From vision to action

European Open Science Cloud (EOSC)

Dr Wainer Lusoli – European Commission

CREMLIN Workshop on Big data Management

15 February 2017 NRC “Kurchatov Institute” Moscow

The Commissioner's vision

"Europe's final transition must be one from fragmented data sets to an integrated European Open Science Cloud. By 2020, we want all European researchers to be able to deposit, access and analyse European scientific data through a European Open Science Cloud.."

Speech by Commissioner Carlos Moedas in Amsterdam, NL:
“Open science: share and succeed”, 4 April 2016

Communication 2016/178 : European Cloud Initiative

Part of DSM strategy (19 April 2016), strong political support.

- 'Game-changing policy', a 'vision'.
- Commissioners Moedas and Oettinger worked jointly.
- Supported by Pres. Juncker, VP Ansip, Ch. Merkel, LUX Presidency, NL Presidency, 2 sets of COMPET Council Conclusions, EP ITRE/IMCO Joint Report on DSM Act, EESC, …

A truly European project

- The European Commission (e.g. DG RTD, DG CNECT)
- OSPP - representing all sectors, including business *(19 Sept 2016)*
- 8 (technical) Expert Groups – notably HLEG - EOSC
- Member States (ministries & national funding agencies)– *workshop on 29 June 2016*
- Council - *29 November 2016 COMPET Council: first state of play on the EOSC*
- EP (ITRE, IMCO) – *INI Report expected in Jan 2017*
- EESC, CoR and other stakeholders with advisory roles
- Discipline specific scientific communities & participants in H2020 execution (e.g. Dec 2016 – start of INFRADEV-4 project)
- Global partners(e.g. OECD, G7) - *March 2017 joint workshop*

Key challenges

- Still a lack of widespread **awareness** of the value of data and of **incentives** for data sharing.
- Lack of common standards to ensure **inter-operability** of data.
- **Not enough hardware capacity** for scientific computing, storage, connectivity.
- **Fragmentation and lack of coordination** over different scientific communities and countries.
- Need to translate recent **changes in privacy, data protection and copyright rules** to the research data domain.

European Cloud Initiative: pillars

1. European Open Science Cloud.

2. European Data Infrastructure.

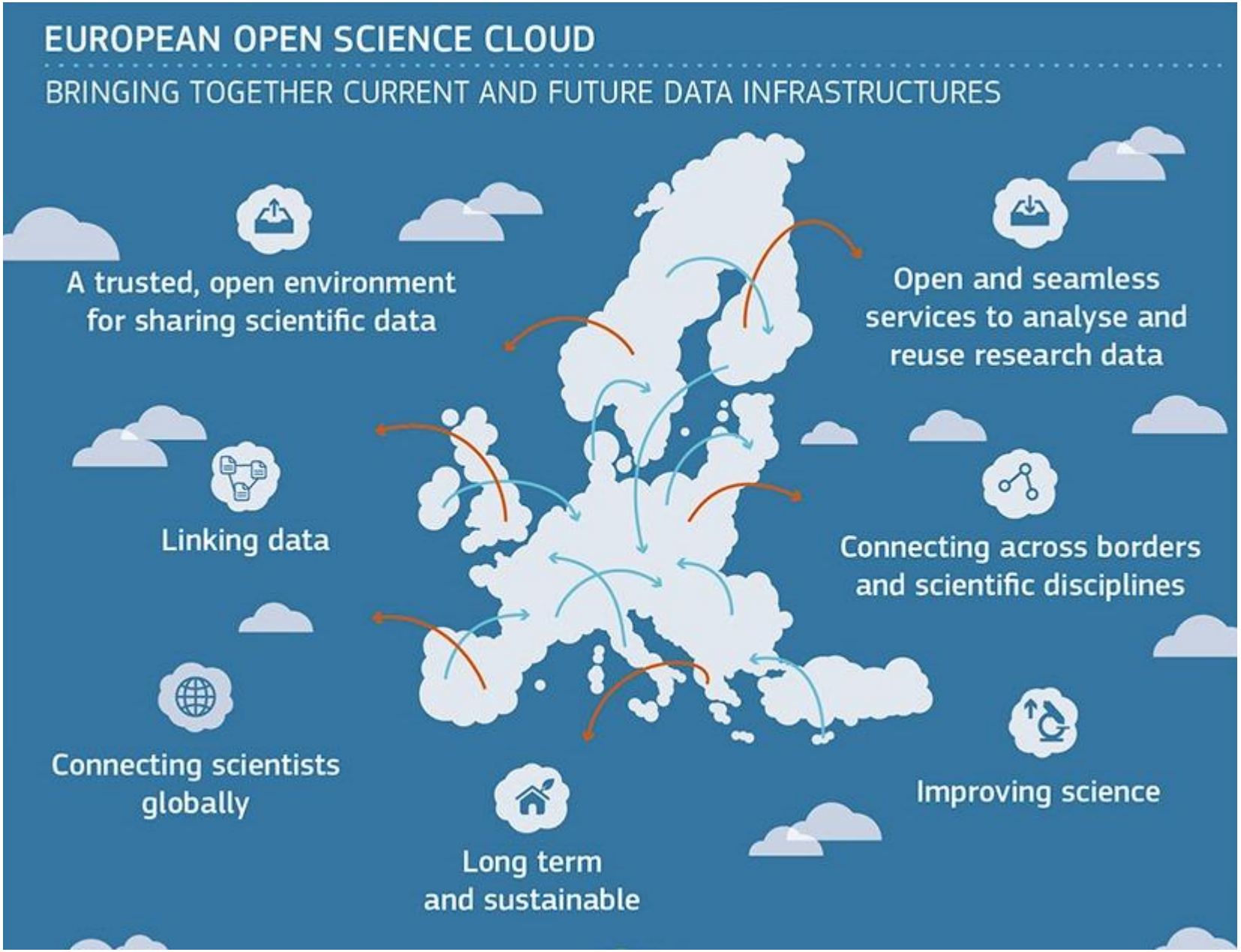
3. Widening the user base (e-gov & industry) and building trust (certification and standards).

European Open Science Cloud

- The cloud will **federate** existing and emerging horizontal and thematic data infrastructures, effectively **bridging todays fragmentation and ad-hoc solutions**.

- It will provide 1.7m EU researchers an environment with **free, open services for data storage, management, analysis and re-use** across disciplines.

- It will **add value** (scale, data-driven science, inter-disciplinarity, data to knowledge to innovation) and leverage current and past infrastructure investment (10b per year by MS, two decades EU investment)..


EUROPEAN OPEN SCIENCE CLOUD
BRINGING TOGETHER CURRENT AND FUTURE DATA INFRASTRUCTURES
A trusted, open environment for sharing scientific data
Open and seamless services to analyse and reuse research data
Linking data
Connecting across borders and scientific disciplines
Connecting scientists globally
Improving science
Long term and sustainable

Policy actions directly foreseen in the Communication

- **Open research data** the default option in H2020, preserving opt-outs.
- **Action Plan for scientific data interoperability**, including 'meta-data', specifications and certification.
- **Encourage scientific data sharing** by creation of incentive schemes, rewards systems and education and training programmes for researchers and businesses to share data.
- Foster **global cooperation** and to create a level playing field in scientific data sharing and data-driven science.
- **Roadmap for governance and financing mechanisms** for the EOSC.
- Horizon 2020 to **consolidate and federate** e-infrastructures, research infrastructures and scientific clouds, support development of cloud-based services for Open Science.
- **Connect** priority European and national research infrastructures to the EOSC.
- **Widening** the European Open Science Cloud to all EU-28 Member States (e.g. ESIF)

Policy actions foreseen in the COM

Content (open data)

Make Open research data default in H2020

Foster scientific data sharing in MS

(Open data) Infrastructure

Action Plan for scientific data Interoperability (e.g. FAIR)

Connect key EU RI (e.g. ESFRIs)

Consolidate / federate data-infrastructures

Governance

Develop roadmap for governance and financing

Create a global level playing field for research data sharing

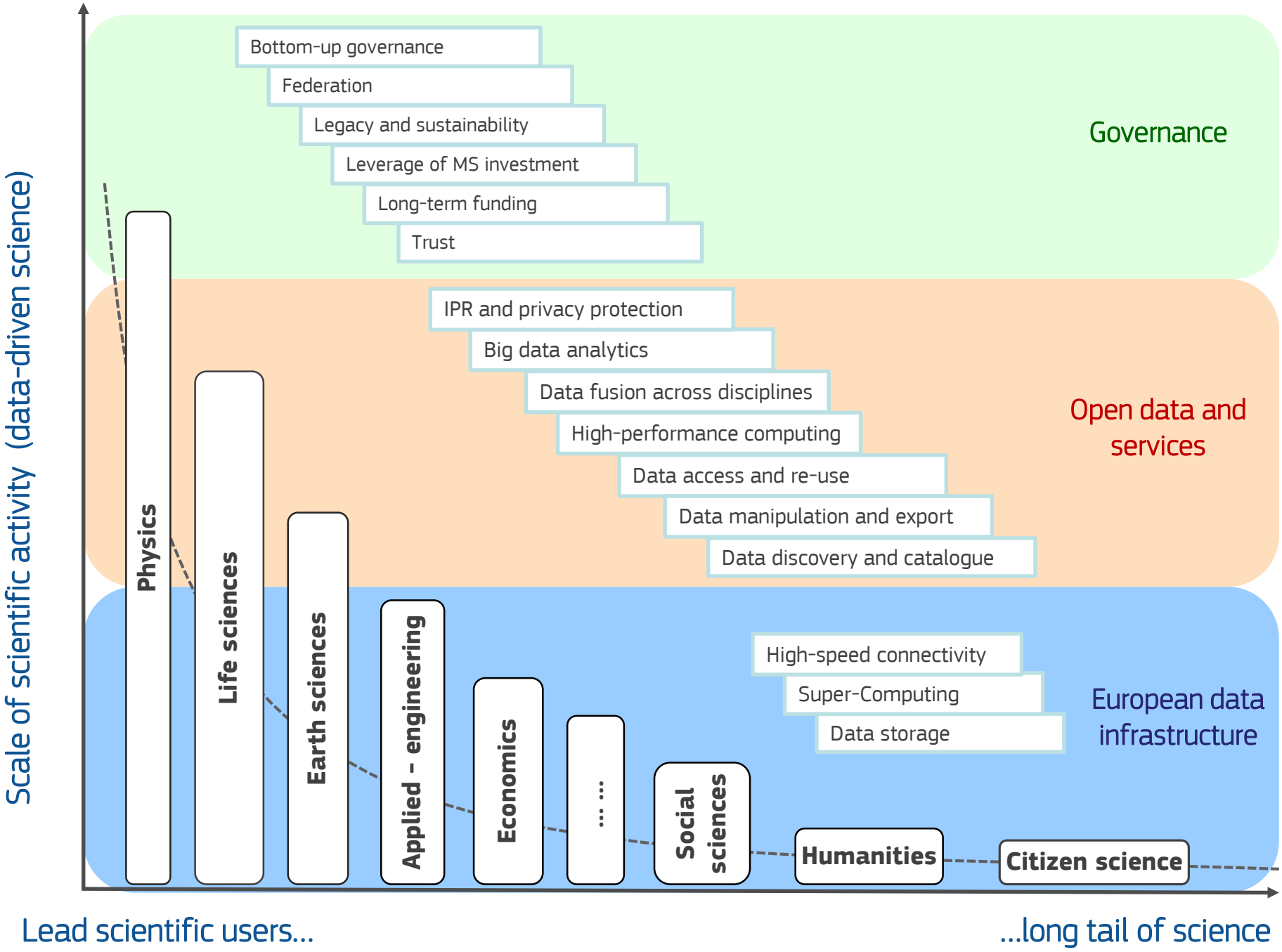
Widen user-base to public services, Industry and EU-13

Hardware
Infrastructure (CNECT)

High-Performance Computing

Big-data storage

High-speed connectivity


Scale of scientific activity (data-driven science)
Governance
Bottom-up governance
Federation
Legacy and sustainability
Leverage of MS investment
Long-term funding
Trust
Open data and services
IPR and privacy protection
Big data analytics
Data fusion across disciplines
High-performance computing
Data access and re-use
Data manipulation and export
Data discovery and catalogue
European data infrastructure
High-speed connectivity
Super-Computing
Data storage
Physics
Life sciences
Earth sciences
Applied - engineering
Economics
... ...
Social sciences
Humanities
Citizen science
Lead scientific users...
...long tail of science

Commission High Level Expert Group European Open Science Cloud (HLEG EOSC)

- Set up on 16 September 2015.
- 10 members – 8 EU and 2 non-EU observers.
- Chaired by Professor Barend Mons until December 2016.
- Listed in the Commission transparency register.
- 4 meetings, 2 stakeholder workshops, several external presentations, extensive community engagement.
- Report on 10 October 2016, > 2000 downloads, one of biggest Communication successes of DG RTD

HLEG EOSC report (11 October 2016)

Publication of First report by the Commission High Level Expert Group on the European Open Science Cloud
Including recommendations on Policy, Governance and Implementation

http://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud

Recommended Action in the HLEG Report

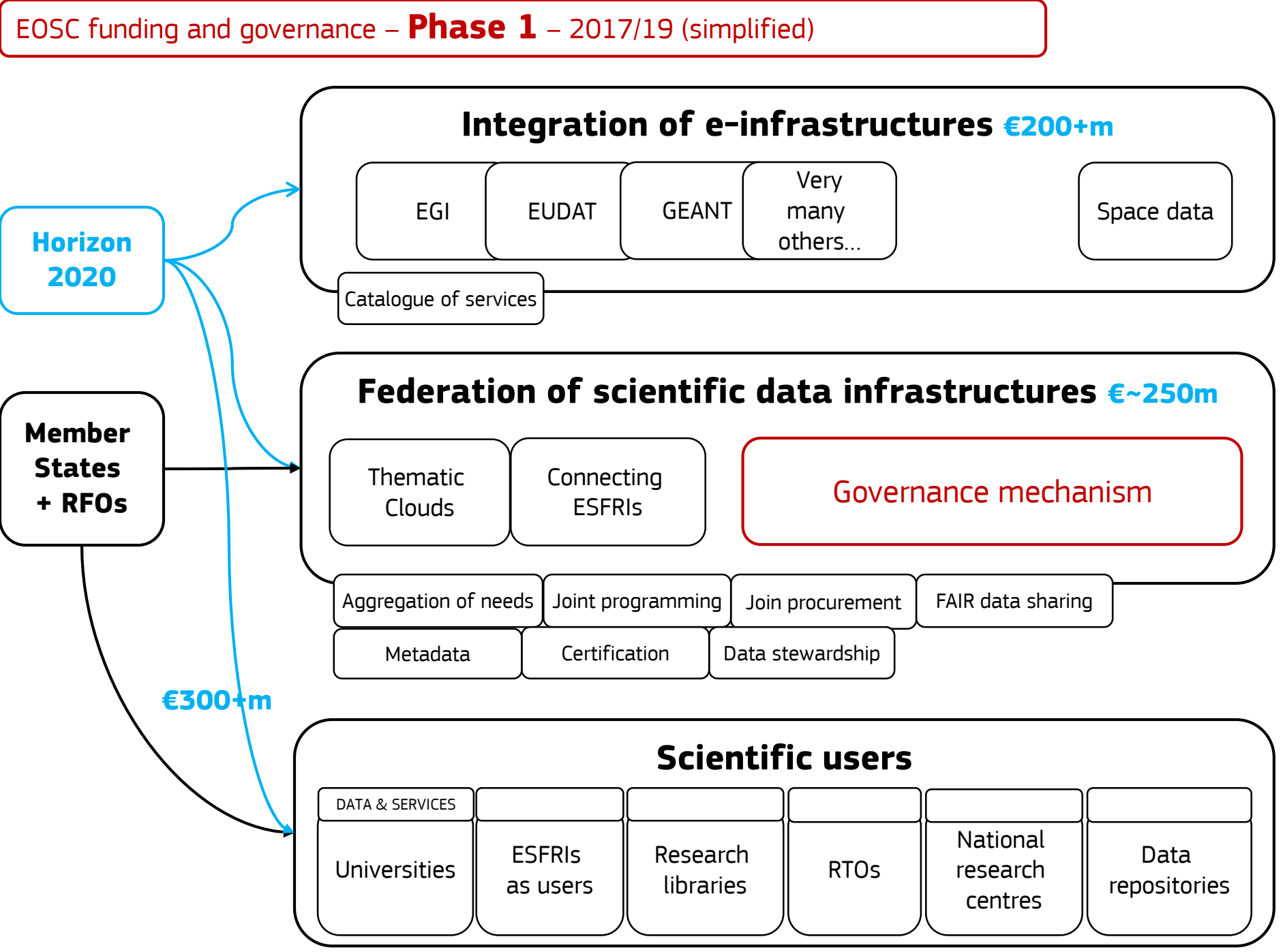
- Innovative (new) **funding schemes**.
- **Connect** key national scientific data infrastructure / ESFRIs ("the gems" of Europe).
- Modern **reward and recognition** practices to support data sharing and re-use.
- Training and career perspective for **core data experts** (fund a concerted effort to locate and develop Data Expertise in Europe).
- Cross-disciplinary **collaboration**: review, funding and infrastructure.
- Data formatting, terminology/identifier mappings and provenance to be organised –**interoperability plans** (DMPs).
- **One governance** (light, international).
- **Rules of Engagement** for both use and service provision in the EOSC.
- Appropriate **data management and stewardship** of research proposals and funding.

Not a cloud 'made in Brussels'

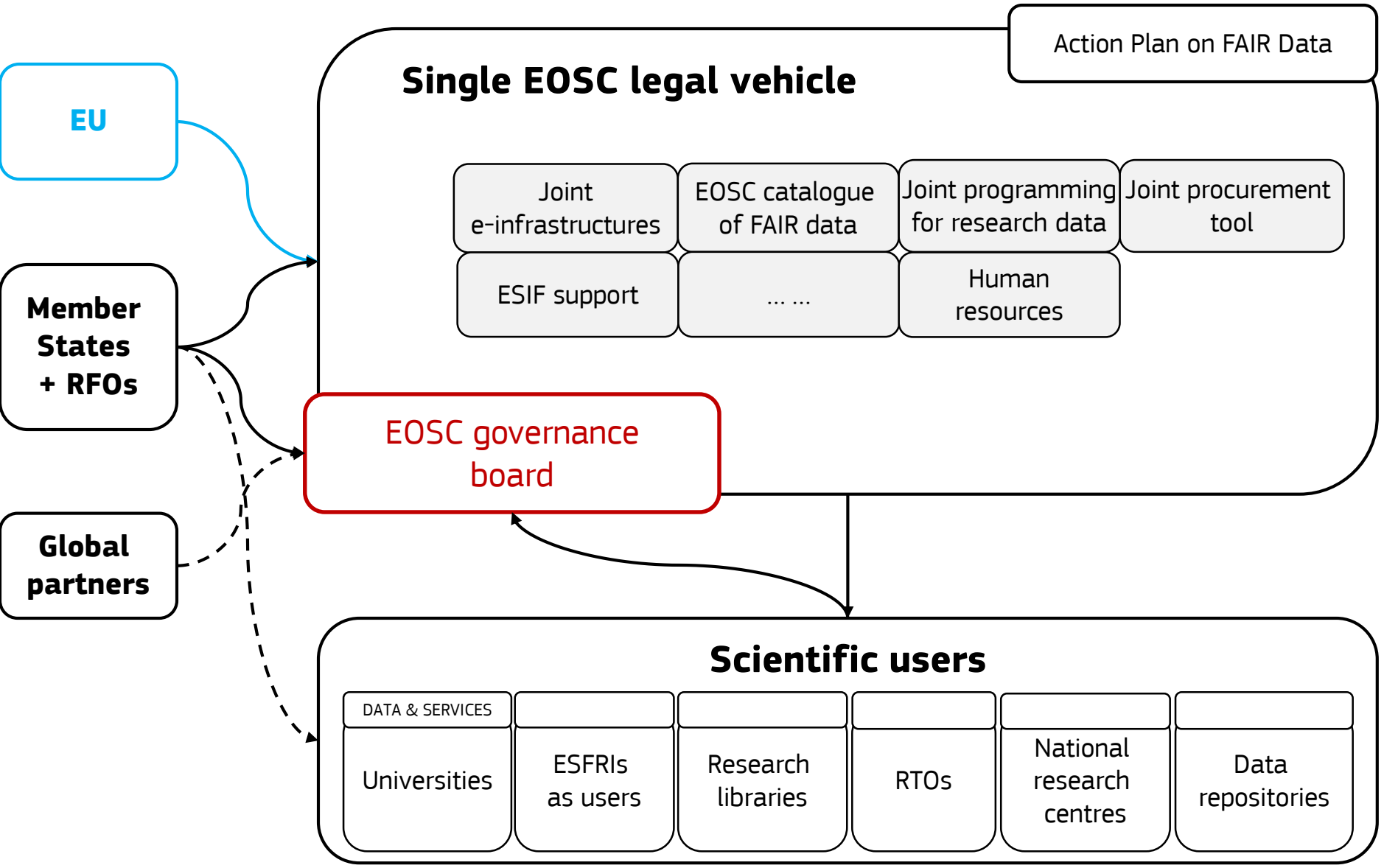
European Commission

The way ahead for the Commission

- Roadmap with clear rules of participation in the EOSC (2016-2017);
- Action Plan for Interoperability (2017);
- H2020 Open Data= default option from 2017;
- Build on synergies (FP actions, regional smart specialisations strategies, ESIF…) and federate;
- Integration of e-infrastructures and connection of ESFRI projects (H2020 WP 2018-2020);
- Widen participation to all scientific communities and sectors;
- Strengthen the Global level playing field (OECD, G7).


EOSC funding and governance – Phase 1 – 2017/19 (simplified)
Integration of e-infrastructures €200+m
EGI
EUDAT
GEANT
Very many others…
Space data
Catalogue of services
Horizon 2020
Member States + RFOs
Federation of scientific data infrastructures €~250m
Thematic Clouds
Connecting ESFRIs
Governance mechanism
Aggregation of needs
Joint programming
Join procurement
FAIR data sharing
Metadata
Certification
Data stewardship
€300+m
Scientific users
DATA & SERVICES
Universities
ESFRIs as users
Research libraries
RTOs
National research centres
Data repositories

EOSC funding and governance – **Phase 2** – 2020 (simplified)



EOSCPilot project

- To support the Commission in the first phase in the development of the European Open Science Cloud (EOSC).
- WPs on
  - Governance and Policy
  - Science Demonstrators and Services
  - Interoperability
  - Skills
  - Stakeholder Engagement

http://cordis.europa.eu/project/rcn/207500_en.html

http://www.eoscpilot.eu/

Roadmap for governance and funding

- October 2017
- 4 Layers – architecture, governance, funding, timeline
- 2 Phases of implementation
- EOSC Summit – June 2017
  - OSPP Opinion (TBA) – Spring 2017
  - EOSCPilot outputs – 2017-2018
  - HLEG EOSC and FAIR expert group inputs

Questions?

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