Early trigger conditions

- Prescales, definitions, and even names in trigger menu may change rapidly in response to unknowns in early collisions
- AlCaReco is bound to a release cycle, can't update as quickly
- Old idea: take an "OR" of all available triggers of one type (e.g. inclusive muon), at least one will collect data
- Problem: unable to take advantage of new trigger name
- Sub-problem: current code throws exceptions when it encounters an unknown name; we're getting a parameter to turn that off

Conclusions from HLT/AlCaReco meeting

1. Disappearing/changing trigger names would only happen in emergencies, with a reversion time of $\sim$24 hours
2. We could move our trigger selection to the offline database

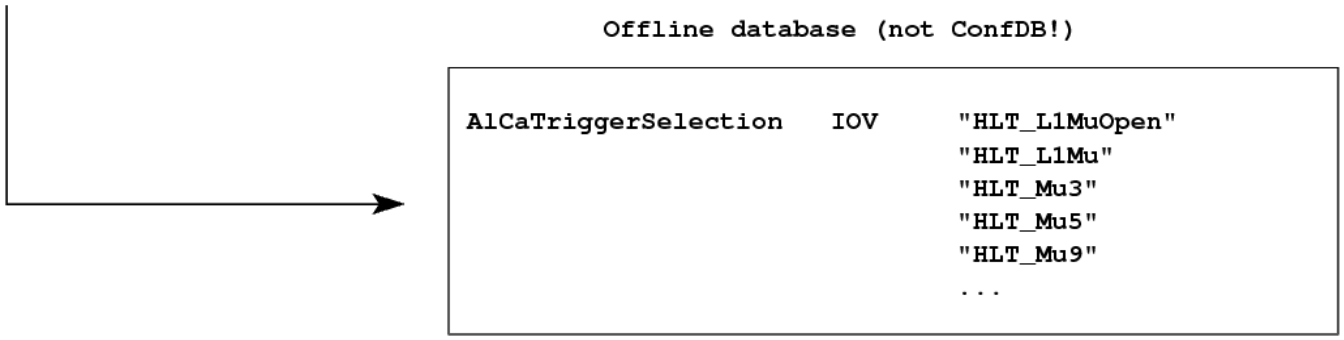
Trigger selection in offline database

Current method

```
import HLTrigger.HLTfilters.hltHighLevel_cfi
ALCARECOMuAlCalIsolatedMuHLT = HLTrigger.HLTfilters.hltHighLevel_cfi.hltHighLevel.clone()
ALCARECOMuAlCalIsolatedMuHLT.HLTPaths = ["HLT_L1MuOpen", "HLT_L1Mu", "HLT_Mu3", "HLT_Mu5",
         "HLT_Mu9", "HLT_Mu11", "HLT_Mu13", "HLT_Mu15", "HLT_Mu15_L1Mu7", "HLT_L2Mu9",
         "HLT_IsoMu11", "HLT_IsoMu13", "HLT_IsoMu15"]
```

Access via database

```
ALCARECOMuAlCalIsolatedMuHLT = cms.EDFilter("HLTFromDatabase", label="somelabel")
somelabel = cms.ESSource("PoolDBESSource",
          connect = "..."
          toGet = ...
```

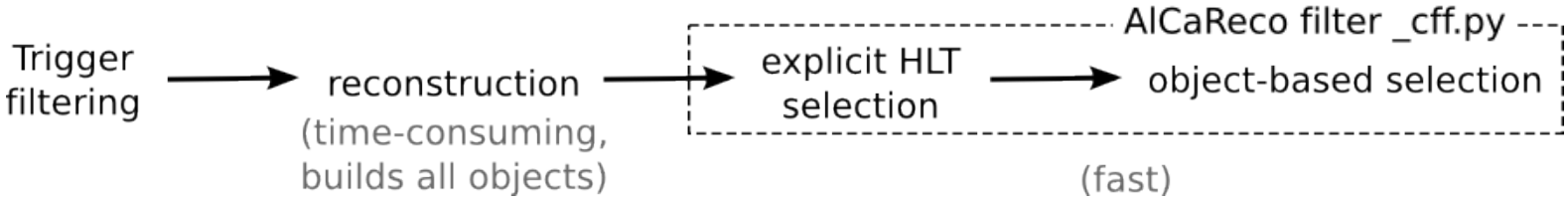


- Associates trigger selection with run number (IOV) to better match trigger scenario during data-taking
- In the very early stages of development

Do all AlCaRecos need to select trigger names?

- Of course trigger definitions affect all data collection, including AlCaRecos, but some AlCaReco configurations don't need to explicitly select a set of names

- Explicit AlCaReco trigger name selection not relevant for rate because it happens after reconstruction



- AlCaRecos must be associated with relevant primary datasets: in some cases, this provides all the filtering an explicit trigger name requirement would have (e.g. cosmic rays, beam-halo)

- This simplification would reduce the amount of work we need to do to keep up with changes in the trigger, without loss in many cases

Example: Muon Alignment AlCaRecos

	Muon AlCaReco Stream	trigger	Comments
E	MuAlCalIsolatedMu	none	muon p_T cut is higher than HLT
E?	MuAlOverlaps	none	track pattern recognition is a tighter cut than HLT
P	MuAlZMuMu	none	dimuon mass cut is tighter than HLT
P	MuAlStandAloneCosmics	cosmic ray tech. trigger	special primary dataset for special reco path
P	MuAlGlobalCosmics	same as above	
P	MuAlBeamHalo	L1_SingleMuBeamHalo/ HLT_CSCBeamHalo	may or may not be separate from cosmics
P	MuAlBeamHaloOverlaps	same as above	

- "E" labels Express Streams (no Primary Datasets), "P" labels Prompt Reconstruction (split into Primary Datasets)
- "none" means no explicit selection, though event distribution is determined by union of all active triggers, selected afterward for muons