**HGCAL DB Setup – a Short Description**

* If you need to access the HGCAL DB, please contact Imran ([Muhammad.Imran@cern.ch](mailto:Muhammad.Imran@cern.ch)), Rao (muhammad.atif.shad.rao@cern.ch ), or Umesh ([joshi@fnal.gov](mailto:joshi@fnal.gov)).
* There are 2 instances of HGCAL Database (DB)
  + HGCAL Development DB – INT2R Database
  + HGCAL Production DB – CMSR Database
* Both databases reside in CERN IT. **If found necessary**, an instance of the DB can be deployed in P5 to store HCGAL specific online data.
* The development DB is used solely for development work.
* Applications are deployed in the production DB after all known issues have been solved.
* It should not be assumed that data in the development DB is permanent. It can be wiped out when needed.
* Both databases are backed up.
* All production data resides in the production DB.
* The eight schemas (accounts) defined in the DB are all interconnected. Each schema is used to store a different type of data as described below.

HGCAL DB consists of the following 8 inter-connected schemas (accounts), each used to store different data types

* CMS\_HGC\_CORE\_ATTRIBUTE
* CMS\_HGC\_CORE\_COND
* CMS\_HGC\_CORE\_CONSTRUCT
* CMS\_HGC\_CORE\_IOV\_MGMNT
* CMS\_HGC\_CORE\_MANAGEMNT
* CMS\_HGC\_HGCAL\_COND
* CMS\_HGC\_HGCAL\_CONSTRUCT
* CMS\_HGC\_HGCAL\_VIEW

**CMS\_HGC\_CORE\_CONSTRUCT**

* This schema consists of the following tables. Tables in this schema are used store all detector components – e.g. Si Sensors, Si Modules, . . ., Casettes, Disks, HGC+, HGC-, and HGCAL
* **A component in the DB is uniquely identified with a unique barcode, serial number, and a name label.**
* Parent-child relationships are used to “construct” higher level detector devices – e.g. Si modules, Cassettes, Disks, etc.

CONNECTORS

CONNECTORS\_HST

KINDS\_OF\_PARTS

KINDS\_OF\_PARTS\_HST

LOGICALPARTTYPES

MANUFACTURERS

MANUFACTURERS\_HST

PARTS

PARTS\_HST

PART\_ATTR\_LISTS

PART\_TO\_ATTR\_RLTNSHPS

PART\_TO\_ATTR\_RLTNSHPS\_HST

PART\_TO\_PART\_RLTNSHPS

PART\_TO\_PART\_RLTNSHPS\_HST

PHYSICAL\_PARTS\_TREE

PHYSICAL\_PARTS\_TREE\_HST

SIGNAL\_CONNECTIONS

SIGNAL\_CONNECTION\_TYPES

SIGNAL\_CONNECTION\_TYPES\_HST

SUBDETECTORS

SUBDETECTORS\_HST

**CMS\_HGC\_HGCAL\_COND**

* This schema consists of user generated tables to store data related construction, calibration, and operations (data taking).
* Tables are deployed based on data types and conditions as defined, needed, and requested by users.
* Data generated during construction and integration can be stored.
* Note: If preferred, the DB can be moved to P5 to store calibration and configuration data.

HGC\_CERN\_SENSOR\_CV

HGC\_CERN\_SENSOR\_CV\_SUMRY

HGC\_CERN\_SENSOR\_IV

HGC\_CERN\_SENSOR\_IV\_SUMRY

HGC\_MOD\_ASMBLY

HGC\_PQC\_DIODE\_CV

HGC\_PQC\_DIODE\_IV

HGC\_PQC\_FET

HGC\_PQC\_GCD

HGC\_PQC\_LINEWIDTH

HGC\_PQC\_MOS

HGC\_PQC\_OXIDE\_BREAKDOWN

HGC\_PQC\_SUMRY

HGC\_PQC\_VAN\_DER\_PAUW

HGC\_SENSOR\_DEFECT\_CHKS

HGC\_SENSOR\_IRRADIATION\_SUMRY

**CMS\_HGC\_CORE\_COND**

* This schema consists of the following tables to store all conditions related meta-data – e.g. data types (kinds of conditions), association of detector components with datatypes, attributes associated with detector components and data types, etc.
* Each table defined in the CMS\_HGC\_HGCAL\_COND schema is associated with one or more types of data, a Kind of Condition name.
* A table in the CMS\_HGC\_HGCAL\_COND schema can host one or more kind of condition data.
* It also contains a table to store all channel related metadata of detector components.
* Tables in this schema define the relationships between detector components and associated data types.

CHANNEL\_MAPS\_BASE

COND\_ATTR\_LISTS

COND\_DATA\_SETS

COND\_RUNS

COND\_RUNS\_HST

COND\_TO\_ATTR\_RLTNSHPS

COND\_TO\_ATTR\_RLTNSHPS\_HST

COND\_TO\_PART\_RLTNSHPS

COND\_TO\_PART\_RLTNSHPS\_HST

KINDS\_OF\_CONDITIONS

KIND\_OF\_CONDITIONS\_HST

**CMS\_HGC\_CORE\_ATTRIBUTE**

* This schema consists of the following tables to store attributes and related information for detector components and data types.

ATTR\_BASES

ATTR\_CATALOGS

ATTR\_CATALOGS\_HST

COND\_ALGORITHMS

EXT\_POSITION\_SCHEMAS

MODES\_STAGES

POSITION\_SCHEMAS

**CMS\_HGC\_CORE\_MANAGEMNT**

* This schema consists of the following tables to store management information associated with detector components and data types.

CONDITIONS\_DATA\_AUDITLOG

INSTITUTIONS

INSTITUTIONS\_HST

LOCATIONS

LOCATIONS\_HST

USERS

**CMS\_HGC\_CORE\_IOV\_MGMNT**

* This schema consists of the following tables to store IOV and associated data.
* If you happen to browse through the DB, you will see additional tables that were deployed to meet requirements of the original Pixel detector online software.

COND\_DATASET2IOV\_MAPS

COND\_IOV2TAG\_MAPS

COND\_IOVS

COND\_TAGS

**CMS\_HGC\_HGCAL\_CONSTRUCT**

* This schema consists of the following tables used to store data to track shipment of detector components.

REQUESTS

REQUESTS\_HST

REQUEST\_ITEMS

REQUEST\_ITEMS\_HST

SHIPMENTS

SHIPMENTS\_HST

SHIPMENT\_ITEMS

SHIPMENT\_ITEMS\_HST