UNISEC-Global Korea activity: Gathering as a consortium

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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

2 YRS  
2006.7.26 Dnepr  
HAUSAT-1

2 YRS  
2013.11.21 Dnepr  
KHUSAT-1,2

4 YRS  
2015.9.15 Falcon 9  
CANYVAL

3 YRS  
2016.10.15 Ariane  
SNUSAT-1 LINK

7 YRS  
2013.4.19 Soyuz-2-1a  
OSSI-1

3 YRS  
2015.9.15 Falcon 9  
KHUSAT-3

4 YRS  
2016.10.15 Ariane  
SIGMA

3 YRS  
2015.9.15 Falcon 9  
STEP Cube Lab
CubeSat Activity of Korea: A Glance

CubeSat Launches

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

2016.10.15 Ariane Space [Expected]
SNUSAT-1, LINK

2016.10.15 Ariane Space
SNUSAT-1, LINK
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

<table>
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<tr>
<th>SRR</th>
<th>PDR</th>
<th>AITRR</th>
<th>Launch</th>
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<td>2014.10.15</td>
<td>2016.10</td>
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<td>SDR</td>
<td>CDR</td>
<td>FRR</td>
<td>2015.8.15</td>
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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
Current CubeSat Activities in Korea

• CubeSat Competition 2015
  • 11 Teams from 9 universities applied
    • Three teams will be selected as finalists
  • As more universities are participating in space activities, needs in communication and collaboration is arising more

• SNU Educational CubeSat
  • Educational CubeSat system under development
    • Aiming for development by end of August 2015
    • Engineering practice and hands-on experience material
Gathering as a Consortium

• Progress
  • Continuously applying for university conference support

• Challenges
  • Some programs already exists: i.e. CanSat/CubeSat Competition, National University Rocket Association

• Near term plans
  • Form a consortium
  • Get in contact with CanSat/CubeSat Competition, NURA
  • Organize annual meetings

• Long term plans
  • Organize programs such as educational lectures or CLTP
  • Organize a joint space activity within the consortium
Gathering as a Consortium: Vision

Joint Projects

Competition

Share Information, Seek Opportunity, Stay Motivated

Education

Students, Faculty, Professionals