BENCHMARK® space systems

PRODUCT, CONFIGURATION, AND PRICING INQUIRIES
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Advanced Onboard
Propulsion Control Software

SmartAIM™

IMPROVED OPERATIONAL EFFICIENCY

SmartAIM™ is an onboard Guidance, Navigation and Control (GNC) software layer that can intelligently interpret or create maneuver commands to actively control propulsion and other mobility subsystems. The functionality expands small satellite capabilities, from improved collision avoidance to on-orbit servicing in congested earth orbit and cislunar domains, while enabling unprecedented maneuver efficiency and operational autonomy. SmartAIM™ reduces integration costs and time by accepting high-level GNC commands rather than bespoke, discrete component inputs, extending operational capability as well as constellation scalability with intelligent onboard propulsion control for optimized and precise maneuvers.

Availability: Missions launching in 2024

MANUEVER OPTIMIZATION

SmartAIM™ desktop tools offer digital twin and simulation models to plan or verify maneuvers in advance and can be paired with Benchmark's Hardware-in-Loop testing capability.

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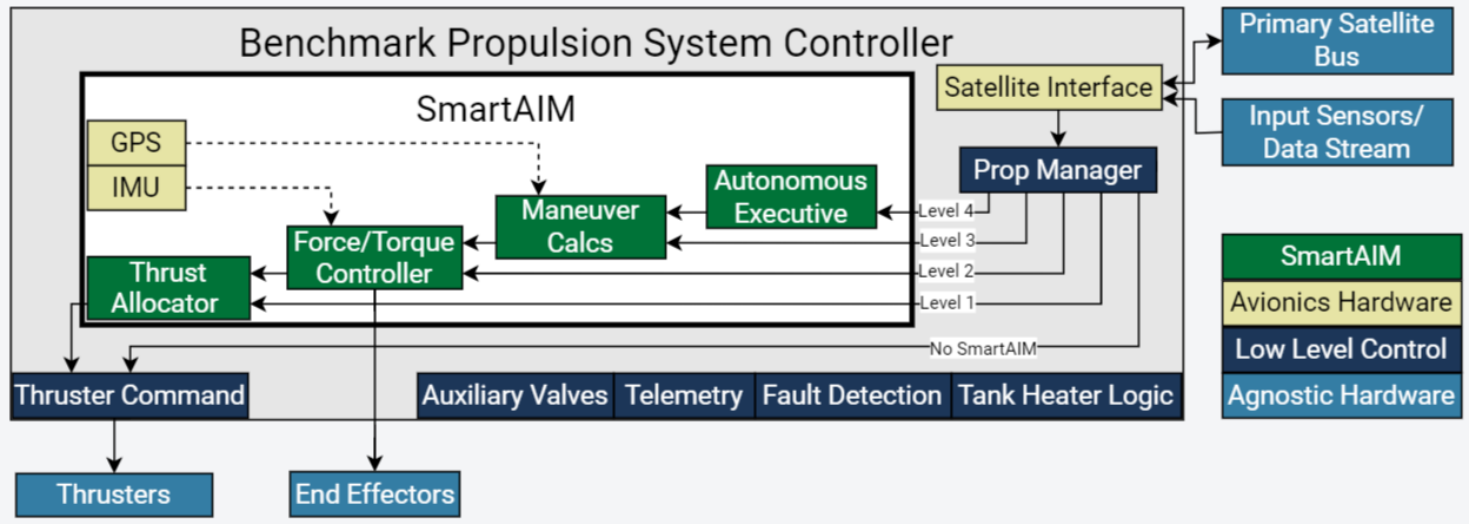
SOFTWARE SPECIFICATIONS

SmartAIM™ Maneuver Control Software is Offered in Tiers for Your Mission Mobility Needs

SmartAIM™ LEVEL		COMMAND PACKET	COMMAND FREQUENCY
1	Command propulsion system thrust vector	Forces and torques	Fixed frequency (100 hz to 1 hz typical)
2	Command a change in pointing or velocity	Delta-angle and/or delta-velocity	Once per maneuver
3	Command a maneuver	Attitude and completion criteria	Once per maneuver
4	Command an orbit	Orbital elements and collision avoidance criteria	Once per mission phase

Assisted - Autonomous

Included in all levels:
Operators can manually command a maneuver or disable SmartAIM™.
Operators can set abort criteria for each maneuver, to be monitored and utilized by SmartAIM™.
Onboard maneuver planning results can be evaluated by the operator prior to maneuver execution.
Levels 2-4 allow scheduling maneuvers by time, attitude, and position as hardware capability allows.



SmartAIM™ uses embedded sensors and an inner-control loop for thrusters and can incorporate additional effectors, sensors, and data input to eliminate positioning and propulsion command latency and generate more efficient and effective maneuvers than state-of-the-art operations.

MORE MISSION. LESS COST.

Benchmark is a full lifecycle partner committed to supporting your mission from operational planning through asset decommission in LEO, GEO, and beyond. By combining our heritage propulsion products and advanced control systems with complementary products and services, Benchmark can deliver bundled in-space mobility solutions for 3U through ESPA and OTV spacecraft with significant cost, schedule, and capability benefits over alternative offerings.

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Contact us today to design your system!