

DO-178 Process Deployment Advisory Service

Model-Based Design for developing high-integrity embedded systems requires a well-defined process and rigorous verification and validation. Software safety standards are emerging that describe the development and verification objectives and measures for simulation, modeling, code generation, and tool qualification. For aerospace companies, the primary software safety standard is DO-178B, which will soon be updated to DO-178C. A new Model-Based Development and Verification supplement will be introduced with DO-178C.

MathWorks consultants are already helping engineers worldwide make this transition and can help you migrate your existing process—whether based on manual methods or Model-Based Design—to a process for using Model-Based Design for DO-178 featuring the items listed below.

The DO-178 Process Deployment Advisory Service can educate you on the DO-178 standard, identify gaps in your current processes, provide a road map to a more optimized DO-178 process framework using Model-Based Design, and assist with deployment of that road map.

This service will help you:

Perform key activities to comply with DO-178, including:

- Requirements traceability
- Requirements-based testing and coverage of models
- Model standards checking using Simulink® Model Advisor
- Code reviews, traceability, and analysis using Simulink Code Inspector™ and Polyspace® products
- Test case generation and design analysis using Simulink Design Verifier™
- Tool configuration and code generation using Embedded Coder™
- Software-in-the-loop and processor-in-the-loop testing of generated and compiled code
- Tool qualification using DO Qualification Kit (for DO-178)
- Generation of process artifacts needed for DO-178 compliance

Plan and execute the transition:

- Transform your company's development process while gaining efficiency improvements
- Identify and execute a phased approach to achieving the gains

Educate your organization:

- Learn the fundamentals of the DO-178 standard
- Learn how to fully leverage Model-Based Design to maximize the benefits
- Become self-sufficient by building a center of expertise for Model-Based Design

A typical deployment service follows four steps:

- 1. Familiarization with Existing Processes and Tools**
Review your current flight software development process, tools, application, required safety Levels (A-E), and planning documents including tool qualification.
- 2. Gap Analysis**
Based on the knowledge gained in step 1, perform a gap analysis to identify current challenges and process efficiency improvements, training, and changes that may be necessary for a DO-178 process framework using Model-Based Design. Develop an actionable road map that includes a phased approach to achieve the recommended improvements.
- 3. Targeted Instruction**
Provide instruction to fill the specific gaps identified in step 2. Discuss DO-178 fundamentals and the process framework for using Model-Based Design with DO-178. Use Model-Based Design and tool automation to perform key development activities, with specific tools and topics based on a list of prioritized needs.
- 4. Hands-On Deployment Support**
Apply the knowledge gained in step 3 to a specific project. Assistance can be provided in a wide range of areas including modeling, simulation, code generation, verification, validation, and certification. Certification and compliance assistance includes preparing tool chain and automation information involving Model-Based Design for DO planning documents such as the PSAC, and generating DO-178 tool qualification artifacts by tailoring DO Qualification Kit.

The DO-178 Process Deployment Advisory Service is conducted by senior MathWorks consultants who are experienced in organization-wide adoption and deployment of Model-Based Design. MathWorks clients include leading companies from the aerospace, defense, automotive, and industrial automation industries. To discuss your specific requirements, contact MathWorks Consulting Services.