

ISO 24089:2023 Automotive Software Updates



Course Duration: 2 Days - 8 Hours/day

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Seminar Content

- Recent advances such as Software Defined Vehicle (SDV) and Automated Driving Systems (ADS) will require large amounts of software (SW) in a vehicle that must be configured, assembled, packaged, and updated in a safe and secure manner.

This two-day course is designed to provide the knowledge and skills required to be an active member of automotive software update teams in an organization. The course material covers the ISO 24089 standards and is supplemented with additional material to make it self-contained.

This course combines lecture topics along with in-class group exercises to let you put what you are learning into practice. Concepts are reinforced by a series of team breakout exercises on critical aspects of software update engineering.

Learning Objectives

- List and apply the main processes at the Organizational and Project levels required for automotive software
- Review and understand the structure, objectives and requirements of all clauses of ISO 24089
- Review and understand the responsibility of the organization performing the software update campaign to have governance in place so that the processes for software update engineering can conform to the requirements
- List and understand the requirements for the development of infrastructure that is used for software update campaigns
- List and understand the requirements for the functions needed for vehicles and vehicle systems to support software update campaigns
- List and apply methods to manage functional safety and cybersecurity risks that arise in a software update campaign
- List and understand the requirements for assembling the software update package, and verifying and validating its contents
- List and understand the requirements for identifying the targets of a software update campaign and obtaining vehicle configuration information

Course Competencies and Learning Objectives

Competency 01:

Organization of SW Update Campaigns and Involved Processes and Governance

LO 01: List and apply the main processes at the Organizational and Project levels required for automotive software

LO 02: Define the structure, objectives and requirements of all clauses of ISO 24089

LO 03: Describe the governance needed to ensure the processes for software update engineering conforms to requirements

Competency 02:

Infrastructure and Functionality Needed to Support Software Update Campaigns

LO 04: Define the requirements for the development of infrastructure that is used for software update campaigns

LO 05: Define the requirements for the functions needed for vehicle and vehicle systems to support software update campaigns

Competency 03:

Vehicle Risks That Arise in a Software Update Campaign

LO 06: List and apply methods to manage Functional Safety and Cybersecurity risks that arise in a software update campaign

Competency 04:

Assembling the Software Update Package and Identifying the Targets of a Software Update Campaign

LO 07: Define the requirements for assembling the software update package, and verifying and validating its contents

LO 08: Define the requirements for identifying the targets of a software update campaign and obtaining vehicle configuration information

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Seminar Outline

Day 1

- ✦ Chapter 1: Introduction and Overview to ISO 24089
- ✦ Purpose, Scope and Framework
- ✦ Chapter 2: Organizational and Project Level Processes for Software Update Engineering
- ✦ Organization-specific Rules and Processes
- ✦ Quality, Functional Safety, and Cybersecurity Management for SW Update Engineering
- ✦ Organizational Audit for Process Compliance
- ✦ Planning a SW Update Project
- ✦ Managing and Storing of Information Regarding the SW Update Project
- ✦ Preserving the Integrity of SW
- ✦ **Breakout Exercise 1: Company and Project Level Processes for SW Updates**
- ✦ Chapter 3: Infrastructure Level
- ✦ Management of Cybersecurity Risks
- ✦ Collecting and Managing Vehicle Configuration Information for the Infrastructure
- ✦ Collecting and Distributing Information about SW Update Campaigns
- ✦ Functionality for Creating, Managing, and Distributing SW Update Packages
- ✦ Chapter 4: Vehicle and Vehicle Systems Level
- ✦ Managing Safety and Cybersecurity Risks for SW Update Operations
- ✦ Managing Vehicle Configuration Information
- ✦ Communicating SW Update Campaign Information
- ✦ Enabling SW Update Operations, Verifying SW Update Packages
- ✦ **Breakout Exercise 2: Planning a SW Update Campaign**

Day 2

- ✦ Chapter 5: Functional Safety and Cybersecurity Risks
- ✦ Functional Safety Risk Assessment (ISO 26262)
- ✦ SOTIF Risk Assessment (ISO 21448)
- ✦ Cybersecurity Risk Assessment (ISO/SAE 21434)
- ✦ Verification of Functional Safety and Cybersecurity Risk Mitigation in the SW Update Package

- ✦ **Breakout Exercise 3: Mitigating FS and Cybersecurity Risks**
- ✦ Chapter 6: Software Update Package
- ✦ Identifying the Target(s) and Contents of the SW Update Package
- ✦ Assembling the SW Update Package
- ✦ Verification and Validation of the SW Update Package
- ✦ Release of the SW Update Package
- ✦ Chapter 7: Software Update Campaign
- ✦ Requirements for Identifying the Targets of a SW Update Campaign
- ✦ Obtaining Vehicle Configuration Information
- ✦ Distributing the SW Update Package
- ✦ Preparing, Executing, and Completing SW Update Campaigns
- ✦ **Breakout Exercise 4: Preparing a SW Update Package and Associated Campaign**

Who Should Attend

This course is designed for those involved in the design, development, and production of electrical and electronic based vehicle products, including the systems, software and hardware engineers, and managers. Basically, all those responsible for the development and implementation of hardware and software systems in motor vehicles.

Participants should be, or plan to be, actively managing, or involved in, or aware of electrical and/or electronic devices, sensors, systems, or elements that are incorporated in motor vehicles. They should also have the abilities, education, and experience required for the above roles.

Seminar Materials

Each participant will receive a seminar manual including breakout exercises.

Note: Omnex does not provide copies of standard(s) during training courses, but clients are encouraged to have their own copy.

Pre-Requisite

Participants should be involved in or aware of software and hardware development as it relates to the motor vehicle industry. A basic understanding of the ISO 26262, ISO 21448, and ISO/SAE 21434 standards is recommended.

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