

Testeract Case Study: Streamlining Aerospace/Defense Test Systems

The Challenge:

A leading defense contractor faced a daunting test dilemma involving intricate satellite components. These components, comprising various CCAs (Circuit Card Assemblies), demanded comprehensive testing that consumed around two and a half weeks per Device Under Test (DUT). This extensive manual testing caused substantial project cost underestimations and severe delays. Their in-house hardware abstraction layer (HAL) and test sequencer proved overly complicated. Additionally, the presence of over 10 disparate graphical user interfaces (GUIs) on the screen simultaneously hindered functionality. The project entailed conducting 200-300 distinct tests, involving thousands of measurements and instruments from numerous vendors.

The Solution Approach:

Conducting an internal project assessment, the company estimated it would take 20 full-time engineers two years to complete the project. Initially, they tried adding more resources, but high turnover and extensive training requirements hindered progress. They sought an alternative solution, turning to Testeract in the Fall of 2020 for guidance.

Testeract engineers recognized that the system's complexity could be significantly simplified by leveraging the Testeract Framework. This encompassed the Testeract HAL, seamless integration with NI TestStand, and Testeract TASC, a unified user experience for the entire test system.

Two Testeract test engineers joined the project. Simultaneously, one engineer from the defense contractor focused on Interface Test Adapters (ITAs) and other system components.

The Results:

After incorporating instruments into the HAL and preparing the necessary system components, the Testeract Engineers developed test sequences using NI TestStand, consolidating them in TASC. This effort reduced the test time per unit from 2.5 weeks to just 2.5 hours. Because each DUT also required multiple tests, they were able to save many months of effort.

During testing, the company engineers identified excess noise from an RF signal generator, necessitating a replacement. Typically, integrating new hardware would take weeks due to hard-coded instrument configurations. However, with the Testeract HAL, they were able to make the transition in just a few minutes by modifying a single configuration file. One engineer remarked, "Connecting the new instrument took longer than making the required software changes."

By adopting Testeract TASC, they consolidated multiple GUIs into a unified application space. This enhancement improved system manageability, simplifying development and debugging. Moreover, it substantially reduced development time, resulting in significant cost savings by requiring fewer engineers.

The defense contractor found Testeract's deployment tools facilitated easier deployment, offering modularity and simplified updates when changes occurred.

97%

Test Time Reduction

Cost Savings of Over

\$200K