

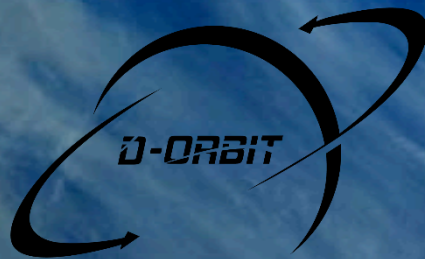


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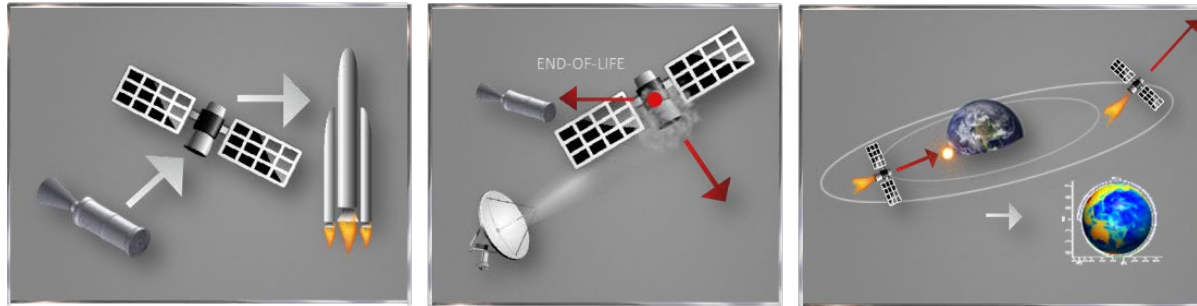
Autonomous Decommissioning Device for Satellite Controlled Re-entry
D-ORBIT

24/05/2016



Autonomous Decommissioning Device for Satellite Controlled Re-entry:

An **independent** subsystem to be installed on satellites and launcher stages before launch. It is based on **solid propellant** and is able to **autonomously remove the spacecraft at the end-of-mission** with a controlled re-entry through the Earth's atmosphere or, alternatively, dispose it in a **predefined graveyard orbit**.



Several degrees of autonomy from the host satellite platform are conceivable:

- Fully Autonomous ("*Emergency*" configuration);
- Dependent for AOCS aspects ("*Standard*" configuration);
- Dependent for AOCS, communication and power aspects ("*Standard Slim*" configuration);
- Dependent for AOCS, communication, power aspects and computational aspects ("*Mini Slim*" configuration).

Total Impulse level customization possible through the clusterization of a pre-defined number of solid propellant motors.



Description of proposed technology Building Block



Applicability:

Applicable to all classes of satellites and launcher stages at all LEO altitudes.

Particularly suited for:

- i) small satellites with no propulsion
- ii) large satellites (~ > 1ton) seeking for controlled re-entry
- iii) large constellations

Electrical Interfaces

Power Interface:

24/28V

Data Interface:

MIL-STD-1553 / CAN / SpaceWire

Quality and Reliability (Compliance with Safety Standard MIL-STD-1573)

Components Level:

SSC-B to Extended Range

Predicted Reliability:

> 0,999

Fail-Safe Architecture:

- Single-point-of-failure free
- Critical software B-Class

Subsystems

Electrical Power Subsystem (EPS)

Electro-Explosive Subsystem (EES)

Command and Control Unit (CCU)

Telemetry, Tracking and Command (TT&C)

Solid Rocket Motor



Main technical challenges during development:

- Integration with the Spacecraft
- Autonomy Assessment
- Quality of the components / Reliability
- Standardization
- Max acceleration on the spacecraft
- Interfaces
- Modularity/configuration
- Consolidation of SRM classes

