GRID validation tool

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Content

- Motivation for GRID validation system
- Existing system usage and overview
- Development towards new system

Motivation

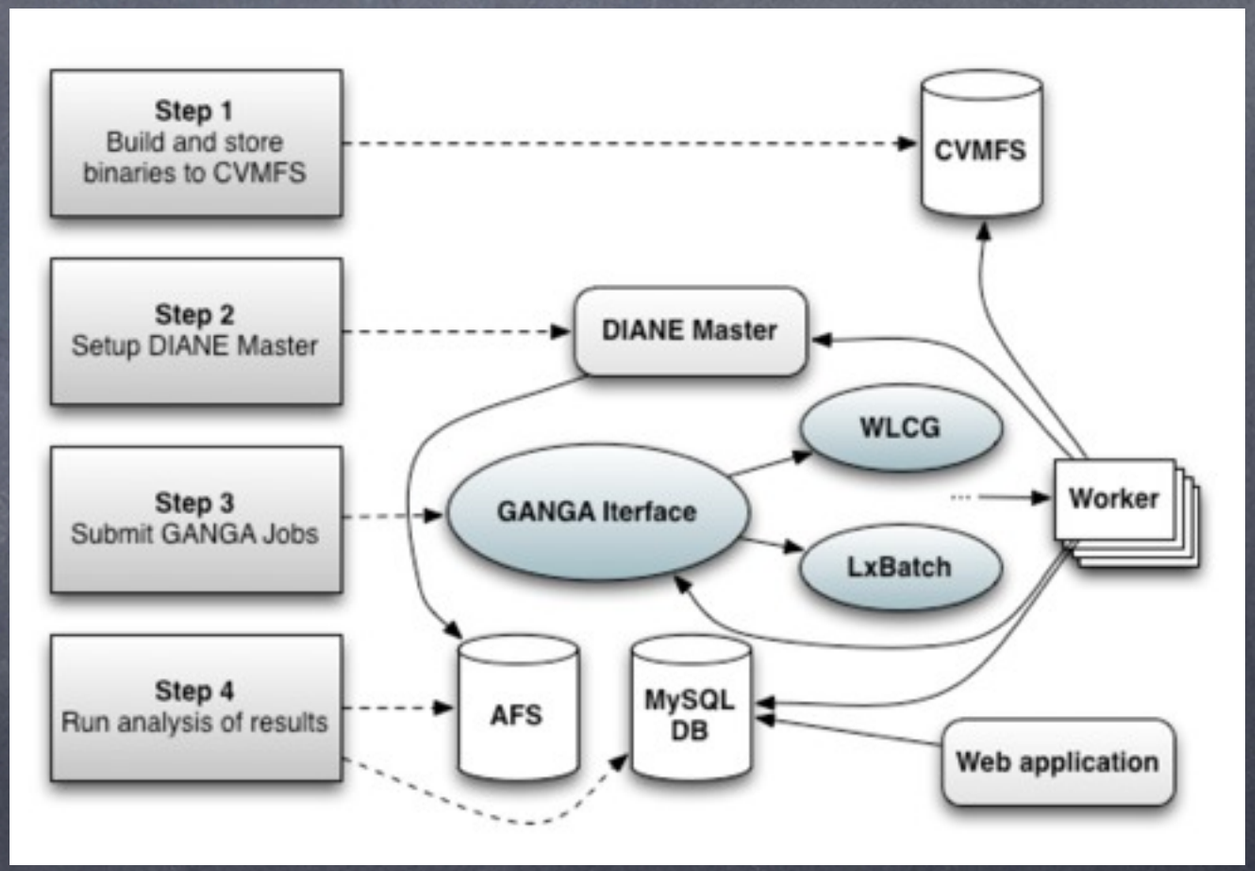
- monthly validation of reference tags
- large statistics runs
  - general stability testing
- 'simplified calorimeter' setup to test new developments in electromagnetic and hadronic physics
  - checks calorimeter physics observables
- extension to other 'simplified setup' like thin target
  - checks tracker like-devices physics, cross-section, etc

Usage

- validation campaign after each tag (ref, patch, cand, release), at least one per month
- ~4000 jobs, each ~5000 events
- ~24-36 hours on the GRID (1000-1500 workers, ~600 real machines)
- results merged/analyzed and available through web interface

Overview of (problems of) the existing system

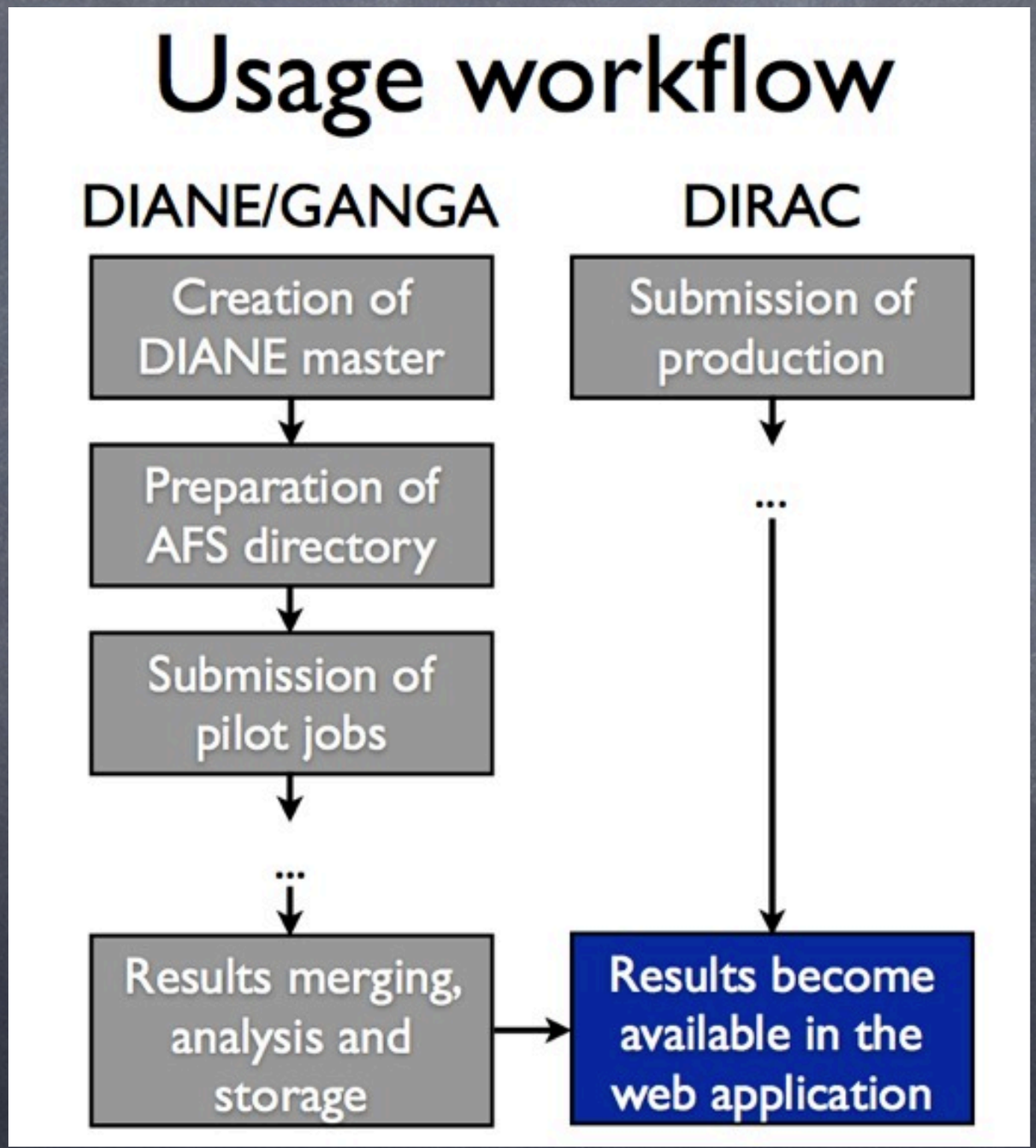
- GRID submission based on unsupported software (Diane)
- manual intervention required at all the steps
- web application implementation specific simplified calorimeter



New system development

- based on DIRAC (Distributed Infrastructure with Remote Agent Control) tool
  - initially developed by LHCb, since 2010 a general purpose framework for distributed computing
    - source code in Github
    - implemented in Python
    - successfully used outside LHCb
- allows to automatize the whole process
  - concept of 'Production' with a given 'workflow'
- uses EOS mass storage instead of AFS
  - no problems with allocating space (creating volumes) every month

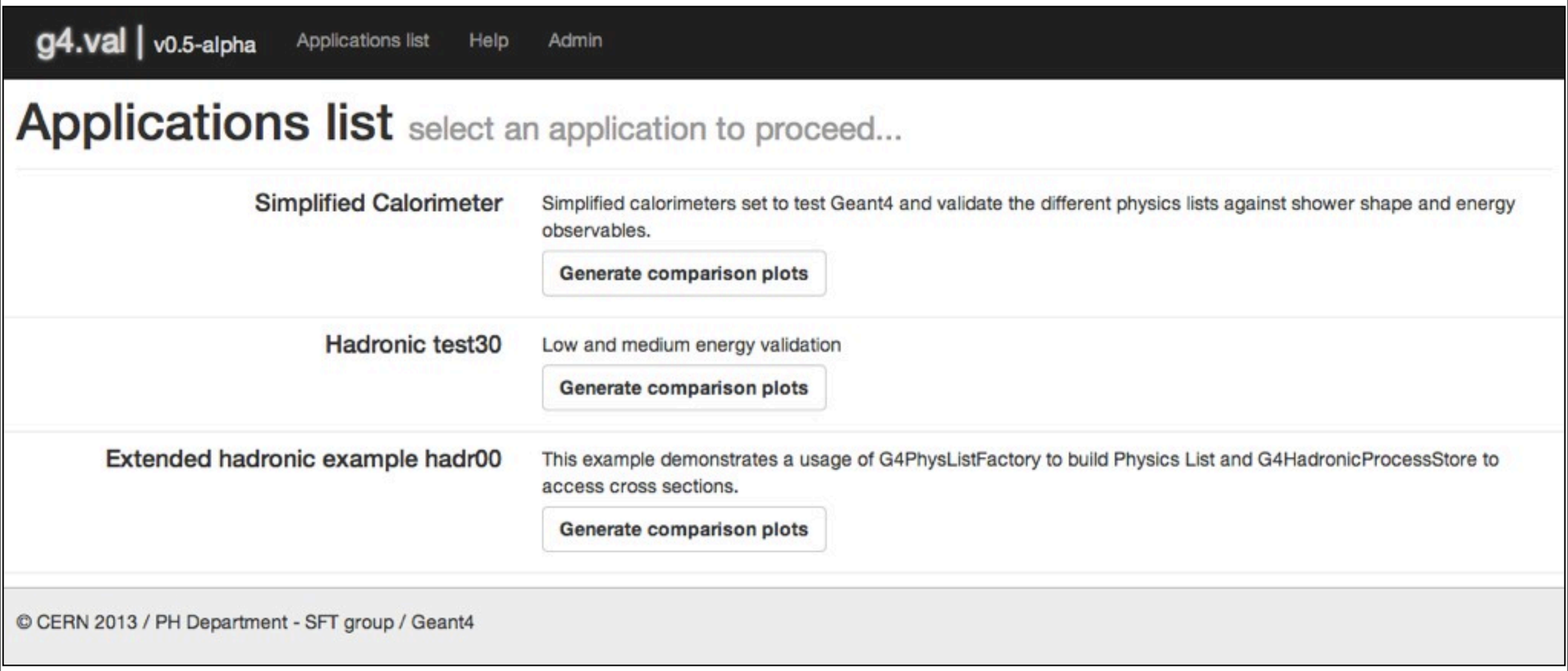
DIRAC vs GANGA/Diane



New web portal

- designed with a general interface to validation output
  - not bound to Simplified Calorimeter
- allows easy addition of new tests/validations
  - can use GRID, local tests, etc
- faster and with improved (hopefully) interface

Web interface



Applications list

g4.val | v0.5-alpha Applications list Help Admin

Comparing runs Simplified Calorimeter (change application)

Parameters

Geant4 version

Please select a Geant4 version

9.6.p02 × 9.6.p01_cand-00 ×

Physics list

FTFP_BERT

Beam particle

pi-

Calorimeter

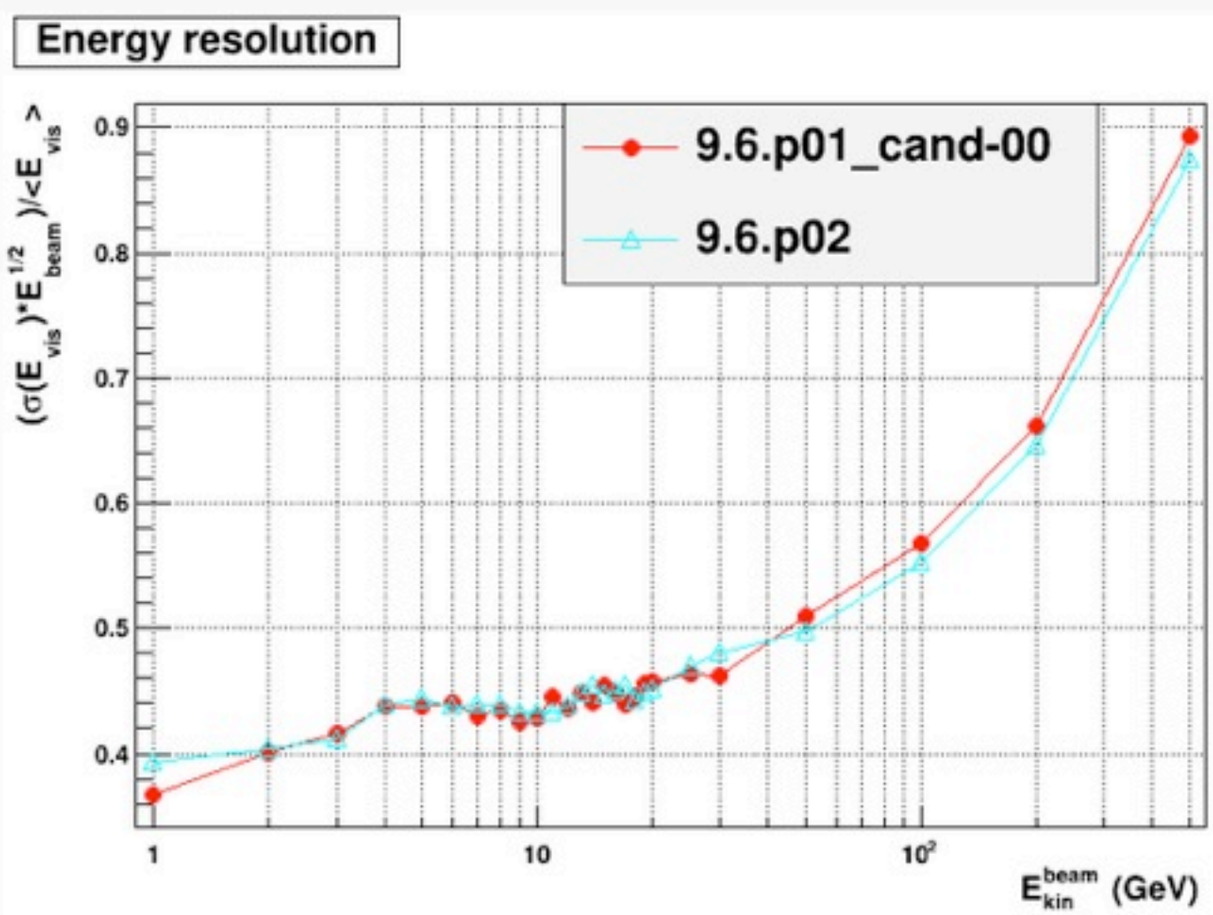
TileCal

Observables

Comparing runs options

Run Bookmark form

Tab Tab Tab Tab Tab Tab



Energy resolution

Web interface

Conclusion

- GRID validation system essential for Geant4 development in HEP
- new system based on supported tools with long-term maintenance
  - combined simulation, merging, analysis
  - moves away from AFS storage
- new web portal with a generic interface
  - allows to include other tests and validation
- technical presentation by George in the parallel session this afternoon