Points from DPD task force

- First meeting last Tuesday (29th July)
  - Need to have concrete proposal in 1 month
  - Still some confusion and nothing very concrete yet
  - Caveat: I wasn't there…

- What can be done in DPDs:
  - Skimming – remove un-interesting events
  - Slimming – remove un-needed containers
  - Thinning – remove un-necessary object details
  - Add information – detector and user data

- Some points:
- DPDs to be made from ESD/AOD not expected from BS
- Produced in RecExCommon environment: effort to reduce multiplication of DPDMakers…
- Not doing N(streams)xM(phys groups) DPDs: do sparse matrix as needed

Timeline

- August 11th :
  - each performance group presents a list of DPD use cases, with skim cuts and event content
  - each physics group evaluates ability to do analysis with and provides requirements for performance DPD(s)
- August 13th :
  - DPD use cases have been analyzed (merged when relevant). Final list is proposed.
- August 22nd :
  - Performance DPDs code in a release.
- August 27th :
  - FDR-like exercise of DPD production
- Mid-September:
  - DPDs are being used by physics and performance groups. Feedback is provided. Improvements are implemented.

> smaller technical meetings also possible...

Trigger information in DPDs

- We've been collecting input from slices: reported by Fabrizio in Menus meeting last week (23 July)
  - Which triggers passed/failed, prescale, passthrough
  - Enough info to allow tag-and-probe (match trigger and offline objects)
    - Benchmark for minimal trigger info being requested!
  - Possibility: use for selection optimisation

- Trigger navigation:
  - For 2008 run: store as is, no thinning
  - For 2009 run:
    - Thin down to contain only requested chains
    - Tomasz and Harvard group interested
    - Not clear how to deal with trigger features attached to deleted chains (in progress)

- Matching between offline and online objects
  - Some interest from physics groups
    - Ideas:
    - List of triggers passed attached to offline objects
    - "External" map to chains and offline objects
  - Can we provide common solution?

Loose ends

- How many DPDs – more concrete examples needed
- Monte Carlo DPDs
  - Noted that stream reproducibility depends on trigger
  - Truth info will be needed
- Duplicate event removal
  - Potential for blunders when running DPD making on several streams
  - On PAT to-do list
- Use of RecExCommon not a peaceful decision
- Generic physics DPD
  - Maarten to present proposal in tomorrow's meeting ("first shot" for data production)
- Performance DPDs (T0 and T1):
  - Size is likely to hit the 100 kB/ev (AOD size… which begs the question of DPD usefulness)
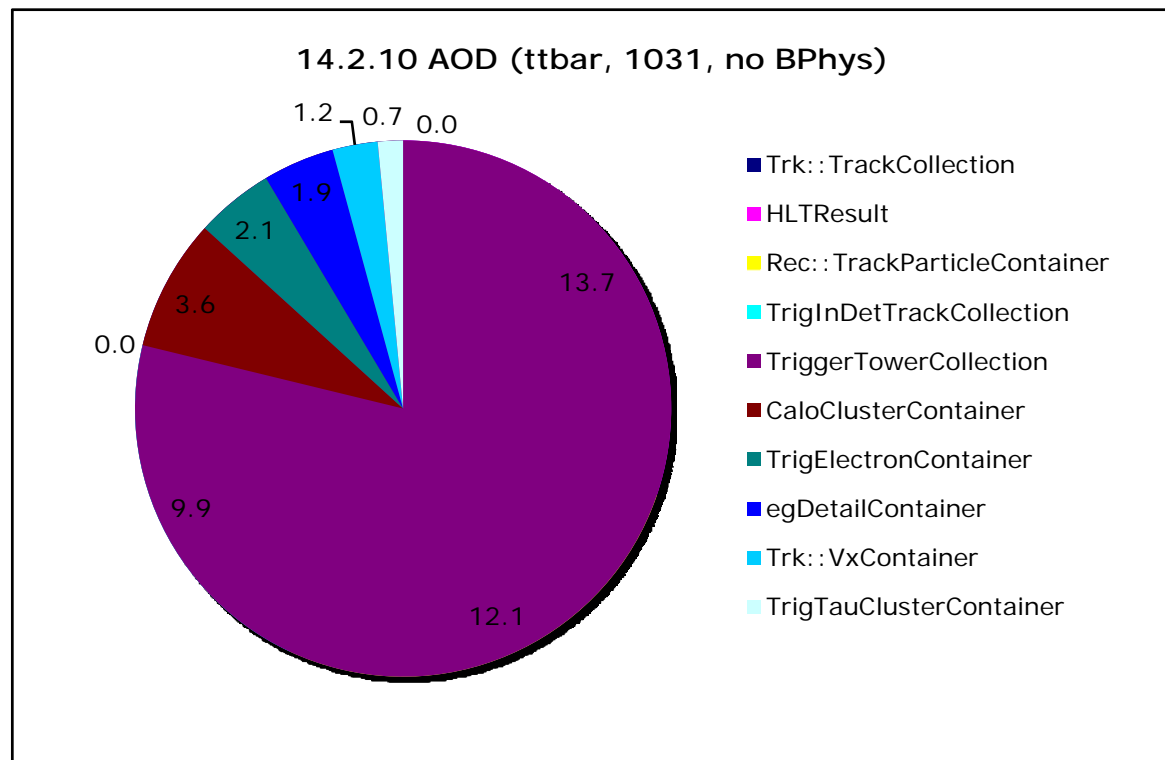 - Overlap between offline commissioning and performance DPDs not clear

Backup

DPD task force:

- The DPD task-force is being set up to address urgently the requirementsfor DPDs for detector and object performance understanding, especiallyin the early data. The expectation is that "Performance DPDs" should bemade at the Tier-0 for this purpose: these can contain parts of the ESDand/or AOD content, and might be highly skimmed subsets of the standardevent-filter streams.

- The specific goals are as follows:
  - Establish how many performance DPDs are required, and define their content. This must be done in consultation with detector, trigger, and combined performance groups.- Implement and demonstrate the making of these DPDs at the Tier-0, for example in an FDR follow-up exercise, if possible before the end of August meeting days.
  - Ensure, in collaboration with the production team, that such performance DPD-making also works in the production system at Tier-1s.
  - Identify additional object slimming priorities, to be implemented in consultation with relevant experts and PAT. An example is an effective slimming of trigger information.
  - Understand and document the expected distribution requirement for the performance DPDs to Tier-1's and Tier-2's.
  - Complete recommendations by, and report to, the end-August physics/performance clustered-meeting days (26-29 August). Further refinements may be needed following these meetings, which the task-force should consider and implement.

- The work for the period until the August workshop should be focused on the definition and implementation of performance DPDs. Some of thetests at the Tier-0 and in the production system may need to extend beyond that date. The task-force should define its own detailed schedule.

- A second-phase task force is foreseen afterwards to define the common physics group DPDs, which will normally be made at Tier-1s. Nonetheless, all members of the group should be engaged in all phases of the work of the task force: there are many issues which will be common to both performance and physics group DPDs.

- EDM migration allowed improvements in data size on file
- Overall size of trigger data depends strongly on data type and on menu
- Running menu for L=10^{31} cm^{-2}s^{-1} (no Bphysics):
  - AOD total size: 48 kB/event
  - ESD total size: 86 kB/event
- The HLTResult may be reduced further to 1-2 kB/event by slimming out navigation information - (e.g. for inclusion in DPDs)

13.7 HLTResult

12.1 Rec::TrackParticleContainer

9.9 TrigInDetTrackCollection

3.6 CaloClusterContainer

2.1 TrigElectronContainer

1.9 egDetailContainer

1.2 Trk::VxContainer

0.7 TrigTauClusterContainer

14.2.10 AOD (ttbar, 1031, no BPhys)

Legend:
- Trk::TrackCollection
- HLTResult
- Rec::TrackParticleContainer
- TrigInDetTrackCollection
- TriggerTowerCollection
- CaloClusterContainer
- TrigElectronContainer
- egDetailContainer
- Trk::VxContainer
- TrigTauClusterContainer

Pie values: 1.2, 0.7, 0.0, 1.9, 2.1, 3.6, 0.0, 9.9, 12.1, 13.7

Ricardo Goncalo, RHUL

Removing navigation

- Slimming of the trigger information by removing the navigation will definitely allow to include quite a few trigger information in the physics DPDs: e.g. ttb AOD

Original AOD	500 kb/evt
No TrigDetails	~ 31 kb/evt
TrigDetails, no trig slimming	~ 45 kb/evt
TrigDetails + remove navigation	~ 31.5 kb/evt
TrigDetails+TrigObjects, no trig slimming	~ 54 kb/evt
TrigDetails+TrigObjects + remove navigation	~ 40.3 kb/evt

TrigDecision
HLTResult_L2
HLTResult_EF

- Clear benefit in DPD size
- Probably not a lot of use cases with first data
  - Will need navigation for tag-and-probe, etc...

Default Containers in D1PD

```
# Tools to write MetaData in DPD
Stream.AddMetaDataItem( ["IOVMetaDataContainer#*"] )
Stream.AddMetaDataItem( ["LumiBlockCollection#*"] )

# Event Info
Stream.AddItem( ['EventInfo#*'] )

# Tracks/Vertex/MissET
Stream.AddItem( ["Rec::TrackParticleContainer#TrackParticleCandidate"] )
Stream.AddItem( ["MissingET#MET_Ref*"] )
Stream.AddItem( ["VxContainer#VxPrimaryCandidate"] )

# PID: ele/gamma/mu/tau
Stream.AddItem( ["ElectronContainer#ElectronAODCollection"] )
Stream.AddItem( ["PhotonContainer#PhotonAODCollection"] )
Stream.AddItem( ["egDetailContainer#egDetailAOD"] )
Stream.AddItem( ["Analysis::MuonContainer#MuidMuonCollection"] )
Stream.AddItem( ["Analysis::MuonContainer#StacoMuonCollection"] )
Stream.AddItem( ["Rec::MuonSpShowerContainer#MuonSpShowers"] )
Stream.AddItem( ["Analysis::TauJetContainer#TauRecContainer"] )
Stream.AddItem( ["Analysis::TauDetailsContainer#TauRecDetailsContainer"] )

# Jets
Stream.AddItem( ["JetCollection#Cone4H1TowerJets"] )
Stream.AddItem( ["JetKeyDescriptor#JetKeyMap"] )
```

Keep only the essential information useful to all SUSY analyses, without removing events

Trigger information

- **Extra objects for trigger analyses can be passed in D1PD**
  - ➢ Default configuration: no Trigger info in the D1PD

```
# Trigger objects
if WriteTrigDetails :
    Stream.AddItem( ["TrigDec::TrigDecision#TrigDecision*"] )
    Stream.AddItem( ["HLT::HLTResult#HLTResult_L2"] )
    Stream.AddItem( ["HLT::HLTResult#HLTResult_EF"] )

if WriteTrigObjects :
    Stream.AddItem( ["LVL1_ROI#LVL1_ROI*"] )
    Stream.AddItem( ["CombinedMuonFeature#HLTAutoKey*"] )
    Stream.AddItem( ["TrigEMCluster#HLTAutoKey*"] )
    Stream.AddItem( ["TrigT2Jet#HLTAutoKey*"] )
    Stream.AddItem( ["TrigElectronContainer#HLTAutoKey*"] )
    Stream.AddItem( ["TrigPhotonContainer#HLTAutoKey*"] )
    Stream.AddItem( ["TrigTau#HLTAutoKey*"] )
    Stream.AddItem( ["JetCollection#HLTAutoKey*"] )
    Stream.AddItem( ["TrigMuonEFContainer#HLTAutoKey*"] )
    Stream.AddItem( ["egammaContainer#NoIDEF_RoI*"] )
    Stream.AddItem( ["egammaContainer#egamma_RoI*"] )
    Stream.AddItem( ["egDetailContainer#HLTAutoKey*"] )
    Stream.AddItem( ["Analysis::TauDetailsContainer#HLTAutoKey*"] )
    Stream.AddItem( ["Analysis::TauJetContainer#HLTAutoKey*"] )
    Stream.AddItem( ["TrigMissingET#HLTAutoKey*"] )
    Stream.AddItem( ["TrigRoiDescriptor#HLTAutoKey*"] )
```

TrigDetails

Two levels of info can be included in D1PD, depending on analysis needs

TrigObjects