HighTec Development Platform
Multi-architecture C/C++ Compiler

Safety Multicore Development Suite
COMPILER
BUILD TOOL

Any Architecture. Any Device.
HighTec Core Products
Development & Consulting

COMPILER
BUILD TOOL

PXROS-HR
REAL-TIME OS

QKIT
TOOL QUALIFICATION

CONSULTING
DESIGN & SUPPORT

Safety Multicore Development Suite
C/C++ Compiler Overview
Core of the Safety Multicore Development Suite

- HighTec leading optimization technology
- Advanced multicore support at linker level
- Customer-specific Frozen Versions
- Long-term maintenance & availability
- Advanced bug scanning support
- Certified quality management process
HighTec Leading Optimization Technology

General Optimization Features

› Supports parallel compilation process
› Multiple performance levels to optimize speed and code size
› Multi-level optimization process
  › Global optimizer
  › Target-specific optimizer

Fastest build system on the market
HighTecLeading Optimization Technology

Target Specific Features

› PowerPC
   › Mix of NON-VLE and VLE var. length encoding instructions
   › Legacy NON-VLE to equivalent VLE code translation
   › Supporting VLS, SAT, LSP and pipeline optimized dual issue
   › Small data area optimization

› TriCore/Aurix
   › Absolute addressing mode, circular
   › Small data area optimization
Advanced Multicore Support at Linker Level

Smart Approach to Multicore

- Enables to map code and data to different cores easily
- No source code modifications are necessary
- Allows straightforward re-use of existing SW modules
- Facilitates single to multicore migration of legacy code
- Hide-and-visibility concept used to handle data exchange between the cores.
Hide-and-visibility Concept

Keep Complexity Under Control

- Defines a clear interface among the cores
- Only exported symbols are visible outside the core
Customer Specific Frozen Versions

Control Your Own Compiler Release

- Minimizes the impact of compiler changes to a customer SW
- The customer decides
  - What updates and customized bug fixes to include
  - When new QA cycle will be run

Enables a complete control over the compiler life cycle
Advanced Bug Scanning Support

Image Inspection

› A unique feature to support corrective actions in case a critical bug is discovered in the toolchain

› HighTec provides a custom tool to scan the user code and detect if the application is affected by the bug

› Helps significantly to make decision whether product or software in production needs to be updated
Certified Quality Management Process

Reliable Development Process

- ISO 9001:2000
  - Development, production, distribution and support of software products

- ISO 26262:2011(E)
  - The Tool is qualified to be used in safety-related software development according to ISO 26262:2011(E) standard
Code Coverage Analysis

HighTec Control Flow GNU Extension

- Enables to perform a branch coverage analysis without instrumented code
- Use `-dwarf-control-flow` option to preserve the control flow information in `.debug_control_flow` debug section
- The pls UDE debugger analyzes control flow data and generates branch coverage reports
Code Coverage Analysis

UDE Coverage Summary Chart Example
Eclipse-based Development IDE

Well known C/C++ Editor

- HighTec Project Wizard
  - Support of HW evaluation boards
  - Generates projects with all necessary files
  - Preconfigured for one-click build operation

- Board Support Package
  - Prepared low-level startup code and linker file
  - HTML documentation of SFR included
Multi-architecture Environment
HighTec Compiler – The Solution for Any Platform

› One-stop shop for all leading industrial and automotive platforms
› Support for advanced peripherals: GTM/MCS, HSM...
Questions?
Let Us Hear You!

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Thank You