



### HOW YOU CAN BENEFIT: AT A GLANCE

**After the seminar, you will be able to ...**

... understand future vehicle communication with other vehicles and the (V2X) infrastructure.

... assess risks in the field of IT security and V2X communication, and evaluate solutions.

**This seminar will provide you with ...**

... an overview of vehicle operating systems and their special features in terms of IT security.

... an overview of identity management in V2X communication in the critical area of ensuring the authenticity of security-relevant messages and privacy protection.

## IT SECURITY IN VEHICLE COMMUNICATION

Introduction to the topics of IT security risks and their handling in vehicle communication

### **The challenge: IT security risks due to increasing connectivity of vehicles**

New functions in vehicles are increasingly created through networked connections of control devices both interconnected between devices and with other external communication partners. As this new complexity also creates new possibilities for attacks on the safety of traffic participants, their privacy or on the business model of vehicle manufacturers, IT security aspects must be incorporated into vehicle development in a target-oriented manner. Thus, an understanding of security needs, attack paths and defense options in vehicles is necessary to implement appropriate early measures.

### **The solution: Knowing and understanding the risks and solutions for vehicle communication**

The workshop first covers the basic cryptographic mechanisms, presenting and discussing them, providing an introduction to the field of IT security in vehicle communication. Based on this, the participants familiarize themselves with the bus systems used internally in the vehicle, evaluating any possible improvements. For the vehicle-external side, examples of future V2X communication are considered and discussed in terms of risks and opportunities. This builds a fundamental understanding of the current problems, future risks and typical solutions to increase IT security in vehicle communication.



## INFORMATION OVERVIEW

**Course:** IT Security in Vehicle Communication

**Prerequisites:** Basic knowledge of vehicle IT

**Duration:** 1 day in class

**Number of participants:**  
max. 16 people

**Event location:** Garching in Munich, in-house on request

**Cost:** €600

**Organized by:**



## OUR SPEAKERS

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## Contents:

- IT security aspects in V2K communication
- Protection against manipulated messages
- Protection of privacy
- Security format of V2X messages: ETSI TS 103 097
- Exclusion of participants in cases of abuse
- Trust Assurance Levels (TAL) as an example of an IT solution that encompasses the entire life cycle
- Presentation of select IT security incidents and their technical backgrounds
- Basics of cryptography
- Introduction to the IT security of vehicle bus systems and common operating systems in the automotive field
- Discussion of possible attacks inside the vehicle

## Learning objectives:

- Developing a basic understanding of IT security in current vehicle bus systems and operating systems
- Correctly assessing IT security risks in vehicles as part of communication with other parties
- Understanding the functionality of future vehicle communication with other vehicles and their infrastructure (V2X) and correctly assessing the risks and solutions for IT security in this field
- Developing an understanding of cryptographic procedures

## Target group:

Employees of vehicle manufacturers and suppliers that do not have a deeper understanding of IT security.

## The Cyber-Security Training Lab: Cyber-Security Training for the IT security experts of tomorrow

The Cyber-Security Training Lab is the result of a collaborative effort between Fraunhofer and a number of select technical colleges, transferring up-to-date knowledge of cyber-security as part of advanced training courses offered to companies. All over Germany, specialists and managers in industry and public administration receive compact qualifications in top labs with the latest IT infrastructure.

## DO YOU STILL HAVE QUESTIONS ABOUT ...

### ... IT security in vehicle communication?

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### ... registration, organization or information about other courses offered?

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