Open Science Commons for the ERA

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Outline

- Digital ERA priorities
  - Issues
- Open Science
- Commons
  - Principles
  - Examples
- Open Science Commons
  - Definition
  - Implementation

European Research Area

A unified area open to the world, in which scientific knowledge, technology and researchers circulate freely

- More effective national research systems
- Optimal transnational co-operation and competition
- Facilitating mobility, supporting training and ensuring attractive careers
- Gender equality and gender mainstreaming in research
- Optimal circulation and transfer of scientific knowledge

http://ec.europa.eu/research/era/

Digital ERA: State of Play in 2015

- Incomplete national roadmaps for Research and e-Infrastructures
  - E-Infrastructures and RIs should be components of the same research system

- e-Infrastructure Commons not fully achieved yet
  - Lack of e-Infrastructure capacity for multidisciplinary research and the long tail of science
  - Different access policies for user groups in each access
  - Incomplete technical interoperability, different access policies
  - The “Commons” governance principle not widely adopted
  - Non organized landscape of multiple service providers and research communities, lack of cross-border procurement/funding scheme that allows coordinated resource management across Europe (except for GEANT)

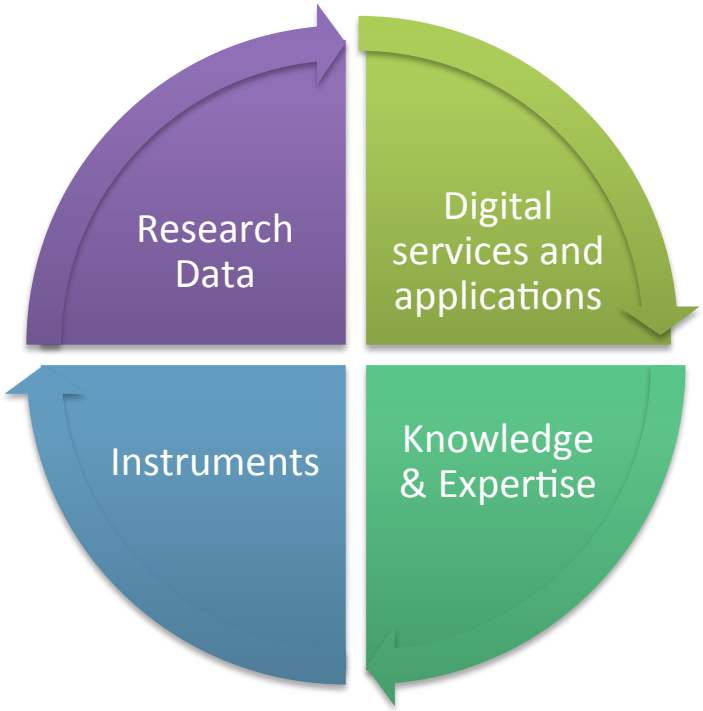
- Lack of one ‘backbone’ of European ICT capabilities

Open Science

Opening *of the* ***creation*** *and* ***dissemination*** *of* ***scholarly knowledge*** *towards a multitude of stakeholders, from professional researchers to citizens*

It needs:

- Shared resources
  - Integrated, easy and fair access
- Engaged communities
  - Participating in the process
  - Collaborating in the management and stewardship
- Governance
  - Rules to access/exclude
  - Rules to resolve conflicts
- Financial support
  - For long-term availability



An overarching vision for an Open Science Commons

Commons

Institutionalised community governance of the production and/or sharing of a particular type of resource (from natural to intellectual)

Open Science Commons vision

Researchers from all disciplines have easy, integrated and open access to the advanced digital services, scientific instruments, data, knowledge and expertise they need to collaborate and achieve excellence in science, research and innovation. They feel engaged in governing, managing and preserving these resources for everyone's benefit, with the support of all stakeholders

website: www.opensciencecommons.org - paper: http://go.egi.eu/osc

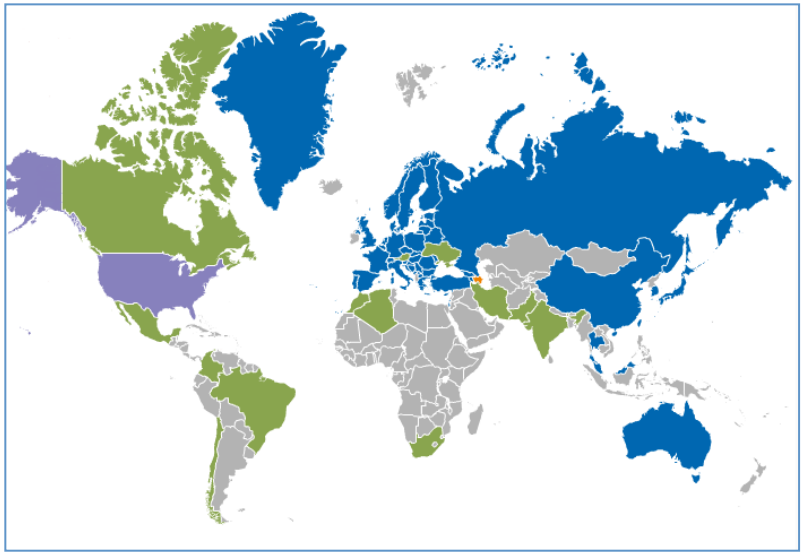
A common endeavor

Key aspects in a Commons

Principles of the Commons	What it means to the Open Science Commons
Shared community resources	Research data, scientific instruments, digital services, software, scientific publications, educational and training, expertise
Community-based rules and procedures in place with built-in incentives for responsible use	Access modes are well defined and non-discriminatory for all members of the ERA (e.g. see charter for open access to RIs); clear points of access and support
Governance: the community is part	Governance model with multiple stakeholders, including research communities, scientific infrastructures, resource providers, national and European infrastructures, etc.
Long-term, persistent care for a given resource for the benefit of oneself and others	Long-term support of funding agencies to allow for infrastructures to take a long-term view and build for a common European future

Commoning in EGI

- Types of shared resources
  - Large-scale computing/Storage/ Cloud IaaS-PaaS-SaaS/Data services
  - Certified open source software, open virtual appliance library (applications, tools, science gateways)
  - Knowledge, expertise, training and educational material
- Rules
  - Various types of access modes (e.g., policy-based, excellence-driven)
- Governance
  - Funding agencies, service providers, user communities
- Funding
  - National funding agencies, EC, service providers, user communities



Implementing the OSC (1)

Adoption of the “Commons” management principles during the entire open science process from creation to sharing

- Analyse, identify patterns for cross-border procurement, federating and sharing
- Define the best practices
- Define the business model
- Define a multi-level governance – European and national – bringing together the OSC stakeholders and funding agencies
- Promote the Open Science Commons

Implementing the OSC (2)

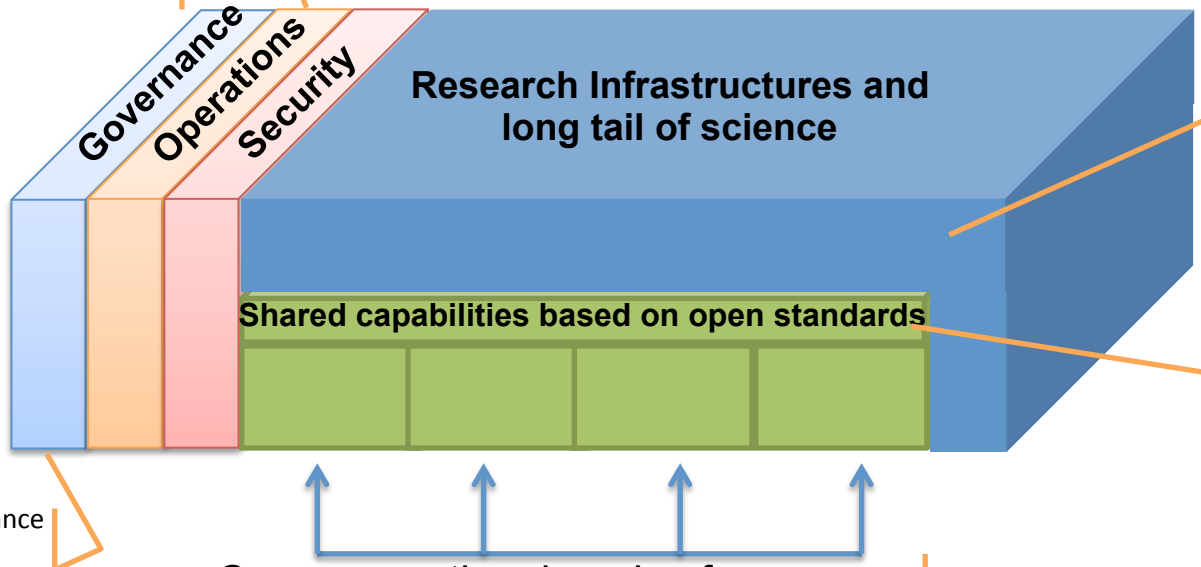
Implement the shared Digital ERA Backbone

- Offering standardised generic ICT capabilities across countries and communities
  - Data intensive computing and storage/preservation/cloud/AAI
  - Shared capacity for RIs and long tail → the whole ERA is addressed
- Federated (the “European glue”) and discoverable
- Supporting open standards
- Based on a governance and business models
  - Access policies and procurement
- Complemented by community-specific and community-managed services (Research Infrastructures)

The Digital ERA Backbone

Federated operations and support
- Service desk
- Monitoring and accounting
- Capacity management
- Service level management

- Network of CSIRT
- Federated IdPs, Auth and Authz
- Management of different levels of assurance



- Research platform built on top of shared capabilities plus community owned resources
- Data products, tools, scientific gateways, virtual labs

Core capabilities
- Open Science Cloud (e.g., VM management, Data storage/access/ discovery)
- PID
- Service registry and marketplace

Multi-level governance with community participation
- Local
- National
- European

From Member States
- Capacity dedicated to large RIs
- Free pools for long tail communities

Implementing the OSC (3)

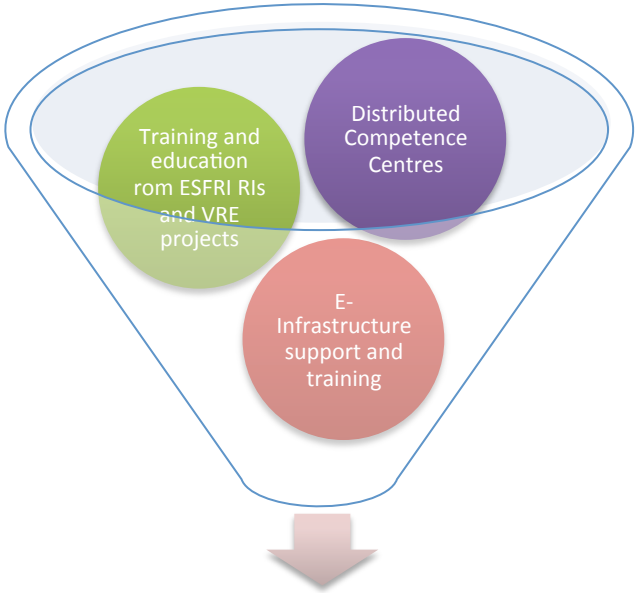
Provide new capabilities for the data commons: easy discovery, access, use and reuse of open data

- Open data federated cloud platform allowing caching and depositing of data, including services for citizen science
  - Open data as a service: scalable access through caching of open datasets of European relevance
  - Federation of national and international institutional/community archives on cloud/HTC/HPC
  - Open data available to SMEs and industry

Implementing the OSC (4)

European Open Knowledge Hub: a *coordinated* network of competence centres

- Sustained by multiple stakeholders
  - e-Infrastructures, RIs, Virtual Research Communities, Data Providers …
- Offering federated scientific software, applications, tools, knowledge and expertise
  - Scientific software is open, documented, discoverable, supported
  - Open source publications + datasets + scientific software (repeatability of science)
  - Knowledge and expertise from a network of European training and education centres
  - Different capabilities (HTC, HPC, cloud, open research data, tools, applications, software…)



Open Knowledge Hub

How EC could contribute

- Promote the Open Science Commons
- Fund a design study to develop guidelines and best practices on “commoning” resources (infrastructure, data, people)
- Adopt a Communication and Recommendation to MS on the extension of the national research infrastructure roadmaps to include national e-Infrastructures contributing to the Digital ERA Backbone
- Stimulate the development of open standards based digital capabilities that are certified
- Extend open access to include the depositing of open scientific software and training material

How Member States could contribute

- Prioritize investment to further develop and operate e-Infrastructures (as already done for ESFRI)
  - Contributing to the Digital ERA Backbone
  - Includes capacity building, allows maximization of return from public investments
- Adopt and implement shared resource policies
- Develop various access policies for different research segments including the long tail (scientific review, fees, free at point of use…)
- Develop human networks for knowledge and technology transfer

1st Open Science Commons Workshop

19 May 2015, Lisbon (Portugal)
09:00-10:30 (keynotes)
11:00-17:00 (workshop)
https://indico.egi.eu/indico/sessionDisplay.py?sessionId=100&confId=2452#20150519

Advancing on the Open Science Commons: Governance, policies, benefits, role of stakeholders, actions and roadmap

JOIN US: http://conf2015.egi.eu/

Conclusion

- Implementing the ERA and promoting Open Science are key priorities
- Many types of resources are needed: a holistic approach is required
  - Physical, digital, intellectual
- Open Science Commons are a unifying policy
  - Adopting the “Commons” principle for the creation and dissemination of scholarly knowledge (http://go.egi.eu/osc)
  - Ensuring maximization of return from public investment
- The shared Digital ERA Backbone and a European knowledge hub are key elements for the Digital ERA implementation