



Science and
Technology
Facilities Council

Natural
Environment
Research Council

JASMIN

Providing Globus services to users of JASMIN for environmental data analysis

GlobusWorld 2024

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STFC RAL, UK

Outline

- About JASMIN
- Example workflows
- Current Globus setup
- Future thinking



About JASMIN

- UK data analysis platform for environmental science
- Operated by STFC on behalf of NERC
 - Infrastructure team: STFC Scientific Computing
 - User services team: CEDA/RAL Space
- Tenants
 - CEDA Archive (uses JASMIN as host infrastructure)
 - >350 other science projects
- “Bring compute to the data”
- Community grown around the platform



About JASMIN

helpdesk

docs

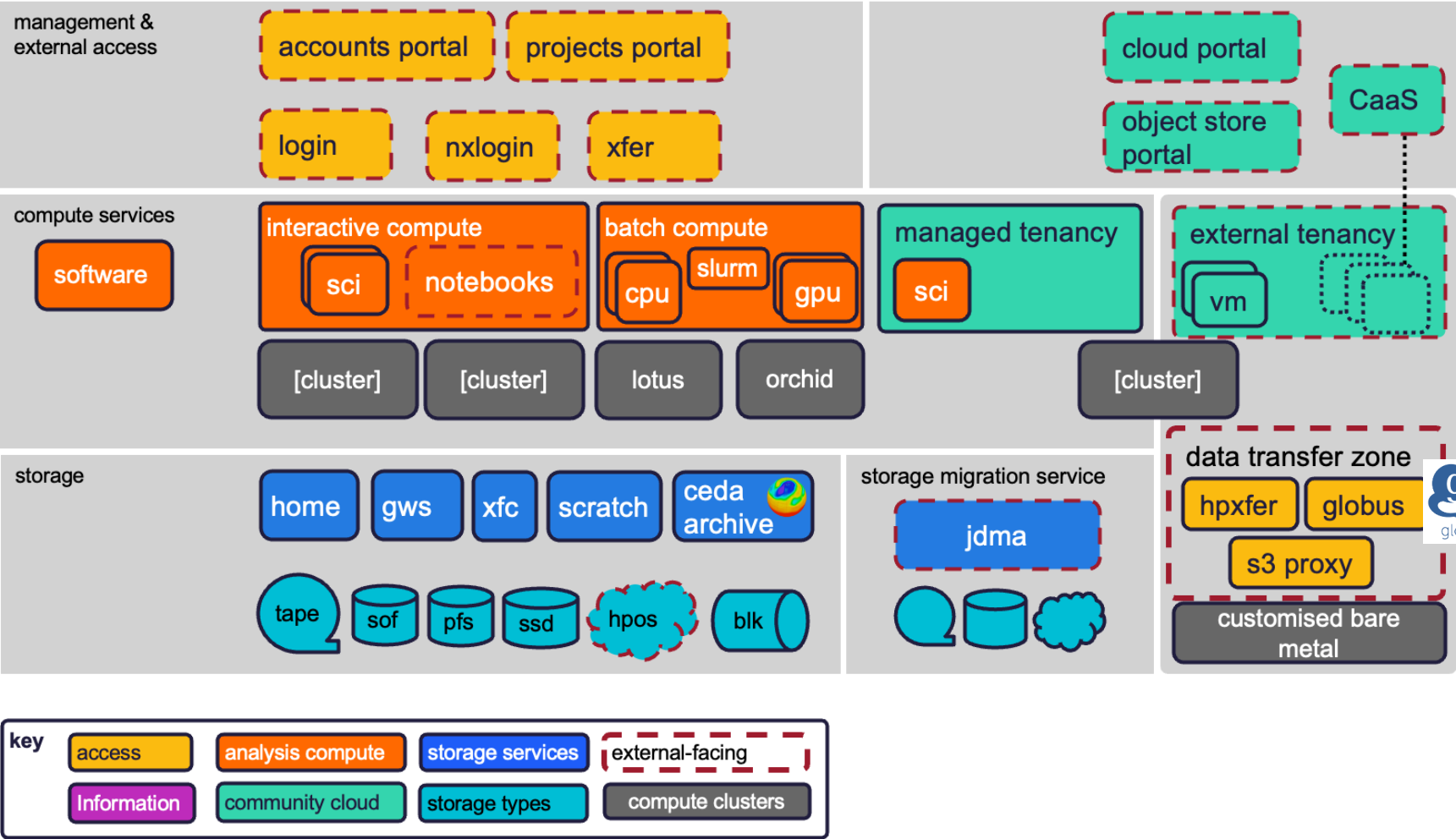
beacon

training

metrics

status

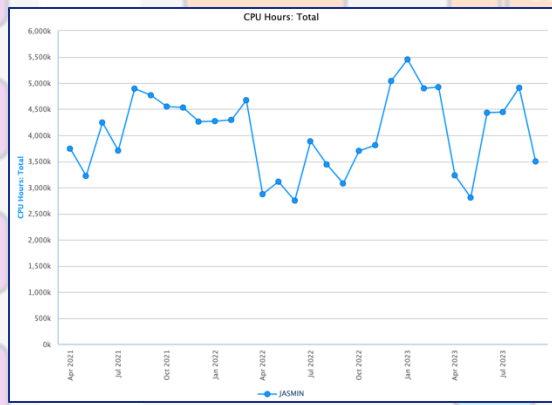
discussions








 **~2000 users
350+ projects**

 **~60 cloud
tenancies**

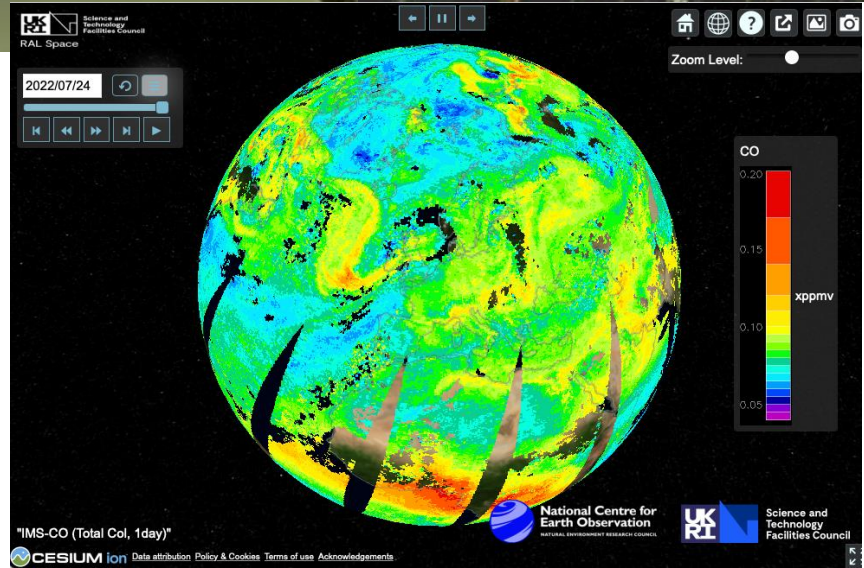
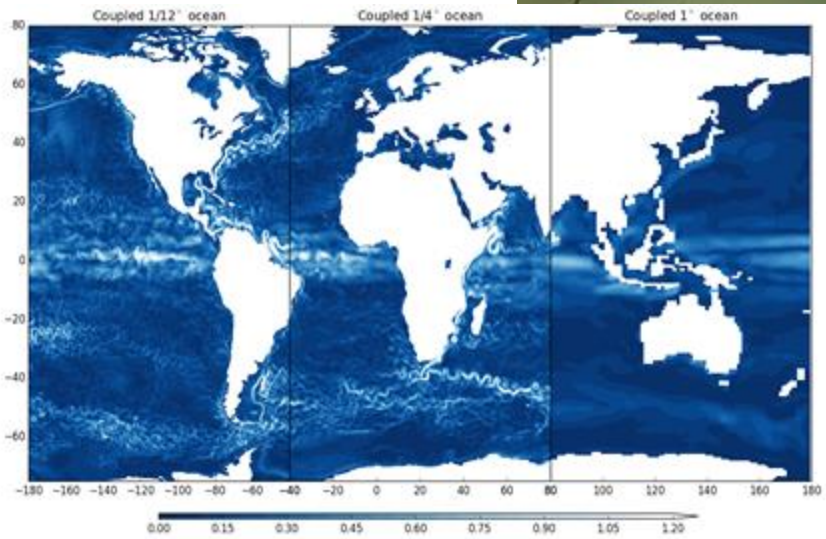
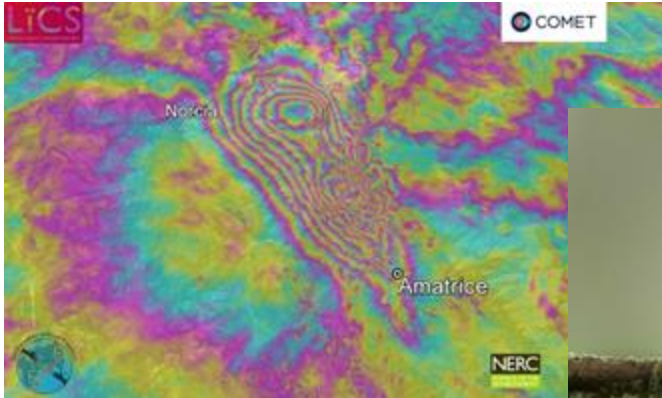


 **18,500 CPU nodes (+ soon)
~5M CPU hrs/mo
Slurm cluster
+ 8 interactive “sci” nodes**

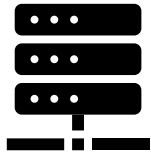
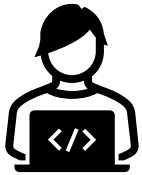
 **1x x 4-card GPU nodes
2 x 8-card GPU nodes**

 **Storage:**
~50 PB SOF for GWS volumes
~8 PB PFS for scratch, transfer cache & specialist volumes
~8 PB Object storage for access from anywhere
~90 PB Tape capacity
SSD storage for user home directories & small-file volumes
BLK storage for cloud system storage & databases

Current projects



Example workflow: user/group project



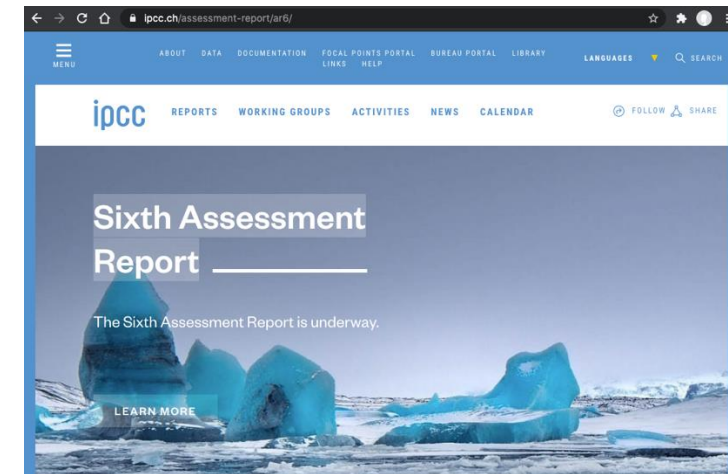
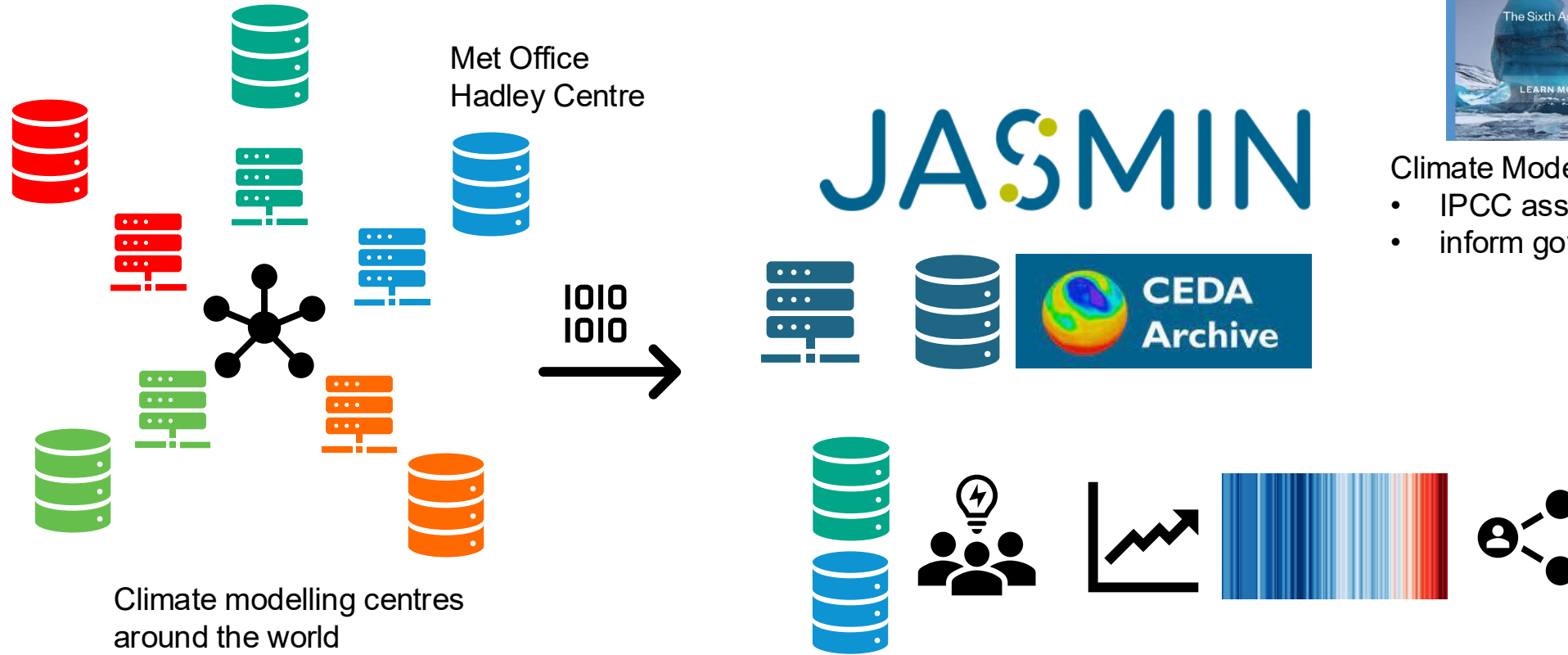
1010
1010



JASMIN



Example workflow: climate science community



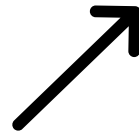
- Climate Model Intercomparison project (CMIP)
- IPCC assessment reports AR5, AR6, ...
 - inform government policy, decision making

Example workflow: remote instruments

COZI lab,
Univ. of
York



JASMIN



amof.ac.uk/observatory/bt-tower-atmospheric-observatory-bttaa/

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What We Measure Mobile Instruments Observatories Laboratories Services

Apply



BT Tower
Observatory, London



NCAS Mobile
X-band weather
radar



BT Tower Atmospheric Observatory (BTTAO)



The site is a 177 m tall tower located in central London in the borough of Camden, south of Euston Road and north-east of Hyde Park (latitude and longitude: 51.521° N, -0.138° W). The surroundings are typical of the central London area with a mixture of larger arterial roads, high traffic density, and smaller side streets interconnecting them.

Measurements of NO and NO₂ mixing ratios are made using a closed-path dual-channel Air Quality Design (AQD) chemiluminescence analyser equipped with a blue-light converter for NO₂. The instrument is similar to those described by Lee et al. (2010) and Spence et al. (2010) and provides a sampling rate of 5 Hz.

NO₂ levels used in early covariance calculations to measure emissions in footprint surrounding the tower, see Spence et al. 2022 and Cliff et al. 2023 for recent papers.

NCAS is not the only organisation making measurements at the BT Tower site. The Centre for Ecology and Hydrology (CEH) operate a range of instrumentation and the details of the observations they make can be found [here](#).

Further information on the Laboratory

Chemistry

CO₂

50 ppm

40 ppm

30 ppm

20 ppm

10 ppm

0 ppm

Time

10/20 11/04 11/18 12/04 12/18 01/03 01/18 02/02 02/17 03/03 03/18 04/02 04/17

Mean

20.1 ppm 48.1 ppm 3.47 ppm

Max

50 ppm

NO Concentration

20 ppm

10 ppm

0 ppm

Time

10/20 11/04 11/18 12/04 12/18 01/03 01/18 02/02 02/17 03/03 03/18 04/02 04/17

Mean

-4.865 ppm 0.531 ppm 24.2 ppm -38.2 ppm

Max

20 ppm

Min

-10 ppm

Time

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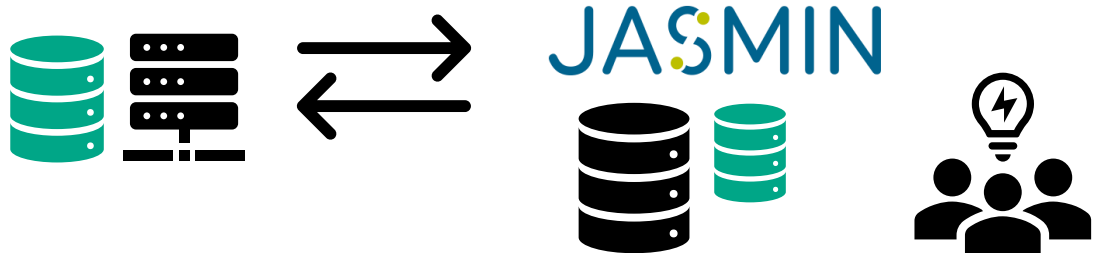
Data transfer services

3 main functions



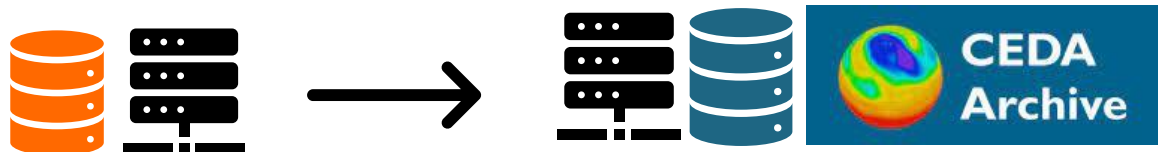
Data download
from CEDA Archive
[RO]

ftp
http
gridftp, globus



Data flow in/out of
JASMIN group
workspaces
[RW]

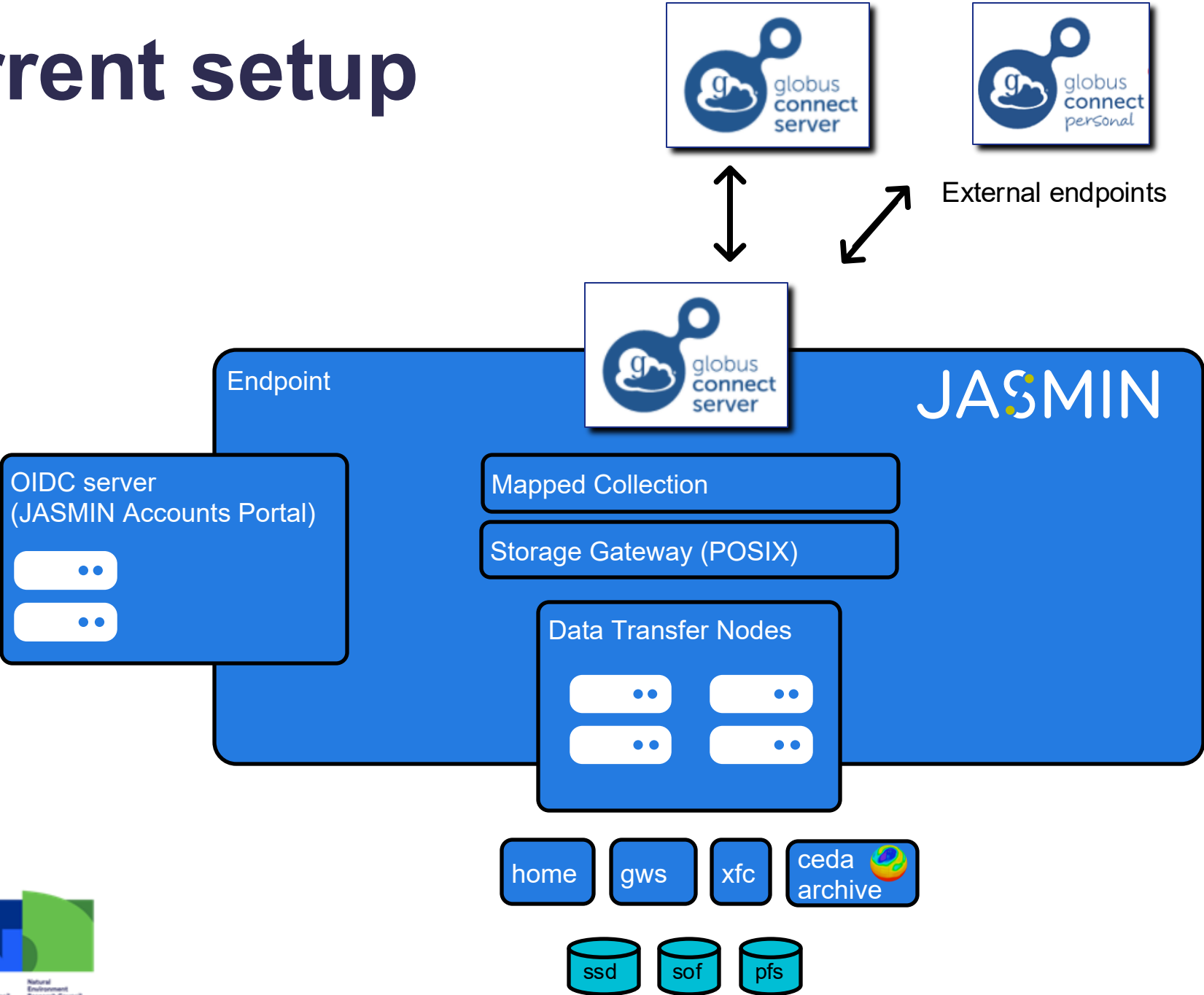
scp, sftp, rsync
bbcp
gridftp, globus



Ingest to data to CEDA
Archive for long-term
curation
[W]

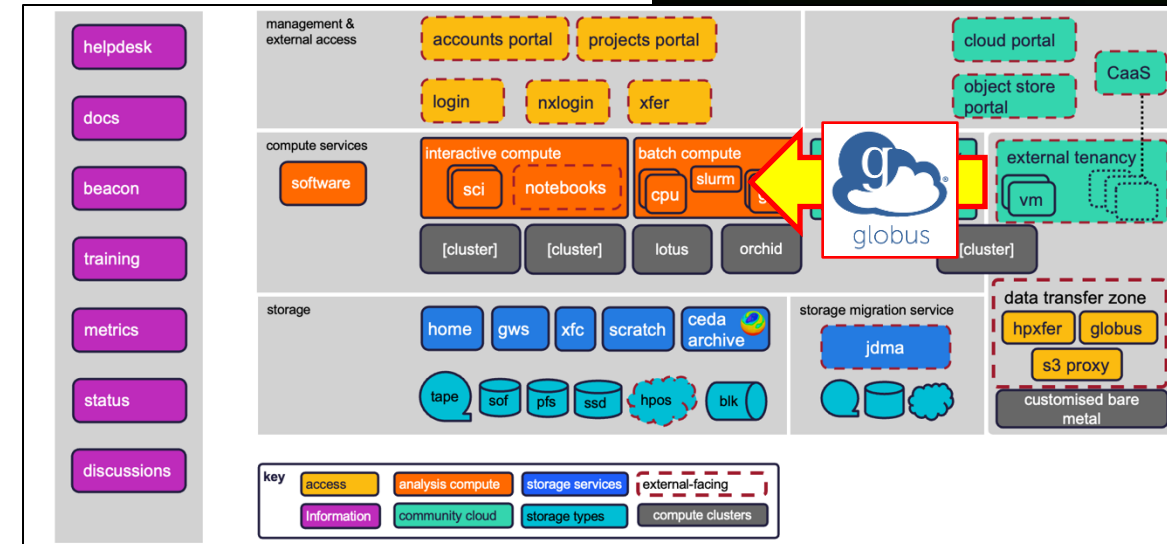
scp, rsync, http
gridftp, globus

Current setup



Future thinking

- More Globus transfer usage in JASMIN community
 - GCS collections at partner institutions
 - Docs, examples, training to help our users
 - Timers, automation
 - Migrate away from legacy technology
- Globus flows
 - develop, demonstrate, maintain useful basic building block operations
 - Move (copy + delete-source)
 - Sync ARCHER2/Edinburgh -> JASMIN
- Globus compute endpoint
 - invoke processing on LOTUS Slurm cluster from JASMIN external cloud



Thanks

- Thanks to
 - Globus, for a great system
 - Documentation authors
 - Contributors to globus-discuss group
 - Globus support team



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