

# Update on TriggerDecision and TriggerDecisionMaker

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Status in rel.12.0.3  
Documentation  
Conclusions and plans

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# Status

- TriggerDecision/TriggerDecisionMaker working in 12.0.3
  - Some problems were found in the meantime: as soon as complex menus were used
  - Wiki with 12.0.3 status:  
<https://twiki.cern.ch/twiki/bin/view/Atlas/AtlasRelease1203#Trigger>
- Should be very useful to many physics analysis for CSC notes

```
TriggerDecisionMaker      INFO Initializing TriggerDecisionMaker...
TriggerDecisionMaker      INFO Properties:
TriggerDecisionMaker      INFO doL1                = True
TriggerDecisionMaker      INFO doL2                = True
TriggerDecisionMaker      INFO doEF                = True
TriggerDecisionMaker      INFO TrigDecisionKey    = MyTriggerDecision
TriggerDecisionMaker      INFO TrigConfigL2Key    = storeL2Location
TriggerDecisionMaker      INFO TrigConfigEFKey    = storeEFLocation
TriggerDecisionMaker      INFO IgnoreItemNames   = dummy0 dummy1
TriggerDecisionMaker      DEBUG Retrieving Level 1 configuration
TriggerDecisionMaker      DEBUG L1 map has 4 items
TriggerDecisionMaker      DEBUG TrigerItem id=0; signature label=iEM01
TriggerDecisionMaker      DEBUG TrigerItem id=1; signature label=iL1_2EM15I
. . .
TriggerDecisionMaker      INFO REGTEST Run summary:
TriggerDecisionMaker      INFO REGTEST  Events processed      : 10
TriggerDecisionMaker      INFO REGTEST  Level 1 passed        : 10
TriggerDecisionMaker      INFO REGTEST  Level 2 passed        : 1
TriggerDecisionMaker      INFO REGTEST  Event Filter passed   : 0
TriggerDecisionMaker      INFO REGTEST  Unprocessed events     : 0
TriggerDecisionMaker      INFO REGTEST  Level 1 errors                : 0
TriggerDecisionMaker      INFO REGTEST  Level 2 errors                : 0
TriggerDecisionMaker      INFO REGTEST  Event Filter errors     : 0
TriggerDecisionMaker      INFO REGTEST  StoreGate errors            : 0
```

# Event Filter errors

- Event Filter had problems when running on AODs:
  - EF errors : either EFRresult not found in file or signature (TE label) returned by EFRresult not in trigger configuration

```
TriggerDecisionMaker      INFO REGTEST  Events processed      : 10
TriggerDecisionMaker      INFO REGTEST  Level 1 passed        : 10
TriggerDecisionMaker      INFO REGTEST  Level 2 passed        : 5
TriggerDecisionMaker      INFO REGTEST  Event Filter passed   : 0
TriggerDecisionMaker      INFO REGTEST  Unprocessed events    : 0
TriggerDecisionMaker      INFO REGTEST  Level 1 errors        : 0
TriggerDecisionMaker      INFO REGTEST  Level 2 errors        : 0
TriggerDecisionMaker      INFO REGTEST  Event Filter errors   : 5
TriggerDecisionMaker      INFO REGTEST  StoreGate errors      : 0
```

- Fixed in 12.0.x nightlies with tags from last week

# Signature names

- More a feature than a bug...but should be corrected
- The Signature name is, for now, not available to the TriggerDecisionMaker
  - What I returned by the Signature class is the concatenation of TriggerElement names:

```
std::string Signature::label() {  
    std::string tmpString="";  
    for(unsigned int i=0;i<m_SignatureTEStringVector.size();i++){  
        tmpString+=m_SignatureTEStringVector[i];  
    }  
    return tmpString;  
}
```

# Signature names

- This means in practice that users need to know what label to ask for:
  - Example: 2e15i

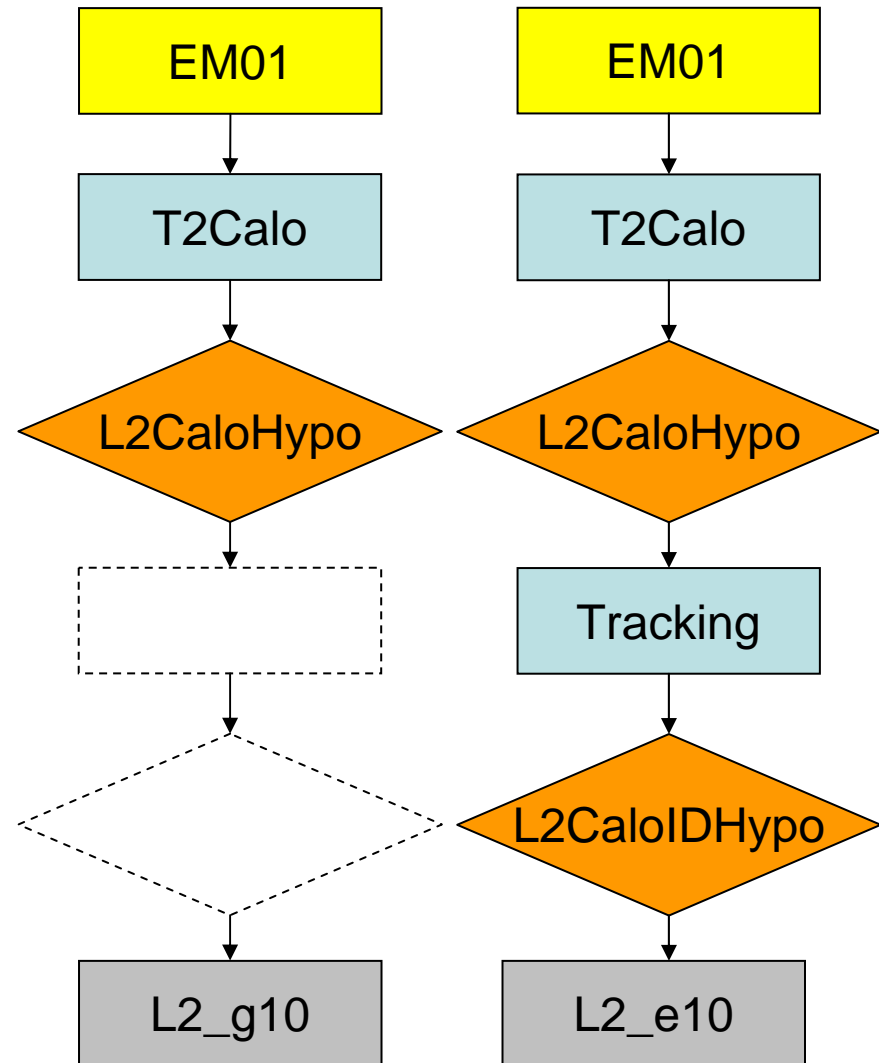
```
// TriggerConfig_2e15i.py
TE = sequenceFile.addSequence("EF", TE,
EgammaRecEgamma.classAndInstanceName(), "EF_e15i")
signatureFile.addSignature("2e15i", "1", "0", TElist=[TE,TE])
```

In this case, last TriggerElement in EF is “EF\_e15i”:

- Ask TriggerDecision for “EF\_e15iEF\_e15i”, instead of “2e15i”...

# Short chains vs Long chains

- Shorter chains used to always fail in Steering
- This has been fixed but names of TEs were not getting to the last step
- And so did not appear in TriggerDecision
- Seems to be fixed now (checks in progress)



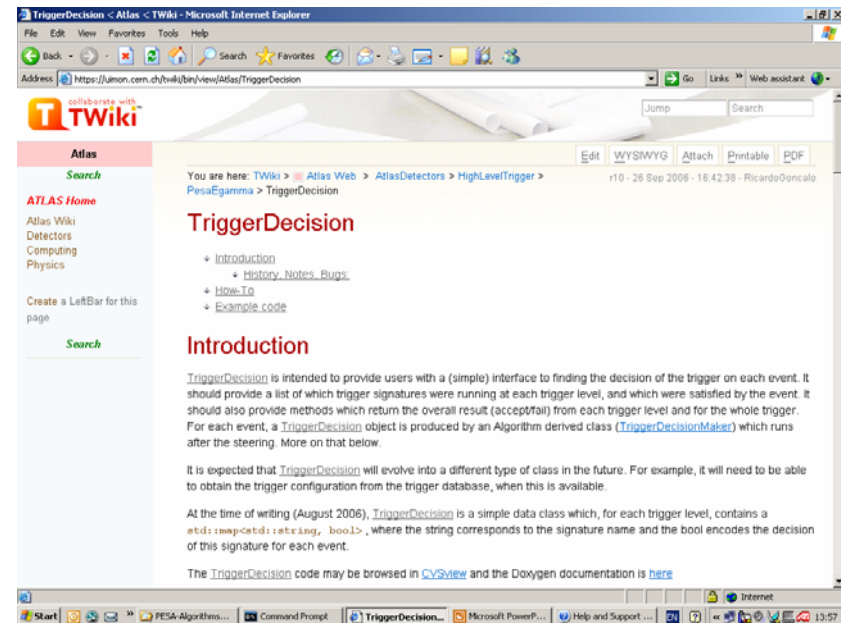
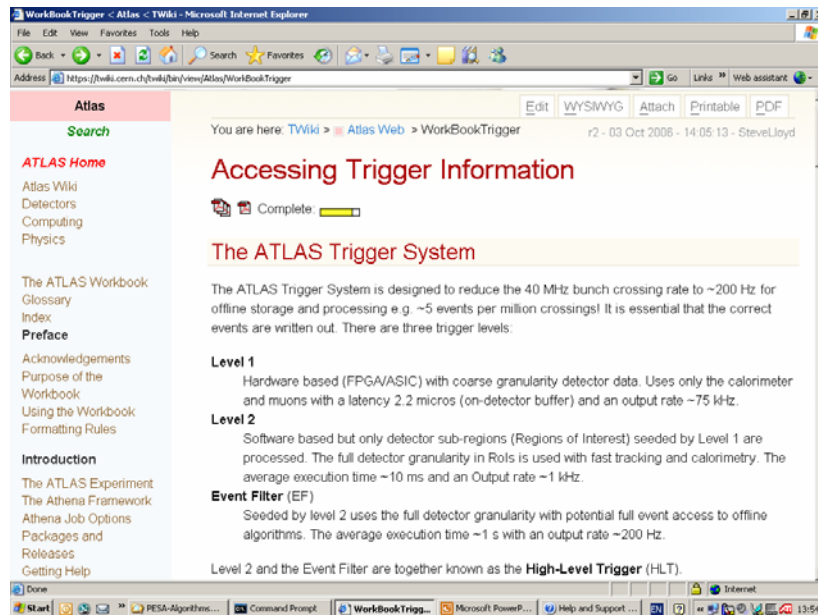
# TriggerElement name conflict

- Not strictly related to TriggerDecision, but needs to be fixed
- Steering uses keys obtained from TE names
- 2 TE names in L2 jets and EF taus generate same keys: exception produced

```
HLTConfig INFO -----  
HLTConfig ERROR TE labels: T2HypoJetOutj20 &  
tau10iEFTauSCTClusters give identical keys: 39558  
change one of this TE label  
HLTConfig ERROR Running the trigger code with above  
not fixed is incorrect  
HLTConfig ERROR Going to crash your job now ...  
TriggerConfig.sysInitialize() FATAL Standard  
std::exception is caught ...
```

# Documentation

- Wiki pages with information and example code for TriggerDecision: <https://uimon.cern.ch/twiki/bin/view/Atlas/TriggerDecision> and TrigDecisionMaker: <https://uimon.cern.ch/twiki/bin/view/Atlas/TriggerDecisionMaker>
- Now also in ATLAS Workbook (thanks to Steve Loyd): <https://twiki.cern.ch/twiki/bin/view/Atlas/WorkBookTrigger>





# Conclusions and plans for 12.0.4

- Not enough to test things on simple cases only!
- Thanks for people who reported problems!
- For CSC production, must be able to run with complex menu without problems
  - This should be baseline menu for most CSC physics notes
  - Problems need to be ironed out: ongoing...
- Documentation essential for physics users and evolving nicely
- Some signatures should be put in the list of “dummy signatures”:
  - e10, g10 for e/gamma
  - For other slices?
  - These “dummy signatures” are needed to produce “features”, so that trigger can be re-run on POOL files, but intended to accept all events