

Safety through quality

PRODUCT BRIEF

Derisk your multicore certification approach with the
MACH¹⁷⁸ Blueprint

Product brief: MACH¹⁷⁸ Blueprint



How can the MACH¹⁷⁸ Blueprint help you?

The MACH¹⁷⁸ Blueprint provides a platform through which you can understand what is required for multicore certification in accordance with airworthiness guidance including AC 20-193, AMC 20-193, CAST-32A and AA-22-01, and derisk your multicore certification approach.

The solution supports different roles in the avionics supply chain, including those of Integrated Modular Avionics (IMA) Certification Applicants, System Integrators, Platform Providers and Application Suppliers.

Benefits and use cases

- Understand how to meet AC 20-193 and AMC 20-193 compliance objectives from planning to submitting compliance results using the MACH¹⁷⁸ workflow
- Develop in-house expertise to support AC 20-193 and AMC 20-193 compliance
- Derisk your multicore DO-178C projects

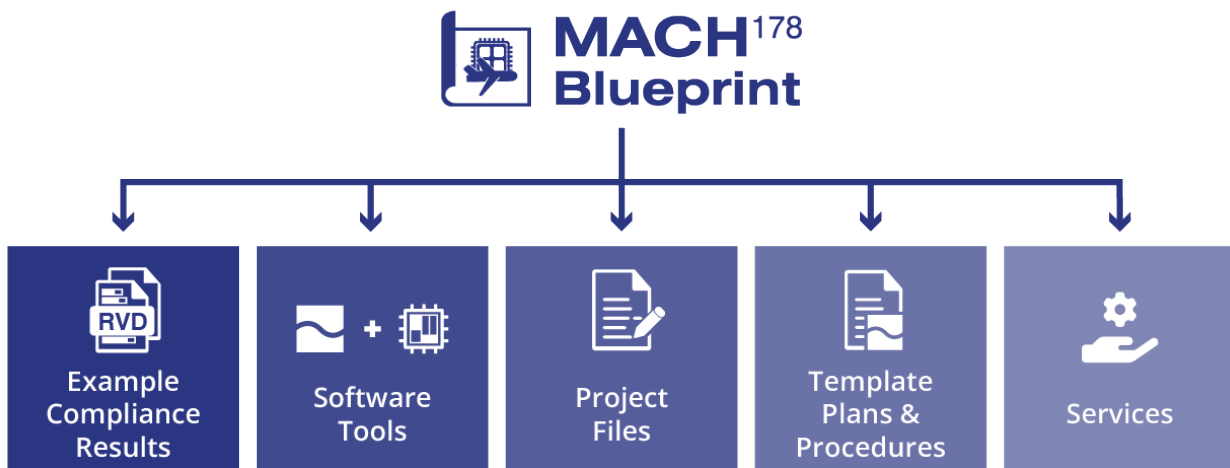
How does it work?

The MACH¹⁷⁸ Blueprint is based on Rapita's MACH¹⁷⁸ approach for AC 20-193 / AMC 20-193 compliance, which is being used to support the certification of multicore DO-178C software up to and including DAL A by avionics software developers globally. For more information on MACH¹⁷⁸, see the MACH¹⁷⁸ Product brief.

The MACH¹⁷⁸ Blueprint demonstrates how you can address key AC 20-193 / AMC 20-193 objectives using the MACH¹⁷⁸ workflow. It includes results from running the workflow on the Blueprint platform, software tools and project files to support running the workflow on the Blueprint platform, and template plans and procedures that support using the workflow.

This is delivered along with support, training and consulting services to help you understand and repeat the MACH¹⁷⁸ workflow and answer any questions you may have about AC 20-193 / AMC 20-193 certification.

To repeat the MACH¹⁷⁸ workflow using the Blueprint materials, you will need to arrange access to the corresponding multicore platform and RTOS, which are not included in the MACH¹⁷⁸ Blueprint.



Must be provided by you:



What's included?

The **MACH**¹⁷⁸ Blueprint includes the following components.

Example Compliance Results

The **MACH**¹⁷⁸ Blueprint includes results generated from running the **MACH**¹⁷⁸ workflow to identify and characterize the impact of two interference channels on the Blueprint platform. Results include:

- Hardware Resource Identification Results
- Interference Channel Identification Results
- Critical Configuration Setting Identification Results
- Hardware Event Monitor Identification Results
- Hardware Event Monitor Validation Results
- Interference Channel characterization Results
- Multicore Platform Characterization Results
- Timing Requirements Analysis Results
- Software Characterization Results

Software Tools

The **MACH**¹⁷⁸ Blueprint includes software tools that you can use to repeat the **MACH**¹⁷⁸ workflow in-house; this includes:

- The **RVS** toolsuite to automate instrumentation to collect performance metrics including software execution time and Hardware Event Monitors, to run multicore tests, and to report on and export results
- **RapiDaemons** to support the characterization of interference effects on the Blueprint platform

Project Files

The **MACH**¹⁷⁸ Blueprint includes project files that you need to run the Blueprint software, execute **RapiDaemons**, and run multicore timing tests on the platform. This includes:

- Blueprint application software build files
- Timing tests for the Blueprint application
- **RVS** project files to support running timing tests on the Blueprint application and collecting results

Template Plans and Procedures

- Template AC 20-193 / AMC 20-193 compliance documents including:
 - Plan for Multicore Aspects of Certification (PMAC)
 - Multicore Platform Characterization Plan (MPCP)
 - Multicore Timing Verification Plan (MTVP)
- Process documents describe in detail how to follow the **MACH**¹⁷⁸ workflow to produce evidence for AC 20-193 / AMC 20-193 compliance
- Checklists support compliance processes including reviews

Support, Training & Consulting

We provide support, training and consulting to ensure that you get the most from the **MACH**¹⁷⁸ Blueprint and to answer any questions you may have about AC 20-193 / AMC 20-193 certification.

Supported platforms

MACH¹⁷⁸ Blueprint products are based on specific multicore platforms (including hardware, RTOS and applications).

To repeat the **MACH**¹⁷⁸ workflow using the Blueprint materials, you will need to arrange access to the corresponding multicore platform and RTOS, which are not included in the **MACH**¹⁷⁸ Blueprint.

For information on the Blueprint platforms available, contact Rapita Systems.

Interference channels

Understanding interference channels and characterizing the effects of interference is a key part of addressing AC 20-193 and AMC 20-193 objectives.

Artifacts delivered in **MACH**¹⁷⁸ Blueprint products focus on two interference channels on the associated platforms.



About Rapita

Rapita Systems provides on-target software verification tools and services globally to the embedded aerospace and automotive electronics industries.

Our solutions help to increase software quality, deliver evidence to meet safety and certification objectives and reduce costs.

Find out more

A range of free high-quality materials are available at:
rapitasystems.com/downloads

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Compiler Verification

Multicore verification

MACH¹⁷⁸

Multicore Timing Solution

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