Recent status of CubeSat development as the UNISEC-Global activity: Korea

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18 November, 2014
Agenda

• CubeSat Activity of Korea: A Glance
• Current CubeSat Activities in Korea
• Approaching UNISEC-Global in Korea
CubeSat Activity of Korea: A Glance

CubeSat Development

- HAUSAT-1: 2006.7.26
- OSSI-1: 2013.11.21
- KHUSAT-1,2: 2013.11.21
- KAUSAT-5 Papillon: 2015.9.15 Falcon 9
- SNUSAT-1 LINK: 2015.12.15 Cyclone-4
- SIGMA: 2013.4.19 Soyuz-2-1a
- STEP Cube Lab: 2015.9.15 Falcon 9
- CANYVAL: 2015.9.15 Falcon 9

Timeline:
- 2 YRS: 2006.7.26 Dnepr
- 2 YRS: 2013.11.21 Dnepr
- 4 YRS: 2015.9.15 Falcon 9
- 3 YRS: 2015.12.15 Cyclone-4
- 7 YRS: 2013.4.19 Soyuz-2-1a
CubeSat Activity of Korea: A Glance

CubeSat Launch

2006.7.26 Dnepr
HAUSAT-1

2013.4.19 Soyuz-2-1a
OSSI-1

2013.11.21 Dnepr
KHUSAT-1, KHUSAT-2

2015.9.15 Falcon-9 [Expected]
CANYVAL, KAUSAT-5, Papillon,
KHUSAT-3, STEP Cube Lab

2015.12.15 Cyclone-4 [Expected]
SNUSAT-1, LINK

SNUSAT-1
LINK
CAYNYVAL
KAUSAT-5
Papillon
KHUSAT-3
STEP Cube Lab

2006.7.26
Dnepr

2013.4.19
Soyuz 2-1a

2013.11.21
Dnepr

2015.9.15
Falcon 9

2015.12.15
Cyclone-4
CubeSat Activity of Korea: A Glance

CubeSat Activity

**ESA Authorized and Advised**

- **Kick-Off**: 2011.11.2
- **CDR**: 2014.2.28
- **AITRR**: 2014.10.15
- **Launch**: 2015.12

**KARI Authorized and Advised**

- **RFP**: 2013.3
- **CDR**: 2013.8
- **AIT**: 2014.9

**Development**

- **PDR**: 2013.6
- **Development**: 2013.9
- **Launch**: 2015.1
Current CubeSat Activities in Korea

- **SNUSAT-1 [2U]**
  - University: Seoul National University
  - Kick-off: November 5, 2012
  - Mission:
    - QB50 Science (FIPEX: Oxygen Measurement)
    - FDIR Tech-Demo
  - ADCS: 3-Axis Stabilization
  - Funding: NRF (EU-FP Related)
  - Time Schedule

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<th>PDR</th>
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<td>2012.11.5</td>
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<td>2015.8.15</td>
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Current CubeSat Activities in Korea

• SNUSAT-1 [2U]
Current CubeSat Activities in Korea

- SNUSAT-1 [2U]
Current CubeSat Activities in Korea

• LINK [2U]
  • University: Korea Advanced Institute of Science and Technology
  • Mission:
    • QB50 Science (INMS: Spectrometry)
    • Langmuir Probe
  • ADCS: Spin Stabilization
  • Funding: 2012 CubeSat Competition
Current CubeSat Activities in Korea

• KAUSAT-5 [3U]
  • University: Korea Aviation University
  • Mission:
    • Infrared Imaging
    • Geiger Muller Tube
  • Mission Lifetime: 1 Year
  • Orbit: 720 km, 97.73°
  • Funding: 2012 CubeSat Competition
Current CubeSat Activities in Korea

• CANYVAL [3U]
  • University: Yonsei University
  • Mission:
    • Space Telescope: Vision Alignment Experiment
  • Mission Lifetime: 3 Months
  • Orbit: 600 km, 27.172°
  • ADCS: Spin Stabilization
  • Funding: 2012 CubeSat Competition
Current CubeSat Activities in Korea

• KHUSAT-3 (SIGMA) [3U]
  • University: Kyung Hee University
  • Mission:
    Measure global magnetic field and radiation
    • TEPC - Radiation Detector
    • Magnetometer
  • Mission Lifetime: 3 Months
  • Orbit: 650 ~ 800 km, 90°
  • Mass: < 6 kg
  • ADCS: Spin Stabilization
  • Funding: 2013 CubeSat Competition
Current CubeSat Activities in Korea

• PAPILLON [3U]
  • University: Chungnam University
  • Mission:
    • Solar Sail Deployment
  • Mission Lifetime: 1 Year
  • Orbit: 700 km, 98.193°
  • ADCS: Spin Stabilization
  • Funding: 2013 CubeSat Competition
Current CubeSat Activities in Korea

• **STEP CUBE LAB [1U]**
  - University: Chosun University
  - Mission:
    • Variable emittance radiator
    • Oscillating heat pipe
    • MEMS solid propellant thruster
    • Concentrating photovoltaic power system
    • Non-explosive holding and release mechanism
  - Mission Lifetime: 1 Year
  - Orbit: 600 km, 97.78°
  - ADCS: Spin Stabilization
  - Funding: 2013 CubeSat Competition
Approaching UNISEC-Global in Korea

- CubeSat Utilization
Approaching UNISEC-Global in Korea

- CubeSat Utilization
Approaching UNISEC-Global in Korea

• CubeSat Utilization