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IAF SPACE SYSTEMS SYMPOSIUM (D1)
Cooperative and Robotic Space Systems (6)

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SPACE START – A CONCEPT FOR DYNAMIC SPACE

Abstract

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Space START (Space Servicing Transportation Retrieval Target) is the TAS concept for in orbit servicing, an entirely new market, ripe for growth, furthermore changing the paradigm of a "static space" into a "flexible and sustainable space". The evolving market needs for services in orbit show the necessity to focus the second generation of services. TAS solution consists in a smart and agile multitasking vehicle able to perform several operations in different orbits. In orbit servicing pioneers fundamentally changed the approach in space but the operations addressable in relative short term seems to be already obsolete for customers in the next 5 years. The demand is going faster than the technical development, it should actually drive the technical development, this is what TAS is proposing: a multitasking vehicle able to maximize the benefit for customers, being them Institutional or Commercial. TAS believes in orbit services will shape the next generation of satellites, adequately prepared to be cooperative with external objects. TAS approach has been to first analyze market trends and requests, to establish business cases per class of services and then to derive the right design to maximize the opportunities. TAS went through on-ground test of key technologies and building blocks that will enable a large range of efficient and safe orbital services like: rendez-vous, navigation, guidance for docking, robotics control, capturing, grasping, berthing, manipulation of cooperative target trough payload transfer and replacement. The result is a multi-mission vehicle that features a modular architecture based on a service module hosting the avionic functions, a propulsion module providing thrusting capability, rendez-vous and capture module with inspection equipment, robotic arm and docking provision to capture and stabilize the target vehicle. TAS is now working on a demonstration mission that will allow in-orbit validation of the key enabling technologies: rendezvous, capture, robotic manipulation, precise inspection. The vehicle mass has to allow ride share launches and the design should be consistent with both GEO and LEO operations. The vehicle needs common interfaces with the targets satellites when appropriate and to allow multiple applications. If one of the mission required to the vehicle is the debris removal, it has then to be robust enough to assure a safe operation. Space START is the answer to a variable market demand and is the solution that will turn space from static to dynamic.