HSF Feedback for IRIS-HEP

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IRIS-HEP Steering Board Meeting
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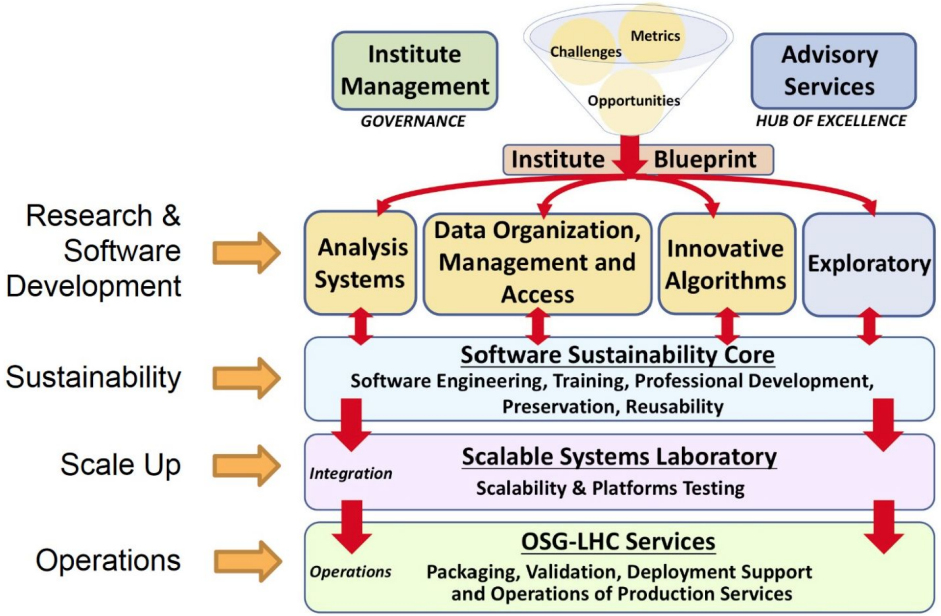
Feedback on the usual areas

- Concentrating on the main areas where the HSF and IRIS-HEP overlap
  - Analysis Systems
  - Innovative Algorithms
  - Training
- Blueprint Meetings
- Grand Challenges



Training - HSF and IRIS-HEP Joint Activity

- Training found a basic rhythm again in 2021
  - Three Software Carpentry events held, all in virtual format
    - Very good to see The Carpentries re-engaged with us, alongside HEP specific training
  - Moving such events back to a hybrid mode will help us to really get to know the new students
  - Want to progress people from students to mentors (a la StarterKit)
- Sudhir and Killian play a key role in activating training within the HSF
- New training material for Matplotlib tapped into an enthusiasm that the trainers had
- Development of new material is important
  - Generally, incentivising training remains troublesome, especially for development of material
    - Did we progress on ‘pay to teach’?
- Key areas to continue to work in
  - C++ course (has also progressed a lot in the last year)
    - Even if this is this moving to a higher level of the pyramid, it remains critical
  - Advanced HEP Python packages
- Links to HSF Software Tools and Packaging could be strengthened

Analysis Systems

- Continuing support for the evolving Pythonic parts of the ecosystem is extremely important
  - Impressive list of projects!
    - Allows the community to link to and explore new tooling options
  - HL-LHC Review input contribution to the data science area was important
- Common work with HSF Data Analysis working group
  - Analysis benchmarks
  - Declarative analysis languages
  - Metadata/systematics for analysis capture and reuse
- Links to PyHEP are now extremely strong, with two conveners supported by IRIS-HEP
  - Possibility of joint meetings should be explored
    - Fosters community development and reduces the overall meeting burden
  - Support for the PyHEP workshops is part of this - thank you!
- Sustainability is something to consider
  - Projects are well beyond R&D
  - People are the real treasure!

Analysis Ecosystem Workshop II

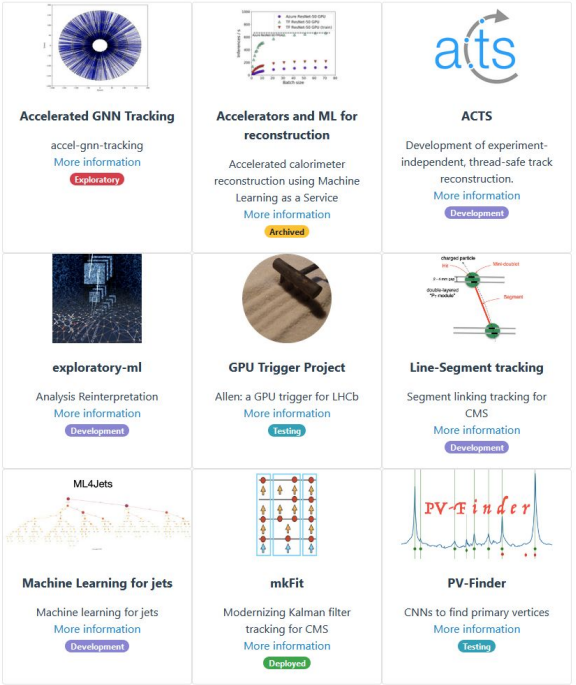
- After the lull of 2021 (Zoom fatigue!) important to get back to workshops
- IRIS-HEP - HSF co-organisation was extremely useful
  - Event would not have happened in the same way without this
- Hope the that conclusions from this workshop are as prescient as in AE1
  - Should guide the community in developments for the next 5 years
- Workshop stressed the need for cooperation between Data Science and ROOT components
  - Also an LHCC outcome

Analysis Facilities Forum and Analysis Grand Challenge

- Analysis Facilities became a hot topic in the last few years
  - Motivated by the challenges of HL-LHC
  - Helped a lot by the developments promoted by IRIS-HEP
- Initiative to broaden this to an HSF Analysis Facilities Forum was broadly welcomed
  - Provides a meeting point for all those involved and interested in providing the facilities and in using them
  - Significant potential, but relationship to other parts of WLCG not yet clear
- Grand Challenge will be a key part of proving they justify the effort to establish them
  - Would be keen to see others involved (e.g. SWAN at CERN; SWIFT-HEP) - broaden the base of the tests
  - Drive by concrete metrics - a key ones are scaling out the number of concurrent users and the breadth of workflows

Innovative Algorithms

- Impressive list of projects that have support from IRIS-HEP
  - Many key pieces of software for HL-LHC and other upgrades
- Focusing on use of Machine Learning and Accelerators
  - ACTS on GPUs very notable contribution
  - Allen and mkFit address immediate Run-3 needs
  - Strong ML themes match needs and opportunities
- David Lange did a great job for many years in this area (HSF Coordinator) - thank you!
  - Ensure that the links to the new coordinators are kept up (Andi, Dorothea, Jin)
- One area to explore is cross-experiment possibilities
  - By design in ACTS
  - Are there opportunities in other projects?



Other Areas

- Sustainable Software
  - Have the outcomes of the blueprint meeting made into best practice?
  - Could be a topic to link to HSF Tools group
- Blueprint Meetings
  - Not so many in the last 12 months
  - This is probably fine, given the stage that IRIS-HEP is at in its funding cycle
- EP R&D Project
  - Should still follow-up on topics of mutual interest (as much our fault as anyone else's)
    - PODIO for self-describing data models with backend code generation
    - CLUE as a novel algorithm for high granularity calorimeter reconstruction at high pile-up

Final General Remarks

- Generally we think IRIS-HEP is making a very positive contribution
  - And this is helping attract further support to the field
  - Working as a partner in projects is a good strategy - don't (and shouldn't!) own everything
- HSF and IRIS-HEP communities have a significant overlap
  - This is natural and a good thing, we both benefit
  - Two-way street, so of course we also welcome your feedback and input (HSF Planning)
- Acknowledgement for individuals' areas of cooperation will help projects and people's career development
  - People are one area we need to sustain, as well as software products
- Actively explore additional opportunities to widen discussion and involvement
  - HSF Working Group Meetings and mini-workshops
    - PyHEP, Data Analysis, Reconstruction in particular
  - Compute Accelerator Forum series and Software and Computing Roundtable
  - *Sharing meeting slots also helps overcome meeting overload and Zoom-fatigue*