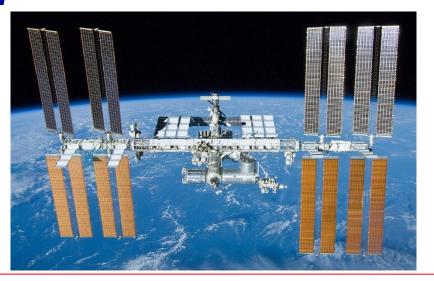
6th UNISEC-Global Meeting Group Discussion Activity

Group 1

Commercialisation of ISS:

How to Open Up the ISS Utilisation to Commercial Sectors









Topic Description



- The budget of the ISS operation after 2025 is still unclear among the participating governments.
- NASA and other national space agencies are considering re-directing their budgets to deep space exploration, such as cis-lunar habitation plan.
- In amidst of this transition, there is an urgent need for further commercialization of the ISS in order to keep it sustainable.

Question

What uses or services can contribute to further commercialisation of the ISS??

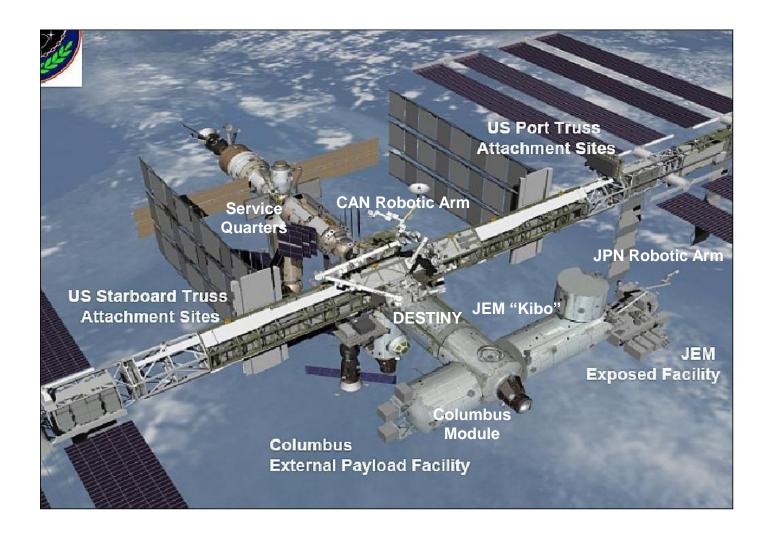
- You can come up with any ideas utilizing external and/or internal platforms on the ISS, or even new facilities (but within reasonable limits)
- Ideas shall be summarized with a brief, tentative business plan(s).



ISS and its Facilities



• ISS has internal & external platforms, robotics arms, and smallsat deployment facilities





ISS – Key Features & Applications



Microgravity

Space Environment Exposure

Science Experiment Facilities

Regular Re-fueling
Mission

Earth Observation

Telecommunication

No convection
No sedimentation
Less buoyancy
Radiation

Biology / Bio-tech

Food & Cosmetics

Pharmaceuticals

In-orbit demonstration

Advanced materials

Satellite operation support

Cells grow differently in microgravity

 Cell and tissue engineering to find new ways to fight diseases

New food processing methods

Adv. cell tissues to repair and replenish damaged skin

 Different protein crystallisation, molecule and enzyme development

Adv. antibiotics and other drugs

Quickly test new technologies

Gain "flight-proven" status to raise TRL

Improved manufacturing

Creation of new materials, alloys

3D print in microgravity – Made In Space

Provision of additional resources to support Earth-observation and relaytelecommunication



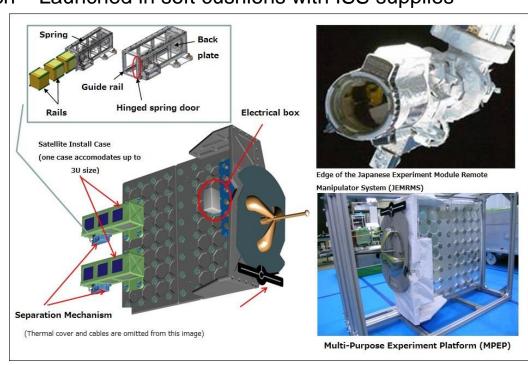
Examples of Commercial Applications



Space BD – Cubesat and microsat deployment service from the ISS (J-SSOD)

- Regular deployment opportunity 4 re-fueling missions per year to the ISS
- No need to wait for a piggy-back launch opportunity
- Flexible deployment schedule 4 deployment opportunities per year so easy to re-schedule
- Reduced vibration during launch Launched in soft cushions with ISS supplies





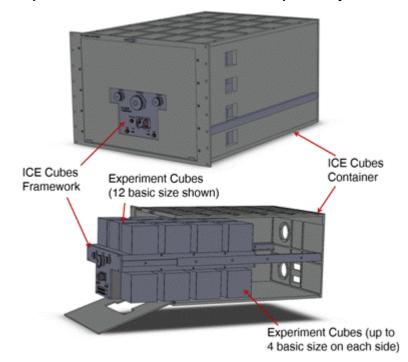


Examples of Commercial Applications



Space Applications Services – "ICECUBES" Experimentation Platform

- Provides a platform where a system can plug on to
- Fast, simple, low cost & direct access for research and technology in LEO
- The platform provides standard interface power, communication, USB and Ethernet ports
- Unique real-time interaction capability with space experiment from own premises







Examples of Commercial Applications



Space for Entertainment, Tourism and Virtual Reality

- Space tourism Bigelow Aerospace
 - Additional modules on ISS to operate as hotels
- ALE Co., Ltd Artificial shooting star
 - Shoot metal pellets from smallsats/ISS, which then burns up in atmosphere to create artificial shooting stars that can be viewed from the Earth
- Warp Space Gaming and VR experience in space
 - Smallsats for gaming where players can send signals to "power up" and "collect items"
 - Cubesat with a camera to provide customers a VR experience of flying through space







Discussion Points & Schedule



- Brainstorm on commercialization ideas in smaller groups (30 45 mins)
- Come back together, round circle of ideas (15 mins)
- Concept establishment + benefit to the customer / value proposition (30 mins)
- Approach implementation / required facility (30 mins)
- Basic monetization scheme / business plan (30 mins)
- Preparation of pitch presentation (30 mins)