Software Status

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

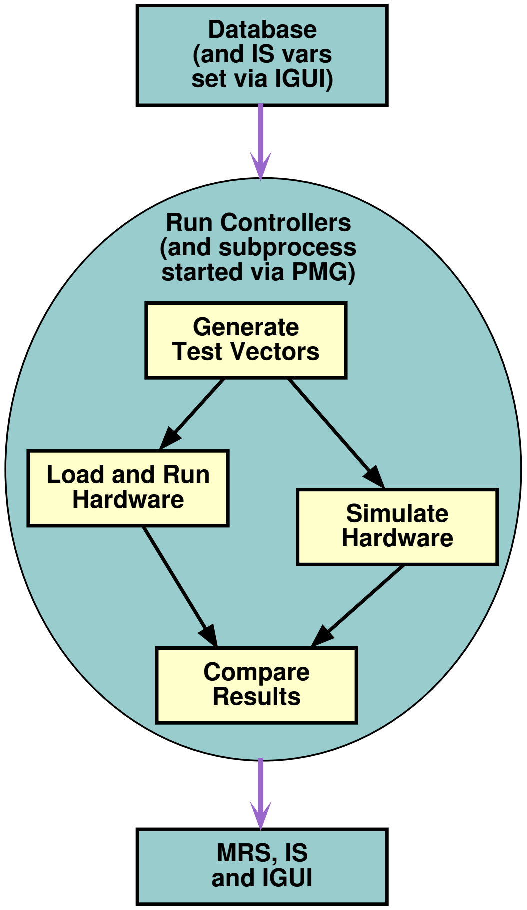
Overview

- Reminder of the aims
- Recent developments (whats there)
- Whats missing
- Overall status
- Progress, plans and people

Reminder of the Aims

Slice Test Procedure

- Choose a test to run and a hardware configuration
- Generate test vectors (if necessary)
- Load the hardware with test vectors
- Simulate expected output of the selected configuration
- Run the system, collect data, compare and report



Recent Developments (1)

First release

- We recently made the first official “release” of our online software (l1calo-00-00-01)
- Aim was to make an identifiable step in “evolutionary delivery” of what we need for the slice test
- Functionality limited to CPROD/DSS tests at RAL (though versions of CPM and CMM packages were also included “as is”)
- Includes everything required for a non-expert to run the test system – with a few rough edges

  No feedback yet?
- Everything is done in the framework of the ATLAS Online software – though we are not using all its facilities yet

Release Functionality

l1calo-00-00-01 features

- The database fully describes the configuration, including the run control system, other programs to be run, workstations, crate, modules, connections, test vectors and overall “test descriptor” file
- Test vector generation and simulation uses the database and is executed in a run controller
- Loading the hardware is also done by a run controller which starts a separate process to perform the readout
- Selection of the test to be done and associated run parameters can be set with the IGUI which also displays the status of the test as it runs
- The release can be downloaded and installed from the web

Recent Developments (2)

Miscellaneous

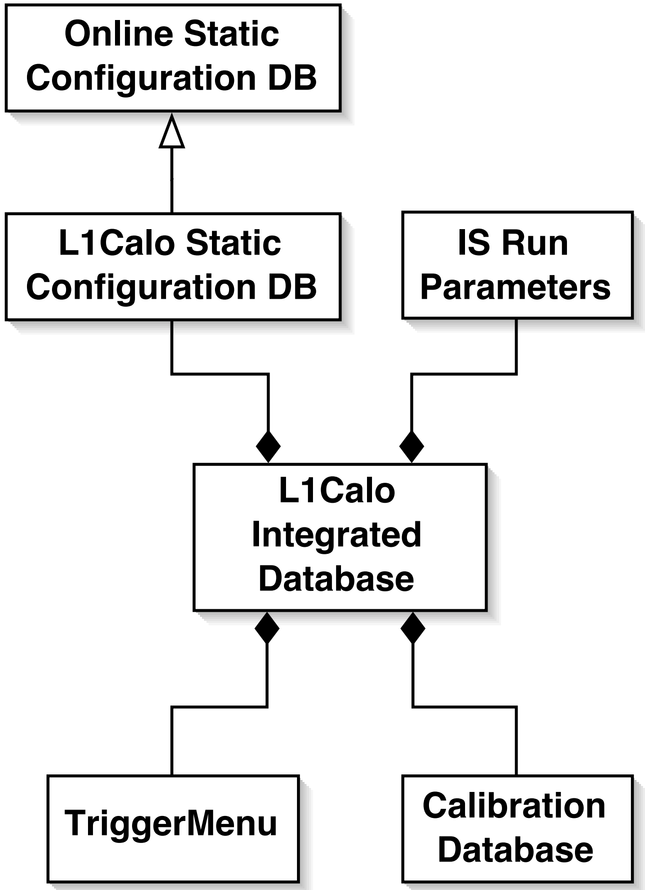
- Test vector generation and simulation now included in the run control framework
- Module services and simulation are both fully configured via the database
- The database integrates static configuration, volatile run parameters, calibration and trigger menu data
- Improved error handling and reporting from simulation and module services via run controllers to MRS
- IGUI panels show CPROD test status reported by DSS readout program
- There has been a lot of progress with the CPM module services
- Various HDMC improvements: robustness, loading FPGAs, etc
- We now do nightly builds of the software, including generating source code documentation via Doxygen and Javadoc

Database overview

Aim

Provide module services and simulation objects with one database object that provides everything they need:

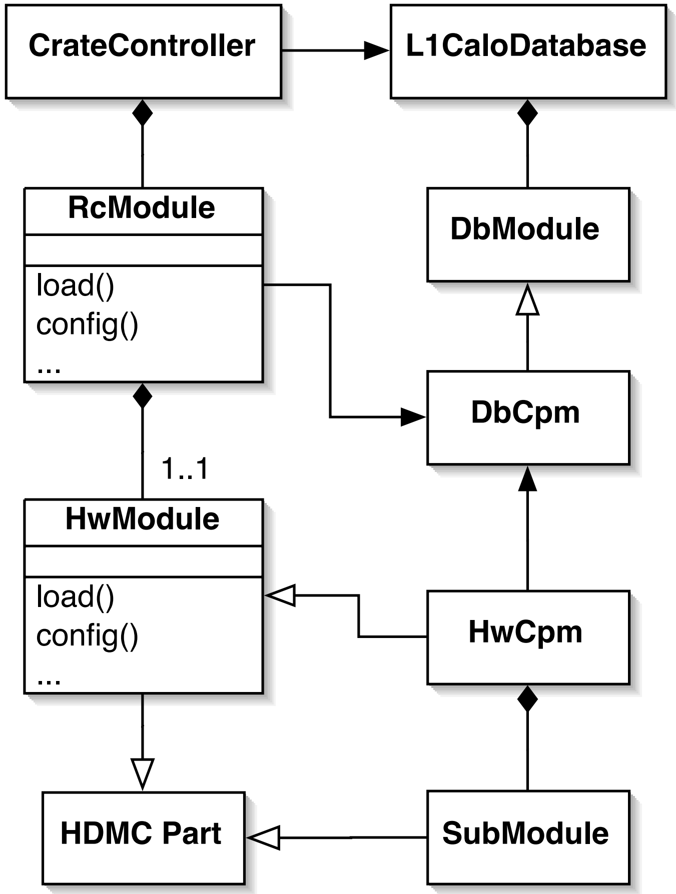
- Static configuration information from the Online database (eg addresses) with our own extensions (cables, test vectors, firmware)
- Volatile run parameters: override static configuration interactively
- Calibration data and trigger menu: may change from run to run or during multistep scans



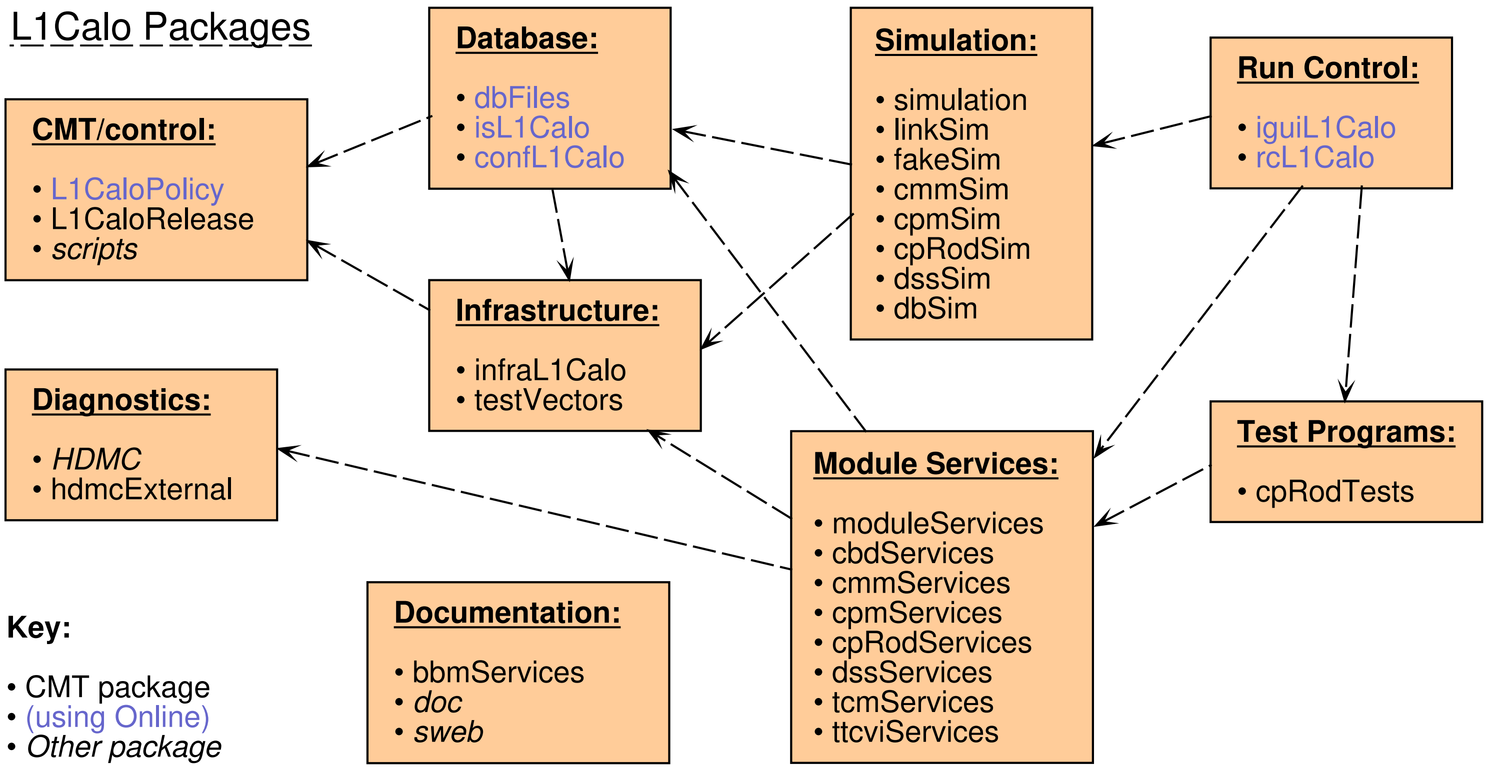
Run control overview

Devolution to modules

- Generic controller for all our crates
- Actions for each transition handled by the modules
- RcModule handles interaction with Online (MRS, IS)
- HwModule does all the work and can be used in standalone test programs
- Readout process started by PMG
- Also envisage separate hardware status monitoring program



L1Calo Components and Packages



Whats missing? (1)

General framework

- Implementation of L1A generation (requires DSS GIO card)
- Use of the ROS and monitoring framework
- Multistep runs, loading in new test vectors. Also calibrations
- Interaction of database and test vector generators needs revisiting
- Inclusion of HDMC into CMT environment

CP subsystem

- CPM module services (nearly complete?)
- CPM simulation has been ready for a long time
- CMM module services (partly done)
- CMM simulation (partly done – needs updating?)

Whats missing? (2)

JEP subsystem

- Database: add JEM (esp calibration, trigger menu)
- JEM module services: move existing scripts into module services framework
- JEM simulation: someone has to take over student project and complete it
- CMM: jet and energy algorithms must be added to CP simulation
- CMM module services: little change from CP version?
- Test vectors: physics test vectors exist, what about specially crafted ones to test boundaries, random data etc?

Whats missing? (3)

PP subsystem

- Database: add PPM (esp calibration data) and PPROD
- PPM module services: Asic/MCM test code may be a starting point? But a lot more is probably needed
- PPROD module services: CPROD may not be very similar?
- PPM simulation: started?
- PPROD simulation: here CPROD may be a good starting point?
- Test vectors: analogue pulses exist, what about digital data to check BCID, jet summing, etc?

Rough summary

Activity	Core	ROD	CP	JEP	PP	Slice
Database	90%	90%	80%	70%	50%	60%
Test vector gen	90%	90%	70%	50%	30%	40%
Simulation	90%	90%	70%	40%	20%	50%
Load hardware	90%	90%	70%	60%	20%	50%
Run control	80%	N/A	N/A	N/A	N/A	80%
Read out data	50%	90%	N/A	N/A	N/A	10%
Display results	60%	90%	60%	30%	10%	40%
Diagnostics	90%	90%	80%	50%	20%	40%
Monitor h/w	50%	10%	10%	10%	10%	10%
Calibration	20%	N/A	20%	10%	10%	10%
Event dump/disp	50%	0%	0%	0%	0%	0%

Promises, Promises... (1)

Timetable as at Stockholm: CPROD tests

- Complete integration of CPROD tests: module services, database, run control, test vectors interface.
- Be able to successfully run a single test via the run control. [July?].
  DONE August/September, Release in October

Promises, Promises... (2)

Timetable as at Stockholm: CP subsystem tests

- Add CMM and/or CPM with their test vector generators and simulation. Include L1A generation via a DSS.

  Still under development

- Be able to run a single test including simulation of the selected configuration. Event readout still via DSS? [August?]

  CPM is fairly close, CMM December?

- Integrate the ROS, implement event monitoring and comparison via the ROS.

  Not started

- Expand to whole CP system. [September?] December?

Todays Schedule (1)

CP Subsystem

- Complete CPM module services and integrate with run control. [November]
- Ditto for CMM, including simulation. [December?]
- Run CPM and CMM together. [December seems optimistic].
- Integrate the ROS, implement event monitoring and comparison via the ROS. [December?]
- Implement multistep test sequences. [November/December]
- Develop timing calibration procedures (CPM and CMM inputs). [December?]
- Add hardware monitoring and reporting via the IGUI. [December?]

Todays Schedule (2)

JEP Subsystem

- Integrate JEM code into module services and database. [???]
- Finish JEM simulation. [???]
- CMM extensions for the JEP subsystem. [???]
- Best approach would be an intensive joint working visit, but this takes experts away from the CP subsystem...

PP Subsystem

- Wait until Asic/MCM tests satisfactorily completed?
- Then lots of integration work required. [March?????]

People

Some hope...?

- Part time help from QM system manager from January
- New students at Birmingham, Heidelberg, Mainz, Stockholm: some may be able to work on software
- But still a lot to do at the moment...