# ESiWACE

## Cylc development and support plan

David Matthews, September 2016

Objectives: "ESiWACE substantially improves efficiency and productivity of numerical weather and climate simulation on high-performance computing platforms by supporting the end-to-end workflow of global Earth system modelling in High Performance Computing environments"

Factsheet: https://www.esiwace.eu/Context/media-center/factsheet-esiwace/view

# Work package 3: Usability

Met Office has funding for 1.5 fte for 3 years to support Cylc. See https://www.esiwace.eu/services/sup_cylc/cylc
"Specifically, the aim of Task 3.3 is to build a supported, user-driven community around the cylc meta-scheduler for complex climate and weather suites on HPC systems"

Initial support and development plan published: https://www.esiwace.eu/results/milestones/ms-1-report/view
Please refer to the published plan for details of the proposed approach (overview provided in this presentation)

Principles of the development priorities, support approach and governance to be agreed at this workshop

# Task 3.3.1: Scoping the work

Establish development priorities and the most effective form of user support services

Existing inputs
- Input from the first IS-ENES2 workflow workshop
- Interaction with current cylc users via github / google group / direct contact
- Input from UM Technical Advisory Group (represents large proportion of current user base)

This workshop is an opportunity for you to influence this work

# Task 3.3.2: Cylc development

This task covers both
- enhancements - development of new features required by the user community
- on-going improvements - e.g. bug fixes, optimisation, re-factoring, etc. Essential for ensuring the system is supportable & maintainable in the long term

# Cylc development team

Currently:
- Dr Hilary Oliver, NIWA (cylc's original author)
- several members of the Met Office Modelling Infrastructure team

Other active developers are welcome to contribute

The openness of the development was a key issue when cylc was chosen at the Met Office and was recognised as an important feature at the first IS-ENES2 workflow workshop

# Development process

All development is done via GitHub using the "GitHub Flow" workflow

All code changes:
1.  are documented and discussed on GitHub
2.  must comply with Python PEP8 coding standards
3.  must have associated automated tests to ensure future stability
4.  must be reviewed and signed off by at least two core developers before they are merged to the master branch

Cylc is in operational use at multiple sites - it is essential to minimise bugs and ensure that new features do not create future maintenance issues or problems when upgrading
*   The working practises have evolved with this in mind
*   The team is experienced in delivering robust and portable releases

# Development priorities

Areas highlighted in the ESiWACE plan:
1. Bug fixing! Responding quickly to bug reports is a priority for the development team
2. Migration of some Rose functionality into cylc. Incorporating these features into cylc should make them easier to maintain. Any cylc users not already using Rose will find these new features of significant benefit
3. Scalability. Ensure that cylc is fast and robust and does not become a bottleneck for computing resources despite increasingly complex workflows and larger computing platforms
4. Modernisation. e.g. update the communications layer to use a RESTful API via HTTP (remove dependence on Pyro3 - a legacy Python remote object library which is no longer maintained)

Priorities constantly evolving
Plenty of evidence in recent releases of the progress being made

# Task 3.3.3: Support services

Phase 1: Helping institutions evaluate Cylc.
Bespoke service which could include
- site visits or video conferences
- hosting visits to Met Office for demonstrations and initial evaluations
- help with installation (in person or remote access)

Phase 2; Supporting implementation
- Train local support staff - institutions encouraged to have single point of contact for cylc trained to give first level support
- Support the training of end users
- Help answer support queries

# Governance

Light weight process (appropriate to limited effort available)

Development team already have effective ways of engaging with the user community (?)

ESiWACE work package lead (Reinhard Budich) is the point of contact should there be any dispute (in terms of priority given to particular support or development requests)

Principles for prioritisation:
1. We prioritise support over development (to encourage uptake and evaluation)
2. We prioritise European weather and climate sites over other users

# Thank you for listening, any questions?

Reminder:
Principles of the development priorities, support approach and governance to be agreed at this workshop