HEP Software Foundation (HSF) Introduction

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for the HSF Startup Team

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HSF Startup Team meeting with the IF Community

https://indico.fnal.gov/conferenceDisplay.py?confId=9233
http://hepsoftwarefoundation.org
The HEP Software Foundation

HSF’s 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 order of business 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 that we know we need
  - 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

- 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

Table of Contents

- Executive Summary
- The White Papers
- General motivations, goals and scope
- Software focus areas
- Technology challenges
- Software process – Policies, guidelines
- Software process - Common infrastructure and support teams
- High-level coordination and support tasks
- Communication and visibility within and outside HEP
- Software developer skills and careers
- Stakeholders and membership
- Governance
- Potential activities and deliverables
- Proposed startup plan
- References
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](http://groups.google.com/d/forum/hep-sf-forum)
  - 59 people (still incomplete relative to a precursor list)
  - Feel free to sign up

- HEP S&C community website
  - ~163 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
  - doodle being filled (expected meeting next week)
- 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)
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

● 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?