



Centre de Calcul de l'Institut National de Physique Nucléaire et de Physique des Particules

HNSciCloud & EOSC

Journées LCG France juin 2016

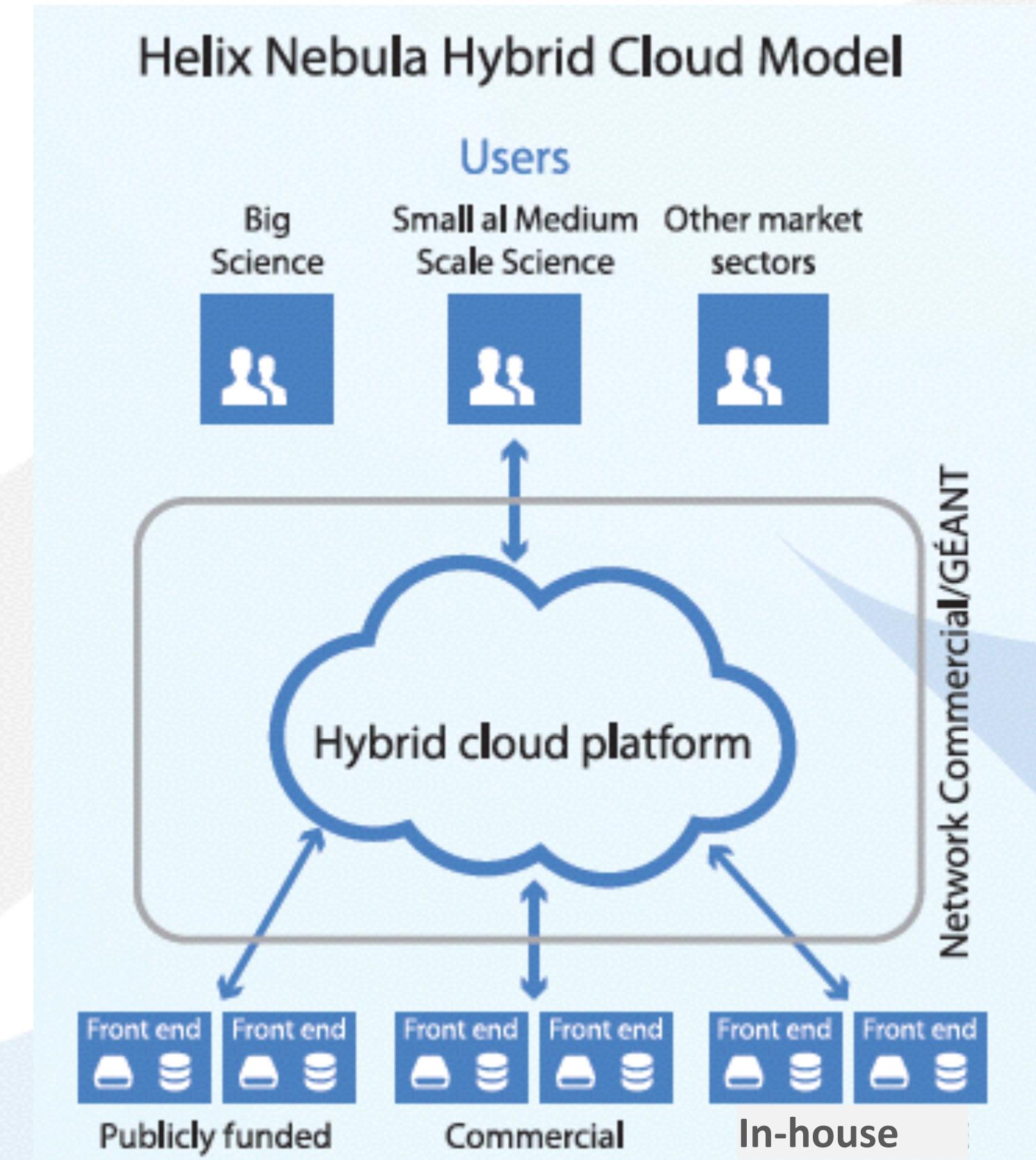
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HNSciCloud



The Helix Nebula Initiative

The Helix Nebula initiative has brought together research organisations, data providers, publicly funded e-infrastructures and European commercial cloud service providers to develop a hybrid cloud model with procurement and governance approaches suitable for the dynamic cloud market



The preferred model for public research organisations is a hybrid cloud that combines in-house resources with public e-infrastructures and commercial cloud services

The Helix Nebula Science Cloud public-private partnership



Strategic Plan

- ▶ Establish multi-tenant, multi-provider cloud infrastructure
- ▶ Identify and adopt policies for trust, security and privacy
- ▶ Create governance structure
- ▶ Define funding schemes

March 2016



To support the computing capacity needs for the ATLAS experiment



Setting up a new service to simplify analysis of large genomes, for a deeper insight into evolution and biodiversity



To create an Earth Observation platform, focusing on earthquake and volcano research



To improve the speed and quality of research for finding surrogate biomarkers based on brain images

Additional Users:











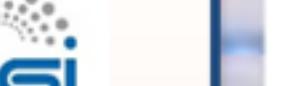

Suppliers















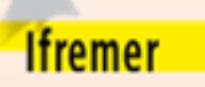





Adopters
















Crédits : Bob Jones – CERN – 26 mai 2016

Horizon 2020 Call: H2020-ICT-2015

Topic: ICT-08-2015 - ***Boosting public sector productivity and innovation through cloud computing services***

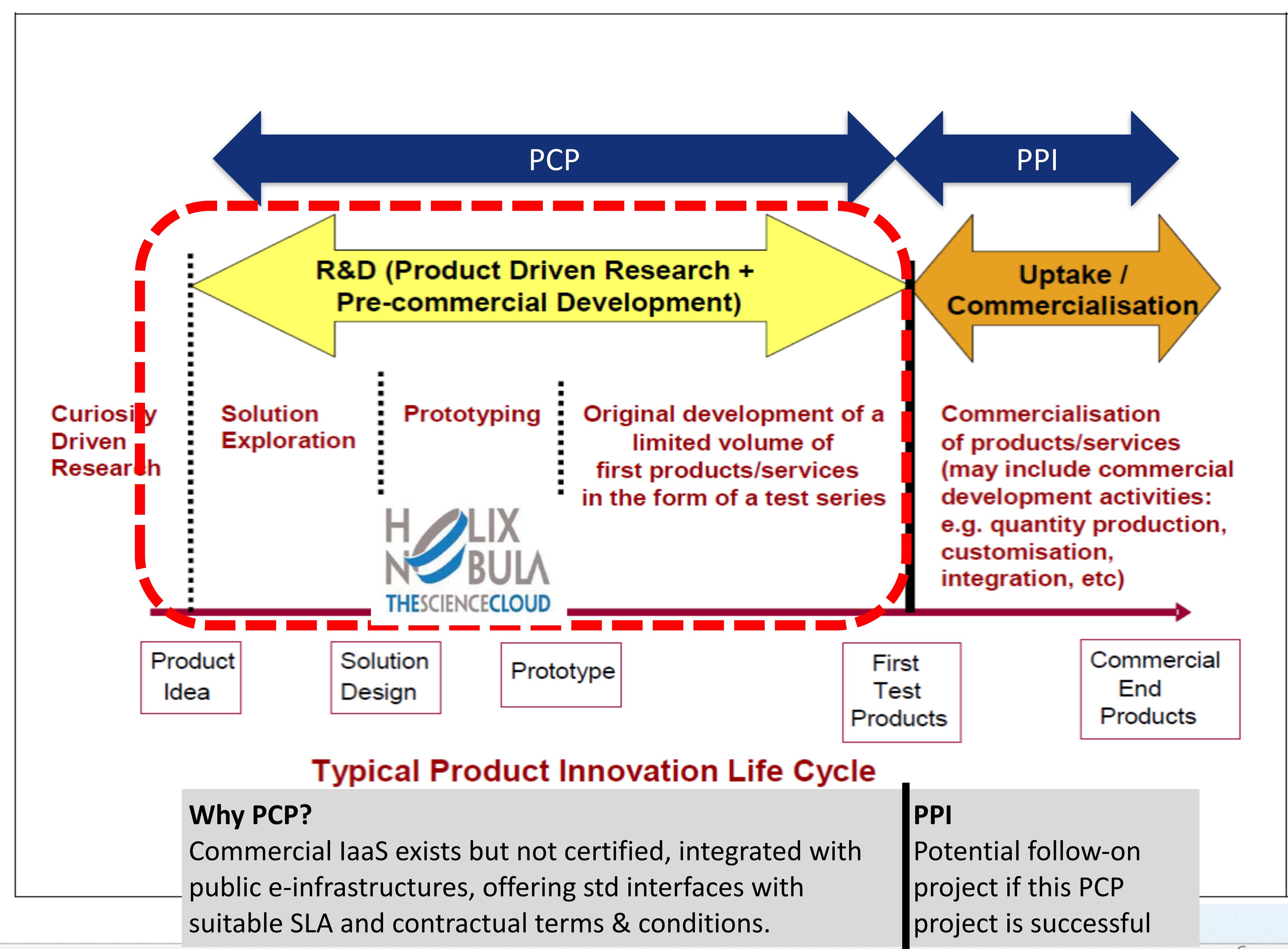
Type of action: COFUND-PCP

PCP : Pre-Commercial Procurement

- Il s'agit **d'acheter**
- un produit **innovant** (n'existant pas sur le marché)
- en publiant un **appel d'offre**

COFUND :

- l'achat est financé à 70% par l'UE



HNSciCloud Joint Pre-Commercial Procurement



Procurers: CERN, CNRS, DESY, EMBL-EBI, ESRF,
IFAE, INFN, KIT, SURFSara, STFC

Experts: Trust-IT & EGI.eu

The group of procurers have committed

- >1.6M€ of procurement funds
- Manpower for testing/evaluation
- Use-cases with applications & data
- In-house IT resources

To procure innovative IaaS level cloud services integrated into a hybrid cloud model

- Commercial cloud services
- European e-Infrastructures

Services will be made available to end-users from many research communities

Co-funded via H2020 Grant Agreement 687614

Total procurement budget >5M€



User groups to be supported

High Energy Physics

- LHC experiments
- Belle II
- COMPASS



Astronomy

- CTA – Cherenkov Telescope Array
- MAGIC
- Pierre Auger Observatory



Life Sciences

- ELIXIR
- Euro-BioImaging
- Pan-Cancer
- BBMRI
- WeNMR

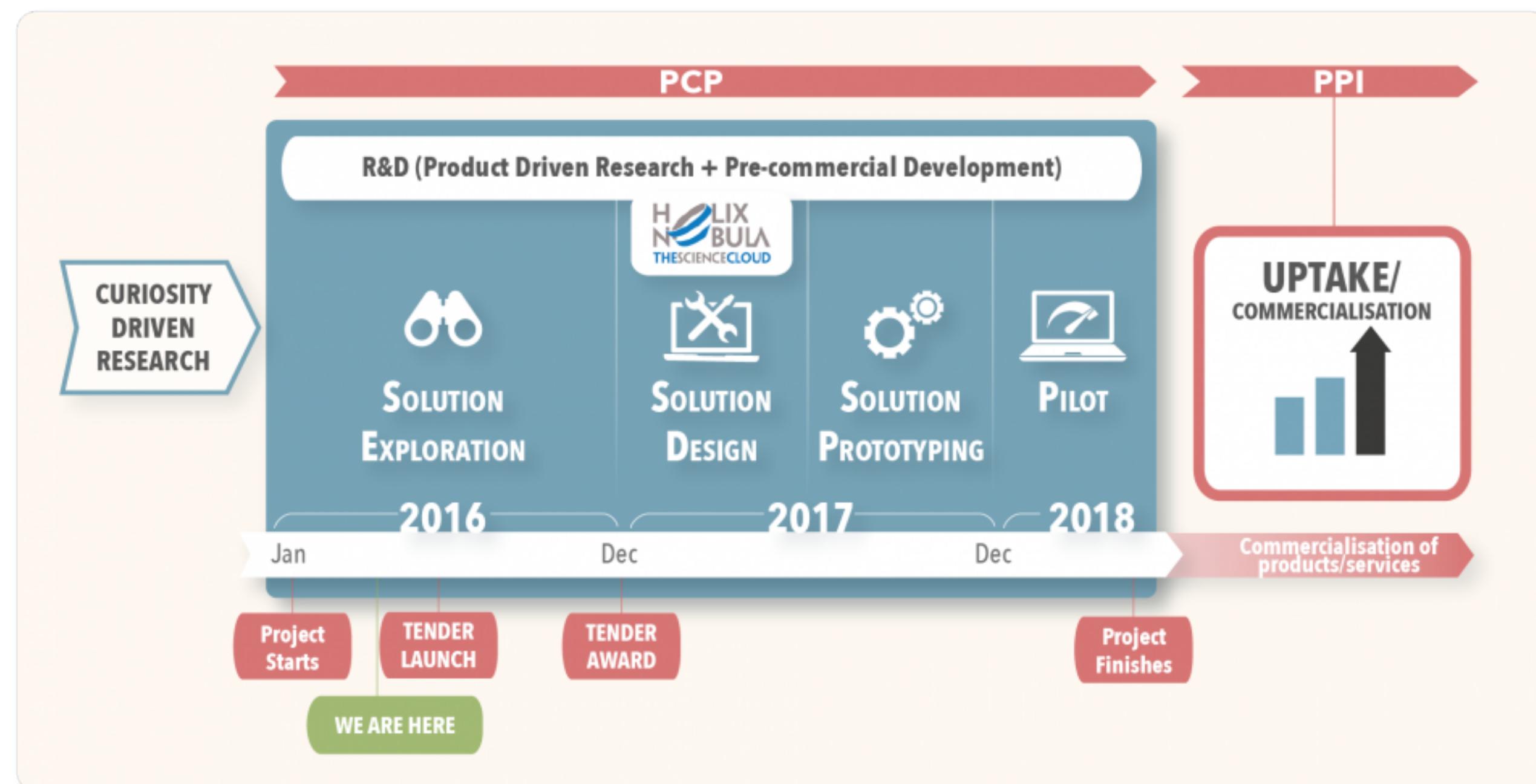


Photon/Neutron science

- PETRA III, European XFEL, 3DIX, OCEAN, OSIRIS

Long tail of science

Etc.



Calendrier :

- mi-juillet : publication appel d'offres
- mi-septembre : clôture réception des offres

Use-cases retenus pour IN2P3 :

- LCG (seul l'achat de la phase Pilot comptera dans les pledges)
- CTA

- ▶ Solution design phase : >4 designs - 15 % budget
 - ▶ WP leader CNRS - 3 months
- ▶ Prototype development : >3 prototypes - 25 % budget
 - ▶ WP leader DESY - 6 months
- ▶ Pilot phase : >2 pilots - 60% budget
 - ▶ WP leader INFN - 5 months

<http://www.hnscicloud.eu>

<https://webcast.ec.europa.eu/building-the-european-open-science-cloud#>

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European Open Science Cloud

Mise en place en 2014 d'une nouvelle Commission européenne présidée par J.C. Juncker :

- construction d'un Digital Single Market (DSM)
- permettre la construction d'un paysage numérique fédéré à l'échelle européenne (p.ex. roaming des opérateurs mobiles, unification des réglementations...).
- vise aussi à créer le « European Open Science Cloud » pour une circulation des données scientifiques en support à une open science via sur une infrastructure fédérée virtuelle (e-infrastructure) de ressources et de services en Europe

Deux initiatives et trois workshops :

- EIRO-Forum et CERN via Helix Nebula

<http://www.helix-nebula.eu/events/towards-the-european-open-science-cloud>

WS Helix Nebula Open Day le 20 janvier 2016

<https://indico.cern.ch/event/461262/other-view?view=standard>

- EGI.eu / EUDAT / Geant / OpenAire / Liber

https://documents.egi.eu/public/RetrieveFile?docid=2637&version=1&filename=OSC_Position_Paper.pdf

WS en marge du EGI Community Forum le 13 novembre 2015

WS en marge du EUDAT User Forum le 5 février 2016

<https://www.eudat.eu/events/european-open-science-cloud-for-research-eosc-workshop>

Les 2 workshops ont chacun :

- fait référence et proposé une présentation de l'autre initiative
- proposé une ou des présentation(s) de la CE

La commission a mis en place un site web dans lequel elle fait référence :

- à ces deux workshops
- aux travaux du High Level Expert Group :

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

Commentaire : la CE ne privilégie pas a priori une initiative sur l'autre mais les voit comme **complémentaires**

« The European Open Science Cloud: the policy » de J-C. Burgelman :

Digital Single Market consultation on cloud **ends** in january 2016. This initiative has a strong political support :

- Report of European Parliament on DSM (date of report 19/1/16 point 124)
- strong political support : Juncker, Merkel, NL presidency , Luxembourg

About EOSC

It is a **virtual environment** to store, manage, analyze et re-use data

Is about **bringing together existing and emerging data infrastructure**, privacy & IPR conscious

Its added value : scale,data driven science, inter-disciplinary

EOSC will federate existing and emerging horizontal ant thematic data infrastructures to provide 1.7 M EU researchers an environment with free, open services for data storage
cloud-based for open science — governance platform for policy development

« we don't have 3 years » : the momentum is now

Key challenges :

- lack of awareness of the value of data
- lack common standards
- not enough hardware capacity
- fragmentation and lack of coordination
- need to translate recent changes in data privacy, protection, copyright ruled to research data domain

2016 :

- meeting EOSC governance
- harnessing H2020 and FP9 « rules »
- engage with council, NL presidency , RWP , European Parliament
- continuous extensive stakeholder engagement
- broad global consensus (think of Internet gov)

Barend Mons - Chair of the HLEG - Presentation title : «open science as a social machine »

Report will be available soon

Speaks about a « ridiculogram » when trying to graph the relationships between all existing infra/data/researcher/FAI/...

Data means data and tools to process them

FAIR(*) guiding principles for scientific data management

EOSC :

open science ≠ open access

framing : - trusted access / RE-use of data / across disciplinary and borders / federated environment across state members

« internet approach »

scope : human expertise, core resources, standard but practices ,underpinning technical infrastructures, a web of services

supports : open science, open innovation, systematics and professional data management, long term data stewardship

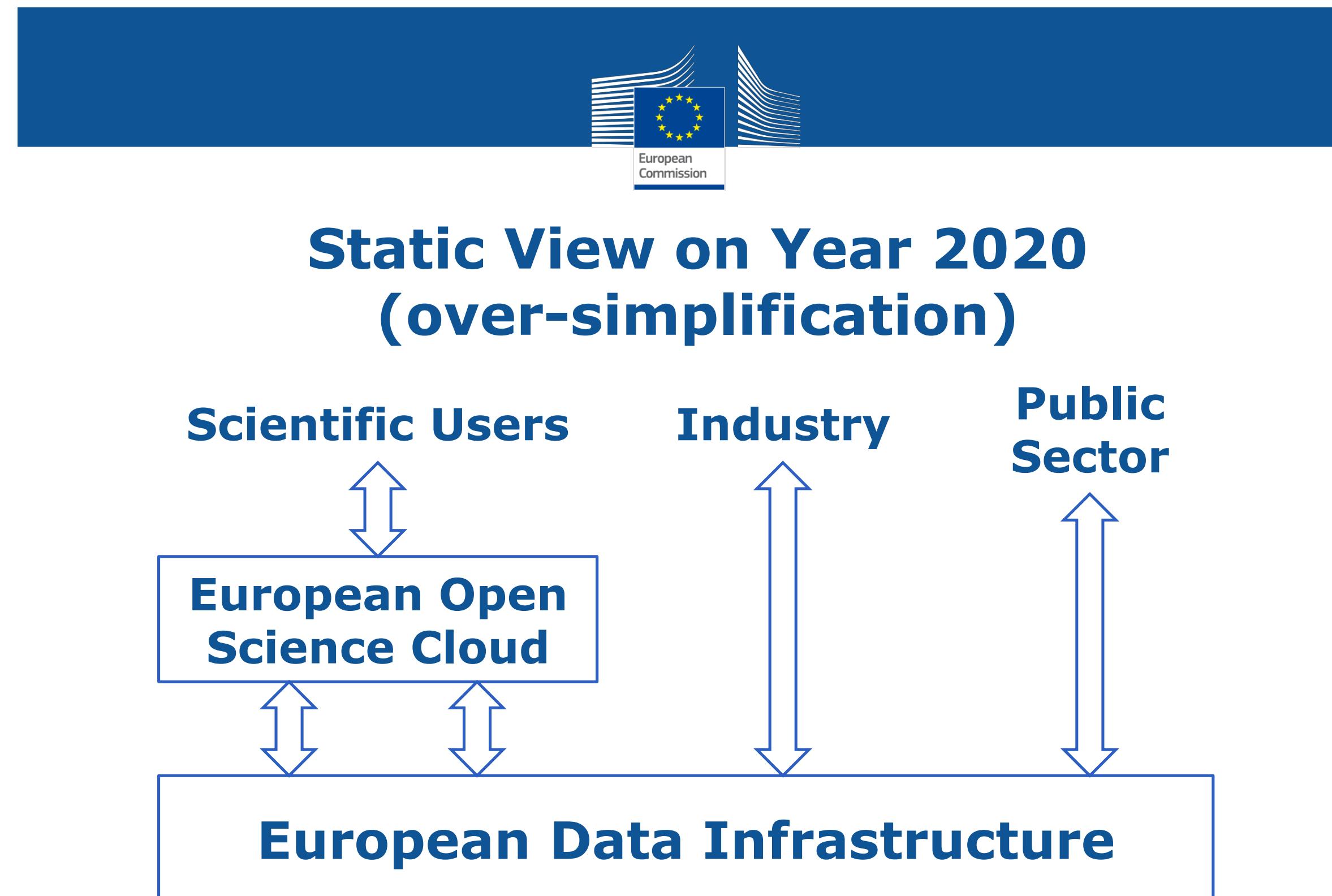
challenges : not technical but social

(*) : <https://www.force11.org/group/fairgroup/fairprinciples>



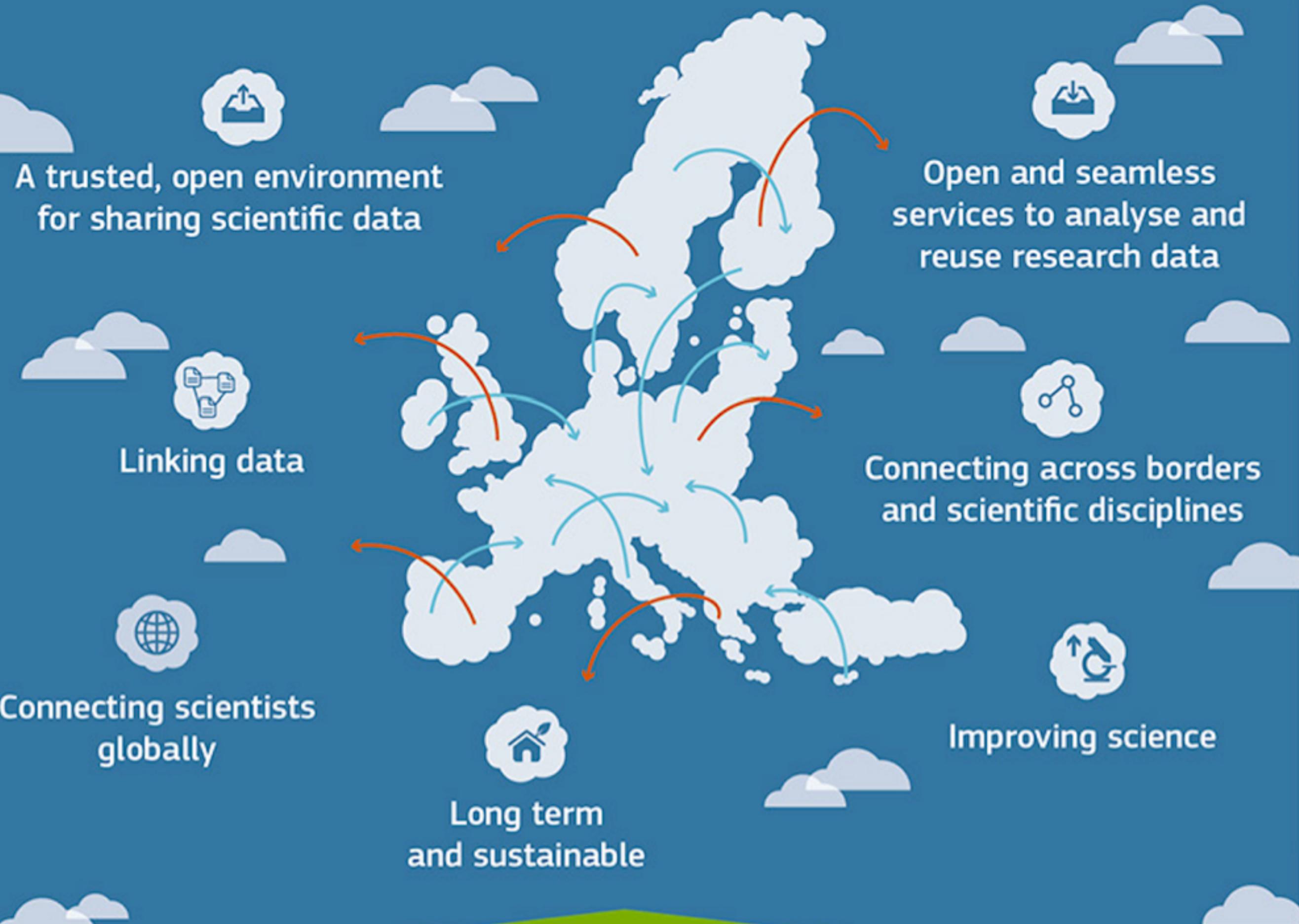
European Cloud Initiative (highlights)

- *European Open Science Cloud (EOSC)*
 - **Integration and consolidation of e-infrastructures**
 - **Federation of existing research infrastructures and scientific clouds**
 - **Development of cloud-based services for Open Science**
 - **Connection of ESFRIs to the EOSC**
- *European Data Infrastructure*
 - **Development and deployment of large-scale European HPC, data and network infrastructure**
- *Widening access and building trust*
 - **SMEs, Government as a Service, Standards**



EUROPEAN OPEN SCIENCE CLOUD

BRINGING TOGETHER CURRENT AND FUTURE DATA INFRASTRUCTURES



EUROPEAN DATA INFRASTRUCTURE

UNLOCKING THE VALUE OF BIG DATA; DIGITAL BY DEFAULT



facilitate access to and re-use of data for researchers, innovators and public sector



work in combination with national and regional, scientific and public data and computing centres



reduce the cost of big data storage and high-performance analysis

1

HIGH PERFORMANCE COMPUTING (HPC)

↓
exascale supercomputers based on EU technology in global top 3

large scale flagship to unlock the potential of quantum technologies

2

PAN-EUROPEAN DATA AND SOFTWARE INFRASTRUCTURE

↓
storage, preservation, access and management of big data

European big data centre for high-capacity cloud solutions

3

CONNECTIVITY

↓
seamless, high-speed, reliable and secure connectivity and big data storage for EU-wide HPC access

integration of European public services networks

- ▶ INFRADEV-4-2016 : European Open Science Cloud for Research
 - ▶ Type d'action : RIA
 - ▶ Lien explicite avec l'appel à projet EINFRA-12
- ▶ EINFRA-12-2017 : Data and Distributed Computing e-infrastructures for Open Science
 - ▶ Type d'action : RIA
- ▶ EINFRA-21-2017 : Platform-driven e-infrastructure innovation
 - ▶ Type d'action **PPI**

Contraintes :

- ➡ Date limite : 22 juin 2016 17h00
- ➡ Un projet ...
- ➡ 10 M€
- ➡ 2 ans
- ➡ Un pilote pour la recherche

STFC coordonne le projet

~35 partenaires :

- *Disciplines, Services, e-Infrastructures*
- *dont STFC, CSC, INAF, MPG, HGF(DESY), Athena, LIBER, HGF (KIT), GEANT, INFN, CNR, EGI, JISC, DCC, EMBL, SURF, CNRS, DANS, INGV, CERN, PRACE, ICOS, Ifremer, BSC, EUA, TRUST-IT, BBMRI, ECRIN, ...*

De nombreuses autres organisations impliquées via ~20 « Science Demonstrators »

▶ Governance Model (**CSC**)

Design and pilot a stakeholder driven EOSC governance model with the involvement of the research communities, research institutions, research infrastructures, and research funding bodies

▶ Service Demonstrators (**EGI.eu/Surf**)

Create a EOSC pilot that federates data and services to offer data findability, accessibility, analysis and interoperability and scholarly communication, to foster multidisciplinary research across geographical borders

▶ Science Demonstrators (**MPG/EMBL**)

Develop a number of Science Prototypes that demonstrate the relevance and usefulness of the EOSC Services and drive the further development of the EOSC

▶ Infrastructure Interoperability (**CNRS/INFN**)

Define and implement specifications that through interfaces, standards and processes enable interoperability and sharing of EOSC services across disciplines and infrastructures

▶ Skills and Capacities Building (**DCC/KIT**)

Develop education, skills, and expertise in data stewardship and data science, identify and promulgate good practice in skills development elsewhere and coordinate effort within and outside the project to address gaps and raise awareness of the issues around incentive structures for academics, industry and public services to share their data

▶ Community Engagement (**Liber/Trust-IT**)

Awareness of this cross-border and multi-disciplinary open research and innovation environment for research data, also among new potential EOSC stakeholders communities, based on a common vision on the Open Science Cloud, and an engaged community of stakeholders that can provide input for enhanced knowledge and services, also in the future.

▶ Policy (**Athena/JISC**)

Contribute to the development of a European open science policy framework that promotes making scientific data open by default.

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