Barcelona Supercomputing Center
Centro Nacional de Supercomputación

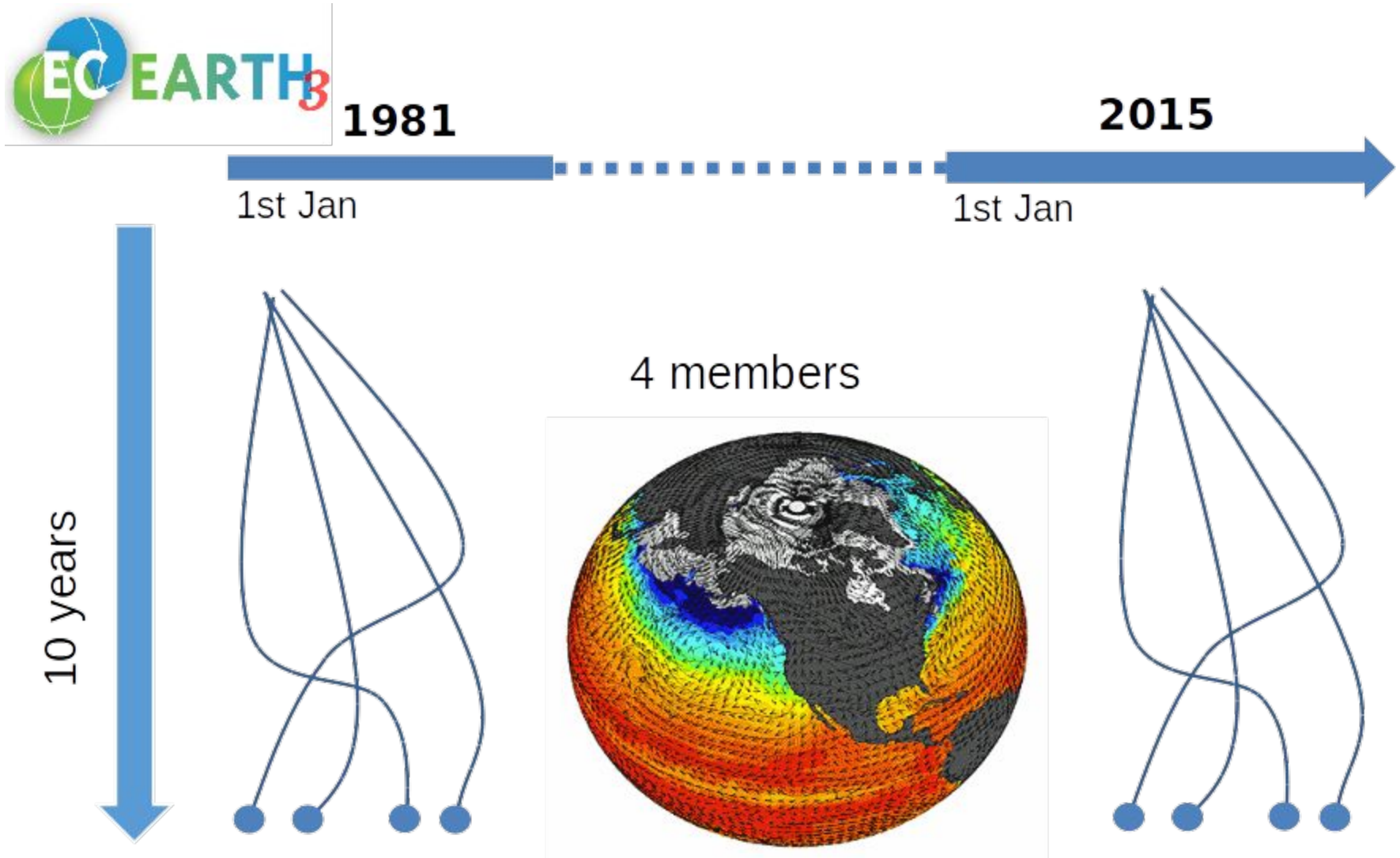
Autosubmit, Cylc and ecFlow

Domingo Manubens

Outline

- M4 HR introduction (D9.6)
- Autosubmit
- Cylc
- ecFlow
- Assessment report (D9.3)
- Features compared
- Autosubmit roadmap

Multi-member climate experiment

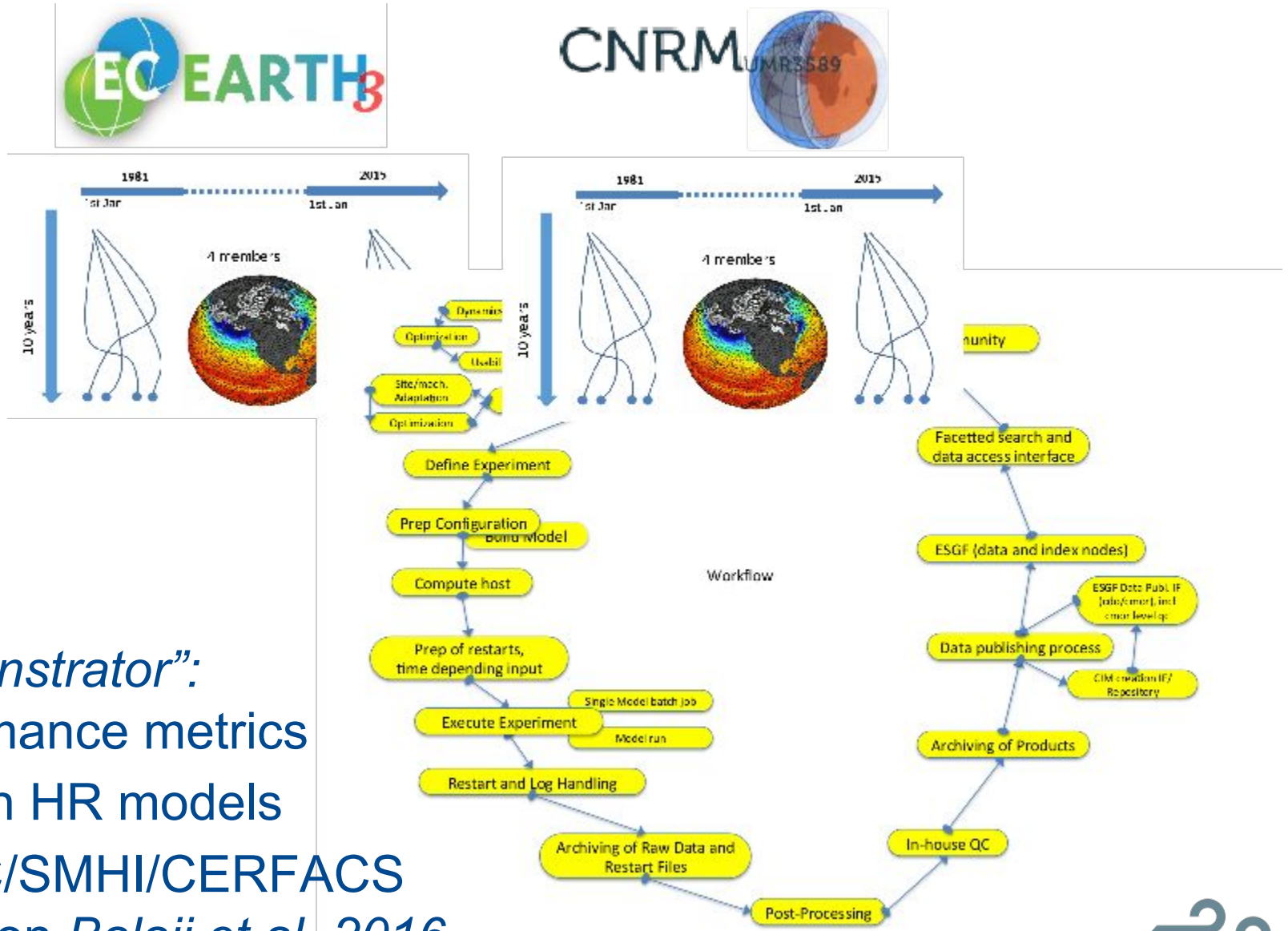


~ 12000 CHPSY

Multiple HPC infrastructures

Computing resources funded by: National / EU / International projects

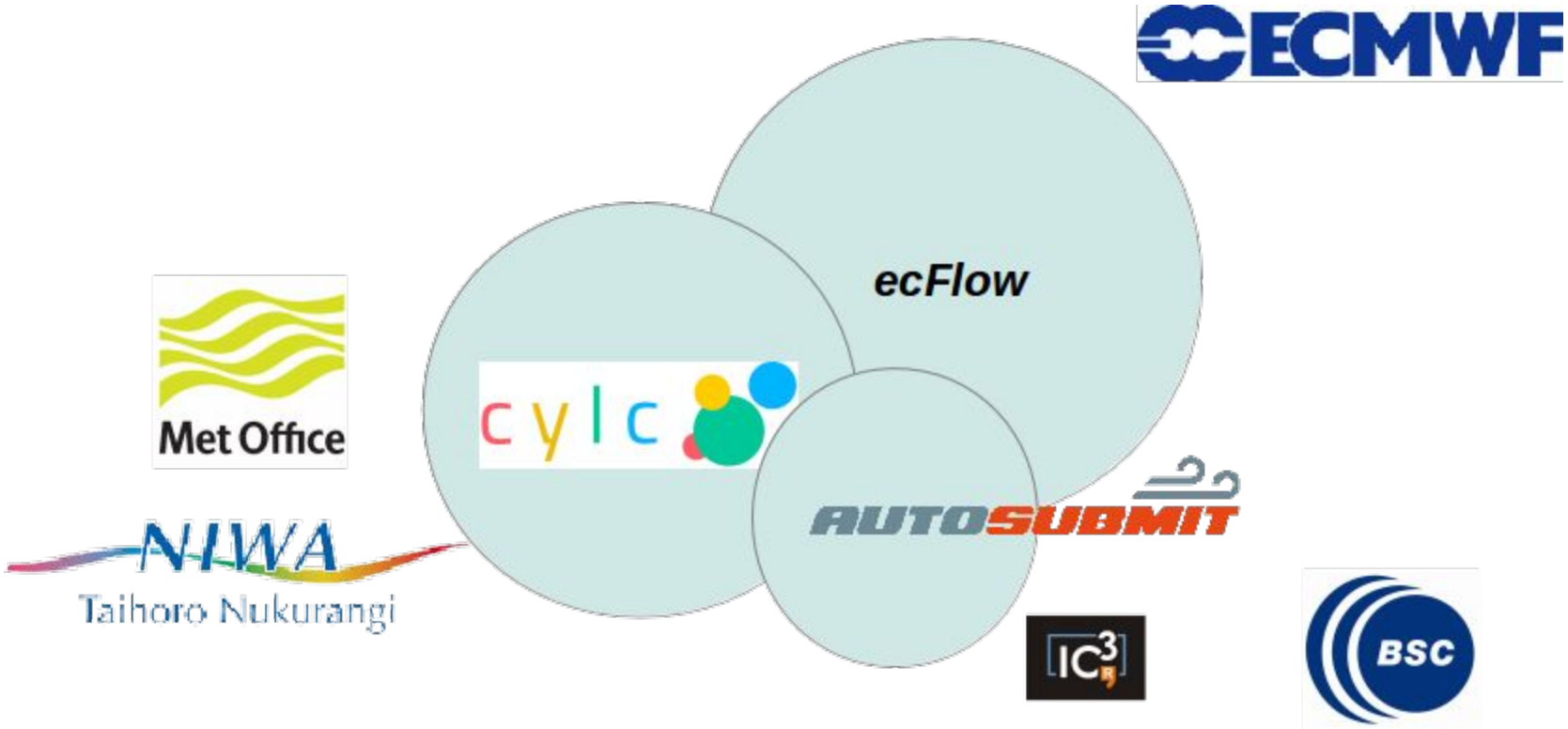
Multi-model multi-member climate experiment workflow (D9.6) (WiP)



"Demonstrator": performance metrics for both HR models at BSC/SMHI/CERFACS based on *Balaji et al. 2016*

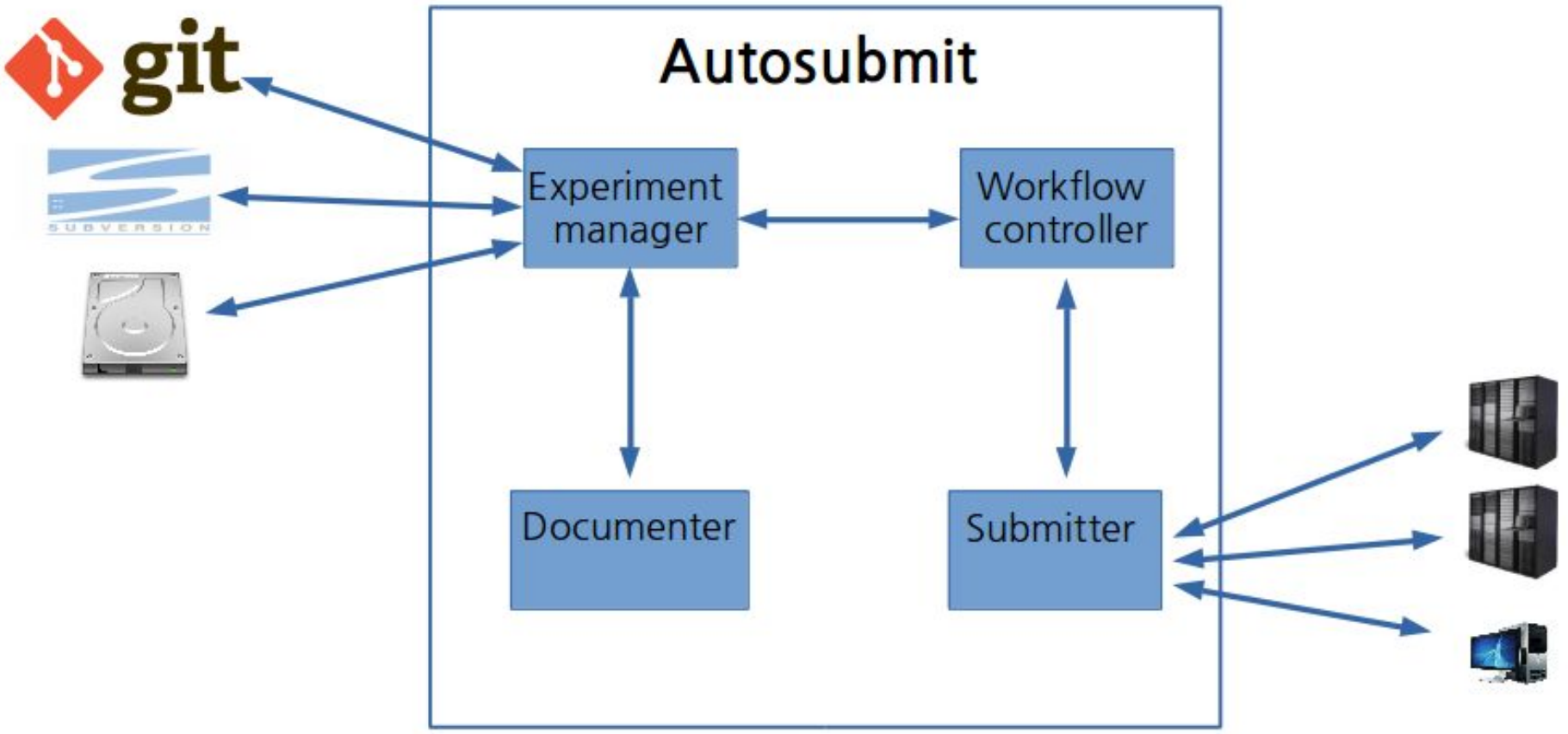
AUTOSUBMIT

Workflow tools appropriate for M4 HR

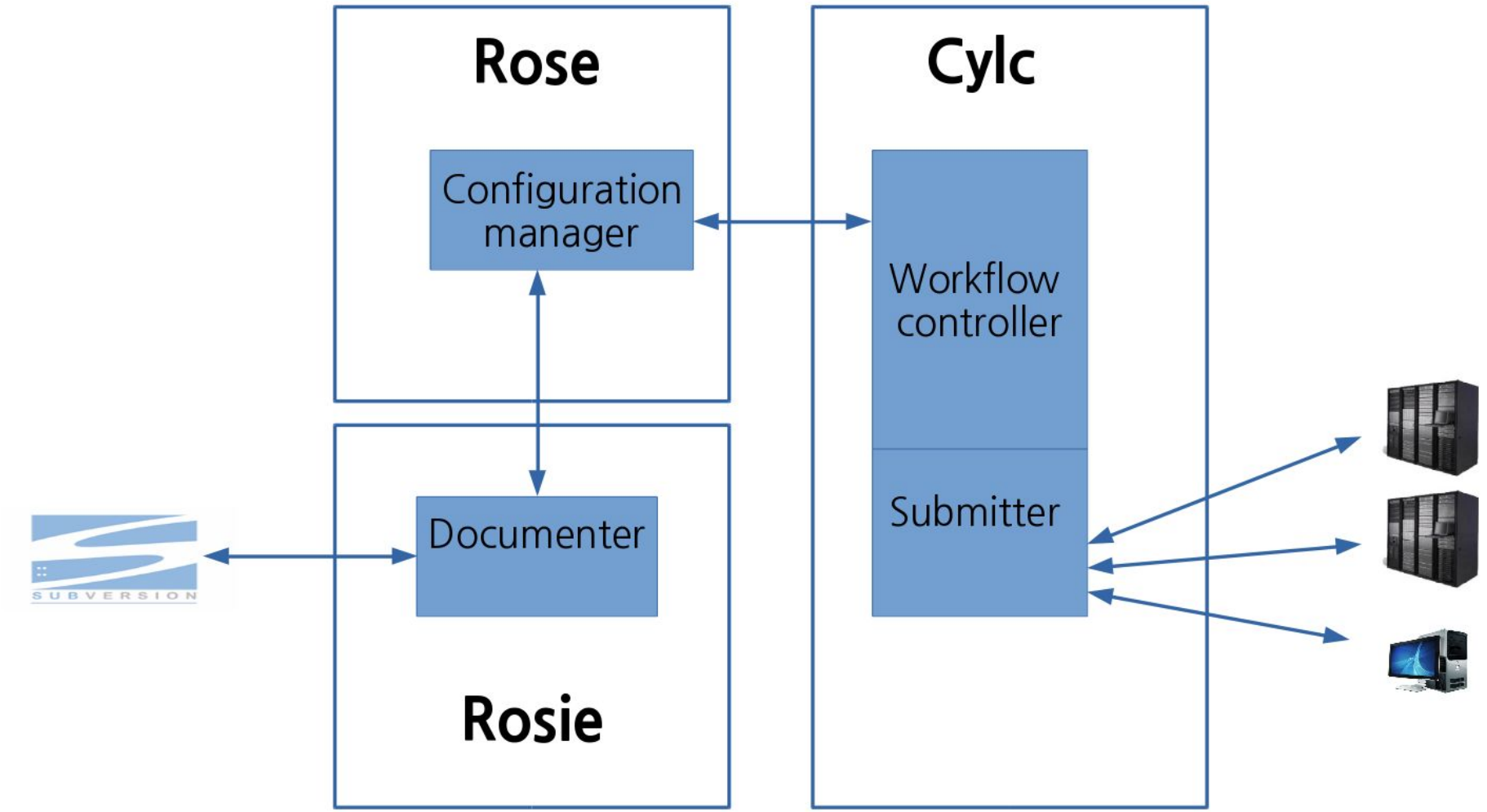


The three scheduling and submission systems have been tested and evaluated with regard to the suitability for multi-model multi-member high resolution (M4 HR) experiments (D9.3)

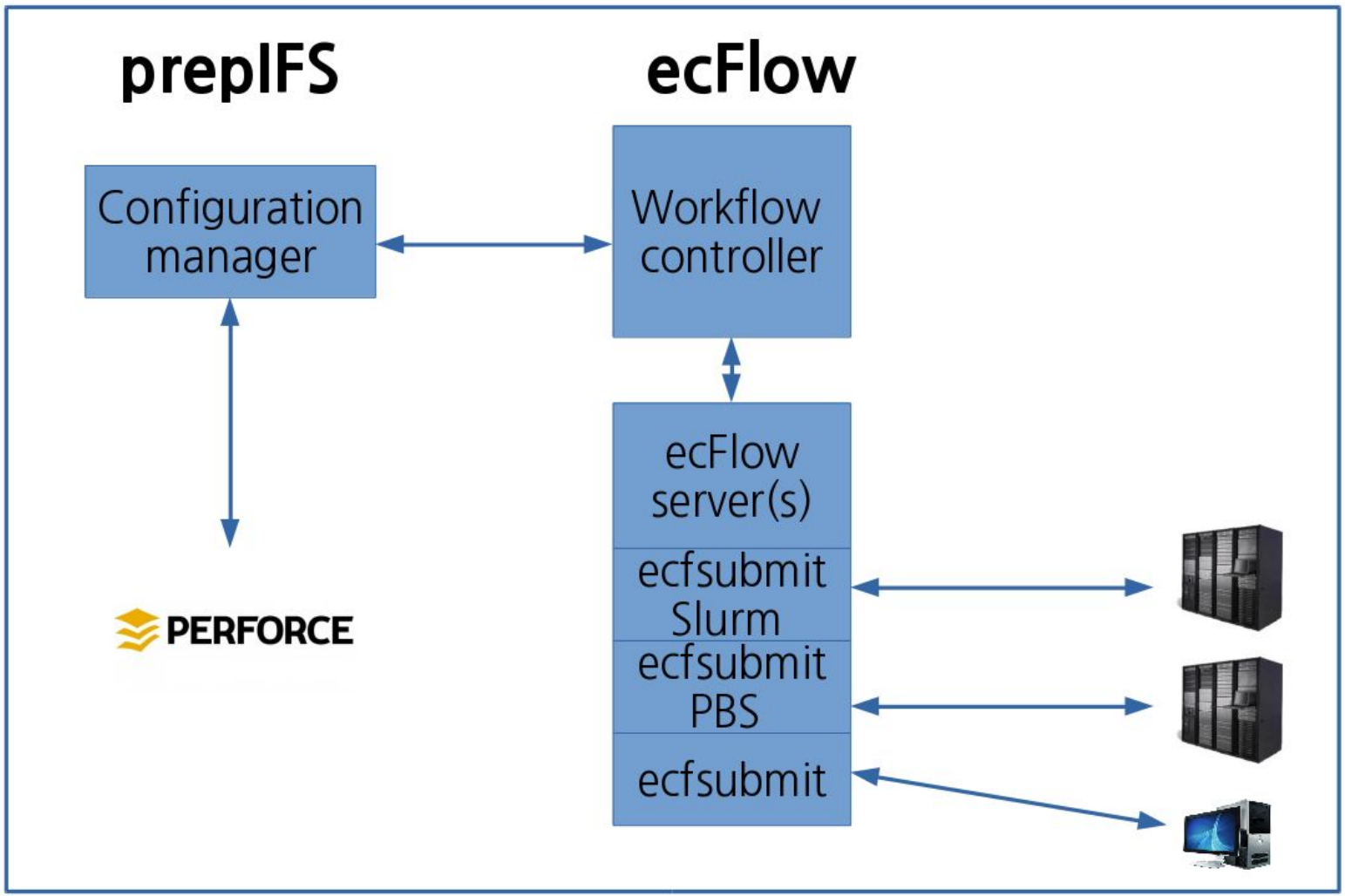
Autosubmit technical infrastructure



Cylc technical infrastructure

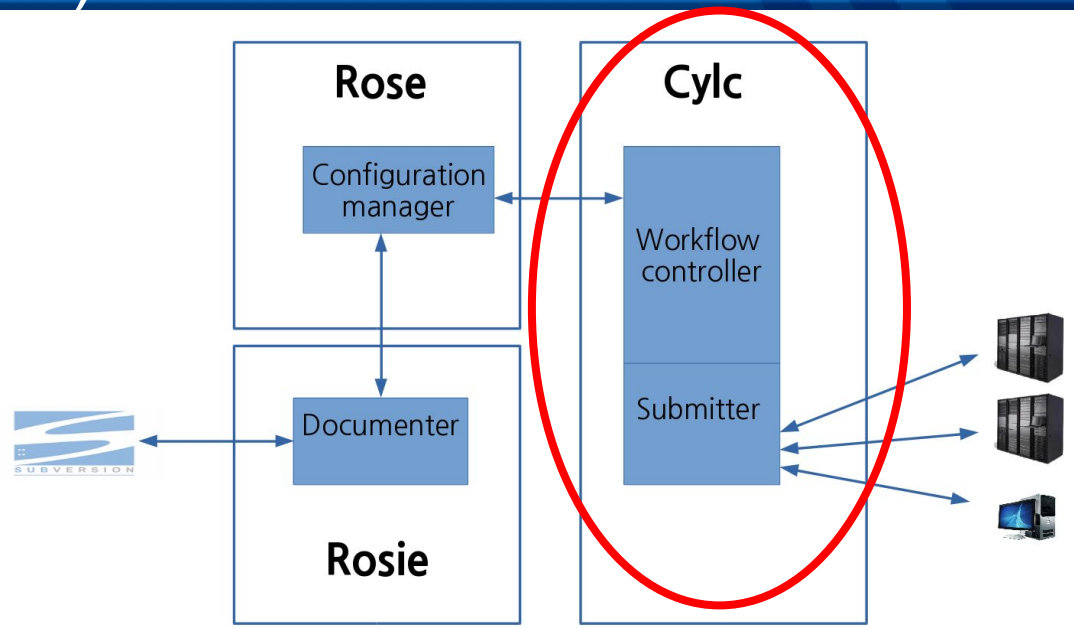


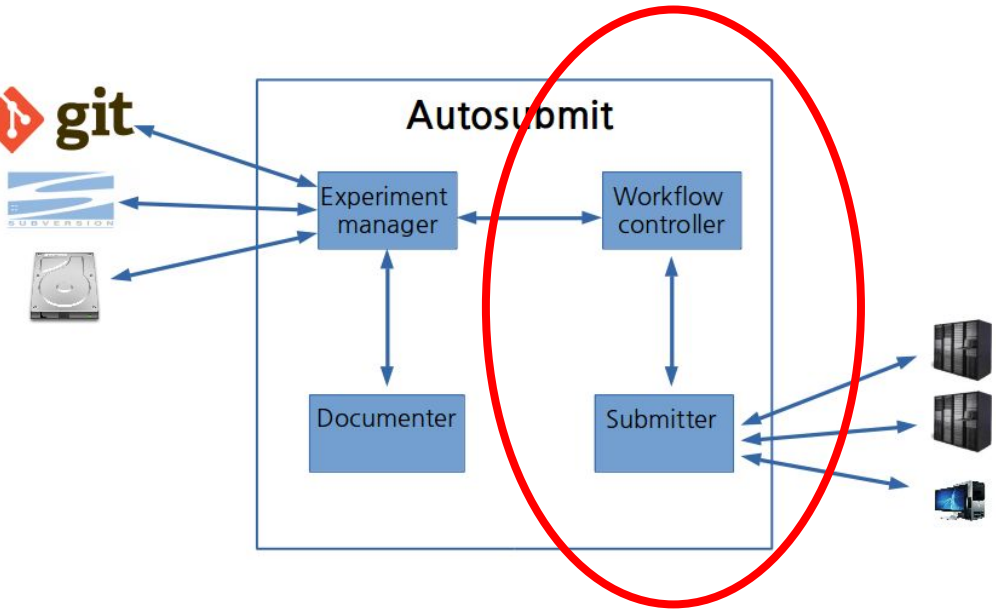
ecFlow technical infrastructure

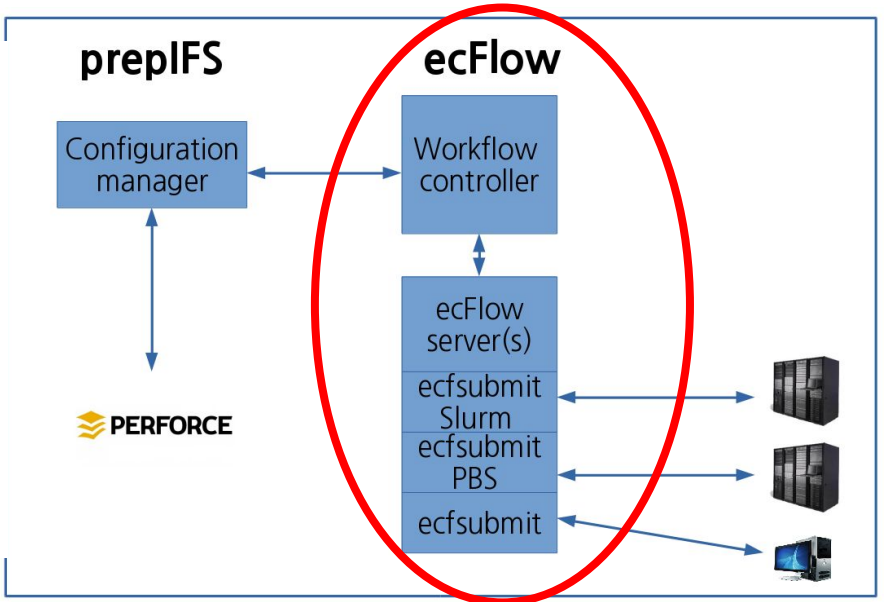


Assessment report on Autosubmit, Cylc and ecFlow (D9.3)

Focus on workflow control and submission systems







Assessment report on Autosubmit, Cylc and ecFlow (D9.3)

Part 1: Compared features:

- Portability
- Task communication
- Support for remote platforms
- Support for different workload managers
- Fault tolerance
- Support for automated error recovery
- Support for date/time cycling
- Monitoring and intervention tools
- Support for generated workflows
- Scalability

Document available here: https://goo.gl/lKqIjV

Assessment report on Autosubmit, Cylc and ecFlow (D9.3)

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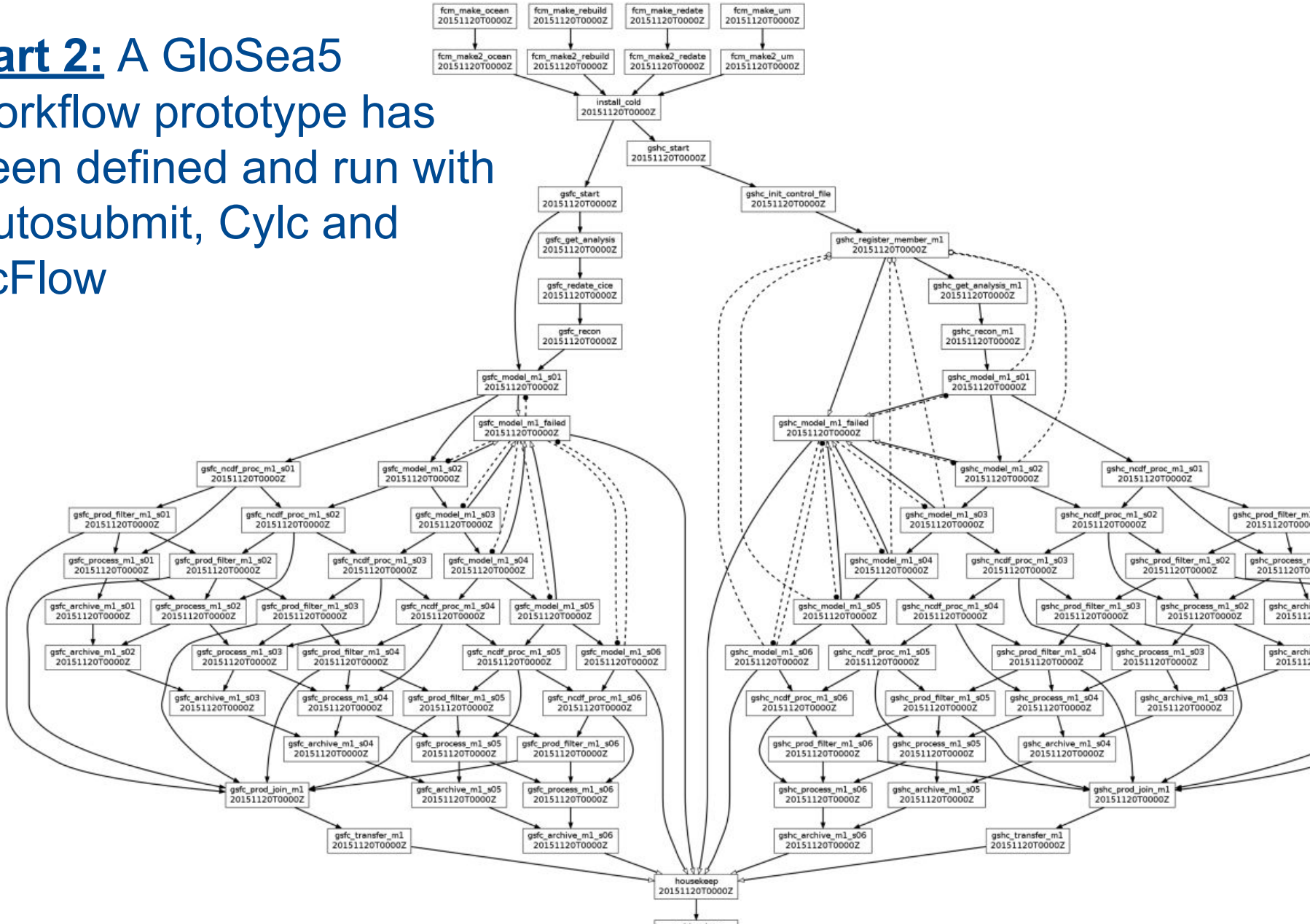
EXCELENCIA SEVERO OCHOA

Part 2: A GloSea5 workflow prototype has been defined and run with Autosubmit, Cylc and ecFlow



Drawbacks

(1) Portability

ecFlow

- Client / server installation

(2) Task communication

ecFlow

- Restrictive firewalls issue
- Not always possible to run server in login nodes

(3) (4) Support for remote platforms / Support for workload managers

ecFlow

- Restrictive firewalls issues
- Scripts for LoadLeveler (adapted for PBS, Sun/Oracle Grid Engine and Slurm)

Drawbacks

(5) (6) Fault tolerance / Automated recovery error

All tools acceptable features

(7) Support for date / time cycling

Autosubmit

- No families
- No clock time triggered tasks

(8) Monitoring and intervention tools

Autosubmit

- No GUI

Drawbacks

(9) Support for generated workflows

Autosubmit

- CONF. FILE

Cylc

- CONF. FILE + JINJA2

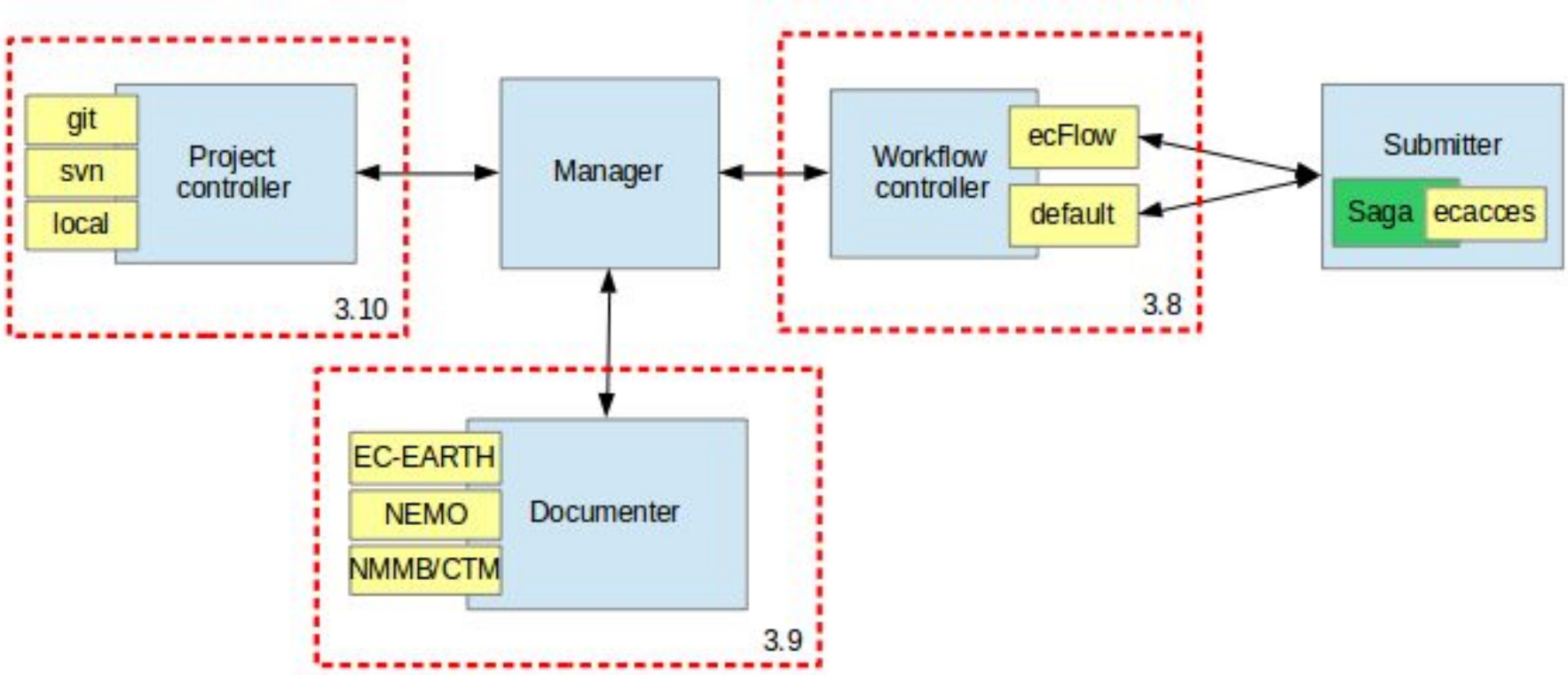
(10) Scalability

All tools reasonable scalability

Summary

Best Options	Autosubmit	Cylc	ecFlow
Portability	✓	✓	~ CLIENT / SERVER installation
Task communication	✓	✓	✓
Support remote platforms	✓	✓	~ RESTRICTIVE FIREWALLS
Support workload mangrs.	✓	✓	~ ecf_submit scripts
Fault tolerance + Automated error recovery	✓	✓	✓
Support date/time cycling	~ NO FAMILY / TRIGGER	✓	✓
Monitoring & interv. tools	~ NO GUI	✓	✓
Support generated workfl.	~ CONF. FILE	~ CONF. FILE + JINJA2	✓
Scalability	✓	✓	✓

Roadmap


git
svn
local
Project controller
3.10
Manager
Workflow controller
ecFlow
default
3.8
Submitter
Saga
ecacces
EC-EARTH
NEMO
NMMB/CTM
Documenter
3.9
es-doc
Earth System Documentation
Module
Library
Plugin

Q & A

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Thank you!

For further information please contact

joan.lopez@bsc.es
domingo.manubens@bsc.es