V1.0 – April 2016

QKIT Overview

Compiler Qualification Kit

QKIT

TOOL QUALIFICATION

Toolchain Standard Compliant Qualification. Automated.

HighTec Core Products

Development & Consulting

COMPILER

BUILD TOOL

PXROS-HR

REAL-TIME OS

QKIT

TOOL QUALIFICATION

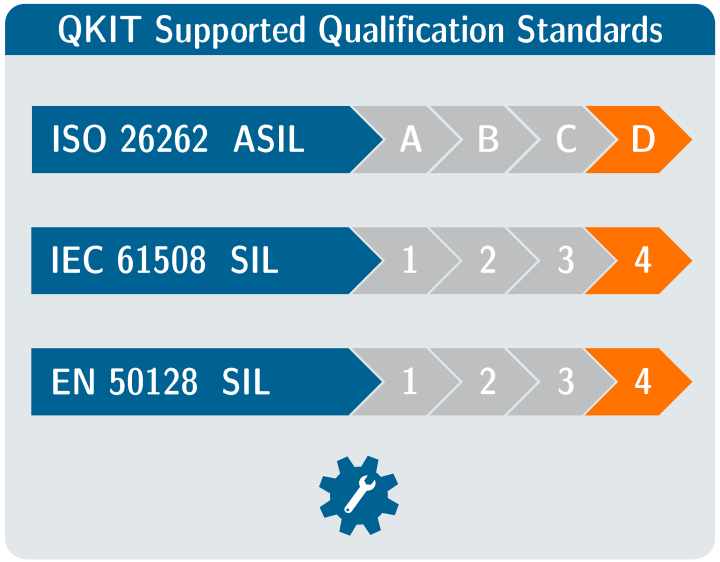
CONSULTING

DESIGN & SUPPORT

Safety Multicore Development Suite

Compiler Qualification Kit Overview

For Safety Critical Applications

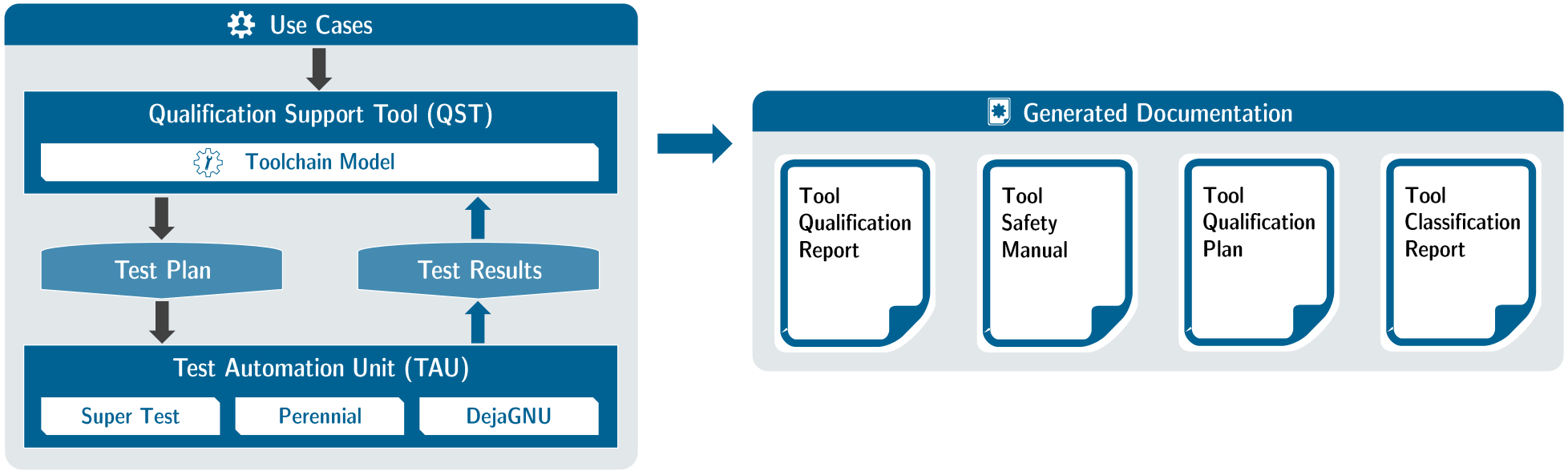


- Enables to perform standard compliant qualification in a simple way
- Significantly reduces effort for test and document generation process
- Transparent and traceable validation flow
- Flexible and extensible due to model-based approach

Main Components of the QKIT

QKIT Architecture

- Qualification Support Tool QST contains toolchain model
- Test Automation Unit TAU integrates different test suites



Qualification Support Tool

Toolchain Model and Test Generator

- Contains an extensive model of the tool
  - Toolchain structure, its tools, artifacts and features
  - Potential errors, known bugs and mitigation measures
  - Test cases for errors with not known mitigation measures
- For each specified Use Case QST computes
  - List of measures to mitigate potential errors
  - List of tests proving that no non-mitigable errors can occur
  - Resulting Tool Confidence Level (TCL)

Test Automation Unit

Test Suites Integration

- Integrates different standard test suites
  - SuperTest Rembrandt Release for massive testing against different language standards
  - Perennial Validation Suite
  - The DejaGNU test suite for GNU GCC
- Supports easy extension for other customized tests

Tool Safety Manual

Generated Documents

- Description of methods
- Requirements tracing to standards
- Tool, usage and operation dependent safety guidelines
- List of measures to mitigate potential errors of the selected Use Case

Tool Classification Report

Generated Documents

- Resulting Tool Confidence Level (TCL)
- Description of the TCL derivation method
- List of TCL for each component of the toolchain
- Determination of TCL for each use case and for each of the components (Compiler, Linker...)

Tool Qualification Plan

Generated Documents

- Use Cases and features with qualification needs
- Validation goals, requirements of standards and how they are to be satisfied
- Qualification environment
- Planned qualification process

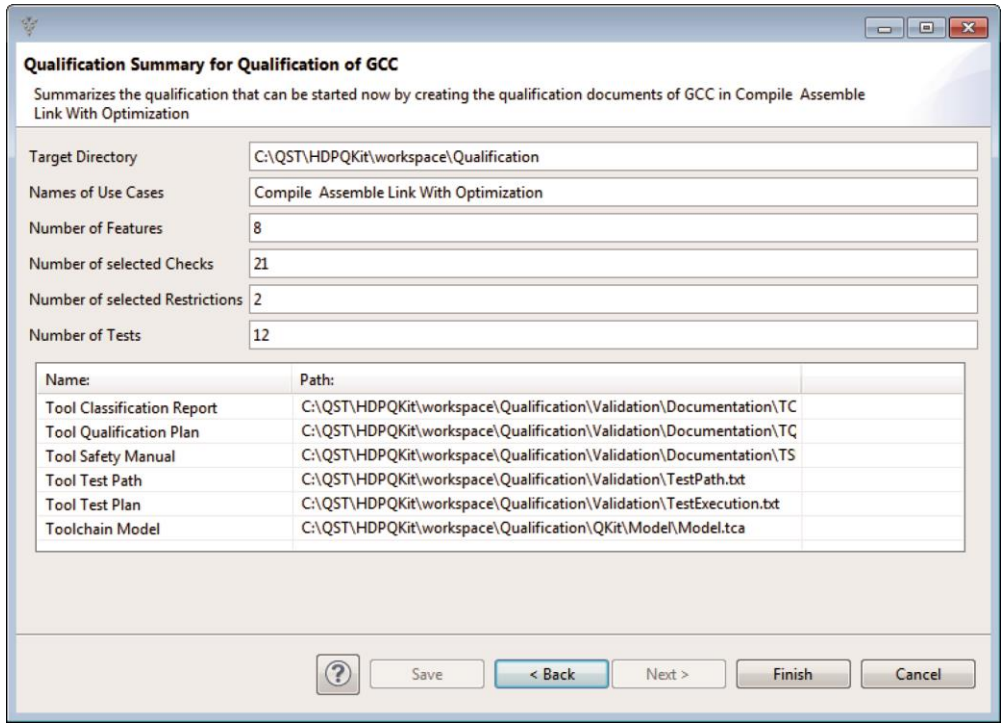
Tool Qualification Report

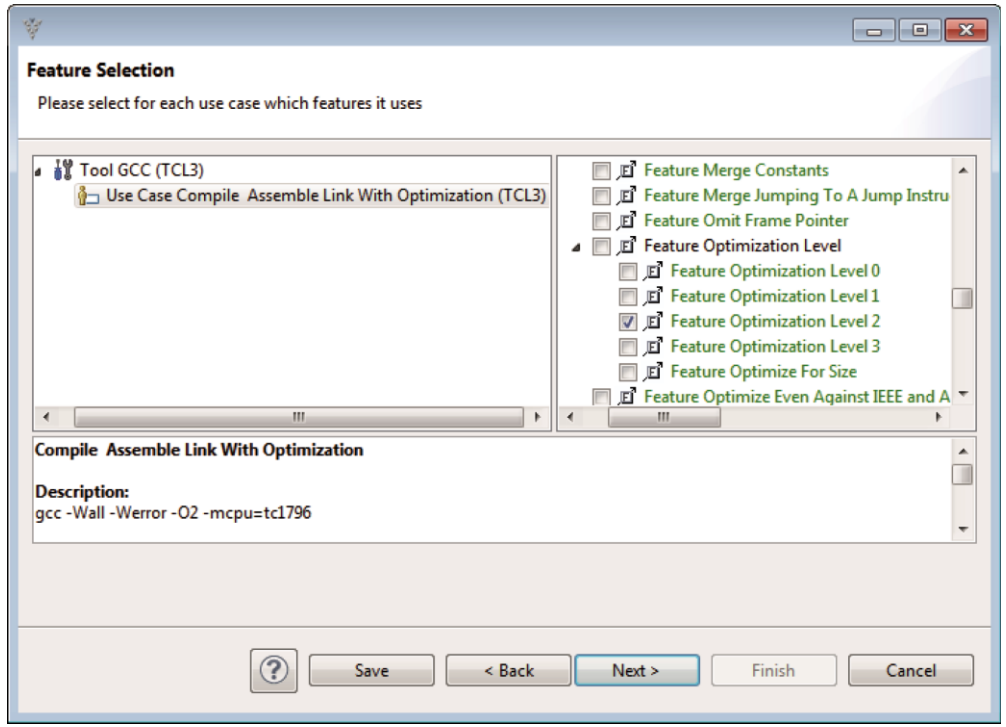
Generated Documents

- Use Cases and features that have been qualified
- Test environment
- Test results and analysis for test cases with not PASS result
- Executed qualification process

QKIT GUI

Use Case Selection and Modification





Questions?

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Thank You