# European Industrial Technology Roadmap for Next-Generation Cloud-Edge and Telco Cloud Developments

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## Executive Summary

The European Industrial Technology Roadmap for the Next-Generation Cloud-Edge outlines strategic investments needed to develop competitive, secure, and climate-neutral cloud and edge services across Europe. It emphasizes the importance of digital sovereignty, interoperability, and the integration of emerging technologies like AI and quantum computing. The roadmap identifies critical technology and deployment priorities, including the establishment of open standards, the promotion of open-source solutions, and the enhancement of infrastructure to support a distributed edge-to-cloud continuum. The New Telco Cloud Thematic Roadmap complements this by focusing on the telecommunications sector’s cloud environments, addressing challenges and recommendations for converged network and computing infrastructures. Together, these roadmaps aim to position Europe as a leader in digital infrastructure, fostering innovation and collaboration while ensuring compliance with European values and regulations.

## Characteristics

* The European Industrial Technology Roadmap emphasizes the need for strategic investments in next-generation cloud and edge technologies to enhance digital sovereignty and competitiveness in Europe.
* It outlines priorities for technology and deployment, focusing on interoperability, sustainability, and the integration of open standards and specifications.
* The roadmap highlights the importance of collaboration among industry players, public authorities, and research institutions to foster innovation and address challenges in the cloud-edge landscape.
* It identifies critical use cases across various sectors, including healthcare, mobility, and smart cities, to drive the adoption of cloud and edge solutions.
* The New Telco Cloud Thematic Roadmap complements the main roadmap by addressing specific challenges and recommendations for the telecommunications sector in relation to cloud and edge computing environments.

## Actors

| Category | Actor |
| --- | --- |
| Political Actors | European Union; European Commission; EU Member States; European Council; European Parliament |
| Research and Innovation Actors | European Institute of Innovation and Technology; Digital Innovation Hubs; Universities; Technology Organisations |
| Economic Actors | Telecommunication Companies; Private Sector Representatives; Digital Companies |

## Main Themes

| Category | Subcategory |
| --- | --- |
| Digital Transformation & Strategy | Digital Infrastructure; Digital Platforms |
| Technology & Innovation | Artificial Intelligence; AI Ethics |

## Practical Applications

* The European Alliance for Industrial Data, Edge and Cloud was launched in July 2021 to define strategic investment roadmaps for the development and deployment of next-generation cloud and edge technologies.
* The European Industrial Technology Roadmap for the Next-Generation Cloud-Edge outlines technology and deployment priorities, including:
* Representation in Open Standards and Relation to Norms & Standards.
* Open Specifications and Open Source Reference Implementations.
* Multi-provider Edge Cloud Federation.
* Support for Distributed & Interoperable Architectures.
* Implementation of EU Regulations fit for a Digital Sovereign Europe.
* Organising EU Standards on Pre-procurement of EU Products, Systems & Services.
* Development of Data-Sharing Business Models.
* The European Commission’s Code of Conduct for Energy Efficiency in Data Centres aims to reduce energy consumption in data centres through best practices.
* The Climate Neutral Data Centre Pact is a self-regulatory initiative targeting climate neutrality for data centres by 2030.
* The IPCEI on Next-Generation Cloud Infrastructure and Services (IPCEI-CIS) aims to create innovations for the computing continuum from edge to cloud.
* The Data Spaces Support Centre project is focused on creating building blocks for technology and business-related topics in data spaces.
* The Telco Cloud Thematic Roadmap focuses on developing converged network and computing infrastructures in Telco Clouds, addressing challenges in the telecommunications industry.
* The establishment of a Federated Cloud Marketplace is proposed to provide a one-stop shop for cloud-edge applications and infrastructure from compliant providers.
* The development of a Reference Test Bed for edge-to-cloud continuum deployment is planned to showcase European cloud efforts and facilitate large-scale deployment.
* The European Commission is investing in the implementation of an open-source smart middleware, Simpl, to enable cloud-to-edge federations and support major data initiatives.
* The establishment of an Open Hardware Ecosystem is encouraged to promote innovation and collaboration in hardware design and manufacturing.
* The Print-And-Go initiative aims to implement local manufacturing for IT equipment to reduce transportation costs and improve supply chain resilience.
* These initiatives represent actionable steps being taken to enhance the European cloud and edge computing landscape.

## Commitments

* By 2025, 80% of all generated data is expected to be processed at the edge.
* The European Digital Compass includes a target for the deployment of 10,000 climate-neutral, highly secure edge nodes across the EU by 2030.
* The EU aims to reduce greenhouse gas emissions by 55% by 2030.
* The European Commission’s Code of Conduct for Energy Efficiency in Data Centres aims to achieve climate neutrality for the data centre industry in Europe by 2030.
* The European Commission has set a target for 100% of key public services for citizens and businesses to be available online by 2030.
* The European Commission aims for 100% of European citizens to have access to electronic health records by 2030.
* The European Commission aims for 80% of citizens to have access to a digital ID solution by 2030.