Committee on the Peaceful Uses of Outer Space, 59th session  
June 8-17, 2016

- KiboCUBE -  
UNOOSA-JAXA Cooperation Programme on Deployment of CubeSat from the ISS “Kibo”

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JEM Mission Operations and Integration Center
“KiboCUBE”
– CubeSat Deployment from ISS Kibo –
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*Issues needing to be addressed in the meeting.
ISS: Japan’s Capabilities and Contributions

ISS
The International Space Station

Kibo
Japan Experiment Module

HTV
H-II Transfer Vehicle
“Kibo” is Unique! – Exposed Facility

- **ExHAM:** Material Exposure Mission
- **Standard-class EF Mission:** CALET (JAXA)
- **Medium-class EF Mission:** J-SSOD: Small satellite deployment
- **Standard-class EF Mission:** HREP (NASA)
- **Standard-class EF Mission:** SEDA-AP (JAXA)
- **Air Lock**
J-SSOD: JEM Small Satellite Orbital Deployer

JEM Remote Manipulator System (JEMRMS)

JEM Airlock

Small Satellites

Multi-Purpose Experiment Platform (MPEP)

Satellite Install Case (for Cubesats)

Electrical Box

Hinged door

Spring deployment mechanism

Separation Mechanism
## J-SSOD: JEM Small Satellite Orbital Deployer

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite Size</td>
<td>CubeSat: 1U, 2U, or 3U (*1) 50 kg class satellite: 55×35×55 cm</td>
</tr>
<tr>
<td>Satellite mass</td>
<td>CubeSat: 1.33 kg or less per 1U 50 kg class satellite: 50 kg or less</td>
</tr>
<tr>
<td>Orbital altitude</td>
<td>approximately 380 - 420 km (*2)</td>
</tr>
<tr>
<td>Inclination</td>
<td>51.6°</td>
</tr>
<tr>
<td>Deployment direction</td>
<td>Nadir-aft 45° from the ISS nadir side</td>
</tr>
<tr>
<td>Deployment velocity</td>
<td>CubeSat: 1.1 - 1.7 m/sec 50 kg Microsat: 0.4 m/sec</td>
</tr>
<tr>
<td>Ballistic coefficient</td>
<td>100 kg/m² or less (*3)</td>
</tr>
</tbody>
</table>

*1) CubeSat specification:
10 cm (W) × 10 cm (D) Height: 1U: 10 cm, 2U: 20 cm, 3U: 30 cm

*2) Depends on ISS altitude.

*3) Depends on ballistic coefficient, altitude at release, solar activity, etc.
J-SSOD: Opportunities for Increased Capacity

As of Today

• **139** satellites from Kibo

How?

• Moderate expenses
• Collaborate with Japanese universities or private enterprises.
• (CubeSat (1U-3U) and Microsat (50 kg))

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CubeSat Deployment Mission Overview

SERPENS Launch and Deploy: 2015

Investigator:
- University of Brasilia (Brazil)
- Agência Espacial Brasileira (AEB)
- Japan Manned Space Systems Corporation

Size: 3U
50kg Microsat Deployment Mission Overview

JAXA’s First Mission for 50kg Microsat

Diwata-1
Launch and Deploy: 2016

Investigator:
University of the Philippines (Philippine)
Department of Science and Technology (DOST)
Tohoku University/Hokkaido University

Size: Micro-Satellite (55cm × 35cm × 55cm)
UNOOSA and JAXA are raising awareness of the role that space science and technology plays in promoting sustainable development and contributing to building national capacities in spacecraft engineering, design and construction. (CubeSat (1U)/ once a year from 2017-2019)
Eligibility Criteria of “KiboCUBE”

The entity shall be...

- Located in developing countries
- Located in a country without the means to transport artificial satellites into space and place them in orbit
- A head of research institutes, universities, or other public organizations
- Responsible for the development, operation and utilization of their CubeSat
**Selection Milestone for KiboCUBE**

- UNOOSA/JAXA have completed our public offering of this opportunity on March 31 and accepted **13 proposals**.

### Selection Milestone

<table>
<thead>
<tr>
<th>Selection of Successful Applicant</th>
<th>Several entities will be selected as “short listed entities” and notified before 1 July 2016.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One entity will be selected among the short-listed entities and notified by 1 August 2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signing of an arrangement (contract) and Technical coordination</th>
<th>Signing of a non-disclosure agreement and a contract between JAXA and the Selected Entity.</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Technical coordination in preparation of the CubeSat deployment between JAXA and the Selected Entity.</td>
</tr>
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</table>
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Schedule of KiboCUBE for Deployment in 2017

Announcement of Opportunity  Application Submission  Selection Phase  Selection and notification of applicants  Kickoff Meeting with selected applicant

Verification Complete & Safety Data Package Release for Review  Safety Review Complete  CubeSat H/O to JAXA  Integrated J-SSOD with CubeSat H/O to Vehicle  Launch
L-7.5mon  L-6mon  L-5.5mon  L-5mon  L-0

Deployment ! Expected in 2017
Conclusion

Eager to support capacity building and technological development

2\textsuperscript{nd} KiboCUBE is coming soon!

Looking forward to seeing more applicants!
Thank you for your attention

For further information, please contact
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