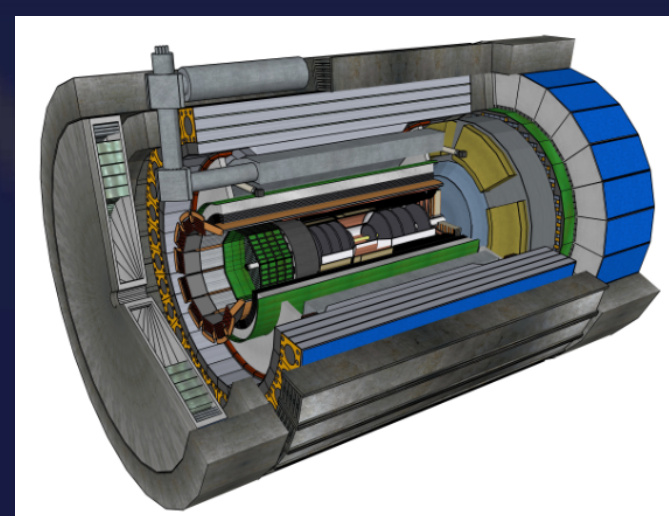
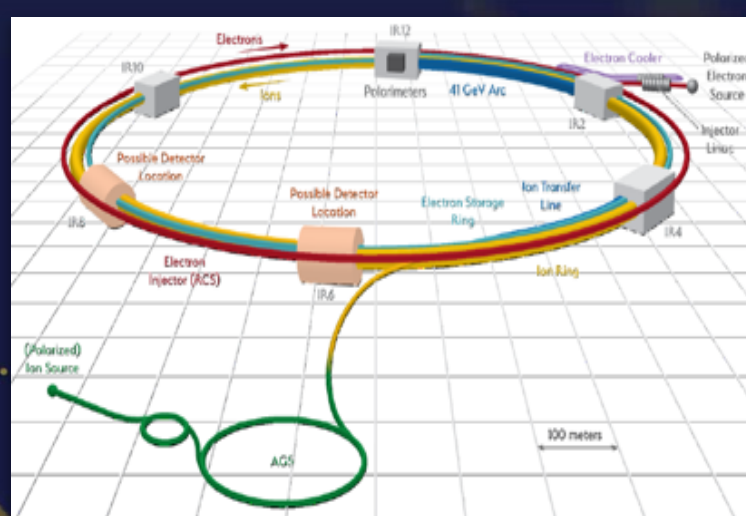




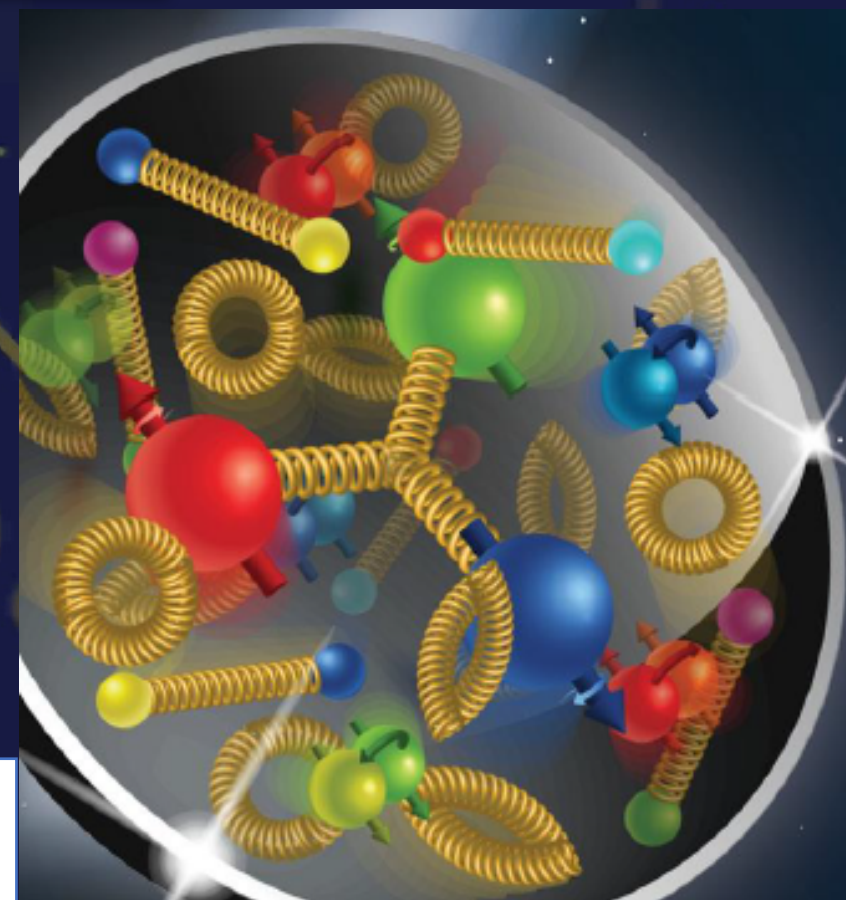
July 2026 Joint ePIC/EICUG Meeting



AI INITIATIVES IN ITALY

Building a national ecosystem for Artificial Intelligence,
High-Performance Computing, Big Data & Quantum Computing

M. Battaglieri (INFN), D. Elia (INFN)



The Italian AI Ecosystem

Italy has built a coordinated, multi-layered ecosystem for AI, combining foundational research, sovereign compute infrastructure, and national coordination — with more than €1 billion invested over the last five years.

>€1B

invested in Italy's HPC / AI / Quantum ecosystem over the last five years



FAIR



Future Artificial Intelligence Research — foundational AI research partnership



AI-INFN



INFN's national program for AI infrastructure, training & strategy



ICSC



National Research Center for HPC, Big Data & Quantum Computing

ICSC — National Research Center

The Italian Research Center on High-Performance Computing, Big Data and Quantum Computing coordinates a public-private foundation of universities, research institutes and companies — and is the seed for Italy's AI Factory.

6.325 M€

Annual contribution from ICSC members

76%

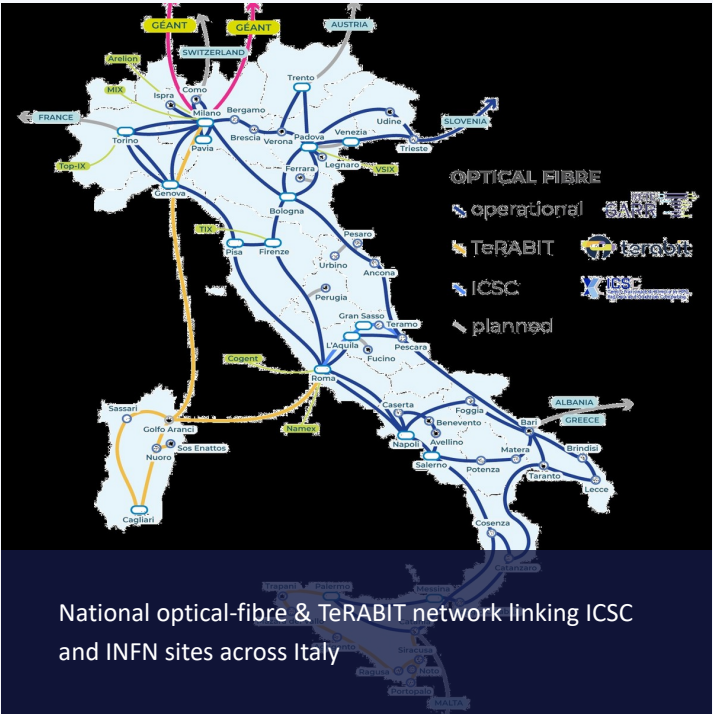
Overall project progress (as of Oct 2025)

25 + 12

Universities & national research institutes

14

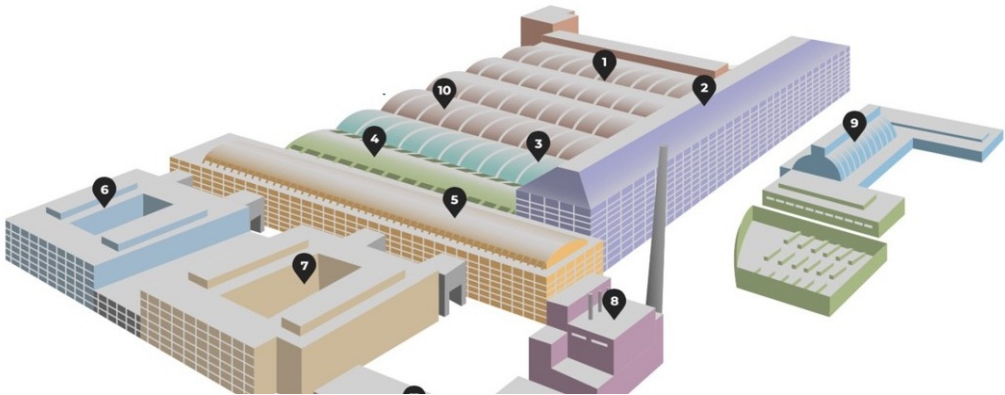
Private-sector partners in the foundation



ICSC's supercomputing, Big Data (HTC) and network (GARR) upgrades — plus integrated cloud/grid access — form the technical seed for the national AI Factory.

IT4LIA AI Factory

Awarded by the European AI Factories call (Dec 2024) to the Minerva Consortium, coordinated by CINECA. ICSC is a Work Package leader for Data Services and Training.



€400M

New exascale supercomputer

€30M

AI services & applications

>50

Exaflops of AI compute (FP8)

>100 PB

Storage capacity

From Tecnopolo Bologna: LEONARDO, GAIA, MARCO POLO & the new IT4LIA AI Factory system form an integrated HPC + AI + Quantum campus.

Consortium — Implementers: ACN · AI4I · FBK · AIM · ARTER · ICSC · IFAB Partners: Sapienza · UniBO · UniTO · UniMoRe · Confindustria

National Computing Infrastructure



Leonardo (CINECA)

250 Pflops FP64 · 14,000 GPUs — one of Europe's leading pre-exascale systems



INFN Big Data Infrastructure (CNAF Tier-1 + sites)

>200,000 CPU cores · 260 GPU systems · 300 PB disk storage · 290 PB tape, across 11 INFN sites



Integrated HPC / Cloud / Grid

Federated access with CINECA & GARR; part of the Worldwide LHC Computing Grid (WLCG)



GARR Network Upgrade

National research network upgraded to multi-Tbit/s, 100+ Gbps WAN per site



Leonardo — CINECA, Bologna



INFN-CNAF Tier-1 data center

Quantum + AI

Italy is building hybrid HPC–quantum capability alongside its AI infrastructure, with two quantum computing platforms live at CINECA's Tecnopolo (Bologna) and integrated into ICSC / EuroHPC workflows.



Pasqal — HPCQS Italy



150–200 qubit neutral-atom quantum computer, part of the EuroHPC–ICSC program



Hybrid Workflows

Quantum communication and hybrid HPC/ quantum pipelines integrated with Leonardo & GAIA

AI Gigafactory — Next Scale

Three Italian proposals to the EU AI Gigafactory call are being merged into a single, aligned initiative — building on the IT4LIA AI Factory ecosystem.

~€9B combined proposed budget across the three merging initiatives



€2.1B

Leonardo-led Consortium

Contact point: Leonardo, with ENI & Domyn among a top-tier Italian consortium



€5.2B

Eni / Khazna Proposal

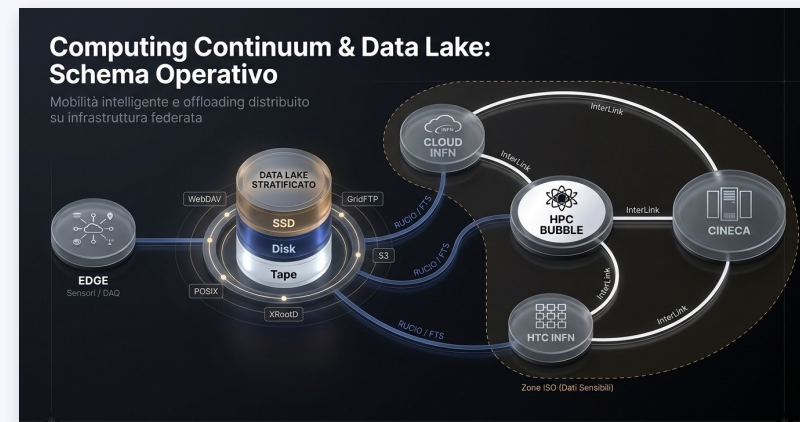
Upgrades the Ferrara Erbognone Green Data Center to 500 MW IT capacity, powered by a new Blue Power Plant



€4.5B

Domyn Proposal

Italian AI scale-up specialized in large language model training



Federated Compute Continuum

Edge, Cloud, HPC and CINECA resources unified under one federated workflow — the same continuum model that will scale into the AI Gigafactory.

AI for Science: AI-INFN & EIC / ePIC

AI-INFN Program



Shared AI infrastructure across INFN sites



Training & upskilling programs



150+ AI use cases collected nationwide



A coordinated national AI strategy

AI Applications for EIC/ePIC Physics

Detector design & optimization

Fast & generative simulation

Particle tracking & reconstruction

Particle identification (PID)

Physics analysis

Scientific AI agents & agentic workflows

Collaboration Opportunities

Italy's AI, HPC and quantum infrastructure is open to the international big-science community — including EIC / ePIC — across several concrete tracks.



Digital Twins

Detector and facility digital-twin development using national HPC/AI resources



AI Reconstruction

Joint development of AI-based event reconstruction for large detectors



Workflow Automation

Agentic and automated workflows for simulation, analysis & operations



Data Interoperability

Shared data services, standards & access across international collaborations

A National Ecosystem, Ready to Collaborate

1

A strong, well-funded Italian ecosystem — over €1 billion invested in HPC, AI & Quantum in the last five years

2

An integrated pipeline: ICSC → IT4LIA AI Factory → AI Gigafactory (~€9B in proposed next-scale investment)

3

Strong alignment between Italy's AI infrastructure and EIC / ePIC scientific computing needs

4

Open for collaboration — through INFN, ICSC and AI-INFN — on digital twins, AI reconstruction, workflow automation and data interoperability