

# De-Orbiting of Satellites using Solar Sails

## Fact Sheet

### Project Information

DEORBIT SAIL

Grant agreement ID: 263248

[Project website](#) 

Status  
Closed project


Start date  
1 March 2011

End date  
31 October 2014

Funded under  
FP7-SPACE

Overall budget  
€ 2 830 728,40

EU contribution  
€ 1 997 342,75

Coordinated by  
**UNIVERSITY OF SURREY**  
 United Kingdom

## This project is featured in...

RESEARCH\*EU MAGAZINE  
**Rare diseases and genetic  
disorders under the  
microscope**

NO. 22, MAY 2013

## Objective

The goal of this project is to develop and flight test a novel, low cost/risk deorbiting device based on a 25-m squared Solar Sail with a total mass (including the satellite platform) of 3 kg. The approach will be to modify Solar Sail deployment technology for use as a satellite and/or rocket upper stage deorbiting system. The effectiveness of such deorbiting device is predicted to be high at altitudes lower than 900 km for minisatellites (20 to 500 kg) if deorbiting time constraints of 25 years are being considered. Recent studies show an increasing probability of collisions between intact spacecraft and debris. If no countermeasures are taken, the number of debris particles will grow with a growth rate in the order of up to 5% per year. The historical practice of abandoning spacecraft and upper stages at the end of mission life has resulted in 8,500 tones of space debris in low earth orbit. The uncontrolled growth of the space debris population has to be avoided in order to enable safe operations in space for the future. However, reviews by panels of independent international experts have repeatedly failed to identify a single plan which is both technically feasible in the near-term and economically viable. The consortium will design and develop a state of the art deorbiting system for LEO satellites and upper stages with a mass less than 500 kg. The deorbiting system will be deployed after the useful time of the satellite/upper stage and will be used to remove/deorbit the object from its orbit within 25 years as required by Space Agency recommendations. An example of the kind of impact this project can have is that if one assumes that all satellites and upper stages with a mass < 500 kg launched after 2013 to 2020 would hypothetically carry the proposed deorbiting system developed by the DEOBRIT-SAIL team, space debris (> 10 cm) will be reduced by 70%.

## Field of science

/natural sciences/physical sciences/astronomy/planetary science/satellites

/natural sciences/physical sciences/theoretical physics/particles

## Programme(s)

## Topic(s)

### Call for proposal

FP7-SPACE-2010-1

### Funding Scheme

CP - Collaborative project (generic)

### Coordinator



#### UNIVERSITY OF SURREY

Address

**Stag Hill**  
**GU2 7XH Guildford**  
 **United Kingdom**

[Website](#)

Administrative Contact

**Maria Segal-Buhalis (Ms.)**

Activity type

**Higher or Secondary**  
**Education Establishments**

[Contact the organisation](#)

EU contribution

**€ 508 777,75**

### Participants (9)

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#### CALIFORNIA INSTITUTE OF TECHNOLOGYCORP

**United States**

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Administrative Contact

**Mary Gibson (Ms.)**

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#### AIRBUS DEFENCE AND SPACE SAS

**France**

EU contribution

**€ 232 046**

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Activity type

**Private for-profit entities  
(excluding Higher or  
Secondary Education  
Establishments)**

[Contact the organisation](#)

Administrative Contact

**Herve Guenat (Mr.)**

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## **DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV**

Germany

EU contribution

**€ 400 465**

Address

**Linder Hohe  
51147 Koln**

[Website](#)

Activity type

**Research Organisations**

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Administrative Contact

**Michael Renker (Mr.)**

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## **STELLENBOSCH UNIVERSITY**

South Africa

EU contribution

**€ 152 000**

Address

**Victoria Street Administration  
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[Contact the organisation](#)

Activity type

**Higher or Secondary  
Education Establishments**

Administrative Contact

**Willem Herman Steyn (Prof.)**

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## **PANEPISTIMIO PATRON**

Greece

EU contribution

**€ 102 000**

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**University Campus Rio Patras  
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Activity type

**Higher or Secondary  
Education Establishments**

[Website](#)

[Contact the organisation](#)

Administrative Contact

**Vassilis Kostopoulos (Prof.)**

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## **ATHINA-EREVNITIKO KENTRO KAINOTOMIAS STIS TECHNOLOGIES TIS PLIROFORIAS, TON EPIKOINONION KAI TIS GNOSIS**

Greece

EU contribution

**€ 235 136**

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Activity type

**Research Organisations**

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Administrative Contact

**Theodore Sarris (Dr.)**

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## **MIDDLE EAST TECHNICAL UNIVERSITY**

Turkey

EU contribution

**€ 80 000**

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Activity type

**Higher or Secondary  
Education Establishments**

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## **Surrey Satellite Technology Limited**

United Kingdom

EU contribution

**€ 54 918**

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Activity type

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## ISIS - INNOVATIVE SOLUTIONS IN SPACE BV

 Netherlands

EU contribution

**€ 232 000**

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[Website](#) 

Administrative Contact

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Activity type

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(excluding Higher or  
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**Last update:** 1 August 2019

**Record number:** 97975

**Permalink:** <https://cordis.europa.eu/project/id/263248/>

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