LYNX

MOSA.ic Certification Support Supplements



Purpose

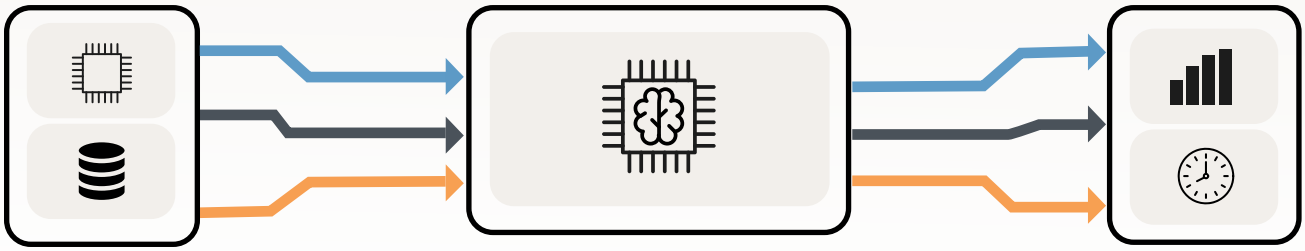
LYNX MOSA.ic® safety evidence is strongest when it reflects the system the customer intends to field. MOSA.ic scheduling, communications, resource sharing, and fault behavior significantly depend on the target environment hardware, hypervisor and OS settings, guest software, services, and application workloads.

Lynx offers supplements that help Lynx and the customer establish an understanding of the target MOSA.ic configuration, address configuration-dependent safety conditions early, and plan for the analysis and verification needed for system-level safety objectives. They complement the DO-178C Artifact Package; the Multicore System Configuration Supplement also complements the 516C System Integration Supplement.

516C System Integration Supplement

The 516C Integration Supplement includes safety and architecture expertise during the planning phase of the program to address Safety Critical Function Thread Analysis (SCFTA) and applicable failure-mode analysis and testing objectives, including Failure Modes and Effects Testing (FMET) where applicable. This planning is relevant to single- or multicore system configurations and is aligned to the program's applicable MIL-HDBK-516C Section 15 / USAF AC-17-01 basis.

Under the standard Lynx certification license, Lynx provides reference DCCAR, STR, and SSAR artifacts, along with subsystem descriptions and worked examples. These materials help the customer identify assumptions and conditions to monitor and plan system timing, SCFTA, and fault analyses. Tests that characterize subsystems in isolation are reference tests, not customer system-submission evidence or direct objective-compliance credit.



Project Option	516C System Integration Supplement
Focus	System behavior across scheduling, IPC, networking, and health management where the hypervisor, real-time runtime, customer applications, and target configuration interact.
Planning Alignment	Lynx and the customer jointly plan how to address Safety Critical Function Thread Analysis (SCFTA) and applicable failure-mode objectives, including Failure Modes and Effects Testing (FMET). Relevant to single- or multicore configurations; AC-17-01 / MIL-HDBK-516C Section 15 apply as defined by the program.
Project Outputs	Reference DCCAR, STR, and SSAR artifacts, with subsystem descriptions and worked examples for scheduling, IPC, networking, and health management.
How Teams Use It	Use the references to identify conditions to monitor and plan customer system timing, SCFTA, and fault analyses. Isolated-subsystem tests are reference tests, not customer system-submission evidence or direct objective-compliance credit.

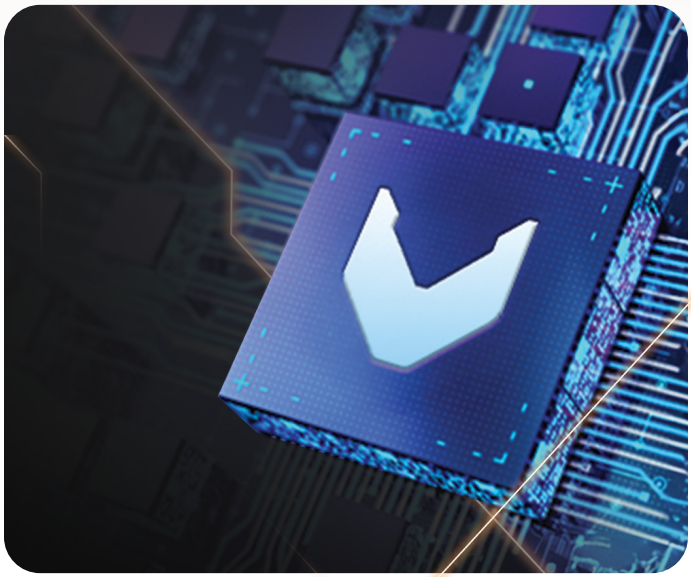
Multicore System Configuration Supplement

This supplement extends the planning to multicore-specific objectives addressed by FAA AC 20-193 and USAF AA-22-01. Lynx and the customer establish the target multicore configuration, identify critical hardware, hypervisor, and OS settings, and plan how those settings will control the selected interference mitigations, such as cache partitioning.

Project Option	Multicore System Configuration Supplement
Focus	Multicore safety considerations across processor hardware, hypervisor, operating system, and cross-core resource use.
Planning Alignment	Planning aligned to applicable multicore objectives in FAA AC 20-193 and USAF AA-22-01. Identify and control critical hardware, hypervisor, and OS settings; select and verify multicore interference mitigations, such as cache partitioning.
Project Outputs	Partitioning Analysis Reports (PAR); DCCAR analysis augmented for multicore interference and data/control-flow complexity; and supplementary test/reference material for shared-resource pressure and inter-core ARINC messaging and networking.
How Teams Use It	Use the references to plan configuration-specific partitioning, interference, and data/control-flow analyses and the system-level verification needed for the selected target configuration.

Reference outputs introduce Partitioning Analysis Reports (PAR) and augment DCCAR to capture multicore interference, shared-resource effects, and added data and control-flow complexity. Supplementary test and analysis material addresses memory-bus/shared-memory pressure and performance attributes of inter-core ARINC messaging and networking. The results help the customer plan configuration-specific analyses and system-level verification.

Each supplement is offered for an additional fee. Contact Lynx sales for details: sales@lynx.com



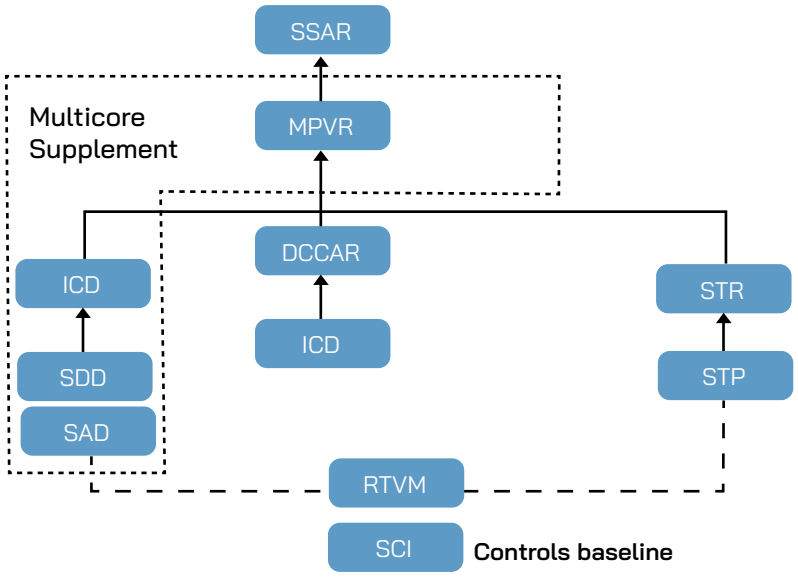
Guidance References

FAA CAST-32A | EASA AMC 20-193 | FAA AC 20-193 - Use of Multi-Core Processors | USAF AC-17-01 - Verification Expectations for Select Section 15 Criteria | USAF AA-22-01 - Multicore Processor Environments Supporting Safety Critical Functions

Reference Artifacts and Evidence Flow

Supplemental project fees provide a reference artifact set that supports analysis, verification, multicore argumentation, and safety assessment. The applicable artifact scope is identified for each project. Reference artifacts and tests illustrate the required analyses and verification approach; on their own they are not customer system-submission evidence or direct objective-compliance credit, and program-specific analysis and verification remain the customer's responsibility.

ID	Artifact	Role in the Evidence Set
SSAR	System Safety Assessment Report	Documents the overall safety assessment and final safety conclusions. The MPVR is a key supporting input.
MPVR	Multicore Processing Verification Report	Consolidates the multicore compliance and verification argument from PAR, DCCAR, and STR evidence; supports the SSAR.
STP	Software Test Plan	Defines the software verification and test approach.
STR	Software Test Report	Records executed test results and provides detailed evidence to the MPVR.
ICD	Interface Control Document	Defines interfaces used with architecture and detailed-design information as inputs to PAR and DCCAR analyses.
PAR	Partitioning Analysis Report	Provides detailed partitioning-analysis evidence that feeds the MPVR.
DCCAR	Software Configuration Index	Provides detailed data and control analysis evidence that feeds the MPVR.
SCI	Software Configuration Index	Identifies and controls the software/configuration baseline to which the evidence applies.
SAD	Software Architecture Design	Defines software architecture; used with SDD and ICD as input to PAR and DCCAR analyses.
SDD	Software Design Description	Defines detailed software design; used with SAD and ICD as input to PAR and DCCAR analyses.
RTVM	Requirement Traceability Verification Matrix	Maintains requirement-to-design-to-verification traceability across the evidence set.





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