

DE LA RECHERCHE À L'INDUSTRIE



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ETP4HPC

*Une Plateforme technologique
Européenne*

Pour le calcul haute performance



- **HORIZON 2020: Une politique nouvelle pour le HPC en Europe**
- **La plateforme ETP4HPC**

30^{ème} Forum de l'ORAP
PARIS
4 octobre 2012

High-Performance Computing: Europe's place in a Global Race



Neellie KROES

Vice Présidente de la Commission Européenne
Commissaire à la société numérique

This Communication highlights the strategic nature of High-Performance Computing (HPC) as a crucial asset for the EU's innovation capacity, and calls on Member States, industry and the scientific communities, in cooperation with the Commission, to step up joint efforts to ensure European leadership in the supply and use of HPC systems and services by 2020.

Le HPC est reconnu comme stratégique pour la recherche, l'industrie, la société...

Mais il existe un écart inacceptable entre ce besoin stratégique et la capacité de l'Europe d'y répondre par ses propres ressources.

Despite this, EU HPC suppliers held a market share of only 4.3%⁵ in 2009... Since then US-manufactured supercomputers have captured 95 % of EU market. ...In fact, the large majority of the principal parallel software applications in use at EU HPC sites have been created and are further developed in Europe. However, the mastering of advanced HPC hardware is closely linked to the associated software and losing out on one side inevitably leads to a loss on the other.

Il existe une fenêtre d'opportunité:

- Des changements majeurs dans les architectures matérielles et logicielles,
- Les challenges de l'énergie et de la complexité,
- La potentielle convergence entre HPC et embarqué,
- L'Europe dispose d'une expertise dans tous les éléments de la chaîne,
- Les retombées d'un tel programme seront considérables dans tous les domaines.

*Europe has all the technical capabilities and human skills needed to tackle the exa-scale challenge, i.e. to develop native capabilities that cover the whole technology spectrum from processor architectures to applications. Even though the EU is currently weak compared to the US in terms of HPC system vendors, there are particular strengths in applications, low power computing, systems and integration that can be leveraged to engage successfully in this global race, **getting the EU back on the world scene as a leading-edge technology supplier.***

Un plan d'action pour un leadership européen du HPC

Les objectifs

- ❑ *Ensure independent access to HPC technologies, systems and services for the EU;*
- ❑ *Provide a world-class European HPC infrastructure, benefitting a broad range of academic and industry users, and especially SMEs,*
- ❑ *Ensure the EU's position as a global actor. The Commission shall raise inequalities in HPC market access, with the aim of ensuring that their national HPC procurement and R&D are open to EU-based industry*

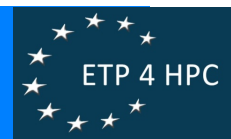
Les budgets

The Union, Member States and Industry should increase their investments in HPC to some EUR 1.2 billion per year – equal in terms of GDP to other world regions.

La gouvernance

For industry, through

- ❑ *the industry-led technology platform for EU HPC suppliers,*
- ❑ *a network of competence centres providing expertise and services on HPC applications and software development;*



For science, through

- ❑ *PRACE, providing world class computing power to European research*
- ❑ *Centres of Excellence, addressing key societal and scientific challenges by deployment and application of HPC software and services;*



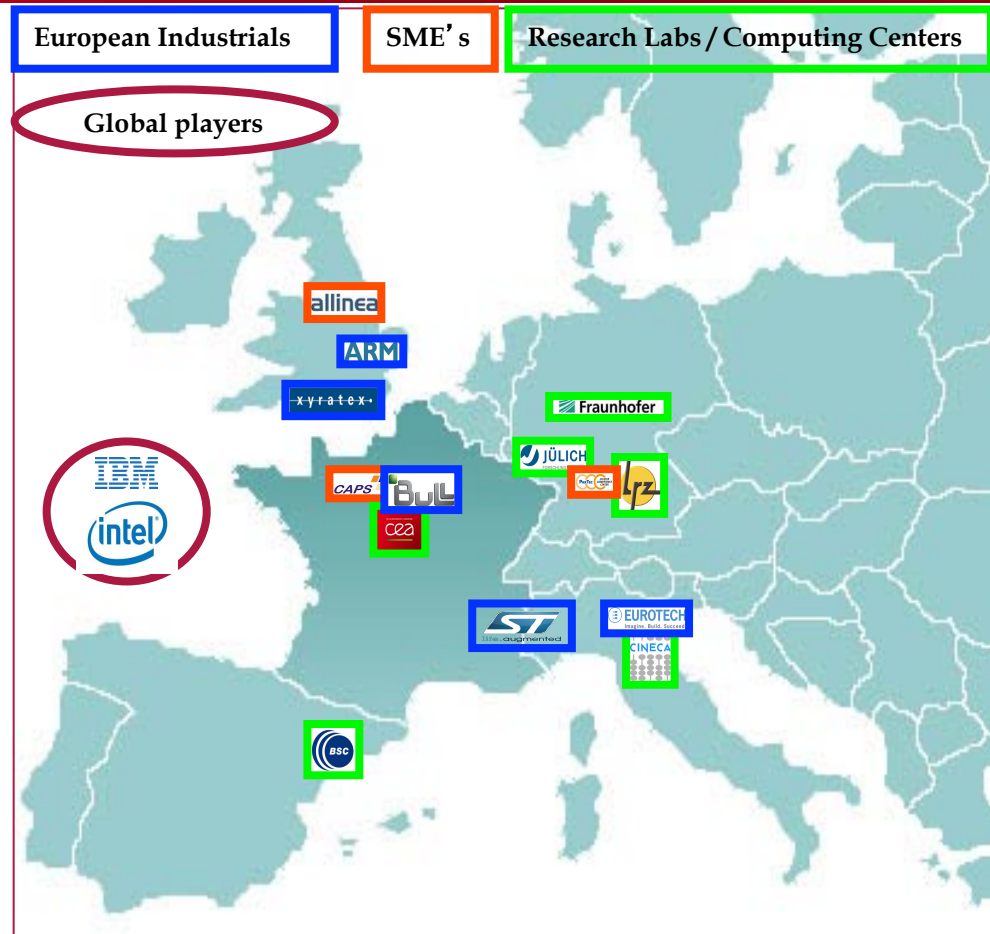
PRESS RELEASE**European industry and research centres join forces to create a European Technology Platform for High Performance Computing**

Barcelona, 10th November 2011- Major European suppliers of High Performance Computing (HPC) technologies, Allinea, ARM, Bull, Caps Entreprise, Eurotech, ParTec, STMicroelectronics and Xyratex associated with HPC research centres BSC, CEA, CINECA, Fraunhofer, Forschungszentrum Juelich and LRZ have decided to combine forces to create a European Technology Platform (ETP), building on the previous work of PROSPECT and Teratec.

The objective of the ETP is to define Europe's research priorities to develop European technology in all the segments of the HPC solution supply chain...

...The ETP will be an industry led forum that will propose a Strategic Research Agenda taking advantage of European industry strengths to increase the value created in Europe from future HPC systems. Currently the design of supercomputer solutions face significant challenges such as management of the extreme parallelism experienced in HPC architectures or the reduction of the power consumption, **addressing these presents opportunities for European players to improve their position in the worldwide market.**

To achieve these objectives the current consortium will set up an organization that will be **open to any businesses, groups or individuals who have R&D activities in any aspect of HPC and are located in Europe.** The goal is to bring together all the research forces in Europe including R&D activities of SMEs, European corporations, international corporations and research centres to benefit from their competences and to foster these capabilities by proposing an ambitious research plan to the European Commission. The consortium will act promptly to create the ETP and to propose a Vision Paper. The ETP will prepare the Strategic Research Agenda seeking acknowledgement from the European Commission to provide inputs towards the Horizon 2020 program that will define the future European research objectives...



An Industrial lead platform
Open to all entities doing significant R&D
in EUROPE
in the field of HPC technologies

European Technology Platform for High Performance Computing



HPC is a key technology for European science, industry and society. It is of utmost importance:

- To build a world-class, globally competitive, European HPC technology value chain
- To increase the competitiveness of European HPC vendors and solutions
- To leverage the transformative power of HPC in order to boost European competitiveness in science and business
- To expand the HPC user base, especially SMEs
- To facilitate the provision of innovative solutions to tackle grand societal challenges in Europe such as climate change, better healthcare, predicting large scale catastrophes and managing risks.
- To foster international cooperation in research and industry.

Vision

An industry-led forum founded by stakeholders of HPC technology supply and research,
to further enroll all the actors of the European HPC technology ecosystem



<http://www.etp4hpc.eu>

Qu'est-ce qu'un ETP ?

- **An ETP is an industry-led forum**
 - Medium to long-term research and technological objectives and developing roadmaps to achieve them.
 - *Increasing synergies between different research actors, ultimately enhancing European competitiveness*
 - The European Commission is committed to its structured dialogue on research policy and priorities with European technology platforms


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Individual ETPs

Energy	ICT	Bio-based economy	Production and processes	Transport
Biofuels	ARTEMIS	FABRE TP	ECTP	ACARE
SmartGrids	ENIAC	Food	ESTEP	ERRAC
TPWind	ISI	GAH	ETP SMR	ERTRAC
Photovoltaics	Net!Works	NanoMedicine	Manufuture	Waterborne
ZEP	NEM	Plants	FTC	ESTP
SNETP	NESSI	Forest-based	WSSTP	
RHC	EUROP		SusChem	
	EPoSS		EuMaT	
	Photonics21		IndustrialSafety	

Un ETP, pourquoi faire ?

Vision paper

- Designing and updating a **Strategic Research Agenda (SRA)** to provide decision makers with relevant advice and expertise for the long term development of HPC in Europe, and recommendations and support to the implementation of the SRA
- Facilitating **coordination between the HPC ecosystem and public authorities** (EU and Member States) responsible for HPC research and dissemination programs
- Fostering **joint initiatives among ETP members and other stakeholders** in the area of research and innovation programs
- Facilitating the **emergence of start-ups and the growth of existing SMEs**
- Supporting Europe and Member States authorities by **reinforcing Europe's position in the worldwide HPC arena**
- Representing the **voice of the European HPC industry** in the worldwide HPC arena

- Collaborate closely with scientific and industrial HPC user communities and ISVs
- Cooperate with other existing initiatives in the area of HPC and ICT in Europe such as PRACE
- Specify the most effective actions to take advantage of Europe's current strengths, utilise existing and emerging opportunities and close the currently increasing gaps
- Account for other key enabling technologies from non-HPC industry and research centres that might bring disruptive solutions into HPC
- Facilitate the creation of new international standards if required
- Recruit new members such as vendors, ISVs, research organisations and end-users with active R&D in Europe
- Focus on the main challenges facing the European HPC industry such as: parallelisation of software, power consumption, reliability and big data.

Mission

Strategy

SRA

Research Priorities

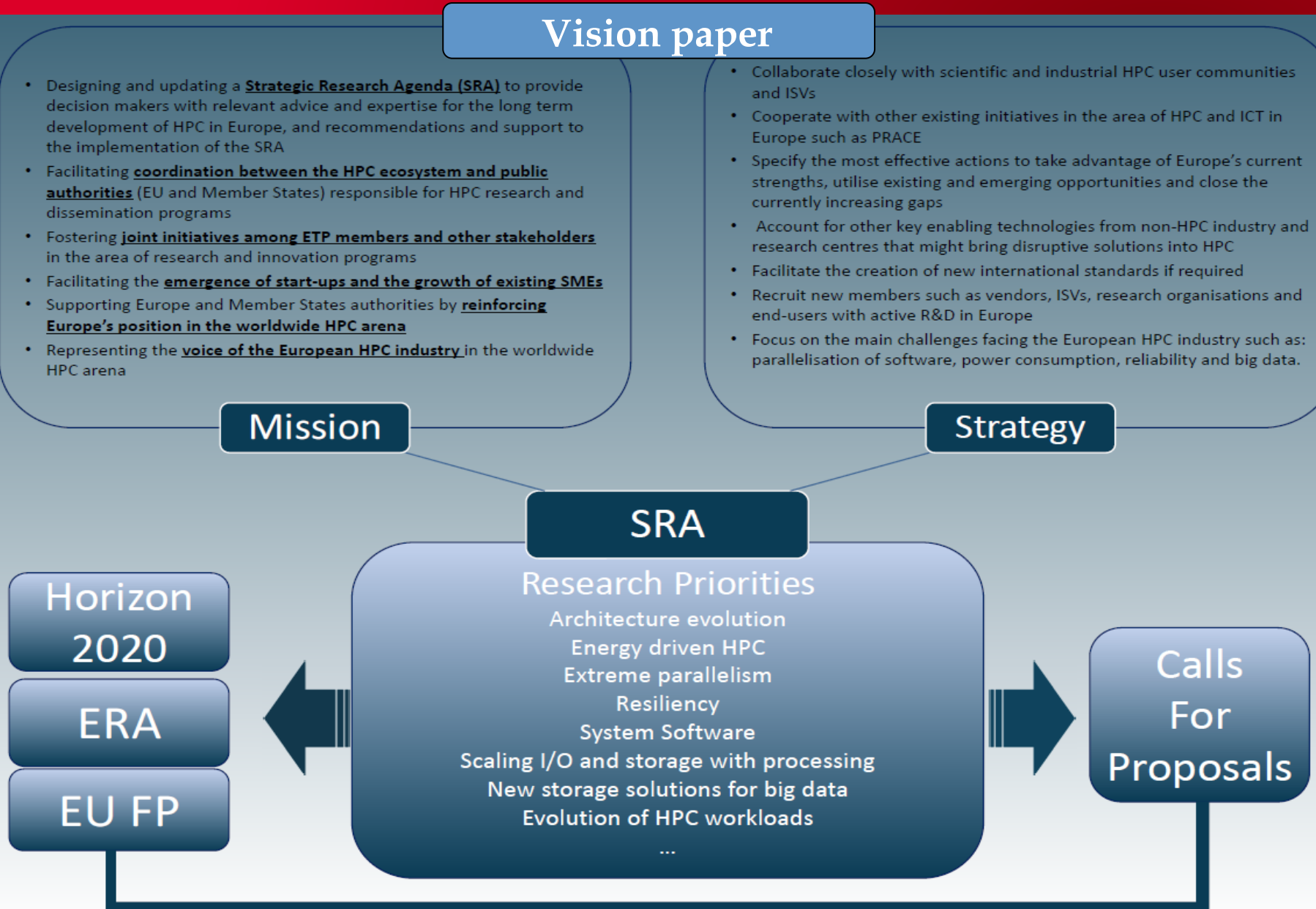
- Architecture evolution
- Energy driven HPC
- Extreme parallelism
- Resiliency
- System Software
- Scaling I/O and storage with processing
- New storage solutions for big data
- Evolution of HPC workloads
- ...

Horizon
2020

ERA

EU FP

Calls
For
Proposals



Les éléments principaux du Vision Paper

- **Recommendations :**

- To launch a research program with the aim to develop European technology in all the segments of the HPC solutions value chain
- To focus this program on specific technical domains and on some operational priorities

- **Operations :**

- Building on existing strengths.
- Analysing disruptions that can change the current HPC landscape and facilitate introduction of new technologies developed in Europe.
- Selecting technologies with a market potential large enough for a sustainable development.
- Using synergies with other IT market technologies.
- Choosing technologies fitting the needs of important applications.
- Creating a favourable environment for SMEs (creation of start-ups and development of existing SMEs).

Organisation d' ETP4HPC

- Incorporated as a Dutch association
- Open membership for organizations having R&D based in Europe
- Managed by a Steering Board with 15 members representing:
 - Research centres (5)
 - European SMEs (3)
 - European controlled corporations (5)
 - International companies with R&D in Europe (2)
- Steering board organisation
 - Chairman
 - 2 Vice-chairmen for PPRACE coordination and HPC development
 - Secretary-Administrator, Treasurer
- Virtual office
 - BSC, CEA, Cineca+Eurotech, ParTec

Who should participate in ET4HPC ?

- European HPC technology ecosystem:
 - Technology providers
 - ISVs facing the multi-core/new architectures disruption
 - Users looking for advanced technological HPC systems
 - Research centers involved in HPC research
 - Computing centers working on HPC technology or innovative HPC system operation
- Two possibilities
 - Full member : organizations with HPC research in Europe
 - Associate member : individuals or organizations not qualified for full membership

Why become a member of ETP4HPC ?

- To participate in the definition of the R&D HPC strategy
- To share your ideas about the evolution of HPC technology
- To influence the definition of the SRA
- To pool your resources with other HPC stakeholders
- To anticipate evolutions related to your activity
- To increase the visibility and the voice of your organization

What are the main topics covered ?

- System and Component Architecture
- System Software
- Programming Environment
- HPC Usage Models

- Energy driven HPC
- Extreme parallelism
- Resiliency
- Compute, I/O and Storage Balance
- Big Data – Supporting New Workloads
- New HPC Delivery (e.g. Cloud)

How will we prepare the SRA ?

- A series of workshops in October/November 2012, synchronising various approaches to European HPC technology competencies, strengths and opportunities:
 - End-users' input: requirements related to applications, co-design processes, and societal challenges
 - External HPC experts and other fields of industry and research
- Organizations with HPC research in Europe are invited to participate

SRA Working Groups

	System & Component Architecture	System Software	Programming Environment	HPC Usage Models
Energy Efficiency	 	 	 	
Extreme Parallelism				
System Resiliency				
Compute, I/O & Storage Performance Balance	 			
Big Data - Supporting New Workloads				
New HPC Delivery (e.g. Cloud)				

Si vous faites de la R&D pour le HPC en Europe

VOUS ETES LES BIENVENUS

Inscription: www.etp4hpc.eu

ETP4HPC

European Technology Platform for HPC

