Horizon2020

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Research Infrastructures

"The views expressed in this presentation are those of the author and do not necessarily reflect the views of the European Commission"

Europe 2020 Strategy for smart, sustainable and inclusive growth

3% of the EU's GDP to be invested in R&D

Innovation Union and Digital Agenda for Europe flagship initiatives

European Research Area

EU Multiannual Financial Framework for 2014-2020 (Commission proposal)

Horizon 2020, EU Framework Programme for Research and Innovation 2014-2020

Horizon 2020, three priorities:

1. **Excellent science**

2. **Industrial leadership**

3. **Societal challenges**
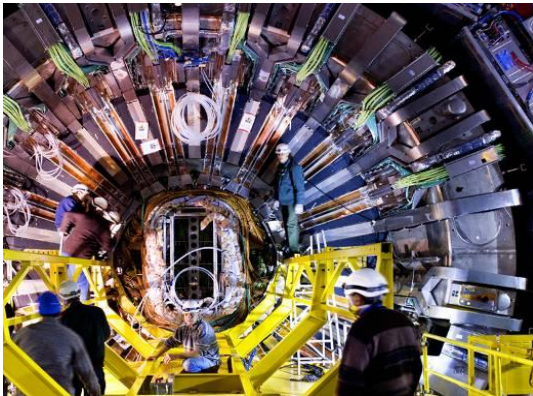
Priority 1. Excellent science

Why:

- World class science is the foundation of tomorrow's technologies, jobs and wellbeing

- Europe needs to develop, attract and retain research talent

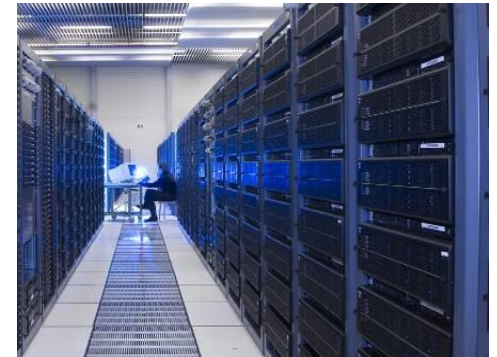- Researchers need access to the **best infrastructures**

Contributing to the European Research Area (ERA)

- ERA framework proposal in 2012 to create a single market for knowledge research and innovation

- Complemented by Horizon 2020:

  - Boosting support to ERA priorities – mobility, **infrastructures**, knowledge transfer, policy learning

  - Stronger partnerships with Member States and private sector to invest more efficiently

  - Taking account of gender, ethical issues, researcher careers and open access to results
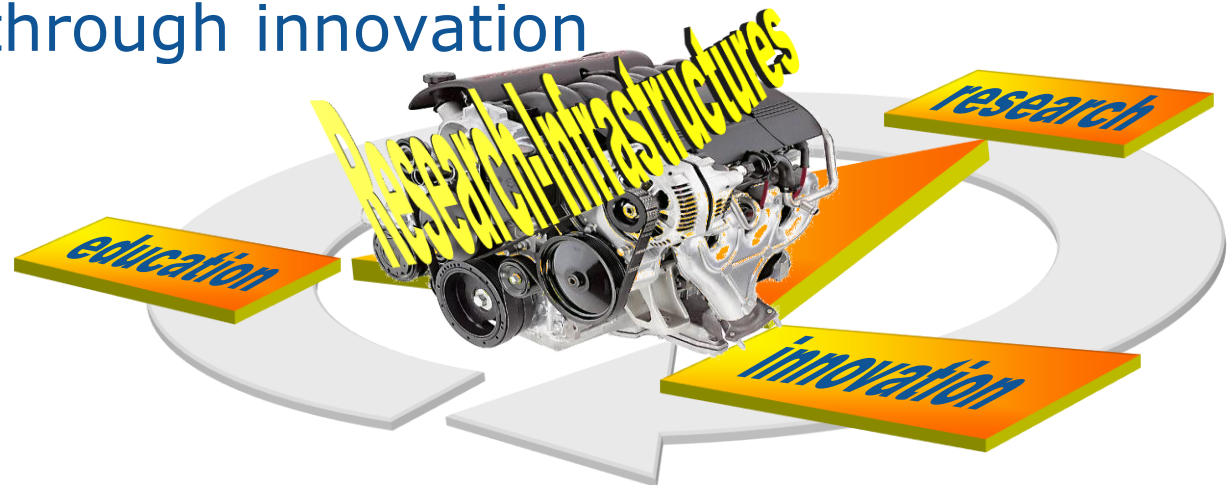
Research Infrastructures

Facilities, resources, organisational systems and services that are used by the research communities to conduct research and innovation in their fields

The Knowledge Triangle at Work

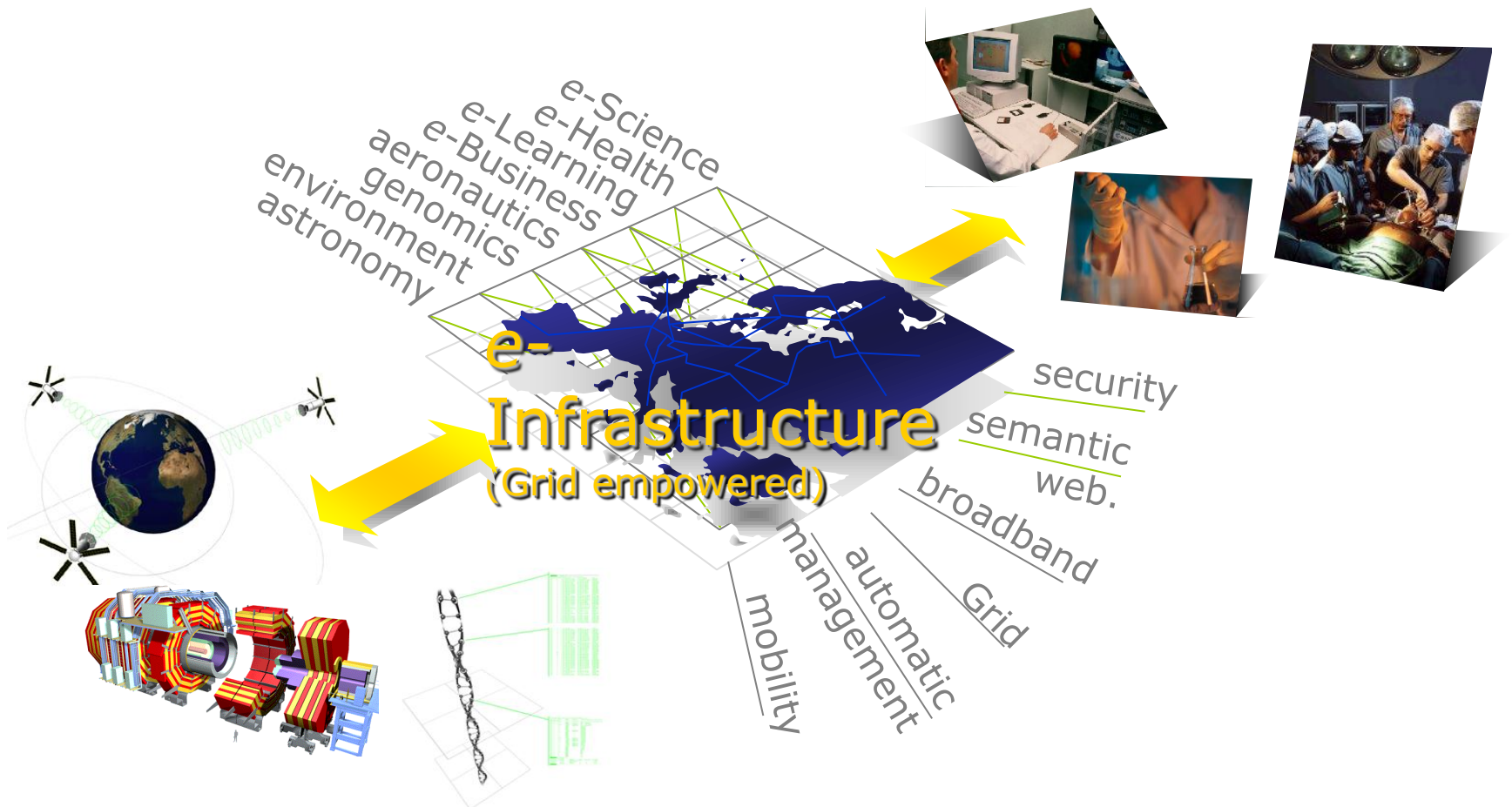To be a genuinely competitive in the knowledge economy, one must be better:

- in producing knowledge through research
- in diffusing it through education
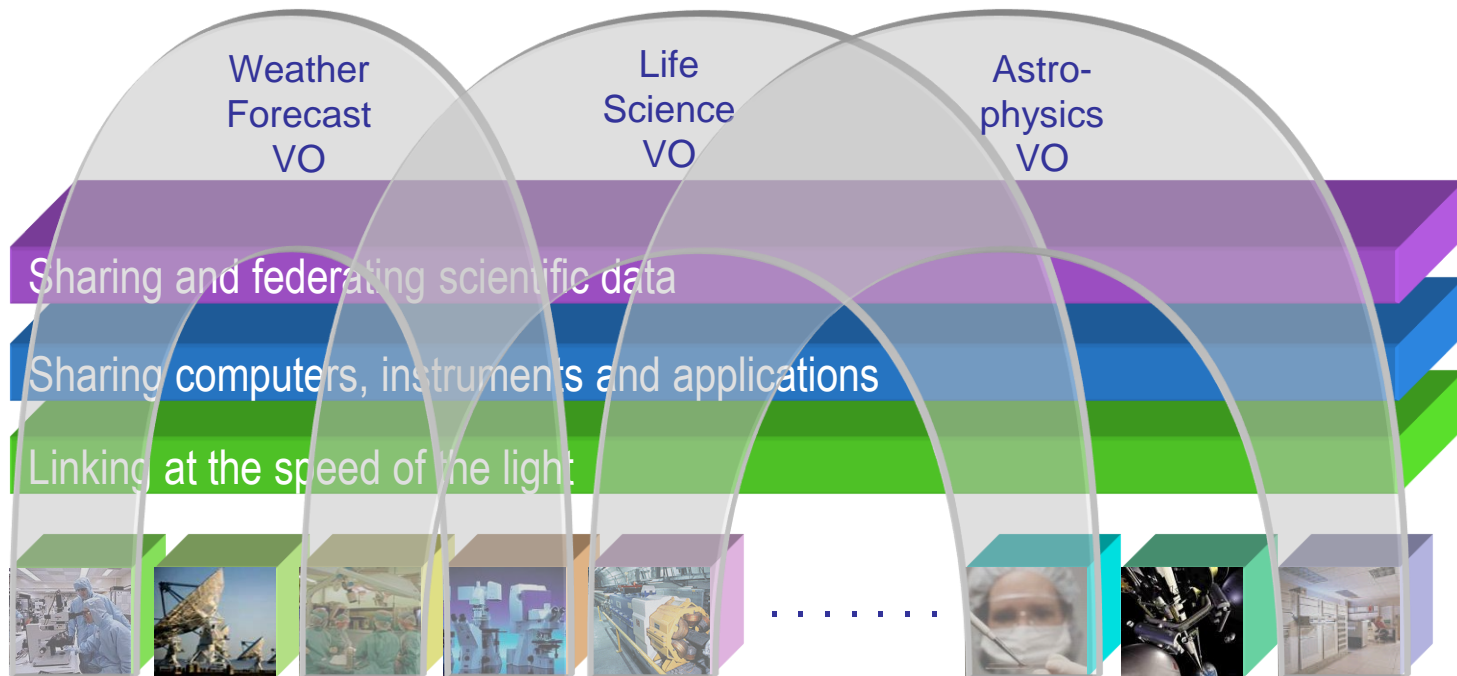- in applying it through innovation

Staying Competitive in Science

- Collaboration between European and worldwide research teams; access to rare/remote resources

- Global Virtual Research Communities

- Data-intensive science and innovation

- Use and manage exponentially growing sets of data

- Experimentation in silico, simulation

- Use of high-performance computing

Global Virtual Research Community

Virtual Organizations Formed

**Connecting the finest minds
Sharing the best scientific resources
Building global virtual communities**

Weather Forecast VO

Life Science VO

Astro-physics VO

Sharing and federating scientific data

Sharing computers, instruments and applications

Linking at the speed of the light

Why an EU Approach for Research Infrastructures?

- To **open access** to the research infrastructures existing in the individual Member State to all European researchers

- To **avoid duplication of efforts** and to coordinate and **rationalise the use** of these research infrastructures

- To trigger the **exchange of best practice**, develop **interoperability** of facilities and resources, develop the **training** of the next generation of researchers

- To connect national research communities and **increase the overall quality of the research and innovation**

- To help **pooling resources** so that the Union can also acquire and operate research infrastructures **globally**

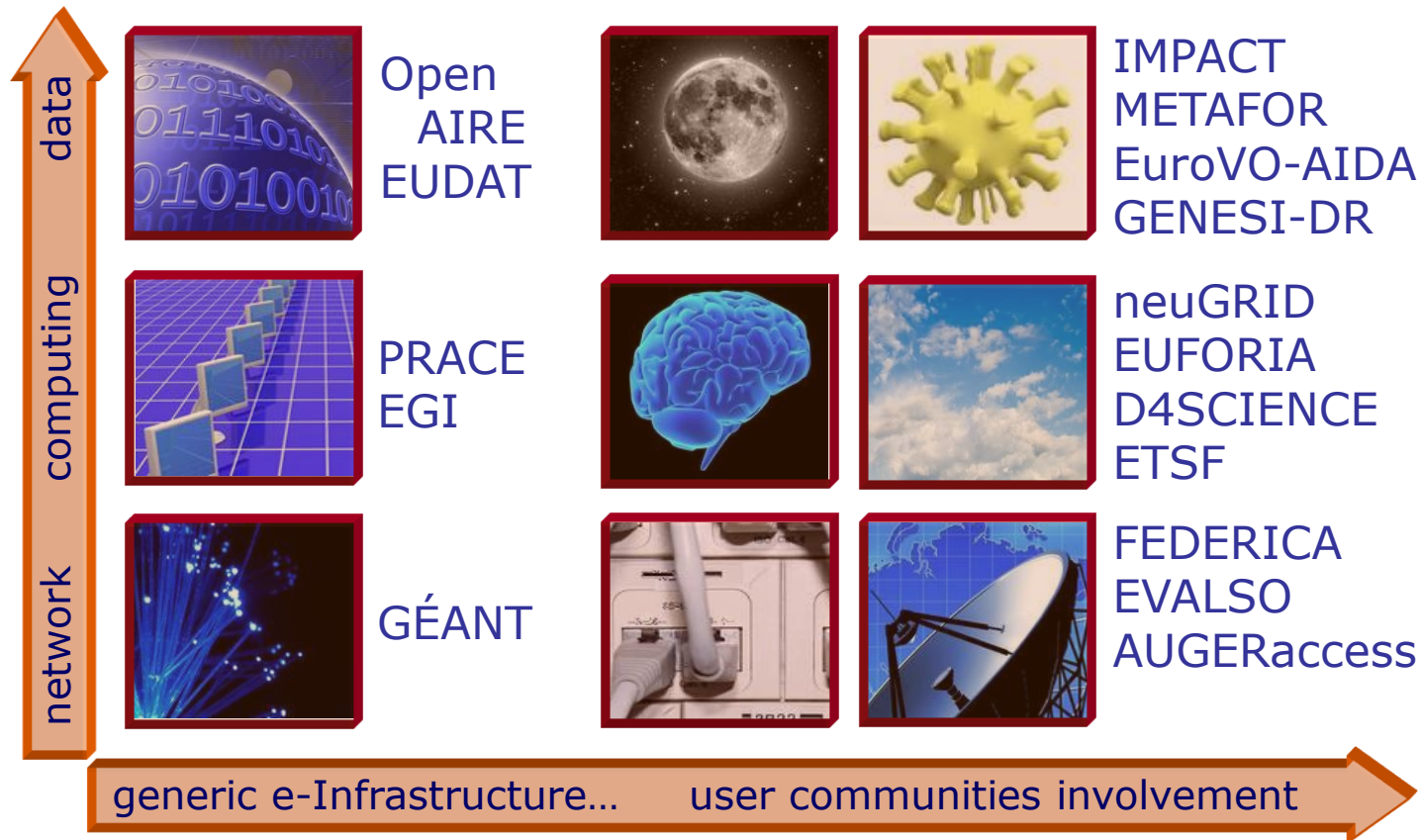# Commitments within the Innovation Union

- *By 2015 (…) have completed or launched the construction of 60% of the priority European research infrastructures currently identified by ESFRI (…).*

- *… opening of Member State operated research infrastructures to the full European user community …*

- *The European Union should step up its cooperation on the roll-out of the global research infrastructures…*

RI Objectives in Horizon2020

Endow Europe with world-class research infrastructures which are accessible to all researchers in Europe and beyond and fully exploit their potential for scientific advance and innovation:

- Addresses core commitments of the Innovation Union flagship initiative, to develop world-class research infrastructures for ground-breaking research and innovation

- Addresses key actions of the Digital Agenda for Europe flagship initiative, to reinforce Europe's e-Infrastructures

Involving Scientific Communities

data → Open AIRE EUDAT

IMPACT
METAFOR
EuroVO-AIDA
GENESI-DR

computing → PRACE EGI

neuGRID
EUFORIA
D4SCIENCE
ETSF

network → GÉANT

FEDERICA
EVALSO
AUGERaccess

generic e-Infrastructure... user communities involvement

Activities Overview

Developing the European RIs for 2020 and beyond

- Developing **new world-class RIs**

- **Integrating and opening national RIs** of pan-European interest

- Development, deployment and operation of ICT based e-Infrastructures

Fostering the **innovation potential** of RIs & their human capital

Reinforcing European RI policy and **international cooperation**

Developing new World-class RIs

To ensure the implementation, long-term sustainability and efficient operation of RIs identified by ESFRI, and other world-class RIs

- specifically those RIs that are setting up or that have set up their governance e.g. ERIC

Developing new world-class RIs

Activities will cover:

- the preparatory phase of future RIs (e.g. detailed construction plans, legal arrangements, multiannual planning, etc.);

- the implementation phase (e.g. R&D and engineering work jointly with industry and users, development of regional partner facilities, etc.);

- the operation phase (e.g. access, data handling, outreach, extension of membership, training and international cooperation activities);

- design studies for new RIs through a bottom-up approach.

Integrating and Opening existing National RIs of pan-European Interest

- To open up key national research infrastructures to all European researchers and to ensure their optimal use and joint development

- Support to "European Research Infrastructures Networks" bringing together infrastructures in a given field

- Continuation of the FP7 Integrating Activities and I3s

Activities will cover: Transnational and virtual access; Networking to foster a culture of cooperation; Joint research to improve the services provided by the infrastructures

Development, Deployment and Operation of e-Infrastructures

- To achieve by 2020 a single and open European space for online research

- Leading-edge capabilities, ubiquitous and reliable networking and computing services

- Seamless and open access to e-Science environments and global data resources

Activities will cover: Global research and education networks; Grid and cloud infrastructures; Ecosystem of supercomputing facilities progressing towards exa-scale; Software and service infrastructure for visualisation and simulation; Real-time collaborative tools for virtual research communities; Interoperable, open and rich scientific data infrastructure

Fostering the Innovation Potential of Research Infrastructures

Exploiting the innovation potential of RIs: in the infrastructures and in their supplier and user industries

- R&D partnerships with industries to develop Union capacities in high-tech areas such as scientific instrumentation

- Pe-commercial procurement by RI actors

- Stimulate the use of RIs by industry

- Encourage the integration of RIs into local, regional and global innovation ecosystems

Fostering the Human Capital of Research Infrastructures

Strengthening the human capital of RIs: managers, engineers, technicians, as well as users

- Training and/or exchanges of staff managing and operating RIs

Reinforcing European Research Infrastructure Policy

- Partnerships between relevant policymakers and funding bodies across Europe

- Surveys, monitoring and assessments of RIs at Union level

- Policy studies and communication tasks across Europe

Facilitating Strategic International Cooperation

- Cooperation of European and global RIs

- Cooperation of European RIs with their European and beyond counterparts

- Ensuring their interoperability and reach

- Pursuing international agreements on the reciprocal use, openness or co-financing of RIs

Specific Implementation Aspects

Proposed funding (million euro, for 2014-2020, 2011 constant prices)

European Research Council Frontier research by the best individual teams	*13 268*
Future and Emerging Technologies Collaborative research to open new fields of innovation	*3 100*
Marie Curie actions Opportunities for training and career development	*5 572*
***Research infrastructures** (including **e-infrastructures**)* Ensuring access to world-class facilities	***2 478***

From FP7 to Horizon 2020

Increased budget: 1.7 M€ (FP7) to 2.5 M€ (H2020)

New activities to support the implementation and operation of world-class infrastructures such as ESFRI infrastructures

Continuation of the successful FP7 RI Activities

Reinforcement of the support to e-infrastructures

New objective of better exploiting the **innovation potential and human capital** of infrastructures

Priorities and Vision

- Support international collaborations that are strategic for European scientific partnerships

- Consolidate RIs as a multi-disciplinary platform for regional/global collaborations

- Pool and reinforce regional capacities

- Adopt adequate organizational and governance models

Next steps

Ongoing: Parliament and Council negotiations on the basis of the Commission proposals

Ongoing: Parliament and Council negotiations on EU budget 2014-2020 (including overall budget for Horizon 2020)

Mid 2012: Final calls under 7th Framework Programme for research to bridge gap towards Horizon 2020

Mid 2013: Adoption of legislative acts by Parliament and Council on Horizon 2020

1/1/2014: **Horizon 2020 starts, launch of first calls**

Thank you for your Attention!

HORIZON 2020

Find out more:

www.ec.europa.eu/research/horizon2020