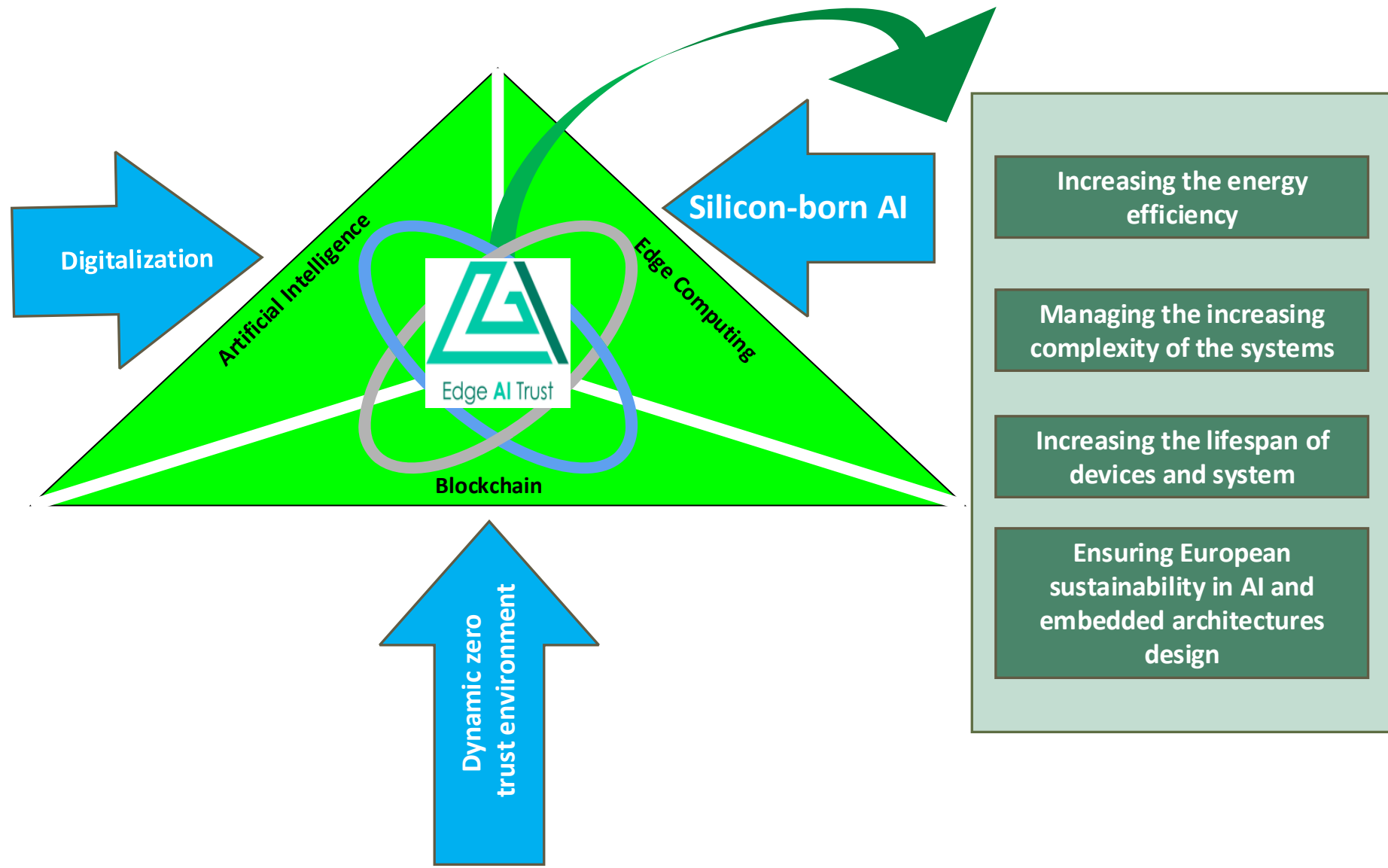# Project Overview

- **Funding**: HORIZON-KDT-JU-2023-1-IA

- **Coordinator**: TTTech Auto GmbH

- **Duration**: 36 months (May 2024 – April 2027)

- **Partners**: 47 from 12 countries (EU + turkey) + 3 associated partners from Switzerland

- **Use Cases**: 17

- **Project size**:
  - Total: ~ 38 Mio EUR / ~20Mio EUR Funding

tttech auto
part of NXP

empower European industries and communities

Digitalization

Society 5

Edge **AI** Trust

Decarbonization
&
Green Deal

Chip — Tier 2 & sub-tier Suppliers — Tier 1 Suppliers — OEM`s — End user

tttech auto
part of NXP
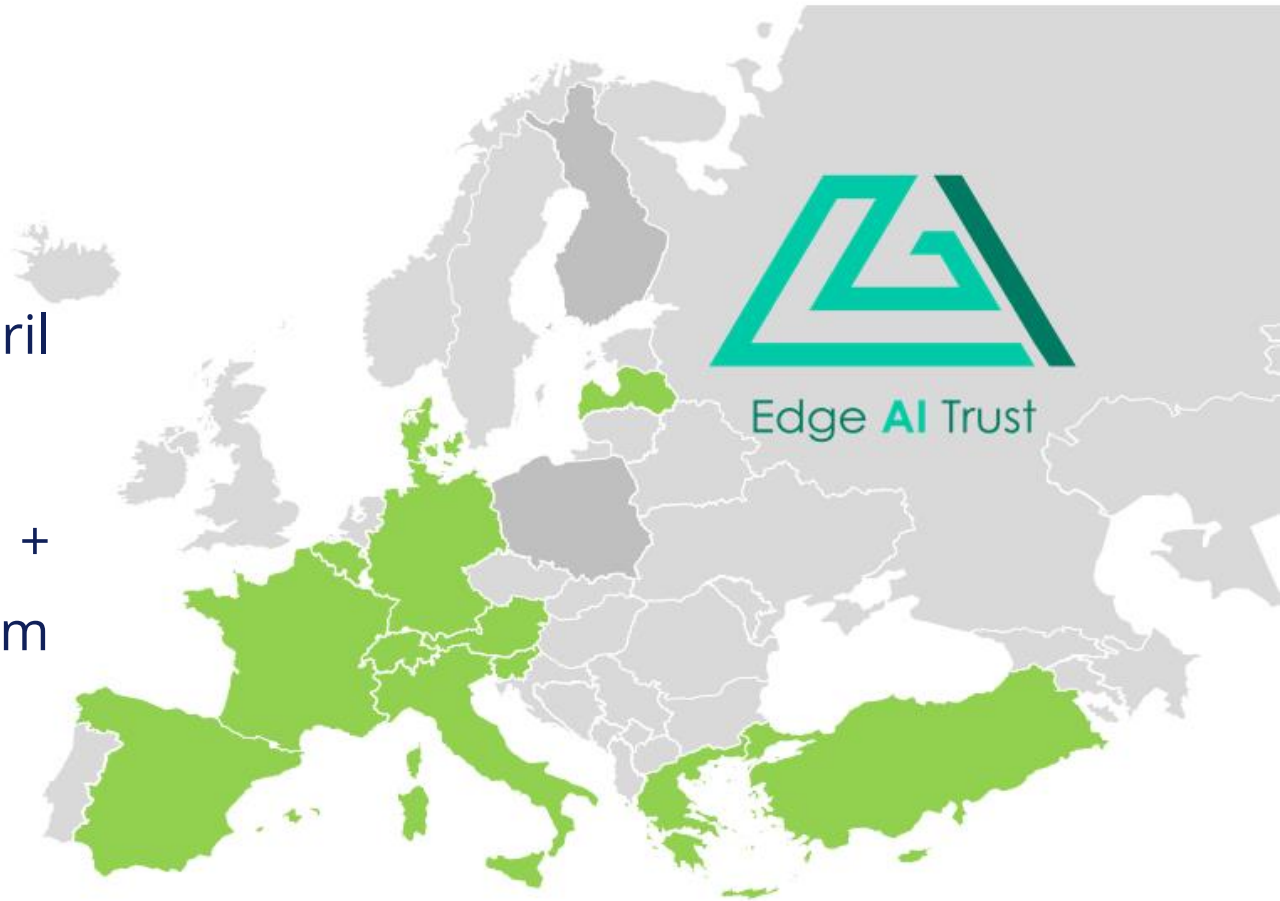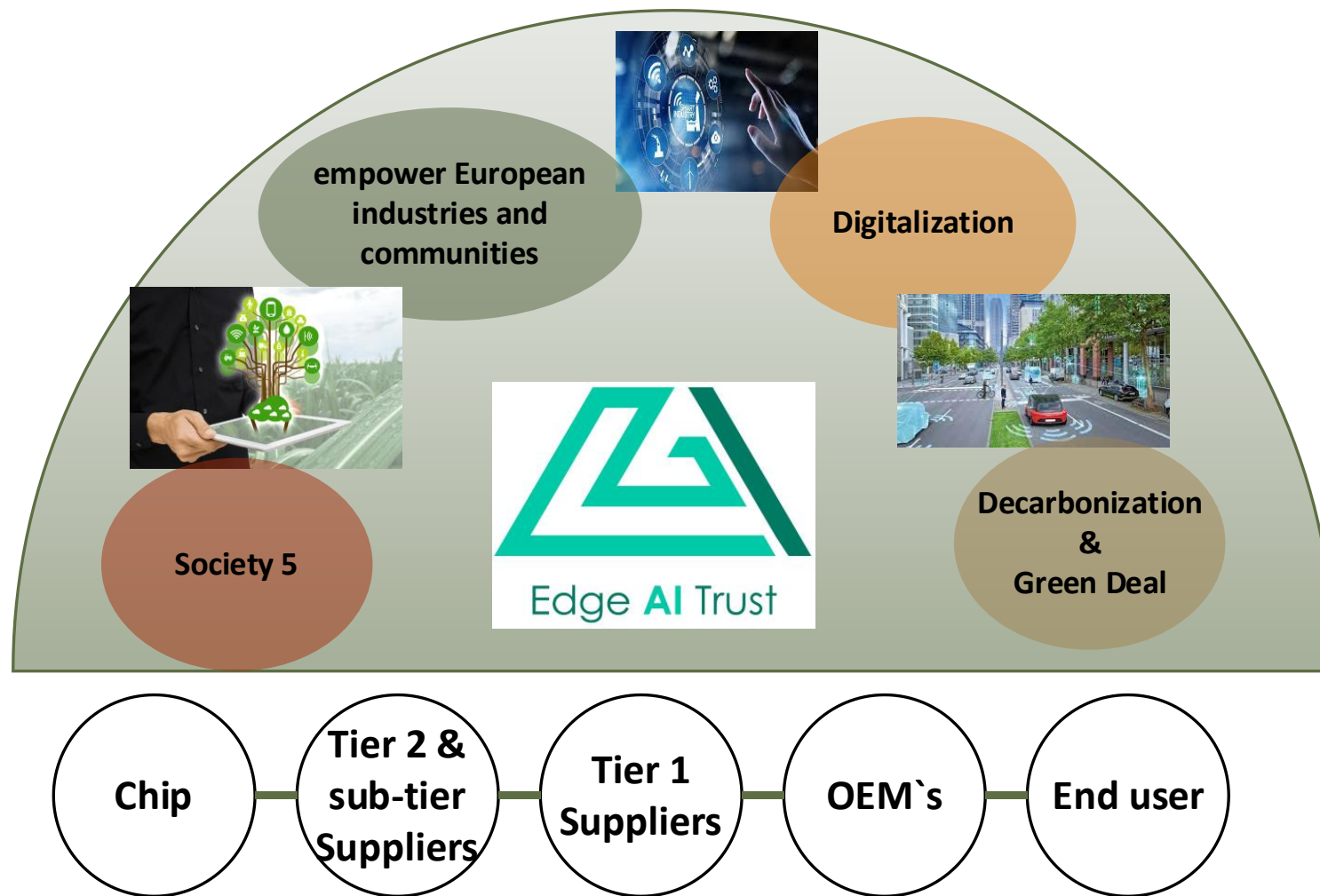
Vision and Mission

Vision	Create a trustworthy edge AI ecosystem including an AI architecture, components, orchestration techniques, development tools and a community enabling the real-time collaboration of heterogeneous edge devices, while maintaining the highest levels of security, scalability, sustainability and robustness

Mission	EdgeAI-Trust will develop a domain-independent end-to-end collaborative AI architecture and large-scale edge AI technologies. It will enable devices to learn, adapt and coordinate with one another for cognitive reasoning tasks despite of a dynamic zero trust environment. The core of our approach increases trustworthiness, reliability, safety, security, energy efficiency, sustainability and societal acceptance of AI through orchestration of AI components, virtualization of heterogeneous distributed AI resources for federated learning, rigorous plausibilization, explanation and monitoring of AI decisions and standardized interfaces and toolchains for optimizing and validating edge AI solutions. The technical activities will be complemented by community building for liaising with related projects and stakeholders, standardization and roadmapping that will lead to a European edge AI ecosystem.

tttech auto
part of NXP

Target scope

- **Edge Computing:** Edge computing allows computing resources to be deployed at the edge of the network, enabling data to be processed locally on the devices themselves. This dramatically reduces latency, improves real-time decision-making, and reduces reliance on distant cloud servers.

- **Edge AI Chips and Processors:** Specialized hardware, such as edge AI chips and accelerators, are designed to efficiently handle complex AI computations at the edge. These chips are optimized for power efficiency and performance, enabling AI processing on edge devices feasible.

- **Internet of Things (IoT) Devices:** IoT devices are ubiquitous in today's world and generate massive amounts of data. These devices, including sensors, cameras, and smart appliances, serve as data sources and intelligent endpoints for Edge AI applications.

- **Federated Learning**: Privacy-preserving federated learning enables AI models to be trained across multiple edge devices without transferring raw data to a central server. This decentralized approach preserves data privacy while improving model accuracy through collective intelligence.

- **Blockchain and Distributed Ledger Technology**: To ensure data integrity, security, and trust in decentralized Edge AI environments, blockchain and distributed ledger technologies play a critical role. They enable secure data sharing, smart contract execution, and decentralized governance.

- **Edge AI Frameworks and Libraries:** Software frameworks and libraries tailored for edge AI simplify the deployment and management of AI models on edge devices. These tools enable developers to effectively optimize AI applications for edge environments.

- **Privacy and Security Solutions:** Robust privacy and security mechanisms are critical for decentralized Edge AI systems. Encryption, secure boot, and secure enclaves safeguard data privacy and protect against potential threats.

- **Validation Tools**: Validation tools are essential technologies in the development of decentralized Edge AI. These tools enable rigorous testing and verification of AI models and their performance on edge devices, ensuring reliable and robust functionality.

- **Edge-to-Cloud Orchestration:** While Edge AI emphasizes local processing, cloud infrastructure still plays a critical role in decentralized Edge AI. Edge-to-cloud orchestration solutions manage the coordination between edge devices and cloud services, optimizing resource utilization and data flow.

Automated Vehicles, Production, Agriculture

Reliability
Safety
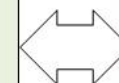Energy efficiency
Security
Resilience
Manageability
Scalability

AI Applications with domain-specific instantiations of the architecture

Community Building

EdgeAI Ecosystem

EdgeAI-Trust Architecture: End-to-End Architecture for Collaborative AI with Building Blocks and Standard Interfaces
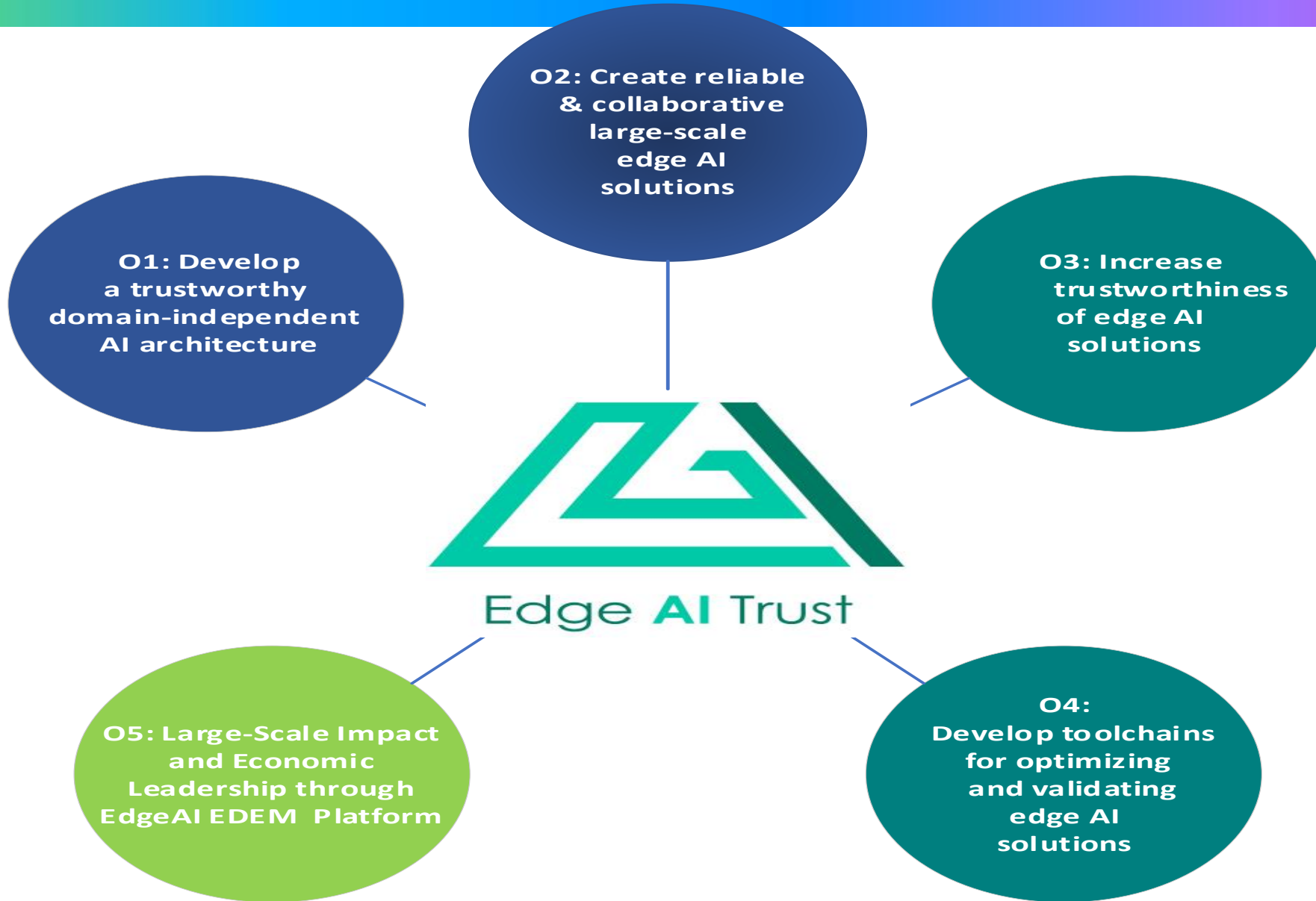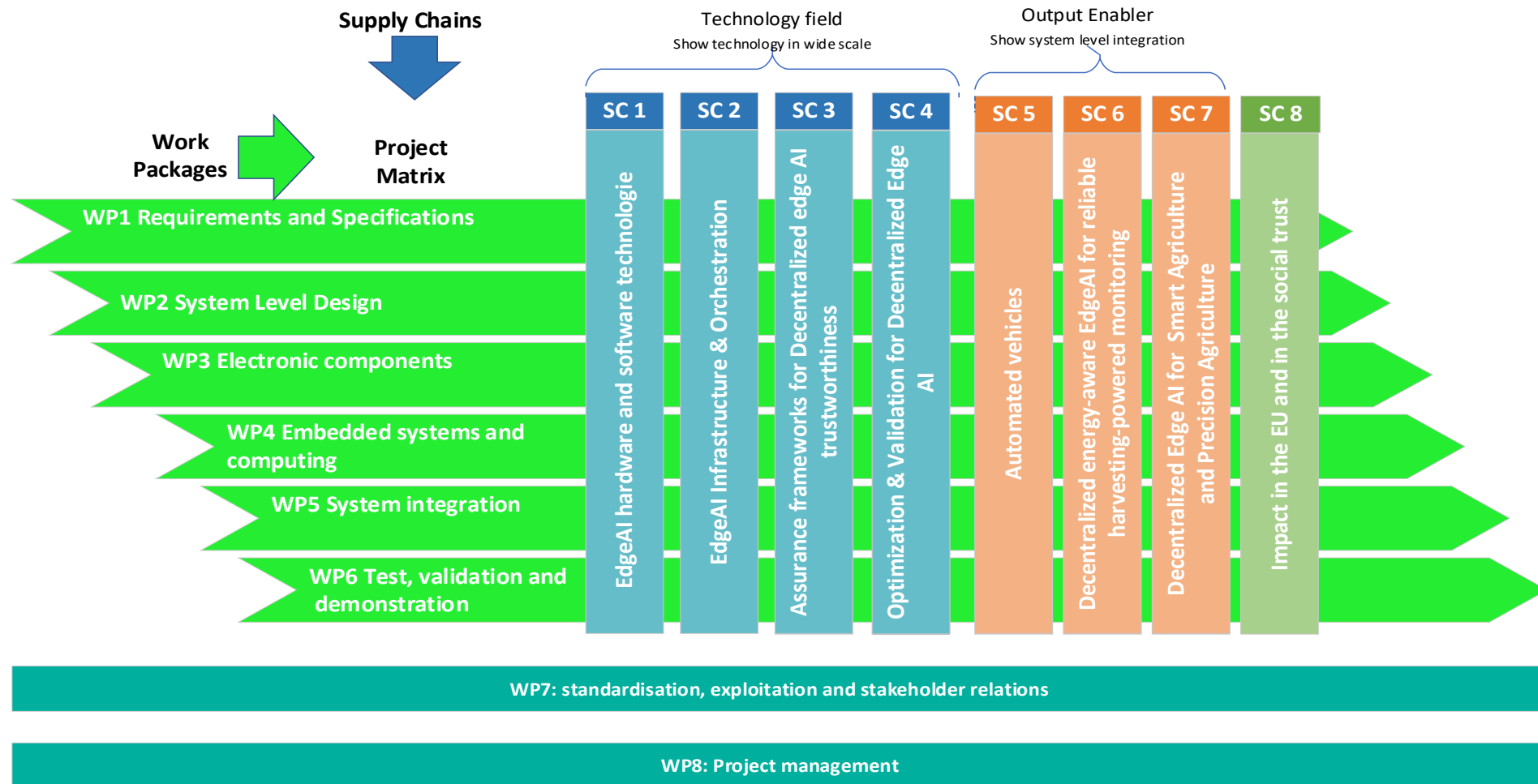
Instantiation

EdgeAI-Trust Tools

EdgeAI-Trust Technologies
Hardware and SW including Middleware

Orchestration Services
Adaptation Services
Monitoring Services
Fault Tolerance Services
...

Large-Scale Distributed Heterogeneous AI Resources

part of NXP

O2: Create reliable & collaborative large-scale edge AI solutions

O1: Develop a trustworthy domain-independent AI architecture

O3: Increase trustworthiness of edge AI solutions

Edge AI Trust

O5: Large-Scale Impact and Economic Leadership through EdgeAI EDEM Platform

O4: Develop toolchains for optimizing and validating edge AI solutions

tttech auto
part of NXP

Thank you