ground station
- Sensor
- Structure

7 main steps have been completed!

hepta-sat training

Schedule and Homework



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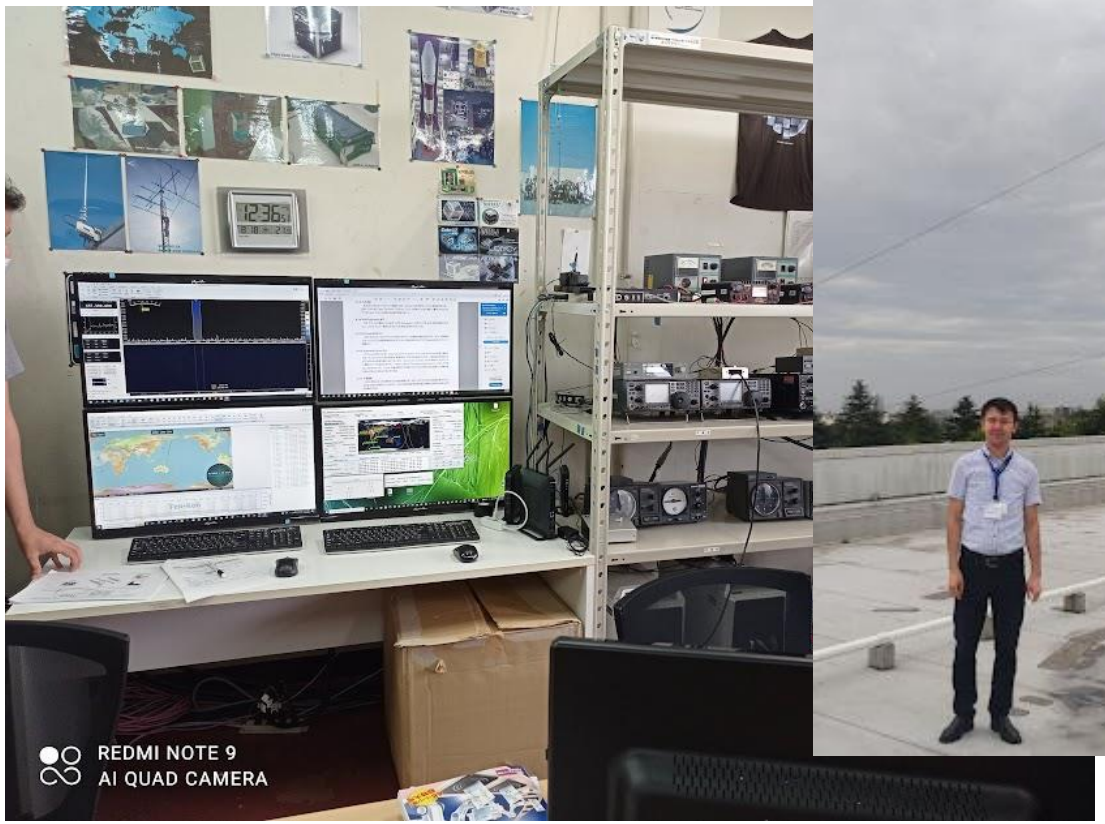
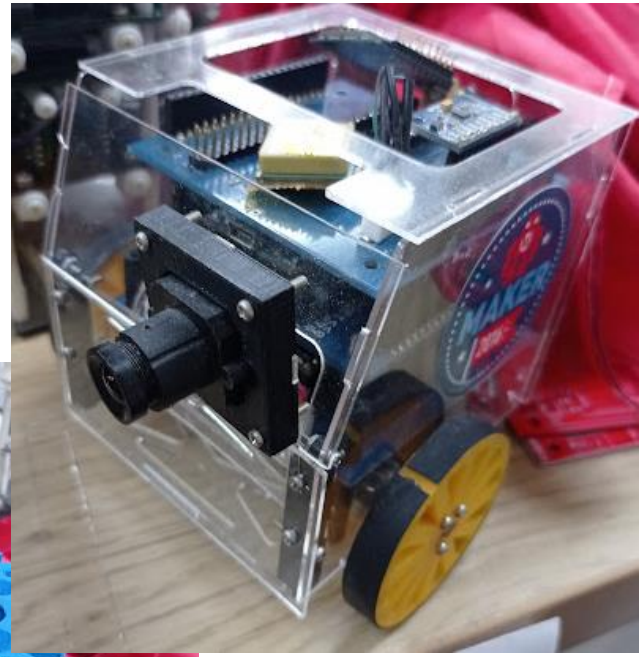
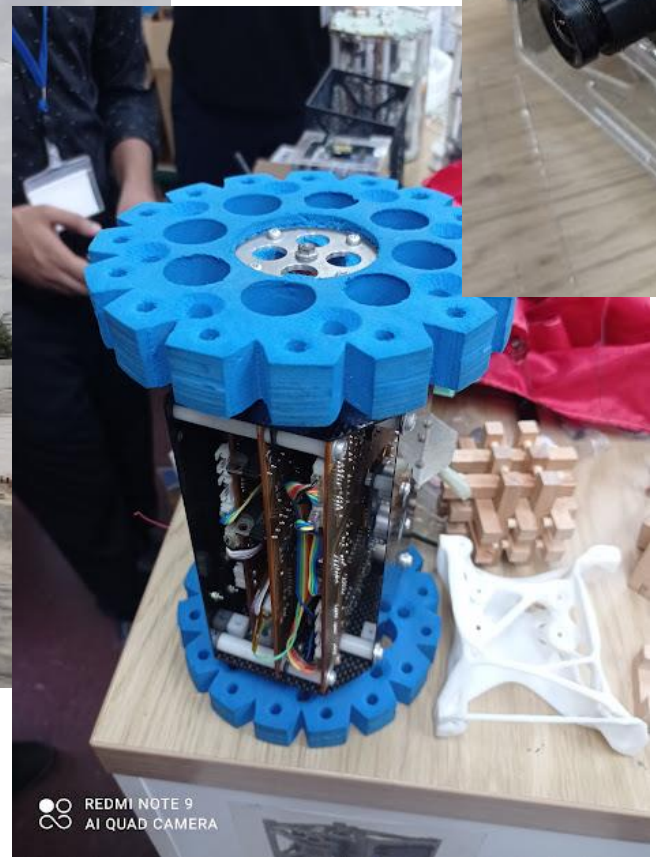
Self-Introduction & team building

Nice campus tour





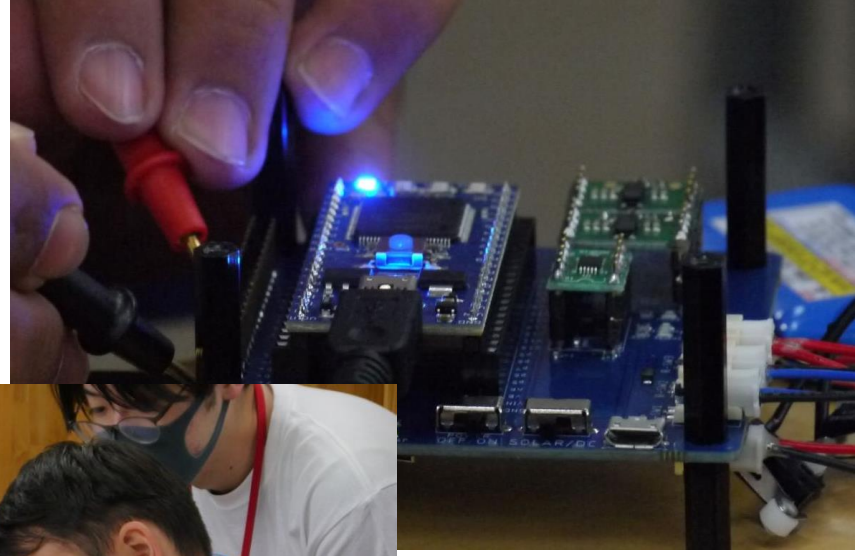


Started working with HEPTA-Sat

Day 1 Day 2 Day 3

Covered lab0-lab6

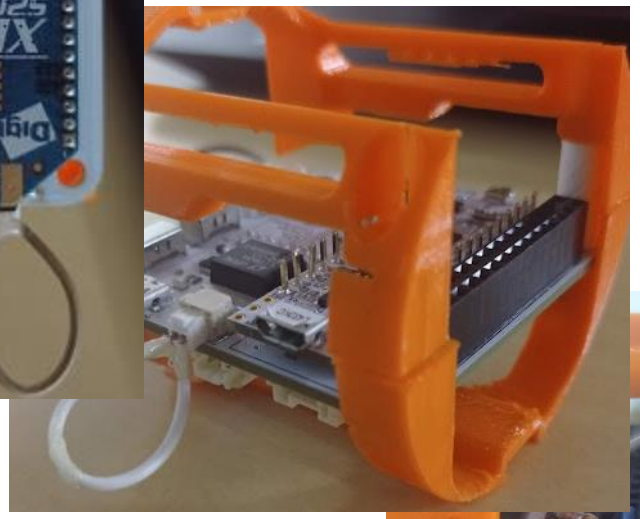
- Introduction
- Electrical subsystem
- Command & data handling subsystem
- Sensor subsystem
- Communication subsystem
- Structure subsystem

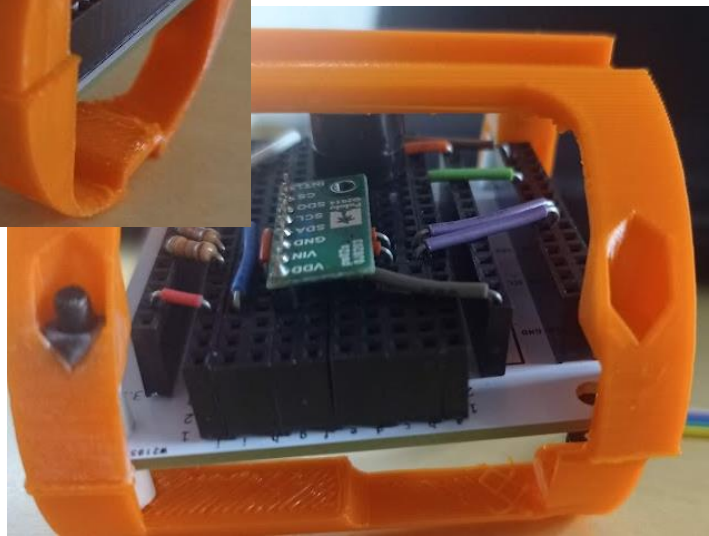


Day 5

Covered lab10

Model Rocket Launch with CanSat





First launch failed!

Second launch was successful and finally our rocket get 90 m altitude!

Day 6

Covered lab7-lab8

Mission design of HEPTASat

Day 7

Akihabara tour

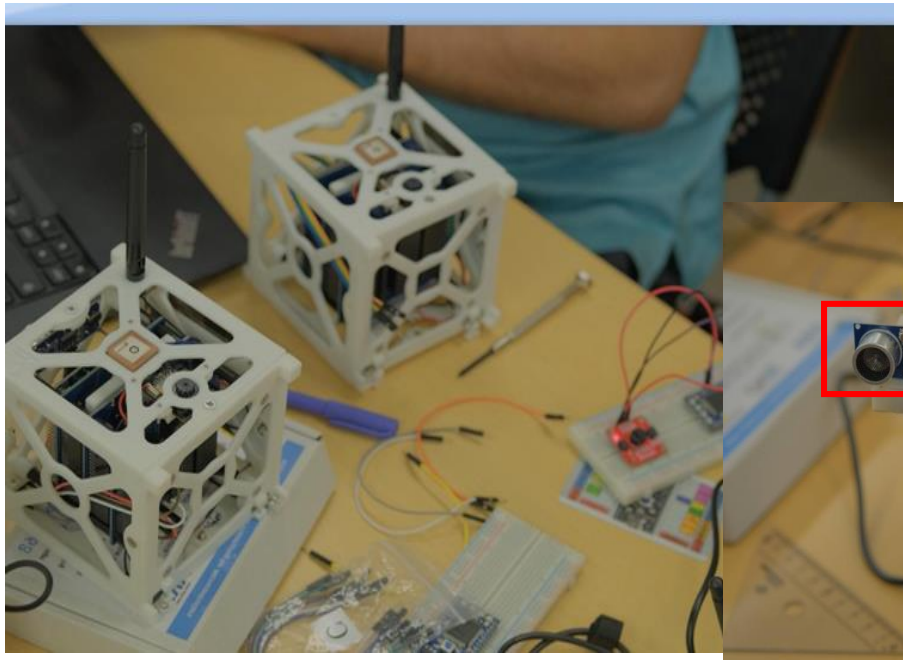
Covered lab7-lab8

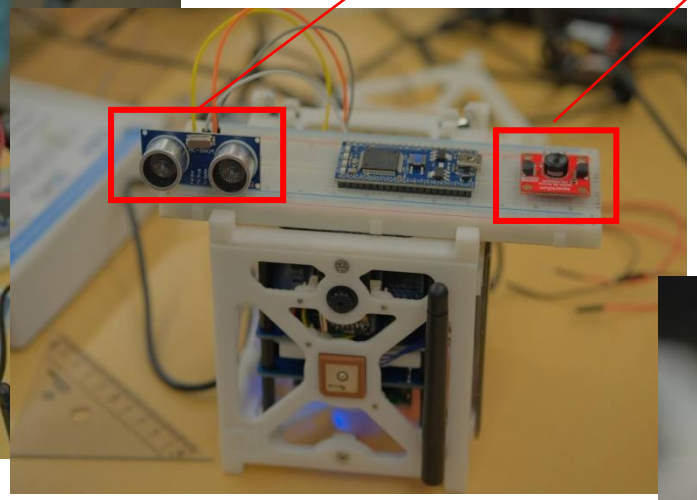
We bought some mission components

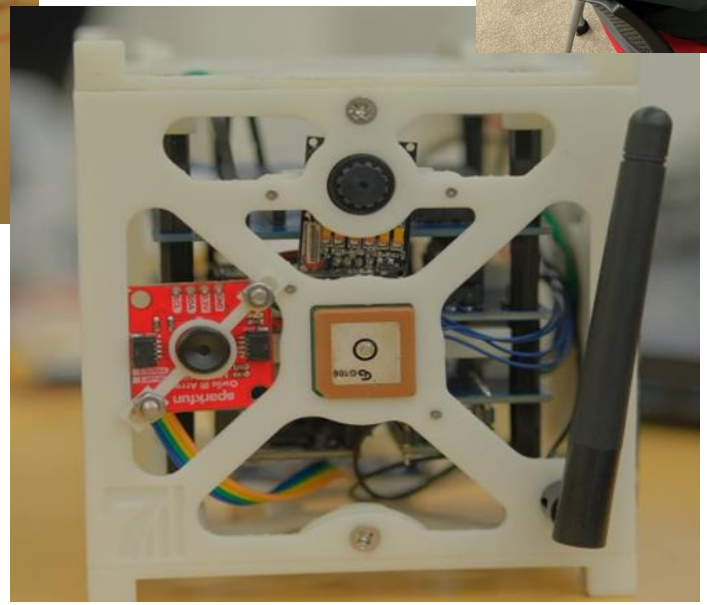
Day 8 Day 9

Covered lab7-lab8

Mission implementation



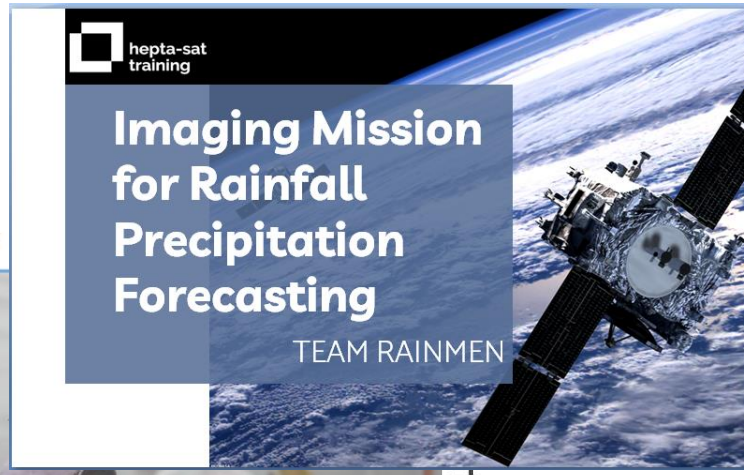




Day 10

Covered lab7-lab8

Mission result presentation



1.1 User Needs /

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1.3 Success Criteria

Success level	Goal No.	Mission Success Criteria	
Minimum Success	[MG-1]	Distance monitoring between FoReST-1 and FoReST-2 is not successful	The dis
	[MG-2]	Capture an IR image from at least one FoReST	Receiv usage
	[MG-3]	Send image from at least one FoReST to GS	Receiv
Full Success	[MG-1]	Distance monitoring between FoReST-1 and FoReST-2 is achieved with some assumptions	The dis
	[MG-2]	Capture an IR images from both FoReST-1 and FoReST-2	Receive the confirmation from both satellite (check the battery voltage usage by Camera)
	[MG-3]	Send images from both FoReST-1 and FoReST-2 to GS	Receive the Payload data (mission data) from at both satellites
Advanced Success	[MG-1]	Keeping of the exact distance between satellites is achieved successfully using actuators	Thrusters are used to keep the required distance between s Receive confirmation data from sensors and actuators
	[MG-2]	Capture an IR image from both FoReST-1 and FoReST-2	Receive the confirmation from both satellite (check the battery voltage usage by Camera)
	[MG-3]	Send images fr predict precipita	

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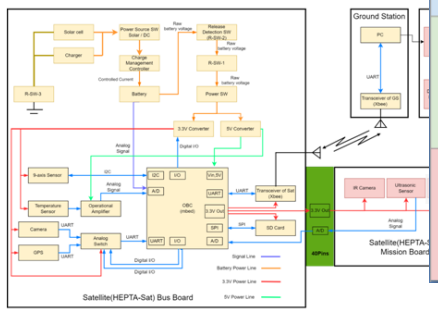
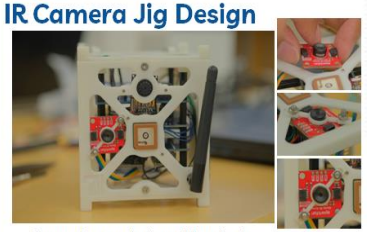
4.1 Experimental Setup (2



Design and development was based on the system diagram.
Succeeding slides show how the components were integrated.

4.2 Experimental Result

IR Camera Jig Design



Camera placement in the satellite using the newly design jig.

3D render of the newly designed jig as IR camera holder.

The IR camera is fixed in the Hepta-Sat using a newly design jig/holder mounted using bolts and nuts. Camera position was chosen so that it is located at the same face location of the RGB camera and the connector pin headers do not interfere with the internal parts.

NSTRATION JLTS 04

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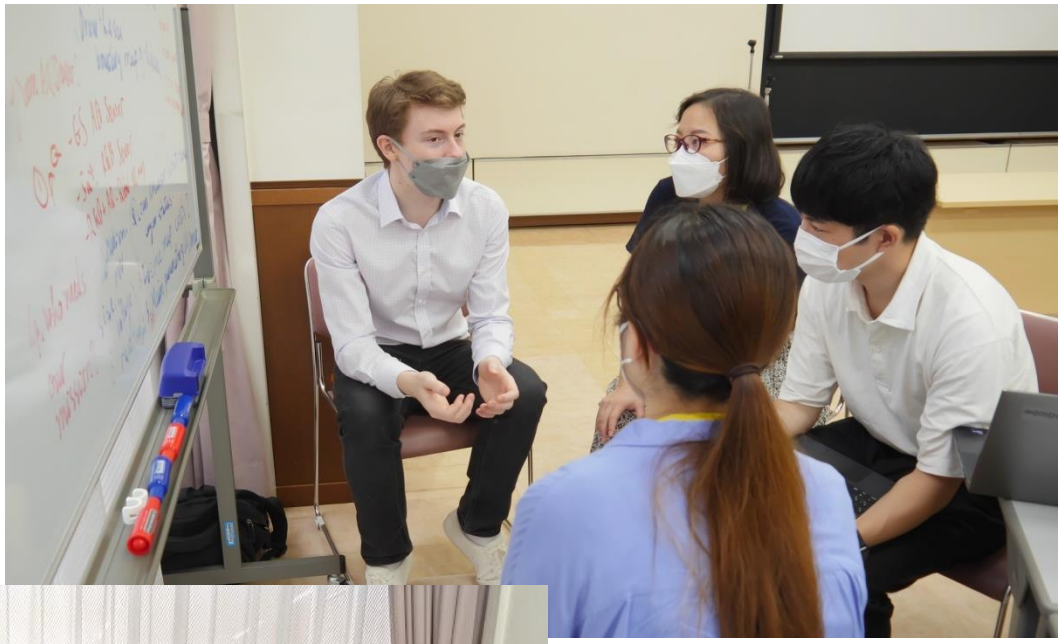
Day 11 Day 12 Day 13 Day 14

Covered lab9

Teaching practice



Axelspace, IHI Aerospace, Sky Perfect JSAT, JSOL, NEC,
Space Systems Development Corporation

Thank you for your attention!