



# SCIAPPS: SCIENCE APPLICATION STORE For ESA Datalabs

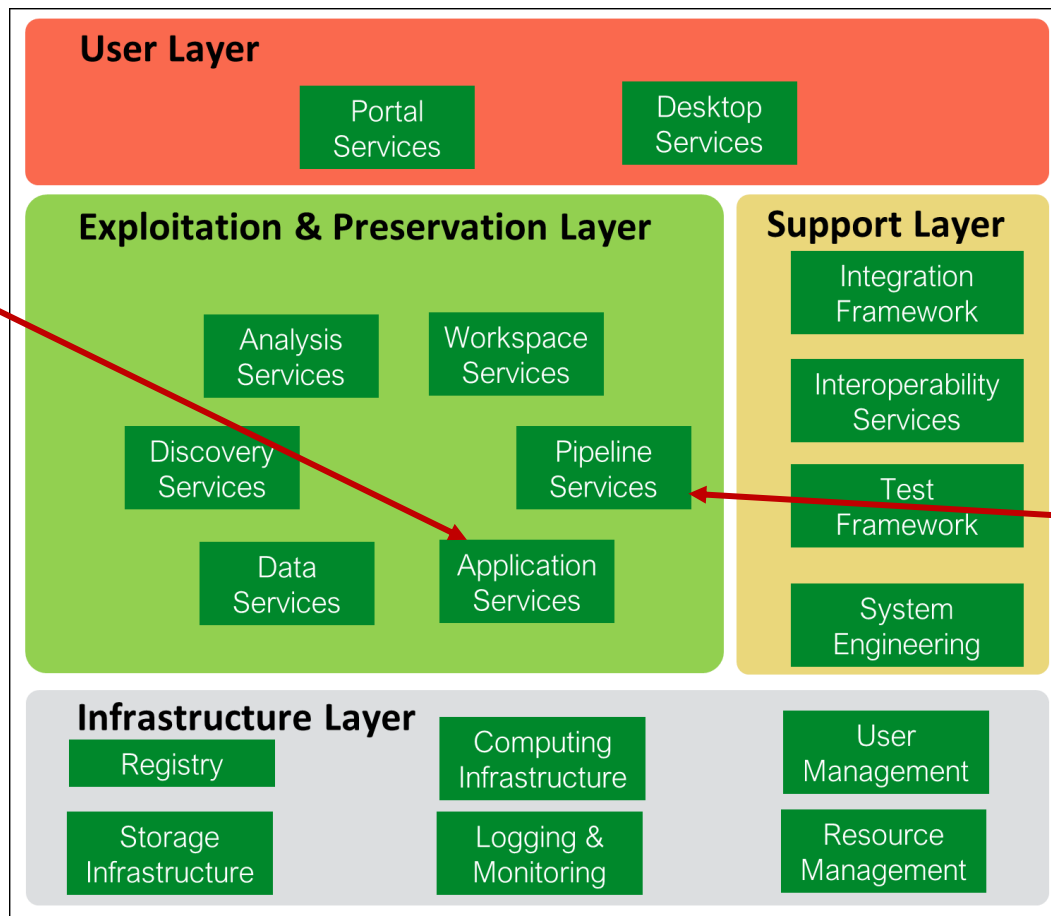
# Application Services in ESA Datalabs

An Application Services to publish, search applications for the community

Science Application Store, SCIAPPS  
(ACRI-ST)

SCIAPPS: an evolution of  
Application services solution  
currently available in ESA Datalabs

Currently integrated in  
ESA Datalabs v0.2.4



ESA Datalabs  
(Core, Edisoft)

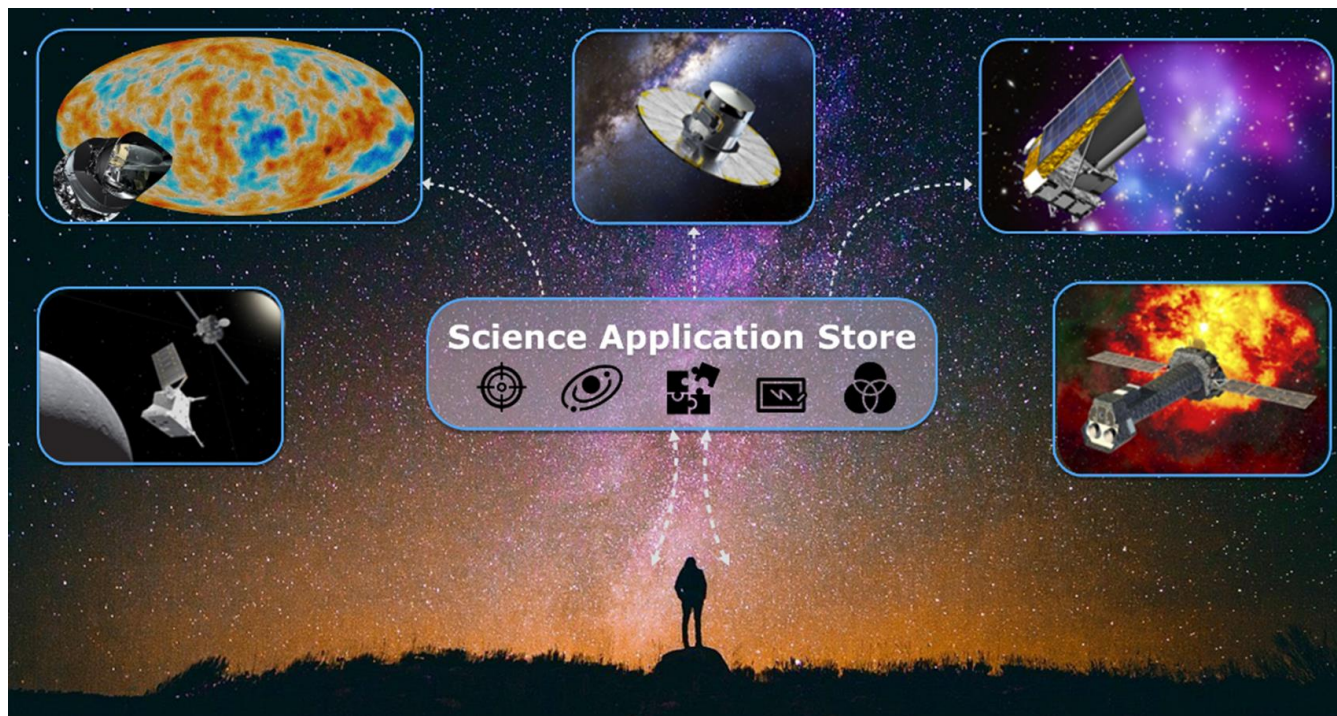
Pipeline services  
(CGI)

Image credit: ESA

# SCIAPPS – Science Application Store

An application store to foster space exploration of ESA missions

Entry point for users to create, search and launch applications - that can be linked to data assets from space missions – we call datalabs



- Simple to use
- Hidden complexity
- Secure
- Interoperable

*Image credits: Background (released free of copyrights under Creative Commons CCO); XMM (D. Ducros, ESA/XMM-Newton, CC BY-SA 3.0 IGO); Planck (ESA & Planck Collaboration D. Ducros); BepiColombo (ESA/ATG Medialab); Euclid (ESA/C. Carreau, CC BY-SA 3.0 IGO); Gaia (ESA, D. Ducros, 2013)*

# Main technology



# Roles

 **Scientific users**

Can search, provide feedback,  
bookmark, launch datalabs

## Developers

 **Scientific Developers**

Scientific user + build, test,  
publish, share, archive datalabs

 **Internal Developers**

Scientific developer + advanced  
datalab creation(\*)

(\*) Allows to include own docker file

 **Moderators**

Scientific user + test, inspect and  
provide moderation to datalabs

# Datalab

A datalab is a specific software component which includes an application and its specific relationship with data assets

datalab

Datalab components:

- Source code
- Metadata
- Config. files
- Dockerfile
- Image
- Chart

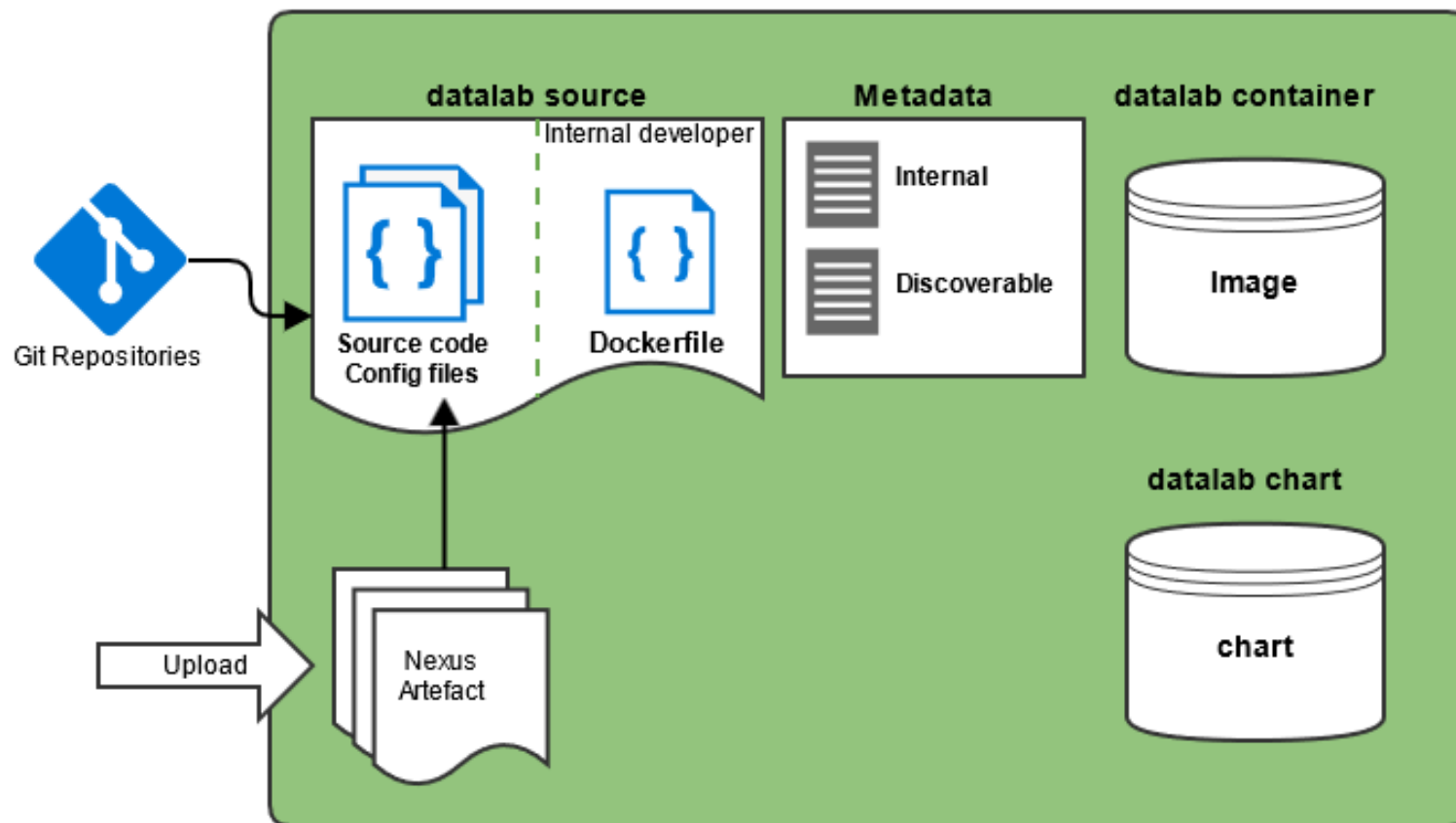
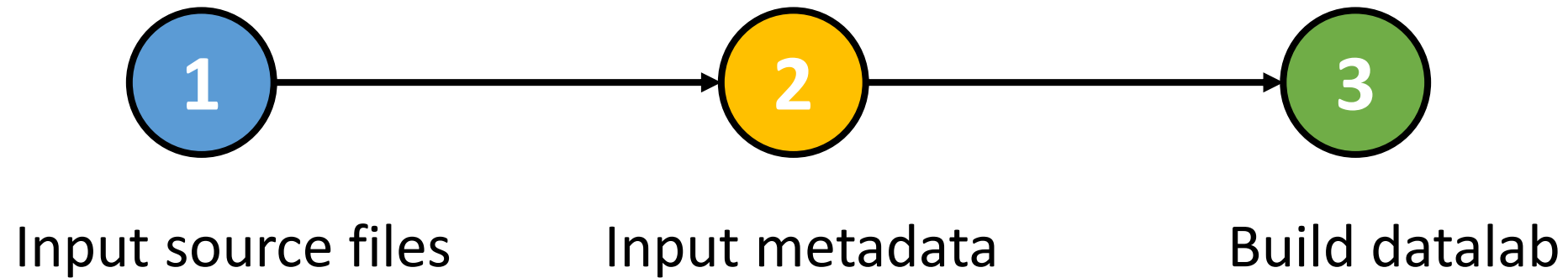


Image credit: ESA

# Datalab creation



All you need to bring is a Jupyter notebook!

# Datalab lifecycle

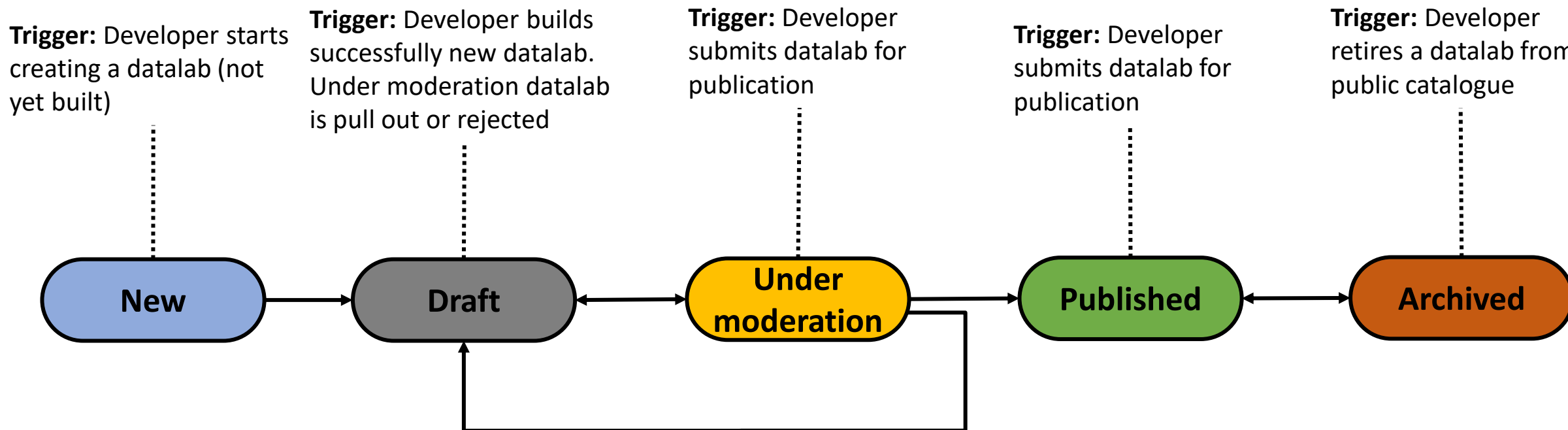


Image credit: ESA



# Datalab actions

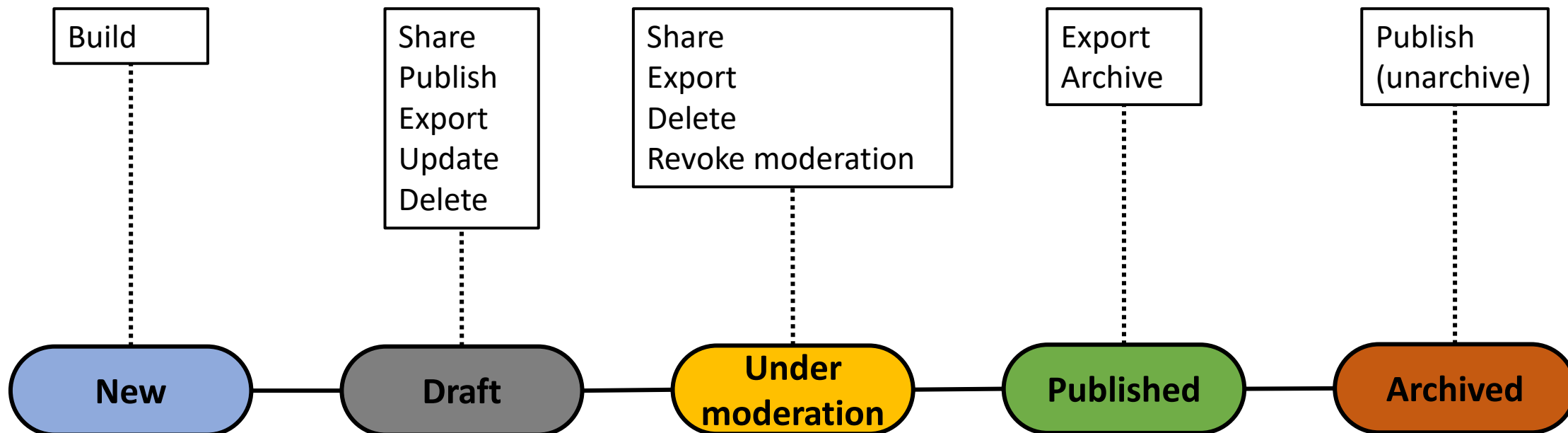


Image credit: ESA



datalabs

«YOU CAN EITHER MOVE YOUR QUESTIONS  
OR THE DATA. [...] OFTEN IT TURNS OUT  
TO BE MORE EFFICIENT TO MOVE THE  
QUESTIONS THAN TO MOVE THE DATA.»

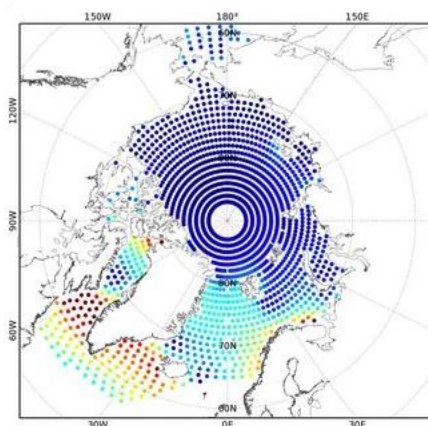
Jim Gray, eScience: A Transformed Scientific Method

## BRING YOUR QUESTIONS TO THE DATA

There is a new paradigm, opening completely new opportunities for discovery – a data-intensive approach to science. In many domains, we have entered what could be called the golden age of surveys, with several large-scale projects, spanning decades, between finished, ongoing, and planned activities. ESA is responsible, or is a major partner, in several of these initiatives.

There is, however, a new profound change: data has become a major technological challenge. Increases by multiple orders of magnitude in dataset size means that transferring data to a scientist is often unfeasible.

ESA datalabs gives you a privileged position; bring your code directly to ESA's infrastructure – there is a great set of tools and programming languages are flexible – and execute it with direct access to ESA's archives.



# Summary

An exciting platform to bring and share space science applications:

- Scientific users can browse, search, provide feedback and launch datalabs
- Developers can create, test, share and publish datalabs
- Moderation capabilities

Our current activities include user support, platform evolution and maintenance, community engagement

- We are interested in your feedback
- Hands-on session tomorrow!

# Contact Us

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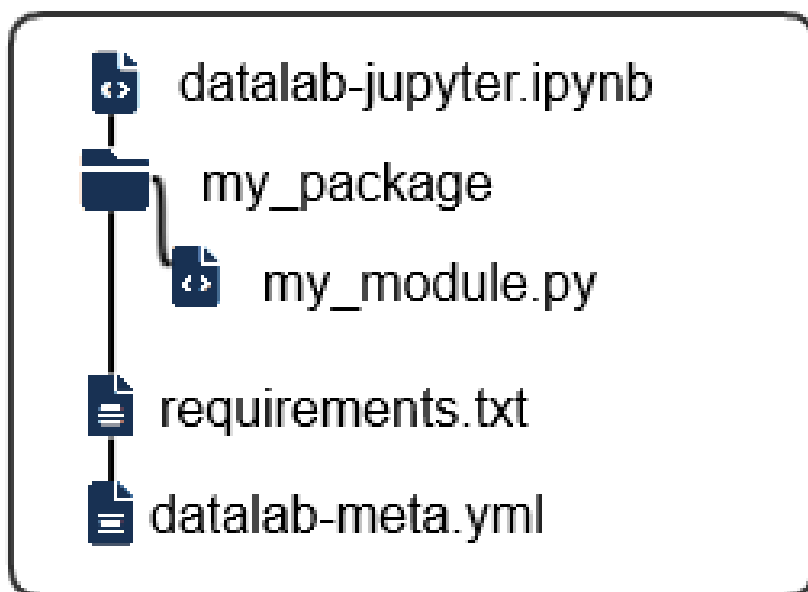


A French Company  
ISO 9001 – 2015 Certified

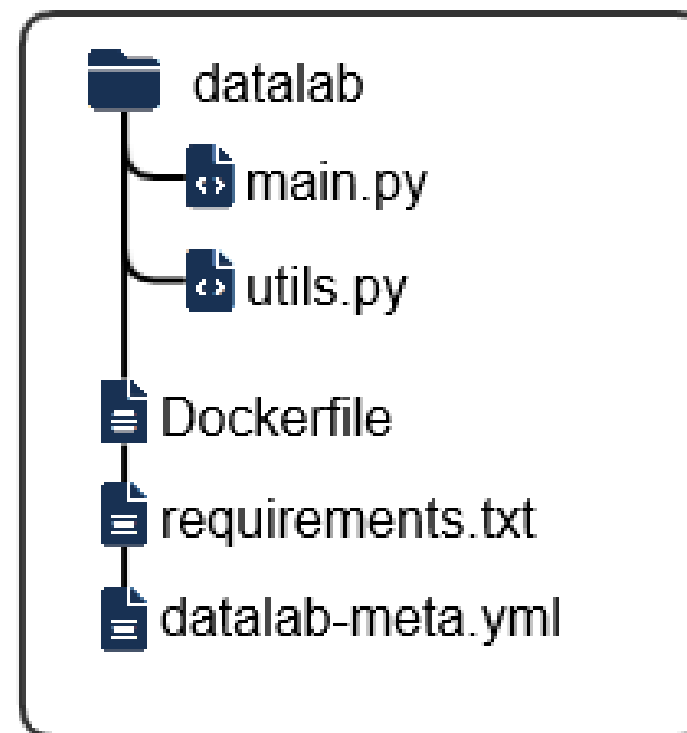


# Repository example

 git



 git



# Datalab creation

## ❖ Two modes:

- Basic datalab: For Sci. developers and Internal developers
- Advanced datalab: For Internal developers (can include docker file)

## ❖ Basic mode:

- Select image type(\*)
- Upload files
- Input metadata
- Build datalab

(\*) Currently 2 datalab types available: Jupyter Lab,  
VNC based X server

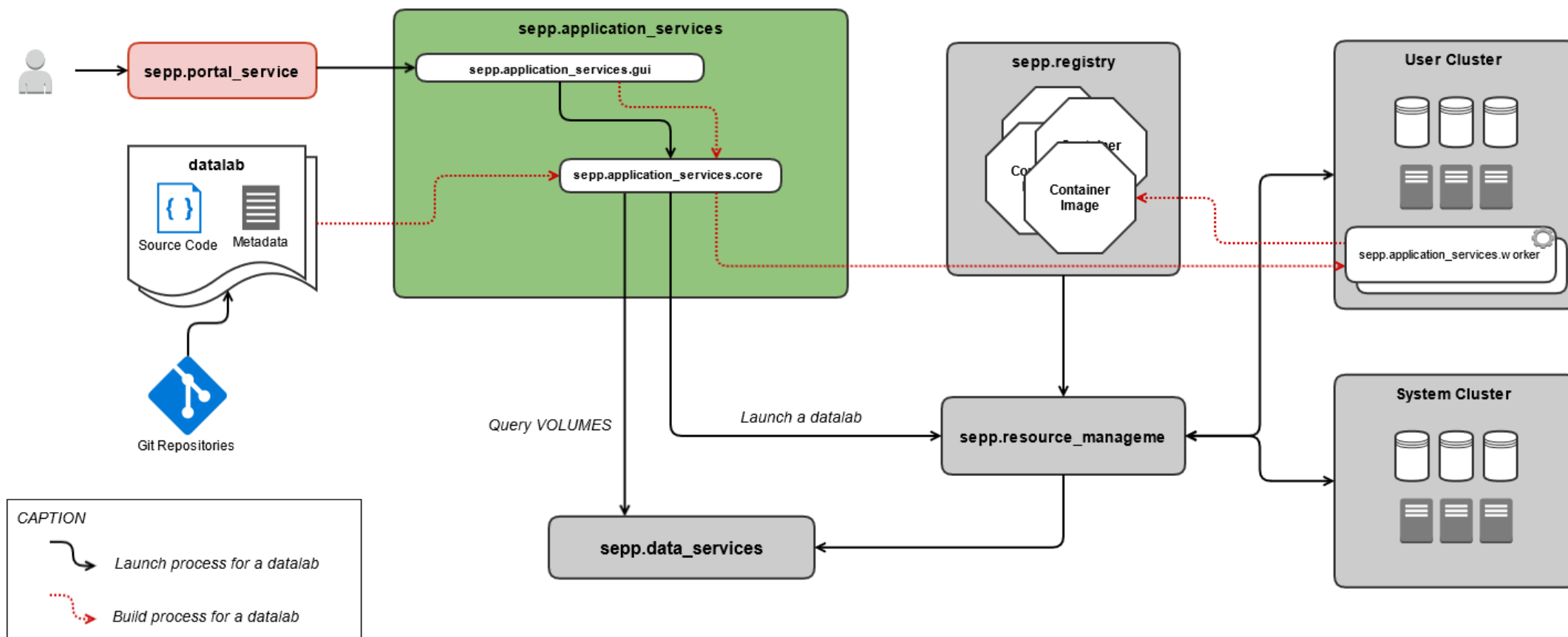
## ❖ Advanced mode:

- Upload files (\*\*)
- Input metadata
- Build datalab

(\*) Provide a docker file using available ESA base images (jl\_base, x\_base, datalabs\_ubuntu\_base)

# High level architecture

Three new domains to be included in the ESA Datalabs: core, gui, and worker



# Current scope

SCIAPPS uses EDL 0.2.4 which does not have the RBAC feature so it is hardcoded

Security scan during datalab build is disabled so current ESA base images pass the scan

Resources are not yet sync, so are now fixed

Currently 2 datalab types available: Jupyter Lab, VNC based X server

(\*) Provide a docker file using available ESA base images (jl\_base, x\_base, datalabs\_ubuntu\_base)