

# **HEP Software Foundation (HSF) Initiatives**

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for the HSF Startup Team

CMS Fall O+C Week, CERN, October 15 2015

# Motivations

- Much of our HEP software is now old ( > 20 years) and needs to be adapted to more modern standards
- Paradigm-shift resulting from the evolution of CPUs
- 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
- Ensure interoperability with software developed by other scientific communities
- Opportunity for sharing software between different experimental programs

# Objectives

- 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 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 Timeline

- Jan 2014: [HEP software collaboration proposed](#)
- Apr 2014: [HEP software collaboration meeting](#)
- Spring/Summer 2014: gathering White Papers from the community.
- Oct 1 2014: [Startup plan approved and startup team established](#). Agreement communities and software domains to focus on initially.
- Nov 11 2014: [White Paper Analysis and Proposed Startup Plan](#) released, followed by discussions and contact meetings with many parts of the community prior to the SLAC workshop.
- Jan 20-22 2015: [SLAC HSF workshop](#) established concrete [activities](#) and next steps for the HSF.
- Mar 3 2015: Working groups, services, activities emerging from the workshop established.
- Apr 17, 2015: [HSF meeting at CHEP 2015, Okinawa](#) to present progress, assess opportunities emerging from CHEP, and discuss next steps.

# Startup Team

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

# HSF Working Groups

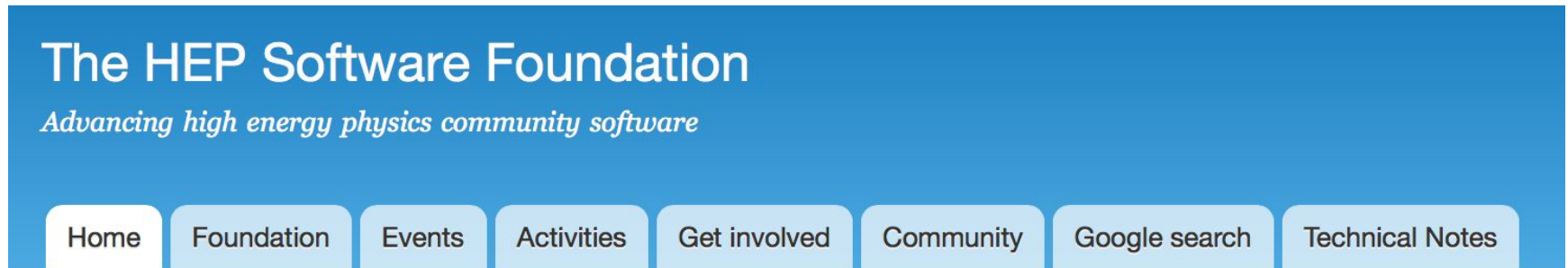
Working Group	Objectives	Forum - Mailing list
<a href="#">Communication and information exchange</a>	Address communication issues and building the knowledge base Technical notes	<a href="#">hep-sf-tech-forum</a>
<a href="#">Training</a>	Organization of training and education, learning from similar initiatives	<a href="#">hep-sf-training-wg</a>
<a href="#">Software Packaging</a>	Package building and deployment, runtime and virtual environments	<a href="#">hep-sf-packaging-wg</a>
<a href="#">Software Licensing</a>	Recommendation for HSF licence(s)	<a href="#">hep-sf-tech-forum</a>
<a href="#">Software Projects</a>	Define incubator and other project membership or association levels. Developing templates	<a href="#">hep-sf-tech-forum</a>
<a href="#">Development tools and services</a>	Access to build, test, integration services and development tools	<a href="#">hep-sf-tech-forum</a>

# Communication and Information Exchange

- HSF Web
- Mailing Lists (Fora)
- Knowledge Base
- Technical Notes
- Newsletter Proposal

# HSF Website

- <http://hepsoftwarefoundation.org>



- New Main pages (tabs)
  - **Community**
    - HEP software and computing job offers
    - Other projects related and/or relevant to the HSF
  - **Technical Notes**
    - Easy access to TNs



# Mailing Lists: Update

- HSF Forum
  - <http://groups.google.com/d/forum/hep-sf-forum>
  - 114 members
- HEP S&C community website
  - <http://groups.google.com/d/forum/hep-sw-comp>
  - 222 people have signed up, a small increase from the 163 pre-workshop
- Other specialized lists
  - Training - [hep-sf-training-wg](#)
  - Packaging - [hep-sf-packaging-wg](#)
  - General HSF technical discussion forum - [hep-sf-tech-forum](#)
- Reminder: Google-free self-signup to lists
  - Simply send a mail (subject and content irrelevant, can be empty) to <listname>+subscribe@googlegroups.com, e.g. for the list above, [hep-sw-comp+subscribe@googlegroups.com](mailto:hep-sw-comp+subscribe@googlegroups.com)
- See the '[Get involved](#)' page on the website for details

# Topical Fora

- **Concurrency Forum**
  - Technical issues to embrace concurrency in our software
  - Ongoing activity
- **Reconstruction Algorithms Forum**
  - All matters of event reconstruction and pattern recognition
  - Not yet really started
- **Machine Learning Forum**
  - ML discussions and code development in the context of HEP
  - Development of relevant tools, methodology and applications

# Knowledge Base

- **Software catalog, software categories, science fields, community, and events**
- Developing new implementation (data migrated from Drupal). Main points:
  - data moved to DKB (data knowledge base prototype initiated in ATLAS) entity-relation schema in mysql
  - implementation is a browser-based app ( javascript client, node.js server, json in between, MySQL)
  - authentication is via github, google, facebook etc.
  - **emphasizes easy adding/editing of content, and extensibility. Adding content should be fun.**
- Preview: <http://hepsoftware.org>
  - Comments/feedback are welcome!

# Technical Notes

- First TN with the TN policy has been published
- Notes can be proposals, ideas, whatever people want to add
- 3 more notes in preparation:
  - Licence Guidelines, Naming conventions, Brett Viren paper
- Repository and version control in GitHub

## Technical Notes

[View](#) [What links here](#)

The Technical Notes policy is set out in the first technical note. Finalised notes and some of the later stages of the acceptance process are stored in the HSF GitHub repository.

TN Number	Title	Authors	Download
HSF-TN-2015-01	HSF Technical Notes policy	A. McNab	<a href="#">GitHub</a>

Drafts in the acceptance process:

Draft TN Reference	Title	Authors	Download
HSF-TN-2015-LIC	(Draft) Software Licence Agreements HSF Policy Guidelines	J. Harvey et al.	<a href="#">GitHub</a>

# HSF Newsletter

- An attempt to improve the communication about what we do
  - probably our [minutes](#) are not read by many...
- Thus the idea of a curated information distributed as a HSF newsletter
- Monthly?
- We probably need to do it once to make an example of what it could be
- We'd really appreciate your comments and suggestions

# Training

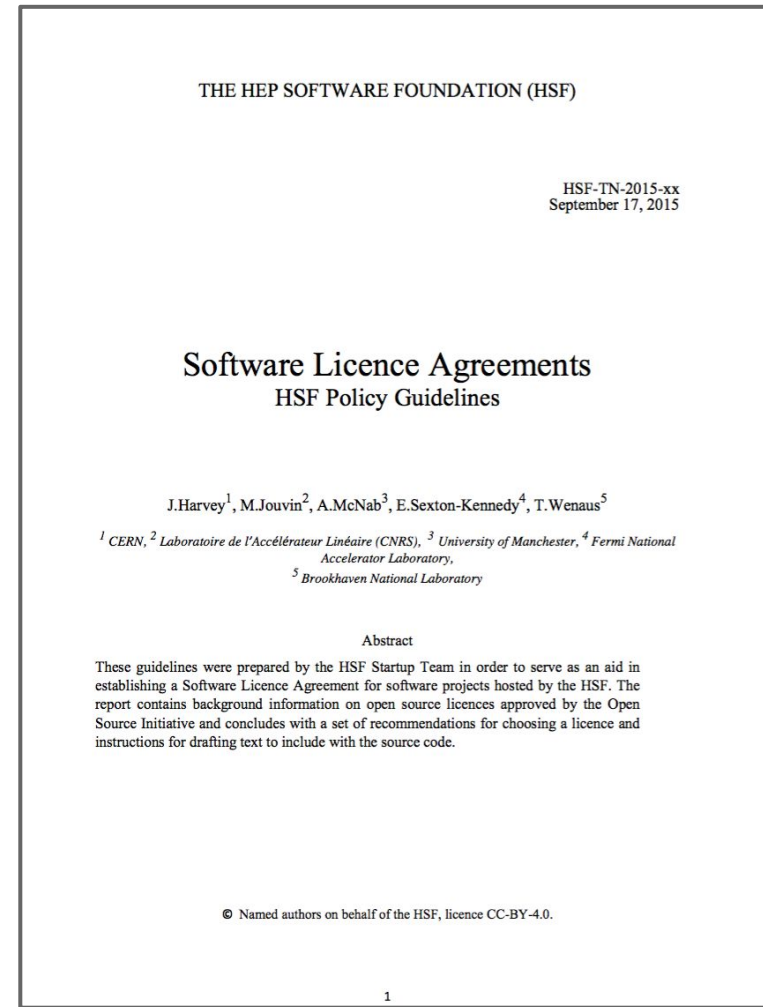
- [Document](#) developing HSF training and education plans
- Developing the training platform:
  - [WikiToLearn](#) site gaining momentum, people are starting to put material in, not all is relevant to HSF but some is
- HSF training and education working group forum
  - An open google group discussion forum, you are welcome to join and participate
  - [hep-sf-training-wg](#)

# Software Packaging

- Topics
  - package building, deployment, runtime environment, new technologies like Dockers
- Organized a series of discussions/presentations on packaging and build tools (5 meetings)
  - Current practices at CERN, FNAL, Experiments, etc.
  - Ongoing discussions in [hep-sf-packaging-wg](#)
  - Document to summarize findings being prepared
- Agreed on the usefulness of common tools, which can be used to assemble individual software stacks
- HSF Organization in GitHub
  - <https://github.com/HEP-SF>

# Software Licensing

- TN draft of the HSF Licensing Guidelines is being discussed in the technical forum
  - Plan to finalize it in 2-3 weeks
- Background information on open source licences approved by the Open Source Initiative
- Set of recommendations for choosing a licence and instructions for drafting text to include with the source code





# Software Projects

- The essence of the Foundation are the **Software Projects** under its umbrella
  - HSF does not enforce any particular software process, project management or methodology, however packages should conform to some standards to facilitate integration
- Defined preliminary [Project Guidelines](#)
  - Project name, public repository, web site, issue tracker, version naming, mandatory documentation, best practices,...

# Software Projects (2)

- The idea is to develop a **project template** implementing these guidelines
  - For example using the PODIO project (Toolkit for Event Data Models) as guinea pig developed under the AIDA 2020
- Prototype template available at <https://github.com/HEP-SF/tools>

# Development Tools and Services

- Not much progress
- Offer from TechLab (Okinawa meeting)
  - Willing to support the goals of the HSF
  - Offer access to its systems
  - Collaborate with other organisations with similar systems
  - Participate in joint initiatives
- Plan to set up services such as Coverity (static code analyser)
  - Provide analysis report for any HEP software project

# Conclusions

- We have made progress in some areas but on a lower pace than anticipated
- Areas for which we would like to have more help are:
  - Engagement of some more software projects and development of a project template
  - Migration of software catalog and knowledge base to a new system ensuring sustainability and completeness
- Please join and contribute to any of the working groups, the startup team, discussion fora
  - subscribe to the fora to follow progress and contribute