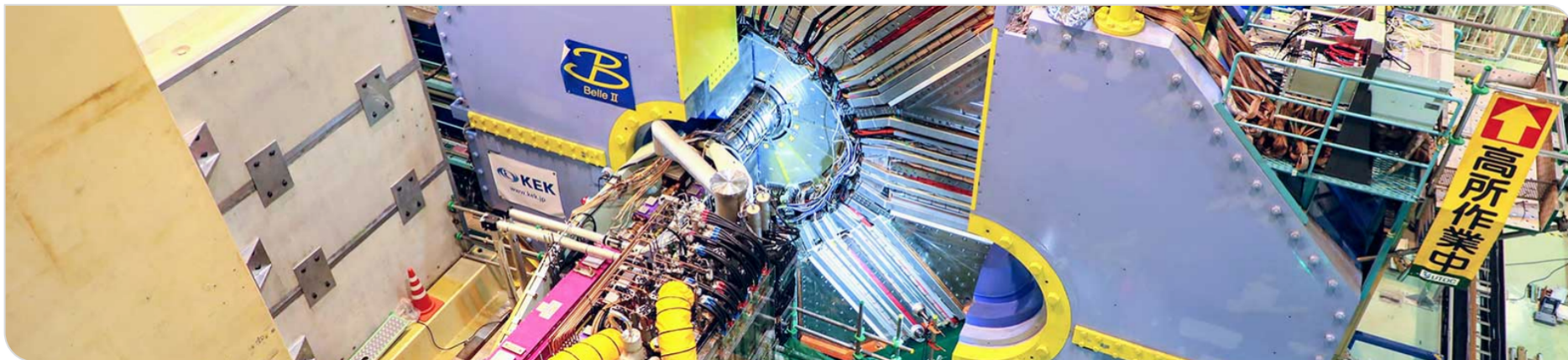# The software group & basf2 & other stuffs

Giacomo De Pietro, *giacomo.pietro@kit.edu*
Belle II Germany Meeting, 19-21/09/2022 @ Munich

Outline

- Status of the software group
- Validation
- Current and future release(s)
- Collaborative tools

Giacomo De Pietro

Institute of Experimental Particle Physics (ETP)

注意！

- What follows is my view about what we should aim at as software group!

  - Not "the group says we must do this", but "I think we should do this"

What does "the software group" do?

- Developing, validating and deploying basf2

  - Including tools, externals and related stuffs

- Organizing the starter kits and providing documentation

- Cooperating with the other groups (including subdetectors)

- "Maintaining" some collaborative tools

- Using, whenever necessary, funny pictures of cute animals

Institute of Experimental Particle Physics (ETP)

The software group

- Compared to some years ago, the SW group is much smaller
  - Of course, less development is required, but we are loosing expertise in key areas…

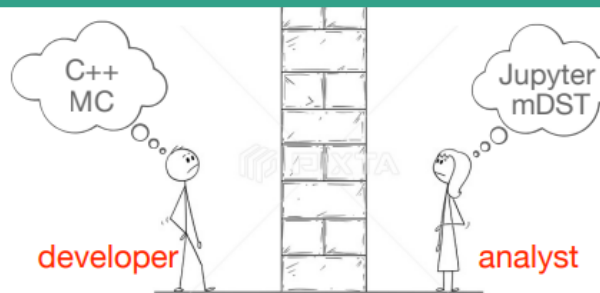   **The Belle II Core Software**

    Belle II Framework Software Group

    T. Kuhr[1] · C. Pulvermacher[2] · M. Ritter[1] · T. Hauth[3] · N. Braun[3]

    - 4/5 authors of the basf2 paper left the collaboration...
  - It's hard that students nowadays use ROOT or C++ for their analyses…
    - I am a bit pessimistic about the future...

aller

xpertise in key

nalyses…

*From Giulia,
January 2022 B2GM*

- I am a bit pessimistic about the future...

- … and I am not the only one

The software group chart

Software
Coordinator: Frank Meier,
Giacomo De Pietro (Deputy)

Framework & infrastructure
T. Kuhr

Simulation D. Kim

Documentation and training
K. Lieret

Tracking A. Glazov, G. Casarosa

Database P. Laycock, J. Kumar

Timing & Event T0 E. Hill,
G. Casarosa

**Analysis software & tool
validation** F. Meier

Online integration S.-K. Park

Minor Release Manager
G. De Pietro
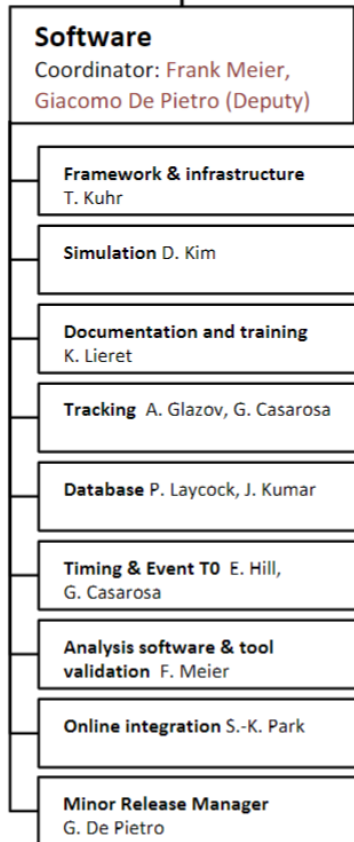
- Yes, the chart should be updated…
  - Timing: E. Hill → M. Staric
  - Analysis: F. Meier → Y. Sato
  - Documentation: K. Lieret → …
- Flaming needs:
  - New convenors for the Timing and Event T0 group
    - Both Giulia and Marko would like to step down 🔥
  - A new convenor for the Documentation and training group
    - Kilian left the collaboration :(🔥🔥🔥
  - Note: we already contacted few persons, but we received only "no"s

The software group and the other Belle II groups

- In general, we have a good connection with the other groups, but in some cases we should make it stronger

  - We need a stronger communication with the computing group: a regular (every a couple of months?) joint meeting may be very useful

- Sometimes, we receive feedbacks in weird ways, especially from the physics WGs…

  - Or WGs do weird assumptions / take weird decisions: don't be afraid, SW folks are your friend, please contact us directly!

    - How? Attend the SW meeting, write us via e-mail, write us via RocketChat, ask something on b2question, etc.

The software group and the HEP community

- We (me and Frank) are in touch with the ROOT developers and we attend the regular meeting with the other large HEP collaborations

- Some Belle II members are convenors of some HEP Software Foundation WGs

- We are closely in touch with the developers of the main generators we use

- AFAIK, no one from Belle II is part of the Geant4 collaboration

  - And we have a serious lack of Geant4 experts (or even Geant4 users)...

Validation (I)

- We should revisit how we validate our software

  - We should catch the issues before deploying them to the collaboration :D

- In theory, the developers should validate their work when developing a new feature / fixing an issue

- In theory, the librarians should properly review the developers work and ask for a validation report

- In practice, this happens quite rarely

  - And most of the times, only the "physics outcome" is checked, neglecting the mDSTs size, the execution time or the memory consumption

    - And since we use basf2 for taking data and for running grid jobs, we can't afford this!

Validation (II)

- What can we do for improving the situation?

    - Increase the awareness of the developers

    - Increase the awareness of the librarians

    - Increase the awareness of the SW shifters

- Is it enough? No!

    - We should seriously reconsider what we run / validate during the nightly build

        - Carefully review both the shifters and the experts plots

        - Produce only "central samples" with common settings / globaltags

            - Avoid that each package, or even each script, produces its own samples!

        - Run the validation on collisions data too

    - We will likely need a dedicated workshop for this

        - And a dedicated team too!

release-07

- In July we tagged prerelease-07-00-00a
  - New externals
    - v01-11-00 in prerelease-07-00-00a, v01-11-01 in HEAD of release/07-00
  - New tracking refinement step for reducing the track charge asymmetry
  - Improved TOP reconstruction
  - Improved ECL likelihoods
- After more than two months, we are still waiting for most of the validation reports
  - We got the validation samples quite late
  - First reports we received (especially about PID) are quite contradictory…
- It's mandatory finishing the validation soon in order to move forward!

Institute of Experimental Particle Physics (ETP)

release-08

- release-08 will be the first post-LS1 basf2 release

- Our wishlist:

  - Upgrade Geant4 from v10.6 to v11.1

  - Reduce the memory usage

  - Reduce the mDSTs size

  - Get rid of deprecated ROOT classes

  - Improve some of the analysis software tools like FEI and flavor tagger

    - Can we automatize / streamline the training?

  - Reduce further the track charge asymmetry

- Some of these tasks are unassigned (e.g. the mDSTs size reduction): you are free to contribute and give some help!

Collaborative tools

- During the LS1, we will migrate from Atlassian to GitLab

  - https://gitlab.desy.de/ (please sign in and create an account!)

  - Bye bye Stash, Jira and Bamboo

  - Unfortunately, we will keep Confluence for a while…

    - But this should not prevent the collaboration from using Confluence **correctly**

- Preparation work for the migration is ongoing

  - Migration of the repositories and the JIRA issues will be automatized

    - See https://gitlab.desy.de/belle2/test-group/migtst2/-/issues for the migrated issues ;)

  - Translation of the basf2 pipeline from Bamboo to GitLab is ongoing

    - Our current GitLab runner is "slower" than our current Bamboo agent

    - Because of some fundamental differences between GitLab and Bamboo, we must redesign part of our workflow in order to limit the build time

Institute of Experimental Particle Physics (ETP)

Conclusions

- We need a new convenor for the Documentation and training group
- Lack of manpower may be an issue in the next few years
- We should revisit how we validate basf2 while developing new features
- release-07 will be out soon
- Bye bye Atlassian! Welcome GitLab!

Institute of Experimental Particle Physics (ETP)

Conclusions

- We need a new convenor for the Documentation and training group

- Lack of manpower may be an issue in the next few years

- We should revisit how we validate basf2 while developing new features

- release-07 will be out soon

- Bye bye Atlassian! Welcome GitLab!

- Goats!

Giacomo De Pietro

Institute of Experimental Particle Physics (ETP)