Data Quality HLT Monitoring

DESY/HUB ATLAS meeting, Hamburg, 23rd Jan 2007

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Outline

- **Different Monitoring tasks**
- **DQM: information to be monitored?**
- **How to access information? : Data Quality Monitoring framework**
- **Outlook**

Monitoring

Trigger Operation Monitoring
e.g. performance of HLT farm, subfarms, ... ==> Sami
any information from IS server
Presentation of Monitoring Information
for user = e.g. Shift crew ==> Judita

Trigger Decision Monitoring
e.g. rejection power of chains
events accepted after each step ==> Gordon
steps executed

Data Quality Monitoring ==> this talk
quality of data for physics analysis
detect malfunctioning components (online)
decide on goodness of data
flag “good” .... ”bad” (offline)

Subdetector Monitoring ==> subdetector experts

Information to be monitored

some ideas and examples ... further discussion and your suggestion welcome!

- # TE (actual) / Event for LVL2 and EF
- spectra of phys. Objects e.g. p_T of μ, jets, e, γ E_T^{miss}
- η,ϕ – maps of RoIs for μ, EM, had separately
- variables used to cut on in the PESA algorithms
- variables for groups of chains: e.g. E_T^{jet} for jet signatures...
- matching between different subdetectors
- beam conditions: correlations between
  inst. & spec. lumi, beam currents, EF input rate, dead time
- comparison between full reconstruction and HLT reco. objects
  ==> offline

Information to be monitored

”granularity” or which **event samples**

- Lumi block - how to sort info according to Lumi block
  events not necessarily ordered on SFO
- monitor different chains or data streams
  (input from physics working groups will be needed)
- Monitor and store monitored info for rejected events

Some kind of **Reference** histos/values needed
to judge (automatically) on quality of data

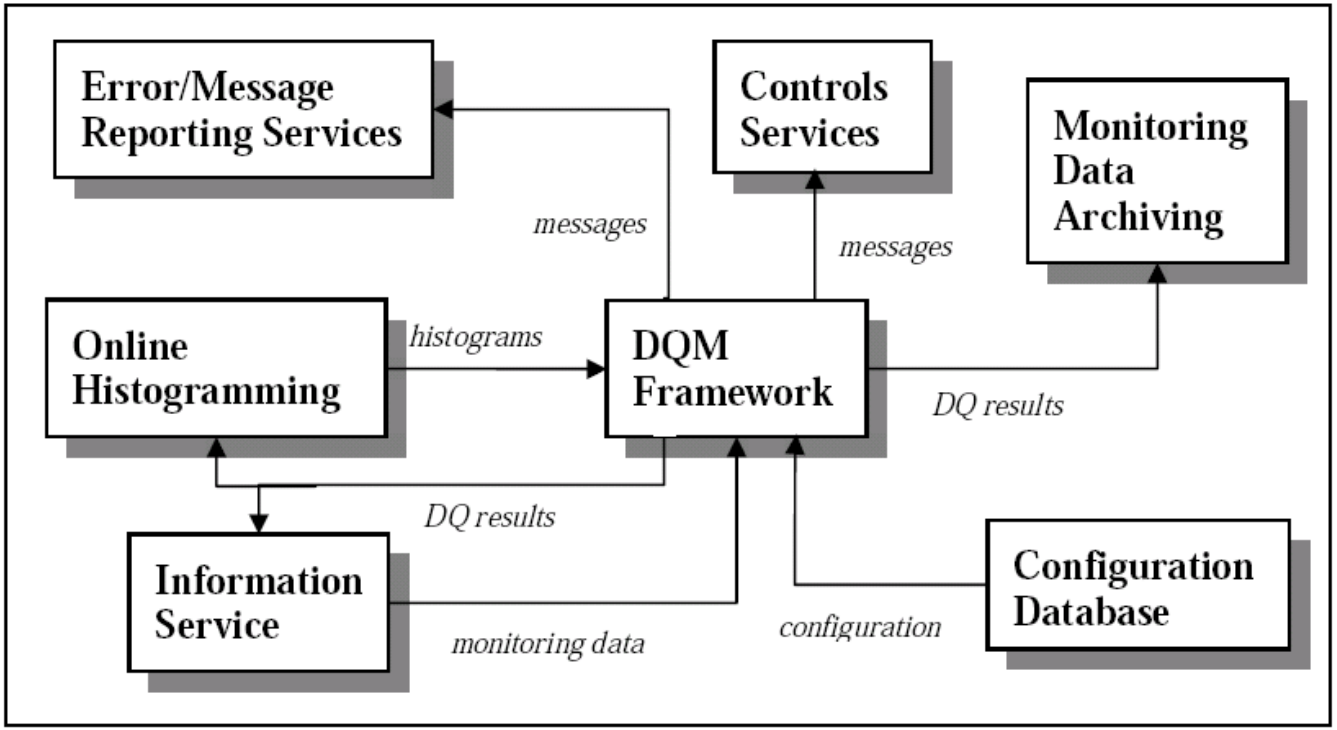
- depends on Lumi, beam conditions, trigger menu ...
- experience from first data needed
- not much can be done before without data and
  data taking experience

How to access information?

Steering code must stay **independent** of Monitoring code

- (every?) PESA algorithm could publish monitoring info
  e.g. P_T, η, ϕ ... of phys. objects or variables used in the selection
- Use existing Monitoring tools (where possible)

Data Quality Monitorin Framework:
Interaction with TDAQ components :



https://edms.cern.ch/document/719917/1.0

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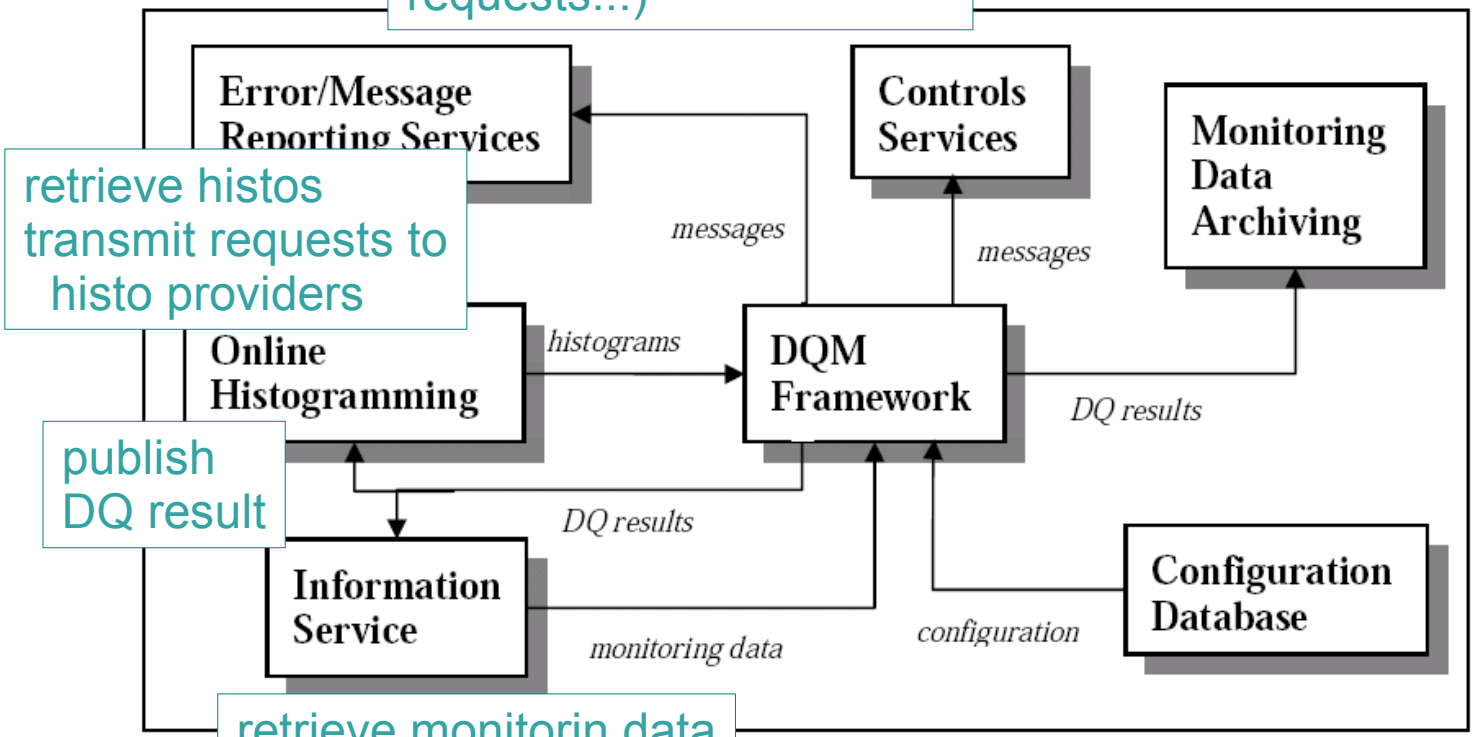
send messages via ERS/MRS to TDAQ and via CS (e.g. run stop requests...)

Data Quali **ework:**
Interaction **nts :**



retrieve histos transmit requests to histo providers

store DQ result

publish DQ result

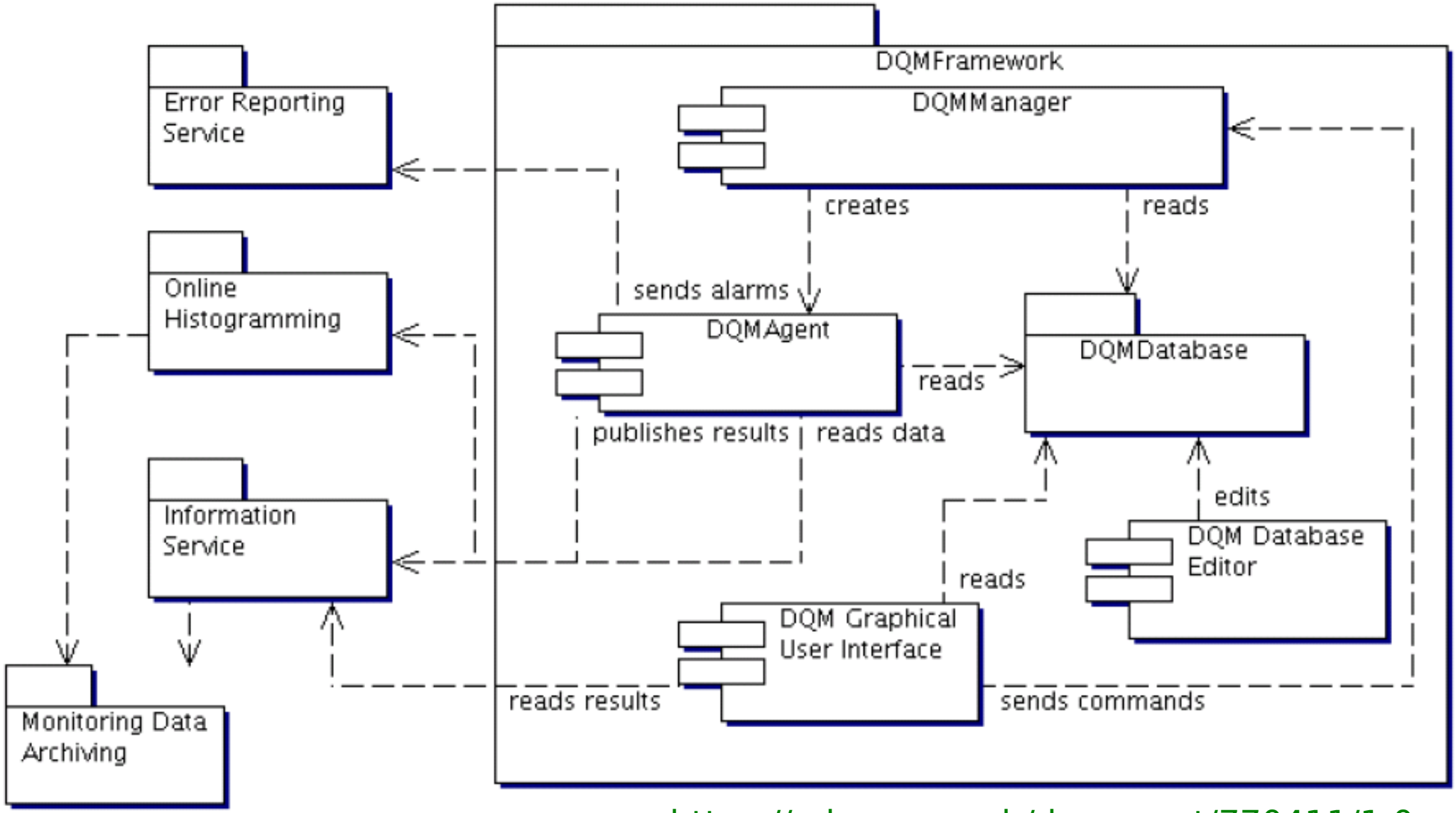
configure DQM activity

retrieve monitorin data

https://edms.cern.ch/document/719917/1.0

Data Quality monitoring framework

DQMF components and relation to online services:



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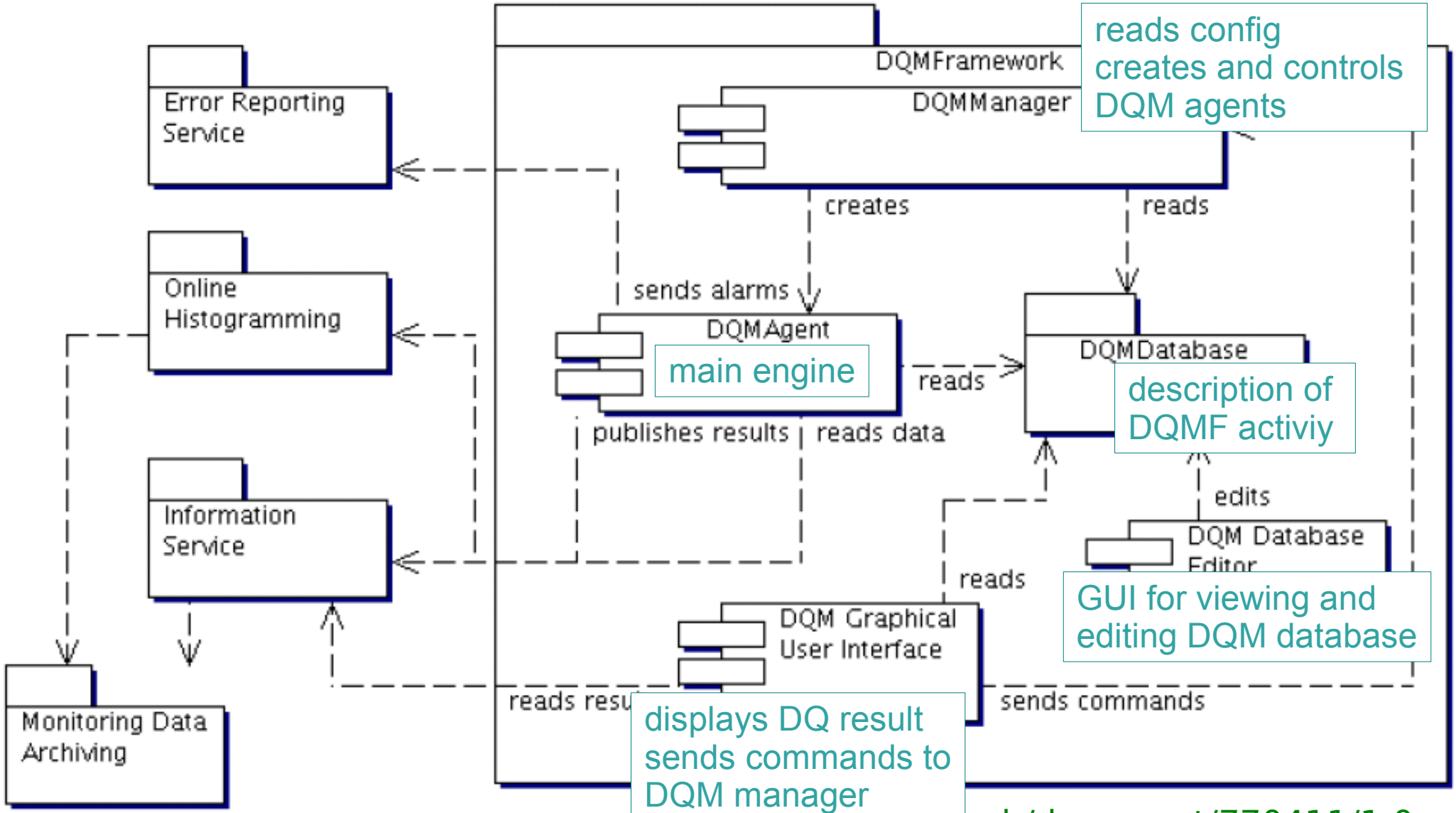
Data Quality monitoring framework

DQMF components and relation to online services:



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Summary

- we agreed to take over “HLT DQ General and global coordination”

concentrate first on monitoring information
decision on DQ will (much later) be based on this information

- sources of information e.g. from selection algorithm jobs?
- which info is already available?
- how to process and store this info – use available tools

TDAQ data quality workshop in DESY-Zeuthen
1.5 days workshop in February (14t and 15th of February)
focused on Trigger (specially HLT/LVL1 and slices)