ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

Conference **ESCAPE to the Future** | 25-26 October 2022

Royal Belgian Institute of Natural Sciences | Brussels, Belgium

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The Virtual Research Environment (VRE) for ESCAPE Science Projects

Enrique Garcia
CERN

Alba Vendrell
CERN

Elena Gazzarrini
CERN

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The VRE for the EOSC Future Science Projects

Enrique Garcia on behalf of
Alba Vendrell, Elena Gazzarrini, Agisilaos Kounelis,
Domenic Gosein and Xavier Espinal

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 Grant Agreement no. 824064.

The Virtual Research Environment - What is it?

The VRE is a **collaborative online platform** where researchers from the EOSC Future Science Projects (SPs) are able to **develop** and **share** end-to-end **analysis and workflows**, having access to all the digital content needed to produce a scientific result, in compliance with **FAIR** principles.

- **Single platform** where users can perform these tasks (analyse, preserve, (re)run, share…) as well as for **learning and outreach purposes**.

- During the last year, members from EU and DM SPs have been **actively using the platform** to run analysis and work on their research topics.

- Landing page containing project subjects and links to services and tools: escape2020.pages.in2p3.fr/virtual-environment/home/

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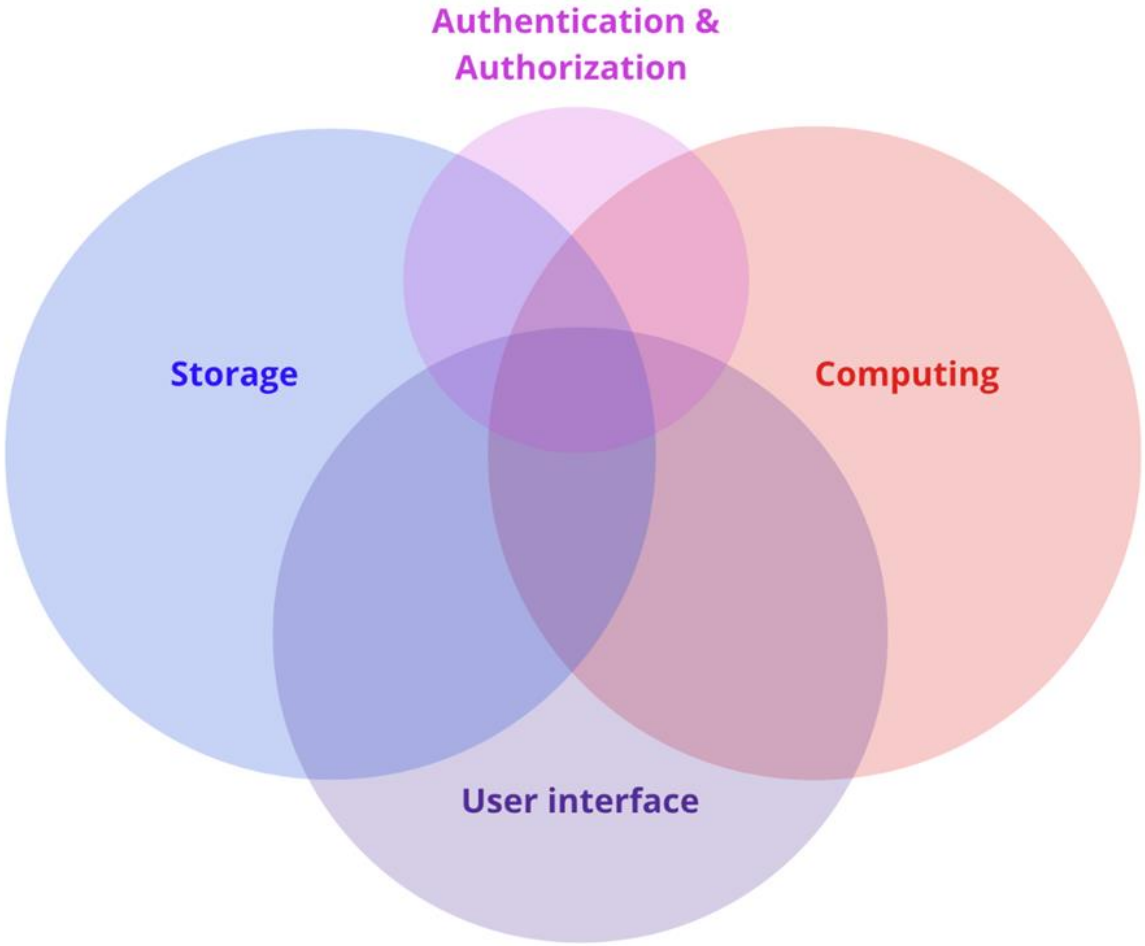
The Virtual Research Environment - What is it?



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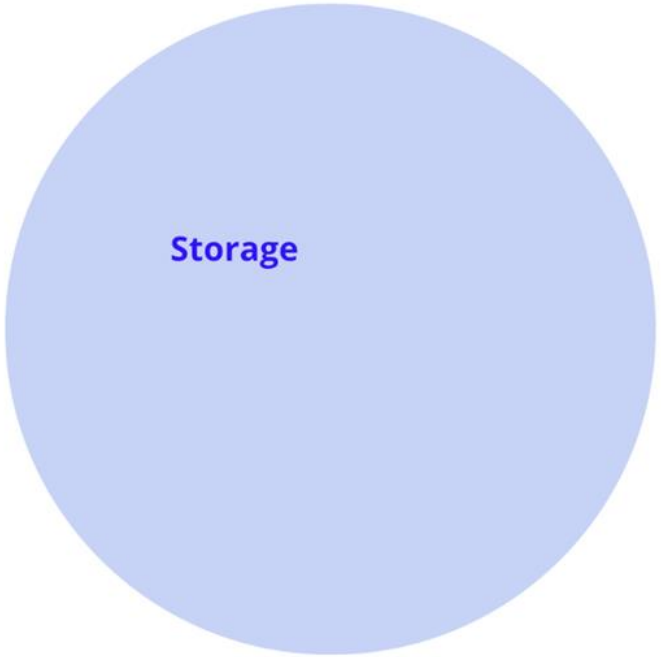
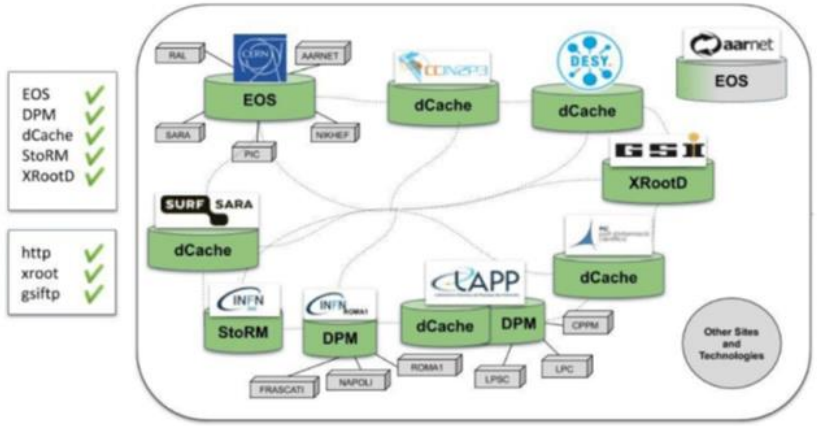
Current pieces of the Virtual Research Environment



Data Lake infrastructure



- Distributed storage based on WLCG model
- Support for all data types
- Ensures data security, quality, access,
- Experiments *dump* data... scientists *fish* data
- Data access and transfer with gridFTP, HTTP(S), and xroot protocols

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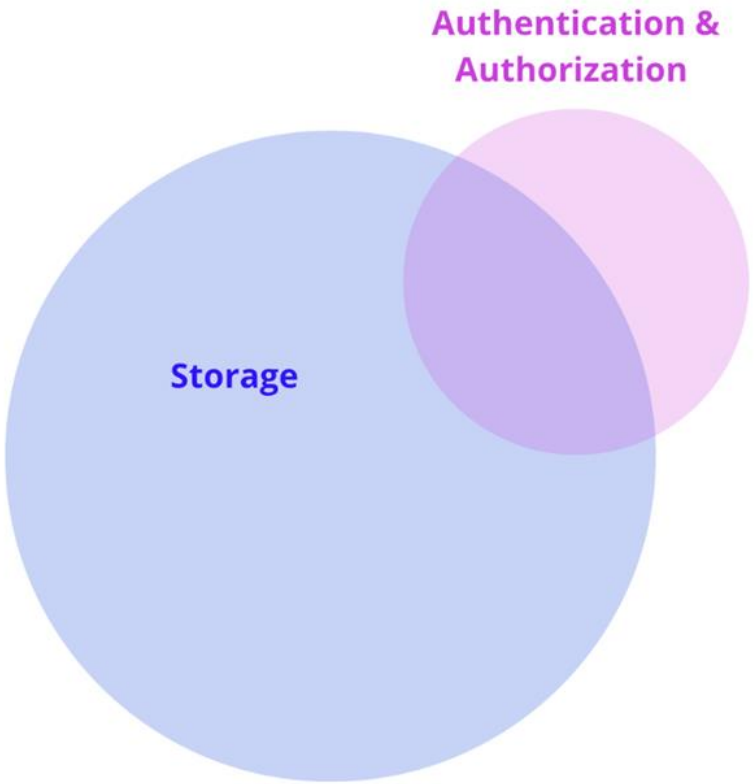

Identity provider via:

- x509 certificates
- OIDC tokens

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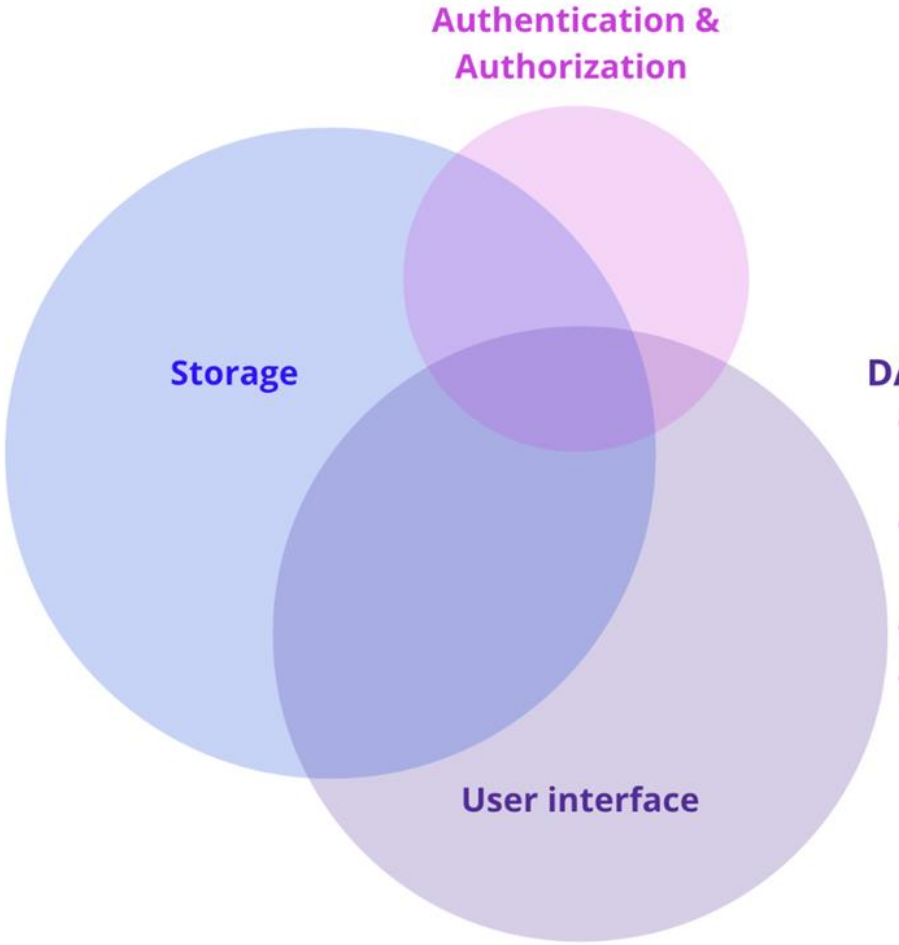

jupyter

DATA LAKE AS A SERVICE

- hides complexity of Data Lake - **scientists browse data**
- **Computing environment**: pre-installed software
- run preliminary analysis
- (send batch/parallel jobs to compute cluster - no need of local file copy)

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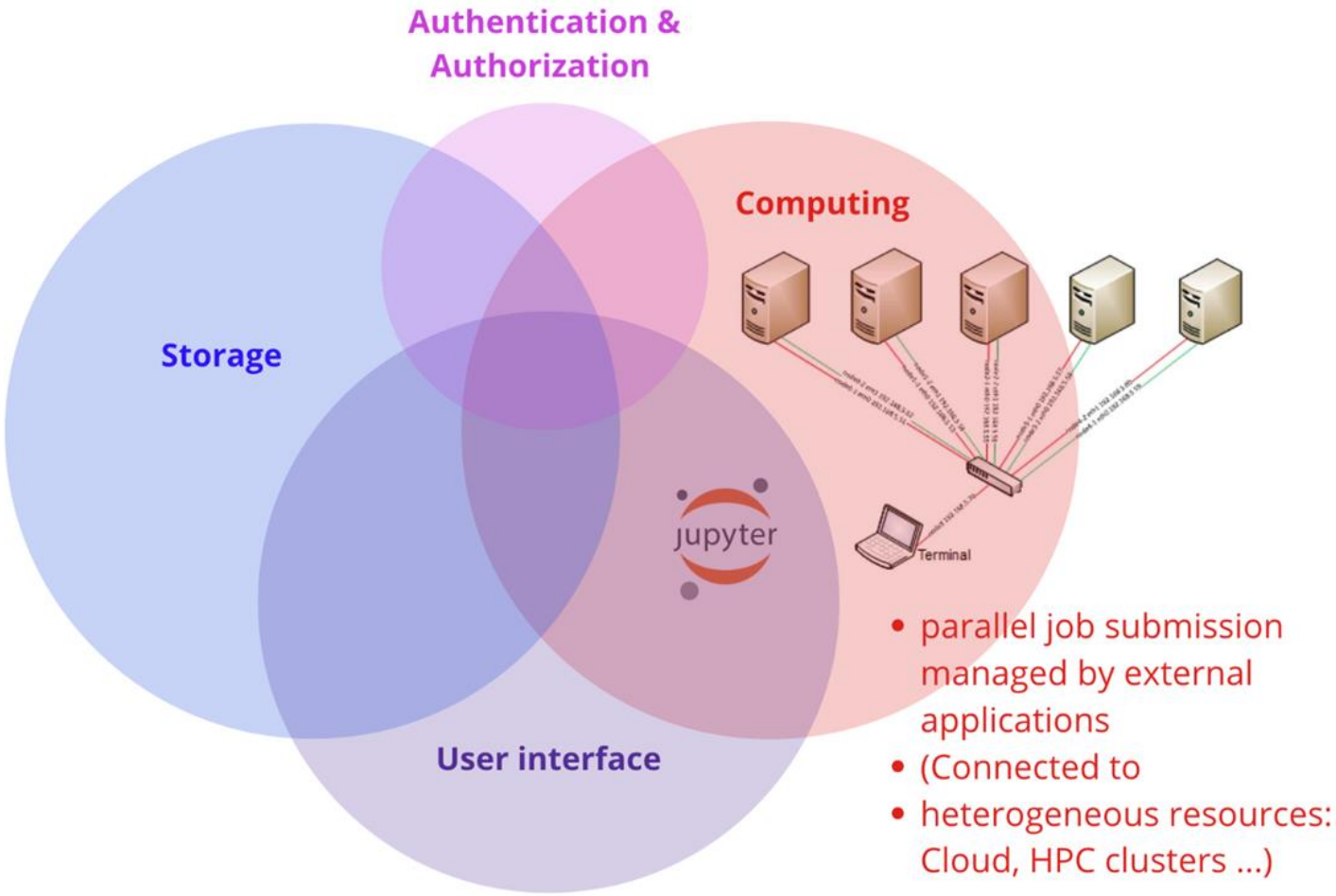

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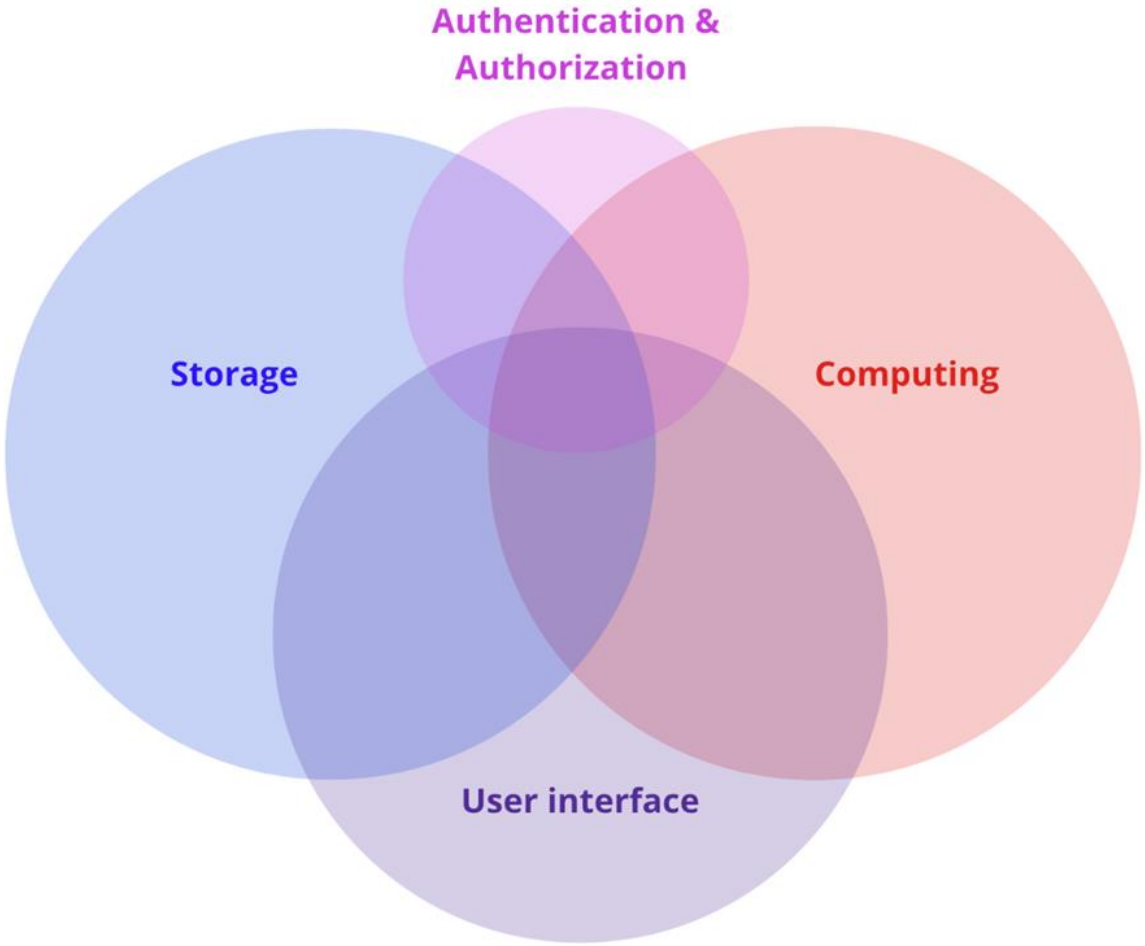

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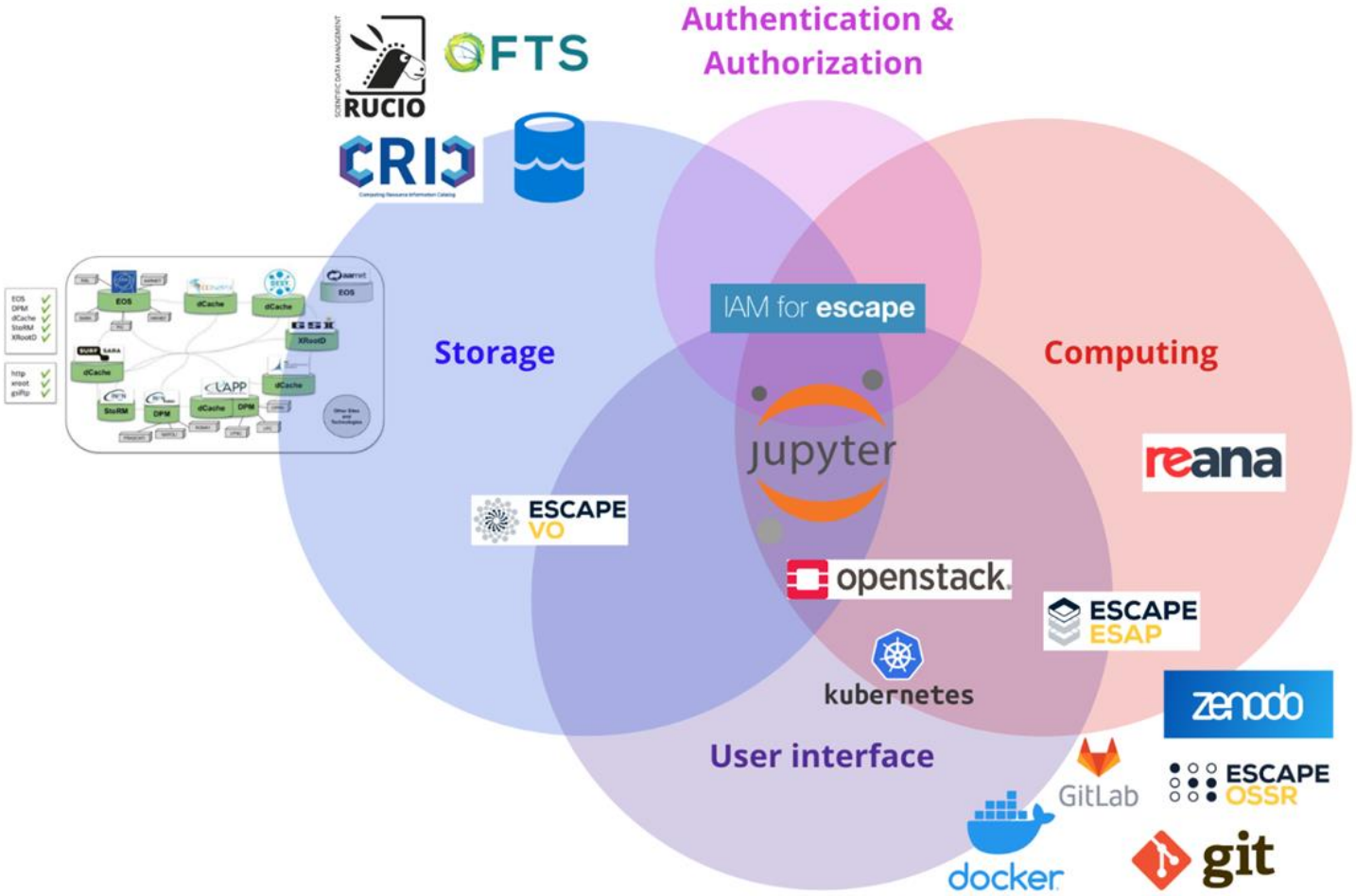

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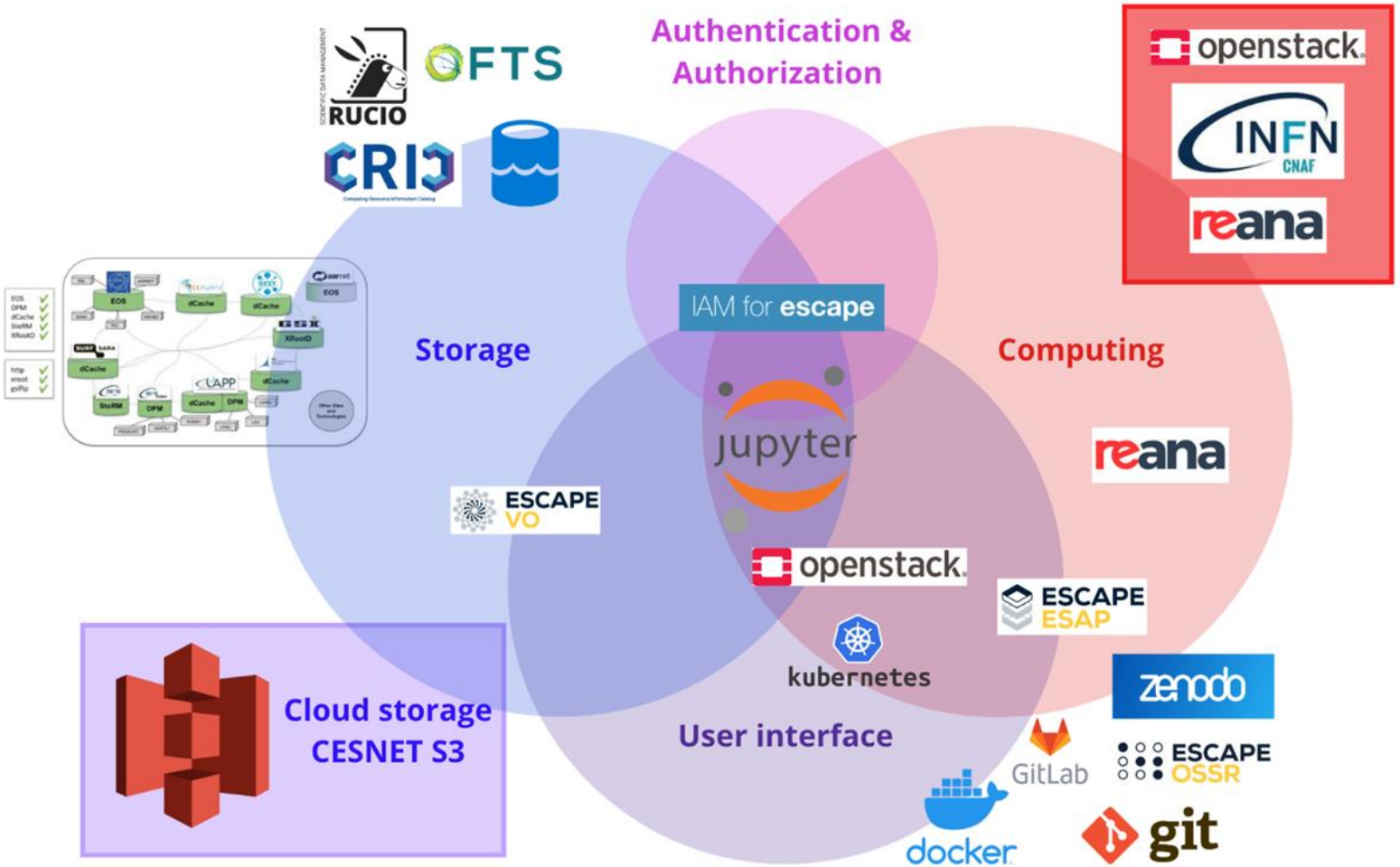
Future pieces of the VRE: connection with EOSC resources



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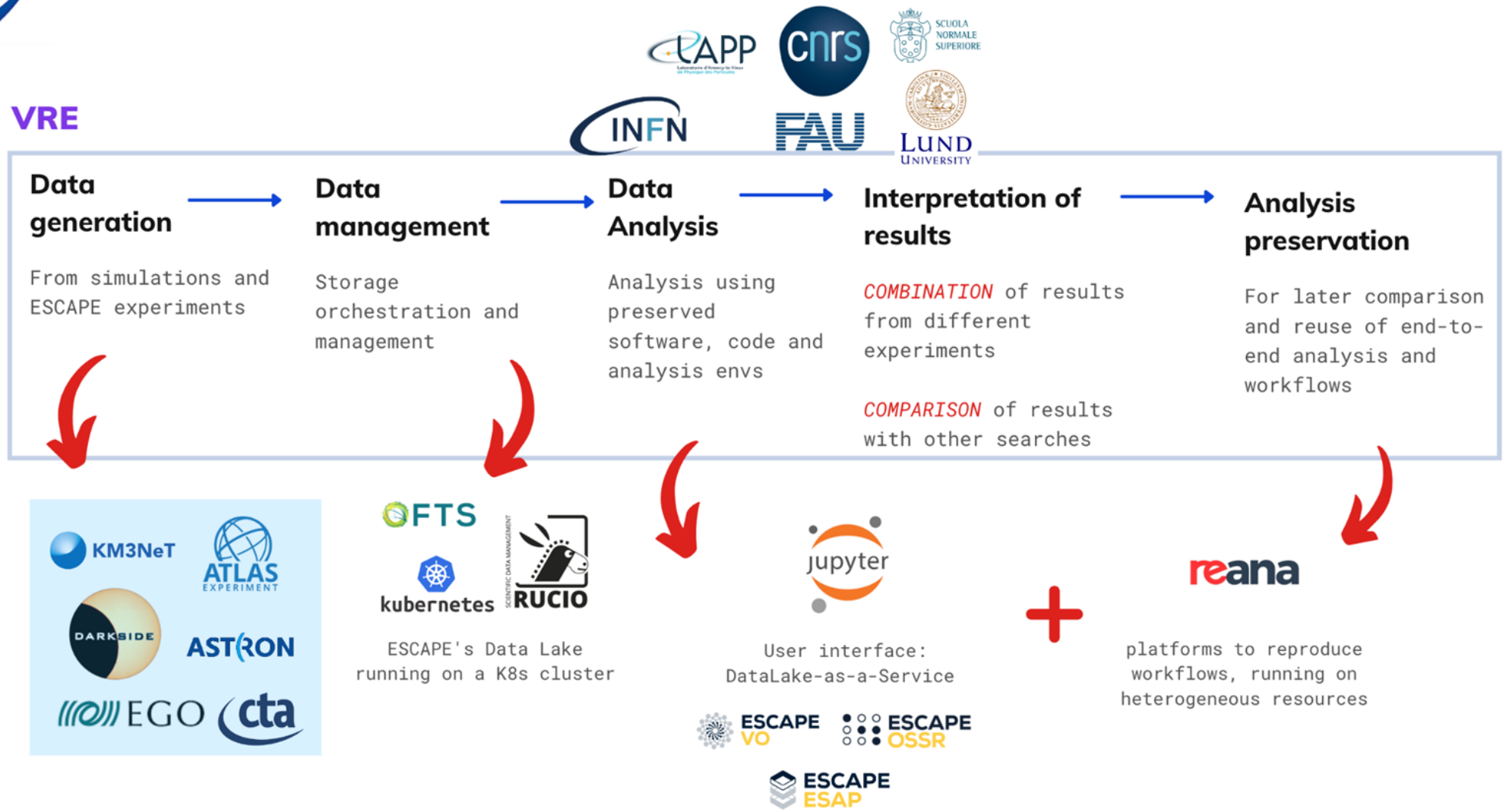
Wrapping up the VRE: Building an analysis platform



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How are the SP using the VRE ?