Database

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Database Use Cases

1. Data cataloguing (run info, file location, ...)

2. Storing materials / parts / geometry information

3. Storing / retrieving calibration constants

4. Storing / manipulating slow controls / monitoring information

Use Case Mapping

- Simulation: 1, 2 (+3)

- DAQ: 1, 3, 4

- Analysis: 1, 3 (+2, 4)

➡ Would be best to have all 4 use cases covered by one database with uniform access

Example: MaGe Geometries + GDML

- Code geometry in G4

- Export to GDML, put GDML file in DB

- Pull GDML file from DB for simulation production jobs

Provides a tag for the geometry that is distinct from the MaGe tag

MaGe's DB Code

- Retrieves material / geometry information from a PostgreSQL database

- Buggy, difficult to modify / augment

- Uses direct interface to PostgreSQL; could be replaced by ROOT's TSQL* interface

- Only used by MAJORANA (to my knowledge)

DB Options

- SQL-based: highly structured, powerful querying capability; better for e.g. calibration constants

  - PostgreSQL

  - MySQL

- Schema-less databases: lighter weight, flexible I/O and data definition; better for e.g. data cataloguing

  - CouchDB

  - MongoDB