# *Design for Demise:*

# *Open points and Future challenges.*

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**Abstract.** Design for Demise (or simply D4D) is a multidisciplinary design process aimed to intentionally re-design the spacecraft such that it will completely demise during its natural decay from Space to Earth. This is a hot research topic at the moment: it consists in an alternative strategy to the controlled re-entry, potentially cheaper and simpler, able to guarantee a safe post-mission disposal and then the compliance to the Space debris mitigation requirements.

Numerous re-entry simulation tools have been built to assist and assess the design of completely demisable spacecraft and, over time, continuous improvements have been developed, especially in the last ten years, but certainly open points and uncertainties are not missing.

An overview of the current state of the art of the destructive re-entry models will be presented and outlined, as well as the crucial aspects required to be considered in the upcoming future and the key areas where our efforts should be focused.

**Keywords:** Design for Demise, Destructive re-entry models, Space debris mitigation.