

# Common Software Infrastructure

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Common Track Reconstruction Software Forum  
3.12.2015

# The Context - HSF

- This meeting has been organized under the umbrella of the [HEP Software Foundation](#) (HSF)
- Its aim is to
  - increase the share of expertise and code
  - raise awareness of existing software
  - aiding developers and users
  - support career development for software and computing specialists.
  - ...
- So all about collaboration

# What to do for collaborative working

- Enable collaborative working with making your source code available
- Allow collaborative working by putting your software under a proper license
- Support collaborative working by setting up build and testing infrastructures and nightlies
- Avoid “impedance mismatch”
  - how much time do we loose on making different tools with different conventions work w/ each other

# Making source code available

- Git is state-of-the-art for code management
- Many free services around one could use, e.g.
  - GitHub
  - GitLab at CERN
- Both provide nice features like easy forking, merge requests, code review, etc
- The HSF is an organization on GitHub
  - but obviously any public place for code does the job

# Licenses

- Our community is very bad when it comes to licensing
  - Often forgotten or ignored
  - Wrongly applied
- Should make sure new efforts do it properly from the start
- Boundary conditions given by
  - The fact that things have to stay open
  - Your personal take on the free software movement
  - Software you take advantage of and their licenses
  - Rules of your collaboration and employer
- Licenses to consider
  - GPL - if your and all software using it should stay free
  - LGPL - if your software and all changes to it should stay free
  - Apache2 - if you want to provide your software w/o little constraints on people using it
  - Use other licenses only if there is a **strong** reason for it
- Some more information on licenses in HEP available [here](#) and [here](#)

# Development infrastructure and nightly builds

- To share software with others one has to make sure it compiles, runs and yields proper physics...
  - ... outside the environment it was originally developed in!
- Multiple free nightly build services for open-source projects available, like Travis CI
  - Nicely integrate with GitHub / GitLab
  - Allow compilation and simple tests
- They do not easily cover
  - (CPU) performance studies or validation do not fit into that model
  - Multiple platform support
  - “Exotic” machines
  - Direct debugging of failures
- Doing it properly involves some boring setup and maintenance work
  - People rarely have time for that!
- Idea by HSF contributors is to set up a basic build and test cluster at CERN the various tracking software projects can take advantage of
  - Do the work only once!
  - Taking advantage of Jenkins and Docker containers
  - Allowing interactive access for debugging