MICROSAR Multi-core

Agenda VectorAcademy

Delivery Format:	This Course is offered in Classroom **or** Remote Format
Duration:	Classroom: 2 days Remote: 12 hours
Target Group:	ECU developers, Software Architects
Prerequisites:	Participation in "AUTOSAR Classic Platform Course" or good knowledge about AUTOSAR Classic Platform
Goal:	Obtain an overview on the usage of Multi-core processors in an AUTOSAR based ECU, get insight into the configuration of the MICROSAR basic software and learn how to achieve an optimized multi-core processor configuration.

1. **Theory About Multi-core and Concurrency**
   - Motivation to use multi-core ECUs
   - Law of Amdahl and Gustafson (theory and speed-up)
   - Parallel environment and the arising side-effect

2. **AUTOSAR Multi-core Concepts**
   - General AUTOSAR concepts applied to multi-core
   - Feature of operating system (OS) and RTE for multi-core
   - MICROSAR optimizations for OS and RTE

3. **Multi-core Exercise**
   - Extend SW design for multi-core
   - BSW integration for multi-core with synchronized start up sequence
   - Discussion of fundamental MICROSAR multi-core concepts

4. **Multi-core Basic Software Integration**
   - Start-up and shut-down phase in multi-core
   - MICROASR BswSplit feature
   - BSW proxies and satellite modules in MICROSAR

5. **System Design Patterns for Multi-core Applications**
   - The multi-core cookbook – software design recommendations
   - Design patterns for parallelization
   - Evaluation of application design supported by tools