

# Geant4 Collaboration Meeting Plenary 5

<https://indico.cern.ch/event/942142/sessions/358915/#20200923>

These “live notes” are used to collect questions and comments during presentations for discussion after presentation, in discussion sessions, or offline.

If you have questions or comments, please add them below, prefixing with your name so we know who to come back to!

## Update on User Interfaces (Koichi Murakami)

- (Laurent) What about <https://mybinder.org> ?
  - In my lab (INRIA), we’re working on a web platform for building and deploying apps on the web. The front end is python and using binder is our challenge in the next 6 month <https://allgo18.inria.fr/>
  - (Koichi) thanks. Interesting tools! Actually docker extension is necessary for running Geant4 applications. I will try it.
- (Ben) For some interesting use cases of Jupyter/Fn for HPC, see this talk: <https://drive.google.com/file/d/18lc-qOUwRLXzEibA4VxFAEqHL4LyRJy4/view>
  - (Ben) and also the site of the author: <https://chryswoods.com/index.html>. This type of system become more common, lots of experience (and expectation!) out there.
- (Ben) I think the critical item for Geant4Py now is examples and documentation.
- (Ben) Have been discussing with Jonathan on some code he has for message passing with serialization. Should ensure all these efforts are linked up.
- (John) Is Jupyter available with the release, elsewhere or only a prototype?
  - (Ben) I think (Koichi can confirm), current code is: <https://github.com/koichi-murakami/igeant4?>
  - (Koichi) I will include it in the next release. It is pure python package.

## Update on Visualization (Laurent Garnier)

- Questions, comments
  - New vis driver when OpenGL will be removed
  - OpenInventor features
  - Others topics
- Maybe consider Vulkan (<https://www.khronos.org/vulkan>) for the new renderer, as Molten VK (<https://moltengl.com/moltenvk/>) can translate its API to Metal on Macs.

- Another option: convert geometry and export into a file format that can be viewed with an external tool, e.g. collada (<https://www.collada.org/>), OBJ ([https://en.wikipedia.org/wiki/Wavefront\\_.obj\\_file](https://en.wikipedia.org/wiki/Wavefront_.obj_file)), or gltf (<https://www.khronos.org/gltf/>, example with ATLAS detector: <https://sketchfab.com/3d-models/cern-atlas-detector-e3c13e9a777c4c1db14cd75cf61855fb>).
- (Ben) See, for example <https://github.com/HSF/phoenix>
  - (Joseph) But remember not just geometry but also trajectories and hits.
  - (Joseph) We do already have several such formats, though fairly old: DAWN, HepRep, VRML
  - (Laurent) We can also generate point clouds, but I don't remember if we have an option to save them ?
- (Giovanni) (A vis beginner question) Apart from sharing via file, would there be any technical option to interface to other tools for "real time" visualisation of e.g. trajectories and/or scorer results in another tool (e.g. FreeCAD) inside the existing native geometry vis of that tool? I.e. an existing API for exchange of vis objects between 2 applications running in different processes? Is this already possible?
  - (John) Gosh! Wow! Mmmm! Still incorporated but not much used (if at all) are drivers that communicate via sockets to receiver viewers, e.g.,  
`-DGEANT4_USE_NETWORKDAWN:BOOL=ON`  
`-DGEANT4_USE_NETWORKVRML:BOOL=ON`  
 Maybe we could use a similar mechanism, but it's tough, tough, tough.
  - Thank you John for your answer. I was asking this as I believe we should try and "join forces" with CAD tool developers (such as FreeCAD, but other options are available), so that we can delegate to them the geometry creation/import/editing, and we can concentrate on providing a robust export to GDML and inserting a Geant4 application in their open source framework
- (Ben) On Qt3D, maybe a useful link up with the HEP Software Foundation/GSoC project here: <https://github.com/HSF/Qt3DExaminerViewer>
  - (John) Thanks. Will follow up.
- (Ben) Just a comment, I think we should still keep VTK: <https://vtk.org> in the back of our minds.
  - (Koichi) Just a comment, drawing non-structured data like geometry is hard work in my experience.
  - (John) Yes. My experience is that it takes a year of concentrated effort (at, say, 10%) to write a new G4 graphics driver, and 5 years to reach maturity. It is a task not lightly to be undertaken.
- Debugging the geometry of the human phantom
  - (Ivana): Is this visualization of overlaps always available or do we need to activate it somehow?
    - (John): Always available: `/vis/drawLogicalVolume`
  - (Makoto) This is nice! Could it be possible to visualize all healthy volumes in black and white so that only the overlaps are drawn in colour and thus more

highlighted? I guess that set transparency to 10% on healthy volume could do the job, John ?

- (John) A good idea. I will see. Switching to wireframe will help. Not so easy to override designated colours/styles.

## Update on N&E Examples (Ivana Hrivnacova)

- Questions, comments
- (Daren) For Ivana and Susanna: could we (everyone) try to get all macros tested in CDash?

## Update on Advanced Examples (Susanna Guatelli)

- Questions, comments
- (Daren) For Ivana and Susanna: could we (everyone) try to get all macros tested in CDash?
  - E.g advanced/underground\_physics/ambe\_spectrum.mac gives me a command not found error. (just to pick one example)

## Update on Documentation (Alexander Howard)

- Questions, comments
- (Guilherme) I think kindle format could be checked on an Android device with the Kindle app: <https://play.google.com/store/apps/details?id=com.amazon.kindle>
  - (Anna) thanks! We have checked it there, but we expect there could be differences on actual e-reader (kindle) devices, so any feedback from kindle owners is most welcome!
  - (Alex) Equally how to get the files onto a kindle... unless we push to the amazon web-shop...
  - (Dmitri) Alex, just connect Kindle to pc with USB cable and copy files to your kindle:) It looks pretty decent on my old 2 gen. Kindle.
- (Guilherme) GitLab CI might help with a live preview of documentation if needed
  - (Ben) Yep, same with "delta" deployments
  - (Alex) yes I have it set-up for another project and also a g4-doc service account, just need to find the time to put the two together :-)
- (Ben) Think the user guide stuff can/should be rolled in as part of the overall review of the front page of the website (yes, thought to be a good idea).

## Update on Analysis (Ivana Hrivnacova)

- Questions, comments

## Closing Session (Marc Verderi & Alberto Ribon)

- Questions, comments