Science & Technology Facilities Council

European Open Science Cloud:
moving from Policy to Practice

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Coordinator of EOSCpilot project

Open Science Conference, Berlin, March 2018

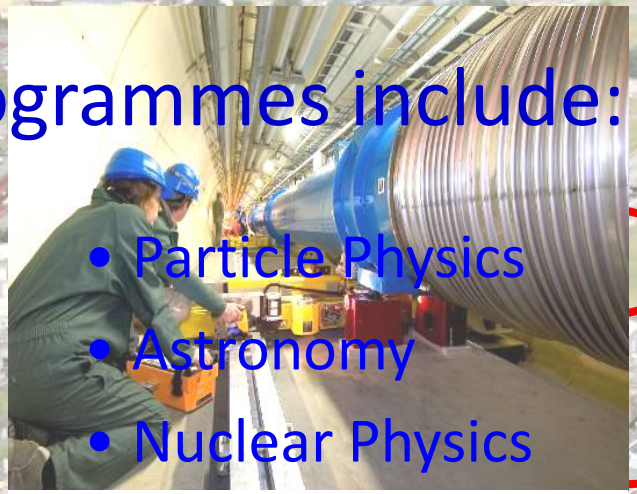
Overview

- Science and Technology Facilities Council
  - STFC as a Research Funding Organisation
  - STFC as a Research Performing Organisation
- Policy basis for EOSC
  - A Decade of Policy
  - The Innovation Lifecycle
  - How to get there from here
- From Policy to Implementation: EOSCpilot
  - Project Aims and Objectives
  - Project Challenges
  - Workpackages
  - How to get there from here

The Science and Technolgy Facilities Council

Programmes include:

- Particle Physics
- Astronomy
- Nuclear Physics



Large Hadron Collider

International include:

- CERN
- ESO
- SKA
- ESS
- ESRF
- ILL

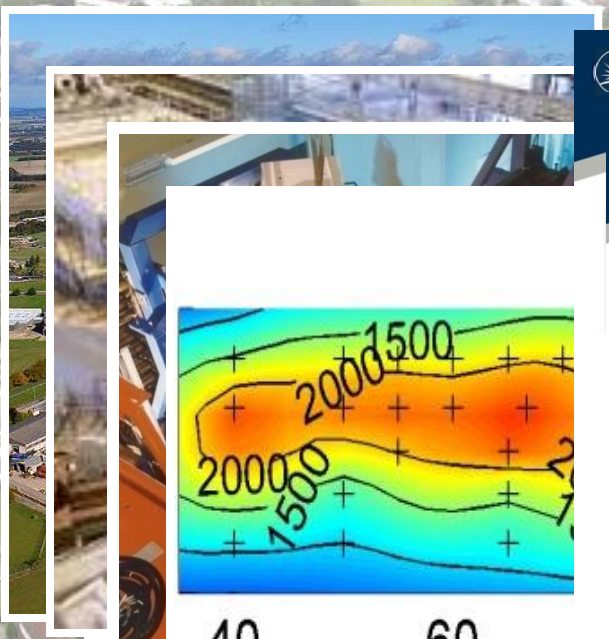
Square Kilometre Array

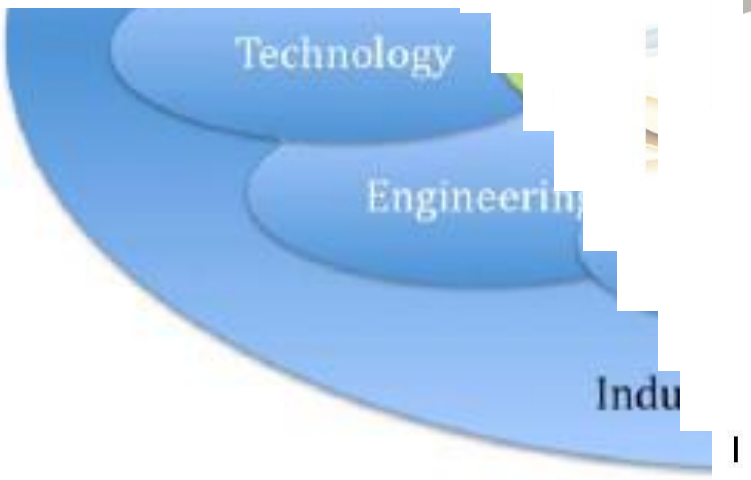
National Laboratories include:

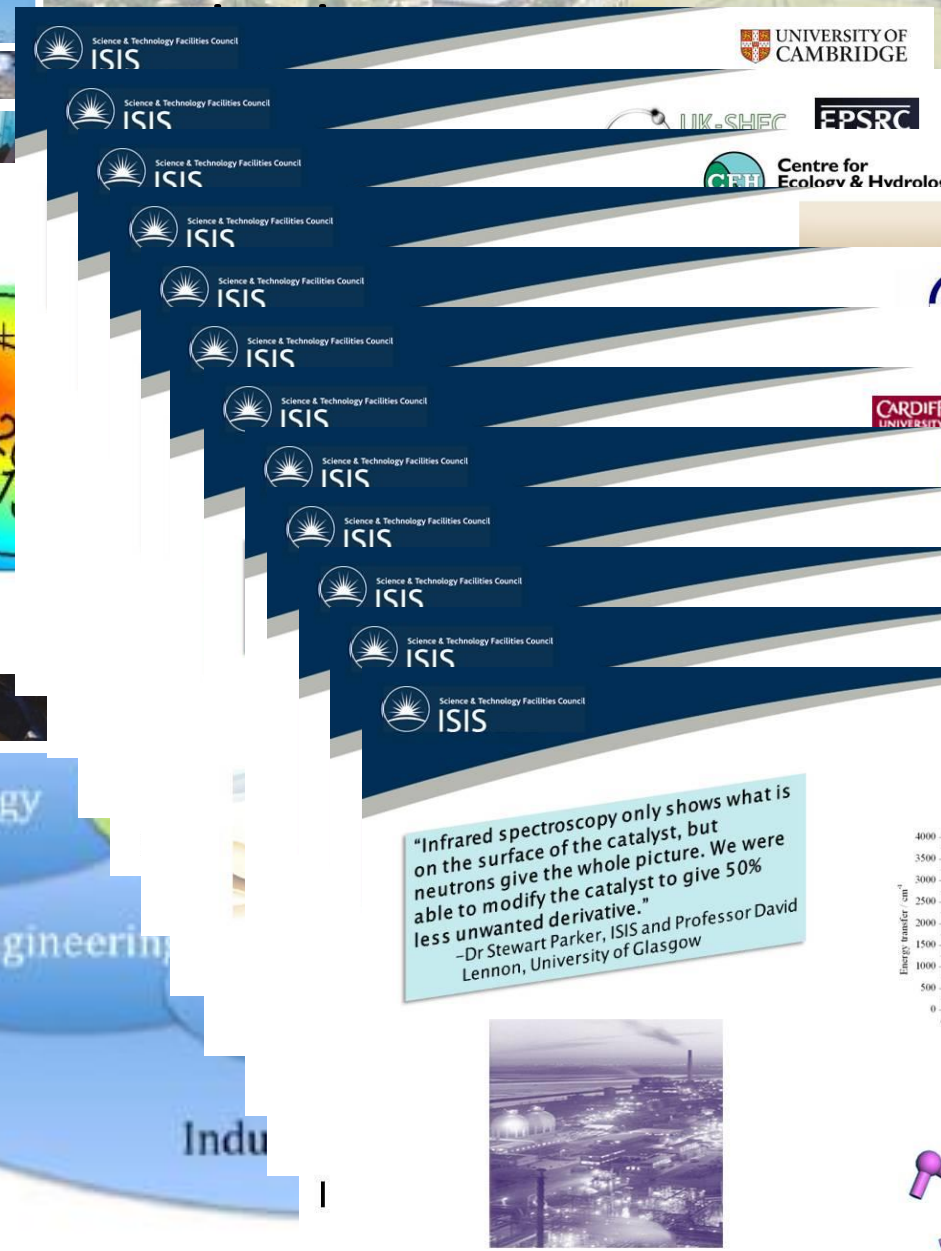
- Neutron and Muon Source
- Synchrotron Radiation Source
- High Power Lasers
- Scientific Computing/Hartree Centre
- Space Science
- Electronics, Cryogenics

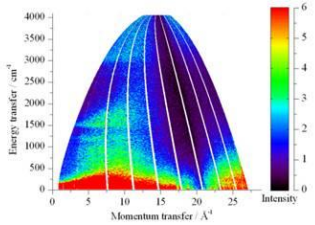
Daresbury Laboratory

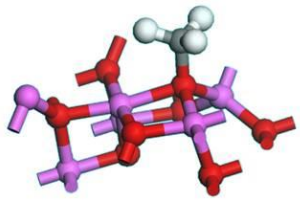
ESRF & ILL, Grenoble











Methyl chloride synthesis: Neutrons help industry

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The views expressed herein are the personal views of the author and do not necessarily reflect the views of the refered policy makers

A Decade of Policy: 2006-2016

2006, OECD

Recommendation on Access to Research *Data* from *Public* Funding.

2007, EC

Recommendation on access to and preservation of scientific information

2007, EC,

Communication and Conclusions on scientific information in the digital age

2010, HLEG on Scientific Data

Riding the wave: How Europe can gain from the rising tide of scientific data

2011, G8+5

Global Research Infrastructure Group on Data

2012, EC

Recommendation on access to and preservation of scientific information

2013, G8 Ministerial Communiqué

"… [publically funded] scientific research data should be open…"

2015, G7 Ministerial Communiqué, October

"…accomplish an effective open-data science environment..."

2016, EC

Communication on European Cloud Initiatives

G8+5 Global Research Infrastructure Subgroup on Data report 2011

In 2020/2030…

- Researchers and practitioners from any discipline are able to **find, access and process the data they need** in a timely manner.

- They are confident in their **ability to use and understand** data, and they can evaluate the degree to which that data can be **trusted.** ...

- Data are managed, shared, and preserved in a way that **optimizes scientific discovery, innovation, and societal benefit**. Where appropriate, producers of data benefit from opening it to broad access and routinely deposit their data in reliable repositories. A framework of repositories work to international standards, to ensure they are trustworthy...

G8+5 were: Canada, France, Germany, Italy, Japan, Russia, United Kingdom, United States, + Brazil, China, India, Mexico, South Africa.

G8: Open Scientific Research Data. London, 2013

- Antimicrobial Resistance
- Open Access to Publications
- Open Data:

i. To the greatest extent and with the fewest constraints possible publicly funded scientific research data should be open, while at the same time **respecting concerns in relation to privacy, safety, security and commercial interests**, whilst acknowledging the legitimate concerns of private partners.

ii. Open scientific research data should be easily **discoverable, accessible, assessable, intelligible, useable, and wherever possible interoperable to specific quality standards**.

iii. To maximise the value that can be realised from data, the mechanisms for delivering open scientific research data should be efficient and cost effective, and consistent with the potential benefits.

iv. To ensure successful adoption by scientific communities, open scientific research data principles will need to be underpinned by an appropriate policy environment, including recognition of researchers fulfilling these principles, and appropriate digital infrastructure.

G7 Ministerial Communiqué
Berlin Oct 2015

- Neglected tropical diseases
- Future of the Seas and Oceans
- **Global Research Infrastructures (GRIs)**
  - "…[4 items about Global (physical) Research Infrastructures]…
  - Further progress on sharing and managing scientific data and information should be achieved, especially by **continuing engagement with** community based activities such as the **Research Data Alliance** RDA.
  - We encourage the GSO to continue their work on convergence and **alignment of inter-operable data management** that could accomplish an **effective open-data science environmen**t at the G7 level and beyond."
- Clean Energy

But to give fair warning: there are Inherent Tensions

RCUK Principles on Data Policy 2011 (http://www.rcuk.ac.uk/research/datapolicy/)

1) Data are a Public Good

   ***Publicly funded research data are a public good**, produced in the public interest, which should be made openly available with as few restrictions as possible in a timely and responsible manner*

2) Data should be managed…

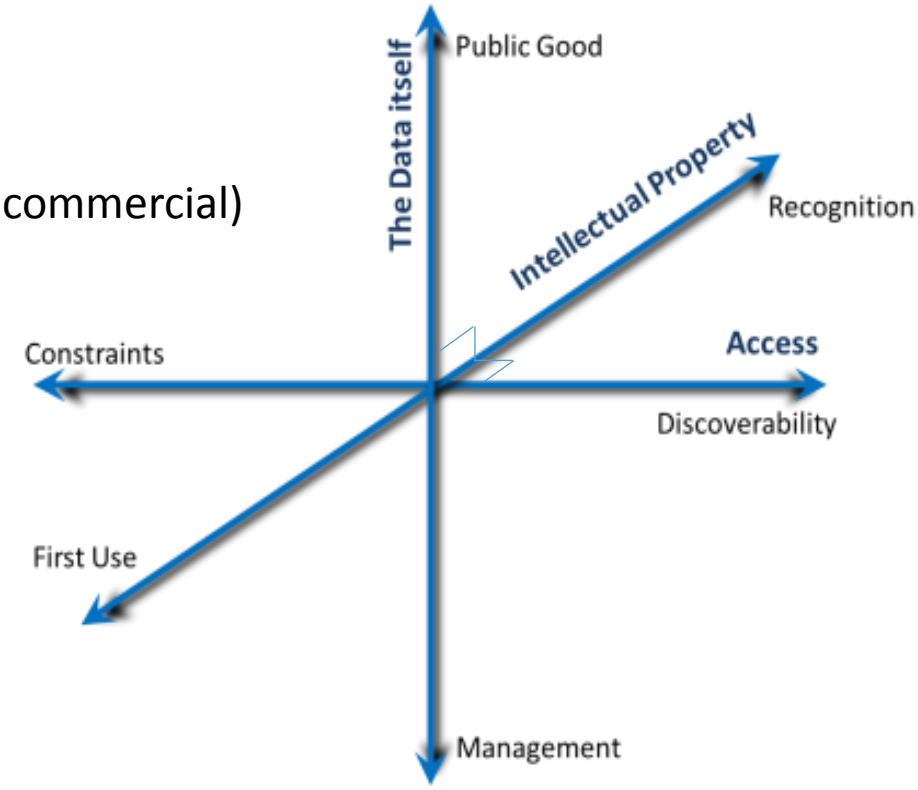
3) Data should be discoverable…

4) There may be constraints … (legal, ethical, commercial)

5) Originators may have first use…

6) Reusers have responsibilities…

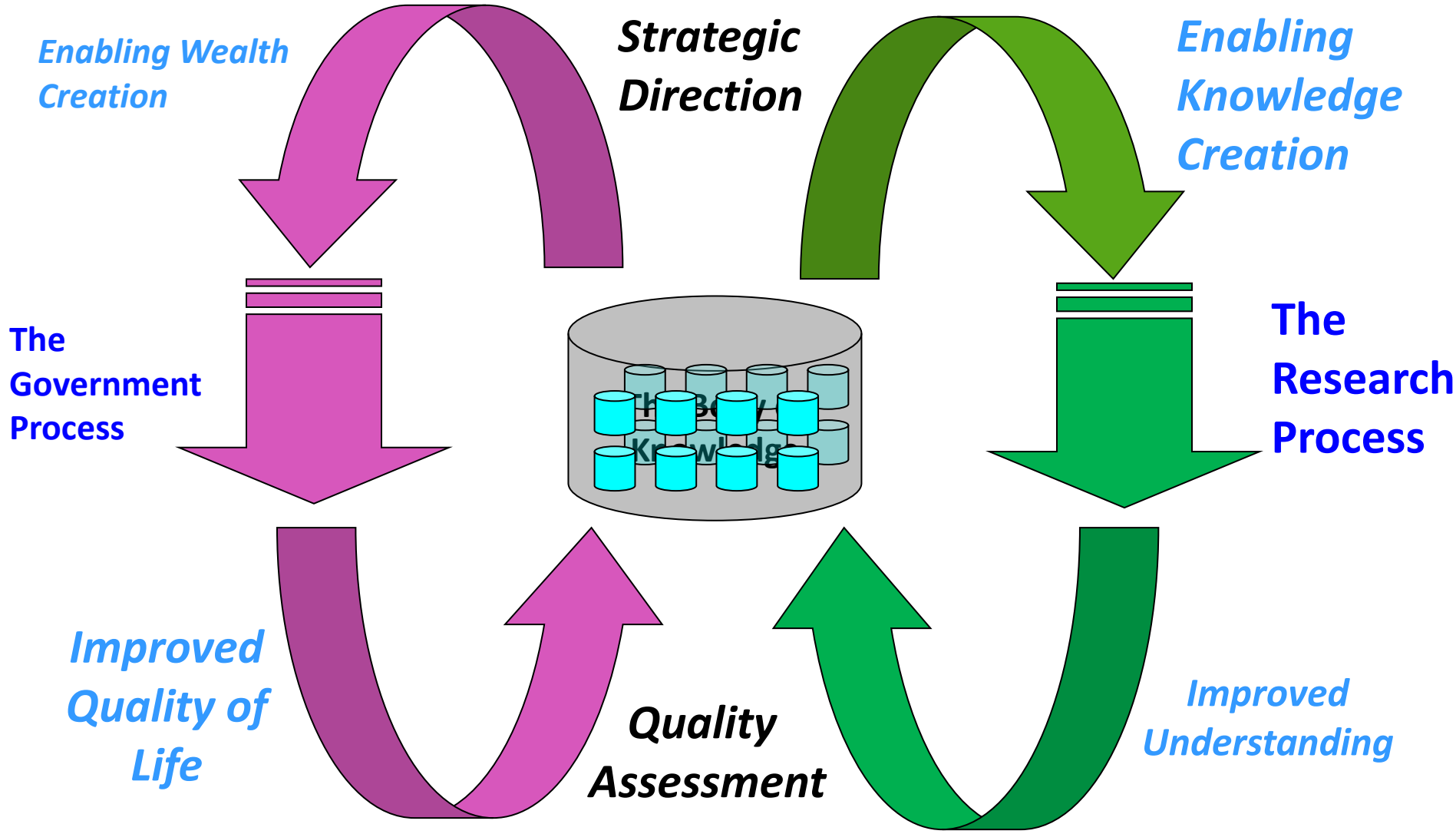
7) Data sharing is not free…



Examples:

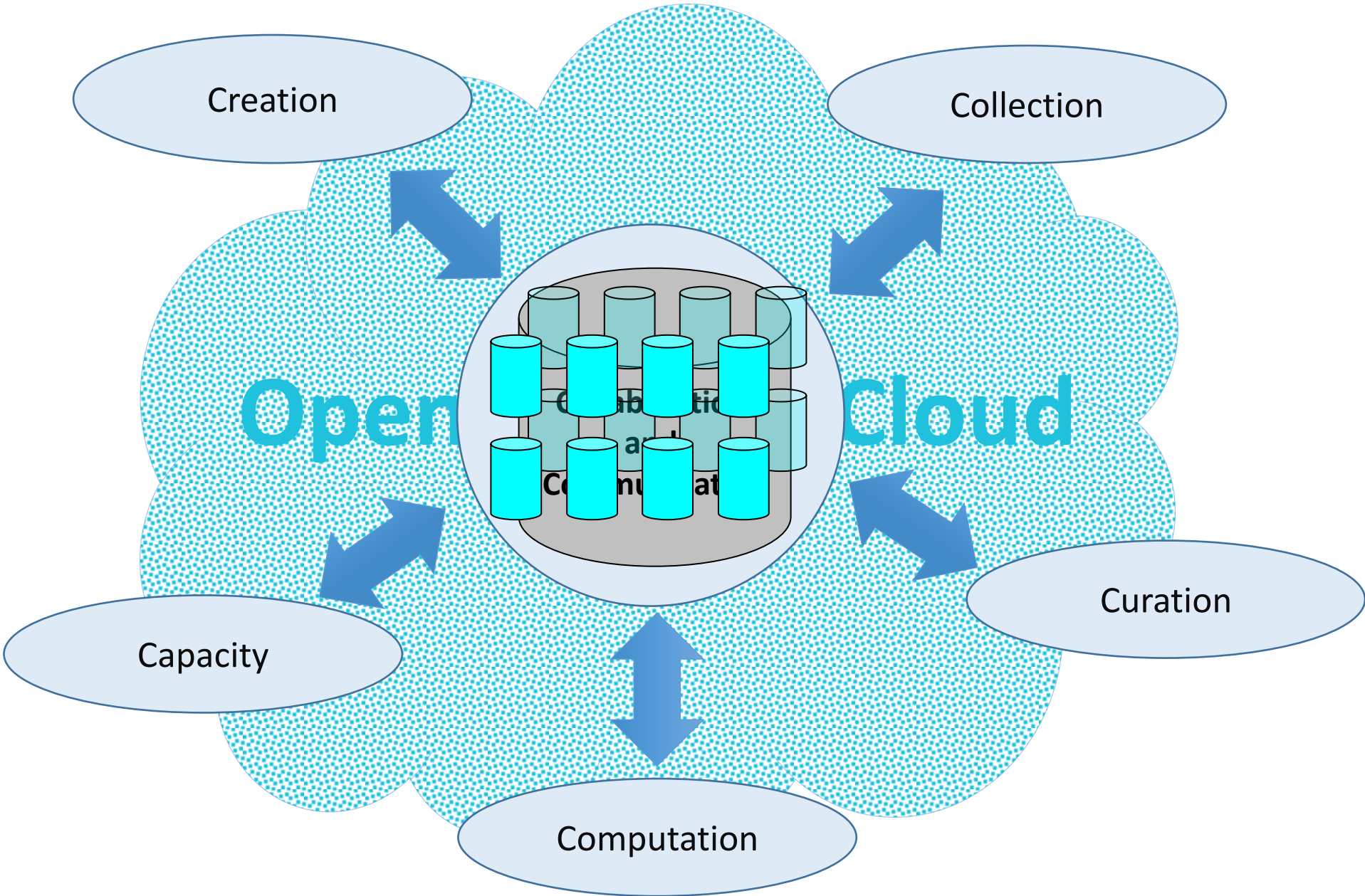
- Smoking habits of teenagers
- Nesting locations of rare species
- Embargo periods

The Innovation Lifecycle

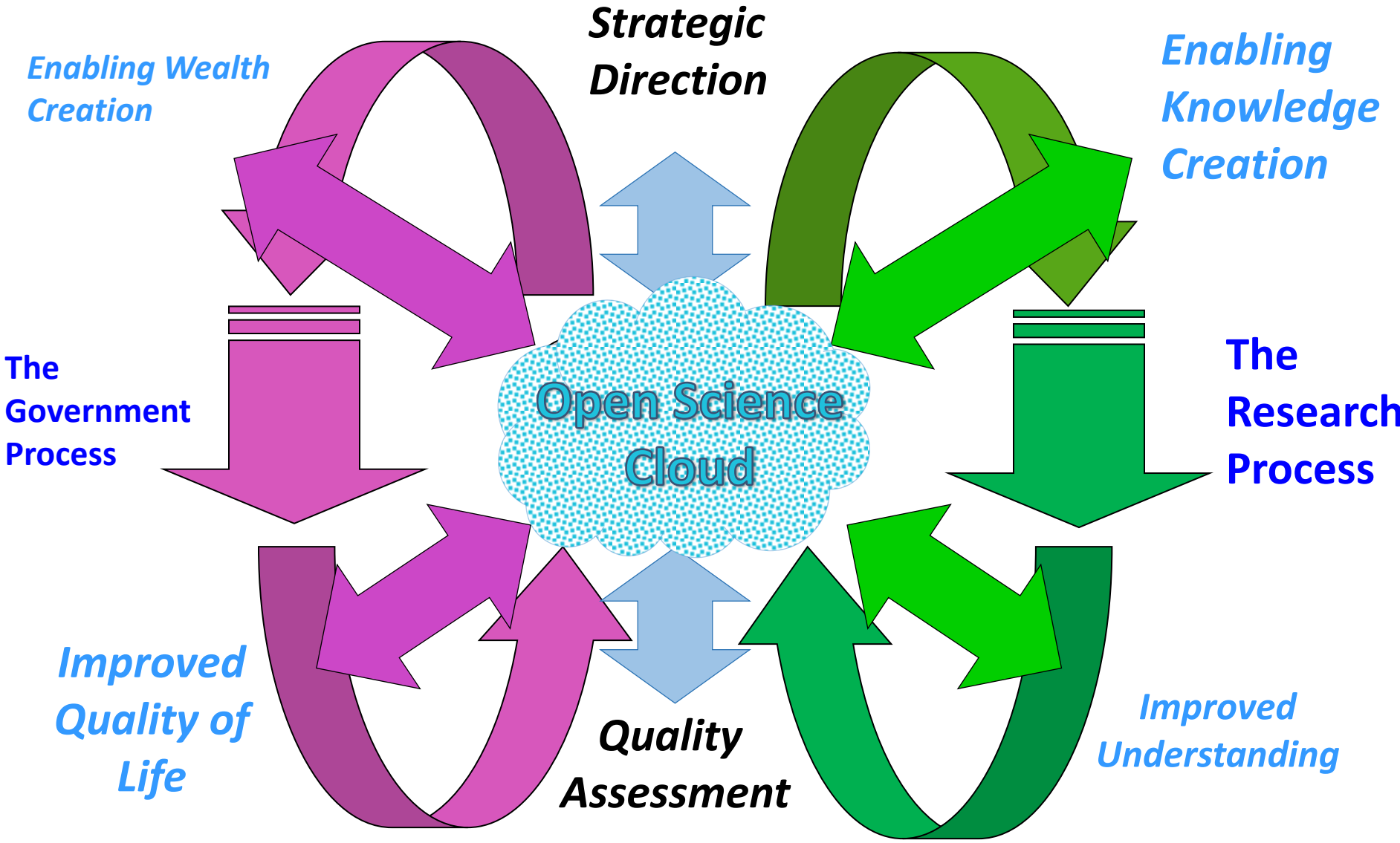


Aggregation of Knowledge lies at the heart of the innovation lifecycle

The Innovation Lifecycle

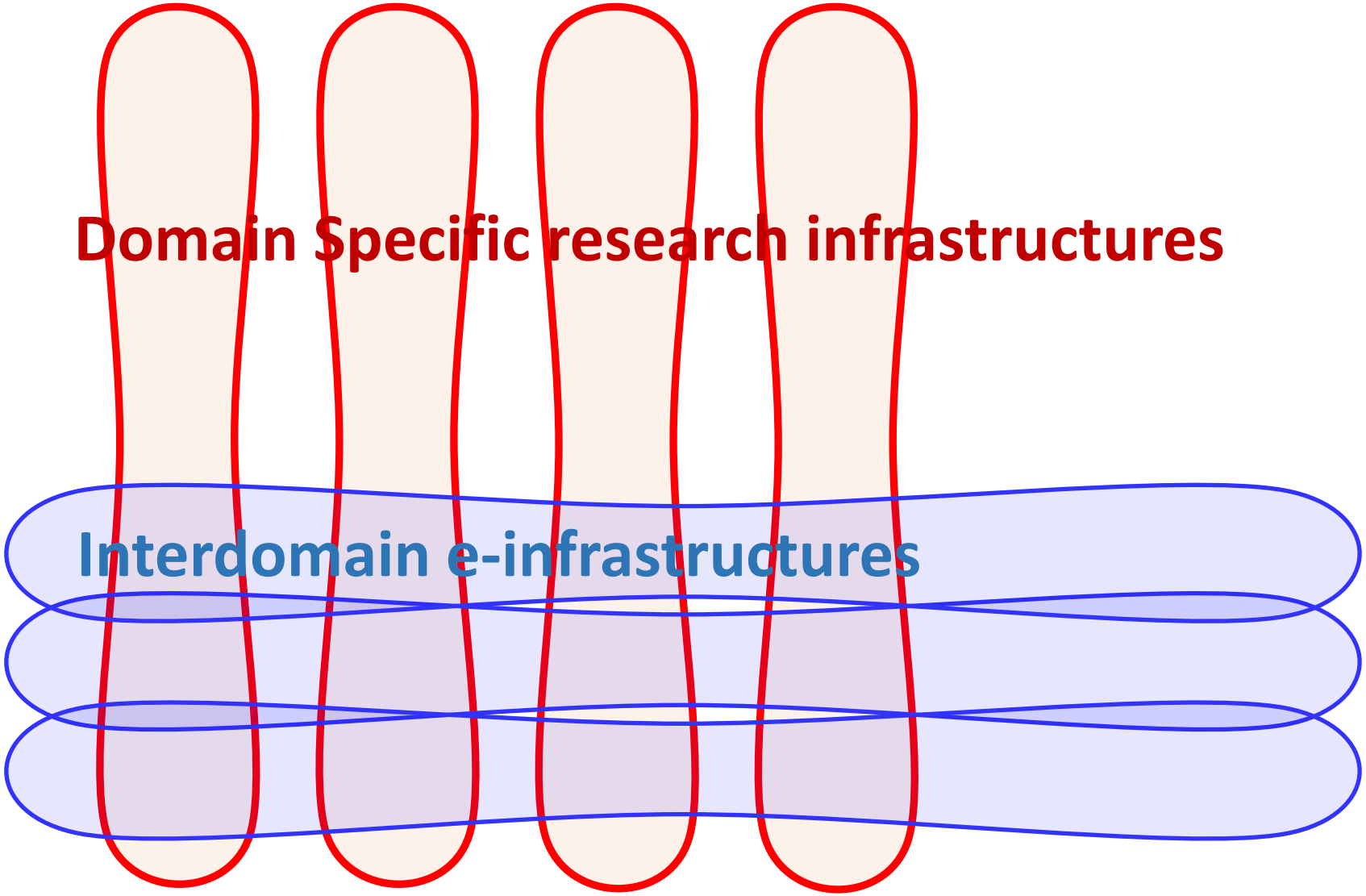


The Innovation Lifecycle



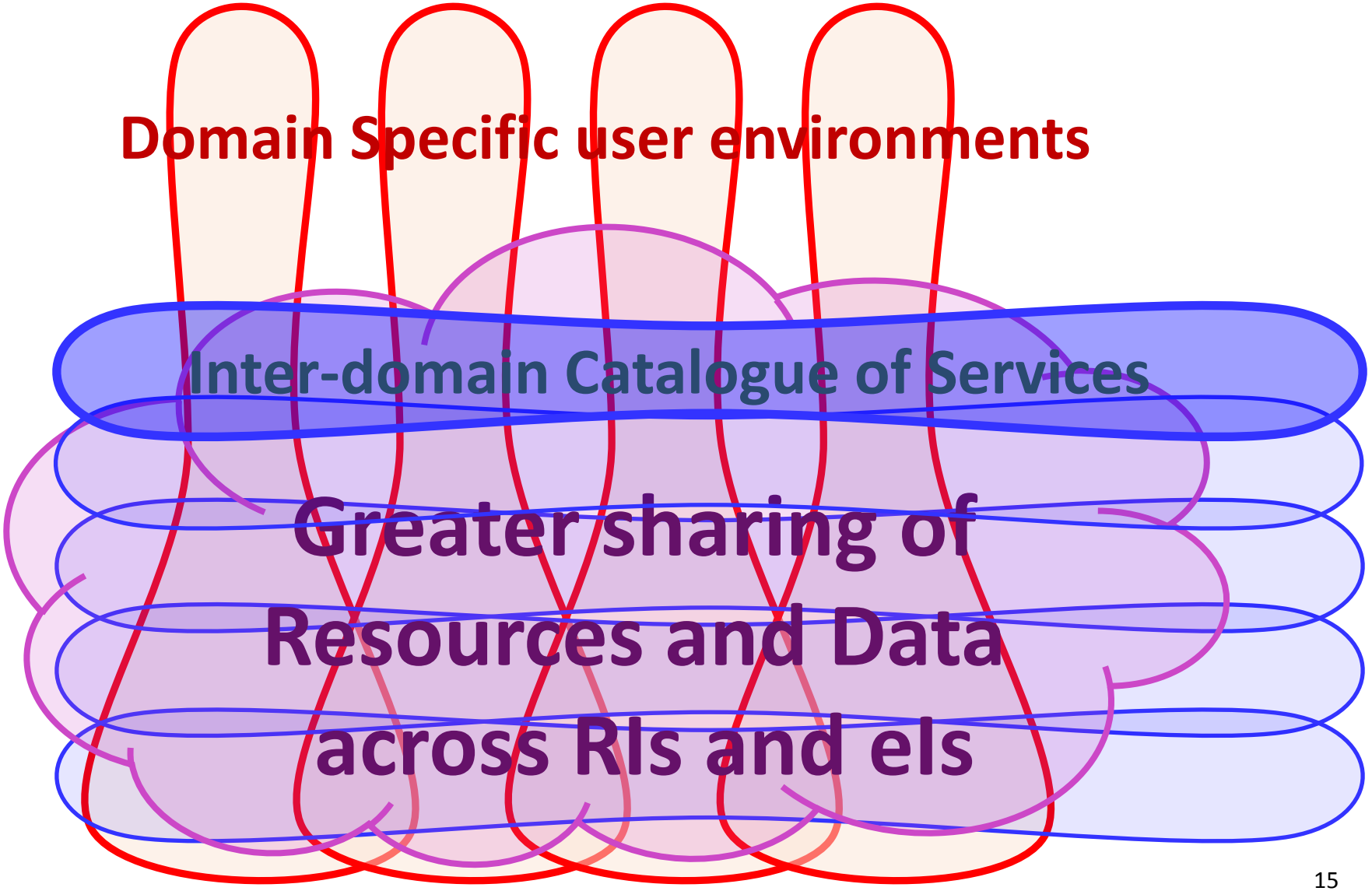
Aggregation of Knowledge lies at the heart of the innovation lifecycle

Existing Horizontal and Vertical infrastructures



Credit: e-IRG, eInfrastructure Commons, 2013

Integrated Horizontal and Vertical provision



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European Open Science Cloud Pilot

Berlin
March 2018

Project Overview

Juan Bicarregui
Co-ordinator EOSCpilot

#EOSC
#EOSCForum

@eoscpilot

EOSCpilot
The European Open Science Cloud for Research Pilot Project
www.eoscpilot.eu

European Cloud Initiatives Communication (2016)

To develop EOSC it will be necessary to:

- Make all scientific data produced by the Horizon 2020 programme open by default.
- Raise awareness and **change incentive structures** for academics industry and public services to share their data.
- Develop **specification for interoperability** and data sharing across disciplines and infrastructures
- Create a fit-for-purpose **pan-European governance structure** to federate scientific data infrastructures and overcome fragmentation.
- **Develop cloud based se**rvices for Open science **supported by** the necessary **data infrastructure**
- **Enlarge the scientific user base** to researchers and innovators from all disciplines.

EOSCpilot: High Level Aims

The *EOSCpilot* project will support the first phase of development of EOSC:

- **Engage with a broad range of stakeholders**, crossing borders and communities, to build the trust and skills required for adoption of an open approach to scientific research
- **Develop a number of demonstrators** functioning as high-profile pilots that integrate services and infrastructures to show interoperability and its benefits in a number of scientific domains
- **Establish the governance framework** for the EOSC and contribute to the development of European open science policy and best practice

The European Open Science Cloud for Research pilot project is funded by the European Commission, DG Research & Innovation under contract no. 739563

Aims

Objectives

- It will establish the governance framework for the EOSC and contribute to the development of European open science policy and best practice;
- It will develop a number of pilots that integrate services and infrastructures to demonstrate interoperability in a number of scientific domains; and
- It will engage with a broad range of stakeholders, crossing borders and communities, to build the trust and skills required for adoption of an open approach to scientific research

Impact

- Reduce fragmentation between data infrastructures by working across scientific and economic domains, countries and governance models; and
- Improve interoperability between data infrastructures by demonstrating how data and resources can be shared even when they are large and complex and in varied formats

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EOSCpilot Challenges

Three types of challenges:

Scientific Challenges are really *Opportunities*

- **Scientific Challenges:** deploying the EOSC to deliver Open Science

Technical Challenges are *Barriers to overcome*

- **Technical Challenges:** developing technical solutions that meet the scientific needs

Cultural Challenges are also *Barriers*

- **Cultural Challenges:** adopting new, more open ways of working

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Motivation and HL introduction

- **Scientific Challenges – Needs and provision**
  - *What do research communities need from an "Open Data Science Environment"?*
- **Technical Challenges - Services and integration**
  - *How can EOSC deliver integrated services that are relevant to community needs?*
- **Cultural Challenges 1 – Skills and engagement**
  - *What changes are needed in capability and practices?*
- **Cultural Challenges 2 - Governance and policy**
  - *How should provision be overseen to maximize benefit?*

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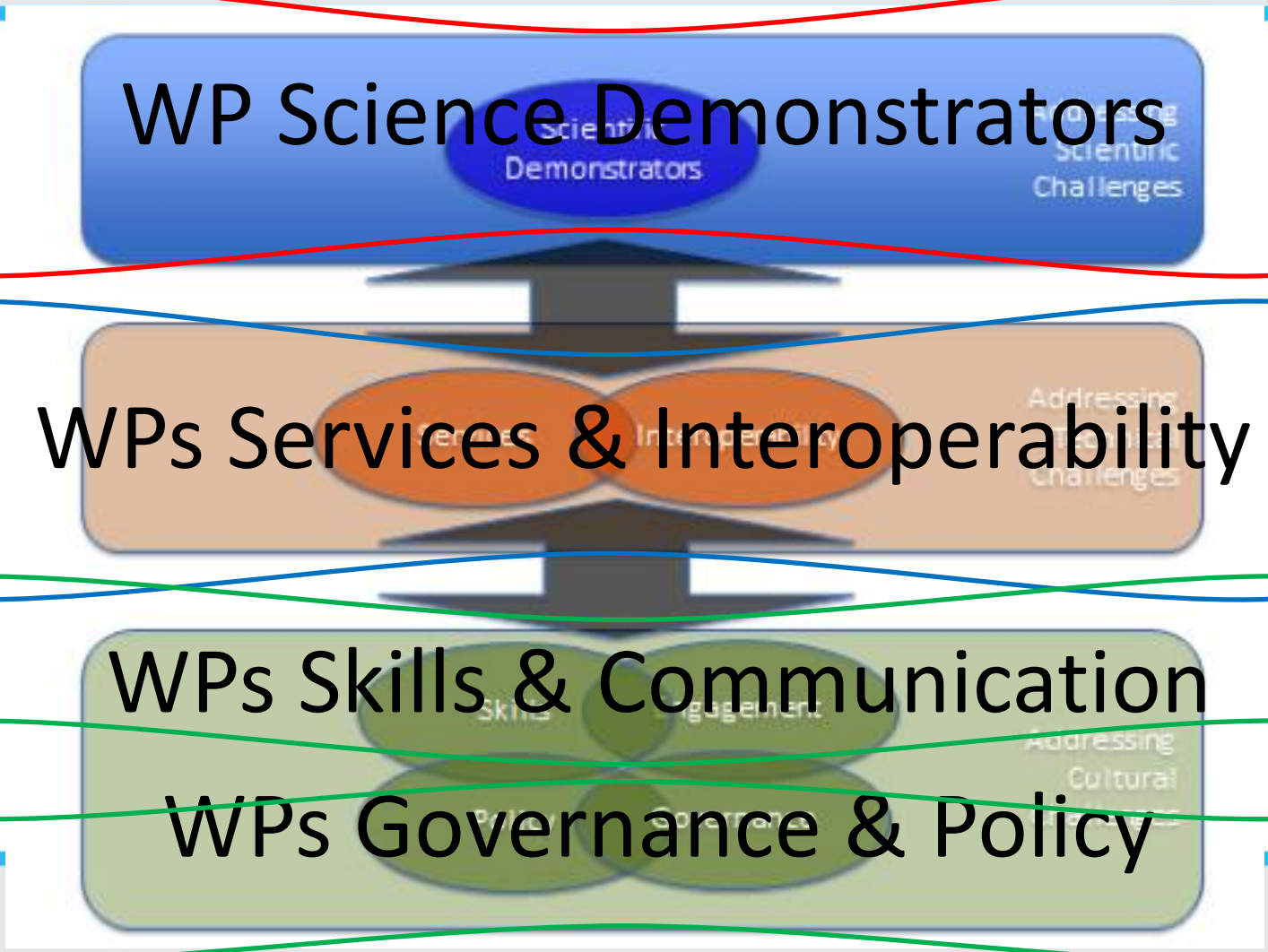
Workpackage Challenges



WP Science Demonstrators

WPs Services & Interoperability

WPs Skills & Communication

WPs Governance & Policy

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Workpackage Level Objectives

Science Demonstrators Objective

- To develop a number of Science Demonstrators … to drive the development of the EOSC.

Services Objective

- To create a number of EOSC pilot services that federate data, infrastructure and services …

Interoperability Objective

- To define and implement specifications, interfaces, standards and processes that …underpin interoperability and sharing …

Governance Objective

- To design and trial a stakeholder-driven governance framework …

Policy Objective.

- To establish the policy environment required for the effective operation…

Skills Objective.

- To develop common standards and assessment frameworks to ensure …

Community Engagement Objective.

- To identify and bring together … the major groups of stakeholders …

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Some Numbers

- 15 Science Demonstrators
- 33 Beneficiaries and 15 Third Parties
  - 13 new Beneficiaries for Demonstrators 6-15.
- 1022 Person Months/2 Years
  - ~42 FTE
  - >100 people
- 50 Deliverables
  - 23 in year 1
  - 27 in year 2
- 4 “Plenary meeting
  - Kickoff Meeting (120 pers)
  - Stakeholders 1 (300 pers)
  - All Hands Meeting (100 pers)
  - Stakeholders 2 (Nov 2018)

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EOSC*pilot* is a *pilot*

EOSCpilot is a pilot

it will take first steps

but not build the EOSC

A *pilot* not a *design study*

A set of *experiments* and design *proposals*

A *requirements study*?

Must feed into and work with future RI and eI projects….

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Alignment with other EOSC projects

- 2018
  - EOSC-hub, Openaire, FREYA, RDA, AARC
  - eg @RDA next week
- 2019 onwards
  - Ensure hand-over of project results
  - INFRAEOSC 1-6, Thematic Clouds

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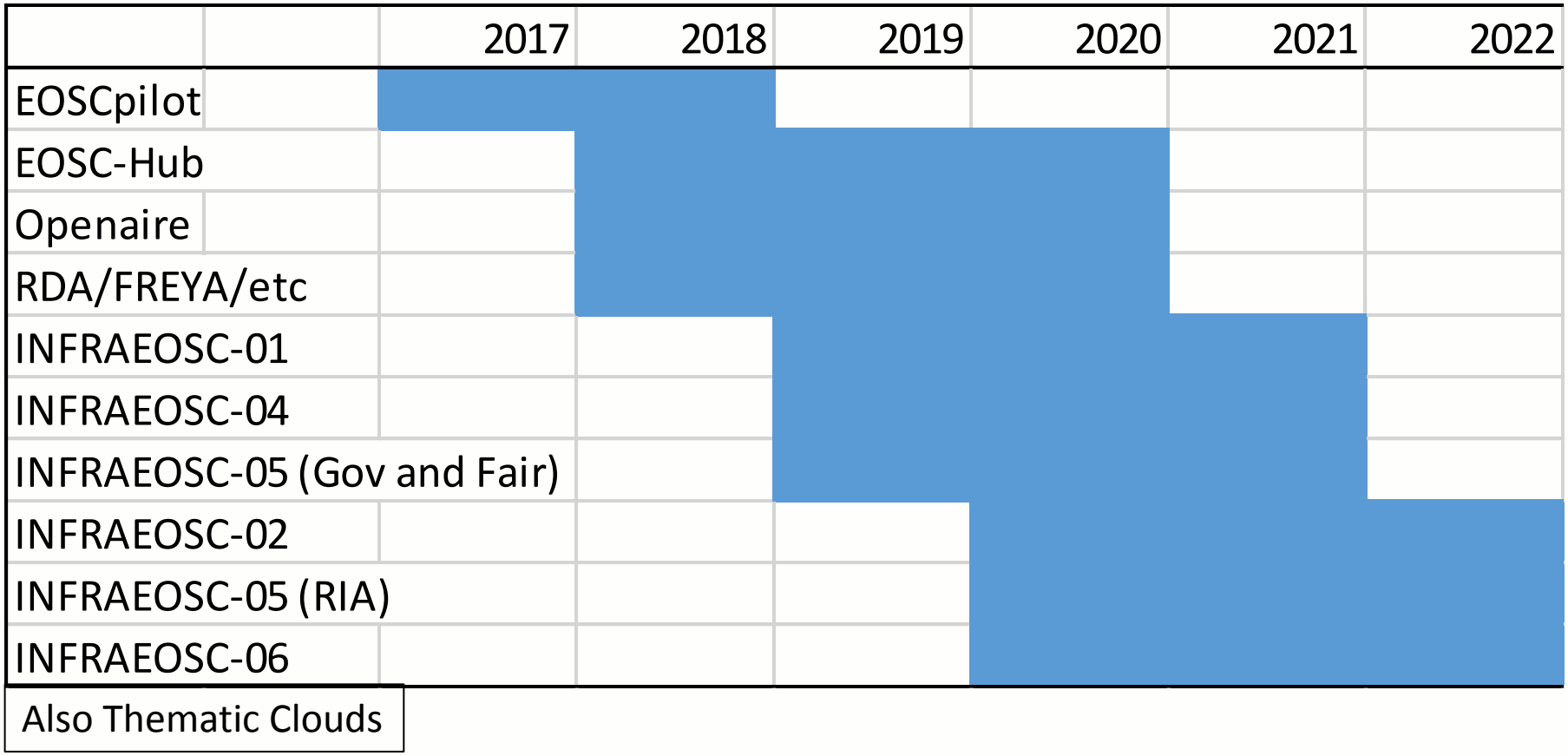
Timing of INFRAEOSC Projects



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584++ participants
159 from Germany

To find out the programme of the plenary visit:
https://www.rd-alliance.org/plenaries/rda-eleventh-plenary-meeting-berlin-germany/rda-11th-plenary-programme

Registrations at
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Questions

"By academic freedom, I understand the right to search for truth and to publish and teach what one holds to be true. This right implies also a duty; one must not conceal any part of what one has recognized to be true."

Albert Einstein
Letter on his seventy-fifth birthday, 1954

Questions