



## HPC User Forum

Campus Teratec, Bruyères-le-Châtel (F)

6-7 March 2018

# EuroHPC: the European HPC Strategy

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# **HPC in the political agenda**

# HPC: top in the EU political agenda



***Our ambition is that by 2020, Europe ranks in the top 3 HPC powers worldwide***

**04/2016: European Cloud Initiative** COM(2016) 178

*A world-class HPC, data & network **infrastructure** and a leading HPC and Big Data **ecosystem***

**05/2017: Mid-Term Review of the Digital Single Market Strategy** COM(2017) 228

*by end-2017, propose a **legal instrument** providing a **procurement framework** for an exascale supercomputing & data infrastructure*

# The EuroHPC Declaration



*Declaration signed in Rome, March 23<sup>rd</sup>, 2017 by:*

France

Germany

Italy

Luxembourg

Netherlands

Portugal

Spain

*8 more countries signed the Declaration:*

Belgium

Slovenia

Bulgaria

Switzerland

Greece

Croatia

Czech Rep.

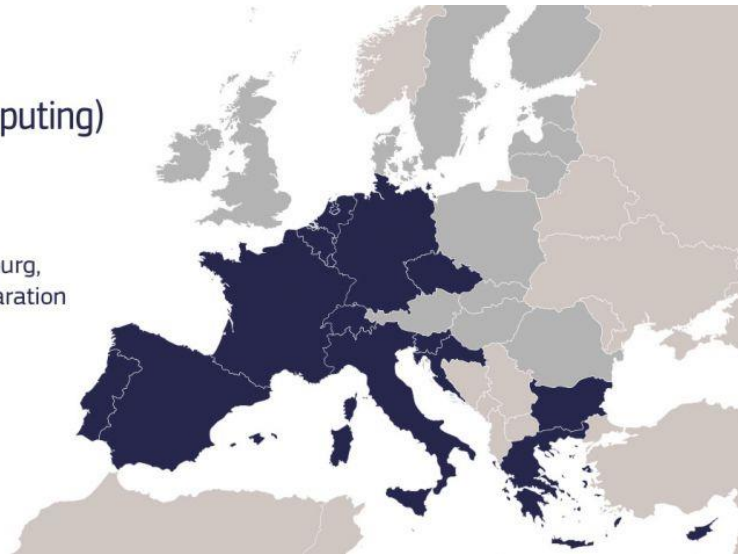
Cyprus

## #EuroHPC (High Performance Computing) Declaration

*Signatory European countries*

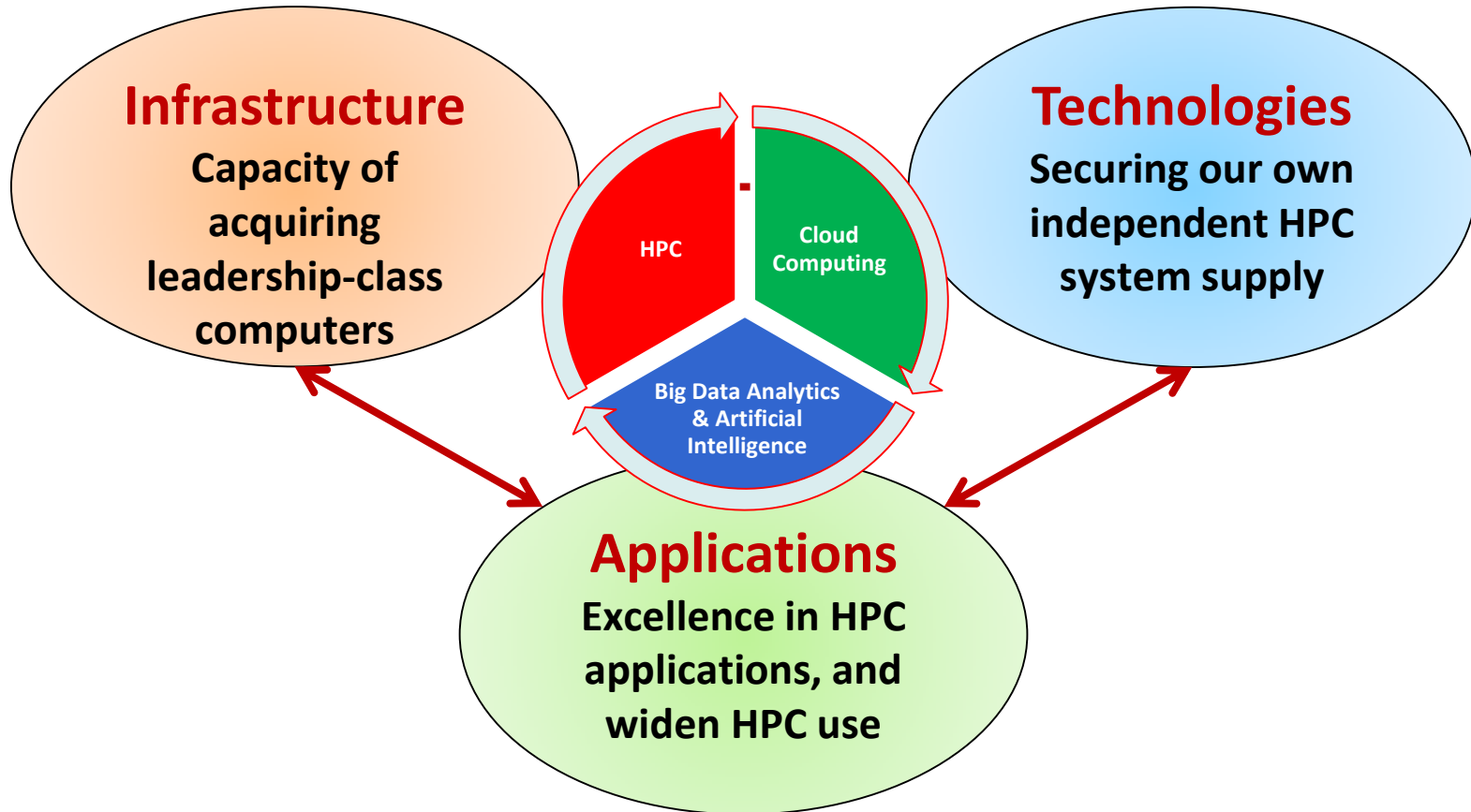
Seven countries – France, Germany, Italy, Luxembourg, Netherlands, Portugal and Spain – signed the declaration in March 2017.

Since then, another eight countries – Belgium, Slovenia, Bulgaria, Switzerland, Greece, Croatia, Czech Republic and Cyprus – have also signed.



Agree to work towards the establishment of a **cooperation framework - EuroHPC - for acquiring and deploying an integrated exascale supercomputing infrastructure** that will be **available across the EU** for scientific communities as well as public and private partners

# The European HPC strategy in Horizon 2020

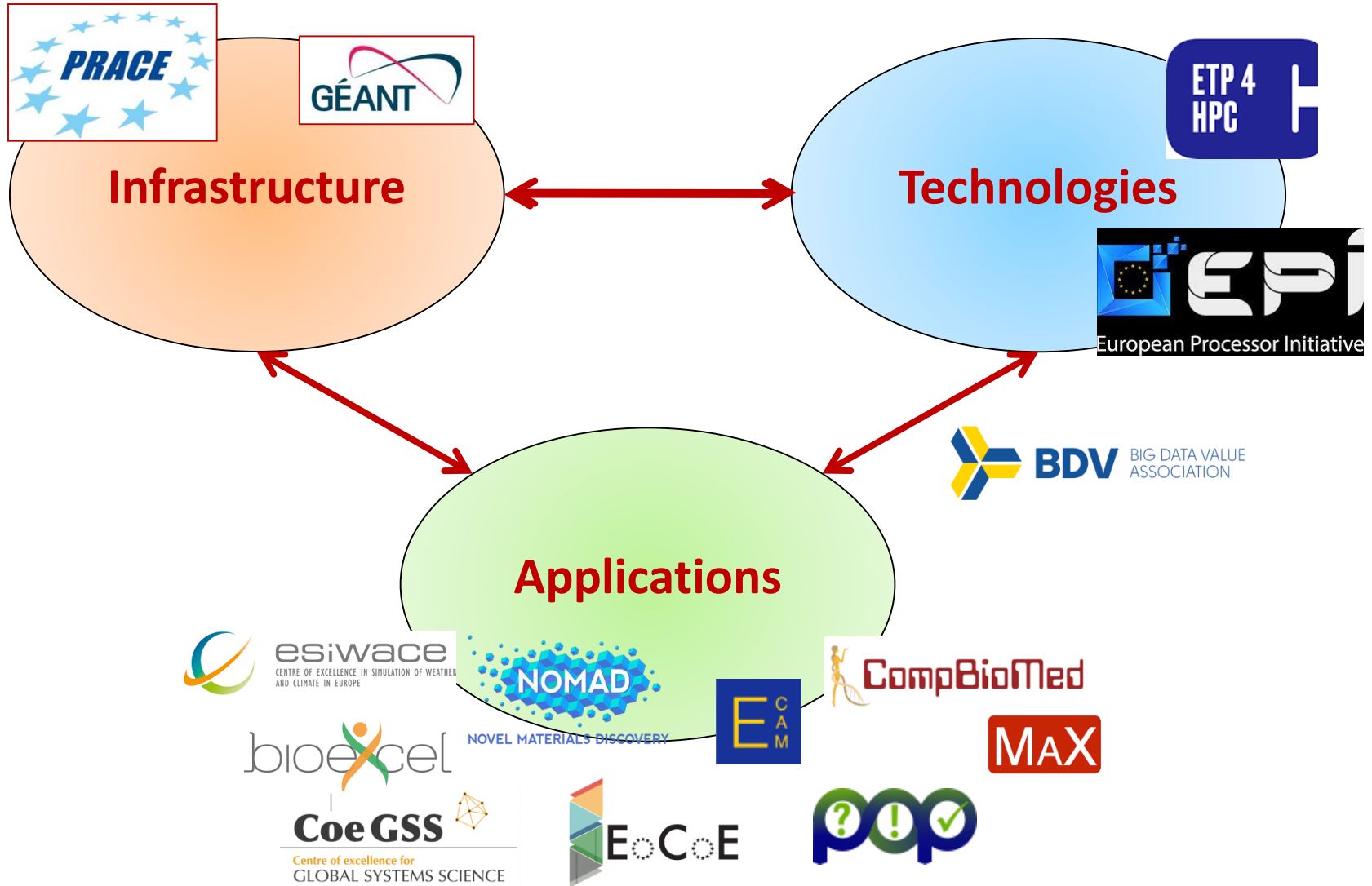


**Build a thriving European HPC, Big Data and Cloud Ecosystem**



# The European HPC strategy

## Ongoing activities



# European Processor Initiative 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.*

# EuroHPC Joint Undertaking



# HPC challenges in Europe today



European  
Commission

**EU has no top ranked  
supercomputers and  
depends on non-EU  
technology**

**Funding Gap  
wrt USA, JP, CN**

**Weak EU supply chain  
Weak integration of EU  
technology in HPC  
machines**

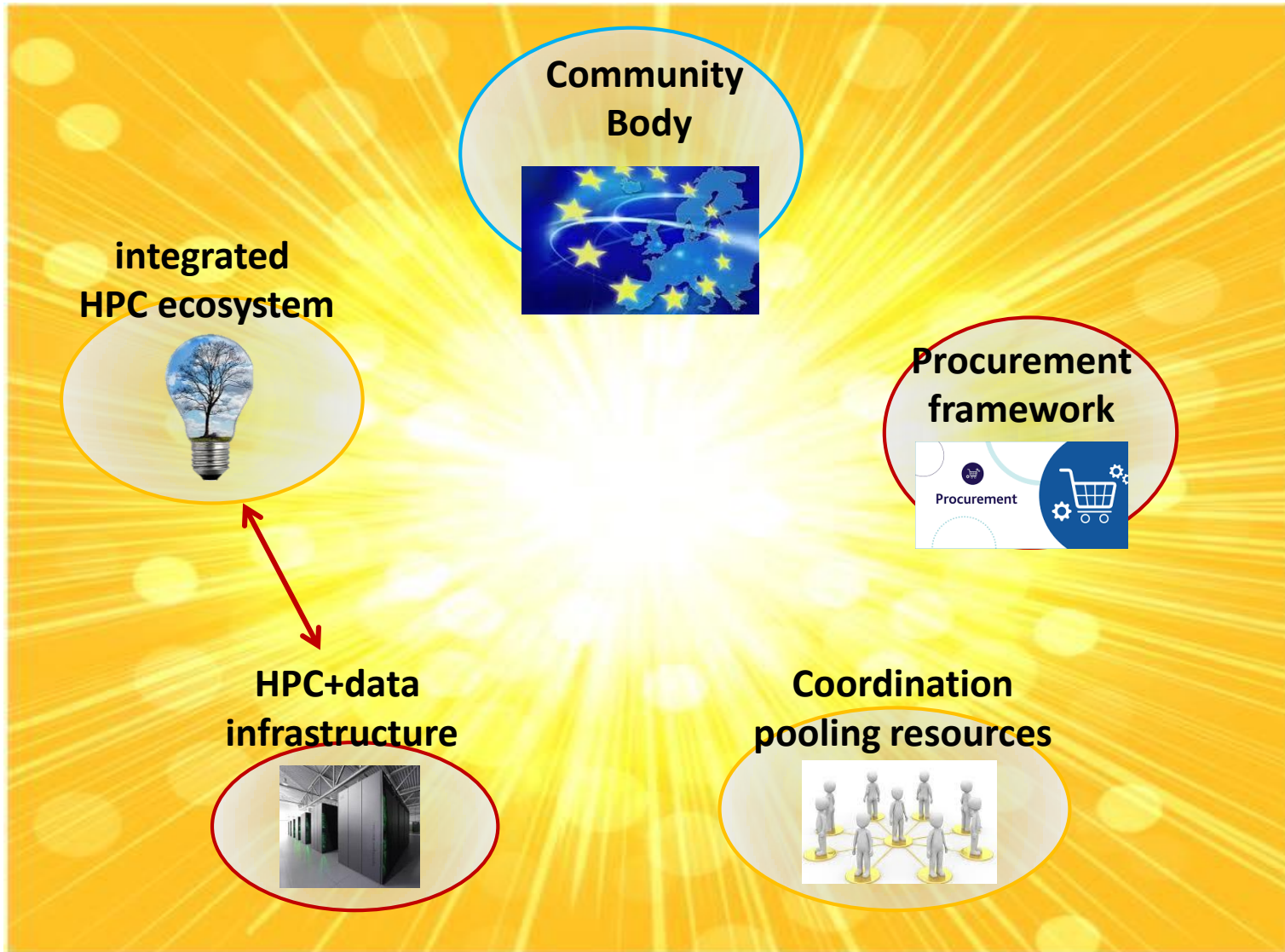
**HPC strategy  
implementation is  
inefficient**

**Insufficient  
coordination  
of national investments**

**Demand is not met**

# Overall objectives

## EuroHPC Joint Undertaking (JU)





**Commission proposal – under discussions in Council**

# **Governance**

# EuroHPC JU

## Membership and Roles

### The JU Members



#### Members of the JU

- The European Union (represented by the European Commission)
- Participating States: Member States (MS) and Associated Countries (AC) – Initially the signatories of the EuroHPC declaration (open to new Members)
- Private Members: ETP4HPC and BDVA Associations

- **Public Members**: The EU and Participating States - the decision makers - responsible for funding decisions  
→ **Voting rights** based on financial contribution
- **Private Members**: Advisory role only both for R&I and for procurement

Roles &  
Responsibilities



#### Specific articles of the regulation (and Annexed Statutes) address

- *Principles and rules for Membership, Voting rights, Financing, Functioning of bodies, ...*

# The EuroHPC JU Governance

## Intelligence gathering

### Stakeholders

[academia, industry]

#### (a) Users forum

- Science Users
- Users of PRACE and HPC Centres of Excellence
- Industry Users

#### (b) Technology forum

- PRACE, GEANT
- Supercomputing centres
- Industry (ETP4HPC, BDVA PPP, etc.)

## Decision making & Advice

### Executive Director

### Governing Board

Public Members

The decision making Board

### Industrial and Scientific Advisory Board

#### Research & Innovation Advisory Group

[academia & industry]

#### Infrastructure Advisory Group

[academia & user industry]

## Implementation

R&I activities

JU funded

HPC machines

Member State-funded  
activities

PRACE activities

...

# Activities

# EuroHPC JU: Overall activities



## ■ Infrastructure & Operations

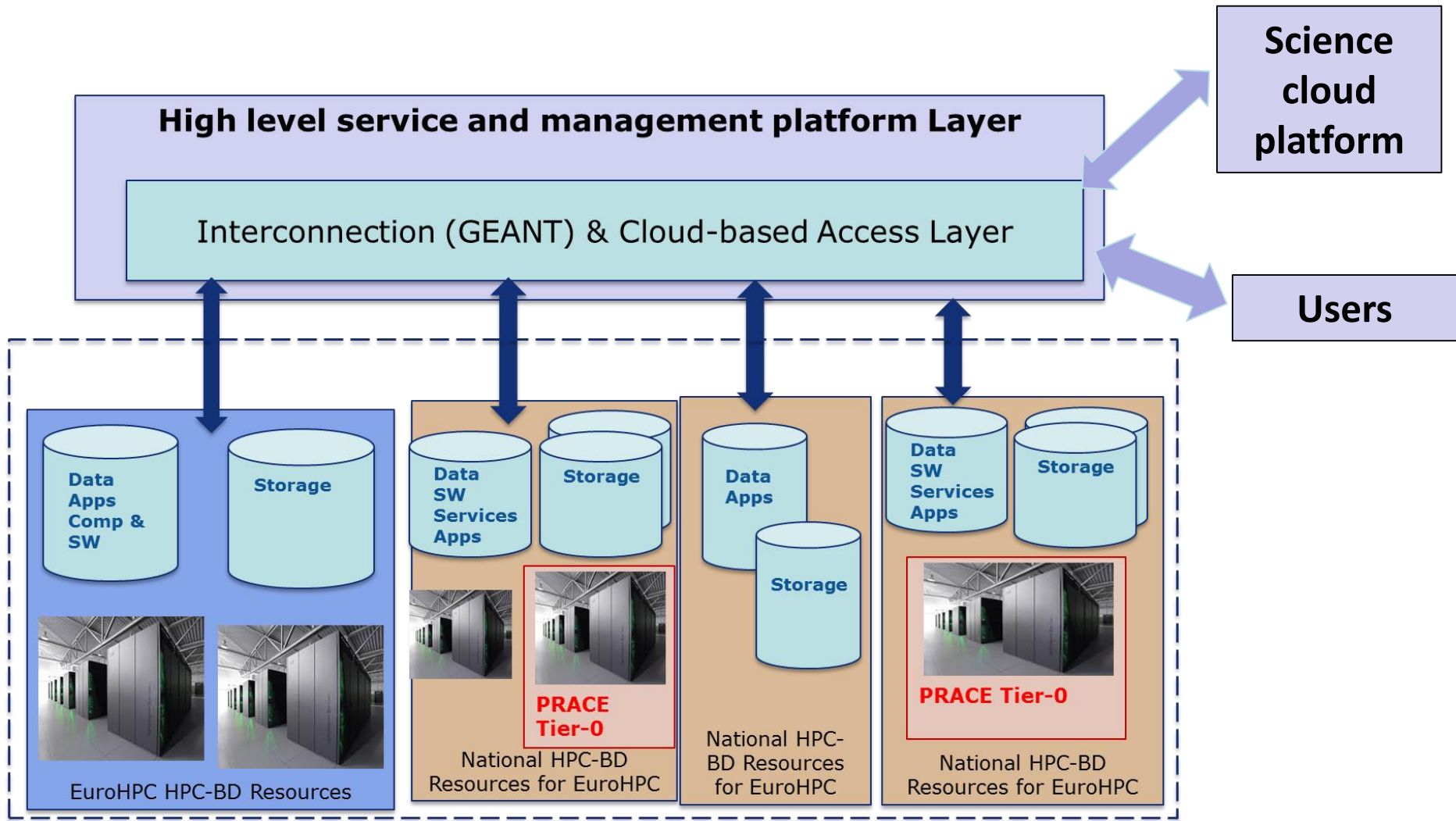
- Acquisition of infrastructure (linked to Research and Innovation)
- Installation, deployment and operation via hosting entities
- providing and managing access to users

## ■ R&I, Applications & Skills

- Supporting technologies and systems developed in Europe
- Excellence in HPC applications; HPC, Centres of Excellence, Supporting HPC competence development in Industry (incl. SMEs); Training and Outreach



# The European Data Infrastructure Implementation (long term vision)



# **Funding and timing**

## Contributions:

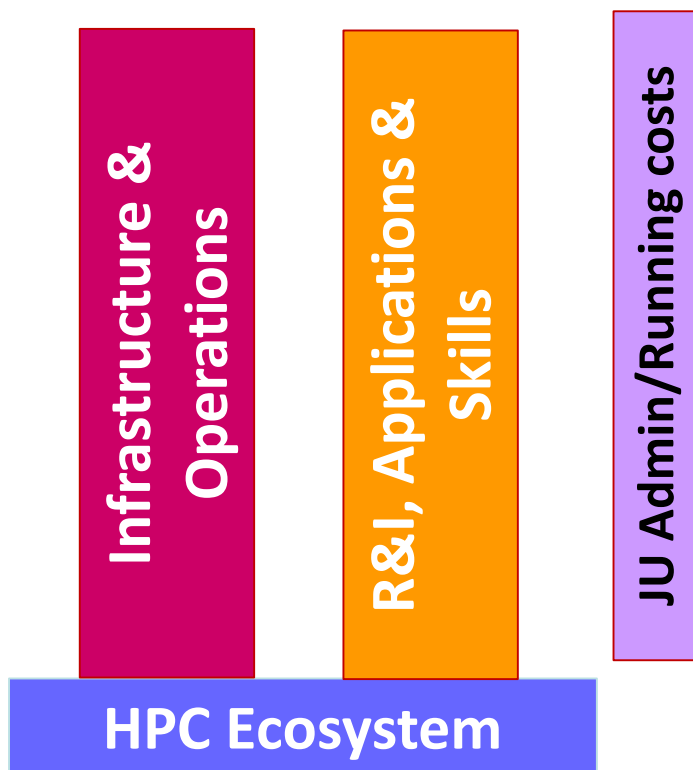
**EU : €486 million (10 M€ admin costs)**

**Participating States: €486 million (10 M€ admin costs)**

**Private Members: €422 million (2 M€ admin costs)**

- JU established until end 2026
- Procurements and call for proposals until 2020/2021 (*current MFF*)
- 2021-2026 – *management and payment of launched activities*

# EuroHPC Activities 2019-2020



## ■ Infrastructure + Operations

*Procurement of 2 pre-exascale machines  
and several (tbd) mid-range machines*

**No funding for operating costs of  
machines**

## ■ Applications & Skills + R&I

*Calls for R&I*

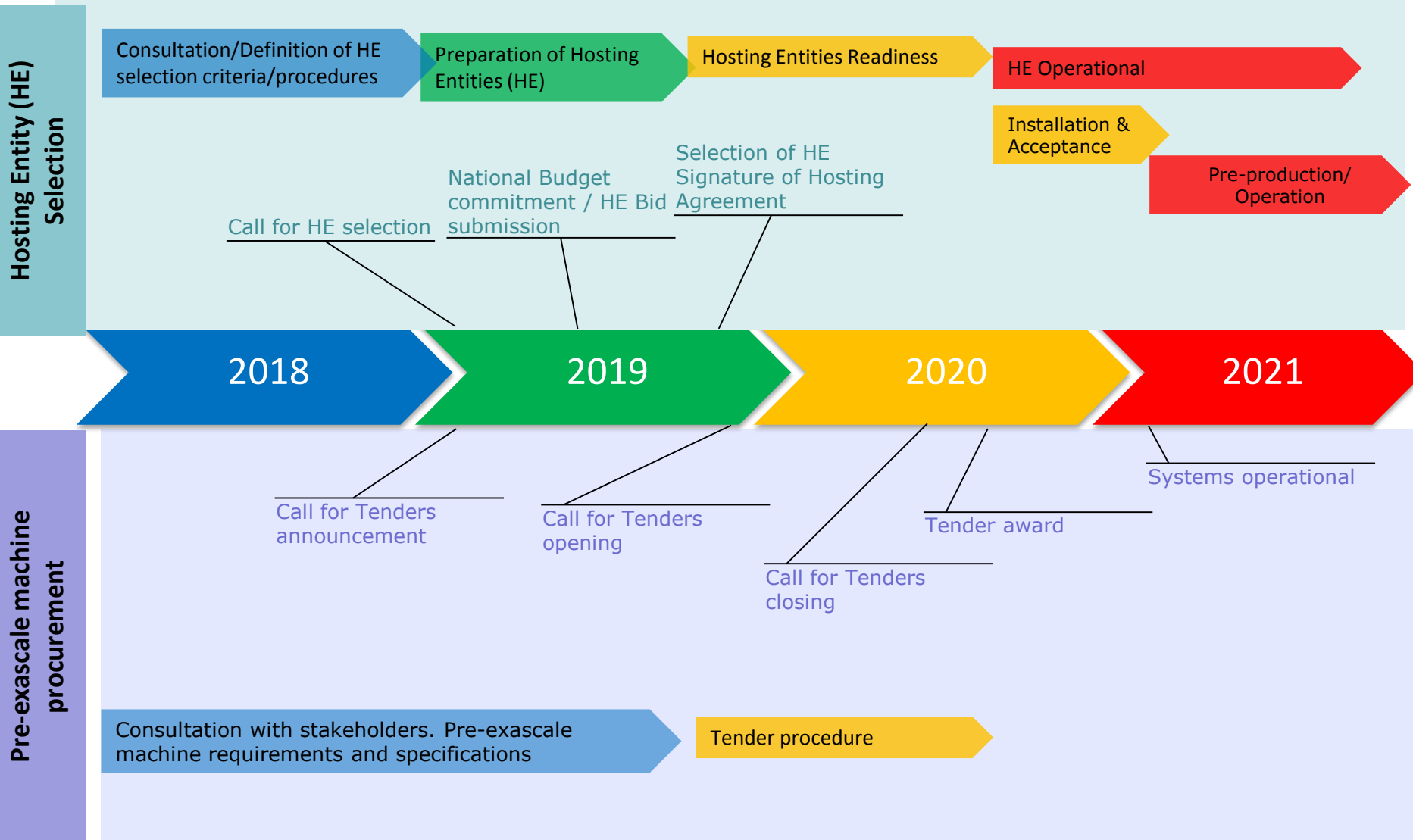
## ■ JU Admin/running costs

## Next EU Financial Framework? 2021-2028

- Exascale and post-exascale machines + hybrid HPC / Quantum Computing infrastructures
- Applications; technologies for post-exascale, outreach and skills



# draft timeline for pre-exascale systems procurement



# **Ownership, Hosting, Procurement and Access**



## Machine Ownership

- The JU owns the pre-exascale machines
- Member States own other HPC machines (i.e. the mid-range petascale machines)

## Procurement of pre-exascale systems

- Procurement done by the JU under EU rules
- Two-step procurement process
  1. The JU ***selects a hosting entity*** to delegate the installation and operation of each of the machines— a hosting agreement is signed with the hosting entity
  2. The JU launches the ***call for tender to procure the supercomputer*** with the help of national experts/hosting entity

# Access to JU machines

## ■ Primarily for R&I from public-funded research actions

- Governing Board will define general and specific access conditions (e.g. same quality of service for all users, specific access time for users participating in R&I funded actions, etc.)

## ■ Commercial services/private purposes

- paying service – market price; max 10% of total system time
- Revenues will be used for admin costs of the JU



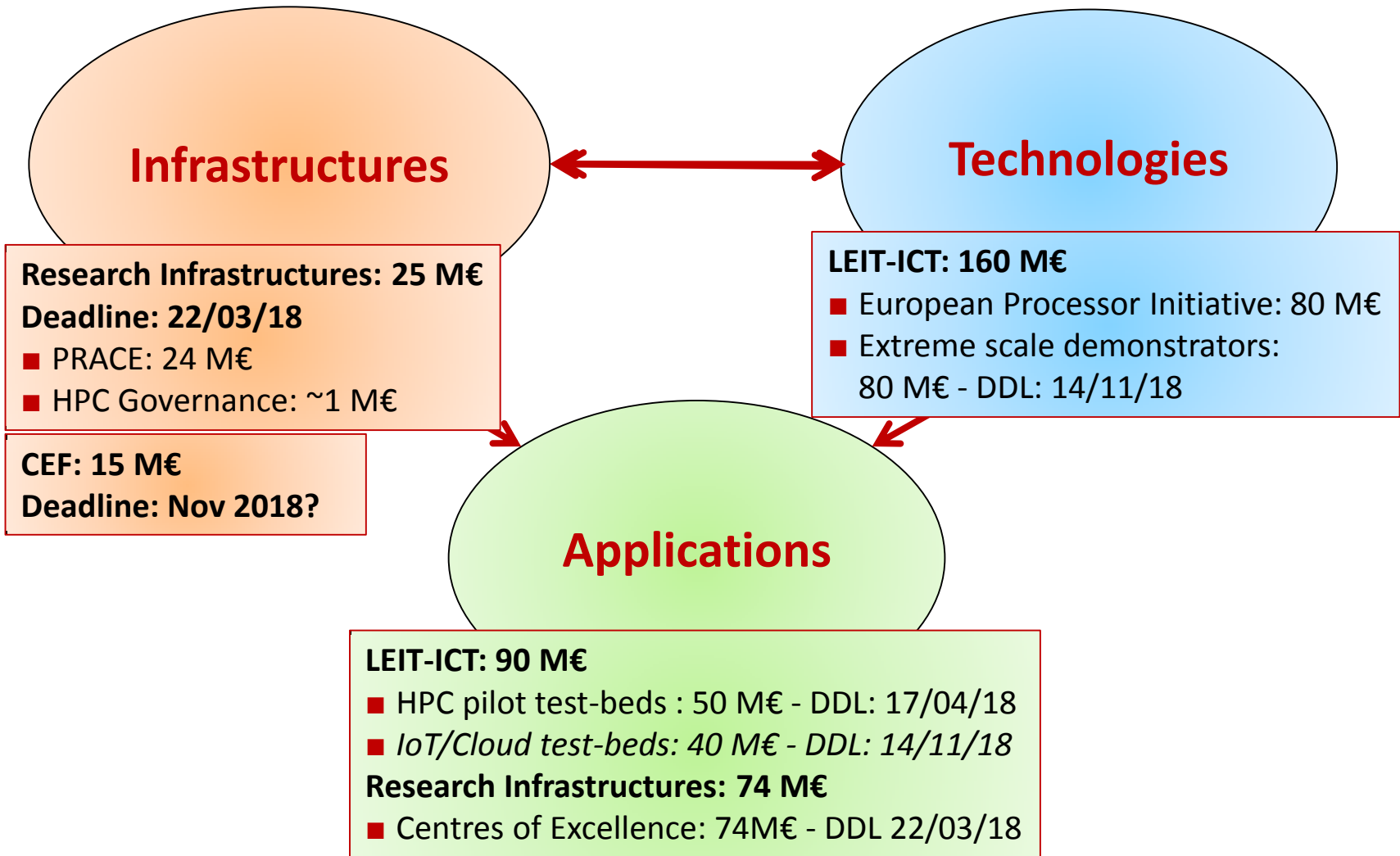
- Union's access time directly proportional to its financial contribution to TCO (access rights defined by the Governing Board)
- Participating States' access time directly proportional to its contribution to TCO (access rights defined by Participating States, in accordance with access conditions defined by Governing Board)

# **HPC activities in 2018 & Next steps**



# Agenda for 2018

## HPC Calls for proposals in 2018





## 1. Council negotiations

- Agreement by end May'18
- Adoption: Austrian Presidency (September?)

## 2. Sherpa meetings

- 20 March, 20 April, 15 May, 19 June

## 3. Working Groups

- "In-kind contributions" 19 March
- "User requirements" & "procurement process" to be launched in March 2018

## 4. Workshop "HPC & SMEs" 20 March

## 5. JU planned Start Date: 1.1.2019

## 6. Transitional phase: Q3 2018 – Q4 2019 (?)

### EuroHPC Sherpa's Body

Defining the EuroHPC JU 2019-2020 activities, the calls for proposals and the MS budget contributions



eu2018bg.bg

Bulgarian Presidency of the Council  
of the European Union



## HPC for Extreme Scale Scientific and Industrial Applications

- **19 April 2018, Sofia, Bulgaria**
- **Scope:** The role of HPC to transform Europe's digital future.
  - HPC in personalised medicine and in understanding the human brain
  - HPC and other emerging computing paradigms
  - The EuroHPC JU in South and Eastern Europe
- **Registration:** <https://eu2018bg.bg/en/events/1572>
- **URL:** <https://ec.europa.eu/digital-single-market/en/news/save-date-shaping-europes-digital-future-bulgarian-presidency-event-high-performance-computing>



# THANK YOU!



<https://ec.europa.eu/digital-single-market/en/policies/high-performance-computing>