

Space Satellite

How can we design a sustainable and innovative retrieval system for our Aster cube satellite after its mission ends to prevent it from becoming space debris?

Challenge Introduction

As the space industry continues to advance, the space debris issue becomes more pressing. Aster, a student team from the Eindhoven University of Technology, is working to bridge the gap between Eindhoven and space by designing an affordable cube satellite. However, once their mission is complete, their cube satellite will become space debris, adding to the growing problem. To address this challenge, Aster is seeking to develop a cube satellite mission that accomplishes its goals and retrieves the satellite in a sustainable and innovative way, thus reducing space debris.

Who is behind this initiative?

Aster Student Team is a highly motivated group of students from the Eindhoven University of Technology with a passion for space education and engineering. The team is focused on promoting innovation and sustainability in the field of space engineering and increasing accessibility to space education for students and companies in the Brainport region of Eindhoven. The team's core vision is to encourage collaborative work and pursue space-related projects while prioritizing sustainability and innovation.



To achieve its mission, Aster is working on developing a CubeSat equipped with a communication infrastructure that will serve as a platform for innovative research in developing fields. Through this, Aster hopes to make going to space more affordable, promote space engineering, and impact education in Eindhoven. The team is looking forward to collaborating with leading innovative companies and institutes in the field of space engineering in Brainport to achieve their mission. [Oyku Elif Aydin](#) is your contact person. She is the PR Lead of the Aster team.

What is the Space Satellite challenge?

How can we design a sustainable and innovative retrieval system for our Aster cube satellite after its mission ends to prevent it from becoming space debris? Consider your design's cost, feasibility, safety, and environmental impact. Additionally, how can we ensure that our retrieval system aligns with current and future space debris mitigation guidelines and regulations?

The challenge is to address the issue of space debris, which poses a significant threat to current and future space missions. Space debris refers to man-made objects, such as old satellites and rocket fragments, that orbit the Earth and can collide with operational spacecraft, potentially causing damage or even rendering them useless. This challenge aligns with the overall collider theme of 'Leave No Waste Behind' as it seeks to find innovative solutions to mitigate the negative impact of space debris on the environment and ensure sustainable use of space.

Key Questions & Overall Challenges

- How can we create more efficient ways to track and monitor space debris in orbit?
- What innovative materials and technologies can be used to make satellites and other space equipment more sustainable and reduce space debris?
- How can we develop more effective methods for safely removing or disposing of space debris without creating additional waste?

Relevant considerations for the challenge / theme:

- All components used in the solutions should be able to withstand the harsh environment of space and operate reliably in microgravity.
- The solution should not interfere with the functioning of other spacecraft or infrastructure in orbit.
- The solution should be cost-effective and scalable so that it can be implemented on a larger scale in the future. When designing the solution, it is important to consider the entire lifecycle of the product, from manufacturing to disposal, to ensure that the solution is sustainable and does not contribute to additional waste in the long run.

It is also important to note that while the focus of the challenge is on space debris, solutions that address broader environmental sustainability and waste reduction goals are also encouraged. However, it is important to ensure that the solution remains relevant to the space industry and can contribute to solving the specific challenge of space debris.

Relevant links

[Aster Student Team Website](#)
[Information about Space Debris](#)