Hep Software Foundation and Community White Paper

F.Gaede, DESY

Terascale Annual Meeting, 22.11.16

Outline

- Motivation
- HSF Overview
- HSF Activities
- Participating in HSF
- Community White Paper (CWP)
- Summary and Outlook

Motivation

- much of the HEP software is more than 20 years old and needs to be adapted to
  - more modern software standards (c++11/c++14)
  - parallel and heterogeneous hardware architectures
  - be more efficient for coping with experiments' needs
  - need to be able to use of all resources available to our community such as HPC, commercial clouds, volunteer resources
- must attract people with the required advanced skills and experience
- opportunity for sharing software between different experimental programs
  - do not re-invent the wheel all the time

Hep Software Foundation (HSF) has been created to address these issues

Objectives and Activities of HSF

Objectives

- catalyze new **common projects** and promote collaboration (*limited resources*)
- provide a framework for attracting effort and support to common S&C projects (*new resources*)
- provide a structure to **set priorities and goals** for the work
- support the **career development** for software and computing specialists

selected Activities

- working groups
- discussion fora
- technical notes
- knowledge base (`http://www.hepsoftware.org/`)

Brief history of HSF

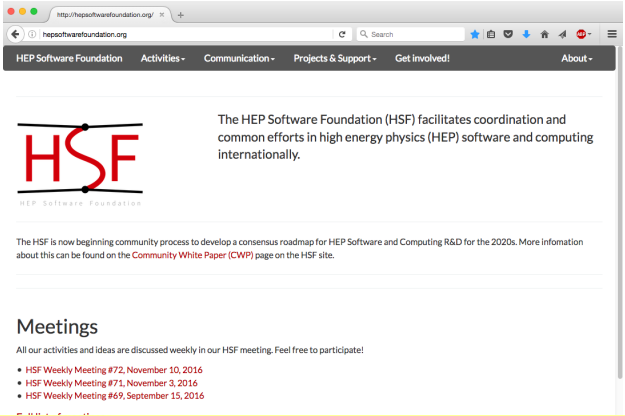
Date	Meeting	Activity
Apr 2014	HEP Software Collaboration Meeting (CERN)	Kick-off meeting. Initiated white paper process.
Jan 2015	HSF Workshop (SLAC)	First formative HSF workshop. Refined the continuous building process of the HSF.
Apr 2015	HSF Meeting at CHEP 2015 (Okinawa)	Presentation of HSF to CHEP audience. Concrete discussions about next steps in work packages.
May 2015	HSF Workshop (LAL, Orsay)	Discussion on progress an further plans. First discussion on **CWP**.
Oct 2016	HSF-CWP Meeting at CHEP (San Francisco)	Dedicated Meeting initiating the **CWP** process.

HSF Startup Team

- Amber Boehnlein - Jefferson Lab
- Peter Elmer - Princeton University
- Daniel Elvira - FNAL
- Frank Gaede - DESY
- Benedikt Hegner - CERN
- Michel Jouvin - LAL,IN2P3
- Pere Mato - CERN, co-lead
- Andrew McNab - Manchester
- Dario Menasce - INFN
- Elizabeth Sexton-Kennedy - FNAL
- Graeme Stewart - Glasgow
- Craig Tull - LBNL
- Andrea Valassi - CERN
- Brett Viren - BNL
- Torre Wenaus - BNL, co-lead

- **Open to everybody**
- **Anyone willing to participate and contribute is most welcome**
- startup team holds **open** weekly meetings
- announced in *hep-sf-forum*
- to subscribe send mail to:
- *hep-sf-forum+subscribe@googlegroups.com*
- **so far little contribution from German community !**

HSF Web site



`http://hepsoftwarefoundation.org/`

your entry point to all HSF activities

HSF Activities Working Groups

Working Group	Objectives	Goggle forum:
Communication and Information Exchange	Address communication issues and building the knowledge base. Technical notes.	*hep-sf-tech-forum*
Training	Organization of training and education, learning from similar initiatives.	*hep-sf-training-wg*
Software Packaging	Package building and deployment, runtime and virtual environments.	*hep-sf-packaging-wg*
Software Licensing	Recommendation for HSF licence(s).	*hep-sf-tech-forum*
Software Projects	Define incubator and other project membership or association levels. Easy-start project templates.	*hep-sf-tech-forum*
Development tools and services	Access to build, test, integration services and development tools.	*hep-sf-tech-forum*

HSF Topical Fora

- Software Technology Forum
  - replaced *Concurrency Forum*
  - discuss all sorts of technical issues including concurrency in our software
- Reconstruction Algorithm Forum / Common Tracking Software Forum
  - all matters of (track) reconstruction and pattern recognition software
  - 3 meetings so far (one at “Connecting the Dots” workshop)
- Machine Learning Forum
  - ML discussions and code development in the context of HEP
  - development of relevant tools, methodology and applications

HSF Technical Notes

- HSF Technical Notes can be proposals, ideas, whatever people want to publish and share
- existing TNs (more to come) :

TN Number	Title	Authors
HSF-TN-2016-04	Vacuum Platform	A. McNab
HSF-TN-2016-03	HSF Packaging Working Group Report	B. Hegner, L. Sexton-Kennedy
HSF-TN-2016-02	Machine/Job Features	M. Alef et al.
HSF-TN-2016-01	Software License Agreements HSF Policy Guidelines	J. Harvey et al.
HSF-TN-2015-01	HSF Technical Notes policy	A. McNab

The Commnunity White paper (CWP)

- first discussions on CWP process started at HSF Workshop 2015 and continued at WLCG meeting at CHEP 2015
- the planned outcome is to create:

A Roadmap for HEP Software and Computing R&D for the 2020s

- address the challenges in software and computing for the next 10 years
- LHC (HEP) computing models will have to change
- need a white **community white paper** describing the strategy and Roadmap
- LHC experiments have been officially charged by WLCG
- other HEP experiments are invited to participate
- timeline: have consensus document by **summer 2017 (!)**

CWP Working Groups

- active groups:
  - Computing Models, Facilities, and Distributed Computing
  - Detector Simulation
  - Event Reconstruction
  - Visualization
  - Data Access and Management
  - Security and Access Control
  - Machine Learning
  - Conditions Database
  - Event Processing Frameworks
  - Monitoring
- planned groups:
  - Triggering
  - Workflow and Resource Management
  - Physics Generators
  - Data Analysis and Interpretation
  - Data and Software Preservation
  - Software Development, Deployment and Validation/Verification
  - Careers, Staffing and Training
  - Math Libraries
  - Various Aspects of Technical Evolution

Getting involved in CWP

- details at `http://hepsoftwarefoundation.org/cwp.html`
- documents have been setup in Google docs for all CWP working groups
- everyone can contribute by editing these documents
- need to register (with google account):
  - mailto: hsf-community-white-paper+subscribe@googlegroups.com
- you can also start new working groups if needed
- participate in next HSF workshop (next slide)

HSF Workshop 2017 - San Diego

- San Diego Supercomputing Center (SDSC), Jan 23-26, 2017
- main focus of workshop on **CWP**
- plenary sessions on CWP
- topical parallel working groups
- **your chance to get involved**
  - `http://indico.cern.ch/event/570249/overview`

Summary and Outlook

HSF

- promote common SW&C projects
- foster cross experiment collaboration
- provide a structure to set priorities and goals

CWP

- define roadmap for HEP Software and Computing R&D for the 2020s
- open process with many working groups
- goal to have consensus document in summer 2017

Get Involved

- sign up for HSF and CWP mailing lists
- attend HSF meetings and workshops