

22nd IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)  
 Generic Technologies for Small/Micro Platforms (6A)

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X50: REDUCING COST AND SCHEDULE WHILE BEING MODULAR AND ADAPTABLE FOR  
 REMOVEDEBRIS

**Abstract**

Demand for small low-cost spacecraft, by themselves or in groups, has been increasing significantly over recent years. In order to address this demand, SSTL has investigated, qualified and implemented a new satellite platform and avionics suite, collectively called the X-Series. The process makes significant use of modern automated manufacture and test techniques, and the avionics and platform are designed taking this into consideration. The consequence of this is that significant savings in production costs and schedule are achieved.

The X-Series avionics development includes a suite of core avionics systems based on a cardframe design with a standardised mechanical and electrical interface allowing for ease of adaptability to changing mission requirements. The X-Series platform is designed to be scalable in order to service a range of missions from 50 kg up to 150 kg and be launched from a variety of launchers, including the ISS. In addition, the folding design of the platform simplifies and speeds up the assembly, integration, and testing phase of the mission by allowing easy access to any component of the satellite without requiring full disassembly.

Within the X50 class of missions, RemoveDEBRIS is aimed at performing key Active Debris Removal (ADR) demonstrations in order to increase the readiness level of strategic technologies that would be required for an operational scenario. This mission provides unique cost and schedule challenges along with requirements that dictate the need for having a platform and avionics suite that can be modified late into the development program. In addition, the mission requires a platform that is able to host and service multiple payloads with varying requirements. Lastly, the launch options also require the need to have a platform design that can cope with contradicting needs.

This paper will outline the technical and programmatic challenges faced by the RemoveDEBRIS mission and how they are addressed by the modular and flexible X50 development. The architecture, design and production approach for the new platform and avionics will also be described along with details of the mission trades, CONOPS and schedule.