HSF and CMS

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CMS and HEP Tools Today

- There are several examples of CMS initiated projects used and now in development beyond CMS:
  - A good example: Frontier is a project developed for CMS. We offered to collaborate with ATLAS on Frontier. They accepted, and it has been successfully generalized for them by them.
- CMS is a strong collaborator in a number of HEP/LHC wide tools:
  - The big projects G4 and ROOT
  - fastjet and external generators
- In order to enable transitions we have adopted a method of working with others that we think has been very successful and would like to promote as a way forward within the HSF.
  - G4.9 -> G4.10
  - ROOT5 -> ROOT6
  - thread unsafe -> thread friendly

CMS and HEP Tools

- A co-development model is essential for success
  - The owners of the above packages have been willing to accept bug fixes into their repositories.
  - The owners have to trust that the proposal for change has been well vetted within the collaboration and it is worth putting the time in to consider it.
- CMS has benefited from using computing tools developed by others.
  - Examples: XROOTD, CVMFS.
  - The effort to integrate them was not larger than the gain
- We would like to participate in more projects like this.
- CMS has also successfully used "free" software and services.
  - Examples: github, jenkins and now starting with docker and other projects.

Opportunities for Future Collaboration

- There are other areas of software that we are currently not collaborating with anyone else on, but we our open to the idea of doing so in the future.
  - In the effort to move to multi-threaded applications we have developed tools to catch threading errors and find performance bottlenecks. Other experiments have expressed interest but we don't have the manpower ourselves to generalize them. The HSF could help us find partners for this work.
  - The framework itself could be a target for sharing.
- CMS would benefit from better field wide support of Generators.
  - Often the code written by theorists is not ready for wide scale deployment on the GRID at the scale necessary for the LHC
  - This is a common problem across many experiments. A common effort on this front is a natural role for the HSF, and we're willing to partner on this.

Conclusion

- CMS hopes to take this opportunity to open doors, and start discussions about participating in collaborative projects under the umbrella of the HSF.
- The HSF could play the role of getting communities to talk to each other, collaborate, leverage resources and co-develop.