Silicon tracking status. SIT, SET, ETD

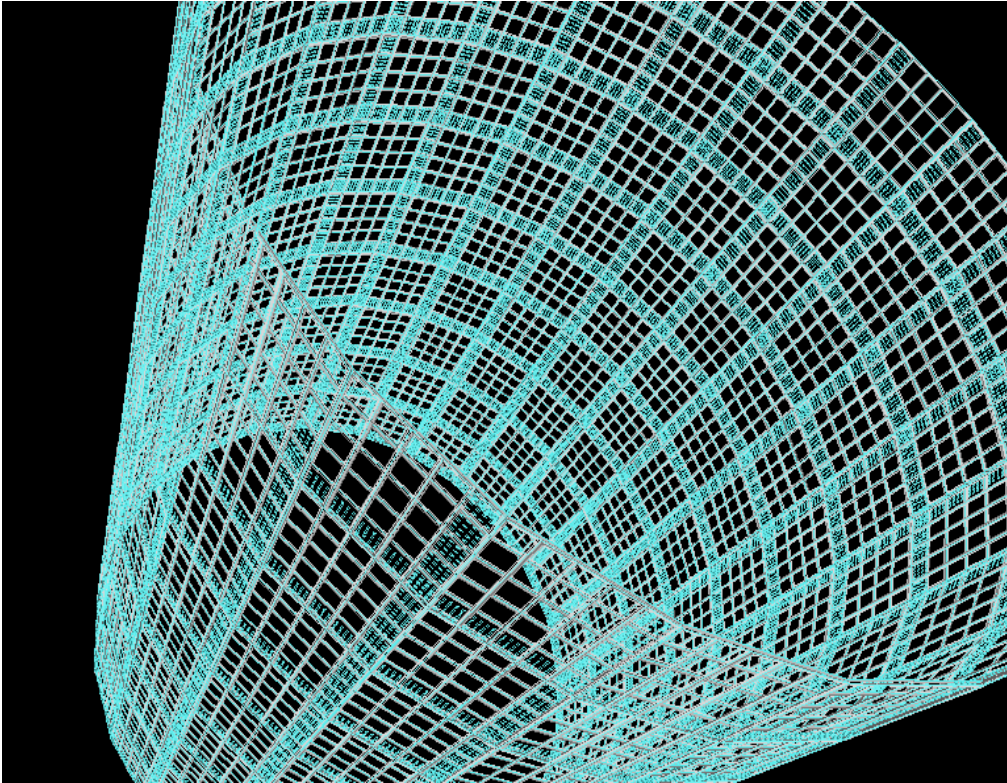## ILD DETECTOR OPTIMIZATION   August 24th 2011

Alexandre Charpy - professional@charpy.net
**Aurore Savoy-Navarro -** aurore@apc.univ-paris7.fr
Konstantin Androsov - konstantin.androsov@gmail.com

SIT, SET & ETD support simulation status:

- *SIT & SET simplified support design* based on two components: silicon and support with variable thickness (%X0): **almost done**.
- *SIT & SET detailed support design*: **will be ready for September**
- *ETD detailed support design* **is available**

Synoptic view of the main connections of the SIT, SET, ETD sub-detectors software
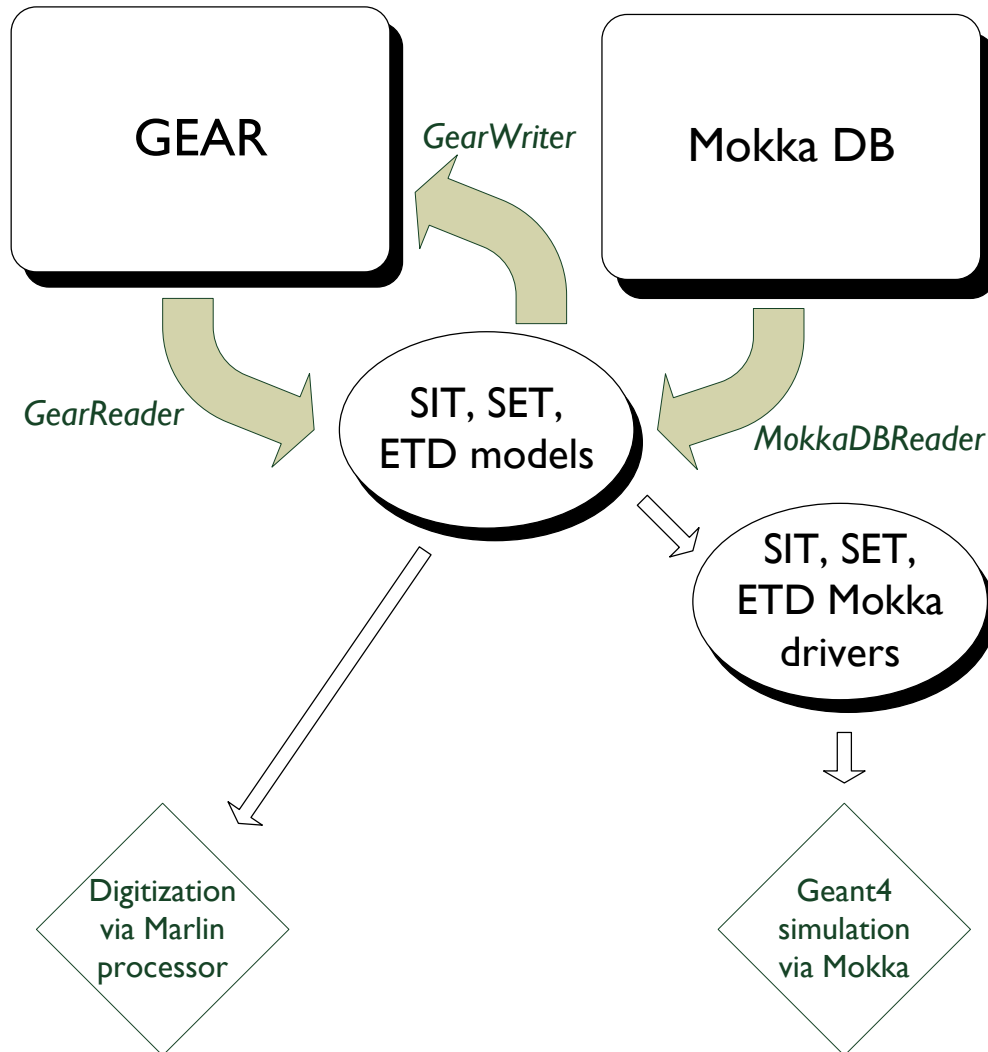
- The SIT, SET, ETD geometry description models are the same for both these sub-detector digitization via Marlin processor and these sub-detectors GEANT4 simulation via Mokka geometry drivers
- The same set of main parameters for each sub-detector geometry model is included both into the Mokka and GEAR databases

K.Androsov   24-Aug-11

Definition of Si sub-detectors parameters in GEAR
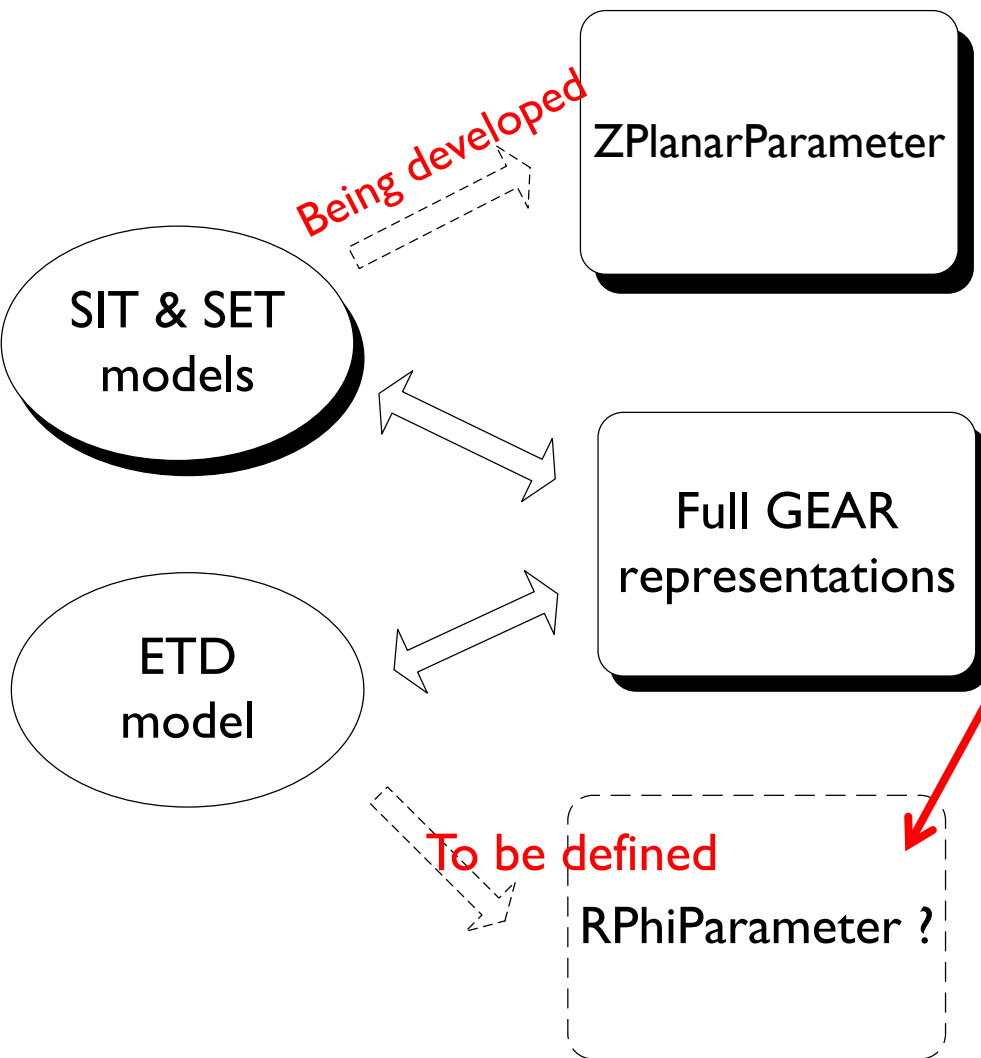
- The full GEAR representation of SIT, SET and ETD models is ready
- ZPlanarParameter interface filling with SIT and SET information is being prepared
- The interface (RPhiParameter?) common to all endcap and forward tracking components that includes the ETD is not yet defined (at least up to our knowledge)
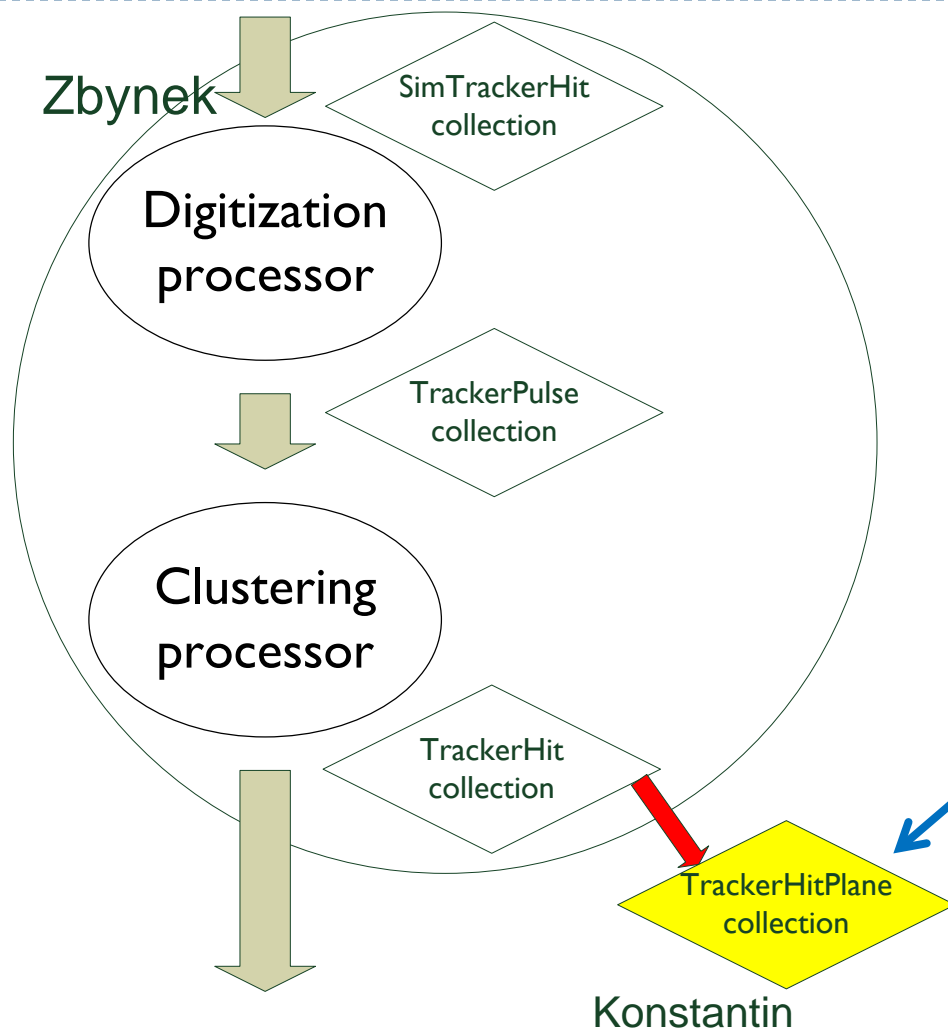- ETD information will be provided as soon as interface will be defined

Digitization

SIT, SET & ETD models

↓

Common geometry provider

↓   ↓

Digitization processor   Clustering processor
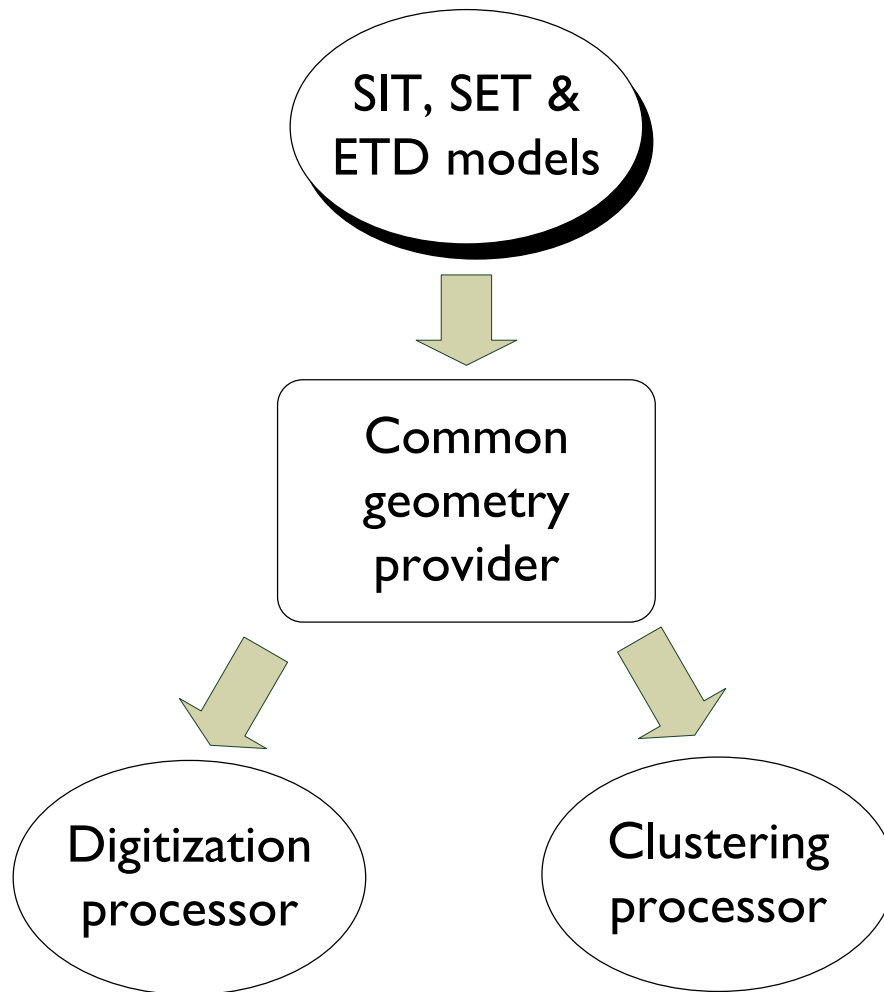
▸ Current work is on developing one silicon geometry provider common to SIT, SET, ETD:
  - ▸ Layer volume description
  - ▸ Global vector to the Cell ID transformation
  - ▸ Cell ID to the global vector transformation
  - ▸ Include environment information: magnetic field components, …

Digitization and clustering processors are provided by Z. Drasal.

Digitizer output within current LCIO version

Zbynek

SimTrackerHit collection

Digitization processor

TrackerPulse collection

Clustering processor

TrackerHit collection

TrackerHitPlane collection

Konstantin

▸ The output of the Zbynek's digitizer (collection of TrackerHits) will be modified in order to fit with the new LCIO class: TrackerHitPlane as defined in the current LCIO trunk version.

Present concluding remarks

▸ Since last presentation (July 20) :

  ▸ GEAR serialization (i.e. detailed geometry description storage in GEAR) is ready for SIT, SET and ETD sub-detectors

  ▸ Several code optimization tasks (code refactoring) performed

  ▸ Zbynek's digitizer code integrated into our framework

▸ Work plan

  ▸ Provide digitizer outputs:

    ▸ Geometry description using ZPlanarParameter interface

    ▸ Hit output using TrackerPlanarHit class

    for SET and SIT by beginning of September

  ▸ Simplified support description for SIT & SET, by end of August

  ▸ Full SIT & SET support description, by end of September (Granada)

  ▸ Similar information will be prepared for ETD as soon as reconstruction framework is available for the end cap/forward region

  ▸ Keeping close contacts with full reconstruction (Steve + Frank)

K.Androsov   24-Aug-11