ENVELOPE Deep Dive & Open Call #1

From Architecture to Experimentation in Future Mobility

1st ENVELOPE Webinar, 7 July 2025

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Agenda

PART I: Introducing ENVELOPE: A Look into the Architecture, Technology Enablers, and Real-World Applications

- **Introduction to the ENVELOPE Project** – (Dinos Katsaros, ICCS)
- **The ENVELOPE Architecture** – (Harilaos Koumaras, NCSRD)
- **ENVELOPE APIs and Enablers** – (Pavlos Basaras, ICCS)
- **Experimentation-as-a-Service** – (Edoardo Bonetto, LINKS)

PART II: ENVELOPE Open Call 1: Experiment with Future Mobility over B5G Architectures – (Dimitris Zouzias, EBOS)

Q&A

PART I

Introducing ENVELOPE

A Look into the Architecture, Technology Enablers, and Real-World Applications

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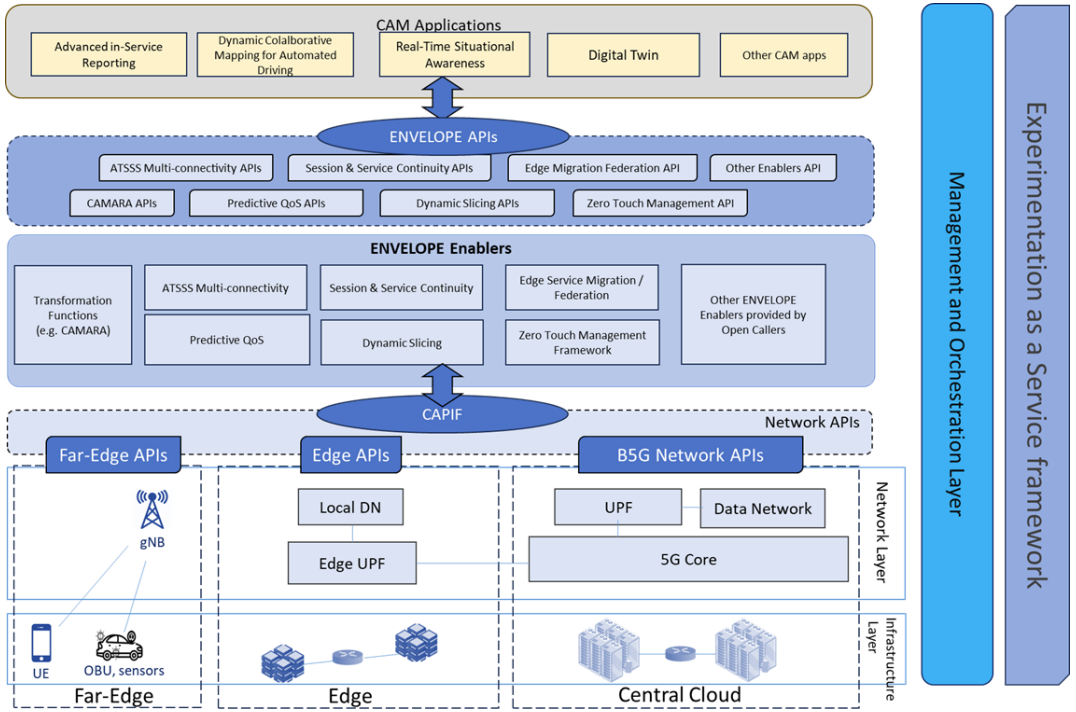
Introduction to the ENVELOPE Project

Dinos Katsaros (ICCS)

ENVELOPE high level view

- Transform the reference 5G-Advanced architecture into a vertical-oriented one with the necessary **interfaces** tailored to vertical CCAM use cases that:
  - expose network capabilities to verticals,
  - provide vertical-information to the network; and
  - enable verticals to dynamically request and modify certain network aspects,
- Develop an *envelope* that can cover, accommodate and support any type of vertical service



Project Objectives

- Develop novel CAM services and design vertical-oriented **open, transparent and easy-to-use interfaces** (network and service side)
- Develop an **open and dynamically reconfigurable B5G system** with NEF and PCF services
  - Quality on Demand
  - Device location
  - Performance metrics
- **Advance key B5G technologies** to enable the ENVELOPE architecture to meet the challenging requirements of automation and improved user experience
  - ATSSS multi-connectivity
  - Predictive QoS
  - Zero-Touch management
- **MEC integration and cross-domain east/west-bound coordination** involving different stakeholders (network-assisted service continuity)
- **Demonstrate** the ENVELOPE capacity to accommodate a variety of services (CAM and Open Call large-scale experimentation on 3 B5G infrastructures)

Italian Living Lab

Overview

- **Joint 5G/6G testbed of LINKS and Politecnico di Torino**
  - Two base stations for experimentation
- **Technical focus on:**
  - CCAM service – network interaction e.g., Quality on Demand
  - MEC federation and MEC handover support
- **Two (2) Use Cases:**
  - Advanced In-Service Reporting for Automated Driving Vehicles
  - Dynamic Collaborative Mapping for Automated Driving

Dutch Living Lab

Overview

- **At Helmond automotive campus**
  - Pre-tests at Unmanned Valley near Leiden.
- **Technical focus on:**
  - Service driven dynamic network reconfiguration
  - CCAM Digital Twin exposure
  - MEC federation and MEC handover support
- **Three (3) Use Cases:**
  - Periodic vehicle data collection for improving digital twin
  - Vehicle testing with mixed reality
  - Tele-operated driving aided by digital twin

Greek Living Lab

Overview

- **Located at Athens, NCSRD's campus**
  - Two (2) PLMNs: NCSRD, OTE
- **Technical focus on:**
  - Inter-PLMN service continuity:
    - HO/Roaming support
    - Edge service migration
  - Predictive QoS
  - ATSSS multi-connectivity
- **One Use Case:**
  - Data sharing for Real-Time Situation Awareness

Planned Use Cases (UC)

- **Italian UCs**
  - Advanced in-service reporting for automated driving vehicles
  - Dynamic collaborative mapping for automated driving
- **Dutch UCs**
  - Periodic vehicle data collection for improving digital twin
  - Vehicle testing with mixed reality
  - Tele-operated driving aided by DT
- **Greek UC**:
  - Data sharing for Real-Time Situation Awareness