AURIX Microcontroler Safety Integration

INTELLIGENT & CYBER-PROTECTED SAFETY-CRITICAL SYSTEMS

We Accelerate Product Commercialization

What is the Aurix TriCore ?

The AURIX TriCore (TC2/TC3XXX) is the Infineon's Microcontroller based platform specifically designed for safety-critical applications. AURIX microcontroller is key to solve **certification challenges of EV and AV** providing unique combination of features such as performance, scalability, **safety and security.**

Built-in safety and security features

The AURIX is designed to meet the highest safety and security standards in the automotive industry, such as **ISO 26262 ASIL D** and **ISO 21434 Cybersecurity**

High processing power

The AURIX has multiple high-performance CPU cores that can process large amounts of data quickly and efficiently.

High reliability and durability

Designed to operate reliably in harsh automotive environments, with features such as temperature and voltage monitoring and **built-in fault detection and correction mechanisms**.

The integration challenges

- **Implementation of Assumption of Use**
- **Safety Mechanism Configuration & Integration**
- **Integration of Documentation and Traceability**
- **Infineon qualified tools for safety-critical development activities**

The AURIX Tricore is a Safety Element out of Context (**SEooC**) in compliance to ISO 26262. Nevertheless, systems makers must provide evidence of a systematic and structured approach to integrate AURIX in-context of the intended use and its respective safety objectives. **Integrating and configuring** all the powerful built-in AURIX **safety mechanisms** according to **AURIX Safety Manual** can be challenging especially in **design, integration, and verification** activities.

Developers **must ensure** that the proposed **system architecture supports the implementation of Assumptions of Use (AoU)** of Safety Manual. AURIX can be configured and operated in the **BareMetal mode** or the **RTOS modes** to address the different performance requirements. Developing self-testing and setting configuration of AURIX by using **SafeTlib** to ensure the correct integration of AURIX.

CS GROUP

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Our Offer

CS Canada is a major partner to OEMs & Tier 1 developing autonomous and electrical technologies. Our **engineering teams** and **safety experts** have in-depth experience in a variety of industries to **support you in integrating Aurix** microcontroller safety integration as per **ISO 26262, IEC-61508** or **ISO 214343** using advanced and cost-effective techniques.

Solutions Integration

Implementation of Infineon Guidelines

- Safety comprehension : HW Safety Feature, Safety Mechanisms, FMEDA
- Safety Manual Description

Environment setup

- IDE and Compilation tool-chains for C/C++, Tasking
- Debugger configuration
- CICD pipeline and automatic build
- Automated regression testing

Software Product Integration

- **Embedded SW development in C/C++** through various tools
  - UML Support
  - Infineon Low-Level Driver configuration
- **MC-ISAR package integration support**
  - AUTOSAR BSW development
  - MCAL Configuration review and integration
- **Safety Drivers Integration Support using RTOS**
  - **SafeTpack** : PFM, Watchdog & TLF configuration
  - **SafeTlib** : Safety Manual & Safety Case - Test framework
  - **SafetyCore**
- Traceability and documentation support

Integration of the AoU and Safety Requirements

- SW safety architecture and integration
- Integration and DevOps

Functional Safety for Aurix

ISO 26262 compliance & documentation

- Documentation to show evidence and prove the ISO 26262 compliance of the Aurix chip integration: **HARA** - **Safety Concept & Safety Plan** - **V&V plan & Test reports**
- Traceability and Integration manual for AURIX AoU

Safety Analysis at the system, HW and Software level

- Bottom Up analysis (**FMEA**) - Top- Down Analysis (**FTA**) - Dependant Failure (**DFA**) - **FMEDA**

Test & Verification at the SW level

- Static code analysis (AUTOSAR, MISRA-C)
- Integration testing - Functional testing - Fault injection testing - Unit Testing

Cybersecurity for Aurix

Achieve product certification under the ISO/SAE 21434 standard.

- **ISO 21434 Gap Analysis**
- **CSMS Implementation**
- **Threat Analysis and Risk Assessment (TARA)**

Security Features Implementation

- Hardware Security Module (HSM) system integration
- Secure Hardware Integration (SHE) software integration

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