

# Diagnostics, UDS and CANdelaStudio

## Agenda VectorAcademy

<b>Delivery Format:</b>	This Course is offered in Classroom <b>or</b> Remote Format
<b>Duration:</b>	Classroom: 2 days Remote: 10 hours
<b>Target Group:</b>	Users of CANdelaStudio, users of diagnostics
<b>Prerequisites:</b>	None
<b>Goal:</b>	Introduction to vehicle and fleet diagnostics, working with CANdelaStudio

### 1. Vehicle and Fleet Diagnostics

- > Trends in Automotive Industry, Motivation of vehicle and fleet diagnostics
- > Diagnostics with an Embedded System, Diagnostics within an ECU

### 2. UDS

- > DIDs, Read/Write Data by Identifier
- > I/O Control, Routine Control, UDS Services

### 3. Communication

- > Diagnostic addressing, Sessions
- > Timings

### 4. Security

- > Security Access
- > Authentication and Authorization

### 5. Fault Memories

- > DTCs and Events, Snapshots and Extended Data

### 6. CANdelaStudio

- > Template concept
- > ECU diagnostic design

### 7. Diagnostic Design

- > Create a simple ECU diagnostic specification
- > Diagnostic Instances, Parameters, Data Types, Exercises

### 8. Fault Memories in CANdelaStudio

- > DTCs and Events
- > Snapshot Data and Extended Data, Exercises

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### 9. Communication in CANdelaStudio

- > Diagnostic addressing
- > Sessions

### 10. Security

- > Security Access
- > Authentication and Authorization

### 11. E/E Systems Engineering

- > Diagnostics in PREEvision, Diagnostic synchronization between PREEvision and CANdelaStudio
- > Diagnostic connection from E/E System Description

### 12. Variants

- > How to create ECU variants and how to use variant identification feature
- > Compare variants

### 13. AUTOSAR Classic

- > Diagnostics in AUTOSAR Classic
- > Workflow with CANdelaStudio, DaVinci Configurator/Developer, DEXT

### 14. CANoe

- > Diagnostics in CANoe

### 15. CANoe.DiVa

- > Validation of diagnostic implementation
- > Protocol tests, Application tests, Software update tests

### 16. ODX

- > Tester parameterization with ODX
- > ODX Export

### 17. OBD with CANdelaStudio | Optionally, material is distributed in the training

- > OBD with CANdelaStudio

### 18. AUTOSAR Adaptive with CANdelaStudio | Optionally, material is distributed in the training

- > AUTOSAR Adaptive with CANdelaStudio

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### 19. Import

- > Import of parameters and conversion from ODX, A2L, CDI, CANdb, FIBEX, AUTOSAR System Description
- > Import of DTCs

### 20. Miscellaneous | Optionally, material is distributed in the training

- > Jobs, Vehicle System Groups, Boot Variant
- > CDD, DEXT and ODX

### 21. DoIP

- > Ethernet, Automotive Ethernet
- > DoIP

### 22. AUTOSAR Adaptive

- > Overview and concept
- > Diagnostics and Software Update

### 23. UDS Expert Topics | Optionally, material is distributed in the training

- > Service 2A, 2C and 86
- > UDS on J1939 in Trucks, Off-Highway and Marine Industry
- > Heavy Duty

### 24. OBD

- > OBD II, OBD on UDS and WWH-OBD
- > Concept of PID, MID, TID, Fault memory

### 25. Diagnostics on CAN or LIN | Optionally, material is distributed in the training

- > Addressing on CAN/CAN-FD
- > Transport protocol ISO TP
- > Diagnostics on LIN