

CleanSpace One

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Background & Purpose

- The EPFL Space Center created in 2003
 - to federate needs, resources, opportunities and purposes
 - to strengthen the position of its partners in the Space domain, from an institutional, academic and industrial point of view.
- Support of Swiss Space policy:
 - Development and utilisation of space applications to serve citizens' quality of life.
 - Permanence of its commitment to space exploration for the benefit of innovation and knowledge.
 - Input of significant scientific, technology and industrial contribution, making Switzerland a competitive, reliable and necessary partner

Mission

The Swiss Space Center shall support institutions, academia and industry to access space missions and related applications and promote interaction between these stakeholders

Role

- *To network Swiss research institutions and industries on national and international levels in order to establish focused areas of excellence internationally recognized for both space R&D and applications.*
- *To facilitate access to and implementation of space projects for Swiss research institutions and industries*
- *To provide education and training*
- *To promote public awareness of space*

SwissCube

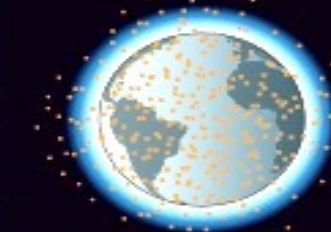
- ~ 15 laboratories
- 3 universities, 5 engineering schools
- 3.5 years of development
- More than 200 students involved
- High visibility



CleanSpace One - Mission

CleanSpace One, un satellite à la poursuite des débris de l'espace

Les débris orbitaux représentent un risque de collision croissant avec des satellites opérationnels. Mis au point à l'Ecole Polytechnique Fédérale de Lausanne (EPFL), CleanSpace One sera le premier «nettoyeur» de l'espace.



16'000 déchets de plus de 10 cm répertoriés autour de la Terre.

2 Ejection

Altitude: 630-750 km

3 Approche

Vitesse: 28'000 km/h

4 Phase de rendez-vous

5 Accrochage

1 Lancement

CleanSpace One

Taille: 30 x 10 x 10 cm

Lancement prévu: 2015-2016

Mission: **Désorbiter un satellite obsolète**

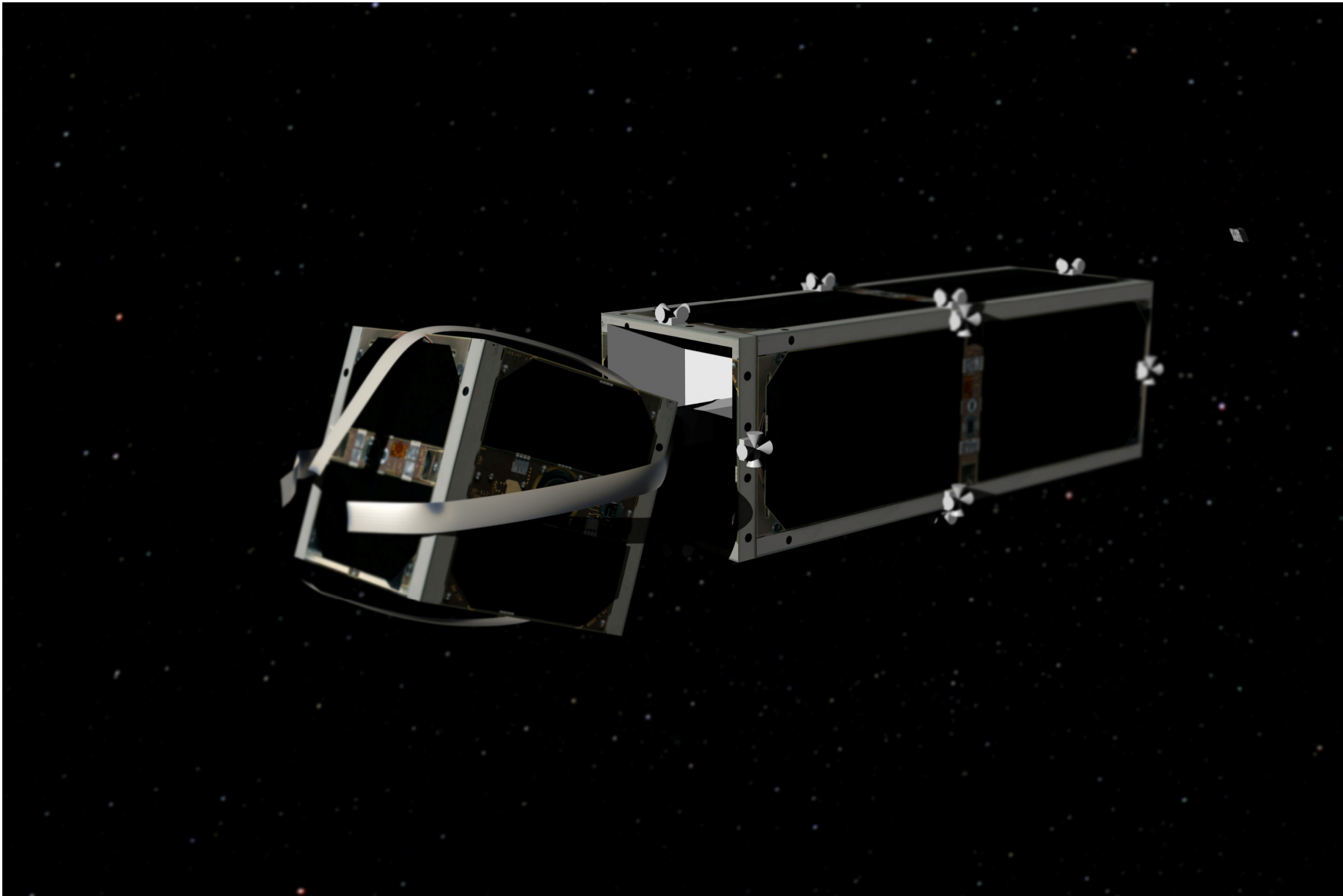
6 Désorbitage et désintégration

Température: + de 1000°C

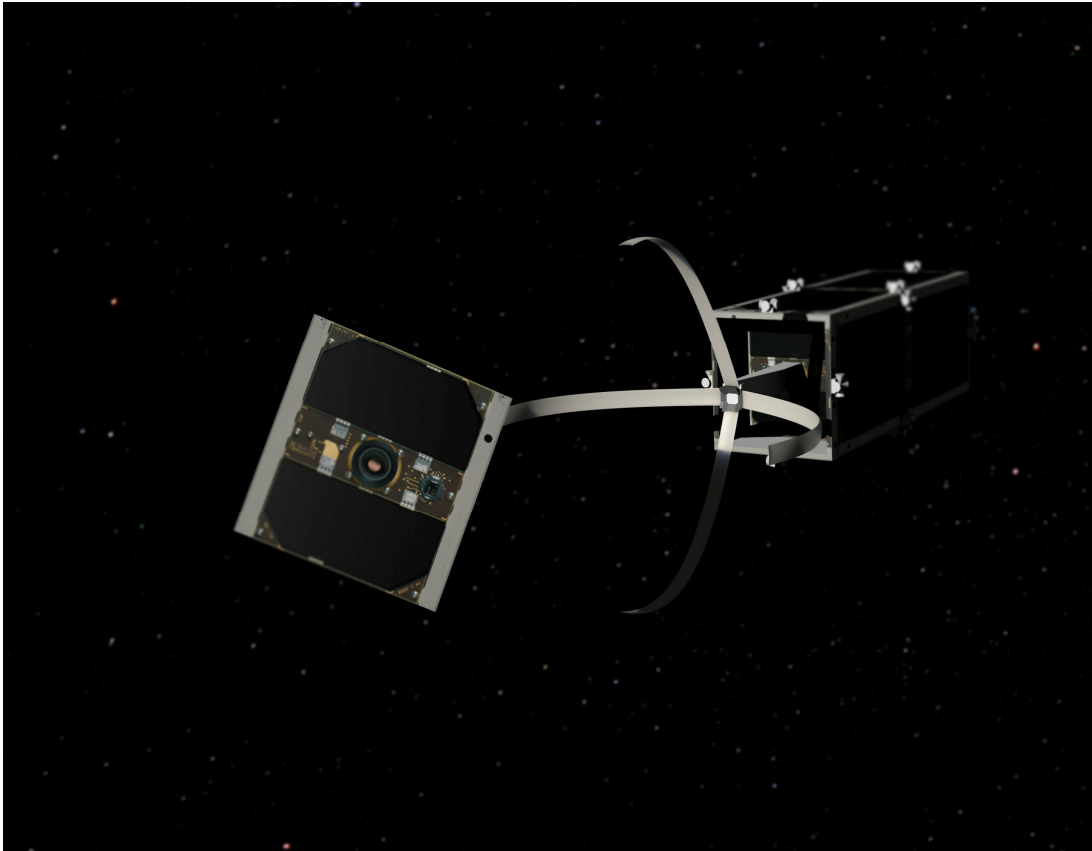
Infographie: Pascal Coderay / EPFL

- Initial Orbit placement and determination
- Location of the satellite and RDV
- Approach
- Grabbing

CleanSpace One - Spacecraft

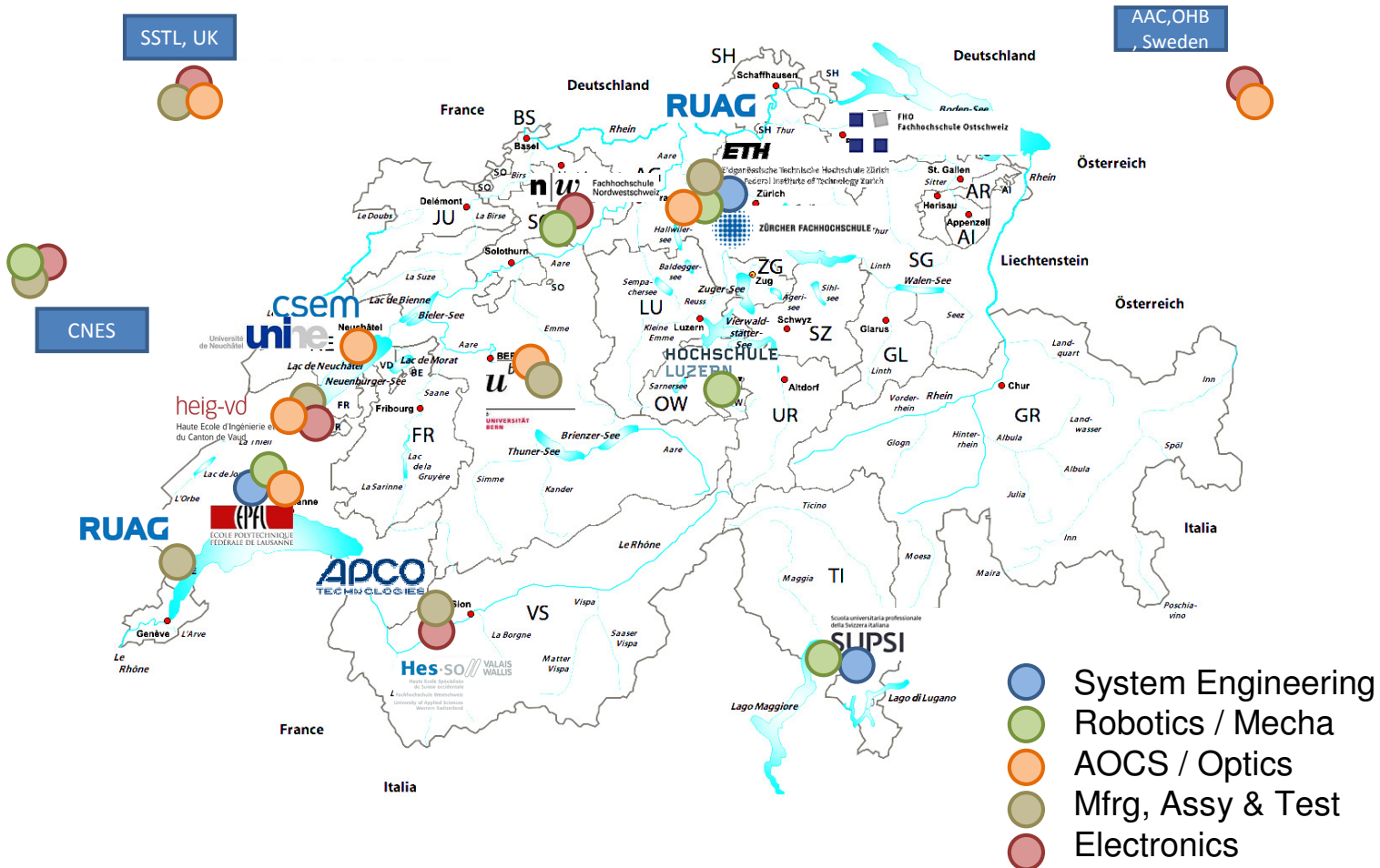


CleanSpace One - Challenges



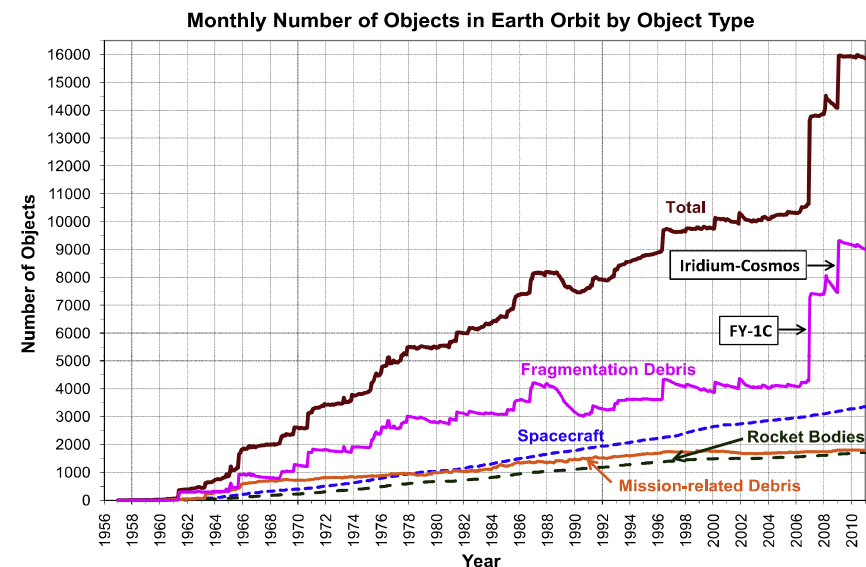
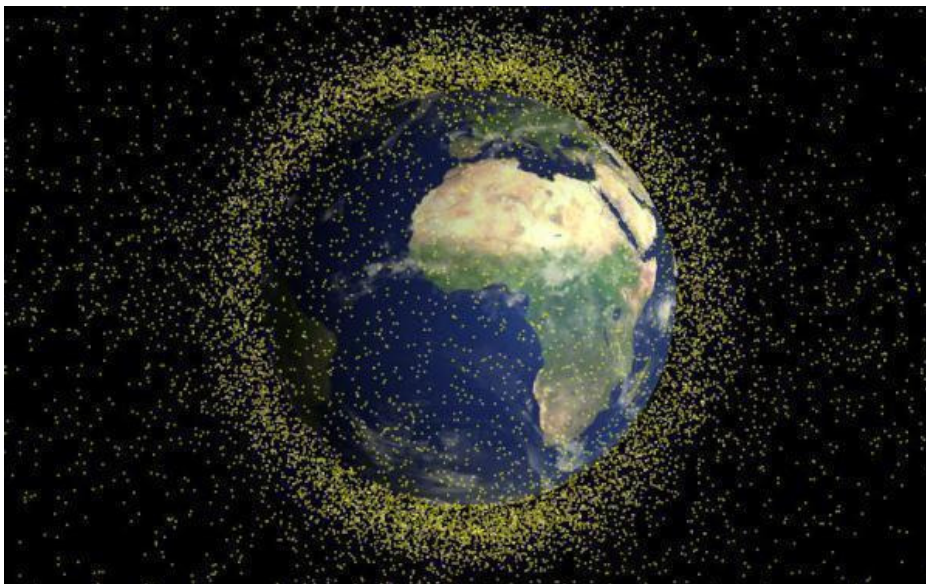
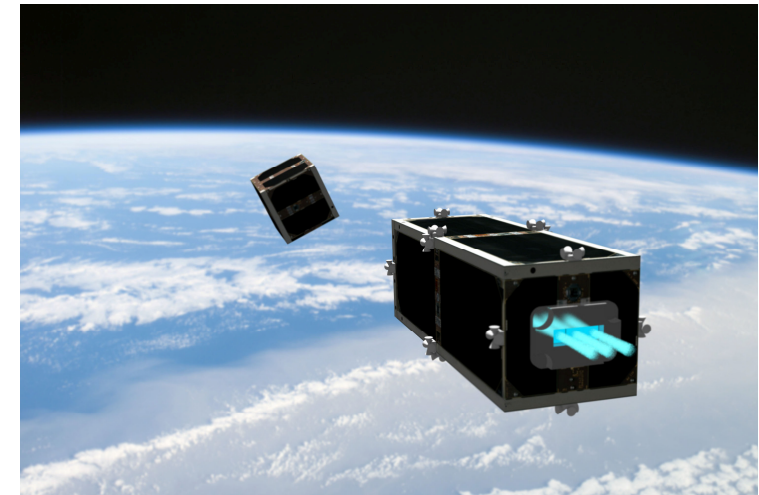
- Orbit Insertion
- Attitude Control - Propulsion
- Identification
- Communication
- Grappling
- Stabilization
- Controlled de-orbiting

CleanSpace One - Collaboration



CleanSpace One - Objective

- Demonstrate Debris removal
- Heighten Public Awareness
- Strong student involvement - Educational
- Collaboration with labs and Industry
- Duration 3-5 years
- Estimated costs 10 MCHF





Thank you for your attention