

IAA Study Group 3.22

Next-Generation Space System Development Basing on On-Orbit-Servicing Concept

Paris Spring Meeting (Second Meeting)

DATE: March 23, 2015 (Monday)

Place: 6 rue Galilee, 75116 Paris

Study Report: Important Remarks

Over the last years many organizations in different countries have been involved in development of various technical aspects of on-orbit satellite servicing, which to a great extent predetermines the characteristics of the next-generation space systems. Such works, in particular, are now carried out in USA, Germany, Japan, Sweden, Spain, Russia and some other countries. **Note:** The materials regarding national projects mentioned are located at DropBox "IAA SG 3.22".

Satellite On-Orbit-Servicing is connected with justifying the technical solutions for building next-generation space infrastructure that will reverse the practice of abandoning billions of dollars in vital commercial and national space assets for lack of full-scale satellite on-orbit services. It would have the capability to correct orbits and to visually examine, recover, repair and refuel satellites. This property of the next-generation space infrastructure will revolutionize space industries of the nations worldwide.

The on-orbit-servicing includes, but are not limited to:

- Orbital corrections and modifications to failed and out of control satellites
- Detailed visual inspection of satellite assets
- Spacecraft salvage options and debris clean up
- Rescuing mis-launched, stranded satellites and delivering them to their intended orbits
- On-orbit mobility to meet international and national mission needs
- Refueling spent satellites in orbit to extend life
- Repairing and correcting malfunctioning satellite in orbits
- Transportation and support for lunar and planetary missions

The servicing satellite is to provide the following **main operations**:

- **Observation** of the satellites with the purpose of determination the nature of the issue
- **Technical assistance** – repairing, refueling, etc.
- **Graveyarding** of the satellites (moving the satellites to graveyard orbits) is implemented in case if the satellite damage is irreparable

Additional Benefits of On-Orbit-Servicing:

- The creation of a new high technology industrial and manufacturing base with benefits today and far into future
- Provision for training and advanced education to the existing labor force leading to many new permanent employment positions