

# Role of IS-ENES in ESGF.

## Main achievements.

Sébastien Denvil (IPSL) and partners.

IPSL	G. Levavasseur, J.Raciazek, A. BenNasser
DKRZ	H-D.Hollweg, S.Kindermann, T.Kipp
CERFACS	C.Pagé, N.Tatarinova
CMCC	S.Fiore, O. Marra, A.D'Anca, G.Calò, M.Tridici
UREAD	D.Hassel, B.Lawrence
MetOffice	M.Elkington
STFC	M.Juckes, P. Kershaw, K.Tsaousis, I.Ivy

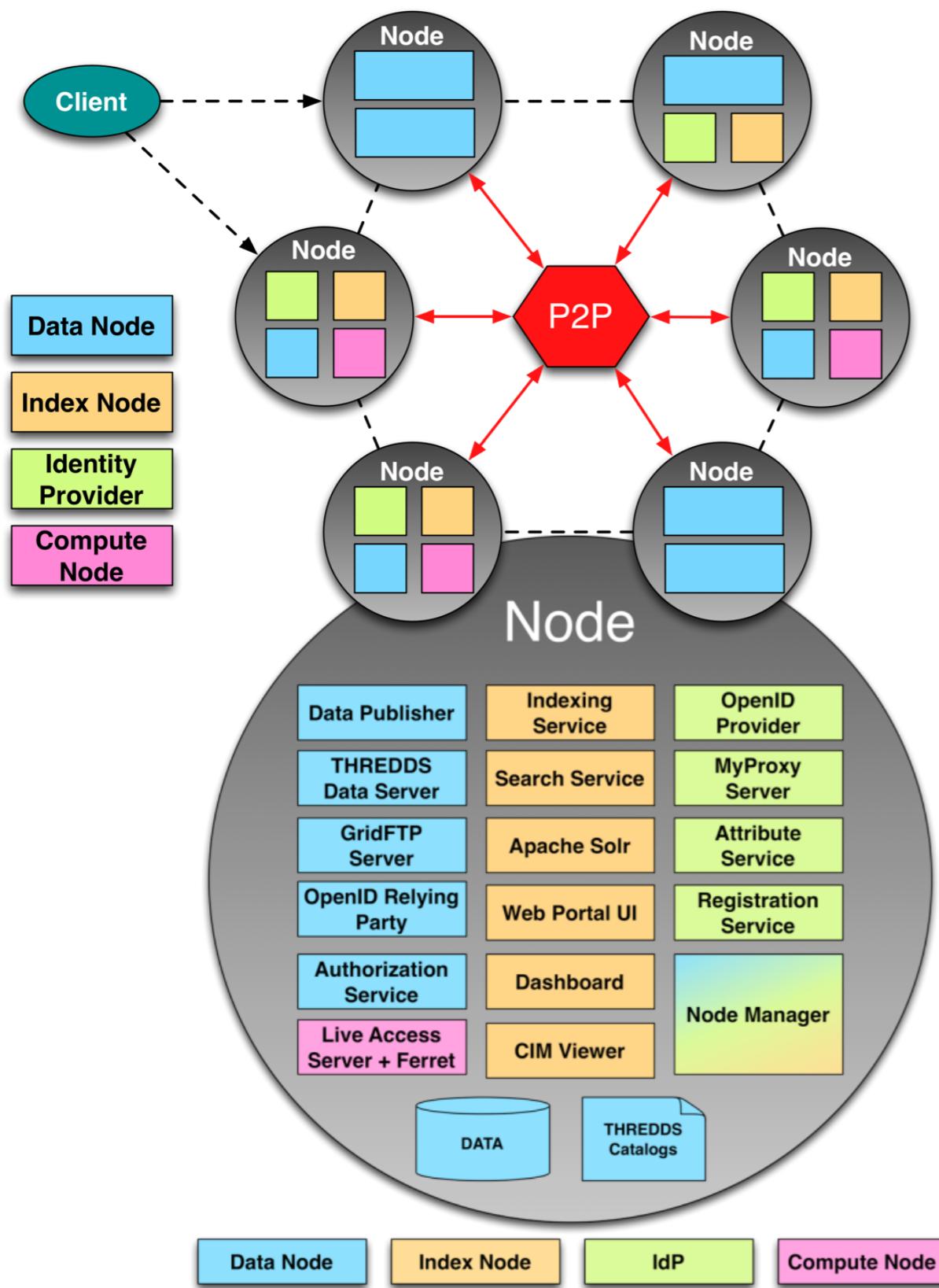
SMHI	M.Kolax
KNMI	W.S.de Cerf, M.Plieger, E.de Vreede
CSAG	C.Jack, R.Duffet, P.Mukwena
LiU	P.Dwarakanath
UC	A.S.Cofino, M.V.Saldarriaga
DMI	O.B.Christenssen



Royal Netherlands  
Meteorological Institute  
Ministry of Transport, Public Works  
and Water Management



# ESGF : Worldwide distributed system



## IS-ENES développements

Ease access to model data

Processing tools : **KNMI/CERFACS**

CMIP5 index nodes

**BADC / DKRZ / IPSL/ CMCC**

CORDEX index nodes

**BADC / DKRZ / IPSL / DMI / LIU**

Security SW

**BADC**

Quality Control SW

**DKRZ/BADC/SMHI**

Monitoring SW

**CMCC**

Replication SW

**IPSL**

Replication sites

**BADC/DKRZ**

Access to metadata

**IPSL/DKRZ/BADC**

Installation SW

**IPSL/LIU/DKRZ/ BADC**

Help/FAQ

**DKRZ/BADC/PCMDI**

Data citation

**DKRZ**

Controlled vocabularies **NCAS/BADC/NOAA**

## US développements

Search APIs

**NASA/JPL**

Computing

**PCMDI**

Network/Globus

**PCMDI**

Security Scans

**NASA**

## 10 ESGF outstanding achievement awards

Stephen Pascoe (2014)

Nicolas Carenton (2014)

Prashanth Dwarakanath (2014)

Torsten Rathmann (2015)

Nicolas Carenton (2015)

Prashanth Dwarakanath (2015)

Philip Kershaw (2016)

Katharina Berger (2016)

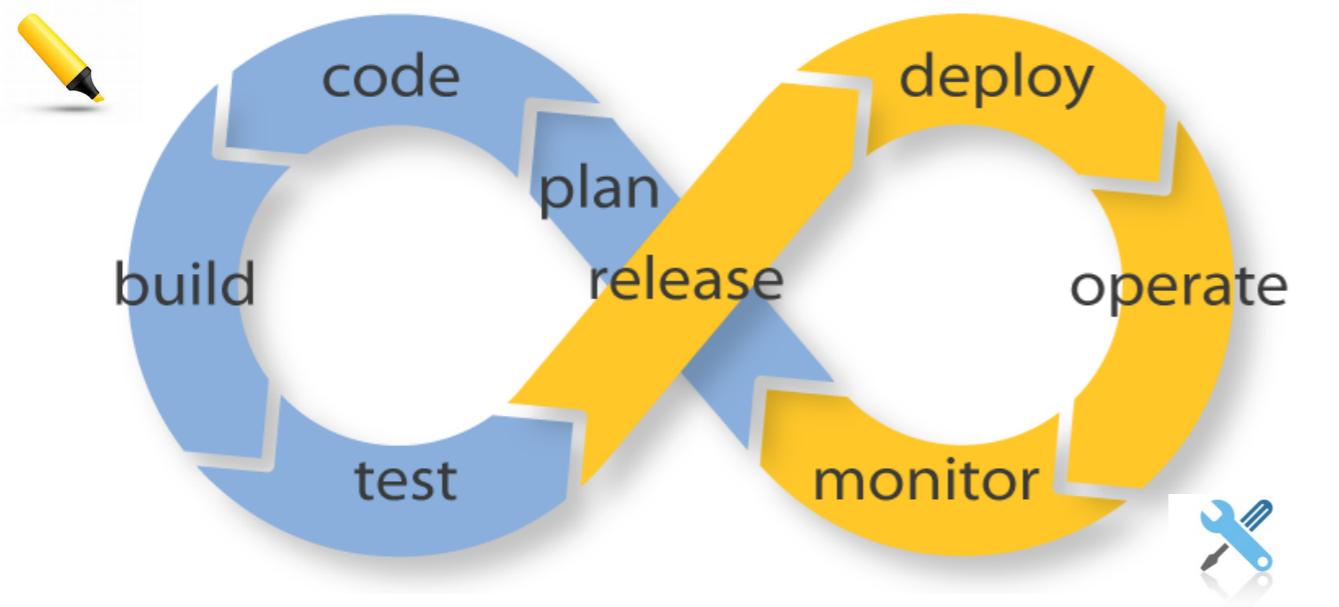
Jérôme Raciazek (2016)

Sébastien Denvil (2016)

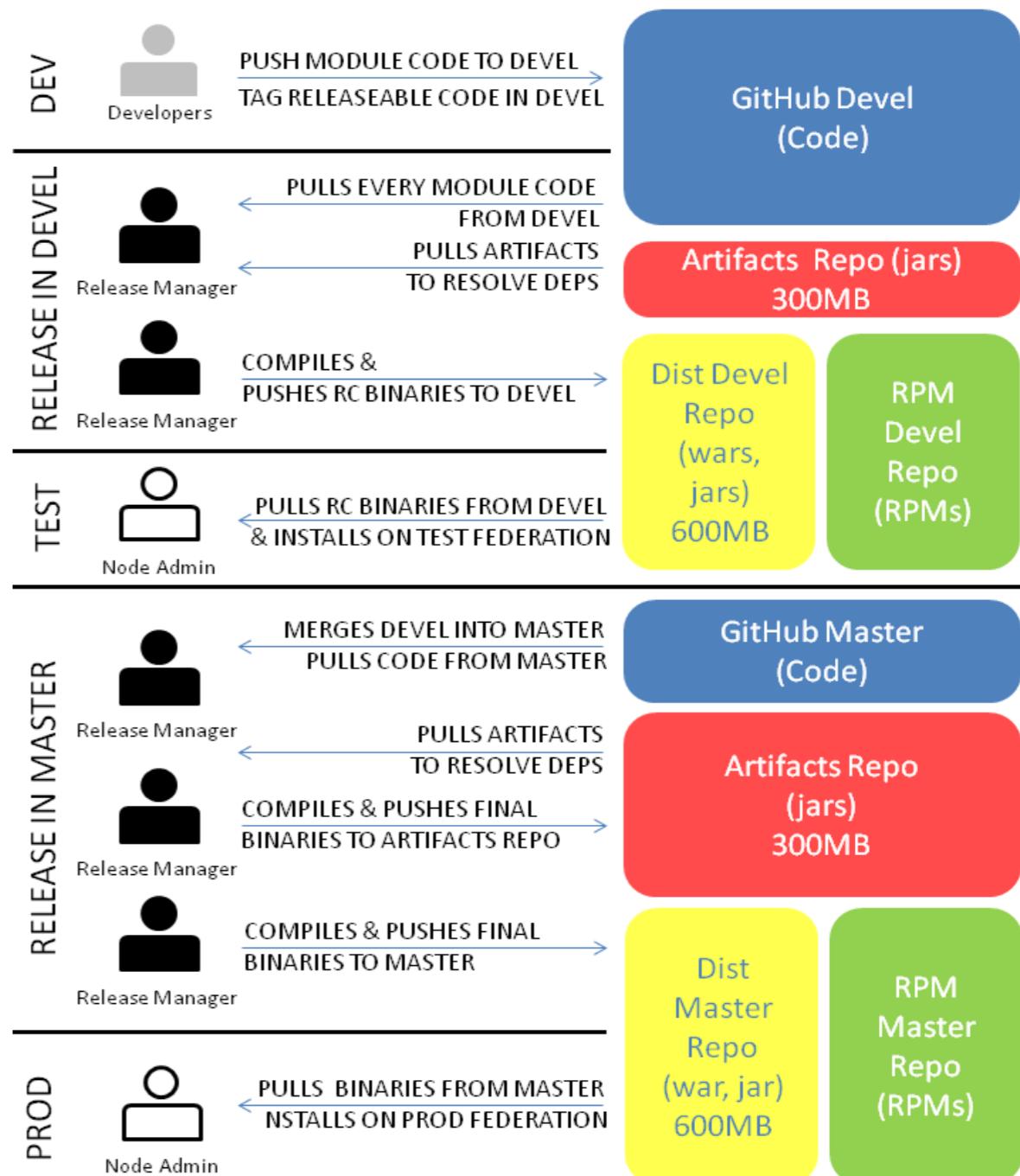
**Table 1.** The current list of ESGF working teams and designated working team leads.

Working Team	Working Team Leads	Team Goals
1. CoG User Interface Working Team	Cecelia DeLuca (NOAA) and Luca Cinquini (NOAA)	Improve ESGF search and data cart management and interface
2. Metadata and Search Working Team	Luca Cinquini (NASA)	Implement ESGF search engine based on Solr5 and discoverable search metadata
3. Publication Working Team	Sasha Ames (DOE) and Rachana Ananthakrishnan	Enable capability for publishing CMIP and other project data sets to ESGF
4. Node Manager Working Team	Sasha Ames (DOE) and Prashanth Dwarakanath (IS-ENES)	Manage ESGF nodes and node communications
4a. Tracking/Feedback Notification Working Team	Sasha Ames (DOE) and Prashanth Dwarakanath (IS-ENES)	Implement user and node notification of changed data in the ESGF ecosystem
5. Identity Entitlement Access Management Working Team	Philip Kershaw (IS-ENES) and Rachana Ananthakrishnan (DOE)	Implement ESGF X.509 certificate-based authentication and improved interface
6. Compute Working Team	Charles Doutriaux (DOE) and Daniel Duffy (NASA)	Develop data analytics capability within ESGF
7. Quality Control Working Team	Martina Stockhause (IS-ENES) and Katharina Berger (IS-ENES)	Integrate external information into the ESGF portal
8. Installation Working Team	Nicolas Carenton and Prashanth Dwarakanath (IS-ENES)	Install the components of the ESGF software stack
9. Dashboard Working Team	Paola Nassisi (CMCC) and Sandro Fiore (IS-ENES)	Monitor the Earth System Grid Federation in terms of system metrics and data usage statistics
10. International Climate Network Working Group	Eli Dart (DOE/ESnet) and Mary Hester (DOE/ESnet)	Increase data transfer rates between the ESGF climate data centers
11. Data Transfer Working Team	Lukasz Lacinski (DOE) and Rachana Ananthakrishnan (DOE)	Enhance ESGF data transfer and web-based download
12. Software Security Working Team	George Rumney (NASA) and Dan Duffy (NASA)	Implement security measures to identify vulnerabilities in the ESGF software and provide continuous improvement to the ESGF software development life cycle.
13. Support Working Team	Torsten Rathmann (IS-ENES) and Matthew Harris (DOE)	Develop frequently asked questions regarding ESGF and housed data
14. Documentation Working Team	Matthew Harris (DOE) and Sam Fries (DOE)	Document the use of the ESGF software stack
15. Replication and Versioning Working Team	Stephan Kindermann (IS-ENES) and Tobias Weigel (IS-ENES)	Create replication tool for moving data from one ESGF center to another; in addition, preserve versioning history of the ESGF published data sets
16. Provenance Capture Working	Bibi Raju (DOE)	Enable ESGF provenance capture for

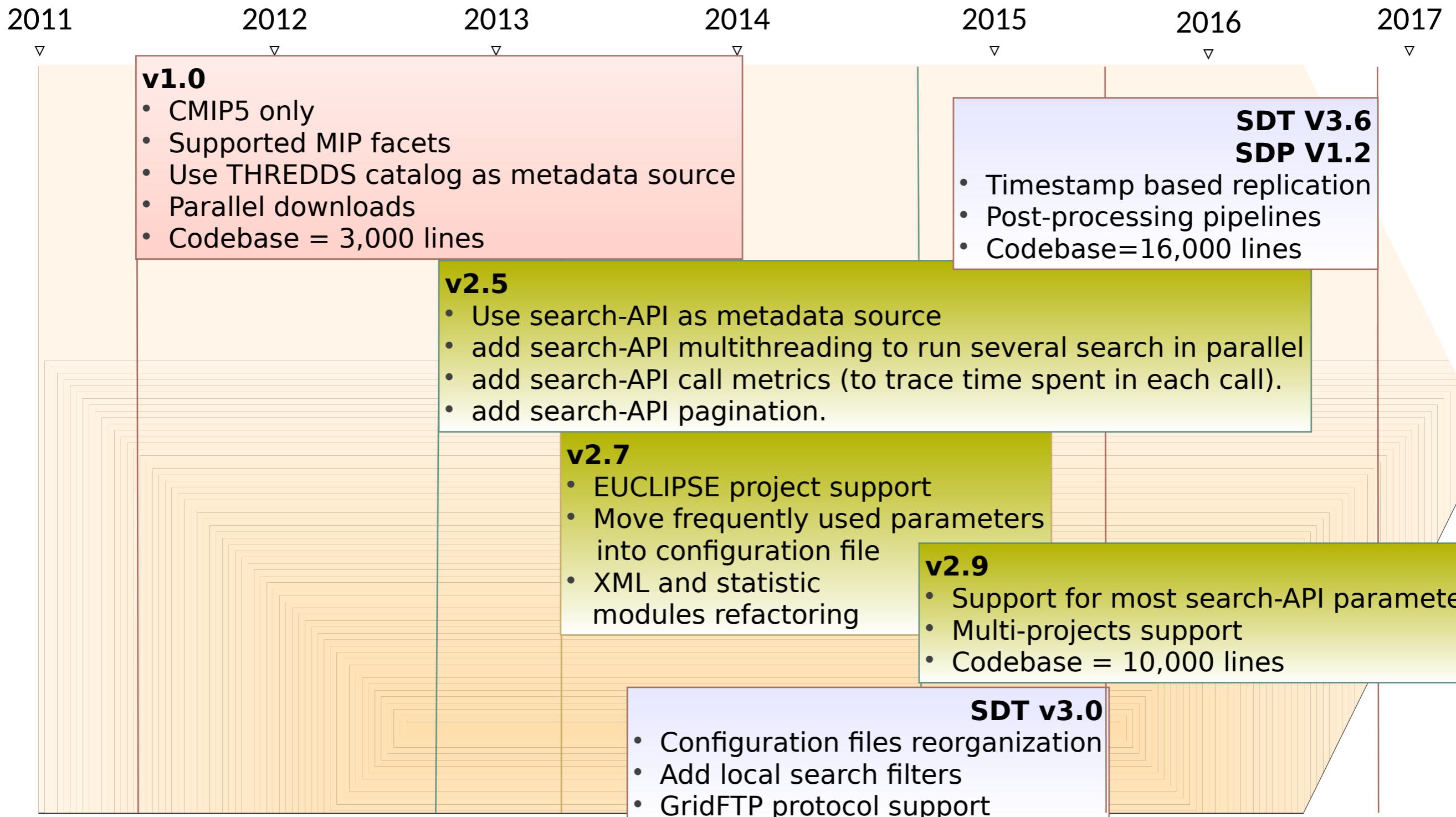
# Towards continuous deployment and integration



## ESGF Release Management & Installation Process



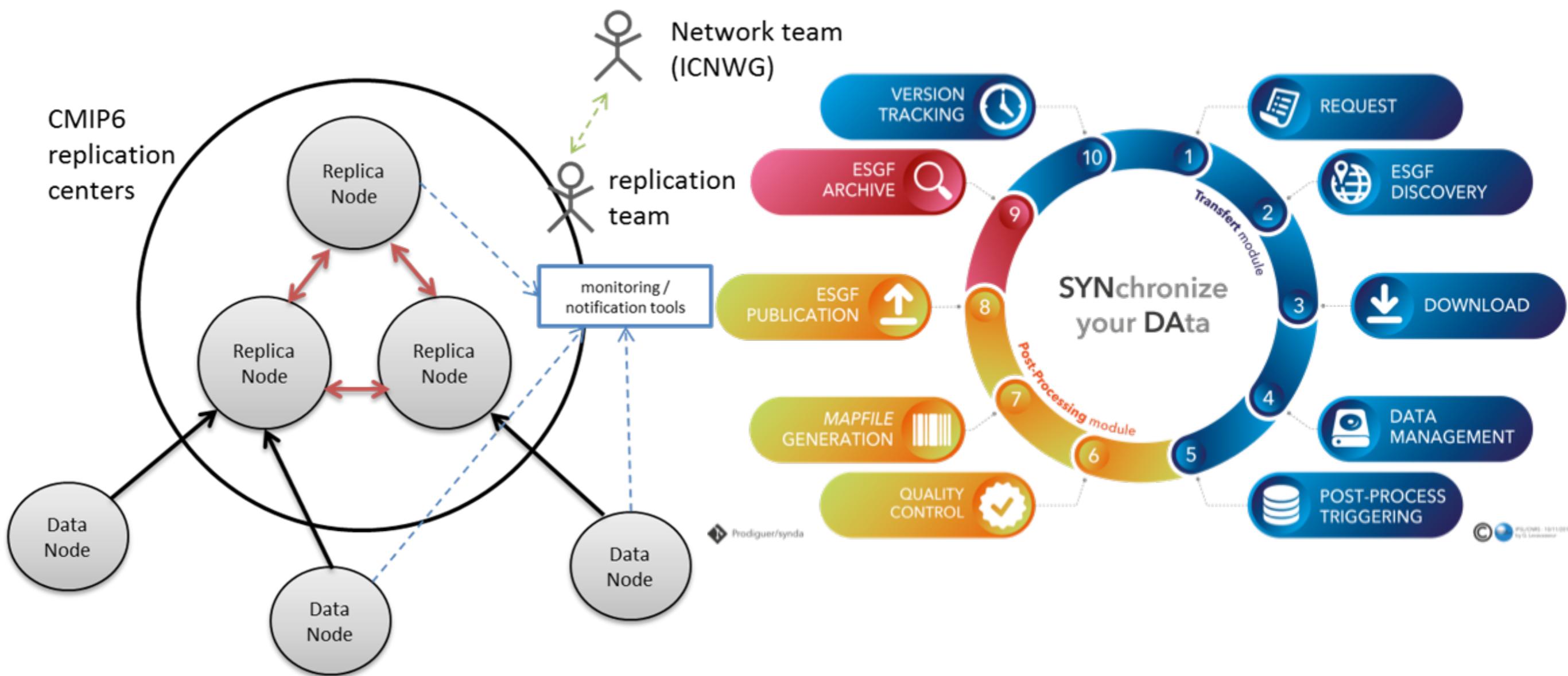
# Synda history



The program evolve together with the ESGF archive backend functionalities.  
 5 releases last year (2016)

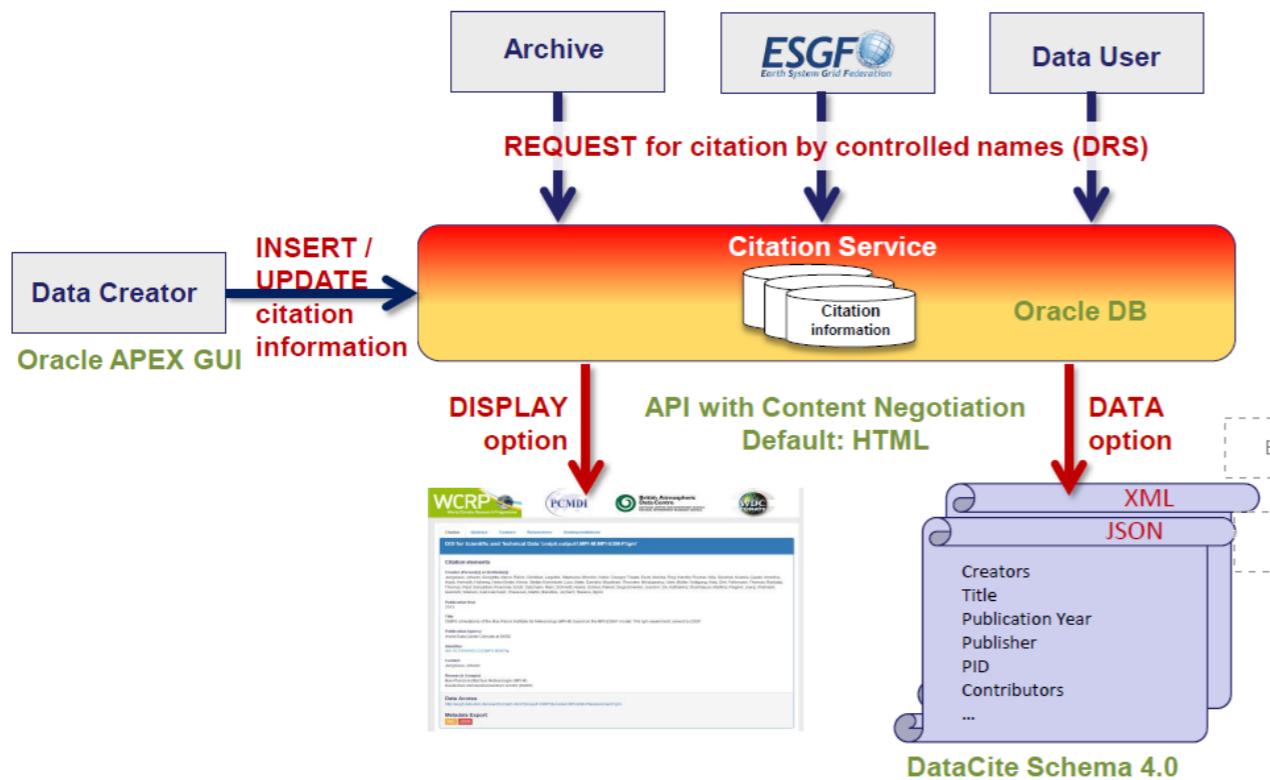
# Replication and versioning

- Impact on CMIP6 data management (DM) and ESGF governance (ESGF)
- Stable processes which are supervised by a board (the CDNOT Team?) are needed for CMIP6 data consistency in ESGF
- CMIP6 data replication architecture:

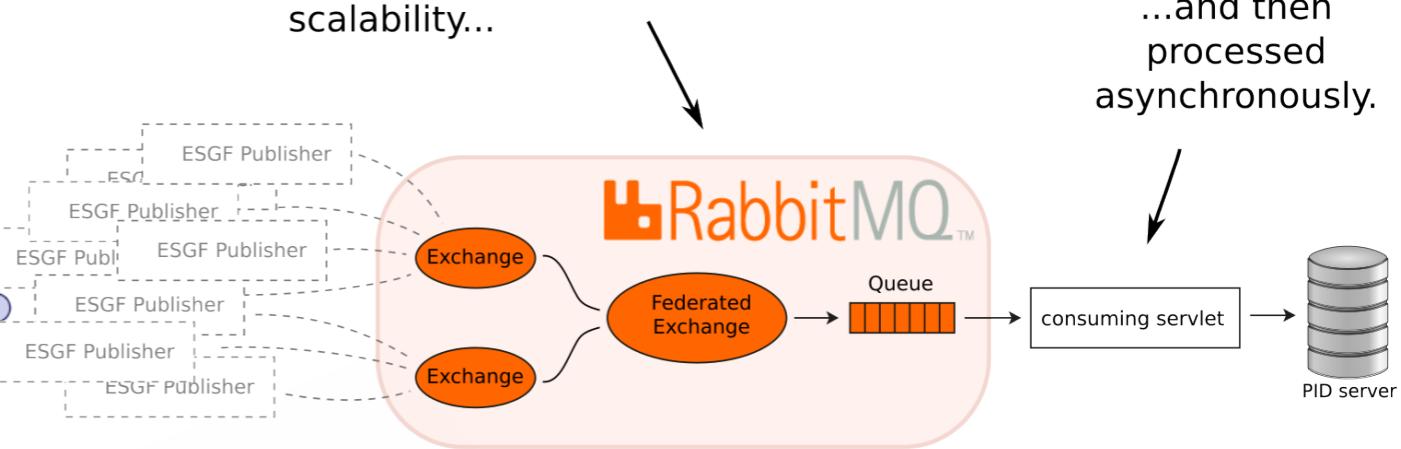


# Improved Data Management & Data services

- Improvement of versioning support in ESGF publisher
- Persistent identifier support integration for ESGF (especially CMIP6)
  - ESGF PID infrastructure based on handle system and message queues
  - ESGF publisher extension to interact with PID infrastructure
- Integration of early citation services into ESGF (especially COG)
  - DOI assignment and management backend runs at DKRZ
- Quality assurance tool to support CORDEX and CMIP6 data producers
- (Authoring and contributing to a set of WIP papers)

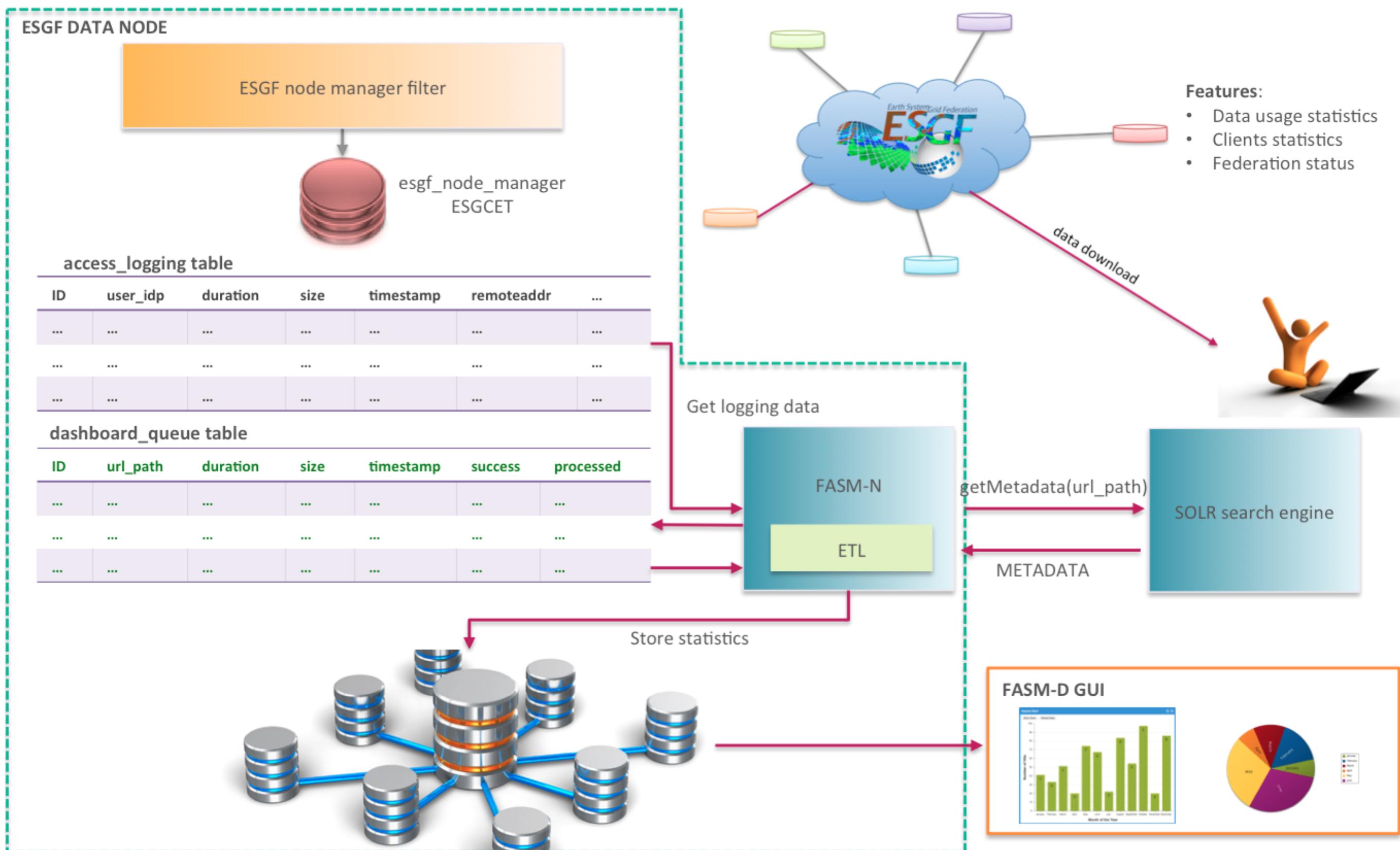


The PID registration and metadata update tasks are pushed to a message queueing system facilitating high availability and scalability...



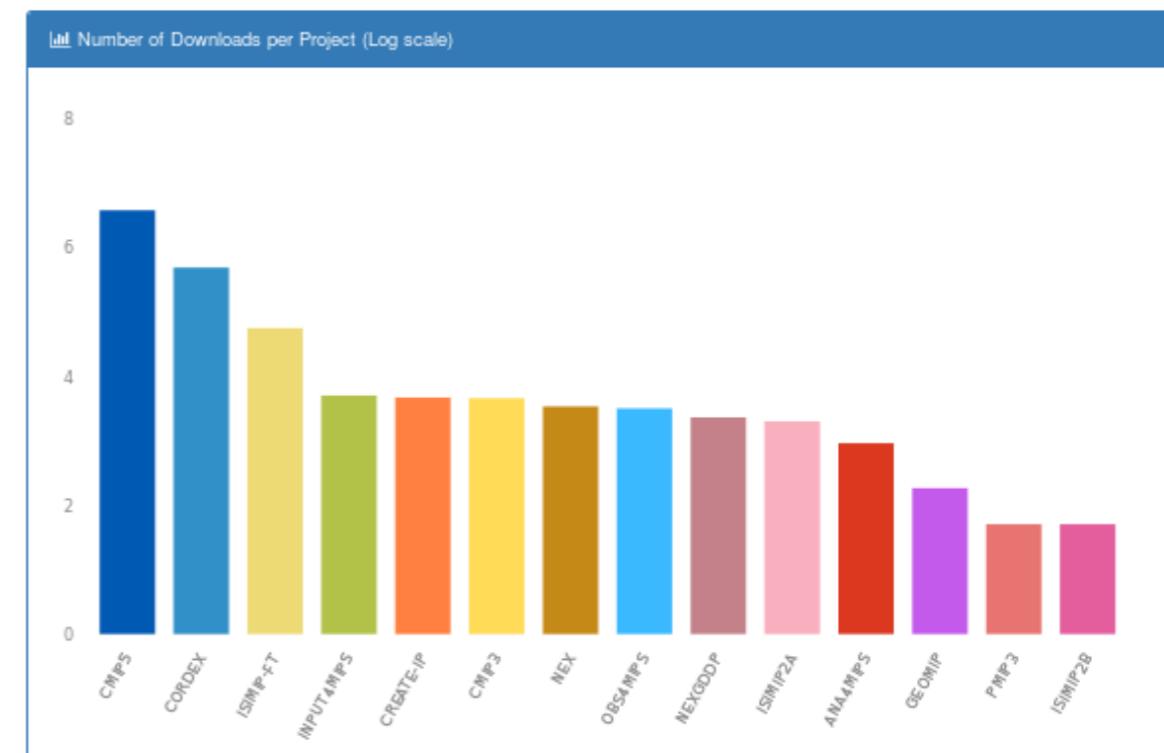
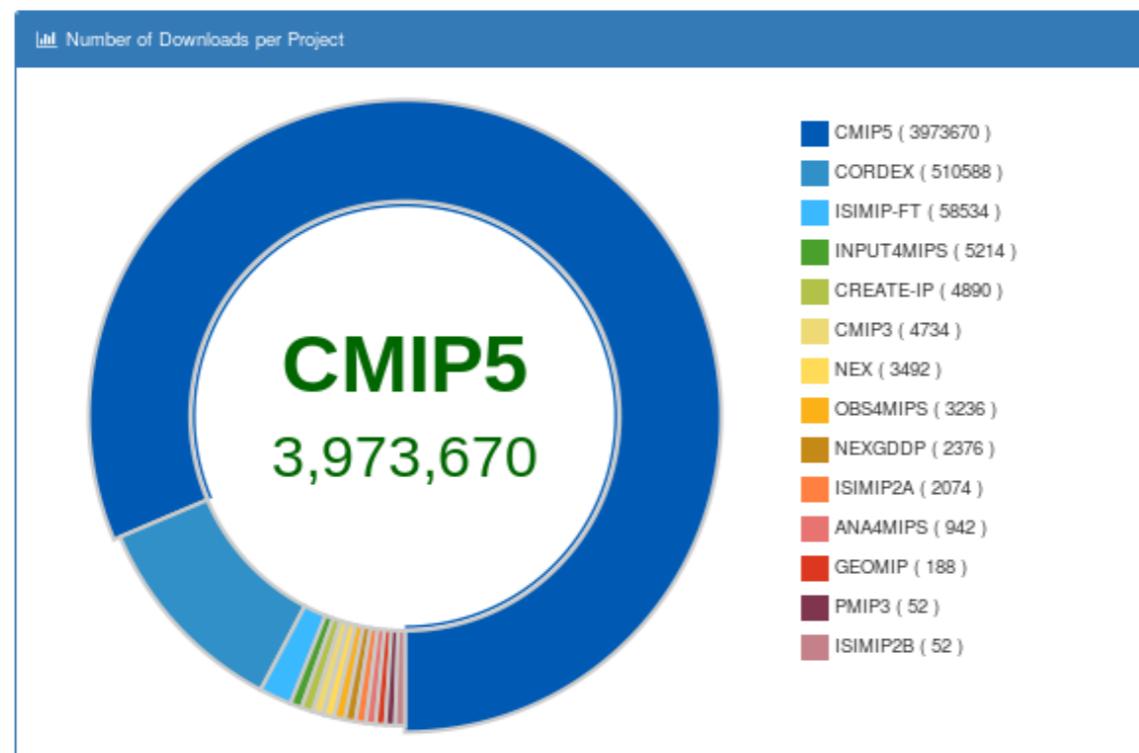
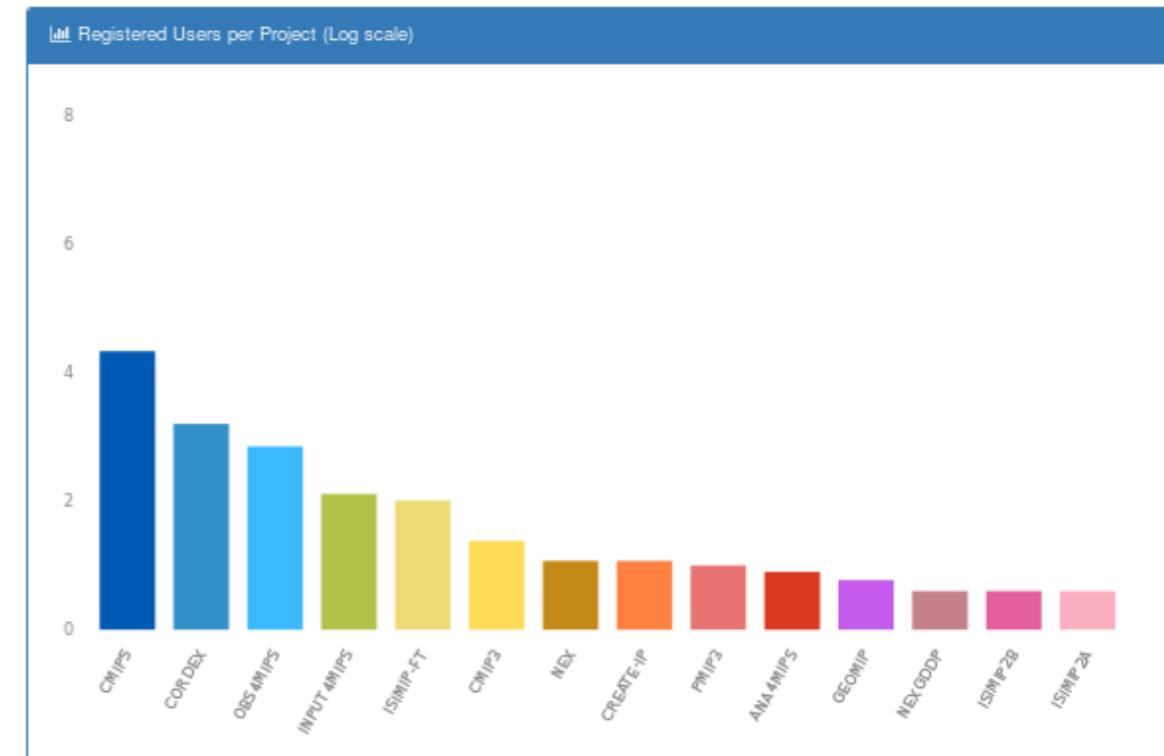
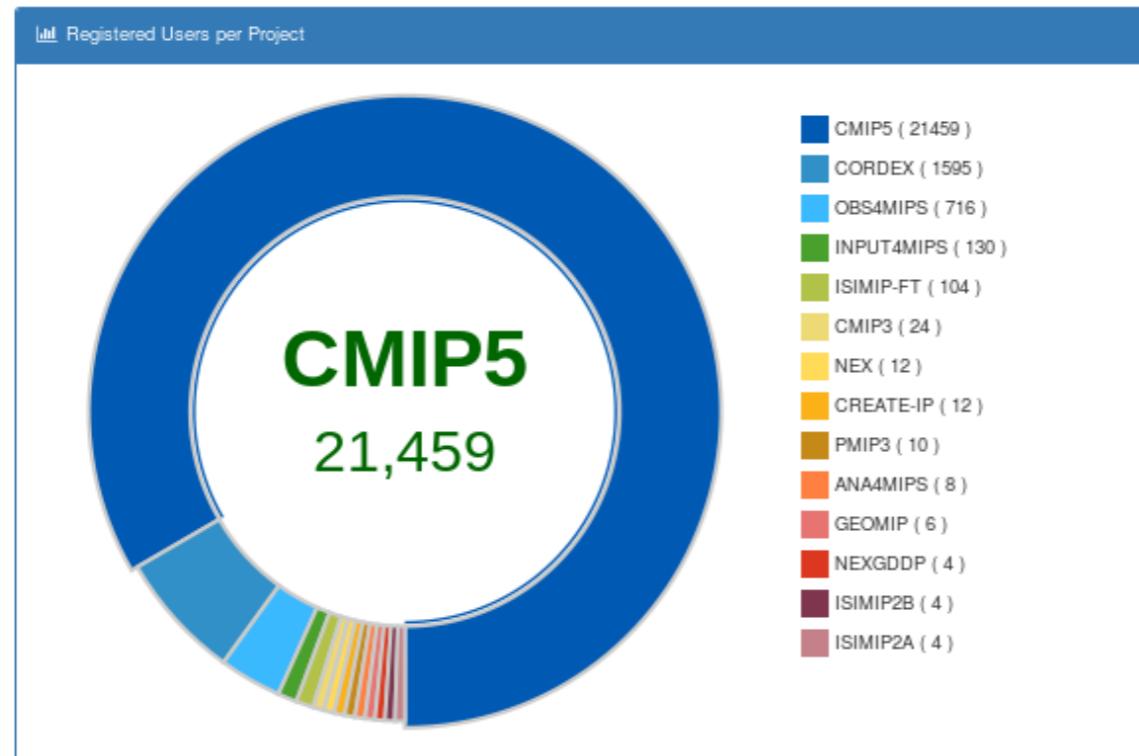
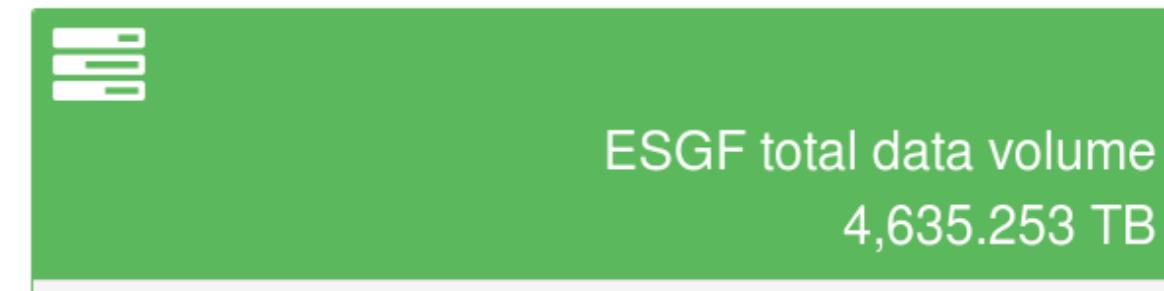
This leads to a slight delay in PID registration but avoids blocking resources at the data centres and slowing down data publication.

# ESGF usage monitoring



[Statistics overview](#)[Data usage statistics](#)[Project-specific statistics](#)[Clients statistics](#)[Federated data archive](#)[Service status](#)

## Statistics Overview





# Thank you for your attention

