# Parallel IB Report

## Physics Validation Tools

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# Reports

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- Discussion Session on tools and common strategies for physics validation
- Contributions:
  - Hans: "FNAL Validation DB  Status"
  - George Lestaris (remotely from CERN): "CERN SimplifiedCalorimeter web system"
  - Andrea: "Sharing common code in ctest based system"

# FNAL-DB Status

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Geant 4

Home > Results & Publications > Physics Validation and Verification

Home | Validation Overview | Release Highlights | Electromagnetic | Hadronic | LHC-feedback | Expert

**Welcome to the Geant4 Validation Repository**
**Please make your selection from the menu on the top**

| Database statistics | |
|---|---|
| Number of test setups | 21 |
| Number of test results (public and internal) | 18128 |

| List of Tests | | |
|---|---|---|
| **Name** | **Description** | **Working Group** |
| **ATLAS** | shower characteristics of ATLAS Calorimeters | LHC-feedback |
| **CMS** | shower characteristics of CMS Calorimeters | LHC-feedback |
| **HadrIon** | Test of Physics Lists (thick targets, ion beams) | hadronic |
| **HadrXS** | Test of Physics Lists (cross sections) | hadronic |
| **Hadrcap** | is an analogous to Hadr00, with advanced features. | hadronic |
| **IAEA** | IAEA Benchmark of Nuclear Spallation Models | hadronic |
| **Ndata** | Test concerning developments of new nXS, it is calling HP XS as well as HPW XS. | hadronic |
| **Testfragm** | Test of hadronic generators (thin targets, ion beams) | hadronic |
| **atlasbar** | Test of ALTAS barrel type em calorimeter, determines response, resolution, and CPU performance | electromagnetic |
| **placeholder** | Dummy testdes | hadronic |
| **simplifiedCalo** | Test of Shower shapes using selected simplified calorimeter setups. | hadronic |
| **test19** | high energy test, provides comparison with NA61 (31GeV/c proton beam) and NA49 (158GeV/c proton beam) data sets. | hadronic |
| **test22** | Testing of the FTF model and comparison with experimantal data for a wide energy region | hadronic |
| **test30** | Test of hadronic generators of inelastic processes | hadronic |
| **test35** | Test of hadronic generators of inelastic processes, based on results of HARP collaboration, Experiment PS214 at CERN. | hadronic |
| **test37** | Test against Sandia data, electron beam in semi-infinite media. | electromagnetic |
| **test41** | Comparison with MUSCAT experiment for multiple scattering validation | electromagnetic |

# Status of FNAL DB

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- More tests added
  - Not always up-to date
  - Requires contribution from all collaborators
- DB Schema updated to support not only images but also "raw" data
  - Web portal to produce plots on request under development: first prototype released

# CERN new system for GRID productions and results presentation

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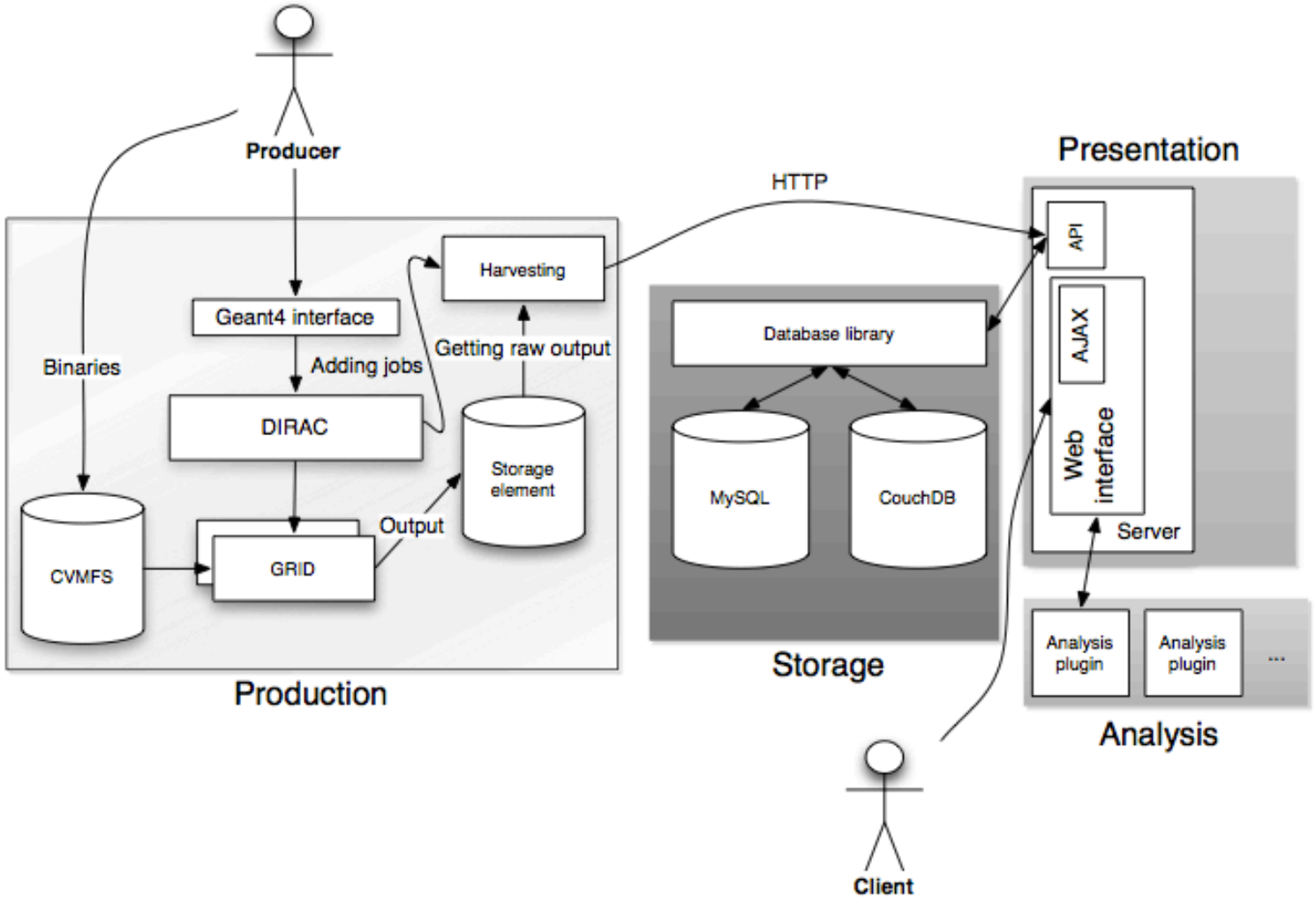

# GRID Validation

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- Ongoing: replacement for DIANE/GANGA system based on DIRAC
  - Better support expected (used by LHCb and ILCs)
  - Fully customizable to our needs
- Web-portal updated with new "general" DB to allow presentation of results
  - Now include test30 results for LHCb requests (track multiplicity regression testing)
- Thanks to this new design should be easier to add new applications for GRID validation

# Current Status: CTest/CDash

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- SimplifiedCalorimeter (regression testing):
  - FTFP_BERT **hadron showers on light and heavy materials** (Sci, Fe, Cu, LAr)
  - Energy deposit histogram
  - Inclusive secondary spectra
- test67 : EM test (T.Vidmar et al., Appl. Rad. Iso. 66 (2008) 764-766) **full efficiency peak in Ge detector**. All EM builders. Compare with data
- test73 : MSC **internal consistency check** (initially developed by LHCb). Compare to expected predictions

# Conclusions

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- Tools have been developed to help collaboration in duties of physics validation
  - CTest/CDash integration
  - FNAL-DB Results repository
  - Enhanced design of GRID system
  - New general results "inspector" at CERN
  - g4analysis / g4tools mature enough to be used everywhere
- Issues that remain
  - Not as widely used as they could (in particular ctest)
  - Due to missing helpers streamlined

# Actions items and ToDos

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- On FNAL and CERN teams:
  - Review commonalities of web-interfaces
  - Convergence to common code is welcome
- CERN team:
  - Conclude migration to DIRAC system for GRID validation
- SLAC team:
  - Extend usability StatTest tool
  - Other todos discussed in Parallel Session XXXX
- On PV TaskForce:
  - Add new tests to PhysicsChecks group on CDash
  - EM: based on extended electromagnetic (test40) example
  - HAD: high and intermediate energies (test30, test19/12)