Status and plans for the DBD simulation

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ILD EB meeting

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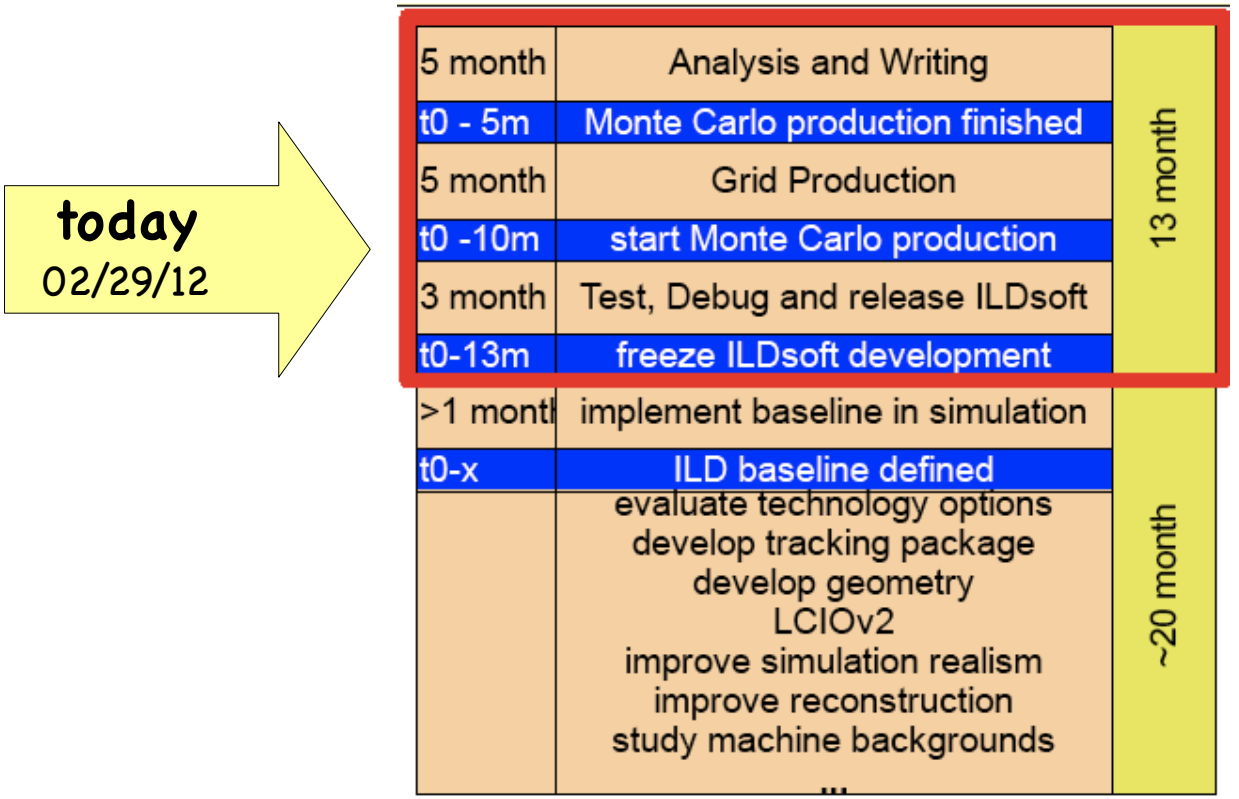
ILD software timeline



agreed timeline for software development in preparation of a large Monte Carlo production for the DBD

- **10 month before handing in the DBD is today !!**
  - ideally we would start Monte Carlo production now
  - not quite there yet – let's see where we are:
    - generation of benchmark samples
    - status of ILD simulation model(s) in Mokka
    - status of reconstruction
    - summary & outlook

generation of benchmark samples

- generator working group founded:
  - A.Miyamoto, KEK
  - M.Berggren, DESY
  - T. Barklow, SLAC
- to split work load on producing large benchmark samples:
- 1TeV
  - **nunuH, ttH and WW**
  - + 2-6 fermion bg samples
  - + gamma gamma-> hadrons bg
- 500 GeV
  - redo ttbar -> 6f
- using Whizard/Pythia and PhysSim

- status:
  - production of 1TeV samples mostly done
  - technical issues with like flavour fermions (WW) and 2f sample under investigation
  - 500 GeV and bg samples ongoing

- estimate of total full Monte Carlo production: dedicated Analysis & Software meeting last week:
  - presentations with requests for signal & bg production
    - <15M events needed
    - should be feasible in less than 5 month

ILD simulation models in Mokka

- added 'new' models to Mokka

ILD_O1_v02 "ILD simulation reference Model for DBD using Analog HCal"
ILD_O2_v02 "ILD simulation reference Model for DBD using SDHCal"
ILD_O3_v02 "ILD simulation reference Model for DBD using SciW Ecal and Analog HCal"

- improved realism wrt to ILD_OO simulation model used for the DBD
  - new Si-tracking detector drivers for SIT, SET and FTD with **planar wavers (petals)** including support and **service material**
  - improved realism in VXD, TPC and all calorimeter drivers: closer to engin. models including electronics and services - new models for SDHCal

- need **decision on ETD:** plan to not include it for DBD production !
- need **testing and technical validation (start with ILD_01 model)**
  - check for overlaps in complete (finalized) models
  - check simulation output - hit maps, cellIDs, etc.
  - check material budget
  - synch. with engineering models
  - **=> volunteers needed !**

cannot start to produce benchmark samples before these issues are resolved

reconstruction for the DBD

- tracking
  - completely new C++ tracking software developed (DESY, KEK, OEAW) w/ new C++ Kalman Filter and new (or re-written) pattern recognition for the TPC, FTD and Si-Trackers
  - currently implemented proper treatment of Si-strip detectors
    - progress is somewhat slow due to tight manpower situation
  - need to properly test and evaluate efficiencies
  - need to tune material description (fit parameters !)
- particle flow algorithm
  - PandoraPFANew in good shape - demonstrated at CLIC CDR, needs to be adopted to new new ILD simulation models (calibration/SDHcal...)
- vertexing & flavor tag
  - new LCFIPlus package with new vertex and flavor tag algorithm w/ improved efficiencies
  - needs to be finalized and documented (user examples)

Summary & Outlook

- event generation for 1TeV (500GeV) is done to a large extent

- since the LOI has been handed in a lot of software development has been done to improve the realism of the simulation for the DBD
  - more realistic simulation (imperfections, cables and services)
  - new tracking, improved PFA and flavor tag

- still a lot of things to finalize in particular testing and validation
  - both for simulation and reconstruction
- progress will depend on manpower situation (currently very tight)

- we are delayed wrt. our software timeline for the DBD production
- the conservative estimate of 5 month for actual production might help us to get back on track w/o cutting into the number of events to be produced