



SuperTest extended by 3000 new tests and support for C++20

- *C++20 supported with new tests and line-number accurate diagnostic reporting*
- *Enhanced floating-point checks confirm arithmetic accuracy*

Amsterdam, The Netherlands – 12 January 2022 – Solid Sands, the world leader in testing and validation for C and C++ compilers and libraries, today announced Update #3 to its SuperTest Vermeer Release. This update supports widespread adoption of the C++ programming language in safety-critical applications with comprehensive C++20 language coverage. SuperTest Vermeer Release Update #3 includes over 800 tests designed to verify the correct implementation of C++ language constructs. It also includes 1700 new tests for C++ library functions to make sure they work as intended in all use cases.

C++20 support

The ability of C++ to meet the security, functional safety, and behavioral requirements of ISO 26262 has increased adoption of C++ in the automotive industry. Many of the latest image processing, signal processing, and machine learning algorithms used in Advanced driver-assistance systems (ADAS) are now written in C++. With SuperTest now comprehensively supporting the test and validation of C++20 compilers, developers can keep abreast of the latest developments in C++ programming.

“Vehicle manufacturers are moving from single-core embedded processors to high-performance multi-core processor solutions, for which C++ has a distinct advantage over C in terms of structuring large software projects. As a result, the AUTOSAR Adaptive Platform now includes programming guidelines for C++,” said Marcel Beemster, Chief Technology Officer at Solid Sands. “By upgrading to SuperTest Vermeer Release Update #3, developers who want to make use of the latest features in C++, can now verify that their compiler implements them correctly.”

For diagnostic tests that are specifically designed to generate a compiler error, SuperTest’s C++ support includes line-number accurate error reporting so that developers can identify the precise language construct that generates the error.

Arithmetic accuracy checking

Applicable across SuperTest’s full gamut of C language support, SuperTest Vermeer Release Update #3 features improved floating-point accuracy checking, with the default accuracy limit on arithmetic operations now universally set at four ULP (Units in the Last Place – the smallest interval between two subsequent floating-point numbers). If needed, SuperTest users can change this default limit to a ULP value of their choice. For non-library arithmetic it even can be set to zero to check rounding accuracy. SuperTest Vermeer Release Update #3 also incorporates other enhancements to SuperTest’s arithmetic function testing, including improvements to its



powerful arithmetic depth suite that now supports target platforms that do not support floating-point arithmetic.

Improved calling convention testing

SuperTest's calling convention test suite has been improved in terms of its ability to randomly select local and global variables. Ensuring that arguments and return values are correctly passed between a calling function and a called function is an important aspect of compiler testing that is sometimes overlooked by developers. SuperTest Vermeer Release Update #3's improved calling convention tester can be used to verify calling conventions within a compiler, verify that no compiler changes break ABI (Application Binary Interface) integrity between different versions of a compiler, and even test for calling convention consistency between completely different compilers.

Extended traceability

SuperTest's section traceability – the report that details how each individual test matches the language standard – has been extended to cover all versions of C, including C18, and C++ up to C++17.

Enhanced host environment flexibility

This update makes it easier to manage multiple installs of different versions in the same Windows operating system environment, allowing users to run SuperTest and SuperGuard (Solid Sands' C Library Safety Qualification Suite), or multiple SuperTest versions, on the same machine.

SuperTest Vermeer Release Update #3 is available now.

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About Solid Sands

Founded in 2014, Solid Sands is the one-stop shop for C and C++ compiler and library testing, validation and safety services. Solid Sands offers extensive test and validation suites with a unique level of compiler and library test coverage, enabling customers to achieve the software tool quality level demanded by ISO standards. The company's name combines sand – the world's most abundant source of silicon – with the solidity and security expected of sector-leading testing and validation technologies. More information on the company's products and services is available at www.solidsands.nl. You can follow Solid Sands on [LinkedIn](#), [Twitter](#) and [YouTube](#).

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