UNISEC-Japan
Regional Report 2018

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Board member of UNISEC-Japan
Outline

• Overview of UNISEC-Japan
• Activities of 2018
• Space industry and jobs in Japan
Overview of UNISEC-Japan

• UNISEC: “University Space Engineering Consortium”
  – UNISON: UNISEC Student Organization
  – UNISAS: UNISEC Alumni Organization

• Established in 2002

• NPO/NGO to facilitate/promote university level students’ practical space development activities, such as designing, manufacturing and launching small satellites and hybrid rockets.

• 74 laboratories/groups from 55 universities

• 823 student members, 266 individual supporters, and 14 corporate supporters

• 3 pillars: Human resource development, Technological development, Outreach
Activities in 2018

• January 27: 15\textsuperscript{th} Year Anniversary Event
• March 15: Takumi Conference
• July 7-Aug.26: CLTP9 (CanSat Leader Training Program.)
• July 29: General assembly
• August 16-23: Noshiro space event (CanSat, Rocket)
• September 10-13: ARLISS (A locket launch for international student satellites) – CanSat
• December 1-2: Annual Workshop
15\textsuperscript{th} Year Anniversary Event

• On January 27, 2018, 93 members (alumni, professors, students, etc.) gathered to celebrate the 15\textsuperscript{th} year anniversary of UNISEC-Japan

Members who built the first Japanese CubeSats in 2000-2002

Talk session by early members
CanSat Leader Training Program (CLTP)

Objective: CLTP is a training program for professors/instructors to learn how to conduct CanSat training by experiencing it. Participants are expected to teach their students after training. It has contributed to capacity building in basic space engineering and technology.

Launched: October 2010
Offered: Annually
Graduated: 85 participants from 37 countries
CLTP History & Participants

CLTP1 (Wakayama Univ. in Feb-March, 2011)
12 participants from 10 countries, Algeria, Australia, Egypt, Guatemala, Mexico, Nigeria, Peru, Sri Lanka, Turkey (3), Vietnam.

CLTP2 (Nihon Univ. in Nov-Dec, 2011)
10 participants from 10 countries, Indonesia, Malaysia, Nigeria, Vietnam, Ghana, Peru, Singapore, Mongolia, Thailand, Turkey.

CLTP3 (Tokyo Metropolitan Univ. in July-August, 2012)
10 participants from 9 countries, Egypt (2), Nigeria, Namibia, Turkey, Lithuania, Mongolia, Israel, Philippines, Brazil.

CLTP4 (Keio Univ. in July-August, 2013)
9 participants from 6 countries: Mexico(4), Angola, Mongolia, The Philippines, Bangladesh, Japan.

CLTP5 (Hokkaido Univ. in Sept 8-19, 2014)
7 participants from 5 countries, Korea (2), Peru, Mongolia, Mexico (2), Egypt.

CLTP6 (Hokkaido Univ. in August 24-Sept4, 2015)
8 participants from 8 countries: Angola, UN(Austria), New Zealand, Tunisia, Turkey, Egypt, Bangladesh, Mexico

CLTP7 (Hokkaido Univ. in Sep 21-Oct 1, 2016)
8 from 7 countries: Egypt, Myanmar, Peru, Nepal (2), Mongolia, Serbia, Dominican Republic.

CLTP8 (Nihon University in Sep 7-16, 2017)
8 from 7 countries: Egypt, Turkey, Bolivia, El-Salvador, Malaysia, Japan (3), Nepal.

CLTP9 (Nihon University in July 7- Aug. 26, 2018)
12 from 6 countries: Japan (6), India, Mongolia, Malaysia, UAE, and Argentina

85 participants from 37 countries
i-CanSat & HEPTASAT

- Development sponsored by MEXT funding
- Tools for Hands-on training
- Being used for CLTP and other hands-on trainings
- HEPTSAT training on Nov.22-23
University satellites launched this year

TriCOM-1R (U. Tokyo)
BIRDS-II x 3 (Kyutech)
SPATIUM-I (Kyutech)
STARS-Me (Shizuoka U.)

Tenkoh (Kyutech)
DIWATA-2B (Tohoku U.)
AO-stars (Shizuoka U.)
AUTcube2 (Aichi Tech)

10 satellites (4x1U, 3x2U, 1x3U, 2x50kg) went to orbit this year
Human Resource Development

- UNISEC tries to provide many engineers/researchers who have
  - Project management skills
  - Proficient knowledge of satellite/rocket and their subsystem design and manufacturing
  - Systems engineering and integration
  - “Guts” to tackle challenging problems

- To Japanese space sector as well as many other technological areas such as automobile, aircraft, plants, electronics, etc.

- But, it is good if all the UNISEC graduates can go to the space sector
  - We want UNISEC to be the group of people with high spirits of aiming at going to space
    - Not satisfied with CanSat!
    - Not satisfied with making friends
Space engineering education and jobs in Japan

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<thead>
<tr>
<th>Item</th>
<th>Numbers</th>
<th>Note</th>
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<tbody>
<tr>
<td>Undergraduate student enrollment (per year)</td>
<td>1600</td>
<td>27 university*</td>
</tr>
<tr>
<td>Graduate student enrollment (per year)</td>
<td>500</td>
<td>20 university*</td>
</tr>
<tr>
<td>UNISEC student member</td>
<td>823</td>
<td>55 university</td>
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<tr>
<td>JSASS student member</td>
<td>1099</td>
<td>FY 2018</td>
</tr>
<tr>
<td>JSASS regular member</td>
<td>3001</td>
<td>FY 2018</td>
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<tr>
<td>Space industry employment</td>
<td>8980</td>
<td>2016 excluding JAXA</td>
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<td>Total employment in Japanese space sector</td>
<td>11,000</td>
<td>Including JAXA</td>
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<td>Job demand every year</td>
<td>300 ~ 400</td>
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Total employment in aircraft industry ~ 30,000

*Source: Kyushu Institute of Technology

Japanese space sector is so small. But we see a sign of changes
Japanese New Space

Axelspace
https://industry-co-creation.com/industry-trend/17345

Cannon electric

Mitsubishi Heavy Industry

Astroscale
http://sorae.jp/030201/2017_07_18_as.html

Ale
http://www.sankeibiz.jp/business/photos/171107/bsl1711071850004-p1.htm

i-Space
https://doda.jp/guide/brand/02_001a.html

QPS

Infostellar

Interstellar Technologies
http://www.istellar.tech

Need companies oriented to space application to expand further
What are needed now?

• Development of human resource who can contribute to the worldwide space activities
  – Participate in UNISEC-GLOBAL
  – Be international and inter-cultural
  – Going abroad & working abroad

• Keep spirits high to aim at going to space

• Provide new talents to the Japanese space sectors to promote its growth with their innovative ideas
Conclusion

• Since 2002, UNISEC has been successful to provide valuable engineering talents to Japanese society

• Supported by individual, corporations, government, agency
  – But most of all, students

• UNISEC is still struggling
  – Time to grow one step higher
  – Challenge continues