UK Research and Innovation

Met Office

SPF ExCALIBUR Webinar, 21 November 2019: Q+A

Q: How will the Met Office/UKAEA and UKRI work together?
A: The ExCALIBUR Programme will be overseen by a Programme Board co-chaired by the Met Office and EPSRC Senior Responsible Owners (SROs). The Programme Board's remit includes ensuring alignment between all aspects of the programme. The Programme Board will be advised by a Steering Committee made up of key members of the community. On a practical level there is funding available for Knowledge Integration across the programme which will include multiple meetings and workshops.

Q: Exascale computing also means the Exadata commensurate with it - i.e. multi Exabyte data sets. This means the storing, moving, cataloguing, accessing (including remotely), metadata aspects, AAI for access to these data....and more. Are proposals for Exadata software development needed for the Exascale computing era in scope for the EPSRC calls?
A: It is envisaged that these aspects will primarily come through the cross-cutting calls which will be scoped over the next 6-12 months. It is anticipated that as the use case working groups get underway, workshops will be set up to identify cross-cutting themes which will lead to calls (some managed by Met Office and some by EPSRC). One of the ExCALIBUR pillars is Data Science which we anticipate will include researching workflows to manage and analyse vast volumes of simulation data.

Q: Is there any activity around multi-scale modelling between mesoscale meteo model and CFD operating at urban or even room levels to study air quality at building level?
A: The Weather & Climate use case is aiming at ensuring that we have a modelling system as a whole that is fit for purpose that spans the range from very high resolution, very short timescales (weather forecasting/nowcasting) out to longer-term climate simulations. It is not targeting any particular process as such, being more about making sure that the software, algorithms and design of the system is performant. This should deliver much better capability for urban-scale modelling, modelling multi-scale processes, but this isn't what this work is targeting at doing itself. As air quality is not being addressed in the Weather and Climate Use Case this could potentially be addressed as part of a submission to the EPSRC call.

Q: Is there any activity around developing more state-of-the-art numerical techniques for ocean modelling beyond NEMO?
A: This is unlikely to happen as part of ExCALIBUR as NEMO lies at the heart of the modelling system as it stands. If NEMO proved to be completely unfit for purpose after WP1 activity 2 then there could be an element of this, but this is not anticipated to be the case.

Q: Are the Working group activities funded by (vetted) by Met Office?
A: No, the EPSRC call is being run by EPSRC on behalf of UKRI. The expert panel will be invited by UKRI/EPSRC based on expertise and lack of conflict of interest. We do not have specific individuals lined up at this stage. It is likely that there will be at least some international representation on this panel.

Q: Is there any scope for the use of Exascale computing for model calibration/tuning
A: Unlikely to be covered under the ExCALIBUR project. Later the project work will start to look at emerging technologies and it is possible that there will be a focus on machine learning aspects with a view to making sure the algorithms are as fast as they can be.

Q: With respect to the Working groups, is the proposal for a complete working group on some subject, or do individuals propose to join working groups?
A: Once the successful working groups have been decided there will be a chance for new people or groups to bid in to work on the use cases. Proposals for working groups should be developed by the applicants and submitted to the call.

Q: Very interesting emphasis on collaborative working between groups, but is the expectation that the working group proposals will focus on a single science topic.
A: The individual working groups would be expected to have a single area of focus (an area of scientific simulation), though this area of focus may be very broad depending on the nature of the subject (e.g. particle physics). As part of the activities of the working groups it is expected that successful groups would collaborate together in one or more workshops in order to address wider, cross-cutting issues that affect them all and allow them to benefit from each other's experience.

Q: Are none of the output column issues being covered in the upcoming calls?
A: Not in the upcoming calls; a lot (but not all) would be more appropriate for cross-cutting themes.

Q: Current modelling forecast system for Shelf sea environment uses ERSEM as Biogeochemical model. Will ERSEM be a focus of activity 2 too?
A: No, as the focus will be on MEDUSA rather than ERSEM.

Q: Will a set of Petascale algorithms / benchmarks be built up (collated), to share amongst the community?
A: Good idea.

Q: Do you think there will be many Exascale systems nationally or in special services?
A: Unlikely that there will be many (out of scope of the project which is more about the software).

Q: Will there be any attempt to connect to the US ECP programme in order to get access to Frontier etc.?
A: This is a good suggestion, but will be up to the individual working groups to describe how they would link up to international activities and why this would be appropriate and beneficial to their proposals.

Q: If this was supposed to be inclusive of NERC exascale issues, not just Met Office, what processes are in place to choose/address those?
A: The EPSRC calls are on behalf of the UKRI delivery partners which includes NERC. Therefore, any NERC non-Weather & Climate / non-Fusion use cases are eligible to apply to the EPSRC call.

Q: Who is eligible to bid for the calls?
A: The following criteria must be met by the organisation submitting a bid against Strategic Priorities funded Calls in order to be eligible to apply or be awarded funds against this Call:

- Must be a UK operating and registered organisation;
- Consortium bids are eligible; a lead partner must be nominated for payment and agreement purposes and all parties must be UK operating and registered organisations. Details of all consortium members must be provided;
- Funding can only be used to fund new activity for the costs incurred;
- The activity must last the full duration of the Grant Award Term specified;
- There must be a willingness to work with Authority and other organisations and individuals associated with the SPF Programme;
- Specific eligibility criteria relevant to UKRI/EPSRC are described in the working groups call document.

Questions received post the Webinar:

Q: How will people with expertise in the cutting-edge stuff link into the ExCALIBUR calls, for example we couldn't put together a consortium of people developing automated code generation strategies for HPC because that isn't a specific use case?
A: Two routes would be: engage with the UKRI use cases when we know what they are and what their scope is going to be; await the calls that will come out of the cross-cutting themes. There should be opportunities to engage in the appropriate workshops to develop these. The cross-cutting themes will be evolved by the joint working groups for the use cases, which will emerge over the coming year.

Q: Where do new algorithms fit into what was presented at the webinar? Would a general maths/algorithm development use case be well received?

A: The UKRI use cases are for a specific application area (a specific area of scientific simulation). This is what distinguishes them from the cross-cutting themes. It is anticipated that there will be good opportunities for algorithm development within those cross-cutting themes. Those themes will be evolved by the community as a whole, based on common themes that emerge from the totality of the use cases. This process needs to wait for the UKRI use cases to be determined which will happen over the coming year via the process described by the EPSRC call.