



EuroHPC Joint Undertaking & cPPP ETP4HPC

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HPC status in Europe today

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

Demand is not met

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

HPC strategy implementation by EC is inefficient

Insufficient coordination of national investments

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

What is the starting point?



Tier-0 → access to HPC infrastructure, training, applications, support services



Provides the high-bandwidth connectivity between the users and the supercomputers



R&D&I Programme → fundamental science, technology development, infrastructure, applications, support services



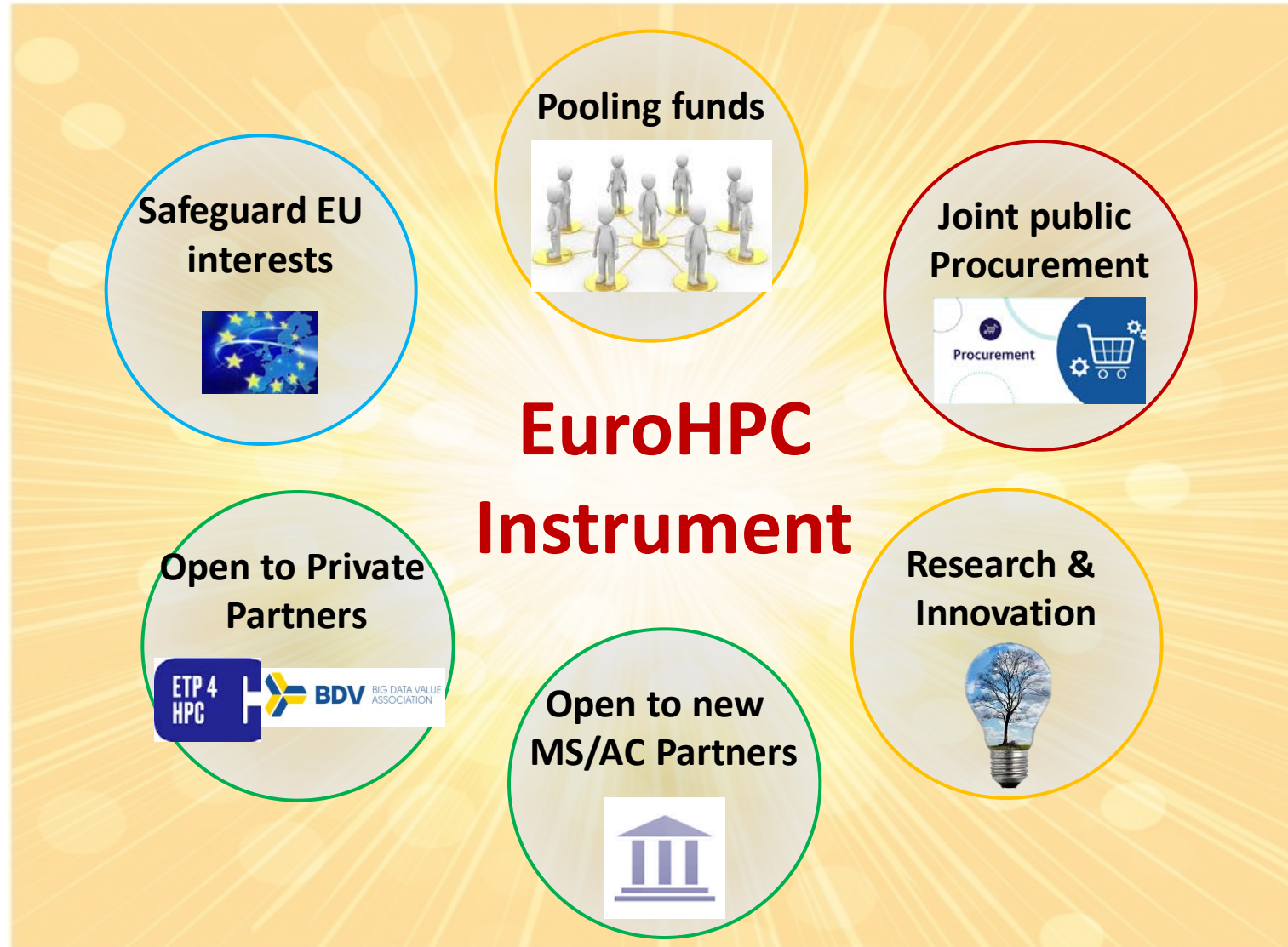
HPC cPPP → SRA, community building



Data intensive applications, new business cases

A new Instrument

The main Specifications





Towards the world top HPC powers: EuroHPC Joint Undertaking

Co-invest on a leading HPC and data infrastructure

for our scientists, industry and the public sector and support the development of technologies and applications across a wide range of fields

- Coordinate EC/MS activities
- Pool public and private resources at EU level
- Procure world-class infrastructure
- Close the chain from R&D to procurement
- Become lead Users
- Create a competitive supply industry
- Lead in Applications

A world-class European HPC, Big Data and Cloud Ecosystem

The EuroHPC JU

A two-phase Approach



High
Performance
Computing
(HPC)



Phase 1: 2019-2020 (Present EU Financial Framework)

[Pillar 1] Pre-exascale machines and petascale machines

[Pillar 2] Applications; technologies for exascale

➔ The JU operates until 2026 with ~1 B€ budget (50% Union; 50% participating countries)

Phase 2: 2021-2028 (Next EU Financial Framework)?

[Pillar 1] Exascale and post-exascale machines + first hybrid HPC / Quantum Computing infrastructures

[Pillar 2] Applications; technologies for post-exascale

➔ JU operates until 2030+

EuroHPC JU in a nutshell



- Follows underlying model of JUs (legal base, reporting, establishment, staff issues, auditing, ...)
- Tripartite partnership: EC + Participating States + Private Members
- Implements H2020 + Connecting Europe Facility
- Infrastructure Acquisition AND R&I activities
- Open to in-kind contributions by MS
- Governance adapted to the EuroHPC objectives
- Participating countries entrust JU with their financial contributions
- JU running costs shared → EC, Participating States, Private Members
- Seat = Luxembourg

High
Performance
Computing
(HPC)



The EuroHPC JU

(Phase 1) Activities and Funding

Pillar 1

Infrastructure
Acquisition
Operating machines

Pillar 2

Research & Innovation
Applications & Skills

JU Admin/Running
costs

JU Operation: 2019 to 2026

- **Pillar1: HPC Machines**
2 Pre-exascale machines + ≥ 2 petscale machines
- **Pillar 2: R&I, Applications and Skills**
European exascale technologies and systems (incl. low-power processor); Applications & Skills;
- **JU Admin/running costs**

Indicative only!

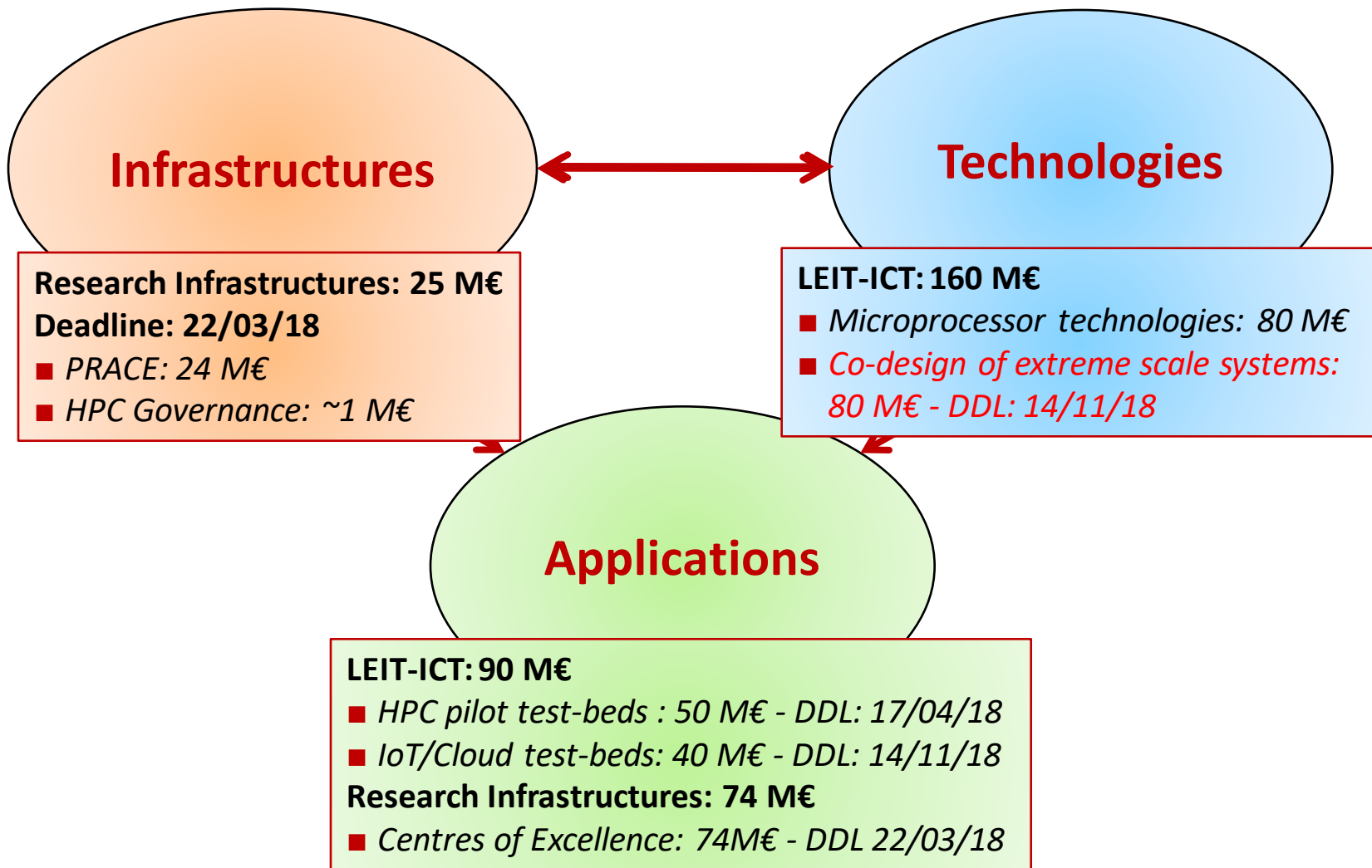
Indicative only!			<u>In M€</u>
~270	~206	10	486
~290	~186	10	486
560	392	20	972
0	~420 (in kind)	2	422

EC
Participating States
Total
Private Members



EuroHPC Agenda for 2018

H2020 Calls for proposals in WP 2018



EU Budget for the JU

	H2020 FET	H2020 LEIT-ICT	H2020 Research Infrastructures	CEF
WP 2018		ICT-14-2019: Co-designing Extreme-Scale Demonstrators (EsD)		
WP 2019	68 M€		8 M€	
	FETHPC-02-2019 : HPC - Extreme scale computing technologies, methods and algorithms for key applications and support to the HPC ecosystem		INFRAINNOV-01-2019: Stimulate the innovation potential of SMEs	
WP 2020	100 M€	40 M€	80 M€	100 M€
	FETHPC-03-2020 : Co- design of extreme scale HPC systems and applications	Framework Partnership Agreement in European low- power microprocessor technologies (Phase 2)	INFRAEDI-04-2020: Support to Public Procurement of innovative HPC systems	CEF WP 2020

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
- Tier-0 supercomputing centres
- Industry (ETP4HPC, BDVA PPP, etc.)

Decision making & Advice

Governing Board

Public Members

The decision making Board

Industrial and Scientific Advisory Board

Research & Innovation Advisory Group

[academia & industry advising
on Pillar 2 activities]

Infrastructure Advisory Group

[academia & user industry
advising on Pillar 1 activities]

Implementation

R&I activities

JU funded

HPC machines



Member State-funded
activities

PRACE activities

IPCEI activities

...



EuroHPC Statutes: Article 10ff

Industrial & Scientific Advisory Board

Research & Innovation Advisory Group

[academia & industry advising
on Pillar 2 activities]

Public information/feedback on SRA

- Draft & update the SRA for achieving the objectives of the JU as basis for the workplans
- Advise on the scientific & technological achievements described in the annual activity report
- Suggest possible areas of advanced research that could be subject to further developments
- Suggest possible synergies with national research & innovation activities
- Global consistency of the EuroHPC Initiative: schedule, critical milestones, interfaces, KPIs ...
- Updates of all targets, following possible evolution in the technological scenarios
- Innovative content of the Programs & situation of activities with respect to European and global state of the art
- The overall socio-economic and environmental outcome of the EuroHPC Initiative.

Next Steps



JU establishment

- 1. JU Start Date: 1.1.2019**
- 2. Council negotiations**
 - Agreement by end May'18
 - Adoption: Austrian Presidency (September?)
- 3. Sherpa meetings**
 - 20 March, 20 April, 15 May, 19 June
- 4. Working Groups**
 - "In-kind contributions" 19 March
 - "HPC & SMEs" 20 March
- 5. Transitional phase: Q3 2018 – Q4 2019 (?)**

EuroHPC Sherpa's Body

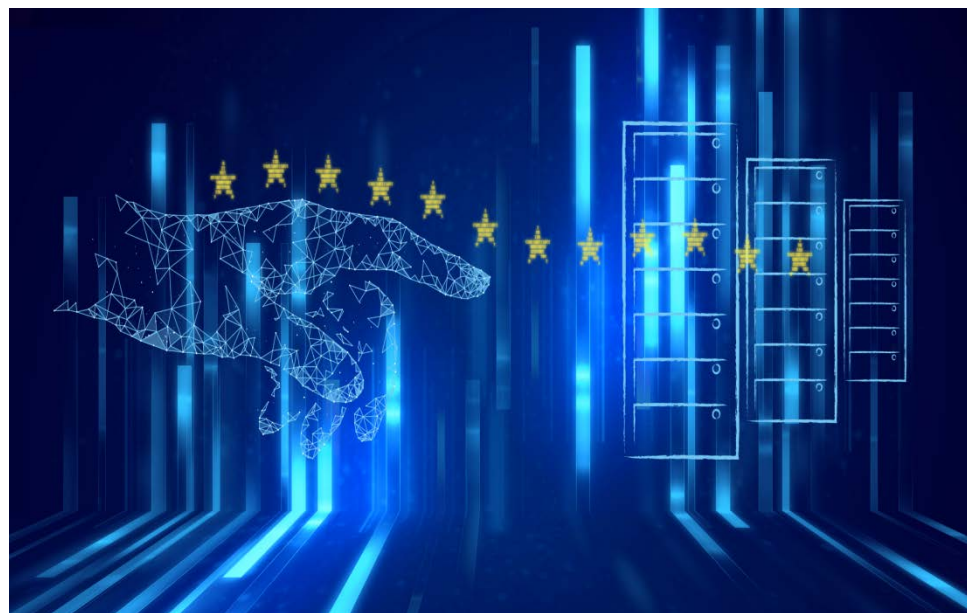
Work with Sherpa's for defining the EuroHPC JU 2019-2020 activities, the calls for proposals and the MS budget contributions



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>