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Airborne Software Requirements Guide and Checklist: 10 Essential Best Practices for Assuring Compliance with DO-178C



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Software Considerations in Airborne Systems and Equipment Certification, better known as DO-178C, has in recent years become the de facto standard for avionics software development.

As its title implies, DO-178C doesn't specify a specific software process. Instead, it creates a flexible development framework designed to lead to system certification by relevant authorities. DO-178C specifies software lifecycle process objectives, along with activities for meeting those objectives. It also provides guidance for tailoring process objectives and activities to the level of safety the software must provide and for collecting evidence to show the process objectives have been met.

While DO-178C focuses on the software development process, it has implications at the

system level, as well. In particular, the software requirements process is directly impacted by the system requirements process, which dictates the high-level software requirements.

This guide describes ten requirements engineering (RE) best practices aerospace organizations can apply to help assure their avionic software complies with DO-178C. The accompanying checklist is meant to help those organizations embed these best practices, both within their RE process and in the minds of their engineers.

1. Document your process for requirements analysis and review

Paragraph 5.1 of DO-178C provides guidance for the software requirements process. It's first two recommendations are:

- *"The system functional and interface requirements that are allocated to software should be analyzed for ambiguities, inconsistencies and undefined conditions."*
- *"Inputs to the software requirements process detected as inadequate or incorrect should be reported as feedback to the input source processes for clarification or correction."*