



ESCAPE

European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures



LAPP

Laboratoire d'Annecy de Physique des Particules

- Dominique BOUTIGNY
- Sabine ELLES
- Marie PATUREL

The Rubin Science Platform



VERA C. RUBIN
OBSERVATORY

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The Rubin Science Platform (RSP) is developed by the SQuaRE* team, Rubin Data Management funded by NFS and DOE

All the RSP code is Open Source and freely reusable: <https://github.com/lst-sqre>



(*) SQuaRE = **S**cience **Q**uality and **R**eliability **E**ngineering team



The Rubin Science Platform (RSP)

- A set of integrated web applications & services deployed at Data Access Centers (DACs) through which the scientific community will access, visualize, subset and perform next-to-the-data analysis of Rubin Data products.
- Compatible with IVOA standards



Portal Aspect

exploratory analysis and visualization of the Rubin archive



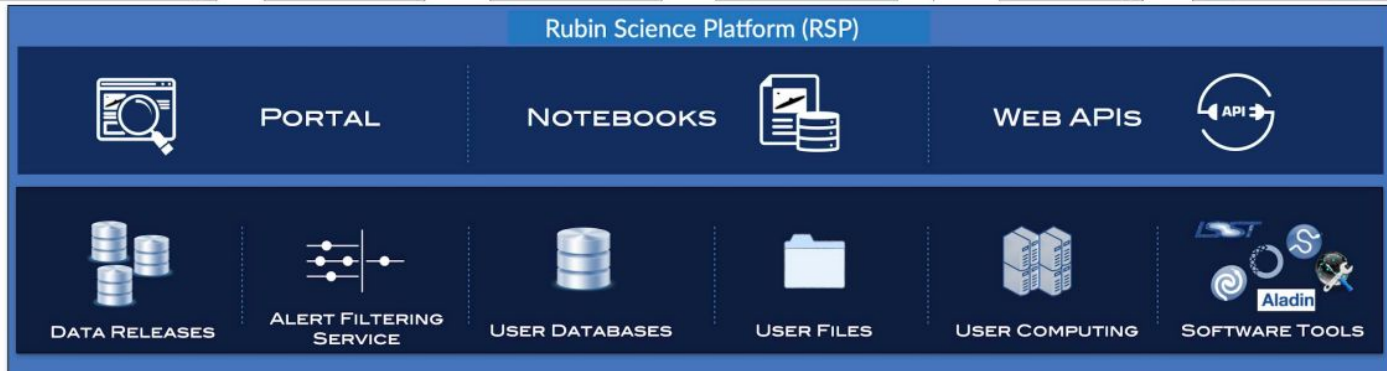
Notebook Aspect

in-depth 'next-to-data' analysis and creation of added-value data products



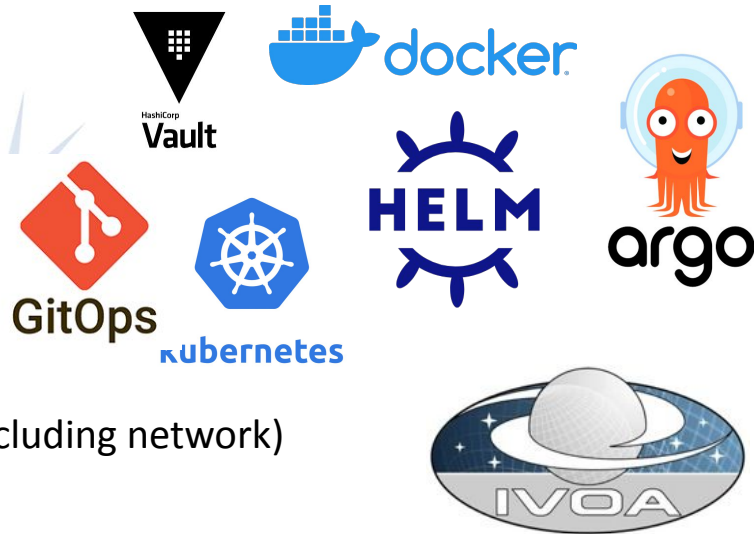
API Aspect

remote access to the Rubin archive via industry-standard APIs



Main characteristics

- Deployments at LAPP (2 instances in the WP5 framework) and at CC-IN2P3 (in the Rubin framework)
- Based on Kubernetes
 - Container management system
 - Allows to create a fully virtual complex cluster (including network) with several interacting components
- Infrastructure as Code
 - The k8s infrastructure is described in configuration files kept on github
 - A change in configuration (commit / push) is automatically detected by the platform
- Complex to deploy, especially on real hardware (“on premise”)
 - Kubernetes has been originally designed for cloud environments
 - Several services have to be deployed manually while they just show up automatically on commercial clouds (Google)



- Designed to scale up to several thousand users
- The github repo organization allows to keep customized configuration files to configure several sites with different specificities / environments
- A pre-production RSP is deployed on Google cloud for the Rubin Data Preview 0 (up to 300 selected users)





argo

Some key components of the RSP deployment

Workflow engine - Orchestrate parallel jobs on Kubernetes

Argo CD

Declarative, GitOps continuous delivery tool for Kubernetes



Package manager for Kubernetes



Kubernetes secrets management



Firefly is an interactive Java based visualization tool developed at Caltech-IPAC

<https://github.com/Caltech-IPAC/firefly>

It is fully integrated in the Rubin Science Platform