

HEP Software Foundation (HSF) Introduction

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for the HSF Startup Team

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HSF with the MC Generators Community

The HEP Software Foundation

GOAL: facilitate coordination and common efforts in HEP software and computing

Why now? Because resources are shrinking at the same time that HEP S&C is becoming more challenging

- HEP software must evolve to meet the challenges posed by new experiments
- The computing landscape is evolving rapidly; we need to exploit all the expertise available in our community, and outside it, to meet the challenges
- The free-lunch form of Moore's Law has shrivelled, and we can't buy our way out of the problem with hardware
- We have to code our way out, and the affordable way to do that is to do it collaboratively

Objectives of the HSF

- Share expertise
- Raise awareness of existing software and solutions
- Catalyze new common projects
- Promote commonality and collaboration in new developments to make the most of limited resources
- Aid developers and users in creating, discovering, using and sustaining common software
- Support training career development for software and computing specialists
- Provide a framework for attracting effort and support to S&C common projects
- Provide a structure for the community to set priorities and goals for the work
- Facilitate wider connections; while the HSF is a HEP community effort, it should be open enough to form the basis for collaboration with other sciences

HSF Origins

- An April 2014 workshop at CERN discussed the need for such an organization and charged the community to submit **white papers expressing views and ideas**
- There was much commonality, and of course differences, in the 10 white papers that came back
- In fall 2014 it was decided to assemble a startup team -- volunteers with a proactive interest in getting the HSF started -- to assimilate the inputs and get something going

Starting up the HSF

- Starting up the HSF followed a plan presented and agreed by the Interim Foundation Board -- the self-defined body of those interested to participate in and help guide the HSF -- on Oct 1
 - First was to **assemble a volunteer startup team** with broad representation and expertise
 - Should have a flexible, evolving membership: and indeed we have steadily added members
 - Should work well as a group: and we've had good agreement, participation, progress
- Startup team works in an open way with a weekly meeting and with minutes promptly made public
 - Eleven meetings thus far, all publically minuted
- Once a month an open meeting is held (IFB meetings)
 - Four meetings since October
- Meeting notes for all are on the HSF [website](#)

Startup Team Membership Today

Amber Boehnlein (SLAC)

Peter Elmer (Princeton)

Daniel Elvira (FNAL)

Frank Gaede (DESY)

Michel Jouvin (LAL, IN2P3)

Pere Mato (CERN)

Dario Menasce (INFN)

Elizabeth Sexton-Kennedy (FNAL)

Graeme Stewart (Glasgow)

Craig Tull (LBNL)

Andrea Valassi (CERN)

Brett Viren (BNL)

Torre Wenaus (BNL)

Principal activities of the startup team thus far

- **Synthesizing the white papers**, other inputs, startup team views into a summary analysis and proposed initial plan
 - Released in Nov, just updated
- Establishing **basic infrastructure and tools**
 - Website hepsoftwarefoundation.org
 - Mailing lists (including a HEP-wide community mailing list for broad announcements -- please sign up to at least this!)
 - Prototypes for a software knowledge base and information exchange
- **Discussing with people across the community** how the HSF could help them, what they can bring to it
- **Planning a workshop at SLAC** Jan 20-21 to gather input to guide the HSF in its next steps
 - And a next face to face meeting at CHEP 2015 in April
- **Preparing materials to guide the input and the discussion:** prospective services, possible focus areas, questionnaire on how the HSF could be useful...

Draft White Paper Analysis and Proposed Startup Plan

<http://hepsoftwarefoundation.org/sites/default/files/HSFwhitepaperanalysisandstartupplanV1.1.pdf>

- Draft document released Nov 11
- V1.1 (minor revision) released Jan 7
- Lays out initial ideas, proposals for building the HSF
 - The HSF will be what people bring to it; all encouraged to get involved
 - The HSF aims to marshal existing resources so they are used more effectively
- Document has twofold purpose:
 - Analyse and summarise the many proposals and ideas expressed in the White Papers
 - Take the next step beyond a bare summary: synthesise, together with other inputs, into a proposal as to how to proceed
 - Sections include, as well as a factual summary, the startup team's assessment of how the HSF should approach the area
 - Document concludes with a summary of the startup team's recommended (and partially underway) course of action
 - The plan will evolve as practical experience is gained and as a result of further discussions, in particular those at the upcoming SLAC workshop

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The website: hepsoftwarefoundation.org

- An early objective for the HSF was to *animate discussions between all stakeholders, including users, and provide a system for facilitating information exchange*
- hepsoftwarefoundation.org was established as one basis for this
- A nexus for HSF activities
- And also a prototype knowledge base and information exchange
- Objectives:
 - A communication and info exchange tool with contributions from all
 - Facilitate collaboration and common efforts, and avoid redundant efforts, by increasing awareness of the activities and resources within our field
 - Promote awareness of useful software and tools from outside our community, e.g. open source
 - Define, describe, encourage “membership in the HSF” on the part of projects
- Anyone can request an account -- you'll be given an editor role and can add and modify content (yours and others; all changes versioned and revertible in a wiki-like way). Add your favorite software and experiment, describe the software your experiment uses

Mailing lists

- HSF Forum (the open list, self-defined 'IFB')
 - <http://groups.google.com/d/forum/hep-sf-forum>
 - 61 people (still incomplete relative to a precursor list)
 - Feel free to sign up
- HEP S&C community website
 - <http://groups.google.com/d/forum/hep-sw-comp>
 - ~170 people have signed up, ie a long way to go to be a true community list: please help propagate the word
 - And please sign up yourself!
- It is easy to sign up to the lists, no need for Google account or email address
 - Simply send mail with 'subscribe' as the *subject* (not content) to <listname>+subscribe@googlegroups.com, e. g. for the list above, hep-sw-comp+subscribe@googlegroups.com

Contacts

- One on one contacts, small discussions, presentations (like this one) have been a principal activity
- These discussions often involve correcting mistaken impressions!
- Some common examples:
 - HSF is concerned only with big players (no!)
 - High barrier to entry, like requirements on packaging, software process (no!)

Contacts thus far -- our working summary

- Generators/theory: Pere
 - scheduled for January 13th
- ATLAS: Torre
 - management discussions on HSF input underway
- CMS: Daniel, Pete
 - completed
- Linear collider: Frank
 - talk scheduled at workshop
- LHCb: Pere
 - completed
- ALICE: Pere
 - scheduled for January 12th
- Intensity frontier: Daniel, Brett
 - scheduled for January 8th
- Fermilab experts
 - scheduled for January 9th
- Astro: Torre, Dario
 - Pre-workshop discussion and possible post-workshop (Thu 22nd) face-to-face with SLAC LSST people (at least)
- Belle II: Pere, Torre
 - Invited to and participating in workshop
- Photon science: Torre
 - Talk at workshop, possible face to face post-workshop (Thu 22nd)
- Nuclear (beyond ALICE): Michel, Torre
 - perhaps later, not in first round
- Geant4: face to face on Thu 22nd (and a workshop talk)

SLAC HSF Workshop Jan 20-21

Main workshop goal: Refine next steps for building HSF

- Status of the startup, white paper synthesis: where we're at now
- Hear from a range of large and small projects expressing their views on how the HSF could be useful to them, and what they can bring to it
- Hear also from experiments, science communities, individual users
- Discuss new project initiatives which might be launched under the Foundation umbrella
- Hear the views of institutions and funding agencies
- Come to consensus and conclusions on the next steps in starting up the HSF

SLAC Workshop Planning

- Main workshop page
 - <http://hepsoftwarefoundation.org/workshop-slac-jan-2015>
- About 65 registered attendees
- A doodle poll to keep track of remote participants
 - <http://doodle.com/xhqpfykhgynkrp8b>
- Agenda
 - <http://indico.cern.ch/event/357737>
- We're currently filling in the agenda details
 - Call for volunteer abstracts is open: see the indico page
 - Also sending invitations
 - Fully detailed (and tight) draft agenda being iterated in startup team

Our next face to face: at CHEP 2015, Okinawa, April

<http://hepsoftwarefoundation.org/content/hsf-meeting-chep-2015-fri-apr-17-2014>

Material to provide background and frame the discussion for meetings such as this

A new document providing background information, guidelines and a questionnaire for contributors and participants at the workshop and as background to discussions with the HSF:

<http://hepsoftwarefoundation.org/content/guidelines-and-questionnaire-hsf-workshop-and-discussion-contributors>

- Background on white papers, report, startup plan
- Possible activities and services (next slides)
- Questionnaire, possible focus areas (next slides)

Guide to discussion/input: Focus areas

What do you think should be the main areas of focus?

- Evolving software to optimize performance
- Promoting compatibility, interoperability and integration testing
- Promoting common software developments
 - A place where people can bring their ideas and projects and turn them into common efforts
- Improving communication and expertise sharing within HEP and with non HEP partners
- Support for software careers and on training
- Incubating and promoting innovation
- Others?

Guide to discussion/input:

Potential activities/services the HSF could offer

Which of these could be useful to you as HSF activities/services? Have we missed others?

- Project hosting infrastructure
- Building and testing infrastructure
- Teams for certification and integration
- Software repositories and package managers
- Access to computing resources on many platforms and architectures
- Access to software development tools
- Training in software technologies and tools
- Support for IP and licensing issues
- Peer reviews
- Access to scientific software journals
- Task forces or “SWAT” teams to solve specific issues
- Consultancy for new experiments or projects

Guide to discussion/input: Questionnaire

- In general terms, what should the HSF be and do, and what should it not be and do? What should its main areas of focus be?
- Any feedback related to the work performed so far by the startup team?
- Could you comment on the white papers summary document?
- How could the HSF be helpful (not helpful) to your project? Which of the proposed activities/services could be helpful, and are we overlooking others?
- What can you and/or your project bring to the HSF? Do you see potential to form new collaborations via the HSF, e.g. through parts of your projects becoming common software efforts?
- What should the next steps for the HSF be after the SLAC workshop?