

ACCORD

A Consortium for COnvection-scale modelling
Research and Development

ACCORD System activities and future perspectives

Dr. Daniel Santos Muñoz, ACCORD AL for System

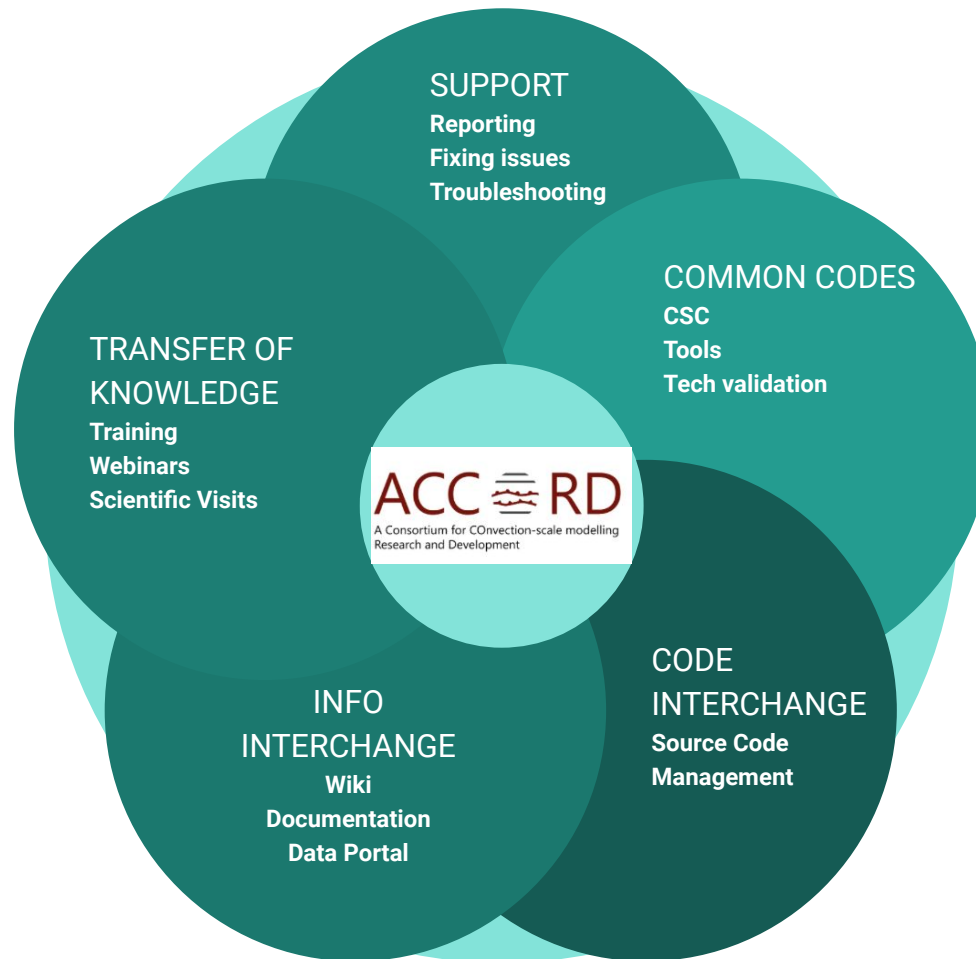
4rd ACCORD ASW, 15-19 April 2024, Norrköping and hybrid

Intro

One objective of the ACCORD strategy is to set up a **framework to collaborate more easily** on the codes that we develop, whether it be the **NWP codes or accessory tools to run our models, handle data or any other NWP-related activity.**

Facilitate the research activities to improve the operational weather forecasts

Collaboration



COMMON CODES

3 Canonical System Configurations (“CSC”):

- [AROME](#)
- [HARMONIE-AROME](#)
- [ALARO](#)
- **Separate codes:** [SURFEX-NWP](#) [oops](#) [ectrans](#) [fiat](#) ...

Tools: [harp](#) [EPyGrAM](#) [AccordDaTools](#) [obsmon](#) ...

Technical code validation: DAVAI ([DAVAI-env](#), [DAVAI-test](#), [DAVAI-ciboula](#)), Testbed ...

Software/code ecosystem

Facilitate the research activities

- Share **versions/adaptations:** (op branches, h branches, ...)
- All the codes should be considered as **multi/cross platform codes**
 - **DAVAI runs in Belanos and ECMWF**

2 Davai contributors Working Weeks



23 - 27 Nov 2022 at DMI (Copenhagen)

<https://github.com/orgs/ACCORD-NWP/teams/system/discussions/1>

- Necessary changes to add **ALARO test** CY48T3
 - https://github.com/ddegrauwe/DAVAI-tests/tree/ddegrauwe_48t3_alaro
- **Pseudo Harmonie** test based on CY48T

23-27/10/2023 at RMI, Brussels

https://opensource.umr-cnrm.fr/projects/accord/wiki/Davai_Developers_Working_Week_#1

- **Namelist in git repo per CSC**
 - Manipulation in the repo with TNT <https://github.com/UMR-CNRM/bronx>
 - Namelist handling as deltas or per CSC or per NM

- **Data storage** of the permanent data in cloud for s
- **Portability** to other HPCs, PCs, AWS, compilation
- Move docs from **Latex to MD** and creating a github

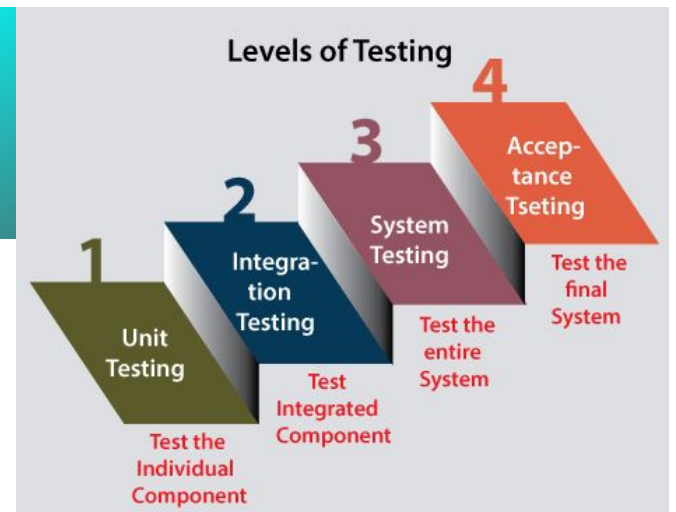
<https://accord-nwp.github.io/DAVAI-env/stable/>

- **Data version control** comparison as alternative to <https://lakefs.io/data-version-control/dvc-tool/>
<https://git-annex.branchable.com/>



Testing codes

Facilitate the research activities



SPFRACCO ECMWF Special project 2022-2024

1. An enhanced **portability and improved capability** of the code testing tools in ACCORD (DAVAI).
2. An enhanced definition of **common working practices and work environment for ACCORD** code and system activity, with a strong focus on code integration and technical validation of new cycles.
3. An improved **evaluation of the portability of new code** versions for ACCORD Members.
4. Through the additional testing on the ECMWF HPC an **improved technical quality assurance of new cycles**, with feedback of potential bug-fixes or optimization fixes to the Central Code Repository

https://www.ecmwf.int/sites/default/files/special_projects/2022/spfracco-2022-request.pdf

CODE INTERCHANGE AND SUPPORT

ACCORD GitHub



Overview Repositories 17 Projects Packages Teams 5 People 91 Settings

Popular repositories

- EPyGRAM** (Public) Forked from UMR-CNRM/EPyGRAM. Enhanced Python for Graphics and Analysis of Meteorological fields. Python 1 3
- IAL-expertise** (Public) IAL outputs expertise toolbox. Python 1
- IAL-build** (Public) Wrappers to help building IAL executables from SCM. Python 2
- DAVAI-tests** (Public) DAVAI tests templates and config files. Python 3
- DAVAI-env** (Public) DAVAI environment for testing experiment creation. Python 3
- eckit** (Public) Forked from ecmwf/eckit. A C++ toolkit that supports development of tools and applications at ECMWF. C++ 1

Mar 29, 2022

AlexandreMary

CY48T1
e656fe7

Compare

CY48T1

- Call for contribution
- Deadline for contribution
- Integration: Oct.
- Feb. 2021 -> Jur validated (+ coll)
- Declaration: Jul.

Release notes: [Conti](#)

Assets 2

ACCORD-NWP/IAL released last week

CY49T2

Associated IAL tag: CY49T2
Bundle (for side packages): [BDL49T2-default](#)
Davai tests version: `-v DV49T2`

[List of Contents](#) (of which contributions with [numerical impact](#))

This cycle is mostly a technic...

[Read more](#)

Repositories

Find a repository... Type Language Sort Clear current search query, filters, and sorts

- IAL** (Private) IFS-Arpege&LAM: NWP models & DA common code. Fortran 3 29 2 2 6 Updated on Mar 17
- EPyGRAM** (Public) Enhanced Python for Graphics and Analysis of Meteorological fields. Python 1 9 0 1 1 Updated on Mar 16
- DAVAI-env** (Public) DAVAI environment for testing experiment creation. Python 0 3 0 0 1 1 Updated on Mar 16
- DAVAI-tests** (Public) DAVAI tests templates and config files. Python 0 3 0 0 1 1 Updated on Mar 15
- SURFEX-NWP** (Private) A version of the Surfex repository, cleaned from STRATO binary files and other spurious binary files. Fortran 0 21 0 1 1 1 Updated on Mar 10

Filters is:pr is:closed Labels 22 Milestones 5 New pull request

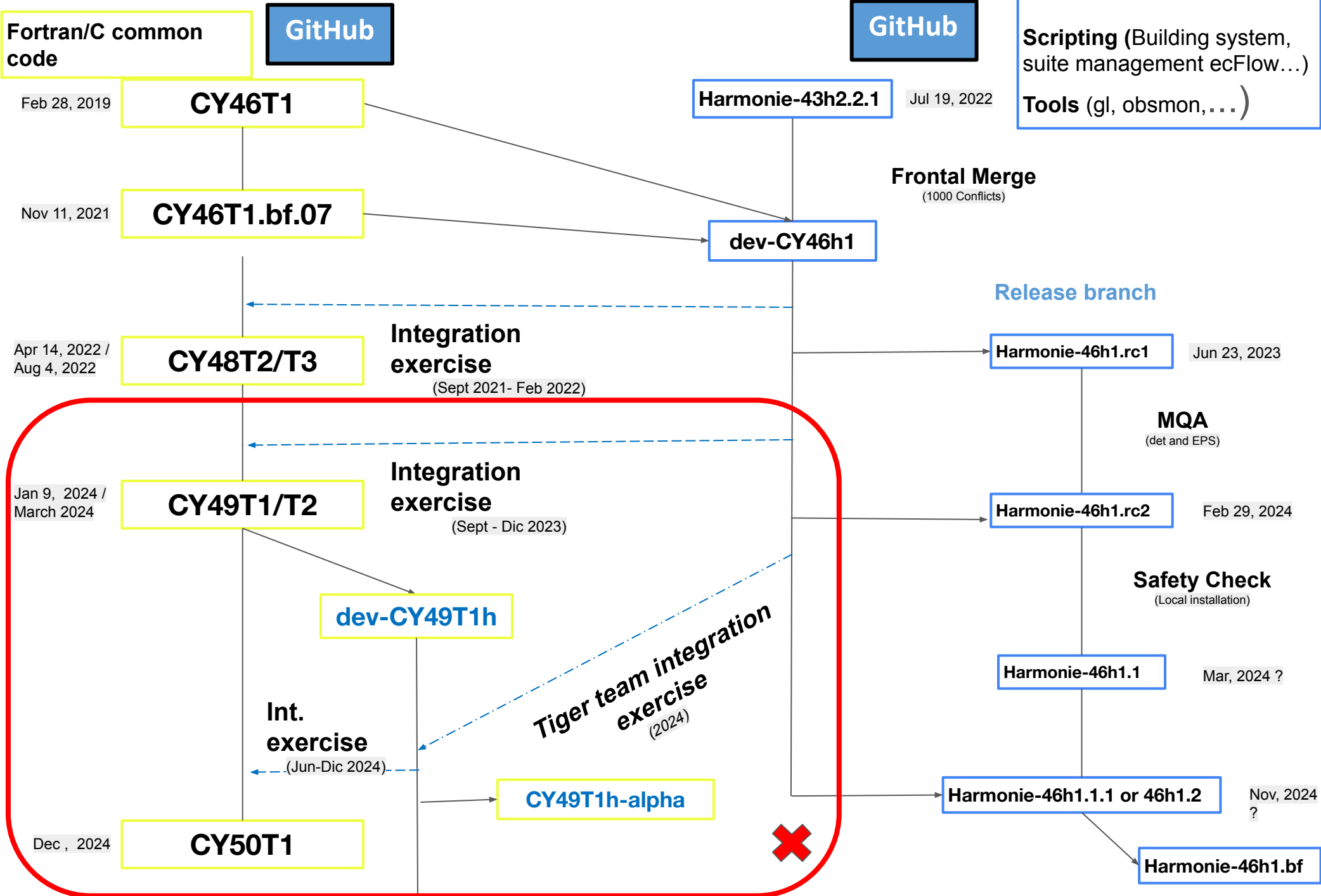
0 Open 207 Closed

Author	Label	Projects	Milestones	Reviews	Assignee	Sort
	fix	porting				
#242 by FlorianSuzat	merged last week					
	fix	area:physics				
#241 by AlexandreMary	merged 3 weeks ago					
	fix	non-repro				
#240 by AlexandreMary	merged 3 weeks ago					
	fix	area:physics				
#239 by chapeau	merged 3 weeks ago					
	fix	area:DA				
#238 by FlorianSuzat	merged 3 weeks ago					
	fix	non-repro				
#237 by MaritiniIraekShtuj	merged last month					
	fix	area:DA				
#236 by SebastianRiettemTO	merged on Mar 7					
	fix	bit-repro				
#235 by FlorianSuzat	merged on Mar 7					
	fix	bit-repro				
#234 by pmarguinaud	merged on Feb 28					
	fix	bit-repro				
#233 by pmarguinaud	merged on Feb 28					
	fix	single precision				
#232 by pmarguinaud	merged on Feb 28					

Filters is:issue is:open Labels 22 Milestones 5 New issue

10 Open 16 Closed

Author	Label	Projects	Milestones	Assignee	Sort
	bug				
#231 opened on Feb 23 by AlexandreMary					
	bug				
#229 opened on Feb 23 by AlexandreMary					
	area:DA				
#206 opened on Jan 24 by ChristophePayanMF					
	area:DA				
#203 opened on Jan 22 by FlorianSuzat					
	bug				
#172 opened on Oct 13, 2023 by AlexandreMary					
	bug				
#121 opened on Aug 30, 2023 by meierflorien					
	bug				
#108 opened on Aug 24, 2023 by RyadEIKhatibMF					
	bug				
#57 opened on Apr 17, 2023 by AlexandreMary					
	phasing				
#55 opened on Apr 13, 2023 by AlexandreMary					
	bug				
#50 opened on Apr 7, 2023 by AlexandreMary					



INFO INTERCHANGE

Facilitate the research activities

- Different tools for storing, maintaining and make available the documentation: **DOC OFFICER**

The image displays a composite view of the ACCORD-NWP Forge documentation and its GitHub repository. On the left, the ACCORD-NWP Forge documentation is visible, featuring a navigation menu with sections like 'Overview', 'Activity', 'News', 'Documents', 'Wiki', and 'Settings'. The main content area includes a 'View On GitHub' button, the ACCORD-NWP logo, and a 'Join the organisation' section with three numbered steps: 1. Create your github professional account if you professional e-mail address), 2. Contact the ACCORD System Area Leader, asking and providing your github identifier. 3. He will send you an invitation, that you finally join.

On the right, the GitHub repository interface for 'ACCORD-NWP / IAL' is shown. The 'Home' tab is active, displaying the 'DAVAI User Guide' and a recent release candidate 'CY48T2'. The repository navigation bar includes options for Code, Issues (10), Pull requests, Discussions, Actions, Projects, Security, Insights, and Settings. The 'Discussions' section is expanded, showing a list of discussions with their respective categories and activity counts.

TRANSFER OF KNOWLEDGE

Facilitate the research activities

GIT :

- GitHub for ACCORD forge
- local support to implement GIT working practices

Git Forge webinar

DAP - Tech support visits for GIT

DAVAI:

- Dev working week
- Users training
 - Training on ECMWF's HPCF for Davaï testers and integrators (spfracco project)

DAVAI training for users webinar

DAP- DAVAï contributors-developers WW

Vortex:

- Scientific visit

DAP - Visit to MF

ROAD FROM ECOSYSTEM TO SYSTEM



3 Canonical System Configurations ("CSC"):

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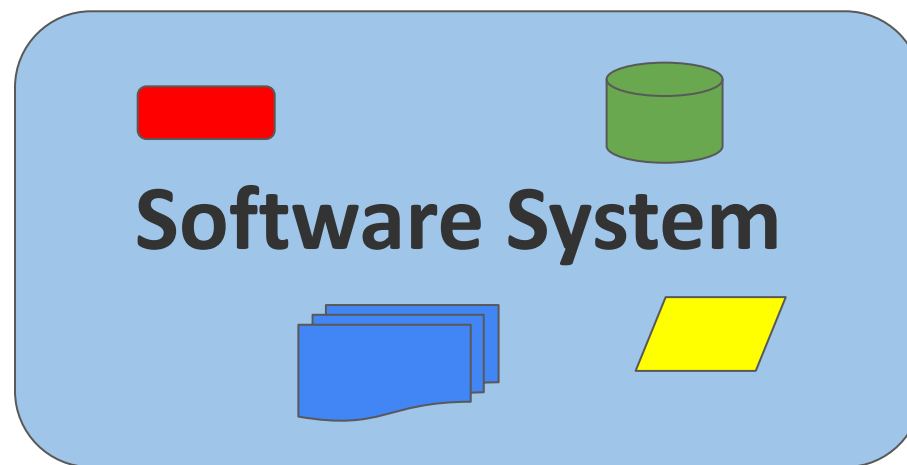
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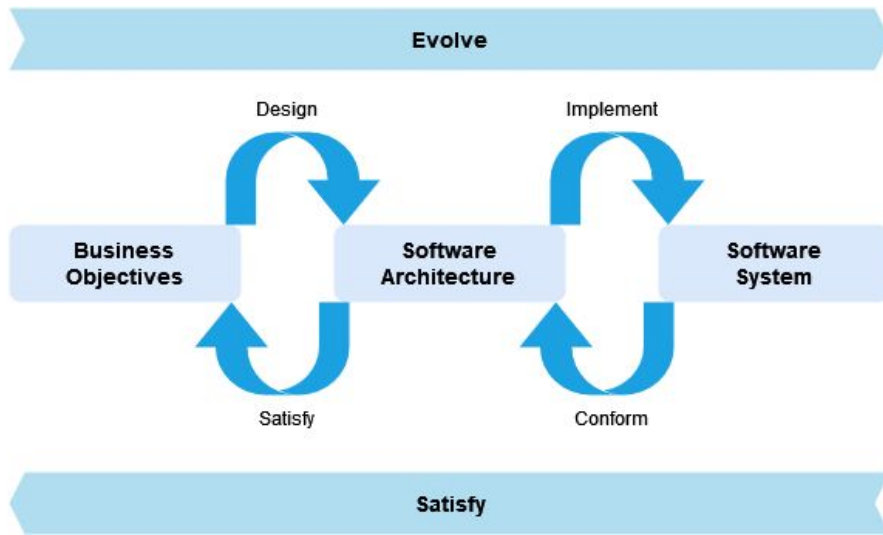
Software/code ecosystem

ROAD FROM ECOSYSTEM TO SYSTEM

The software system provides an **interface** to run the application software.



ROAD FROM ECOSYSTEM TO SYSTEM



Facilitate the research activities

- Ensures an **homogeneous and reproducible environment** for research activities and code debugging
- Ensures the **compatibility of a full stack of software** per version
- Ensures a minimum **tested workflow**
- Allows a **local deployment** to ensure the local installation is correct and could be use for research and operations
- Facilitates the **code maintenance** and increases the **code quality** (easier to test)
- Facilitates the **support and troubleshooting**
- Accelerates the research and development
- Increases the **sense of community** and helps to **homogenize the different levels** due to different resources

ROAD FROM ECOSYSTEM TO SYSTEM

Facilitate the research activities



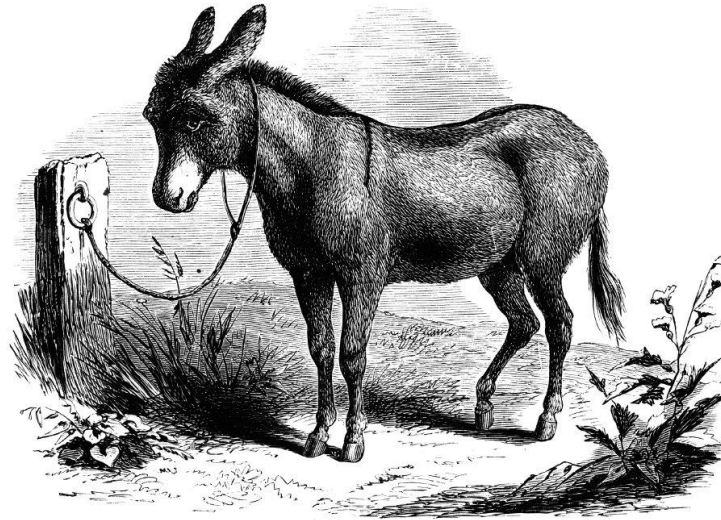
Requires a **consortia effort, mental flexibility and a transition period** from local solutions to a common system.

All the voices should be heard and a **common goal is the key.**

Providing the members an **end-to-end NWP system** in a research mode **is supported by the Assembly**

THANK YOU FOR YOUR ATTENTION

Scripting, software stack and beyond



Excuses for not having a common system

The definitive guide

O'RLY?

Daniel Santos

MoU: Article 2: Scope and Objectives

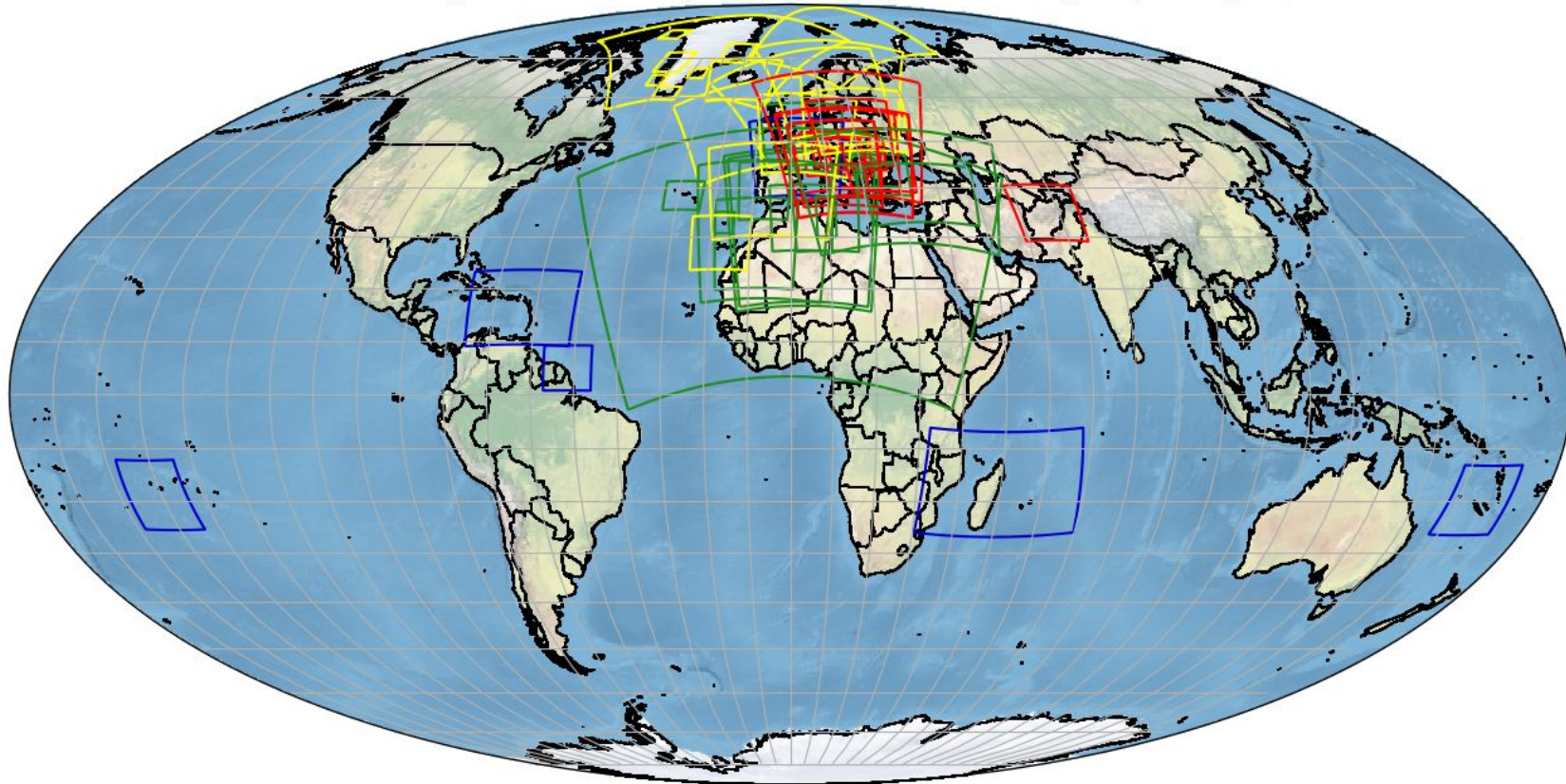
The primary purpose of the Consortium is to share limited resources for the efficient development of a state of the art NWP system and support its operational set up. The Consortium will deliver to its Members a set of common codes that can be assembled under diverse configurations to support the production of world-leading quality numerical weather predictions on limited geographical domains. To this effect, the Consortium will carry out the following activities:

- Research to contribute to the progress of scientific knowledge relevant for short-range weather forecasting, leading to publication of scientific results in the areas of environmental science and high-performance computing;
- Improvement of existing codes or developments of new codes to translate research results into forecasting tools
- Extensive testing to ascertain the technical and meteorological quality of some configurations allowed by the codes (called Canonical System Configurations)
- Regular updates of the scientific and technical documentation of the codes for the benefit of the Members;
- Regular maintenance of the codes in order to increase their efficiency on the latest computing architectures and facilitate their operational use by the Members.

http://www.accord-nwp.org/IMG/pdf/mou_alh_for_signature.pdf

Domains

ACCORD configurations in HIRLAM(yellow), LACE(red), Flat-Rate NMS(green) and MF(blue)



Titre

• Text 1

- Text 2

 - .Text 3

• Text a bit longer blablabla

- Text xxxxx