

Soka Univ.
Mo.P.-SAT

ARLISS2005
SOKA UNIVERSITY
Mo.P.-SAT

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Mission

- Name

Mo.P.-SAT

Acquisition of **M**ovie and **P**icture - **S**atellite

- Mission1

Mo.P.-SAT takes a picture per minute and determination of picture .

- Mission2

Mo.P.-SAT takes animated data by using ready made movie camera.

- Mission3

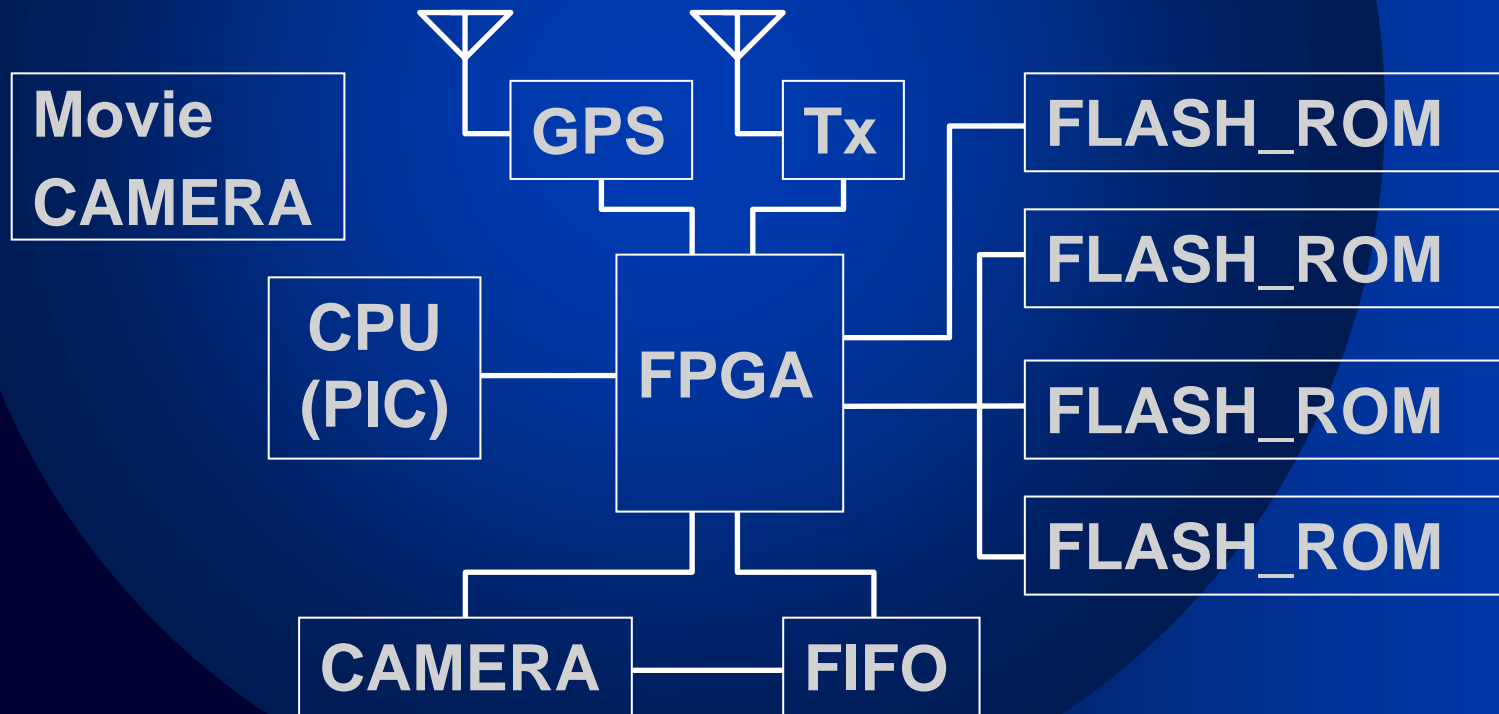
Mo.P.-SAT transmits GPS data and picture data to ground station.

System Diagram

- Feature

Peripheral device (Flash ROM , CMOS camera , GPS) controller is developed by Hardware (use FPGA).

CPU (use PIC) controls peripheral devices.

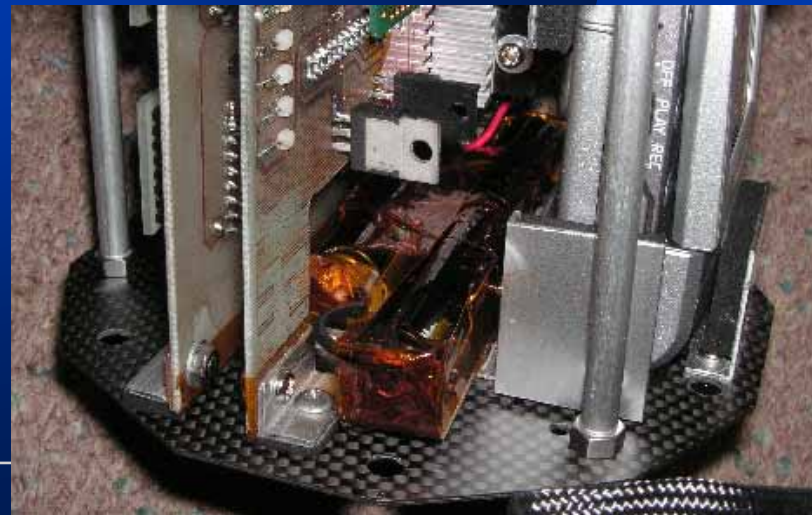


Structure

- Size
Open Class 140mm × 200mm
- Weight
1100g
- Material
Aluminum
CFRP
(Carbon Fiber Reinforced Plastics)



- Frequency
430MHz Band
- Protocol
AX.25
- Radio
YAESU Vx-2 (Loading Mo.P-SAT)
KENWOOD TH-D7 (Ground Station)
- Battery
CR-V3 (3V) × 3
- Voltage transformer
Regulator



Criteria of well-balance picture

- Area of blue in a picture is examined.
- Ratio of blue area is measured by a picture shoot before launching.
- 30% to 70% is the criteria of well-balance picture.
- Judgement is tagged with each picture.
- All good picture and bad pictures stored in ROM.

- We could not acquire GPS data.

But!!

- We could take 19 pictures with judgment.
 - 9 Well-balance pictures
 - 10 Bad balance pictures
- We could take animated data by using ready made movie camera.
- We could transmit picture data to ground station.

CMOS Camera 1



Altitude : about 3000m

CMOS Camera 2



Movie Camera



Separation



Landing

Conclusion

- We could not acquire GPS data .
- We should improve in picture determination .
- Experience of this CANSAT test will be applied to our CubeSat.

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THANK YOU

Picture determination

- Determination of a good picture which includes sky and land by using output blue parameter from CMOS camera.
- We decided blue threshold from a taken picture before launching.
- When ratio of blue sky in a picture is 30% to 70%, we determine this as a well-balanced picture .
- Pictures are stored in ROM even if well-balanced or Not .