

Next Generation Space Transportation Systems Avionics System TestBench

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The Avionics Test Bench for the Next Generation space Transportation systems is aimed to provide the combined/integrated avionics system testbed based on new technologies and tooling in particular for Next Generation Space Transportation Systems.

A Microlauncher Ascent Flight and Active Debris Removal are the mission scenarios that are used to instantiate a number of ATB configurations and to provide representative test scenarios and test cases. In particular a Functional Engineering Simulator, Software Validation Facility and Assembly and Integration Verification bench are built for these scenarios making use of TASTE, SIB, Mathworks, EuroSim, dSpace, MultiCore, Canbuses, etc. tooling and technologies.

Of particular interest are the AIV instantiations making use of real HW. For example, in what regards the Ascent Flight scenario a Thrust Vector Emulator has been ensembled making use of Electro Mechanical Actuators (EMA), Small Control Loop (SMC) and potentiometers to send back the signal to the Real Time Simulator running dSpace. Moreover, the AIV facility integrates a precise gimbal system to reproduce the launcher attitude dynamics with an accuracy of 0.01 deg and integrate a Fiber Optic Gyro providing tactical grade performances.