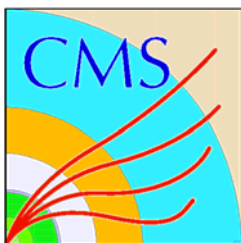# CMS Databases Schedule

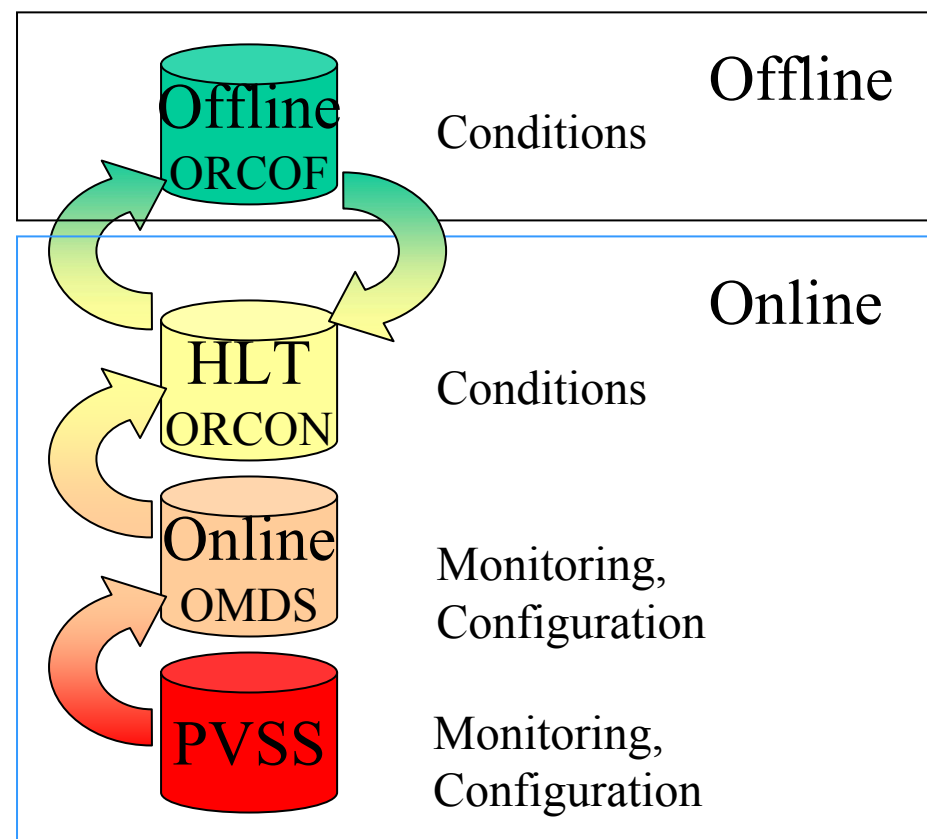Lee Lueking

May 19, 2005

General Info

- Database areas in CMS

    1. Online PVSS

    2. Online configuration and conditions

    3. Near-line High Level Trigger conditions

    4. Offline conditions, construction

    5. Data Management

- Our schedule is largely driven by preparation for the Cosmic challenge in November and Magnet test in January 2006. Need will be ramping up throughout the summer.

- Disclaimer: My understanding of, and responsibility for, the DB needs is primarily in the areas of 3. and 4.
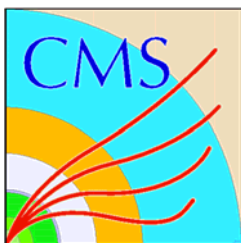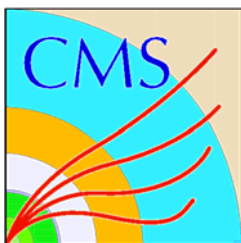
Architecture and Technology

- Oracle is used for all production DB servers, both Online and Offline.

- Distributed access, HLT and Offline, to read-only data is through web-based proxy caching system (a la Frontier).

- Write, update, delete access for offline DB requires Grid-based authentication mechanism (a la LCG presumably).

- DB access is through C++ API, ROOT-ORACLE API, Java e.g. Object Relational Bridge (Apache OJB).

Offline

Offline ORCOF — Conditions

Online

HLT ORCON — Conditions

Online OMDS — Monitoring, Configuration

PVSS — Monitoring, Configuration

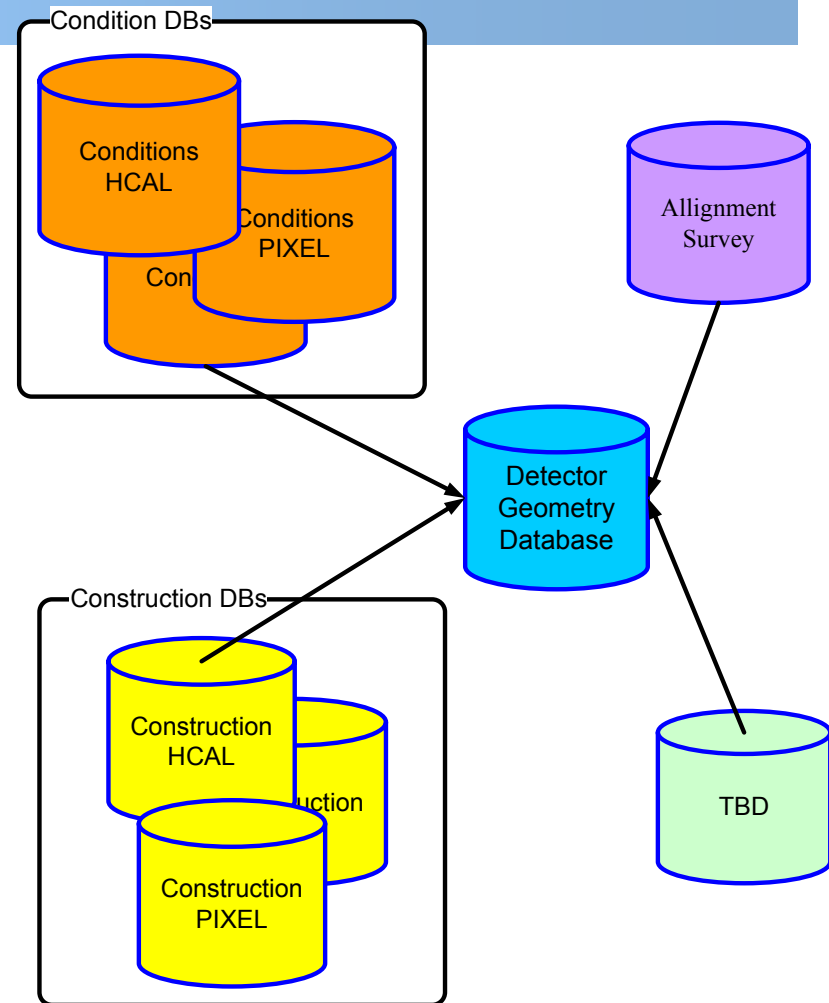Conditions=calibration,alignment, slow controls data

Database Environments & Procedures

- Operational Levels: Development, Integration, Production

- Naming conventions for Schema owners, and table-spaces.

- DDL's, scripts, etc. maintained in CMS software CVS hierarchy

- Bug reporting and change control: LCG Savanna

- Design tools: Oracle Designer recommended. Other tools (e.g. MS Visio is popular) used for prototyping.
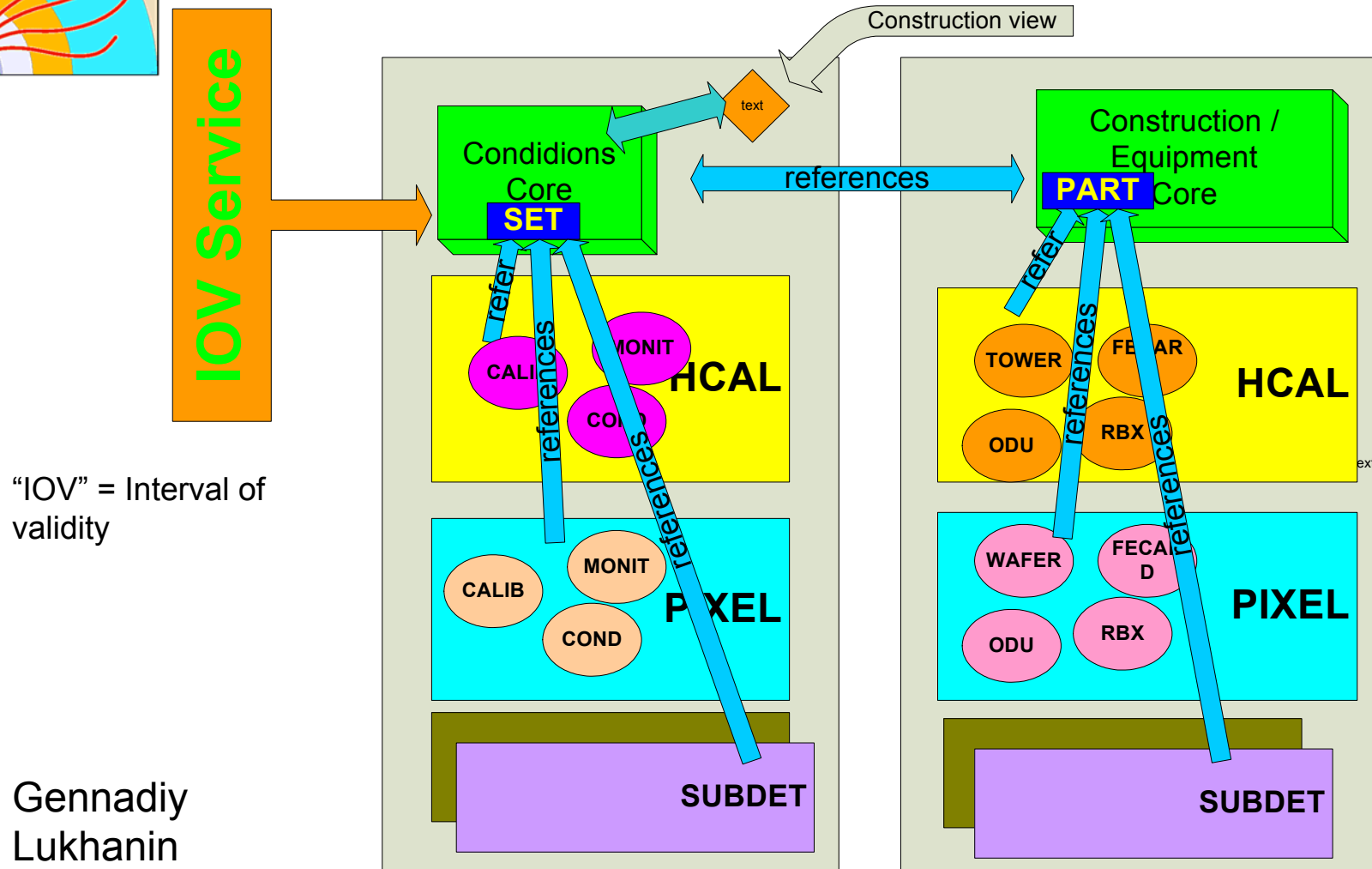
- Schema review process.

"Generalized" DB

- Generalized DB was proposed to as a common schema approach that could be used by all sub-detectors for offline.

- It uses the Detector Geometry Database as a starting point and extends it as suggested in CMS IN 2004/011.

- A prototype has been built and has some HCAL and PIXEL data in it for testing.

Condition DBs

Conditions HCAL

Conditions PIXEL

Con

Allignment Survey

Detector Geometry Database

Construction DBs

Construction HCAL

uction

Construction PIXEL

TBD

Generalized Database Schema

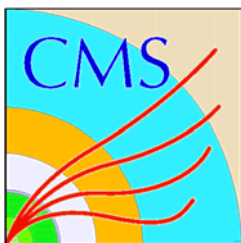"IOV" = Interval of validity

Gennadiy Lukhanin

End-to-end Test Chain

- End-to-end tests:
    - Access database for HCAL pedestals and gains
    - Access geometry from DGD (Detector Geometry DB) for tracker or other detectors.
    - Other tests possible, like accessing "simulated" PIXEL pedestals.

User Application
EDM Framework
EDM Context
Plug-in for P1 or P2

Frontier

Database
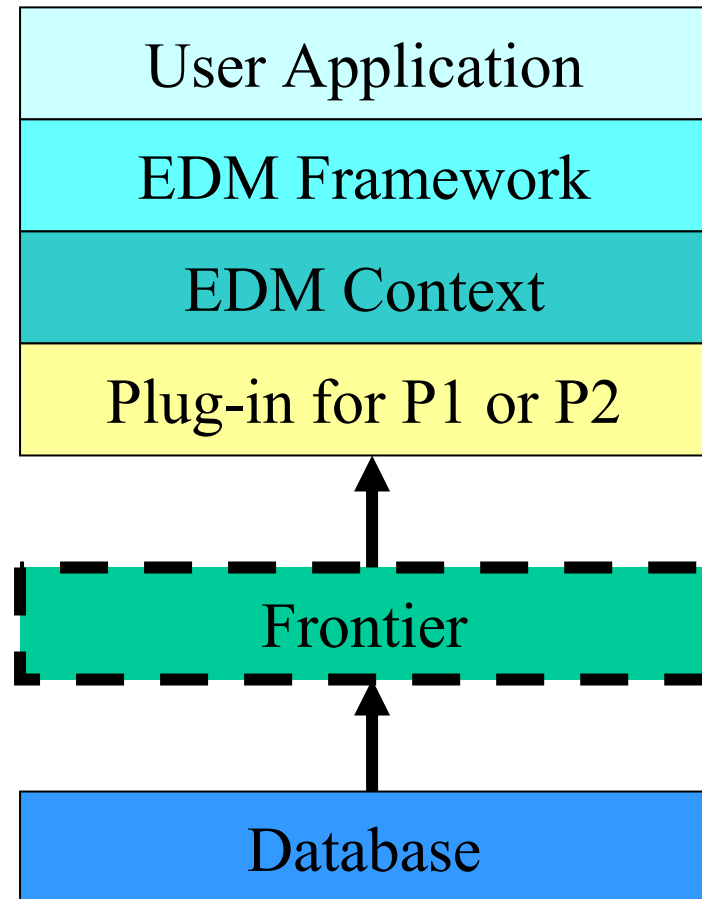
Access via Frontier

- This is the proposed offline distributed delivery system.
  - Frontier server(s) will be deployed at CERN.
  - Squid proxy/caches deployed at each Tier 1 and Tier 2 center. ACL (Access Control Lists) configured to accommodate needed users/servers.
- Operating with large objects (up to 1 GB) has been tested and works well.
- Testing will soon begin on the existing HLT farm to verify throughput and reliability.
  - Squid server load test
  - Full Frontier test (server + squid + client).

Offline DB Schedule

- May 2 – First draft of Roadmap. Finalize plan for C++ API and DB access machinery (continued testing in end-to-end).
- May 15 – Integration and production environments in place. Exercise shortly after that. Understand online to offline transfer needs. End to end test (DB to EDM framework) with HCAL (existing TB calib schema), and tracker geometry. Begin Frontier testing with HLT farm.
- June 1 – Generalized schema prototyping completed for PIXEL and HCAL. GenDB approach understood by sub-detector groups, begin testing w/ 2 or 3 additional sub-detector groups. Work with additional detectors to develop and exercise end-to-end tests.
- June 15 – First example of online to offline transfer tool. New GenDB schema loaded with HCAL TB calibration. Additional sub-detectors start using schema. Begin Frontier tests to Tier I and Tier II sites.
- July-August – Graphical tools. (PIXEL construction tools may be ready prior to this.) Deploy Gen Schema to production at CERN. Begin populating with subsystem information as available. Exercise DB access to reconstruction and HLT framework.
- September 15 – Most sub-systems ready for testing in Gen DB. Begin load testing. Start integration for Cosmic Challenge.

The End