

Minutes of the FCC software informal meeting, 22 May 2014, 1:00pm
Presents: Andrea Valassi, Federico Carminati, Benedikt Hegner, Andreas Salzburger, Andrea dell'Acqua, Carlos Solans Sanchez, Patrick Janot, Clément Helsens

The items that still require(d) action were reviewed (see A to E).

A. Open Source Software

It was agreed that we would protect our code with the public license "[GPLv3](#)". In short, it means that we will retain the copyright of the software we develop, while making it "Open Source", i.e., free for use by anybody. The only constraint is that any software using the FCC open-source software must become part of GPL too. (There is a possibility to restrict the public access to the FCC software to the use of libraries only, i.e., with the "LGPL" license, but it was agreed to start with the GPL license, for which the source code is free access too.)

In practice, the only thing we have to do to be "GPLv3" is to add to our software source code a statement acknowledging the relevant copyrights, the applicable license, and CERN's special status as an intergovernmental organizations, such as in the following example:

□ © *Copyright [year] CERN [and other copyright owner as applicable]. This software is distributed under the terms of the GNU General Public Licence version 3 (GPL Version 3), copied verbatim in the file "COPYING". In applying this licence, CERN does not waive the privileges and immunities granted to it by virtue of its status as an Intergovernmental Organization or submit itself to any jurisdiction.*

Action items:

- 1. Benedikt will check if the rest of the tools we are using in our software framework are under GPLv3 too. (For example, DD4HEP is under the GPLv3 license.)**
- 2. Patrick will send a mail to the DELPHES team to check their status in this respect, and ask them to adhere to the GPL license if needed.**

B. Twiki documentation for the software.

Benedikt will work on it during the coming days. The documentation will be visible from the FCC-software [twiki page](#).

Action item is still open.

C. Proposal for the DELPHES configuration

Benedikt will send a definite proposal to Fabiola and Patrick, for later communication to the DELPHES team.

Action item is still open.

D. Simple example to run the FCC software (Generator + LCIO-based data model)

To be provided soon by Benedikt. Colin will guinea pig the example as soon as it is available.

Action item is still open.

E. VO request

Andrea V. sent the VO request was sent long ago. However, the official answer was that an official request had to come from the FCC study leader (together with CPU, disk space and HR requests to IT).

Action item: Fabiola and Patrick will inquire with Michael Benedikt about the progress with sending the official request, during the FCC coordination meeting on Friday.

DD4HEP news

The rest of the meeting was mostly a discussion about DD4HEP, although no progress were actually made since last time, because of the current showstopper with the DD4HEP / GEANT4 interface (see below).

First, Federico informed us that a Korean university ([Gangneung university](#)) has manifested a strong interest to join the DD4HEP effort, in particular towards the implementation of the detector for the FCC-ee, with for now a professor and a student. Of course, we'll have to find money to support the student. We could start with a few months from PH-SFT, taken over with a few months from PH – when and if the MTP is approved in the next days, and a budget is given to PH for the FCC. The longer-term prospects would be for the student to do a 4-years PhD thesis in Orsay (benefiting from a LAL-Orsay / Gangneung University agreement), with a doctoral student contract at CERN. **This possibility will be followed up by Federico and Patrick.**

Federico also mentioned that Sergio (Bertolucci) has encouraged him to open an ERC for H2020, with GEANTV as main topic, indicating the FCC as a case study. There would be collaboration with AIDA2, hence participation to DD4HEP, within this ERC. If the application is successful, the ERC money would be used to attract more students to work for the FCC, in particular.

The timeline for Federico is to start working on the application in June (when the call is open), send the request in September, and have the money flow by mid-2015, optimistically.

Clément met Markus Frank and Pere Mato earlier this week. They agreed to help with DDG4 (the DD4HEP / GEANT interface), and make it work, as to allow us to continue our developments for the FCC detector simulation. An interesting discussion followed on the merits of DD4HEP, which does not need to be summarized in the minutes. One of the striking advantages of DD4HEP is that the same geometry can be used for simulation and reconstruction (as DD4HEP, for

example, allows the definition of the sensitive material readout segmentation in the same file as the detector volumes, making all the relevant information available in and modifiable from a single place), and can be used to derived simplified geometries (e.g., for fast simulation, or indeed, reconstruction purposes). Federico pointed out that DD4HEP and the Root modular geometry library – allowing visualization in particular – should evolve together, but must not depend on each other.

Federico and Benedikt will keep an eye on this aspect. It was also suggested to invite the DD4HEP developers to our meetings as to make them aware of our progress and issues as clients.

Patrick also suggested a hands-on DD4HEP tutorial to be organized towards the end of the summer (like beginning of September), with a general presentation from the developers, and a hands-on session from us. Clément accepted to take the responsibility of making it happen.

Shortly prior to the meeting, Peter Kostka (who could not attend) sent information about the DD4HEP software use for the FCC-eh detector. These information are reproduced here in extenso:

- the DD4h4p software (factory modules of example CLICSiD) have been modified/extended allowing asymmetric placements of detectors (definition of OffsetZ variable in the .xml file - the detector description file);
- DD4hep, Xerces-C, LCIO, CLHEP, Geant4, root5 are the main ingredients; gear is implemented as well (gear allows reco modules to be setup using parts of ilcsoft);
- the LHeC and FCC-he detectors have been modeled preliminary (.xml files) in some detail such that the geant4 volumes are set up using the same software (same factory modules); the detector descriptions have been checked avoiding overlaps (david);
- a very simple “simulation” part has been implemented - reads generator files of different formats — hepevt, stdhep, lhe, lcio, hepmp2 — beside standard internal GEANT4 generator events;
- the software resides in the lhec afs area currently on lxplus

A discussion is now going on via e-mail to understand more about some of the above statements. **A summary will be given here in due time.**

FCC-hh workshop (26-28 May):

Two presentations on the FCC software are foreseen. Benedikt Hegner will give the general presentation of the framework. Clément volunteered to give the presentation on DD4HEP. He will contact Fabiola directly to negotiate the length of his presentation, as well as the balance with the presentation about calorimeters.

CERN git vs github

The last topic of the meeting was about the repository for our software. Federico mentioned that the numerous services provided by github prompted CMS to use it. A possibility would be for the FCC software to move to github as well. **Federico will meet with Frederic Hemmer to understand the IT position about this choice.**

Next meeting (after the FCC-hh workshop):

Thursday 5 May, 1pm-2pm, B40 lobby

Action item:

Decide who will be the speaker for the CLICdp meeting on 10-11 June.

Next Events (where software progress will be presented):

FCC-hh physics [workshop](#): 26-28 May

CLICdp collaboration [meeting](#): 10-11 June

FCC-ee physics [workshop](#): 19-21 Juin