

AEL Sistemas Increased Productivity by 80% using VectorCAST Automated Solutions

Case Study - AEL Sistemas



The Customer

AEL Sistemas S.A. (AEL), a majority owned subsidiary of Elbit Systems located in Porto Alegre Brazil, is a market-leading company dedicated to the design, manufacture, and qualification of military and civilian electronic systems for aircraft, watercraft, and land vehicles. AEL customers include Embraer, Helibras, and the National Institute for Space Research (INPE). In addition, AEL provides avionics systems for the Brazilian Air Force (FAB) and weapons systems for the Brazilian Army.

The Challenge

AEL faced a number of challenges on this project including tight development schedules and strict software development guidelines. The situation was compounded as the company's previous code coverage tool was difficult to use and unstable. Much of their process required manual input and often the same process steps lead to the tool crashing.

"Our previous process required a file system in order to record all coverage data. Because of this, we were forced to tailor our own file system over UDP communication between the target and host PC", commented Mauricio Ribeiro Barbieri, AEL Sistemas Software Engineer Manager. "This forced us to a scope of a few files to be instrumented at one time, due to a constraint on the communication load. The target software had to be divided into small segments in order to be instrumented and analyzed. Then, each instrumented portion was executed on target."

Once the coverage data was collected for each sub-set of files, the tester was required to manually load the data back to the tool environment. This process had to be repeated multiple times until all the source files had been instrumented and tested. Finally, an additional project had to be created to report on the aggregate coverage.

The Solution

AEL needed a solution that was easy to use, flexible, and reliable. After a rigorous two-month trial, AEL selected VectorCAST. As part of their evaluation process, AEL performed code coverage on over 250 files and 800 functions, totaling 20,000 lines of source code. With VectorCAST, a single engineer working for 150 hours was able to achieve 85% code coverage.

With VectorCAST, AEL was able to make fast progress achieving code coverage and resolving software quality issues while saving real development costs. By introducing the VectorCAST solution into their process, the AEL engineering team realized immediate benefits.

"When compared with our previous code coverage approach, the usage of VectorCAST has decreased the amount of hours required to achieve final code coverage results and increased our productivity by 80%", stated Mr. Barbieri.

Regarding VectorCAST's scalability, Mr. Barbieri stated, "VectorCAST can be deployed among the project developers quite fast due to its easy installation process and intuitive interface. In a few hours a software engineer can get qualified to implement new environments to execute coverage over certain software project portions". Efficient Source Code Instrumentation

He continued, "The VectorCAST target execution approach allows us to instrument the whole Avionics Application Standard Software Interface 653 partition at once. With this scenario, developers can test and exercise as much as possible of the source code in one run only, with no need of further instrumentation and preparations. As a result, just one environment for the target partition is managed, keeping all data together with no need to merge results".

Mr. Barbieri went on to say, "The VectorCAST approach for buffered mode during target execution simplifies the test equipment and laboratory infrastructure. With the possibility to run all coverage with no host attached to target, the setup is made easy and the time to prepare the test execution is decreased, allowing a more efficient usage of the lab facility by the development team".

The Results

Since the adoption of VectorCAST, AEL has reported a significant return in terms of man-hour budget for coverage activities. Additionally, with the time savings introduced by VectorCAST, final software development phases are now reached earlier, reducing overall project costs.