EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

ETP4HPC IN A NUTSHELL

Building a globally competitive European world-class HPC technology value chain

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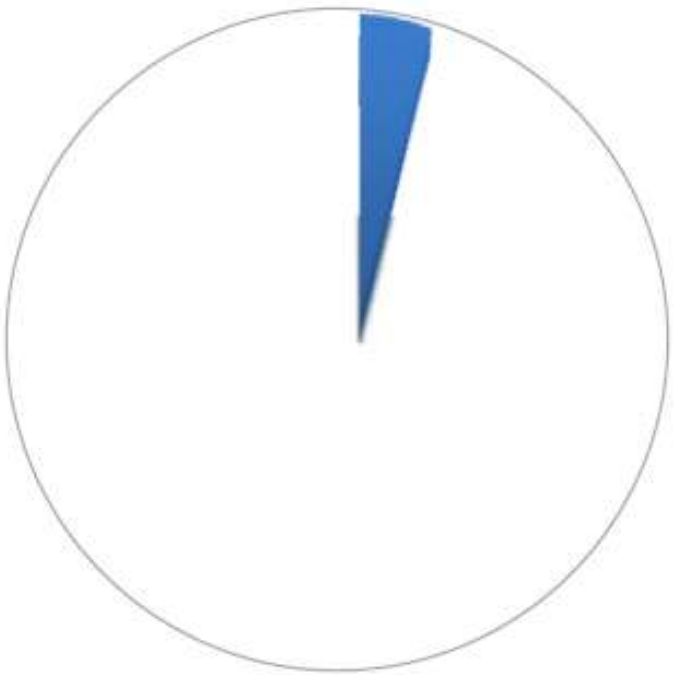
WHY DO WE NEED TO ACT NOW?

EU **consumes** 33% of global HPC resources

But **supplies** less than 5% of them



HIGH PERFORMANCE COMPUTING FOR EUROPE

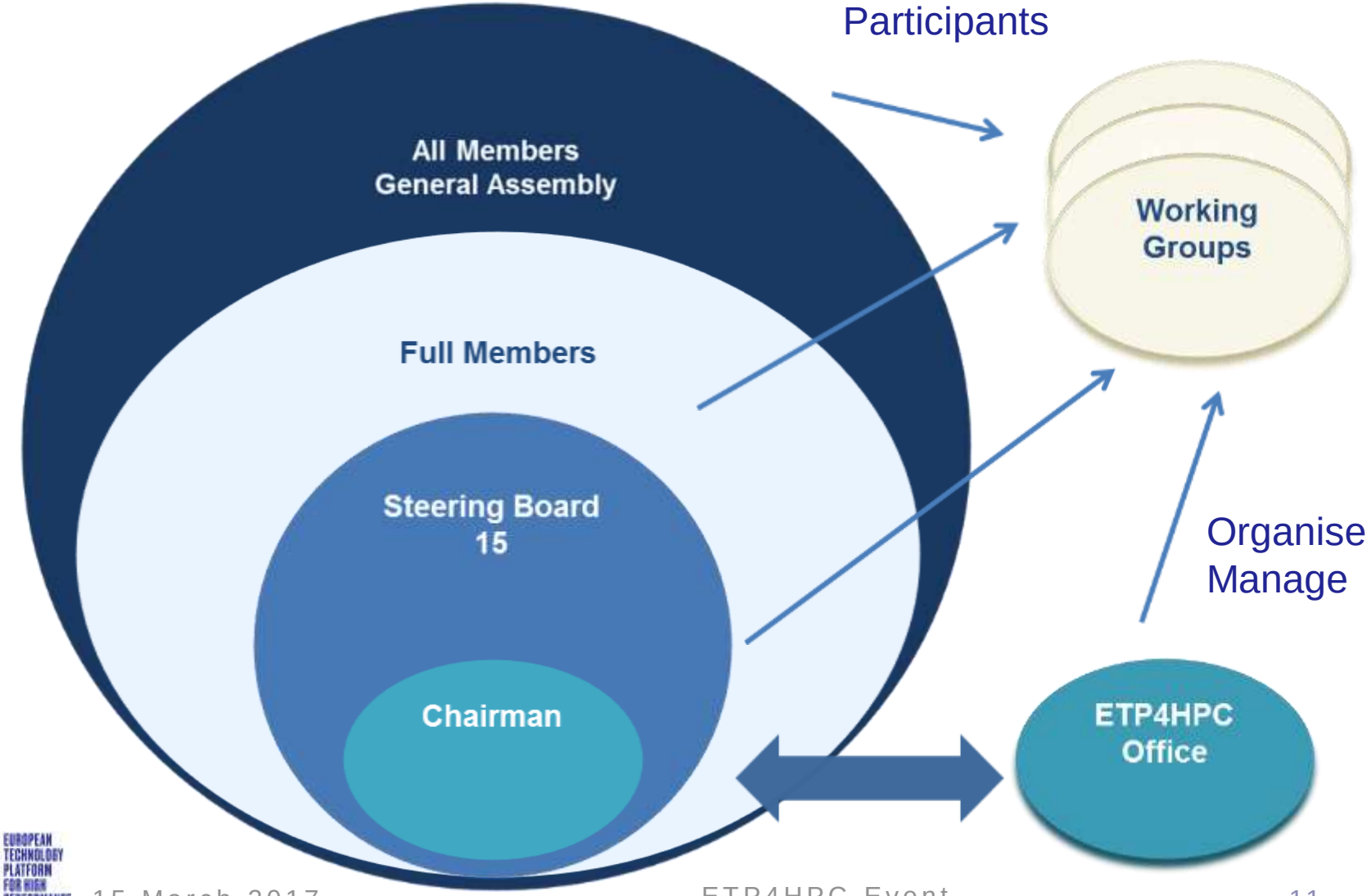
ETP4HPC

What we do

Key Activities

- Foster growth of HPC technology Research and Development in Europe
- Advise EC through cPPP
- Define Strategic Research Agenda (SRA)
- Propose H2020 Work Program contents
- Monitor ecosystem development

ETP4HPC Organisation



ETP4HPC

Established in 2011

Officially a Dutch Association since December 2012

79 Members
(as of February 2017)

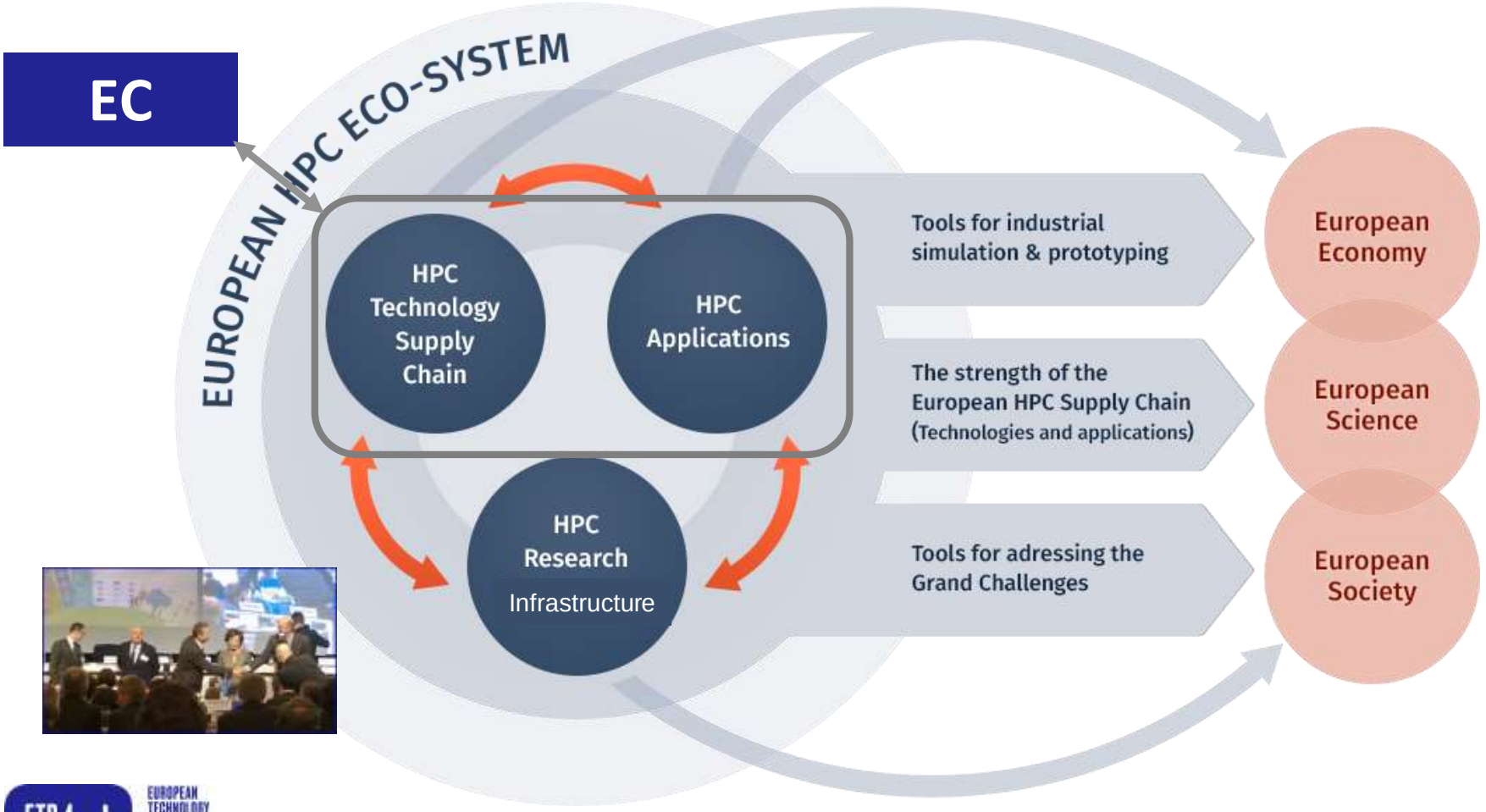
- 52 Full
- 27 Associated

- 39 Private
- 25 SMEs

- 11 Larger companies
- 36 Research organisations

EUROPEAN HPC ECO-SYSTEM

The contractual Public-Private Partnership covers two pillars of the European HPC eco-system: technology provision and application expertise



The Objectives and Principles of cPPP

Development of the next generation of HPC technologies, applications and systems towards Exascale and pervasive use

Excellence in HPC applications delivery and use

Training, education and skills development

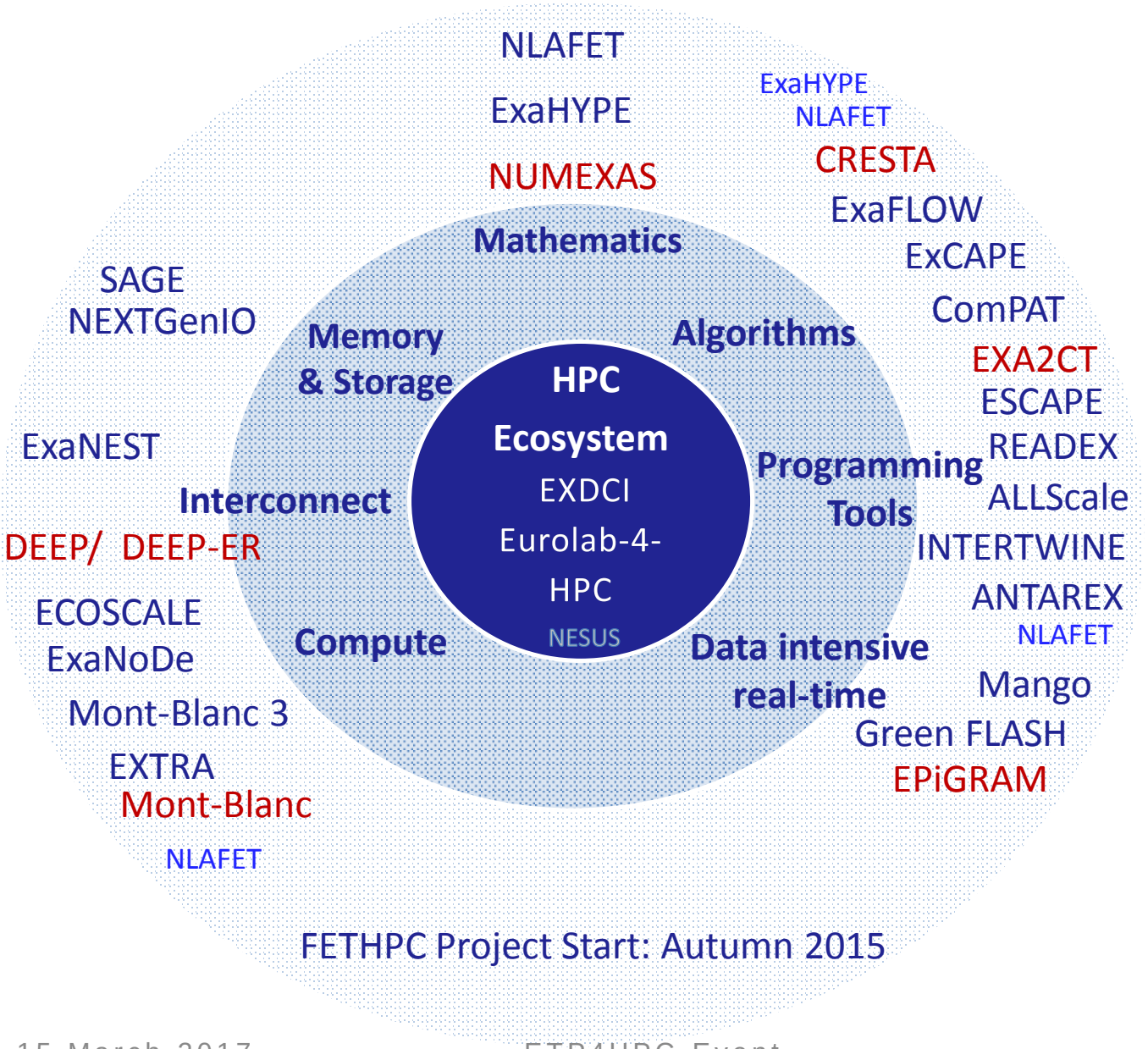
- Structured dialogue
- Commitment from private partners to match EC funding
- Joint progress and impact monitoring

cPPP Implementation:

First part of H2020: Work Programme 2014-2015… running

- 90 M€ for 19 FETHPC projects started autumn of 2015
- Amplified FP7 ‘pre-exascale’ effort
  - ca. 50 M€ - 7 projects
- 40+ M€ for 9 CoEs
- 2 coordination and support actions (EXDCI and EuroLab4HPC) for ecosystem development
- New 2016 Call projects to Start in 2017

THE CURRENT EUROPEAN HPC TECHNOLOGY LANDSCAPE



EXCELLENCE IN HPC APPLICATIONS (CENTRES OF EXCELLENCE)

MAX	**Material sciences:** Materials design at the eXascale
NOMAD	**Material sciences:** The Novel Materials Discovery Laboratory
cam	**Material sciences:** An e-infrastructure for software, training and consultancy in simulation and modelling
EoCoE	**Energy:** Energy oriented Centre of Excellence for computer applications
esiwace	**Climate:** Excellence in Simulation of Weather and Climate in Europe
CoeGSS	**Global Systems Science:** Center of Excellence for Global Systems Science
bioexcel	**Bioscience:** Centre of Excellence for Biomolecular Research
CompBioMed	**Biomedicine:** A Centre of Excellence in Computational Biomedicine
POP	**Performance:** Performance Optimisation and Productivity

APRIL 2016: NEW EC COMMUNICATION(S)

« European Cloud Initiative – Building a competitive data and knowledge economy in Europe »

- Directions :
  - European Open Science Cloud
  - European Data Infrastructure
  - Widening access and building trust

Looking forward …

EC European Open Science Cloud and European Data Infrastructure announcements of April 2016 acknowledge and confirm the importance of HPC

- Scientific but also industrial and societal stakes
- Wider scope of Digital Single Market and Digitising European Industry

http://europa.eu/rapid/press-release_IP-16-1408_en.htm

ETP 4 HPC SRA

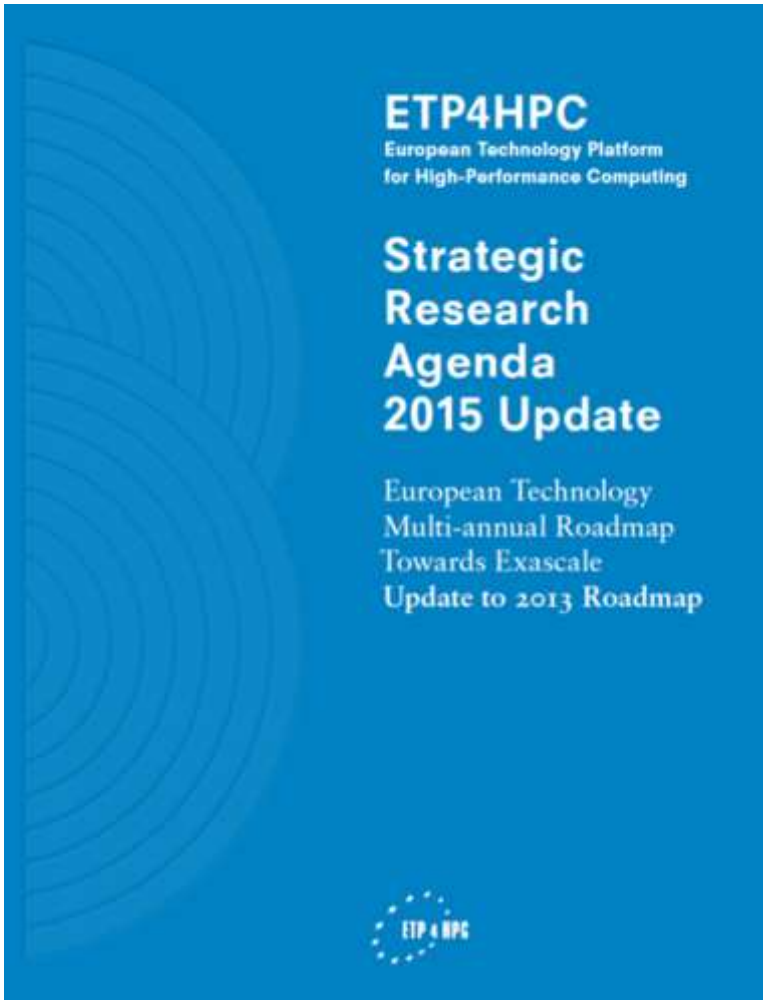
HIGH PERFORMANCE COMPUTING FOR EUROPE

STRATEGIC RESEARCH AGENDA (SRA)

Our Multi-Annual HPC Technology Roadmap

www.etp4hpc.eu/sra

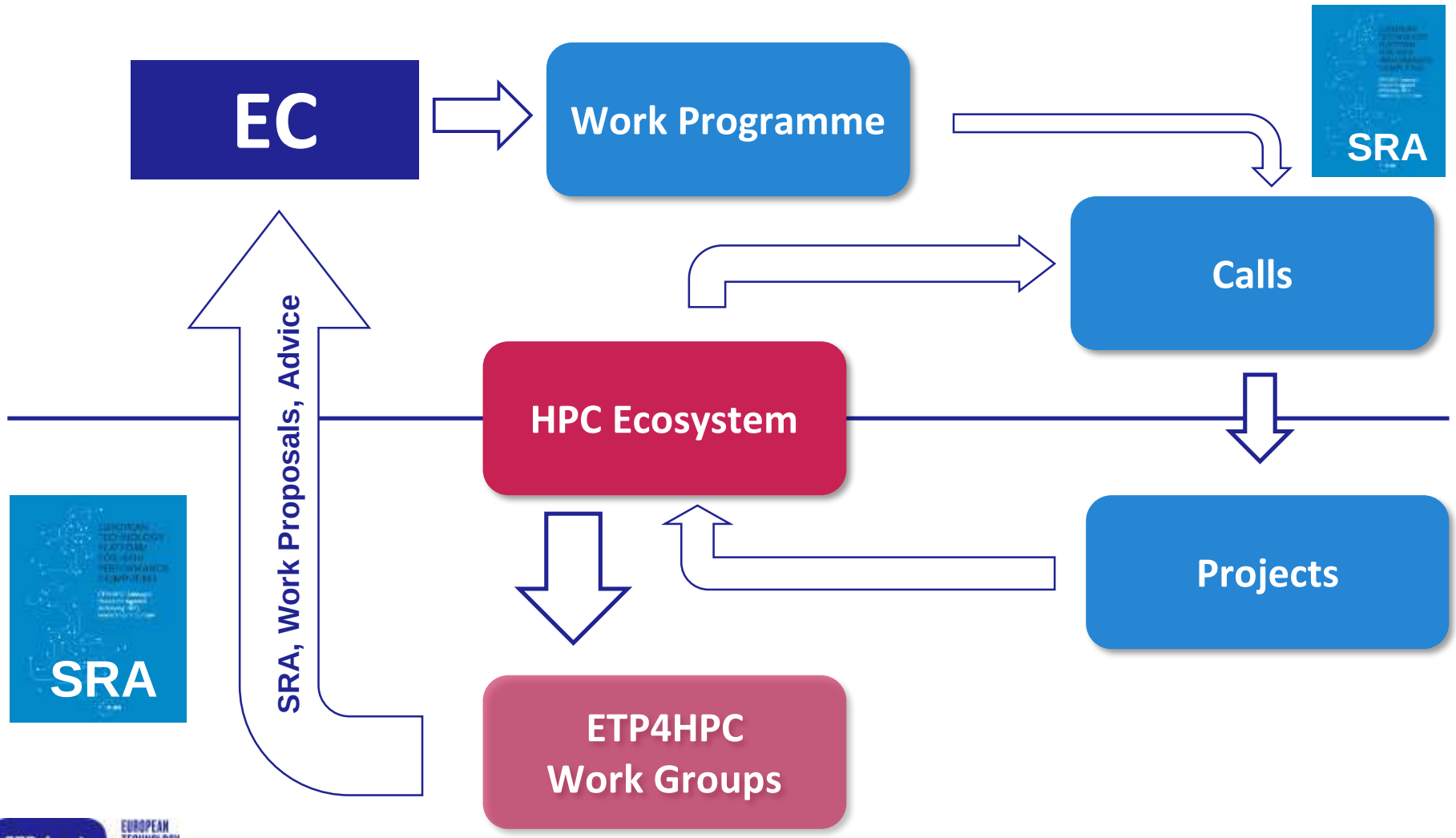
The Strategic Research Agenda (SRA)



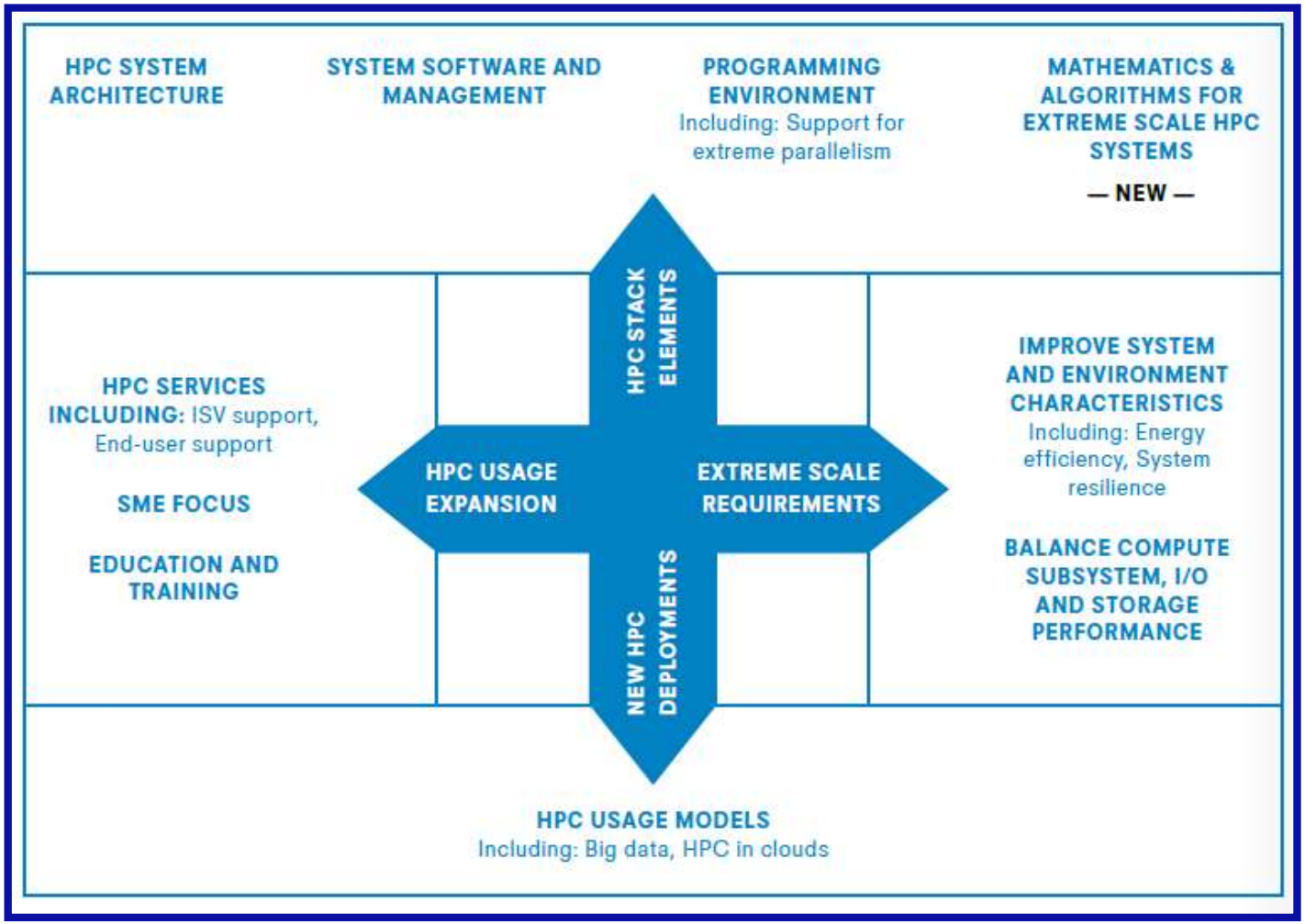
ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

http://www.etp4hpc.eu/en/sra.html

SRA's Role: Research Priorities



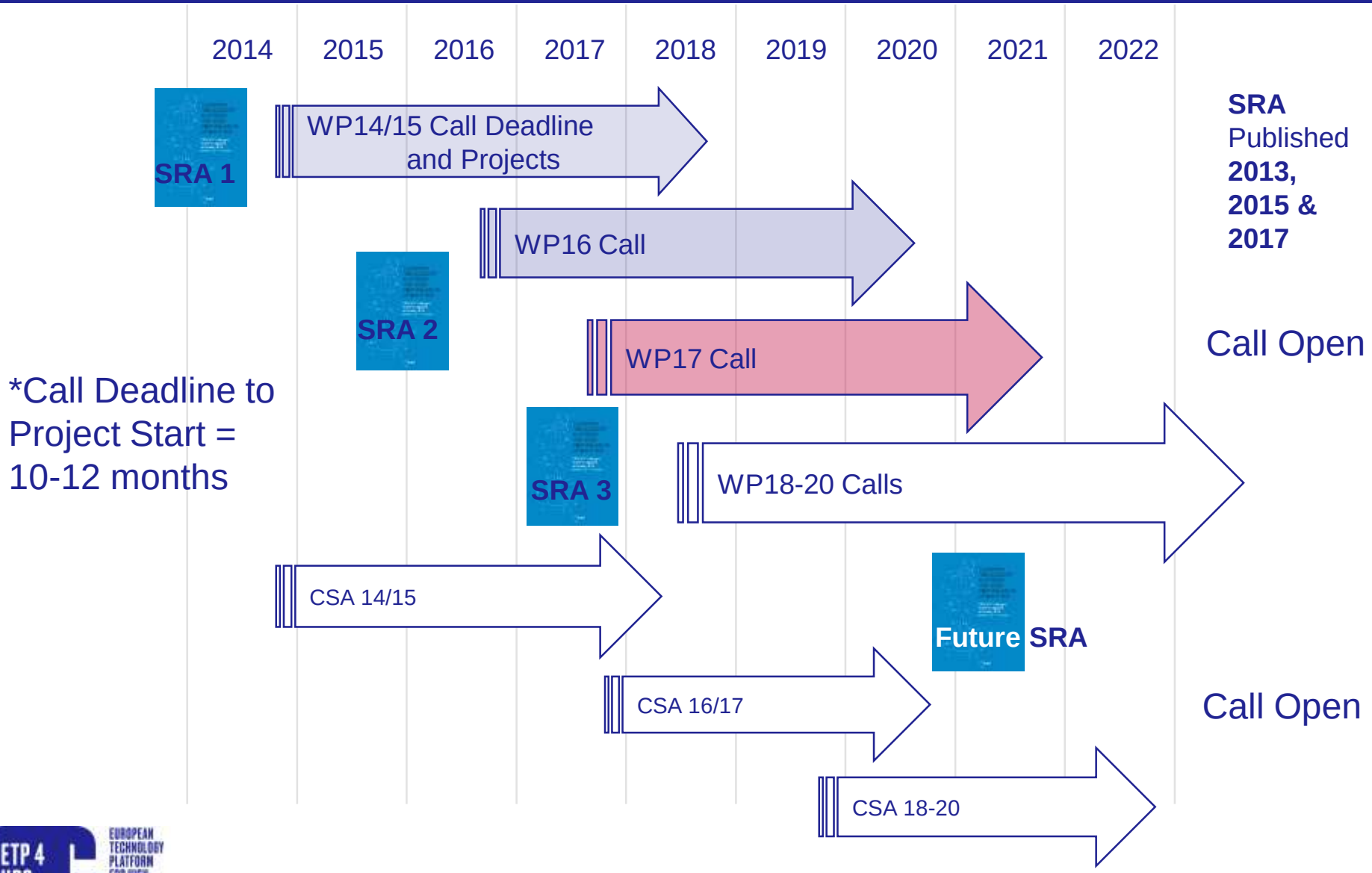
MULTI-DIMENSIONAL SRA HPC MODEL



Input related to **Centres of Excellence** (CoEs) **in Computing Applications**

Extreme-scale Demonstrators (EsD) concept in WP18-20

SRA in Horizon 2020 Timeline



How do we write an SRA?

- 8 topical ETP4HPC Working Groups reflecting the Dimensions: 150 to 200 experts
- Workshops and Conference Calls
- Recognised external sources
- SWOT Analysis to identify general strategy
- Collaboration with PRACE, BDVA, HiPEAC & Eurolab4HPC, Industrial End-Users, ISVs and external experts

WP 18-20 COMPONENTS

2018 2019 2020 2021 2022 2023 2024

CoE 18

EsD 18

RIA 19

CSA 19

EsD 20

WP18-20 Calls

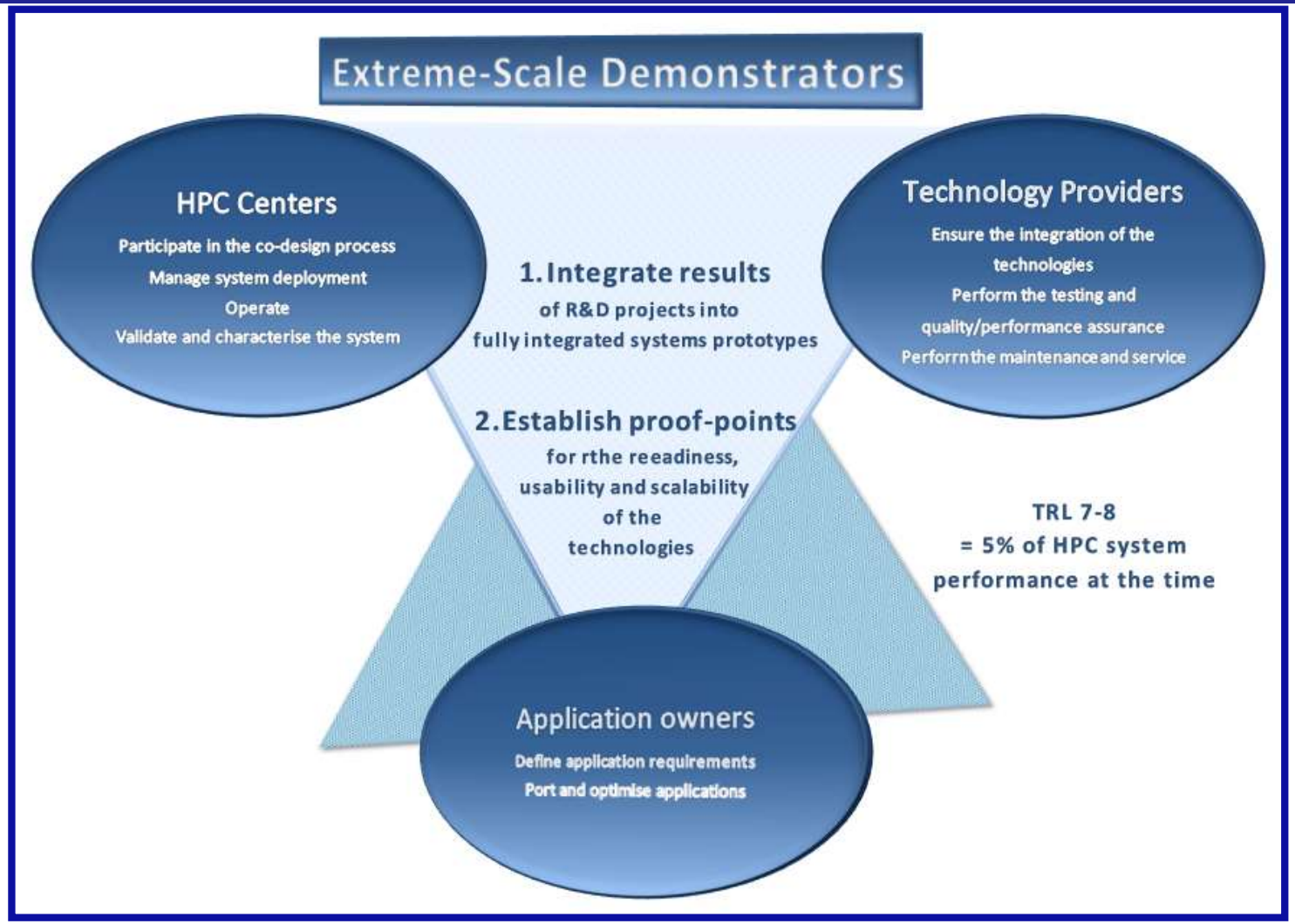
WP18-20: Guiding Principles

- Diversity of applications:
  - requires a range of flexible HPC infrastructure solutions
  - no “one size (“one system-architecture”) fits all”

- Strengthen and expand the HPC technology foundation in Europe:
  - using the best available technologies, components, methods and design concepts, - regardless of their origin - under European system architectural leadership, thereby maximising the use of European technology sources.
  - It is essential to grow the basic “know-how” and the expertise
  - of developing, integrating and producing all layers of the HPC stack.

- ETP4HPCs recommendations are independent and neutral relative to
  - product types and brands
  - origin of technology

EXTREME-SCALE DEMONSTRATORS



SRA 3 ROADMAP IN 2017

- **March 20th**: Kickoff meeting at IBM IOT center in Munich

  (SRA –workgroup leads, application owners, CoE, HiPeac, BDVA, BDEC, EUROLAB-4-HPC)

- **May 18th**: EsD - Roundtable during European HPC summit

  (FETHPC projects, CoE, HPC centers, system integrators, technology providers)

- **June 22nd**: Workshop at ISC with industrial users (”how to benefit from EsDs?”)
- **March-June**: writing, interlock with workgroups
- **July**: integration, tuning, review
- **July 31st**: completion target
- **September 15th**: release and distribution after WP17 call closure

Images courtesy of BSC, CEA, Fraunhofer and JSC

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THANK YOU FOR YOUR ATTENTION!

For more information:
www.etp4hpc.eu ■ contact: office@etp4hpc.eu

HPC strategy, work programmes and HPC related news:
ec.europa.eu/horizon2020-hpc