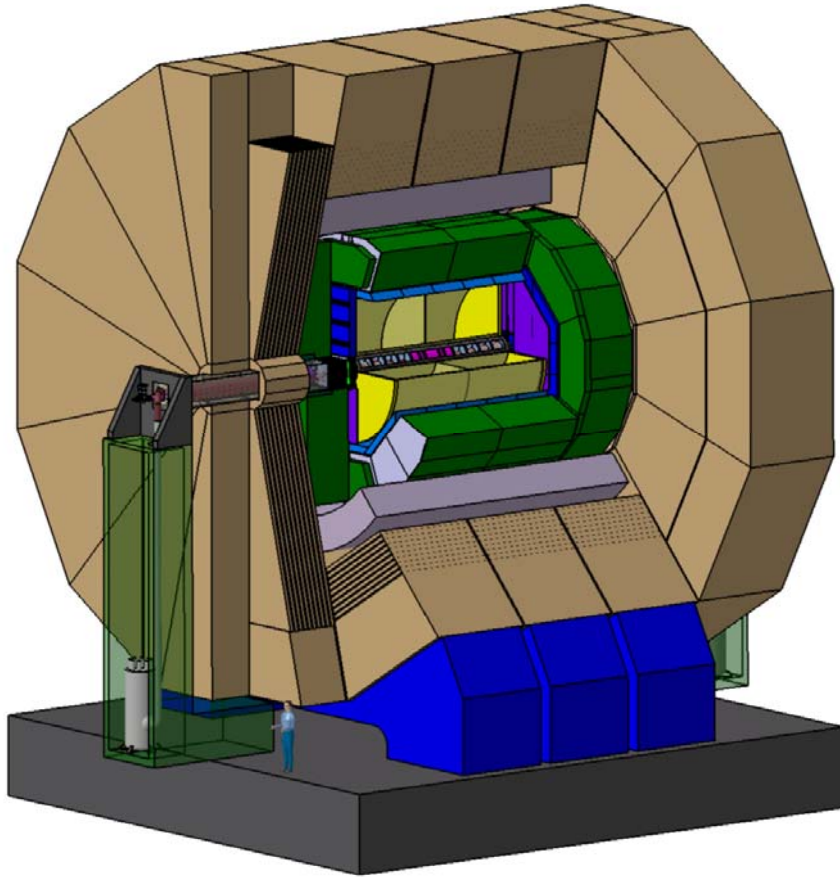


ILD Software Workshop: Discussion of Future Plans

Mark Thomson



The Past:

① Didn't we do well ?

The Future:

② Context

Highest Priority ?

③ Backgrounds

④ Simulation

Other issues

⑤ Physics needs

⑥ Mass production

⑦ DST format /root ?

⑧ LCFIVertex

Not really a talk – intention to prompt discussion...

1 Didn't we do well ?

Yes

The good

- ★ Don't underestimate what we have achieved over the last year(s)...
 - Sophisticated simulation of ILD – significantly beyond what might be expected at this stage: **a real ILD strength**
 - High performance full reconstruction code: **a real ILD strength**
 - Very large production of Monte Carlo: **impressive effort**
 - Physics analyses: **a very good start**
- ★ Remember that we have been through this loop twice+ in last year
 - with LDC and GLD

But not perfect

The bad

- ★ Some items got “missed”
 - didn't study backgrounds in Lol
 - not all sub-detector technologies
- ★ Always working in survival mode – Lol deadline not easy...

The ugly

- ★ Pretty much everything...
- ★ Never had the time to tidy up code etc.

② The Future: Context

Likely Deadlines

- TDP-1 (Summer 2010) ← This is rather soon (~1 year)
- TDP-2 (2012) ← Software needs to be fixed by mid/end 2011 (~1.5 years later)

Effort

- Until ILC becomes more real – effort very limited
 - must to bear this in mind
 - wrong time to be too ambitious (sorry)

Consequences

- Must concentrate on tasks essential for TDP-1+2
 - shouldn't try and invent the ultimate ILC software today
 - should aim for (mostly) incremental changes

What are the essential physics deliverables...

3 Backgrounds

- ★ In my opinion this is absolutely the highest priority !
- ★ We will be asked by IDAG to do this (99 % C.L.)

What is the “right” question:

- ★ How does background (beam and physics) degrade ILD track finding/PFlow

What needs to be done:

★ Simulation

- Simulation of the entire bunch train ?
- Time structure in hits for all sub-detectors ?

★ Digitisation

- More realistic digitisation for Si hits
 - account for hits from background tracks at low angle
- do we need more complete TPC digitisation ?

★ Reconstruction

- Silicon tracking – needs to be modified
 - speed
 - robustness
- TPC curler removal – maybe current version works
- TPC reconstruction with time structure

A lot of work

What is needed to make progress ?

4 Simulation

- ★ In my opinion level of detail in Mokka already rather good
- ★ Immediate priorities should be to support sub-detector options

What ?

- ★ Scintillator-Strip ECAL in Mokka
- ★ Digital/Semi-Digital HCAL
 - partly there now (barrel)
 - also would like to see RPC option with current HCAL geom
- ★ MAPs based ECAL

5 Physics Needs

Physics analyses

- For TDP-1 will need to improve analyses
 - e.g. cuts → multi-variate
- ZHH sensitivity is an issue
- people
 - need to keep people involved with analyses
 - graduate students (hopefully) move on
- Analysis framework (as mentioned by Taikan)
 - Many people have developed a DST analysis framework
 - event weighting/polarisation weighting
 - book-keeping
 - Should we centralise this ? (maybe DST and ROOT based)

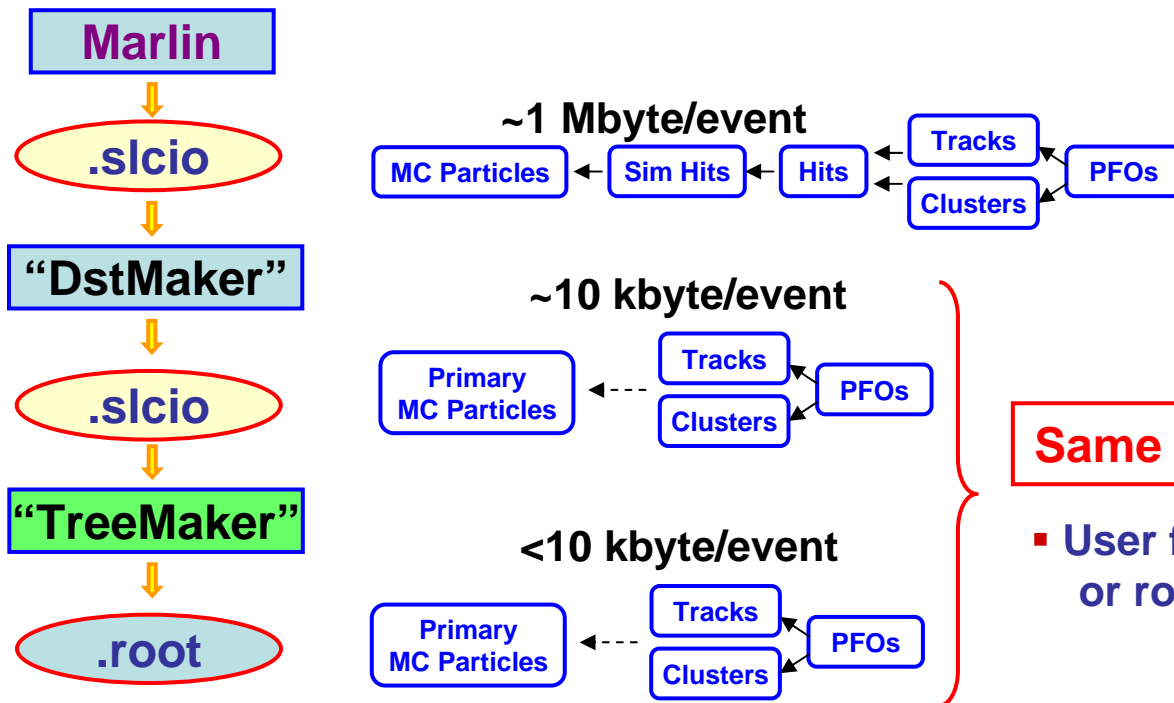
6 Mass Production

- ★ Have just completed major mass production
 - a lot of work
- ★ Unless there is a very strong argument – the default should be **NOT** to pursue a new production in near future (aim for TDP-2?)

7 DST Format / Root

★ My take on Root discussion – where might LCIO end and Root start

- MarlinReco tied to LCIO
 - LCIO deeply embedded in MarlinReco, too much effort to switch
 - Also issues of speed – many Root classes carry significant overhead
- Replace DSTs with root Trees ?
 - Difficult to do without breaking functionality, e.g. rerun LCFIVertex
 - (currently tied to LCIO)
- Simplest (short-term) “fix” - create root copy of DST ?



Same information

- User free to choose DST or root based analysis

★ Not discussed so far... is the information in the DST sufficient

- Requests ? (beware file size)
- Different particle ID algorithms ?
-

8 LCFIVertex

- ★ Essential part of ILD reconstruction chain
- ★ Large investment of effort
- ★ Concerns about long term support of this package, training etc...
- ★ Need to ensure LCFIVertex for ILD

9 Conclusion

- ★ Need to prioritise effort **and** assign tasks
- ★ Careful not to be over-ambitious