

DECICE

Device-Edge-Cloud Intelligent
Collaboration Framework

Facts & Partners

Programme

Horizon Europe
HORIZON-CL4-2022-DATA-01-02
Research & Innovation Action

Reference

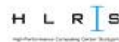
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Duration

12/2022 to 11/2025

Coordinator

Georg-August-Universität
Göttingen



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About DECICE

DECICE aims to develop an AI-based, open and portable cloud management framework for automatic and adaptive optimization and deployment of applications in a federated infrastructure, including computing from the very large (e.g., HPC systems) to the very small (e.g., IoT sensors connected on the edge).

EDGE | CLOUD | DATA CENTERS | KUBERNETES | FRAMEWORK | HETEROGENOUS SYSTEMS | HPC | IoT |
DIGITAL TWIN | AI-SCHEDULING | MACHINE LEARNING | DEEP LEARNING | SYSTEM MONITORING



BACKGROUND

Growth and higher complexity of cloud computing industry



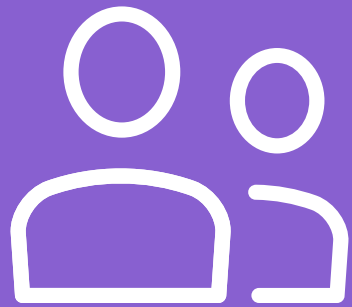
CHALLENGE

Ultra-low latency, security and close location (e.g. in Smart Cities)



SOLUTION

AI-Scheduler: using the available resources of a digital twin



Target Group

- Industry and innovators in the IoT, Cloud, Edge
- Research institutes, individual Researchers and Research initiatives
- Standardization bodies, pre-standardization, and open-source initiatives
- European and International Initiatives
- Policymakers
- Civil society and community at large

PROJECT CONCEPT

WHAT we are doing!

Solving the challenge of optimization of both performance and energy or addresses data and job locality.



AI-based, open and portable cloud management (from large HPC to small IoT)



Digital Twin
AI-model uses available resources for real-time scheduling decisions

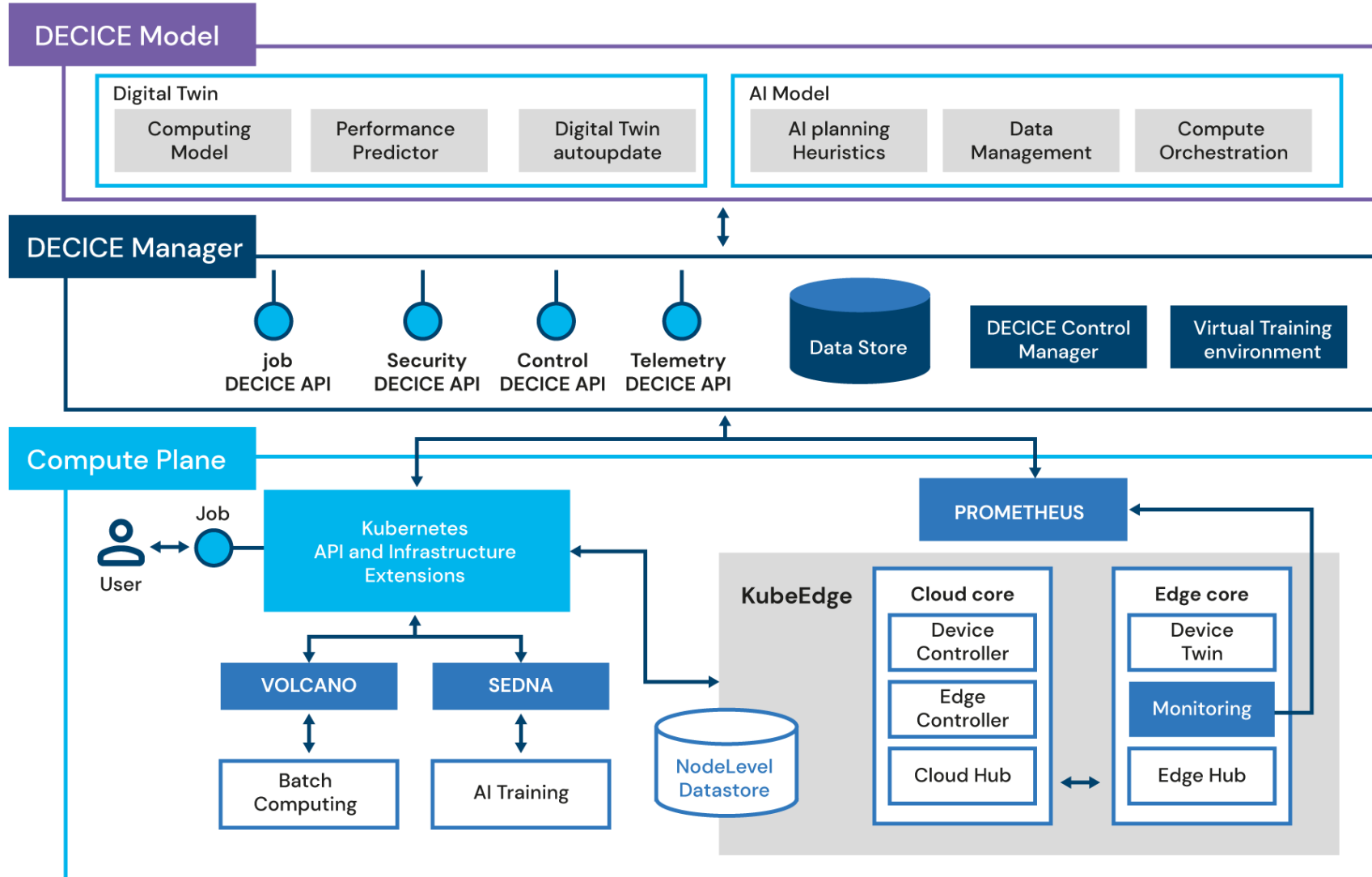


DECICE framework
tool and interface for the administrators and deployment experts



Open standard APIs
portable, modular and extensible

Architecture



DECICE OBJECTIVES



LEVERAGE A COMPUTE CONTINUUM ranging from Cloud and HPC to Edge and IoT.



AI-SCHEDULER supporting dynamic load balancing for energy efficient compute orchestration, improved use of Green Energy, and automated deployment.



API that increases control over network, computing and data resources.



DYNAMIC DIGITAL TWIN of the system with AI-based prediction capabilities.



REAL-LIFE USE CASES of DECICE framework (usability and benefits).



SERVICE DEPLOYMENT with a high level of trustworthiness and compliance with relevant security frameworks.

PROJECT IMPACTS

Impact 01



Europe's open strategic autonomy by sustaining first-mover advantages in strategic areas including AI, data, robotics, quantum computing, and graphene, and by investing early in emerging enabling technologies

Impact 02



Reinforced European industry leadership across the digital supply chains

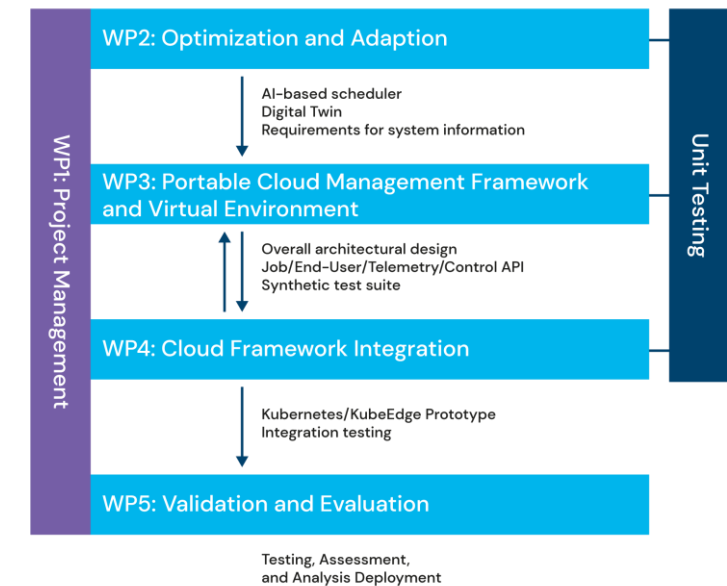
Impact 03



Robust European industrial and technology presence in all key parts of a greener digital supply chain, from low-power components to advanced systems, future networks, new data technologies, and platforms.

Project Structure

- WP1: Project Management
- WP2: AI Scheduler for Optimization and Adaption
- WP3: Open Framework and Virtual Training Environment
- WP4: Cloud Management Framework Integration
- WP5: Deployment, Validation and Performance Assessment
- WP6: Dissemination and Communication



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