

HSF Training - Next Steps?

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Recent Funding in US for Software & Training Workforce



The NSF recently funded 2 projects (started in Aug./Sept.)

1. *“Institute for Research and Innovation in Software in High Energy Physics (IRIS-HEP)”* - 5 year funding - <http://iris-hep.org>
 - Part of the NSF “Software Infrastructure for Sustained Innovation” Program -NSF sees this as a long-term investment focused on realizing a “Cyberinfrastructure Framework” for 21st Century Science and Engineering
1. *“Framework for Integrated Research Software Training in High Energy Physics (FIRST-HEP)”* - 3 year funding - <http://first-hep.org>
 - “Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining)” Program

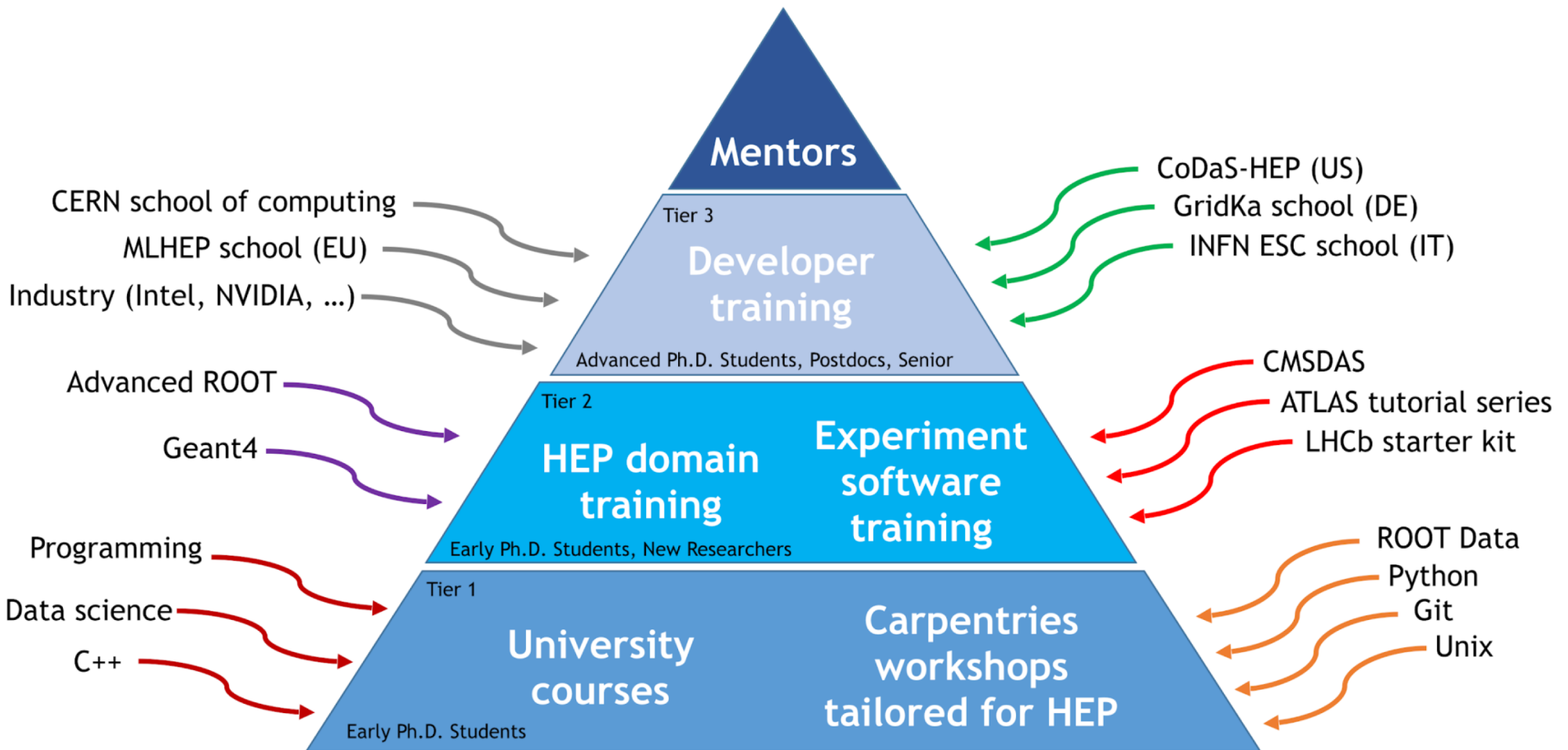
We hope to work with and strengthen the broader training community in HEP as an important component of these projects



Let's Start Building the Vision in the Training Pyramid



HEP Software Training





Carpentries-Style HEP Basic Curriculum



- Establish training elements to provide a uniform set of basic skills for all Common basics (Unix/Shell/Python/C++/ Git/ROOT) for all HEP graduate students and postdocs, and broadening participation from institutions lacking such courses
- Help to build on the LHCb StarterKit experience and extend much more widely in HEP (already starting for Alice and Belle-II)
- Establish a collaboration with “The Carpentries” to leverage their experience, material and instructors(!). We can assemble an introductory HEP curriculum built out of existing LHCb material, Software Carpentry material and augmented by HEP-specific material training material.
- Build a “common good” curriculum for the introductory material, with a *sustainable* community of instructors
- IRIS-HEP/ FIRST-HEP have funds used to train the instructor pool, fund instructor travel and to acquire a “membership” with the Carpentries
- Workshops will be organized at HEP institutions, either with a sufficient local audience to reach a large community or in conjunction with other community events, e.g. conferences, computing related workshops, experiment collaboration meetings, etc. Some fraction of the workshops will be held at the major HEP laboratories (Fermilab, CERN, etc.) and others at universities



HEP-domain specific training

- HEP-domain specific training exist already
 - Appropriate for Ph.D. students, new researchers, mastered the basic skills, starting their research activities
- Work with partners to recognize and solve common problems
 - Variability of basic skills knowledge, evolve the “First Steps” curriculum
 - Gives natural pool of possible instructors
- Organize “Birds of a Feather” sessions at HEP conferences
 - To increase the impact and sustainability of training activities
 - Can combine ROOT/ Geant4 training to more visible intermediate-level “boot camp
 - Make these tools more accessible outside of HEP?
 - Modest fund for a pilot intermediate “boot camp” in U.S. on above/HEP-related tools



Developer Training

- For researchers
 - Mastered basic and experiment specific skills
 - Ready for research contribution/activities
 - Develop innovative new methods
- Week long school
 - Like-minded students, similar interests in computational problems
 - Build collaborations, interact and find senior mentors professional development
 - Example - CoDaS-HEP, ESC/Bertinoro, and so on



Concrete Near Term Steps

1. Organize initial “test-run” introductory level Carpentry-style workshops (worry about scaling it later)
 - Engage with Carpentry team
 - Run an ATLAS and a CMS event? (Perhaps separately the first time)
 - For CMS we could run one at FNAL, for ATLAS?
 - Hope to engage LHCb/ALICE to showcase Starterkit as part of these
1. HEP Software/Computing Training Survey
 - Intent - provide input on training needs
 - Assess current training practices for HEP software/computing and related software-centric areas.
 - Information potentially used to seek resources, organize training activities to meet training needs
 - Prior training experience, interest in possible training topics, aggregate summary information, will be made public.