6G-DALI Overview

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ISI/ATH

SNS Call 3 Projects Introduction Webinar

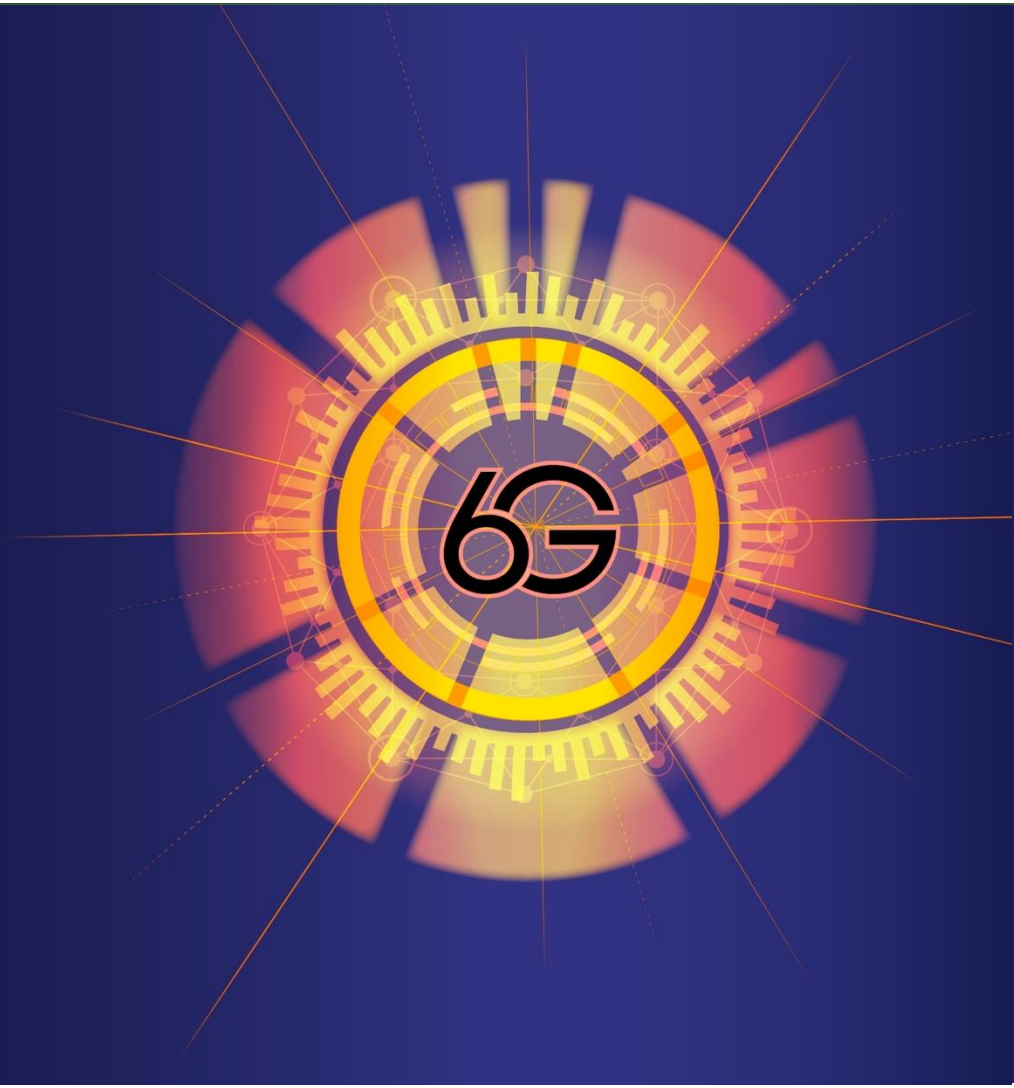
Co-funded by the European Union

6GSNS

6G-DALI project has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grand Agreement No 101192750.

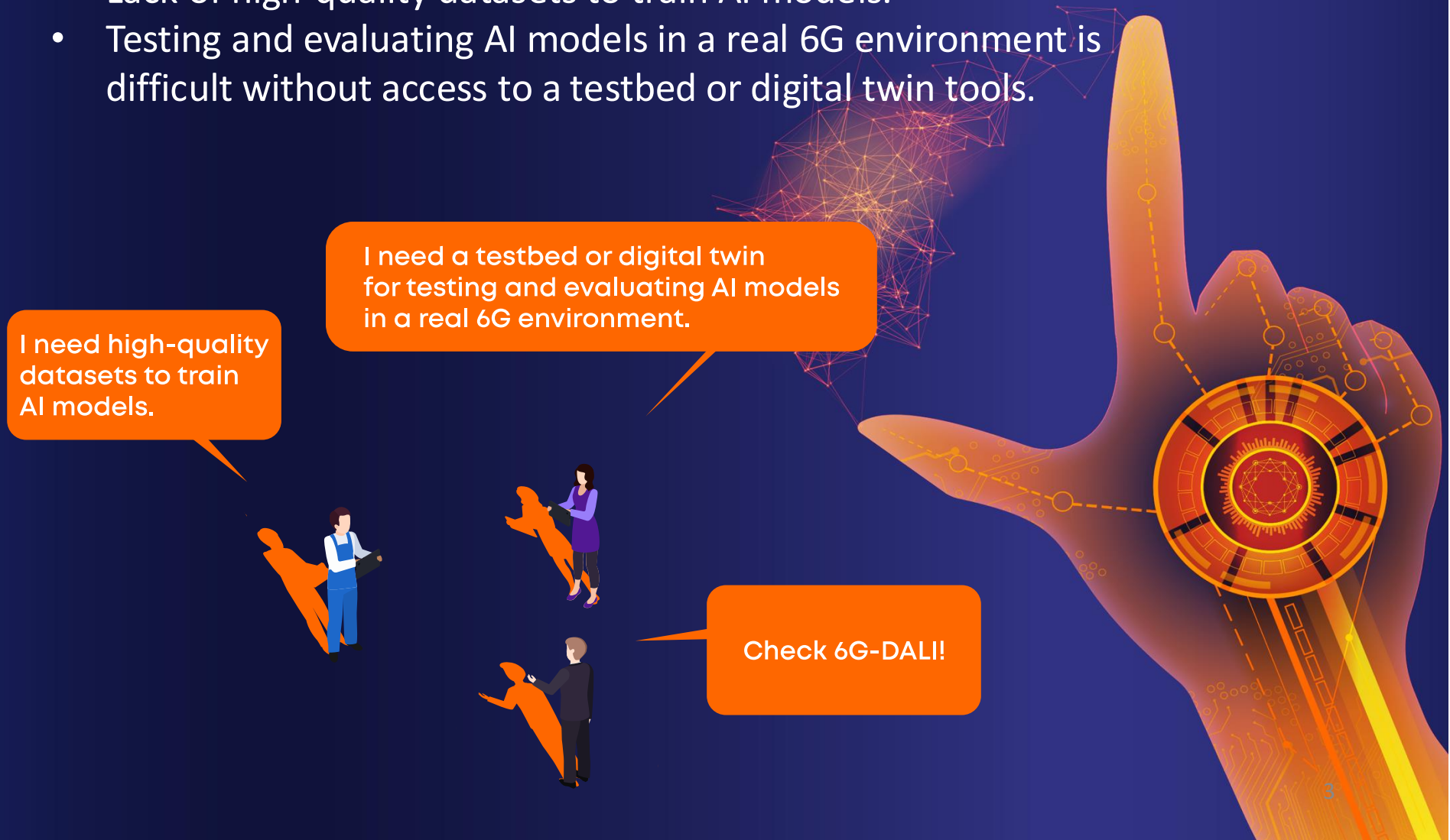
Outline

1. Motivation
2. Objectives
3. Pillars & Architecture
4. Innovation streams
5. Proof-of-Concepts



Motivation

- Lack of high-quality datasets to train AI models.
- Testing and evaluating AI models in a real 6G environment is difficult without access to a testbed or digital twin tools.



6G-DALI

European AI framework for 6G Data Spaces

General Information

- **Grant Agreement:** 101192750
- **Call: HORIZON-JU-SNS-2024-STREAM-B-01-08: Reliable AI for 6G Communications Systems and Services**
- **Duration:** 36 months
- **Starting date:** 01/01/2025
- **Total budget:** 6,223,736.25 Euros
- **EC funding:** 5,826,453.13 Euros
- **Project Coordinators:** Dr. Theodora Tsapikouni & Prof. Christos Verikoukis (ISI/ATH)
- **Technical Manager**: Dr. Vassilios Theodorou (ICOM)
- **URL:** www.6gdali.eu
- **Project Officer**: Mr. Tambiama Madiega

Main Objective

6G-DALI builds the first European e2e AI framework that aims to connect 6G data with verticals and ML developers, experimenters, while relying on 6G testbeds from SNS projects.

6G-DALI is bringing together 3 communities:

- experts on the design and experimentation on 6G systems
- experts on AI and MLOps
- experts on DataOps and the Gaia-X

to collaborate to build an efficient, realistic, and trustworthy framework for e2e AI/ML experimentation for 6G.

Partners

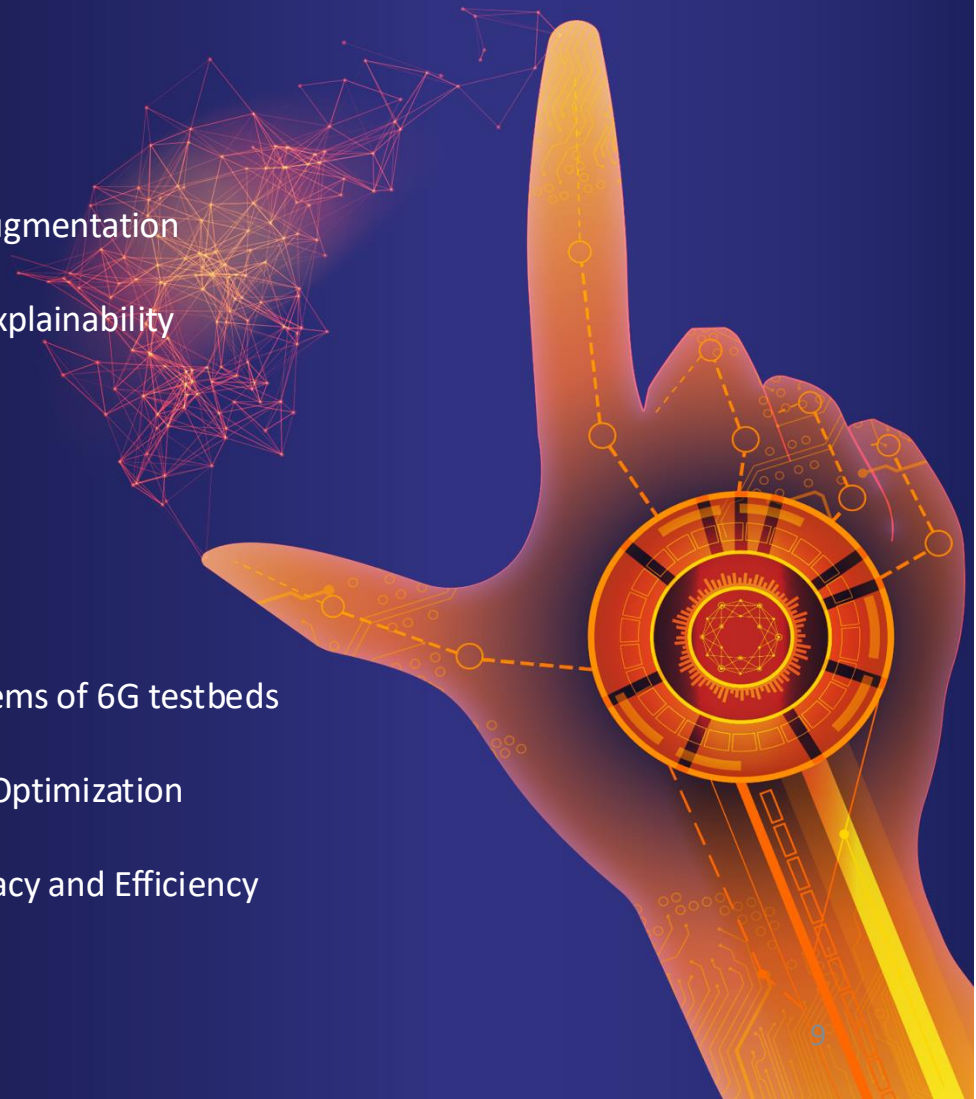

13 Participating organizations
7 EU Member States
4 RTO/ academia
5 Large companies
4 SME innovation champions
IBM
spark works
TU Delft
KU LEUVEN
EURECOM
VIAVI
NEXTWORKS
CyberEthicsLab.
iSi
ATHENA
INTRACOM
OTE

Objectives

Objective 1	**Deliver a user-friendly e2e AI framework for DataOps and MLOps in 6G**
Objective 2	**Deliver Gaia-X and ELT approaches for DataOps in 6G environments**
Objective 3	**Streamline 6G testbed's trustworthy AI/ML ops via MLOps and AutoML**
Objective 4	**Plug-able adapters to easily integrate 6G testbeds from future calls**
Objective 5	**Build & Integrate a DT Testbed to generate representative datasets for 6G**
Objective 6	**Ethical data sets and validation methodologies and legislative compliance**
Objective 7	**Dissemination, Communication, Exploitation and Standardization**

Innovation Streams

- AI-based data cleaning and improvement
- Collaborative MLOps and RLOps
- Trustworthy AI via ML model drift detection and data augmentation
- Trustworthy Reinforcement Learning via LLM-assisted explainability



- Digital Twin for large-scale 6G experimentation
- Knowledge transfer automation for multi-party ecosystems of 6G testbeds
- LLM-enabled AI experimentation and Hyperparameter Optimization
- Federated Learning with NWDAF operations for 6G Privacy and Efficiency

6G-DALI Concept

Pillar 1:

AI experimentation as a service via **MLOps/RLOps**

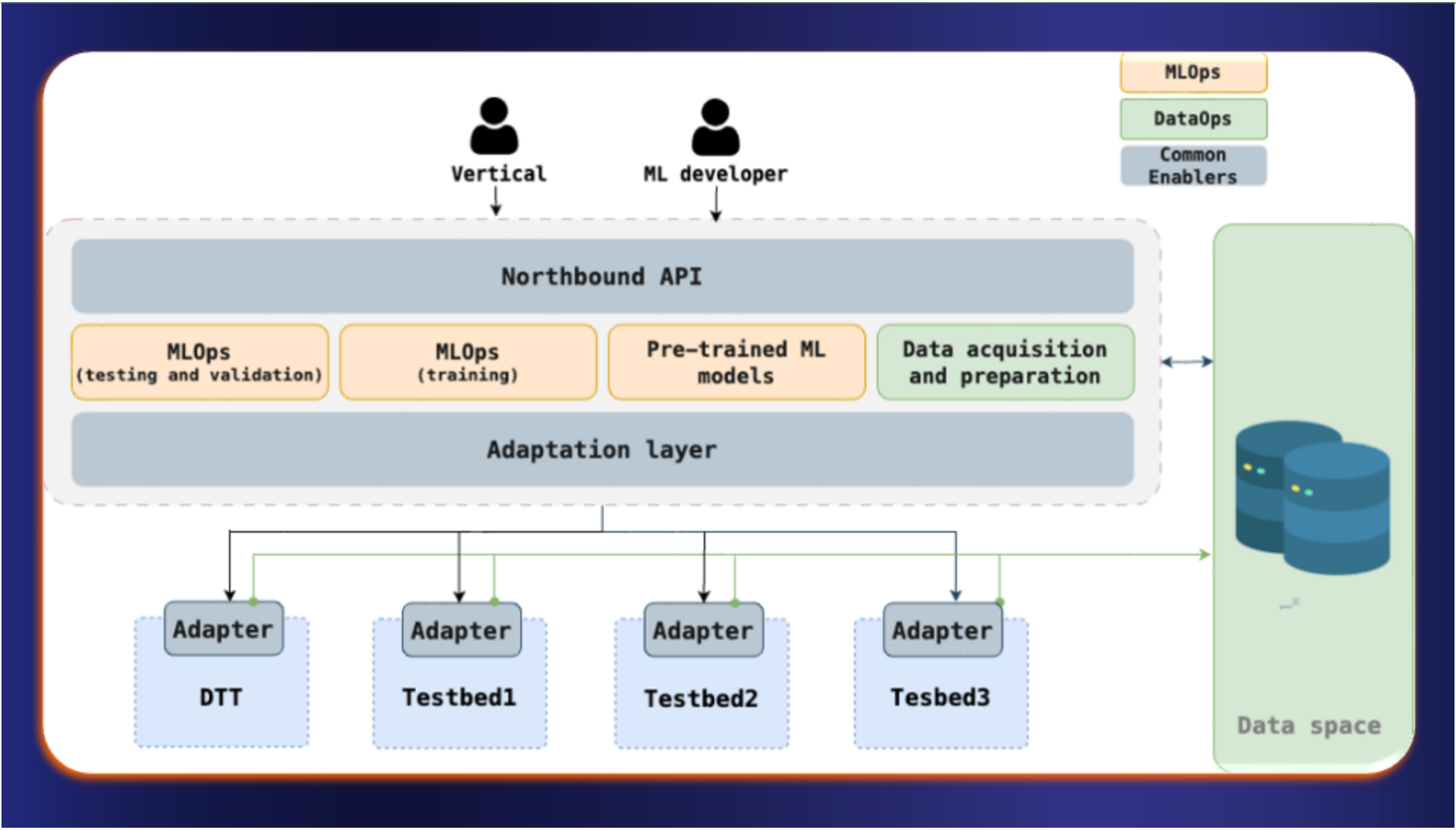
- Distributed MLOps open-source software solution for 6G
- AI as a Service (AIaaS) framework for 6G experimentation

Pillar 2:

Data and analytics collection and storage via **DataOps**

- Gaia-X for 6G dataspace connection with the 6G-DALI framework
- Trustworthy AI and Societal acceptance
- Digital Twin Testbed (DTT) for large-scale experiments
- Core Network Data Analytics and Federated Learning via NWDAF

Initial Architecture



PoC-1 Data management and experiment on demand

Exp. 1.1: Data search and extraction via Gaia-X service catalogue

TRL5

Exp. 1.2: Data on-demand and enhanced ELT pipelines

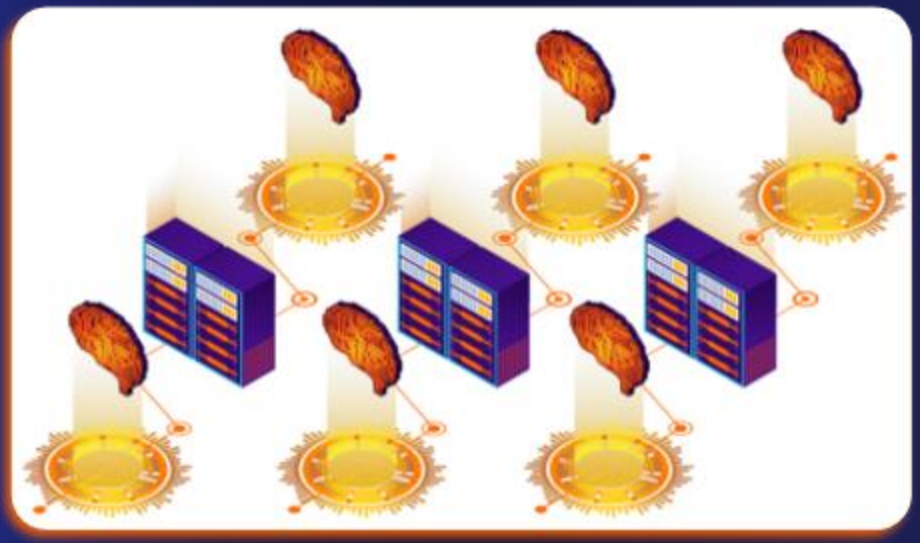
PoC-2 AIaaS for CDN apps via cross-testbed decentralized MLOps

Exp. 2.1: Hyperparameter optimization and placement of ML models at the Cloud-Edge-Continuum

TRL4

Exp. 2.2: ML model Benchmarking and drift detection during vertical application testing

PoC-3 DTT and RLOPS for large and medium-scale experiments



Exp. 3.1: Large-scale experimentation for RLOps

TRL4

Exp. 3.2: Medium-scale DT experimentation for O-RAN

Thank You!!!

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