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# RESULTS FROM THE H2020 ReDSHIFT PROJECT: A GLOBAL APPROACH TO SPACE DEBRIS MITIGATION

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**Abstract**
The ReDSHIFT (Revolutionary Design of Spacecraft through Holistic Integration of Future Technologies) project has been approved by the European Community in the framework of the H2020 Protec 2015 call, focused on passive means to reduce the impact of Space Debris by prevention, mitigation and protection. The main innovative aspects of the project concern a synergy between theoretical and experimental aspects, such as: long term simulations, astrodynamics, passive de-orbiting devices, 3D printing, design for demise, hypervelocity impact testing, legal and normative issues. After more than two years of work, the project is approaching its end. The main expected output are almost complete. The first complete dynamical mapping of the whole space, from LEO up to the geostationary orbit, was performed, looking for "de-orbiting highways", i.e., preferential escape routes to speed up the disposal of spacecraft at the end-of-life, both with and without the use of area augmentation devices. The first prototypes of 3D-printed spacecraft (and of specific spacecraft parts) were produced and extensively tested. A number of innovative Design for Demise tests were performed both on 3D-printed samples and on traditional space hardware. Hypervelocity and radiation tests were completed on a number of 3D-printed samples to understand their suitability for the prototype spacecraft. A software tool, encompassing the main project findings and allowing a preliminary design and definition of a debris compliant mission (in terms of de-orbiting strategy, shielding, demising, etc.), is now completed and will soon be made publicly available on the website of the project. The legal and normative implications of the project's findings (e.g., their potential impact on the current mitigation guidelines) is being explored. The paper presents an overview of the ReDSHIFT results obtained so far, in an effort to highlight the holistic approach of the project covering different aspects of the space debris mitigation field.