



# Never trust, always verify

CONTINUOUS AND EFFICIENT COOPERATIVE TRUST MANAGEMENT FOR RESILIENT CCAM

### Message from the Coordinator

In this issue of the CONNECT newsletter, we place the spotlight on our three use cases and the practical implementation of the Trust Assessment Framework (TAF) developed within the project. These use cases demonstrate how CONNECT's technology can assess the trustworthiness of messages exchanged between on-board units in vehicles and the surrounding network—a key capability for ensuring secure and reliable Cooperative, Connected, and Automated Mobility (CCAM) systems.

Over the past months, the CONNECT con-

sortium has been active across several key events. In March, we hosted a dedicated workshop on Trustworthy AI and in May, CONNECT was presented at EUCAD 2025, the European leading conference on Connected and Automated Driving. Looking ahead, we are preparing a series of webinars aimed at showcasing our research results and making them accessible to a wider audience. As always, we would like to thank all partners for their continued dedication and collaboration as we move closer to achieving our project goals.

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**Technical Lead** 

Thanassis Giannetsos Ubitech

**Scientific Lead** 

Frank Kargl University of Ulm

Project Coordinator Lisa Burgstaller-Hochenwarter

Technikon

coordination@horizon-connect.eu



Budget

€ 5.7 Million 100% EU-funded



Consortium

16 Partners 8 countries



**Duration** 

**36 Months** 09/2022 - 08/2025

### **Use Cases**

CONNECT applies and evaluates the TAF in three separate Use Cases that each highlight und make use of different properties of the Trust Assessement Framework (TAF).

**Use Case 01** "Intersection Movement Assistance" is an application in V2X ecosystems that can help coordinate vehicles at intersections. Based on the exchange of critical real-time data from the involved vehicles, it can detect and evaluate probable crash zones in time. The IMA bases its calculations on the so-called Extended Perception - kinematic description data of known dynamic objects at the scene, consisting of local perception from onboard data and Collective Perception Messages (CPMs) received from neighbours. But what happens in case data in the transmitted messages is maliciously manipulated?

The focus of the first CONNECT use case is to demonstrate CONNECT's trust assessment framework's ability to provide accurate trustworthiness assessments of CPM messages. This ensures that the IMA bases its decision calculations on trustworthy data only, guaranteeing its safe operation. As trust sources, the TAF uses Trustworthiness Claims and evidence from a Misbehavior Detection (MBD) system.

The following video demonstrates the IMA application and the Misbehavior Detection service without the use of the CONNECT Trustworthiness Assessment Framework. An updated video will be published once the use case implementation is completed. **Use Case 02** "Cooperative Adaptive Cruise Control (C-ACC)" is an in-vehicle driver assistance system designed to synchronize and coordinate traffic. By exchanging critical real-time vehicle data—such as speed, acceleration, and position—it can automatically calculate and adjust the vehicle's speed to maintain a safe distance from others, provided that the data is trustworthy. This leads to optimal traffic flow and efficient roadway capacity usage. But what happens if the electronic control unit (ECU) of the vehicle transmitting the data gets hacked or compromised?

The focus of the second CONNECT use case is to ensure the safe operation of C-ACC by assessing trustworthiness at runtime and responding to loss of trustworthiness with appropriate actions. Trustworthiness changes in this use case are detected by the Trust Assessment Framework (TAF), which evaluates trust evidence from the Attestation Integrity Verification (AIV) module. This framework calculates the actual level of trustworthiness based on collected trust evidence from the two vehicle computers in use.

In our new video we show the use case setup and the proof-of-concept implementation of this system:

### Watch now:



Use Case 1 Video: Intersection Movement Assistance (IMA)

#### Watch now:



Use Case 2 Video: Cooperative Adaptive Cruise Control (C-ACC)

**Use Case 03** "Slow-Moving Traffic Detection (SMTD)" enhances road safety and traffic efficiency using V2X communication. Vehicles share real-time sensor data about slow-moving traffic through a Multi-access Edge Computing (MEC) server, which acts as a central hub at the edge of the network, facilitating real-time data analysis and decision-making. This data consists of Collective Perception Messages (CPMs) and Cooperative Awareness Messages (CAMs). But how can we trust the data in case of untrustworthy sources and sometimes even unreliable sensor data?

The focus of the third CONNECT use case is to demonstrate the ability of CONNECT's TAF to federate multiple MBDs to work together by continuously identifying data and exchanging suspicious, preventing the dissemination of harmful or erroneous information within the network. This use case is demonstrated on a vehicle equipped with V2X functionalities on the Stellantis test track in Turin, Italy.

### Watch now:



Use Case 3 Video: Slow-Moving Traffic Detection (SMTD)

### Looking back: Technical & Advisory Board Meetings

The CONNECT consortium convened from 15<sup>th</sup>-17<sup>th</sup> January 2025 in Turin, Italy hosted by Politecnico di Torino. Partners presented their work on CONNECT's key technical pillars such as the Trust Assessment Framework based on the subjective logic approach, the Trust Level Estimation Engine (TLEE), trust extensions, advanced cryptographic primitives etc. and discussed the next steps for implementing and evaluating these components. Day 2 spotlighted the project's three use cases, while on day 3 the consortium visited the Stellantis test track in Orbassano near Turin, where use case 3 on slow moving traffic detection (SMTD) was demonstrated.

On 10th and 11th March 2025 the CONNECT use case partners presented first evaluation results of the three use cases to CONNECT's Advisory Board, which includes distinguished representatives from leading automotive companies and research institutions, such as Toyota, Volkswagen, and the Korea Advanced Institute of Science and Technology (KAIST) — ensuring CONNECT's work remains aligned with cutting-edge industry needs and expectations.



### Workshop on Trustworthy AI

In March 2025, CONNECT - in collaboration with the EUfunded project REWIRE - successfully organized a workshop in Frankfurt, that brought together a diverse group of experts from academia, industry and policy to explore the future of trustworthy AI. Through insightful keynotes and panel discussions, the workshop addressed critical issues such as data reliability, bias mitigation, explainability and the secure deployment of AI in domains like CCAM, 6G, and ITS. A highlight of the event was an interactive working session where participants collaborated on identifying the key ethical, technical and economic challenges in implementing trustworthy AI systems. The insights of this session are gathered in a comprehensive roadmap that will act as a guide for responsible AI development. This successful CONNECT event laid the groundwork for future initiatives aimed at strengthening Europe's leadership in trustworthy AI.



Figure 2: CONNECT partners at the Workshop on Trustworthy AI in Frankfurt (March 2025)



Figure 3: CONNECT/SELFY stand at EUCAD 2025

### **EUCAD 2025**

From 12<sup>th</sup>-15<sup>th</sup> May 2025, the CONNECT project actively participated in the 5th European Conference on Connected and Automated Driving (EUCAD 2025) in Ispra, Italy, contributing to key discussions on the future of Connected, Cooperative, and Automated Mobility (CCAM). Alexander Kiening (Denso Automotive) joined our sister project's SELFY final event at a panel on the deployment and scalability of CCAM services. In addition, we shared a booth with SELFY at the exhibition area where a live demonstration of the Trust Assessment Framework (TAF) was shown alongside brand-new demo videos. EUCAD 2025 offered a great platform to engage with European policy-makers and CCAM researchers and to showcase our contributions to cyber-secure, trustworthy mobility systems.

### Media & Papers

#### **CONNECT Videos:**

#### All project-related videos are now showcased on Vimeo: [link]



#### **CONNECT** scientific publications

All project-related scientific publications are available on the project website: [link]

#### **Project Facts**

Consortium: 16 partners (8 countries) Project Coordinator: Lisa Burgstaller-Hochenwarter (Technikon) Technical Leader: Thanassis Giannetsos (Ubitech) Scientific Leader: Frank Kargl (University of Ulm) Project number: 101069688 Project website: [link] Project start: 2022-01-09 Project end: 2025-31-08 Duration: 36 Months Total cost: EUR € 5 656 643.75 EC contribution: EUR € 5 656 643.75 Follow CONNECT on: [Twitter], [LinkedIn]



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#### **Upcoming Events**

Webinar on Trust & Trustworthiness in CCAM 28<sup>th</sup> May 2025 @Online

IEEE Vehicular Networking Conference 2<sup>nd</sup>-4<sup>th</sup> June 2025 @Porto, Portugal

USENIX Symposium on Vehicle Security and Privacy (VehicleSec'25) 11<sup>th</sup>-12<sup>th</sup> August 2025 @Seattle, US

CONNECT Final Event September 2025 @Online (Stay tuned for more information!)

All past and upcoming events can be found on the CONNECT website:

horizon-connect.eu/events