



EN 50716:2023

+ Coding Standards: MISRA CERT CWE

EN 50716:2023 governs the development and verification of railway software across Safety Integrity Levels (SW-SIL 0–4). Section 6.7, “Confidence in the use of support tools,” defines how tools must be classified and qualified. Cantata has been certified as a class T2 tool fulfilling the requirements of EN50657 sub-clause 6.7.

CANTATA

CANTATA HYBRID
Certification Engine for Google Tests

QAMISRA

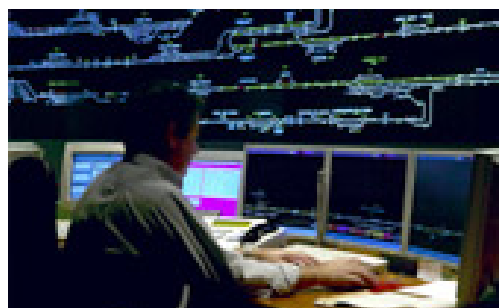


Cantata (including Cantata Hybrid) and QA-MISRA have been certified by SGS-TÜV Saar GmbH against EN 50716 as usable in development of safety related software up to the highest Safety Integrity Level (SW-SIL 4).

Tool Certification kits for each are available free of charge.

Railway applications

QA Systems software verification tools are used accross all automotive software domains.



Integrated Operations Control Centre System
at Kowloon Canton Rail

Main Line Railway Projects

Regional rail, UK Channel Tunnel Rail Link, West Coast Main Line and others.

- > Thales Rail Signalling Systems
- > Siemens Rail Automation
- > Westinghouse Rail Systems
- > Ansaldo

Metro Rail Projects

London Underground - Jubilee Line, Beijing Metro, Madrid Metro's Line 9, ATC, ATP and ATO Systems

- > Westinghouse Rail Systems
Dimetronic



Kaba Gilgen AG's Platform Screen Door Systems
in Paris Metro Station



Thales Rail Signalling Systems ETCS Test Track Facility

ERTMS - ETCS

European Rail Traffic Management System - Interoperable European Train Control System

- > Thales Rail Signalling Systems
(see Case Study)
- > Siemens Transportation Systems
Dimetronic

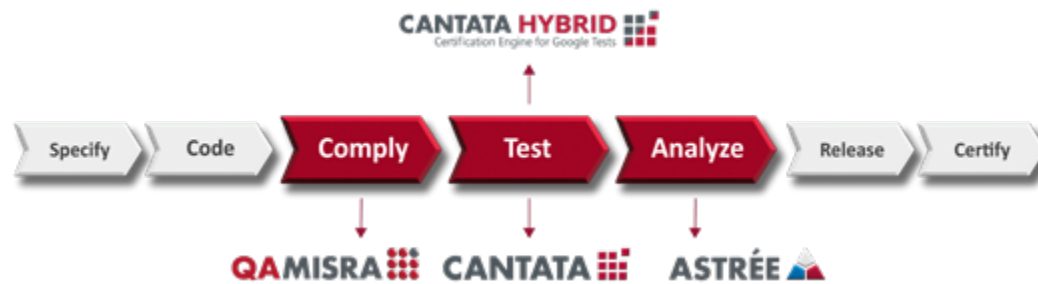
“I was impressed with the capabilities in Cantata since it was able to support many testing levels (Unit, Integration and System testing). Cantata was a great tool to use for white-box unit testing on our project. It provided a good test report with very clear information that helped us identify problems in our source code.”

Pham Hong Son,
Mgr. for Consulting Services at Hitachi Vantara

Standard Compliant Verification

Railways
Customers include:

QA Systems static analysis & software testing tools support standard compliant verification in linear flow as below:



QA Systems tools can be used for standard-compliant verification against railway standards (listed below) as well as coding standards such as MISRA, CERT, and CWE.

EN 50716

A European standard defining requirements for the development of software in railway control, signalling, and rolling stock applications. It supersedes EN 50128 and EN 50657, aiming to ensure the safety, reliability, and performance of programmable electronic systems. Cantata supports verification and validation processes across all EN 50716 Software Safety Integrity Levels (SW-SILs), up to the highest level (SW-SIL 4). It helps meet the requirements outlined in key sections of the standard, including:

- Section 6 – Software assurance
- Section 7 – Software development
- Section 9 – Software deployment and maintenance
- Annexes A and D – Techniques and measures

EN 50128

Applies to railway control and signalling software where safety is critical. Cantata supports this standard by automating unit and integration testing for C/C++ code, enabling efficient compliance with verification requirements. When used as specified, it produces certification-ready evidence and aligns with 'State-of-the-Art' safety practices under the General Product Safety Directive.

EN 50657

Extends the principles of EN 50128 to onboard rolling stock software. Cantata facilitates compliance through certified, automated testing for embedded systems, including coverage analysis and regression testing. With tool certification under Section 6.7 and traceable results, it supports both development and maintenance phases.

Both EN 50128 and EN 50657 have been replaced by EN 50716, which unifies and updates these standards into a single, modern framework for railway software safety.



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Bosch Engineering GmbH



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