GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

ConnRAD – Connectivity and Resilience for Automated Driving

Midterm Presentation
Berlin 6G Conference, 01. – 04.07.2024

ConnRAD
Connectivity & Resilienz für automatisierte Fahrfunktionen in Deutschland

ConnRAD Project Overview

Project Objective

Motivation
- V2X bears tremendous potential for ADAS and automated driving functions.

Problem
- V2X data must be proven reliable
- instantaneous trust relationships between communication partners must be established at runtime
- Independent homologation process for system components

Approach
- Improvement of the overall system resilience through an extended safety and security argumentation based on evident trust relationships for automated driving functions in open V2X systems

Project Key Figures

Funding	BMBF
Coordinator	Robert Bosch GmbH
PMO	VDI/VDE Innovation + Technik GmbH
Duration	01.01.2023 - 31.12.2025
Total Volume	10,8 M€ (Funding ~ 8,2 M€)
Status	Implementation Phase

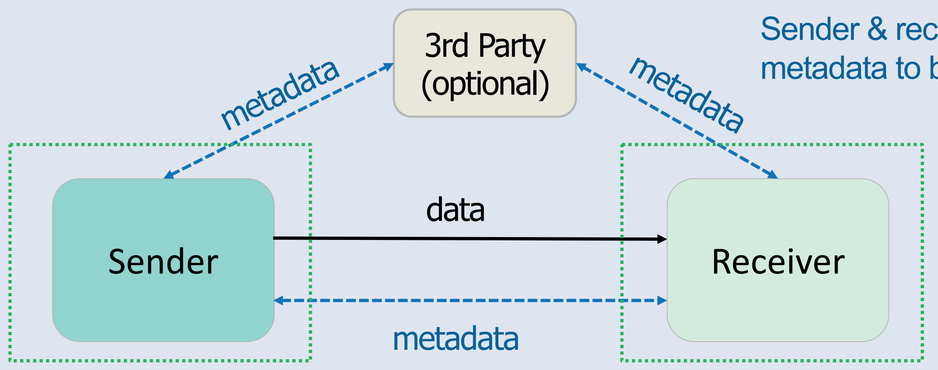
Safety and Security in closed world V2X system

- Development as one system
- Relies on common safety concept & approval
- Examples: Automated Valet Parking

- Implicit knowledge in closed systems:
- Predetermined intended functionality
- Operational design domain
- Sender/receiver fulfill requirements of overall system
- No unilateral changes against approved system

Safety and Security in open world V2X system

- Enable safe connected driving functions
  - between subsystems from different companies
  - developed separately with independent safety concepts
- Missing knowledge must be made explicit



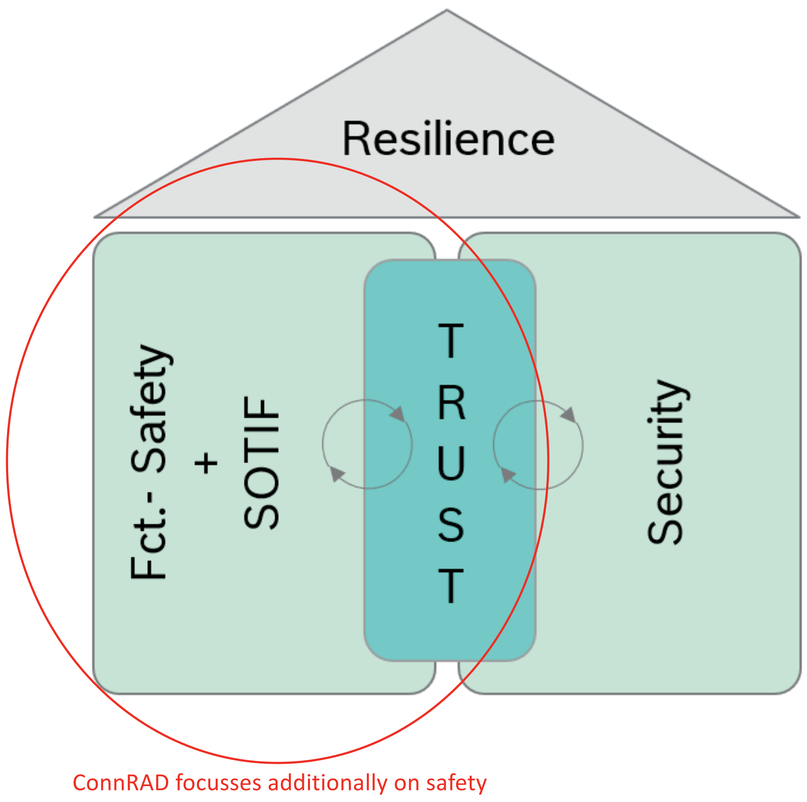
Sender & receiver exchange metadata to build trust

Sender sends V2X information for any function of any receiver.

metadata=all additional info to build trust

Receiver is able to decide if/how information can be used for the receiver's functionality

Project Context Related Terminology



ConnRAD focusses additionally on safety

Key Research Questions

1. What could be a base for mutual trust?
   - Quality of Data
   - ODD Information
   - Development Process Data
2. On which base is data collected and exchanged?
   - Per Function
   - Per Function Class
   - Per Component
3. How can data be qualified?
   - Based on Metadata (which)
   - Based on Pure Data (how)
4. What are stakeholders and roles?
   - Component Development
   - Trust Enforcement
   - Regulation
   - Standardisation
5. What is needed for acceptance and road release?

Related Posters

- Legal, Regulatory, and Organizational Aspects and Requirements
- Subjective Logic Based Trust Assessment Framework
- Resilience by Design – Development Process
- A Resilient V2X Communication Architecture - ConnRAD Approach
- ConnRAD Use Cases for Automated Driving Functions
- Ability-based System Awareness Protocol for Teleoperated Driving

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