ETP 4 HPC

THE EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

www.etp4hpc.eu

Towards European HPC Systems fulfilling the requirements of Big Data

ETP4HPC SRA Team

4th closed BDEC Workshop

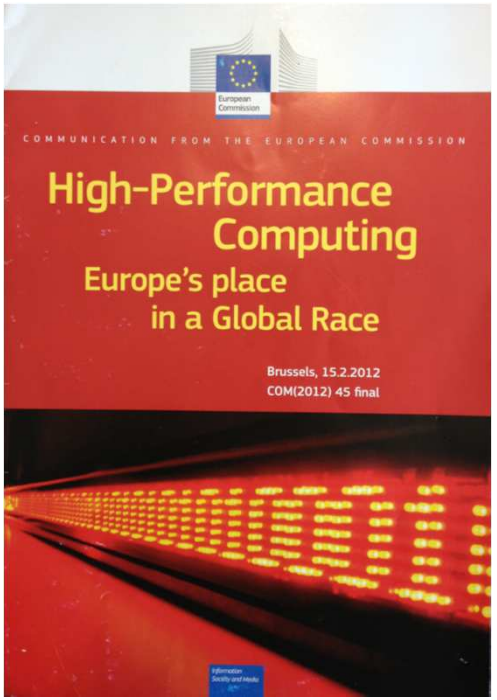
ETP 4 HPC

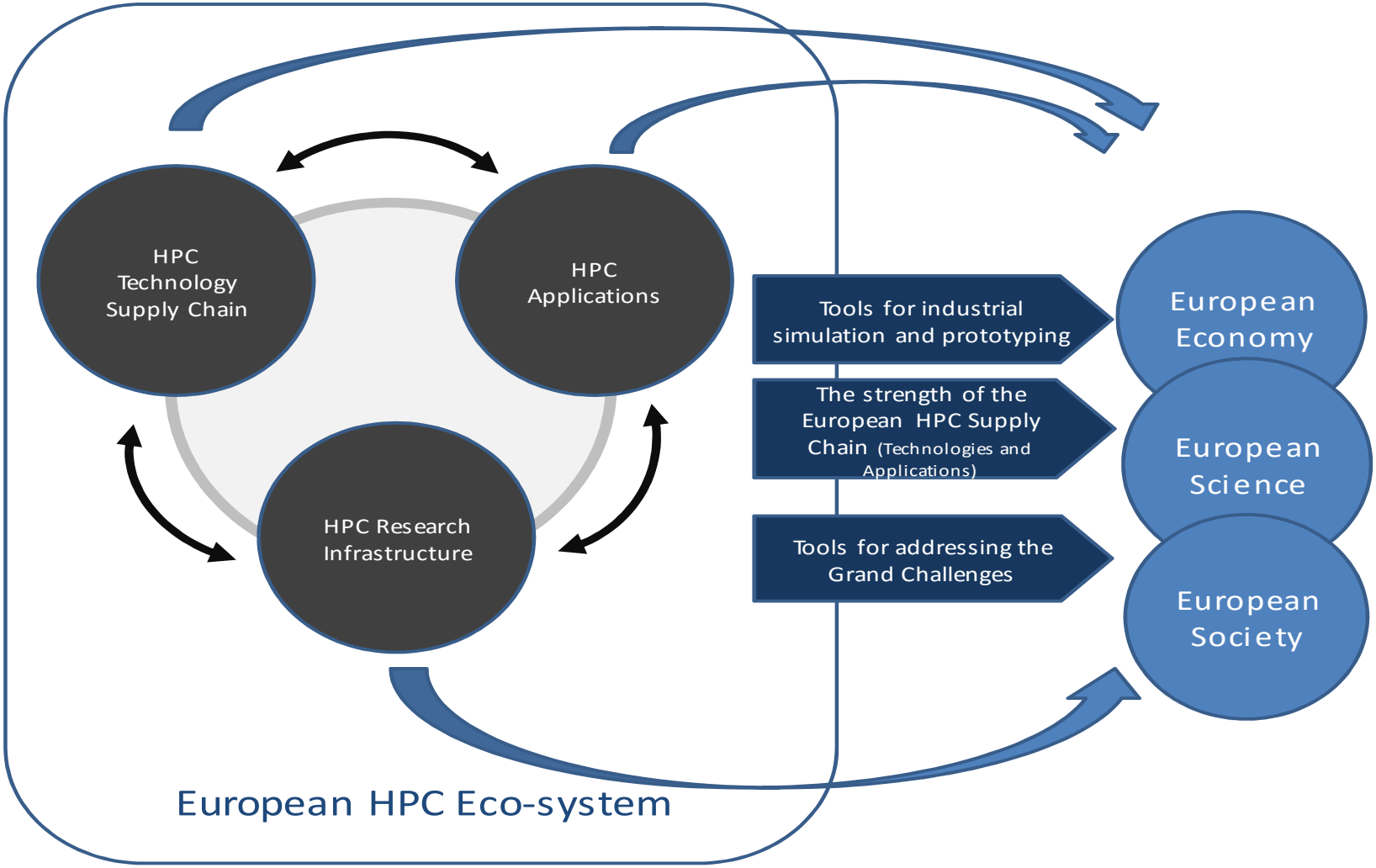
What you should know by the end of this talk?

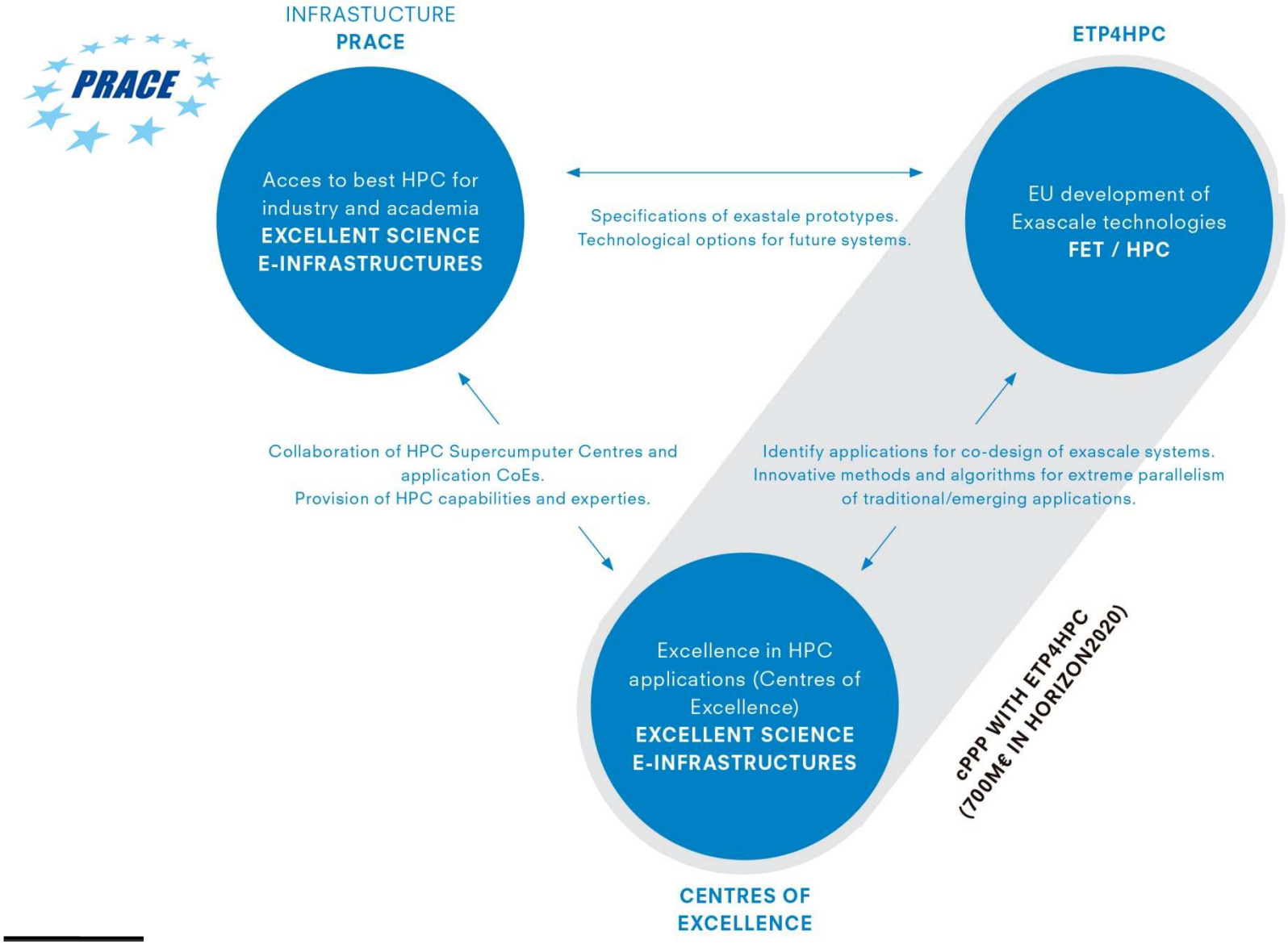
- The European HPC Eco-system & the role of the European HPC Technology Platform (**ETP4HPC**)
- **Strategic Research Agenda (SRA)** – the European HPC Technology Roadmap
- The European HPC Technology calls and projects
- **Prototyping** – the European Extreme-Scale Demonstrators and their Big Data related characteristics
- **How could we collaborate?**

Main message:

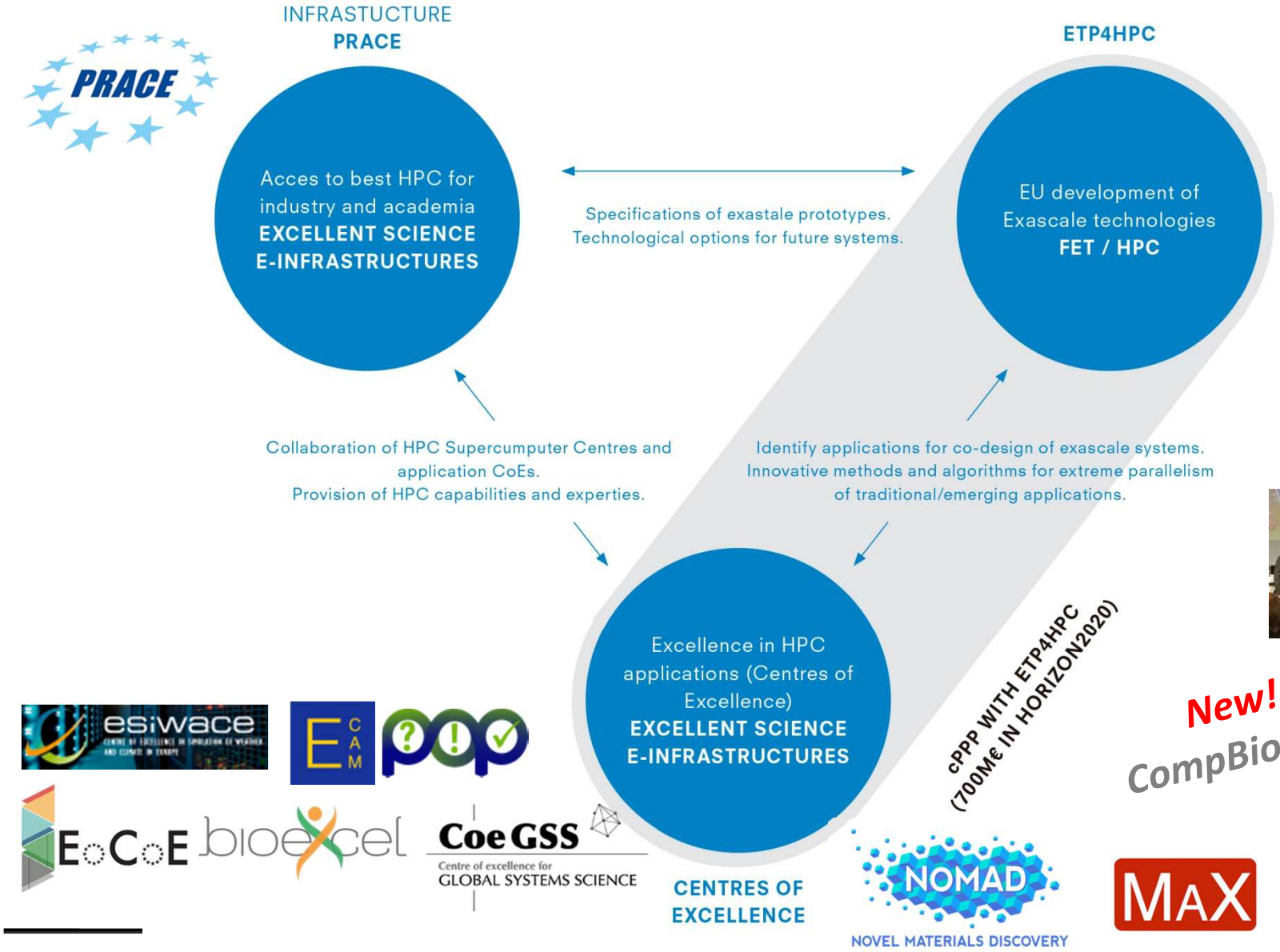
EU needs **independent** access to HPC technologies, systems and services




HPC
Technology
Supply Chain
HPC
Applications
HPC Research
Infrastructure
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
European HPC Eco-system


INFRASTUCTURE
PRACE
Acces to best HPC for industry and academia
EXCELLENT SCIENCE
E-INFRASTRUCTURES
ETP4HPC
EU development of Exascale technologies
FET / HPC
Specifications of exastale prototypes.
Technological options for future systems.
Collaboration of HPC Supercumputer Centres and application CoEs.
Provision of HPC capabilities and experties.
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
CENTRES OF EXCELLENCE
cPPP WITH ETP4HPC
(700M€ IN HORIZON2020)

The European HPC Eco-system




allinea
ARM
BSC
Bull
atos technologies
cea
CINECA
EUROTECH
Imagine. Build. Succeed.
Fraunhofer
IBM
intel
JÜLICH
FORSCHUNGSZENTRUM
Irz
PARTEC
CLUSTER COMPETENCE CENTER
SEAGATE
MAXELER
Technologies
MAXIMUM PERFORMANCE COMPUTING
INFN
Istituto Nazionale di Fisica Nucleare
epcc
numascale
Inria
Ter@tec
ROGUE WAVE
SOFTWARE
KALRAY
HLRS
NVIDIA
Terno Fluids
clustervision
produban
Science & Technology Facilities Council
MEGWARE
SUPERCOMPUTING · TECHNOLOGY
NICE
transtec
scilab enterprises
DISTENE
UNIVERSITÉ DE REIMS CHAMPAGNE-ARDENNE
Micron
eXact
solutions for your productivity
SICOS
KTH
UNIVERSITAT POLITÈCNICA DE VALÈNCIA
Bright Computing
ARCTUR
universe
CIMNE
DataDirect NETWORKS
HPC
WALES · CYMRU
E4
COMPUTER ENGINEERING
ENGIN SOFT
CSC
CRAY
THE SUPERCOMPUTER COMPANY
FUJITSU
Queen's University Belfast
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National Centre for Nuclear Research
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ASETEK
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ONERA
THE FRENCH AEROSPACE LAB
ENEA
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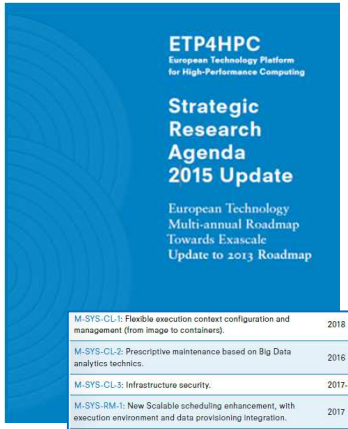
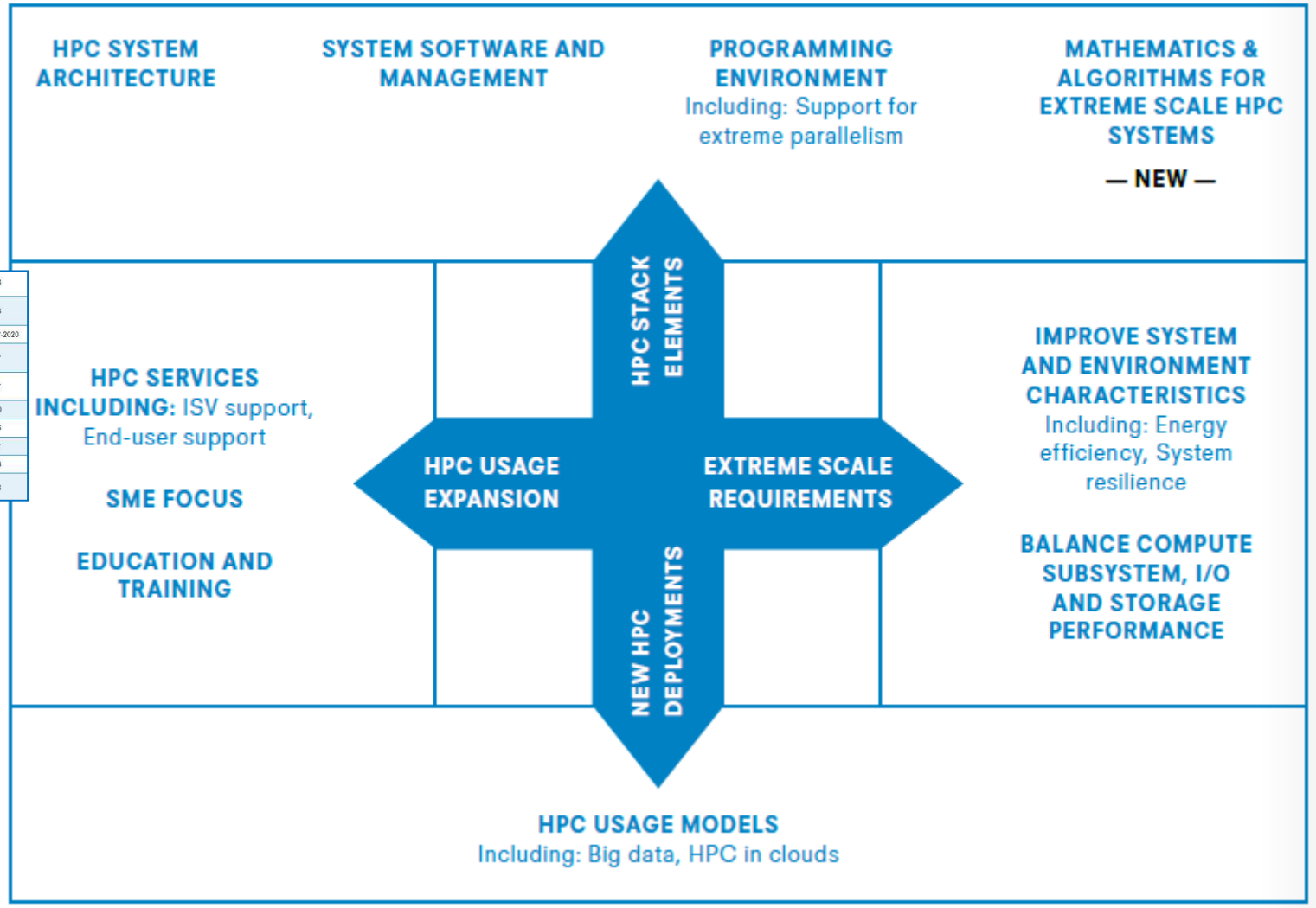
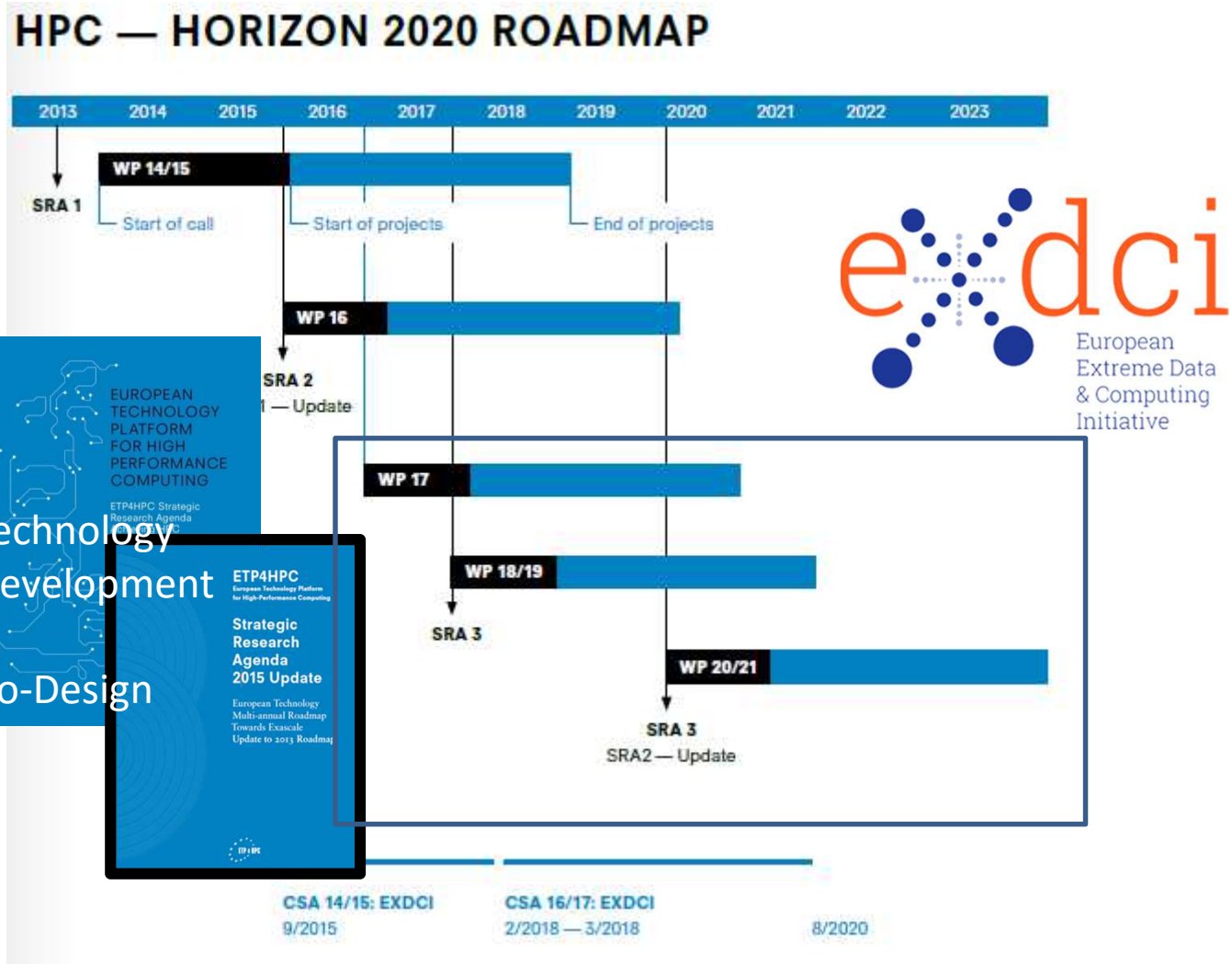
QUANTUM ESPRESSO FOUNDATION

Strategic Research Agenda

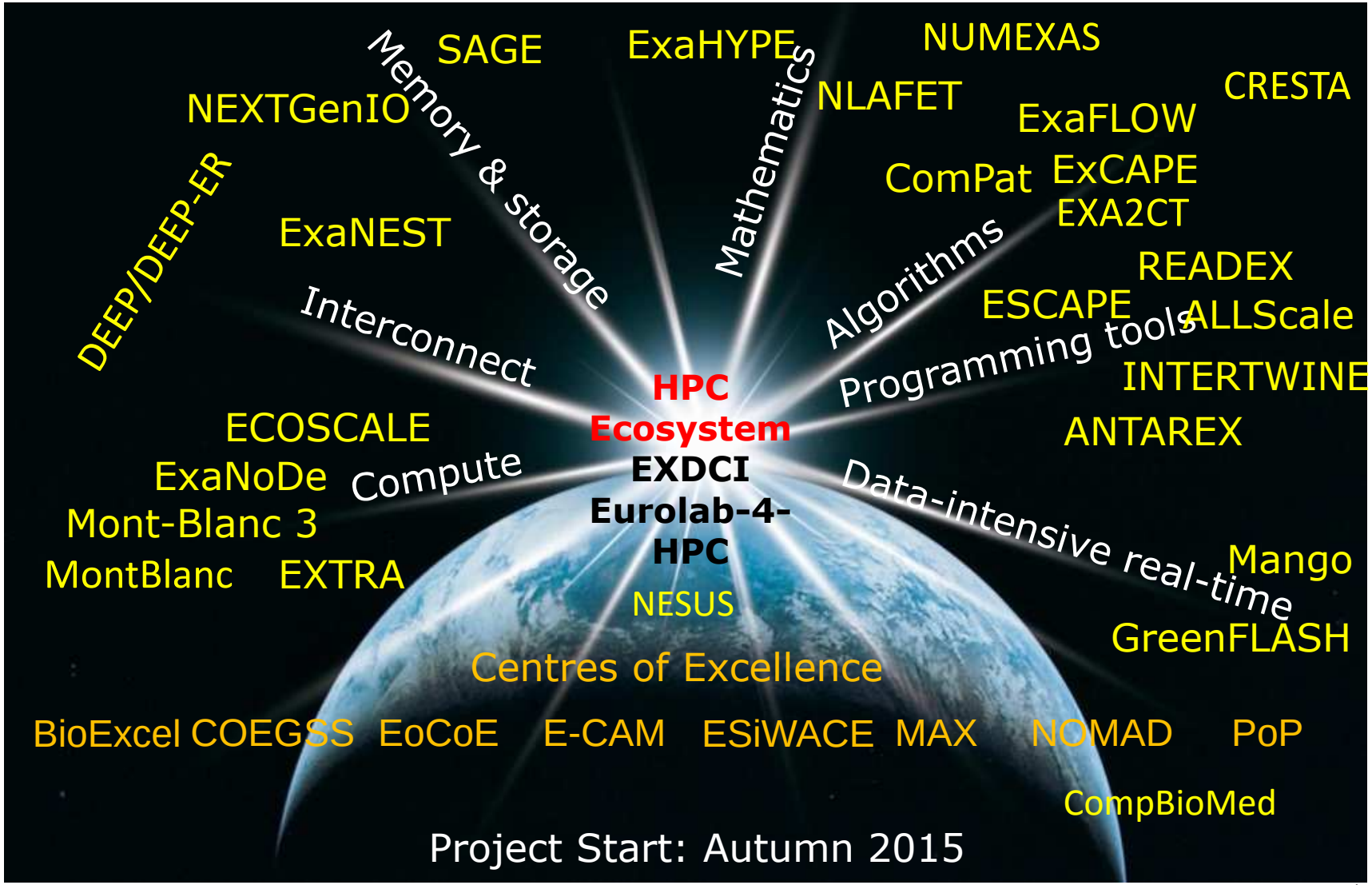


M-SYS-CL-1: Flexible execution context configuration and management (from image to containers).	2018
M-SYS-CL-2: Prescriptive maintenance based on Big Data analytics technics.	2016
M-SYS-CL-3: Infrastructure security.	2017-2020
M-SYS-RM-1: New Scalable scheduling enhancement, with execution environment and data provisioning integration.	2017
M-SYS-RM-2: New multi-criteria adaptive algorithms: Heterogeneity-/memory- and locality-aware.	2017
M-SYS-RM-3: Resilient framework.	2020
M-SYS-Vis-1: Scalable "in situ" visualisation.	2016
M-SYS-Vis-2: Scaling for the compositing phase.	2017
M-SYS-Vis-3: Ray-tracing capabilities.	2018
M-SYS-Vis-4: High dimensional data, graphs and other complex data topologies.	2018

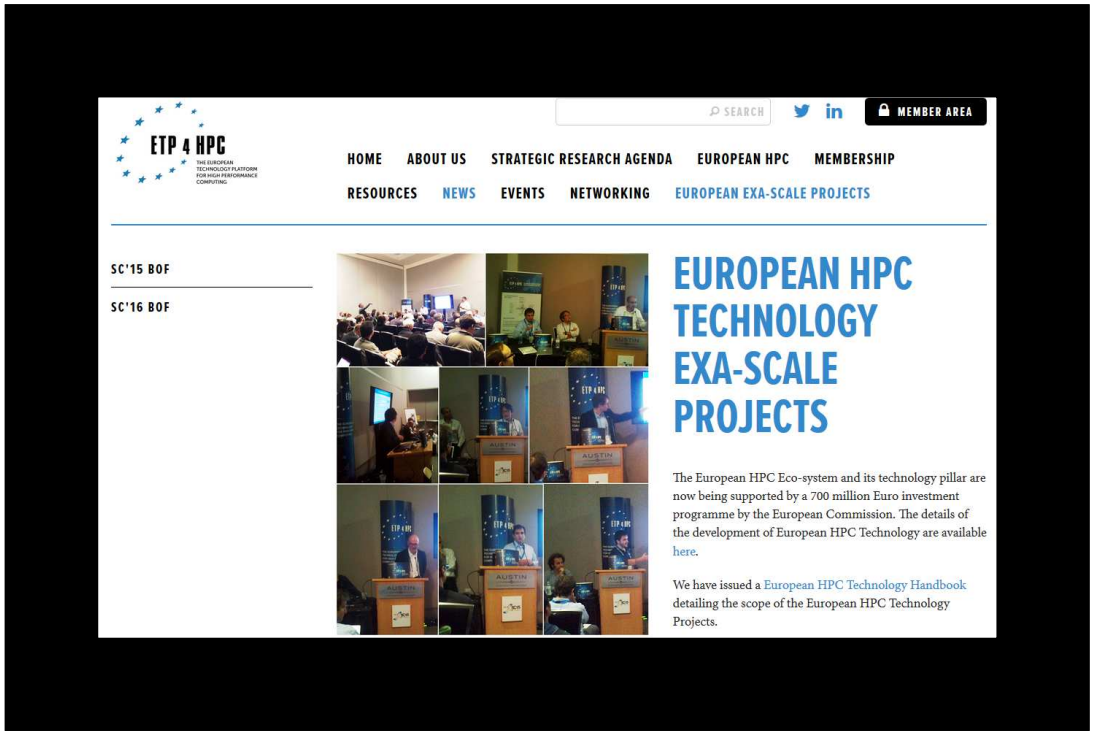



HPC — HORIZON 2020 ROADMAP
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
WP 14/15
SRA 1
Start of call
Start of projects
End of projects
WP 16
SRA 2
— Update
WP 17
WP 18/19
SRA 3
WP 20/21
SRA 3
SRA2 — Update
CSA 14/15: EXDCI
9/2015
CSA 16/17: EXDCI
2/2018 — 3/2018
8/2020
EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING
ETP4HPC Strategic Research Agenda
ETP4HPC
Strategic Research Agenda 2015 Update
European Technology Multi-annual Roadmap Towards Exascale
Update to 2013 Roadmap
Technology Development
Co-Design
e dci
European Extreme Data & Computing Initiative

The EU HPC Technology Landscape



- Memory & Storage, Data-Intensive FETHPC project sample topics
  - Develop a new server architecture using next generation interconnection, and memory advances
    - Integration of NVRAM technologies in the I/O stack
    - Fast, distributed in-node non-volatile memory Storage
    - ../…
  - Develop the systemware to support new architectures use at the Exascale
    - Data Centric Computing System based on object-storage
    - …/…
  - Model different I/O workloads and use this understanding in a co-design process
    - Very Tightly Coupled Data & Computation
    - API for massive data ingest and extreme I/O
    - Extreme data management and analysis
    - …/…


ETP 4 HPC
THE EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING
SEARCH
MEMBER AREA
HOME
ABOUT US
STRATEGIC RESEARCH AGENDA
EUROPEAN HPC
MEMBERSHIP
RESOURCES
NEWS
EVENTS
NETWORKING
EUROPEAN EXA-SCALE PROJECTS
SC'15 BOF
SC'16 BOF
EUROPEAN HPC TECHNOLOGY EXA-SCALE PROJECTS
The European HPC Eco-system and its technology pillar are now being supported by a 700 million Euro investment programme by the European Commission. The details of the development of European HPC Technology are available here.
We have issued a European HPC Technology Handbook detailing the scope of the European HPC Technology Projects.

How to involve the broad Big Data community **in the SRA process**?

We need feedback on the SRA from international experts – we have **a Public Call for Comments** open

We need your help in defining the **EsD system requirements**