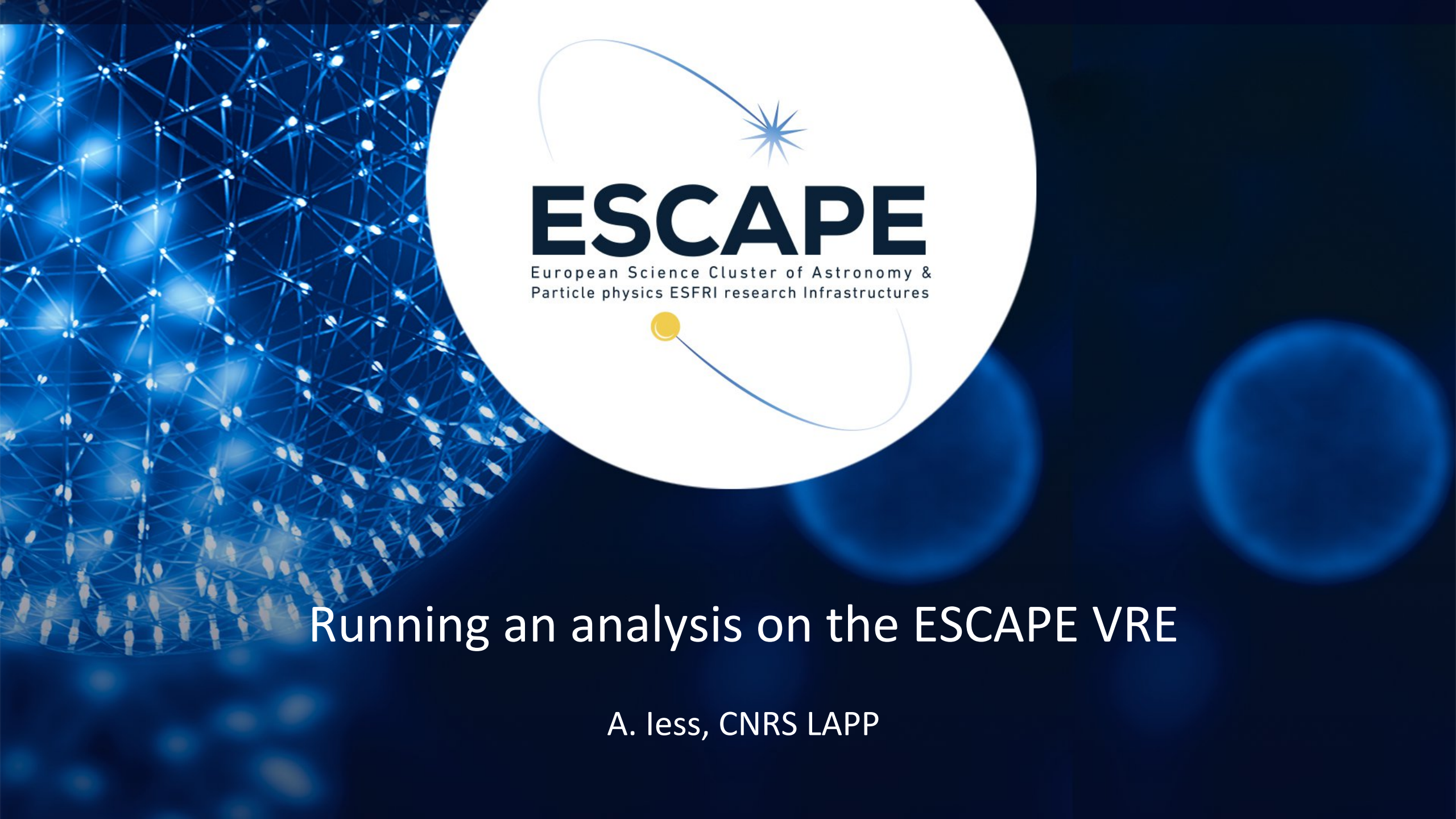



# Running an analysis on the ESCAPE VRE

A. Iess, CNRS LAPP

# The ESCAPE Virtual Research Environment (VRE)

The **Virtual Research Environment** was developed by the VRE Team at CERN as part of the ESCAPE Project, under EU Horizon 2020 Grant Agreement no. 824064.

## References

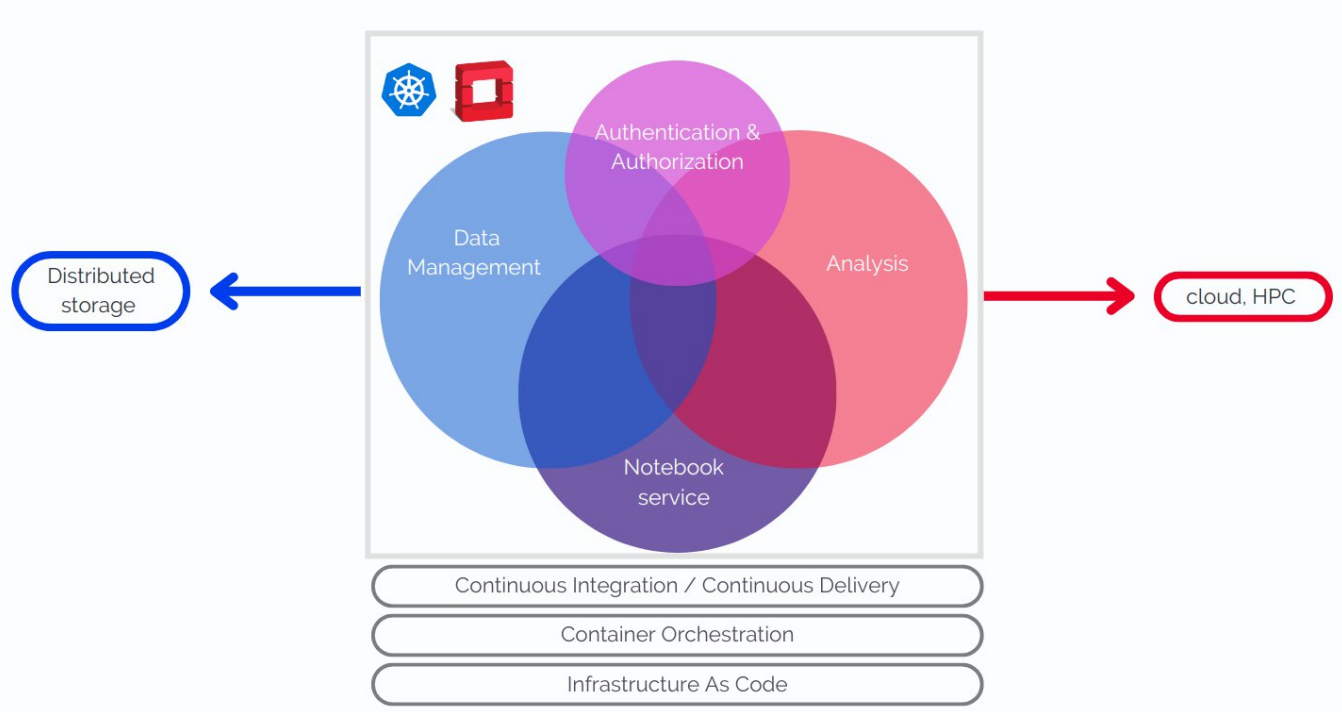
- CHEP2024 proceedings: https://arxiv.org/pdf/2503.02483.
- CHEP2024 contribution: https://indico.cern.ch/event/1338689/contributions/6010696/
- VRE Documentation: https://vre-hub.github.io
- Github Profile: https://github.com/vre-hub

CERN VRE Hub: https://jhub-vre.cern.ch

Mattermost Channel: https://mattermost.web.cern.ch/escape/channels/vre-support

# VRE components

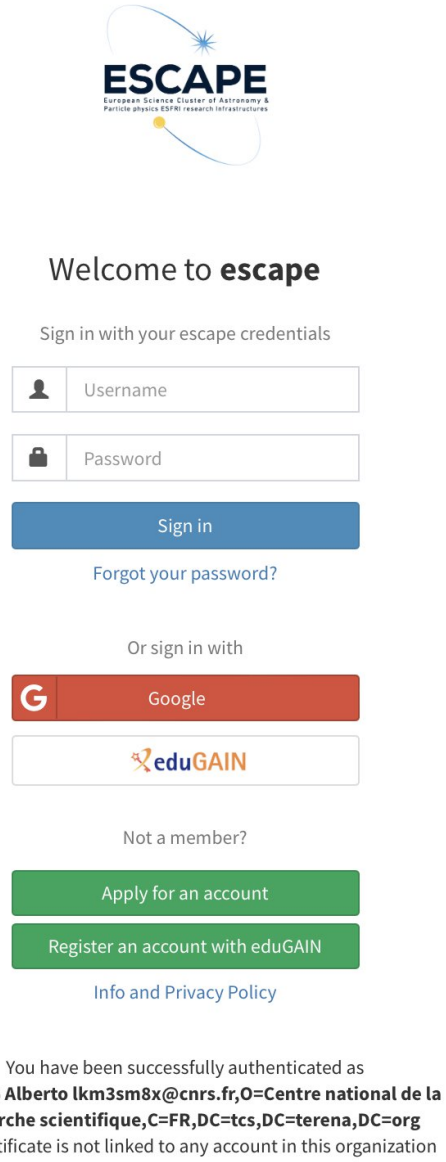
- Federated AAI
- ESCAPE Datalake for federated distributed storage .
- Computing cluster supplying the processing power to run full analyses.
- JupyterHub Interface with containerised environments.



# ESCAPE AAI

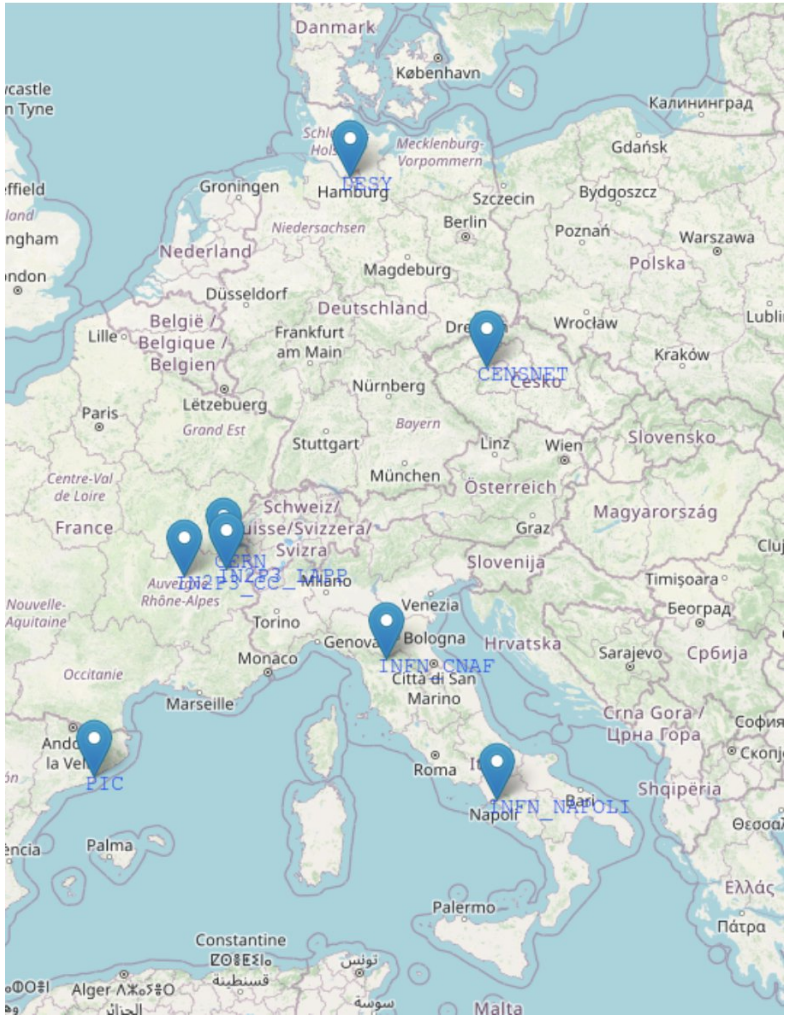
- ESCAPE AAI is based on INDIGO Identity and Access Management (IAM).
- Request an account and wait for approval.
- Add escape group.
- Support Usr+pwd, JSON Web Token OIDC, x.509 certificates.

All ESCAPE Virtual Research Environment (VRE) services and resources are federated through the ESCAPE IAM service.



# Rucio for Federated Distributed Data Management

- Distributed Rucio Storage Elements (RSEs).
- Rucio distributed data management system (upload, replication rules, transfer) .
- Interaction through docker container or rucio client.
- Authentication through X.509 certificates and OIDC tokens.

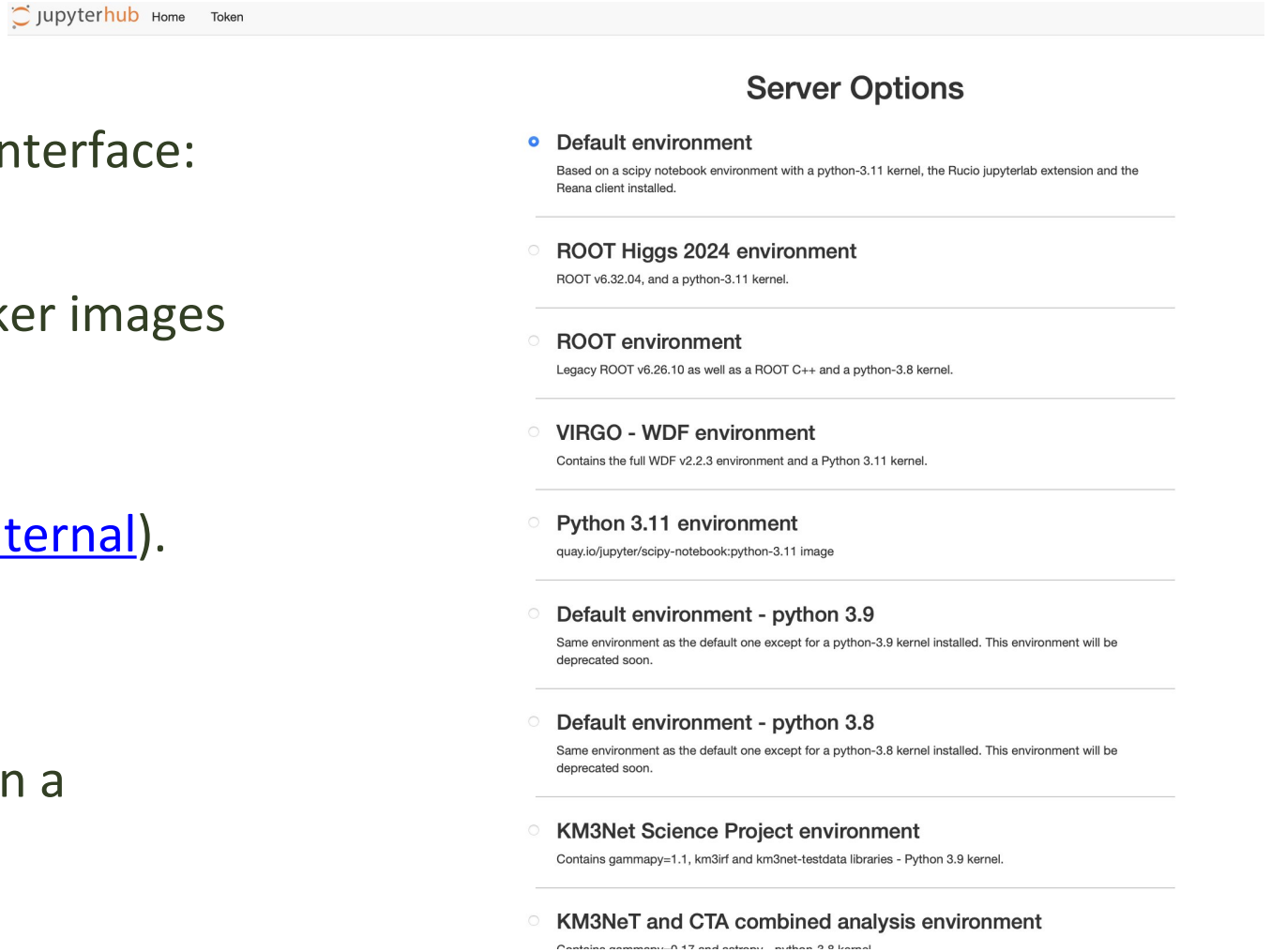


# Running an analysis on the ESCAPE VRE

The ESCAPE VRE offers a JupyterHub interface:

- AAI (credentials, x.509,OpenID)
- Environments encapsulated in Docker images and run as containers.
- Rucio, REANA plugins.
- VREs at CERN and at LAPP (EOSC, internal).
- Documentation.

You can select an environment and run a notebook interactively.



# Running an analysis on the ESCAPE VRE

Alternatively, add an environment with a pull request, which will be reviewed and eventually merged by the VRE team.

README MIT license

Docker automatic build and publish passing

## Environments

VRE user environment images for workflows and notebooks available in the VRE JupyterHub service.

### VRE user environments

#### Custom user environments

If you want to extend or modify any image, find below some suggestions:

We strongly recommend that every user enviroment image uses the latests `vre-singleuser-py311` image as a base layer (the `FROM` command in the `Dockerfile` - see below).

- Check the latest version of the `vre-singleuser-py311` image here.
- To custimize an image please have a look to the Startup Docker Stack documentation Hooks.
- Create one folder per environments. The directory would need to contain a valid `Dockerfile`. Once your PR is merged, the CI will detect the changes in the repository and will trigger the building of the image.
- Add a `README.md` file describing the environment and its usage.
- We strongly recommend to add the following lines to any new user environment (thus in a `Dockerfile`), so that the image would labelled with the building date.

```
#  Beginning of the suggested Dockerfile
FROM ghcr.io/vre-hub/vre-singleuser-py311:sha-5106e39
LABEL maintainer=<your_name>
ARG BUILD_DATE
LABEL org.label-schema.build-date=$BUILD_DATE

...
```

vre-hub / environments

Code Issues 3 Pull requests 9 Actions Projects 1 Wiki Security Insights

environments Public

Edit Pins Watch 4 Fork 1 Star 2

main 16 Branches 0 Tags Go to file Add file Code

GravitationalWaveSurfer Feat: add WDF python 3.11 env (#60) ba497d3 · 15 hours ago 66 Commits

| | | |
|---|---|---|
| .github | do not trigger second stage, what makes CI fail, if the o... | 6 months ago |
| atlas-ntuples | change name of repo | 2 years ago |
| vre-singleuser-combined_ana_km3net_cta | some changes in readme for cta env (#32) | 2 years ago |
| vre-singleuser-dask-root | adding image with rucio extension and dask (#41) | 2 years ago |
| vre-singleuser-interTwin | VRE - interTwin DL integration (#45) | 8 months ago |
| vre-singleuser-itwinai | Itwinai - Rucio jlab extension integration (#50) | 5 months ago |
| vre-singleuser-km3irf | Km3irf env (#34) | 2 years ago |
| vre-singleuser-microomega | WIP: migrate microomega docker file to gh and test buil... | 2 years ago |
| vre-singleuser-py311 | Copy correctly vomsdir content (#56) | 3 months ago |
| vre-singleuser-py38 | update py38 base image in agreement wiht latesst chan... | 2 years ago |
| vre-singleuser-root | Include rsync in packages (#58) | 2 months ago |
| vre-singleuser-wdf | Feat: add WDF python 3.11 env (#60) | 15 hours ago |
| vre-singleuser | Trigger build of singleuser (#37) | 2 years ago |
| AUTHORS.md | some changes in readme for cta env (#32) | 2 years ago |
| LICENSE | Update LICENSE | 2 years ago |
| README.md | update environment information | 6 months ago |

**About**

VRE user environment images for workflows and notebooks

python docker containers jupyterhub root jupyterlab dask

Readme
MIT license
Activity
Custom properties
2 stars
4 watching
1 fork
Report repository

**Releases**

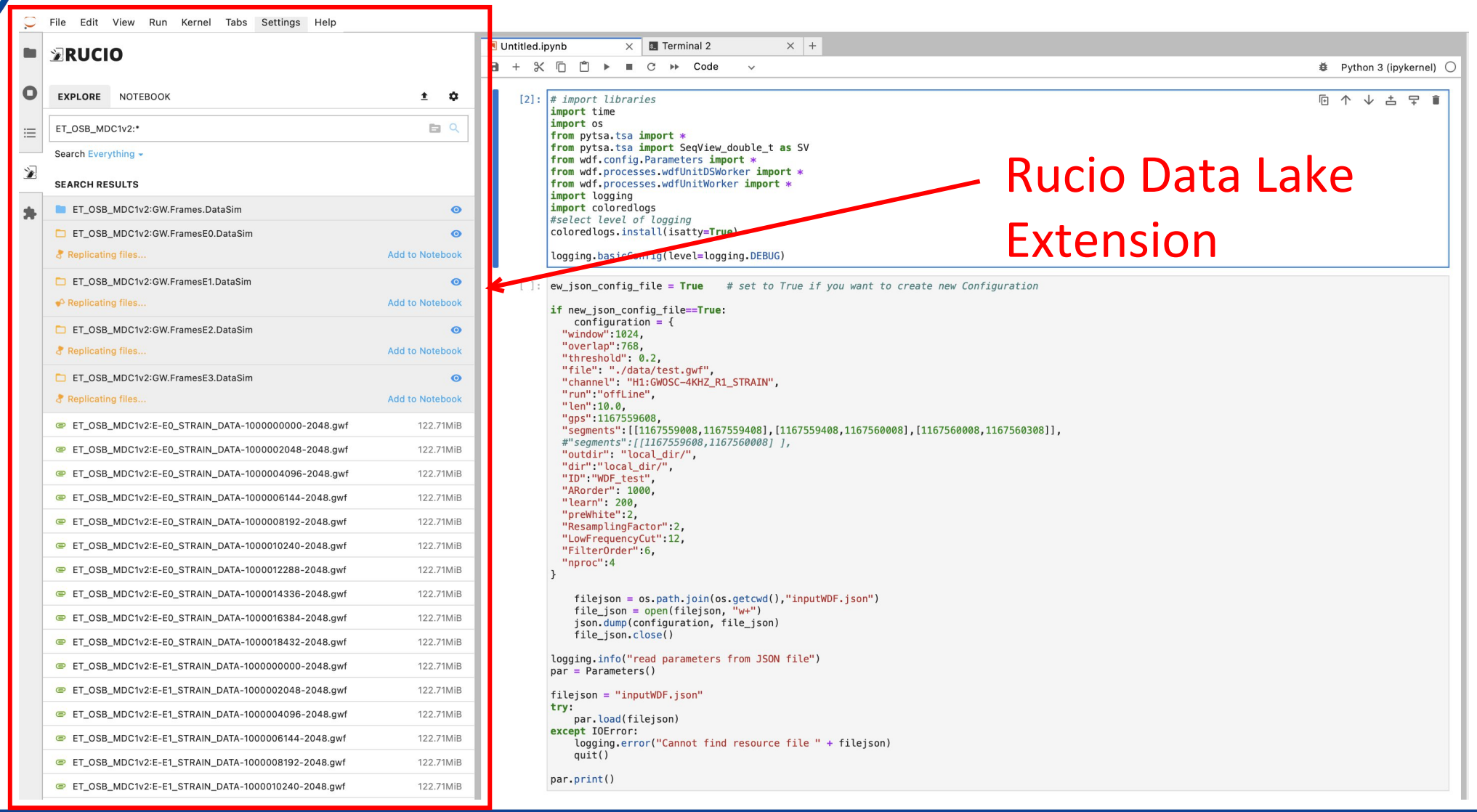
No releases published
Create a new release

**Packages** 25

vre-singleuser-intertwin
hub
atlas-ntuples
+ 22 packages

**Contributors** 6

# Running an analysis on the ESCAPE VRE



# REANA

Reproducible analysis platform for containerised data analysis pipelines on remote compute clouds.

- Supported workflow systems: CWLSerial, Snakemake, Yadage
- Supported compute backends: HTCondor, Kubernetes, Slurm
- Supported source code and storage systems: GitLab, CVMFS, EOS