

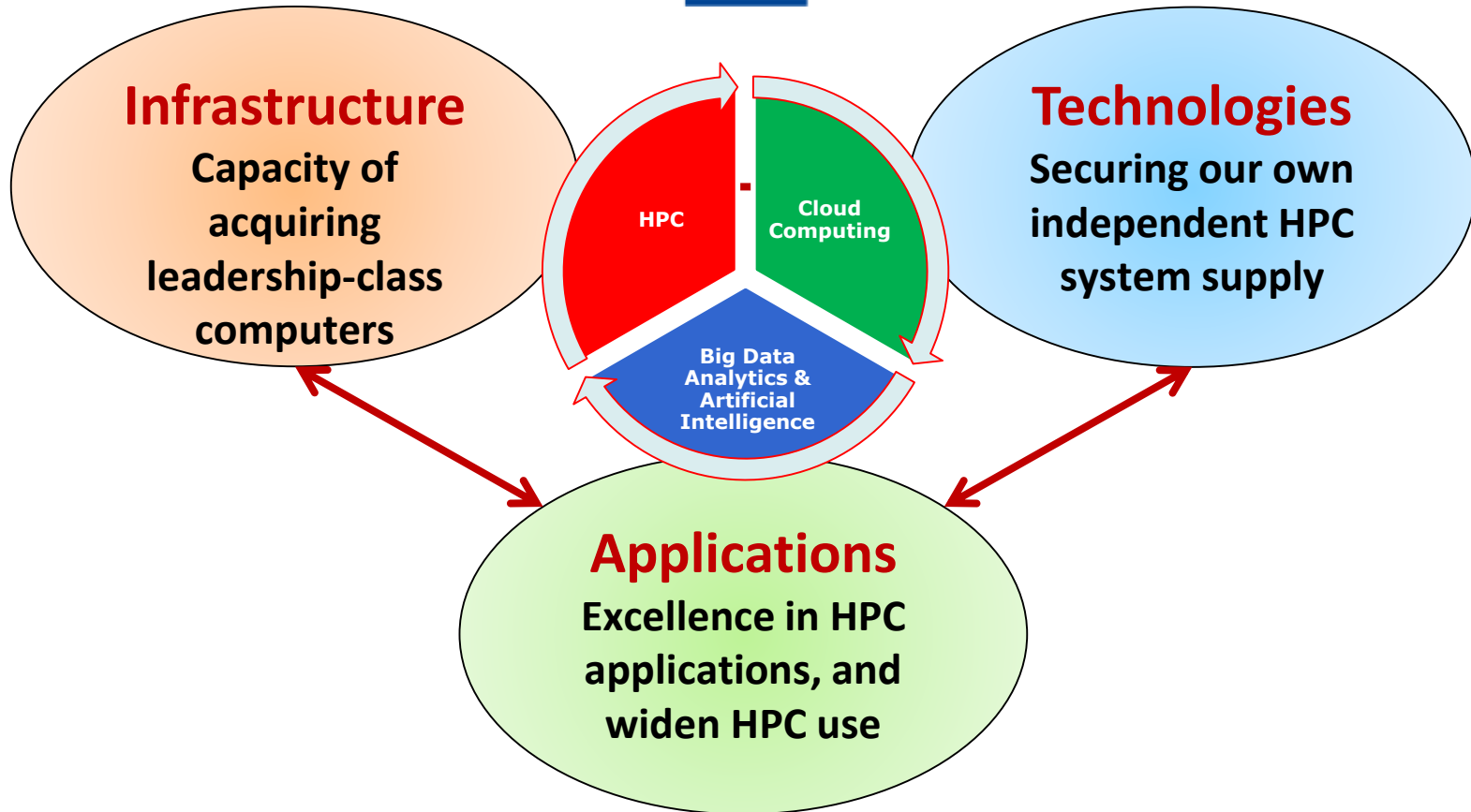


EuroHPC and the European HPC Strategy

**HPC User Forum
September 4-6, 2018
Dearborn, Michigan, USA**

Leonardo Flores Añover
Senior Expert - HPC and Quantum technologies
DG CONNECT
European Commission

Overall goals of the European HPC strategy



Build a thriving European HPC Ecosystem
(hardware, software, applications, skills, services...)

What happened since last year...

HPC - High on the European agenda



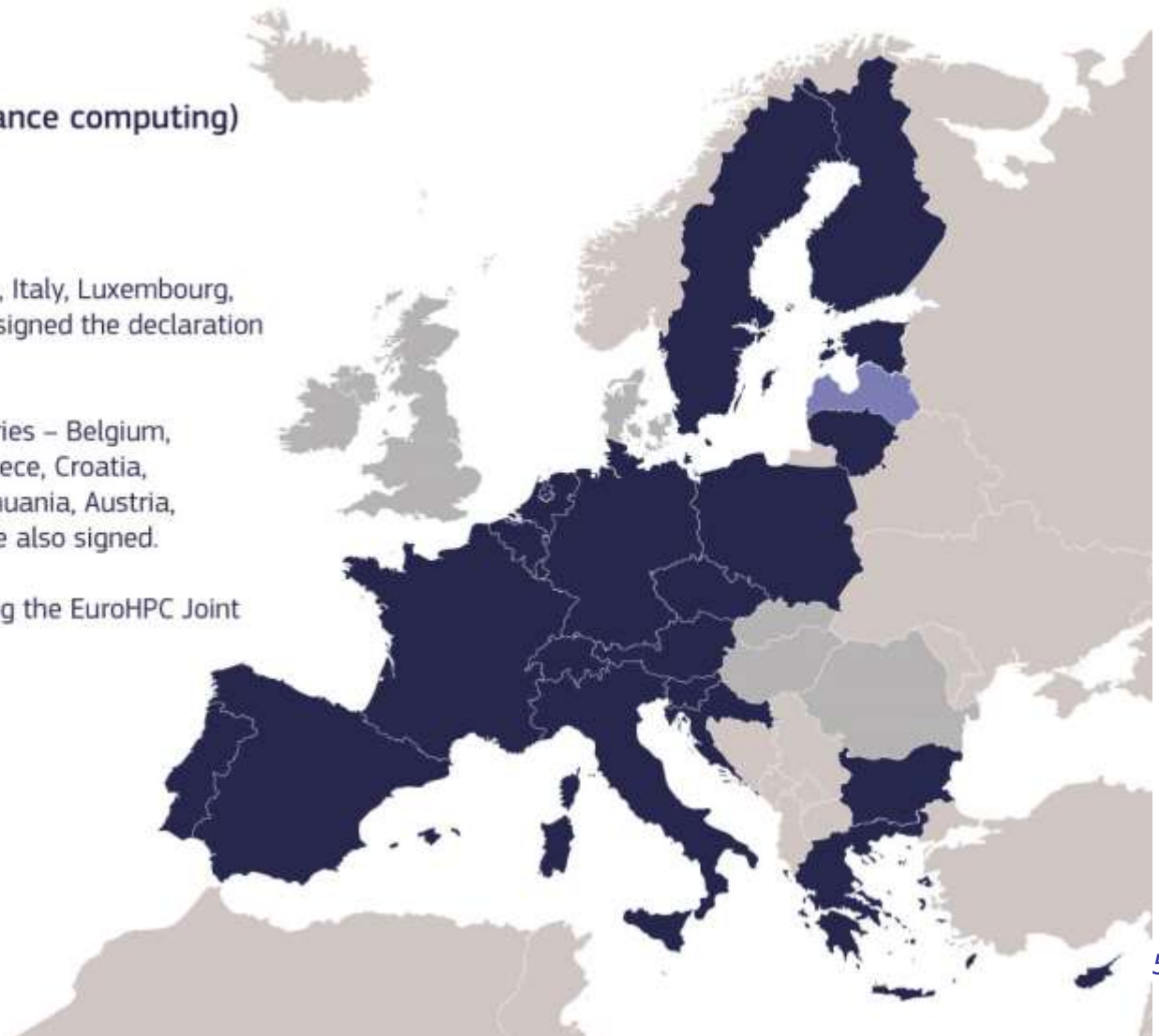
#EuroHPC (high-performance computing) **Declaration**

Signatory European countries

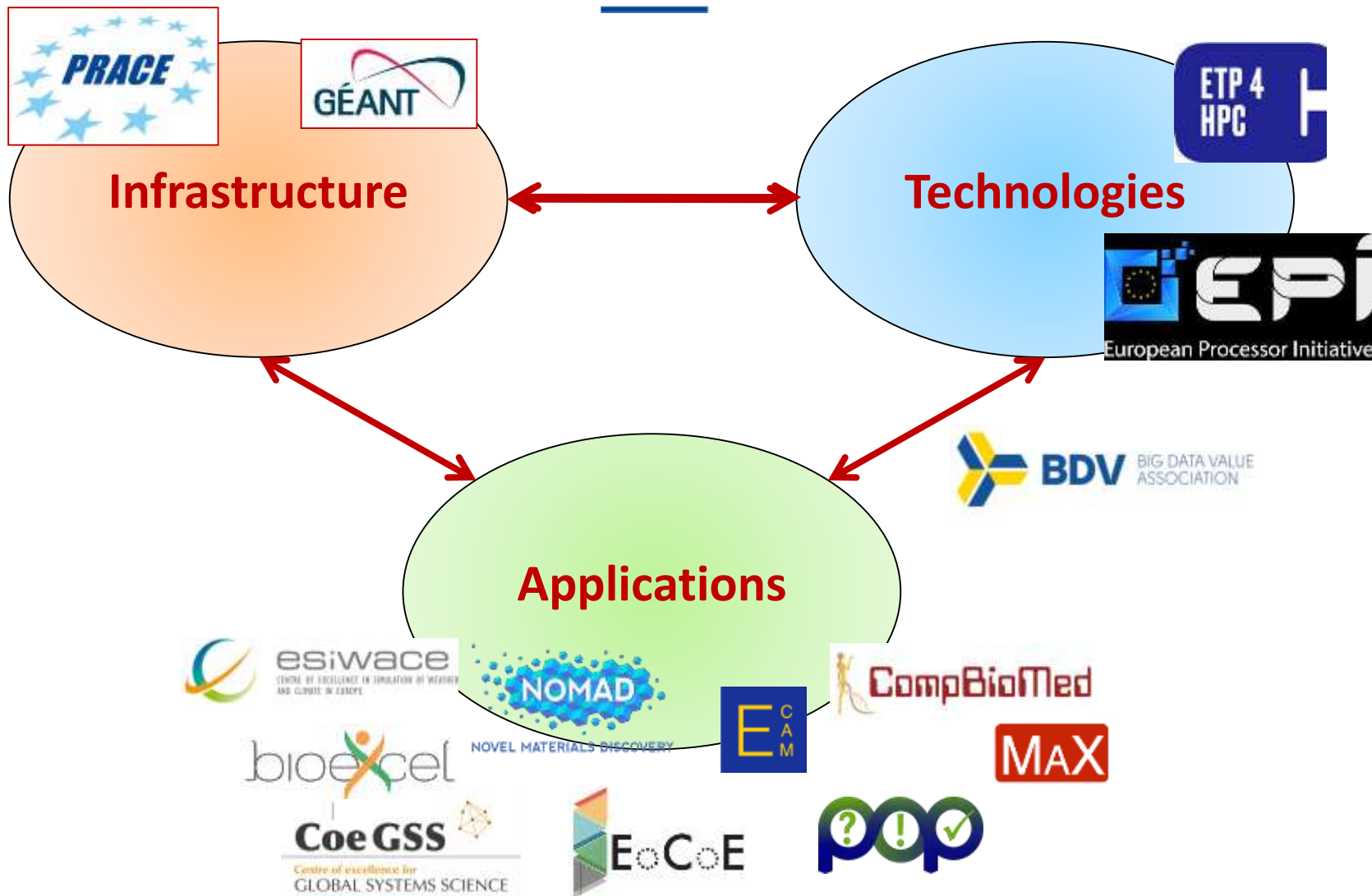
Seven countries – France, Germany, Italy, Luxembourg, Netherlands, Portugal and Spain – signed the declaration in March 2017.

Since then, another fourteen countries – Belgium, Slovenia, Bulgaria, Switzerland, Greece, Croatia, Czech Republic, Cyprus, Poland, Lithuania, Austria, Finland, Sweden and Estonia – have also signed.

Latvia has also committed to joining the EuroHPC Joint Undertaking.



The European HPC strategy Landscape



European Processor Initiative (EPI) consortium in a snapshot

- *23 partners*
- *10 countries*
- *Multidisciplinary*
- *Cross-market*
- *Industry + academia*



Main objectives of EPI

- *Develop low-power processor technology to be included in a pre-exascale system for Europe in 2020-2021 and exascale in 2022-2023*
- *Ensure that a significant part of that technology is European*
- *Ensure that the application areas of the technology are not limited only to HPC, but cover other areas, thus ensuring the economic viability of the initiative.*



European
Commission

EuroHPC



EUROHPC Joint Undertaking → A specific instrument to provide a new legal framework to coordinate national and European efforts for HPC₁₀

The EuroHPC Joint Undertaking Mission & Objectives



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

- **Objectives**

1. ***An integrated world-class supercomputing and data infrastructure***

- 2 pre-exascale + 2-3 petascale by 2020; 2 exascale by 2022/2023 (1 EU tech); post-exascale infrastructure by 2027
- federation of HPC infrastructures at European level
- hybrid HPC/Quantum infrastructure

2. ***Research and innovation for a HPC and Big Data ecosystem***

- an integrated European HPC R&I agenda
- independent HPC technology supply
- excellence in HPC applications and use
- HPC Competence Centres, training/skills, outreach

Infrastructure &
Operations

R&I: Tech, Apps
& Skills

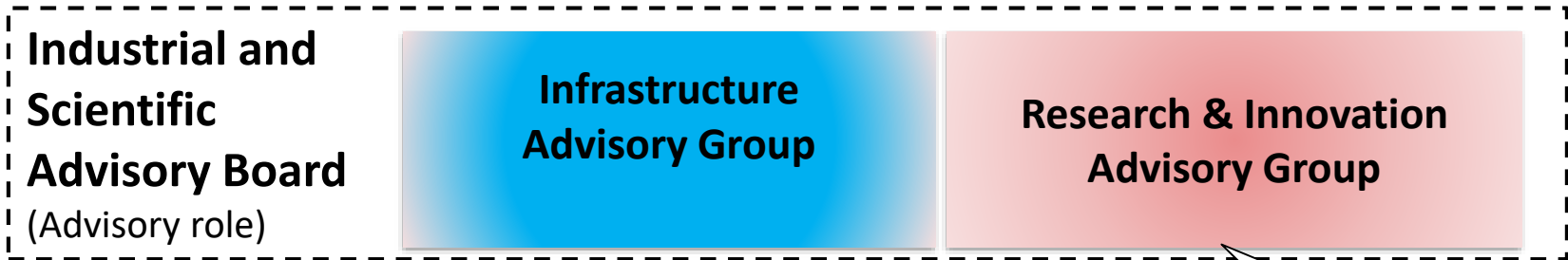
HPC Ecosystem

EuroHPC JU Governance



Governing Board
Public Members (Member
States + European Commission)
The decision making Board

Executive Director





First Phase EuroHPC Activities 2019-2020



Infrastructure &
Operations

R&I: Tech, Apps
& Skills

HPC Ecosystem

■ Infrastructure + Operations

Procurement of 2 pre-exascale machines and several (tbd) petascale machines

■ Applications & Skills + R&I

Technology and applications for exascale (incl. low-power processor); HPC Competence Centres

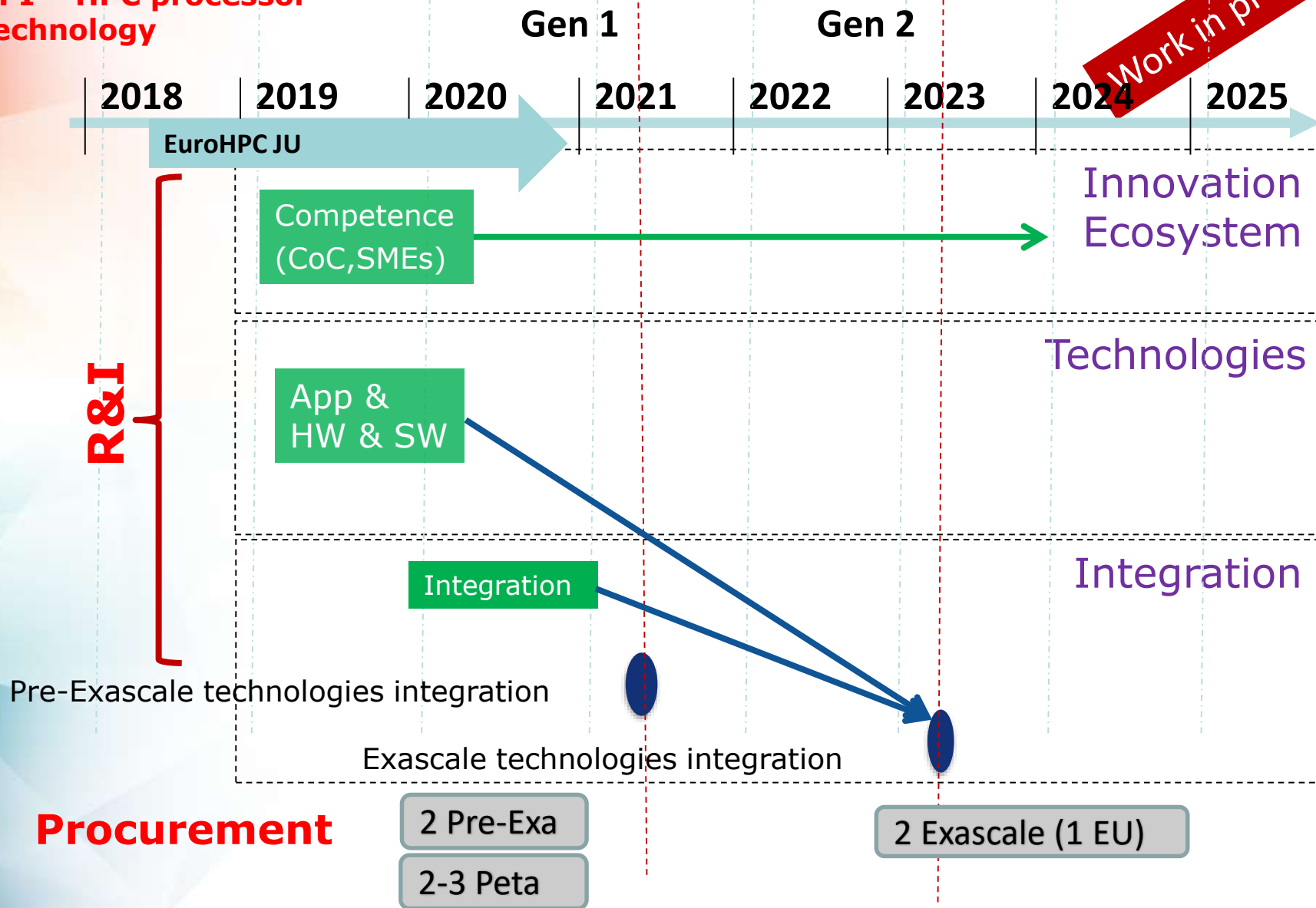
JU Operation: 2019 to 2026

EC	486 M€
Participating States	486 M€
Total	~1 B€
<i>Private Members (in kind)</i>	<i>422 M€</i>

Work in progress

The EuroHPC Roadmap – actions 2019-2020

EPI – HPC processor technology



Where are we now...

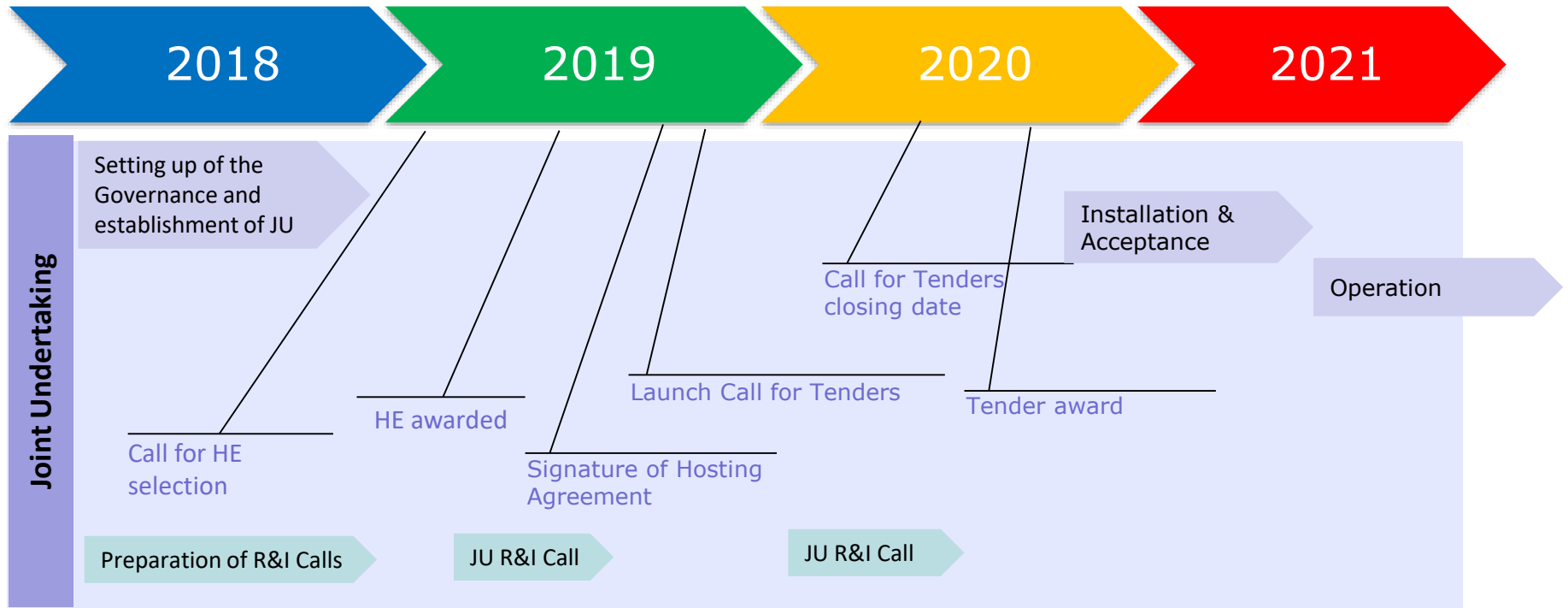
Work in progress

**Working Groups
stakeholder consultation**

WG User requirements and specifications

WG on Hosting and Procurement

- timeline and procedure
- HE agreement/criteria





Support to second phase of EuroHPC in 2021-2027

- Digital Europe Programme (DEP)
- Horizon Europe



Second Phase EuroHPC Activities 2021-2027

Work in progress



Europe in next Multiannual Financial Framework (2021-2027)

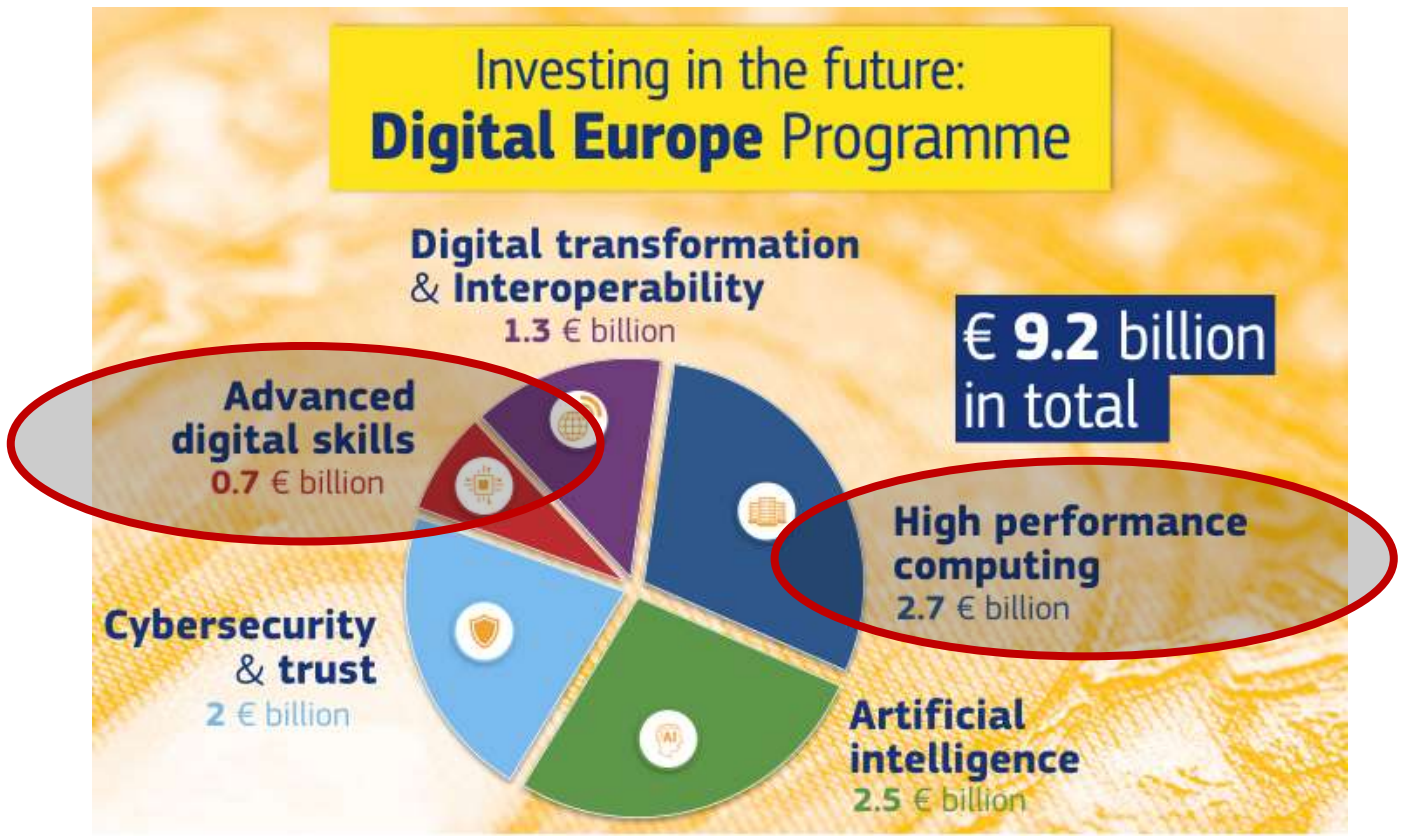
- two exascale systems by 2022/2023, post-exascale infrastructure by 2027
- federation of HPC infrastructure
- Hybrid HPC/Quantum infrastructure by 2028
- emerging computing architectures (quantum/neuromorphic)
- novel applications in key areas, and synergies with Cybersecurity, AI
- HPC Centres of Competence in all Member States
- advanced digital skills development

EuroHPC in the next MFF (2021-2027)



Work in progress

Digital Europe programme Commission proposal of 06 June



#EUBudget
#DigitalEurope



EuroHPC in the next MFF (2021-2027)



Work in progress

Commission proposal for **Horizon Europe**

THE NEXT EU RESEARCH & INNOVATION PROGRAMME (100 B€)



Advanced computing & Big Data

Work in progress



HPC Competence centres

- One per MS – associated with national supercomputing centres
- On demand services and tools to users
- Access to the HPC innovation ecosystem, and to the supercomputers
- Access to skilled technical experts
- Training and outreach activities
- Networking and coordination with other competence centres

Work in progress



- *Convergence & Synergies of HPC with other DEP pillars*



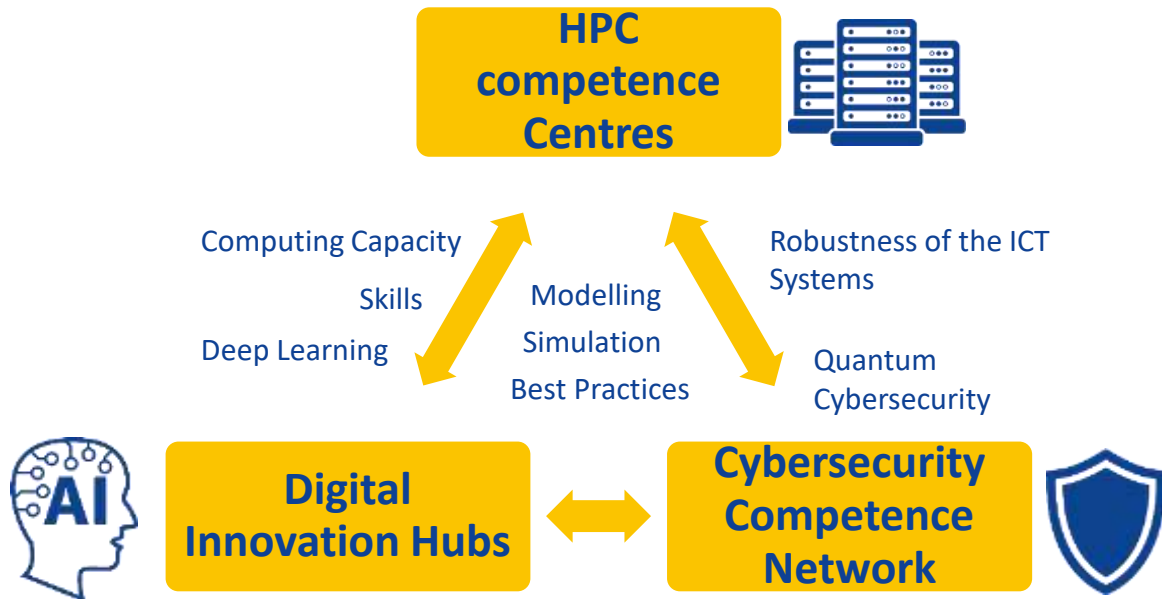
- **HPC competence Centres in Member States**



- **Cybersecurity Competence Network with a European Cybersecurity Research and Competence Centre**



- **Digital Innovation Hubs will be reinforced (AI)**



Thank you for your attention!

<http://ec.europa.eu/horizon2020-hpc>

