

Peter Hale

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SUMMARY

Principal software engineer with **13 years** building, verifying, and certifying **safety critical avionics software**, reusable platform libraries, middleware, and embedded applications. Leads architecture and technical direction for modern C++ systems running on VxWorks, with hands on ownership across requirements decomposition, object oriented design, implementation, peer review, automated verification, certification evidence, and delivery. Experience includes DO 178C lifecycle execution and DAL A programs for **Flight Management Systems**, aircraft applications, and integrated cockpit platforms. Translates system needs into traceable High Level and **Low Level Requirements**, practical verification strategies, and maintainable software boundaries. Coordinates software, systems, verification, program, customer, and regulatory stakeholders, resolving technical issues while protecting quality objectives. Brings clear technical judgment, collaborative delivery, and certification discipline to complex avionics product lines.

EXPERIENCE

Principal Software Engineer, Core Services and Libraries

January 2023 - Present

Skyward Avionics Group

Cedar Rapids, IA

Owns architecture and technical delivery for reusable C++ core services, middleware, and embedded avionics platforms supporting multiple safety critical product configurations. Leads DAL A lifecycle activities, certification evidence, customer engagement, and cross functional resolution of complex software issues.

- Architected reusable C++ middleware for multiple avionics configurations, reducing duplicate platform implementation effort.
- Led DO 178 DAL A traceability across **High Level Requirements**, Low Level Requirements, code, and verification evidence.
- Guided **peer reviews** and defect resolution, preserving certification objectives through controlled technical decisions.
- Presented architecture trades and **certification evidence**, building customer confidence during milestone reviews.
- Defined VxWorks service boundaries for Flight Management Systems and **aircraft applications**, supporting scalable product lines.
- Reviewed Test Cases and **Automated Test Procedures**, improving requirements coverage before **certification reviews**.

Senior Software Engineer, Middleware and Platform Libraries

June 2019 - December 2022

Northstar Flight Technologies

Des Moines, IA

Designed platform libraries and middleware for integrated cockpit and navigation applications on VxWorks. Connected system capability decomposition with traceable requirements, automated verification, certification artifacts, controlled releases, and practical mentoring across **engineering teams**.

- Designed **modern C++** middleware for VxWorks cockpit applications, improving reuse across integrated navigation functions.
- Decomposed system capabilities into High Level and **Low Level Requirements**, maintaining **DO 178** traceability.
- Investigated integration failures across software and hardware interfaces, restoring stable system behavior.
- Produced **certification artifacts** for customer milestones, resolving findings through controlled software updates.
- Built automated **verification** procedures for reusable services, strengthening release confidence before formal delivery.
- Mentored engineers on object oriented design, peer reviews, GIT, JIRA, and configuration management.

Software Engineer III, Embedded Aircraft Applications

August 2016 - May 2019

Pioneer Aerospace Software

Wichita, KS

Developed embedded C++ aircraft applications and reusable services for flight deck systems. Supported requirements authorship, detailed design, VxWorks integration, verification, peer review, configuration baselines, and root cause analysis for navigation functions.

- Developed embedded C++ services for flight deck systems, supporting reusable aircraft application behavior.
- Authored **Low Level Requirements** and detailed designs, connecting system intent with testable software behavior.
- Created **Test Cases** for navigation functions, supporting root cause analysis of interface discrepancies.
- Reviewed requirements, design data, source **code**, and verification materials during peer review cycles.
- Integrated software on **VxWorks** targets, diagnosing timing, interface, and data flow issues.
- Maintained **Subversion** baselines and supported workflow migration to **GIT** for controlled development.

Software Engineer, Embedded Avionics Applications

June 2013 - July 2016

Midwest Avionics Solutions

Omaha, NE

Implemented C++ modules for embedded avionics applications while expanding ownership across requirements, object oriented design, unit verification, traceability, configuration audits, and peer review. Supported communication and data management functions through controlled laboratory testing.

- Implemented C++ modules for embedded avionics applications, advancing reusable communication and data management functions.
- Translated approved requirements into object oriented designs, creating clear boundaries for maintainable software components.
- Executed laboratory **verification** against **Test Cases**, investigating discrepancies and documenting corrective findings.

- Reconciled revisions, reviews, and verification results, supporting **traceability** and configuration audits.
- Contributed to **peer reviews** across requirements, code, and test artifacts, improving shared technical judgment.
- Maintained Subversion issue tracking workflows, supporting disciplined configuration control across software releases.

PROJECTS

Reusable Avionics Middleware Product Line 📅 2024

Built a reusable middleware foundation for safety critical avionics configurations, connecting C++ services, VxWorks interfaces, traceable requirements, and automated verification for scalable aircraft applications.

DAL A Certification Evidence Framework 📅 2023

Structured certification evidence across requirements, code, Test Cases, and Automated Test Procedures, giving customers and regulatory stakeholders clearer review paths.

LEADERSHIP & AWARDS

- Technical leadership recognition for architecture direction across reusable avionics core services and middleware.
- Customer recognition for clear certification presentations and effective resolution of complex software findings.
- Peer leadership recognition for mentoring engineers through C++ design reviews and verification activities.

EDUCATION

Bachelor's Degree in Computer Engineering

2013

Iowa State University GPA: 3.5

Ames, IA

Coursework: Embedded systems, software architecture, digital systems, computer organization, verification

CERTIFICATIONS

- DO 178C Avionics Software Certification Training 📅 2024
- VxWorks Application Development Training 📅 2022

TECHNICAL SKILLS

- **Programming Languages:** Modern C++, C++, Object Oriented Design
- **Real Time Operating Systems:** VxWorks, embedded systems, real time software
- **Safety Critical Standards:** DO 178C, DAL A, certification evidence
- **Requirements Engineering:** High Level Requirements, Low Level Requirements, requirements decomposition
- **Verification Engineering:** Test Cases, Automated Test Procedures, verification evidence
- **Avionics Platforms:** Flight Management Systems, aircraft applications, flight deck systems
- **Software Architecture:** Core services, platform libraries, middleware
- **Configuration Management:** GIT, Subversion, configuration controlled development
- **Issue Management:** JIRA, defect resolution, technical issue tracking
- **Quality Processes:** Peer reviews, traceability, lifecycle quality activities
- **Certification Reviews:** Customer reviews, regulatory reviews, certification artifacts

SKILLS

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|--------------|-----------------------------|---------------------------|-----------------------------|
| • Modern C++ | • Avionics Architecture | • High Level Requirements | • Automated Test Procedures |
| • VxWorks | • Middleware | • Low Level Requirements | • Verification |
| • DO 178 | • Flight Management Systems | • Traceability | • Technical Leadership |
| • DAL A | • Aircraft Applications | • Test Cases | |

PROFESSIONAL AFFILIATIONS

- Member, IEEE, with professional focus on aerospace software and embedded systems.
- Participant, avionics software engineering communities focused on DO 178C verification and certification practice.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST