

# UK funding initiatives for software engineering

Very short “heads up” report on current UK opportunities to seek RSE staff funding for HEP software R&D

**RSE = Research Software Engineer**

# 1. ExCALIBUR call from UKRI

Reminder: Research is now funded in UK via UKRI (UK Research and Innovation)

UKRI “contains” STFC

UKRI have issued a call:

## *ExCALIBUR High Priority Use Cases: Phase 1 (Design & Development Working Groups)*

*ExCALIBUR (Exascale Computing Algorithms and Infrastructures Benefitting UK Research) is a £45.7m Strategic Priorities Fund (SPF) programme led by the Met Office and UK Research and Innovation to meet this challenge by delivering research and innovative algorithmic development to harness the power of exascale HPC.1*

This is about developing exascale software for the exascale computing era

- A formative project (phase-1) to lead to larger project in future if we are successful
- Scale is small ~£250k £/\$/€ for 15 months
- Simulation is explicitly in-scope
- Exadata management is, we believe, in scope → “**exa-DOMA**”
- Deadline: Jan 22<sup>nd</sup> 2020 → **eye wateringly short**

HEP UK must/will respond to this as LHC and next-gen experiments are evidently exascale

HEP-UK has self organised a consortium across ATLAS/CMS/LHCb/DUNE/GridPP/IRIS(UK)

# 1. ExCALIBUR call from UKRI

We will submit a pan-experiment proposal

- PI: Davide Costanzo
- Cols: Signed by many others in UK across all experiments and GridPP

We will ask for effort at 4 UK sites to contribute to global HEP effort on

## 1. Detector simulation algorithms to run on CPU-accelerators (e.g. GPUs)

- We have spoken briefly with Geant4 R&D WG, CERN SFT, FNAL
- Of course all work will fit in with existing work
- Site=Warwick

## 2. Exa-DOMA

- We will try to show this is useful to other communities
- Site=RAL

## 3. Experiment exascale algorithms for trigger

- GPU and FPGA work in trigger - use CMS as example
- Site=Imperial

## 4. Use of APIs to interface to CPU-accelerators for ATLAS

- Site=Sheffield

We should know by Q2 2020. If successful then

- Small funds in first 15 months
- (Possibly) larger project to follow
- HEP-UK will be on the UKRI exascale radar

## 2. STFC HEP software projects

### 2.1 A small project was recently funded by STFC “Efficient computing for HEP” @ £50k

- PI: Sinead Farrington, Dave Newbold, Conor Fitzpatrick
- To nucleate coherent HEP software community in UK - to join global activities
- Define challenges
- Consolidate work going on in UK
- Proofs of principle
- Community workshops

### 2.2 We are now discussing with STFC itself about submitting an outline proposal for major UK HEP RSE funding project in its own right

- This could be significantly larger funding
- Phase 1
- Phase 2
- This is a “big deal” in UK process terms (in STFC terms it starts with a *Statement-of-Intent* in March 2020)
- **Watch this space - we will be in contact**

# Summary

UK finally has some opportunity to obtain RSE effort funding

UK HEP has formed a consortium to address these opportunities

Two distinct routes

UKRI

STFC

Each is "small start" with possibility of larger project

The importance of this is twofold

1. HEP must be present in this UK wide exascale agenda
2. Both may lead to a larger projects - perhaps the UK version of IRIS-HEP-USA

It is essential that we respond aggressively to these opportunities

We will keep the community informed as/if we obtain funds

We will of course work in unison with global consortia/interests/collaboration at the appropriate time.

Forget silicon: this is we should be building for HL-LHC

