EuroHPC – State of Play

European HPC Infrastructure Workshop 2020

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The EuroHPC Joint Undertaking 2018-2026

A legal and funding agency (Article 187 of TFEU)

- **32 Participating States + EU + 2 Private Members (ETP4HPC & BDVA)**
- **Budget (2019-2020): ~1.5 B€   (536 M€ from EU + matching funds from Participating States)**

Mission: Establish an integrated world-class supercomputing & data infrastructure and support a highly competitive and innovative HPC and Big Data ecosystem

Infrastructure + Operations

EU funding: 346 M€

Procurement of **3 top-range** and **5 mid-range** supercomputers
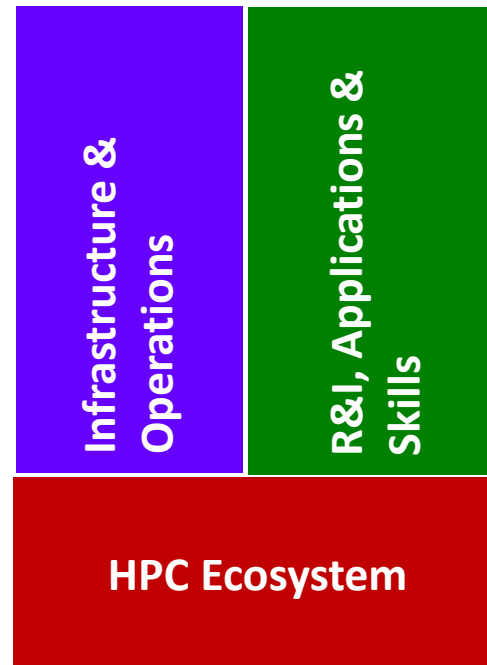
R&I + Applications & Skills

EU funding: 180 M€

R&I: *supporting* exascale technologies and systems (incl. low-power processor); and, innovative applications

Skills: widening HPC use

Administrative costs

EU funding: 10 M€

Infrastructure & Operations

R&I, Applications & Skills

HPC Ecosystem

#EuroHPC (high performance computing)
Joint Undertaking

The European High Performance Computing Joint Undertaking (EuroHPC JU) will pool European resources to develop top-of-the range exascale supercomputers for processing big data, based on competitive European technology.

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, the Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and Turkey.

EuroHPC
Joint Undertaking

EuroHPC JU reached autonomy

- Since 23 September 2020, the EuroHPC JU has the capacity to implement its own budget

- New Executive Director: **Anders Dam Jensen**

- New web-site launched

  - Please subscribe to our newsfeed and follow us on twitter

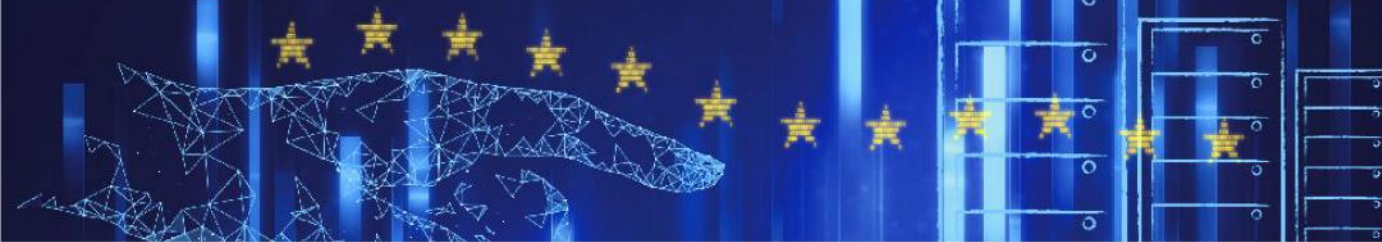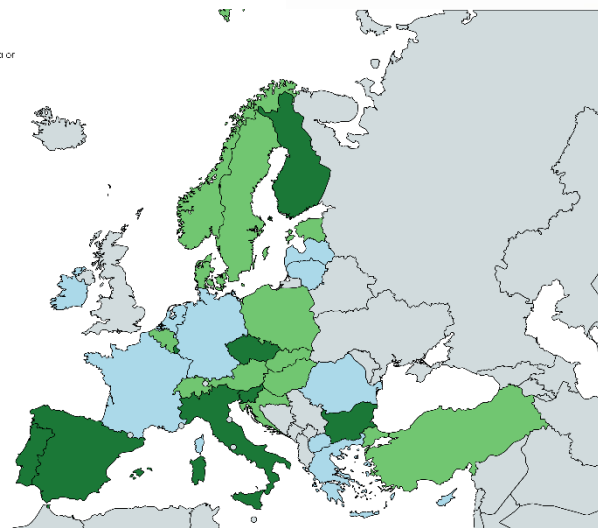- JU offices/HQ in Luxembourg

- Vacancies open!

https://eurohpc-ju.europa.eu/vacancies

Infrastructure pillar

Petascale & Pre-exascale system procurements

EuroHPC supercomputers
- Consortium member (pre-exa or peta)
- Hosting Site (pre-exa or petascale)
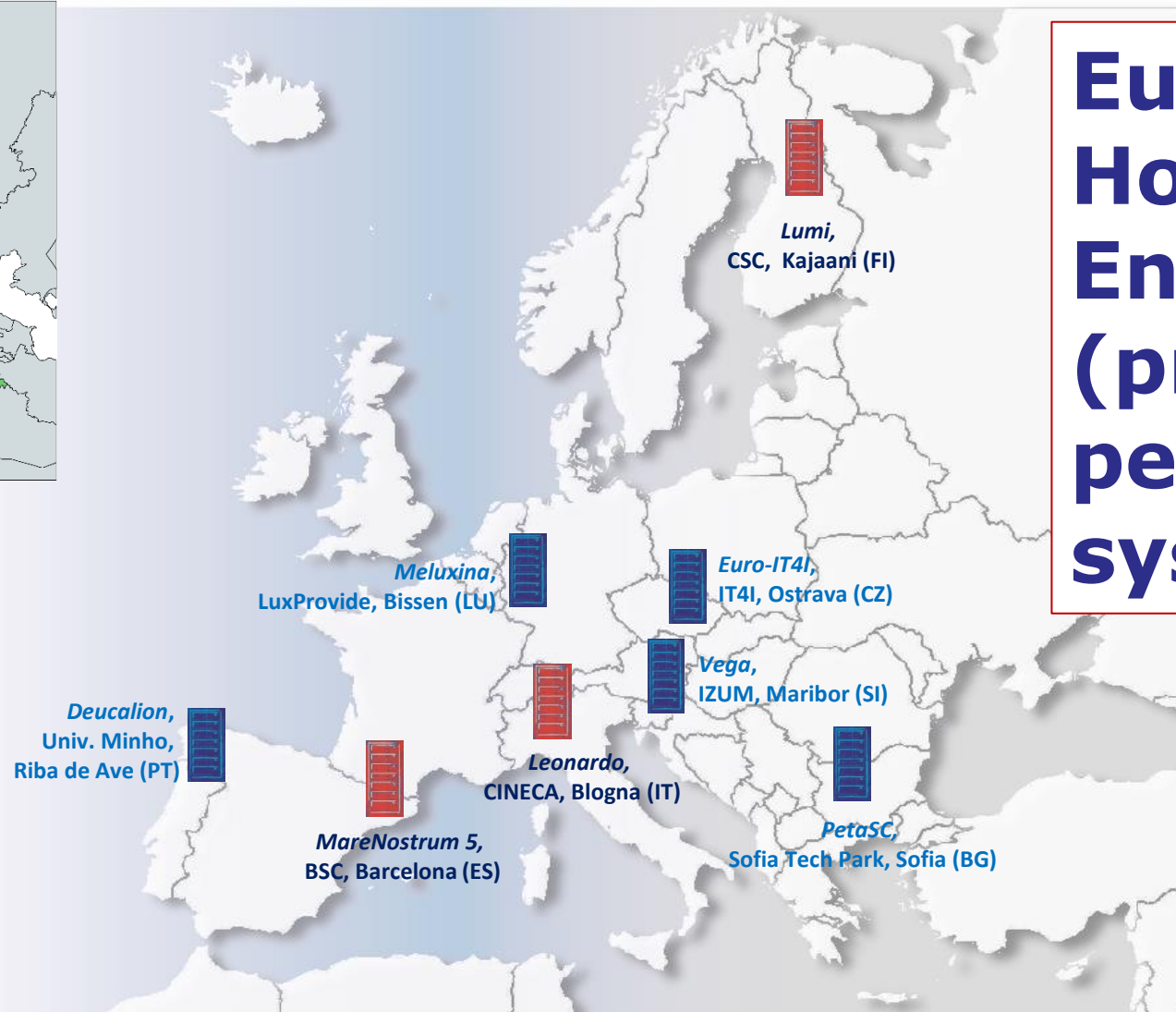- Other Participating State in EuroHPC JU

Created with mapchart.net ☑

EuroHPC Hosting Entities (pre-exa and petascale systems)

Lumi, CSC, Kajaani (FI)

Meluxina, LuxProvide, Bissen (LU)

Euro-IT4I, IT4I, Ostrava (CZ)

Vega, IZUM, Maribor (SI)

Deucalion, Univ. Minho, Riba de Ave (PT)

Leonardo, CINECA, Blogna (IT)

MareNostrum 5, BSC, Barcelona (ES)

PetaSC, Sofia Tech Park, Sofia (BG)

Pre-exascale

Petascale

Procurement status

First EuroHPC contracts signed!

- MeluXina (LU)
- VEGA (SL)
- Euro-IT4I (CZ)

Vega: a new EuroHPC world-class supercomputer in Slovenia

Published on 1 October 2020

The procurement contract of Vega, a new petascale EuroHPC supercomputer has been signed by the European High Performance Computing Joint Undertaking (EuroHPC JU), the Institute of Information Science in Maribor, Slovenia (IZUM), the hosting entity, and the company Atos, the selected vendor.

8 supercomputers in global top 50

Vega, named after a Slovenian mathematician Jurij Vega, will be a petascale supercomputer, capable of executing more than 6,8 Petaflops or 6,8 million billion calculations per second. With such performance, the system will be amongst the world's top 50 supercomputers.

MeluXina: a new EuroHPC world-class supercomputer in Luxembourg

Published on 29 September 2020

The procurement contract of MeluXina, new EuroHPC supercomputer, has been signed by the European High Performance Computing Joint Undertaking (EuroHPC JU), LuxProvide, the hosting entity, and the company Atos, the selected vendor.

Concluded procurements – Planned systems - Petascale

	MeluXina	VEGA
Hosting Site	LuxProvide, Bissen, Luxembourg https://luxprovide.lu	IZUM, Maribor, Slovenia https://www.izum.si/
Rmax (PFLops, aggregated)	12.26	6.8
Architecture highlights	Modular, X86 + GPUs 4 (1xCluster Module, 1xAccelerator Module, 1xLarge Memory Module, 1xCloud Module)	Modular, X86 + GPUs 2 (1xCompute+Large Memory Nodes, 1xGPU)
Total Price	€ 30,405,000.00	€ 17,256,577.71
Operational by	Apr-21	Mar-2021
Contract sign date	28/09/2020	29/09/2020
Tender winner	Atos	Atos

Pending petascale (mid-range) systems

Site	Budget	Expected Rmax (aggr. PFlops)	Architecture	Current status	Operational by
Euro-IT4I (IT4I, CZ)	€ 14,8 M	9.1	Highly modular targeting broad range of applications. Multiple x86 partitions and GPUs	Signed. Pending official announcement.	May 2021
Deucalion (FCT, PT)	€ 20,1 M	7.2	Modular/Hybrid (ARM + x86 partitions)	• Evaluation completed and adopted by EuroHPC GB. • Pending award notification and contract signature	Oct 2021
PetaSC (Sofia Petascale SC, BG)	€ 11,6 M	4.4	Purely x86 (no accelerators)	• Evaluation completed and adopted by EuroHPC GB. • Pending award notification and contract signature	Mar 2021

Pre-exascale systems

Site	Tender closing date	Status	Tentative contract signature date	Tentative date for start of operations
LUMI (CSC, FI)	**24/06/2020**	• Award decision submitted to vendors. (29/9) • Contracts ready for signing	mid-October 2020	Q2 2021 (1st phase)
Leonardo (Cineca, IT)	**29/06/2020**	• Award decision submitted to vendors (30/9). • Contracts ready for signing	mid-October 2020	Q3 2021
Mare Nostrum 5 (BSC, ES)	**31/07/2020**	• Tenders under evaluation	Nov 2020	Q4 2021 (1st phase)

EuroHPC R&I Pillar

Call H2020-JTI-EuroHPC-2019-2
Innovating and Widening the HPC use and skills base

EuroCC – HPC Competence Centres

General objective

*"…elevate the participating countries
to a common high level
in the fields of HPC, HPDA and
artificial intelligence (AI)"*

- *33 participating countries*

- *start 1 September 2020*

- *Duration: 24 months*

- *Budget: 56M Euro*

https://www.eurocc-project.eu/

Launched projects

CASTIEL

"combines the National Competence Centres (NCC) formed in EuroCC into a pan-European network"

Coordination and support action for Competence Centres

Start: 1 September 2020, Budget: 2M€

FF4EuroHPC

"promote innovation using high-performance computing in small and medium-sized enterprises across Europe"

Start: 1 September 2020, Budget: 10M€

Call H2020-JTI-EuroHPC-2019-1
Towards Extreme Scale Technologies and Applications

Call H2020-JTI-EuroHPC-2019-1 topics

EuroHPC-01-2019: Extreme scale computing and data driven technologies

- **Support the European technology supply industry in developing next generation power-efficient and highly resilient HPC and data technologies.**

EuroHPC-02-2019: HPC and data centric environments and application platforms

- **Help maintain Europe's world leadership in HPC applications by stimulating the innovation potential of businesses and industry users to develop applications in different industry sectors (such as manufacturing, farming, health, mobility, natural hazards, energy, climate, space, finance and cybersecurity).**

EuroHPC-03-2019: Industrial software codes for extreme scale computing environments and applications

- **Help European software vendors to improve their offer of industrial software and codes for industrial users to make full use of new, very high-performing supercomputers.**

- **55 M€** total budget
- Evaluation completed.
- **19 proposals** accepted for funding.
- Grants under preparation
- Expected start date **Jan 2021**

R&I work-plan Year 2020

2020 Calls for the development of European HPC technology (EU budget 85 M€)
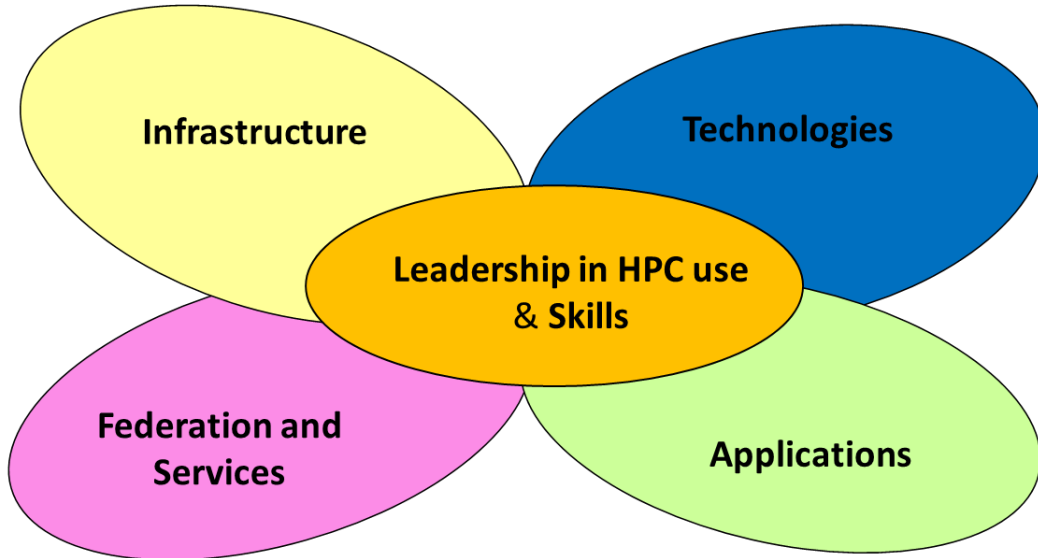
- ■ Advanced pilots towards the European exascale supercomputers (R&I actions)
  - – ***Advanced pilots towards the European supercomputer, 37 M€***
    (call opened 16/04 – closed 15/09/2020)

  - – ***Pilot on quantum simulator, 6 M€***
    (call opened 16/04 – closed 28/07/2020)

- ■ EPI Phase 2 (under the FPA in European low-power microprocessor technologies – (R&I action), **35 M€**
  (Call opened 21/07/2020 – deadline 12/01/2021)

- ■ Training and Education on HPC – (CSA action), **7 M€**
  (Call opening 21/07/2020 – deadline 12/01/2021)

EuroHPC evolution (next MFF 2021-2027)

Expected Budget (EU, Participating States, Private Members):

EUR 8 billion for the period 2021-2033

An interconnected supercomputing infrastructure

- **_Exascale_** and **_post exascale_** _supercomputers (top 5)_
- _National supercomputers_
- _Industrial-grade supercomputers_
- **_Quantum Computers_** _(standalone or in hybridisation)_
- ➔ _All interconnected via terabit networks_

Technologies & Applications for the HPC ecosystem

- _R&D on new HPC technologies and architectures and their integration in supercomputing systems_
- _Advanced industrial, scientific and public sector applications_

Leadership in use and Skills

- _Wide use primarily for civilian applications – incl. for EU strategic initiatives (Destination Earth, personalised health, crisis management, etc.)_
- _HPC Skills ➔ Education, Training_

Thank you!

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