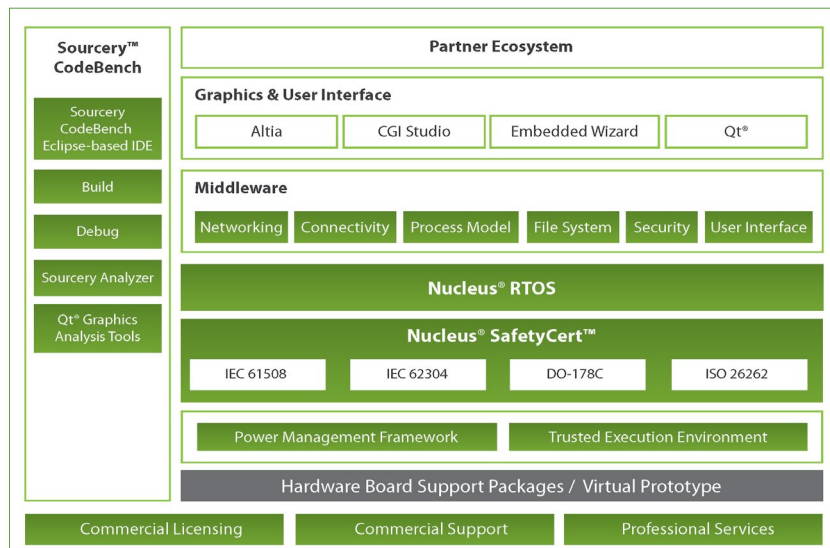


MENTOR EMBEDDED

Nucleus SafetyCert

D A T A S H E E T



The Nucleus SafetyCert commercial solution addresses a broad range of industrial sectors and includes a full spectrum of development tools (quality processes with test and documentation) available to all Nucleus developers.

A Turnkey Safety Certified Solution Addressing Device Complexity, Developmental Risk, and Certification Cost

Mentor® Embedded Nucleus® SafetyCert™ is a safety certified real-time operating system (RTOS) and middleware package targeting high-performance, next-generation applications. The SafetyCert package is designed to meet the stringent safety and regulatory requirements for aviation, industrial, medical, and automotive devices. With Nucleus SafetyCert, Mentor Embedded shortens the path to regulatory certification with a complete certified solution that includes all the necessary documentation and artifacts required for software developers to develop mission-critical applications.

A Complete Solution for Devices Requiring Safety Certification and Regulatory Approval

As a robust and certified solution, including all the necessary documentation and artifacts required to develop mission-critical applications, Nucleus SafetyCert has been documented to meet the certification requirements for products requiring DO-178C Level A, International Electrotechnical Commission (IEC) standards 61508 SIL 3 and 62304 Class C, and ISO 26262 ASIL Level B certification.

The Nucleus SafetyCert offering includes a certified version of the Nucleus RTOS kernel with Nucleus process model support for space partitioning, runtime libraries, connectivity middleware, networking, and data storage. The Nucleus SafetyCert documentation and artifacts have clear traceability across the safety lifecycle, and are hyperlinked for ease of navigation to streamline audits and reviews.

PRODUCT HIGHLIGHTS:

- Certified Nucleus kernel and runtime libraries
- Nucleus process model for critical and non-critical functions
- Full Nucleus development environment and tools
- Powerful debug resources with support for all forms of target connectivity
- Certified UDP/IPV4 stack
- Certified data storage
- Complete performance analysis tools available during development
- Industry-standard specific documentation and artifacts
- Eclipse-based IDE with GCC/G++ tools

INDUSTRY STANDARDS SUPPORTED:

- Avionics: DO-178C Level A
- Industrial: IEC 61508 SIL 3
- Medical: IEC 62304 Class C
- Automotive: ISO 26262 ASIL Level B

CERTIFICATION PACKAGE INCLUDES:

- Software Development
- Software Configuration Management
- Software Quality Assurance
- Software Verification
- Software Requirements
- Software Design Standards
- Software Coding Standards
- Software Test Plan
- Complete Software Test suite
- Safety Manual

(Nucleus SafetyCert documentation and artifacts have clear traceability across the safety lifecycle, and are hyperlinked for ease of navigation to streamline audits and reviews.)

Based on Mentor's Proven Development and Quality Processes with Test and Documentation

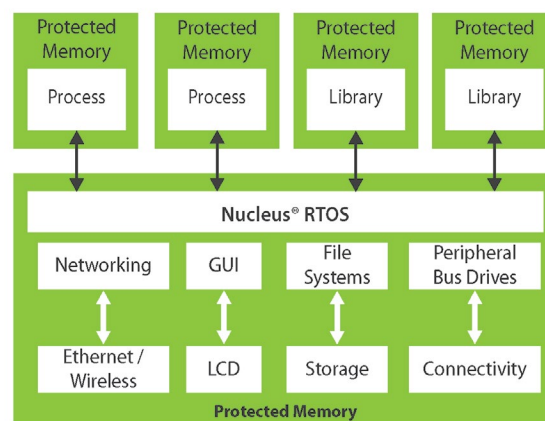
Nucleus SafetyCert is designed to handle the safety critical code (the most important software component) and create safety certifiable devices based on a certified operating system that leverages Mentor's disciplined quality control processes supported by Mentor's dedicated safety engineering team.

The SafetyCert certification package includes the test harness, all test cases, and a complete process plan to enable users to augment the documentation and artifacts. With the Nucleus SafetyCert offering users can build BSPs which can be verified, tested, and documented for regulatory approval.

Process Model for Critical and Non-critical Functions

For mixed criticality designs and added system reliability, the Nucleus SafetyCert process model implements a lightweight framework to create spatial partitions of memory for both critical and non-critical functions. Nucleus process model implements a lightweight framework that utilizes the memory management unit (MMU) or memory protection unit (MPU) to create spatial partitioning that can be used to separate and isolate critical code.

This approach partitions memory without the overhead of virtualization to maintain deterministic real-time performance. The memory hardened process regions protect the critical code sections from the non-critical sections by isolating faults that can occur in a non-critical software subsystem. Safety applications run in priority space to ensure deterministic responses and guaranteed access to system resources. Using the Nucleus process model for mixed criticality systems greatly reduces overall software design complexity, testing, and costs for regulatory certification.



Isolate non-certified code sections using Nucleus process model.

Integrated Development Environment

Nucleus SafetyCert leverages the full spectrum of development tools available to all Nucleus users. Certified applications are developed using the same Eclipse-based Mentor Embedded Sourcery™ CodeBench environment with GCC/G++ tools available to Nucleus developers. This includes the Nucleus project creation, build, and debug management environment, along with graphical control of the project options and build parameters. Full integration with the standard flow of BSP-based project creation means that developing a certified Nucleus application is performed with the same ease and flow as all non-certified Nucleus applications.

More about Mentor Embedded

Mentor Graphics® Embedded Systems Division comprises the Mentor Embedded™ family of products and services, including embedded software IP, tools, and professional services to assist developers and silicon partners to optimize their products for design and cost efficiency.

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