Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP) Retreat Introduction and Goals

Peter Elmer (Princeton)

http://iris-hep.org

Practical Information for the Workshop

Local/in-person participants: I hope everyone's travel went fine and the hotel accommodations are serving your needs.

Zoom participants: we want you to be able to participate here, please let us know if you cannot hear and do not hesitate to jump in to ask questions

Breakfast, Power, Network, Breaks, Lunches, Reception, Dinner, Local Facilities

Breakout rooms for Thursday (202, 401 Jadwin Hall) - Jabra speakers available

Group photo Thursday/tomorrow at 10:30 EDT - both an in-person photo and a zoom photo

IRIS-HEP Timeline

May 2015 - DIANA/HEP project funded

Aug 2015 - S2I2-HEP Institute Conceptualization proposal submitted

Aug 2016 - S2I2-HEP Institute Conceptualization funded

Dec 2017 - [Community White Paper (CWP)](#) and Strategic Plan published in arXiv

Apr 2017 - Go-ahead for submitting institute proposal (unsolicited)

May 2018 - IRIS-HEP proposal submitted

Jun 2018 - Proposal Review at NSF

Sep 2018 - IRIS-HEP is funded (OAC-1836650) - 5 year project, $25M

Feb 2020 - 18 month review (Princeton)

 COVID - but we got through this!

May 2021 - "30 month" NSF review (Virtual)

May 2022 - "42 month" NSF review (Virtual)

Oct 2022 - This full team team retreat

We have delivered what we promised!

All areas of the institute have delivered: to end users for analysis, to the experiment software stacks for Run 3 and to the distributed computing system.

As an "Intellectual Hub" we have built a great community and are often seen as leaders in bringing that community together to make things happen

Most of these things would not have happened, or would have been much less impactful, without IRIS-HEP.

And we are not done. Our primary science driver is still the HL-LHC, which still needs significant preparation to be successful.

IRIS-HEP Slack Community

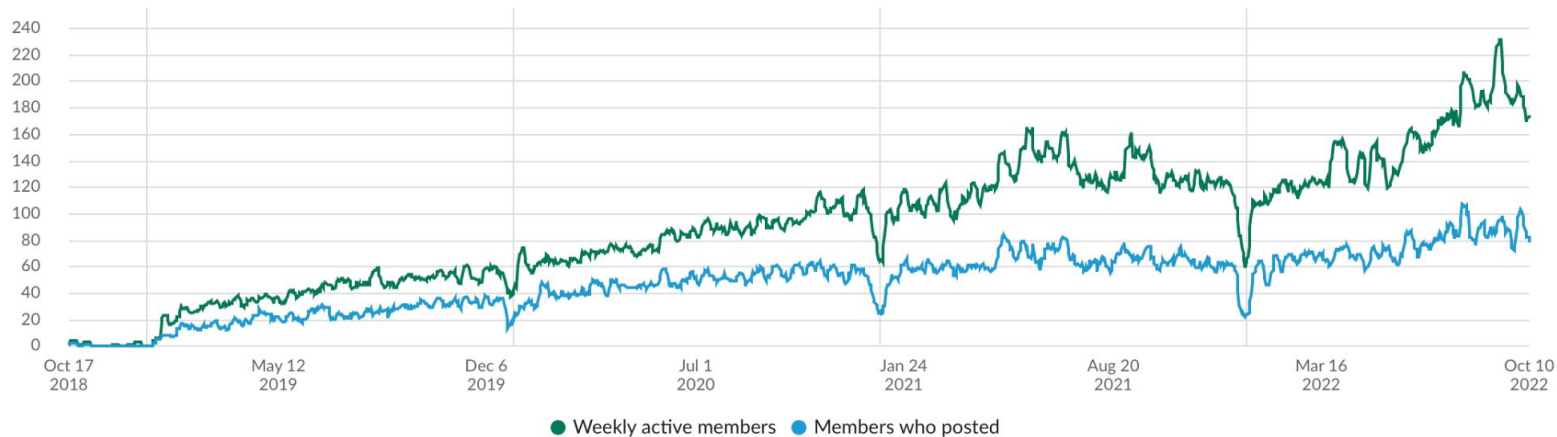| **475**		**448**		**174**	
Total	?	Claimed	?	Weekly active	?

Active members in your organization

See how many people are active — meaning they posted a message or read at least one channel or direct message.

Weekly   Daily

● Weekly active members ● Members who posted

Many related and spin-off projects are also hosted in our Slack

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Aug 2023 - End of the current IRIS-HEP project (ignoring any NCE)

From IRIS-HEP "Programmatic Terms and Conditions"

"The Software Institute will operate in 2 phases – the Design phase and the Execution phase. The goal of the Design phase is to support required Institute design and ramp-up activities and to demonstrate readiness for the execution phase. The Design phase is expected to last up to 2 years. In the Execution phase, the Institute is expected to be completely staffed and operational, and fulfilling the proposed mission."

"The Software Institute may be renewed only once. If the Institute is renewed, a review 18 months prior to the end of this renewed award will lead to a final phase-down. The Institute may also be provided an opportunity to submit a new implementation proposal."

Renewed → we are allowed to submit a renewal proposal, that proposal reviews well and we get funded again

Not guaranteed, but this workshop and other activities this fall are intended to lay the groundwork for a successful renewal proposal

42-month review panel report

"Refocus on science-defined performance targets, priorities, and timelines for the software activities and how these will enable new discoveries with the evolving HL-LHC capabilities and cadence."

"Prioritize those software projects which are critical to the HL-LHC science needs and can be delivered in the 1.5 years remaining. Create a roadmap on how software activities will lead to meeting the science targets and timelines."

This panel was reviewing the current project, but these are clear indications as to what we should to do to prepare for a renewal proposal. We need to step back and think not only about the immediate next steps in front of us, but also work backwards again from what is needed to deliver science at the HL-LHC: what are the remaining software-related gaps to make that happen?

Possible timeline based on past experience

Fall 2022 - multiple workshops to prepare vision for what IRIS-HEP would accomplish for HL-LHC with another 5 year mandate

Mid-December 2022 - publish an updated version of the Strategic Plan and submit to NSF

What happens then depends on NSF, but one model would be:

Early next year (?) - go-ahead from NSF to prepare a renewal proposal along with funding guidance

February or March (?) - submit the renewal proposal

Late spring - proposal review (reverse site visit?)

Aug or Sep 2023 - if successful, a new award (i.e. in FY 2023)

Goals for this Retreat

1. Checkpoint the status of the IRIS-HEP efforts to date and specific plans and achievable goals for the next year (Year 5 of the project)
2. Clarify the gaps between where we are now and what will be needed for the HL-LHC startup
3. Elaborate a vision for what IRIS-HEP could do with an additional 5 year program of work

A Coordinated Ecosystem for HL-LHC Computing R&D

Nov 7 – 9, 2022
US/Eastern timezone

The primary theme of this workshop is to explore and establish coherence and alignment within this broad program. This workshop will bring together representatives from the IRIS-HEP team, representatives from other large R&D efforts, US funding agencies, software and computing management in the stakeholder experiments, national & international laboratories, leadership-class facilities (LCFs) & Centers and partner projects to make progress toward this goal. Specific questions which the workshop will address include:

1. How does the ensemble of US Software R&D efforts fit together to implement the HL-LHC Software/Computing roadmap and meet the challenges of the HL-LHC? Which areas are not covered by US R&D efforts and should have international coordination? Which areas present new challenges or new opportunities since the Community White Paper (CWP) process that was executed in 2017?
2. How do the US Software R&D efforts collaborate with each other and with international efforts? How do these efforts align with and leverage national exascale, national NSF OAC priorities and trends in the broader community?
3. How should the US R&D efforts be structured and evolved in the coming years in order to achieve our goals between now and the HL-LHC era?

This workshop builds on the Mini-workshop on HL-LHC Software and Computing R&D held at the Catholic University of America (CUA) in November, 2017, and the Coordinated Ecosystem for HL-LHC Computing R&D workshop, also held at CUA, in October, 2019.

No full CWP this time, but many community inputs exist
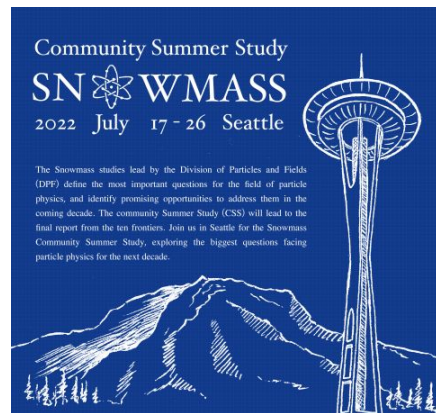
PyHEP
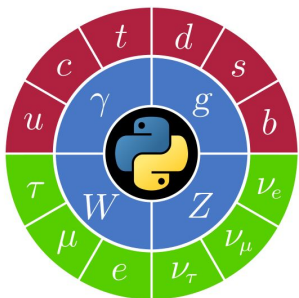
Analysis Ecosystem 2

Connecting the Dots

Diff. Prog. Workshop

Plus many others, not all organized or sponsored by us…

Many sources of input, from those most concretely connected to what has been happening to others more forward looking or even speculative

Strategic Plan Document

Previous (2017) Strategic Plan document structure partially maps to what we need

(See separate draft document)

Specific notes:

- We need to consider multiple paths forward, including "ramp-down" (i.e. project finishes in 2 years), similar funding levels to the current project, "+20%", "-20%", etc. (In constant USD, not forgetting inflation.)
- The scope can evolve: some aspects could be considered completed and others added or evolved.
- Given possible scope evolution, the team for an eventual proposal could also evolve

Deliver the updated Strategic Plan document by mid-December (arXiv, submit to NSF)