



The Strategic Research Agenda from 2014 to 2020

BDEC

Wednesday, January 28th, 2015

What is ETP4HPC ?

- European Technology Platform
 - Stakeholder representation
 - Dialog with European Commission
- ETP4HPC
 - Initiated in 2011
 - Open organization
- 64 organizations involved in HPC technology research based in Europe
 - 34 companies (20 SMEs) + 30 RTO
- Managed by a Board of 15 members



Partnership for European leadership in HPC



Done in duplicate at Brussels on 17 December 2013.

FOR ETP4HPC ASSOCIATION


FOR THE EUROPEAN COMMISSION


Philippe VANNIER
Board Representative


Neelie KROES
Vice-President in charge
of Digital Agenda


Sanzio BASSINTI
Board Representative

700 M€ committed by EC to implement application and technology development


EUROPEAN COMMISSION
PRESS RELEASE
Brussels, 17 December 2013

EU industrial leadership gets boost through eight new research partnerships

The European Commission today launched eight contractual Public-Private Partnerships (CPPPs) of strategic importance for European industry. The partnerships will leverage more than €6 billion of investments to be allocated through calls for proposals under Horizon 2020, the new EU programme for research and innovation. Each year of funding is expected to trigger additional investments of between three and 10 euros to develop new technologies, products and services which will give European industry a leading position on world markets (MEMO/13/1193).

European Commissioner for Research, Innovation and Science Maire Geoghegan-Quinn said: "Europe needs industry to innovate to create income and jobs. New technologies and products, such as green cars, energy efficient buildings and cleaner manufacturing processes, are essential to address societal challenges such as climate change, energy and resource efficiency. We need these contractual PPPs to have a significant impact on the competitiveness of the EU industry, on sustainable economic growth and the creation of new high-paying jobs in Europe."

Vice-President Neelie Kroes, Commissioner responsible for the Digital Agenda, said: "This is a great opportunity for Europe. These PPPs will maintain our global lead in robotics, photonics, high performance computing, sensors and give us a head start in smart cities, intelligent transport, education, infrastructure, health and other promising markets. Combined with a comprehensive industrial strategy, the PPPs will ensure superior European leadership and a better future for all."

The eight contractual Public-Private Partnerships are:

- **Factories of the Future (FoF)**, to support the manufacturing industry through the development of sustainable production technologies and systems ([Link to FoF2014](#))
- **Energy efficient Buildings (EeB)**, to increase the competitiveness and energy efficiency of the construction industry ([Link to EeB2014](#))
- **European Green Vehicle Initiative (EGVI)**, to develop a competitive and resource efficient transport system with significantly less CO2 emissions ([Link to EGVI2014](#))
- **Sustainable Process Industry (SPIRE)**, to make the process industry more resource and energy-efficient ([Link to SPIRE2014](#))
- **Photonics**, one of the key enabling technologies for our future prosperity and an essential element of more sectors, from energy and health, to everyday products like DVD players and mobile phones ([Link to Photonics](#))
- **Robotics**, a key driver of industrial competitiveness and essential to address key societal challenges in areas such as demographic change, health and well-being, food production, transport and security ([Link to Robotics](#))
- **High Performance Computing (HPC)**, which plays a pivotal role in stimulating Europe's economic growth and advancing European science ([Link to HPC2014](#))
- **Advanced 5G networks for the Future Internet (5G)**, to stimulate the development of network internet infrastructure to ensure advanced ICT services for all sectors and users ([Link to 5G2014](#))

The contracts setting up the PPPs were signed today by the Commission and chairpersons of specially-created industrial research and innovation associations, representing more than 1,000 large and small enterprises across Europe.

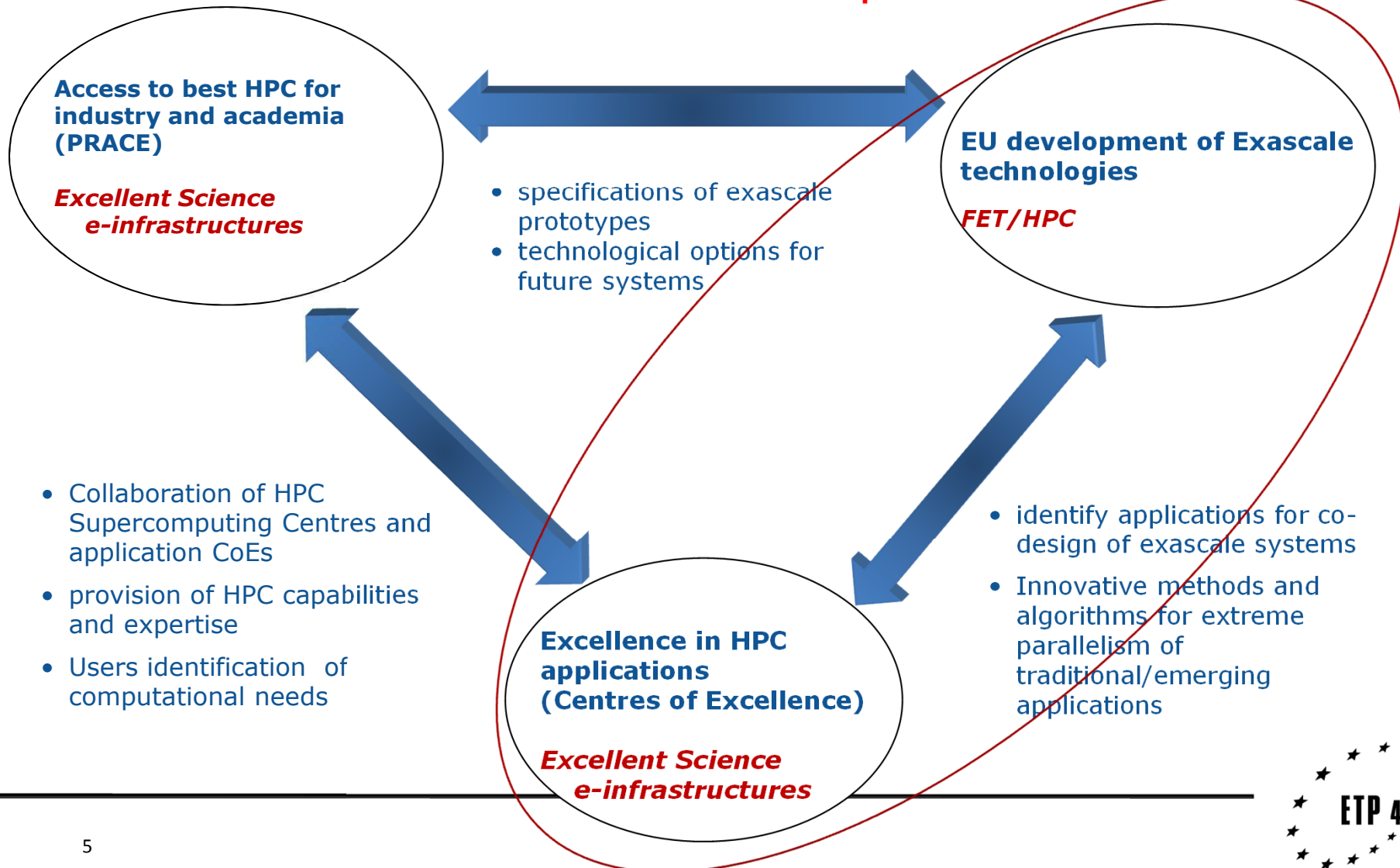


cPPP in a nutshell

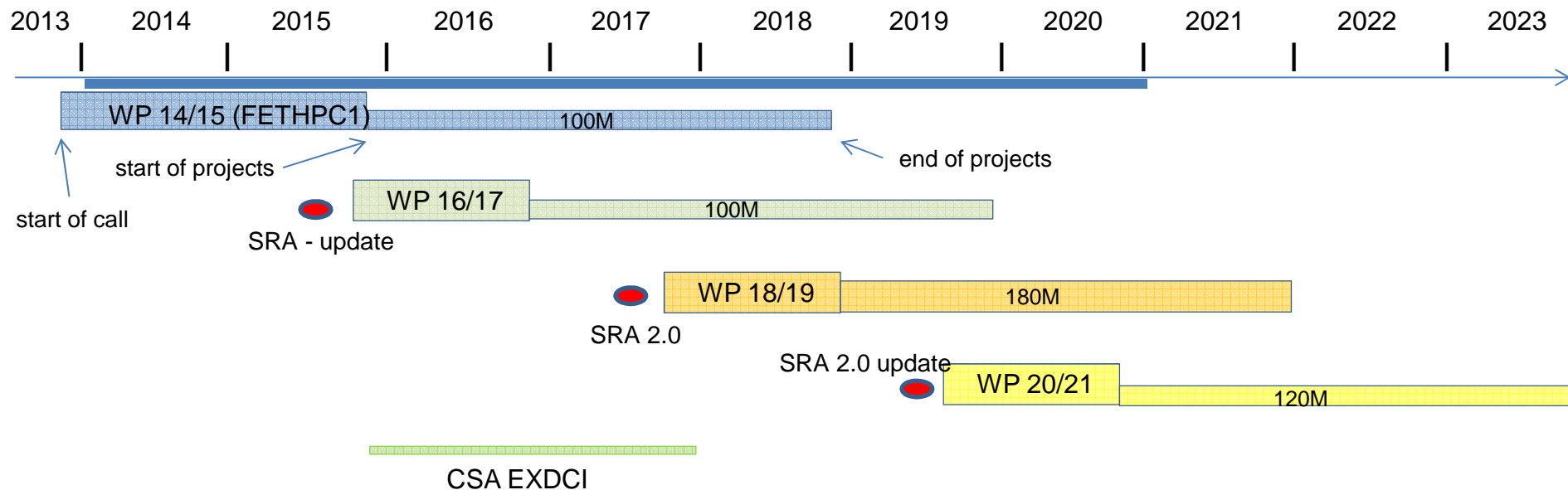
- Mutual commitments
 - EC : continuous support of HPC in Horizon 2020 : 700 M€
 - HPC community : R&D investment matching EC effort + industrial development
- Coordination of the action
 - Advices from stakeholders to EC
 - Management of the work programmes by the EC
 - Preparation of roadmaps proposing the vision
 - Common monitoring of Key Progress Indicators

Interrelation between the three elements

Scope of the PPP



HPC-Horizon 2020 roadmap



Extreme-scale HPC Demonstrators :

FETHPC /CSA in WP16/17

EsD set 1

EsD set 2

Extreme-scale HPC Demonstrators integration/validation:

- Non commercial, pre-Exascale HPC systems
- Technical readiness level at integration-phase-exit: 8
- Scoping starts in 2015 (top down: problem to solve , applications, system architecture, technology)
- Integration, built and test funded through dedicated calls in 2017/18
- Target use: deployed by PRACE and CoEs for appl. dev. / tuning /benchmarking
- Demonstrate and prove effectiveness of HPC research projects

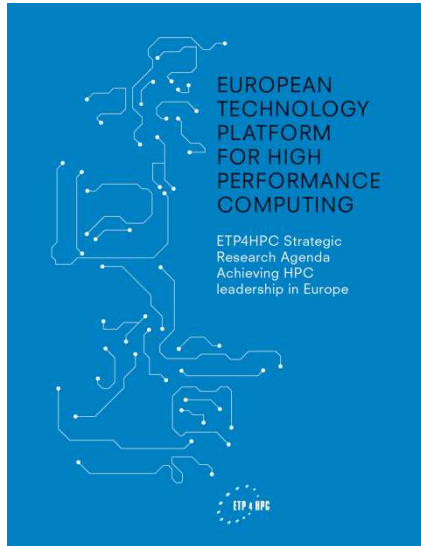
The HPC research focus areas for 2016/17

Research focus areas

- Co-design of HPC systems and applications
- Focused research projects
 - High productivity programming environments
 - System software and management
 - Exascale I/O and storage in the presence of multiple tiers of data storage
 - Supercomputing for Extreme Data and emerging HPC modes
 - Mathematics and algorithms for extreme scale HPC systems and applications
working with extreme data

HPC ecosystem development and international collaboration CSA

Strategic Research Agenda: a multi-dimensional vision



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PROGRAMMING ENVIRONMENT
Including: Support for extreme parallelism

HPC SYSTEM ARCHITECTURE

SYSTEM SOFTWARE AND MANAGEMENT

USABILITY

AFFORDABILITY

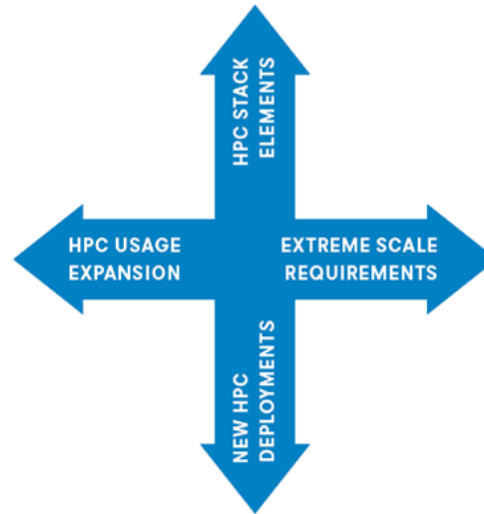
HPC SERVICES
Including: ISV support, End-user support

SME FOCUS

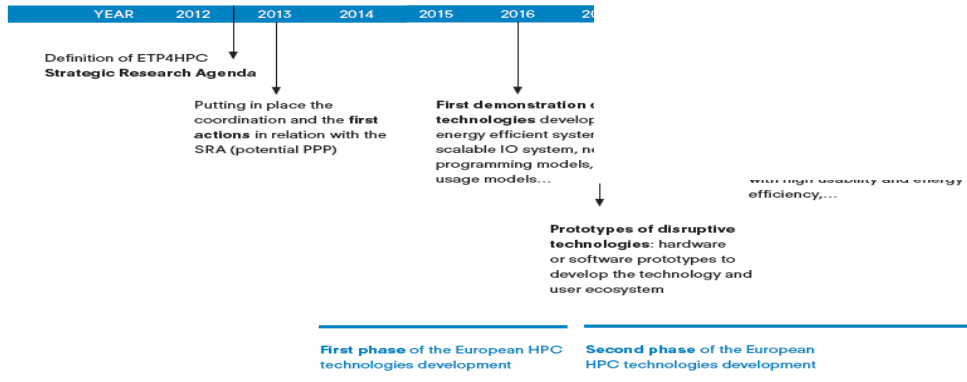
EDUCATION AND TRAINING

IMPROVE SYSTEM AND ENVIRONMENT CHARACTERISTICS
Including: Energy efficiency, System resilience

BALANCE COMPUTE SUBSYSTEM, I/O AND STORAGE PERFORMANCE



HPC USAGE MODELS
Including: Big data, HPC in clouds



SRA update methodology

- One of the activity of EXDCI-CSA
- SRA-2 in 10/2015 as update (addendum) to SRA-1 released in 2013
- SRA-3 in 10/2017 will be a bottom-up new release again
- Sources of input:
 - technical experts from ETP4HPC-members, EESI, PRACE, SKA, BDV (+ expanding network)
 - HPC users (academia and industry), ISVs
 - information out of international collaborations
- Four research focus areas
 - HPC system architecture and design for extreme scale
 - High productivity programming environment and system software
 - Exascale I/O and storage, Supercomputing for Extreme Data and emerging use modes
 - Scoping of Extreme Scale Demonstrators
- Reviewed within HPC community before release

International collaboration

- Develop synergies with the most active areas
 - Analyze the complementary of R&I programs
 - Identify common effort on Exascale software stack and programming models
 - Exchange experience in HPC application development
 - Share vision and determine if joint communication is needed
 - EC could establish MoU's with MEXT and DoE
- Collaborate with some of the countries developing their HPC strategies
 - Joint call on some strategic topics for the partner
 - Explore the experience developed by the CoEs
 - Potential partners : Algeria, Brazil, Mexico, Morocco, South Africa



Question ?



THANK YOU!

For more information visit

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