Qualitest Assures DO-178 Compliance, Crushes Costs with Automated Testing for Global Defense/Aerospace Leader

Challenge

DO-178 compliance requires independent reviewers, adding 125%-250% to costs.

The Client had little experience with DO-178 testing and could not find reliable, qualified reviewers.

Solution

Qualitest implemented automated testing, agile practices and continuous integration.

We undertook technical deep dives into the existing delivery systems and gained a detailed understanding of the hardware and tools used in the Client's processes.

Results

Test running hours and man-hours were slashed by 90%, offsetting added costs.

Successful compliance testing protected Client's reputation and potential revenues, with no budget or quality compromise.

Client Overview

The Client is an international high-tech company primarily focused on defense and homeland security, well-known for their work in aerospace, land and naval systems, intelligence surveillance and reconnaissance, military and commercial aviation platforms and related fields.

DO-178: The Gold Standard for the Industry

In the Client's target industries, DO-178B/C compliance is mandatory for many products. Without certification in the standard, businesses risk loss of potential revenues and a weakened competitive position.

The Client had started to work extensively in areas that required compliance, but they had little experience with the testing aspects of certification. Also, because of the rigorous nine-month training required for reviewers, they were unable to find reliable, qualified partners.

After a Deep Dive, Flying Fast and High with Automation

Qualitest had been the Client's testing partner on other projects for over 20 years and had successfully completed a large number of DO-178 projects for other companies. We had developed our own comprehensive DO-178 employee training program, to ensure qualified reviewers were available on demand. The Client contacted us to help with testing for an aviation project.

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As a first step, Qualitest engineers/performance test specialists/architects undertook technical deep dives into the Client's existing delivery systems. Our team gained a detailed understanding of the hardware and tools used in the Client's processes. Then we created an automation testing strategy and identified tools to be used for the steady state project support.

After several proofs of concept, the team identified exactly the right solution. Benefitting from the trust developed over many years partnering with this Client, we created a code and a method-testing platform.

We built an automatic flow designed to do the follow-ing for each project:

- Reset the hardware station and initialize it.
- Inject test inputs.
- Save test outputs (images, messages, etc.).
- Compare test outputs to pre-defined "Golden Outputs" (desired results).
- Document test results in Tests Management Tool.

We then integrated the automatic flow to Jenkins Re-Executions, re-running the tests to measure the impact of code/infrastructure fixed.

Finally, we prepared the final, detailed test report, which contained all the information on tests conducted, fixes applied, results, recommendations and conclusions.

Key Benefits

Qualitest's ongoing commitment to perfecting DO-178 testing, with the help of agile work and automation, paid off. Results achieved on this Client's project included:

- 90% reduction in running hours of tests.

- 90% drop in man-hours due to night runs.

- Continuous automated integration of the system, allowing detection of more bugs earlier in the SDLC.

- Fast delivery of results to all project stakeholders.

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