

EuroHPC

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EuroHPC - Europe's journey to exascale HPC

<http://eurohpc.eu/>

What

- EuroHPC is a joint collaboration between European countries and the European Union about developing and supporting exascale supercomputing by 2022/2023.

EuroHPC declaration

- signed on March 23 2017 by 7 countries marked the beginning of EuroHPC.

Why

- HPC is an essential tool to address major scientific and societal challenges
- The use of HPC is having a growing critical impact on industries and businesses
- HPC is also essential for national security and defence

Issues

- the Union does not have the best supercomputers in the world
- the supercomputers available in the Union do not satisfy demand.
- Member States' and the Union's investments in HPC remain largely uncoordinated

Who joined the declaration: 23/03/2017

Declaration signed in Rome by:



France

Germany

Italy

Luxembourg

Netherlands

Portugal

Spain

8 more countries signed the Declaration:

Belgium

Slovenia

Bulgaria

Switzerland

Greece

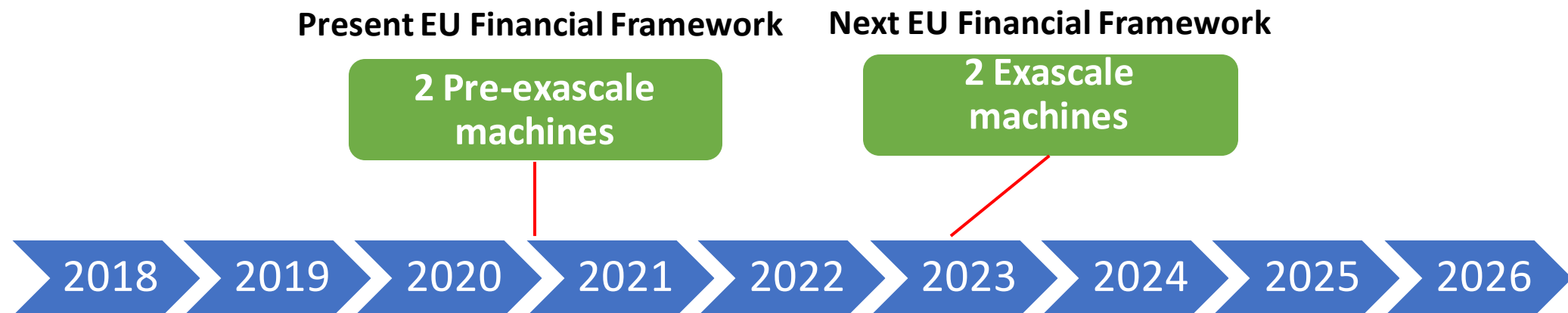
Croatia

Czech
Republic

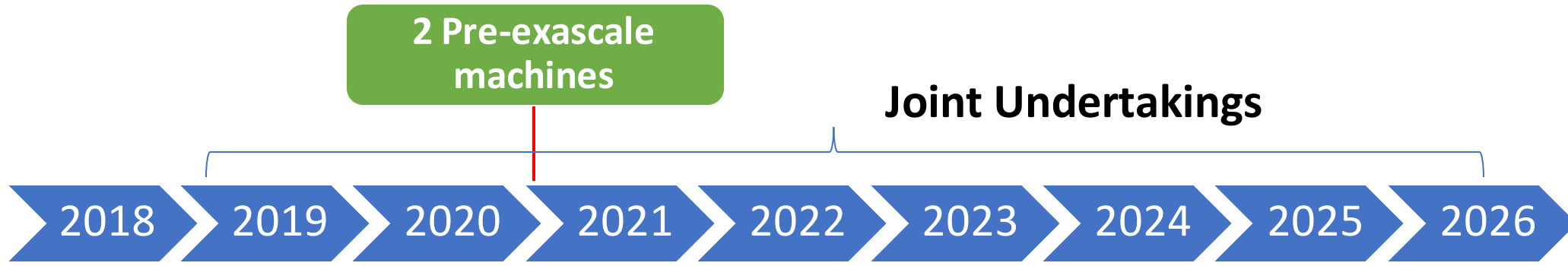
Cyprus

EuroHPC Mission and objectives

- to provide scientists, industry and the public sector from the Union with **latest HPC and Data Infrastructure** and support the development of its technologies and its applications across a wide range of fields.
- to provide a framework for **acquisition of an integrated world-class pre-exascale supercomputing** and data infrastructure in the Union;
- to provide Union level **coordination** and adequate **financial resources** to support the development and acquisition of such infrastructure, which will be accessible to users from the public and private sector primarily for research and innovation purposes;



EuroHPC Mission and objectives



HPC ecosystem

**Infrastructure Acquisition
Operating machines**

**Research & Innovation
Applications & Skills**

■ Pillar 1:

■ Acquisition of infrastructure:

→ 2 pre-exascale machines

→ ≥ 2 peta-scale machines

■ Installation, deployment and operation via hosting entities + access to users

■ Pillar 2:

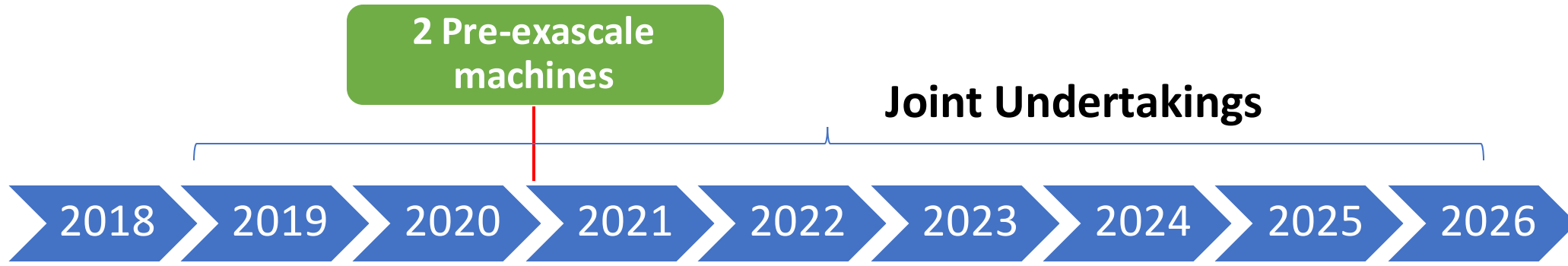
■ European exascale technologies and systems (incl. low power processor)

■ Excellence in HPC applications; CoE; competence centres for industry (incl. SME); Training and Outreach

Activities and Funding

	EC	PS	Total (M€)	Private Mem.
Infrastructure Acquisition Operating machines	270	290	560	
Research & Innovation Applications & Skills	206	186	392	422
JU Admin/Running costs	10	10	20	

Joint Undertakings establishment and Ownership



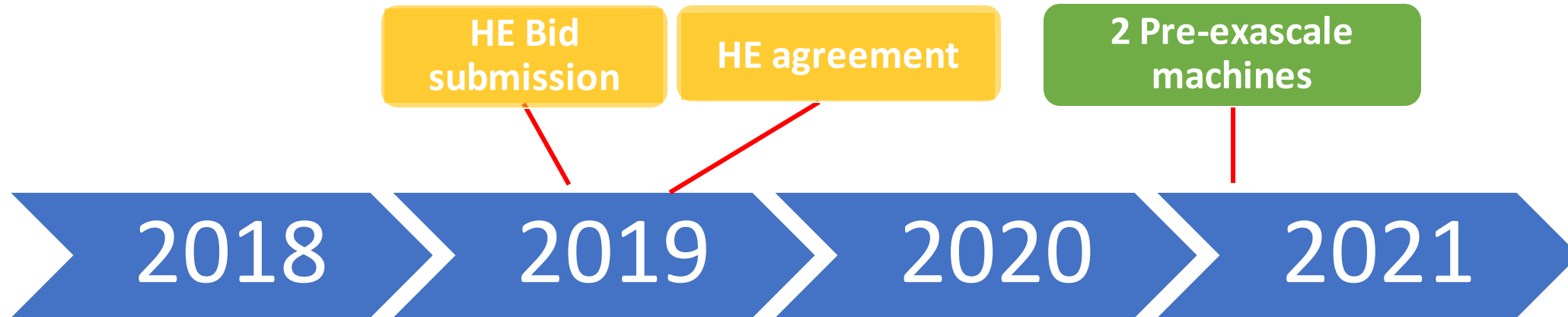
Machine Ownership

- The JU owns the pre-exascale machines
- MS and EU owns the petascale machines

Procurement

- Procurement done by the JU under EU rules with the help of national experts

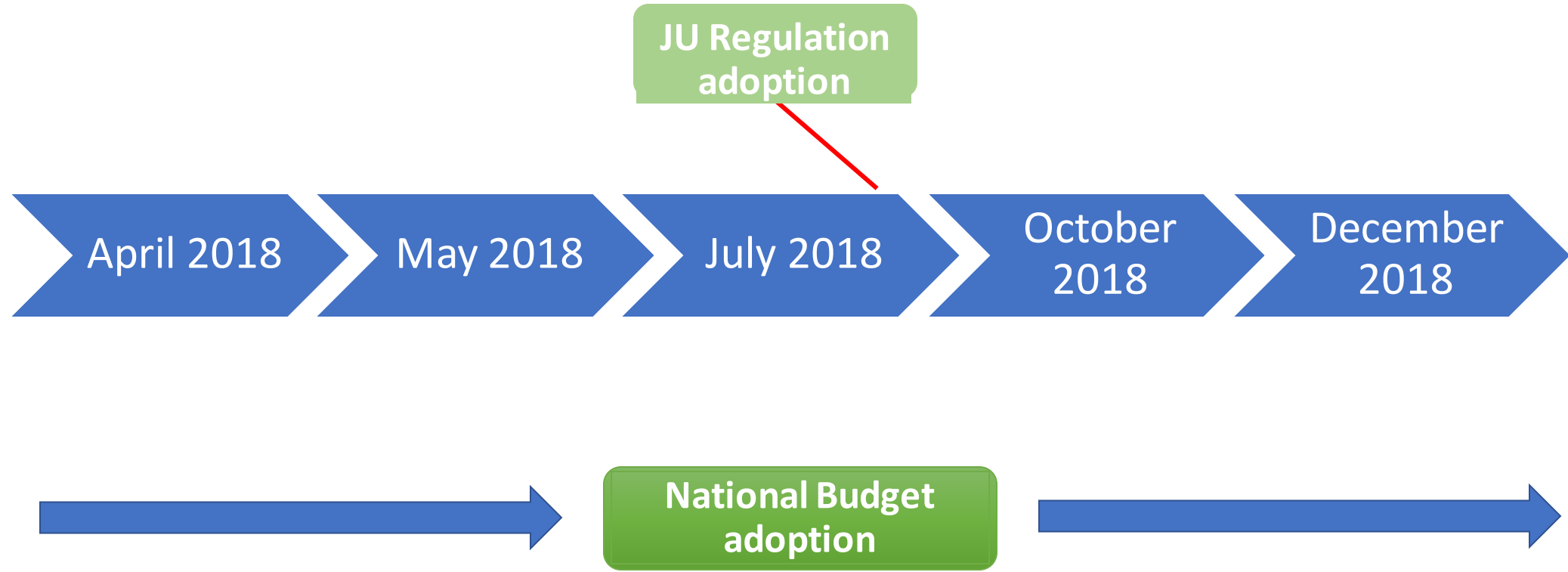
Procurement Process and Timeline



Two-step procurement process

1. The JU *selects a hosting entity* to which it delegates the installation and operation of each of the machines it will procure – a hosting agreement is signed with the hosting entity
2. The JU launches the *call for tender to procure the supercomputer*

Budgetary commitments from the Participating States





Thank you.

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Relations between EuroHPC and PRACE (1/2)

Services potentially implemented by PRACE

Open R&D peer reviewed access (Pillar 1 task 3)

Access to HPC systems

Federated layered Training

Application enabling and refactoring

Scientific evaluation by SSC

Technical evaluation by the Hosting

Peer Reviewed access

Specific community access (ESFRIs, EC projects, industry, ...)

Urgent Computing and support to decision

PATC, PTC

International Summer School and Summer of HPC

Communities training with CoE and ESFRIs

HLST level 3 (enabling up to 1 year) and 4 (long term refactoring) with CoE

Enabling of new communities (SHAPE, SHS, ESFRIs, ...)

Relations between EuroHPC and PRACE (2/2)

- Services potentially implemented by PRACE
 - Prototyping of novel HW and SW technologies (Pilar 3 task 7)
 - Technology watch, hosting of pre production systems, share of best practises, development of a (joint) software stack, co design with users and ETPs, ...
 - Support of dissemination and outreach (Pilar 2 task 6)
 - European HPC Summit Week, attracting new skills, Women in HPC, promoting HPC careers, dissemination across industry and new communities, ...
- Additional data Services in relation to EDI and EOSC (Pilar 1 Task 2)
- Additional Tier0 and Tier1 cycles provided as inkind, accessible through Peer Review, accepted by Governance Board (Pilar 2 task 4)
- Potential commitment from Jan 2020 to 2025

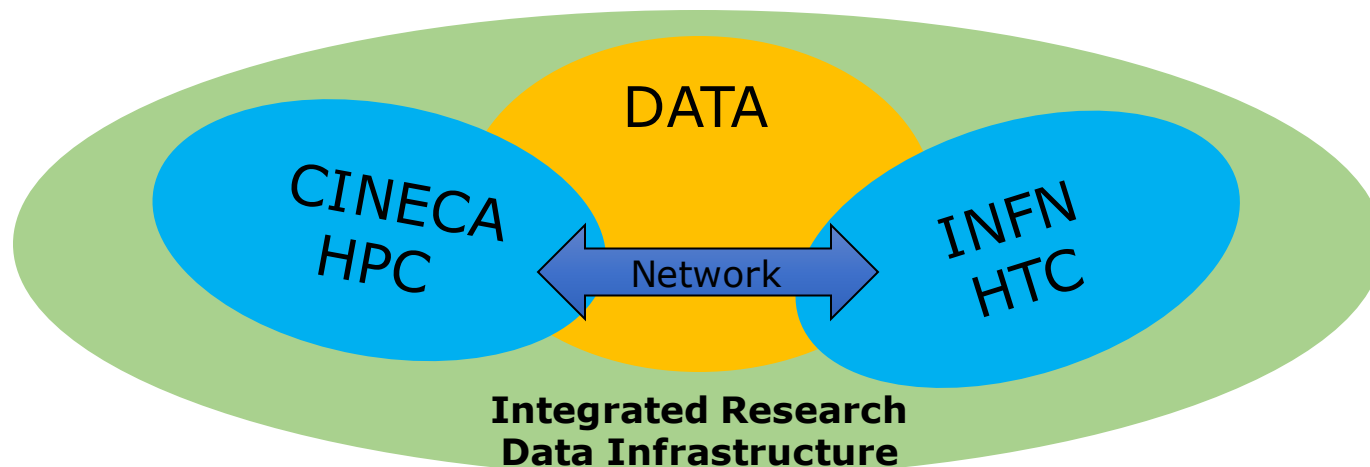
Bologna Big Data Technopole



- The Emilia Romagna Region (ERR) is the National and European hub for big data: about the 70% of the Italian research data is stored / processed in research centers sited in this region.
- The National Interuniversity supercomputing consortium (CINECA) and the National Institute for Nuclear Physics (INFN) have their top tier computing facilities and data centers in ERR, integrating infrastructures of the top universities and National Research institutions.
- ERR is the headquarters of world-leading companies in the sectors of automotive, mechatronics, digital production, bio-medical, e-commerce, agri-food
- ERR is the Italian leading region in term of economic growth rate and one of the most dynamic regions in Europe

Integration of CINECA-HPC and INFN-HTC computing infrastructure and progressive inclusion of the others qualified systems owned by national entities (CMCC for weather, climate and ocean predictions and simulations; ENEA for ITER, INAF for SKA, INGV for EPOS...):

- Institutional basic and applied research
- Enabling for Public administrations
- Proof of concept and innovation for private organizations and industries





Bologna Big Data Technopole

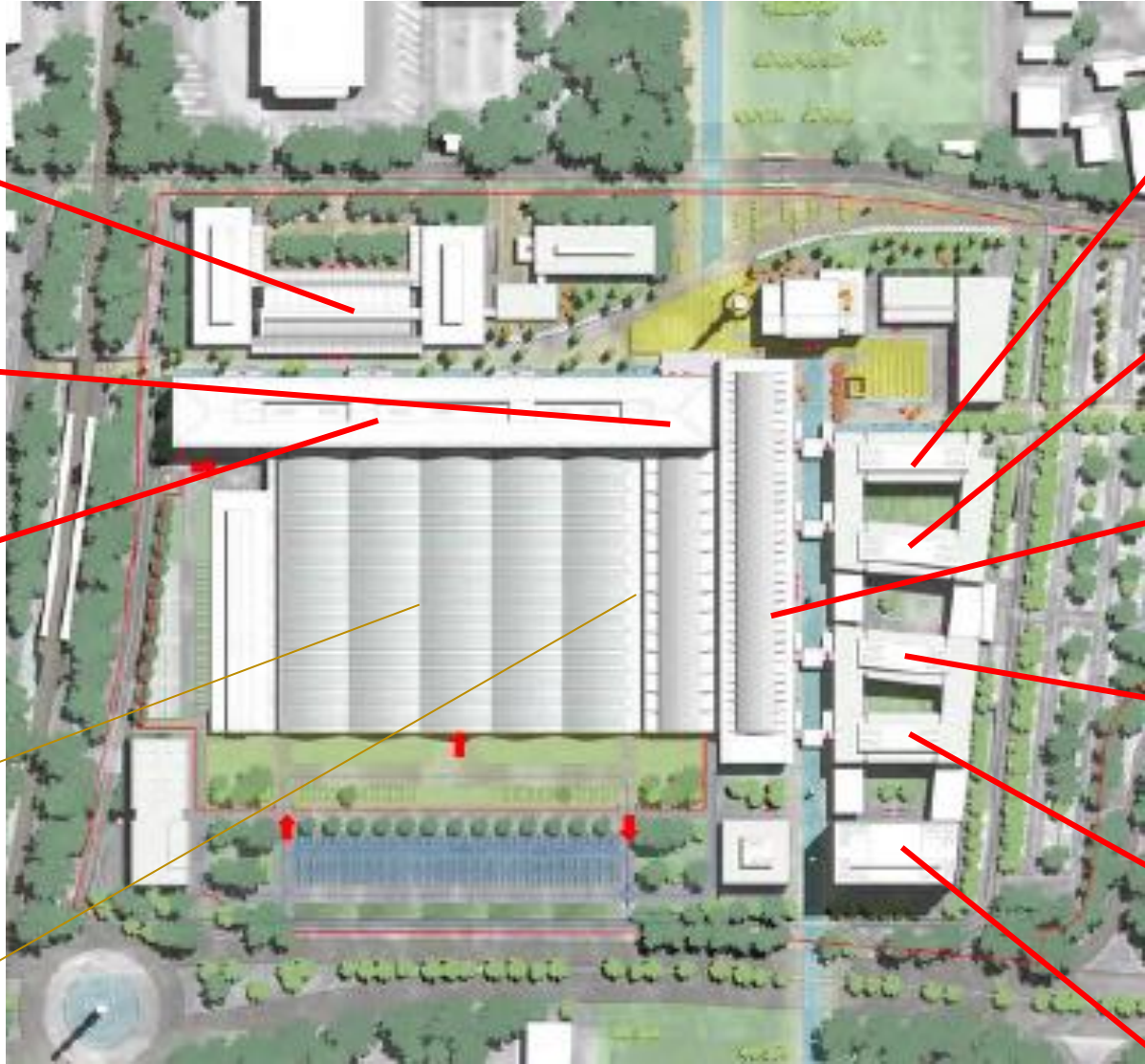
Conference and Education Center

Big Data Foundation

«Ballette» innovation and creativity center

ECMWF Data Center

CINECA & INFN Supercomputing center



Competence center Industry 4.0

Protezione civile and regional agency for development and innovation

Enea center

IOR bio-banks Regenerative medicine center

Academic Doctoral School

Agenzia Nazionale Meteo