



Case Study

Delivering Robust Avionics Software Systems for Defence Operations

Achieving DOD-STD-2167A Compliance in
Mission-Critical Avionics Software Development

Client Profile

Our client is a leading organization in the defence aviation sector, pushing the boundaries of aeronautical innovation and aircraft development. With expertise in designing and building aircraft, the organization has been at the forefront of projects that strengthen the air defence capabilities.

The Challenge

The client required the development of the application software for a microcontroller-based Electronic Unit. The project presented specific technical and procedural challenges:



Architectural Complexity:

Software development for Coldfire architecture and Power PC architecture-based microcontrollers.



Niche Technology Stack:

Requirement to use a specialized programming language chosen for its reliability and robustness in real-time systems.



Stringent Compliance Requirements:

The need for mission-critical software development and documentation strictly compliant with the DOD STD 2167A standard.



Zero-Tolerance for Defects:

Ensuring the delivery of completely reliable, bug-free software for a system directly impacting aircraft performance and pilot safety.

Our Solution

MicroGenesis implemented a structured and compliant software development lifecycle to address these challenges:



Process Management:

Managed the entire software development lifecycle through a Process Management System (PMS) tool as per the DOD STD 2167A standard.



Specialized Development:

Developed the software using specialized toolchains and integrated development environments for the required programming language.



Rigorous Testing:

Conducted thorough Computer Software Component/Unit (CSC/CSU) module-level testing using HCL One Test.



Version Control:

Maintained all software assets and versions using IBM ClearCase for repository management.

The development followed the V-model and the DOD STD 2167A SDLC process across a multi-year duration, comprising six milestones.

The Business Impact

The solution delivered critical outcomes that ensured the project's success:



Standards-Compliant Process Management:

We managed the entire Software Development Lifecycle (SDLC) using a Process Management System (PMS) tool, configured to enforce and automate all deliverables as mandated by the DOD STD 2167A standard.



Specialized Development Expertise:

Software was developed using specialized integrated development environments and toolchains, leveraging our deep expertise in this niche environment.



Rigorous Testing Regime:

We implemented a thorough testing strategy where every Computer Software Component/Unit (CSC/CSU) underwent module-level testing using HCL One Test to identify and eliminate defects at the most granular level.



Robust Version Control:

All software assets, from source code to documentation, were managed within IBM ClearCase, ensuring impeccable version control, audit trails, and complete reproducibility for every build across the entire development cycle.



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