

CESGA

CESGA's New Infrastructure Landscape

FinisTerrae IV, Quantum Computing, and the Path Toward AI-Ready e-Infrastructures

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XUNTA DE GALICIA
GOBIERNO DE ESPAÑA
MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD
CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS
Unión Europea
Fondo Europeo de Desarrollo Regional
"Una manera de hacer Europa"

2026 – 2028

NEW INFRASTRUCTURES

01 Starting point: one ecosystem, not one machine

02 New datacenter in A Sionlla

03 Quantum computing roadmap

04 FinisTerrae-IV: AI & HPC platform

05 1HealthAI AI Factory system



STARTING POINT · 01

ONE ECOSYSTEM, NOT ONE MACHINE

Each platform covers a different need of a research or AI workflow.

COMPUTE & GPU

FinisTerrae-III

Simulation and model training

354 nodes · 22,656 cores
NVIDIA A100 (40 GB) + T4
4 PF peak · InfiniBand HDR

DATA AT SCALE

Big Data

Ingesting and preparing large volumes

Dedicated 38-node cluster
Hadoop ecosystem
>30 GB/s aggregate I/O

24/7 SERVICES

Cloud

Inference, alerts and dashboards

Tailored virtual infrastructure
Elastic resources
Federated in EGI FedCloud

PEOPLE

Visualisation

Explore data without downloading it

Visualisation nodes
Remote desktops
Jupyter notebooks

Shared storage · more than 26 PB

Lustre on NVMe · permanent disk · 20 PB LTO-9 tape

All platforms work on the same data

COMING · FINISTERRAE-IV

AI-oriented, production planned June 2027

COMING · 1HEALTHAI FACTORY

EuroHPC AI system, expected 2028

Sources: CESGA; FinisTerrae-III technical data

NEW CESGA DATACENTER – A SIONLLA

The home of what comes next: the IQM quantum computers, FinisTerrae-IV, new storage and the 1HealthAI AI Factory system.

€56M
total CESGA investment programme

€13M
building construction

9,100 m²
plot

2,700 m²
built surface

KEY FACTS

- **Location:** A Sionlla industrial park, Santiago de Compostela
- **Builder:** UTE Dominion – Copasa; prefabricated structure made in Galicia
- **Sustainability:** photovoltaic panels, efficient cooling and monitoring
- **Funding:** PERTE Chip (EU Recovery Facility, ~€47M) + Xunta de Galicia
- **Strategic:** first strategic public research project of Galicia

TIMELINE

Oct 2025
Construction starts; AI Factory selected

2026*
Building completed; IQM quantum systems

Jun 2027*
FinisTerrae-IV in production

Q1 2028*
1HealthAI AI Factory system delivered

* Planned. Sources: Xunta de Galicia; DCD; El Correo Gallego (2025–2026); CESGA

QUANTUM COMPUTING ROADMAP

From Qmio to a two-tier IQM platform integrated with HPC, hosted in the new A Sionlla datacenter.

2023 · IN PRODUCTION

Qmio

32 superconducting coaxmon qubits

- Open to users since May 2024
- Coupled HPC system for quantum and quantum-inspired research

2026 · PLANNED

IQM Radiance

54 superconducting qubits

- Production system for science and industry
- Designed for HPC integration and remote access

2026 · PLANNED

IQM Spark

5 superconducting qubits

- Training, proofs of concept, algorithm design
- Testbed before scaling to Radiance

- **IQM systems:** awarded to Telefónica, >€9M
- **Emulators:** Eviden Qaptiva (30 qubits), CUNQA, Qiskit Aer (GPU)
- **Quantum communications:** QKD link Santiago–Vigo (100+ km), QRNG
- **Lab:** quantum optics laboratory for communications research

Sources: CESGA quantum infrastructure; Xunta de Galicia (12/2025); Galiciapress (06/2026)

FINISTERRAE-IV · AI & HPC PLATFORM

AI-first by design, for training, inference and data analysis, while keeping full capability for classic HPC simulation.

~20 PF
planned peak performance*

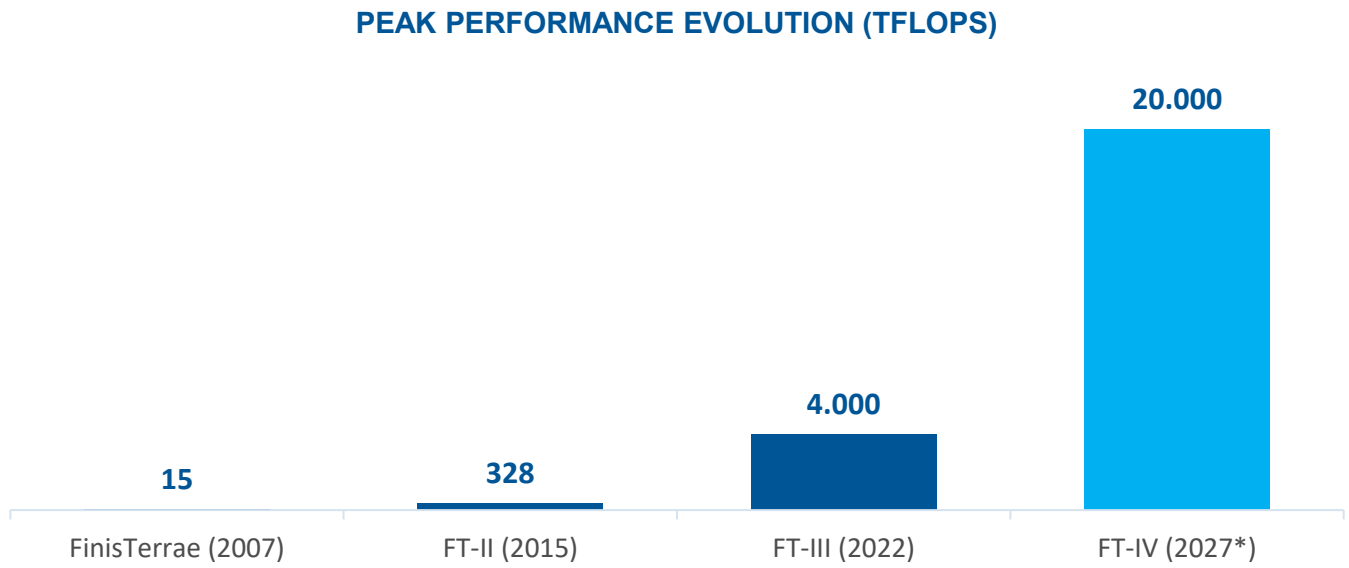
13×
memory access speed vs FinisTerrae-III

8×
data transfer speed vs FinisTerrae-III

2×
storage capacity vs FinisTerrae-III

KEY FACTS

- **Nodes:** 123 × NVIDIA GB200 NVL4: 492 Blackwell GPUs, 1.7 TB memory per node
- **Vendor:** Fsas Technologies (Fujitsu)
- **Contract:** >€25M, supercomputer + storage
- **Storage:** Weka, 1 PB NVMe (220 GB/s read) + 10 PB HDD (24 GB/s read)
- **Cooling:** advanced direct liquid cooling
- **Production:** June 2027 (planned), A Sionlla datacenter
- **Funding:** PERTE Chip (EU RRF) + Xunta de Galicia

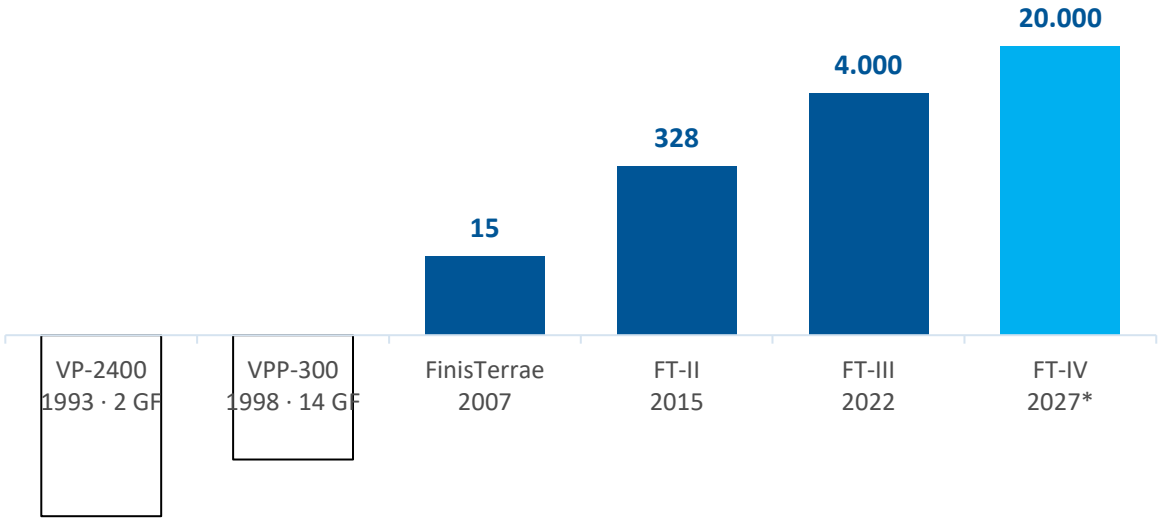


* Planned. Sources: Xunta de Galicia (03/2026); DCD; El Correo Gallego; CESGA

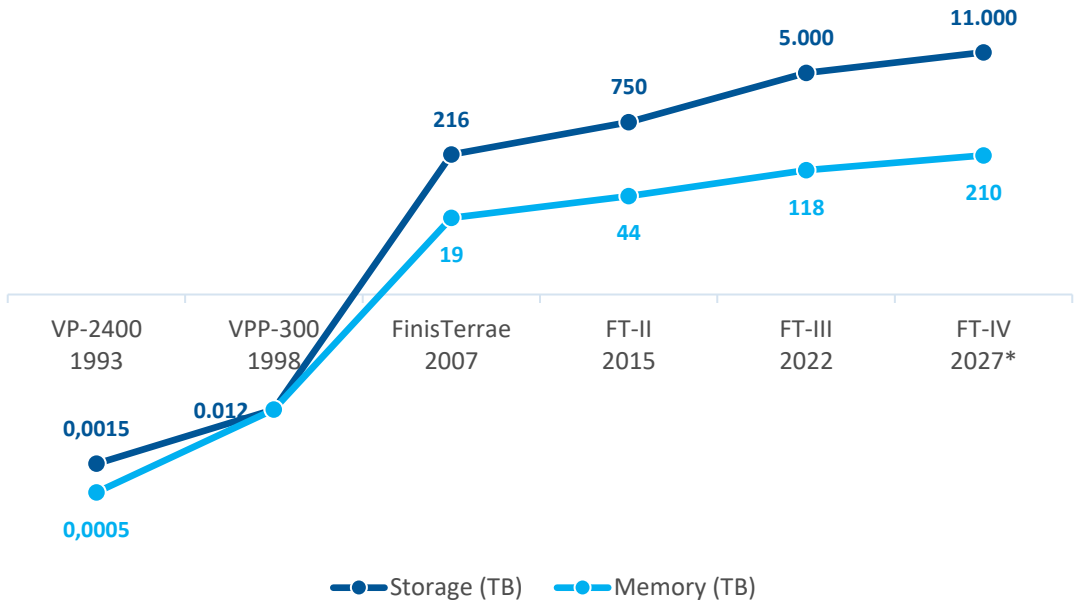
HARDWARE EVOLUTION

From 1993 to 2027: the biggest jump in a single generation comes with FinisTerrae-IV.

PEAK PERFORMANCE (TFLOPS, LOG SCALE)



MEMORY AND STORAGE (TB, LOG SCALE)



10,000,000×
peak performance, 1993 → 2027

~5×
FT-III → FT-IV, now GPU-first

11 PB
Weka: 1 PB NVMe + 10 PB HDD

492 GPUs
Blackwell in 123 GB200 NVL4 nodes

* FinisTerrae-IV planned (production June 2027). Source: CESGA

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THE 1HEALTHAI AI FACTORY SYSTEM

A dedicated AI supercomputer procured by EuroHPC JU and hosted at CESGA, at the core of the €82M 1HealthAI programme.

€41M
EuroHPC JU tender (excl. VAT)

Q2 2027
contract signature (expected)

Q1 2028
system delivery (expected)

3.2 MW
A Sionlla, phase 2 power

BUILT FOR THE WHOLE AI WORKLOAD

01
MLOps
MLOps and container environments, model repository, tiered access to compute

02
Training
Pre-training from scratch or continued on European data; instruction tuning, alignment, fine-tuning

03
Inference
On-demand inference and data services in containers; secure environments for sensitive data

04
Agentic AI
Agents and assistants that chain models, One Health data and HPC jobs

PILOT · 2026–2027
FinisTerrae-III, FinisTerrae-IV (Jun 2027) and partner AI Factories; first open call May 2027

PHASE 2 · 2028
Factory system: large-scale pre-training, secure data environments, synthetic data

Planned figures. Sources: EuroHPC JU; 1HealthAI DoA (GA 101314617); One Stop Shop proposal (CESGA, 2026)

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AI-READY IN PRACTICE

THE LIFECYCLE OF AN AI SOLUTION

Each phase runs on the platform that fits it, on the same shared data, and the loop closes in operation.

↻ Retrain with operational experience

01
Data
Telemetry, logs, sensors, queues

02
Prepare
Big Data
Continuous ingestion and cleaning

03
Train
FinisTerrae-III/IV
Models on GPUs

04
Deploy
Cloud
24/7 inference and alerts

05
Interpret
Visualisation
Operators understand and decide

Shared storage (>26 PB): the data stays put, compute goes to it

APPLIED TO OUR OWN OPERATIONS · SCENARIOS

Predictive maintenance
Retire a failing node in time and requeue its jobs before users lose days of compute

Smart cooling
Anticipate thermal load from the job queue; watch chillers and pumps to prevent failures

ENSURE · Horizon Europe (EGI)
Energy and water metrics with AUDITOR and digital twins to cut the footprint of research infrastructures

Scenarios, not production services. ENSURE: Horizon Europe project coordinated by EGI (from 09/2026)

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TOWARD AI-READY E-INFRASTRUCTURES

Converging HPC, AI, quantum, cloud and data services into one federated and sustainable offer.

SERVICES & ACCESS	One Stop Shop (1HealthAI)	Support, training, co-design	EuroHPC · RES · EGI access
DATA	OneHealth DataSpace	Data spaces, EHDS-ready	Tiered storage, 20 PB tape
INTEGRATION	HPC + quantum (CUNQA)	Cloud + HPC (OpenStack)	EGI FedCloud · EOSC
COMPUTE	FT-III → FT-IV (2027)	AI Factory system (2028)	Qmio → IQM Radiance + Spark
FACILITY	A Sionlla datacenter	Up to 3.2 MW	Target PUE 1.10

DESIGN PRINCIPLES

- **Converged:** one entry point across HPC, AI, quantum and cloud
- **Federated:** plugged into EuroHPC, RES, EGI and EOSC, not an island
- **Data-centric:** trusted data spaces close to compute for sensitive health data
- **Sustainable:** liquid cooling, photovoltaics, PUE 1.10 by design
- **Software-first:** better software for better science: portals, workflows, quantum–HPC tooling

SUMMARY

KEY TAKEAWAYS

01 **~5× more compute: an AI & HPC platform**

FinisTerrae-IV: AI-first, HPC-capable, ~20 PF peak, in production June 2027 (planned)

02 **Quantum integrated with HPC**

Qmio today; IQM Radiance (54 qubits) and Spark (5 qubits) next

03 **An AI Factory system for One Health**

Dedicated EuroHPC system (€41M) for MLOps, training, inference and agentic AI, Q1 2028

04 **Efficiency by design**

New A Sionlla datacenter: up to 3.2 MW at a target PUE of 1.10

LET'S COLLABORATE

EGI FedCloud · EuroHPC and RES access calls · 1HealthAI One Stop Shop · emprego.cesga.es

JOIN THE TEAM

WORK WITH US

CESGA publishes all its job vacancies on its new employment portal.

EMPLOYMENT PORTAL

emprego.cesga.es

WHAT YOU WILL FIND

- **Open positions:** new vacancies are published exclusively on the portal
- **Job alerts:** subscribe to be notified of new calls
- **Profiles:** systems, HPC, AI, quantum computing, research and administration
- **Flexibility:** remote work up to 60% of working hours
- **Archive:** previous calls at www.cesga.es/en/employment/

Scan to see open positions

https://emprego.cesga.es/

Source: CESGA employment portal (emprego.cesga.es), October 2026



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THANK YOU! QUESTIONS?

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