Studying infrastructures for open science

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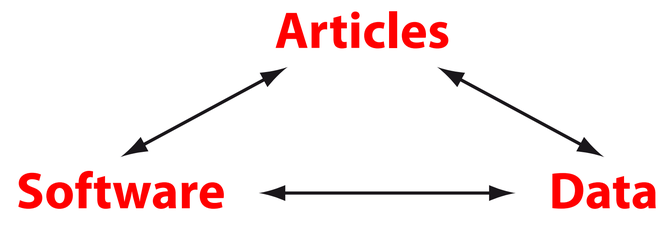
Introduction

Articles are the most visible and accessible part of research.
The distribution of software and data raises similar issues.
Open science makes scientific objects visible, accessible, reusable and linked.

Open science needs linked research objects



I- Design

Stakeholders

Designers

- decide goals and objects to deal with
- decide target public
- study target public requirements
- propose services
- have landscape knowledge
- find funders

Funders

- establish mission (with designers)
- provide political and scientific support
- provide funding, resources
- participate in evaluation
- establish free/open access and other policies
- avoid duplication of efforts and funding

Target public(s)

- a scientific community
- a research institution, a laboratory
- several scientific communities
- other infrastructures
- SMEs, industry, society

Target public requirements

Researcher: user needs

- formation, support, acquire best practices
- how to find existing production
- access to other experts skills
- share own experiences
- monitoring technology advances

Researcher: producer needs

+ evaluation, recognition
+ distribute own production (technical, legal issues)
+ promotion (scientific, technology transfert)

Research institution needs

+ visibility, accessibility of the production
+ patrimonial management
+ evaluation and quality of the production
+ establish free/open access and other policies

Research community needs

+ specific ethical issues

II- Realisation of the infrastructure

Services can range

- metadata publication, links to related authors and objects
- search, mining, retrieval interfaces
- feed back tools
- publication of reviewed descriptions (notices)
- peer review procedures for scientific publishing
- discovery, testing interfaces for software and data
- object deposit, preservation, permanent links...
- support on licensing, guidelines, best practices
- development, collaborative and social networking tools
- HPC, grid, cloud, networking services
- training, workshops

New services added as needed

Teams, gouvernance

- whole internal team, includes computer engineers, scientists, librarians, users and other experts
- gouvernance bodies
- technical team
- scientific and expert team
- users' committee

Challenge: architecture of the collaboration

Servers, interfaces (web sites...)

- provide services
- 7/7, 24/24
- quality of service
- technical evolutions
- software and other components
- monitoring tools

Free/open access policies

Legal matters

- licences
- law: copyright, sui generis, patents...
- country jurisdiction, EC
- international collaborations

What means open?

- check definitions
- check licences
- check policies

III- Evaluation

Scope

- objects
- services
- target communities

Scientific information

- theme classification
- keywords
- updating procedures
- reviewed
- publication workflows

What means a successful infrastructure?

Evaluation criteria

- quality of information
- quality of service
- adopted by target public
- well acknowledged
- gouvernance
- political and financial support
- sustainability
- collaboration/interaction with other infrastructures

Sustainability

- team, its organization
- gouvernance
- funding
- adoption by target public

Links and collaboration with other infrastructures

- interoperability
- develop common standards
- coordination
- common strategy

Keywords: infrastructures, open science, reproductibility, accessibility, free/open access...

GOAL: make free/open access happening in the «every day's life» of researchers.

Consulted platforms

Archimer, arXiv, DataCite, DANS, DOAJ, DRYAD, Edinburgh Research Archive, EGI Applications Database, Episciences, EUDAT, exec&share, GBIF, GitHub, Google code, HAL, IPOL, Journal of Open Research Software (JORS), nanoHUB, OpenAIRE, OpenDOAR, OpenEdition, ORBi (U. Liège), Projet PLUME, RE3DATA, RECOLECTA, Research Papers in Economics, ResearchCompendia, RunMyCode, Software Sustainability Institute, SourceForge, swMath, zbMath, Zenodo and many others.

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