WIND RIVER IEC 61508 AND EN 50128 SOFTWARE CERTIFICATION SERVICES

Wind River® Professional Services Industrial Safety Practice provides software certification services to help our customers address their demanding software system certification needs. Wind River provides assistance in the following areas:

- IEC 61508 and EN 50128 gap analysis, examining existing processes to identify gaps in meeting IEC 61508 or EN 50128 certification requirements
- Development of VxWorks board support packages (BSPs) compliant with IEC 61508 or EN 50128

IEC 61508 OR EN 50128 GAP ANALYSIS

Wind River can perform a complete IEC 61508 or EN 50128 gap analysis of current software development processes, requirements, design data, source code, test methodology, and tools. This gap analysis will also provide an estimate of the time, effort, and special expertise required to take the necessary steps to meet IEC 61508 or EN 50128 certification.

Wind River will send technical experts to your site to collect data for the gap analysis. The gap analysis begins with an interview of the key engineers to get a complete understanding of the current development process, the tools used in development, and the software verification process.

The next step is to perform a planning process audit by reviewing software planning documentation, including the following:

- Overview of current standards of development and testing
- Review and analysis of the software quality organization
- Review and analysis of the software configuration management environment
- Review of standards (coding standards, requirements standards, etc.)
- Review of software verification plans and test plans and procedures

After the planning process audit, we will perform a development process audit, including the following:

- Overview of current design data, build process, tools for requirements, and static and dynamic analysis tools
- Review of system requirements, interface control documents (ICDs) (if applicable), and high-level requirements to determine how the latter are documented, reviewed, and traceable to system requirements
- Review of the software architecture to determine how it is defined, reviewed, and analyzed

- Review of low-level requirements to determine how they are documented, reviewed, and traceable to high-level requirements
- Review of source code to determine how it implements low-level requirements, is traceable to the low-level requirements, and has been internally reviewed
- Review of the problem report process and how problems are corrected
- Review of how source code and software documentation is stored, archived, and revised

Next we will perform a verification process audit, including the following:

- Overview of current tools and processes used for verification of requirements, design data, source code, and test plans, procedures, and results
- Review of the change control process to assess methodology for the evolution and revision of software, as well as how software changes impact revision to software documentation and retesting
- Evaluation of how test cases and procedures are documented, reviewed, and placed under configuration control
- Determination of the extent to which test cases and procedures have been executed and passed, including an examination of what tools are used in the testing process (test harnesses, coverage tools, etc.)
- Determination of the viability of the compiler and linker to support IEC 61508 or EN 50128 requirements
- Determination of the extent to which test results are documented and complete
- Review of how the software testing environment is documented and controlled
- Traceability analysis from requirements to design to source code implementation to test cases and results; determination, if possible, of the extent of code coverage achieved through requirements-based testing

The next step is an application hardware and software analysis, including the following:

- Overview of software functionality, gathering metrics on the number of requirements, functions, source lines of code (SLOC) counts, language constructs, and architecture
- Identification of any special run-time libraries used in the application (standard C and math libraries) and assessment of the extent to which these libraries have been documented and verified
- Interviews of individuals who build, test, and verify the application regarding low-level testing, integration, and system verification processes
- Evaluation of system-testing and regression-testing methodology

The Wind River experts will compile all the gathered data into an IEC 61508 or EN 50128 Gap Analysis Report. The report includes a summary matrix that provides an overall assessment of the current state of your software development processes with regard to the level of IEC 61508 or EN 50128 compliance you are seeking.

Direct Consulting to Implement an IEC 61508 or EN 50128 Compliant Process

Using the information gathered in the gap analysis, Wind River experts can assist you with implementing a fully IEC 61508 or EN 50128 compliant software planning, development, and verification process. This process can then be used to develop, produce, and certify software autonomously, without outside assistance.

DEVELOPMENT OF VXWORKS BOARD SUPPORT PACKAGES COMPLIANT WITH IEC 61508 OR EN 50128

Wind River Professional Services has deep experience developing IEC 61508 and EN 50128 compliant BSPs on VxWorks for custom hardware platforms. Following our IEC 61508 and EN 50128 compliant processes, Wind River can perform the following services:

- Develop and document requirements and design for a custom hardware BSP
- Create a Safety Profile for VxWorks BSP
- Write an acceptance test plan to validate the BSP
- Create an acceptance test case for each requirement
- Integrate a BSP with system software components (onsite or offsite)
- Perform testing (onsite or offsite)

WIND RIVER PROFESSIONAL SERVICES

Wind River Professional Services has a strong track record of guiding our customers through the complexities of new technology adoption. Certified to CMMI Level 3 across all of our global development centers, our proven engagement methodology, timely delivery, and in-depth understanding of market and technology dynamics have made Professional Services a valuable implementation partner to our customers. Our Industrial Safety Certification Practice provides consultation services that help our customers with the specific needs of adopting new technologies when safety and regulation compliance is critical.

Contact us today for more information on how Wind River Professional Services can assist your company with IEC 61508 and EN 50128 certification. To find your local Wind River sales contact, visit www.windriver.com/company/contact/index.html, call 800-545-WIND (9463), or email inquiries@windriver.com.

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Wind River is a global leader in delivering software for IoT. Its technology is found in more than 2 billion devices and is backed by world-class professional services and customer support. Wind River is accelerating digital transformation of critical infrastructure systems that demand the highest levels of safety, security, performance, and reliability.