



# OSCARS

Open Science Clusters' Action  
for Research & Society

## Funded Project

# CodeMetaSoft

## CodeMetaSoft



Principal Co-Investigator: **Daniel Garijo**, Universidad Politécnica de Madrid

Principal Co-Investigator: **Thomas Vuillaume**, Laboratoire d'Annecy de Physique des Particules, CNRS

Project team members: Tom Francois, Anas el Hounsri, Esteban González Guardia

Implemented by



Funded by  
the European Union

## Improving Research Software metadata good practices across OSCARS science clusters

### OSCARS Funding:

€ 250000

### Project Start:

01-Nov-2024

### Project End:

01-Nov-2026

### Field:

All clusters  
Research Software  
Metadata

### Principal Investigators:

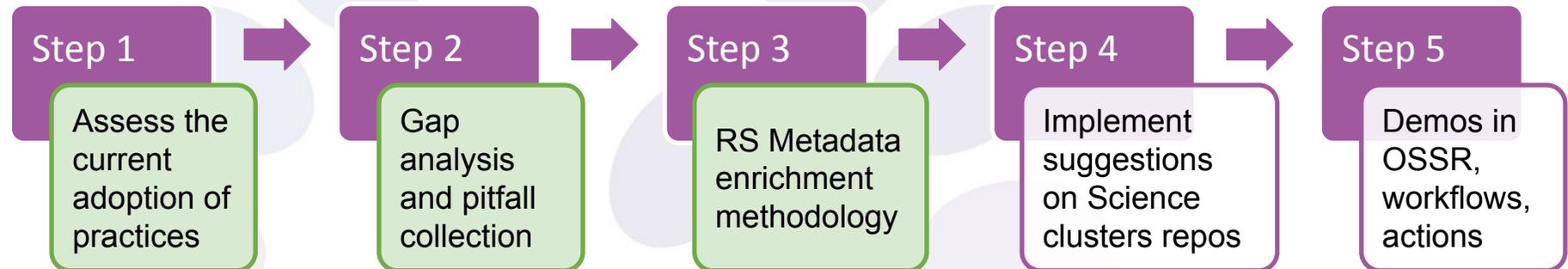
Daniel Garijo, UPM  
Thomas Vuillaume, LAPP

### Other Researchers involved:

Tom Francois, LAPP  
Anas el Hounsri, UPM  
Esteban González, UPM

### Challenge addressed

Ease the adoption of Research Software metadata & good practices  
Automate metadata propagation and interoperability  
Propose suggestions for researchers



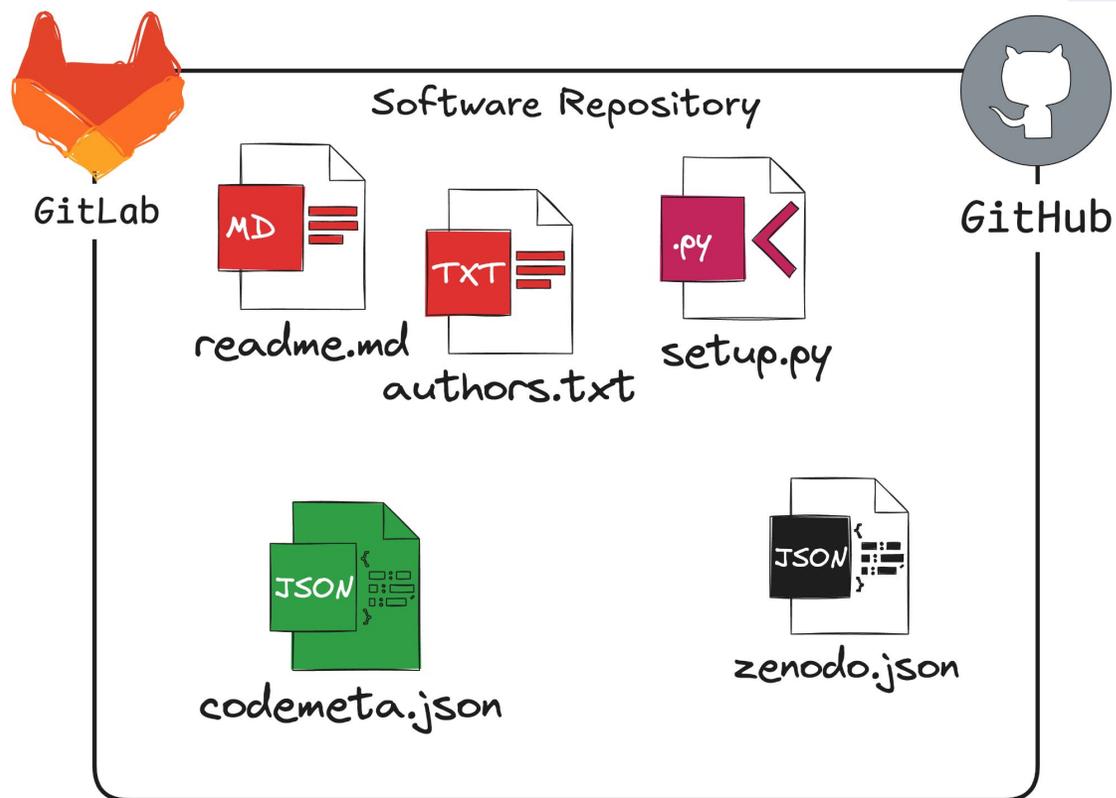
### IMPACT

Improving metadata adoption and FAIR4RS principles in European Science clusters,  
increase the adoption of CodeMeta as a Research Software metadata standard

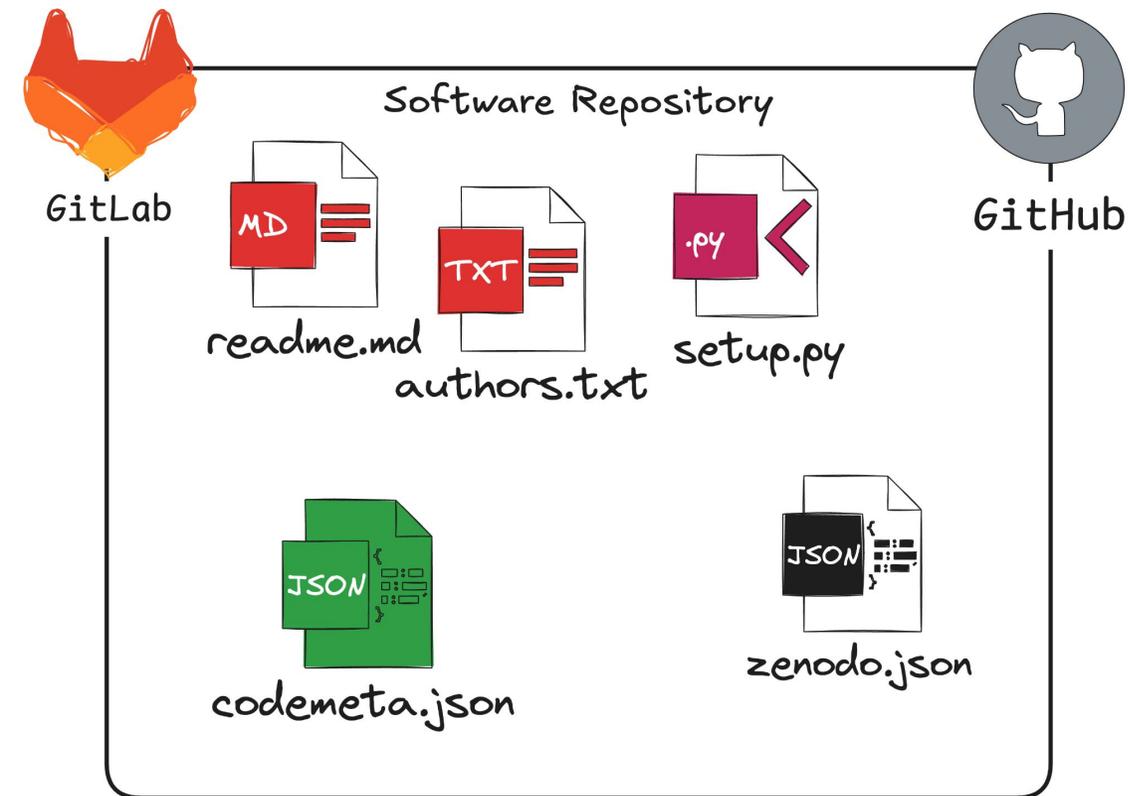
### Organisations involved:



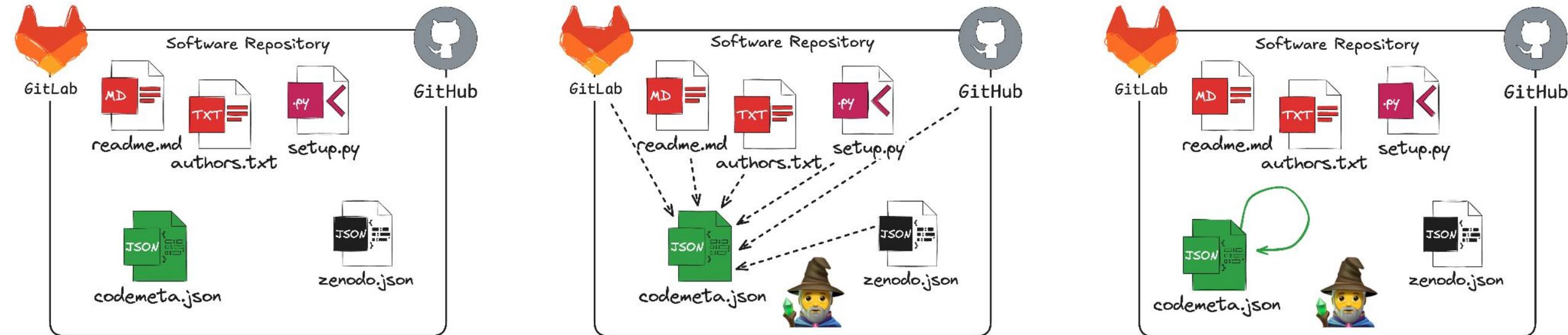
Research Software metadata are a core element of FAIRness.



- Sources of software metadata are often project or platform specific.
  - `setup.py`, `setup.cfg` in python
  - `pom.xml` in Java
  - `README.md`
  - ...
- CodeMeta is becoming the metadata standard for software metadata.



- Software metadata is currently disseminated in heterogeneous files and documentation
- Lack of automated suggestions and enrichment for improving software metadata



- Integrate and enrich Research Software (RS) metadata records
  - Tools to ease metadata compliance, propagation and automated suggestions and enrichment
  - Automate RS metadata maintenance workflows
  - Means to measure metadata gaps and the adoption of best practices
  - Methodology for RS enrichment
  - Demonstrators through clusters and [OSSR](#)
-

# Auto-codemeta wizard: <https://autocodemeta.linkeddata.es/>

Run-time environment	Current version of the software	Reference Publication																											
Programming Language	Version number	Reference Publication URL																											
Python	v6.0.5	<a href="https://doi.org/10.3847/1538-4357/ab4f7a">https://doi.org/10.3847/1538-4357/ab4f7a</a>																											
Runtime Platform	Release date	Title of publication																											
.NET, JVM	2025-05-21	the sunpy project: open source development and status of the version 1.0 core package																											
Operating System	Download URL	DOI of publication																											
Android 1.6, Linux, Windows, macOS	<a href="https://github.com/sunpy/sunpy/releases">https://github.com/sunpy/sunpy/releases</a>	10.3847/1538-4357/ab4f7a																											
Other software requirements	Release notes	ISSN of publication																											
<table border="1"> <thead> <tr> <th>Name/Text</th> <th>Version</th> <th></th> </tr> </thead> <tbody> <tr> <td>astropy</td> <td>&gt;=6.1.0</td> <td>-</td> </tr> <tr> <td>numpy</td> <td>&gt;=1.25.0</td> <td>-</td> </tr> <tr> <td>packaging</td> <td>&gt;=23.2</td> <td>-</td> </tr> <tr> <td>parfive</td> <td>ftp]&gt;=2.1.0</td> <td>-</td> </tr> <tr> <td>pyerfa</td> <td>&gt;=2.0.1.1</td> <td>-</td> </tr> <tr> <td>requests</td> <td>&gt;=2.32.0</td> <td>-</td> </tr> <tr> <td>fsspec</td> <td>&gt;=2023.6.0</td> <td>-</td> </tr> <tr> <td>catutils</td> <td>&gt;=6.2.1</td> <td>-</td> </tr> </tbody> </table>	Name/Text	Version		astropy	>=6.1.0	-	numpy	>=1.25.0	-	packaging	>=23.2	-	parfive	ftp]>=2.1.0	-	pyerfa	>=2.0.1.1	-	requests	>=2.32.0	-	fsspec	>=2023.6.0	-	catutils	>=6.2.1	-	<pre>## What's Changed * Backport PR #7911 on branch 6.0 (Adds support for the timestamp %Y%m%d%H%M) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7915 * Backport PR #7920 on branch 6.0 (bug fix for suviclient unit conversion) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7925 * Backport PR #7917 on branch 6.0 (Handling FILLVAL ATTRIBUTES Missing) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7929 * Backport PR #7933 on branch 6.0 (Updates from the package template) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7934 * Backport PR #7939 on branch 6.0 (Updates from package template) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7941 * Backport PR #7942 on branch 6.0 (Renable full test-suite) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7944 * Backport PR #7937 on branch 6.0 (Optimizing test_goes_suvi.py) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7945 * Backport PR #7954 on branch 6.0 (Updates from the package template) by @meeseeksmachine in https://github.com/sunpy/sunpy/pull/7956</pre>	Date of publication Date Published  Authors (either persons or organizations) can be added below Authors < Add one Remove last > N° Authors: 35 Author #1 Type Author: Organization v < Change priority > Name The SunPy Community E-mail address jane.doe@example.org
Name/Text	Version																												
astropy	>=6.1.0	-																											
numpy	>=1.25.0	-																											
packaging	>=23.2	-																											
parfive	ftp]>=2.1.0	-																											
pyerfa	>=2.0.1.1	-																											
requests	>=2.32.0	-																											
fsspec	>=2023.6.0	-																											
catutils	>=6.2.1	-																											

# Metadata comparison reports in OSSR:

[https://rs-quality-checks-2b2333.gitlab.io/records/global\\_report/](https://rs-quality-checks-2b2333.gitlab.io/records/global_report/)

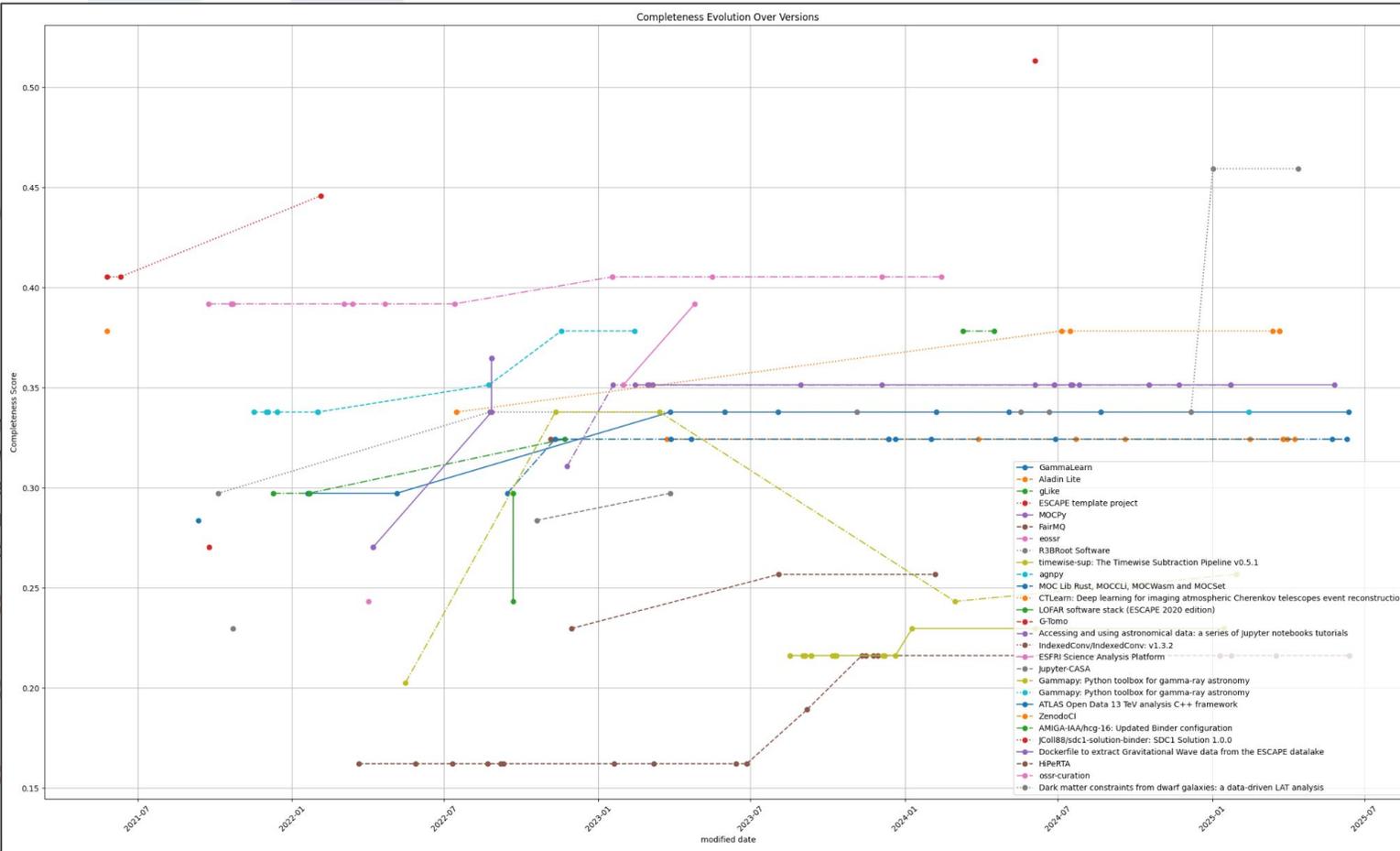
## Global Repository Quality Report

Number of repositories tested: 28 Indicators tested: - [https://w3id.org/everse/i/indicators/codemeta\\_completeness](https://w3id.org/everse/i/indicators/codemeta_completeness) - [https://w3id.org/everse/i/indicators/codemeta\\_discrepancy](https://w3id.org/everse/i/indicators/codemeta_discrepancy)

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### Results

Repository Name	Repository ID	Links	<a href="https://w3id.org/everse/i/indicators/codemeta_completeness">https://w3id.org/everse/i/indicators/codemeta_completeness</a>	<a href="https://w3id.org/everse/i/indicators/codemeta_discrepancy">https://w3id.org/everse/i/indicators/codemeta_discrepancy</a>
GammaLearn	15648631			
Aladin Lite	15181455			
gLike	7342721			
ESCAPE template project	5972794			

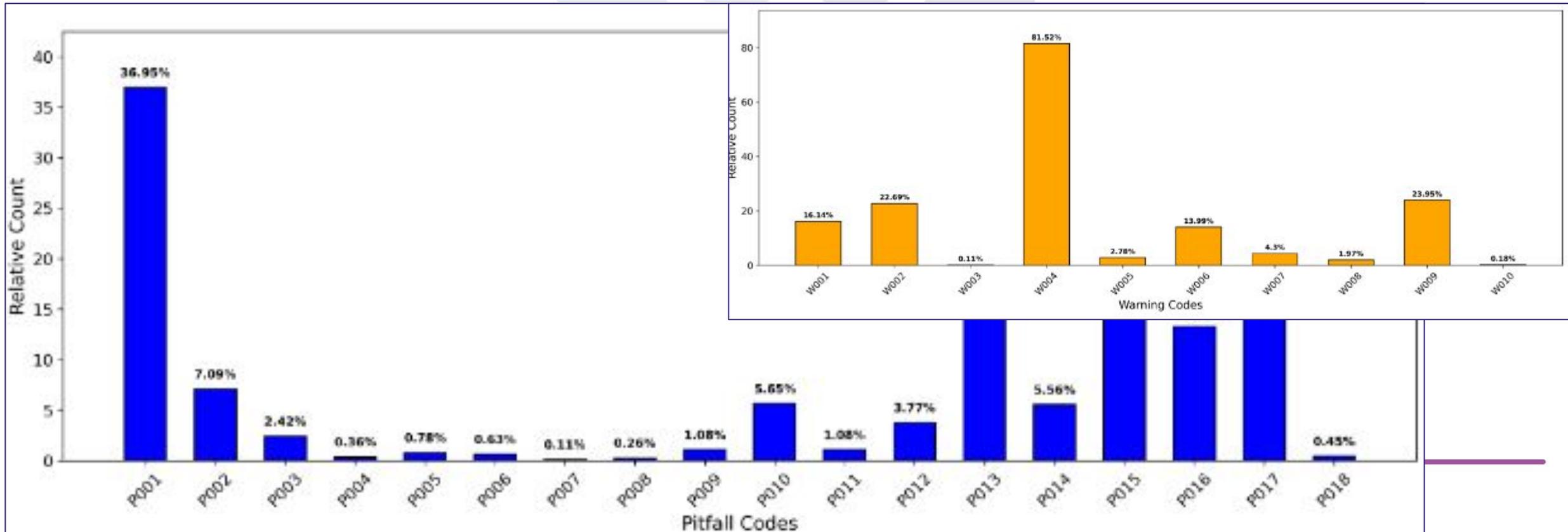


Metadata pitfall catalog (in review at MSR 2025) 18 pitfalls, 10 warnings.

Pitfall detection tool: <https://github.com/SoftwareUnderstanding/RsMetaCheck>

Bot for continuous integration fixes: (being evaluated)

[https://gitlab.com/escape-ossr/rs\\_quality\\_checks](https://gitlab.com/escape-ossr/rs_quality_checks)



- What is going to change thanks to your project?
  - CodeMeta **maintenance in software repositories is simplified**. As a result its adoption in the Science Clusters increases, making software more FAIR globally.
  - **Gaps in metadata are identified in software catalogues**, helping Science Clusters focusing their efforts where they are most needed
- Resources that will be made available:
  - Open service(s) and actions usable by others from any community
- Sustainability:
  - Rely on **existing tooling** (e.g., CodeMeta generator) and **standards** (CodeMeta)
  - The developed solution and results will be open-source and published in Zenodo to be (re)usable by anyone.
- A first landscape analysis of good practices has been accepted at MSR'25 [1]

[1] El Hounsri, Anas and Garijo, Daniel. Good practice versus reality: A landscape analysis of Research Software metadata adoption in European Open Science Clusters. To appear in Proceedings of the Mining Software Repositories Conference, 2025. Association for Computing Machinery. MSR '25. 2025. [https://dgarijo.com/papers/El\\_Hounsri\\_MSR\\_2025\\_landscape\\_analysis\\_CR.pdf](https://dgarijo.com/papers/El_Hounsri_MSR_2025_landscape_analysis_CR.pdf)



OSCARS

Thank you