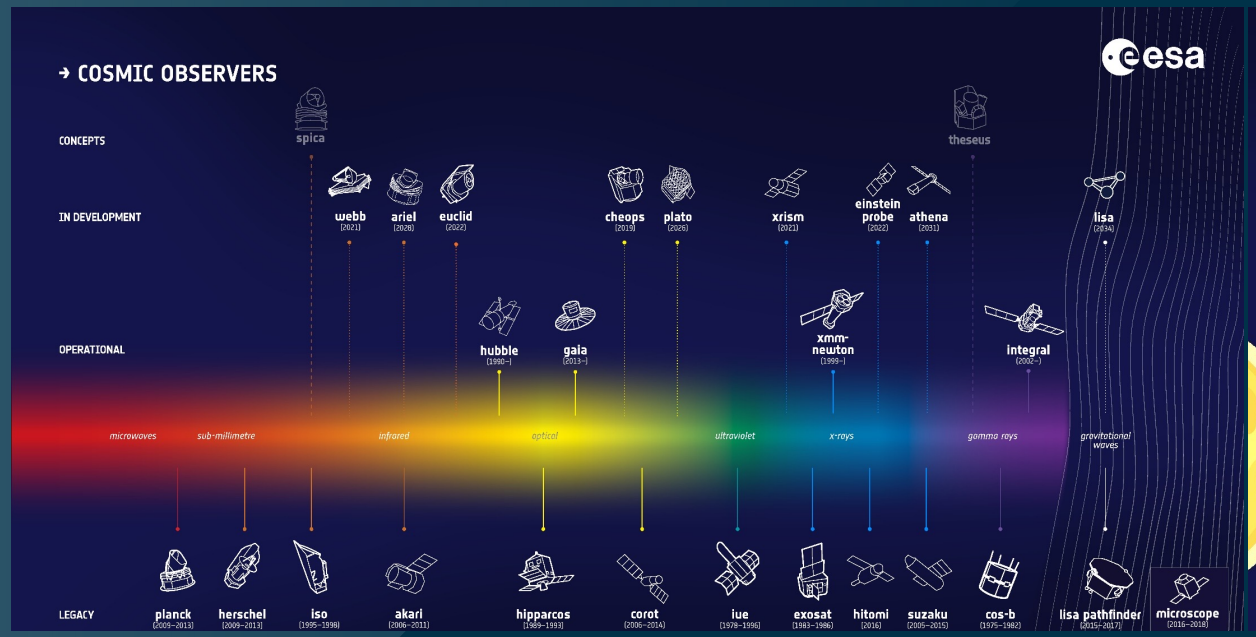
ESA Datalabs

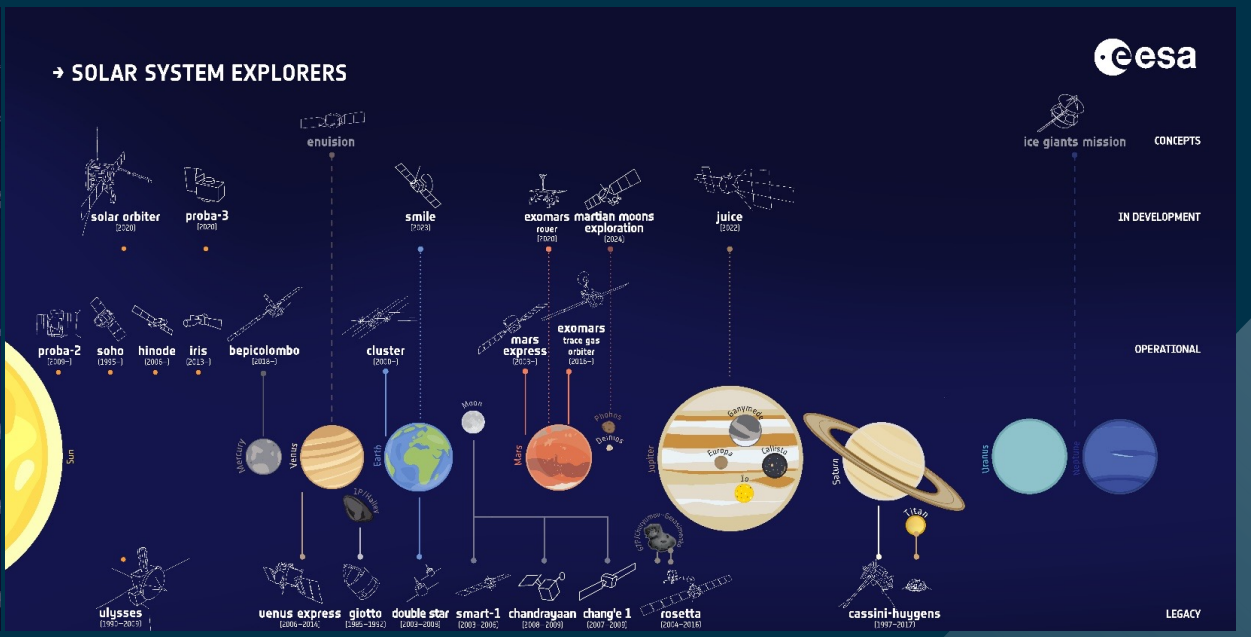
Overview, current status and future plans

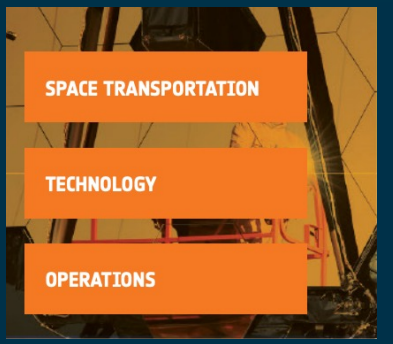
ESA Datalabs Workshop – Vicente Navarro

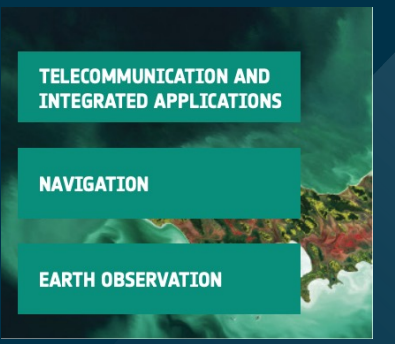
24.11.2022, ESAC

Transversal Platform Driven by Space Science









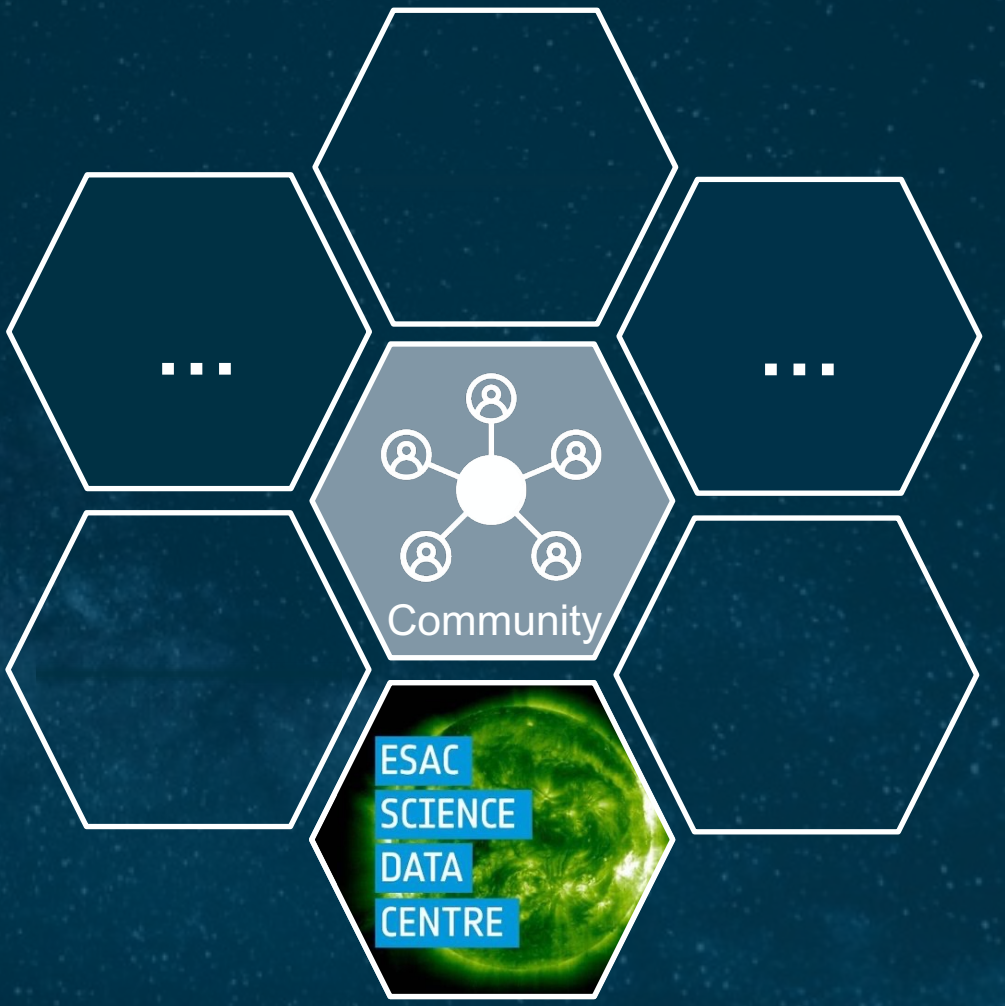
The Community

162 Private Beta Users

123 Public Beta Requests

100 Simultaneous Users

261 Simultaneous Datalabs



The Platform

Science Development

System Development

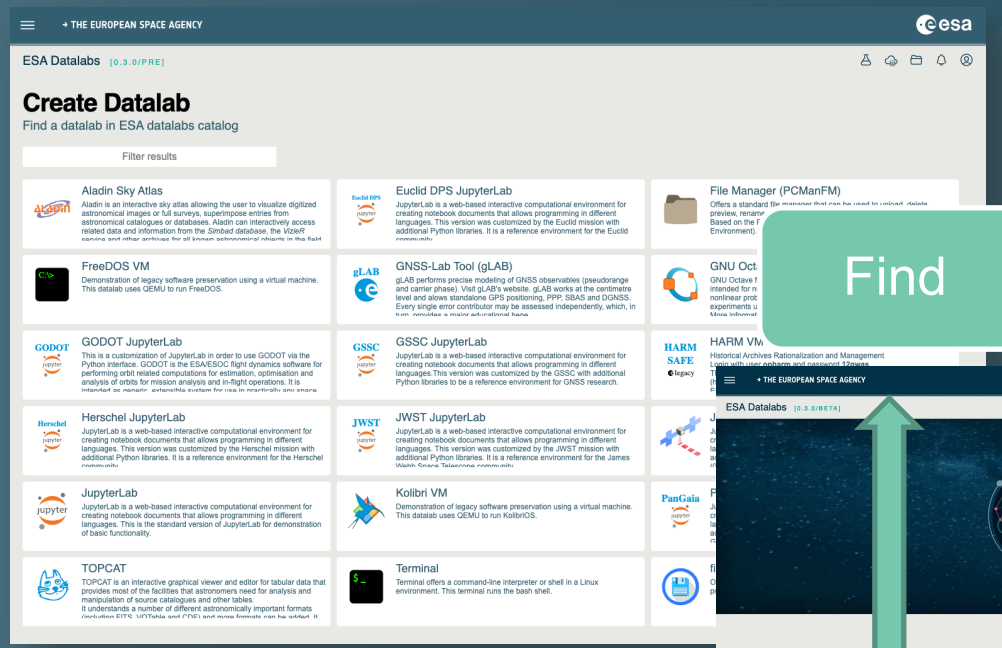
IT Development

SaaS

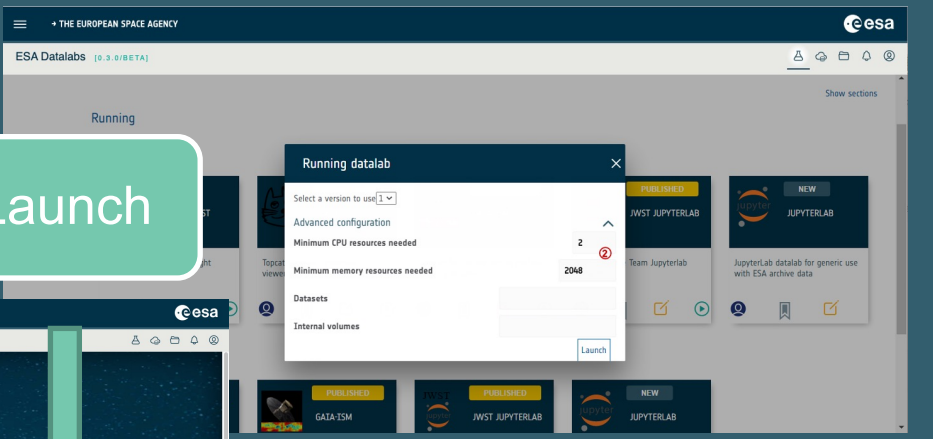
PaaS

IaaS

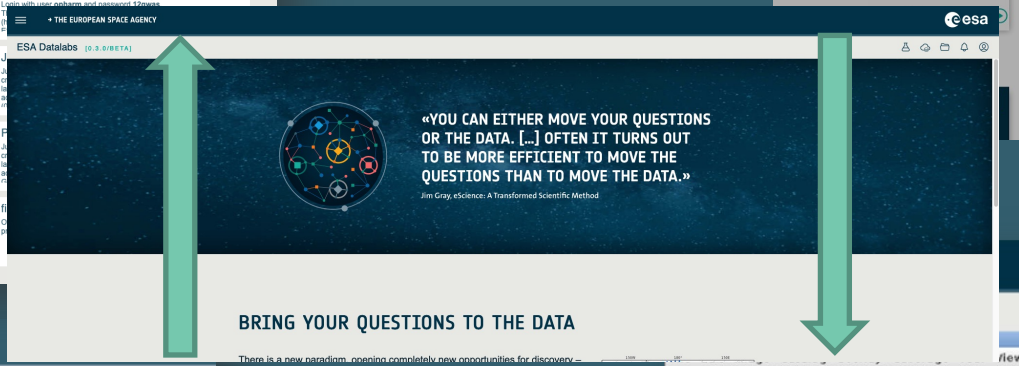
Standard Flow

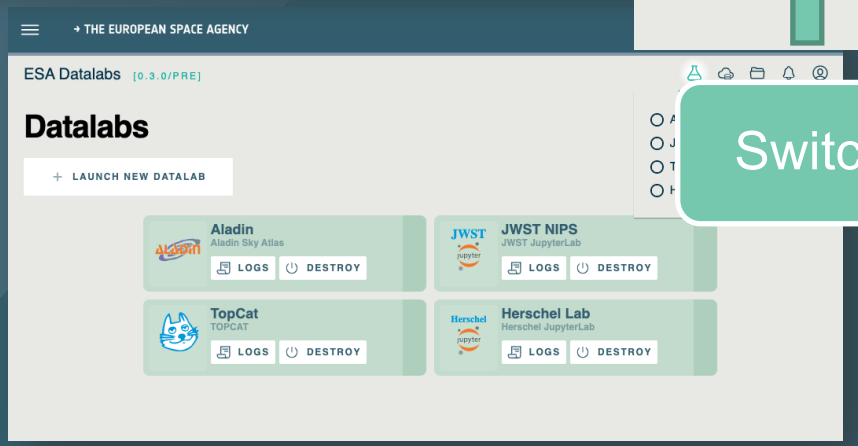


Find



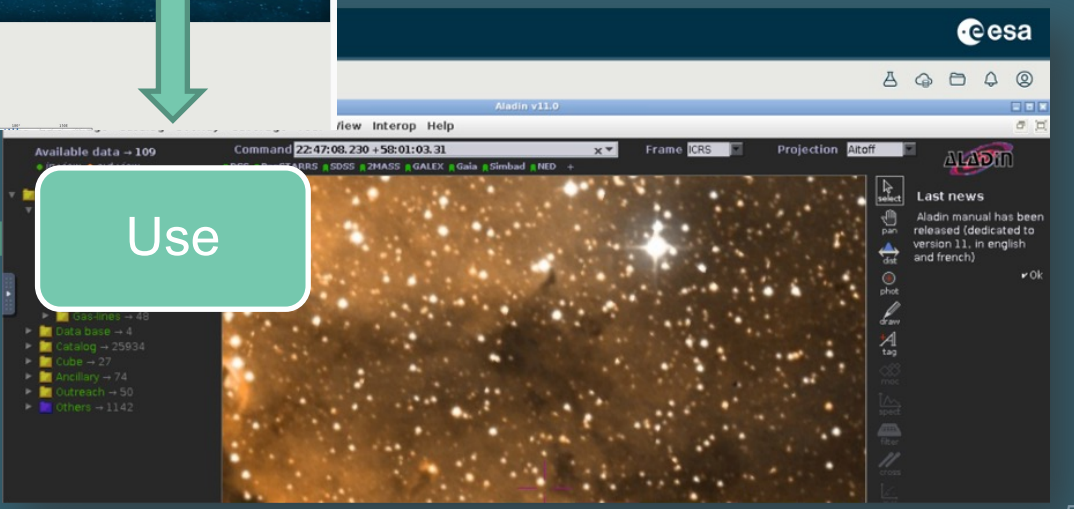
Launch



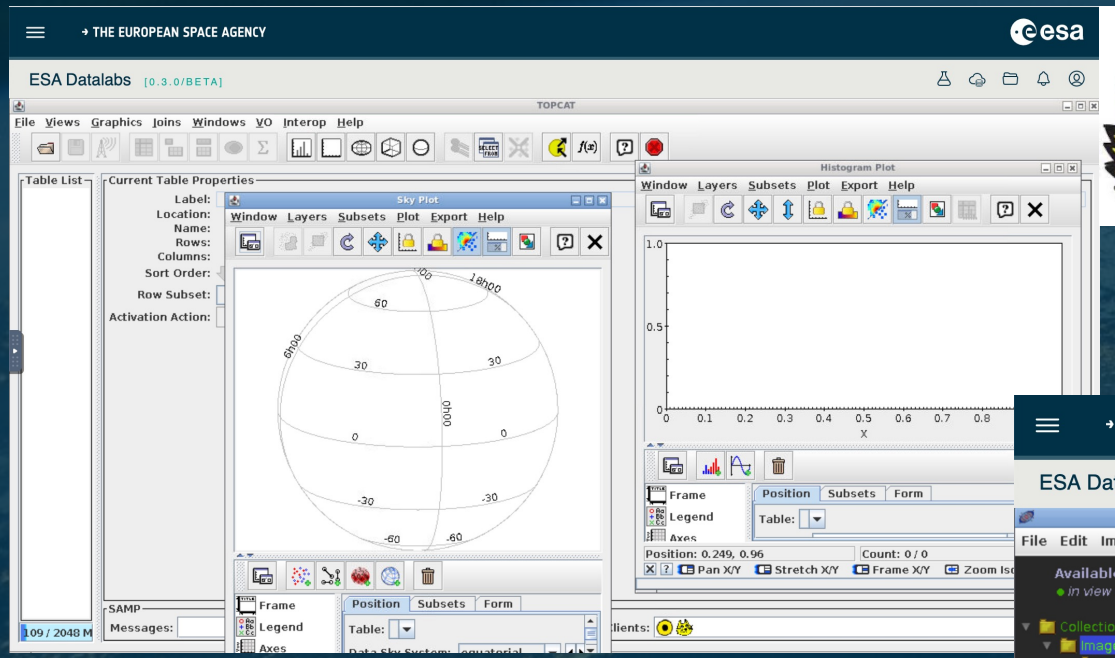


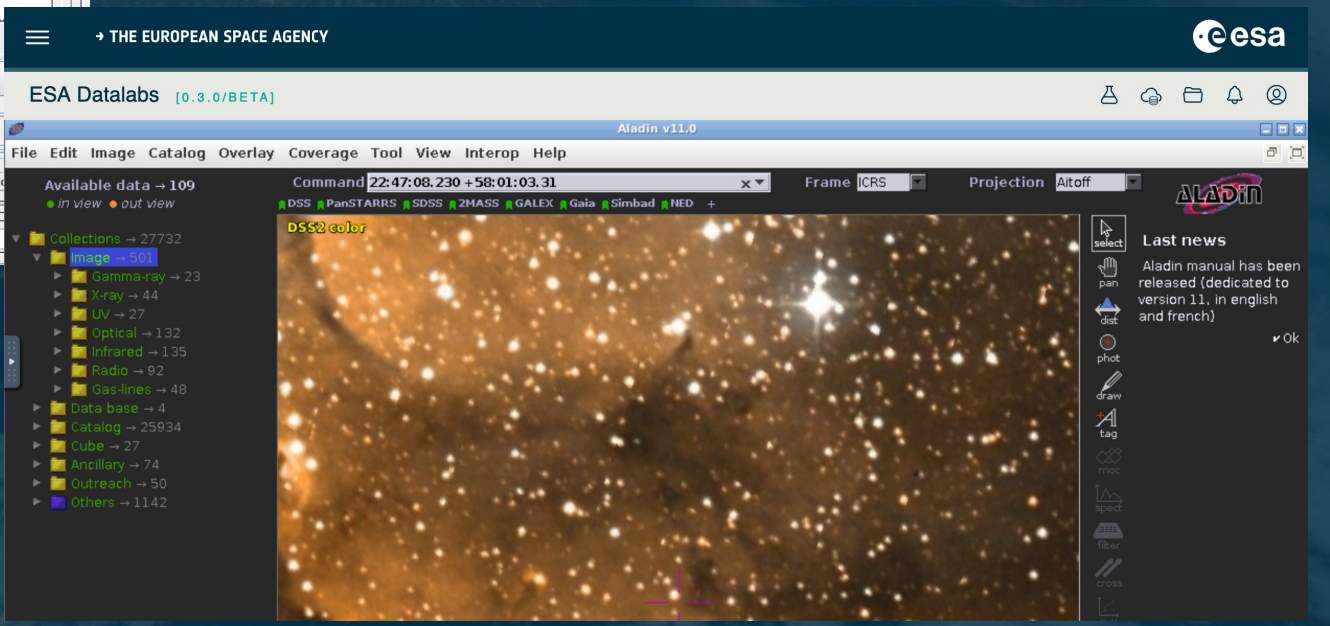
Switch

Use

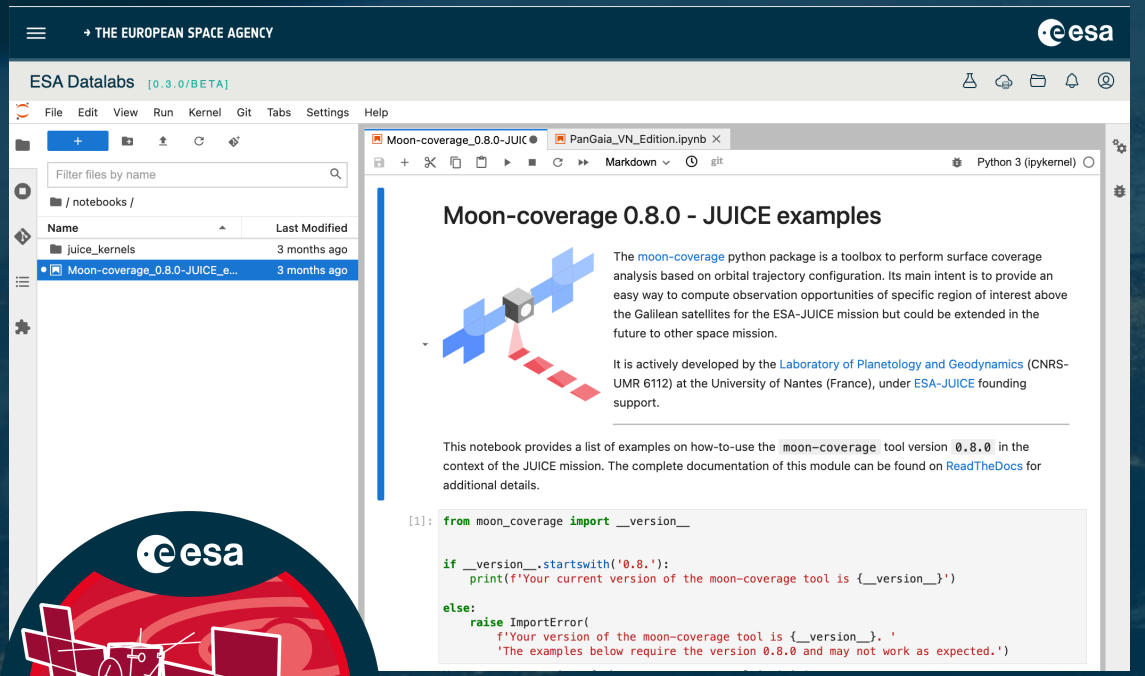


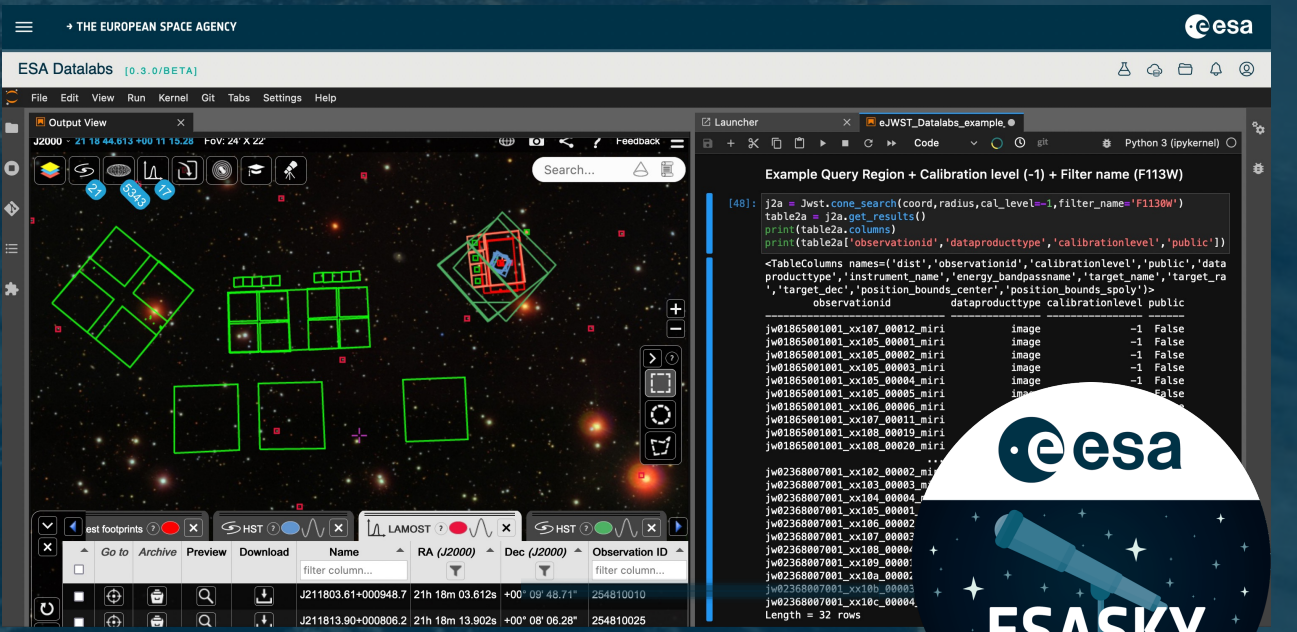
Desktop Datalabs



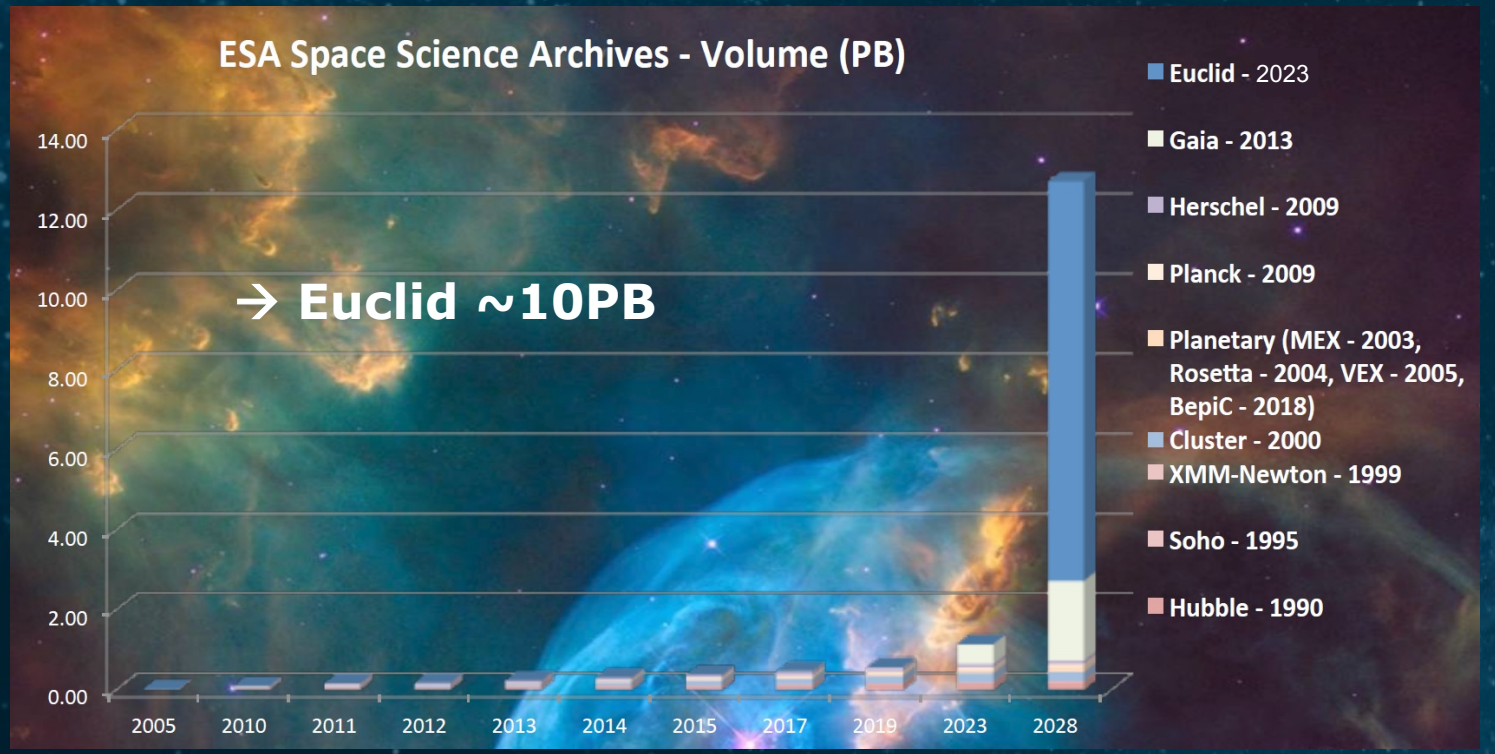


Web-Based Datalabs





Data Colocation as a Differential Factor



From *bring the data to the user*

To *bring the user to the data*


The Future?

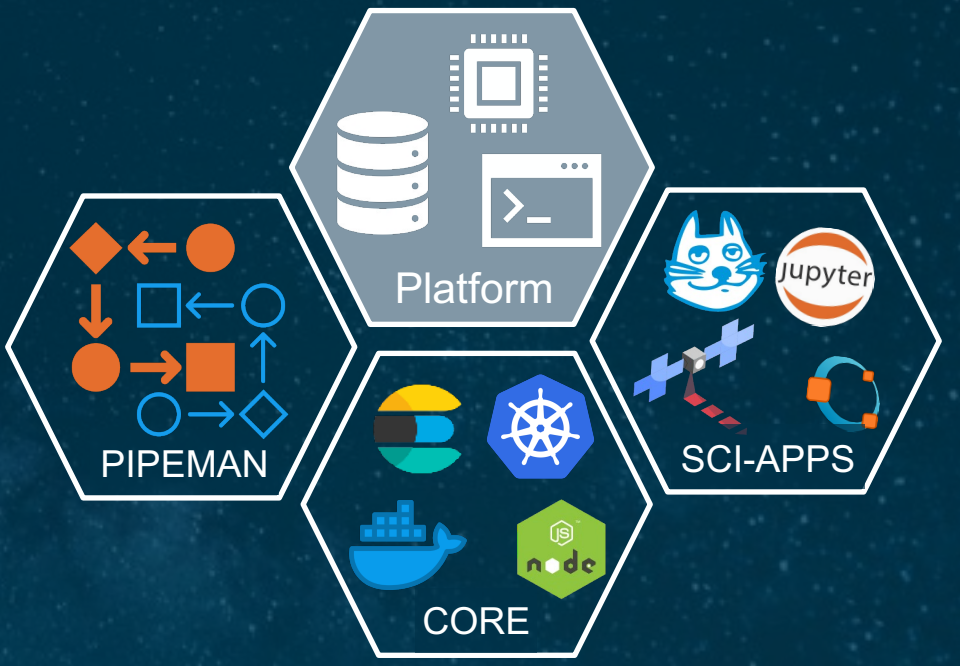
Platform and Community Release Roadmap

Q1 2022 Private Beta

Q4 2022 Public Beta Moderated

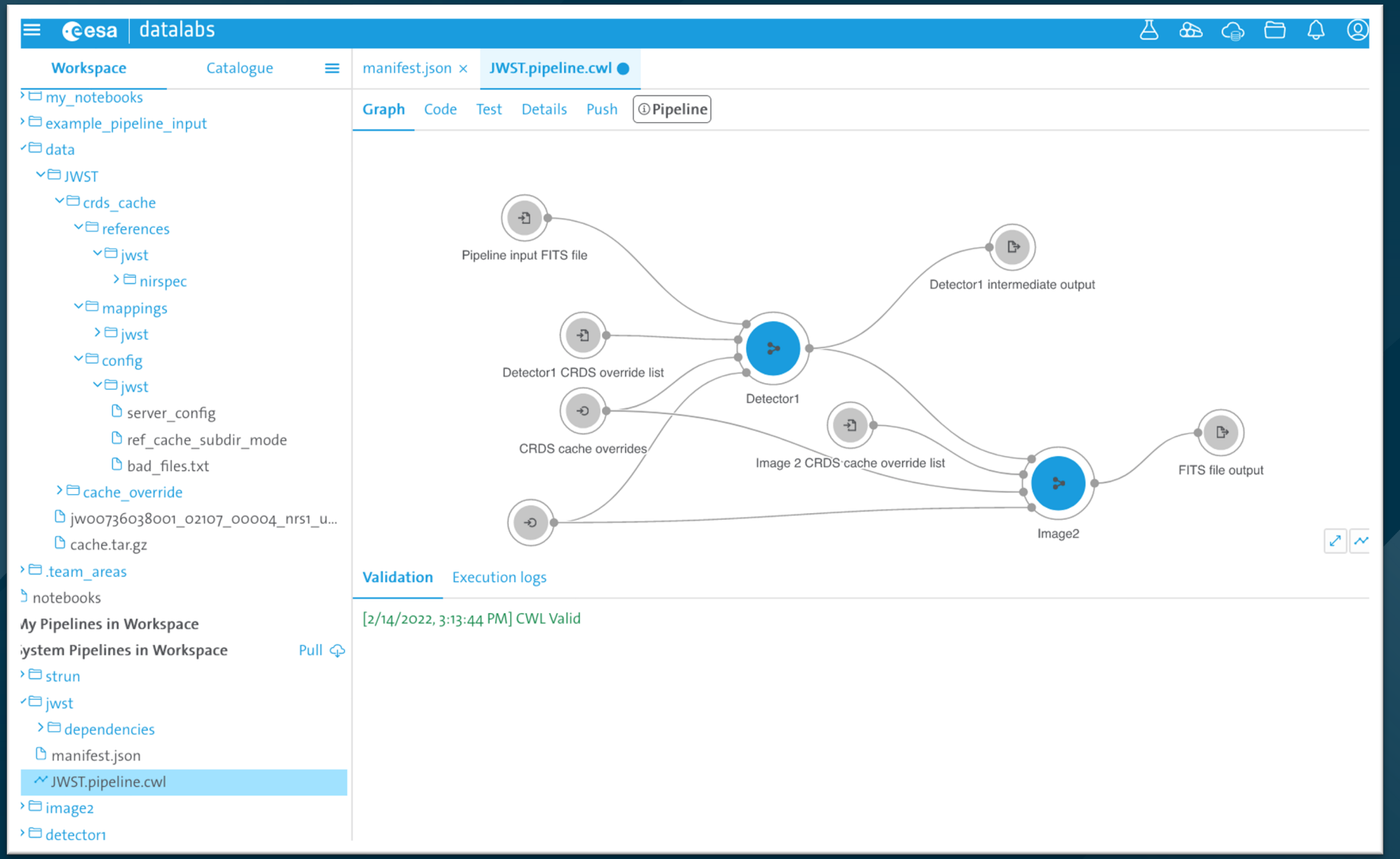
Q2 2023 Public Beta Unmoderated

PRODUCTION WORKSHOP

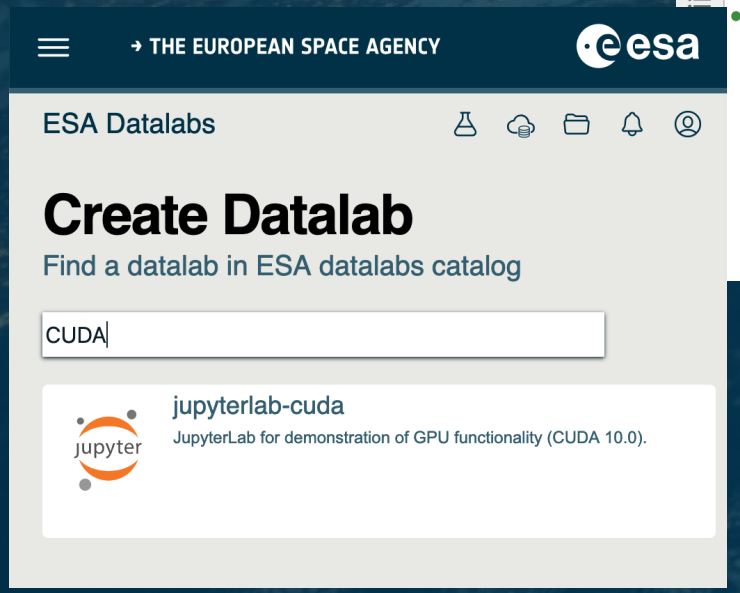


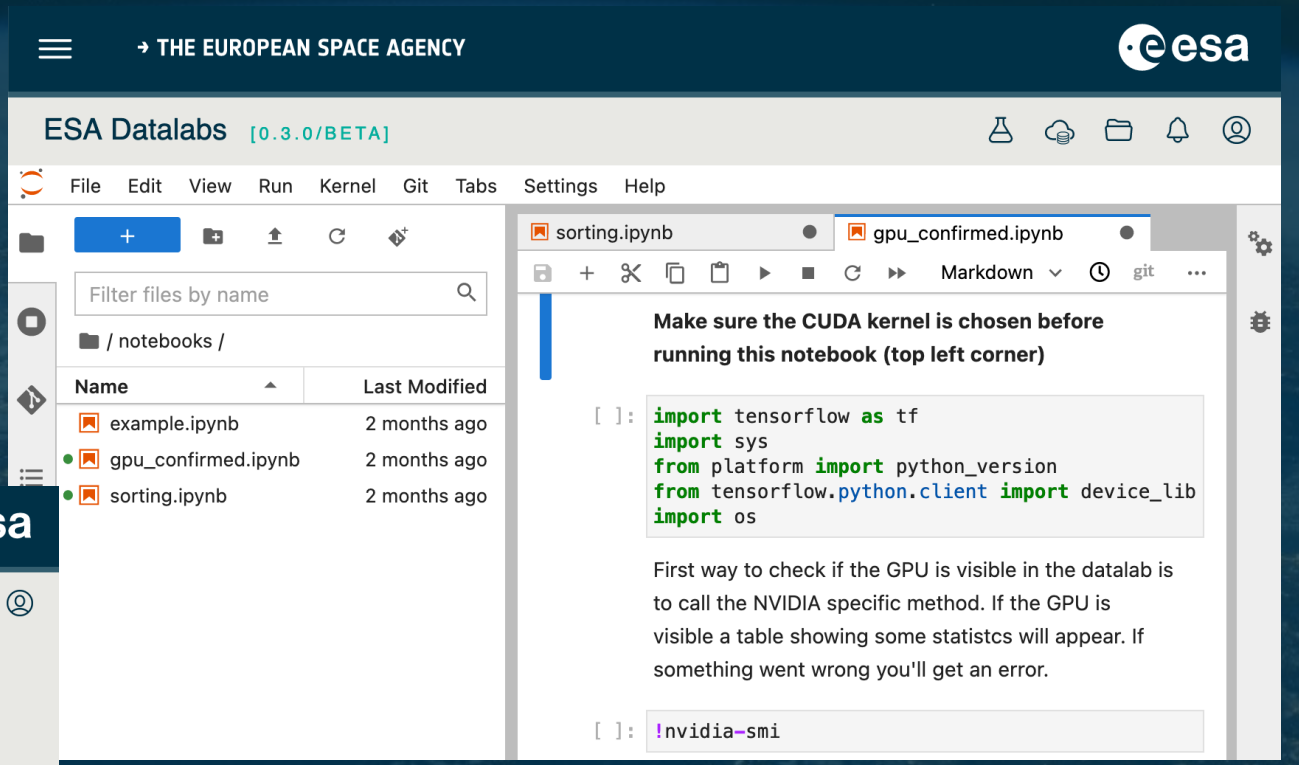
Future Data Processing

Pipelines


esa datalabs
Workspace
Catalogue
my_notebooks
example_pipeline_input
data
JWST
crds_cache
references
jwst
nirspec
mappings
jwst
config
jwst
server_config
ref_cache_subdir_mode
bad_files.txt
cache_override
jw00736038001_02107_00004_nrs1_u...
cache.tar.gz
.team_areas
notebooks
My Pipelines in Workspace
System Pipelines in Workspace
Pull
strun
jwst
dependencies
manifest.json
JWST.pipeline.cwl
image2
detector1
manifest.json
JWST.pipeline.cwl
Graph
Code
Test
Details
Push
Pipeline
Pipeline input FITS file
Detector1 CRDS override list
CRDS cache overrides
Detector1
Detector1 intermediate output
Image 2 CRDS cache override list
Image2
FITS file output
Validation
Execution logs
[2/14/2022, 3:13:44 PM] CWL Valid

GPU Computing

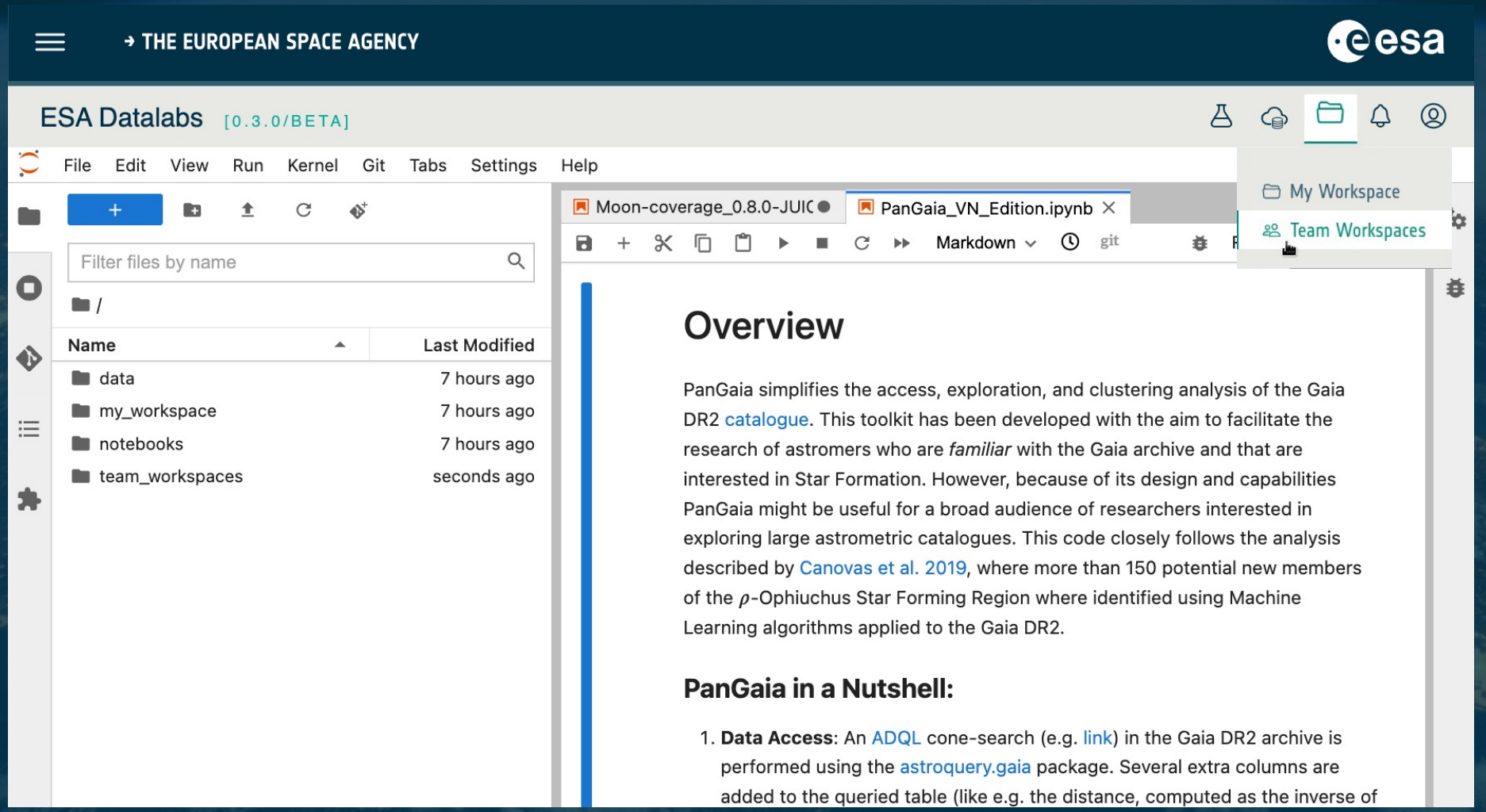




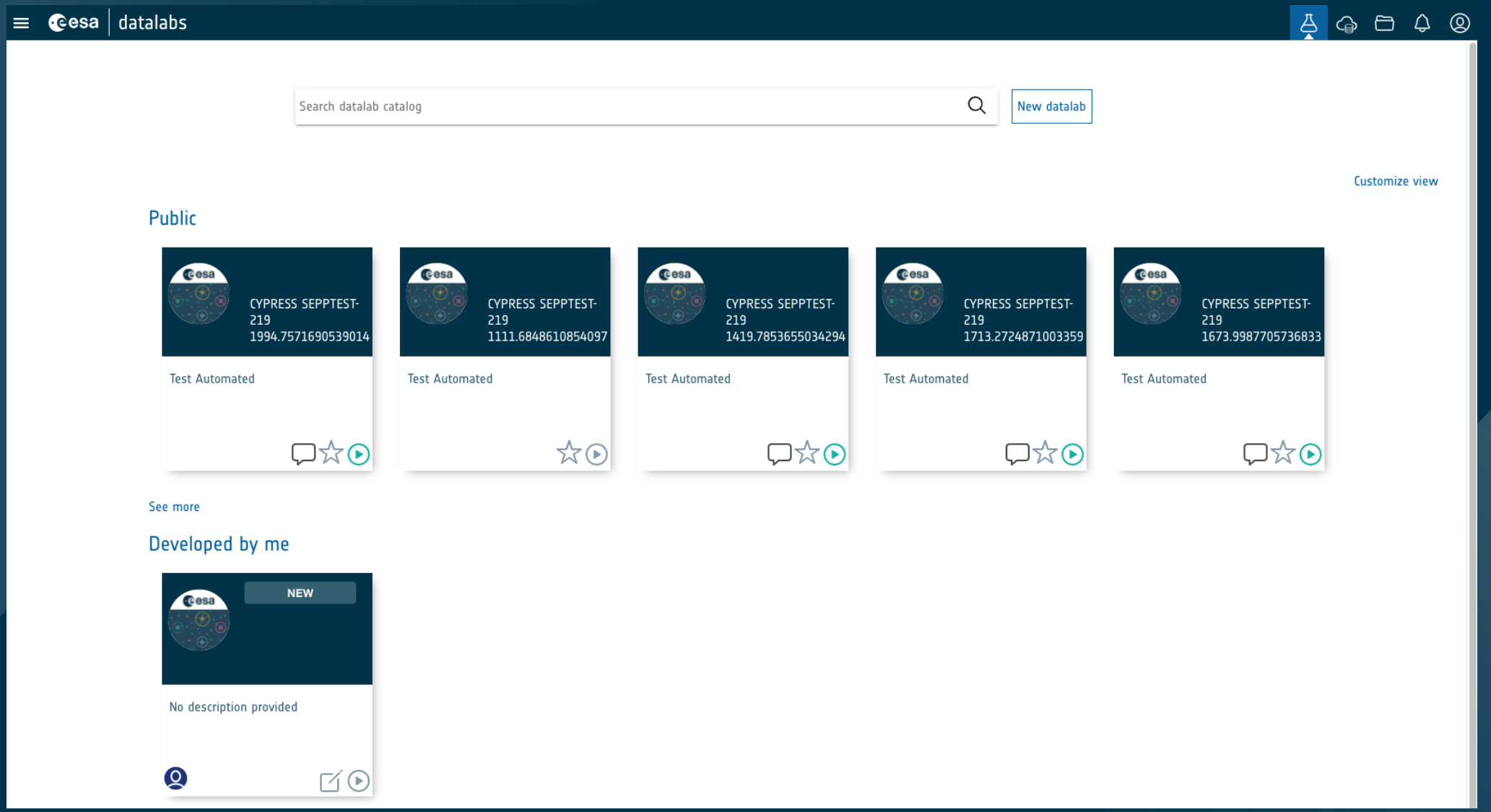
Time measured	numpy + no gpu	numpy + gpu	cupy + gpu
Total execution time	≈ 44m47s	≈ 14min26s	≈ 3min2s


Future
Collaboration

Data Centric Collaboration - Team Workspaces

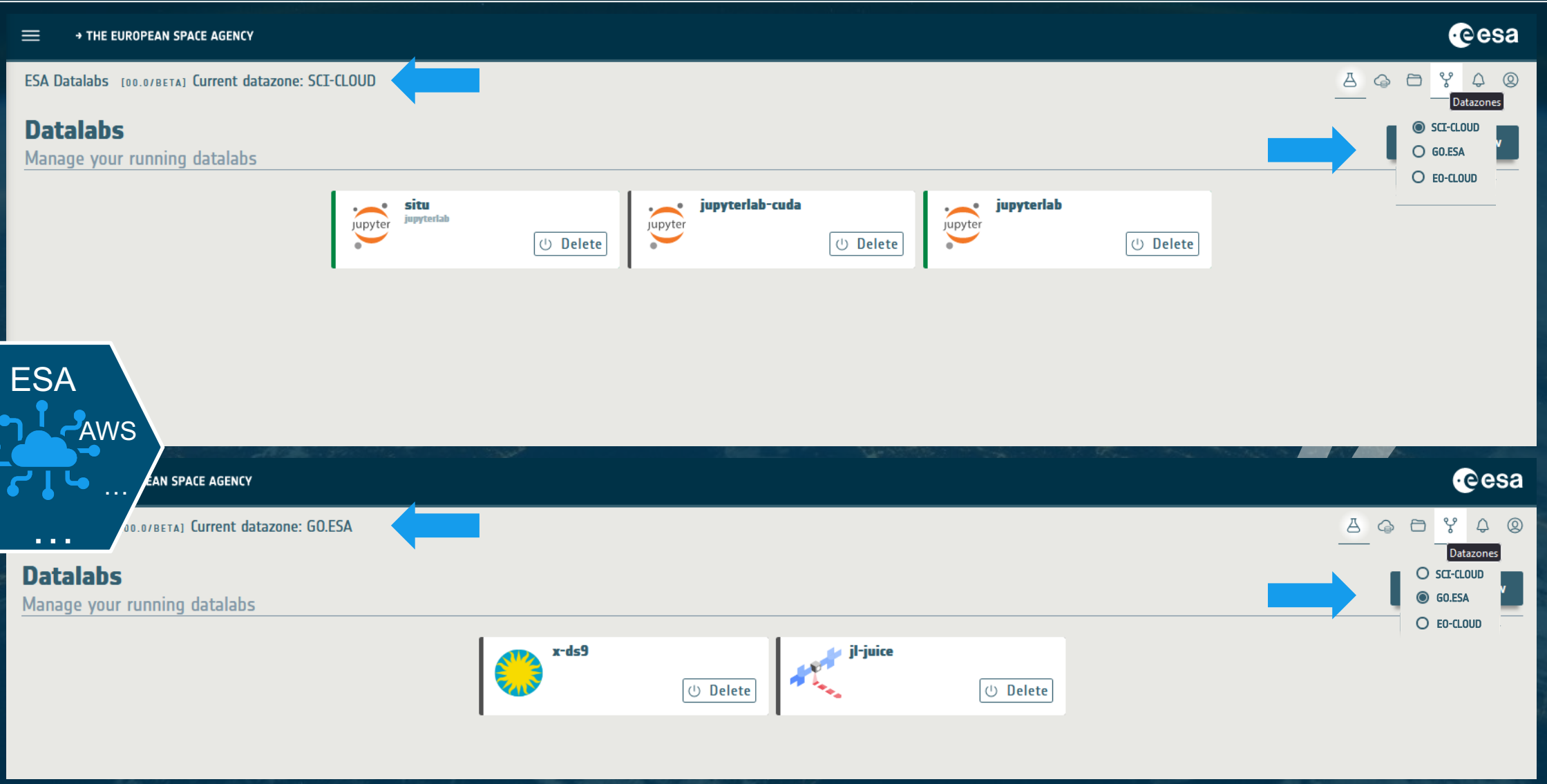


Application Centric Collaboration - AppStore

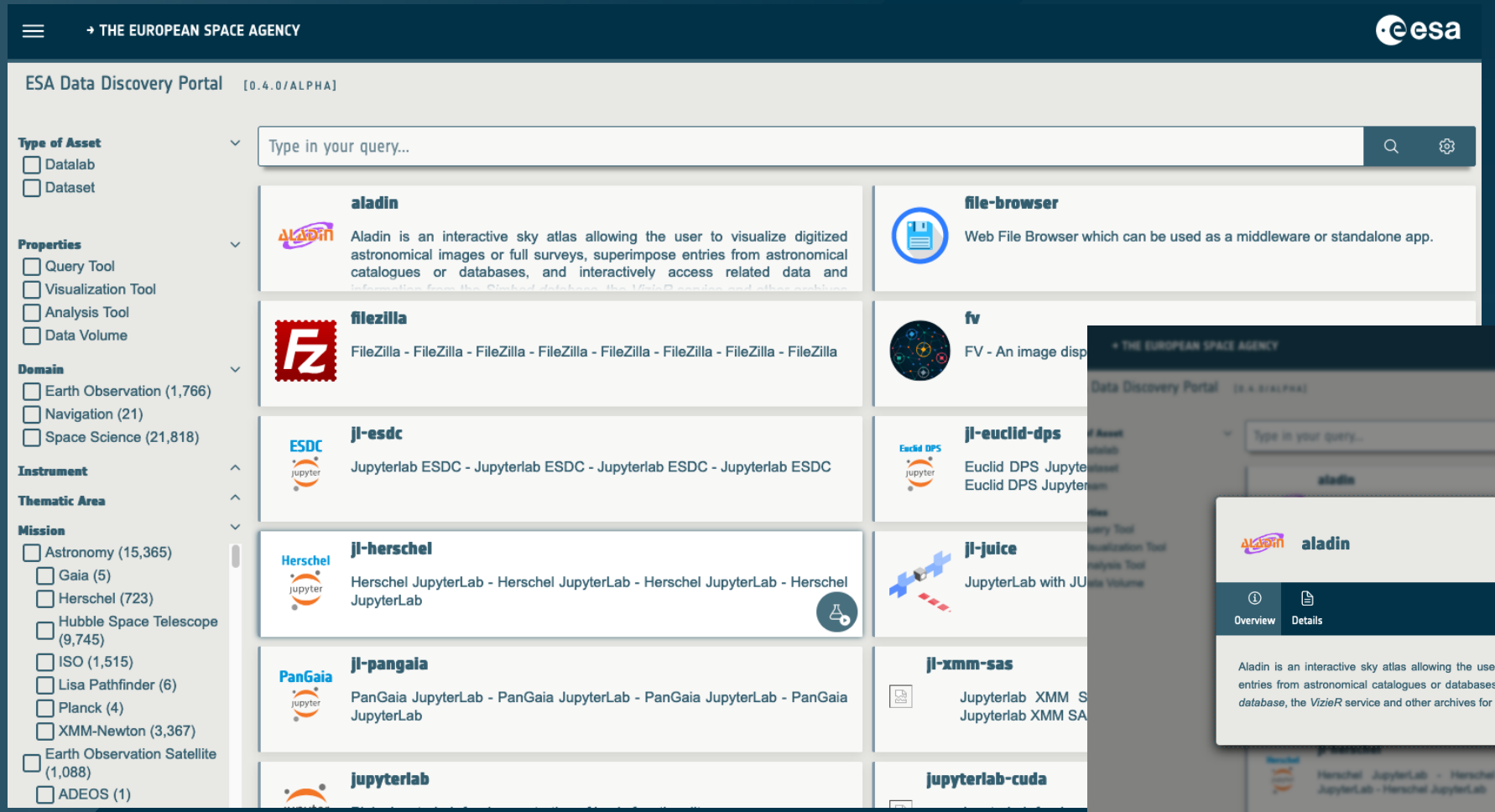


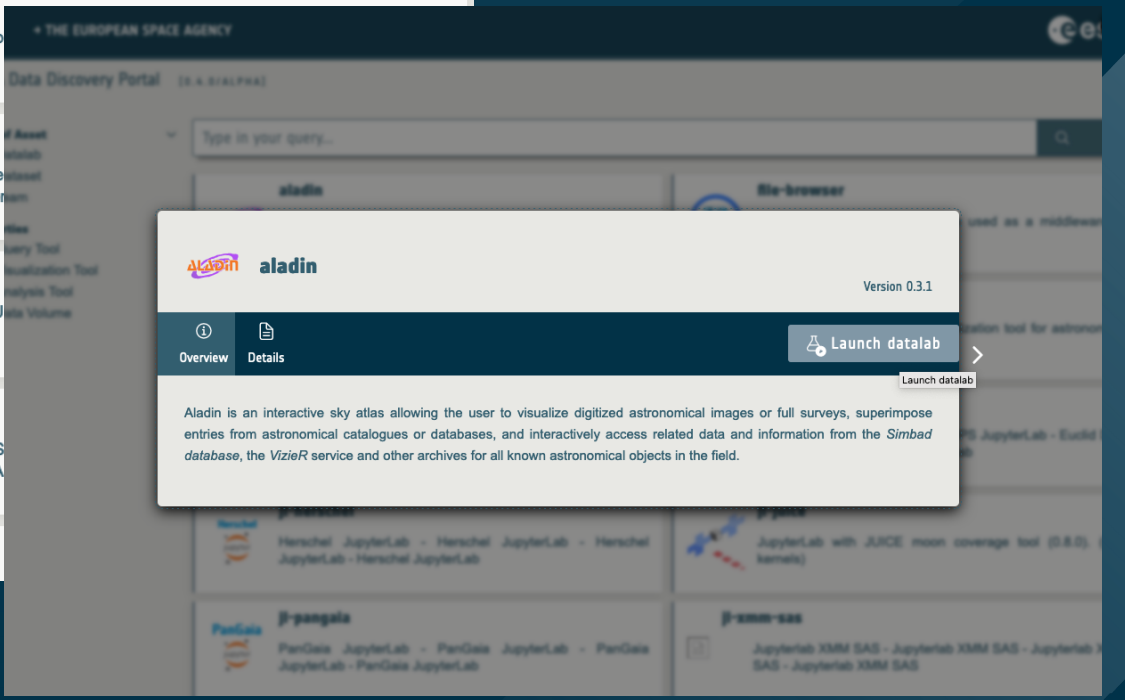
Future Interoperability

Interoperability Across IT Infrastructures



Interoperability Across Exploitation Platforms





Take away messages

ESA Science support

- Increased science return from its missions
- Increased science operations efficiency

Innovation traits

- Science data exploitation coupled with data
- Science pipelines for current and future needs
- Collaborative research & citizen science

Thank You!

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