

DE LA RECHERCHE À L'INDUSTRIE



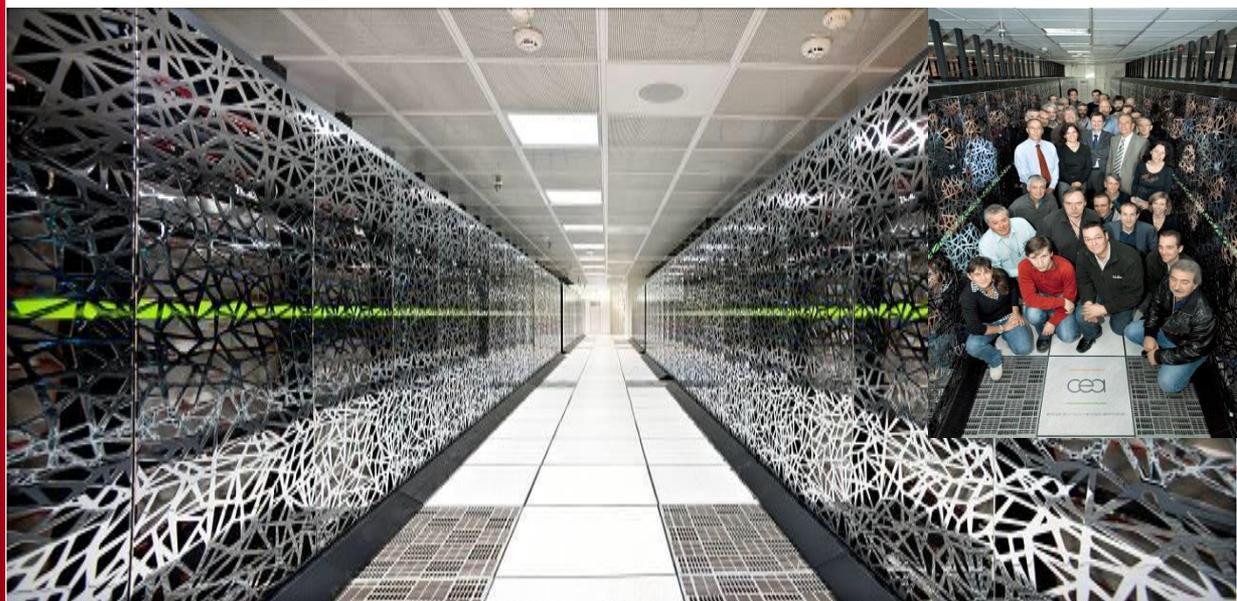
**Jean GONNORD**  
Conseiller HPC de l'AG

Vice Président Ter@tec  
Vice Président ETP4HPC

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# Une nouvelle donne Européenne en matière de HPC et Big Data

*Un IPCEI pour répondre à l'objectif de la Commission  
exprimé dans la déclaration du Commissaire Oettinger d'avril 2016*



Novembre 2010: TERA100 Première machine pétaflopique conçue et réalisée en Europe

**Le HPC: un enjeu permanent pour le CEA**

## Septembre 2015: Une nouvelle ambition



*"Our goal is for Europe to become one of the top 3 world leaders in high-performance computing by 2020."*

Jean-Claude Juncker, 27 Octobre 2015

## Avril 2016: Nouvelles communications de l'UE

**Jean GONNORD**  
Conseiller HPC de l'AG

Vice Président Ter@tec  
Vice Président ETP4HPC



**Gunther Oettinger**  
Commissioner for  
Digital Economy and Society

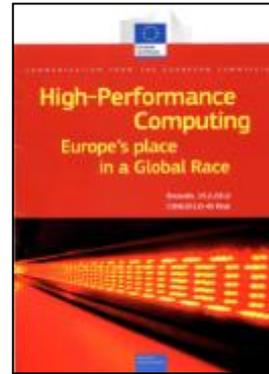


European open science cloud  
**European data infrastructure**  
Widening access and building trust



**High-Performance Computing  
Europe's place in a Global Race**  
Neely Kroes, Commissioner for Information Society  
and Vice-President of the European Commission

Communication of Feb. 2012



[http://ec.europa.eu/information\\_society/newsroom/cf/document.cfm?action=display&doc\\_id=891](http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=891)

- **Provide a world-class European HPC infrastructure, benefitting a broad range of academic and industry users, and especially SMEs,**
- **Ensure independent access to HPC technologies, systems and services for the EU;**

□ **Infrastructure:**



□ **Technologies et Applications**



Un partenariat Public/Privé (cPPP) entre l'UE et ETP4HPC + CoEs  
700M€ sur 2014-2020 dans H2020

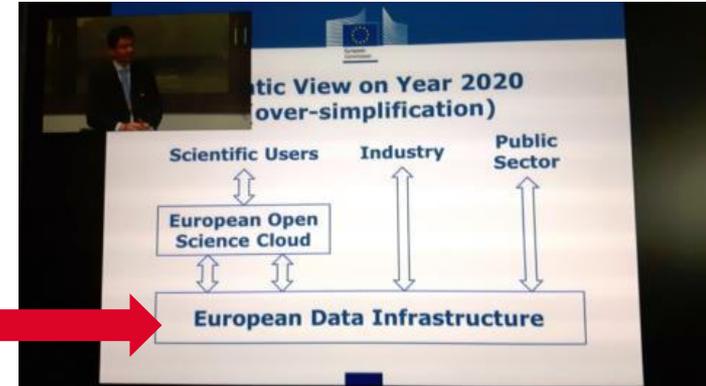
Le cPPP conduit à des appels à Projets H2020  
basés sur le Strategic Research Agenda établi par l'ETP4HPC

- WP2014-2016 First call , 19 FETHPC + 8(9) CoE projects running
- WP2016-2017 call issued
- WP2018-2020 under discussion



## Building a competitive data and knowledge economy in Europe

The European Data Infrastructure should underpin the European Open Science Cloud



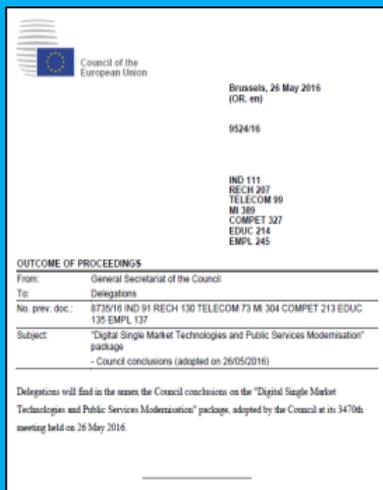
fully unlocking the value of Big Data and digital by default.” The European Data Infrastructure will also support the EU to rank among the world's top supercomputing powers by **realising exascale supercomputers around 2022, based on EU technology, which would rank in the first 3 places of the world**. Europe should aim to have at least two sources of this technology.

- foster an HPC ecosystem capable of developing new European technology such as **low power HPC chips**;<sup>49</sup>

The Commission and participating Member States should develop and deploy a large scale European HPC, data and network infrastructure, including:	2016-2020
– the acquisition of two co-designed, prototype exascale supercomputers and two operational systems which will rank in the top three of the world;	as of 2018



## Déclaration approuvée par le Conseil de Compétitivité du 26 mai 2016



12. WELCOMES the ambitious goals towards a European Exascale high-performance computing (HPC) capability; RECOGNISES the need to support the technology, infrastructure and applications and build on EU strengths and existing initiatives to develop a HPC ecosystem relevant for all Member States, with the ambition of placing the EU among the top supercomputing powers in the world by 2022 and strengthen competitiveness; and ACKNOWLEDGES the launch of the Important Project of Common European Interest on HPC and Big Data enabled applications. WELCOMES the discussion on the Commission's proposal to prepare for the launch of an ambitious flagship initiative in close cooperation with Member States and relevant stakeholders to unlock the full potential of quantum technologies and accelerate their development and take-up in commercial products.

- foster an HPC ecosystem capable of developing new European technology such as **low power HPC chips**;<sup>49</sup>

The Commission and participating Member States should develop and deploy a large scale European HPC, data and network infrastructure, including:

- the acquisition of two co-designed, prototype exascale supercomputers and two operational systems which will rank in the top three of the world;

2016-2020

as of 2018

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# IMPORTANT PROJECT OF COMMON EUROPEAN INTEREST (IPCEI)

ON  
HIGH PERFORMANCE COMPUTING  
AND  
BIG DATA ENABLED APPLICATIONS  
(IPCEI-HPC-BDA)

European Strategic Positioning Paper

Réponse industrielle à  
la vision et la stratégie de l'UE  
avec une insistance forte sur  
la technologie



<https://ec.europa.eu/digital-single-market/en/news/study-high-performance-computing-eu-progress-implementation-european-hpc-strategy-final-report>

6) **Ensuring a level playing field**, in particular regarding inequalities in HPC market access and exploitation obligations regarding intellectual property rights of HPC results generated in Horizon 2020.

- Europe has long been the world's most open HPC market. Government HPC markets in the U.S., Japan and China all present barriers to non-domestic HPC suppliers, although the private-sector markets in these countries are more open and both government and private-sector markets are generally open to non-domestic commercial software. A large majority of European HPC stakeholders IDC interviewed for this study agreed that European scientists and engineers should continue to have access to the world's best supercomputer systems, no matter where in the world they come from. Specific market asymmetries should be addressed at a government (EC)-to-government level and not made part of Europe's HPC strategy.

2015



Si un accès indépendant aux technologies HPC est réalisé  
Il existe toujours des asymétries du marché  
et un partage équitable de celui-ci est loin d'être effectif  
Mais le problème est plus large et s'étend aux applications  
Nous sommes face à une défaillance de marché à 2 niveaux:

- **Technologie**                      **Asymétrie**
- **Applications**                    **Fragmentation**  
   **Absence de coordination**

Cela autorise l'utilisation d'un outil spécifique

**Important Project of Common European Interest (IPCEI)**

L'objectif de l'IPCEI HPC/BigData est de réaliser l'ambition de l'Union Européenne et des Etats membres exprimée par le Commissaire Oettinger.

Objectif suffisamment important pour justifier la levée de certaines contraintes

L' IPCEI permet:

- De démarrer un Projet entre un nombre restreint d'Etats partageant une même vision avec la Commission,
- De rassembler des fonds de différentes sources: H2020, fonds structurels, fonds "JUNCKER", fonds nationaux - et d'éviter la fragmentation...
- D'autoriser les aides d'Etats,
- D'éviter certaines des règles complexes sur la concurrence.

C'est un projet d'**Etats** soutenu par la Commission

Le projet conduit par le Luxembourg est organisé en 3 piliers:



**Il est ouvert à tout autre pays partageant la même vision**

# L'approche "Top Down" de l'Union Européenne

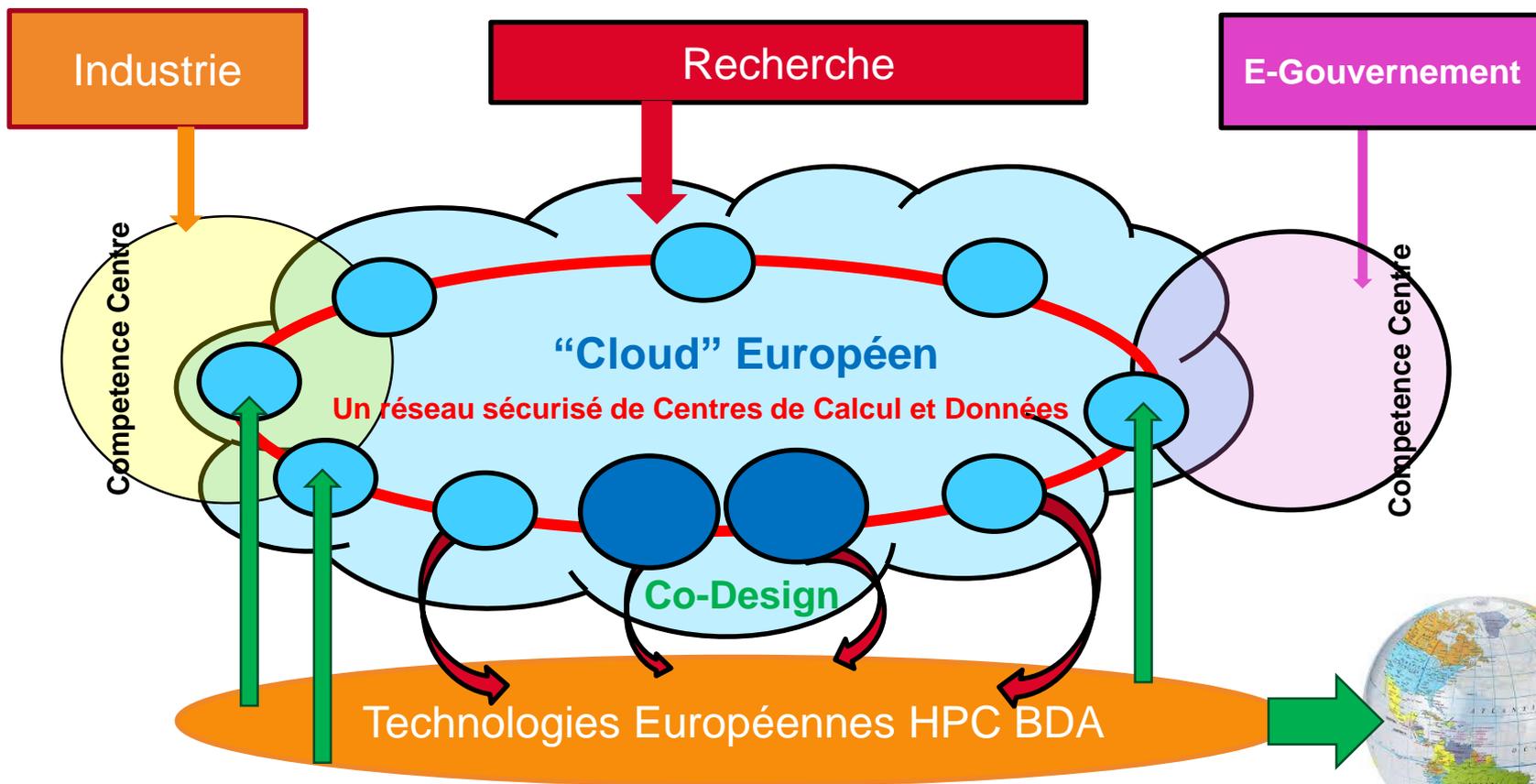
Accélérer l'économie Européenne en améliorant la compétitivité, la croissance et l'emploi



Un marché numérique unique



Un "cloud" sécurisé accessible de manière égale à tous les Européens



Réponse à la défaillance du marché  
Due à la fragmentation et le manque de coordina

Réponse à la défaillance du marché  
Due à l'asymétrie

Vers une part équitable du marché

# The vision of an old European

1996

Launching the challenge of HPC  
face to the ruins field  
of HPC European industry



2006

TOP 500  
CERTIFICATE

*The Bull NovaScale 5160 System at  
the Commissariat à l'Énergie Atomique (CEA), France*

is ranked

*No. 1 in Europe*

among the World's TOP500 Supercomputers  
with **42.9 TFlop/s Linpack Performance**  
on the TOP500 List published at the ISC2006 Conference, June 28, 2006

Congratulations from the TOP500 Editors

*Hans Meuer*  
Hans Meuer  
University of Mannheim

*Erich Strohmaier*  
Erich Strohmaier  
NERSC/Berkeley Lab

*Jack Dongarra*  
Jack Dongarra  
University of Tennessee

*Horst Simon*  
Horst Simon  
NERSC/Berkeley Lab

But we had a dream

We realize it



LET US NOW have  
a dream TOGETHER !

Push Europe at the highest level in HPC  
&  
built the first European petaflop computer

*Nous partîmes cinq cents,*

*mais, par un prompt renfort, nous nous vîmes trois mille en arrivant au port.*