

Athena Technologies Relies on VectorCAST for DO-178B Level B Certification

Case Study - Athena Technologies



The Customer

Athena Technologies, Inc., provides advanced hardware, software, and controls solutions for military and civilian unmanned and manned vehicle applications that demand the highest degree of reliability and robustness. Their flight control and navigation systems feature fully integrated flight control systems and sensor suites that provide more performance, reliability, and capability in a smaller, lower power, and lower cost product. Their flight control and navigation systems feature fully integrated flight control systems and sensor suites that provide more performance, reliability, and capability in a smaller, lower power, and lower cost product. Athena is quickly becoming the standard in flight control and navigation across the aviation industry.

The Challenge

Athena Technologies was faced with a compressed schedule for certification testing of their Micro INSTM and SensorPac® Air Data, Attitude, and Heading Reference System (ADAHRS) project and needed DO-178B tools that provided the highest level of automation.

The Solution

By adopting VectorCAST, Athena Technologies was able to capture structural coverage during unit, integration, and system testing seamlessly. Athena chose VectorCAST/C++ together with the VectorCAST/RSP for the Green Hills tool chain to support their unit and integration testing. They also used VectorCAST/Cover to collect structural coverage during system testings.

The Results

Athena Technologies increased efficiency through automation and successfully met their certification milestones on time.

ADAHRS Certification Project

Athena Technologies is ISO 9001 certified, CMMI-III compliant, and follows the recommended procedures outlined by the Radio Technical Commission on Aeronautics (RTCA) in the development of their flight control and navigation products: DO-178B (software development), DO-160 (electrical system testing) and DO-254 (hardware design).

In 2007, Athena began certification of their commercial products, the Micro INSTM and SensorPac® Air Data, Attitude, and Heading Reference System (ADAHRS). ADAHRS serves as a baseline for added features and functionality for next generation applications. Because the ADAHRS

is required to be developed according to DO-178B Level B standards, the entire application had to be tested and proof had to be supplied that 100% structural coverage was achieved.

Athena determined that automation was critical to the project and felt that an automated unit-level testing solution would be a time saver for creating tests. "We gathered information from outside sources, received recommendations from the Green Hills web site as to tool partners, and had suggestions from our DERs. We also searched the web for DO178B Code Coverage tool sets." said Chris Brown, Vice President of Engineering for Athena Technologies.

Athena performed a survey of test tools in support of their requirements. They evaluated several tools, including VectorCAST, which was recommended by Green Hills Software Engineers. VectorCAST was chosen for unit, integration, and system testing of the ADAHRS. According to Mr. Brown, there were three key factors which led Athena to choose VectorCAST.

"VectorCAST's integration with the Green Hills environment; Not only was there a long history of tight integration, but Vector Software's support and engineering personnel were very experienced with the Green Hills environment and had a good working relationship with the Green Hills support team in the event that issues needed to be resolved." "USA-based development and support was very important due to the tight schedule and the need to get timely responses to issues that arose."

"VectorCAST support for Athena's software environment meant Athena could test their code on either their host or target environment as needed."

VectorCAST was used at every level of testing (unit, integration and system) for the entire application.

Mr. Brown continues "The training was critical and consequently made the team immediately productive using the tool. They also were able to procure VectorCAST three months before testing was to begin, allowing the team to learn the tool, get it configured properly to run on their target, and set up some procedures that would make the testing run as smoothly as possible."

"We were impressed with Vector Software from the outset. VectorCAST provided excellent ease of use and functionality; tight integration with the Green Hills MULTI environment; and there was an extensive network of embedded system developers using the VectorCAST test environment" added Mr. Brown.