**OBJECTIVES**

<table>
<thead>
<tr>
<th>Simplification &amp; Automation</th>
<th>O1: Reduce Edge-Cloud Setup and Management Time</th>
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<tr>
<td>Data-compute-network Orchestration</td>
<td>O2: Optimize Edge-Cloud Operation via a privacy-preserving data-compute-network orchestration</td>
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<td>Security &amp; Privacy Preservation</td>
<td>O3: Provide automated, privacy preserving secure management for multi-clusters</td>
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<td>Openness &amp; Greenness</td>
<td>O4: Support multi-domain Edge Cloud operations integrating openness and greenness</td>
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<td>Broad Impact</td>
<td>O5: Build a consolidated ecosystem appealing to the different CODECO stakeholder groups</td>
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**PROJEKT INFORMATION**

- **Start Date:** 01. January 2023
- **End Date:** 31. December 2025
- **Project ID:** 101092696
- **Programme:** Horizon Europe
- **Keywords:** Edge, Cloud, Kubernetes, orchestration, IoT, federated Learning, data, network, computation

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**CODECO PROJECT**
A novel Edge-Cloud orchestration framework, focusing on data-compute-network

**PARTICIPANTS**

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<tr>
<th>fortiss</th>
<th>INOVA+</th>
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<tr>
<td>Atos</td>
<td>Intracom Telecom</td>
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<td>Siemens</td>
<td>netcompany</td>
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<td>ECLIPSE Foundation</td>
<td>IBM</td>
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<td>Telefónica</td>
<td>Red Hat</td>
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<td>i2cat</td>
<td>Almende</td>
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Affiliated Entities: City of Göttingen, ATOS IT, Universidad Carlos 3 de Madrid

**SOCIAL MEDIA**

- [CODECO Website](#)
- [Eclipse Research Lab](#)
- [Twitter](#)
- [LinkedIn](#)
- [LinkedIn](#)
- [YouTube](#)

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The overall aim of **CODECO** is to contribute to a smoother and more flexible support of services across the Edge-Cloud continuum via the creation of a novel, cognitive Edge-Cloud management framework. To achieve this aim, **CODECO** proposes a unique, smart, and cross-layer orchestration between the decentralised data flow, computation, and networking services, to address Edge-Cloud challenges derived from the rising Internet and IoT service decentralisation.

**CODECO** shall develop an ecosystem consisting of open-source toolkits, large-scale experimentation, training tools and events, use-cases across 4 vertical domains (Smart Cities, Energy, Manufacturing, Smart Buildings), multiple events integrated into a unique Innovation and Research Community Engagement Programme.

The **CODECO** consortium comprises a total of 16 partners across Europe and its associated states Israel and Switzerland. The consortium partners represent several types of organizations, ranging from **SMEs** with a focus on open-source software and innovation management (Inova Mais, Eclipse Foundation, Almende); renowned **universities** (University of Göttingen, Universidad Politecnica de Madrid, University of Pireus research Center) and **research institutes** (fortiss, I2CAT, ATHENA); large **companies** (ATOS, Telefonica, Siemens, Intracom-Telecom, RedHat, Netsoft-Intrasoft, IBM).

### ABSTRACT

<table>
<thead>
<tr>
<th>KERs (Key Exploitable results)</th>
<th>USE CASES</th>
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| **A1** Open, cognitive toolkits and smart Apps, integrating the elastic and advanced concepts to manage, in a smart and flexible way, containerized applications across Edge and Cloud dynamic-cluster and multi-cluster environments. | **P1** Smart Monitoring of the Public Infrastructure (Smart Cities)  
- **Goal:** Smart monitoring of e.g., road status, traffic congestion  
- **Value-proposition:** Improved Quality of Experience of the citizen |
| **A2** Open-source Eclipse repository.  
A developer-oriented Eclipse open-source software repository, to be available in an early stage of the project, thus allowing for early exploitation of initial, advanced results and a better adaptation throughout the project lifetime. | **P2** Vehicular Digital Twin for Safe Urban Mobility (Mobility)  
- **Goal:** Vehicular digital twin for safe urban mobility  
- **Value-proposition:** Increased road safety |
| **A3** Training Database.  
Training tools and events, to support the development of services based on the CODECO framework. | **P3** Media Delivery Streaming across Decentralized Edge Use-case (Smart Cities)  
- **Goal:** Resource-efficient usage via context-aware selection of MDS points  
- **Value-proposition:** Optimized Edge-Cloud and networking for MDS |
| **A4** Edge-Cloud Use-cases.  
6 Use-cases across 4 domains (Smart Cities, Energy, Manufacturing, Smart Buildings), to be deployed in operational environments. | **P4** Collective Demand Side Management in Decentralized Grids (Energy)  
- **Goal:** Smart monitoring of the energy generation, consumption, storing and availability  
- **Value-proposition:** Improved energy management based on Edge computing |
| **A5** R&I Engagement Programme.  
Research and Innovation Community Engagement and multiple community events, based on the different use-cases and including different CODECO stakeholders. | **P5** Decentralized, Wireless AGV Control Flexible Factories (Manufacturing)  
- **Goal:** Decentralized ML/AI to assist energy reduction based on network adaptation  
- **Value-proposition:** Increased AGV autonomy and scalability via decentralized wireless control |
| **A6** Open Experimental Framework.  
CODECO framework integration into the large-scale EdgeNet4, experimental infrastructure, to assist in the building of experimentation and novel concepts by the research community. | **P6** Smart Buildings (Energy)  
- **Goals:** Smart management of Crownstone meshes and their distributed applications  
- **Value-proposition:** flexible far Edge to Cloud data processing |