

ANCIT



ANCIT

SOFTWARE DEFINED VEHICLES 4 WEEKS TRAINING (160 Hrs)

Company Confidential **ANCIT**

Software Defined Vehicle Course Agenda from ANCIT

Delivery Format	:	This Course is offered in Classroom or Online Format
Duration	:	160 Hours (4 Weeks)
Target Group	:	Automotive software engineers, embedded systems engineers, and DevOps teams
Prerequisites	:	Basic understanding of automotive electronics, embedded systems, Linux OS, and AUTOSAR
Outcome	:	Comprehensive knowledge of SDV, AUTOSAR, and SoC technologies along with Hands-on expertise in RTOS, Linux, Yocto, Android Automotive, and Docker containerization and the ability to implement and test OTA updates, AUTOSAR stacks, and virtualization.

Day 1. SDV Overview

- Why SDV, its goals, and challenges in implementation
- Enabling technologies and vehicle operating systems introduction

Day 2: Service-Oriented Architecture (SOA)

- Layers and integration with functional safety
- Overview of E/E architectures and SDV tech stack
- Introduction to Over-The-Air (OTA) architecture and updates

Day 3. System on Chip (SoC)

- Comparison of SoCs like JACINTO, S32G2XX, RCAR, and NVIDIA ORIN
- Architecture, applications, and challenges in implementation

Day 4. Virtualization Concepts

- Evolution of vehicle architecture
- Vehicle OS layers: base layer, middleware, infrastructure, and hardware

Day 5,6,7: FreeRTOS and QNX Implementation:

- Understanding RTOS from NXP and implementing FreeRTOS on M7 core
- Inter-processor communication and comparison of QNX with Linux

Day 8,9,. Advanced Linux OS

- Linux kernel modules, system debugging, profiling, and building Linux systems
- Flashing and running an embedded Linux system on S32G274 (A53 cores)

Software Defined Vehicle Course Agenda from ANCIT

Day 10,11. Yocto Project

- Building and customizing Linux OS using Yocto and flashing on S32 board

Day 12. U-Boot

- U-Boot creation, configuration, and testing commands
- Loading files from FAT partitions and handling flash

Day 13,14. Android Automotive OS (AAOS)

- Building Android Automotive OS and customizing its Linux kernel
- HIDL (Hardware Interface Definition Language) and VHAL (Vehicle HAL) integration

Day 15,16. Classic AUTOSAR

- Architecture, communication stack, and Ethernet switch configuration
- DOIP (Diagnostic over IP) implementation

Day 17. SOME/IP and Adaptive AUTOSAR

- Implementing and testing SOME/IP with adaptive and classic AUTOSAR

Day 18. Data Distribution Services (DDS)

- DDS implementation and addressing challenges

Day 19. Containerization Using Docker:

- Docker installation, container management, and inter-container communication

Day 20. Over-The-Air (OTA) Updates

- Implementing OTA updates in ECU from an end-node perspective

ANCIT

SNO : 37 Gurusamy Nagar,
Codissia Road, Peelamedu, Coimbatore,
Tamil Nadu, India- 641004

+91-9840378602/ 9483541953

info@ancitconsulting.com

www.ancitconsulting.com

www.ancitedutech.com