Databases

Murrough Landon – 7 April 2005

http://www.hep.ph.qmul.ac.uk/~landon/talks

Overview

- ATLAS database strategy
- Existing L1Calo databases
- Future plans and proposals
- Production, Installation and Commissioning DBs

ATLAS database strategy (1)

Organisation and documents

- database project: Richard Hawkings and Torre Wenaus
- website: `cern.ch/Atlas/GROUPS/DATABASE/project`
- strategy for online databases: ATLASDB-2004-7

  `cern.ch/Atlas/GROUPS/DATABASE/project/online/doc/online_evolution.pdf`
- ideas for subdetector configuration: ATLASDB-2004-10

  `cern.ch/Atlas/GROUPS/DATABASE/project/online/doc/subdet_config.pdf`
- occasional online database phone meetings
- new TDAQ configuration WG: Igor Soloviev and Johannes Haller
- recent workshop for database developers:

  `agenda.cern.ch/fullAgenda.php?a044825`

ATLAS database strategy (2)

Outline vision

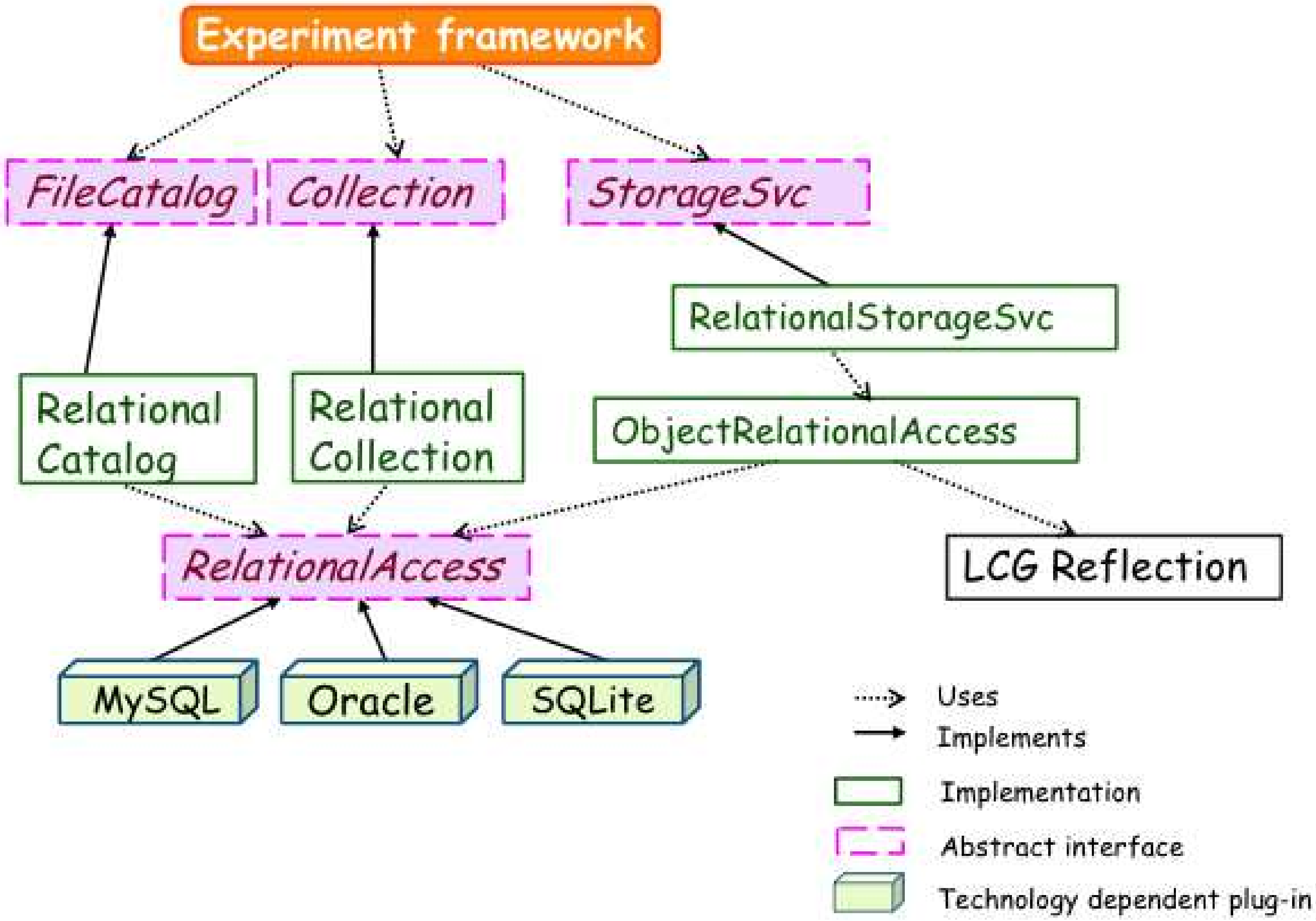
- general move to using common LHC Computing Grid (LCG) tools
- OKS configuration databases just for configuring TDAQ
- subdetector configuration from relational databases (if they want)
- new LCG conditions database project (COOL) to replace “Lisbon API”
- TDAQ to provide access to these from within ROD crate DAQ etc
- there needs to be a compact subset of LCG libraries for online use

ATLAS database strategy (3)

Overview of LCG Tools

- lots of layers with interfaces and plugin components
- POOL for persistent objects (via ROOT for event storage)
- new “Relational Access Layer” (RAL): technology independent access to relational databases, implementations for Oracle, MySQL and SQLite
- new Object Relational Access: store C++ objects using RAL
- new conditions database (COOL): uses RAL plus interval of validity (per object)
- hierarchical versioning system (HVS): give version to groups of objects

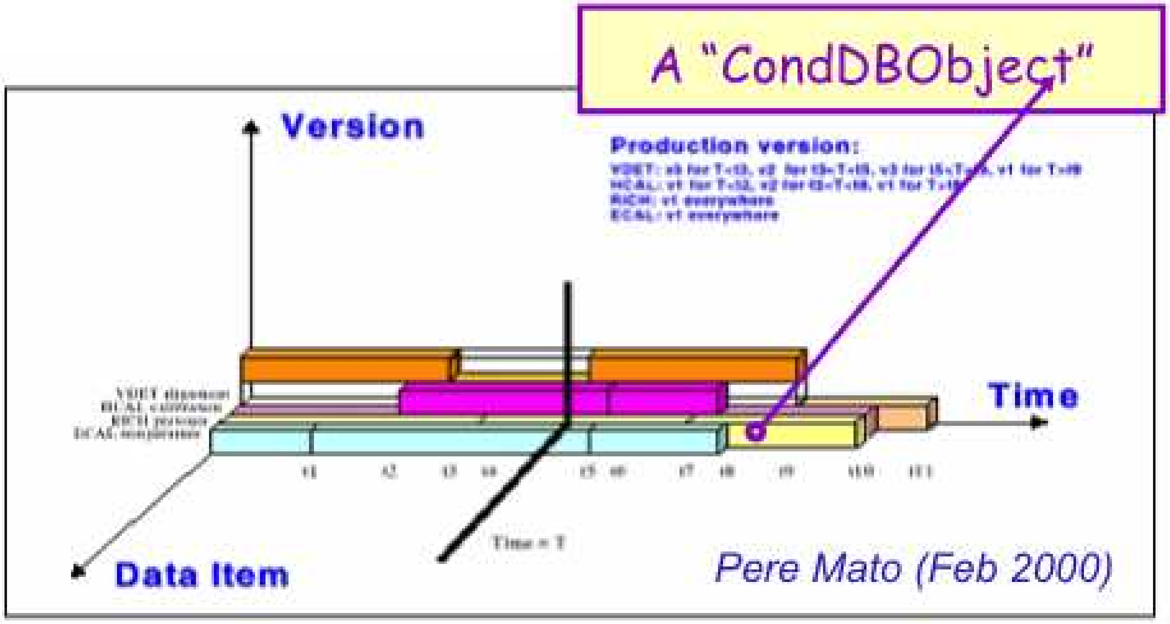
Overview of LCG Packages



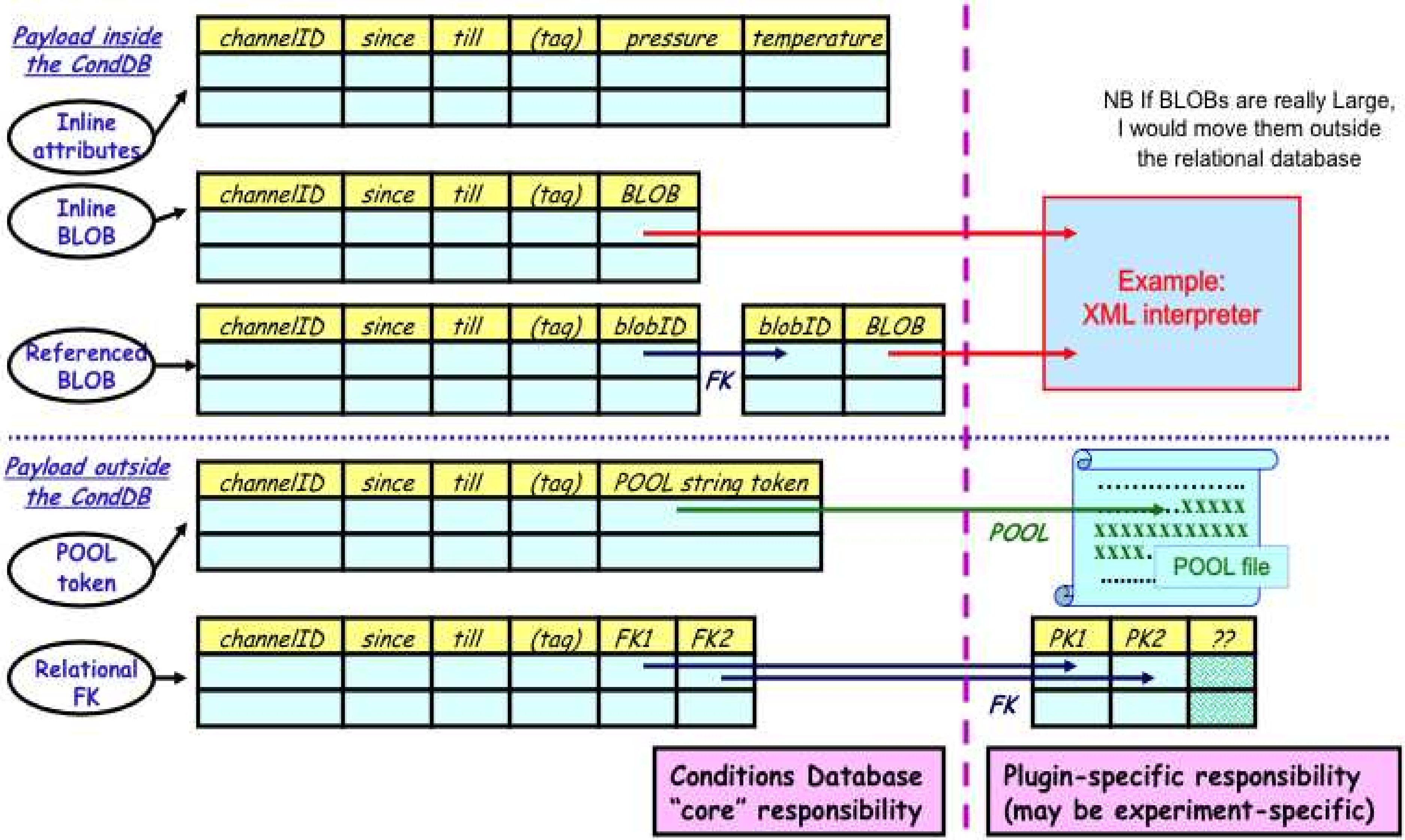
ATLAS database strategy (4)

LCG Conditions Database (COOL)

- release expected by April 2005 (prerelease in January)
- stores data values, objects(?), tables, BLOBs or references to data in other databases along with their intervals of validity
- items organised in folders eg l1calo/calibration/physics/energy/ppm/nn



Possibilities for storing data in CondDb



Online/TDAQ database strategy

Future of configuration database?

- new TDAQ configuration WG has recently started working
- present plan to keep separate configuration database for TDAQ
- investigating methods to move from OKS files to relational DB
  ...but with same API online
- thinking about ways to store state of configuration DB in conditions DB eg at start of run

L1Calo database (1)

Present status

- so far everything is based on the online OKS configuration database
- except for PPM configuration from separate XML structures
- extensions for custom module types
- description of firmware
- cables
- calibrations and trigger menu
- run types
- test vectors (DataGenRecipes)
- some attributes taken from IS instead of static database

L1Calo database (2)

Plans

- new trigger menu (by Johannes) defined in relational DB (via RAL)
- move calibration data into COOL - the new conditions DB
- develop new definition of run types, also in COOL?
- lower priority, consider how hardware (modules, cables) map to/from technical coordination installation DB
- problem of how “purely” TDAQ configuration (applications, run controllers) map to TC derived configuration (eg CPUs in crates)

L1Calo database (3)

Other conditions

- lists of dead/hot channels - so far we have little on this (apart from CPM and JEM channel masks)
- what else?

Store complete configuration at run start?

- read all registers of all modules and save to conditions DB?
- ie in addition to saving higher level references to calibrations, trigger menu, run types etc that we used to load the system
- CTP and MuCTPI plan to do this
- rather more data for us
- need a schema

Other Databases

Production Databases

- do we have all the databases we need for module production and testing?
- reminder: TC will want copies of the data eventually

Installation and Commissioning Databases: What do we need?

- TC database will describe the final complete installation (and history)
- not sure if it will be suitable (or have smooth enough tools) for use during commissioning if temporary cabling is used between receivers and PPM at least
- we need to be able to store and retrieve calibrations from the database
- what additional information, eg test results do we need to store during commissioning? We need to start making lists
- more discussion tomorrow?