



## Studying infrastructures for open science

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# Studying infrastructures for open science

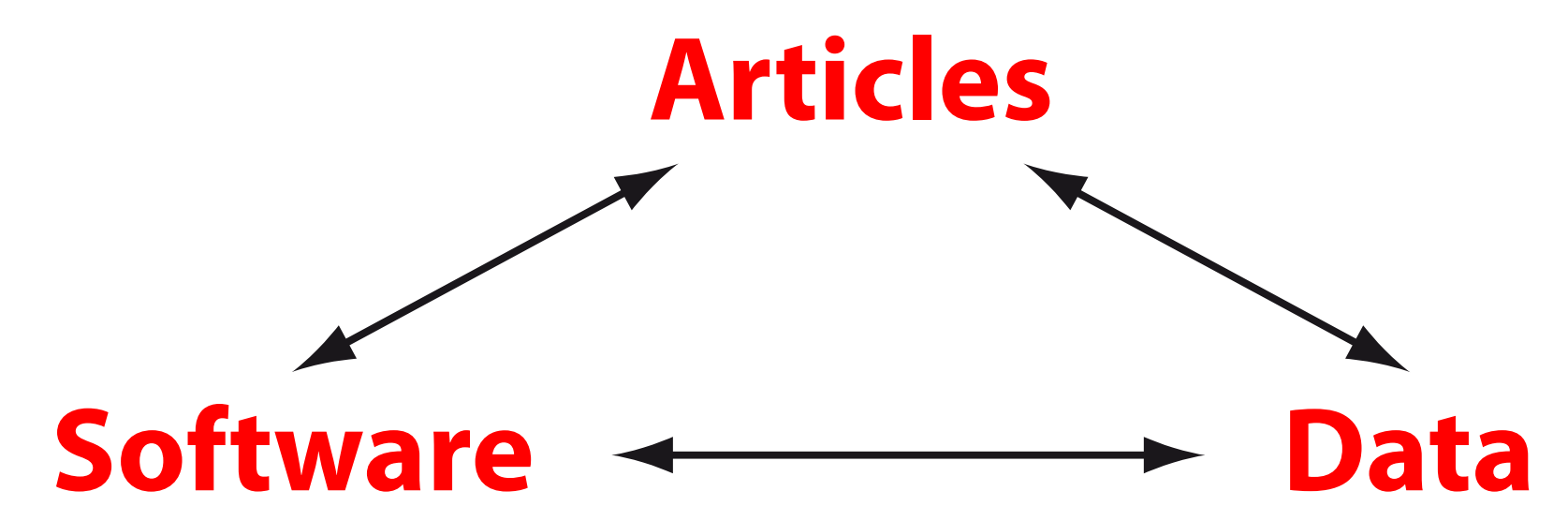
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## Introduction

**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

### 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, reproducibility, 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, RECOLLECTA, Research Papers in Economics, ResearchCompendia, RunMyCode, Software Sustainability Institute, SourceForge, swMath, zbMath, Zenodo and many others.



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