Software Status

Murrough Landon – 16 March 2002

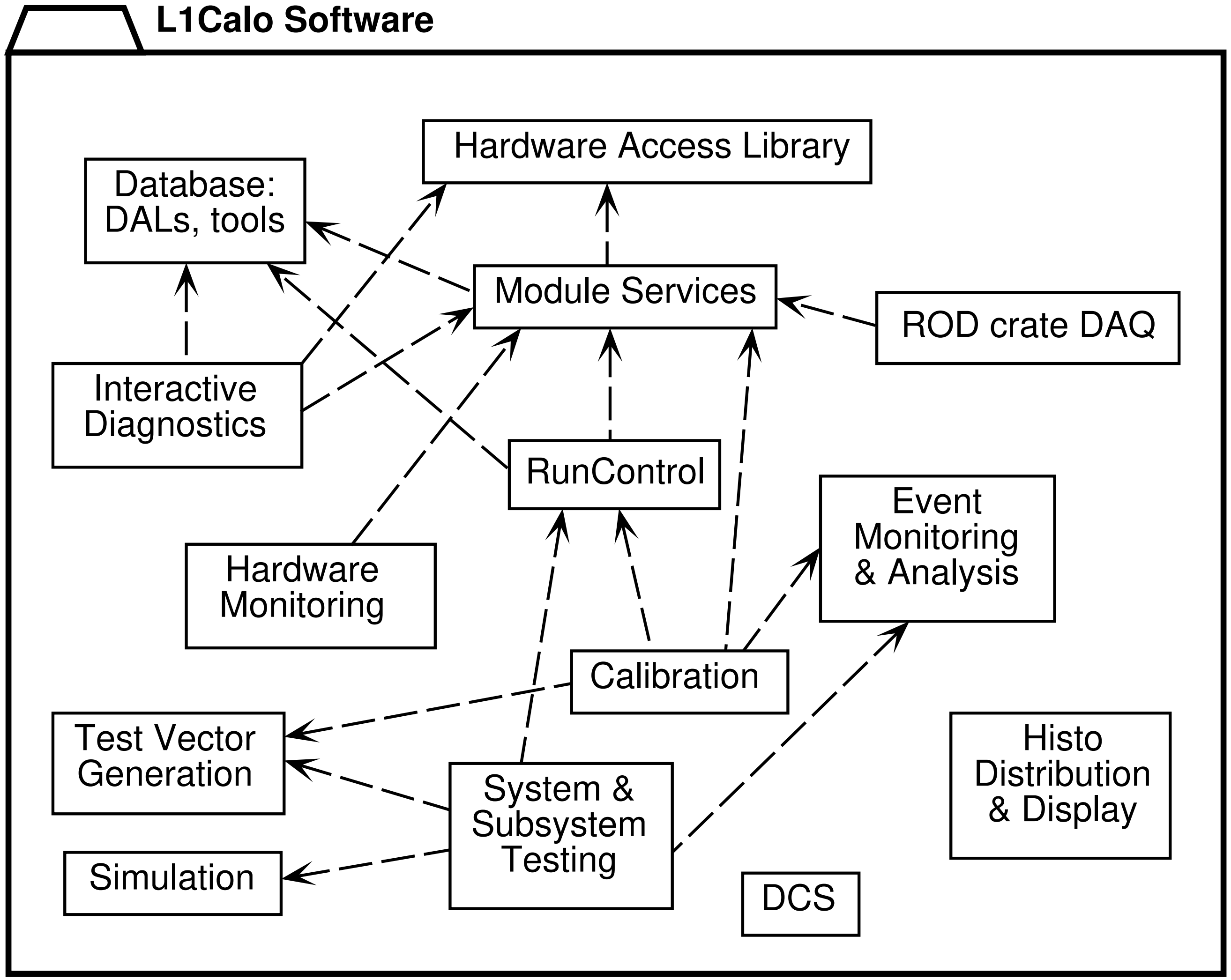
http://www.hep.ph.qmul.ac.uk/~landon/talks

Overview

- Packages
- Test vectors
- Next steps
- External requirements
- Timescale?

Packages Diagram

L1Calo software packages and internal dependencies



Packages (1)

HDMC

- No major changes (but see under Module Services)
- Parts files developed for CMM, CPM
- New parts for PP system...
- ...still require VME driver for homebrew CPU

Module Services

- HDMC parts file syntax extended to support submodules
- New developments (nearly) documented
- Example code used to develop module services for the CPM

Packages (2)

Databases

- Standard online configuration database extended to include classes for our modules
- Also recently extended to allow description of connections between modules (single cables or groups)
- Trigger menu (without editor) has existed for some time, but integration with CTP led developments will be needed
- Preliminary calibration database currently being extended
- More work is still required to bring all the above together for simple use by module services objects

Integrated GUI

- The main run control GUI (the Online IGUI package) has been extended to include panels to show and set the above IS variables

Packages (3)

Run Control

- Little change to run controllers
- Interface to database hived off so it can be used by other programs
- Still required: start processes (eg DSS “kicker” or calibration/test sequencer)

Information Service

- Classes using the Online IS package defined to store our dynamic configuration data, eg L1Calo specific run parameters, module parameters that it mgiht be useful to change quickly (without editing the database)
- NB this is done via the Online database package with C++ and Java being generated automatically from the schema

Packages (4)

Simulation

- Core simulation package complete
- Full reference documentation and user guide available:

  `http://www.hep.ph.qmul.ac.uk/l1calo/doc/pdf/Simulation.pdf`

  `http://www.ep.ph.bham.ac.uk/user/hillier/level1/simulation/simref.pdf`
- CPM and (CP) backplane simulation complete (with fake PPM)
- But readout needs changing to proposed L1A scheme
- CMM simulation still required
- JEM simulation in progress?
- Extension to PPM being considered?

Packages (5)

Test Vectors

- Test vectors(?) and pulse library for PP system exists
- Test vector generation for CPM is fairly complete(?)
- Still need code to generate test vectors for CMM
- Also for JEP system?
- Overall scheme for organising test vectors and running tests agreed (pulling together work on databases, run control, test vector generation and simulation)
- ...but still needs to be implemented
- And test vectors for larger diverse systems required

Packages (6)

Organisation

- Several packages are now using CMT as the tool to build them (this is now the official ATLAS tool)
- Working model basically copied from the Online group
- CMT looks to be very useful in organising collections of many packages developed by different people

Scripts

- Package of scripts created to include CMT related utilities (and some existing scripts)

Test Vector Organisation

- Not just organisation of the test vectors, but also the calibrations, trigger menu and other settings required for simulating the system (roughly the domain of the System Test package on our package diagram)
- Need to be able to run named tests, on varying hardware configurations, and have the system loaded correctly and the correct expected outputs available
- Would like to quickly reuse previous simulations and also easily and automatically generate new ones
- Recent brainstorming meeting came up with proposals:
  `http://www.hep.ph.qmul.ac.uk/l1calo/sweb/meetings/2002/testvectors.html`

Next Steps (CP Subsystem Tests)

- Complete work on database, fix APIs [urgent!]
- Complete CMM, CPM module services using database objects
- Develop CMM simulation
- Implement ideas on organising test vectors
- Integration(s) of existing modular components
- System management to get updated systems at RAL and Bham

Integrations

- Integration of CP simulation with the extended configuration database successfully made during the recent ATLAS week. But now need to link configuration to test vector inputs...
- First integration of HDMC and module services with run control (and configuration database) last year was partially successful. Since then there have been new developments and improvements. Try again when Bruce gets back.
- Complete CMM, CPM module services using database objects
- Implement ideas on organising test vectors
- Integration(s) of existing modular components
- Try on new hardware (but not too soon!)

Remaining Work

- Try more of the Online software (eg Event Dump, Event Monitoring, Histogram transport, Online Bookkeeper?)
- Calibration/setup procedures (may collect events via Monitoring)
- Hardware monitoring (reporting of link errors etc to IGUI)
- More documentation, user guides, design descriptions, etc. NB for most packages some reference documentation is already automatically generated via Doxygen or Javadoc, see:

  `http://www.hep.ph.qmul.ac.uk/l1calo/sweb/packages`
- Extension to the other subsystems...

External Requirements

Just a reminder...

- Readout of the CMM requires new ROD firmware
- Also readout of the JEM requires new ROD firmware
- Effective operation of tests requires DSS firmware modifications (wraparound, pause after bursts of triggers)
- Access to the hardware is required to test the **software** (as well as the hardware itself)

Timescale (UK aspects)

Optimistic estimates?

- Database work: 4 weeks?
- Module services work: $>$2 weeks? + documentation
- Test vector scheme: $>$4 weeks?
- Module services for CPM, CMM: 2-4 weeks each?
- Simulation of CMM: $>$2 weeks?
- More test vector generators: few weeks?
- Run control related: 2 weeks?
- Various integration tests: 2-4 weeks
- Not likely to be ready before May/June??