

20th IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Interactive Presentations - 20th IAA SYMPOSIUM ON SPACE DEBRIS (IP)

Author: Ms. Sri Venkata Vathsala Musunuri
Madras Institute Of Technology, Anna University, India, srivenkata.vathsala@gmail.com

DESIGN THINKING AND IDEATION PROCESS FOR A LEAN SPACE ORBITAL VEHICLE FOR
DEBRIS TRACKING AND REMOVAL, USING ARTIFICIAL INTELLIGENCE

Abstract

Space is certainly getting crowded. As the number of artificial satellites in the earth orbit increase, the probability of collisions among these satellites also increases. In order to mitigate this growing space junk issue, space obviously needs a clean up. The paper focuses on the in depth design thinking and iterative ideation process, to arrive at sustainable and feasible solutions for a lean orbital vehicle design, like a CubeSat or nanosatellite or any particular design, doesn't become a debris itself instead, using the concept of "positive end of life" processing satellites and also work on the processing of existing debris which have no self-removal capability, that is the removal of large size satellite remnants economically and scientifically useful orbits to disposal orbits. The objectives of this paper are (1) arrive at effective ways to solve the space junk problem (2) to ideate a conceptual design of orbital vehicle with Artificial Intelligence on board and trained in Earth under space conditions (3) focuses on how operational life span on-orbit and interplanetary missions as a long-term goal to ensure a sustainable, less traffic, debris free space for upcoming generation.