

# ACROSS

Automated zero-touch cross-layer provisioning  
framework for 5G and beyond vertical services

## SNS Lunchtime webinars

Monday - 20 February, 2023 | Online

### ACROSS project - Introduction

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# Overview

- **Project Name:** **ACROSS** - Automated zero-touch cross-layer provisioning framework for 5G and beyond vertical services

- **Project website:** [across-he.eu](https://across-he.eu).

- **Stream:** A-01-07

- **Members:**

**NOVA**



**NEC**



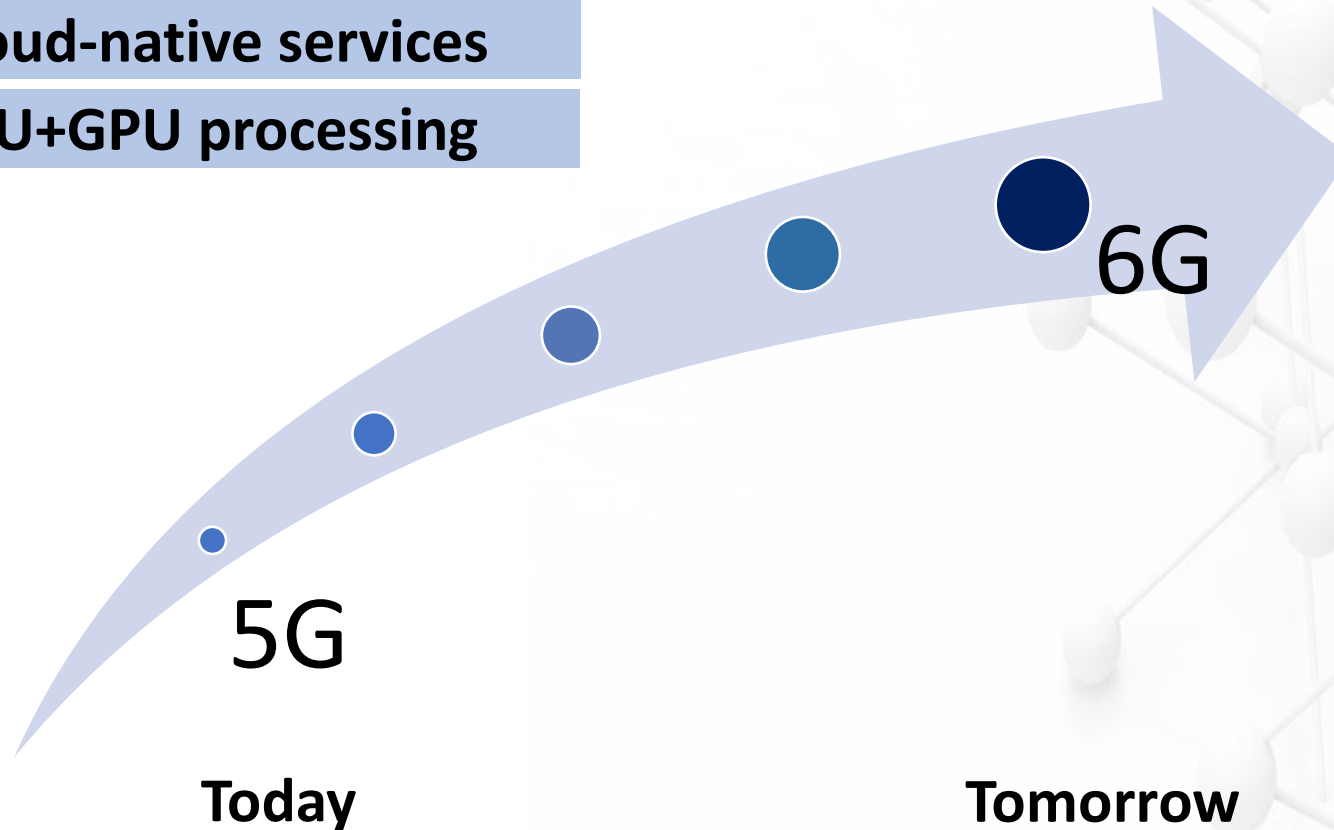
- **Key objective:** ACROSS develops a secure E2E network and service management platform that employs vertical and horizontal zero-touch mechanisms, enabling multi-objective service management optimizations in the presence of trade-offs between performance, energy consumption, and cost.

# Motivation

Edge to core continuum

Cloud-native services

CPU+GPU processing



# of events ++

# of devices ++

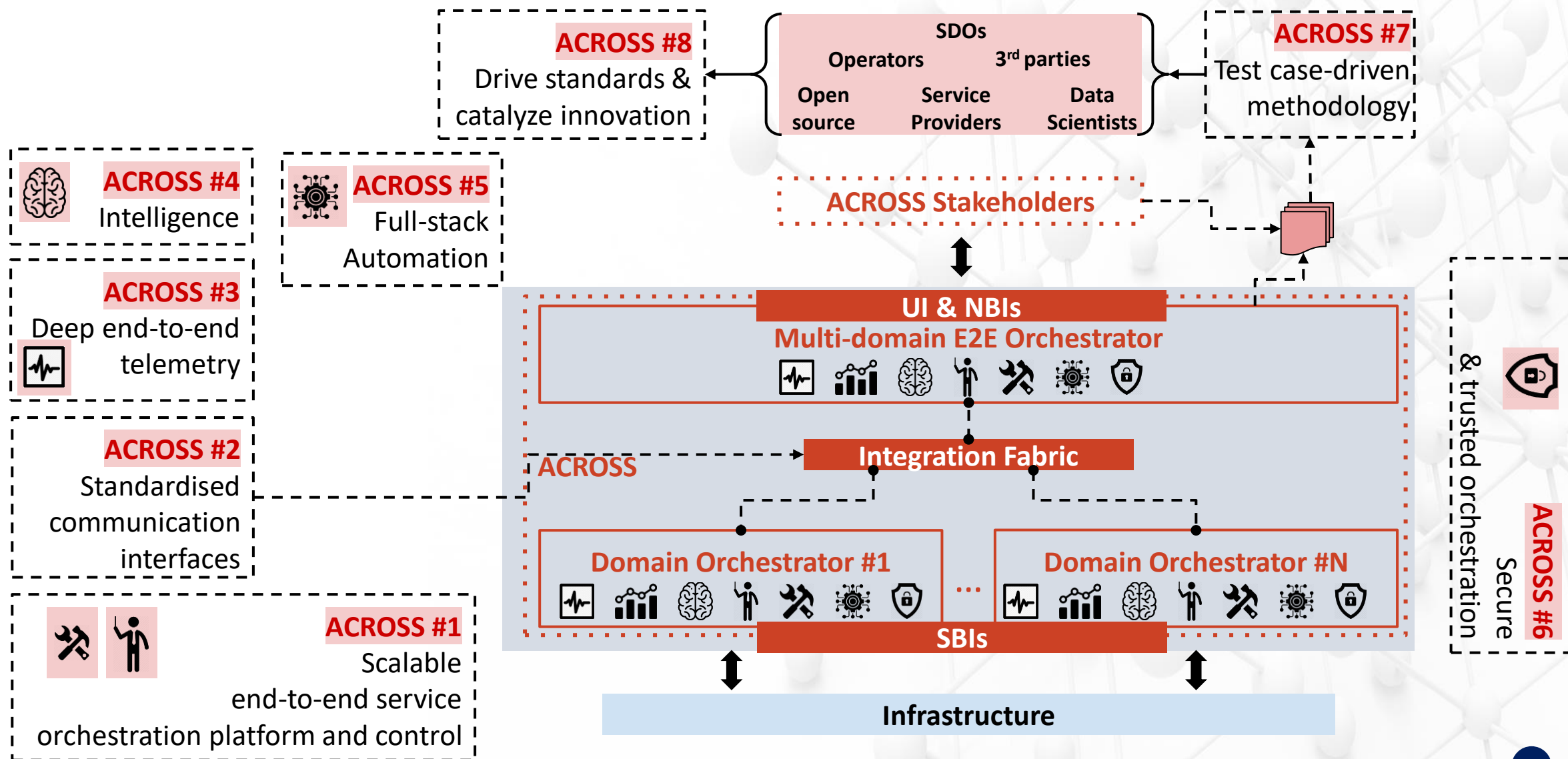
Data volume ++

In-network proc. (FPGAs)

AI breakthrough

Cross-layer automation

# Concept

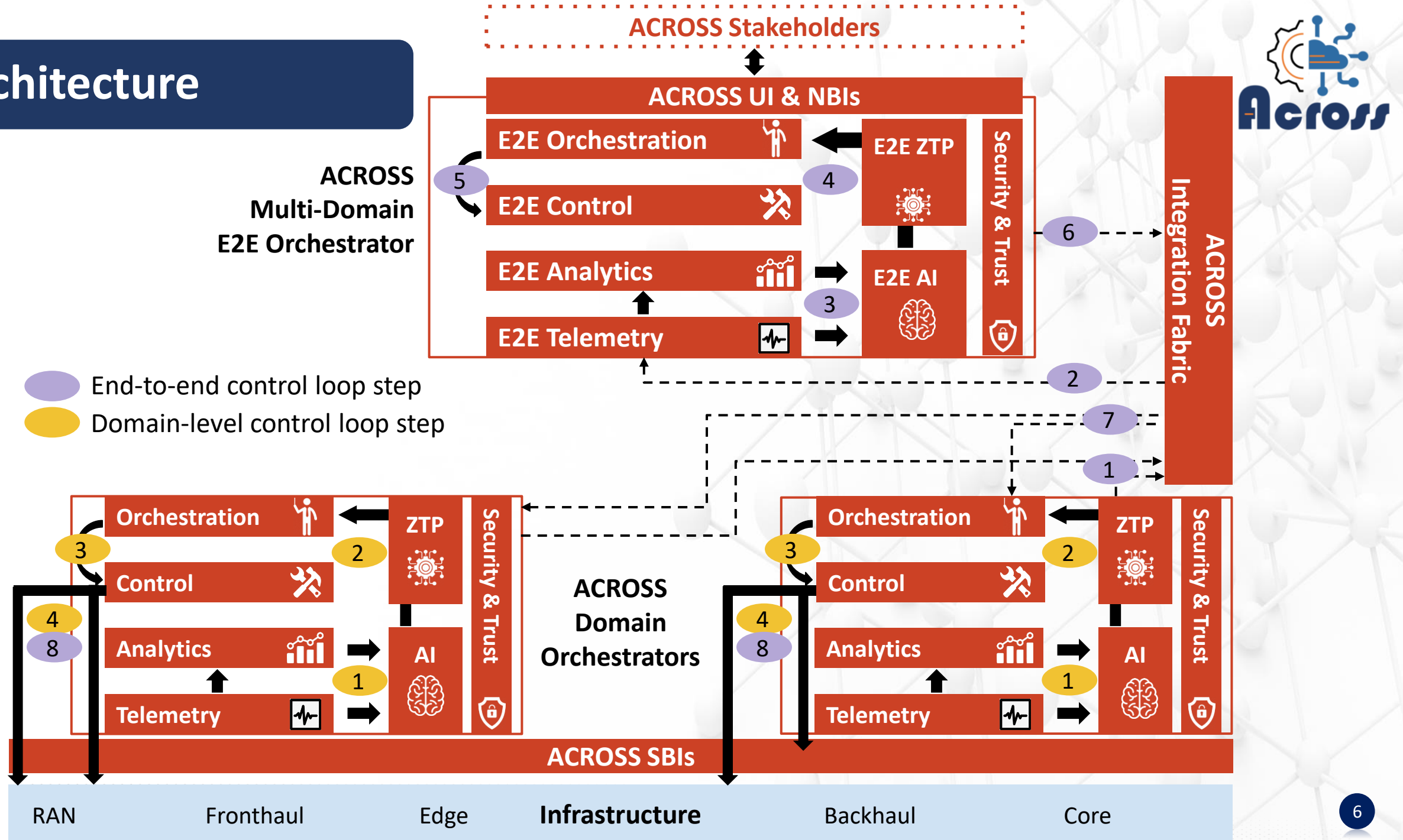


# Key development objective

- ACROSS project's developments...
  - ... provide an ultra-scalable service orchestration stratum, built as an ensemble of
    - a highly-distributed **grid of domain orchestration** instances
    - managed by a **multi-domain cloud-native service orchestrator**, able to ...
  - ... manage multi-X {domain, technology, vendor, tenant} infrastructures spanning across geo-distributed edge-to-core deployments, with...
  - ... increased security and trust over the underlying set of devices and ad-hoc data sources, while
  - ... jointly exploiting the data plane programmability, and the exciting momentum of AI to greatly outperform and outsmart existing service orchestration loops.

# Architecture

## ACROSS Multi-Domain E2E Orchestrator





## Key technologies investigated

- Ultra-scalable cross-domain service deployment and orchestration through standardised and vendor-agnostic **cross-domain integration fabric**
- Deep **end-to-end telemetry** on open programmable infrastructures, from both RAN-to-Core infrastructure and the service layer
- Real-time analytics and AI for next-generation end-to-end orchestration, exploiting **complex graph relationships** and **AI for TE** principles
- Full-Stack **cross-domain zero-touch provisioning** (ZTP), enabling both Vertical (App-to-Hardware) and Horizontal (RAN-to-Core) automation
- Secure & trusted orchestration mechanisms in fields of TEE, efficient and secure enclave management, improved sec-VNF placement

# Planned standardization activities

Alliance with standards and tangible beyond state-of-the-art contributions

## Per-module innovation plan

Aligns with

Contributes to



ETSI ZSM, ETSI TFS, P4.org, IETF OAM

ETSI OSM, ETSI TFS, P4.org/Stratum, OpenSlice



ETSI ZSM

ETSI OSM or third-party platforms



ETSI ZSM, ETSI ENI, ETSI SAI

ETSI TFS, OpenSlice, open AI platforms



ETSI ZSM, ETSI NFV, TMF, 5GPPP

OpenSlice/ETSI OSM, commercial orchestrators



ETSI ZSM, ETSI NFV, TMF, 5GPPP

OpenSlice/ETSI OSM, commercial orchestrators



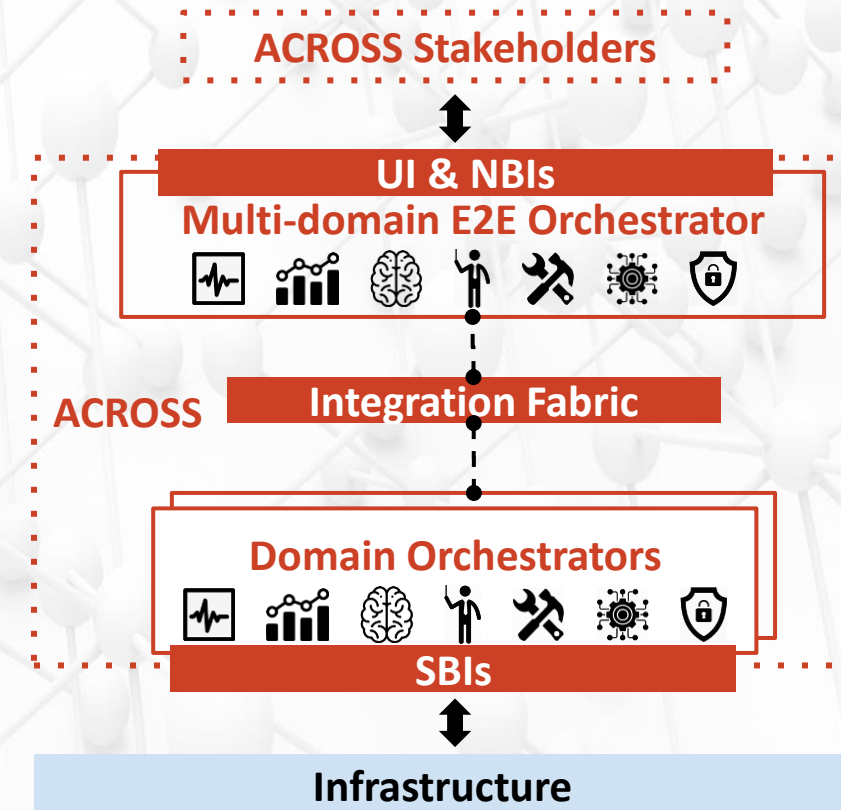
ETSI ZSM

OpenSlice/ETSI OSM, commercial orchestrators



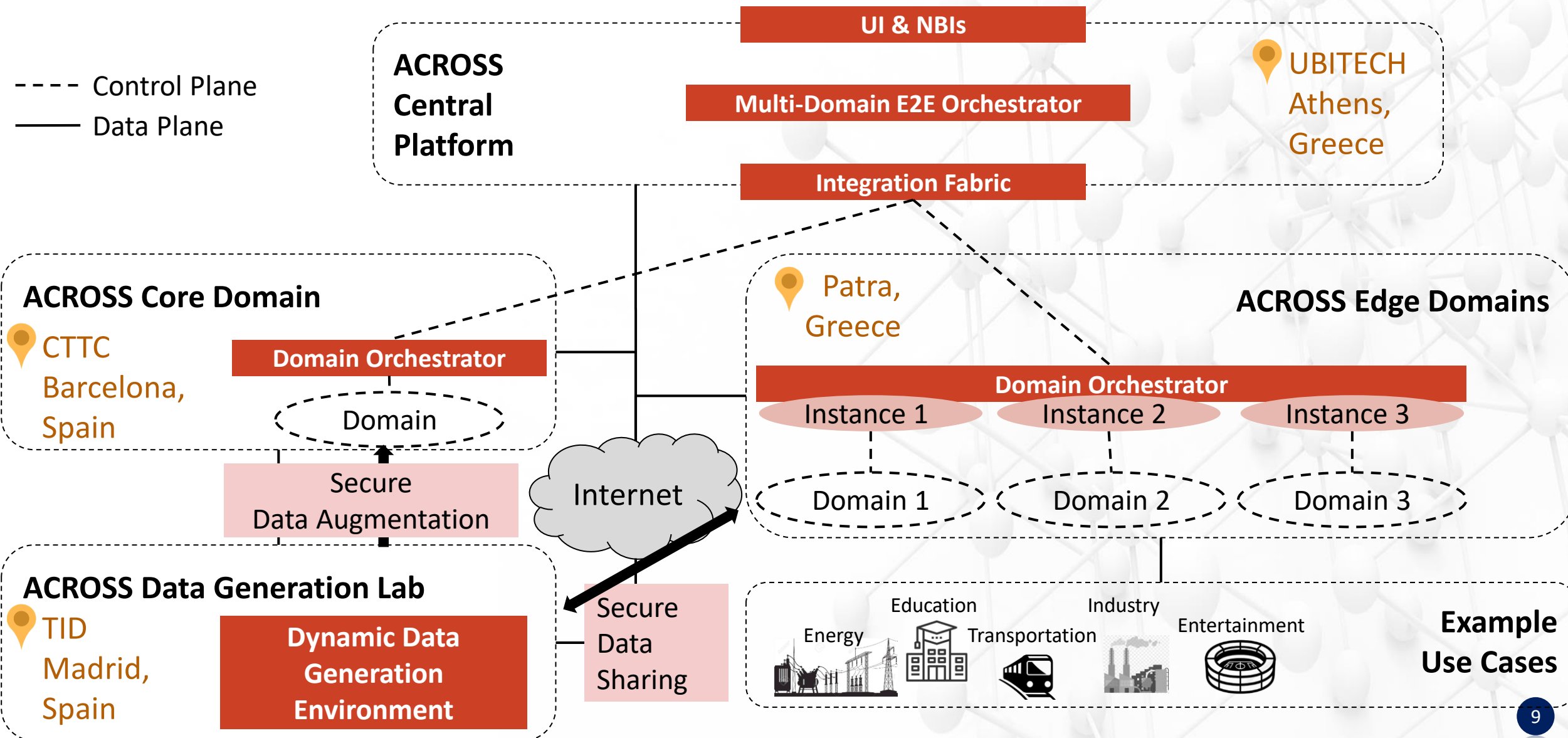
ETSI SAI, SNS Security WG

Open security and trust platforms

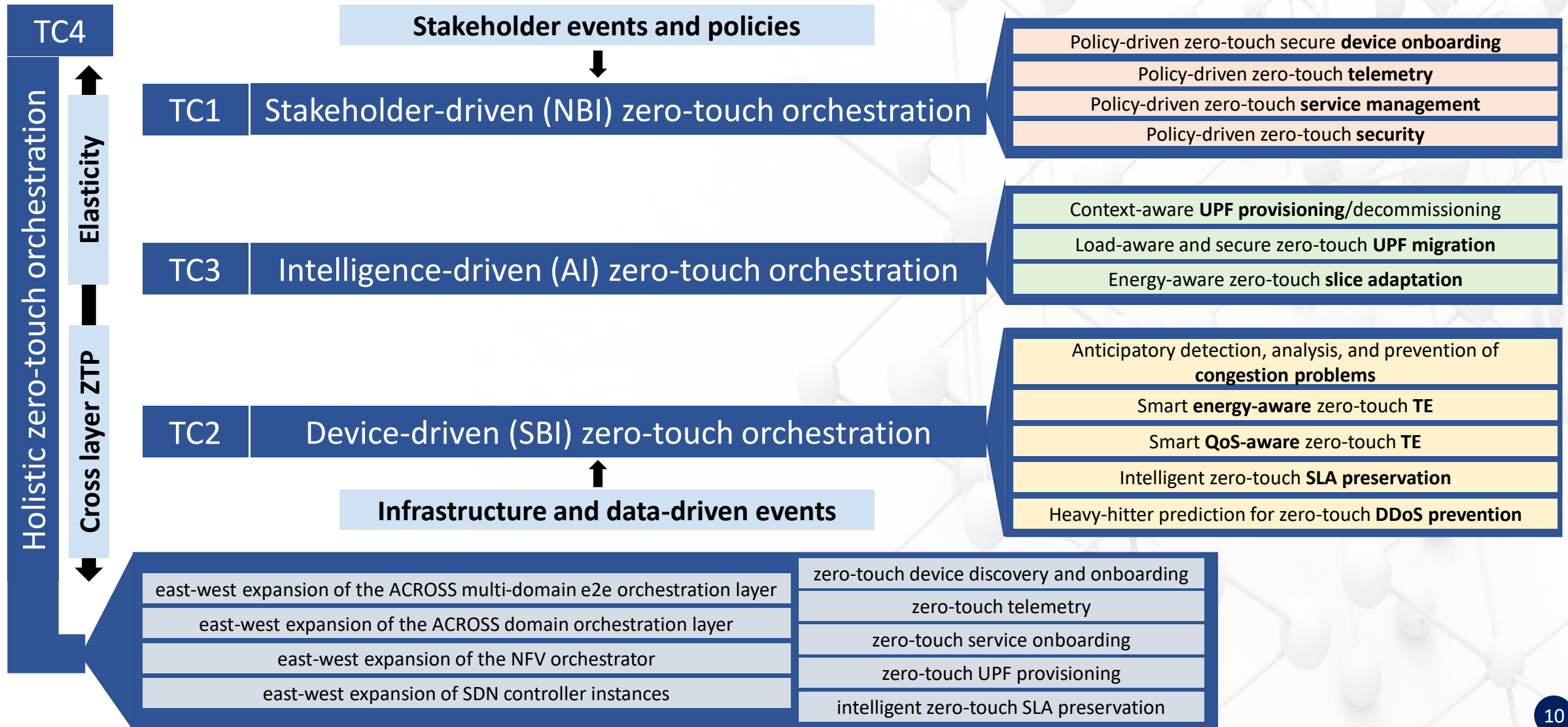




## Experimentation facilities



# Test cases overview



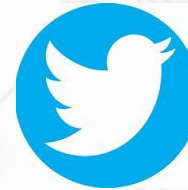
# Thank you !



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