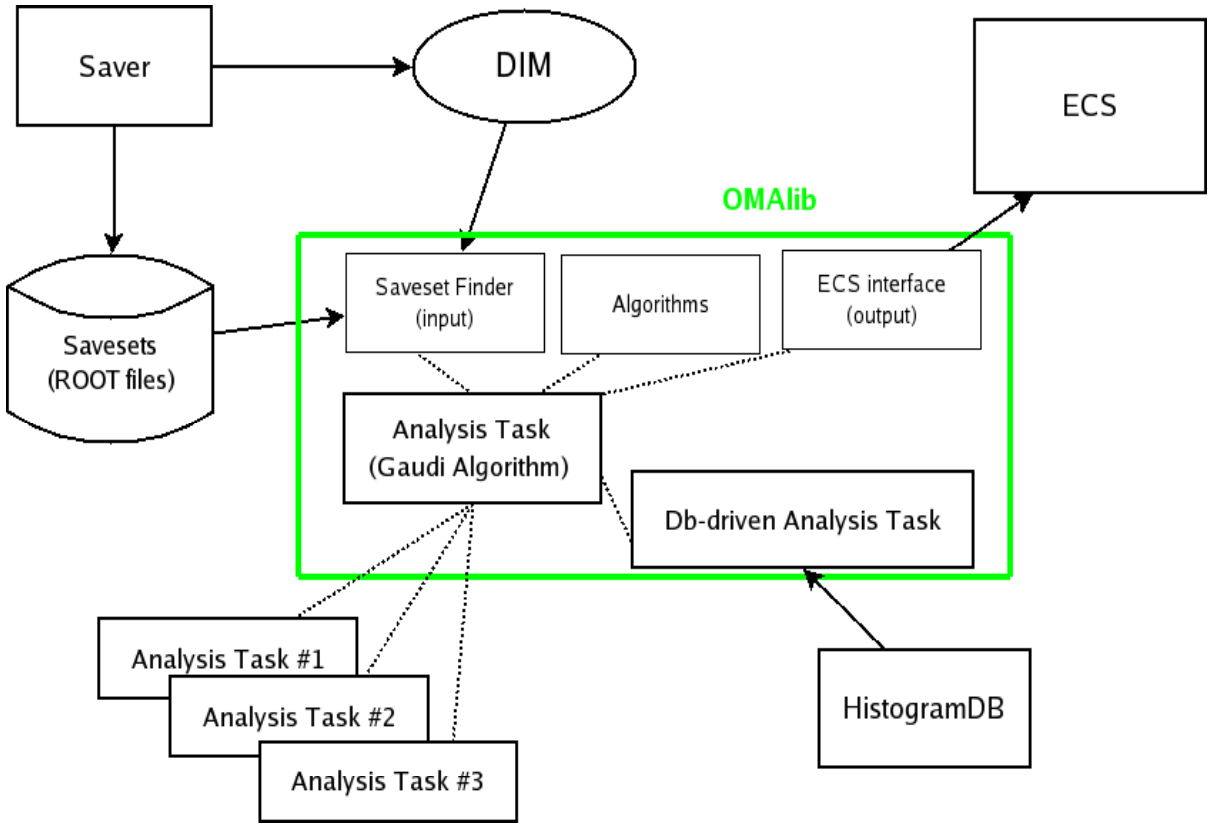
Automatic Analysis on Online Histograms

OMAlib v2r1 provides:

- Mechanism to trigger Analysis on every SaveSet
- Alarm logging mechanism (using HistDB for persistency)
- Standard analysis algorithms
- Prototype algorithm for custom analysis
- Analysis task for checks fully defined and controlled via the web interface of HistDB



- Definition of virtual “analysis histograms” that are produced on the fly by the Presenter from existing ones
- Set of fit functions to be associated to histograms for display or analysis

Example of DB-driven analysis

- Check occupancy maps of the 25920 muon logical channels against reference histogram.
  Procedure:

1) Using HistDB web interface, associate analysis “CheckHolesAndSpikes” to the histogram set. Options: ref. histogram as baseline, 4 sigma deviation as warning threshold, 10 sigma as alarm threshold

2) Install OMAlib and run Gaudi with these options:

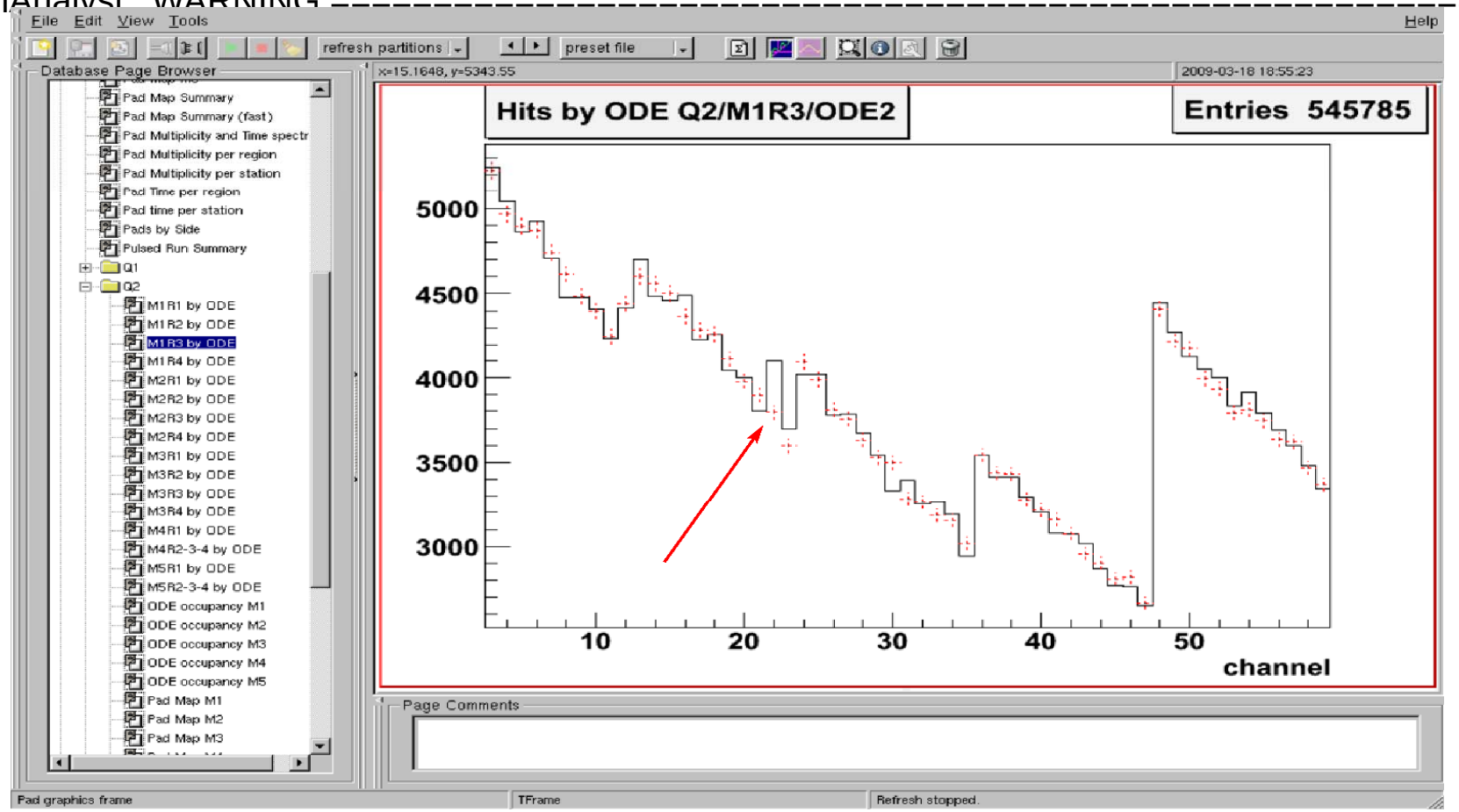
```
ApplicationMgr.DLLs += { "OMAlib" };
ApplicationMgr.TopAlg = { "DBDrivenAnalysisTask"};
ApplicationMgr.EvtSel = "NONE";

DBDrivenAnalysisTask.Partition = "FEST";
// choose input monitoring tasks, “any” for all
DBDrivenAnalysisTask.InputTasks = {"any"};
```

– Tested during FEST2, analysis task running smoothly for days, performing the check on all Savesets

Got messages like these:

```
DBDrivenAnalysi...WARNING ==========================================================
DBDrivenAnalysi...WARNING ---------- Start ---------- Wed Mar 18 18:49:14 2009
DBDrivenAnalysi...WARNING WARNING from Analysis Task DBDrivenAnalysisTask_GiacomoTest  in analysis
DBDrivenAnalysi...WARNING      on histogram MuonDAQMon/MuonMonitor/Hits by ODE_$Q2/M1R3/ODE2
DBDrivenAnalysi...WARNING      from saveset /hist/Savesets/2009/FEST/MuonDAQMon/MuonDAQMon-
20090304T161420.root
DBDrivenAnalysi...WARNING  algorithm CheckHolesAndSpikes : Spike detected for x=22 delta=4.00073
DBDrivenAnalysi...WARNING ==========================================================
```



To be done

- Add analysis task to Monitoring Farm config. (not done during FEST2 since not a priority)
- Alarm display (alarms are logged in HistDB, can be seen using `/group/online/scripts/dumpOMAlarms )`
  - From Presenter (-> Peter)
  - On the main console (OMAlib uses MsgStream, general problem of displaying messages from Gaudi..)
    - Improve alarm messages
    - Add your preferred analysis algorithm or fit function