Software & Standards for Smart Networks & Services

Sovereign Cloud-Edge Continuum Built on Open Source:

An introduction to the European IPCEI-CIS and 8ra initiatives and the NeoNephos Foundation

Florian Müller

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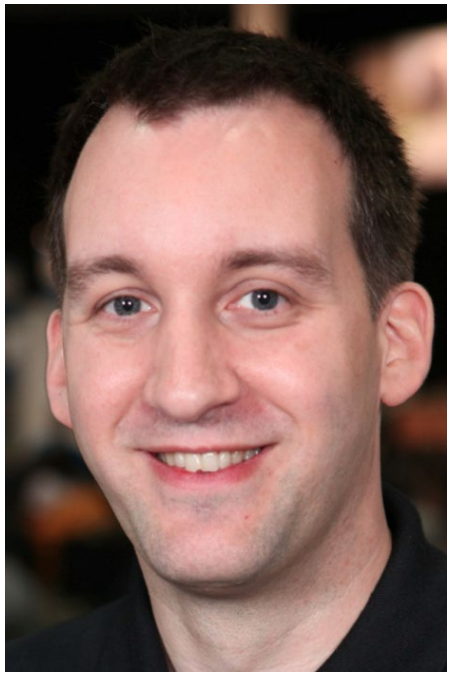
About me...



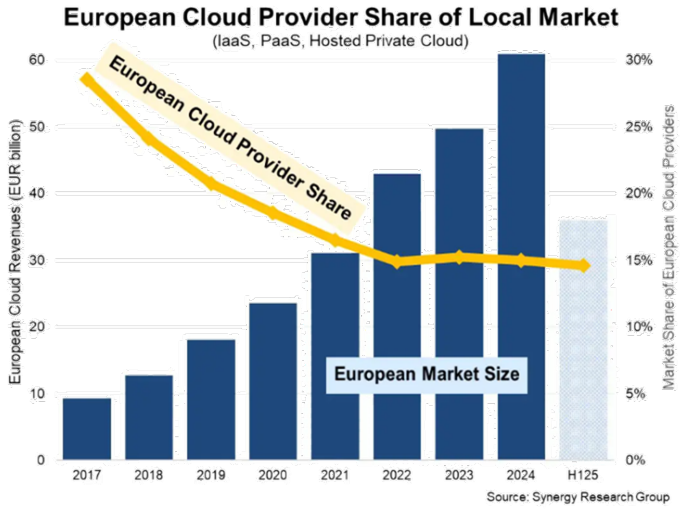
Florian Müller

- Software Architect,
  Apeiro Reference Architecture, SAP SE
- Coordination of the
  IPCEI-CIS Architecture Task Force
- Chair of the Technical Advisory Councils
  of the NeoNephos Foundation

IPCEI-CIS – Next Generation Cloud Infrastructure and Services

Motivation

- Cloud market dominated by a few large companies from non-EU countries
- European providers highly fragmented (<13% of global market)
- Lack of scalability, interoperability, and transparency in offerings



Goal

- Ensure Europe’s competitiveness in the digital space
- Build an independent, high-performance European cloud-edge infrastructure
- Strengthen digital sovereignty and data portability for Europe
- Focus on standardization, interoperability, sustainability, and cybersecurity

Important Project of Common European Interest (IPCEI)

A special EU framework enabling member states to provide **coordinated state aid for large-scale, cross-border industrial projects** that are **strategically important for Europe** - where the market alone would not invest at the required scale or speed.

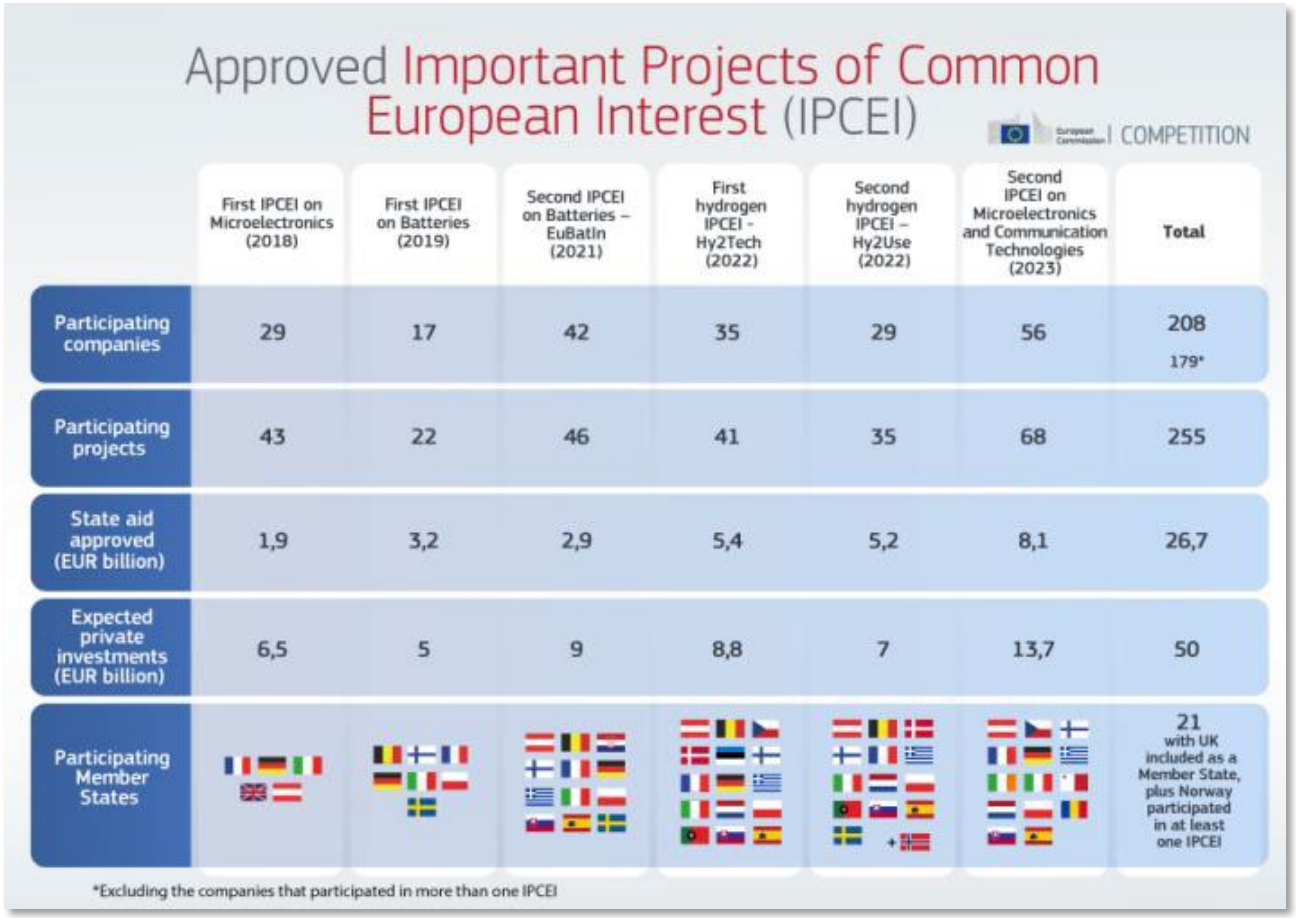
Public Funding Conditions:

- Ambitious R&D&I exceeding current state of the art
- No market distortion
- Co-financing by beneficiaries
- Spill-over effects across the EU

Strategic Importance:

Projects must address key EU priorities such as

- Sustainability
- Technological leadership
- Digital sovereignty

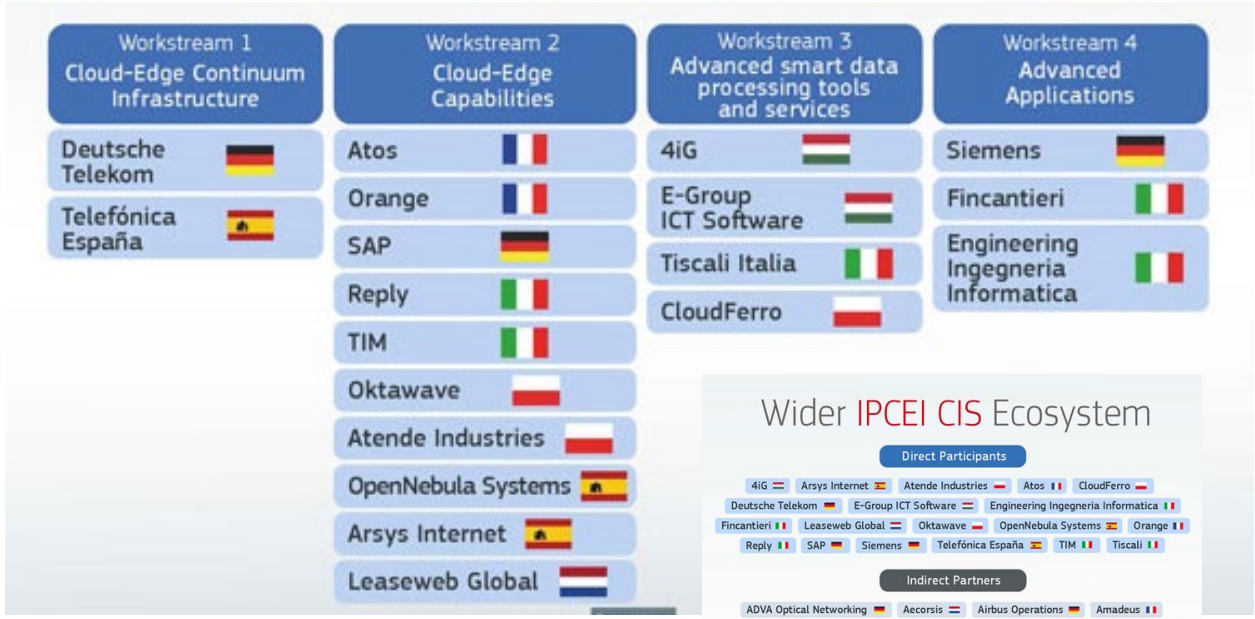


	First IPCEI on Microelectronics (2018)	First IPCEI on Batteries (2019)	Second IPCEI on Batteries – EuBatIn (2021)	First hydrogen IPCEI - Hy2Tech (2022)	Second hydrogen IPCEI – Hy2Use (2022)	Second IPCEI on Microelectronics and Communication Technologies (2023)	Total
Participating companies	29	17	42	35	29	56	208 179*
Participating projects	43	22	46	41	35	68	255
State aid approved (EUR billion)	1,9	3,2	2,9	5,4	5,2	8,1	26,7
Expected private investments (EUR billion)	6,5	5	9	8,8	7	13,7	50
Participating Member States							21 with UK included as a Member State, plus Norway participated in at least one IPCEI

IPCEI-CIS – Next Generation Cloud Infrastructure and Services

*» The IPCEI-CIS aims to build a high-performance **cloud-edge infrastructure** based on **European values** and **ensure European competitiveness** in the digital environment in the long term. The core objective is to create an overarching "**Cloud-Edge Continuum**" that is **not tied to individual providers**. «*

Source: German Federal Ministry for Economic Affairs and Energy

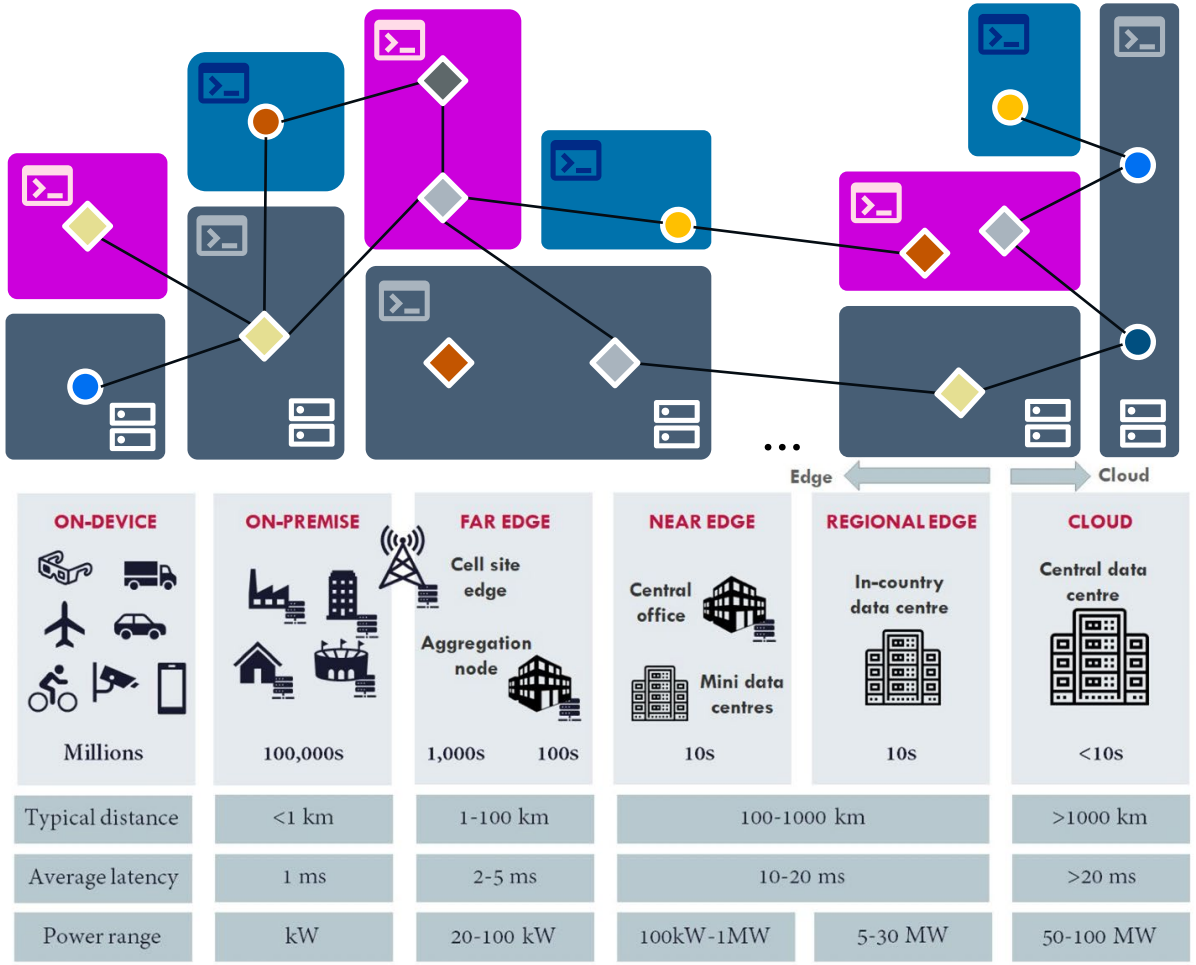


- **12 EU member states**
- **Over 100 indirect partners**
  (large enterprises, SMEs, start-ups, research institutions)
- **Funding**: €3.5 billion total across Europe
- **Duration**: End of 2023 to 2026/2027

8ra – Multi-Provider Cloud-Edge Continuum

Ecosystem: **Software Providers**

Ecosystem: **Infrastructure Providers**



8ra CLOUD·EDGE CONTINUUM

8ra – Multi-Provider Cloud-Edge Continuum

The **8ra initiative** provides the **overarching framework for IPCEI-CIS**:

- Ensures **long-term evolution** of IPCEI-CIS results.
- Establishes a **permanent structure to strengthen relevance and acceptance**.
- Serves as an **umbrella for future IPCEIs**, such as IPCEI-AI.
- Complements the **time-limited IPCEIs** and ensures sustainability.
- Enables **integration of additional partners and initiatives**.
- Promotes **cross-sector integration** and a **sovereign cloud-edge continuum**.

8ra CLOUD·EDGE CONTINUUM

Website: https://www.8ra.com

Open-Source needs Vendor Neutral Governance

Foundation

Launch of NeoNephos Foundation @ KubeCon

London, April 2, 2025

NeoNephos Foundation

- **Non-profit Open Source Foundation**
  under the umbrella of the Linux Foundation Europe

- Founded in Spring 2025
- Currently:
  - **16 members** (more to come)
  - **12 projects** (more to come)
- The foundation itself is not EU or IPCEI-CIS funded, but many of its projects are.

SAP
T-Systems
STACKIT
A Brand of Schwarz Digits
23 Technologies
CLOUDSO
elastx
CYBERUS
TECHNOLOGY
KUBERMATIC
X-cellent
technologies
plusserver
REPLY
LIQUID
SUSE
APE FACTORY
NEARBY
COMPUTING
TNO innovation for life
SBA
Research

Website: https://neonephos.org/

NeoNephos Foundation

- *What:* **Open-source components and tooling for modern cloud and edge stacks**
  From bare metal and AI infra to runtimes, orchestration, service management, and app lifecycle – running from large data centers to on-prem.
- *Mission:* **Democratize cloud & edge with end-to-end solutions built entirely from open source**
  Independence from proprietary and single-vendor OSS.
- *Principles:*
  - **Neutral, community-led governance**
    Merit over affiliation
  - **Cloud-native design**
    KRM as a common interface, OpenTelemetry for unified observability, etc.
- *Federation:* **Interoperability within and across providers**
  Portability, openness, and security by design.
- *Not a product:* **Modular building blocks and sensible defaults**
  Bridge legacy where needed; compose with mature ecosystem projects for production.
- *Production & Market*: **Built for mission-critical and commercial use**
  Many originate in real products; commercial support encouraged; conformance criteria and automated tests ensure compatibility.
- *Sovereignty*: **No lock-in, transparent code, deploy anywhere**
  Federation suits Europe’s diverse market; aligned with IPCEI-CIS/8ra aims yet independent; welcomes related initiatives (e.g., IPCEI-AI).

Current NeoNephos Projects

Kubernetes

Gardener is a proven, scalable system that simplifies Kubernetes cluster management across multiple infrastructures, allowing developers to focus less on cluster operations.

Garden Linux is a Debian GNU/Linux derivate that aims to provide small, auditable Linux images for most cloud providers (e.g. AWS, Azure, GCP etc.) and bare-metal machines.

Packaging, Delivery & compliance

Open Component Model (OCM) provides a standard for describing delivery artifacts that can be accessed from many types of component repositories.

Frontend & Dashboards

Open Micro Frontend Platform enables the dynamic integration of services into a unified common interface experience via micro services.

Service & Federation Management

Platform Mesh establishes interoperability between multiple providers by building upon the Kubernetes API and resource model. Developers and admins can discover, access, and order services from various sources through kubectl.

Bare Metal, Infrastructure & Operations

CobaltCore is a reimagined and opinionated OpenStack distribution fully utilizing IronCore. It ensures backward compatibility for heritage workloads.

IronCore integrates Kubernetes-based control planes for compute, storage and network with an OpenStack IaaS layers. Optimised for both virtualised and cloud-native workloads including a container registry, smart workload scheduling and an end user portal.

Greenhouse is a cloud operations platform designed to streamline and simplify the management of a large-scale, distributed infrastructure.

API Management

Open Resource Discovery (ORD) is a protocol that allows applications and services to self-describe their exposed resources and capabilities.

Infrastructure- and Configuration-as-Data

Open Managed Control Plane (OpenMCP) enables extensible Infrastructure- and Configuration-as-Data capabilities as a Service.

Katalis bridges Telco and Cloud Provider APIs utilizing Kubernetes to drive orchestration and federation principles.

Telco Federation

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Thank you.