

CLTP-7 Final Presentation

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CLTP Mission & Design Philosophy

MISSION REQUIREMENT

- Successfully launch and receive telemetry (GPS)

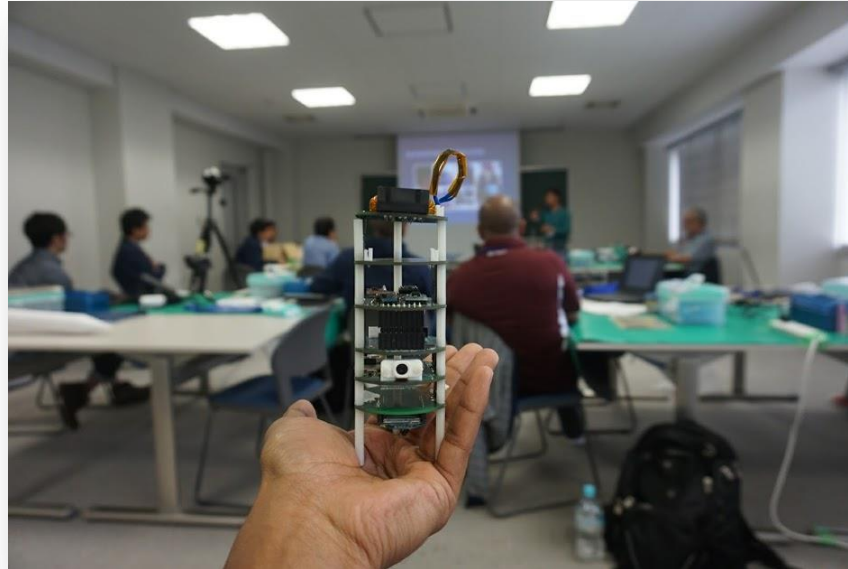
SECONDARY MISSION

- Receive secondary sensor data

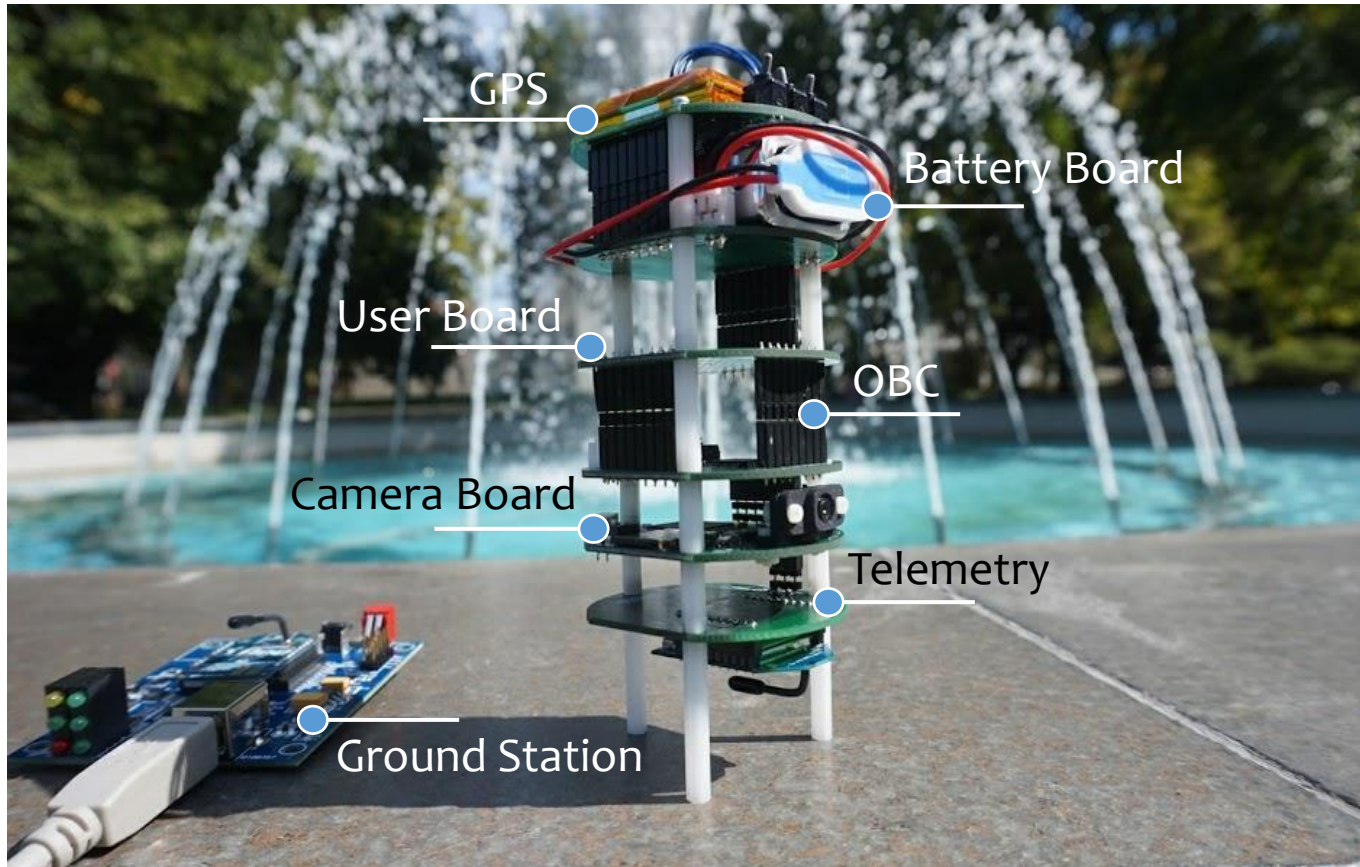
DESIGN PHILOSOPHY

- Minimalistic design





A. DESIGN



Hardware



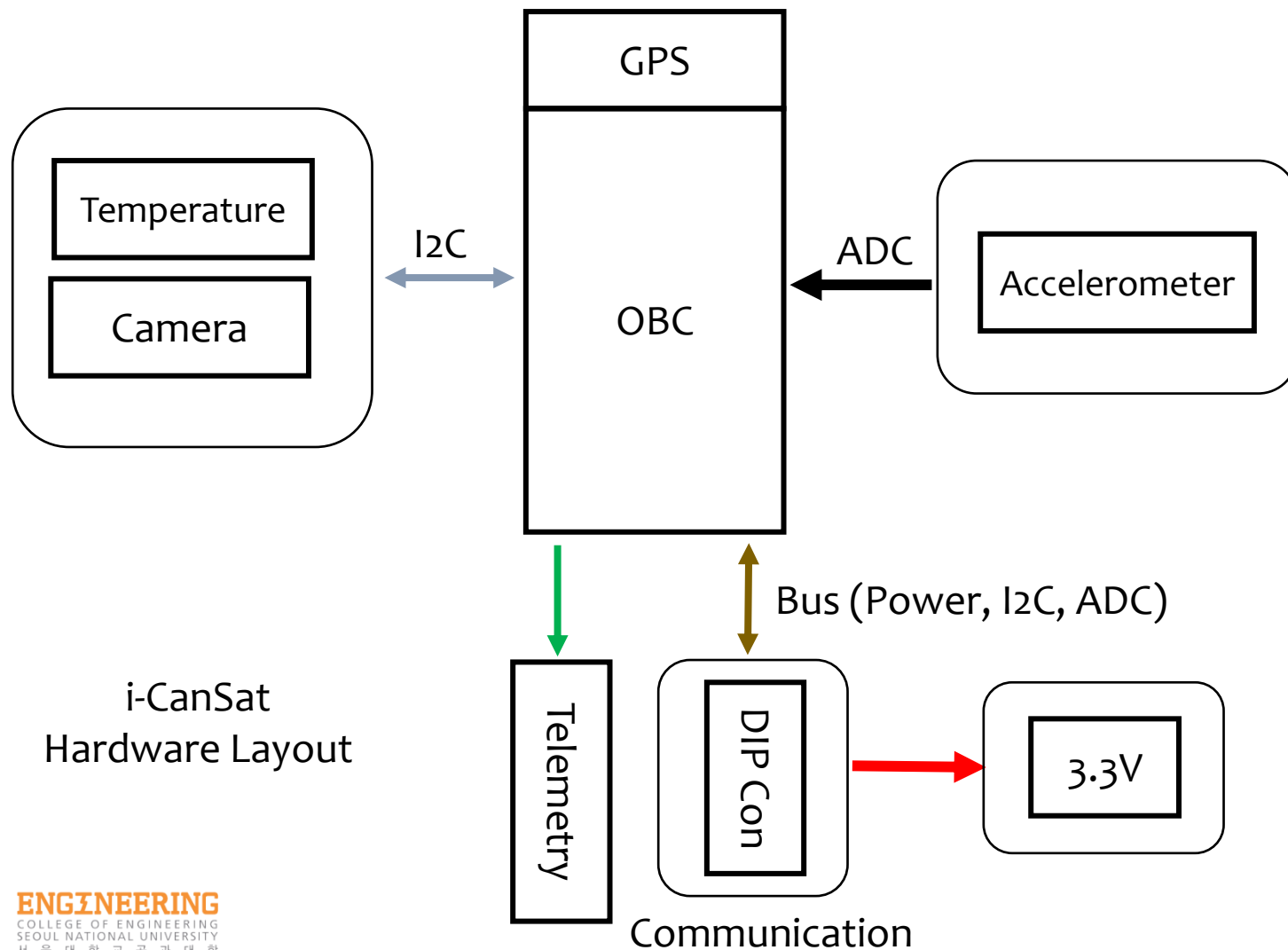
User Board

Parameters				
Part Name	ADT7410	MPL115A2	ENC-03R	ADXL335
Sensor	Temperature	Pressure	Gyroscope	Accelerometer
Sensor Type	Digital	Digital	Analog	Analog
Comm.	I2C	I2C	-	-
Pull-up	Included	Necessary	Not applicable	Not applicable
Power (3.3V)	0.7mW	0.165mW	4.95mW	1.05mW

SELECTED

SELECTED

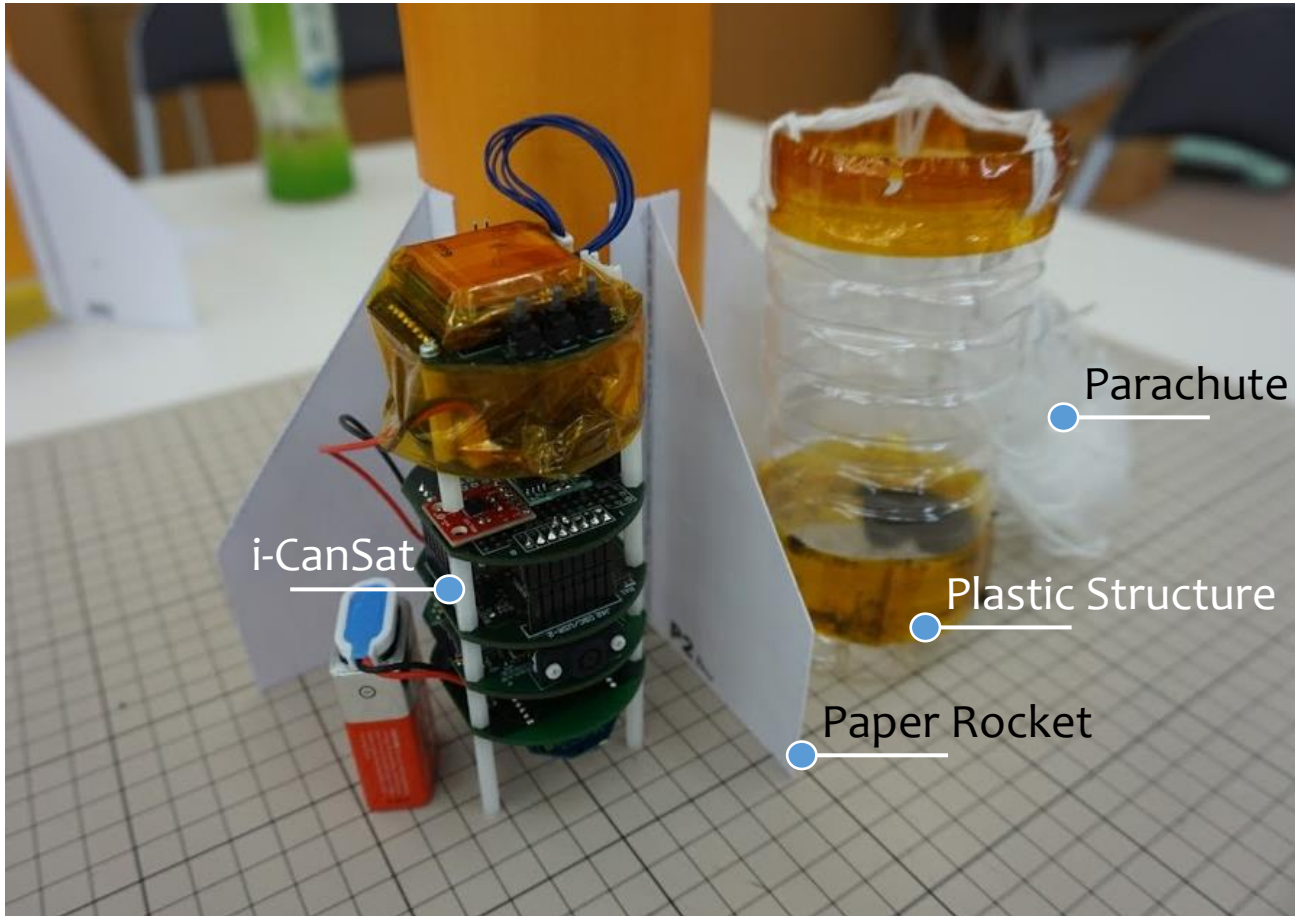
Hardware Layout



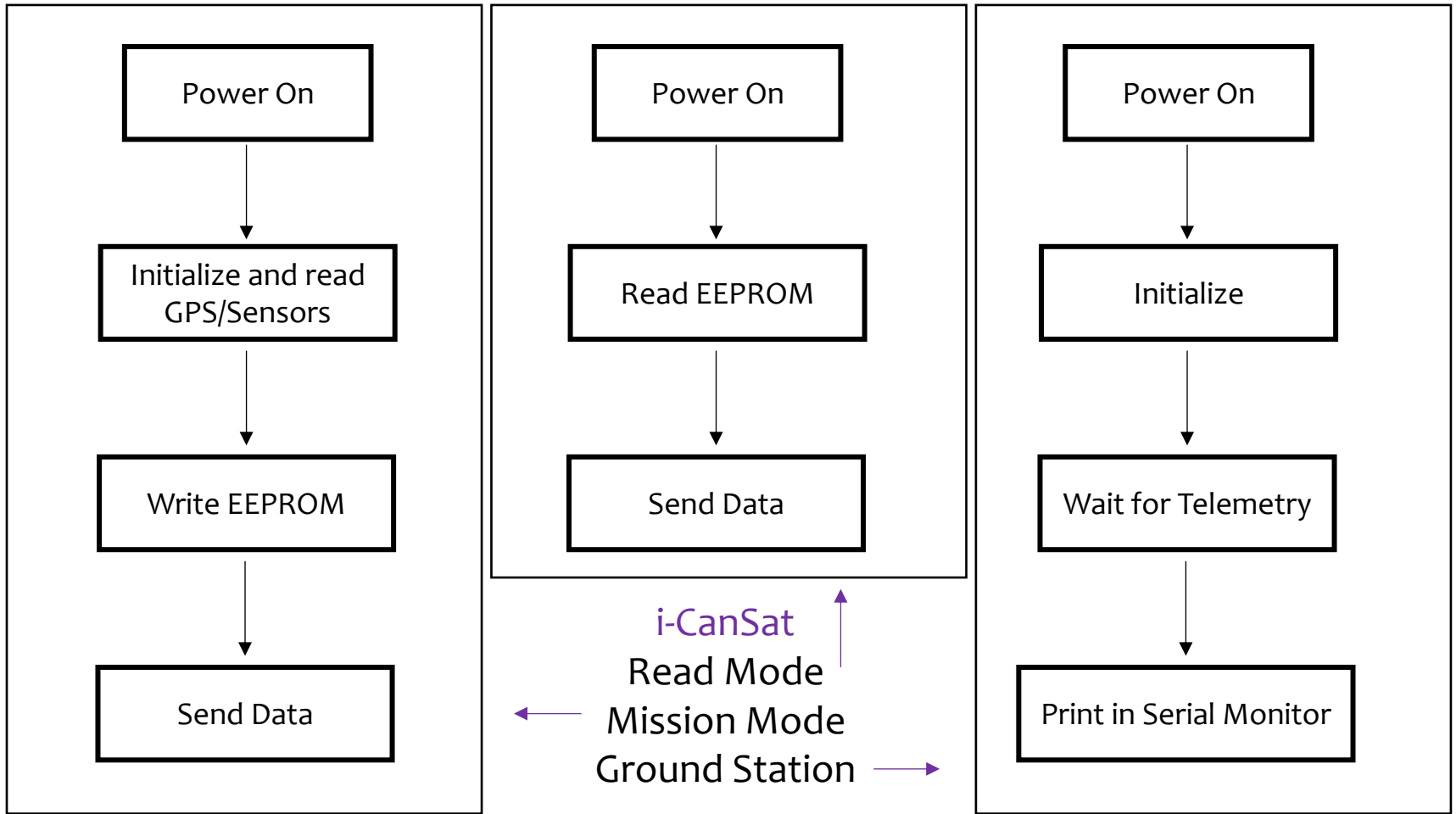
i-CanSat
Hardware Layout

Communication

Complete Hardware



Software Flowchart



B. TESTING



Results

TEST I

Testing	Test Output	Remarks	Risk Assessment
Parachute Deployment	FAIL	Parachute folding/ Parachute design	Parachute redesign Correct folding
Vibration	PASS	No issues seen	Check bolts Super glue
Thermal Cycle	ACCEPTED	Battery ran out	Use new battery

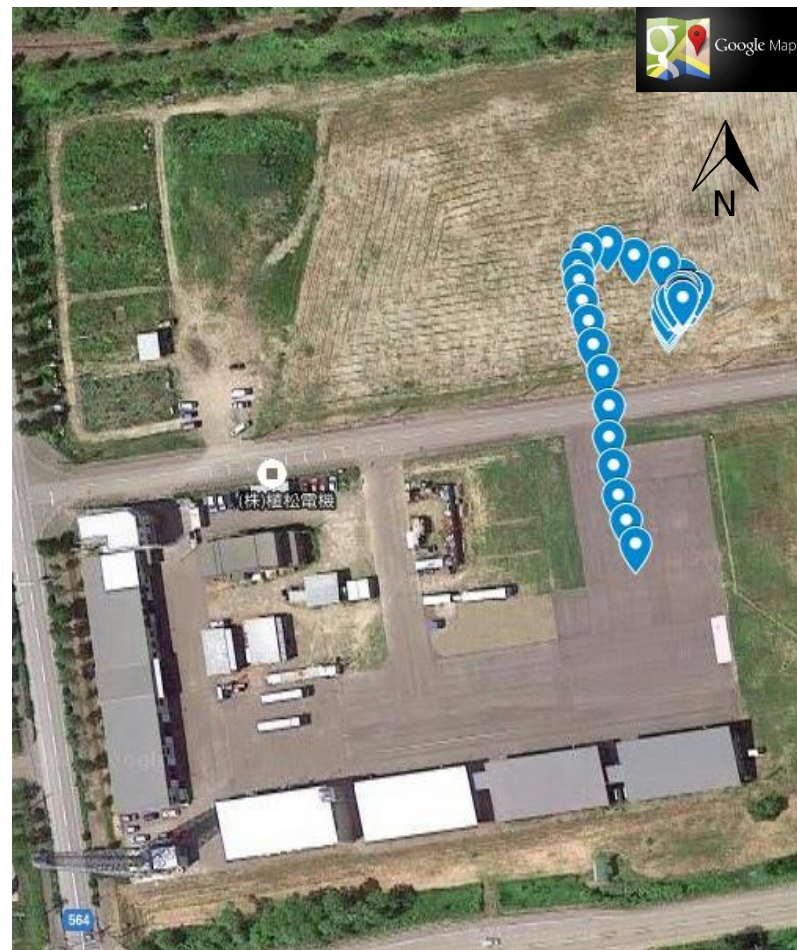
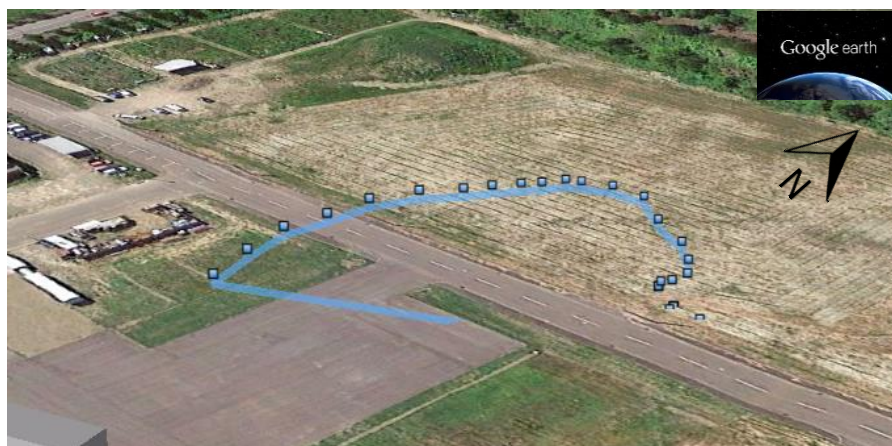
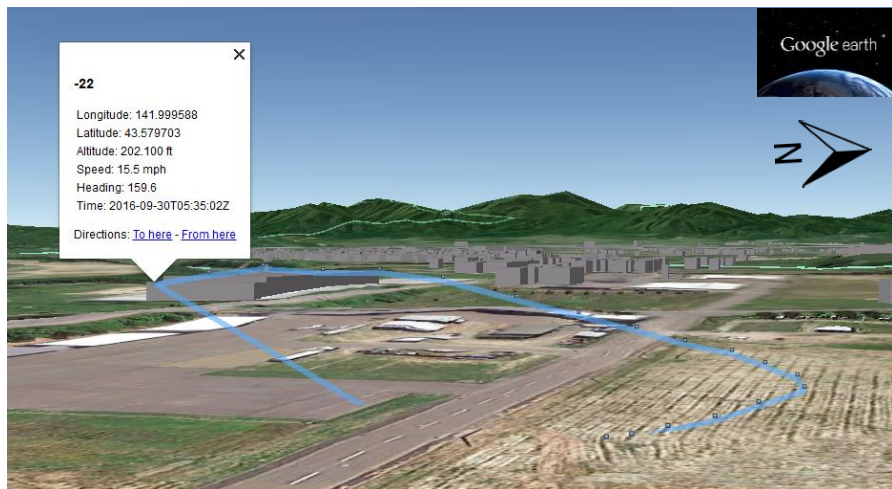
TEST II

Testing	Test Output	Remarks	Risk Assessment
Parachute Deployment	PASS	All three parachutes deployed	Repeat the same technique

C. DATA ANALYSIS



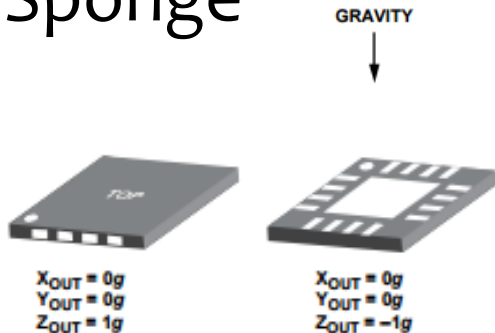
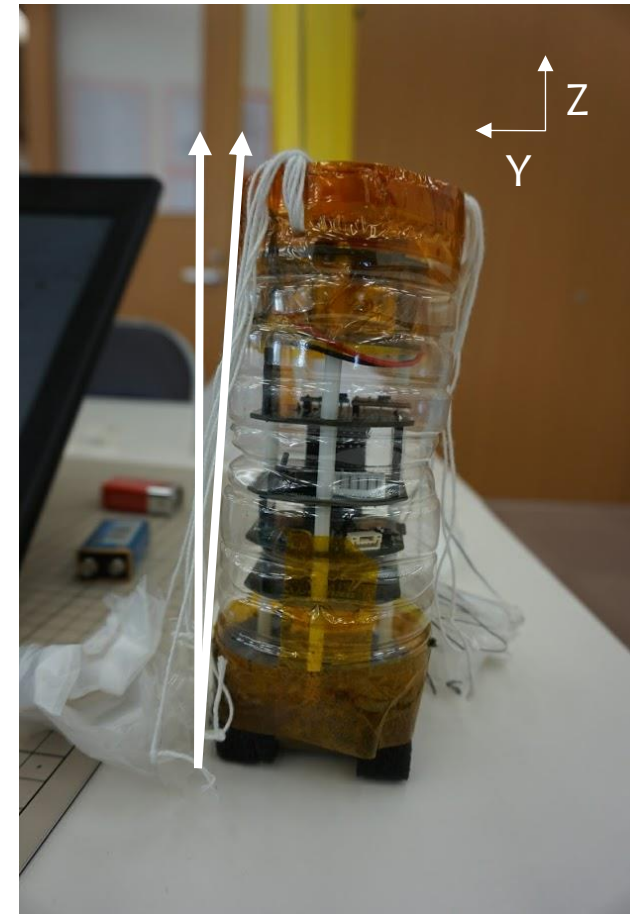
GPS



Accelerometer Orientation

ACCURACY ISSUES

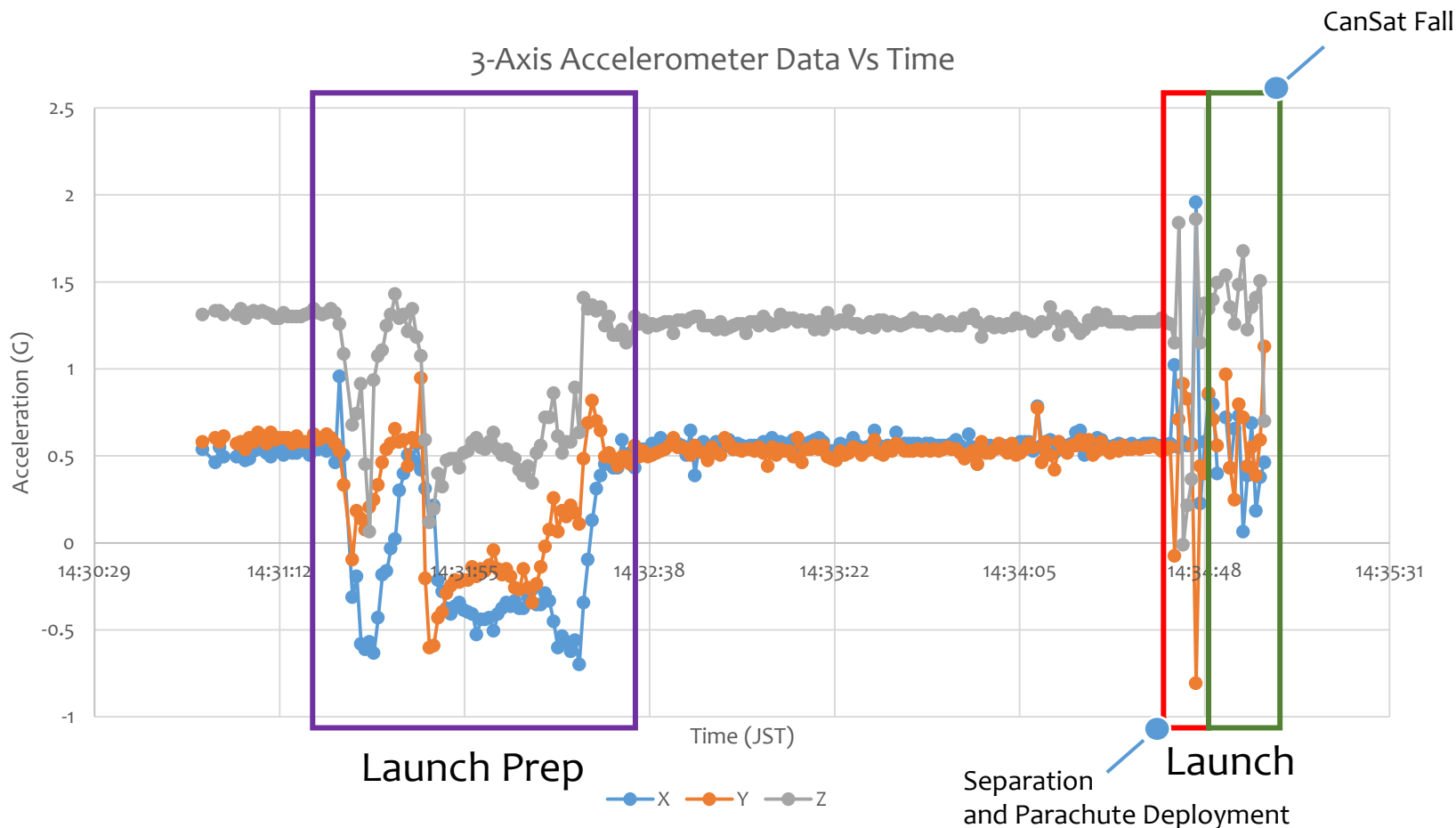
- Calibration
- PCB Orientation
- Structure/CanSat Orientation
- Sponge



X	Y	Z
0.537634	0.580645	1.311828
0.462366	0.602151	1.333333
0.548387	0.580645	1.333333
0.494624	0.612903	1.311828

Response vs. Orientation to Gravity

Accelerometer



Temperature Sensor

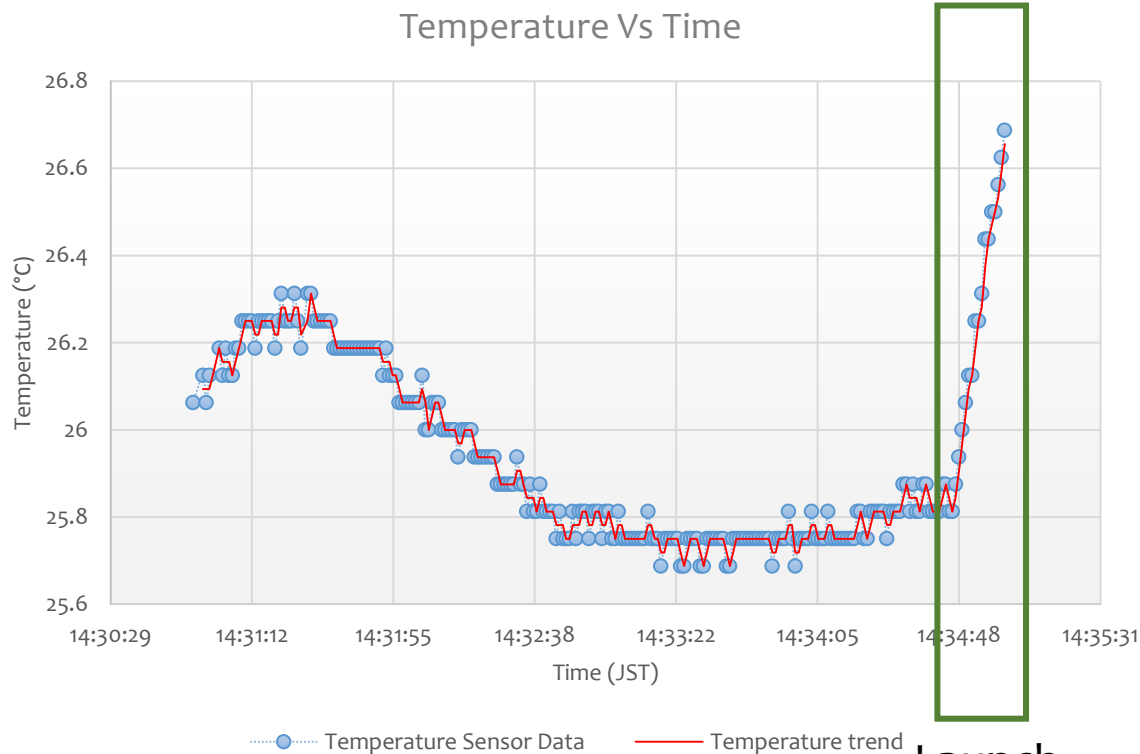
THU 9/29

Actual Temp
19° / 14°

Hist Avg.
20° / 10°



- Max temp 26.9°C
- Min temp 25.7 °C
- Nominal temp 25.75°C



Launch

E. Conclusion



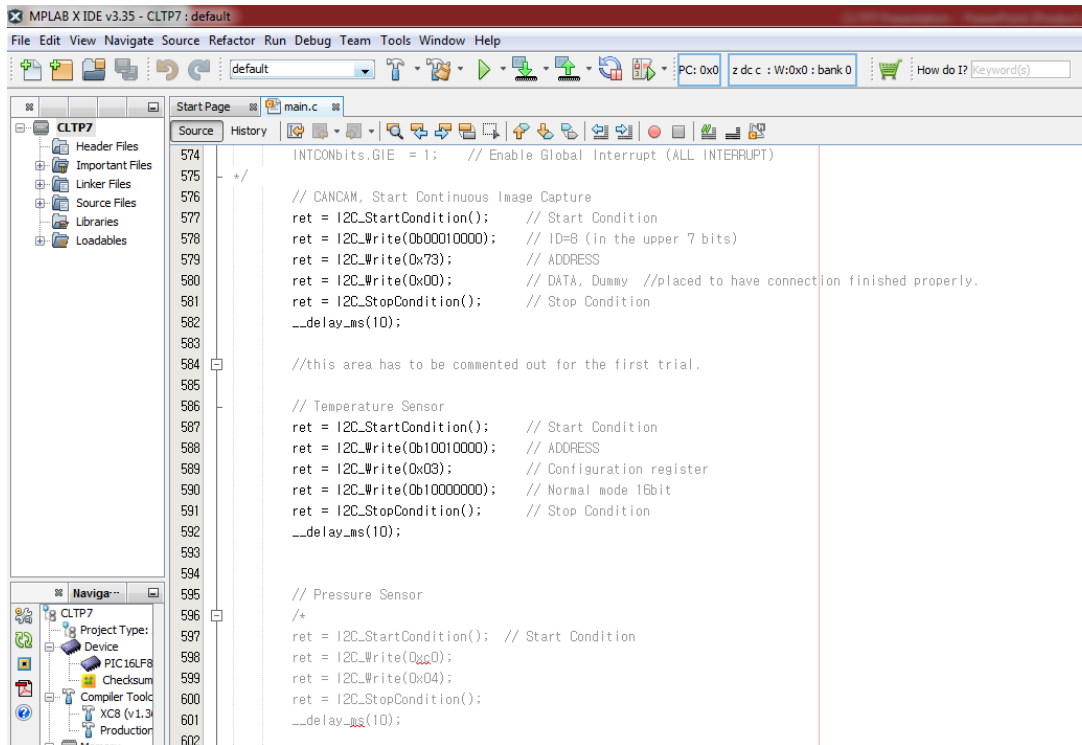
Comments

SEPERATION PIN



Comments

SOFTWARE



```

MPLAB X IDE v3.35 - CLTP7 : default
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
default PC: 0x0 z dc c : W:0x0 : bank 0 How do I? Keyword(s)
Source History
CLTP7
Header Files
Important Files
Linker Files
Source Files
Libraries
Loadables
574 INTCONbits.GIE = 1; // Enable Global Interrupt (ALL INTERRUPT)
575 /*
576 // CANCAM. Start Continuous Image Capture
577 ret = I2C_StartCondition(); // Start Condition
578 ret = I2C_Write(0b00010000); // ID=8 (in the upper 7 bits)
579 ret = I2C_Write(0x73); // ADDRESS
580 ret = I2C_Write(0x00); // DATA, Dummy //placed to have connection finished properly.
581 ret = I2C_StopCondition(); // Stop Condition
582 __delay_ms(10);
583
584 //this area has to be commented out for the first trial.
585
586 // Temperature Sensor
587 ret = I2C_StartCondition(); // Start Condition
588 ret = I2C_Write(0b10010000); // ADDRESS
589 ret = I2C_Write(0x03); // Configuration register
590 ret = I2C_Write(0b10000000); // Normal mode 16bit
591 ret = I2C_StopCondition(); // Stop Condition
592 __delay_ms(10);
593
594
595 // Pressure Sensor
596 /*
597 ret = I2C_StartCondition(); // Start Condition
598 ret = I2C_Write(0x00);
599 ret = I2C_Write(0x04);
600 ret = I2C_StopCondition();
601 __delay_ms(10);
602

```

E. WHAT'S NEXT



Kathmandu University
CanSat Initiative
December 15, 2015



KU Robotics Collaboration



Interaction program conducted on 18th September 2016

Payload capacity of 0.5kg

Smarter CanSat based Medical Delivery System

Payload inside a payload concept

Bottleneck: **Funding**

Thank You

