Trigger Configuration:

Athena + Trigger DB

(status report)

- **Motivation**
- **Trigger Database**
- **Trigger Setup**
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- **Status**
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22.05.08

Motivation

athena.py myJobOptions.py

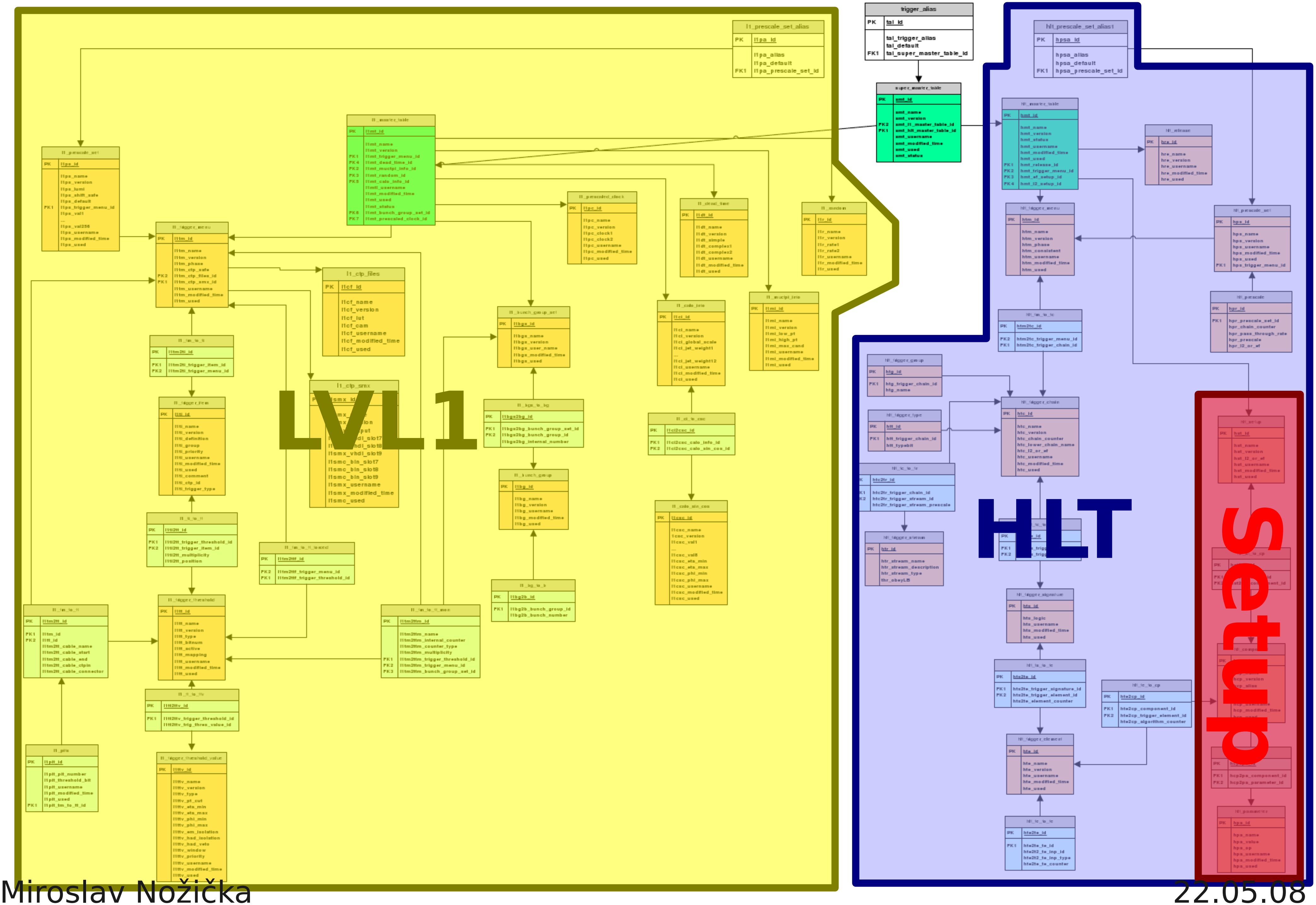
(lots of includes and cross references)

athena.py Trigger DB

(1 Key + DB connection)

- **Full simulation of the Trigger Job**
- **Test of the Trigger setup**
- **MC simulation of the Trigger conditions used in data taking**
- **Trigger Development - user friendly interface for developers (TriggerTool)**
- **....**

Trigger Configuration DB



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HLT Setup

Athena Job

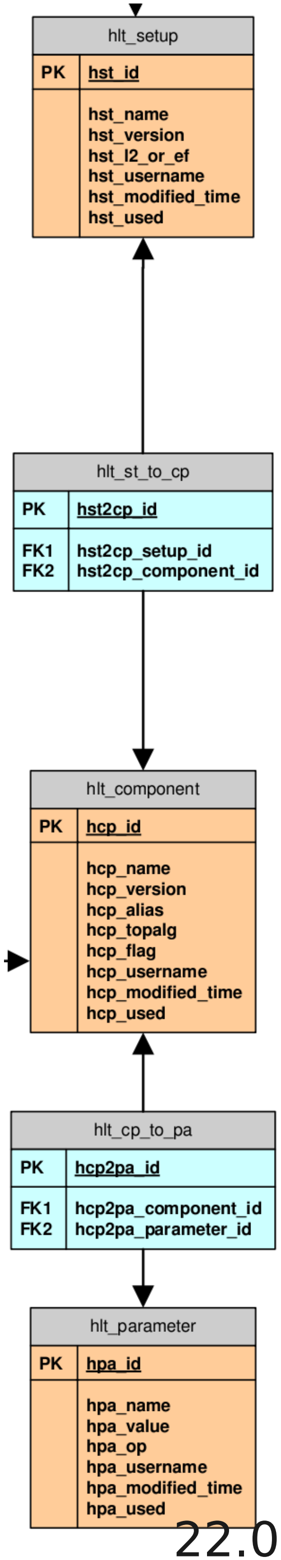
Algorithm Service Tool

Property

HLT Setup

HLT Component:
- *name:* Class name
- *alias:* Instance name

HLT Parameter:
- *value*



hlt_setup
PK hst_id
hst_name
hst_version
hst_l2_or_ef
hst_username
hst_modified_time
hst_used

hlt_st_to_cp
PK hst2cp_id
FK1 hst2cp_setup_id
FK2 hst2cp_component_id

hlt_component
PK hcp_id
hcp_name
hcp_version
hcp_alias
hcp_topalg
hcp_flag
hcp_username
hcp_modified_time
hcp_used

hlt_cp_to_pa
PK hcp2pa_id
FK1 hcp2pa_component_id
FK2 hcp2pa_parameter_id

hlt_parameter
PK hpa_id
hpa_name
hpa_value
hpa_op
hpa_username
hpa_modified_time
hpa_used

Any **HLT Setup** contains full description of the **Athena job** for corresponding **Trigger level** for **online** data taking

Differences between online and offline job

- Full offline trigger job mostly requires both HLT Levels
  - load both L2/EF setups => merge => 1 job
- Package TrigConfOffline
- Rules for setup merging
  1. **Copy** (copy different property into another)
  2. **Merge** (merge properties of the same algorithms)
  3. **Replace** (replace algorithm or property by another + delete included)
  4. **Modify** (add or replace an item in the sequence type of property)
  5. **Rename** (change algorithm name or alias – keep properties)
  6. **Sort** (sort the property values of sequence type)

How-to obtain the rules

- **HistorySvc:**
  dumps all the algs, services, tools with their properties into a text file during the finalize()
- **Offline job:**
  HLT setup: athena.py testHLT_standalone.py
- **Online job simulation:**
  L2 setup: athenaMT.py testHLT_standalone.py
  EF setup: athenaPT.py testHLT_standalone.py
- **Convert** setup text files into xml
- **Upload** offline and online setups into test DB using TriggerTool
- **Compare** offline and online setups in the DB using SQL
  => **basic rules set**
- **Debug** the offline job - determine causes of the crash – include the change into rules and start job again

Rules example

XML file:

format of the components same as for xml upload

```
<Replace name="ByteStreamCnvSvc">
  <online>
    <component alias="ByteStreamCnvSvc" name="ByteStreamCnvSvcBase" topalg="0">
    </component>
  </online>
  <offline>
    <component alias="ByteStreamCnvSvc" name="ByteStreamCnvSvc" topalg="0">
      <parameter name="ByteStreamOutputSvc" value="" op="set"/>
      <parameter name="ByteStreamOutputSvcList" value="[]" op="set"/>
      <parameter name="IsCalibration" value="False" op="set"/>
      <parameter name="IsSimulation" value="False" op="set"/>
      <parameter name="IsTestbeam" value="False" op="set"/>
      <parameter name="UserType" value="RawEvent" op="set"/>
    </component>
  </offline>
</Replace>
```

We plan to have the rules in the Trigger DB in order to have user friendly environment and easier access.

TrigConfOffline package
(current status)

```
cmt co Trigger/TrigConfiguration/TrigConfOffline
```

- Purely python code (formerly C++)
- HLT_trigdb_query.py
  - executable needs options
  - loads the setups from the Trigger DB
  - merge and process setups using rules into a dictionary of algorithms
  - saves the dictionary into pickle file 'trigger_db.pickle'
- athena.py Load_trigger_db_shelve.py
  - read the 'trigger_db.pickle' file
  - creates configurables from the algorithms
  - process the sequences, algorithms parent-child relations
  - setup the ApplicationMgr

Current status

- The C++ sources rewritten to python
  - structural change
    - only one package is needed
    - other problems appeared
- Didn't make it to the 14.2.0 release
- Problem with wrong names for some algorithms caused delay – number of rules increase of one order
- Debug stage – going crash by crash and solving the causes
  - very painful process: most of the problems are not obvious and barely described by the crash

Summary

- TrigConOffline package – main frame present
- Semi-automatic creation of the rules
- Rules are changing for every release
- Very high priority
- Plans:
  - Finish debugging
  - Submit it when ready possibly to the next release
  - Create more user friendly environment
  - Rules to the Trigger DB