

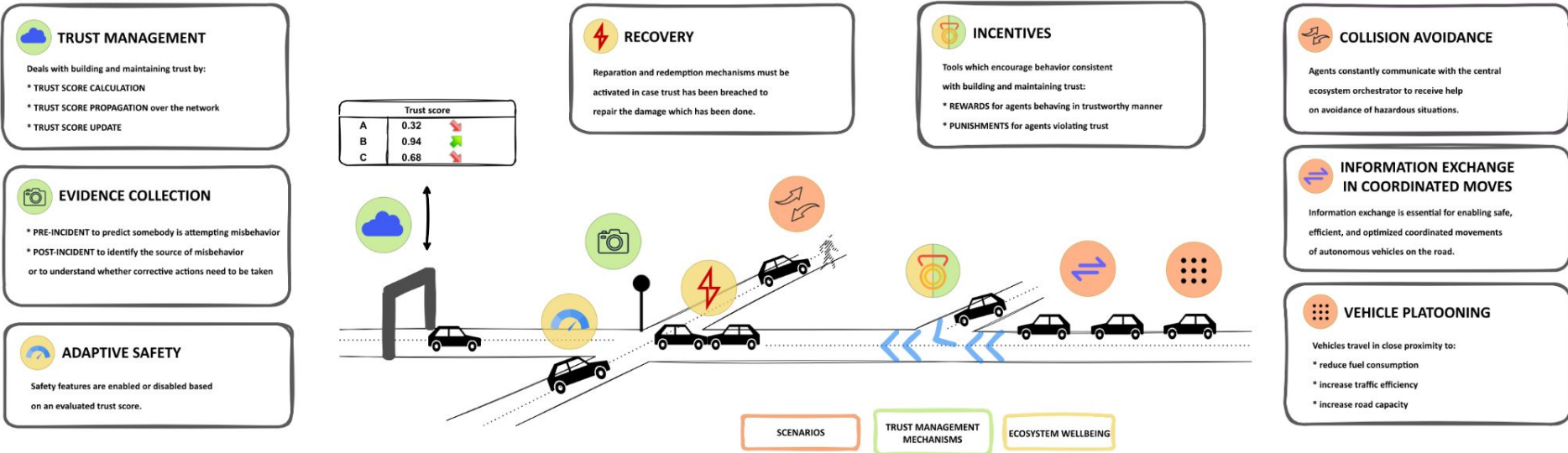
# **Trust-driven and Ethical Supervision of Smart Dynamic Ecosystems**

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# Smart Dynamic Ecosystems

- Smart Dynamic Ecosystems are ecosystems where **physical devices**, **digital technology** and **humans** collaborate and interact.



# Governance of Smart Dynamic Ecosystems

- The ecosystems are characterized by their **dynamism**.
- Smart agents have to navigate in complex dynamic networks. In order to **respond to changing conditions** and needs, they:
  - constantly **monitor** the environment
  - are automatically **re-configured during runtime**
  - **build partnerships** with other smart agents to fulfill common tasks
- This necessitates
  - new concepts in interactions, such as the need of **trust**
  - development of **governing mechanisms** to ensure proper functioning of the ecosystem

# Ethics & Social Values

- Ethical conducts (what is right and what is wrong) of smart systems gains importance when these systems **share space with humans**.
- Smart agents using **AI modules** which can introduce **bias**, **unfair treatment** or **discrimination**, having a negative impact on the ecosystem's wellbeing.
- The **ethical dimension** of smart systems is often **regarded as secondary** and is seldom given proper consideration during the engineering process in the industrial community.
- Ethics and social values must be **addressed proactively** in governance.

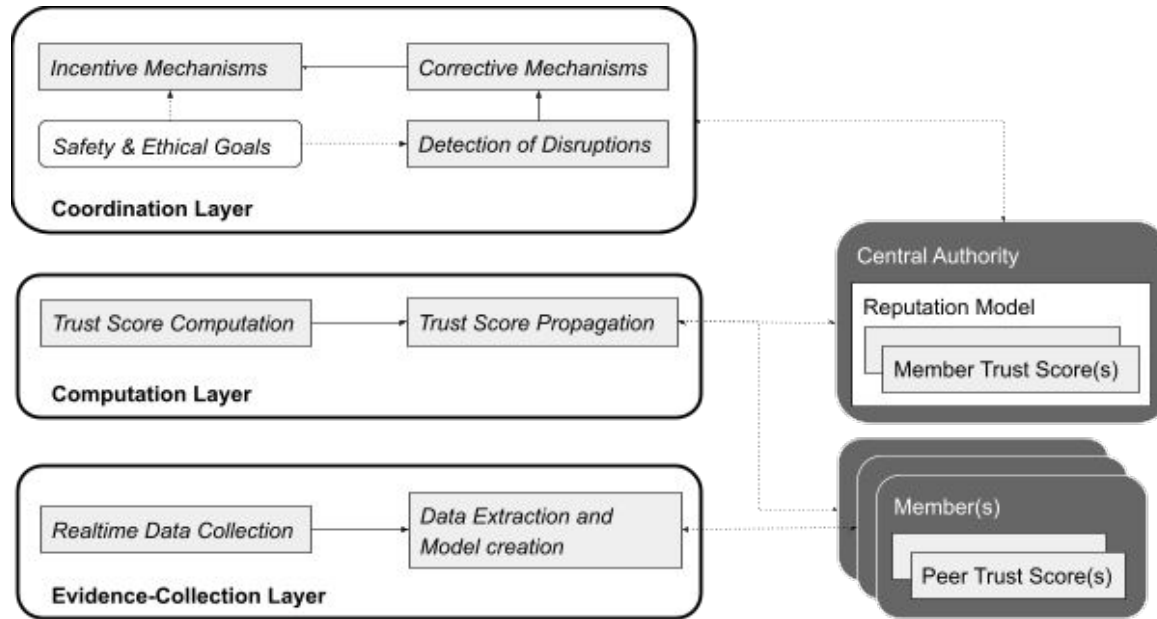
# Objectives

The key objective is to **design a conceptual framework** for value-based governance of smart dynamic ecosystems.

- Organize governance mechanisms & compose a logical architecture

## Multi-layer governance framework

- showing the complex orchestration of the mechanisms across the ecosystem's levels
- based on trust and designed to prevent violation of ethics and agreed values



## Multi-Layer Trust Governance Framework

KUŠNIRÁKOVÁ, Daša and Barbora BÜHNOVÁ. Future Vision of Dynamic Certification Schemes for Autonomous Ecosystems. To appear in *Proceedings of the 18th International Conference on Evaluation of Novel Approaches to Software Engineering*. Scitepress, 2024.

# Ongoing and Future Work

- Design a **multi-layer governance framework**.
- Prepare and run **simulations** to evaluate the proposed governance framework.

## Do you want to contribute?

- Create an **overview of suitable simulation tools**
- **Document scenarios** for simulations
- Create a **simulation prototype**

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