French National Catalogue for Research Software

Violaine Louvet
CNRS & Software and Source Codes College of the French Committee for Open Science

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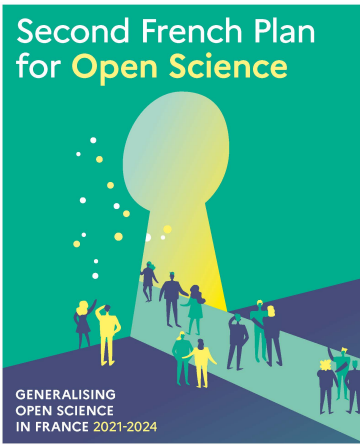
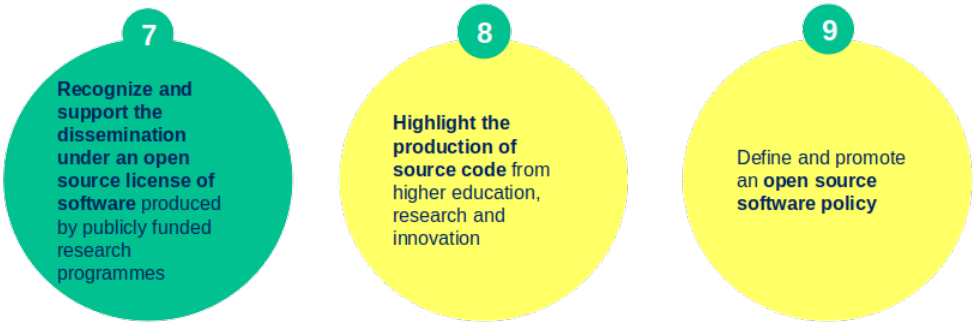
National Plan for Open Science, 2nd edition (2021)



- Multiplying the **levers for change** in order to **generalise open science practices**
- Structuring the **policy for opening up or sharing research data**
- **New commitments to the opening of source code produced by research**
- **European and international inclusion** in the context of the French Presidency of the European Union
- **Disciplinary and thematic variations** : open science policies must be adapted to disciplinary specificities

Opening up and promoting source code produced by research



« The opening of software source code is a major challenge for the **reproductibility** of scientific results. »

« Distribution of software products under **open source licence** will be preferred. »

→ **New college on Software and Source Code** in the Open Science Committee (2022)

One of the measures of the National Plan : Build a catalogue of software resulting from research

What for ?

- **Increased visibility** : Enhance the discoverability of software tools
- **Centralized and permanent access** : Provide a single, organized repository for discovering and accessing research software in the long term
- **Efficiency** : Reduce duplication of effort by allowing researchers and research software engineers to reuse existing tools instead of developing new ones
- **Metrics and impact** : Enable tracking of software developpment for laboratories, universities or academic research organisation
- **Facilitate collaboration** : Encourage collaboration by allowing researchers and research software engineers to share, contribute to, and build upon existing software

- Note : a national quantitative survey in 2023 identified 1,331 research softwares

Identifying key issues

- A first study (report in French) : state of the art of existing catalogues, infrastructures, metadata, support and guidance structures, but also expectations of the research communities
- Key points :
  - Address the **needs and expectations of research communities**
  - Build on **existing resources**
  - Ensure the **quality** of data and metadata
  - Integrate into the **researcher's ecosystem** (Make choices known to scientists)
  - Do not require **re-entry**
  - **Automate** flows and processes as much as possible

Where we are

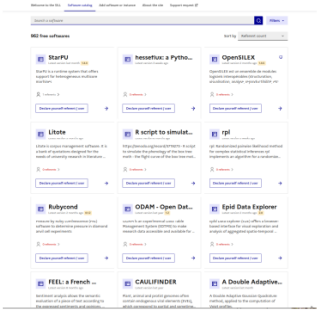
French national Open Archive
Main database for the catalogue
Software deposit link to Software Heritage
MetaData **Moderated**

swhid
Codemeta file

Collect
Preserve
Share

HAL
science ouverte

From HAL, link to SWH
Complementary data : access to code repository and to forge statistics for example



RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

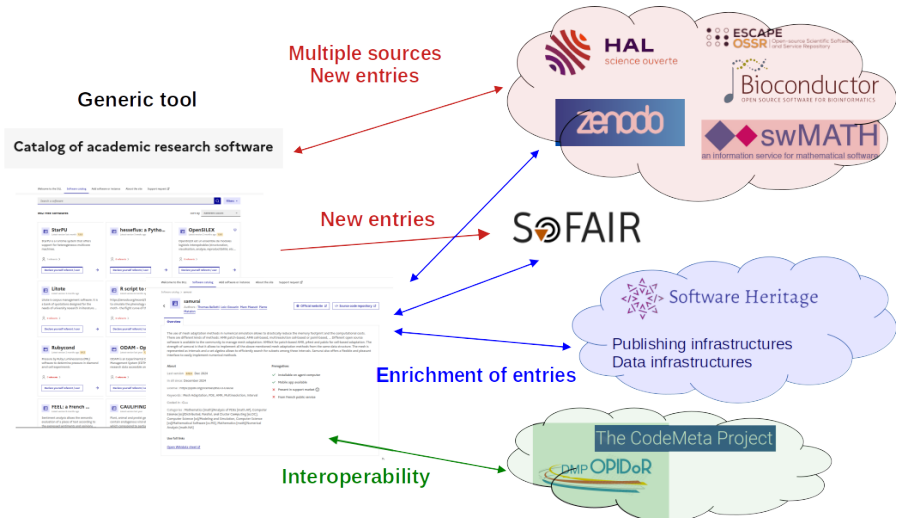
Catalog of academic research software

Existing tool developped by DINUM
(french interministerial digital direction)
Adapted to the needs of scientific research

Where we are going

- **First stage** : national approach. In progress.
- **Next stages** (mid- and long- term) :
  - **Multiple sources** (not only HAL)
    - link to Zenodo, to other research software catalogues
    - Connection to SOFAIR workflow to create new entries or add data (link to publications for example) to entries
  - **Enrichment of entries and making recommendations :**
    - by harvesting resources (publications, data, repositories, etc.)
    - by analyzing other resources (text mining of full text for example : publications, code repositories files as source code, documentation ...)
  - Imagine and build connections between **maDMP** infrastructures, **automatic codemeta file generation** and the catalogue.
    - The CodeMeta project is an initiative to create a standardized metadata schema for software.
    - Codemeta files uses the CodeMeta schema to describe software metadata and are created at the root of the software repository

Where we are going



What about support ?

- First of all : it is **a necessity to involve research communities** in the building of the catalogue, by informing and requesting feedback
- **Organizing support of research communities** is essential :
  - **Development support :** providing infrastructure for the development of research software (software forges, notebook server, CI runners ...)
  - **Best practices :** promoting adherence to best practices in software development, such as version control, testing, documentation...
  - **Training and education :** organising workshops, webinars, and courses to train students and researchers in software development and referencing.
  - **Referencing and archiving :** supporting and helping for archiving (Software Heritage), referencing (HAL) software and citing correctly software
- Moderation teams also need to be strengthened to consolidate moderation and move closer to **curation**

How to organise support ? National level, the French example

- Importance of a **close-proximity support for research software**
  - Including different complementary skills (technical but also legal, open science ...)
  - Draw inspiration from the Recherche Data Gouv ecosystem for research data support
- Develop academic Open Source Program Offices (OSPOs) which do not yet exist in France
  - Organizational construct, situated in an academic research institution, supported by one or more individuals that acts as a convener, community steward, and center of competency for open source software (CURIOSS definition)