ReVus

Reducing the Vulnerability of Space Systems

BETTER SHIELDS AGAINST SPACE DEBRIS

Space waste is a hazard for satellites. In spite of efforts to clean up in space, and avoid collisions between spacecraft and debris, ultimately new design rules or better shielding of satellites are also needed to protect them when impact cannot be avoided. ReVuS addresses this challenge.

Today's satellites are robust enough to resist impact form debris which is smaller than 0.1 cm, and systems exist whereby spacecraft can be steered out of harms way when a collision with space waste larger than 10 cm is foreseen.

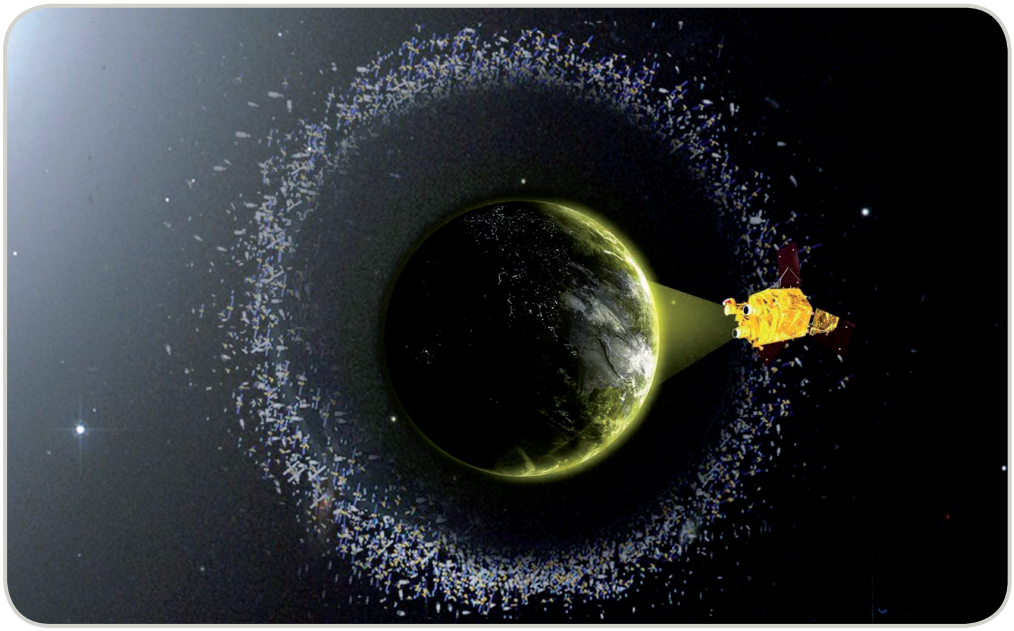
Yet for space junk sized between 0.1 cm and 10 cm, there is currently not a system in place to mitigate the risk of impact, although space debris in this size-range can cause significant damage.

With the population of space debris foreseen to increase in the years to come, as collisions between existing space waste create more and smaller pieces of debris, the probability of damage caused by such debris could reach an unacceptable level, which would force manufacturers of satellites in Low Earth Orbit (LEO) to introduce new and more robust designs.

The ReVuS project undertakes a study in support of such efforts to provide solutions i) at system level (fractionating the functions), ii) at architecture level (routing/segregation design rules), iii) or a better shielding for LEO satellites.

In doing so, ReVuS is set to define new design rules and test new shielding materials, carry out resilience analysis, and evaluate the proposed solutions and recommendations.

Given that currently such a systematic approach to reduce the vulnerability of spacecraft has not yet been undertaken, the project is foreseen to generate results that may be extremely useful for Europe's world class satellite manufacturers.



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ReVuS undertakes a study to reduce vulnerability of satellites against small space debris.

CLAUDE **COUGNET**
IS PROJECT COORDINATOR

QUESTIONS & ANSWERS

What do you want to achieve with this project?

With this project, Astrium, as satellite manufacturer, will define and assess different satellite architecture solutions to minimise the impacts of small debris on satellites. In particular, new shielding materials and new shielding arrangements will be developed and tested.

Why is this project important for Europe?

The ReVuS results will allow enhancing the performance and competitiveness of the European space systems, thanks to new design rules and protection concepts. They will benefit to user stakeholder, European agencies, research institutes, universities and satellite manufacturers.

How does your work benefit European citizens?

Europe is using Low Earth Orbit to provide services like Earth observation, resources monitoring, defense and security systems, that at the end benefit to citizens. Reducing the satellite vulnerability to debris allows to maintain the continuity of these services to the citizens.

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LIST OF PARTNERS

- Astrium SAS, France
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V., Germany
- Technische Universität Braunschweig, Germany
- University of Southampton, United Kingdom
- University of Surrey, United Kingdom
- Astrium GmbH, Germany
- PHS Space Limited, United Kingdom
- Ten Cate Advanced Composites BV, The Netherlands
- Hiscox Assurances Services, France
- Astri Polska Sp. Z.o.o., Poland

COORDINATOR

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PROJECT INFORMATION

Reducing the Vulnerability of Space Systems (ReVus)
Starting date: 01/03/2011
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