

# AUTOSAR Fundamentals

## Agenda VectorAcademy

<b>Duration:</b>	1 Day
<b>Target Group:</b>	Project Leader, Developer, Users
<b>Prerequisites:</b>	Knowledge about software development for automotive systems
<b>Goal:</b>	General view of AUTOSAR

### 1 | Overview and Aims 0.5 h

- > Motivation and aims
- > Organization, schedule

### 2 | Introduction to AUTOSAR 1.5 h

- > Basic principles and technical concepts
- > SWC (software components) and RTE (runtime environment)

### 3 | AUTOSAR RTE 1.5 h

- > Interfaces with application and basic software
- > Mode of operation of the RTE

### 4 | AUTOSAR BSW 0.5 h

- > Explanation of the most important BSW (basic software) concepts

### 5 | Methodology of AUTOSAR 1.0 h

- > Overview and data exchange formats (ECU Extract, ECUC, ...)
- > Methodology from the view of an OEM and supplier

### 6 | AUTOSAR in Practice 1.0 h

- > Development of AUTOSAR systems demonstrated with Vector's DaVinci Tool Suite

### 7 | Implications and Migration 0.5 h

- > Presentation of different migration scenarios from the point of view of the application and the BSW

# AUTOSAR 4 in Practice

## Agenda VectorAcademy

<b>Duration:</b>	3 Days
<b>Target Group:</b>	ECU Developers of automobile suppliers and OEMs
<b>Prerequisites:</b>	Participation in the AUTOSAR seminar or good AUTOSAR knowledge
<b>Goal:</b>	Handling of Vector AUTOSAR solution

### 1 | Overview and Introduction

0.75 h

- > Relation between AUTOSAR, the Vector Implementation MICROSAR and the DaVinci Tools (Developer, Configurator)
- > Mapping between AUTOSAR methodology and the Vector tool chain

### 2 | Operating System

1.0 h

- > Basic understanding of the mediums and mechanisms of the AUTOSAR operating system
- > Tasks, alarms, events, etc.
- > AUTOSAR OS Scalability Classes

### 3 | Software Components (with Exercises)

2.25 h

- > Handling of DaVinci Developer and RTE
- > Design of software components, ports, connections, task mapping and generation of the RTE

### 4 | Input and Output (with Exercises)

3.5 h

- > Data exchange with I/O modules
- > Configuration of the basic software for the I/O with the DaVinci Tools (Developer, Configurator)

### 5 | Communication (with Exercises)

3.25 h

- > Data exchange over CAN
- > Configuration of the basic software for the communication with the DaVinci Tools (Developer, Configurator)

# AUTOSAR 4 in Practice

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### 6 | State Management and System Services (with Exercises)

2.25 h

- > Sleep and wake up of ECUs and bus
- > Roles of the modules ComM, EcuM and BswM
- > Configuration of the Mode Manager Modules in the basic software

### 7 | Bus Systems (material for reference)

- > Understanding the conceptual differences of the bus systems and the importance of the configuration of the basic software
- > CAN, LIN, FlexRay, Ethernet

### 8 | Nonvolatile Memory Access (with Exercises)

3.5 h

- > Access to nonvolatile memory
- > Configuration of the basic software for nonvolatile memory access

### 9 | Diagnostics (with Exercises)

4.5 h

- > Diagnostics with AUTOSAR
- > Configuration of the diagnostics basic software with the DaVinci Tools (Developer, Configurator)