

The Glance Project

A database retrieval mechanism for the ATLAS detector

Carmen Maidantchik, Felipe Fink Graef, Kaio Karam, Kathy Pommès

ATLAS detector construction/commissioning

During the construction and commissioning activities, different data are stored by the several groups in spread databases. The repositories use distinct technologies, data modeling schemes and terminologies. Examples of datasets:

- Equipment items installed in the ATLAS cavern: Equipment database
- Electronics configuration and equipment location data: Functional Positions database
- Connectivity between items: Cable database
- Detector geometry description
- Commissioning databases: Rack Commissioning

The development of retrieval systems for each dataset would require too much effort and high maintenance costs.

Equipment management

Throughout the construction and operation phases, full equipment traceability must be achieved, in order to meet INB (Institute Nucléaire de Base) rules. Equipment installation, replacement and removal/waste have to be managed. This requires updates in more than one different dataset at a time. For example, the installation of one equipment item implies in the following tasks:

- insertion of data to the Equipment database
- description of its electronic configuration in the Functional Positions database
- configuration of the connectivity with other items in the Cable database

Supposing each dataset has its own update mechanism, the insertion of this information should be done in three different steps, using three distinct solutions. This effort can be multiplied by the number of equipment items that must be managed in the ATLAS experiment.

The Glance System

A unique system that automatically recognizes the internal structure of heterogeneous data repositories and creates interfaces for executing search, insertion and update of data. The system connects to database servers of distinct technologies: Oracle, via OCCI library; MySQL and Microsoft SQL Server, using an ODBC driver. The software components are implemented in the C++ programming language.

Search Interfaces creation

List with some predefined data sources.

Other servers can be accessed by providing the connection information.

The internal structure of the repository is displayed, gradually increasing the level of detail, to allow the selection of components to define a dataset.

The description of the SI is automatically created in XML format. Customizing the XML, it is possible to associate synonyms and description texts to schemas, tables, columns or attributes, matching a specific terminology. The system stores the description and handles multiple interfaces.

Search on Cables Database

Multiple parameters

AND or OR matching criteria

Display results in various formats

Three elements define a search rule:

- An attribute: a column in a table or a composition of several attributes.
- An operator: establish a comparison. Ex: the options for an alphanumeric attribute are "Contains", "Equal To" or "Different Than".
- A reference value. A list with the available options can be displayed, guiding the users' selection.

URL carrying the information needed to perform the search, can be used as a bookmark.

Insert Interfaces

Before submitting to the repository, the information is validated according to the attribute types and other restrictions previously specified in the interface description.

Creation of Equipment in profile PIXEL Off Detector Equipment

Add/remove lines to the table

Values can be propagated to a set of selected lines.

Pre-defined prefix value.

Field with fixed length.

Copy lines and paste to others.

Data can be imported from CSV or Excel files.

Interaction to other applications - TileCal DCS

The Glance system supports the monitoring and analysis of the TileCal Detector Control System data.

Pre-defined calculus executed on the data.

DCS Database

Glance

SI

Operation

XML

DCS Web System

Non-physics data: voltages, currents and temperatures

Distinct data sources integration

Equipment Database

Functional Positions

Radiation History

Glance

Equipment Management Databases

Equipments Passport (Detectors Units, Electronic crates, Boards...)

- Asset tracking / INB
- Specific parameters

Functional Position Back End - Rack

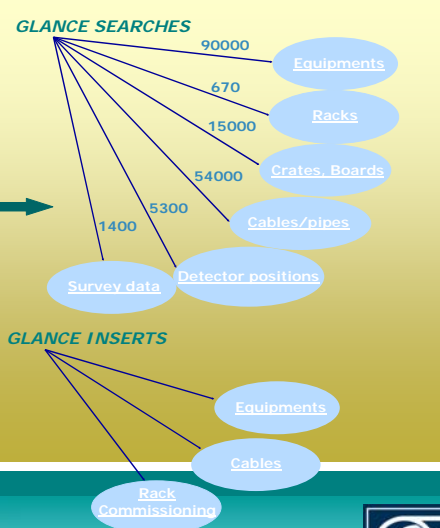
- Electronic Configuration

Functional Position Front End - Detector

- Electronic Configuration
- Geometrical and spatial position 3D
- Survey targets

Rack Wizard

Rack Wizard + AtlasEditor3D



ATLAS Detector Safety System database

DSS Database

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Alarms configuration displayed on the Web

Search DSS Alarm

Alarm name: AL_Smoke-Y-08-16-A1

Alarm:

- Name: AL_Smoke-Y-08-16-A1
- Status: CREATED

Input Conditions:

Name	Library [x]	Status
AL_Smoke-Y-08-16-A1	CREATED	CREATED

Output Actions:

Name	Delay [x]	Status
AL_Smoke-Y-08-16-A1	CREATED	CREATED

History: [Show]

The Glance Team:
 Felipe.Graef@cern.ch,
 Kaio.Karam.Galvao@cern.ch,
 Carmen.Maidantchik@cern.ch,
 Kathy.Pommès@cern.ch