Community White Paper (CWP)

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

Realizing the physics programs of the planned and/or upgraded HEP experiments over the next 10 years will require the HEP community to address a number of challenges in the area of software and computing. It is expected that the computing models will need to evolve and a significant "software upgrade" is required to prepare. In order to identify and prioritize the software research and development investments required, we are now beginning a community planning process. The aim is to produce a Community White Paper (CWP) which will describe the community strategy and a roadmap for software and computing R&D in HEP for the 2020s. This activity is organised under the umbrella of the HSF. The LHC experiments and HSF have been specifically charged by the WLCG project (/assets/CWP-Charge-HSF.pdf) and we are reaching out to other HEP experiments around the world to participate.

Timeline

After the preparatory phase during Fall 2016, the CWP process will be launched at an HSF workshop at SDSC/UCSD (http://indico.cern.ch/event/570249/) on January 23-27, 2017. The aim is to produce a consensus document by summer, 2017.

Communication

To join the CWP process and get information about its progress, please join the hsf-community-white-paper (https://groups.google.com/forum/#!forum/hsf-community-white-paper) Google group (no Google account is required, you can register by sending an email to hsf-community-white-paper+subscribe@googlegroups.com (mailto:hsf-community-white-paper+subscribe@googlegroups.com)). Subscribing to this group with a Google account is required if you want to be able to contribute to CWP documents hosted in Google Docs.

Working Groups

During October, 2016, the process of forming CWP working groups has begun. We are letting the working groups self-organize with a bit of help from the HEP experiment software/computing coordinators and the HSF startup team. The first step for each working group is to formulate a charge to describe the challenges in that area and questions which need to be answered to produce a roadmap for the CWP.

The current working groups are:

Working Group	Charge	Notes
Detector Simulation	Google Doc (https://docs.google.com/document/d/1-wr-Og38KJYf-U2DceBbe1OU1h05y8LCrgeH3tR8yRA/edit)	
Triggering	Google Doc (https://docs.google.com/document/d/13b3aK32R7ZfF9_0Q_CgTb_GiMxMAFRk93hASpAjSXRM/edit)	
Event Reconstruction	Google Doc (https://docs.google.com/document/d/1Mm6aqi2SwVyvQFkmEjDEVSALem_8a7gTORldojaYRs4/edit)	
Visualization	Google Doc (https://docs.google.com/document/d/1ZXiMMmmAj1lwQIuvDc2UM4Jx6-hh1iamIw79DXguLIM/edit)	Google Group: hsf-visualization@googlegro (https://groups.google.com/foru cwp-visualization
Data Access and Management	Google Doc (https://docs.google.com/document/d/1wEsX2BegSBEZe3EXwdNR9VWNPrNEOVVTLhu-NtH-77E/edit)	
Workflow and Resource Management	Google Doc (https://docs.google.com/document/d/1GmcErvxdQR6TksmM96zg_yXGXURZ8vNDk_DyX0zucUQ/edit)	
Physics Generators	Google Doc (https://docs.google.com/document/d/1_-YzxFmwehLbjVRFzkKtJ3Nb4T0fN15VKYJIwRpKdVA/edit)	
Data Analysis and Interpretation	Google Doc (https://docs.google.com/document/d/1QaX20F6WQIwQTlx-5bRK0J2tybFqC_NPn6CF7g3yzqk/edit)	
Data and Software Preservation	Google Doc (https://docs.google.com/document/d/15trJhLKqb9OcN55WIPfmdH8vXO4g43hXGRvhDEu33ow/edit)	
Software Development, Deployment and Validation/Verification	Google Doc (https://docs.google.com/document/d/1bfCQP-p55Xu3IafmwbwpsOmorYiuEGCIh3uA0NV-DdM/edit)	
Computing Models, Facilities, Networking, Distributed Computing and Various Aspects of Technical Evolution (Software Tools, Hardware)	Google Doc (https://docs.google.com/document/d/11C9iCn3FPbvKBJpN0Lwv7tpjFELKPj14_dlkwuTGJqg/edit)	
Security and Access Control	Google Doc (https://docs.google.com/document/d/17xVZv8GJIRqCdFQeH2Ec7J8AmC7HokuRbyNR2K3SryY/edit)	
Careers, Staffing and Training	Google Doc (https://docs.google.com/document/d/1oHnZDMNWe_QTy4cQ8kNN_GDIW8wW1hAIKS8z2z05U2w/edit)	
Machine Learning	Google Doc (https://docs.google.com/document/d/1o9S0XE4ly4-LZh9y96DG-U7HH61m2cHboV6xSt1tI0g/edit)	

Working Group	Charge	Notes
Conditions Database	Google Doc (https://docs.google.com/document/d/1qrTqsLwUnK0SidoPpSFolUrgstt-r8Mo5-acaGjfyHg/edit)	
Event Processing Frameworks	Google Doc (https://docs.google.com/document/d/1pMWia3IXX6w5075PGs_IeEPnWZhkwQgoDQnHGqbPG-c/edit)	
Monitoring	Google Doc (https://docs.google.com/document/d/1sgTrDSwiYthpnE2sztaaByMkJyUXzUy28bUbs9VLI1w/edit)	
Math Libraries	Google Doc (https://docs.google.com/document/d/1cYs5f21d1olumsISfjOH0XjYR7aeM6QZMrFVHFHDQEk/edit)	

The working group charges should be world-visible for reading. If you would like to edit them, you will need to join the hsf-community-white-paper (https://groups.google.com/forum/#!forum/hsf-community-white-paper) Google group and login as your google user. If you would like organize an additional working group, please post to the hsf-community-white-paper (https://groups.google.com/forum/#!forum/hsf-community-white-paper) Google group.

CWP Process

Additional information will be coming soon….

Other notes

The timeline for producing a CWP by summer, 2017, corresponds roughly to the plan for CERN openlab (http://openlab.cern/) to produce a similar white paper describing the plans for their next phase beginning in January, 2018. We expect that the CWP process and CERN openlab planning processes will be synergistic.

Related links

- CWP presentation @CHEP2016 (https://indico.cern.ch/event/505613/contributions/2323238/attachments/1352966/2043354/20161011-chep-cwp-plenary.pdf)
- Initial HSF CWP Google Doc (https://docs.google.com/document/d/140HEAxD0u_XAUKYrCR3SahxyHxFfJ_YOFJpsNubMiC8/edit) - this document is now deprecated and we are moving the contents to this HSF webpage
- US NSF S2I2 Conceptualization Project (http://s2i2-hep.org/) and Google Group (https://groups.google.com/forum/#!forum/s2i2-hep)

Thanks to GitHub Pages (https://pages.github.com/), Jekyll (http://jekyllrb.com/) and Bootstrap (http://getbootstrap.com/)