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@EGI_eInfra

EGI Cloud Services

Evolution

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Our Service Portfolio

Compute

Cloud Compute

Run virtual machines on demand with complete control over computing resources

Cloud Container Compute BETA

Run Docker containers in a lightweight virtualised environment

High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets

Workload Manager BETA

Manage computing workloads in an efficient way

Applications

Applications on Demand BETA

Use online applications for your data & compute intensive research

Notebooks BETA

Create interactive documents with live code, visualisations and text

Storage and Data

Online Storage

Store, share and access your files and their metadata on a global scale

Archive Storage

Back-up your data for the long term and future use in a secure environment

Data Transfer

Transfer large sets of data from one place to another

Security

Check-in BETA

Login with your own credentials

Training

FitSM Training

Learn how to manage IT services with a pragmatic and lightweight standard

ISO 27001 Training

Learn how to manage and secure information assets

Training Infrastructure

Dedicated computing and storage for training and education

EGI Cloud Compute

- Multi-cloud IaaS with Single Sign-On and:
  - Common VM image catalogue
  - Discovery, accounting, monitoring
  - Unified GUI dashboard
- Providers of the service operate a cloud framework and a set of connectors to the EGI federation services (accounting, discovery, AppDB image catalogue)
  - Technology agnostic (OpenStack/OpenNebula/Synnefo), but OpenStack becoming the middleware of choice for all providers
  - Used to enforce a common IaaS API (OCCI)

EGI Cloud Compute Evolution

AAI

- Transition from X.509 to OpenID Connect under good progress
  - 100% of OpenStack sites now support OIDC!
  - OpenNebula pilots successful
  - AppDB finalising support during Q3 2019

CLI access with OIDC

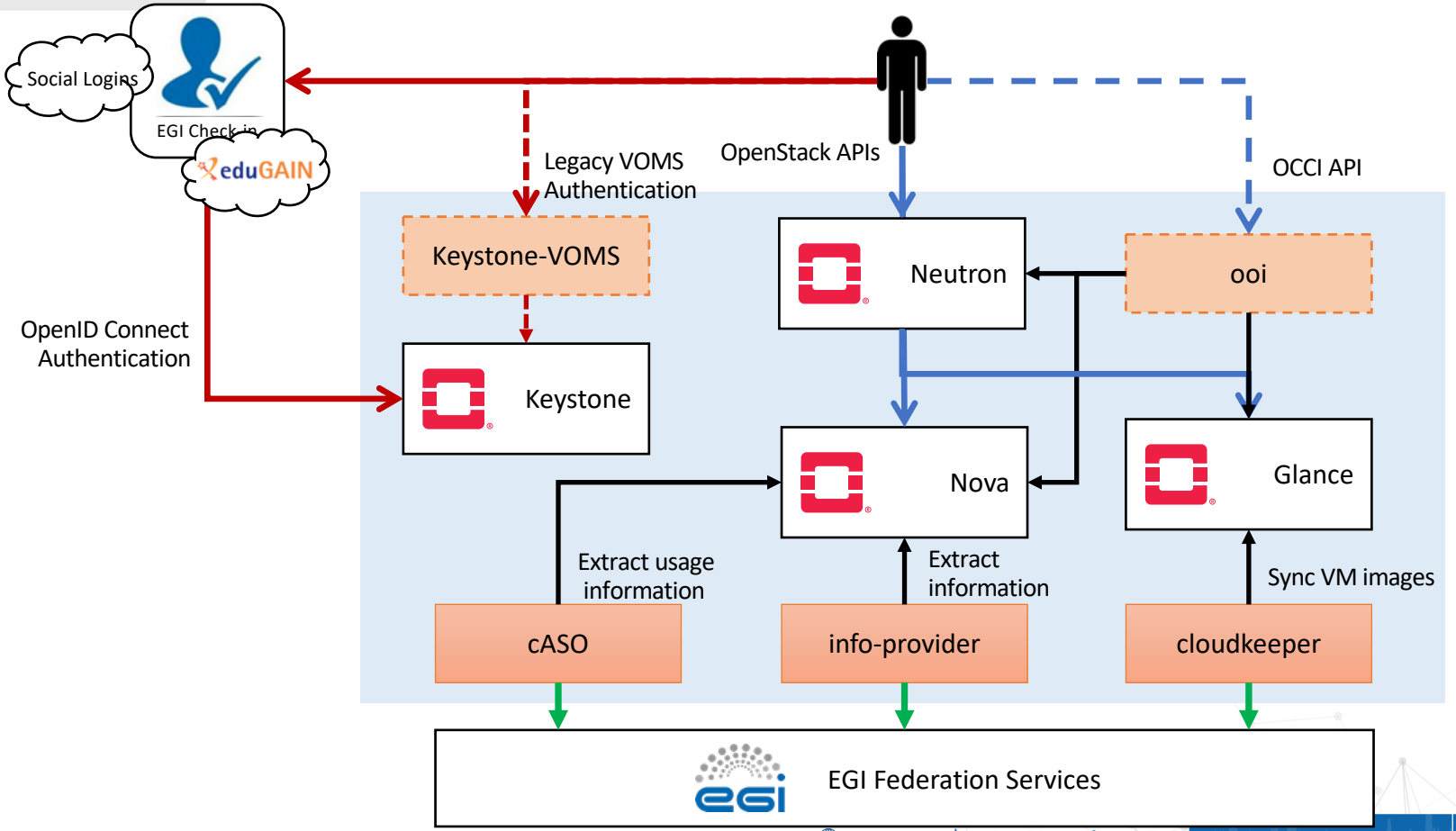
Monitoring with OIDC

EGI Cloud Compute Evolution

Central operations

- We are moving to a central-operations model
  - AAI integration with Check-in (OIDC) remains under site control, but
  - Sites do not operate connectors with EGI federation, instead handled by a EGI Cloud operations team
  - Status:
    - Cloud-info tested successfully!
    - cloudkeeper missing fixing issues found during tests
    - Accounting to be decided once cloud-info and cloudkeeper pilots (but we don’t foresee any major issues)
    - Service accounts in Check-in will simplify management

Evolution, site perspective



EGI Cloud Compute Evolution

Other components

- Info-provider
  - Moving to GlueSchema 2.1: implementation ready, waiting for OGF approval of standard
  - Stop using BDII and instead rely on Argo Messaging System: tests ok, will implement under the central operations schema
- Accounting
  - IP and Storage accounting under progress
- cloudkeeper:
  - Transition to 2.0 protocol, easier to operate under VO-scoped setup (central operations)
- AppDB:
  - Native API support
  - OIDC support
  - GlueSchema 2.1
  - Migration to AMS from BDII

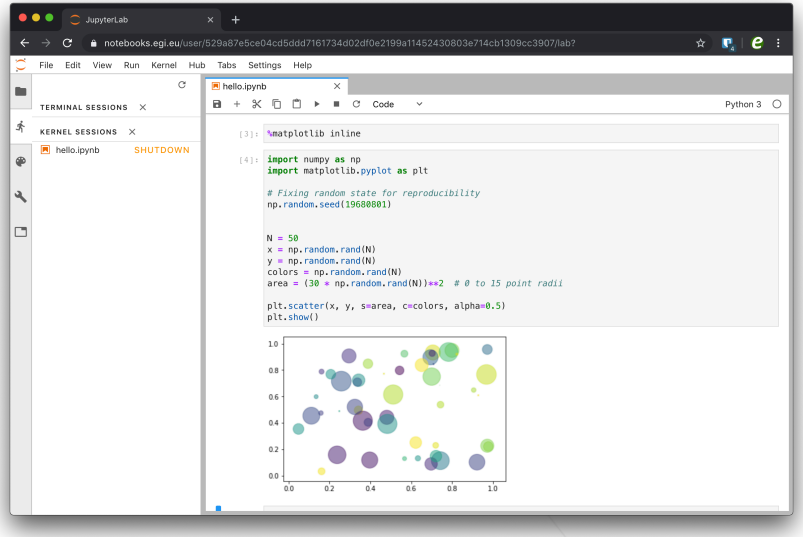
EGI Cloud Container Compute

Run containers on top of EGI Cloud Compute

- Service has been in beta phase since long
- Our understanding on how to run containers has evolved over the years
  - Started with “let’s use nova-docker”, transitioned to “just run containers on your VMs” to “let’s provide Kubernetes deployment on demand”
  - EC3 is now ready to deploy auto-scaling Kubernetes cluster
- What’s next?
  - Testing, testing, and some more testing!
  - Move the EC3 / Kubernetes setup into production
  - Probably not moving into (automatically) managing complete lifecycle of the k8s cluster (upgrades, handling failures)

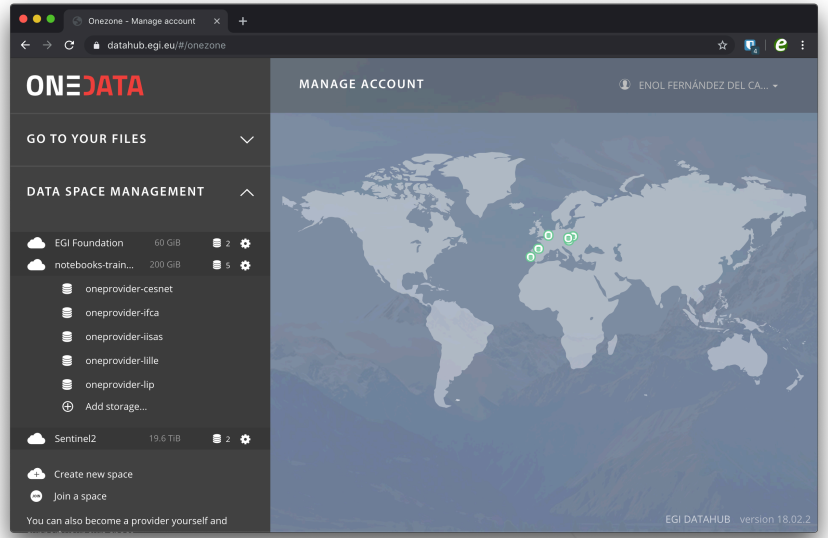
EGI Notebooks

- Run Jupyter Notebooks directly from your browser:
  - **EGI Check-in**
  - **Persistent storage**
  - **Scalable computing in the EGI Cloud**
- Public, free instance with 1 vCPU cores/1GB RAM per user at https://notebooks.egi.eu
- Community specific deployments based on negotiation (SLA signed)



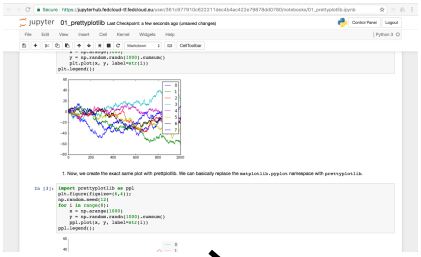
EGI Notebooks + DataHub

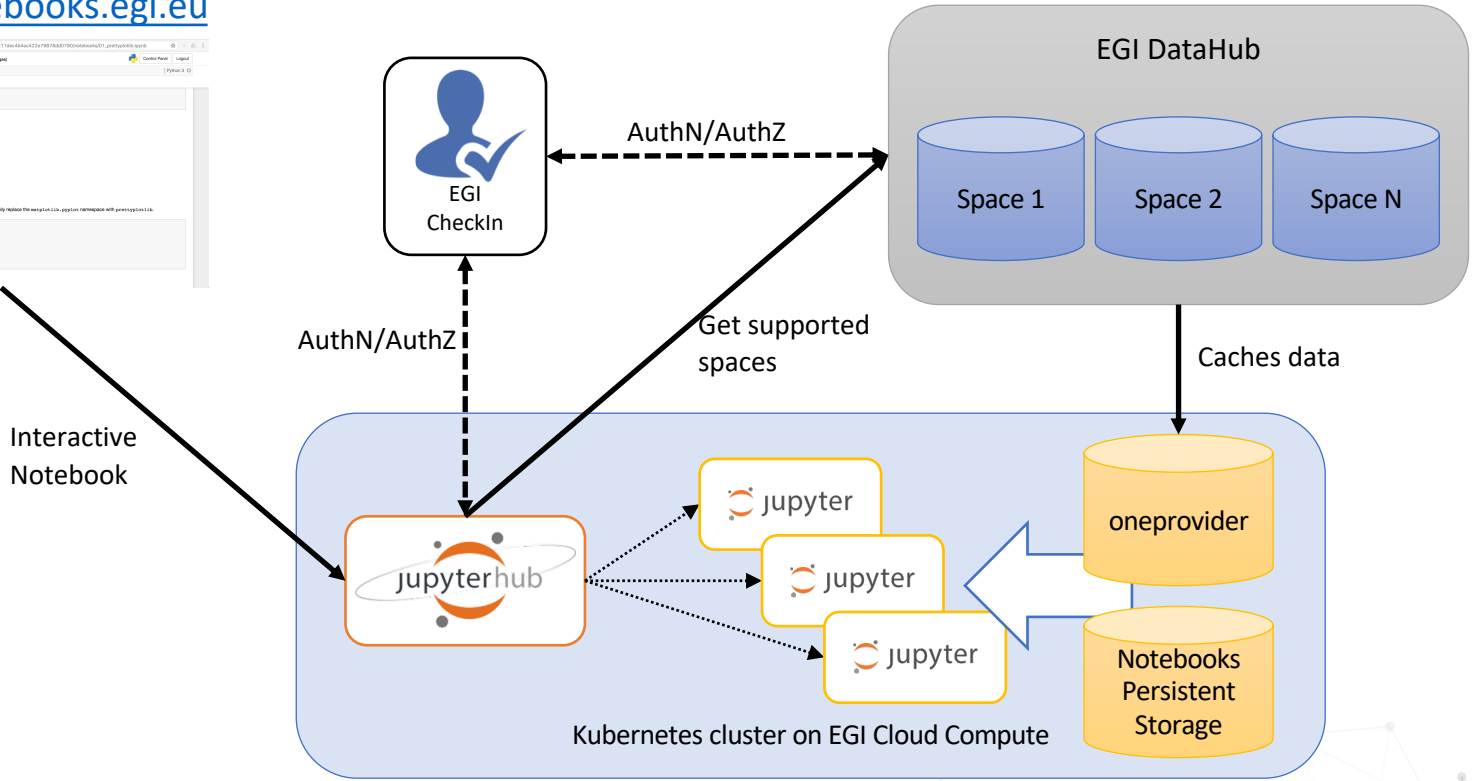
- 4 *oneproviders* running at EGI Cloud sites
  - Same space, hosting SeaDataNet data for demo
- 1 *oneprovider* running near the notebooks
  - Caches data access
  - Ensures good performance



Seamless integration

https://notebooks.egi.eu





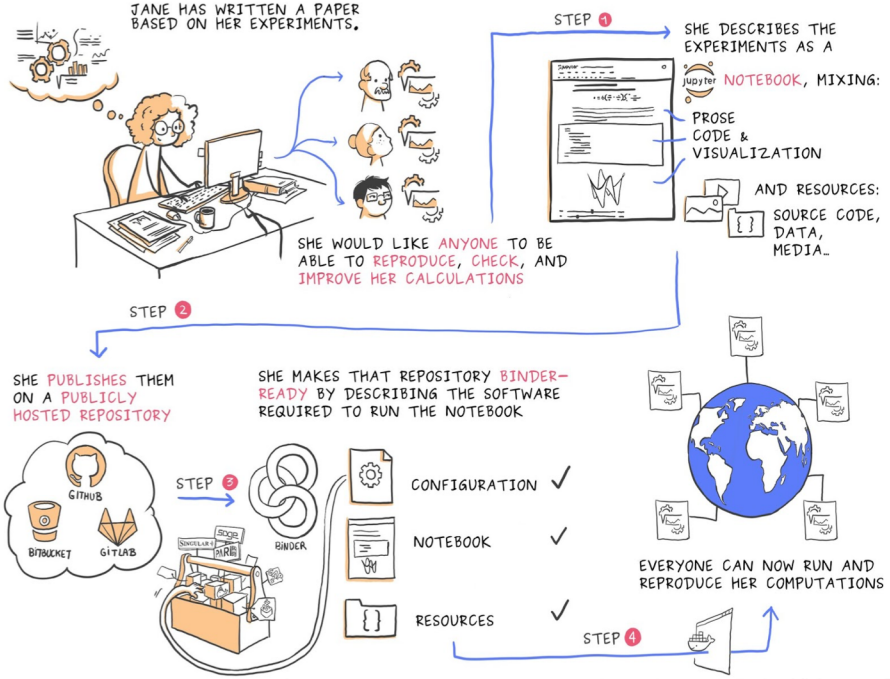
Beyond EGI DataHub

- EGI Notebooks already ready to be interact with other storage systems:
  - D4Science VRE Workspace (in **production** for AGINFRA+)
  - B2DROP (tests done for EPOS-ORFEUS)
  - NFS server for shared data (in **production** for LABSS)
  - OpenStack cinder volumes (tests done for Max-CoE)

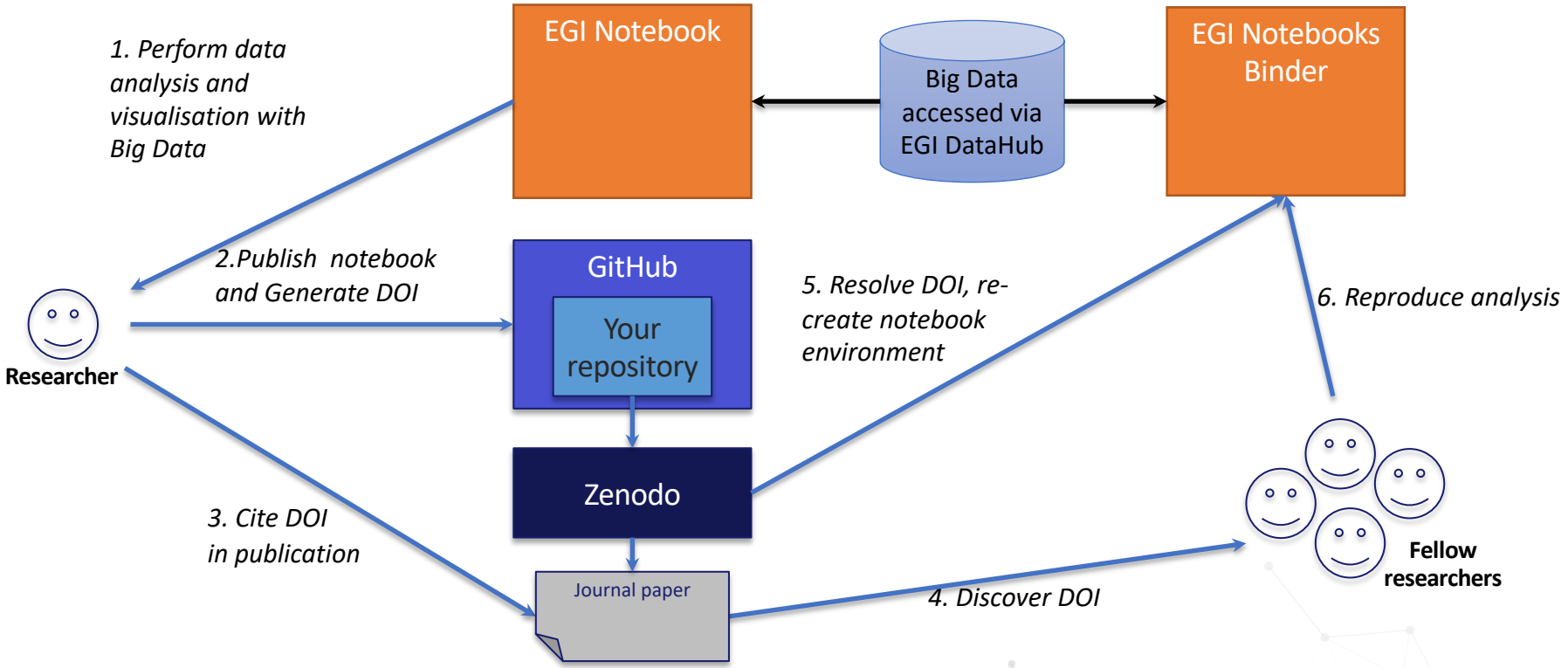
- Potentially can integrate any storage that can be exposed as kubernetes volumes:
  - B2SAFE (e.g. using webdav iRods interface)
  - Ceph
  - ...

EGI Notebooks for reproducible science

- Binder: an open-source web application to turn repositories in interactive notebooks
- It uses Modern technology in cloud orchestration (Kubernetes), interactive computing (Jupyter), scientific computing (the open-science ecosystem)
- Now being integrated into the EGI Notebooks service



Our open science cycle implementation



EGI Notebooks: coming next

- Move to DataHub integration to production notebooks instance
  - Improve performance and reliability of providers
  - Add open datasets
- Explore new storage systems and integrate into production
- Improve the current binder setup (move to beta)