Digital Transformation Session
11th European Innovation Summit

Dr. Jean-Philippe Nominé
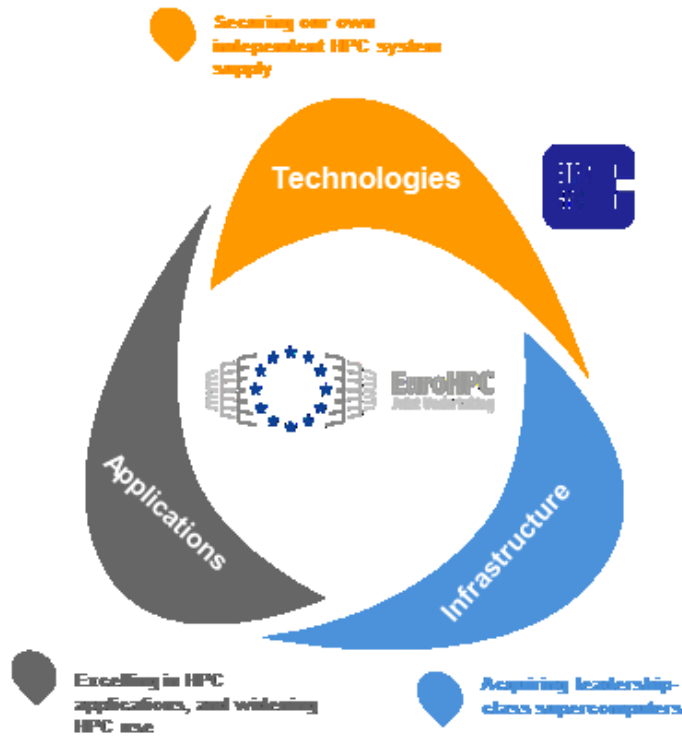*CEA – HPC Strategic Collaborations Manager*
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ETP4HPC in a Nutshell

Securing our own independent HPC system supply

Technologies

EuroHPC

Applications

Infrastructure

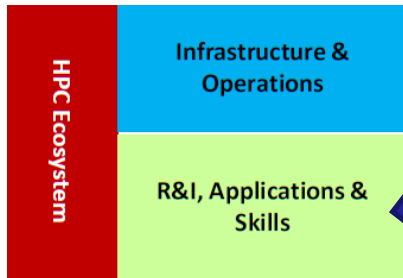Excelling in HPC applications, and widening HPC use

Acquiring leadership-class supercomputers

www.etp4hpc.eu

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

EuroHPC
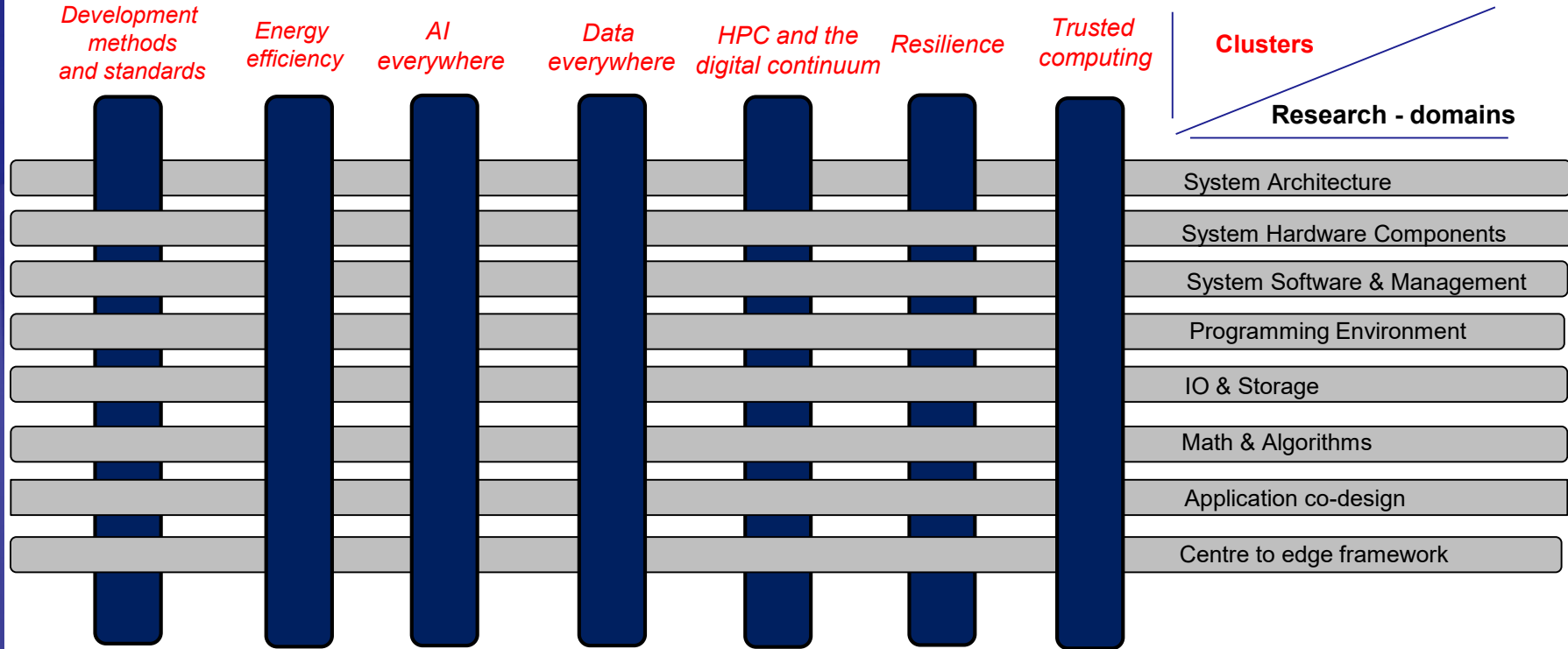Joint Undertaking

HPC Ecosystem

Infrastructure & Operations

R&I, Applications & Skills

STRATEGIC RESEARCH AGENDA 2017

European Multi-annual HPC Technology Roadmap

exdci

- Private, industry-led and non-profit association
- 95 members from 23 countries
  - Technology (h/w+s/w) suppliers, vendors, ISVs, but also research and computing centres, service providers, end users... 35% of members are EU SMEs
- Now a private member of the EuroHPC Joint Undertaking
  - Several representatives in EuroHPC Research and Innovation Advisory Group (RIAG) – related to R&I Pillar
- Mission & (main) activities
  - Be 'the voice" of the European HPC industry in relation with the European Commission and national authorities
  - Multi-annual roadmaps (Strategic Research Agenda – SRA) => EuroHPC
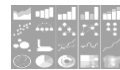 - Ecosystem development

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Key areas: our forthcoming SRA-4 (2019)

Development methods and standards

Energy efficiency

AI everywhere

Data everywhere

HPC and the digital continuum

Resilience

Trusted computing

Clusters

Research - domains

System Architecture

System Hardware Components

System Software & Management

Programming Environment

IO & Storage

Math & Algorithms

Application co-design

Centre to edge framework

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HPC "in the loop" Supercomputing BD Analytics @Cloud

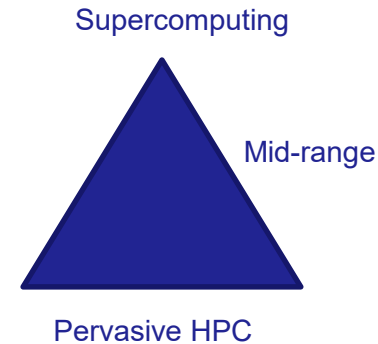BD Analytics @Edge IoT / CPS / Edge /…

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Key areas

- HPC is a key and generic enabler for compute & data intensive, model-based, science and engineering (numerical simulation, data analytics, machine learning and AI)

- This is crucial for competitiveness of EU science, industry, economy and to tackle 21st century societal challenges in a digitised world
    - HPC = push some technologies to the limits (denser, more parallel etc.) …
    - … but also make this more pervasive (down to mid and small scale as well)
    - HPC is part of a digital continuum, more and more connected from embedded/egde to centralised deployments
      Application areas are expanding (simulation, IoT, AI…) and more and more intertwined 'workflows' mix compute & data operations
    - HPC uses, or relates to, many critical technologies (with wider use e.g. nano/micro-electronics, cybersecurity…)

Supercomputing

Mid-range

Pervasive HPC

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Assessment and evaluation of barriers

- EU HPC has strong assets already all along the WHOLE value chain
- The goal is not to become 100% self-sufficient but to control the critical elements and know-how
  - More independence, mitigate risks, diversify sourcing
  - EU technologies must be globally competitive
- We are still missing a level playing field w.r.t. worldwide HPC & other regions
- All EU Members can play a role in HPC and benefit from HPC
  - Leverage our current assets
  - Encourage innovation and lab/fab proximity everywhere
  - Foster democratisation and generalisation of HPC USE everywhere (esp. industry and small companies)

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Skill development

- Many efforts already via PRACE since 2010, plus Centres of Excellence for Computing Applications since 2015…
- More is needed
  – Some domains connex to HPC / application areas are moving fast (data science, AI…)
  – Inter-disciplinarity a must
- "HPC generic skills" esp. in programming, large scale system integration or administration etc. can benefit to wider IT sectors
- Research/industry (supply and use sides) porosity should be strongly encouraged
  – Mixed career paths industry ⇔ research
- On-going reflections with DGCNECT involving all HPC stakeholders…

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