Software Status, Direction and Priorities

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

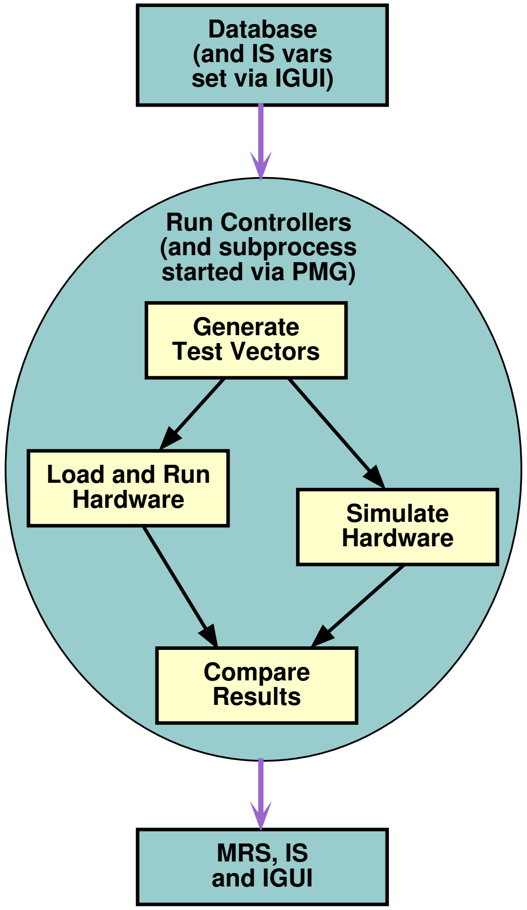
Overview

- Introduction
- Recent progress
- Whats missing
- Suggested priorities
- Timescale: next steps
- Worries and risks
- Summary

Reminder of the Aims (1)

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



Reminder of the Aims (2)

Procedures requiring software

- Single module debugging and acceptance tests for all modules
- Links between modules
- System tests: setup, exploring parameter space and rates, soak tests with good parameters
- Calibration: Timing (digital), LUT, BCID, analogue synchronisation

Recent Developments: Summary

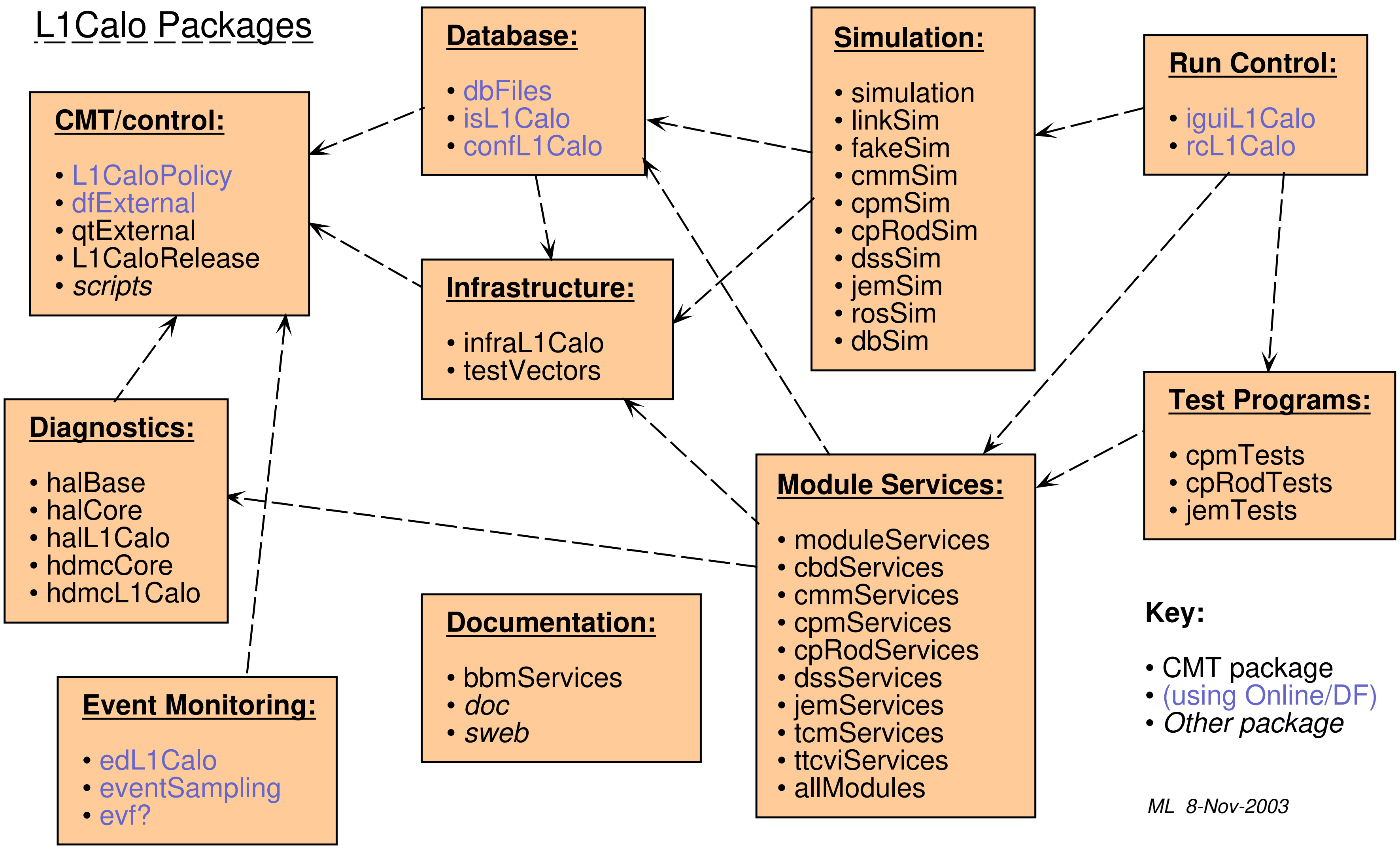
Since the QMUL meeting

- Main focus on testing and improving rather than radical changes
- Refinements of software for CPM, JEM, CMM, CPROD, DSS
- JEM and CMM(energy) simulation improved/implemented
- Changes to test vector generation and L1A generation
- Just started integrating with the ROS

Miscellaneous

- TDAQ developers meetings: looks like being a useful forum

L1Calo Components and Packages



Missing Software (1)

Module specific

- PreProcessor: Atlas/L1Calo software training,
  - Atlas/L1Calo software training
  - Module services (HDMC parts)
  - Complete simulation (Paul has started this)
  - Test programs (e.g. video memory controls?)
- JEM: testing jet component of module services and simulation with new jet firmware
- CMM: jet component of module services and simulation
- CTPd:
  - Simple simulation (or interface) in our framework
  - Control (RodBusy etc)
  - Interaction of databases...

Missing Software (2)

Module specific (continued)

- 6U ROD: simulations for some datatypes (given firmware)
- 9U ROD:
  - New/updated module services and simulation
  - On-module monitoring
- ROS:
  - DB interaction, simulation (readers etc) [started]
  - Analyser of events
  - Fast inline event comparison (using custom ROS IO module)

Missing/Incomplete Software (3)

System related software

- Offline: using ATHENA for analysis/monitoring/calibration
- Physics test vector input
- Generating test vectors (for some modules)
- Event dump: new/modified formats
- Multistep runs for calibration:
  - Stepping infrastructure largely untested
  - Run numbers, run steps and checkpoints?
- Calibration:
  - Control: pulsing, setting parameters, LTP
  - Analysis, conditions DB?
- Histogramming (of monitored events, calibrations)
- DCS

Suggested Priorities (at October S/W Meeting)

- ROS [started]:
  - Installation
  - Integration (database, simulation, comparison)
- Multistep runs [started]:
  - Use in existing setups
  - Anticipated use in integrated calibration
- PreProcessor:
  - Ground work
  - Integration of existing work

Next steps (1)

Short term programme: before Xmas

- CP subslice: CPMs-CMM-CMM links, timing setup
- JEP subslice: (JEMs)-CMM-CMM links, jet algorithms in JEM and CMM
- Readout multiple RODs to ROS, monitor events
- Multistep runs for calibration/setup and long soak tests with random and physics test vectors
- Monitoring/analysis of online events
- PreProcessor groundwork

Critical non-software requirements

- Various CMM readout formats and corresponding 6U ROD firmware
- Jet firmware in JEM and CMM
- FILARs and HOLAs (expected soon)

Next steps (2)

Medium term: before Easter?

- PPM standalone: simulation and module services software, configuration and calibration data

  This needs to start now! Eg training in tools, Online software etc
- PPM readout: ROD firmware, simulation and testing
- PPM integration: PPM-CPM/JEM communication and timing calibration
- Further exploration of CP and JEP subslices
- Test with CTPd? Simple simulation, mix and match database, run controllers

Critical non-software requirements

- PPM! RemFPGA firmware, readout data format and 6U ROD firmware
- Supported CPU and system software (ie CERN RedHat Linux 7.3)

Next steps (3)

Medium term: after Easter?

- Exploration of complete slice setup
- Monitoring/analysis (and simulation?) of events with offline tools (ATHENA)?
- Preparation for summer 2004 test beam
  - Migration to latest Online/Dataflow releases:
    database changes, ROD crate DAQ style run controllers?
  - Combined test beam configuration, databases, environment etc
  - Joint calibrations with LAr and/or TileCal
  - Monitoring/analysis of combined Lar/Tile/L1Calo test beam data offline

Risks

- Progress is just too slow: concentrate on priorities
- People leaving or not joining:
  this is not just a risk: Cano will go to D0 and Jürgen will leave QM, not sure about Heidelberg personnel status
- No PreProcessor software: ?
- Hardware troubles distract from software progress: complain louder!
  NB DSS modules are **still** *flaky*
- Necessary software migrations (Online/database/compilers) are harder than expected or difficult to schedule: ?
- Conflicting priorities, eg slice test, test beam, PPM, 9U ROD: ?

Summary

Progress

- Some good progress... but still going slowly

Worries

- Software for the PPM
- Databases: migration to new Online style configuration database, confusion about conditions database, time taken to prepare database configurations, etc
- Event monitoring, larger scale systems, offline, ...

Less worrying

- ROS: integration now started
- Hardware reliability: RODs better, still some DSS flakiness