QKIT Overview
Compiler Qualification Kit
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
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
Process to a Certified Compiler

(Basic) Workflow in practice

Customer

- Determine the use case

HighTec

- Qkit process
- Safety documents

TÜV

- ASIL-D compiler certification

Use-Case
- Define compiler version
- Specify compiler options
- HostOS version

1. Standard test suites
   - SuperTest Rembrandt
   - Perennial, Nullstone, DejaGNU, ...
2. Customized tests

Generated documentation
- Tool Qualification Report
- Tool Safety Manual
- Tool Qualification Plan
- Tool Classification Report
QKIT GUI
Use Case Selection and Modification
Questions?
Let Us Hear You!

www.hightec-rt.com
support@hightec-rt.com
sales@hightec-rt.com