

The Space Safety Programme – Period 2

Holger Krag, Cleanspace Industrial Days 10.10.2022

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PROTECT ASSETS FROM SPACE HAZARDS





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From SSA to Space Safety













VIGIL – Space Weather Warnings



SPACENEWS.

Intelsat working to regain control of Galaxy 15 satellite by Jason Rainbow — August 19, 2022



An increase in solar activity will result in more atmospheric drag on satellites and risk damaging or disrupting those spacecraft Credit: NASA

TAMPA, Fla. — Intelsat said Aug. 19 it has lost control of its Galaxy 15 broadcast satellite after it was likely hit by a geomagnetic storm.

High space weather activity likely knocked out onboard electronics needed to communicate with the satellite. Intelsat said, and keep it locked in its geostationary orbit slot at 133 degrees West.



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Hera and DART



Asteroid threat! Dangerous 80-foot asteroid speeding towards Earth today; NASA issues warning

A massive 80-foot wide asteroid is headed straight for Earth today, September 19. Here's what NASA said.

By: SHAURYA TOMER | Updated on: Sep 19 2022, 10:54 IST



Worried about the asteroid which is set to make a close approach with Earth today? Know what NASA has to say. (Pixabay)





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COSMIC



Small Missions and Projects eesa NEOMIR Aurora EO Survey Systems SDOMS Laser Technology cesa DRACO **SWE** Deorbiting CREAM **Nanosats** Kit

Core



Competitiveness Segment



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The orbital environment is changing



ADRIOS - Clearspace-1



In-Orbit Servicing Market





In-Orbit Servicing – ESA mission proposal preparation





OBJECTIVES

- To enable a commercial service involving a service provider and customer.
- 2. To limit further losses of potential market share for European IOS service providers.

COSMIC DRACO (Destructive Re-entry Assessment Container Object)



- The world's first recording of a controlled breakup process of a spacecraft during re-entry
- Opportunity to test early fragmentation design for demise (D4D) techniques.
- Period 2: Development and flight of the DRACO mission



DEORBITING KIT





COSMIC Clean Space (Core)

PROD







- Preparing European LEO spacecraft platforms for the "zero-debris approach".
- "Design for Removal"
- Eco-design
 - Life Cycle Assessment a firm requirement in first ESA Missions)
 - Green Technologies

COSMIC Laser Technology



- Advance of laser networking technologies to reduce position uncertainties by using existing lasers
 - System studies for future laser momentum transfer

COSMIC VISDOMS (Verification of In-Situ Debris Optical Monitoring from Space)



- Enhance statistical knowledge about LEO debris by detecting and characterising objects with a diameter of 1 mm or larger.
- Period 2: hosted payload mission and preparation of a dedicated small satellite mission.



CREAM (Collision Risk Estimation and Automated Mitigation)

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- Demonstration of a 'decision support system' for collision avoidance manoeuvres
- in-orbit demonstration

ComLink

ESA-BOT> Debris positions update sent. CUBESAT> ACK. Computing collision risk ... CUBESAT> COLLISION ALERT ! CUBESAT> Computing new orbit ... CUBESAT> New orbit is safe, initiating burn. ESA-BOT> ACK.

esa

Space Debris (Core)



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34 000 objects 900 000 objects 128 million objects 2000 billion objects

- Finalising and demonstrating the Core software.
- Addressing risk and safety models (on-orbit, on-ground)
- Small particle sensors (DISCO)

Competitiveness Segment









Development of a market for space safety products and services. ESA will act as a trial user and early adopter of the

industry's products/services to reduce business risks.



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Thank You !