BaselineSkills

SOFTWARE-DEFINED VEHICLES FUNDAMENTALS

SDV

UNDERSTAND THE SHIFT TO SOFTWARE-DEFINED VEHICLES

Understand the shift. Learn the architecture. Apply it in your organization.

Introduction to Software-Defined Vehicles helps professionals understand and navigate the shift towards Software-Defined Vehicles (SDVs). This course offers a clear definition of SDV, along with real-world applications and use cases. It also explores the underlying technologies that play a key role in SDV.

Course at a Glance

Course	Software-Defined Vehicles Fundamentals (SDV-FUND)
Duration	In-person classroom: 3 full days • Instructor-led virtual: 6 half days
Delivery	In-person Classroom • Instructor-led Virtual
Learning approach	Comprehensive study guide • Running case study • Class discussions and exercises • Role play

Why This Course?

Software-defined vehicles utilize a central computer to oversee various aspects of the vehicle, including performance, safety features, and user experience. This innovative architecture provides enhanced flexibility, efficiency, and customization options. Upon completion of the course, participants will have a deeper comprehension of the ongoing transformations within the automotive industry, and the influential role of software-defined vehicles in shaping the future of transportation — within manufacturing facilities and on the roads.

Three layers of learning

FOUNDATIONS	The foundational concepts and architecture of SDVs, covering challenges, key features and use cases.
TECHNOLOGY	Key enabling technologies for SDVs, such as E/E architecture, microservices, containerization, and over-the-air updates.
IMPLEMENTATION	Implementation strategies for SDVs, including digital-first approaches, shift-left strategies, and the transformative role of AI in future mobility.

Module 1 — Introduction

What is an SDV, and why does it matter now?

You will learn

- What is an SDV?
- SDV from different perspectives
- Challenges
- SDV domains
- SDV enabled feature examples

Module 2 — Reusing Developments in the IT Domain

Learning from the internet- and smartphone-led applications that got here first

You will learn

- Cloud native
- Loose coupling
- Microservices and APIs
- Containerization
- Building resilience — Chaos Monkey
- Learning from smartphone-led developments

Module 3 — Building Blocks of SDVs

The architecture underneath the shift

You will learn

- E/E architecture — today's architectures and evolving trends
- Service-oriented architecture and standards
- Container runtimes and APIs
- Common automotive APIs
- Workshop: the passenger welcome sequence (safety, homologation, testing)
- Micro-services and runtime mappings
- The modern tech stack
- Over-the-air updates, today and in the future
- The vehicle app store

Module 4 — Implementation Ideas for SDVs

Digital-first delivery, from strategy to the vehicle fleet

You will learn

- Digital first: multi-speed delivery and the software factory
- How to implement the shift left
- Autoverse, virtualization, and hardware-in-the-loop
- Engineering mules and development vehicles
- Fleet monitoring and system evolution
- Maturity stages of a vehicle
- Variant management
- Continuous homologation and managing global regulations
- Incumbent OEMs vs. disruptors

Module 5 — Using AI

Where AI actually fits in the SDV development lifecycle

You will learn

- Using AI for product innovation

- Using AI during software development
- Using AI in the “V” cycle

What You Will Be Able to Do

- Explain the foundational concepts and architecture of SDVs, including challenges, key features and use cases.
- Describe the key enabling technologies for SDVs — E/E architecture, microservices, containerization, and over-the-air updates.
- Discuss implementation strategies for SDVs, including digital-first and shift-left approaches.
- Identify the transformative role of AI in future mobility and across the development lifecycle.

Who Should Attend?

- Requirements Engineers
- Business Analysts
- Software Engineers
- Test Engineers

The course is tailored for individuals with a fundamental grasp of software development and cloud infrastructure services, primarily targeting those employed in the automotive industry.

Prerequisites

Some experience in the automotive domain will be useful.

Course Format

Duration	In-person classroom: 3 full days • Instructor-led virtual: 6 half days
Delivery	Both formats use the same materials: a comprehensive study guide with slides and detailed notes, a running case study, and class discussions and exercises throughout.

Why Learn with Baseline Skills?

- Practical exercises and a running case study, not theory alone.
- A comprehensive study guide with slides and detailed notes, usable as an on-the-job reference afterward.
- Real-world SDV scenarios drawn from actual automotive engineering practice.
- Learning from practitioners with automotive and training experience.

For Organizations — Build a Common Capability

Private, on-site classes on this topic are available. Focus on your organization's own issues, use your own templates in class, and save money too.

- A course focused on your organization's real SDV challenges
- The option to work with your own templates and materials in class
- The same comprehensive study guide and case-study approach as the public course

Frequently Asked Questions

Do I need programming experience to attend?

The course assumes a fundamental grasp of software development and cloud infrastructure services, primarily aimed at those already working in the automotive industry.

What's the difference between the in-person and virtual formats?

Both use the same materials — study guide, case study, and exercises. In-person runs as 3 full days; the virtual format is split into 6 half-days.

LEARN THE STANDARD • PRACTISE THE SKILL • APPLY IT AT WORK

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