

## **AURIX™ TC3xx Workshop: 32-Bit Multicore Microcontroller Family (Aurix-2G Second Generation) - Face-to-Face Training**

### **Objectives**

You know the architecture, basic on-chip peripherals and the features (especially related to multicore and safety extensions) of the AURIX™ device family.

You get to apply low-level drivers for this hardware, adapt examples as required and test them with a debugger.

Numerous exercises make this training a practice-oriented software workshop.

### **YOUR BENEFIT:**

Efficient and compact jump-start into the overall topic

Practical tips on multicore and safety

Download of exercises

### **Participants**

Hardware and software architects, hardware and software developers, test engineers // IMPORTANT NOTE: A valid NDA with the chip vendor is a pre-requirement to attend the Aurix-2G training course.

### **Requirements**

ANSI-C knowledge; experience in microcontroller/microprocessor system programming and architecture

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### **Content**

#### **Infineon AURIX™ 2G Architecture**

- Multicore architectural blocks
- Interconnectivity
- Consequences for software architectures

#### **CPU Subsystem**

- Multicore instruction set extensions
- Registers files and context switching
- Memory protection unit (software monitoring)

#### **Internal Connectivity**

- Crossbar and peripheral bus
- CPU clustering
- Performance aspects for software

#### **Memory**

- Memory map
- Configuration options
- Cache and software handling
- Types
- Hierarchy
- Test

**Infineon Low-Level Drivers: Overview**

- Configuration structures
- Application programming interface
- Library distribution
- Frameworks and demos

**Ports****Exceptions and Handling**

- Traps (hardware and software)
- Interrupts (hardware and software)
- Vector tables
- Broadcast software interrupts (core synchronization)
- External interrupts

**Direct Memory Access Controller DMA**

- Move engines
- Triggering (hardware and software)
- Advanced features (software relaxation)

**Timer**

- System timer (STM)
- General purpose timer 12 (GPT12)
- Capture compare unit (CCU)
- Watchdog timer (WDT)
- Temporal protection timer (TPS, exception timer)
- Generic timer module (GTM) - overview

**Safety and Security**

- Safety measures
- Safety management unit (SMU)
- Protection mechanisms
- IO monitoring
- Hardware security module (HSM) - implementation overview

**Multicore Aspects**

- Startup and boot
- Low power options
- Communication and synchronization
- Intrinsic usage in C/C++
- Tool aspects (compiler, linker)
- Debugging (AMP, SMP)

**System Control**

- Reset: sources, types and consequences
- Boot: software configuration and modes
- Clocking
- Emergency stop requests

**Power Management System (PMS)**

- Supply generation options
- Embedded voltage regulators
- Standby and wakeup
- Die temperature sensor

**Synchronous and Asynchronous Standard Peripherals**

- Micro second channel (MSC)
- Serial peripheral interface (QSPI)
- Inter IC interface (I2C)
- UART (ASCLIN)

**Sensor Interfaces**

- SENT
- PSI5
- PSI5-S

**Analog To Digital Converter**

- EVADC
- EDSADC
- Enhanced features offloading software

**Automotive Interfaces: Overview**

- LIN
- CAN
- FlexRay®

**High Speed Serial Link Interface (HSSL)****Ethernet: Overview/Demo****Debug**

- Interfaces
- Tracing
- Multicore aspects

**Exercises**

- Numerous exercises will be conducted on an Infineon AURIX™ board, covering the following aspects: use of low-level drivers, protection mechanisms, interrupt controller, DMA controller, system timer, port, multicore aspects, monitoring, performance measurement etc.

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Please note that the Aurix-2G training does not explicitly cover ADAS specific blocks. If required, please contact our service office prior to the training, phone +49 (0)89 450617-71.

**FACE-TO-FACE TRAINING**

<b>Date</b>	<b>Price *</b>	<b>Duration</b>
24.03.2025 – 28.03.2025	3.500,00 €	5 days

\* Price per attendee, in Euro plus VAT

Training code: E-AURIX2G

**Live Online - English**

<b>Date</b>	<b>Duration</b>
09.09. – 13.09.2024	5 days
20.01. – 24.01.2025	5 days

**Face-To-Face - German**

<b>Date</b>	<b>Duration</b>
09.09. – 13.09.2024	5 days
11.11. – 15.11.2024	5 days
24.03. – 28.03.2025	5 days

**Live Online - German**

<b>Date</b>	<b>Duration</b>
09.09. – 13.09.2024	5 days
20.01. – 24.01.2025	5 days

**Coaching**

Our coaching services offer a major advantage: our specialists introduce their expertise and experience directly in your solution process, thus contributing to the success of your projects.

We will be happy to provide you with further information or submit a quotation tailored to your requirements.