Tools and Strategies for Physics Validation

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Working Session on Geant4-wide tools to perform physics validation

- Propose common tools and strategy
- Minimize code duplication
- Address open issues
- **Introduce KISTI resources and involvement in Geant4 collaboration**

Experience using G4 on the GRID

- Tools to run G4 on the GRID has been developed
  - Currently tailored to HEP testing
- **Action:** We will try to include GRAS application for ion-ion validation (for 9.6)
  - Include an application for low-E models in 2013
- Recognized potential as a general tool for any G4 app
  - Some work still needed to make it more "user-friendly"
  - Some concerns over some third-party tools not supported
- KISTI expertise with GRID for ALICE could help in improving system (discussion will follow)

KISTI resources

- Supercomputing center has been presented
- Activities for G4:
    - Porting and testing for AIX platform: successfully done in private builds
    - Geant4MT benchmarking: started
    - **Support for Validation/GRID**
    - User support: tutorials ongoing
- **Action**: Cooperation with KEK to include KISTI resources in G4 "enabled" resources

Prospects for FNAL Validation DB

- Recognized that system is *THE* tool of the collaboration for:
  - "Public" face towards users to show results
  - "Internal" face towards developers to help validation of models/processes
- Requirement not yet implemented: overlay of plots
  - **Action**: Break-down of needed developments and propose of a detailed work plan
- **Action:** PhysVal Task Force to create a list of the "minimal set of plots" to summarize G4 performance (to be done in collaboration with WG coords)

Experience with CTest/CDash for physics validation

- New CDash group "PhysicsChecks" has been discussed

  - A sub-set of tests to verify if tags introduce changes in physics results (not a detailed validation)

- Additional tool to automatically perform regression testing against *reference* is available

  - **Action:** Provide the tools externally to CTest/CDash to developers

- **Action:** Identify strategy for storing of *reference* files (investigate SVN or AFS)

Conclusions

- We are starting to converge on a G4-wide Physics Validation strategy
  - Common tools have been developed and can be shared among developers
- Few topics need further work (define list of tests, expand FNAL-DB, expand usage of GRID)
  - List of **actions** defined for short-middle term

- **Additional Action:** Create asap a test that compares physics quantities of Geant4MT w.r.t. serial version

- https://twiki.cern.ch/twiki/bin/view/Geant4/PhysicsValidationTaskForce