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STRATEGIC IMPLEMENTATION AND OPPORTUNITIES WITH THE ZERO DEBRIS TECHNICAL BOOKLET

ZERO DEBRIS WEBINAR

KATE LAHAIE, 17.02.2025

SPEAKER

- Space Debris Systems Engineer
 - Pre-Development: Science, Exploration and Space Safety Department
 - Space Safety Mission Specialist
- Co-coordinator at the Space Debris Centre of Competence at OHV System
- Industry Chair for Chapter 5: Preventing Casualties on Ground Sessions



▪ Kate Lahaie



- Group and company HQ
- Competence centre „Large Systems“
- Approx. 1000 employees
- Integration facilities with cleanrooms up to ISO 8 standard

PORTFOLIO

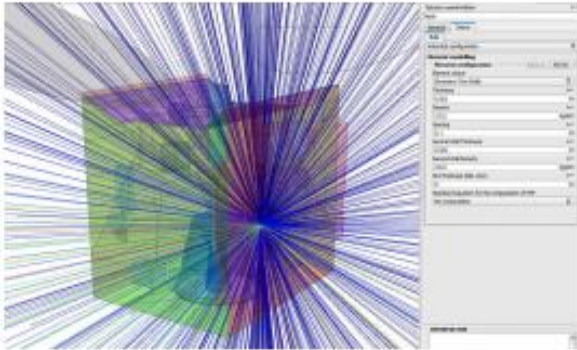
APPLICATIONS AND PROJECTS



- Satellites and payloads for all types of missions:
 - Earth observation
 - Reconnaissance
 - Navigation
 - Telecommunications
 - Science and exploration
- Projects ranging from development of small payloads to extensive space infrastructure

SPACE DEBRIS CENTRE OF COMPETENCE

KEY AREAS AND TASKS



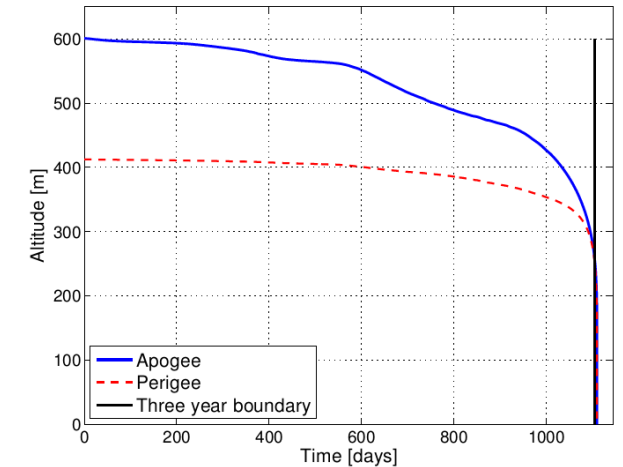
Impact modelling

Protect satellites from space debris

- Collision avoidance
- Spacecraft shielding
- MMOD analysis and resilient design

Avoid creating new space debris

- High reliability end-of-life design
- Passivation
- End-of-life-disposal



Disposal Simulation



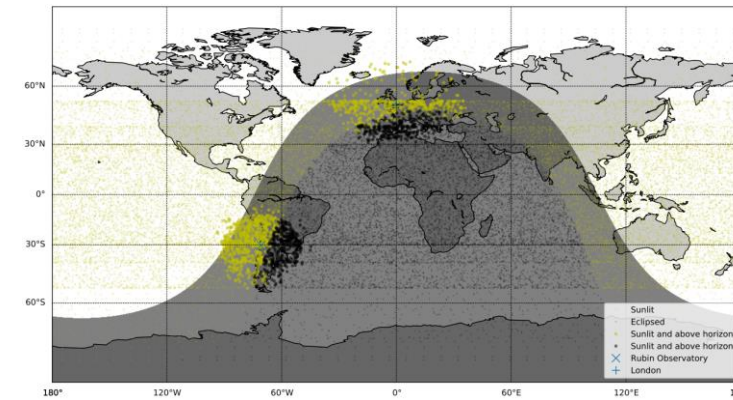
D4DBB wind tunnel test

Minimise risk to people, infrastructure and Earth environment

- Re-entry analysis
- Design-for-demise
- Controlled deorbit

Reduce impact on astronomical observations

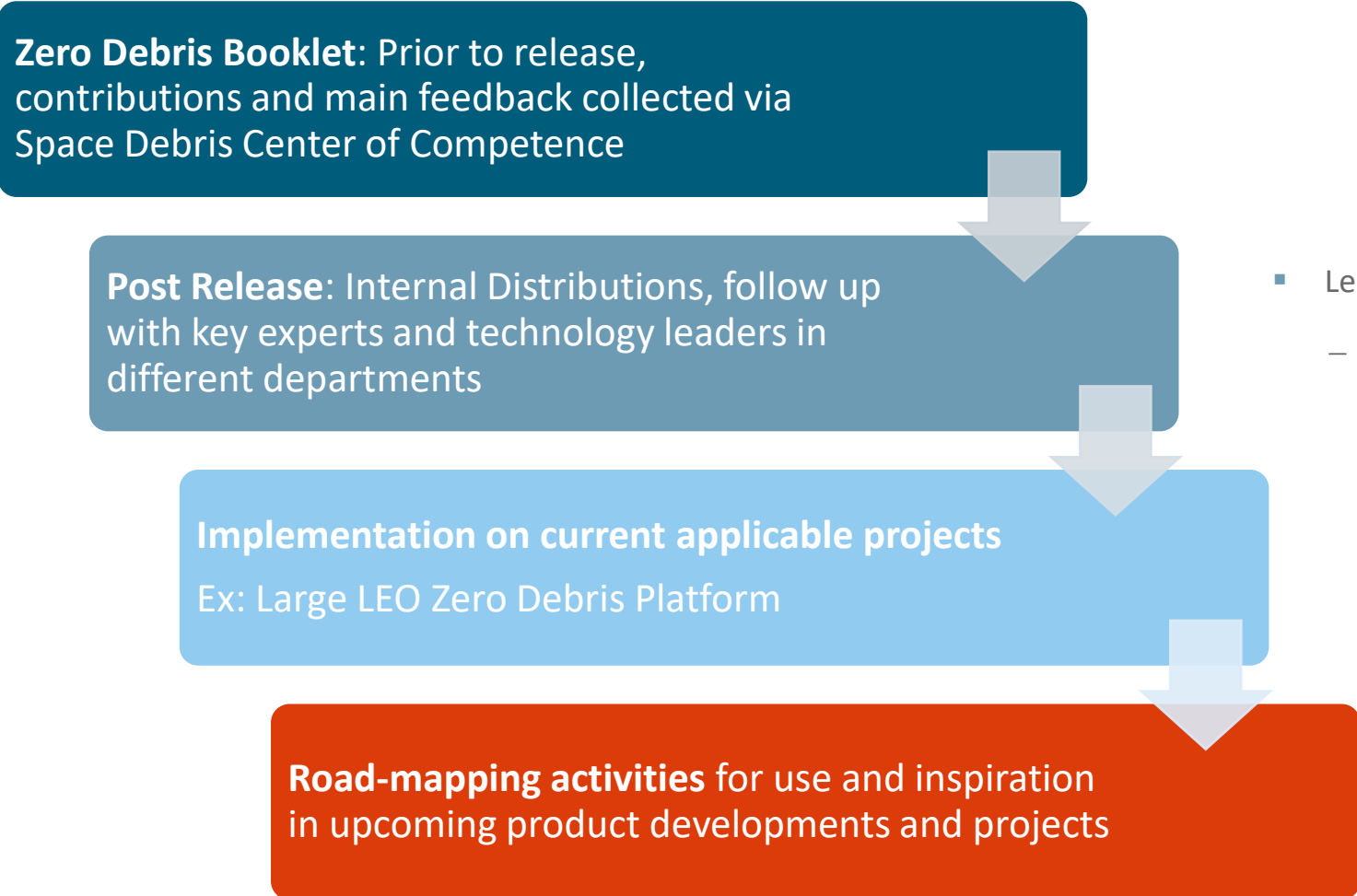
- Control visual brightness of S/C
- Exchange with astronomical community



Source: Bassa, Hainaut, Galadi-Enriquez, 2021

BOOKLET IMPLEMENTATION

CURRENT AND NEXT STEPS



Zero Debris Booklet: Prior to release, contributions and main feedback collected via Space Debris Center of Competence

Post Release: Internal Distributions, follow up with key experts and technology leaders in different departments

Implementation on current applicable projects
Ex: Large LEO Zero Debris Platform

Road-mapping activities for use and inspiration in upcoming product developments and projects

- Lessons Learned: Defining the scope of the booklet
 - The booklet defines *what* but not *how*

BOOKLET OPPORTUNITIES

BENEFITS OF THE BOOKLET

- Zero Debris: A systems engineering challenge for the entire Industry
- Multiple areas, each with inputs constraints and concerns
 - Booklet identifies the Key Needs, Solutions and Enablers: Overlapping Areas Identified
 - Community can collaborate on this together:
 - How and where can we cover the gaps? What inputs could LSIs provide, ability to create new partnerships to tackle challenges
 - Clearer picture on SoTA for multiple areas
- Fosters support to space regulations with tangible actions, enable future/continued operations in space
- Together can increase of sustainability in the Space ecosystem





THANK YOU!

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