NEXUS FORUM.EU

Consolidating Research and Policy along the Cognitive Computing Continuum

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NexusForum.EU Research and Innovation Roadmap

The *Cognitive Computing Continuum Research & Innovation Roadmap* outlines a research and innovation trajectory towards achieving a federated European multi-provider, AI-driven computing continuum, to enable and support data-driven innovation and AI deployments in Europe.

Check the Roadmap more in detail on eucloudedgeiot.eu

Main topics and subtopics of the Research & Innovation Roadmap

Relative current maturity level

Legend:
- Cloud-Edge for AI
- Telco Cloud-Edge
- Next-Gen Applications
- AI for Cloud-Edge
- Disruptive Impact Initiatives

- Integrating HPC in the Cognitive Computing Continuum
- Resilient on-prem 5G/6G edge-cloud for Industry 4.0 and beyond
- Large-scale testbeds for AI services
- Open radio access network (Open RAN)
- Data spaces for AI
- Portable AI applications and an open AI ecosystem
- Augmented Reality/Virtual Reality technologies
- RISC-V and new processing initiatives in the Cognitive Computing Continuum
- New distributed data processing paradigms for the Computing Continuum
- Data privacy and security in AI services
- Sustainable, energy-efficient, and energy-grid-aware Computing Continuum
- A middleware toolkit for the Continuum
- Automotive and the continuum
- Seamless data connectivity and predictive handover across different networks
- Safety-critical applications in the Computing Continuum
- The continuum performance: cross-layer optimisation
- Operationalization of future AI systems in the Computing Continuum (GenAIOps)
- Federated computation for Foundational Models
- AI-assisted operation maintenance of large-scale systems
- Towards a hyper-decentralized Computing Continuum
- Generative telco cloud
- Space edge
- Cyberspace and physical space fusion
- Neuromorphic systems
- Confidential computing
- Integration of quantum computing infrastructure
- Quantum and classical computing fusion

2025   2028 and forward

Preliminary suggested timeline to start integration with the Cognitive Computing Continuum

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