WP1 Review

David Ward

- WP1 covered the completion of the original Calice program as proposed in 2002, i.e.
- Beam tests (electrons and hadrons) of 30-layer ECAL prototype accompanied by AHCAL and one or more DHCAL prototypes.
- Interpretation of data and comparisons with MC models such as Geant4.
- Feed back results into more reliable studies of energy flow.
- Electronics/DAQ aspects largely covered by Paul's talk.

Schedule

- In our proposal in January we envisaged the following:
- Complete ECAL prototype at DESY April 2005. Electron beam tests at DESY until June/July 2005.
- Combined ECAL/AHCAL hadron beam tests at Fermilab starting Autumn 2005; running into 2006.
- Combined ECAL/DHCAL beam tests some time in 2006.
- “Limited activity continuing well into 2007.
- New RAs starting ~April 2005.
- Travel money in FY05/06 and (especially) FY06/07.

Schedule

- Since January, everything has (rapidly) slipped.
- ECAL prototype run (with 14 layers, each of 6 wafers) in Jan/Feb ’05 was highly successful, but production difficulties with Si wafers have delayed completion.
- Now don’t expect completion till end of 2005 (full depth; hopefully full width).
- Cosmic, followed by electron beam tests at DESY, early 2006. Then CERN performance run from ~Jun-Oct 2006.
- AHCAL will now not be ready before March 2006.
- AHCAL commisioning and tests at CERN summer 2006 (μ/hadron beams).
- TCMT tests at DESY autumn 2005.
- Move to FNAL MTBF autumn 2006, full ECAL/AHCAL/TCMT tests in 2007.

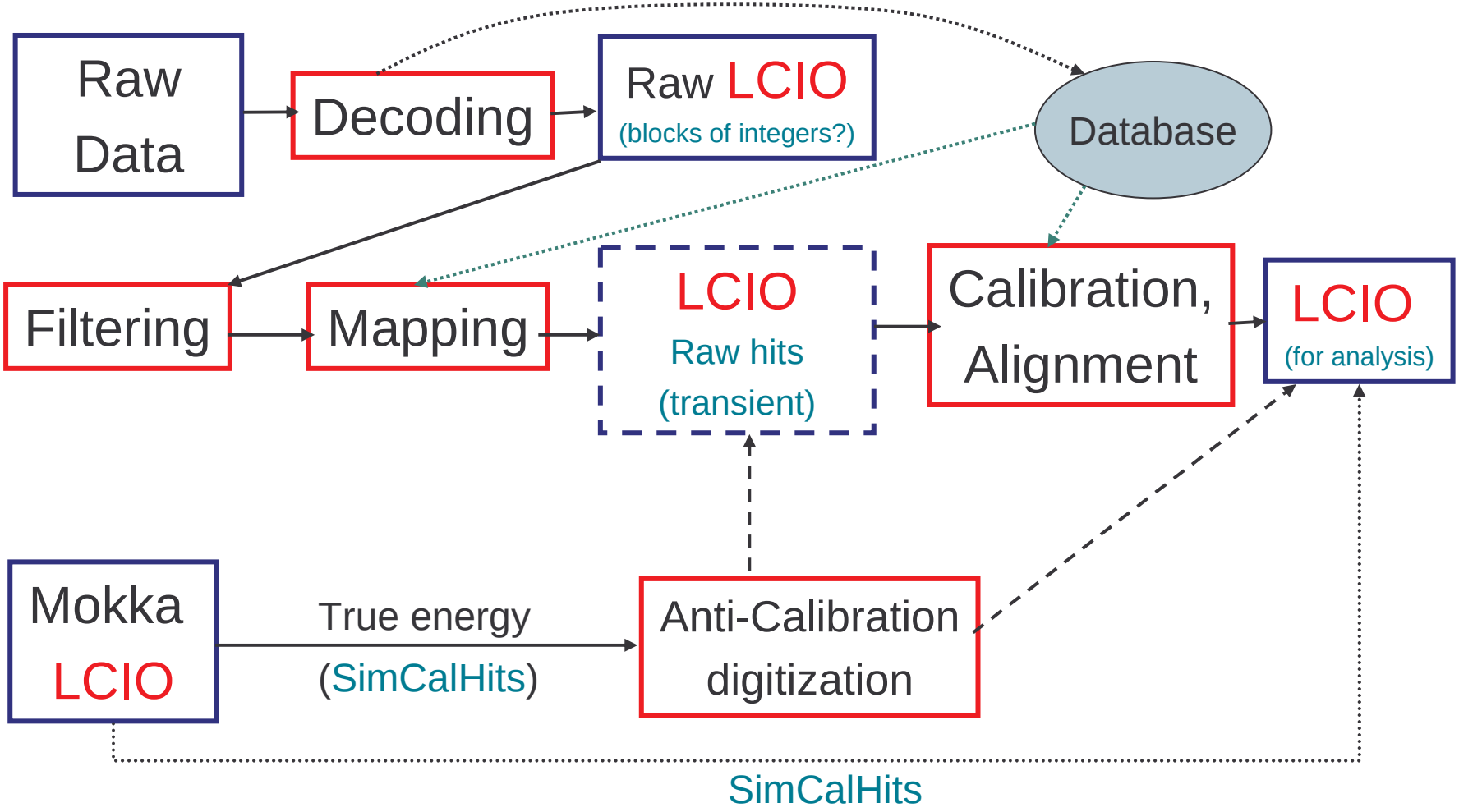
Schedule

- But also (and perhaps fortunately) , the Calice-UK schedule has slipped.
- Took ~6 months to get proposal through PPARC.
- Program stretched to four years rather than three (probably fortunate in some ways).
- Apart from George, newly approved RA's have not yet started.
- Effort for WP1 will be needed later than previously planned. Need to envisage running shifts, supporting DAQ, analysing data through 2007 and into 2008. Need to maintain expertise + availability of experts.
- Start other R&D work sooner, since test beam will be later.

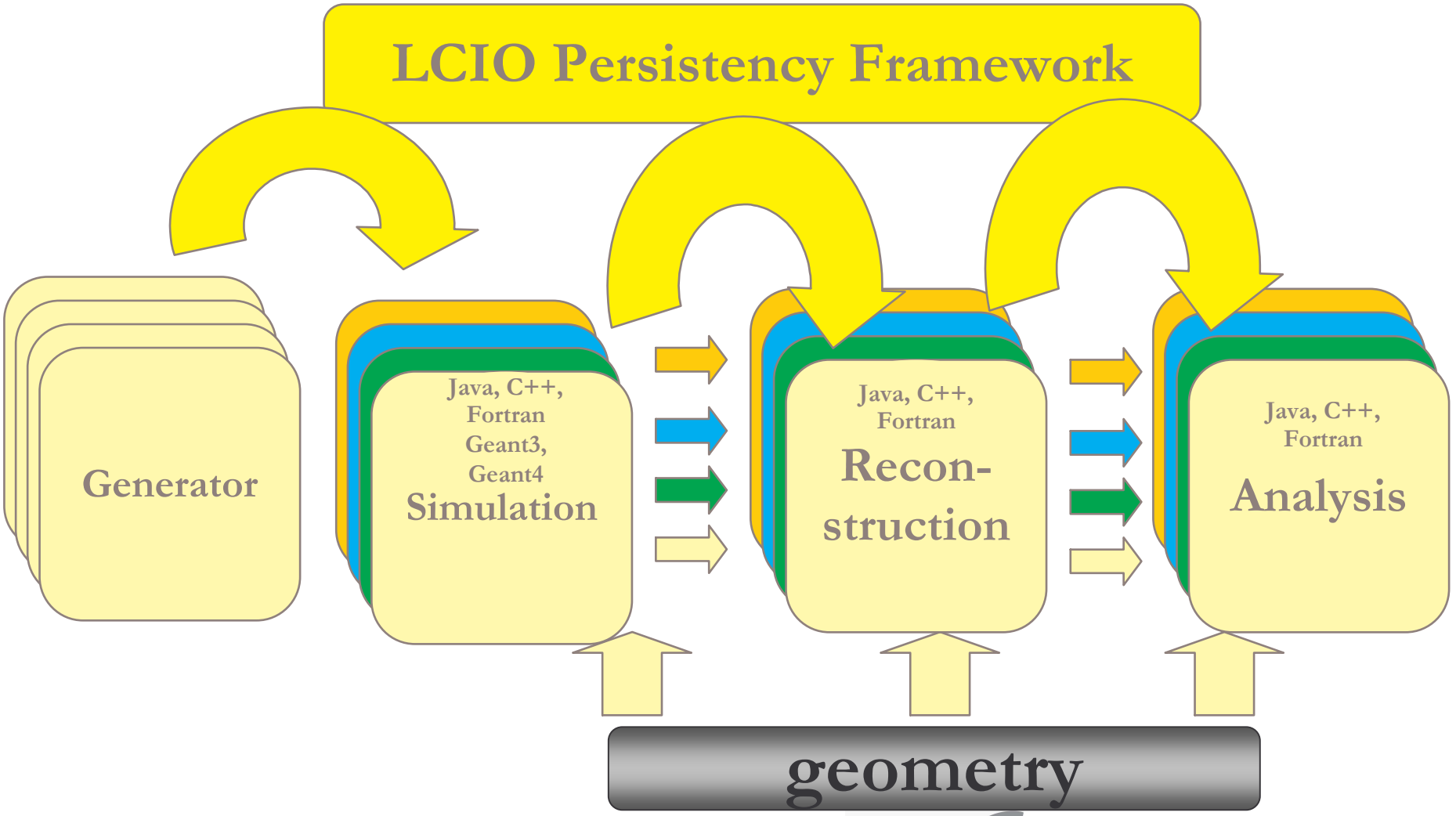
Data processing

- Some controversy last winter. TB came up with some recommendations:
- **Data analysis framework**: lightweight "intelligent" decoding of the raw data into LCIO objects.
- Recommend the use of MARLIN as the analysis framework.
- **Database**: The use of the LCCD package to access a MySQL database in the LCIO/MARLIN framework was recommended.
- **Data storage**: The data (native, raw LCIO and processed LCIO) will be stored in the dCache mass storage at DESY. Access to these data (preferably) via Grid-ftp).
- **Code sharing**: Authors of code are strongly encouraged to store their work at the CVS repository recently established at DESY-Zeuthen.

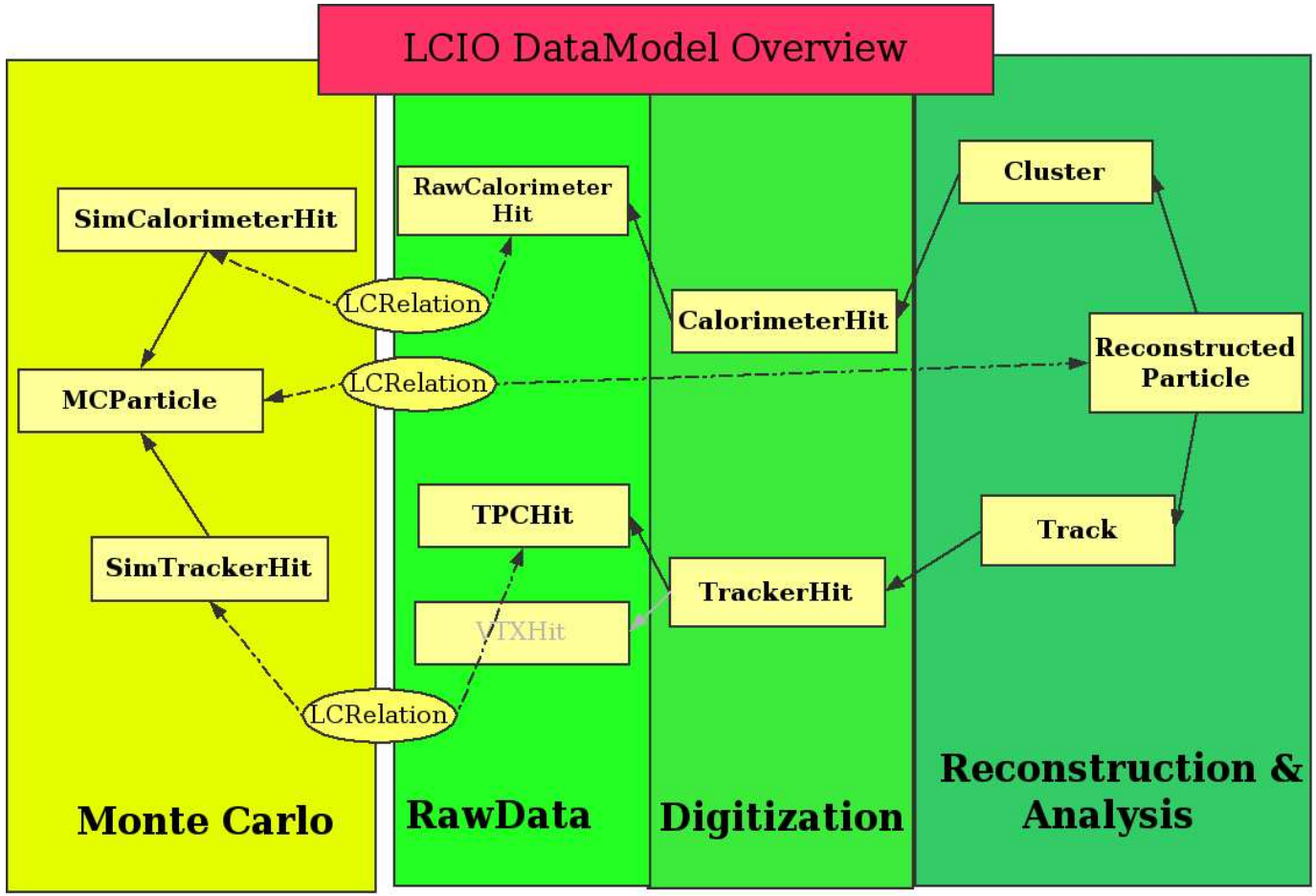
Dataflow (agreed 16 Feb)



LCIO


LCIO Persistency Framework
Generator
Java, C++,
Fortran
Geant3,
Geant4
Simulation
Java, C++,
Fortran
Recon-
struction
Java, C++,
Fortran
Analysis
geometry

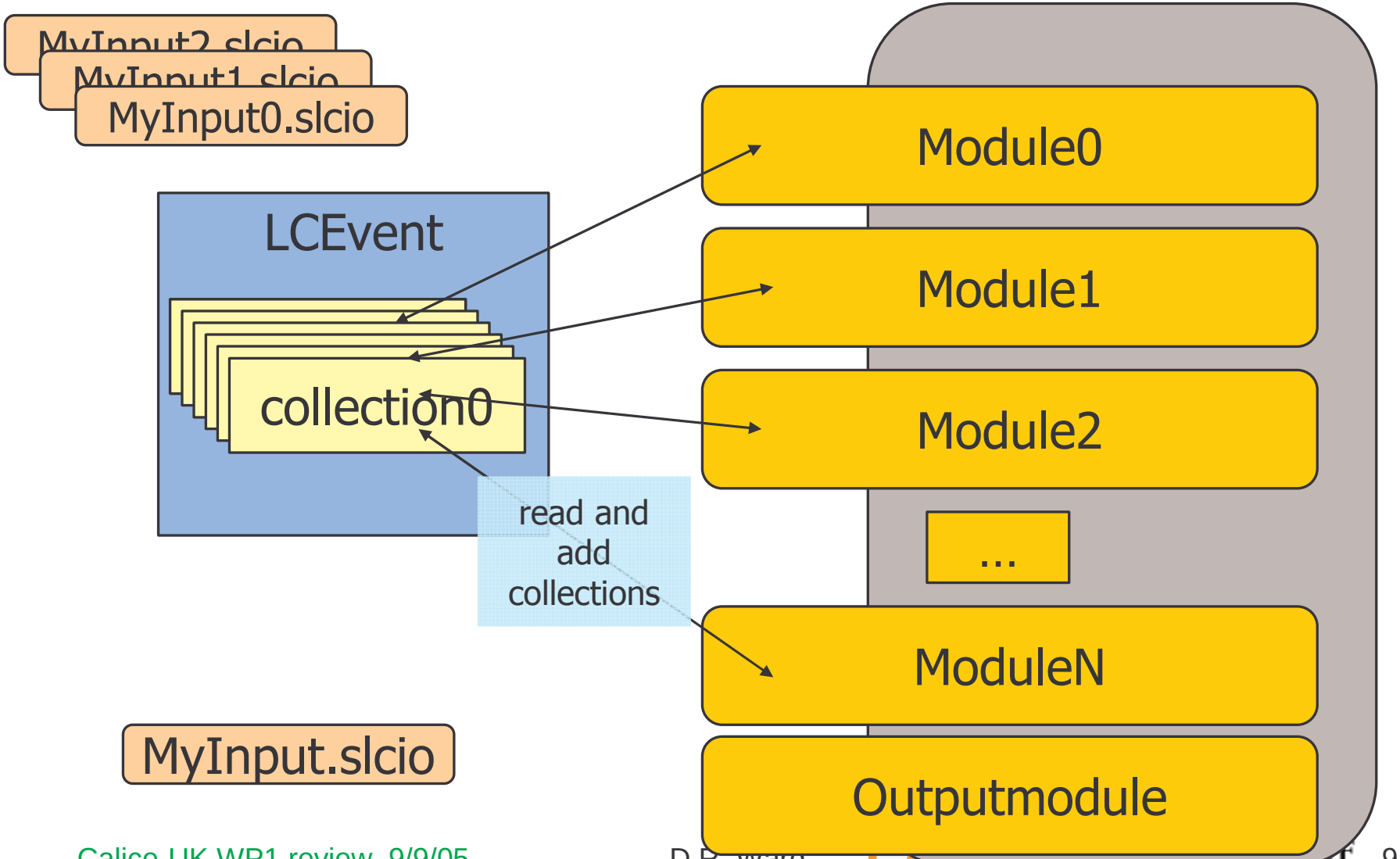
LCIO data model



Additional LCIO objects available for storing other types of data:

- IntVec
- FloatVec
- LCGenericObject

MARLIN – modules and LCIO



Data processing - status

- "Core group" has been discussing this: Pöschl, Dauncey, Gaycken, Mavromanolakis, DRW
- First "complete" version (01-03) of code announced end August.
- Consists of four parts:
- **Userlib** – classes + library needed to read the converted raw LCIO file in a Marlin job (for example).
- **Calice_reco** – the actual conversion code.
- **Calice_online** – the DAQ classes which define the records output by the DAQ
- **Calice_cddata** – utilities connected with conditions data and the database.

Data processing - status

- Conversion started last week – about 20 runs done. (Takes about 15 min per run on a typical modern cpu.)
- Some conditions data (trigger configuration etc) extracted to database. (This has been the biggest holdup). The rest output to event stream. Data size reduced by ~30%
- Data reside in DESY dCache. *To access need Grid certificate and need to belong to the calice VO.*
- Should we maintain a UK copy at RAL? If so who will maintain it?
- Need database to access trigger configuration data. If connected to network, can read from DESY so long as your site is on their list of trusted sites (IC and Camb. so far). Otherwise, can create local copy on laptop (need MySQL server etc) or can create an LCIO snapshot for relevant period.

Data analysis - future

- Progress slower than anticipated, manpower limited, but I think we are approaching a usable system.
- Have seen today that we can look at the data, make useful comparisons with MC. Lots more to do.
- Expecting infusion of new personpower in UK – how best to organise ourselves?
- Issues about UK copies of data etc.
- Do we need shared MC samples? I suspect not, yet.
- We've been having ocasional, somewhat *ad hoc*, software/analysis phone meetings (UK- or CALICE-wide). Do people find these useful? How frequent? Should we keep better records of minutes/talks, or is informality better?