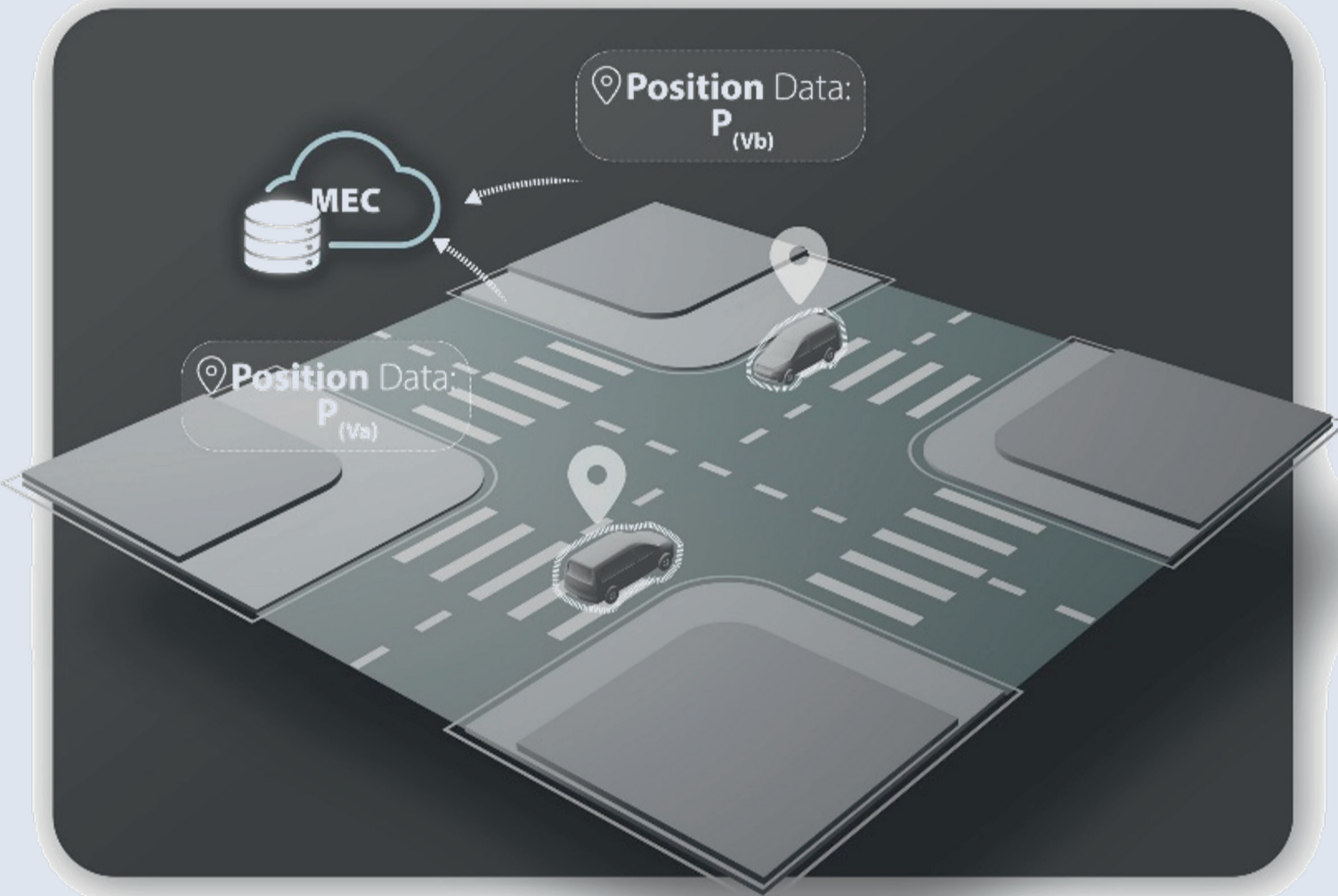


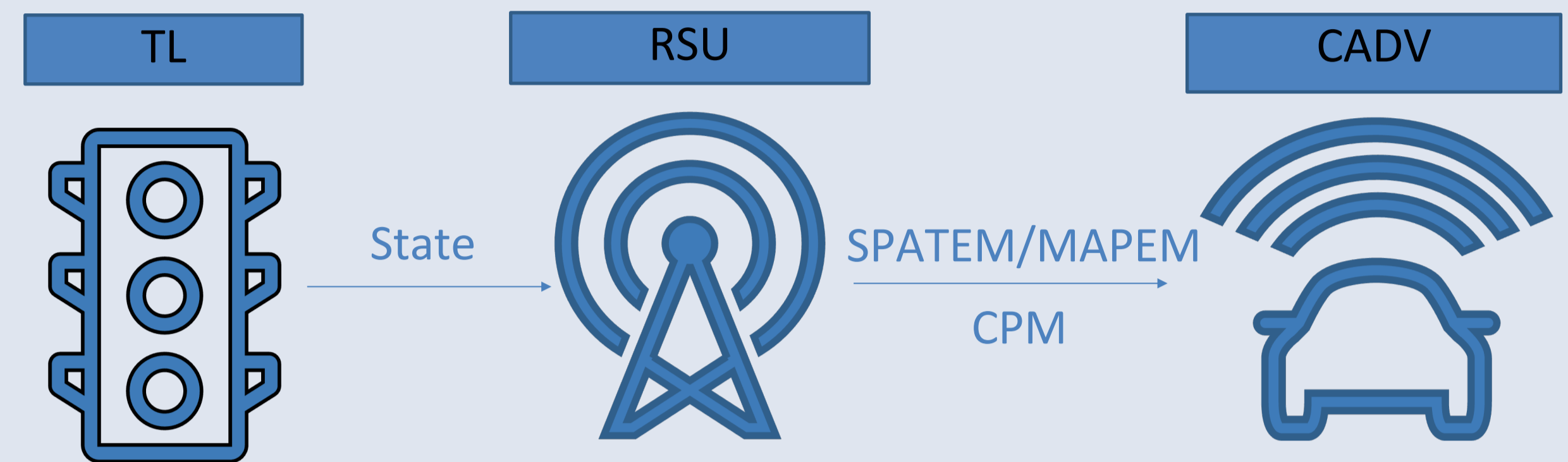
Subjective Logic-based Trust Assessment Framework

Motivation for Trust Assessment



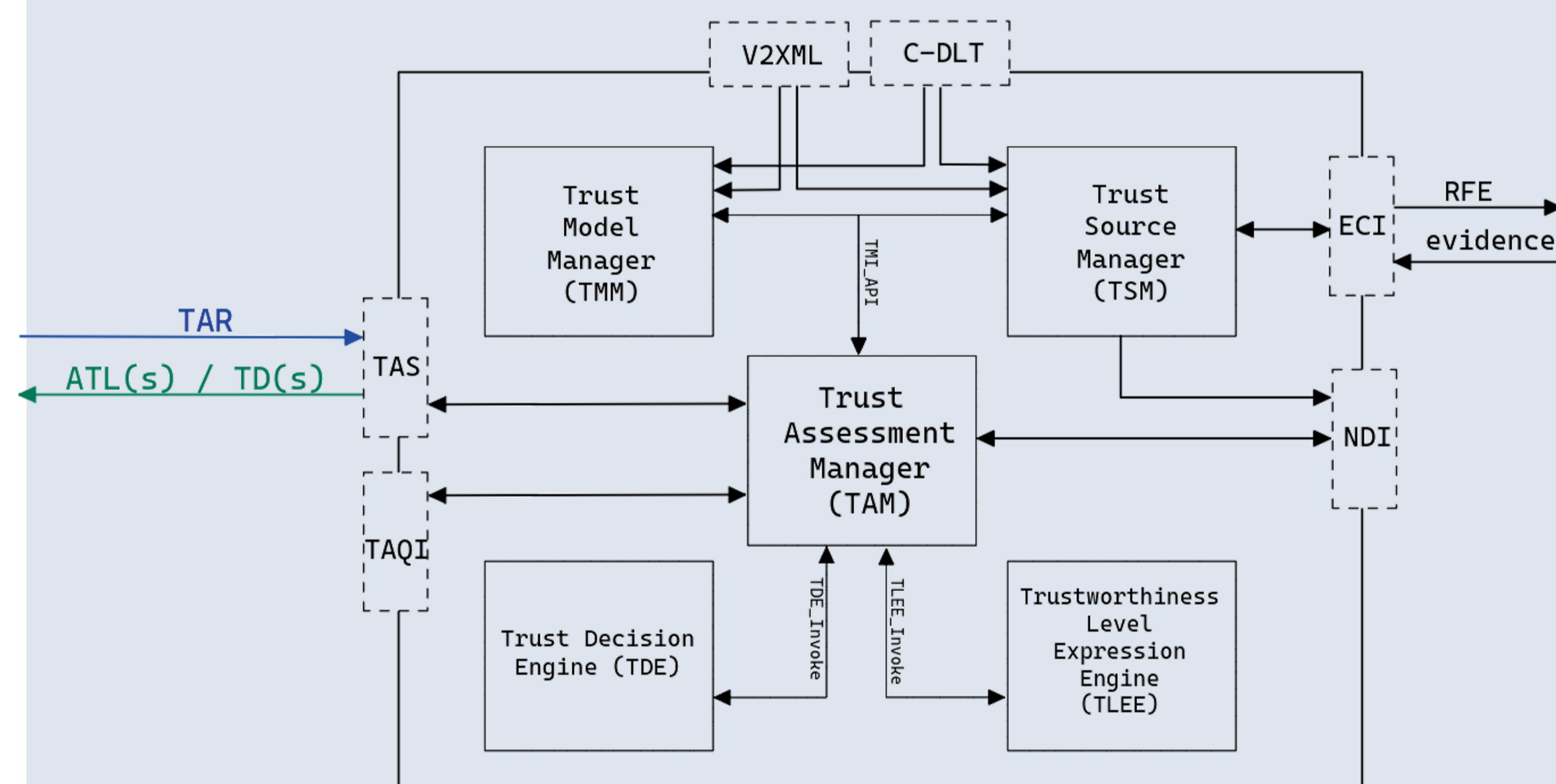
- Vehicles rely on diverse data sources from different systems for safety-critical applications. Malicious data manipulation can compromise security and safety, potentially leading to accidents.
- Current security mechanisms (e.g., IDS) cannot fully assess the impact of attacks on system integrity in complex Systems-of-Systems (SoS).
- A Trust Assessment Framework (TAF) helps to assess trustworthiness in cooperative systems, contributing to safer autonomous vehicles.

Scenario: Cooperative Intersection



- Road Side Unit (RSU) communicate state of traffic lights in a Signal Phase and Timing Extended Messages (SPATEM) and Map Extended Message (MAPEM) as Collective Perception Message (CPM) to vehicles.
- Our Trust Assessment Framework (TAF) can detect untrustworthy communication in real-time and prevent vehicles to rely on unreliable data.
- In general terms, Trust Assessment facilitates secure data sharing among Connected Autonomous Driving Vehicles (CADVs), ensuring the safety of cooperative driving.

Architecture of Trust Assessment Framework



- Trust Application Request (TAR): Provides the possibility to request a decision about a situation.
- Trust Decision (TD): Represents the final decision for the requested situation.
- Trust Model Manager (TMM): Selects appropriate trust models based on TAR.
- Trust Models (TMs): Models representing the trust relationships and trustworthiness of system components.
- Trust Sources Manager (TSM): Collects evidence from all available trust sources to derive atomic trust opinions.
- Trustworthiness Level Expression Engine (TLEE): Enables reasoning over trust models and input from TSM to produce Actual Trustworthiness Levels (ATL).
- Trust Decision Engine (TDE): Compares ATL with Required Trustworthiness Levels (RTL) to take trust decisions.
- Trust Sources (TSs): Various sources providing evidence for trust assessment.

Cooperation with Horizon Europe CONNECT



- The Trust Assessment Framework is developed in cooperation with the EU Horizon Project CONNECT.
- ConnRAD extends the scope towards consideration of safety, additional use-cases, practical deployment, and consideration of AI-based mechanisms.

Further Information About the Project at Our Website:

<https://www.connrad-projekt.de/>

