Excalibur-Neptune report 2047356-TN-16-1

Task 0.3 Community and environment

Ben Dudson, Peter Hill, Ed Higgins, David Dickinson, and Steven Wright

University of York

David Moxey

KCL

October 31, 2022

Contents

1 Executive summary

In this report we discuss ExCALIBUR-Neptune community activities in the October 2021 to October 2022 period and the state of the community environment at the date of this report. Numerous workshops and events have been hosted by Neptune project partners over this period, providing a useful means to help link members from different groups. The digital tools set up at the start of the project to support community interactions are still in use, but some suggestions are made to further enhance the digital environment to increase engagement and to assist with bringing new members up to speed. This is likely to become increasingly important as the project moves forwards and new collaborators join and further stakeholders emerge.

2 Community events

There are three main categories of community events to discuss here; those organised by ExCALIBUR (i.e. the Met Office), those organised centrally by UKAEA and those organised by external project partners.

2.1 Met Office organised events

The Met Office organised a programme-wide ExCALIBUR workshop held on the 11^{th} and 12^{th} of July 2022 [1]. The event was primarily held in-person with some provision made for remote participation. This was the first programme-wide event organised within ExCALIBUR and provided a good environment to connect the different project partners from across ExCALIBUR activities. The agenda for the event primarily focussed on lightning talks but also included some time for small scale discussions via posters and similar. Recordings of the lightning talks are publicly available, providing a useful resource for those unable to attend and new project members.

2.2 UKAEA organised events

Within the UKAEA organised events there are large workshops and small frequent project management meetings. A hybrid format workshop was held in October 2021 with physical participation at Culham [2]. This brought together representatives from the different project partners with stakeholders from UKAEA, leading to interesting discussions around the progress made and further input on the science use case. An in person workshop was held at Cosener's house in Abingdon on the 5^{th} and 6^{th} of September 2022. As with the 2021 event, there were two primary objectives: to provide a venue for the project partners to discuss details and build/strengthen links through summarising progress and goals; to engage with external stakeholders from UKAEA. In particular, following the evolution of related international projects, an initiative to develop an exhaust code has arisen within UKAEA. This proposed code naturally has significant overlap with the physics and numerical approaches relevant to the ExCALIBUR-Neptune project. The workshop provided an opportunity to explore the link between these projects and, clearly, close collaboration between

these projects will bring many benefits. This is likely to see the community around ExCALIBUR-Neptune further grow in the future, which motivates some of the suggestions made in section 3.

In addition to large workshops, project management meetings are held regularly[1]. These provide an opportunity for representatives from UKAEA's Neptune team and each of the external partners to meet and discuss progress. As well as progress reports from the external partners, the meetings typically include some news announcements from UKAEA. These meetings provide a useful means for each of the external partners to keep up to date with the work of others and to identify opportunities for collaboration and further discussion. Whilst one of the primary purposes of these meetings is to monitor progress towards deliverables from the external partners, it would perhaps be a useful addition to also include an item on the agenda for the summary of progress and activities from UKAEA staff on the Neptune team. This may be particularly helpful for new team members to help contextualise their own work in relation to the wider project, for example. It can be challenging to gain full attendance at these meetings due to other immovable commitments of the project partners, such as timetabled teaching. It may be helpful to consider how to record and disseminate the outcome of these meetings, for example sharing minutes[2] or disseminating the slides containing news items via email (or other dissemination methods such as Slack, sharepoint etc.).

2.3 Partner organised events

Neptune project partners have organised and run a range of events both specifically targeted to Neptune members as well as for the wider ExCALIBUR (and beyond) community. For example, the Nektar++ team ran a multi-day workshop in December 2021 for the Nektar++ community and those interested in the project [3]. This was advertised to, but not specifically targeting, the Neptune team members. A second Nektar++ training event was held on the 1st of August 2022. This was themed around project Neptune work and was directly

[1] These are typically held every two weeks but over some periods this may reduce to once a month.

[2] One would not want to increase bureaucratic overhead so this would only be recommended if minutes are already taken. A lightweight alternative could be to automatically record the Zoom meeting and to provide a shareable link to this to those that could not attend.

supported by UKAEA.

The cross-cutting ExCALIBUR project SEAVEA [4] has interactions with Neptune. A large number of workshops, training events and seminars are organised and advertised through SEAVEA. These are of clear interest to Neptune project members. SEAVEA offer a mailing list which is used to advertise these events. It is recommended that Neptune team members consider signing up to this mailing list[3] or a similar mailing list is formed for Neptune which can rebroadcast adverts for relevant events.

The ExCALIBUR project also advertises relevant events through its website at `https://excalibur.ac.uk/news-events/`. The ExCALIBUR website offers the ability to sign up for to a mailing list for news and updates but active dissemination from the Neptune team to project members may be valuable.

3 Community digital environment

Since the start of the Neptune project several tools have been set up in order to build a digital environment which supports the work of Neptune and the interaction of its project partners. These are discussed in the report for task 0.1 [5] and include:

- Slack : For informal discussion, quick questions and advertising of events.
- GitHub organisation : Hosts repositories containing proxy-apps, documentation and project reports.
- ReadTheDocs : Provides a searchable public website containing relevant documentation.

These have all been used since the project began but as the project evolves, team members change and the scope increases, it is timely to review the use of these tools and to consider possible adjustments and alternatives.

[3] See `https://www.seavea-project.org/` for the sign up details.

3.1 Existing environment

The Slack workspace [6] has seen active use over the course of the project, with around 8,000 files and messages shared. Since the workspace was established Slack has changed what is offered through the free plan currently in use. In particular, when originally set up the free plan offered access to the most recent 10,000 messages and files, but as of the 1st of September 2022 this limit has changed to offer access to an unlimited number of messages and files but only from the past 90 days. This is an important change and requires a shift from the use of Slack for recording important information to more transient discussions. It is still well suited to advertising events and for team members to seek answers to quick questions but it is important that team members are aware of the limitation[4].

The ExCALIBUR-Neptune GitHub organisation [7] hosts seven repositories. Of these, six are public with five representing proxy-apps and the sixth holding the source files for the ReadTheDocs site. There is a single private repository holding copies of the reports submitted by project partners, reports generated by UKAEA and other documents outlining aspects of the Neptune project. Whilst this provides a useful resource for team members there are a number of ways that the use of this resource could be enhanced. The public view of the organisation (i.e. to those that are not members of the organisation) is rather incomplete and does not give a good indication of what work is carried out within the organisation. There are several possible solutions to this, with some, such as a dedicated website, outlined below. An interim measure may be to create a public repository within the organisation which consists of instructions for how to become a member, provides documentation details which can be made public and gives a summary of what the project is for and a link to the ExCALIBUR page [8]. This could also be integrated into the ReadTheDocs website. It would also be helpful to provide pointers to associated projects and repositories holding proxy-apps not directly owned by the ExCALIBUR-Neptune organisation.

The ReadTheDocs site [9] has not seen much development since its creation and it currently holds a list of symbols and acronyms, a brief guide to writing

[4]It is not uncommon for answers to quick questions to include important details. It is perhaps helpful to consider how to record relevant questions and answers in a more permanent and accessible venue. Options include through github issues, a wiki or a website depending on the degree of flexibility desired.

documentation and the ExCALIBUR-Neptune charter. It would be helpful to expand the content hosted here to include details which can be made public, such as the systems of equations considered etc. As ReadTheDocs takes re-StructuredText files as input, one may wish to leverage a tool such as pandoc [10] to convert the existing LaTeX files to RST. The ReadTheDocs approach to documentation has proven popular among many projects, including those closely linked to Neptune such as Hermes-3, and can provide a useful place to provide information about how to interact with the project[5]. One may need to be careful about using a single ReadTheDocs site as a repository for all information as this may become unwieldly and hard to maintain. Instead one may wish to develop a series of these each with a different focus, such as documenting the physics system, project management/environment details, proxy-apps etc.

3.2 Possible environment enhancements

The online presence of ExCALIBUR-Neptune is relatively minimal, with one page on the ExCALIBUR website, the public GitHub organisation and the brief ReadTheDocs site being the primary search results. Whilst these all serve a useful purpose, there is currently no clear description of how to get involved in the project, for external people to view contemporary work or how to get started with the project. A dedicated website, say through GitHub's ability to serve static html, maintained by the community is one way to provide such an online presence. Such a site would be directly in control of the Neptune team and would offer an ideal venue to showcase the work of the team to the public, advertise events of interest to the Neptune team and partners and to provide a summary of what the project entails and how people can contribute/collaborate. As the project progresses and there are interactions with other work, such as the Edge Boundary code at UKAEA, this website could provide a useful starting point for new collaborators and can link to other relevant resources such as the ReadTheDocs. This approach is used by established codes such as BOUT++ [11] and has been found to add value despite the additional maintenance costs it brings.

As noted in section 2 other ExCALIBUR projects provide mailing lists which can be used to advertise events of interest to the community. Within Neptune

[5]For example how to join the slack, how to get access to the organisation etc.

there is use of emails, but no formal mailing list that can be used by all team members, with Slack playing this role instead. It may be worth considering the introduction of a more formal self-managed mailing list which can be used by members to advertise relevant events. Archives of the mailing list, if accessible, may also be useful to provide new members a way to review past communications.

3.3 Environment recommendations

In the previous two sub-sections a small number of suggestions and recommendations have been made. The primary motivation for these suggestions is to improve the visibility of the project and the work of the team, such that it is easier for new collaborators to join, the onboarding process for new team members is more efficient and the community around this work can grow. Here we explicitly summarise these recommendations for ease.

1. Further enhance the public facing aspects of the project's online presence. This can most easily be achieved by the introduction of a public website advertising the work of the project team and providing instructions for how to get involved.

2. Improve the public visibility of documentation around key aspects of the project work. This can most easily be achieved by expanding the content provided through ReadTheDocs and this can start with pandoc conversion of existing reports and documents where possible to make these public.

3. Provide a summary of project work directly relevant to Neptune but not contained within the GitHub organisation. This can be facilitated by the introduction of a website.

4. Provide a means to widely advertise relevant events. Currently this is achieved through Slack. Whilst this is reasonable, it limits the reach of the adverts to those monitoring the workspace. Advertising events through a website (with RSS feed) and/or providing a mailing list which team members and the wider public can subscribe to may improve the reach of such adverts.

Whilst these recommendations involve additional maintenance work they are important to help the community grow.

4 Summary

A range of community events have been held and digital tools to support community interactions have been constructed. These have supported the development of a coherent community and allowed links between partners to form. There is a potential challenge for the project in terms of staff/team member turnover and it is important that thought is given to how community interactions and processes are preserved in light of this turnover and how the growth of the community is supported. Digital tools provide an ideal way to support this and some suggestions for further improvements in this area have been made[6].

[6]The author of this report, D Dickinson, would of course be more than happy to help support these developments where useful.

5 References

[1] ExCALIBUR team. ExCALIBUR workshop : July 2022. https://excalibur.ac.uk/spf-workshop/.

[2] Neptune team. Neptune workshop : October 2021. https://excalibur.ac.uk/events/neptune-workshop/.

[3] Nektar++ development team. Nektar++ workshop : December 2021. https://www.eventbrite.co.uk/e/nektar-workshop-2021-tickets-97980766109?aff=ebdsoporgprofile.

[4] SEAVEA Team. Software Environment for Actionable and VVUQ-evaluated Exascale Applications. https://excalibur.ac.uk/projects/seavea/.

[5] Benjamin Dudson, Peter Hill, Ed Higgins, David Dickinson, Steven Wright and David Moxey. Task 0.1 report on environment. https://github.com/ExCALIBUR-NEPTUNE/Documents/blob/main/reports/2047356/TN-01.pdf.

[6] ExCALIBUR-Neptune Slack workspace. https://excalibur-neptune.slack.com.

[7] ExCALIBUR-Neptune github organisation. https://github.com/ExCALIBUR-NEPTUNE.

[8] Neptune page on ExCALIBUR website. https://excalibur.ac.uk/projects/excalibur-fusion-use-case-project-neptune-neutrals-plasma-turbulence-numerics-

[9] Neptune team. ExCALIBUR-Neptune ReadTheDocs. https://excalibur-neptune.readthedocs.io/en/latest/.

[10] Pandoc software. https://pandoc.org.

[11] BOUT++ team. BOUT++ Website. https://boutproject.github.io.