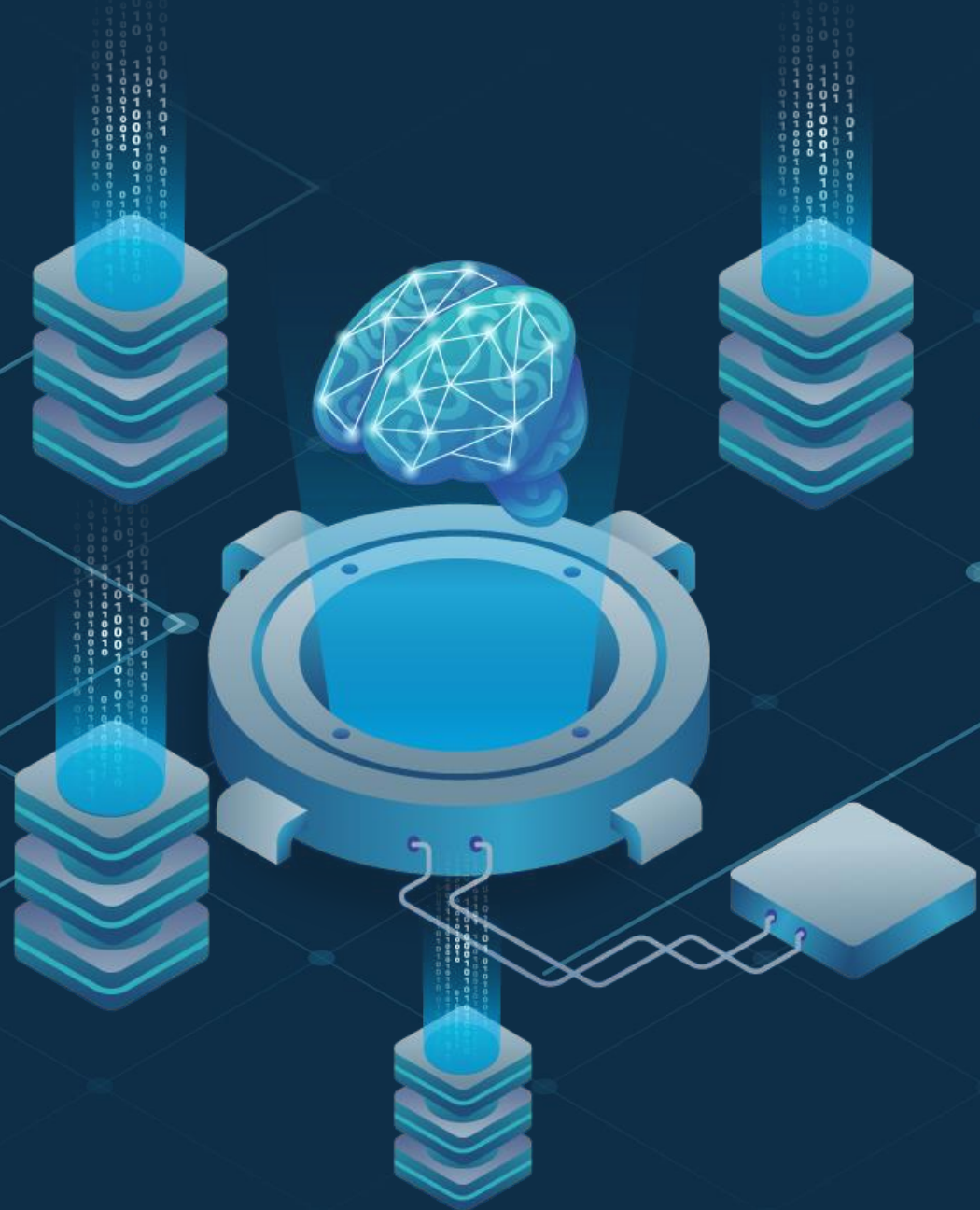# FLECON-6G

Project Overview

Prof. Christos Verikoukis, ISI/ATHENA

SNS Call 3 Projects Introduction Webinar

(Online)

FLECON-6G Project Overview

Presentation Content

General Information

The Project

- ✓ **Grant Agreement:** 101192462
- ✓ **Call:** HORIZON-JU-SNS-2024-STREAM-B-01-01: System Architecture - Standardisation and Follow-up/PoCs

- ✓ **Total budget:** 8,633,860.00 €
- ✓ **EC funding:** 7,971,093.75 €

- ✓ **Duration**: 36 months
- ✓ **Starting date**: 01 Jan 2025

- ✓ **Project Website:** www.flecon6g.eu

The Team

- ✓ **Project Coordinators:**
  Prof. Christos Verikoukis
  Dr. Theodora Tsapikouni

- ✓ **Technical Manager**:
  Prof. Adlen Ksentini

- ✓ **Project Officer**:
  Mr. Odysseas Pyrovolakis

Consortium

- ✓ **19 Consortium Partners**
  - ✓ 5 RTO/Academia
  - ✓ 8 Large Companies
  - ✓ 6 SME Innovation Champions

- ✓ **10 EU Member States**

Main Objective

## Novel 6G blueprint reference architecture

A novel 6G blueprint reference architecture, driven by distributed, modular, open, collaborative, trustworthy frameworks, and multi-layer NDTs, which span from the resource domain, control and management planes up to the business layer.

Intelligent 6G Network of Networks

The core FLECON-6G vision is an "intelligent 6G Network of Networks" architecture, offering Native & Trustworthy AI integration for automated, scalable composition of services and capabilities offered by individual networks, subsystems and technological domains administered by different stakeholders.
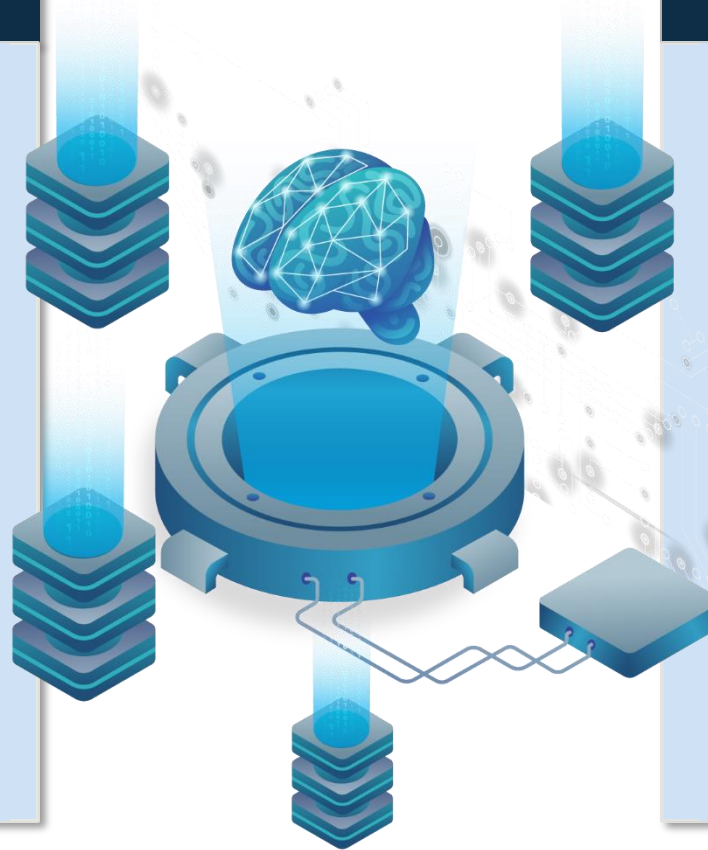
Main Concept
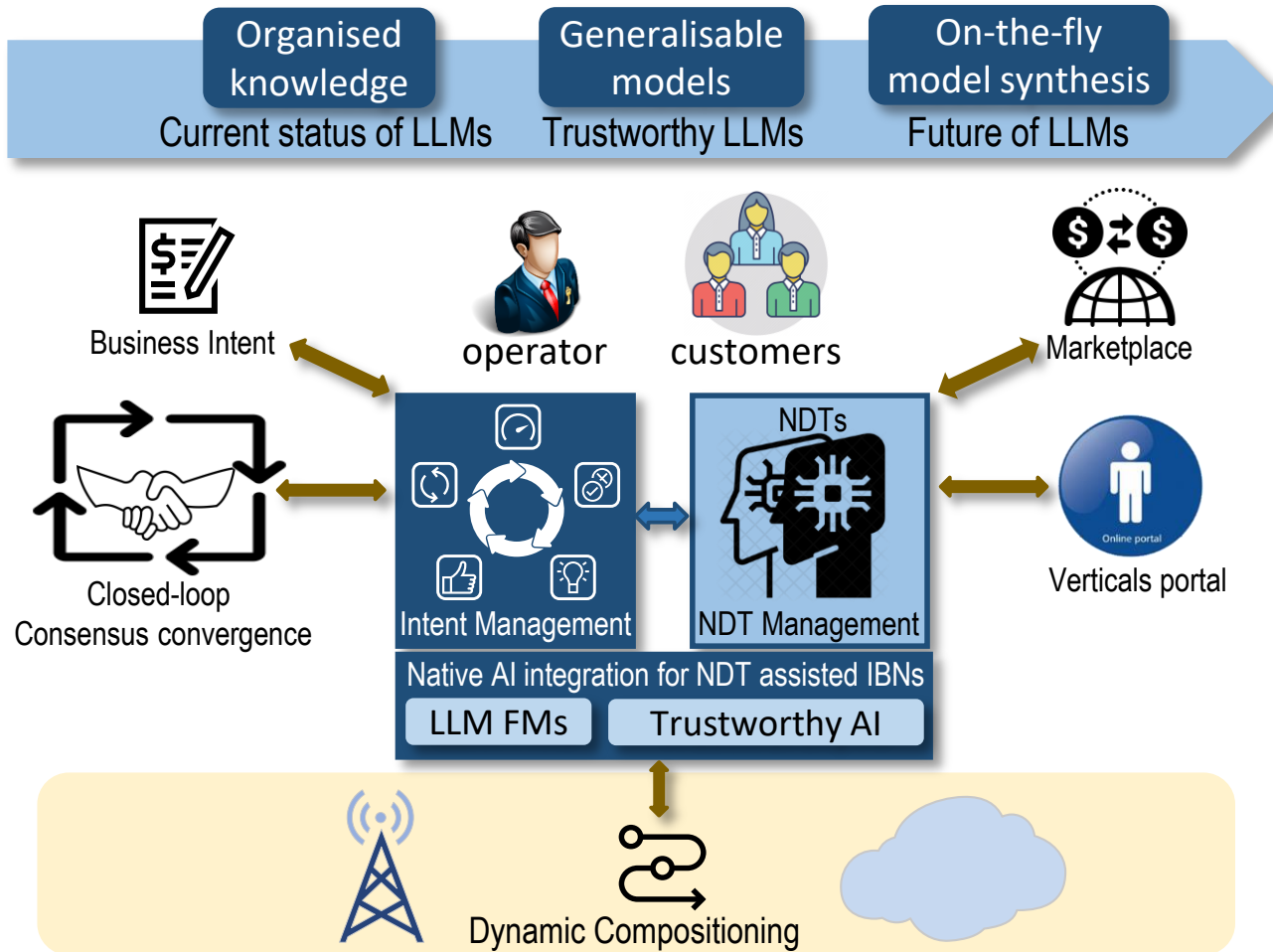
Project Technical Objectives

TO7: Integrate and demonstrate the potential and user value of FLECON-6G through relevant experimentation, testing, and validation of its innovations in PoCs

TO6: Implement a collaborative and distributed framework for recursive modelling, coordination, dynamic composition and operation of multi-domain 6G networks of networks .

TO5: Propose innovative data transfer paradigms considering enhanced data plane techniques with deep Edge integration (Accelerated Programmable Edge Computing)
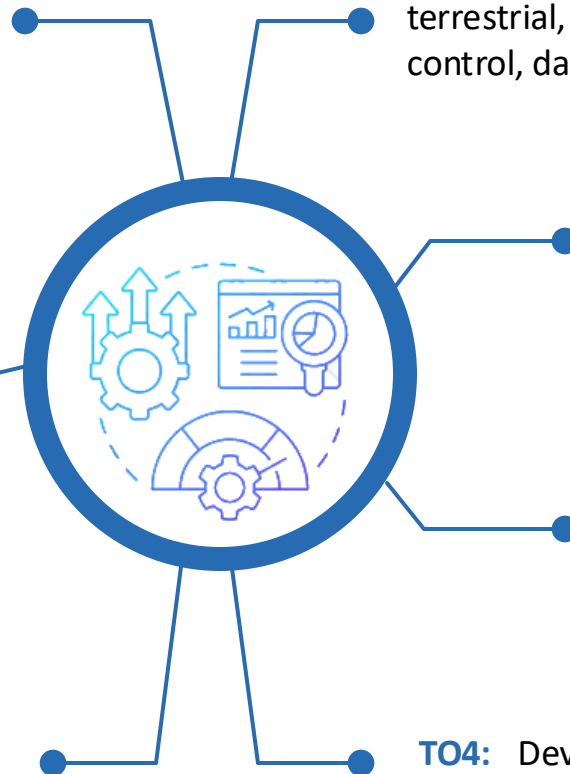
TO1: Design and implement a disruptive architecture for future 6G networks converging public, non-public, terrestrial, and non-terrestrial domains in all aspects of control, data and management planes.

TO2: Develop Native and Trustworthy AI algorithms for intent-driven multi-stakeholder networks, ensuring generalisability and uncertainty quantification.

TO3: Empower MNOs, infrastructure owners and 3rd party vertical application developers with a Smart Marketplace, supporting sharing and exposure of resources, NDTs, and AI models.

TO4: Develop a multi-layer Network Digital Twinning framework and integrate it within a Zero-Touch 6G network architecture.

Project Innovations

1. Accelerated Programmable Edge Computing

2. AI-Native integration via foundation models for planning in multi-stakeholder networks

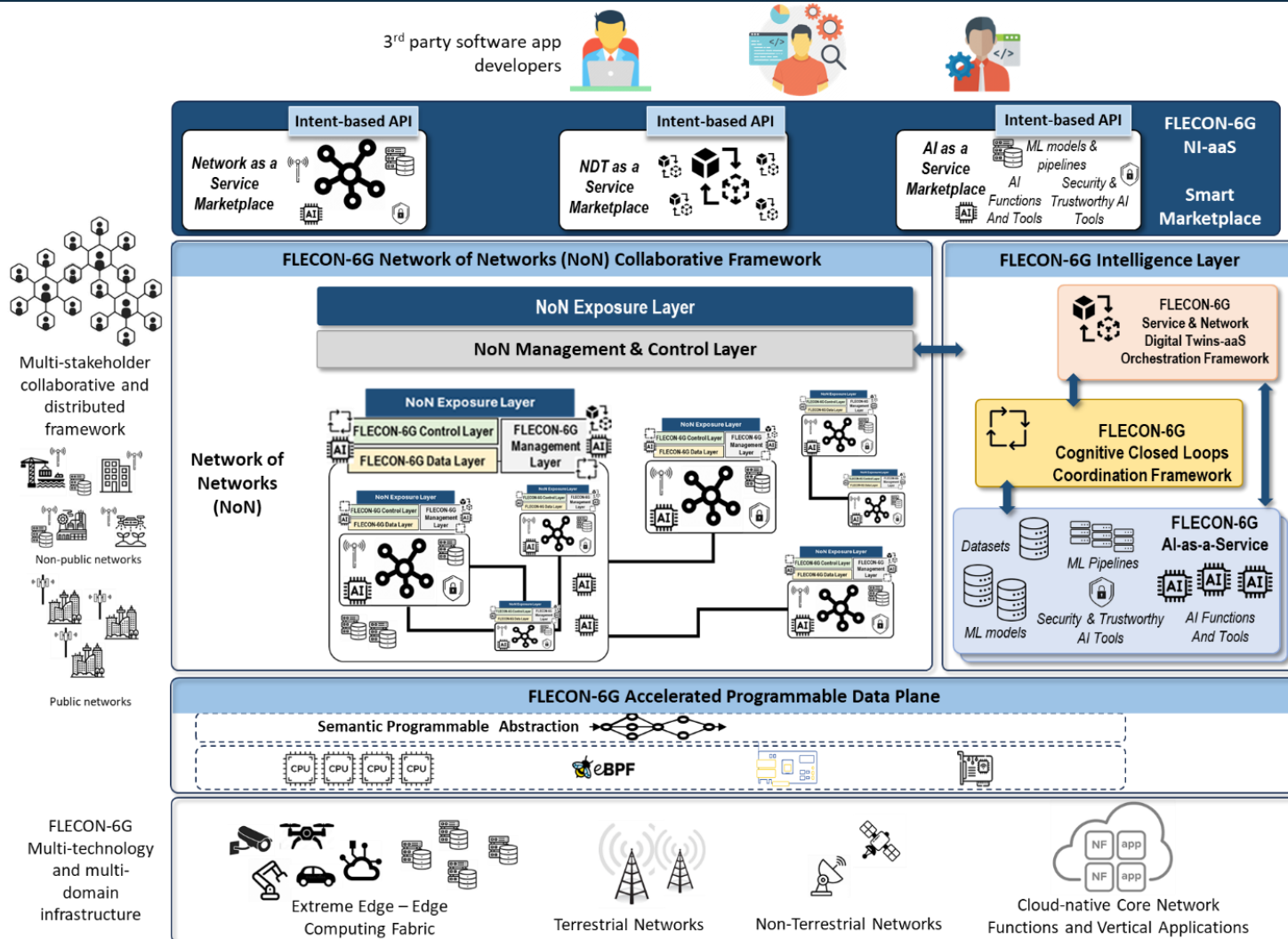3. Recursive and collaborative composition and federation of 6G NoN

4. Trustworthy AI

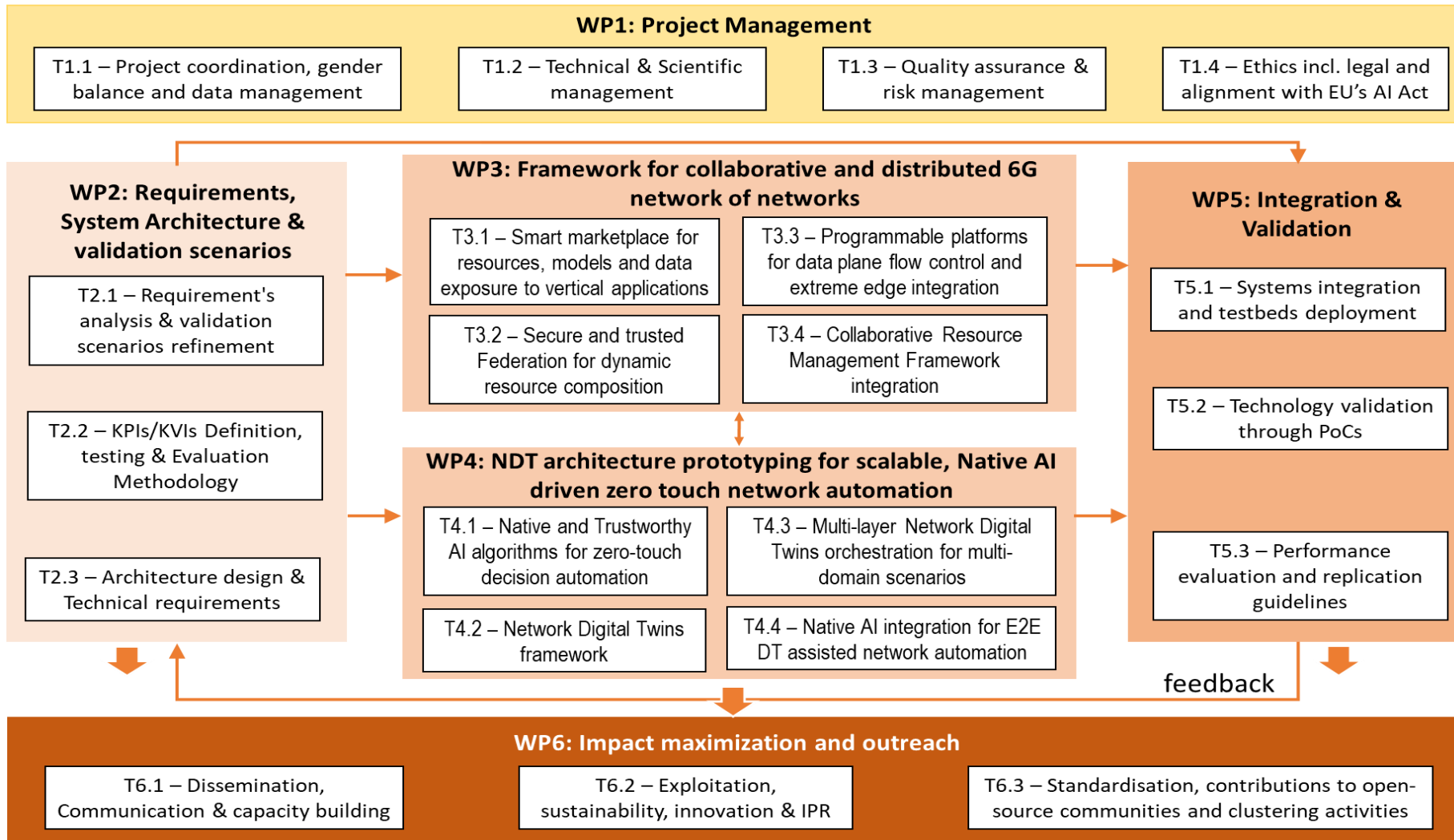5. Intent-driven smart marketplace for vertical exposure

6. Network Digital Twins (NDT) frameworks

7. Multi-layer and multi-domain NDT to assist network orchestration, closed-loop decision automation and conflict resolution

Initial Architecture

WP Structure

WP1: Project Management

T1.1 – Project coordination, gender balance and data management	T1.2 – Technical & Scientific management	T1.3 – Quality assurance & risk management	T1.4 – Ethics incl. legal and alignment with EU's AI Act

WP2: Requirements, System Architecture & validation scenarios

- T2.1 – Requirement's analysis & validation scenarios refinement
- T2.2 – KPIs/KVIs Definition, testing & Evaluation Methodology
- T2.3 – Architecture design & Technical requirements

WP3: Framework for collaborative and distributed 6G network of networks

- T3.1 – Smart marketplace for resources, models and data exposure to vertical applications
- T3.2 – Secure and trusted Federation for dynamic resource composition
- T3.3 – Programmable platforms for data plane flow control and extreme edge integration
- T3.4 – Collaborative Resource Management Framework integration

WP4: NDT architecture prototyping for scalable, Native AI driven zero touch network automation

- T4.1 – Native and Trustworthy AI algorithms for zero-touch decision automation
- T4.2 – Network Digital Twins framework
- T4.3 – Multi-layer Network Digital Twins orchestration for multi-domain scenarios
- T4.4 – Native AI integration for E2E DT assisted network automation

WP5: Integration & Validation

- T5.1 – Systems integration and testbeds deployment
- T5.2 – Technology validation through PoCs
- T5.3 – Performance evaluation and replication guidelines

feedback

WP6: Impact maximization and outreach

T6.1 – Dissemination, Communication & capacity building	T6.2 – Exploitation, sustainability, innovation & IPR	T6.3 – Standardisation, contributions to open-source communities and clustering activities

Proof of Concepts (PoCs)

PoC1
Seamless Immersive
Reality

PoC2
Machine inspection using
autonomous robots and VR

PoC3
Network Digital Twin
with NTN

PoC4
Public Safety
Service

Standardization plans

Contribution to the 3GPP

- **SA2:** Architectural enhancements and novel framework components, e.g. AI-native network operations, trusted federation mechanisms, interfaces.
- **SA4:** Requirements and standards for advanced media services, e.g immersive environments.
- **SA5:** Business intent translation replacing classical BSS model
- **SA6:** APIs that facilitate the exposure of 6G network capabilities to applications

Contributions to the ETSI

- ZSM ISG: NDT for enhanced ZSM with the multidomain NDT.
- ENI ISG: Integration of Native AI for end-to-end NDT

CAMARA: APIs enabling vertical applications to consume services on NDTs and ML models for 6G networks.

TMForum: Catalyst projects intent-driven processes for business plane automation and consensus convergence

IRTF NMRG: NDT architecture and its involvement on 6G network management aspects

FLECON-6G

Contact Details

Prof. Christos Verikoukis

ISI/ATH

cveri@isi.gr

www.isi.gr