



ANNUAL MEETING

Del Centro Nazionale di Ricerca in HPC,
BIG DATA AND QUANTUM COMPUTING

ISOLA D'ELBA – LA BIODOLA, 5 - 8 OTTOBRE 2025



Finanziato
dall'Unione europea
NextGenerationEU



Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA



Spoke 1: Future HPC

Luca Benini
Marco Aldinucci

Spoke 1: Organization and Structure

Two "Spoke labs" research + infrastructure investment and living-labs

- Bologna (UNIBO TECNPOLO) HWS: future HPC HW and system prototyping
- Torino SWI SW integration lab

5 Multi-partner "Flagship Initiatives"

- Similar to EU projects objectives, KPIs (100% achieved)

Cascade funding projects

Innovation projects

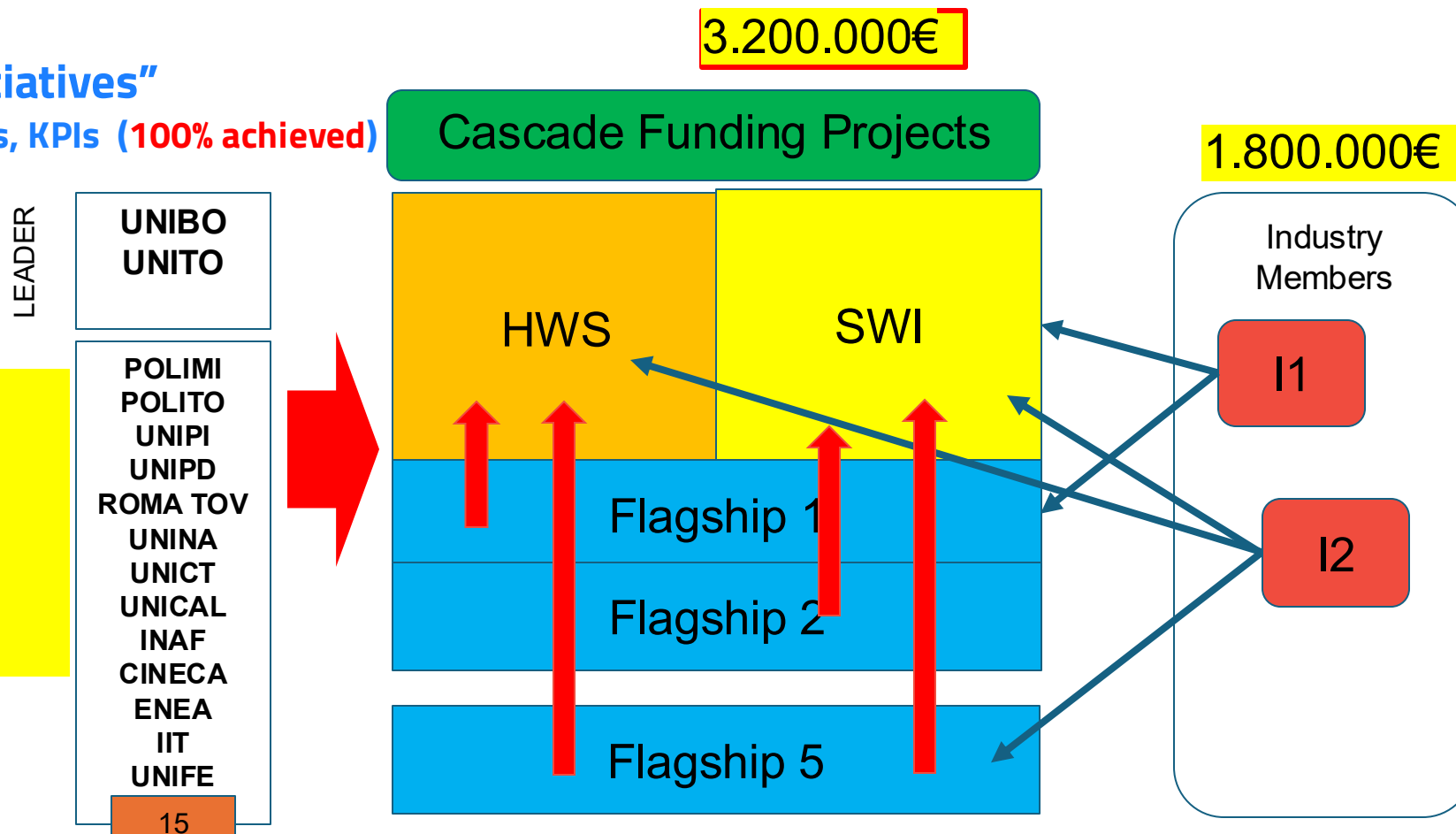
Total:

11.397.000€ (strutt, RTDA)

2.000.000€ (PhD)

1.800.000€ (HWS – UNIBO)

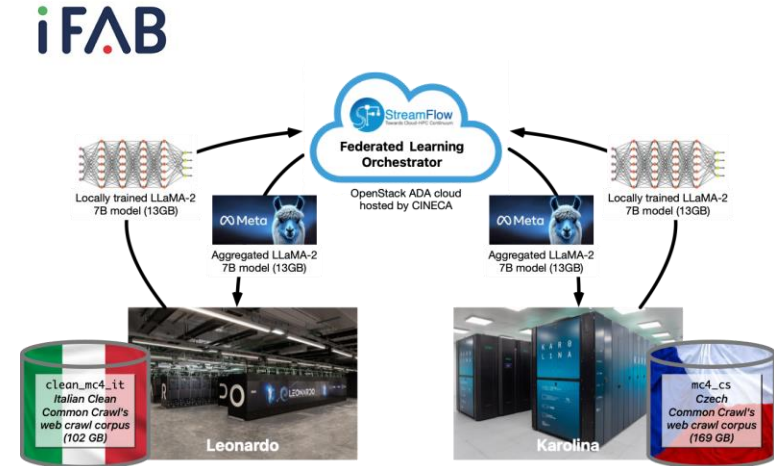
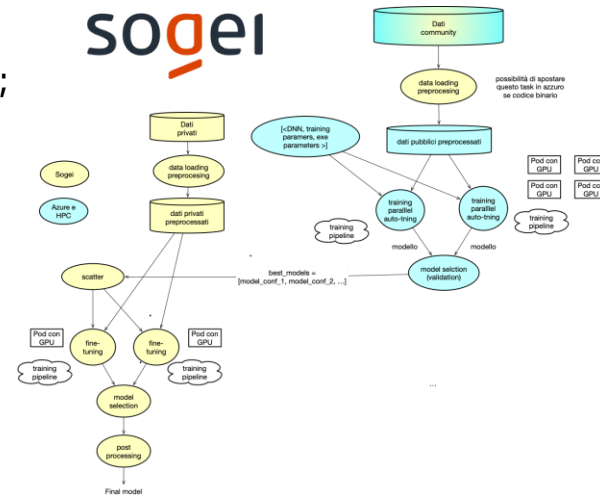
1.350.000€ (SWI – UNITO)



Innovation Grants (available 1.8M€, entirely assigned)

Spoke -1

- **ENI** Cross-Platform Full Waveform Inversion (UNITO); Job duration prediction (POLIMI); Supervised learning beyond mini-batches (UNICT)
- **IFAB**: Federated Learning as a Service (UNITO); Generative Federated Learning (UNICT/UNITO)
- **ISP**: Federated learning finance (UNITO+UNISAL); green AI applications (POLITO), hardware faults (POLITO)
- **SOGEI**: DevOps/MLOps processes (UNITO)
- **TASI/LDO**: RISCv for satellites (UNIBO)

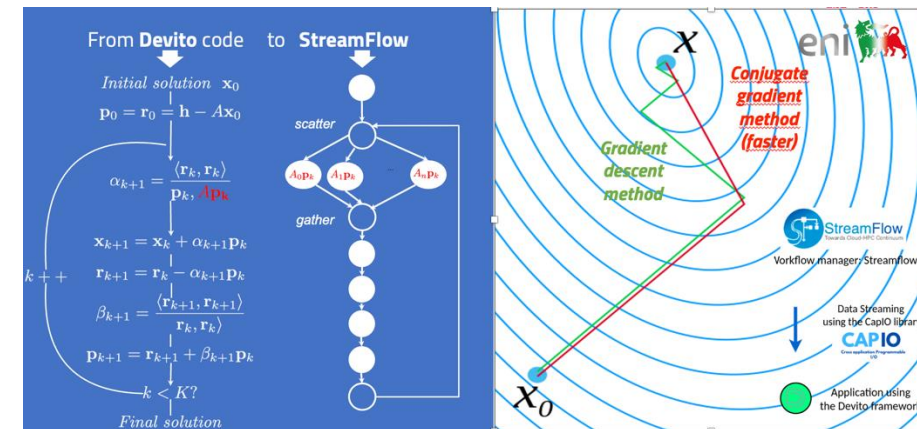


ThalesAlenia
a Thales / Leonardo company
Space



Cross-Spoke

- **TASI/LDO**: Analysis and monitoring (PHM) of multi-scale critical systems through Artificial Intelligence (Spoke6 main - UNITO)
- **Unipol**: Hammon (Spoke3 main – INFN+UNITO)



Cascade Funding

- Total budget: 3.2 MLN € (>50% for the south) → only 0.2MLN € have not been allocated (<7%)**
- Beneficiaries: public and private entities NOT associated with CN HPC - 14 projects**

	ACRONIMO	TEMA	Richiedente	Ente	COSTO TOT
1	AESTETIC	TEMA 1	Teseo SpA	Grande impresa	230'942.60 €
		TEMA 1	Morfo Design srl	Micro impresa	99'257.17 €
		TEMA 1	NORD - GE Avio S.r.l.	Grande impresa	47'527.00 €
		TEMA 1	SUD - GE Avio S.r.l.	Grande impresa	13'351.50 €
2	SMART-MDAI	TEMA 3	VT Solutions & Consulting SRL	Piccola impresa	250'000.00 €
3	DAGonCAPIO	TEMA 3	Università degli Studi di Napoli "Parthenope"	OdR	116'391.75 €
		TEMA 3	FIDES CONSULTING SRL	Media impresa	38'999.90 €
		TEMA 3	ITDM SRL	Piccola impresa	35'895.82 €
4	Fluendo	TEMA 3	Zerodivision systems s.r.l.	Micro impresa	122'163.50 €
		TEMA 3	Università degli Studi della Campania Luigi Vanvitelli	OdR	91'300.00 €
5	SDDS	TEMA 4	DocSpace srl	Micro impresa	98'200.00 €
		TEMA 4	Links Management and Technology S.P.A.	Grande impresa	143'750.00 €
6	VISDAM	TEMA 5	Neodata Group S.p.A.	Piccola impresa	106'892.00 €
		TEMA 5	Università degli Studi di Messina	OdR	70'463.20 €
7	FUTURE	TEMA 6	NORD - E4 COMPUTER ENGINEERING SPA	Media impresa	327'081.60 €
		TEMA 6	SUD - E4 COMPUTER ENGINEERING SPA	Media impresa	394'213.80 €
8	QUBO-HPC	TEMA 7	NET SERVICE S.P.A.	Media impresa	207'510.00 €
9	SMART HPC-QC	TEMA 7	NORD - E4 COMPUTER ENGINEERING SPA	Media impresa	189'879.30 €
		TEMA 7	SUD - E4 COMPUTER ENGINEERING SPA	Media impresa	160'977.00 €
10	ROCK	TEMA 8	Computer Angels s.r.l.s	Micro impresa	87'692.80 €
		TEMA 8	Fondazione Edo ed Elvo Tempia	OdR	84'997.60 €
11	EDGE-ME	TEMA 8	Università degli Studi di Siena	OdR	150'000.00 €
		TEMA 8	SmartMe.IO Srl	Piccola impresa	153'920.00 €

Call 1 closed 15/02/24 all projects started as of 15/06/2024



**RISC-V heterogeneous cluster
with RISC-V SoA AI accelerators**

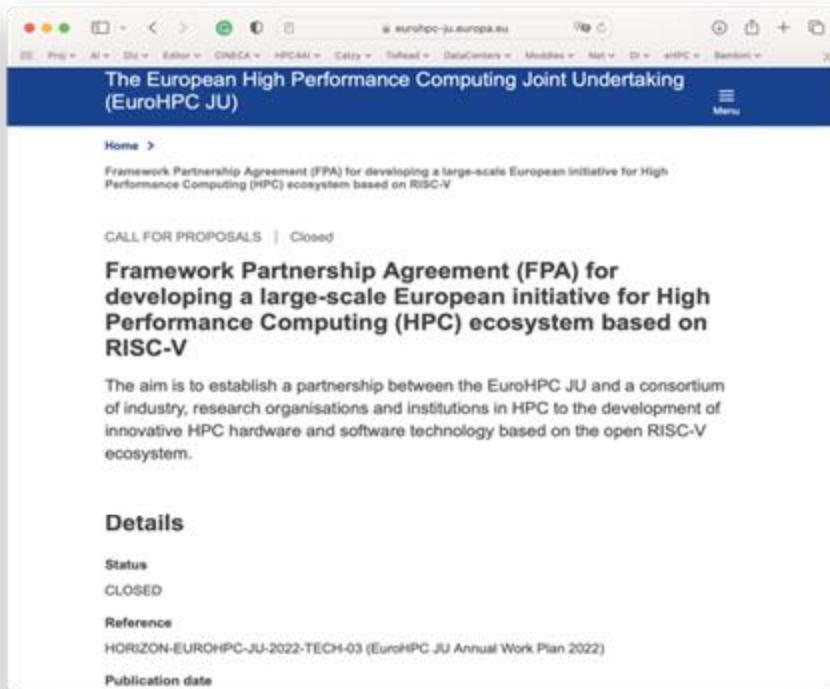
3 Projects Closed 15/06/25

Sustainability 1 - EuroHPC FPA/SGA RISC-V call (240M€)

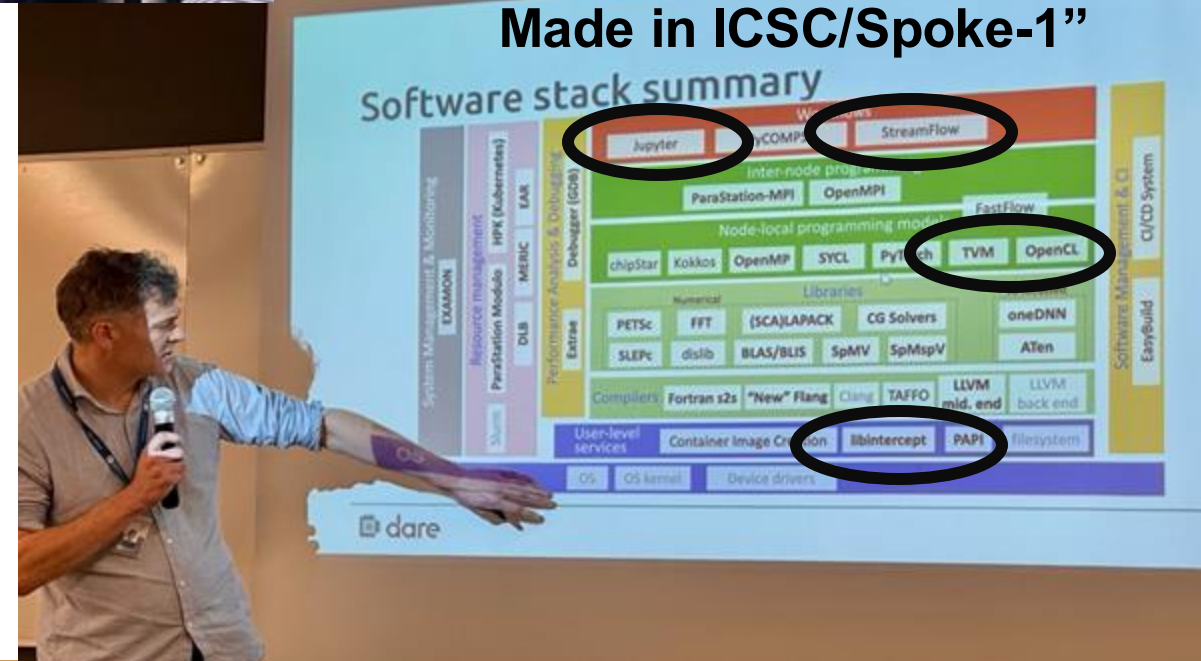


10/3/25 DARE Kick-off
Barcelona

DARE Italian participation €			
	Axelera	24.548.863	
	CINECA	215.000	
	UNIBO	648.188	
	E4	1.363.550	
ICSC	ICSC hub	140.625	3.011.250
	UNITO	701.250	
	POLITO	302.500	
	POLIMI	247.500	
	UNIPI	721.875	
	SISSA	137.500	
	UNIRM1	240.000	
	INFN	520.000	
	LEONARDO	483.500	
	Total	30.270.350	

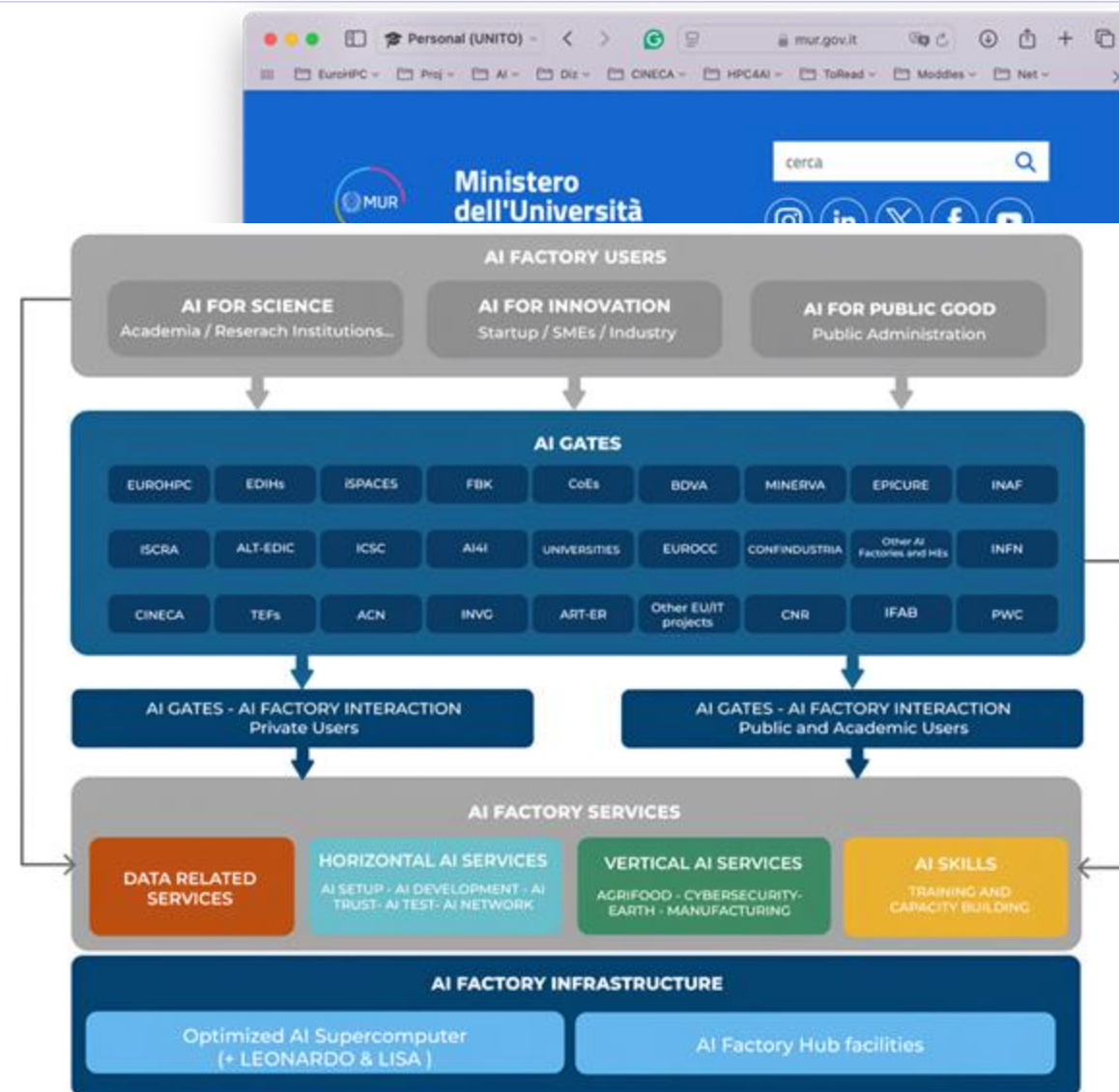
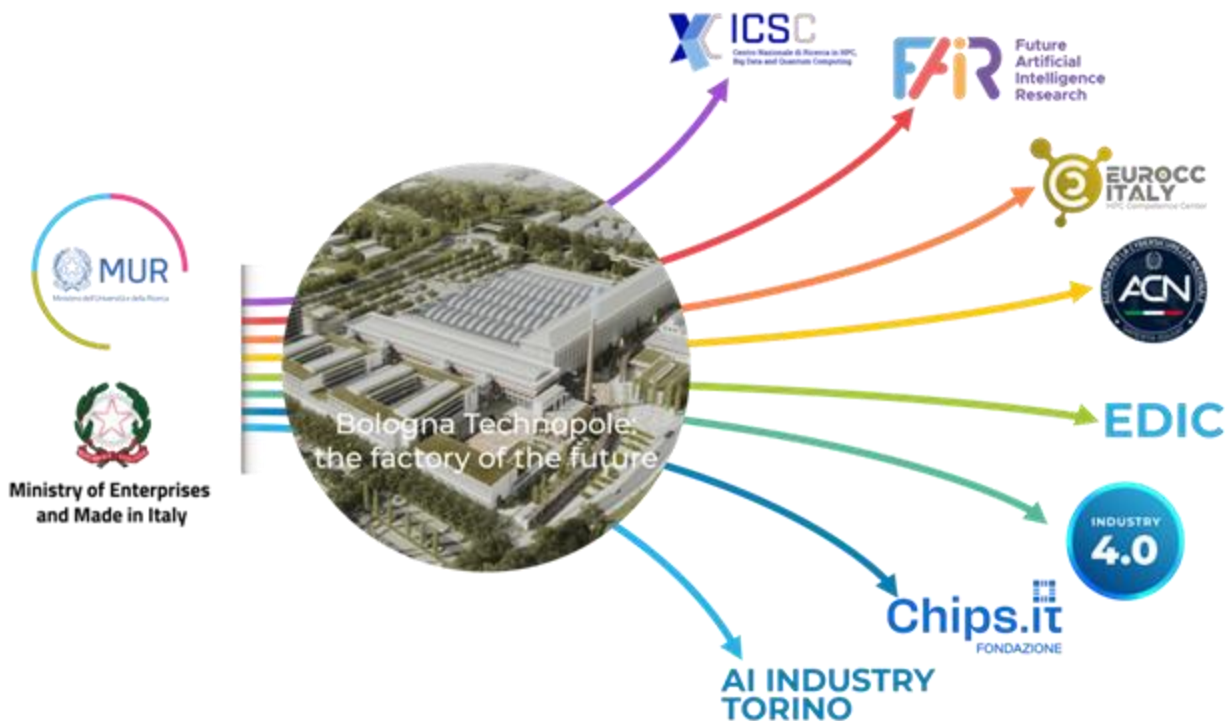


Digital Autonomy with
RISC-V in Europe
consortium



Made in ICSC/Spoke-1"

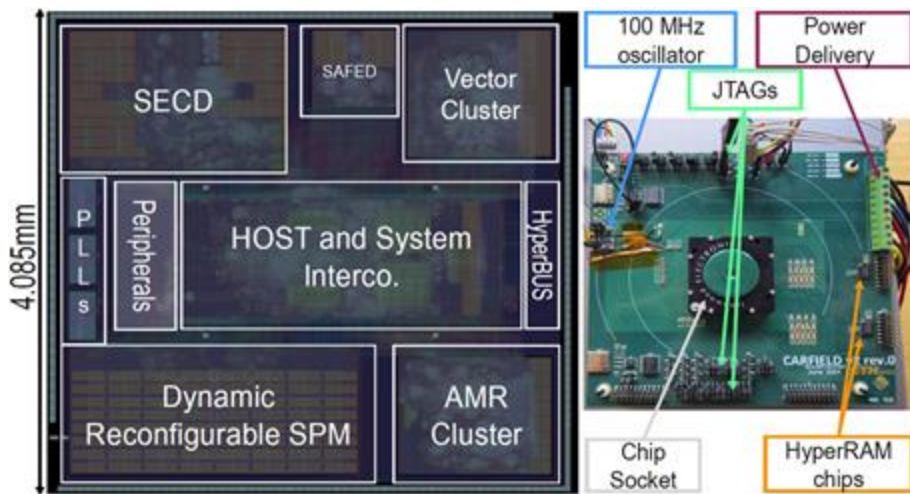
Sustainability 2: IT4LIA AI Factory (430M€)



Sustainability 3: Technology Transfer



**First Silicon Prototype for Automotive
Applications Fabricated and Tested (Intel 16nm)**



**Second Silicon Prototype for Space
Applications Back from Foundry
(12nm GF) in collaboration with TASI**



**First prototype for TASI
RISC-V silicon roadmap!**

Dipartimento di Informatica, Università di Torino
30-31 ottobre 2025
**IBM-UNITO Joint Innovation Lab on
Future Computing Technologies:
Cloud, HPC, AI and QC**
Torino guarda al futuro: Cloud, HPC, AI e QC
Il Dipartimento di Informatica dell'Università di Torino, insieme al laboratorio nazionale CINI HPC Key Technologies and Tools, allo spoke FutureHPC del Centro Nazionale HPC, Big Data e Quantum Computing e al Laboratorio HPC&AI, inaugura un nuovo laboratorio congiunto con IBM.
Un'iniziativa che rafforza la filiera dell'innovazione in città e arricchisce l'offerta formativa su Cloud, HPC, AI e Quantum.
Docenti, IBM e rappresentanti del mondo Industriale presenteranno il progetto e ne discuteranno le prospettive future.

IBM, di.unito, UNIVERSITÀ DI TORINO, HPC, ICSC



CAPIO
Cross application Programmable
I/O

**IBM Cloud as a market.
Place for streamflow
(for BigPharma
market)**



EBRAINS



**Federated Learning as
a Service**

- Medical imaging (ISP)
- Networking (TIM)
- Fully trusted applications (SECO+E4)

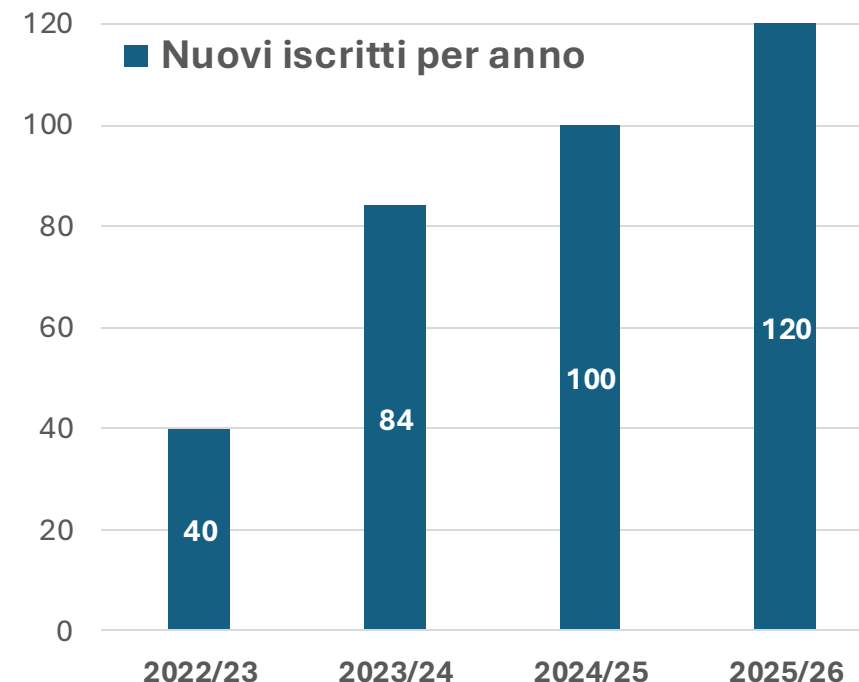
Laurea Magistrale in HPC Engineering (POLIMI)

Dissemination and upskilling

- **470** peer-reviewed scientific publications (journals and major conferences)
- Findings were presented in **128** conferences and **51** workshops
- **1** international conference (IEEE PDP2025), **6** workshops
- **7** training events (summer schools for researchers)

Laurea Magistrale «HPC & AI technologies» (UNITO)

- Starting September 2026
- Topics: HPC, AI, QC
- In English, EU degree (EUMaster4HPC-2)





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