DD4hep Geometry Framework

The DD4hep detector description tool-kit offers a flexible and easy to use solution for the consistent and complete description of particle physics detectors in one single system.

- No need to define for separate geometry for reconstruction, no duplication of effort, fewer bugs
- Generic reconstruction packages with *no* framework dependency: tracking toolkit (aidaTT), particle flow reconstruction (PandoraPFA)
- Only need a thin wrapper between experiment framework and geometry on one side and reconstruction package on the other allows re-use of these reconstruction packages by multiple experiments

If the detector is described via DD4hep, reconstruction comes almost for free

DD4hep Based Event Reconstruction

DD4hep offers different interfaces to access the information needed during reconstruction

- User extensions attachable to detector elements: high level view of physical properties, semi-automatically obtained information
- The same segmentations usable in simulation and reconstruction (cellID $\leftrightarrow$ coordinates)
- Dedicated surfaces attachable to very volume: local-to-global coordinate transforms, material properties
  - Surfaces can be automatically added to detector elements
- Material properties at any given point or between two points in the world volume