

Data Quality: Offline Database

Stefan Söldner-Rembold
Fermilab/Univ. of Manchester
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Motivation:

To provide simple and standardised access to offline information for data analyses.

Quality information can be stored per quality group, w

- a detector (currently CAL, SMT, CFT, MUO)
- an ID object (currently MET, JET)
- Future: Trigger, FPD,...

For all these quality groups a minimum of one status is stored which has a structure common to all groups



Status

good

reasonable

bad

special

unknown

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Definition

A physics run with no known problems which likely can be used for physics analysis and a publication.

A physics run with minor problems which can perhaps be used for physics analysis but needs to be treated with care.

This run should not be used.

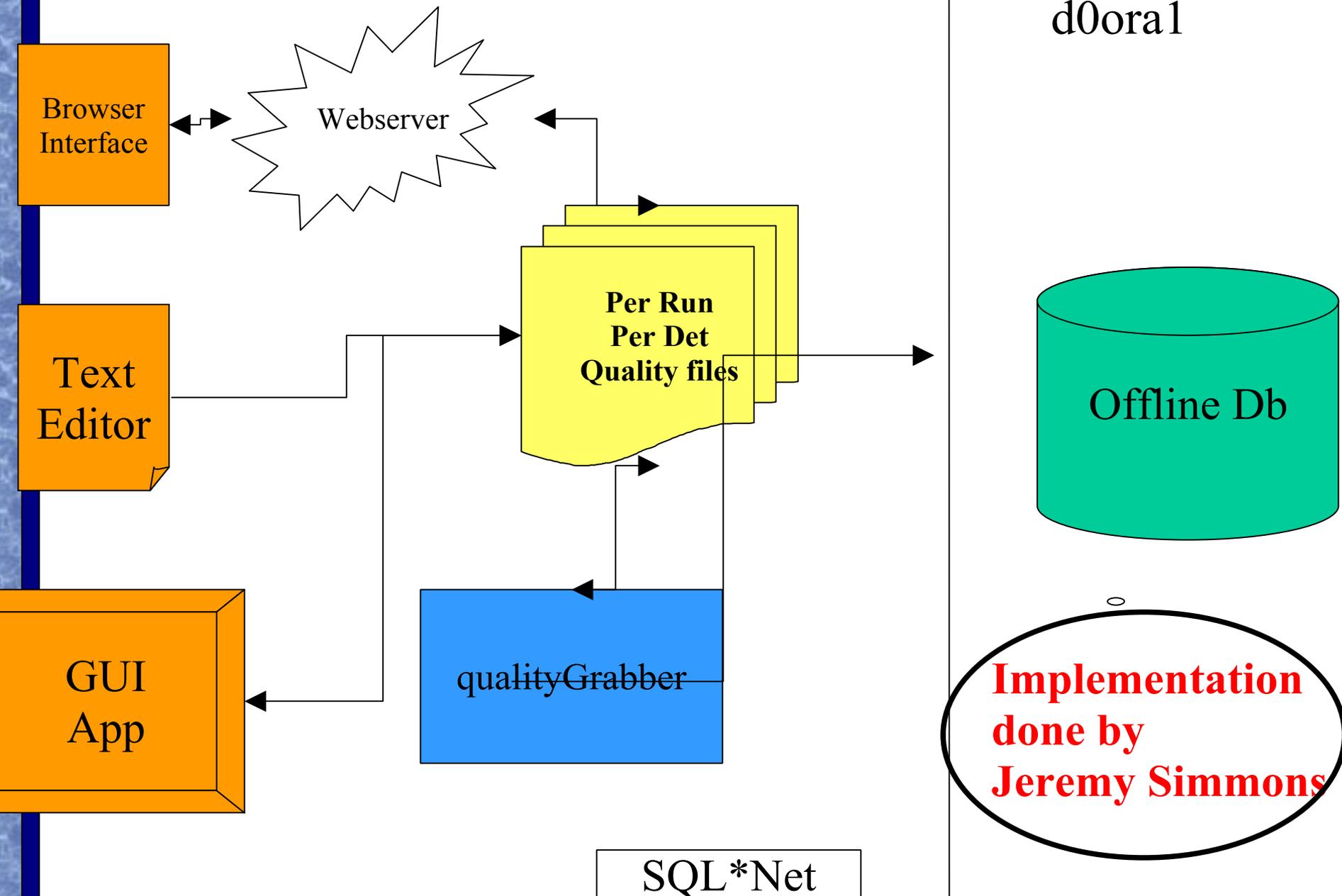
A run for experts only, special conditions.

This run has not been classified



Some Offline Node

d0ora1



**Implementation
done by
Jeremy Simmons**

SQL*Net

How to fill the database:

One file is produced per run & group with the name:
<group>_<run_number>.dat

The file contains:

group: <group_name>

run: <run_number>

status: <status_value>

<parameter_name>: <parameter_value> (alphanumeric)

...

Example file MUO_146437.dat contains:

group: MUO

run: 146437

status: REASONABLE

grade:C

comment:PDT 217 back in read. New CF BC scint thresholds+HV.

A password is required to add information



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Offline Run Quality Database Queries

NEW Run Quality Query (View Based)

Run Number	=		=	
MUON Quality	=	REASONABLE		
MET Quality	=	GOOD		
JET Quality	=	GOOD		
SMT Quality	not =	BAD		
CFT Quality	not =	BAD		
CAL Quality	not =	BAD		
Output Type	Select Output Format			
Number of Rows Per Page	240			
Max Number of Rows	50000			

Run Build Edit

Run Quality Query

- Administrator can add new
- 'Offline' Database =>
 - information can change with time
- SMT/MUO/JET/MET:
 - 'positive list' = use good/re
- CAL/CFT
 - 'negative list' = remove ba

web interface by J.Simmon



Offline Web Query Interface

Offline Run Quality Database Query

LN_NUMBER	MUO_QUALITY	MET_QUALITY	JET_QUALITY	SMT_QUALITY	CFT_QUALITY	CAL_QUALITY
373	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
372	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
370	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
369	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
361	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
360	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
335	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
334	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
325	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
312	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
277	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
043	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
042	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
041	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
040	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
039	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
038	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN
037	REASONABLE	GOOD	GOOD	REASONABLE	UNKNOWN	UNKNOWN

Desk 0	Desk 1	Desk 2
Login	Standard Pres	D0 Offline Que

Offline Run Quality Database Query

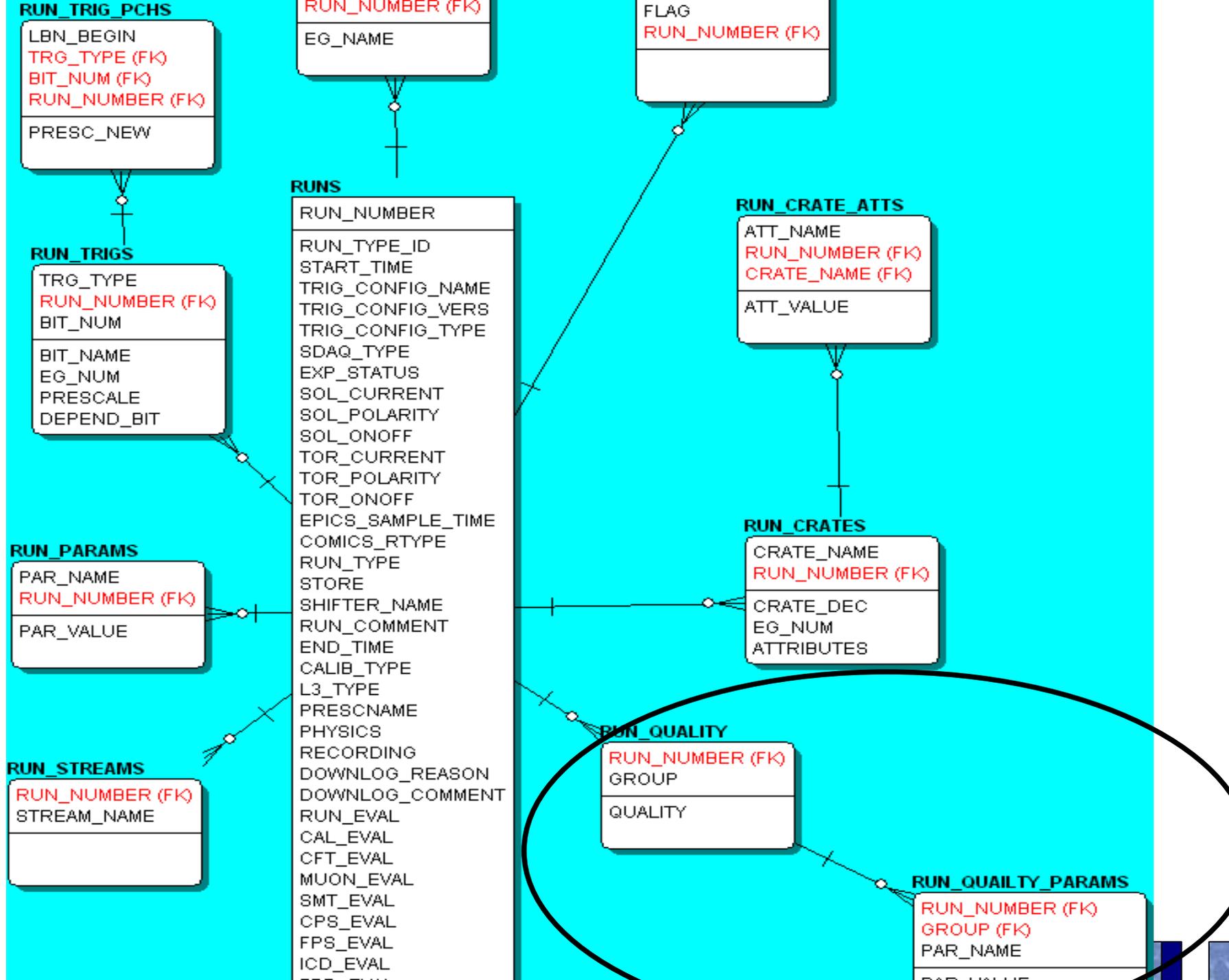
number	quality	qual_group	par_name	par_value	create_date	create_user	modify_date	modify_user
175	BAD	CFT	crates	missing crate number 80	21-JAN-03	cft_run_qual	21-JAN-03	
175	BAD	SMT	crates	missing crate number 96	21-JAN-03	smt_run_qual	21-JAN-03	
175	BAD	MUO	crates	missing crate number 55	22-JAN-03	muo_run_qual	22-JAN-03	
175	BAD	CAL	crates	missing crate number 64	22-JAN-03	cal_run_qual	22-JAN-03	
175	BAD	CFT	comment	magfield off	22-JAN-03	cft_run_qual	22-JAN-03	
175	BAD	SMT	comment	magfield off	22-JAN-03	smt_run_qual	22-JAN-03	
175	BAD	MUO	comment	New trigger test. magnets off no crate x37 note trigv9.5 has new triggers to study.	22-JAN-03	muo_run_qual	05-FEB-03	muo_run_qual
175	BAD	CAL	comment	magfield off	22-JAN-03	cal_run_qual	22-JAN-03	
175	BAD	MUO	grade	F	05-FEB-03	muo_run_qual	05-FEB-03	

Records 1 to 9 of the Total 9 found.

Return to: [Starting Query Page](#) or [Edit](#) the SQL query that produced this page.

For help contact d0db-support@fnal.gov

[Back to Offline Run Database Home Page](#)



Which information is currently available in the database

All runs are entered with 'unknown'. Only 'physics runs'

- CFT

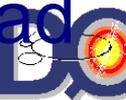
only bad runs entered based on the following criteria

- axial or stereo crate missing ->bad
- magnetic field off ->bad

- SMT

run quality evaluation done by Harald Fox:

- any SMT crate missing or magnetic field off -> bad
- shifter evaluation calls run 'useless' -> bad
- Harald reads the logbook to identify problems



- CAL.

only bad runs entered based on the following criteria (SS)

- any CAL crate off or magnetic field off -> bad
- all runs with L1 event mixing (Bob Kehoe's list) -> bad
- runs from Alan Stone's list with parts of crates off -> bad

- MUO:

run quality evaluation done by Tom Diehl (see D0 Note 39)

- any Muon crate off -> bad
- input from
 - logbooks
 - examine histograms
 - trigger cross-sections
 - reco-output
 - muon experts

is used to determine run quality



JET/MET:

Run Quality evaluation performed by Gregorio Bernardi:

Only 'good' runs should be used.

- runs with more than 1000 events
- shift in MET-xy < 3.5 GeV
- shift in RMS-xy < 15 GeV
- average scalar ET > 80 GeV
- flat ϕ distribution for jets (A. Kupco et al)

The values of these quantities per run should also be stored
(not yet)

Bad JET/MET runs correspond to about 17%
of p13.04/p13.05/p13.06

What is the influence of quality cuts on luminosity ?

Example (prel.) from the WZ group (Marco Verzocchi):

luminosity for p13.04/p13.05 for an unprescaled trigger	52.83/pb
remove runs with bad status for CFT/SMT	51.88/pb
remove runs with bad status for CAL/JET/MET	42.95/pb
remove runs with bad status for MUON	35.06/pb
use MU_W_L2M5_TRK10 (prescaled)	24.27/pb

How can the information be accessed ?

- Primary information only stored in database (private lists should be avoided)
- Querying the database using the web interface (->list of run numbers to read in)
- Run Quality queries can also be done from SAM:

(RUN_QUAL_GROUP MUO and
RUN_QUALITY REASONABLE)

Careful: Using only 'RUN_QUALITY REASONABLE'
will produce nonsense

- Physics group's root-tuples (e.g. WZ group)
- Querying the database within your reco or analysis job (no interface yet)

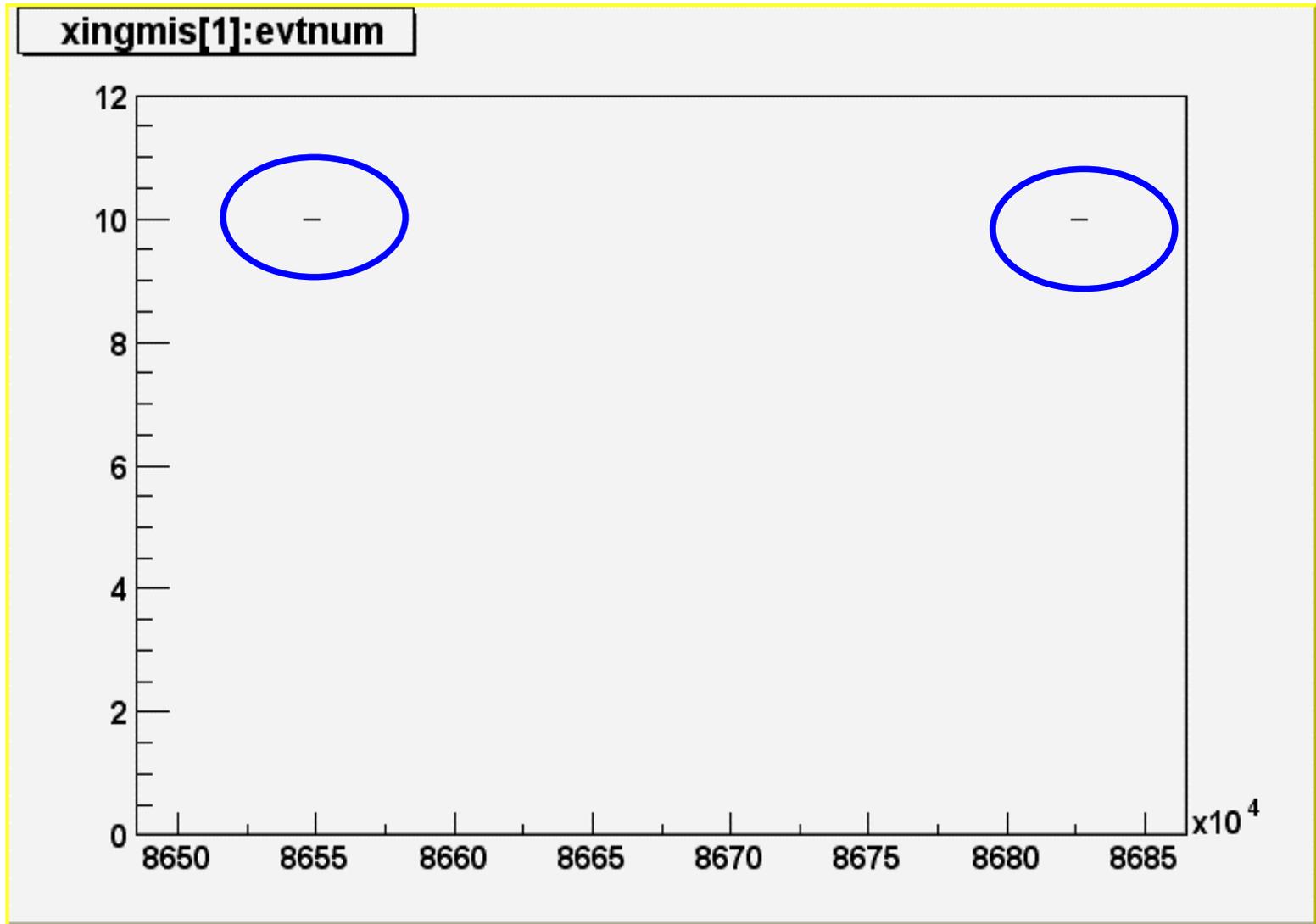


Data quality tiers:

- Runs -> Run Quality Database
- Files -> SAM ? Run Quality Database ?
- Luminosity block -> Luminosity Database will contain:
 - SES alarms (G.Savage)
 - Copy of Runs Quality DB info
- Event -> TMBTriggerChunk
 - currently only done for muon system
storing TN and XN errors
(D.Shpakov, C.Clement)
information accessible in thumbnail (done) o
via MuoCandidate (to be done)



..just an example..



Event Number

Run 168389: 3406 out of 419000 events have XN error

Summary/Outlook

- Quality information must be provided in a standardised format for the large number of data analyses expected in the future.
- More automatic quality monitoring is needed, especially for lower level quality tiers (LBN, events..). This includes read-out, storage and access methods for environments.
- There is a proposal to use the GM shifter's evaluations as a 'seed' for the Run Quality Database for bad physics runs. At the same time an automatic email should be sent to the detector group experts alerting them of the problem.
- All physics groups are encouraged to use the Run Quality Database and to help us improve it.

