



European Cloud Initiative: implementation status

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Political drivers for action

EC Communication "European Cloud Initiative"
published on 19 April 2016

Three pillars:

- **EOSC: the European Open Science Cloud**
- **EDI: the European Data Infrastructure** (Development and deployment of large-scale EU HPC, data and network infrastructure)
- **Widening access & building trust** (SMEs, Industry, Government)

European Open Science Cloud (EOSC)

- The *EOSC* will provide all EU researchers a **trusted** virtual environment with free, **open and seamless services** for data storage, management, analysis, sharing, and re-use, across disciplines.
- The *EOSC* will **integrate** and **consolidate** horizontal **eInfrastructures**.
- The *EOSC* will **federate** existing and emerging thematic **data infrastructures** and **scientific clouds**, effectively bridging today's fragmentation and ad-hoc solutions.
- The *EOSC* will add value (scale, data-driven science, inter-disciplinarity, data to knowledge to innovation) and **leverage** current & past infrastructure **investment**.

European Open Science Cloud: how

- Clear timeline in the EC Communication on the **European Cloud Initiative (ECI)** of 19/4/2016
- Topic for a **Pilot action** for EOSC in 2016 H2020 Research Infrastructure call
 - To demonstrate how to ensure availability of scientific data and data-analysis services through a cloud infrastructure.
 - Designing a stakeholder driven **governance** framework.
- E-Infrastructures topics in 2017 H2020 calls for federation & interoperability of data infrastructures
- Further substantial investments in the 2018-2020 Work Programme of H2020

EOSC Implementing Actions

From	Action
2016	EOSCpilot to develop and test solutions on governance and architecture, building on the federation of existing data RI & eInfrastructure
2016	eInfraCentral to develop a pan-European catalogue of eInfrastructure services
2017	EOSC-Hub and OpenAIRE-Advance to integrate and consolidate access mechanisms to eInfrastructure, open science and RI services
2017	Development of new innovative open science services (e.g. FREYA for PID governance and interoperability)
2018-20	Ensure, through cluster projects, integration/connection of ESFRI RIs collecting or producing data to the EOSC
2018-20	Development of cloud-based services for Open Science
2018-19	Development of a funding mechanisms and legal structure that involve MS and ensure the LTS of an open EOSC
2018-20	...

EOSCpilot Objectives

The EOSCpilot represents a first step towards the development of the European Open Science Cloud. It will:

- Design and trial a stakeholder-driven **governance** framework
- Contribute to the development of European **open science policy** and best practice;
- Develop demonstrators of **integrated services and infrastructures** in a number of scientific domains, showcasing **interoperability** and its benefits;
- **Engage** with a broad range of stakeholders, crossing borders and communities, to **build trust and skills**



European Commission

eInfrastructures: Where do we stand?



OpenAIRE: Science set free

www.openaire.eu



OpenDreamKit: Open Digital Research Environment Toolkit for the Advancement of Mathematics

www.opendreamkit.org



OpenMin7ed: Open Mining Infrastructure for Text and Data

www.openminted.eu



PhenoMeNal: Phenome and Metabolome Analysis

www.phenomenal-h2020.eu



AARC: Authentication and Authorisation for Research and Collaboration

www.aarc-project.eu



BlueBRIDGE: Building Research environments fostering Innovation, Decision making, Governance and Education to support blue growth

www.bluebridge-vres.eu



EarthServer2: Big Earth Data at your fingertips

www.earthserver.eu



EDISON: Building the data science profession

www.edison-project.eu



PRACE: Partnership for Advanced Computing in Europe

www.prace-ri.eu



RDA: Research Data Alliance

www.rd-alliance.org



READ: Recognition and Enrichment of Archival Documents

read.transkribus.eu



SESAME Net: Supercomputing Expertise for Small And Medium Enterprises

www.sesametwork.eu



EGI: Engage: Engaging the Research Community towards an Open Science Commons

go.egi.euengage



e-IRG: Paving the way towards a general purpose European e-Infrastructure

www.e-irg.eu



EUDAT: European Data Infrastructure

www.eudat.eu



EVER-EST: A Virtual Research Environment for the Earth Sciences

www.everest-eu.eu



THOR: Technical and Human infrastructure for Open Research



Vi-SEEM: Virtual Research Environment (VRE) for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean



VRE4EIC: A Europe-wide Interoperable Virtual Research Environment to Empower Multidisciplinary Research Communities and Accelerate Innovation and Collaboration



West-Life: World-wide E-Infrastructure for structural biology



GÉANT Project (GN4-1): Accelerating research, driving innovation and enriching education



INDIGO-DataCloud: Integrating Distributed data Infrastructures for Global Exploitation



LEARN: LEaders Activating Research Networks

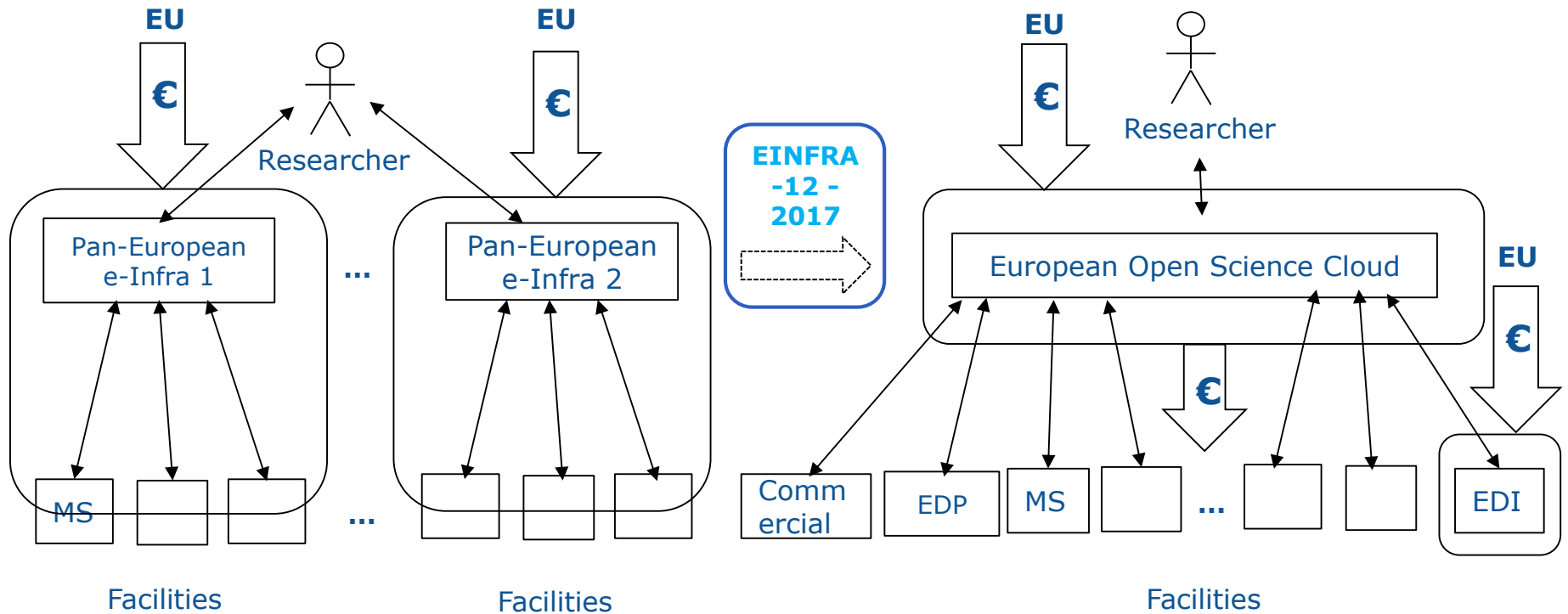


MuG: Multi-scale complex Genomics



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Integration and consolidation of eInfras: users, suppliers and access channels



TODAY

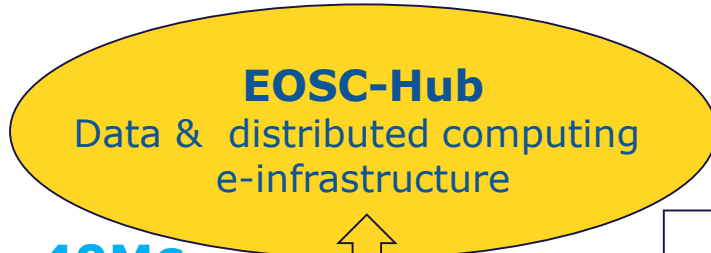
FUTURE



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Outcome of EINFRA-12-2017

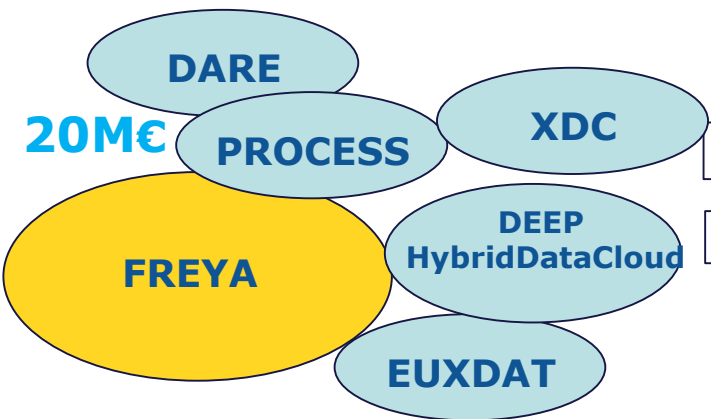
E-infrastructure Operational services



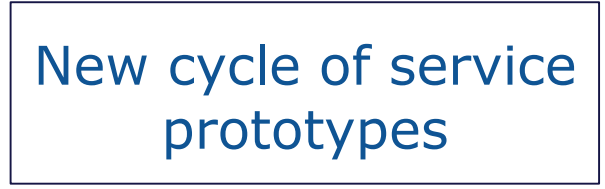
40M€



Innovative new services



20M€



Outcome of the EINFRA-2017 evaluation

2020 and beyond

EOSC-Hub: What is in it for ESFRIs?

- *EOSC-Hub will support the ESFRIs as a **collaborative effort** of the major pan-European e-Infrastructures.*
- *It will **provide integrated access to services** from major European e-Infrastructures and RIs.*
- *It will fund **Competence Centres** related to RIs on the ESFRI roadmap, to promote use and reuse of common compute, storage and data services.*
- *It will collaborate with ESFRI RI cluster projects for continuous engagement with **additional RIs** of the ESFRI roadmap.*

Participating RIs: EISCAT_3D, EPOS, ICOS and eLTER, LifeWatch; BBMRI, ECRIN, ELIXIR; HL-LHC and the SKA pathfinder project LOFAR; CLARIN ERIC and DARIAH ERIC

OpenAIRE: What is in it for ESFRIs?

- *OpenAIRE will look for **greater integration with Research Infrastructures** and will develop a **catalogue of services** that will be inherently interoperable with and complementary to other EOSC services.*
- *Will support the publication of products beyond literature, such as **datasets and software**, fostering reproducibility.*
- *OpenAIRE information space **will triple its size** reaching 120 million objects (incl. publications, datasets, methods, tools, etc.) and 60 million relationships + 8 million full texts articles available for TDM.*
- *Through the production of **dashboards**, it will empower institutions for research assessment and monitoring.*

RI's collaborating with OpenAIRE: EPOS, ELIXIR, DARIAH, CERN, PANGAEA, ICRES

FREYA: What is in it for ESFRIs?

- *A platform that connects and integrates Persistent Identifier (PID) systems, enabling **universal discoverability of data objects and provenance**; a PID service registry across infrastructures.*
- *Prototypes for **new innovative PID services**, based on community needs, for improved discovery, retrieval and access to resources.*
- *Open, sustainable framework for collaborative **self-governance of PID services**.*

RIs involved: *British Library (link to DARIAH), DANS (link to CEESDA), CERN, EMBL-EBI (link to ELIXIR), PANGAEA, STFC*

Last but not least: Research Data Alliance

• *RDA members collaborate together across the globe to tackle numerous infrastructure & data sharing challenges related to:*

- **Reproducibility**
- **Data preservation**
- **Best practices for domain repositories**
- **Legal interoperability**
- **Data citation**
- **Data type registries**
- **Metadata**

In summary

RDA

Recommendations



EOSC-Pilot

Governance

EOSC-HUB

*Pan-European access
channel to EOSC services*

Services,
software and
data for full
life-cycle of
research

Federated
network of
interlinked
research
objects

FREYA

*Persistent
Identifiers*

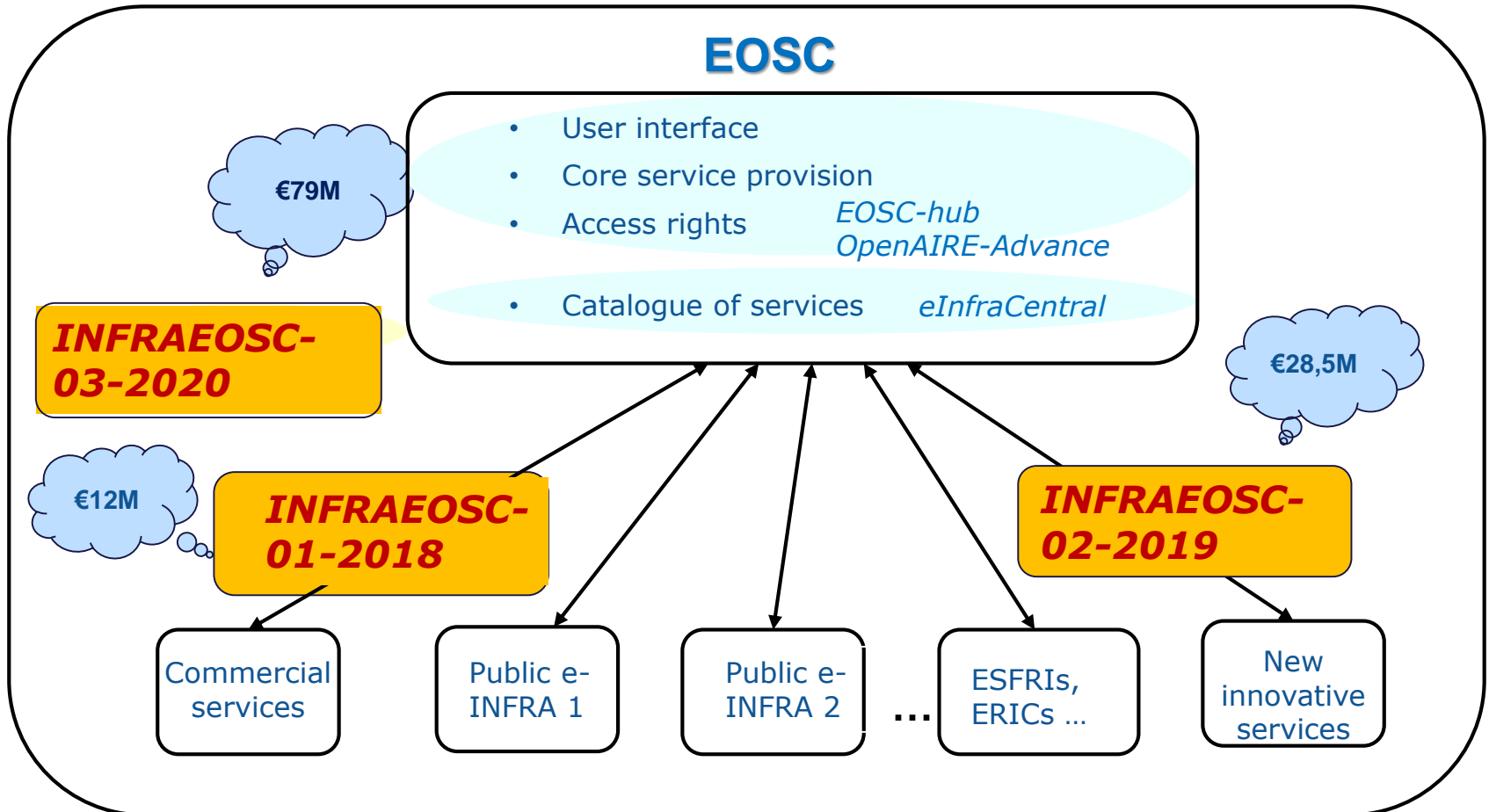
**OPENAIRE
ADVANCE**

*Open
Access*

Socio technical
network for
Open Science



Next technical developments in WP18-20



Thank you!