

SPACE DEBRIS SYMPOSIUM (A6)
Space Debris Removal Concepts (7)

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THE DEBRITOR: AN "OFF THE SHELF" BASED MULTIMISSION VEHICLE FOR LARGE SPACE
DEBRIS REMOVAL**Abstract**

The active removal of large space debris has been identified as a key mission to control the growth in the debris population and to limit the risk to active satellites. These objects can be divided into two classes: spent rocket bodies and inactive satellites. "The Debritor" is an Astrium concept designed to treat several large debris, its basic functions are " Target confirmation/identification by means of long distance camera " Approach target attitude determination to evaluate any spin rate by means of a camera together with 3D reconstruction algorithms " Proximity manoeuvres to place the Debritor and his target into a proper configuration " The capture using several techniques depending on the debris characteristics. " The detumbling if required " The target processing which will consist of progressive decreasing the perigee down to a self passive re entry orbit. This phase could be performed by the Debritor vehicle itself or by specific active or passive de orbiting packs which are released from the vehicle and attached by means of a flexible link to each capture device. We know that the cost of such a mission is a major driver, the use of off the shelf equipments and subsystems would be preferable. This mission required a large agile vehicle powered by many efficient control thrusters, with a large amount of propellant and adequate proximity navigation sensors. All these technologies are available and already flight qualified in the satellite space business, namely in the telecom product line. The Eurostar platform with its light structure, its 3200kg of propellant , its powerful main engine, its 14 efficient control thrusters and its high powered solar panels (up to 25kw)giving also additional capability to use plasma propulsion for overall orbit manoeuvres provides a quantity of equipments and subsystems well suited for such a mission. Various capture systems and their associated deorbiting packs could be easily installed on top of a platform built with those equipments and subsystems, allowing to remove a large number of targets for a low invest and operation costs. More than 35 E3000 satellites are in development or already in operation, showing exceptional reliability figures. This paper will describe the architecture of such vehicle, details the heritage, and remaining needed adaptations.