Axient's Mission Lifecycle Development Lab: Delivering Game Changing Capabilities

Accelerating Possible Through Rapid Modeling & Integration

Axient's Mission Lifecycle Development Lab (MLDL) integrates proven technologies to provide a simulation and test environment tailored to simulate space-based missions. MLDL provides actionable feedback to inform requirements capture for concept, logical, and technology design criteria. Mission assets and actors from ground components to formations to constellations can be placed in simulation with dynamic high-fidelity physics based models to provide feedback in real time with detailed visualization.

Rapid Spacecraft Mission Design

Axient employs COTS, GOTS, and custom tools such as our own Mission Development Satellite Automation Toolkit (MDSAT) to identify spaceflight components, specify and trade performance parameters using physics-based models, assess mission impacts, and visualize system concepts. Axient completes the Specification definition and Bill of Materials (BOM) in minutes, not months.

Independent Assessment

Axient has the ability to rapidly evaluate design alternatives, assess requirements impacts, and predict performance of competing designs at the systems, subsystem, and component level – a key enabler of our ability to reduce design cycle time from 48 months to as little as 18 months as demonstrated on >30 space systems to-date.

System of Systems Architecture Design

Axient has the capability to model, simulate, and visualize space systems, formations, constellations, and interfaces with other space and ground system assets. Axient provides the ability to develop draft CONOPS in a few weeks to meet urgent Warfighter needs, such as Agnostic Communications for Tactical Operations.





MLDL Tool Integration & Analysis Capabilities



MLDL Modeling Hypersonic Missile Detection and Tracking



MLDL Integrated Weather Visualization



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Mission Lifecycle Development Lab | Capability



Concurrent Flight Software Development Approach

Axient leverages Model-Based Systems Engineering (MBSE) methods and re-usable models to rapidly develop flight software based on initial system requirements specification, using autocode generation tools to prototype software and simulate command and control functions. Integration between models, simulations, and source code greatly reduces development time and improves reliability and repeatability.



MLDL Hypersonics Detection Visualization

About Axient

With over 2,200 employees, Axient is headquartered in Huntsville, Alabama and has provided premier services and solutions to the Federal Government for more than three decades. Axient's customers include the U.S. Army, U.S. Navy, Missile Defense Agency, U.S. Air Force, U.S. Space Force, and NASA. Axient is certified in the following: ISO 9001:2015, AS9100 Rev D, CMMIDEV Maturity Level 3, and has a DCMA Purchasing System, DCMA Property System, and DCAA Accounting System.

Model-Based Engineering

Axient has a tailorable approach to system and subsystems engineering that enables designers to link requirements with key performance parameters, develop critical artifacts up front, and visualize interfaces. Axient's MBE processes enable development of a requirements verification matrix (RVM) in less than six weeks, prior to detailed design when it is most cost effective to do so.

Virtual Simulator/Trainer/Contingency Ops Development

Axient closes the gap on early operator training and test support using laptop-based Space Vehicle Trainer. Axient's MLDL tools provide real telemetry and screens for operators for realistic simulations. Axient has the ability to rapidly prove-out operational scenarios and contingencies to improve mission success.

Hardware in the Loop (HWIL) Simulation & Test

Axient's specialized MBSE tools are used to emulate components during lab testing that are impractical to execute during traditional testing. Our rapid HWIL approach allows us to simulate/stimulate hardware and software, assess autonomy, and test interfaces in as few as 14 days.

Verification & Validation

Axient's early development of RVM facilitates test planning much sooner and at significant cost savings. MBSE methods verify interfaces perform as expected and validate mission objectives through extensive HWIL and SIL testing.

Mission Operations Wargaming

Axient has the ability to advance Mission Operations Center (MOC) design to support mission planning and interaction with operational spacecraft and fielded weapons systems. Axient has the ability to measure military utility of systems against threats in real-world Wargames.

