RPROM/SPROM Meeting,

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Muon DT DDD status

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Summary:

- Status of transition to DDD,
- New architecture of DT geometry in ORCA,

You're looking at these slide because they are published in a portable format (pdf),

if yours are not (e.g. ppt) I won't be able to do the same! *(slide viewable by anyone campaign)*

DDD transition:

- Not just a transition from tz to xml!,
- Old Tz reading was poorly implemented: hard to understand, maintain, almost impossible to modify (heavily bounded to the very specific way Tz was accessed) ,
- Very hard to use old framework modifying just the retrieving part,
- Major modification with DDD, take chance to improve DT geometry architecture,
- Improve CommonDet-ness, and so improve reconstruction capability

New DT geometry architecture:

- MuBarChamber *is a* CompositeDet, made of:
- MuBarSL *is a* CompositeDet made of:
- MuBarLayer *is a* DetUnit and *has* MuBarWire
- OLD MuBarChamber *is a* DetUnit.
- Consequences:
  - SimHit and Digi access moved from Chamber to Layer,
  - SimHit and Digi backward compatibility broken,
  - Number of DetUnits increased $(250 \rightarrow 2720)$,
  - SimHit defined (by Geant) in the cell frame, need to move in the layer one (previously in chamber one),
  - Modification needed in SimHitFormatter/Loader and MBDigitizer

XML access for geometry:

- $\sim$ Ready
- MuBarChamber, MuBarSL and MuBarLayer as CompositeDet, CompositeDet and DetUnit respectively,
- Intermediate xml to interface the MuBarDDDReader to complex xml from tz translation, added some information at this level (chamber type (MB1, MB2, ...) for internal use,
- Build Chamber form DDD, then layers inside a chamber, then SLs (which are not described as volume in xml) “gluing” together the layers 4 by 4, then Wires,
- Position check is complex, only chamber had easy access to position, not easy (and sometime buggy) for SL and Layer (apparently buggy code unused in ORCA...)

SimHits:

- $\sim$ Ready
- Modified SimHitFormatter and Loader to the new DetUnits,
- Check SimHit position wrt old ORCA: will check also detectors positions and rotation,
- Unexpected problem: SimHit position ok in chamber frame, not in global frame,
- BUT apparently chamber position in global frame is correct!!
- To understand.

To be done:

- Understand and fix SimHit problem (likely to be related with chamber orientation),
- Update readout (new DetUnit) and MBDigitizer (SimHit in Layer not in Chamber frame) - should be easy,
- Modify RecHits building and access: Segments from Chamber, hits from Layer (can be done in a second phase),
- I started a work which turned out to be much harder than foreseen
- In principle possible to release code with DDD reading and old architecture BUT work would be not easy: time wasted
- New framework is a real improvement at various level: architecture, developers, final user
- Timescale: hopefully ~ 2 weeks