

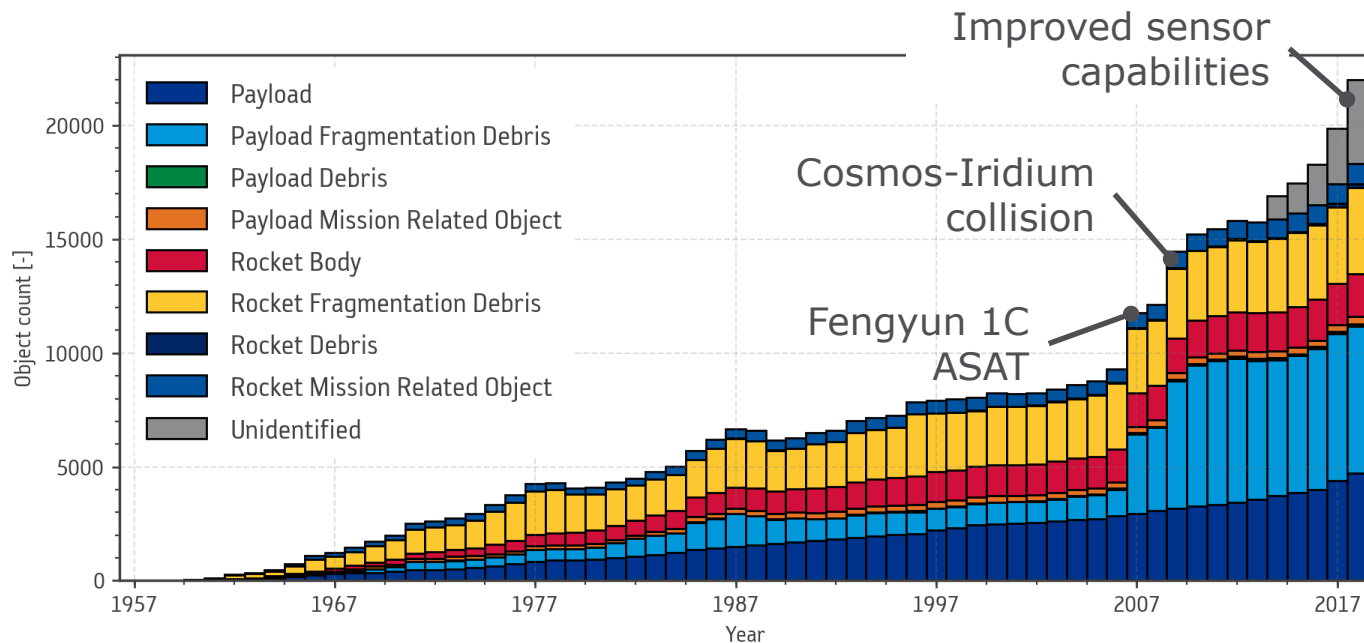
# ESA Environmental Report on Space Debris Mitigation

Francesca Letizia

19/09/2019

ESA UNCLASSIFIED - Releasable to the Public

# State of the environment

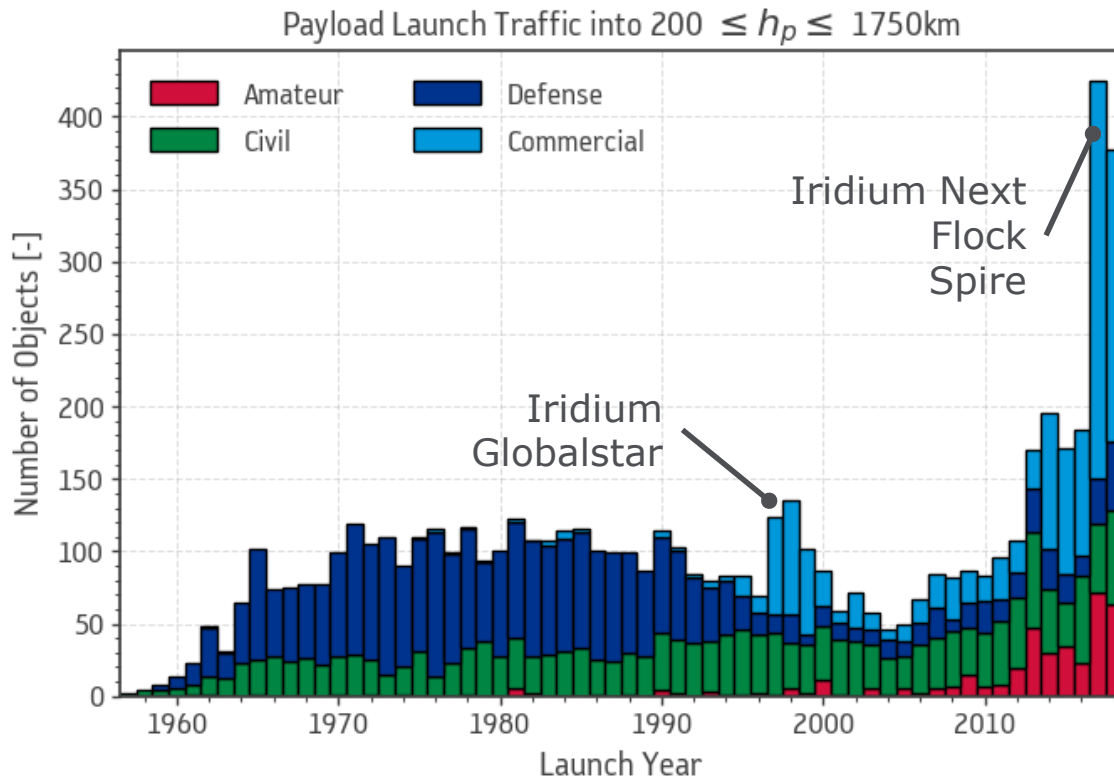


ESA Environment Report

[https://www.sdo.esoc.esa.int/environment\\_report/Space\\_Environment\\_Report\\_latest.pdf](https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf)

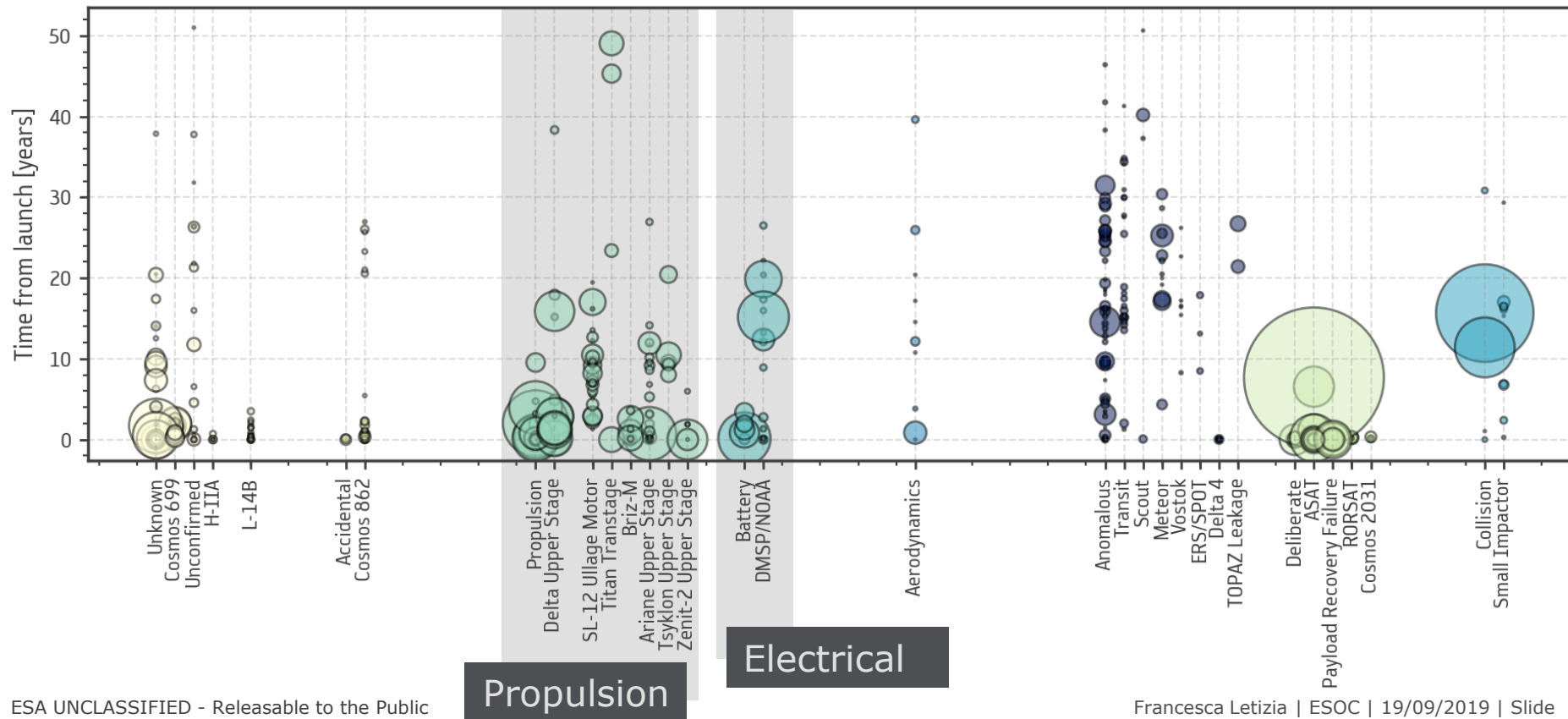


# A changing environment



# Fragmentation events

○ Number of reported fragments



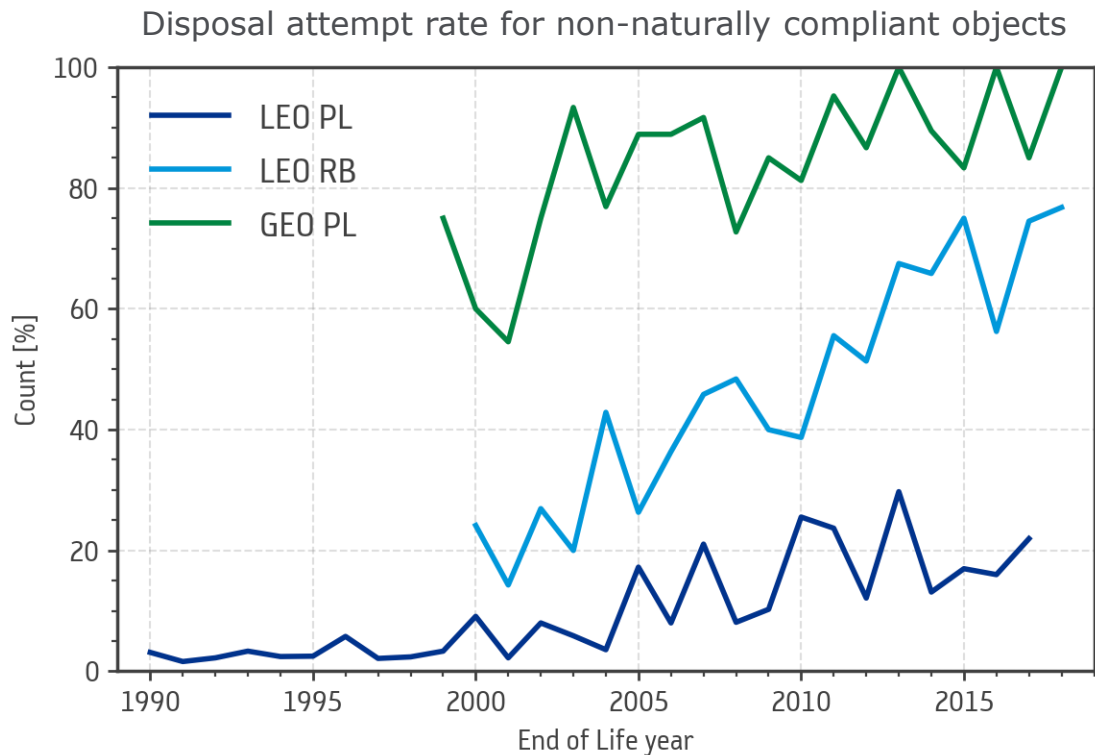
ESA UNCLASSIFIED - Releasable to the Public

Francesca Letizia | ESOC | 19/09/2019 | Slide 4

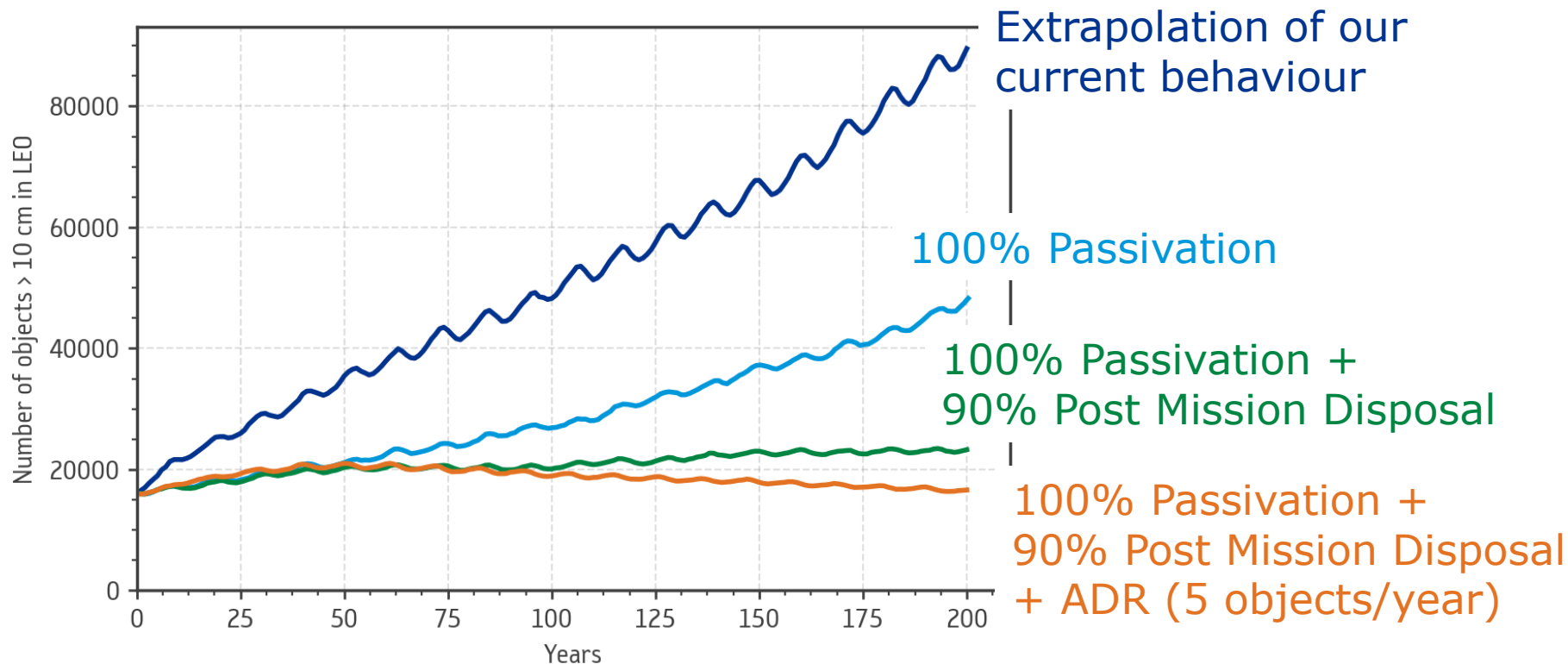


European Space Agency

# Post-Mission-Disposal efforts

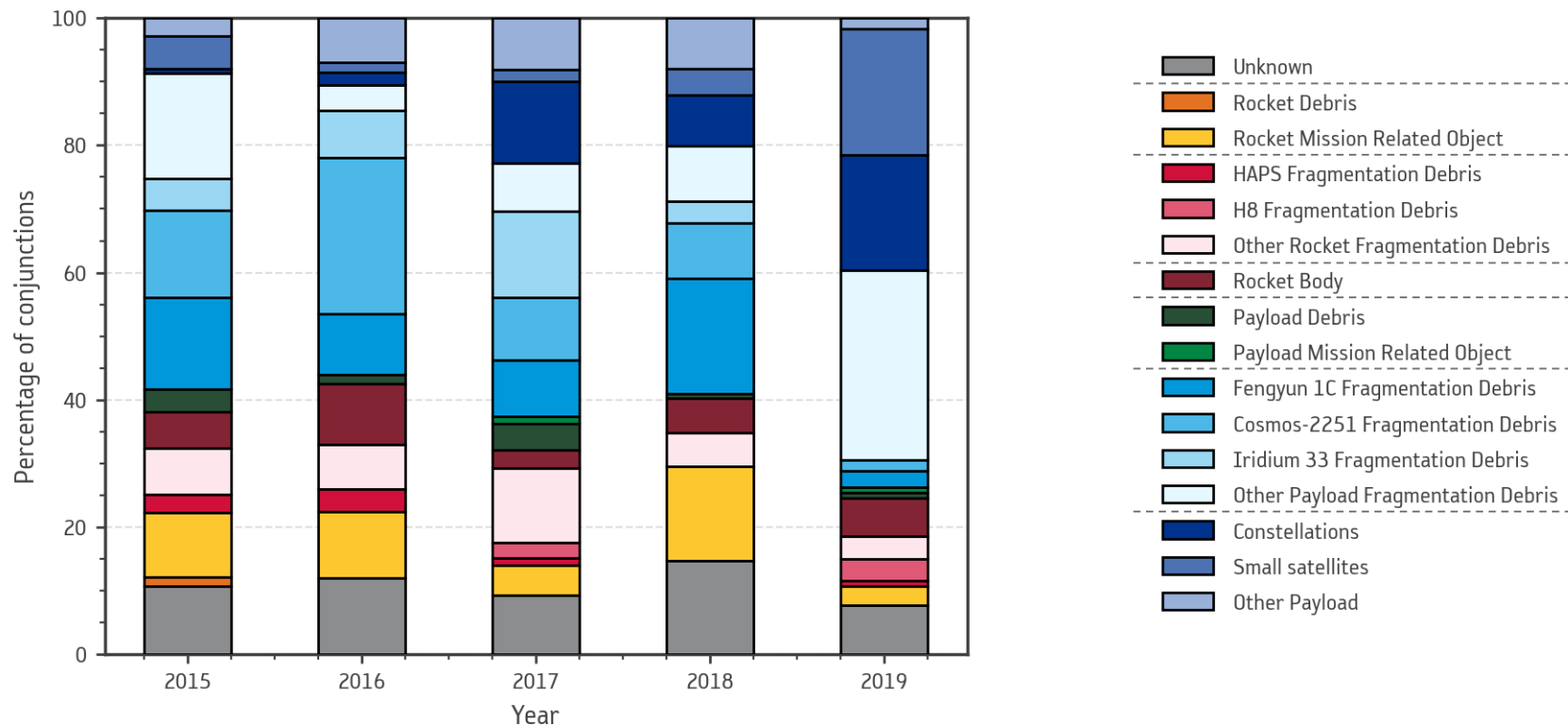


# Effectiveness of mitigation measures

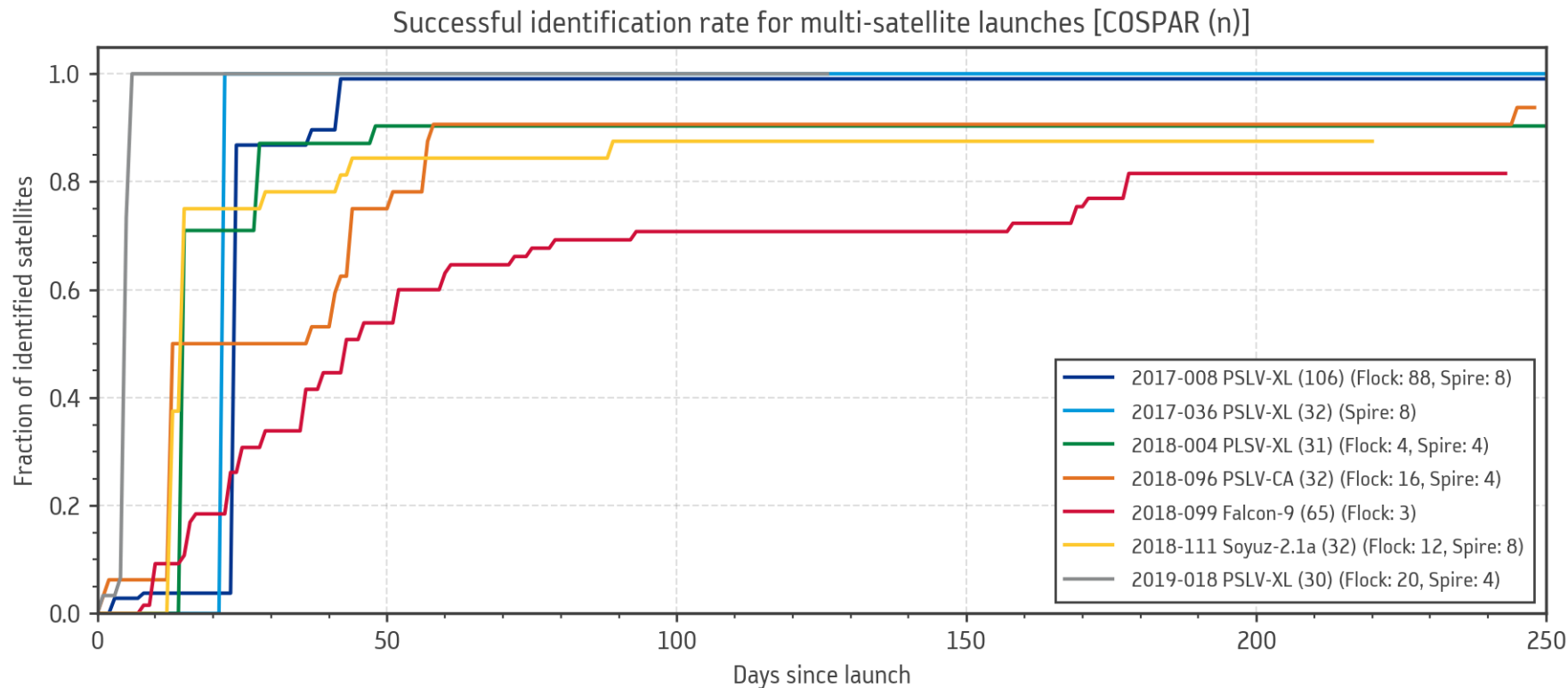


# Collision avoidance

Close approaches for ESA missions at low altitude LEO

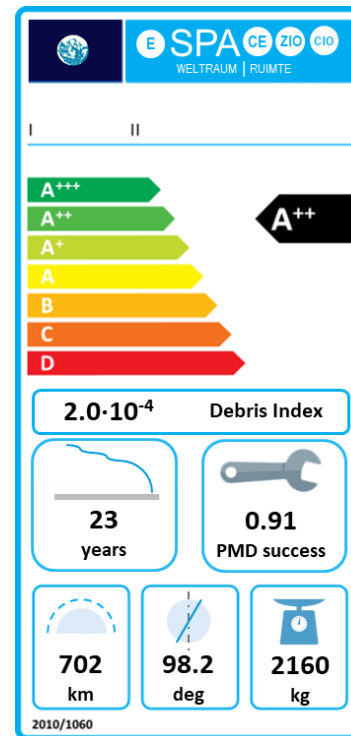


# Trackability & identification





# Towards environment impact assessment



- Space Debris Mitigation requires a level playing field to achieve long-term stability. How are we sure that this is reflected in static standards and licensing?
- How can guidelines evolve to ensure a more sustainable use of space? Which are the priorities from an operator perspective? How can better-than-required behaviour can be reflected?
- What is the most effective way to tackle short-term aspects?
- How far can one go when asking transparency to operators? Should new formal requirements be introduced to promote data sharing and transparency?

ESA Environment Report

[https://www.sdo.esoc.esa.int/environment\\_report/Space\\_Environment\\_Report\\_latest.pdf](https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf)

