



The Right Compiler for Model-Based Development



HighTec: Tools, Services, Software

Compiler:

- C/C++ and Rust

Safety Multicore OS

- PXROS-HR

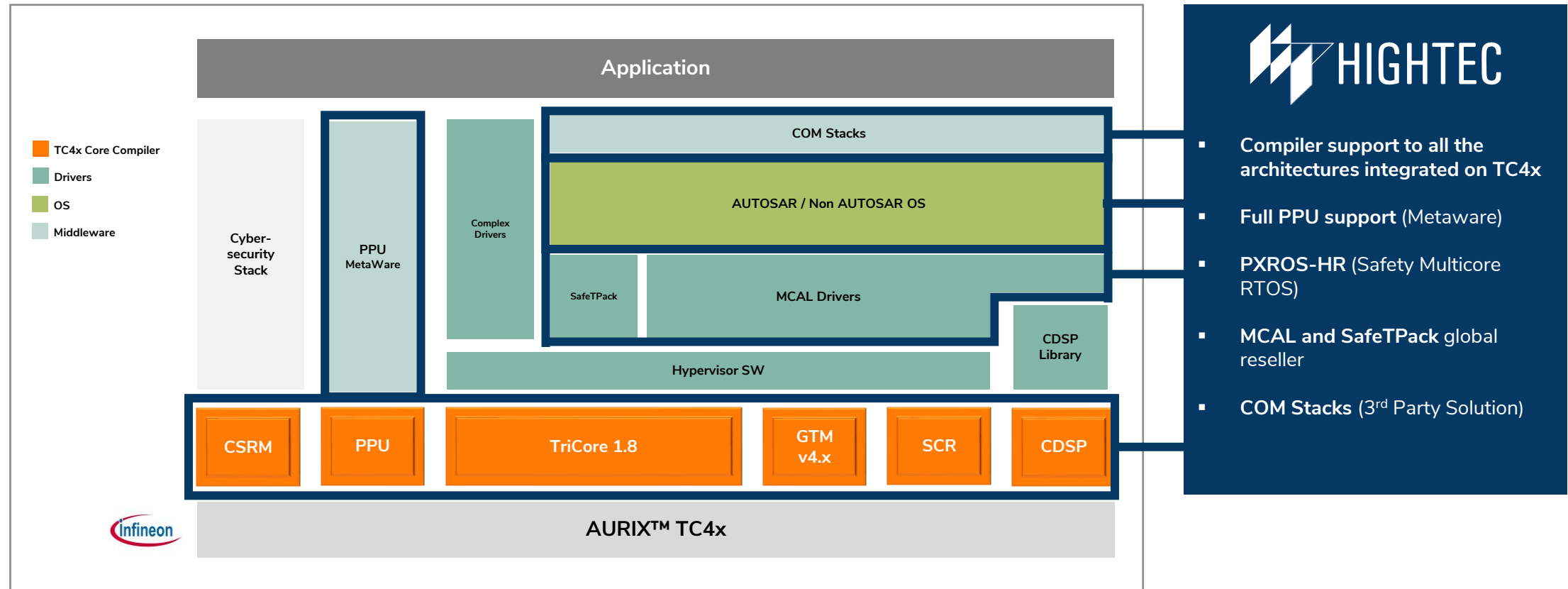


ISO 26262 ASIL D



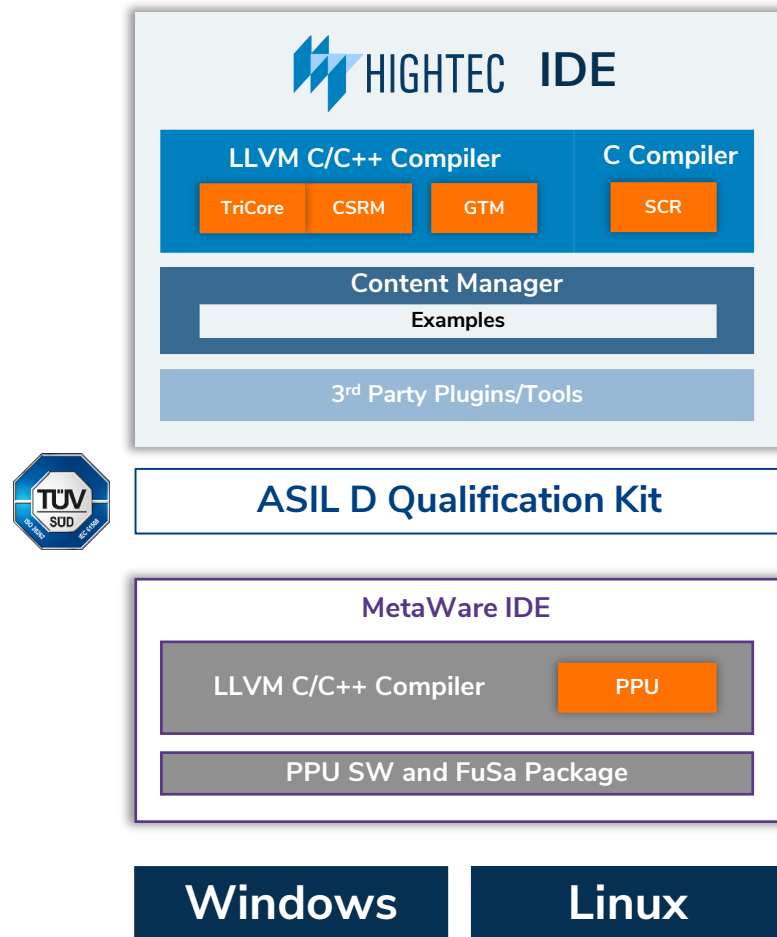
- Preferred Design House

TC4x and HighTec SW Ecosystem



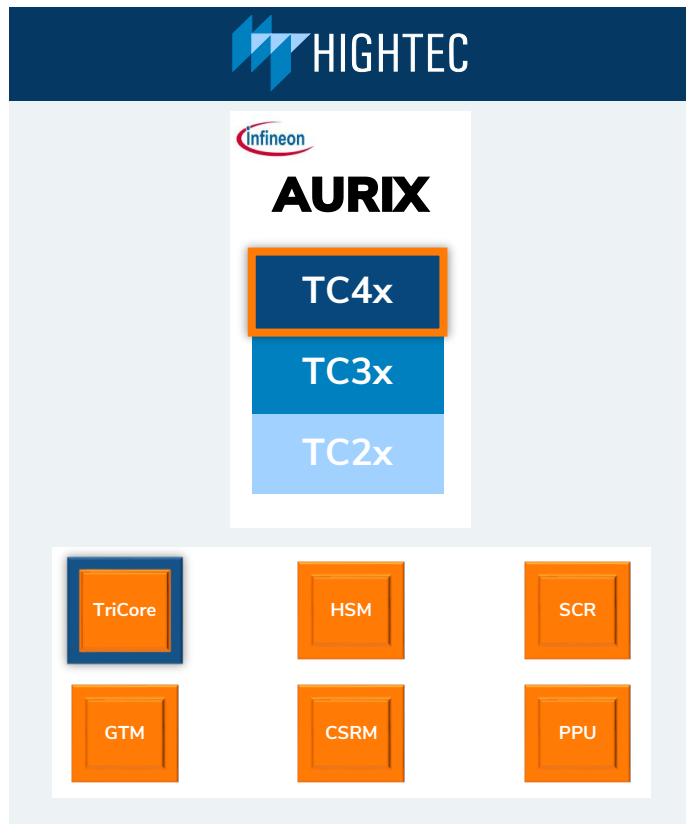
TC4x: Compiler Tools

AURIX Toolchain, IDE, Content Manager



- ❑ **Compiler** support for **all** the architectures integrated on TC4x (TriCore, CSRM, GTM, SCR, PPU)
- ❑ **Full PPU support** via Synopsys MetaWare
- ❑ **IDE** that supports all AURIX family (TC2x, TC3x, TC4x), Windows and Linux supported
- ❑ **Content manager**, providing examples (simple and advanced) for all the core architectures on TC4x and AURIX family
- ❑ **ISO 26262 ASIL D Qualification Kit**
- ❑ **Supports the latest language standards (C++14/C++17)**

TC4x: TriCore TC1.8 C/C++



- Based on the latest **LLVM Open Source** infrastructure
- Short build times, **high code density**, fast execution speed
- ILLD and MCAL **optimizations**
- **Double precision floating point** support
- **Virtualization** – Hypervisor support
- **128-bit** load and store support



ASIL D Qualification Kit

TC4x: PPU



MetaWare IDE

- Scalar C/C++
- Vector C/C++
- Open CL C

- NN SDK

- Runtime
- Libraries (DSP, BLAS/LAPACK, MATLAB)

- IPC framework
 - Bare metal
 - AUTOSAR CDD
 - PPU Dispatcher

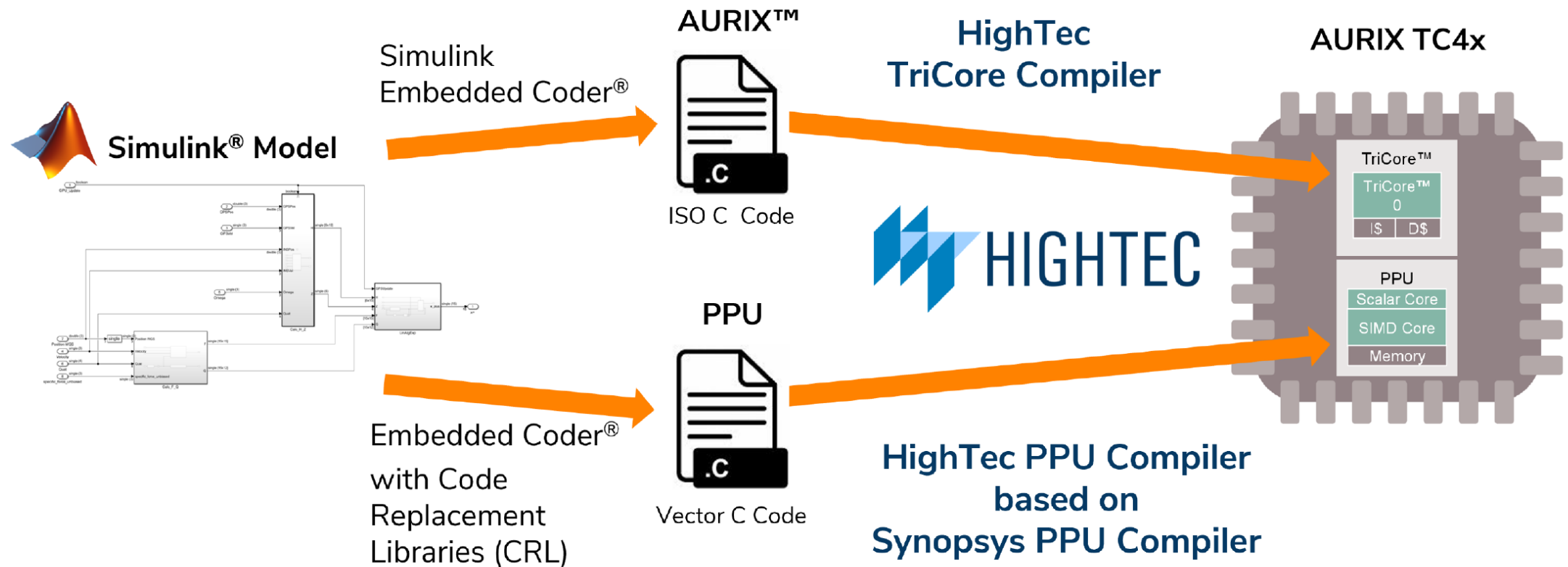
FuSa Packages

Debugger / nSIM

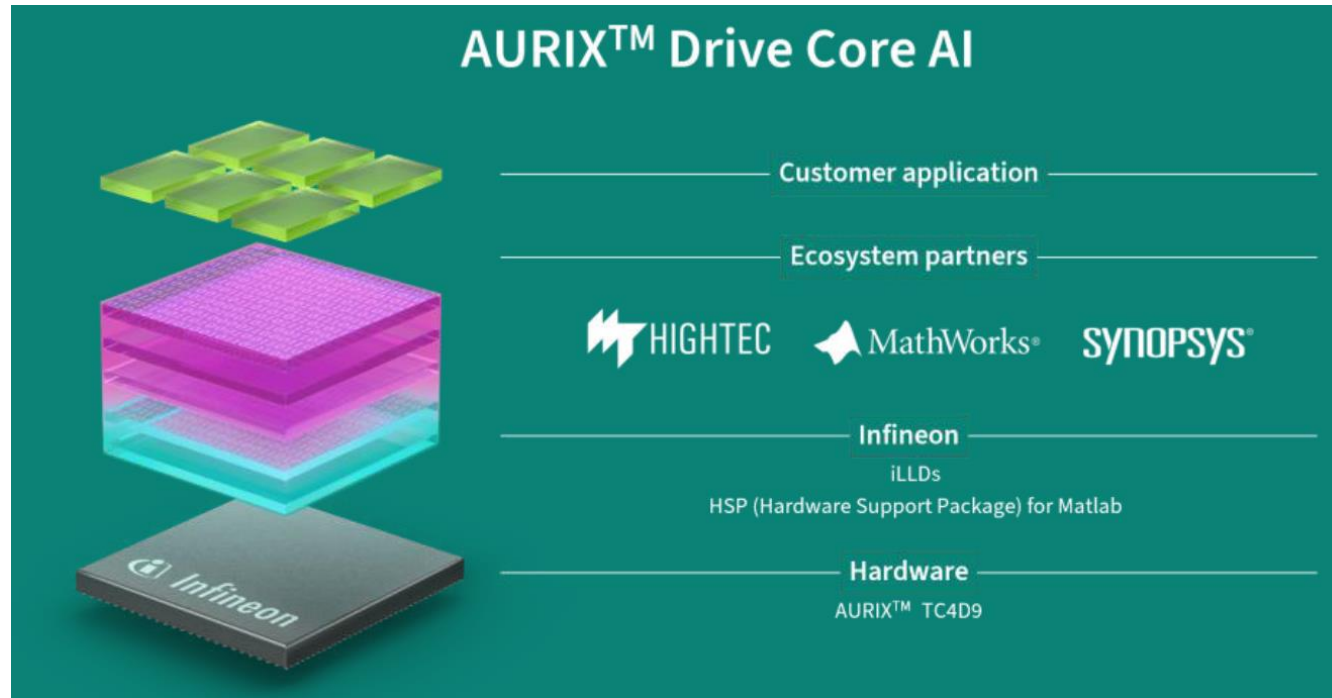
- ❑ **Complete PPU ecosystem covered**
- ❑ **Developed by Synopsys, supported and distributed by HighTec**
- ❑ Compiler toolchain uses the **LLVM technology**
- ❑ Straightforward integration with HighTec's compiler solutions
- ❑ Libraries of **optimized linear algebra** and **math functions**
- ❑ **OpenCL C-Based** optimized implementation
- ❑ **Supporting material** with diverse complexity and applications (incl. Simulink examples)

Model Base Development

General Overview



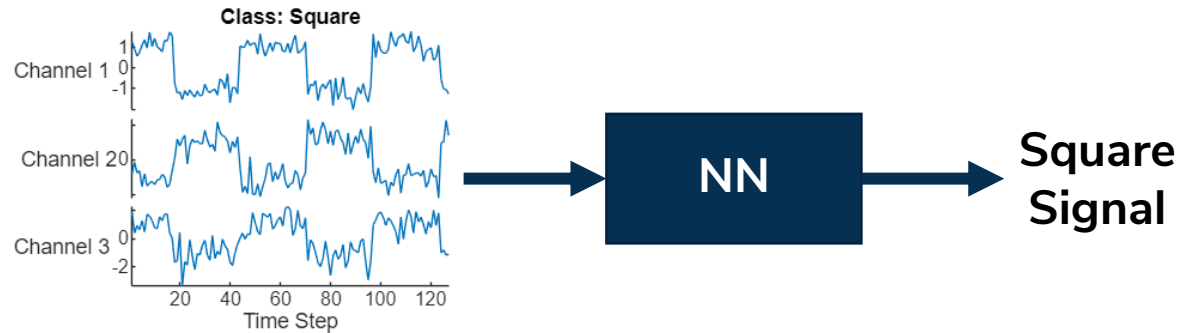
Drive Core AI Bundle



- Infineon, MathWorks, Synopsys and HighTec worked together to develop the Drive Core AI Bundle
- HighTec TriCore LLVM C/C++ compiler
- The MetaWare Compiler and libraries for the PPU
- Ready to use Simulink example projects including an AI example
- **Detailed** getting started documentation

Signal Classifier Example

General Overview

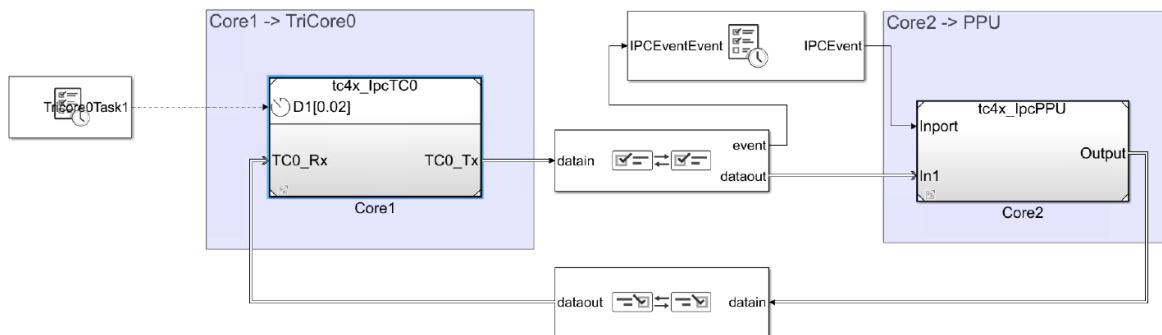


- **Goal:** Through a trained NN identify the type 3-channel signals

■ Top model view:

- **TriCore**(HighTec TriCore LLVM Compiler): generates analog-like signals, handles GPIO, sends data via IPC
- **PPU** (MetaWare LLVM Compiler): runs neural network classifier and returns class result

Top Model View



Key Takeaways



- **Compiler support for all TC4x architectures:** TriCore, CSRM, GTM, SCR, and PPU
- **Drive Core AI bundle** integrates HighTec LLVM (TriCore) and MetaWare (PPU) into a single workflow for a model-based development
- **Complete PPU ecosystem covered**
- **Ready-to-use examples and documentation** reduce setup time and speed up evaluation
- **Scalable path** from model-based prototyping to project development

Automotive Grade Solution - ISO 26262 & ISO 21434



Thank You



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Get the Drive Core AI bundle at:

HighTec:

<https://hightec-rt.com/support/license/drivecore-ai-ppu>

Infineon (IDC):

<https://softwaretools.infineon.com/tools/com.ifx.tb.tool.auxdrivecoreai>