



**EUROPEAN TECHNOLOGY  
PLATFORM FOR HIGH  
PERFORMANCE COMPUTING**

## **Opportunities for industry activities in EU HPC**

***Dr. Eng. Jean-Philippe Nominé***

*CEA, ETP4HPC - ETP4HPC Vice Chair - EuroHPC RIAG Chair*




**NCC Workshop  
May 19, 2022**

<https://www.etp4hpc.eu/>

# Outline

- ETP4HPC in a nutshell
- Ecosystem
- SME focus

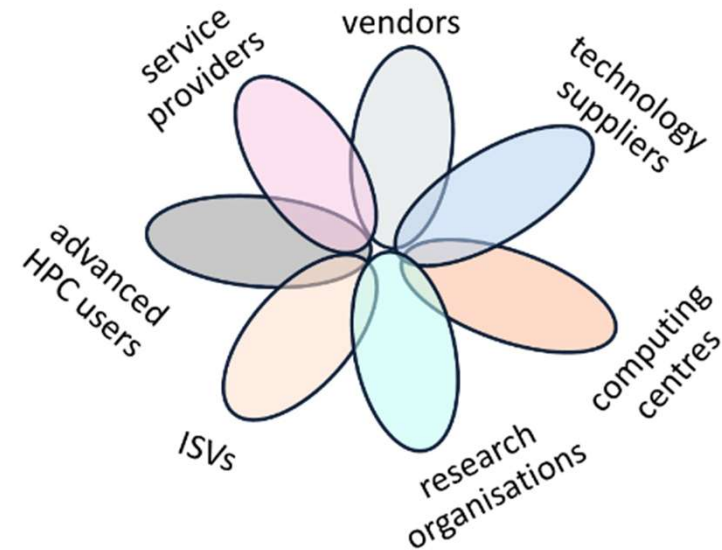
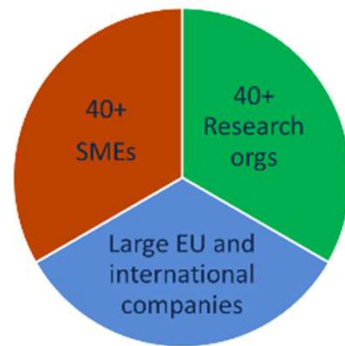
- 
- ETP4HPC in a nutshell
  - Ecosystem
  - SME focus

We are an industry-led think-tank promoting European HPC research and innovation to support Europe's competitiveness

We have a strong focus on technologies (h/w & s/w), and are committed to developing a vibrant EU HPC ecosystem all along the value chain

- Private, independent and non-profit association
- ~110 members from 23 countries

ORGANISATION



# ETP4HPC members



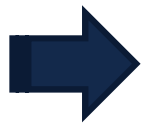
# ETP4HPC Main Activities

- Open forum for discussing HPC-related technologies and initiatives
  - Domain-specific Working Groups
- Private member of the EuroHPC Joint Undertaking together with DAIR0, QuIC
  - 3 seats at the EuroHPC Research and Innovation Advisory Group (RIAG) + 4 observers
- Author of (among other publications):
  - HPC Strategic Research Agendas – **SRA5 coming soon!**
  - the Handbook(s) of EU HPC Projects
  - White Papers
- Developing the TransContinuum Initiative  
<https://www.etp4hpc.eu/transcontinuum-initiative.html>



# New digital handbook

- Until 2021, the Handbook was released yearly. It is now a [website](#) that is constantly updated.



ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

Return to ETP4HPC Login

type to search

All (72)  
On-going (44)  
New projects (4)

Chapter  
Select one

Coordinating organization  
Type first letters

Call  
Select one

**EUPEX**  
EUPEX leverages the best of the assets developed in previous H2020 projects to design, build and validate the first HPC.  
READ MORE

**EuroCC**  
Europe-wide network of national HPC competence centers  
READ MORE

**EuroEXA**  
Co-designed Innovation and System for Resilient Exascale Computing in Europe: From Applications to Silicon.  
READ MORE

**EVOLVE**  
HPC and Cloud-enhanced Testbed for Extracting Value from Diverse Data at Large Scale.  
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**Exa Mode**  
EXA MODE  
Connexion Bureau à distance

**exa2pro**  
EXA2PRO  
Enabling Sustainability and Justice

**exaFOAM**  
exaFOAM  
Enabling of Exascale Capabilities for Ocean Science

**ExaQUTE**  
ExaQUTE  
Exascale Quantification of Uncertainties for Technology and Science Simulation

# Some topics we take very seriously...

- Whole HPC ecosystem development
- Education and Training
  - Ad hoc WG (JPN, Fabrizio Magugliani-E4)
  - ETP4HPC a partner of EUMaster4HPC
- Industrial Use of HPC
  - Ad hoc WG (Sai Narasimhamurthy-Seagate, JPN)
  - [ETP4HPC webinars in 2022 | etp4hpc](#)  
~half of ETP4HPC webinars are on this topic e.g. next one June 10
- Sustainable HPC
  - Ad hoc WG, BOF sessions at ISC/SC etc.
- EU SMEs in HPC from supply to use ... possibly the trickiest topic!



# Une page de publicité...

- [etp4hpc-webinar--collaborative-development-of | etp4hpc](#)

## ETP4HPC Webinar - Collaborative development of the Next-Generation Computation Fluid Dynamics Solver CODA by Onera, Airbus and DLR

10/06/2022

confirmed

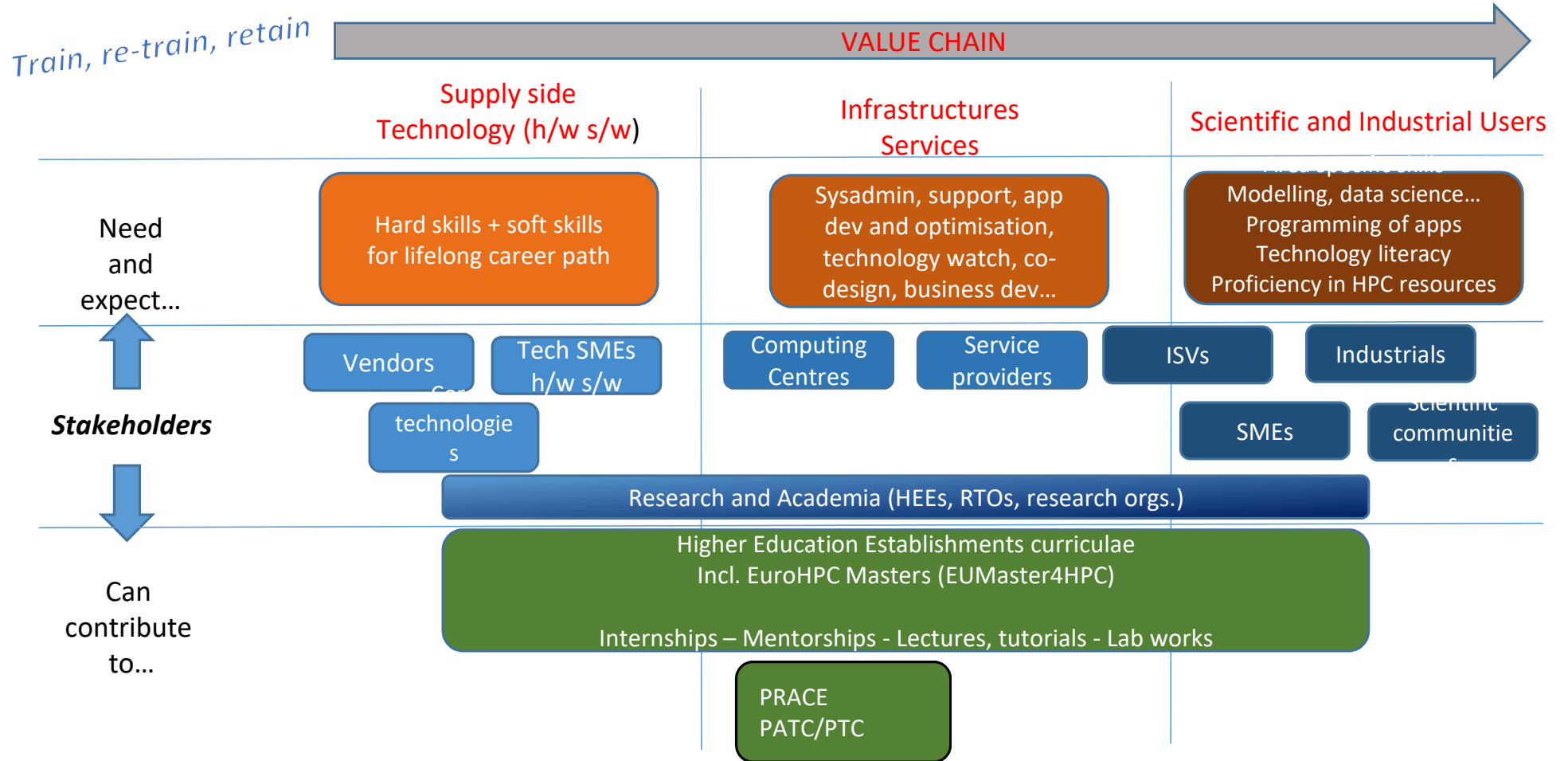
11:00 am - noon CEST

The collaboration between academia, research centers and industry has become a key element to maintain the competitiveness of the European aerospace industry. Industrial needs and use cases can highlight open research topics and industrial partners can turn R&D outcome into innovations and products for the market, while research centers help bridging the gap between academia and industry for improving the research-technology transfer.




Such collaborations are however not always easy to set up and maintain over a long period. To address the need to fundamentally re-design CFD software and to make use of advanced HPC infrastructures, Airbus, ONERA and DLR decided in 2017 to jointly develop the new next generation CFD code CODA. This is the first joint CFD code development by the three partners with a focus on modern algorithms and on exploiting current and future HPC hardware architectures while making use of modern software engineering and code design in a collaborative way of working across organisations. The tools will enable the aerospace industry to solve problems currently out of reach within the constraints of balancing accuracy versus computational load. This will eventually result in improved CFD capabilities that can be employed when aiming to design aircraft that are lighter, quieter and more fuel-efficient which produce less greenhouse gas emissions. This Webinar will address the background of the collaboration and its implementation, the status of the code and the perspective for establishing CODA as a European Next-Generation CFD, Analysis and Design Platform. In this webinar, Airbus, ONERA and DLR will share some insight on their joint work, as well as on the content, but also on how they make it work – the difficulties they faced and the lessons they learned and are worth sharing.

# ETP4HPC a partner of EUMaster4HPC



# Intermediate conclusion?

- ETP4HPC a good place to be for networking, access to information (esp. EuroHPC related)
  - Becoming a member is an option, but we have lots of publicly available resources!
- Any idea on how to better interact between NCCs & ETP4HPC? Tell us!

- 
- ETP4HPC in a nutshell
  - Ecosystem
  - SME focus

# Value chain vision



The diagram illustrates a value chain vision consisting of three sequential stages represented by overlapping ovals. The first oval is orange and contains the word 'Technologies'. The second oval is dark blue and contains the word 'Infrastructure'. The third oval is light blue and contains the word 'Applications'. The ovals overlap from left to right, suggesting a flow or progression.

**Technologies**

**Infrastructure**

**Applications**

# Value chain vision

**Technologies**  
h/w + s/w  
“solutions”

vendors  
s/w h/w suppliers  
service providers

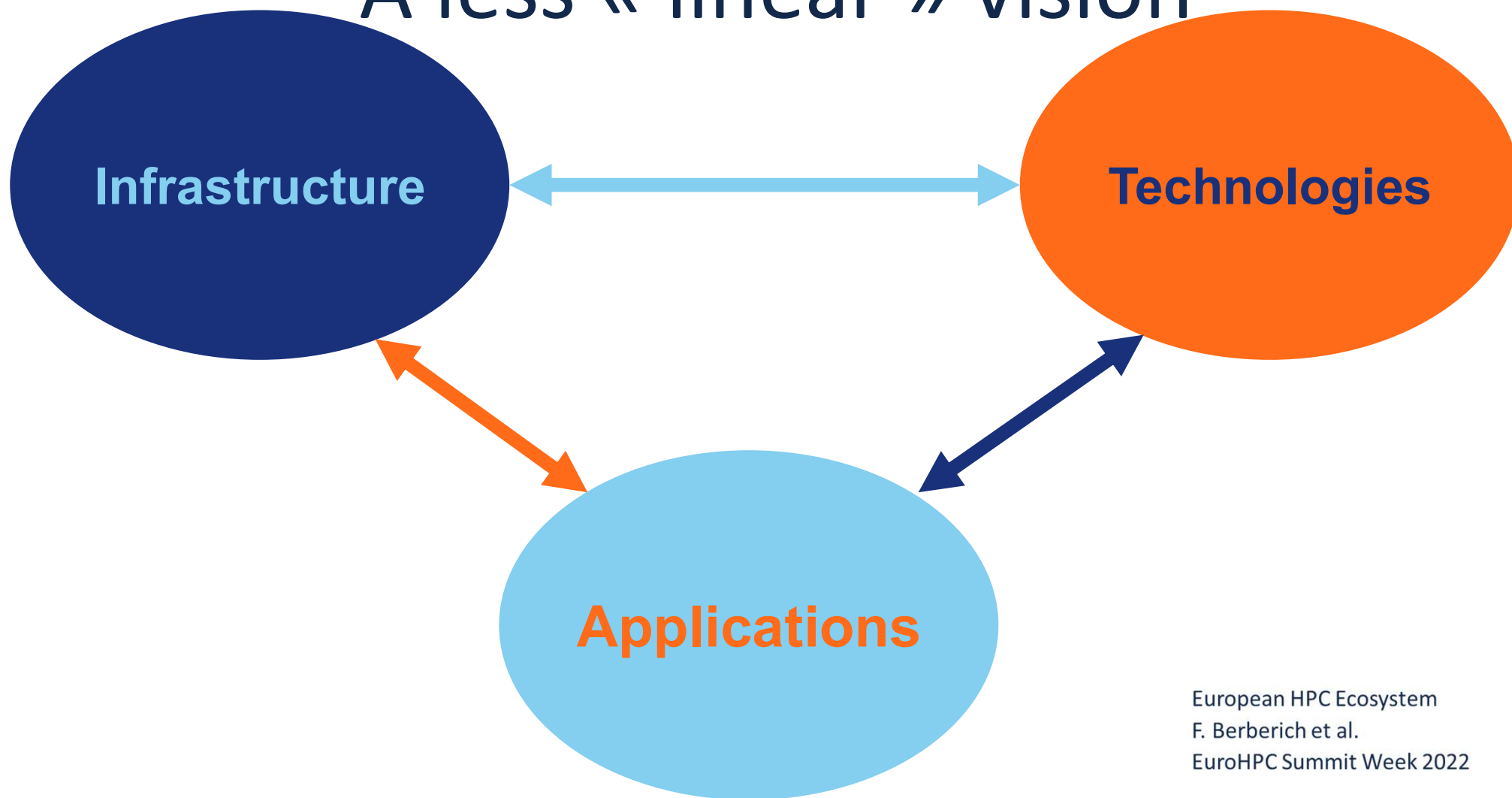
**Infrastructure**  
Cycles  
Services  
Expertise

computing centres  
(public, private...)  
cloud service providers

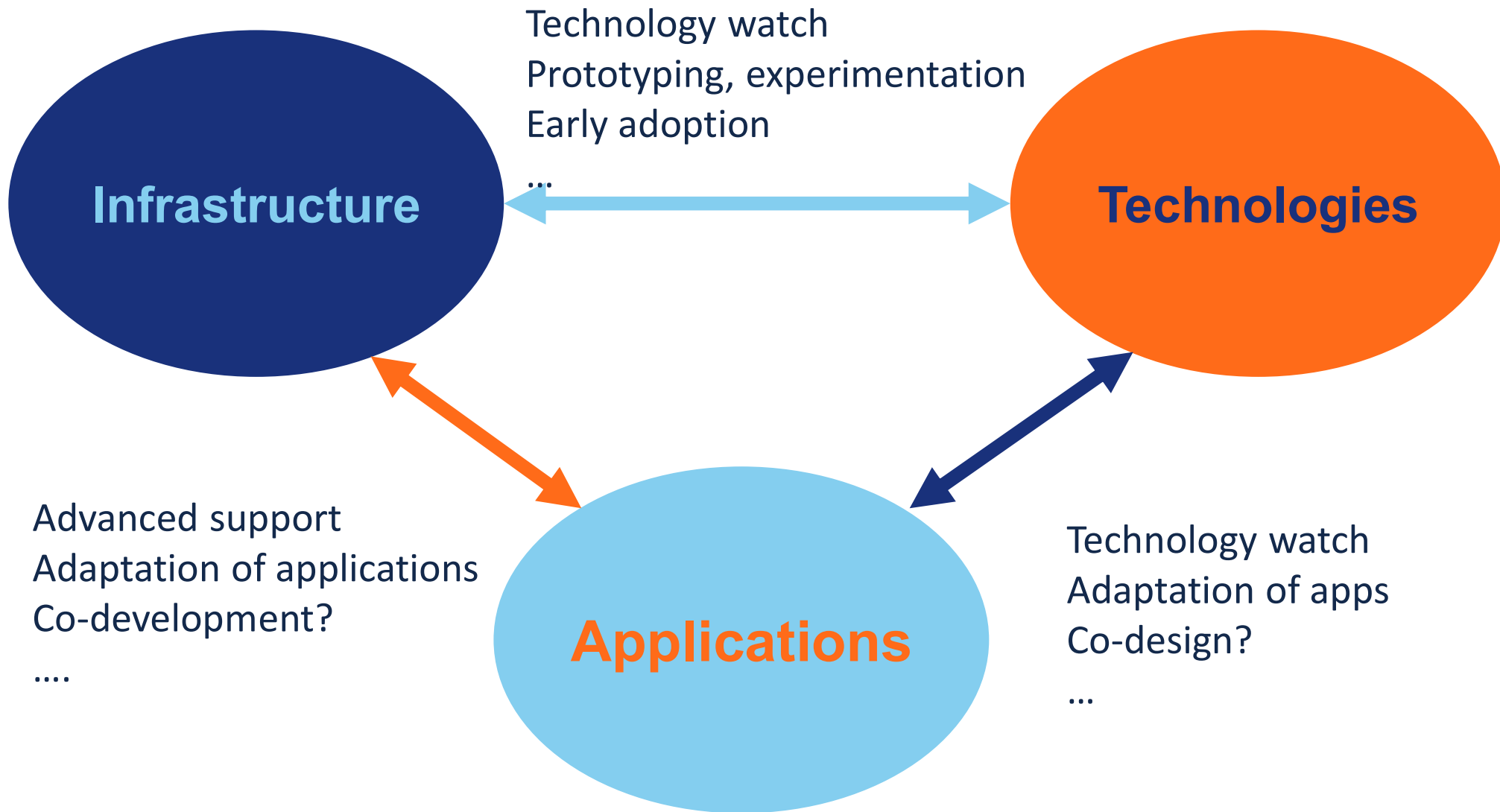
**Applications**  
(uses)  
Development  
Exploitation

Scientific groups, communities  
ISVs  
Industrials of all sizes  
...

# A less « linear » vision



European HPC Ecosystem  
F. Berberich et al.  
EuroHPC Summit Week 2022

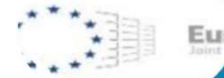




# A quick look back

- EuroHPC reloaded..  
EC+states  
Several « pillars »  
« exascale »
- EC+states  
2 main pillars Infra, R&I  
« pre exascale »
- DGCNECT+ETP4HPC (+CoEs)  
Technologies & Applications  
Collaborating with PRACE
- Focus on technologies
- Association of countries  
Infra, cycles, support,  
training, techno watch..

**ETP4 HPC**



**2021 EuroPHC Phase 2**



**2018 EuroHPC**



**2014-2018 HPC cPPP**



**2012 ETP4HPC**



**2010 PRACE**

May 19, 2022

# EuroHPC 2018



## ■ Infrastructure + Operations

- *Acquisition & operations of at least 2 precursor-to-exascale systems*
- *Acquisition of at least 2 petascale systems*

## ■ Applications & Skills + R&I

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

# EuroHPC 2021

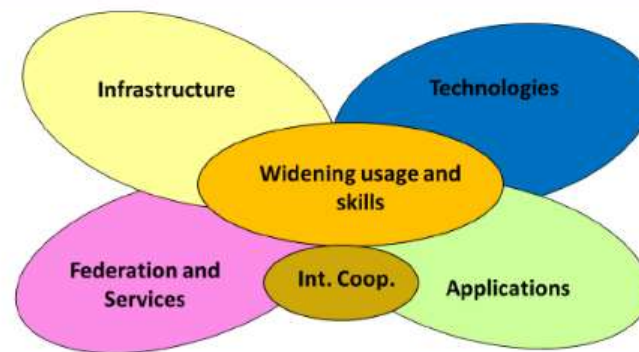
## EuroHPC renewed mission



7 B€ expected public and private total investment.

### New elements

- **Infrastructure** - HPC, quantum / Federation – hyperconnected
- **Technologies** – systems and its supply chain
- **Applications** – optimised for the systems
- **Widening** – support climate neutrality and digital leadership transition



12



- Developments in the European Union – EuroHPC  
HPC User Forum, 7 - 10 September 2021 – L. Flores Añover  
[https://www.hpcuserforum.com/wp-content/uploads/2021/09/EuroHPC\\_Euro-Commission\\_L.Flores-Anover\\_Sept-2021-HPC-UF.pdf](https://www.hpcuserforum.com/wp-content/uploads/2021/09/EuroHPC_Euro-Commission_L.Flores-Anover_Sept-2021-HPC-UF.pdf)

**Infrastructure**  
*Best HPC for Science  
and Industry*

Fast adoption  
& co-design

**Technologies**  
*European Exascale  
development*

Widening  
usage and skills



Federation of  
supercomputing  
services

**Applications**  
*Excellence in HPC  
applications, and widen  
HPC use*





(H2020 FETHPC projects)  
EuroHPC1 R&I projects

**Infrastructure**  
Best HPC for Science  
and Industry

Fast adoption  
& co-design

**Technologies**  
European Exascale  
development



Widening  
usage and skills

Federation of  
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services

**Applications**  
Excellence in HPC  
applications, and widen  
HPC use



NCCs



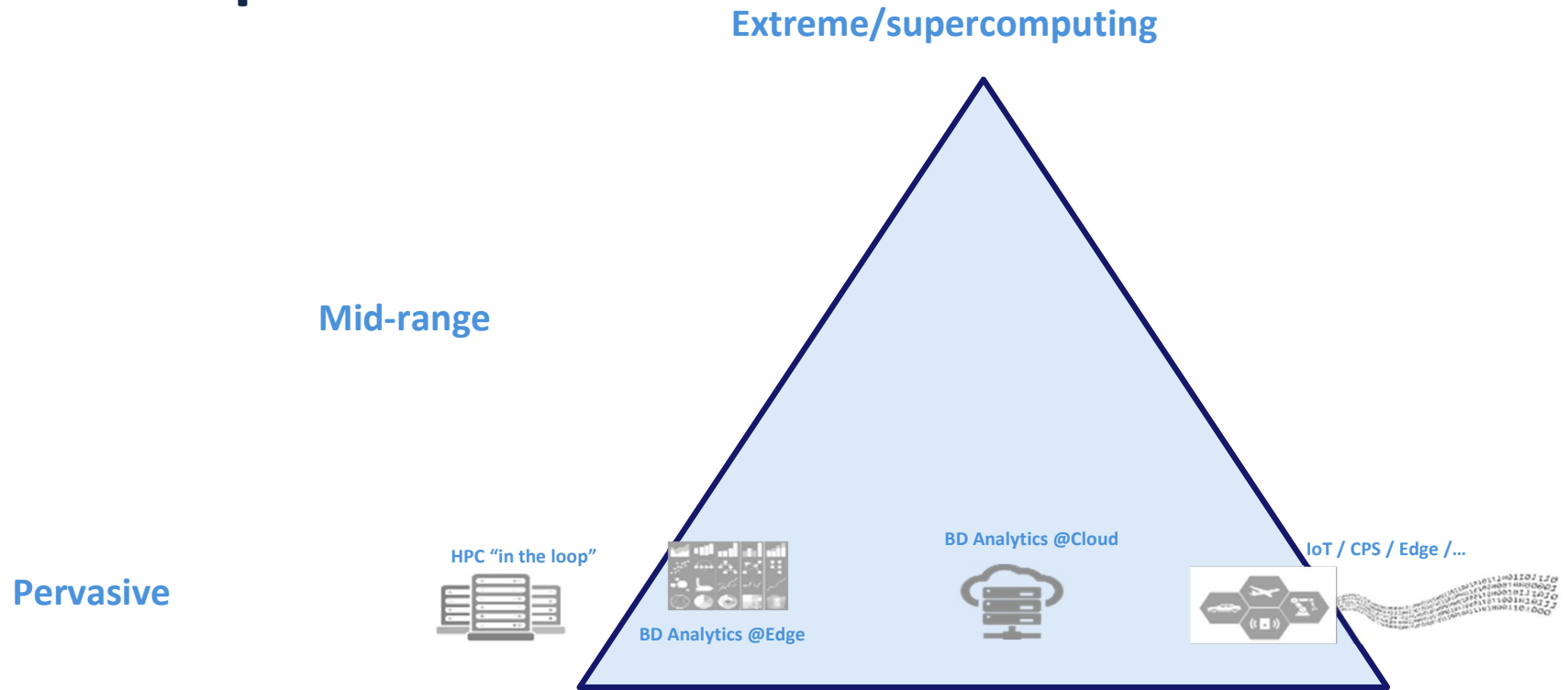
CoEs

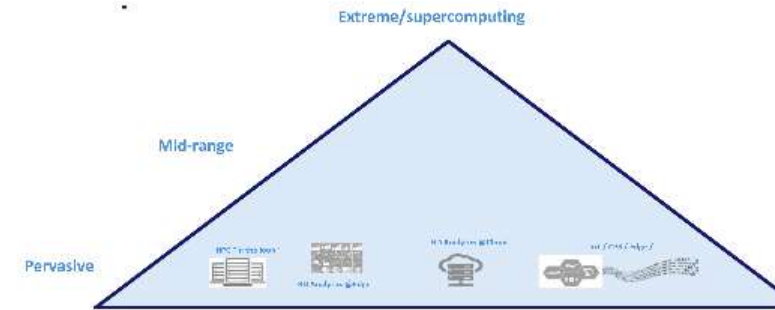


NCC workshop

May 19, 2022

# HPC scope?





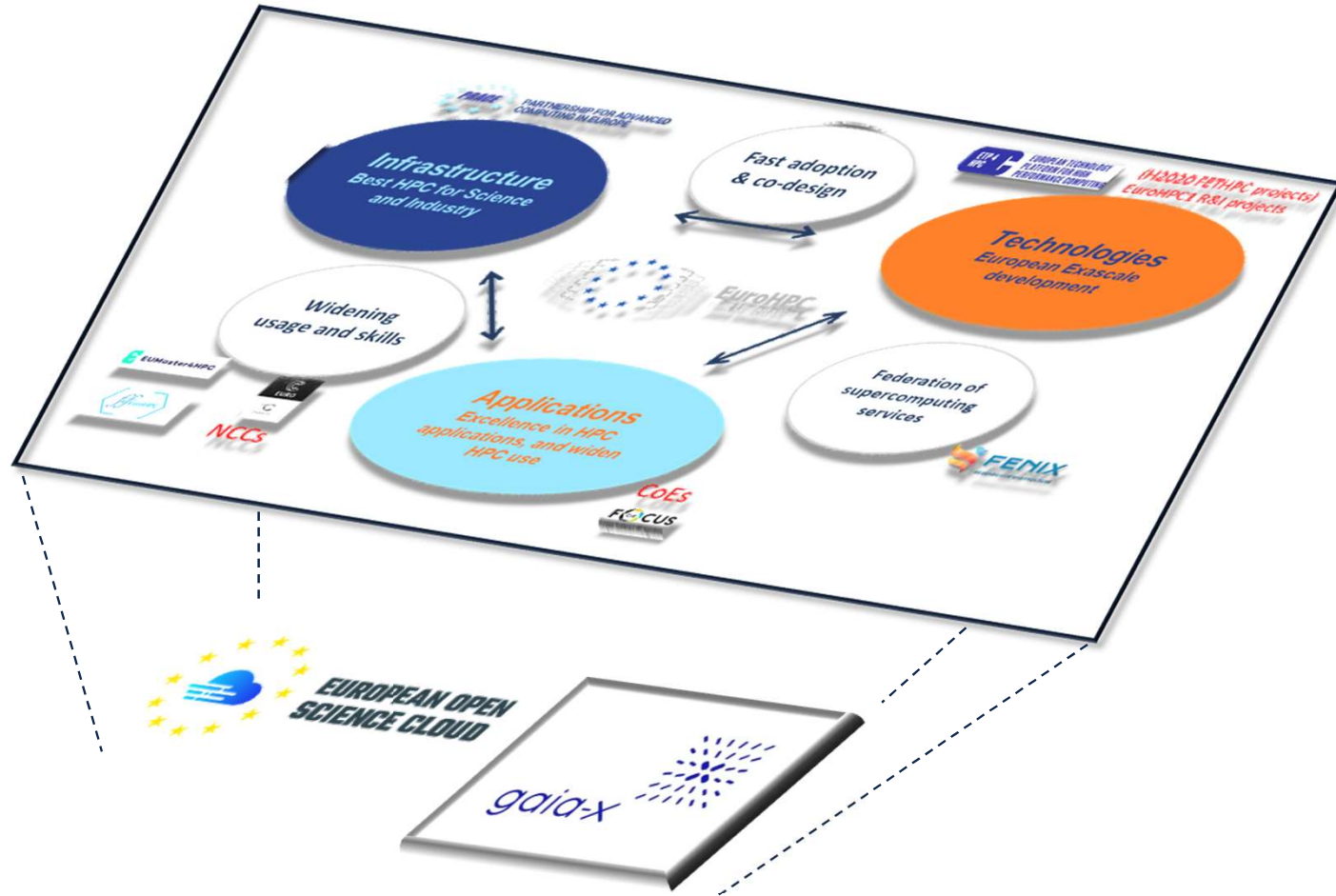
- A wider ecosystem view...  
[TransContinuum Initiative \(TCI\) | etp4hpc](#)
- ETP4HPC created and is coordinating the TransContinuum Initiative (TCI)
  - horizontal collaboration between 8 European associations and projects involved in IT technology, application and services provisioning for the Digital Continuum
  - [5G IA](#), the 5G Infrastructure Association,
  - [AIOTI](#), the Alliance of Internet Of Things Innovation,
  - [BDVA](#), the Big Data Value Association,
  - [ECSO](#), the European Cybersecurity Organisation,
  - [EPoSS](#), the European Technology Platform on Smart Systems Integration,
  - ETP4HPC, the European Technology Platform for High-Performance Computing,
  - [EU-Maths-In](#), the European Service Network of Mathematics for Industry and Innovation,
  - [HiPEAC](#) project (High Performance Embedded Architecture and Compilation).




- Vision = operation of complex data workflow systems
- HPC = engine propelling AI, Big Data, IoT, Cybersecurity, and Mathematical components to work together
- vision of the characteristics of the infrastructure required for the convergence of data and compute capabilities in many leading edge industrial and scientific use scenarios
- meeting place of experts representing various disciplines in both science and industry
- Not creating yet another SRA or alike, but sharing from or nurturing the members' resp. SRAs + sharing use cases visions
  - Eg Digital Twins
- For instance TCI was a good melting pot to establish dialogue with Destination Earth



A still more « multidimensional » ecosystem....  
There would be much more to consider!



- 
- ETP4HPC in a nutshell
  - Ecosystem
  - SME focus
    - widening usage....

# You know better than I do...

- NCCs – EuroCC+CASTIEL ...
  - ... and future EuroHPC follow-up project & related CSA
- Fortissimo projects / FF4EUROHPC
- PRACE SHAPE programme
- ... which are mostly “use side” project and initiatives
  
- A question is: what else, what’s coming next?
- Disclaimer: I can give a few hints in EuroHPC context, this is the limit of my competencies and insight!

# ETP4HPC and SMEs

- ETPHPC has many (a majority...) of SME members, not only but mostly with a *technology supply* standpoint and focus (wider sense = h/w s/w services...)
- We foster information sharing, networking
- Soliciting and exposing SMEs in our webinars, in events like ISC (hosting a selection of SME members on ETP4HPC booth)
- This is not much, a lot more could be done but difficult
  - E.g. more customised support and guidance regarding funding opportunities, EU instruments – but this is not so easy/affordable for our modest association
  - Suggest approaches for EuroHPC projects/calls setup to foster and facilitate SME participation (use or supply side)?

# Examples of ETP4HPC SME members in EuroHPC projects

For more details: refer to <https://etp4hpc-handbook.online/> !!!

(NB: do not hesitate to provide feedback: this is brand new and recently deployed!)

- E4 in EPI, EUPEX (blade / cluster design)
- SemiDynamics, SiPearl, Kalray... in EPI (chip design)
- 2CRSI in The EU Pilot (cluster design)
- Cybeletech in EUPEX (applications in digital agri-food)
- Uclt in HEROES (service/tools for easier HPC use)
- ParTec in DEEP-SEA, IO-SEA, EUPEX (cluster s/w stack and tools)

These are RIA examples, from EuroHPC Work Programmes 2019 and 2020 calls

# Recent/current EuroHPC calls (0)

<https://eurohpc-ju.europa.eu/>

[https://eurohpc-ju.europa.eu/participate/calls\\_en](https://eurohpc-ju.europa.eu/participate/calls_en)

The European High Performance Computing Joint Undertaking (EuroHPC JU)

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## Calls

Filter by

Keywords

Status

Opening date

Deadline date

Funding programme

Subject

Calls (22) [RSS](#)

Showing results 1 to 10

**CALL STATUS: OPEN**

**New algorithms for applications on European exascale supercomputers**

**Reference** HORIZON-EUROHPC-JU-2022-ALG-02-01

**Opening date** 20 April 2022

**Deadline model** Single-stage

**Deadline date** 27 October 2022

**Funding programme** Horizon Europe – the Framework Programme for Research and Innovation

**CALL STATUS: OPEN**

**EuroHPC JU Call for Proposals for Regular Access Mode**

**Reference** EUROHPC JU CALL FOR PROPOSALS FOR REGULAR ACCESS MODE

**Opening date** 10 November 2021

**Deadline model** Multiple cut-off

# Recent/current EuroHPC calls (1)

- Centres of Excellence
  - Recently closed, who applied is not publicly known – probably some SMEs took part in consortia, working on industrial applications or tools?

CALL STATUS: CLOSED	
<b>Centres of Excellence for HPC applications</b>	
<b>Reference</b>	HORIZON-EUROHPC-JU-2021-COE-01
<b>Opening date</b>	27 January 2022
<b>Deadline model</b>	Single-stage
<b>Deadline date</b>	6 April 2022
<b>Funding programme</b>	Horizon Europe – the Framework Programme for Research and Innovation

# Recent/current EuroHPC calls (2)

- New algorithms

CALL STATUS: OPEN	
<b>New algorithms for applications on European exascale supercomputers</b>	
Reference	HORIZON-EUROHPC-JU-2022-ALG-02-01
Opening date	20 April 2022
Deadline model	Single-stage
Deadline date	27 October 2022
Funding programme	Horizon Europe – the Framework Programme for Research and Innovation

- “The objective of the call is to develop novel algorithms to exploit the full potential of the upcoming European exascale supercomputers.”
- “The call is funded by HorizonEurope, the EU funding programme for research and innovation, with a total budget of up to EUR 5 million. The EuroHPC JU will provide funds to a consortium which will provide financial support to third party projects, on the basis of an open and competitive selection process, to develop new algorithms with the highest possible impact.”
- “Considering the complexity of developing, implementing and validating algorithms for new European hardware and exascale supercomputer architectures, typically the financial support will be in the order of EUR 50 000 – 200 000 per third-party project and should primarily cover personnel costs. “



# Recent/current EuroHPC calls (3)

- Centres of competence
  - No comment!

CALL STATUS: OPEN

## National Competence Centres for High Performance Computing

Reference	DIGITAL-EUROHPC-JU-2022-NCC-01
Opening date	20 April 2022
Deadline model	Single-stage
Deadline date	28 June 2022
Funding programme	Digital Europe Programme

# Recent/current EuroHPC calls (4)

- Quantum
  - Primarily for computing centres and quantum computing EU Startups/SMEs...
  - Opportunities for access/experimentation on future platforms?
  - Stay tuned! Remember also to follow HPCQS, « precursor » of this call : <https://www.hpcqs.eu/> , running since Dec. 2021

CALL STATUS: OPEN	
<b>CALL FOR EXPRESSION OF INTEREST for the hosting and operation of European quantum computers integrated in HPC supercomputer</b>	
Reference	EUROHPC-2022-CEI-QC-01
Opening date	31 March 2022
Deadline model	Single-stage
Deadline date	30 June 2022
Funding programme	Digital Europe Programme

# Future EuroHPC calls? (1)

- Predictable calls in WP22 (still under discussion, EuroHPC Governing Board, RIAG/INFRAE will also provide input...)
  - Not before Q3/Q4 2022, likely...

- Hints at:

- [Documents \(europa.eu\)](#)

GENERAL PUBLICATIONS | 23 March 2022

**EuroHPC JU Decision No 07/2022- Work Programme and Budget Amendment no. 2**

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English (1.05 MB - PDF) Download 



# Future EuroHPC calls? (2)



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## Future EuroHPC calls? (3)

- I recommend to watch...:
  - CONNECTED AND FEDERATED SUPERCOMPUTERS => Federation of supercomputing and data resources
  - HPC Open Hardware Technologies
  - HPC Open software stack technologies
  - LEADERSHIP IN USE & SKILLS => HPC Training Activities

## Future EuroHPC calls? (4)

- CONNECTED AND FEDERATED SUPERCOMPUTERS => Federation of supercomputing and data resources
  - Deployment and operation of a platform for federating resources (including High Performance Computing, quantum computing and data resources) providing Union-wide, cloud-based secure services for a wide range of public and private users across Europe. A solution will be deployed on top of specific dedicated resources in order to create a federated EuroHPC infrastructure. Indicative EU budget for the topic is EUR 40 million with an EU funding rate of up to 50%. A Call may be agreed by the Governing Board in 2022.

# Outline

- ETP4HPC in a nutshell
- Ecosystem
- SME focus

# Conclusion?

- Stay tuned...
- Talk to ETP4HPC! We have a lot of freely available resources, events...
  - Applying as a member is an option, not a necessity to benefit from part of this – but this is an opportunity to more directly influence future EuroHPC calls, e.g. suggesting relevant « Widening usage & Skills » projects
- Can we develop more actions between ETP4HPC and EuroCC/NCCs?
  - We have a SME WG...



# Call for possible participation...

- PRACE+ET4HPC are in the process of driving market studies about different aspects of the HPC market. The last part is currently being conducted through a survey until end of May. Still struggling to get answers from industry.
- You could consider promoting: <http://www.sicos-bw.de/marketstudy/> with industrial customer/contacts you have ... OR participating directly!

<http://www.sicos-bw.de/marketstudy/>

Survey

gefördert durch  
MINISTERIUM FÜR WISSENSCHAFT,  
FORSCHUNG UND KUNST  
Baden-Württemberg

Please take part in our survey

» Unser Beratungsansatz

## Your Contribution to Europe's Future in Supercomputing



Your experience, interest and assessment around simulation and data analytics is needed. The industrial usage of powerful computers is very important for Europe's economic success, therefore the European Commission is very interested in your input. This survey is your opportunity to share your knowledge and needs and support the European Commission in the decision making for their supercomputing agenda.

Regardless of whether you already use simulation, high-performance computing, data analytics or artificial intelligence already today, or are just thinking about it: please take part in our survey below. This should take no longer than 10 minutes.

» Start survey for ACTIVE USERS

» Start survey for POTENTIAL USERS

If you enter your email-address after you finish the survey, we will send you the final analysis report, so that you can see how others evaluate all this; of course the survey will be analysed anonymously. And you will then get a chance to win one of our Amazon vouchers, valued at 5x100 €, 5x50 € and 25x10 €!

We thank you in advance for your support!



*This survey has been contracted by the HPC-GIG Project, which is funded by European Commission as part of the Horizon 2020 Programme. The service contract to SICOS BW GmbH was awarded by PRACE, the HPC-GIG Coordinator, on behalf of the consortium.*

*The collected data will be handled anonymously and will not be shared.*



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HPC-GIG

ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

ETP 4 HPC

May 19, 2022

NCC workshop

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- <https://www.hpccoe.eu/impact/>
- [TCI Vision | etp4hpc](#)  
[TCI-vision-joint-press-release\\_final\\_20201211.pdf \(etp4hpc.eu\)](#)



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