Applications and Verification

Work Plan

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Period:	2021	
Date:	March 2021	

Introduction and background

The main activities within the "Applications and Verification" area are to collect information and identify LACE members needs and create an action plan to systematically manage, organize and control the changes in the software codes. Furthermore, to maintain a documentary fund which should help the NWP colleagues.

Goals

The primary goal is to develop and adapt/use different specific applications into user-friendly mode. Many tools and software products were developed along the years for meteorological parameters. These days, it is imperative to have easy to use applications, maybe to find and to identify the operational activities, to make a common way for saving time and manpower resources. Nowadays, it is important to make the applications easy to implement without too much cost and to make a common way for saving time, computer costs and manpower. It is a big challenge to identify and to merge all the beneficial technical approaches and applications for all countries.

Main R&D activities

1 Action/Subject: Collect information, documentation and scripts/programs for model compilation and configurations

Description and objectives: The main objective is to collect information, documentation for model compilation and model configurations (for example: README files). All documentation will be available to developers/users with authentication (with user and password) and they will be stored in a website application. Such a type of website application is the github platform.

The main topics are:

- ❏ Documentation and scripts for model compilation: different ways of compilation (Španiel, 2004) may be done and can be useful to all the teams.
- ❏ Documentation and scripts for model configurations: for example CLIMAKE tool

Oldřich Španiel, September, 2004 : The technical notes for implementation export version al28t3 on IBM Regatta, RC-LACE webpace, Public Documents

Proposed contributors & Estimated efforts: To be decided

2 Action/Subject: Coding and decoding grib files

Description and objectives: In order to develop and to adapt common tools for research and operational chains, it is needed/necessary to have the same input files. This is not coming from commodity or little knowledge, but it is one way to save time since for each team, more and more tasks are overloading us. Having a common table for coding and decoding grib files, gives us the opportunities to develop more tools (even small) for stakeholders for deterministic and probabilistic products.

The main topics are:

- ❏ Common programs and tables in PROGRID tool for grib files.
- ❏ Common tables in ECCODES and/or GRIB_API tools.

Proposed contributors & Estimated efforts: To be decided

3 Action/Subject: Coding and decoding observation files

Description and objectives: The meteorological observations which are indispensable for DA are coming from OPLACE database. This fact offers us a good chance to use observation data as input data in verification packages. Cooperation with different areas are welcome.

The main topics are:

- ❏ To be decided

Proposed contributors & Estimated efforts:

4 Action/Subject: Collect information, documentation and scripts/programs from different other LACE working areas

Description and objectives: This action is necessary at the beginning of this new area of activity. An already defined structure of the scripts from each area can be optimised and/or uploaded on a common web application. It will allow many people to use in a more productive mode the already developed software. On github we can establish the way how to store and track the different versions (or revisions) of the documents or/and all kinds of softwares which will be used by our community.

For example, one person (let's say Simona Tascu) wants to run some parts from DA. This person is not an expert (can be also a newcomer) and she/he doesn't know how to ask and she/he prefers to investigate by himself/herself. It will take time and inevitably it will become harder to ask. If the latest version of scripts from the DA area will be available for each country or a common set of scripts, this approach will facilitate the process of performance and productivity. I do not dispute the help and the kindness of all the colleagues over time, but this is the way I see that we can

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save time on both sides: the one who asks and the one who receives the question.
This italic paragraph will not be included in the official version of the working plan. :)

The main topic are:

❑   To be decided

Proposed contributors & Estimated efforts:

5 Action/Subject: Collect information, documentation and scripts/programs from LACE partners

Description and objectives: Waiting for the common discussion at LSC meeting.

The main topic are:

❑   To be decided

Proposed contributors & Estimated efforts: To be decided

6 Action/Subject: Verification

Description and objectives: Revision, consolidation and further development of the verification tools for *deterministic* and probabilistic forecasts, for surface and upper air parameters. This action will be shared with the EPS area.

The main topic are:

❑   Implementation of LAEF verification package (perl+shell+fortran → python?) - surface and upper air verification
❑   Implementation of HARP verification package
❑   LACE/ALADIN verification tool
❑   Implementation of MET verification package

Proposed contributors & Estimated efforts: To be decided

7 Action/Subject: Graphics packages

Description and objectives: To be decided

The main topic are:
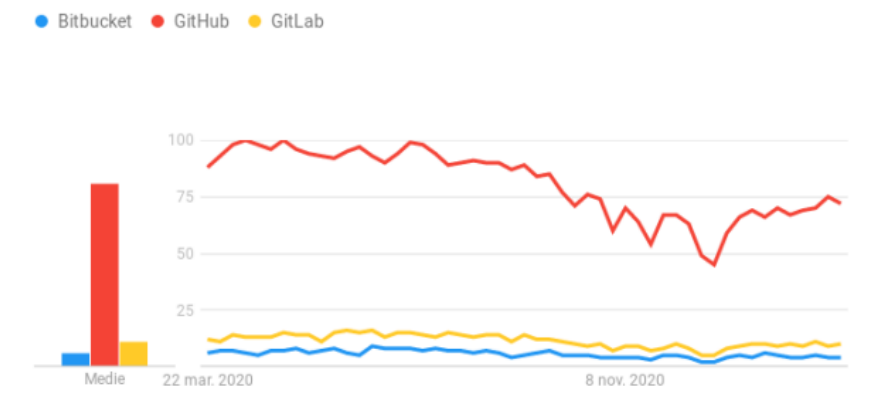
❑   Epygram
❑   Magics/Metview
❑   NCL/NCAR
❑   etc

Proposed contributors & Estimated efforts: To be decided

8 Action/Subject: GitHub platform

Description and objectives: To define the structure of the new chain for operational and research activities. The github platform provides control and trace-ability of changes in the development and maintenance phases of different software applications. In time, the usefulness of it will increase productivity with minimal human efforts when somebody intends to use a software in a different country or a different home computer. Github platform makes available the software to multiple people which can work together to the same soft/script/programs and finally they can establish the final version of the code which can be put in the master branch and declare the "export version" of that code. For the safety of the softwares, in order to protect our developments, weekly (or maybe daily) automatic savings should be done. To be decided in the future.

In the figure below it can be noticed that the interest over a period from 2020 is given to the github platform in comparison with gitlab and bitbucket platforms.

The main topic are:

- ❏ To identify the procedure and to define a structure for the beginning step and to ensure quality and consistency in the future when changes are made.
- ❏ etc

Proposed contributors & Estimated efforts: To be decided

9 Action/Subject: Trainings/courses

Description and objectives: A good opportunity to benefit more efficiently and rapidly from using meteorological products in various formats. This part of training is essential for the new employees and more than useful for the others, to save time. The video-conferences platforms are more and more accessible and used, therefore

an online assistant and support can be offered by the area leader and/or by another colleague to the colleague who requested information about one soft or the installation mode. In order to find and establish modalities on how to approach this training part, it is preferable to have maybe one course online per month, even if it will take one hour.

The main topics are:

- ❏ Climake
- ❏ Introduction to github
- ❏ Gmkpack compilation
- ❏ Model compilation
- ❏ Harp installation
- ❏ Etc

Proposed contributors & Estimated efforts: To be decided

10 Action/Subject: Machine learning

Description and objectives: To be decided

The main topics are: To be decided

Proposed contributors & Estimated efforts: To be decided

Summary of resources [PM]

Meetings and events (2021)