

Cassidian Efficiently Achieves 100% Structural Coverage Using VectorCAST Solutions

Case Study - EADS Cassidian



The Customer

Cassidian, an EADS company, is a worldwide leader in global security solutions and systems, providing Lead Systems Integration and value-added products and services to civil and military customers around the globe: air systems (aircraft and unmanned aerial systems), land, naval and joint systems, intelligence and surveillance, cyber security, secure communications, test systems, missiles, services and support solutions.

The Challenge

Cassidian was developing software for the EuroGrid Tactical Maneuver Computer – Graphical Elevation Processor (GEP). The challenge was achieve DO-178B structural coverage using minimal time and resources.

The Solution

VectorCAST was chosen for its tight integration with the Green Hills Software's IDE MULTI and Real-Time Operating System INTEGRITY and the high level of automation provided.

The Results

Using VectorCAST, the Cassidian development team was able to achieve 99.55% DO-178B Level C coverage in 2.5 months' time. This process was accelerated because they could merge coverage collected during High level (system test) using VectorCAST/Cover with low level (unit) testing performed using VectorCAST/C++.

EuroGrid Software Development Project

Cassidian in Germany develops application software for the Eurocopter Tiger's EuroGrid Tactical Maneuver Computer Graphical Elevation Processor (GEP).

EuroGrid is a battlefield management and map display system developed by EADS. The EuroGrid system supports conventional navigation displays with geographic maps of any area of the world and a Flight Data Recorder System (FDRS) that combines recordings for flight data, cockpit voice and maintenance data into one single system.

The challenge for the Cassidian development team for this project was to be able to test the software to the DO-178B standard using minimal time and resources. The RTCA DO-178B standard is one of the highest safety critical standards in the world, incorporating the most rigorous software testing and traceability requirements.

Cassidian's application development environment was Green Hills Software's INTEGRITY 178B using C++. EADS chose VectorCAST as their embedded software testing platform for its tight integration with the Green Hills environment and the high level of automation provided.

VectorCAST/Cover was initially used to determine the amount of structural coverage achieved during system testing and later, VectorCAST/C++ was used to create unit and integration tests for the uncovered code resulting in 100% code coverage. These tools are now an integral part of the Cassidian DO-178B development environment.

Real Results

The Cassidian development team captured a number of testing metrics during this project. Allocated time and resources for this project included one (1) engineer over the course of 2.5 months. The following metrics were captured:

Project Metrics	
Application Size (SLOC)	55,901
C++ Files	538
C++ Functions	18,513
VectorCAST/C++ unit test environments built (complete test harnesses including all stubs and driver code)	408
VectorCAST/Cover system test environments created (Windows native and INTEGRITY 178B target)	2
Percentage of DO-178B Level C coverage achieved during high-level requirements tests using VectorCAST/Cover (38,012 SLOC)	68%
Percentage of DO-178B Level C coverage achieved during low-level requirements tests using VectorCAST/C++ (17,636 SLOC)	31.55%
Percentage of unit testing achieved via analysis (251 SLOC)	0.45%
Lines of code identified as dead or inactive	83

Cassidian Development Team Project Metrics