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

QST

- 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

TAU

- 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

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