



# ESCAPE

European Science Cluster of Astronomy &  
Particle physics ESFRI research Infrastructures

## ESCAPE OSSR

Thomas Vuillaume, on behalf of all contributors:

Enrique Garcia, Jutta Schnabel, Kay Graf, Tamas Gal, Mark Kettenis, Christian Tacke, Marjolein Verkouter ...

29-11-2022, ESCAPE OSSR workshop, Erlangen



# Today's Menu

OSSR overview...



... To the future



# A step back in time... Bruxelles, February 2020

An example of open science project : The Crab bundle

The Crab multi-instrument gamma-ray analysis with MAGIC, VERITAS, FACT and H.E.S.S.

<https://github.com/open-gamma-ray-astro/joint-crab/tree/v0.1>

<https://zenodo.org/record/2381863#.XkxcD5NKhhA>

Now imagine this as a **standard**,

in an **integrated environment** - with a single

login,

allowing you to (re-)run (part of) **any analysis**,

with another **dataset**,

and easily **publish** your new results,

automatically **giving credit** to original analysis,

datasets, workflows...

The joint-crab bundle

141 views, 12 downloads

Indexed in OpenAIRE

Publication date: December 18, 2018

DOI: [10.5281/zenodo.2381863](https://doi.org/10.5281/zenodo.2381863)

License: CC BY 4.0 International

Cited by

Link to project and article

Cite as

license

Source code and data

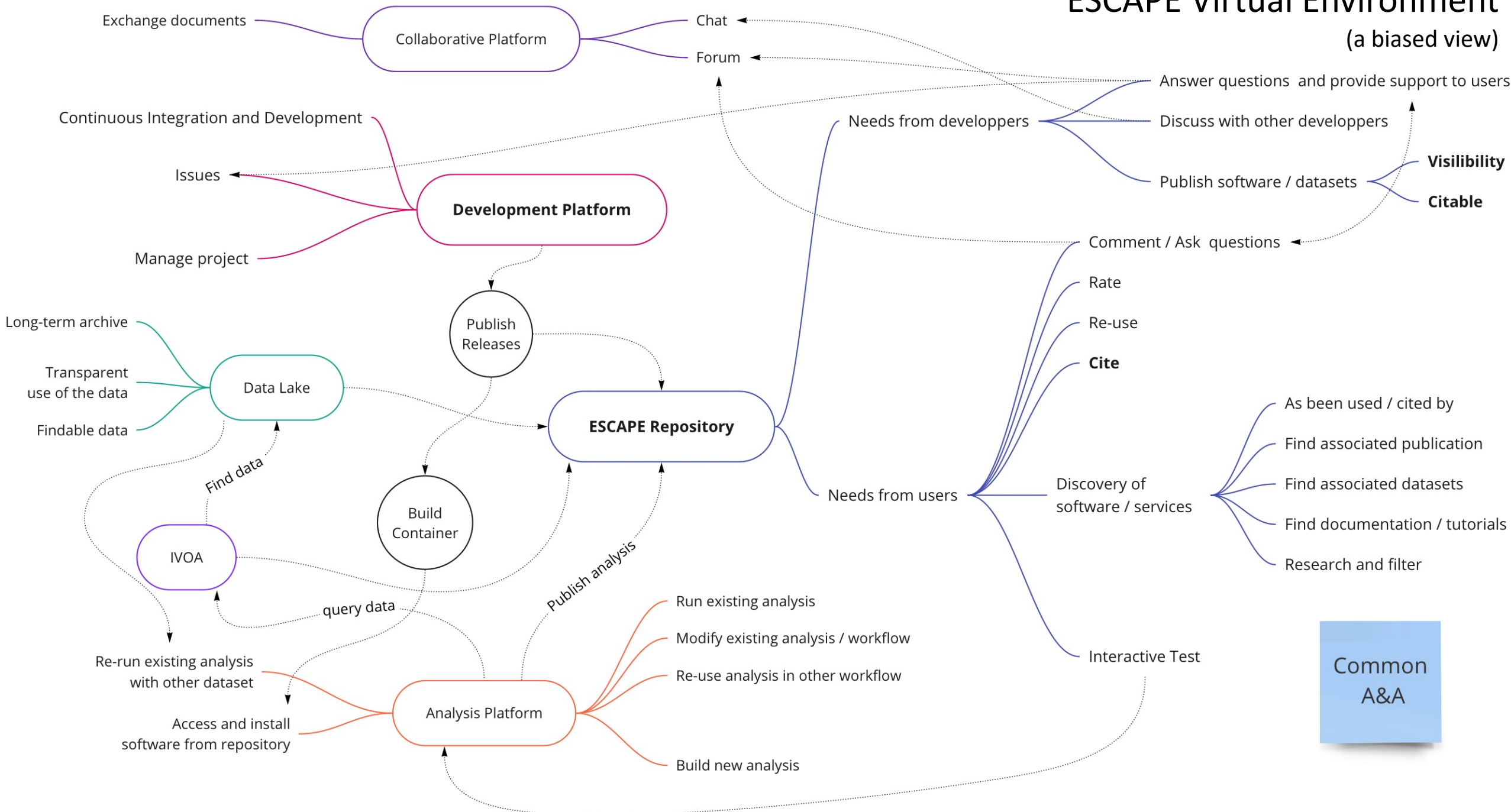
Cited by

Link to project and article

Cite as



# ESCAPE Virtual Environment (a biased view)



# Community Driven Repository, Organised by Science Projects

- Starting a new Science projet (through validation) sets up a complete virtual environment
- Researchers / Institutes contribute to the science project by publishing software / workflow / data
- The contributions are validated by science project curators
- Users can search the repository or explore it through the science projects



# Policy & recommendations



# OSSR policy

- Find it... in the OSSR! <https://doi.org/10.5281/zenodo.6757113>
- TLDR
  - License !
    - Permissive and open-source if possible (MIT, BSD-3... )
  - Add metadata
    - As a CodeMeta file
    - The more (accurate) metadata, the better
  - Version
  - Follow modern development practices (git, environment files, dockerise...)
- Final/updated version before ESCAPE ends?



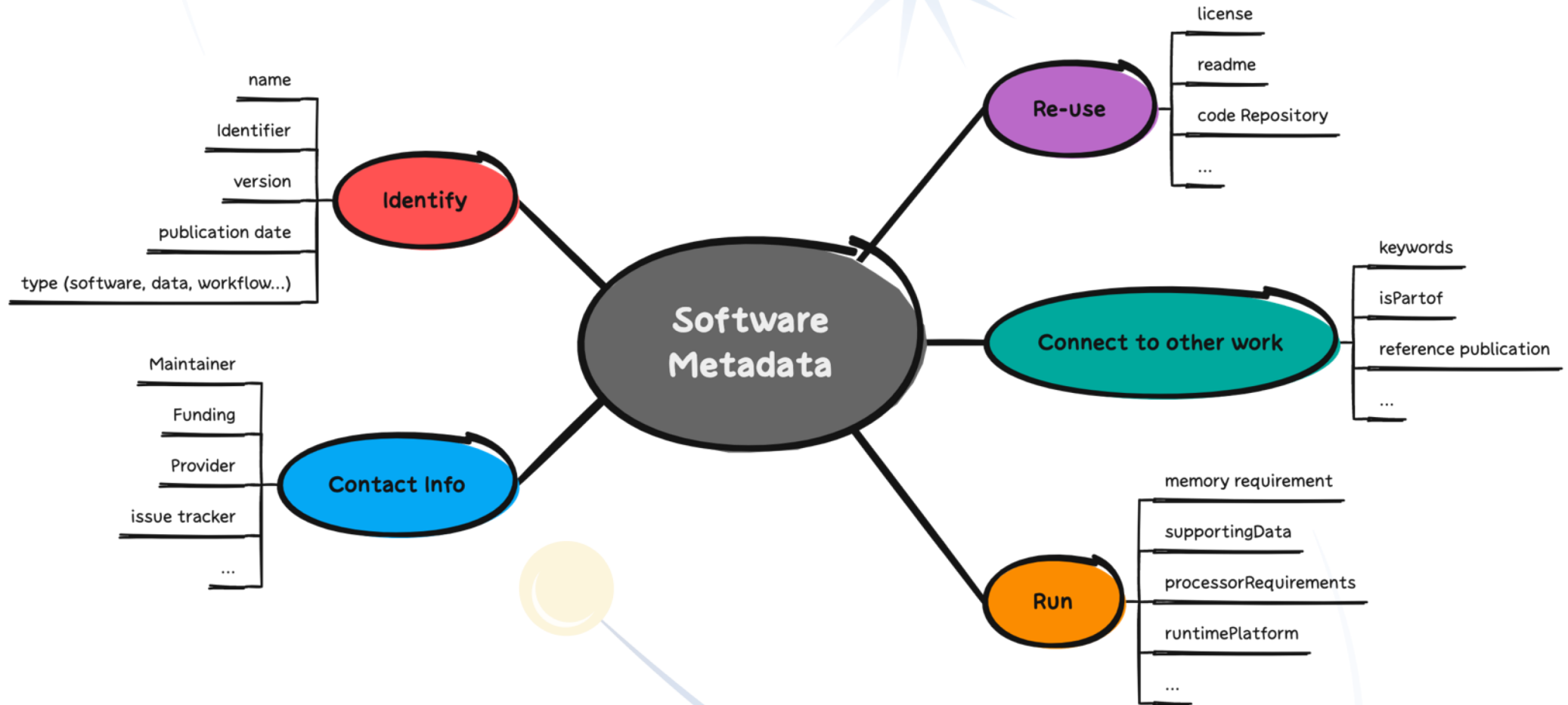
# MetaData & FAIRness





# Metadata & FAIRness

- MetaData are the heart of the FAIR principles



# Metadata & FAIRness

- It also allows services to install a software or run an analysis
  - by finding it: see e.g. the jupyter-notebook keyword in the OSSR allowing the ESAP to identify records that include and interactive analysis
  - by running it: e.g. knowing the CPU or memory requirements
- For FAIRness, **MetaData must be included in a file included in each record.**
- ESCAPE implementation choice for software: [CodeMeta](#) (as a codemeta.json file)
- CodeMeta [generator](#) and [validator](#) online



# An example of codemeta.json

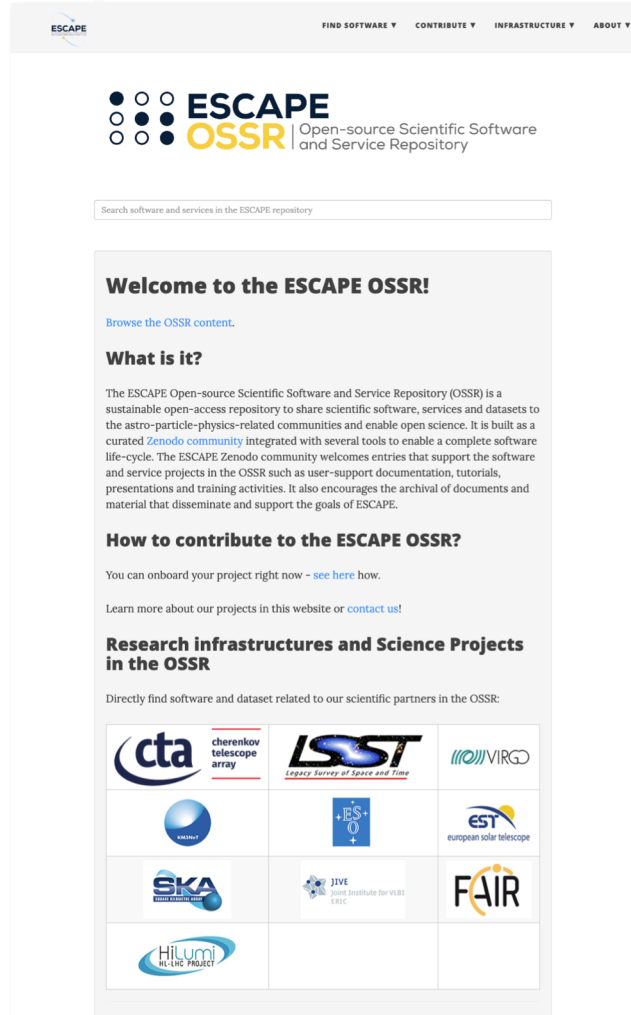
```
1 {
2   "@context": "https://doi.org/10.5063/schema/codemeta-2.0",
3   "@type": "SoftwareSourceCode",
4   "name": "eosrr",
5   "description": "<p align='left'><img src='docs/images/eosrr_logo.png' width='400px' /></p><h1>The ESCAPE OSSR library</h1><p>T
6   "license": "https://spdx.org/licenses/MIT",
7   "version": "v0.6.2.dev34+g75395d9",
8   "softwareVersion": "v0.6.2.dev34+g75395d9",
9   "codeRepository": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr",
10  "developmentStatus": "active",
11  "isAccessibleForFree": true,
12  "isPartOf": [
13    "https://gitlab.in2p3.fr/escape2020",
14    "https://projectescape.eu/"
15  ],
16  "contIntegration": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr/-/pipelines",
17  "buildInstructions": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr/-/blob/master/README.md",
18  "issueTracker": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr/-/issues",
19  "readme": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr/-/blob/master/README.md",
20  "programmingLanguage": [
21    {
22      "@type": "ComputerLanguage",
23      "name": "Python",
24      "url": "https://www.python.org/"
25    }
26  ],
27  "softwareRequirements": [
28    {
29      "@type": "SoftwareApplication",
30      "identifier": "requests",
31      "name": "requests",
32      "softwareVersion": ">=3.6"
33    },
34    {
35      "@type": "SoftwareApplication",
36      "identifier": "pytest",
37      "name": "pytest",
38      "softwareVersion": ">=5.4.2"
39    }
40  ],
41  "keywords": [
42    "jupyter-notebook",
43    "zenodo"
44  ],
45  "runtimePlatform": "Python 3",
46  "downloadUrl": "https://gitlab.in2p3.fr/escape2020/wp3/eosrr/-/archive/v0.6.2.dev34+g75395d9/eosrr-v0.6.2.dev34+g75395d9.zip",
47  "releaseNotes": ""
```



# Technical Implementation



OSSR entry point: <https://purl.org/escape/ossr>

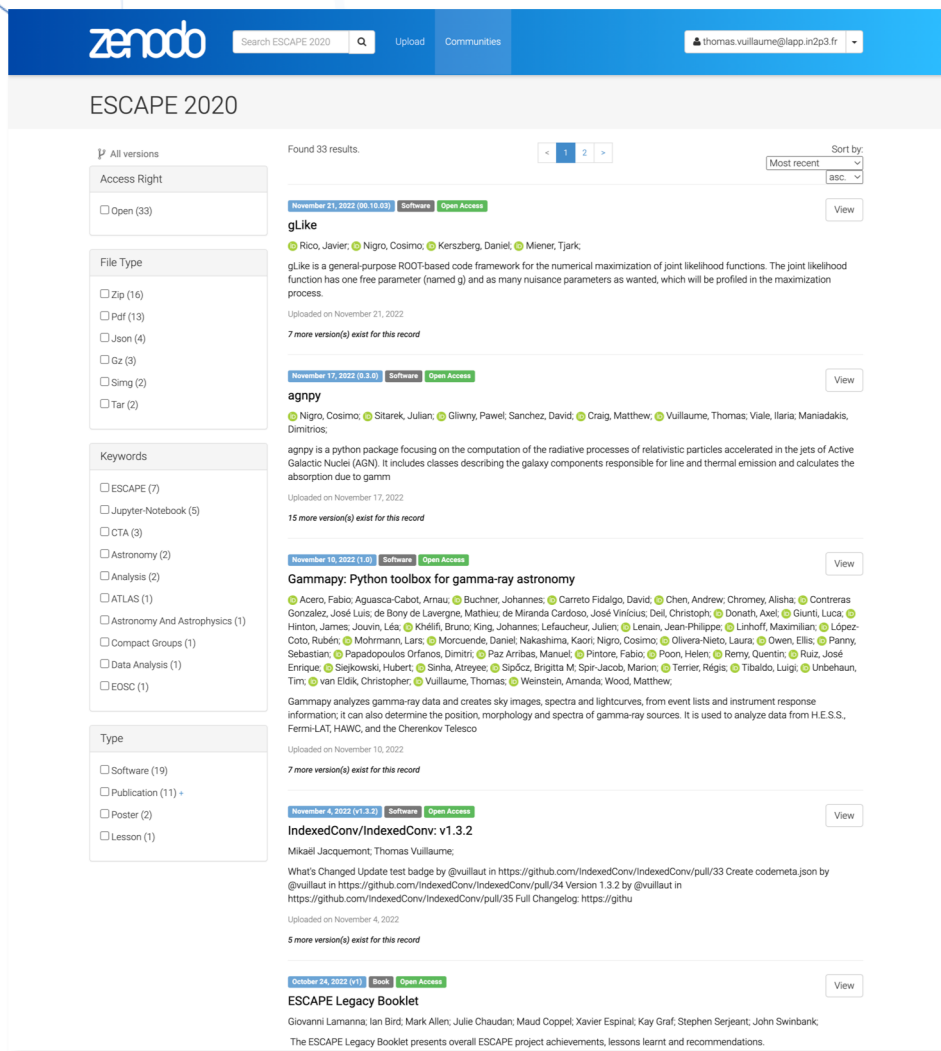


The screenshot shows the ESCAPE OSSR website interface. At the top, there is a navigation bar with links for 'FIND SOFTWARE', 'CONTRIBUTE', 'INFRASTRUCTURE', and 'ABOUT'. Below this is the ESCAPE OSSR logo and tagline: 'Open-source Scientific Software and Service Repository'. A search bar is provided for finding software and services. The main content area features a 'Welcome to the ESCAPE OSSR!' section with a link to 'Browse the OSSR content'. Below this is a 'What is it?' section explaining the repository's purpose and a 'How to contribute to the ESCAPE OSSR?' section with a link to 'see here how'. The 'Research infrastructures and Science Projects in the OSSR' section lists various partners with their logos, including CTA, LSST, VIRGO, SKA, FAIR, and others.

- Browse the OSSR
- Guidelines & policy
- Tutorials
- Contact



# OSSR core: Zenodo & the *escape2020* community



The screenshot shows the Zenodo search results for 'ESCAPE 2020'. The interface includes a search bar, navigation tabs (Upload, Communities), and a user profile dropdown. The search results are filtered to 'All versions' and show 33 results. The left sidebar contains filters for Access Right (Open), File Type (Zip, Pdf, Json, Gz, Simg, Tar), Keywords (ESCAPE, Jupyter-Notebook, CTA, Astronomy, Analysis, ATLAS, Astronomy And Astrophysics, Compact Groups, Data Analysis, EOSC), and Type (Software, Publication, Poster, Lesson). Three records are visible:

- gLike** (November 21, 2022): A general-purpose ROOT-based code framework for the numerical maximization of joint likelihood functions.
- agnpy** (November 17, 2022): A python package focusing on the computation of the radiative processes of relativistic particles accelerated in the jets of Active Galactic Nuclei (AGN).
- Gammapy: Python toolbox for gamma-ray astronomy** (November 10, 2022): A toolbox for analyzing gamma-ray data and creating sky images, spectra, and lightcurves.

## Current stats:

[3]: OSSR statistics generated the 2022-11-30

[4]: `md(text)`

[4]: **There are 19 records in the OSSR.**

downloads: 4806

unique downloads: 2042

views: 19073

unique views: 6964

[6]: `md(text)`

[6]: **Note that there are also 14 records in the ``escape2020`` community that are not software or datasets.**

You may find them [directly on Zenodo](#)



- *eOSSR* library
  - Dev: <https://gitlab.in2p3.fr/escape2020/wp3/eossr>
  - Doc: <https://escape2020.pages.in2p3.fr/wp3/eossr/>
  - OSSR: <https://doi.org/10.5281/zenodo.6826881>
  - **Gathers all OSSR developments and technical definitions**



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  - **Gathers all OSSR developments and technical definitions**
    - **OSSR API:** send request to the OSSR, find and filter software and services, upload new entries, update existing entries





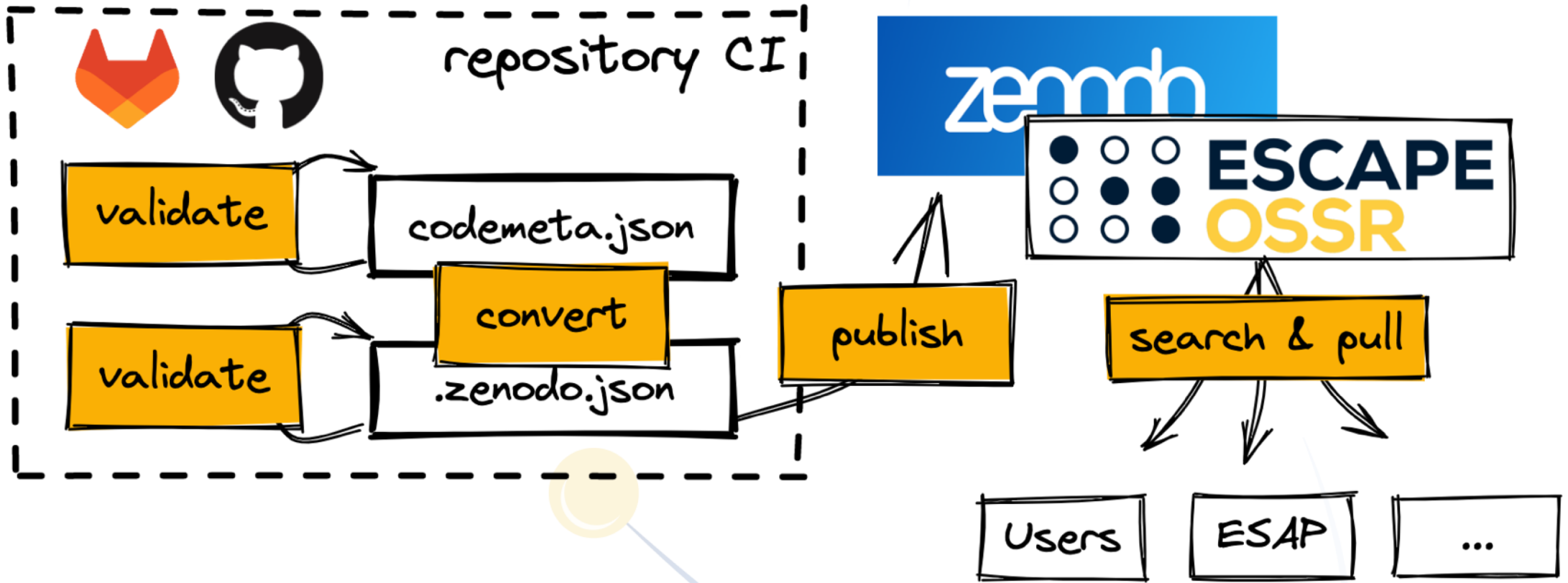
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    - **CI:** automated upload / update using gitlab CI



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    - **CI:** automated upload / update using gitlab CI
    - **Metadata:** schema definition, crosswalk between CodeMeta and Zenodo, validation



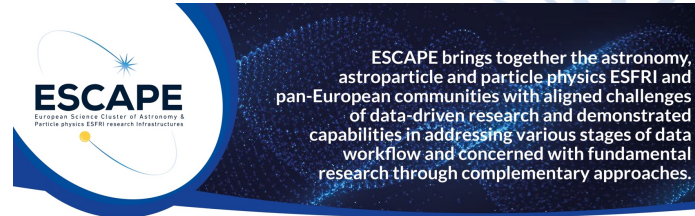
# eOSSR



eOSSR presented as ADASS 2022 poster

proceedings:

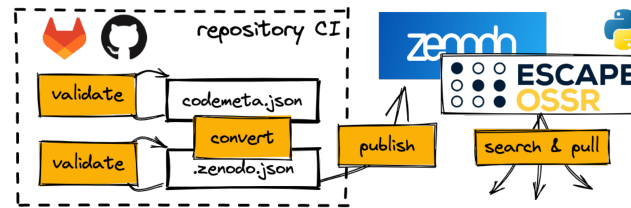
<https://hal.archives-ouvertes.fr/hal-03876630v1>



## eOSSR

Authors: Thomas Vuillaume\*, Enrique Garcia, Christian Tacke, Tamas Gal, for the ESCAPE project  
\*thomas.vuillaume@lapp.in2p3.fr

The aim of the ESCAPE WP3-OSSR (Open-source Scientific Software and Service Repository) is to provide the tools necessary for the communities to share their science products in a harmonized way respecting the FAIR principles, promoting **open science** and maximizing **cross-fertilization** by **software re-use** and **co-development**. One of the key components to achieve this goal is the software and service repository. For its concept implementation, the ESCAPE repository is using **Zenodo web service** through the curated **escape2020** community integrated with several tools to enable a complete software life-cycle. The ESCAPE Zenodo community welcomes entries that support the software and service projects in the OSSR such as user-support documentation, tutorials, presentations and training activities. It also encourages the archival of documents and material that disseminate and support the goals of ESCAPE. We developed a Python library called **eOSSR** in order to allow an automated integration of Zenodo with other tools and platforms forming the OSSR as well as providing an integrated environment to external users. The library is open-source and has been published in the OSSR itself. You may find it at <https://doi.org/10.5281/zenodo.6826881>. You may find documentation and running examples online: <https://escape2020.pages.in2p3.fr/wp3/eosssr/>



**Metadata:** The OSSR has chosen **codemeta.json** as schema and format for its software metadata. The definition of this schema has been integrated within the eOSSR, thus allowing:

- An automated verification of the metadata.
- A converter between Zenodo metadata schema and the OSSR metadata

**API:** For other tool to communicate with the OSSR, an **API** was necessary. The eOSSR takes advantage of Zenodo's API to propose a set of high-level functionalities through Python functions or command-lines, such as:

- Requesting software in the OSSR via wide or specific searches, using plain text or recognized metadata such as keywords or file type.
- Uploading software to the OSSR (or Zenodo) via the CLI.
- Search for Zenodo's communities, and supported licenses, funders and grants.

**JOIN OUR COMMUNITY**  
REGISTER ON THE WEBSITE! [www.projectescape.eu](http://www.projectescape.eu)  
[@ESCAPE\\_EU](https://twitter.com/ESCAPE_EU) [linkedin.com/in/escape-eu](https://www.linkedin.com/in/escape-eu)

ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No. 824064.

### The eOSSR library

Thomas Vuillaume<sup>1</sup>, Enrique Garcia<sup>1,2</sup>, Christian Tacke<sup>3</sup>, and Tamas Gal<sup>4</sup>

<sup>1</sup>Univ. Savoie Mont-Blanc, LAPP, CNRS, Annecy, France; [thomas.vuillaume@lapp.in2p3.fr](mailto:thomas.vuillaume@lapp.in2p3.fr)

<sup>2</sup>IT Department, CERN - 1211 Geneva 23 - Switzerland

<sup>3</sup>GSI Helmholtz Centre for Heavy Ion Research GmbH, Darmstadt, Germany

<sup>4</sup>IT Erlangen Centre for Astroparticle Physics, Erlangen, Germany

### Abstract.

The astronomy, astroparticle and particle physics communities are brought together through the ESCAPE (European Science Cluster of Astronomy and Particle Physics ESFRI research infrastructures) project to create a cluster focused on common issues in data-driven research. Among the ESCAPE work packages, the OSSR (ESCAPE Open-source Scientific Software and Service Repository) is a curated, long-term, open-access repository that makes it possible for scientists to exchange software and services and promote open science. It has been developed on top of a Zenodo community, connected to other services. A Python library, the eOSSR, has been developed to take care of the interactivity between Zenodo, services and OSSR users, allowing an automated handling of the OSSR records. In this work, we present the eOSSR, its main functionalities and how it's been used in the ESCAPE context to ease the publication of scientific software, analysis, and datasets by researchers.

### 1. The ESCAPE OSSR

The aim of the ESCAPE OSSR (Open-source Scientific Software and Service Repository) is to provide the tools necessary for the communities to share their science products in a harmonized way respecting the FAIR principles, promoting open science and maximizing cross-fertilization by software re-use and co-development. One of the key components to achieve this goal is the software and service repository. For its concept implementation, the ESCAPE repository is using Zenodo web service through the curated **escape2020** community integrated with several tools to enable a complete software life-cycle. The ESCAPE Zenodo community welcomes entries that support the software and service projects in the OSSR such as user-support documentation, tutorials, presentations, and training activities. It also encourages the archival of documents and material that disseminate and support the goals of ESCAPE.



# MetaData generator and validator

<https://escape2020.pages.in2p3.fr/wp3/codemeta-generator/>

[Run online](#)

## ESCAPE OSSR CodeMeta generator

This tool helps you create a CodeMeta.json file for your software. Note however that it is not exhaustive and other fields can be manually added in your file following the [CodeMeta schema](#).

Most fields are optional. Mandatory fields will be highlighted when generating Codemeta.

**The software itself**

**Name**  
great-software  
the software title

**Description**  
so great

**Documentation or readme**  
<https://great.doc.com>

**Creation date**  
2022-11-30

**First release date**  
2022-11-30

**License**  
MIT  
from [SPDX license list](#)

**Discoverability and citation**

**Unique identifier**  
10.151.xxxxx  
such as ISBNs, GTIN codes, UUIDs etc. <http://schema.org/identifier>

**Application category**  
Astronomy

**Keywords**  
Projects: CTA, ESO-VLego, ELT, EST, FAIR, HL-LHC, K338eT, LSST, LOFAR, SKA) Content: Astronomy, Astroparticle physics, Particle physics

**Keywords**  
Funding  
ESCAPE 824054  
grant funding software development

**Funder**  
European Union's Horizon 2020 research and innovation programme  
organization funding software development

**Authors and contributors can be added below**

**Development community / tools**

**Code repository**  
git+https://github.com/YourRepoName.git

**Continuous integration**  
<https://travis-ci.org/YourRepoName>

**Issue tracker**  
<https://github.com/YourRepoName/issues>

**Related links**

**Run-time environment**

**Programming Language**  
C#, Java, Python 3

**Runtime Platform**  
NET, JVM

**Operating System**  
Android 1.0, Linux, Windows, macOS

**Other software requirements**  
Python 3.4  
<https://github.com/pet/requests>

**Current version of the software**

**Version number**  
1.0.0

**Release date**  
2022-11-30

**Download URL**  
<https://example.org/MySoftware.tar.gz>

**Release notes**  
Change log: this and that;  
bugfixes: that and this.

**Additional Info**

**Reference Publication**  
<https://doi.org/10.1000/xyz123>

**Development Status**  
[www.zenodo.org](http://www.zenodo.org) for details

**Is part of**  
<http://The.Bigger.Framework.org>

**Authors (add at least one)**  
[Add one](#) | [Remove last](#)

**Contributors (optional, order does not matter)**  
[Add one](#) | [Remove last](#)

**Maintainer (required)**

**Given name**  
Jane

**Family name**  
Doe

**E-mail address**  
[jane.doe@example.org](mailto:jane.doe@example.org)

**URI**  
<http://orcid.org/0000-0002-1825-0097>

**Affiliation**  
Department of Computer Science, University of P

[Generate codemeta.json](#) | [Reset form](#)

codemeta.json:

```
{
  "@context": "https://doi.org/10.5063/schema/codemeta-2.0",
  "@type": "SoftwareSourceCode",
  "license": "https://spdx.org/licenses/MIT",
  "dateCreated": "2022-11-30",
  "datePublished": "2022-11-30",
  "dateModified": "2022-11-30",
  "name": "great-software",
  "version": "1.0.0",
  "description": "so great",
  "readme": "https://great.doc.com",
  "softwareVersion": "1.0.0",
  "maintainer": [
    {
      "@type": "Person",
      "givenName": "Jane",
      "familyName": "Doe"
    }
  ]
}
```

Note that you can validate your generated codemeta.json with the eOSSR CLI tool [ossr-metadata-validator](#)

## Validate and convert your metadata

This notebook will help you validate your metadata for an upload to the ESCAPE OSSR.

To do so, upload your codemeta metadata, either using a URL pointing to the 'codemeta.json' file, uploading a 'codemeta.json' file or copying the metadata in the text box below.

Note that you can generate your ESCAPE codemeta file using the online generator: <https://escape2020.pages.in2p3.fr/wp3/codemeta-generator/>

Load codemeta from a json file

[Upload \(0\)](#)

Load codemeta from an URL

URL:

[Load](#)

codemeta:

[Validate !](#)

[Convert to .zenodo.json](#)

[Add ESCAPE metadata](#)

# Implementation into the OSSR environment

From a  
single click

- Publishes source code (updates your existing record with new versions)

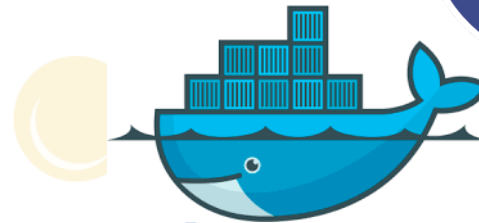


- Long term archived
- Findable
- Citable



1. Make a new tag (release)
2. Let the CI do the rest

- builds images



- publishes to OSSR

- Publishes on registries



# Curation



# Curation

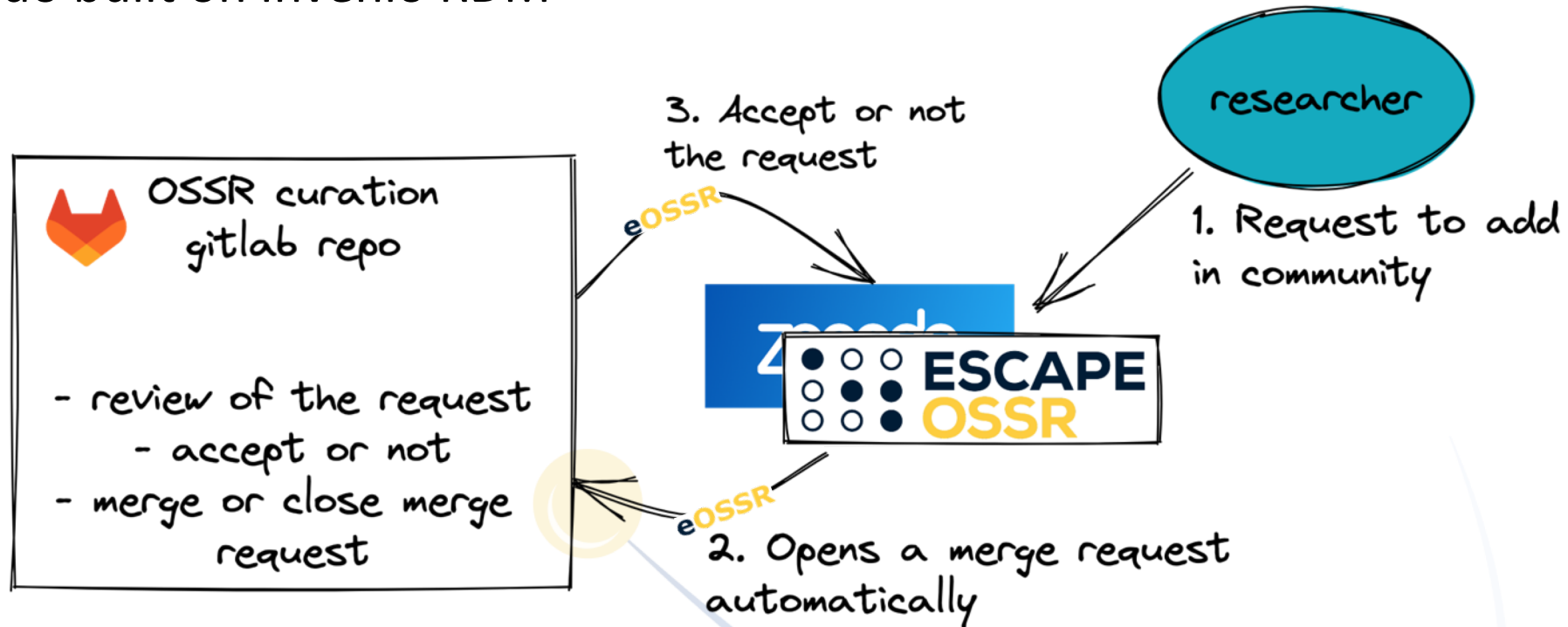
- Each entry in the OSSR is reviewed to:
  - Ensure that it matches our policy and requirements
  - Make recommendations
  - Help implement them
- It happens through:
  - A recorded presentation of the software, analysis or service
  - A formal final review and acceptance through ossr-curation

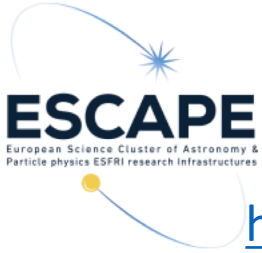




# Curation: ossr-curation

- Issue: Zenodo currently supports a single community maintainer and reviewer
- OSSR curation: a solution to collaboratively and openly review requests in a Zenodo community. Note that it might become obsolete in a future version of Zenodo built on Invenio RDM





# Curation: ossr-curation

<https://gitlab.in2p3.fr/escape2020/wp3/ossr-curation>

ESCAPE2020 > WP3 > ossr-curation > Merge requests

Open 10 Merged 1 Closed 0 All 11

Edit merge requests New merge request

Recent searches Label = ~"In curation" Created date

- [CURATE] IndexedConv/IndexedConv: v1.3.1 0 of 8 tasks completed  
!37 - created 3 months ago by Vuillaume In curation updated 1 day ago
- [CURATE] ATLAS Open Data 13 TeV analysis C++ framework 3 of 8 tasks completed  
!36 - created 3 months ago by Vuillaume In curation updated 2 months ago
- [CURATE] gLike 4 of 8 tasks completed  
!35 - created 3 months ago by Vuillaume In curation updated 1 day ago
- [CURATE] AMIGA-IAA/hcg-16: Repo synced with Zenodo 3 of 8 tasks completed  
!34 - created 3 months ago by Vuillaume In curation updated 3 weeks ago
- [CURATE] agnpy 3 of 8 tasks completed  
!33 - created 3 months ago by Vuillaume In curation updated 2 months ago
- [CURATE] FairRoot 0 of 8 tasks completed  
!32 - created 3 months ago by Vuillaume In curation updated 3 months ago
- [CURATE] FairRootGroup/DDS 0 of 8 tasks completed  
!31 - created 3 months ago by Vuillaume In curation updated 3 months ago
- [CURATE] FairRootGroup/FairMQ: v1.4.52 0 of 8 tasks completed  
!30 - created 3 months ago by Vuillaume In curation updated 3 months ago
- [CURATE] JColl88/sdc1-solution-binder: SDC1 Solution 1.0.0 0 of 8 tasks completed  
!29 - created 3 months ago by Vuillaume In curation updated 1 week ago
- [CURATE] Dockerfile to extract Gravitational Wave data from the ESCAPE datalake 7 of 10 tasks completed  
!8 - created 11 months ago by Cl In curation updated 2 months ago

Open Created 3 months ago by Vuillaume 0 of 8 tasks completed

### [CURATE] IndexedConv/IndexedConv: v1.3.1

Overview 8 Commits 1 Pipelines 1 Changes 1

Record #5884046  
Title: IndexedConv/IndexedConv: v1.3.1  
DOI: 10.5281/zenodo.5884046  
URL: <https://zenodo.org/record/5884046>  
Fix installation issue with docs What's Changed

fix doc requirements file by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/27> Test action by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/29> Pypi autopublish by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/30> add sphinx-rtd-theme to doc requirements by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/28> complete doc requirements for RTD by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/32> Bump version to 1.3.1 by @vuillaud in <https://github.com/IndexedConv/IndexedConv/pull/31>

Full Changelog: <https://github.com/IndexedConv/IndexedConv/compare/v1.3...v1.3.1>

#### Check the software checklist for the entry

- Contains valid codemeta.json (see validator output)
- Documentation is provided in the Zenodo entry (at least through codemeta)
- a stable versioned release of the project
- It is under an open-source license (see SPDX <https://spdx.org/licenses/>)
- Follows a reasonable set of software development / software engineering practices (rough by-eye quality estimate)

#### Complete onboarding issue

Related onboarding issue: <https://project.escape2020.de/issues/25>

- Make sure all boxes of the checklist up to "Uploaded to Zenodo" are ticked
- Tick "software checklist completed" when done with the above
- When cleared for merging, tick "Added to Zenodo community/published" and change issue status to "closed"

!! There is no codemeta file in record 5884046 !!

Edited 3 months ago by Jutta Schnabel

Request to merge 2542651 into

master  
The source branch is 13 commits behind the target branch

Pipeline #191477 passed for 0f6f19f6 on 2542651 3 months ago

Approve Approval is optional

Merge There are merge conflicts Resolve conflicts Merge locally

0 0 Oldest first Show all activity

- Vuillaume @vuillaume added Ready for curation label 3 months ago
- Vuillaume @vuillaume changed the description 3 months ago
- Jutta Schnabel @jschnabel removed Ready for curation label 3 months ago
- Jutta Schnabel @jschnabel added Onboarding missing label 3 months ago
- Jutta Schnabel @jschnabel assigned to @jschnabel 3 months ago

Jutta Schnabel @jschnabel - 3 months ago  
@vuillaume: Same question as with ctapipe - part of another project or separate onboarding?

Vuillaume @vuillaume - 3 months ago  
IndexedConv should be a separate one.  
The codemeta has been added for the next release.

Jutta Schnabel @jschnabel - 3 months ago  
OK, great! Then it would be good if someone could trigger the onboarding process by registering: <https://forms.gle/dGjvEQ9BHSkccz7>

Vuillaume @vuillaume - 3 months ago  
Actually, I just remembered that IndexedConv was presented conjointly with GammaLearn: <https://indico.in2p3.fr/event/22516/#1-gammalearn-deep-learning-wor> and was detailed in the joint report: <https://cloud.escape2020.de/IndexedConv/presentation/kDdfst139VsoGXl>  
Maybe not necessary to redo the whole onboarding process?



# How to publish in the OSSR



# How to publish in the OSSR

- Instructions online: <https://escape2020.pages.in2p3.fr/wp3/ossr-pages/page/contribute/onboarding/>
- 1. Fill a form to request a presentation
- 2. Prepare your repository: see requirements and metadata
  - [Validate your codemeta.json using the eOSSR in your CI](#)
- 3. Publish to Zenodo: ease your life [using the eOSSR](#)
- 4. Add escape2020 as a community (this comes for free if you use the eOSSR)
  - If your software was already in Zenodo, you can edit the metadata and add the escape2020 community through the web portal
- 5. Final review and acceptance → ossr-curation

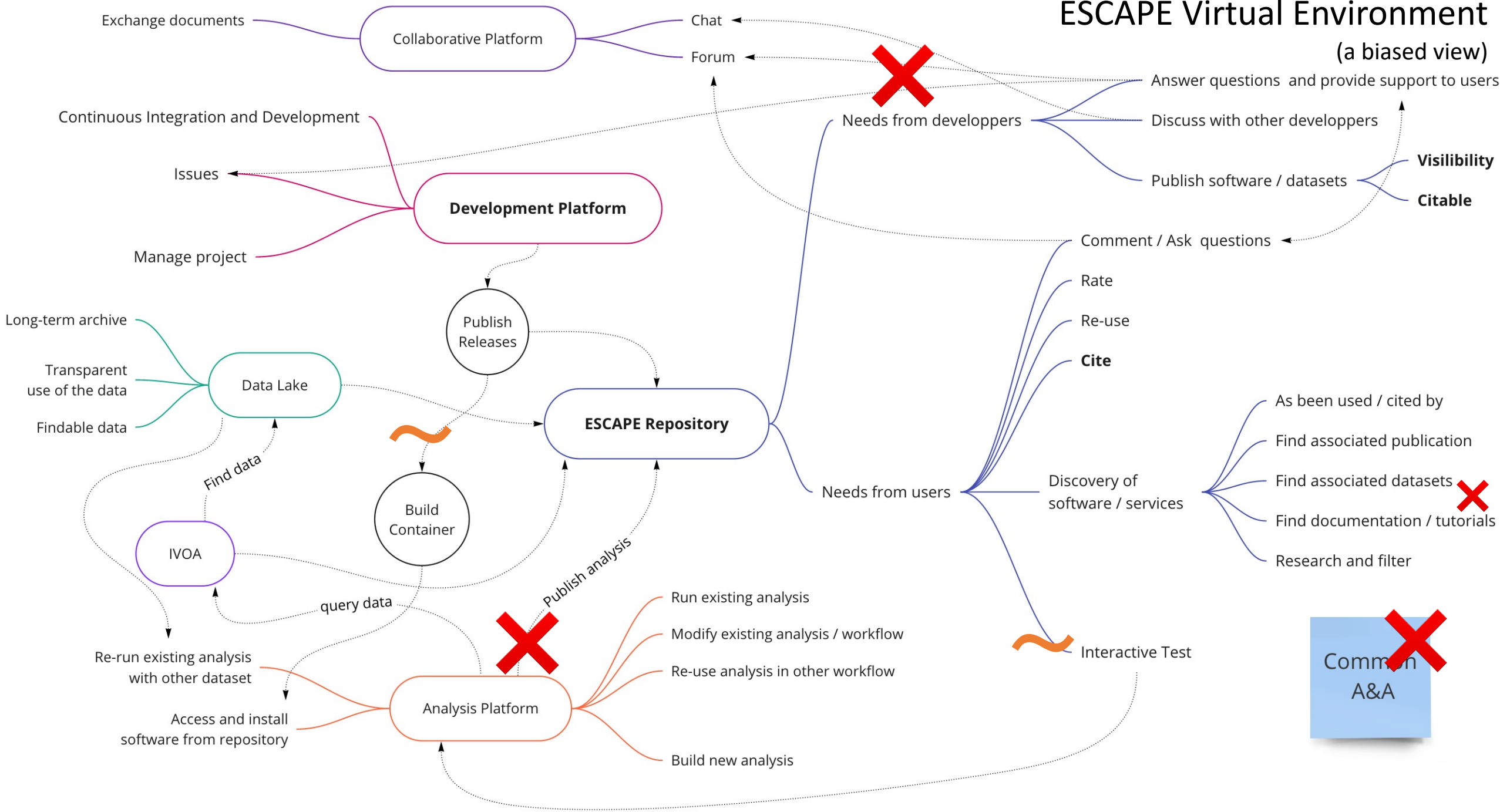


# Things we could improve (a.k.a. I wished we did better)



# ESCAPE Virtual Environment

(a biased view)



- Find associated software / dataset / analysis...
  - Possible in metadata but still not clearly defined and in the hands of developers
  - In Zenodo, ***related identifiers*** (continues this upload, is cited by this upload, etc...)
- Publish analysis from analysis platform
  - Possible using eOSSR but requires an integration between ESAP and the development platforms
- CodeMeta
  - Not automated enough
  - Not integrated enough => some hope with InvenioRDM ?
  - Still too much a burden for developers

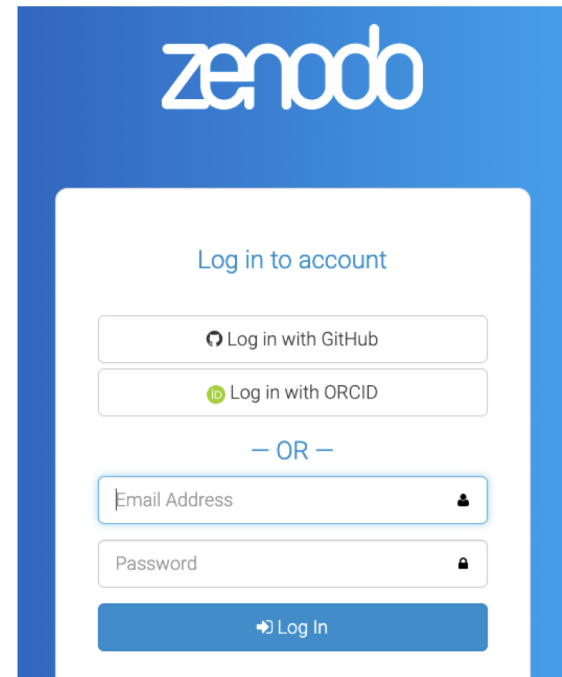


- Containers and registry

- Some attempts: <https://gitlab.in2p3.fr/escape2020/wp3/ossr-registry>
- We rely on developers to do their job

- Common A&A

- Not entirely in our hands for the OSSR
- Will improve with InvenioRDM?





# The future of the OSSR ?



# Some things I'd like to finish before ESCAPE ends

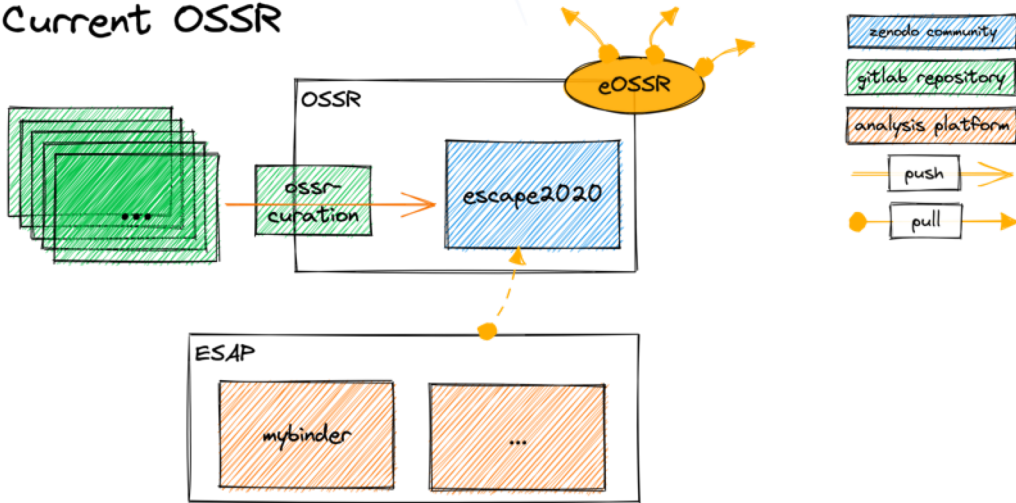
- eOSSR v1.0 release – see milestone in GitLab
- make clear recommendations on how to maintain codemeta.json in a repository
  - Based on the work done recently for gammapy and other repositories
- Finish all on-going curations
- OSSR paper gathering these technical developments and recommendations



# The future of the OSSR: federating the decentralized?

- ESCAPE as a funded project is ending, but the OSSR can stay (though in different forms)

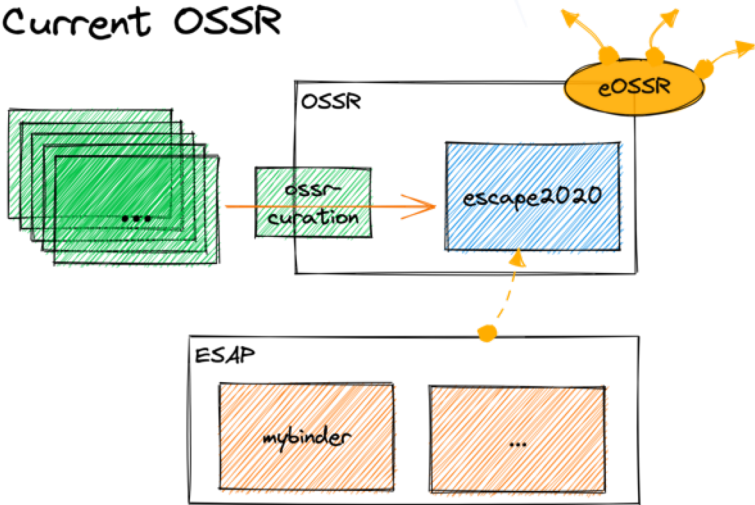
Current OSSR



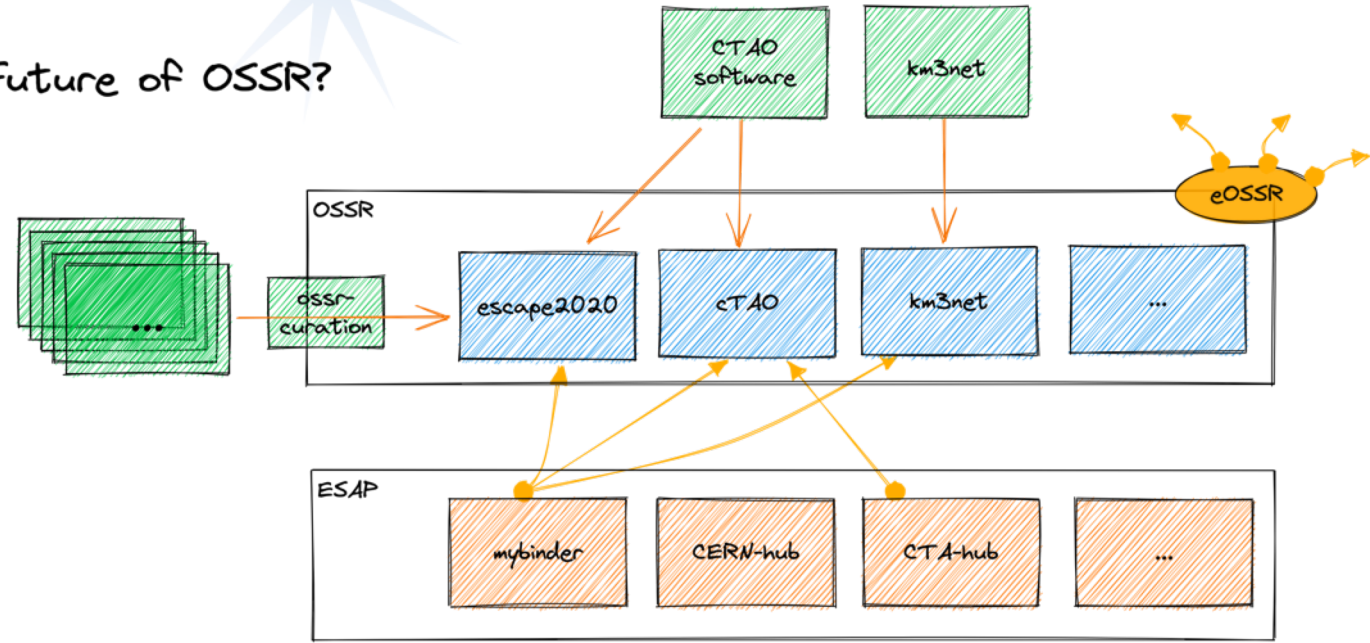
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Current OSSR



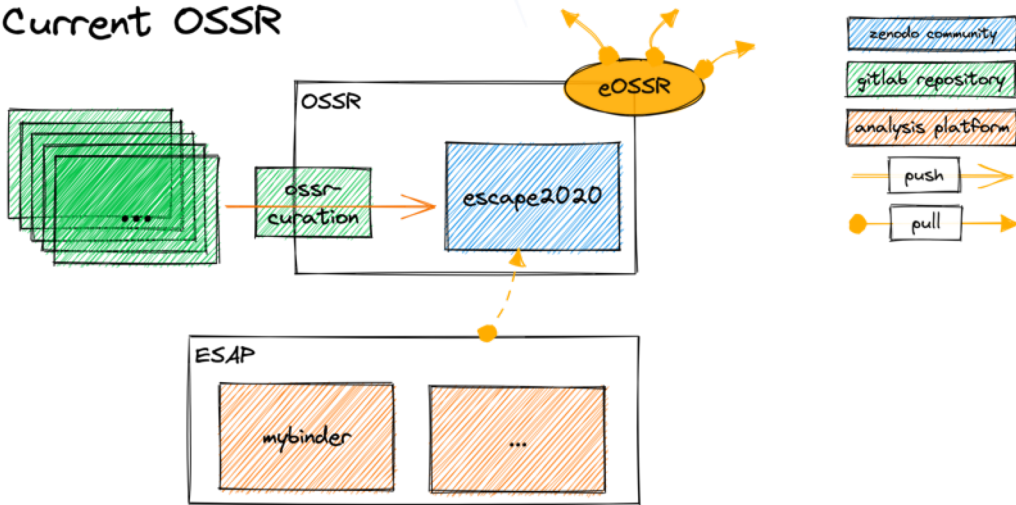
Future of OSSR?



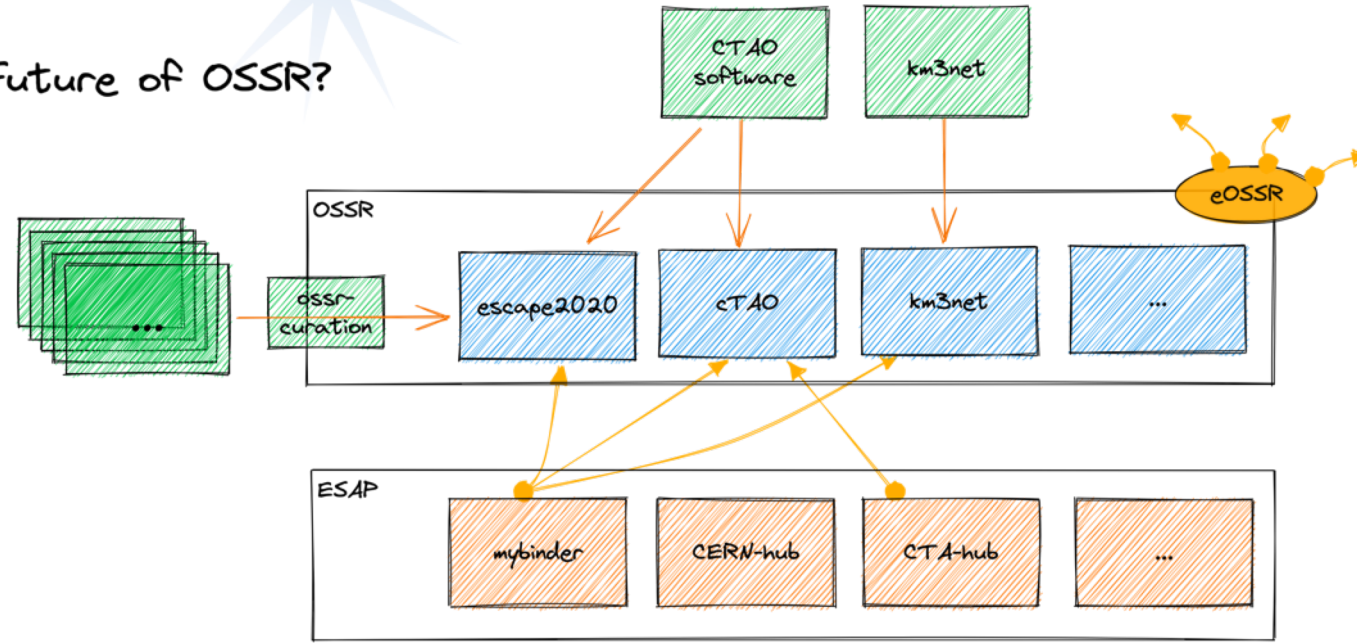
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Current OSSR



Future of OSSR?

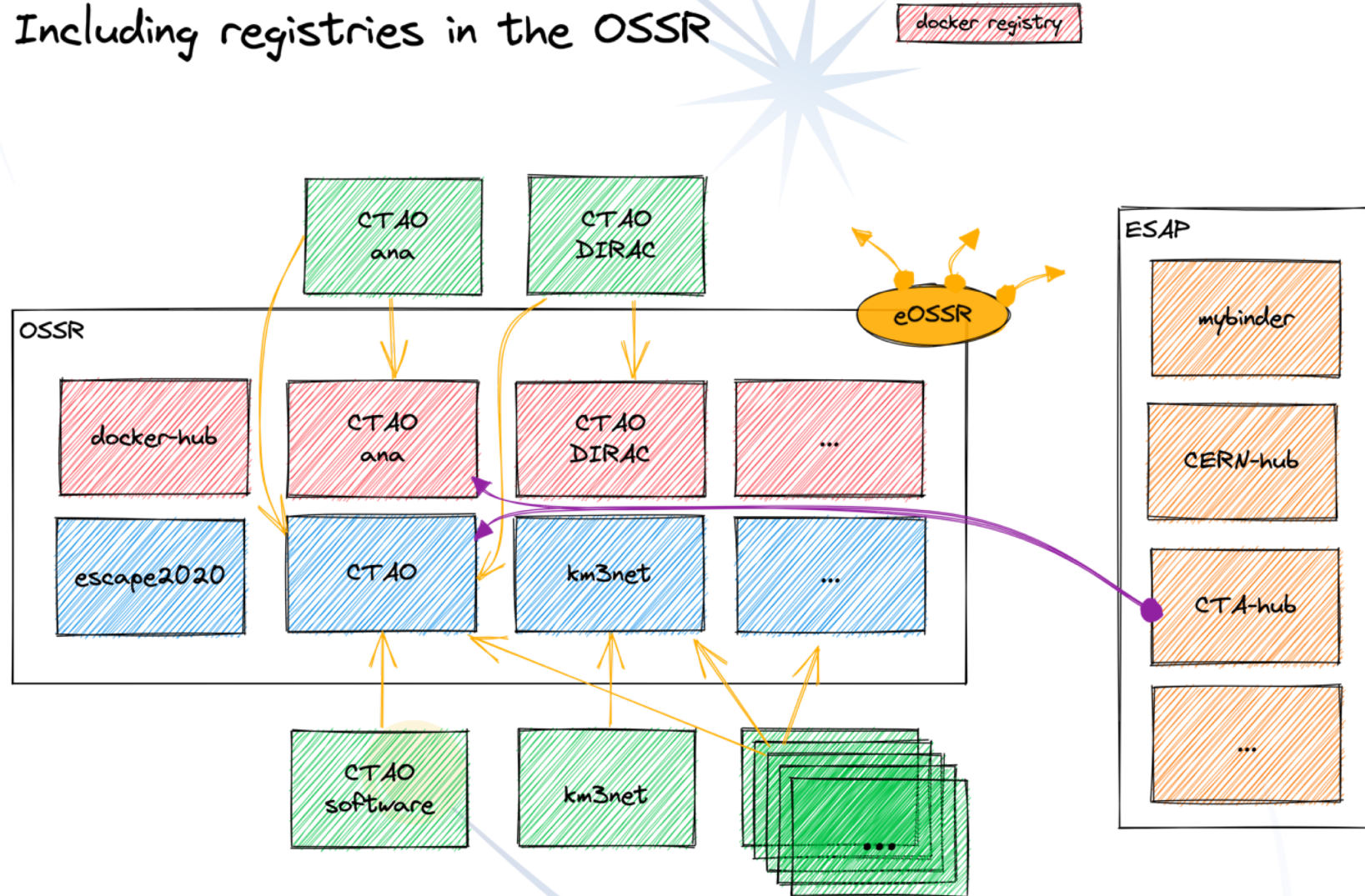


- Decentralization powered by the eOSSR, serving the API to fetch the federated OSSR
- Each community has to commit to follow a minimal set of requirements to be part of the OSSR
- Domain specific platforms will have different requirements, that can be requirements of each Zenodo community



The extra mile: community specific **registries** could also be integrated the same way in the OSSR

Including registries in the OSSR



# Curation

- The curation is a central part of a trusted repository
    - part of it is automated (e.g. checking for correct metadata)
    - but human curation is essential
  - Curation is (sometimes) domain specific
  - For the OSSR to keep growing after ESCAPE ending, we need curators
- ⇒ A commitment from the research infrastructure is needed to assign experts able to do software curation in their domain
- ⇒ In the decentralized version, RI commit to maintain and follow a common base of requirements, and do the curation internally (with potentially more requirements)



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- ⇒ In line with the Open Collaboration agreement signed in Brussels





# Recommendations to ESFRIs

- A clear set of guidelines and requirements to publish any software and analysis in collaborations
  - Following OSSR requirements
- A curation team dedicated to software and analysis code
- A software/analysis publication process for analysers
- A software/analysis review process for curators
- A set of templates for software and analysis for members to use



# Conclusion: mission accomplished!

- There are still things to improve
- We did a good job and achieved our goals and more
- Let's make sure it does not all disappear with ESCAPE ending



# Thank you for your attention

## Questions?



# Finally, some inspiring projects

A list of conference publications:

- [ESCAPE Open-source Scientific Software and Service Repository](#)
- [The ESCAPE Data Science Summer School 2021 ADASS XXXI Poster](#)
- [The eOSSR library](#)

Some inspiring projects:

- <https://deepnote.com/> - collaborative analysis platform
- <https://codeocean.com/> - an analysis platform with and integration publication process
  - eOSSR demo: <https://codeocean.com/capsule/6789403/tree>
- <https://biocontainers.pro/> - an example of workflows registry in the bio community

