



HSF Workshop Outcomes and Actions

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for the HSF Steering Group

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Happy 10th Birthday to the HSF!



- In the established tradition, HSF organized a [workshop colocated with the WLCG workshop](#) at DESY that Ale just discussed
 - Very well organized and enjoyable, thank you David South, Nick Styles & all!
- A particular goal for this workshop at the 10 year mark, in the planning leading up to it and the workshop itself, was to
 - Examine the HSF's organization and activities
 - Optimise and reorganize to best suit the lay of the land today
- Much has changed (generally for the better) in the open software world since then
- Also a rich program of software talks from the community



HEP Software Foundation 2014 to 2024 to the future

- Graeme gave an excellent retrospective on the HSF's first 10 years in his opening talk, recalling its activities and contributions, and looking to the future
- Gathering place for software expertise
 - Community white papers, publications
 - Software body providing input to LHCC, Euro strategy, Snowmass, ...
 - WG-developed recommendations on software licensing (Apache 2), build tools (Spack)
 - Community workshops: [HSF community software](#), [analysis ecosystem](#)
 - Reviews/studies: GeantV, DUNE framework requirements, Geant4 on GPU projects
- Training and career development
 - Training WG with [extensive widely used tutorials](#) - particular thanks to IRIS-HEP
 - A very active Google Summer of Code program, hundreds of participants over the years
- Catalyzing and supporting (in non \$ ways) common software initiatives
 - Impactful role in helping funded projects get established, e.g. IRIS-HEP, SWIFT-HEP
 - Catalyzing new activities: PyHEP, JuliaHEP
 - GitHub home to common software projects
- Growing the common software community
 - Nuclear Physics participating, well represented e.g. among conveners

HEP Software Foundation 2014 to **2024 to the future**

- The bottom-up, community built do-ocracy of the HSF has worked, thanks to the effort of many and the intensive effort of some!
- It's fair to particularly thank CERN and EP-SFT for supporting contributions that have been essential to the HSF's success
- How to sustain, grow, prioritize for the future?
- Ensure a representative, agile organizational structure is one prerequisite
- What's missing from the slate of activities? What should we be doing and aren't?
 - 'HSF projects' was an early notion that didn't really secure a role as the GitHub ecosystem matured
 - HSF does provide a GitHub home to some common projects, e.g. Phoenix event display, prmon
 - Recently, the 'HSF reference implementation' notion emerged, has worked well in one case (conditions database)
 - Should we support and recognize projects by calling them out with GitHub badges? awards? Under discussion

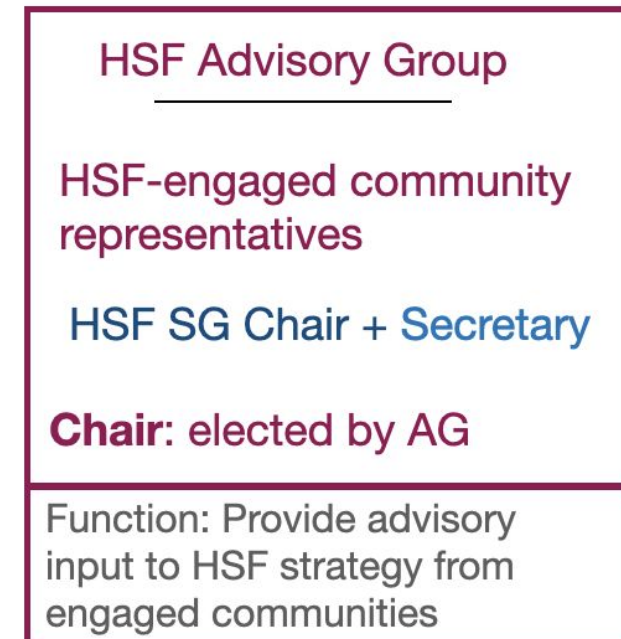
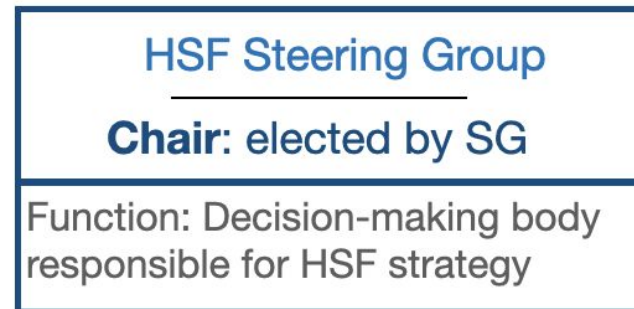
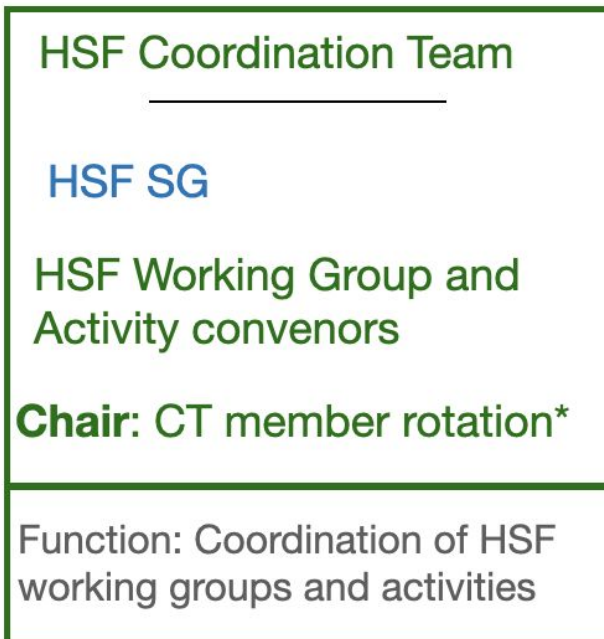
Planning and organizing for the future

- A couple months of brainstorming prior to the workshop led to proposals brought to the meeting, and refined based on input there in active discussions
 - A *core coordination team* with a strategic planning role distinct from the week by week organizing function performed well by the existing **Coordination Team**
 - A better name emerged at the workshop, **Steering Group**
 - Term limits suggested, a good idea, will be taken up
 - Open to suggestions (including self nomination) for SG members, have added one since the workshop
 - An **Advisory Group** of HSF-engaged community representatives to provide input to HSF strategy (LHC, DUNE/neutrino, Belle II, EIC/ePIC, ...)
 - Inspired in part by Rucio's organization
 - Well received at the workshop, so we've started to set this up
 - Is there a role for '**HSF projects**' in some form?
- Good suggestion at the workshop: the **Working Groups** operate more like **seminar series/fora** in many (not all) cases; brand and organize them as such
 - Re-brand groups as 'Activities' or 'Fora' when they operate as communication enablers
 - We've started on this, probably a monthly slot shared with existing series (e.g. Compute & Accelerator Forum)

HSF reorganization proposal, incorporating workshop input

The newly constituted Steering Group (with evolving membership) is proceeding with reorganization on this basis, but still fully open to input

The existing Coordination Team proceeds also with its usual bi-weekly meeting running the HSF, all are welcome, come learn more about the HSF and get involved!



*There is no standing chair for the HSF Coordination Team meetings which are focused on running the day to day work of the HSF

HSF (Affiliated) Software Projects

- [Document](#) prepared prior to the workshop for discussion and input
- Some projects with HSF affiliation manifest through hosting at github.com/HSF
- Other affiliations are looser, projects listed on the HSF site
- Both are an organic aggregation, warrants review and renewal
- What forms can “endorsement” usefully take?
 - Letters of support is one, long time practice at the proposal stage
 - Reward/recognition via badges?
- Offer best-practice guidelines, conduct reviews on request
- And with its first appearance at this workshop, ‘HSF Reference Implementation’
 - When common software meeting a need follows an HSF design & process, recognize it
 - HSF community white paper on conditions DB (its roots coinciding with early CREST planning) seeded a requirements document for an experiment agnostic conditions DB
 - Implemented as an adjunct to BNL work on the Belle II conditions database, thank you Belle II for the latitude
 - sPHENIX is the first adopter, being evaluated (reportedly favorably) by Belle II, also ePIC

And it was mostly a software workshop!



- The core business of the HSF was represented well in software talks
- With a well attended session on software training
- *It's not software but I have to mention Bernd Panzer-Steindel's technology overview, always a highlight*
- A sampling of the ~30 software presentations
 - ROOT status & directions
 - Scikit-HEP overview & future
 - Key4hep common software stack for future experiments
 - HSF-India research software collaboration
 - Pythia8 status and future
 - Phoenix event display
 - HepMC developments
 - HSF 'reference implementation' conditions database
 - Gaussino experiment-independent core simulation software
 - RNTuple development status
 - Fitting and reinterpretation - 4 interesting talks
 - Talks on accelerator use in evgen, first level trigger, tracking (ACTS)

HSF Training Center
Training and educational material for the High Energy Physics community.

Curriculum All Tutorials

Basic
Basic skills for HEP software development.

- The UNIX Shell** GitHub
A guide through the basics of the file systems and the shell.
- Version controlling with git** GitHub
Track code changes, undo mistakes, collaborate. This module is a must.
- Programming with python** GitHub
Get started with an incredibly popular programming language.

[New HSF Training Centre Page!](#)

Conclusion

- HSF after a successful first 10 years is updating and preparing itself organizationally for the next decade
- A Steering Group providing direction and strategy
 - Currently meeting biweekly during the reorganization, will settle into a slower cadence
 - Representative, renewing, self-organized membership
- An Advisory Group being established for community input on strategy
 - Should be up and running circa early Fall, meet ~2x per year
- Coordination Team continues to run the HSF week by week
- Absorb seminar/forum type WGs into a seminar series, taking this up among conveners and SG
- Creative thinking -- ideas welcome -- towards useful (to the project & community) 'HSF Project' designations
 - New 'HSF Reference Implementation' notion has one successful example in conditions database (with roots, as for so many HSF things, in ATLAS :-)
- Next workshop, less boxology, more software! And we'll see where the (re)organizational initiatives of this workshop stand.
 - But much software in this instance too

Supplementary

Working Groups and Activities - current situation

- Data Analysis
- Detector Simulation
- ~~Frameworks~~
- Physics Generators
- JuliaHEP - Julia in HEP
- PyHEP - Python in HEP
- Reconstruction and Software Triggers
- Software Developer Tools and Packaging
- HSF Training

- Analysis Facilities Forum
- Conditions Databases
- Differentiable Computing
- Season of Docs
- Google Summer of Code
- intelligent Data Delivery Service
- Licensing
- Reviews
- Visualisation