The European HPC Ecosystem
Towards a European Leadership

ISC14 BOF Session
Tuesday, June 24th, 2014
12:00 pm - 01:00 pm
Hall 4 - CCL
Agenda

• Welcome and introduction
  ETP4HPC positioning and activities
  Jean-François Lavignon, Chair of ETP4HPC

• EC HPC vision and H2020 calls
  Augusto Burgueño-Arjona, EC/DG-CONNECT

• PRACE contribution to the HPC Strategy
  Sanzio Bassini, CINECA & PRACE Chair

• Centres of Excellence for Computing Applications
  Jean Gonnord, CEA & ETP4HPC Vice-Chair; Thomas Lippert, FZJ and ETP4HPC Steering Board

• Ecosystem actions
  Jean-Philippe Nominé, ETP4HPC Office

• SMEs
  David Lecomber, Allinea & ETP4HPC Vice-Chair for Industry

• Discussion
ETP4HPC positioning and activities
Jean-François Lavignon
Bull & ETP4HPC Chair
SRA: Strategic multi-dimensional vision

www.etp4hpc.eu
What is in it for European HPC?

Contractual Public-Private Partnership
December 2013

cPPP

PRACE day s— May 20th, 2014
cPPP governance

• Participation in the Partnership Board
  – Representative of the whole ecosystem
  – Open and accountable to the stakeholders

• Committed to advise the European Commission
  – Open working groups for preparation
  – Preparation of roadmaps to propose a vision
Other achievements

• Education and Training Work Group
  – A draft report already discussed with the EC

• IP Work Group
  – Recommendations: report sent to the EC
Future actions

- Work Programme 2016-2017
- SRA update in 2015
- Ecosystem animation
Augusto BURGUEÑO ARJONA

European Commission/DG CONNECT
Head of Unit e-Infrastructures
An integrated HPC approach

HPC strategy combining three elements:

(a) Computer Science: towards **exascale** HPC; *A special FET initiative focusing on the next generations of exascale computing as a key horizontal enabler for advanced modelling, simulation and big-data applications* [HPC in Future and Emerging Technologies (FET)]

(b) providing **access** to the best supercomputing facilities and services for both industry and academia; *PRACE - world-class HPC infrastructure for the best research* [HPC in e-infrastructures]

(c) achieving excellence in HPC **applications**; *Centres of Excellence for scientific/industrial HPC applications in (new) domains that are most important for Europe* [HPC in e-infrastructures]

- complemented with training, education and skills development in HPC

(a) and (c) will be implemented in the context of the HPC Public-Private Partnership
Interrelation between the three elements

**Access to best HPC for industry and academia (PRACE)**

- **Excellent Science e-infrastructures**
- 
  - Collaboration of HPC Supercomputing Centres and application CoEs
  - provision of HPC capabilities and expertise
  - Users identification of computational needs

**EU development of Exascale technologies**

- **FET/HPC**
  - specifications of exascale prototypes
  - technological options for future systems
  - identify applications for co-design of exascale systems
  - Innovative methods and algorithms for extreme parallelism of traditional/emerging applications

**Excellence in HPC applications (Centres of Excellence)**

- **Excellent Science e-infrastructures**
<table>
<thead>
<tr>
<th>HPC related Calls WP 2014-2015</th>
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<tr>
<td><strong>2014 EUR million</strong></td>
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<td>EINFRA-4-2014 - Pan-European HPC infrastructure and services</td>
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<td>EINFRA-5-2015 - Centres of Excellence (CoE) for computing applications</td>
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<tr>
<td>EINFRA-6-2014 - Network of HPC Competence Centres for SMEs</td>
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<td>FETHPC1-2014 - HPC Core Technologies, Programming Environments and Algorithms for Extreme Parallelism and Extreme Data Applications</td>
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<td>FETHPC 2 - 2014: HPC Ecosystem Development</td>
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PRACE contribution to the HPC Strategy
Sanzio Bassini
CINECA & PRACE Chair
HPC cPPP – Building a European HPC Ecosystem

European HPC Eco-system

HPC Technology Supply Chain
HPC Research Infrastructure
HPC Applications

European Economy
European Science
European Society

Tools for industrial simulation and prototyping
The strength of the European HPC Supply Chain (Technologies and Applications)
Tools for addressing the Grand Challenges
PRACE → the European HPC Research Infrastructure

- Enabling world-class science through large scale simulations
- Providing HPC services on leading edge capability systems
- Operating as a single entity to give access to world-class supercomputers
- Attract, train and retain competences
- Lead the integration of a highly effective HPC ecosystem
- Offering its resources through a single and fair pan-European peer review process to academia and industry

- 25 members, since 2010
- 6 supercomputers in 4 hosting countries, nearly 15 Pflop/s
- Common operation procedure between 35 centers in Europe
- 22 prototypes evaluated
- 169 white papers produced
- 1500 communications from our users
- 166 Thesis
- HPC Community building: 183 events

- 8 billion hours granted since 2010 (a system with 900k cores for 1 year)
- 303 scientific projects enabled from 38 countries
- More than 20 SME and industries access in first year
- 360 PATC Training days
- 2734 Trained people
- 170 applications enabled
• PRACE has delivered
  – 303 projects from academia and industry provided with 8 billion core hours
  – Tier-0 Infrastructure
  – Tier-1 Coordination
  – User Support
    • Application enabling
    • Training
    • Community Building
  – Technology assessment

*PRACE can bring its expertise and resources to provide support to and cooperate with the other major players in the Ecosystem*
Centres of Excellence for Computing Applications

Jean Gonnord
CEA & ETP4HPC Vice-Chair

Thomas Lippert
FZJ & ETP4HPC Steering Board
HPC cPPP – Building a European HPC Ecosystem

European HPC Eco-system

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European Economy
European Science
European Society
Ecosystem actions

Jean-Philippe Nominé
CEA & ETP4HPC Office

Marcin Ostasz
BSC & ETP4HPC Office
Animation of the ecosystem

- Events
  - April Infoday
  - Prace days
  - ISC, Teratec
  - ...

- Communication gateway
  - Look at our web site [http://www.etp4hpc.eu](http://www.etp4hpc.eu)
  - We relay members’ information

- Monitoring of the progress of HPC in Europe
  - KPIs
  - Exchange of information

- Preparation of a Coordination and Support Action FET HPC 2 a) – with other stakeholders
‘Making the Ecosystem Work!’

European HPC Eco-system

- HPC Technology Supply Chain
- HPC Research Infrastructure
- HPC Applications

European HPC Ecosystem

- Tools for industrial simulation and prototyping
- The strength of the European HPC Supply Chain (Technologies and Applications)
- Tools for addressing the Grand Challenges

European Economy
European Science
European Society
HPC Strategy Coordination – **How could it work?**

- WP: Technical Strategy Management
- WP: Performance Monitoring
- WP: Education, Training (E&T) and Talent Generation
- Independent Strategy Review
- SRA
- PRACE
  - Scientific Case
  - Exa-Scale Software Roadmap
- WP: Project Management
- WP: Eco-system Development and Coordination
- WP: International Liaison
- WP: Dissemination, Outreach and PR

ETP 4 HPC
SMEs
David Lecomber
Allinea & ETP4HPC Industry Vice-Chair
ETP4HPC Members

• 56 members as of May 2014
  – Companies
  – SME
  – ISVs
  – Service providers
  – Research Centres...

  – 23 SMEs!
Discussion
THANK YOU!

For more information visit

www.etp4hpc.eu

contact: office@etp4hpc.eu