

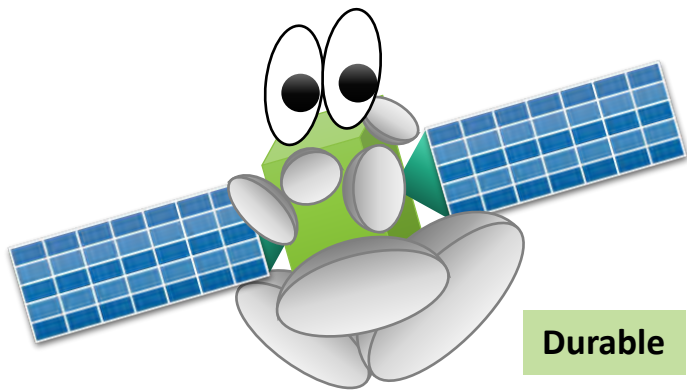
# **On the Study Report by the Sub-WG on On-Orbit Servicing (Released on 17 May 2021)**

**27 May 2021**

**National Space Policy Secretariat  
Cabinet Office, Japan**

# Background (1): Demand for OOS

## Demand for OOS



**Durable**

- Multi-functional
  - Assured reliability
  - Enduring
  - Upgradable during the mission
- ↓
- More expensive

In-situ SSA  
LEX  
Refueling  
Repair  
Augmentation

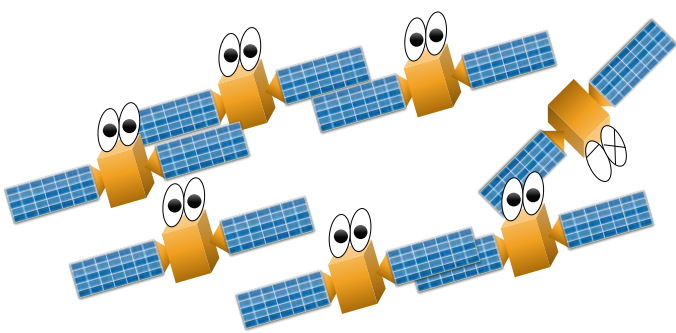
### Disadvantages of a satellite

- Expensive
- Falling into disuse because of failure, out of fuel, or obsolescence

**Disposable**

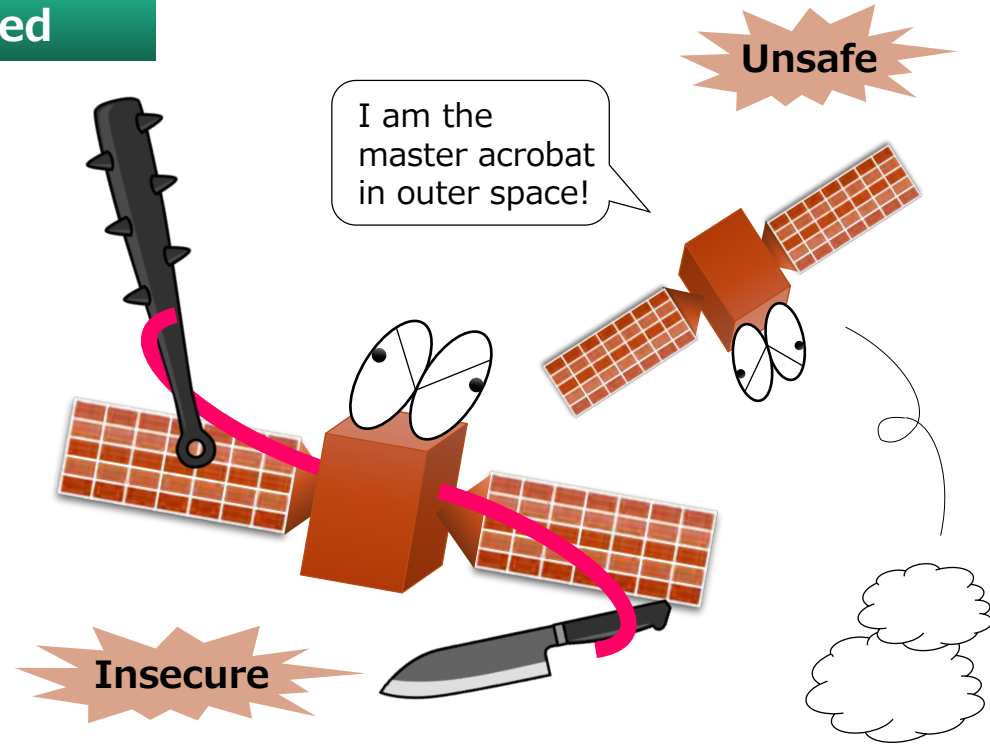
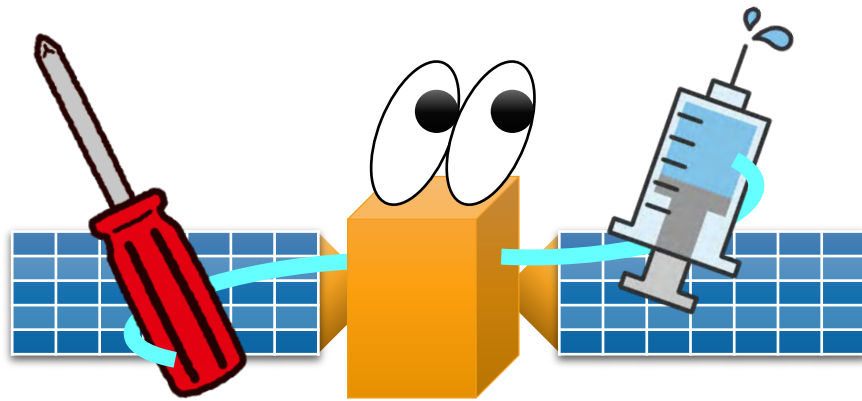
- Inexpensive unit price
  - Selected functions
- ↓
- More operators & objects
  - Discard/exchange if failed
  - Potential of large constellation

ADR



## Background (2): Need for Regulation

Ops of a servicer spacecraft could cause potentially harmful interference if misused



States Parties shall bear responsibility for activities by non-governmental entities. (Article VI, Outer Space Treaty)



It is governmental responsibility to ensure, with appropriate national regulation, that **OOS is carried out appropriately under governmental supervision.**

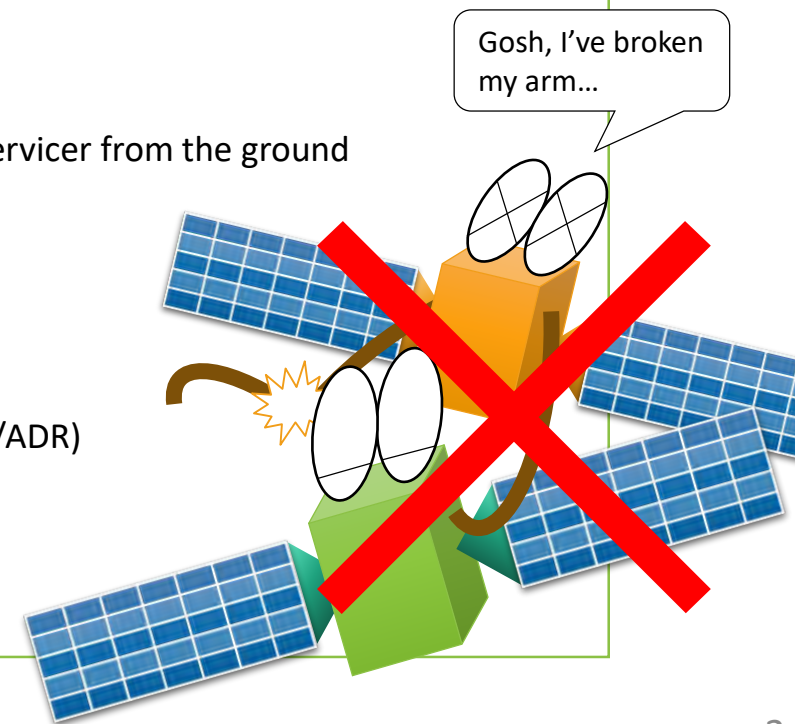
# Major Requirements

## Protection of ownership and jurisdiction

- A contract with or consent from a client with the necessary power & authority
- Not conflicting with regulations applied to the client object by its state of registry/licenser  
(The client party is contracted to comply with the procedures in that state.)
- Notification to the state of registry/licenser of the mission

## Safety of Methodology, Architecture & Operation

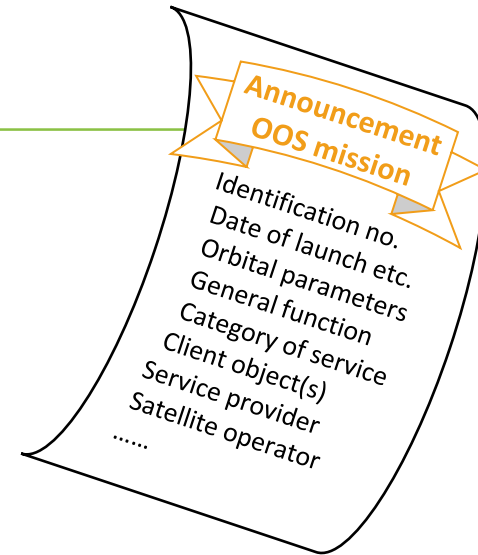
- Prior study of client architecture
- Capability to perform OOS
- Paint and thermal insulations not nullifying the trackability of a servicer from the ground
- Situational Awareness of the servicing area
- Principle and conditions for safe approach
- Stability during capturing and docking
- Transfer of a client/generated debris to an appropriate orbit  
(for relocation/ADR)
- Identification of failure modes and risk mitigation
- Safety measures for beaming and object ejection
- Enhanced cyber security measures



# (Continued) Major Requirements

## Transparency of the Safety/Justifiability

- The Government should:
  - Publish official OOS guidelines based on the draft;
  - Announce the main features of a licensed mission; and
  - Prepare for appropriate international consultations.
  
- A Licensee should:
  - Report mission details to the Government and release the main features of the licensed mission;
  - Report/share ephemeris and maneuver information to the designated official SSA organizations; and
  - Report/announce, as necessary, information on anomalies and/or failures with potential interference.



## Next Steps

### Incorporate the suggested requirements into the actual licensing practice

- Officially approve the “Additional Requirements for a License to Perform OOS”.
- Announce a new guidelines on the Additional Requirements.

### Provide the set of requirements as a good practice to the international community

- Publish English text (summary/extract) of the Report.
- Introduce it on the occasion of space-dialogues and international symposia.

### Study remaining issues dealt with in the report

- Limit of liability and government indemnification
- Supervision on a domestic OOS provider licensed abroad
- Policy on a case that a client with Japan’s license is serviced by an OOS provider licensed abroad
- Incentives to encourage PMD and ADR