Notes from discussion of V&V   28 October 2020

Present: Amy, Andrew, Claire, Jerome, Julien, Mike, Pierre

Apologies: Seb, Simon, Massimiliano

1.   Actions from previous meeting

All actions from the previous meeting are either done, in progress or replaced by actions listed at the bottom of these notes.

Action: Mike, Julien and Amy to further clarify/articulate objectives and scope of V&V. Done

Action: Pierre to add his proposals to the V&V web page and pass the SETTE section to Andrew for his input. Done

Action: Claire to update the section on Trusting and continuous integration (noting recent experiences with video-conference merges) and discuss it with Julien and Nicolas (when he returns).

Claire has updated the document and is writing a report for IMMERSE describing our current tools and processes for continuous integration. A first version will be written prior to this year's merge. It will be updated with reflections on the merge by the end of Jan 2021.

Action: Claire and Amy (?) to summarise pros/cons of transition to git and organise a discussion with the NST. (Replaced by a new action below)

Reno Person, who is a new CNRS engineer working on PISCES, is setting up PISCES as a gitlab project in parallel to the svn version. He is writing a "report" on the pros and cons of git/svn. Andrew noted that the new "NERC" HPC did not have svn installed on it by default. The git/svn choice does not solely affect V&V, it relates to the longevity of NEMO and use of tools familiar to future newcomers.

Action: Mike and Simon to scope out options for introducing unit testing. Not done but closed.

Julien noted that FESOM is using the pf_unit facility developed by GSFC.

2.   Overvall view of document

Sections 1-3 are in quite good shape. Sections 4 and 5 are more uneven. They do not follow the structure of the document described in the introduction and need some re-organisation. We can't write the roadmap properly until (i) more material/information has been gathered on potential tools and processes and (ii) the possibilities for their application to NEMO have been scoped out.

Andrew felt it is not clear enough what the ultimate aim is – where the roadmap is leading. He said that in practice it is the documentation that is incorrect rather than the code. He was also concerned that we could end up making more work for ourselves and that working out how to adjust SETTE to make the NEMO system as a whole easier to maintain is not a simple matter. He noted issues on his new HPC using FCM (with the current old version) and running SETTE (its cores weren't big enough for current hard-wiring). Jerome felt the document was quite comprehensive. He highlighted the importance of improving the flexibility in the definition and sharing of test cases, using the right tools to implement them and promoting their use. He also noted that the document focuses mainly on verification rather than validation.

It is important to produce a version of the document that can be more widely shared – e.g. with the NDC, NST and NSC.

3. Work Plan

Claire stated that the verification tools and processes are of fundamental importance to NEMO and that this view is shared by those in the NST she has talked to about it. There is a view in the NST that the NST would do well to stop doing other development and focus solely on verification work for a period of 6-12 months. The plans for V&V should however recognise that the NST expects to be busy in the first half of 2021 tidying up the new version (which has major changes within it).

There will be work over the next 3 months (Nov-Jan) to include the IMMERSE test cases within SETTE so that SETTE runs the test-cases and checks the results.

It was agreed that suitable specific V&V tasks need to be included in the 2021 Work Plan. These should be distributed across the consortium members. The following specific tasks were discussed:

1) Scoping of how in practice unit testing could be incorporated into NEMO in a compact and sustainable manner. This task could do prototyping with one "typical" module (e.g. eos or hpg). Sibylle has past experience in unit testing so could be well placed to take on this scoping.
2) Scoping of the costs of transition to git/github: assessment of the options, how it would be done, how to mitigate cons (from pros/cons) and the effort required. Nicolas Martin would be best placed to do this scoping. Claire reported that he is expected to return to work in January.
3) Short-term actions on SETTE; scoping of containerisation of SETTE tests; scoping of pros/cons of using ROSE/cylc to test a wider range of permutations of namelist options. CMCC and Met Office could contribute to containerisation and ROSE scoping respectively. Andrew will consider what actions on SETTE to include.
4) Development of Trusting: Claire agreed to formulate a suitable, probably non-specific, task for the 2021 WP.

The NEMO System Team will be fully occupied with the merge for their next few meetings. The earliest realistic date for a discussion of our proposals with them is probably in the second half of January 2021.

Outstanding Actions

Mike to re-organise the material in our draft document into a form that could be circulated to NST, NDC and NSC and ask the team to review it. (Not agreed at the meeting but needs doing.)

Mike to circulate our document post review to the NST, NDC and NSC.

Claire to discuss unit testing with Sibylle and propose an item for WP2021.

Claire to discuss git/github scoping with Nicolas and propose an item for WP2021.

Andrew to discuss containerisation of SETTE with Italo and use of ROSE with Daley/Mike and propose items for WP2021.

Claire to organise discussions of our document with the NST (probably starting late Jan 2021).