

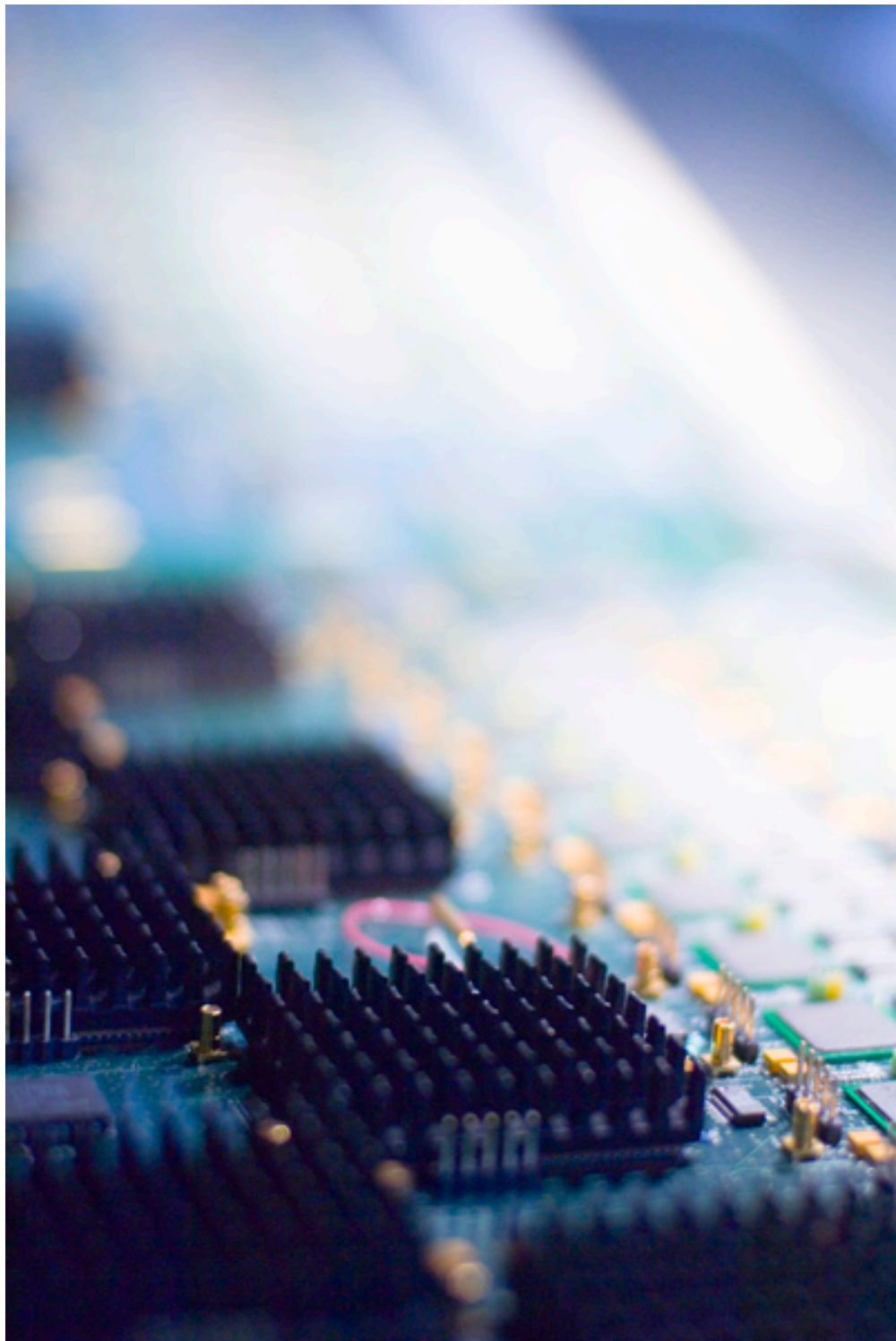


OFFLINE TRIGGER MONITORING

TDAQ Training
5th November 2010

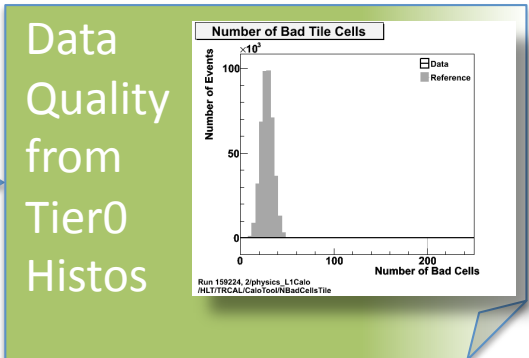
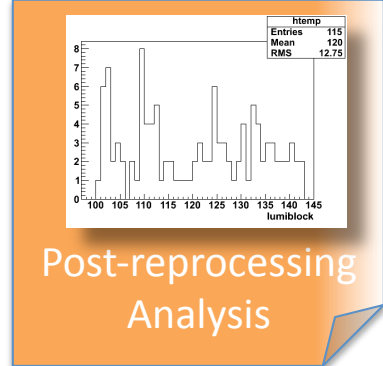
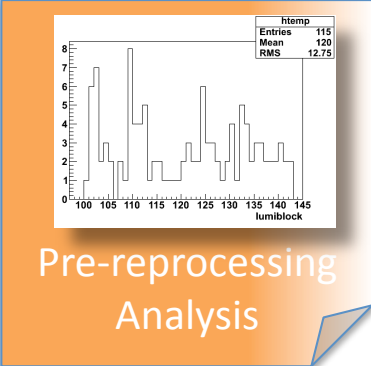
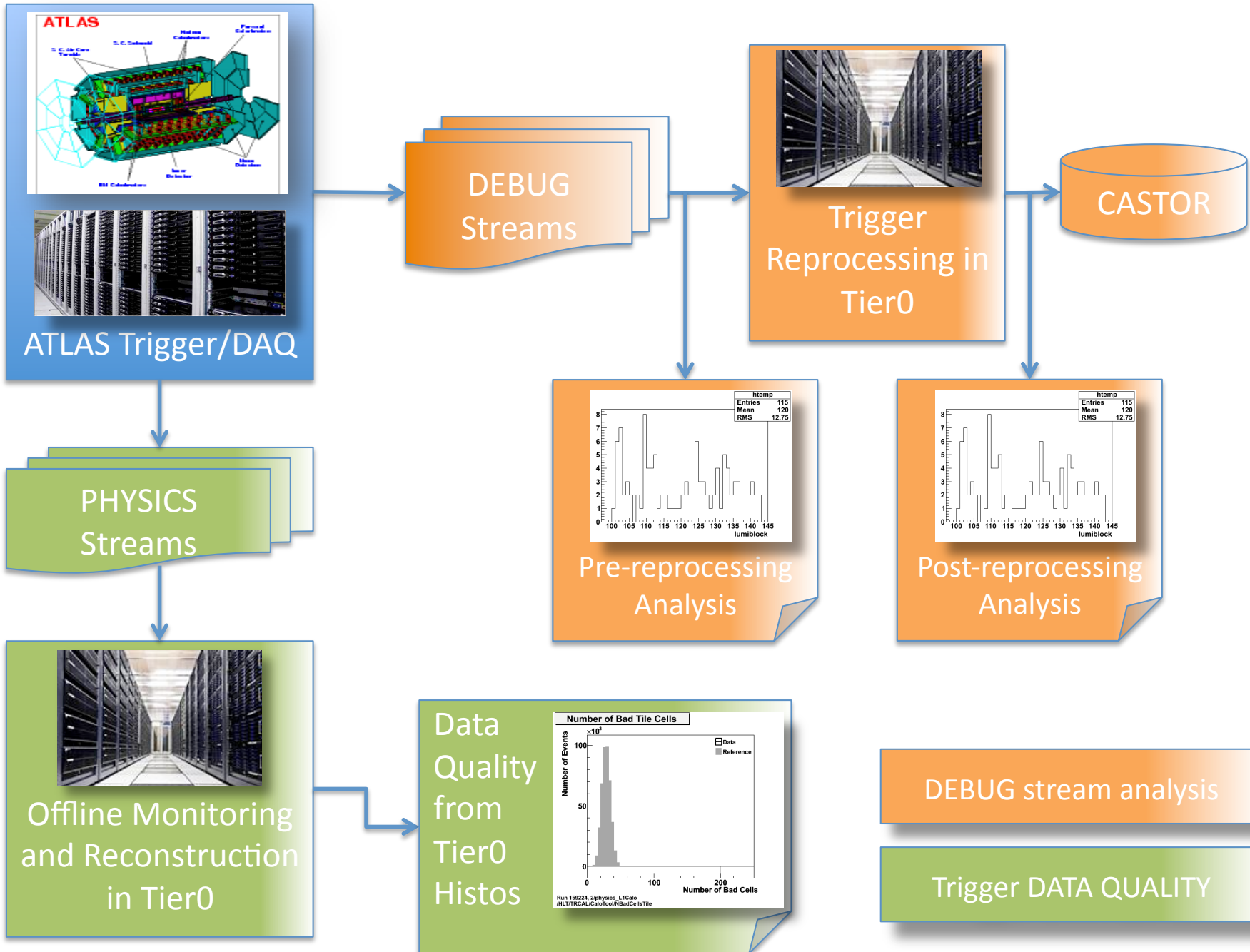
Ricardo Gonalo
On behalf of the Trigger Offline
Monitoring Experts team



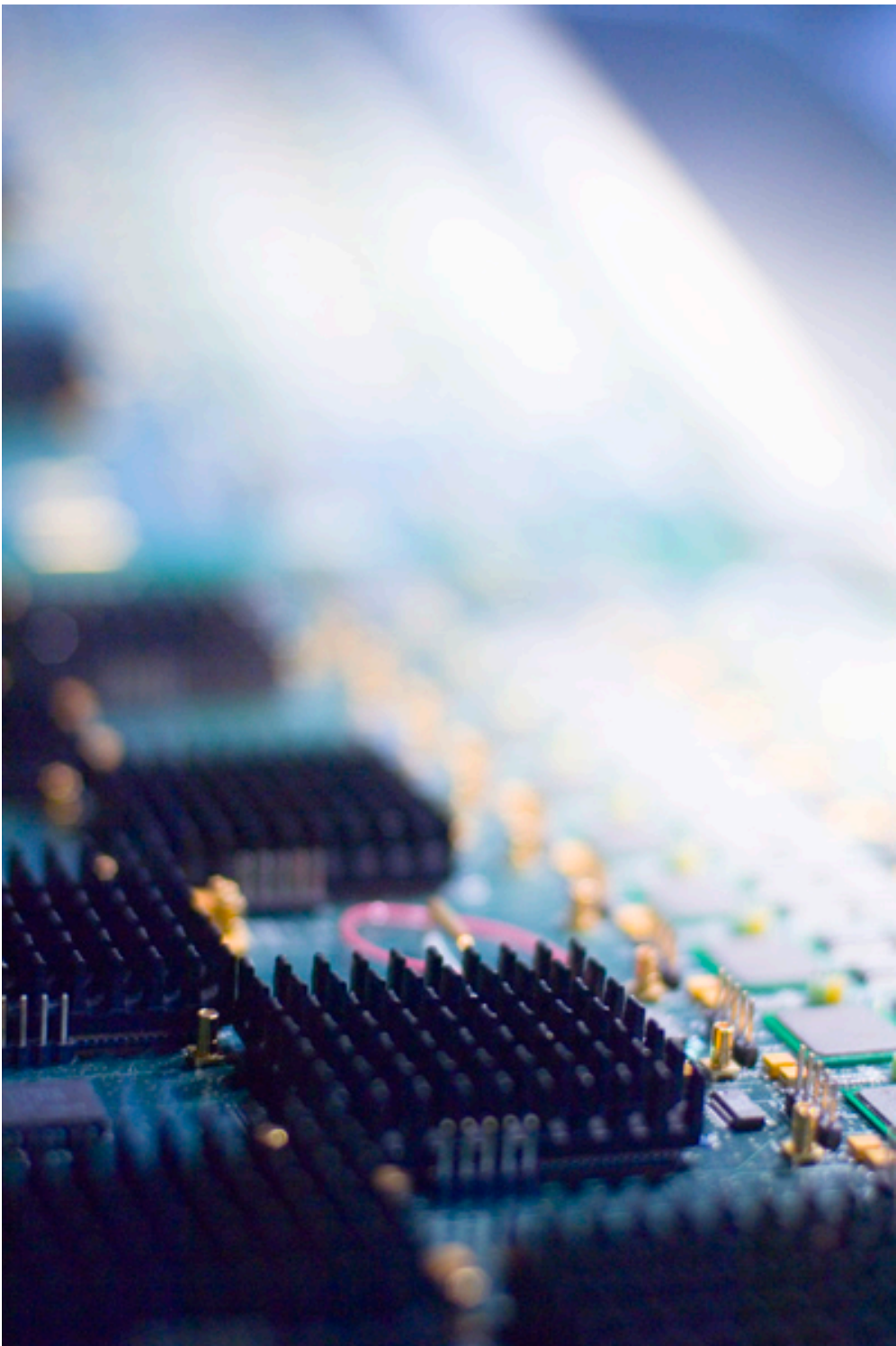


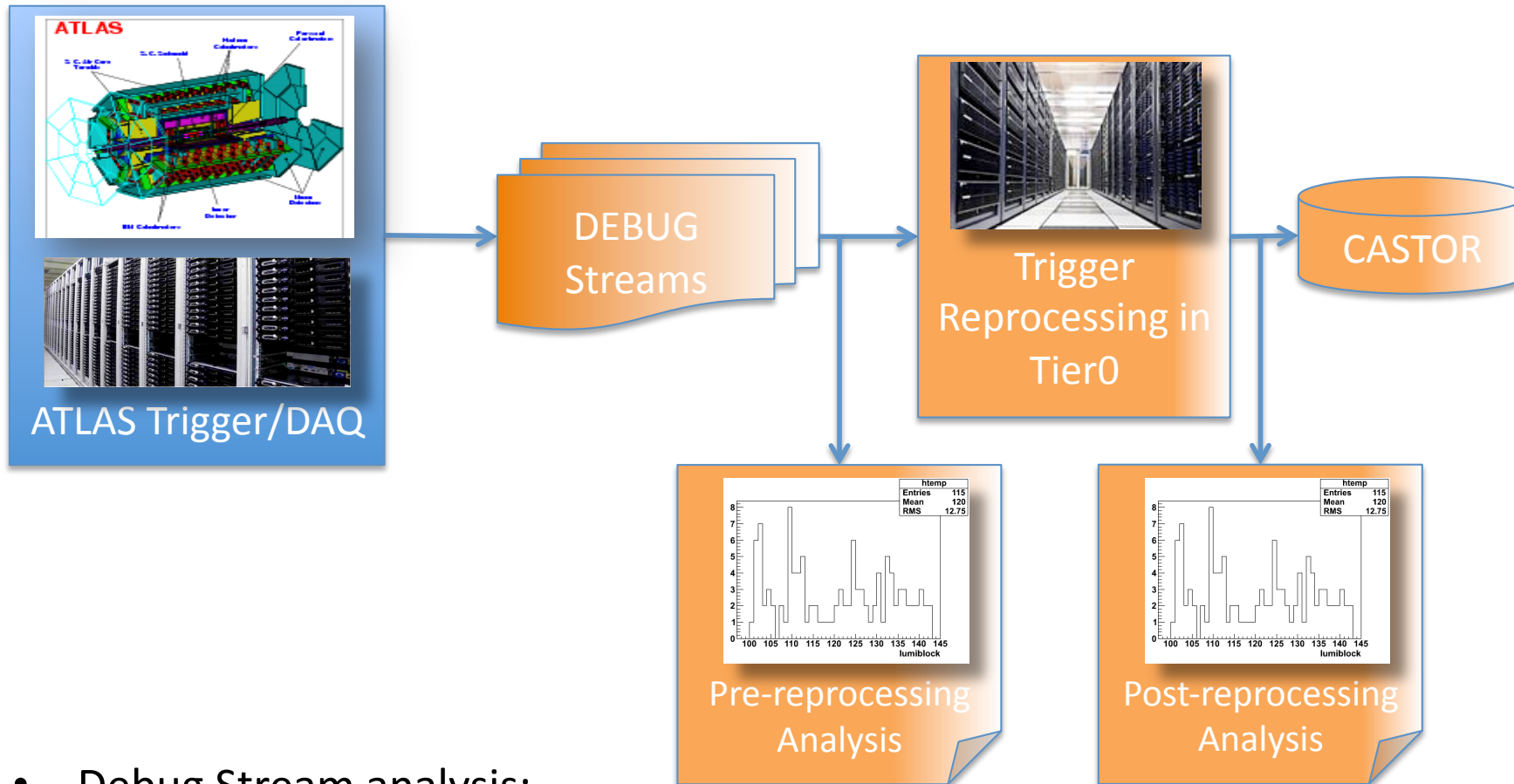
Introduction

- **Aims:**
 - The offline trigger monitoring shifter has two main tasks:
 - Monitor the **DEBUG STREAM analysis** and recovery
 - Monitor the **trigger DATA QUALITY**
- **Practicals:**
 - The trigger shifter is in constant contact with a **Trigger Offline Expert** on call
 - A small team of experts rotate to make sure there is always someone on call
 - Will also be able to answer the shifter's questions/doubts
 - The expert will direct the shifter's work
 - Especially in case non-standard operations are needed
 - One shift per day from **9am to 5pm CERN time**
 - Currently in the TDAQ SATELLITE CONTROL ROOM (SCR)
 - Look for category "TRIGGER OFFLINE MONITORING SHIFTER" (task 46640) in OTP
 - It will be possible to do this shift remotely once the all the tools are available and the LHC is running smoothly – starting in early 2011
- **Organization:**
 - The activity is overseen by Alessandro Di Mattia and is an essential part of the **TRIGGER OPERATIONS** area
 - It makes sure that the trigger is working without problems and that the data collected is good for analysis



DEBUG STREAM MONITORING





- Debug Stream analysis:
- Events generating failures either in the **DAQ infrastructure** or the **HLT software**, and for which the HLT can't make a decision, are sent to debug streams:
 - ✦ **Timeouts:** debug_EFHltTimeout, debug_efdProcTimeout, debug_L2HltTimeout, etc
 - ✦ **Crashes:** debug_efdPTCrash, debug_L2ForcedAccept
 - ✦ **Algorithm errors** that abort processing: debug_EFHltError, debug_L2HltError
- They are **reprocessed** in the Tier0
 - A set of tables and analysis histograms are produced **pre-** and **post-reprocessing** to help diagnose the error and monitor the recovery.

- Debug Stream Monitoring:
https://voatlas17.cern.ch/offmon_new/offlineshifter.php
- Webpage dedicated to the use of the offline shifter and expert on call
- Automatically displays the recorded runs and provides a nice way to **keep the information** about past runs
- Provides access to the debug stream contents and to **analysis histograms** before and after **reprocessing**

Offline Trigger Shifter Monitoring

[Documentation](#) [White Board](#) [Savannah Bug Reporting System](#) [Offline Shifter Elog](#) [Trigger Rates](#)
[Cost Monitoring](#) [T0 Histos Manual](#) [2009 Runs](#) [Checked Runs](#) [Val. Runs as Text](#)

Select search criteria
 Date: Select

Run	Events in Debug	Status DBG Proc.	Ev. in Debug after Proc.	Status Tier0 / Cost Monitoring	Run Validation
Run Number: 160035 Tag: data10_comm Link to run info Link to Elog Search		no events to reprocess		X Start Time: 2010-07-24:08:17:03 Stop Time: not yet finished Link to Tier0 Status Link to Tier0 histos	DBG Proc Status: <input checked="" type="checkbox"/> checked DBG Events: <input checked="" type="checkbox"/> checked DBG Histos: <input checked="" type="checkbox"/> checked TIER0 Histos: <input checked="" type="checkbox"/> checked Bug Report No: <input type="text"/> Comment: <input type="text"/> Shifter: <input type="text"/> <input type="button" value="Validation finished"/>
Run Number: 160034 Tag: data10_comm Link to run info Link to Elog Search		no events to reprocess		✓ Start Time: 2010-07-23:23:17:35 Stop Time: 2010-07-24:08:02:49 Link to Tier0 Status	DBG Proc Status: <input checked="" type="checkbox"/> checked DBG Events: <input checked="" type="checkbox"/> checked DBG Histos: <input checked="" type="checkbox"/> checked TIER0 Histos: <input checked="" type="checkbox"/> checked Bug Report No: <input type="text"/> Comment: <input type="text"/>

Centralized location for useful links and documentation


Validated runs, in html or in text, useful for e-log

- Debug Stream Monitoring:
https://voatlas17.cern.ch/offmon_new/offlineshifter.php
- Guides the checks to be done by the shifter for each run.

Offline Trigger Shifter Monitoring

[Documentation](#) [White Board](#) [Savannah Bug Reporting System](#) [Offline Shifter Elog](#) [Trigger Rates](#)
[Cost Monitoring](#) [T0 Histos Manual](#) [2009 Runs](#) [Checked Runs](#) [Val. Runs as Text](#)

Select search criteria

Run	Events in Debug	Status DBG Proc.	Ev. in Debug Shifter Proc.	Status Tier0 / Cost Monitoring	Run Validation
Total events: 0 Luminosity blocks: 3 Run Number: 159835 Tag: data10_cos Link to run info Link to Elog Search Start-End Time: 2010-07-22 02:40:00 - 2010-07-22 07:26:00 EFHItTimeout: 115 efdStopTransition: 6 efdProcTimeout: 6 100% Total events: 7074664 Luminosity blocks: 144 Run Number: 159831 Tag: data10 cos				Link to Tier0 hists <div style="text-align: center;">  Start Time: 2010-07-22:02:40: Stop Time: 2010-07-22:07:29:22 Link to Tier0 Status Link to Tier0 hists EFHItTimeout efdProcTimeout </div>	Shifter: Validation finished DBG Proc Status: <input type="checkbox"/> checked DBG Events: <input type="checkbox"/> checked DBG Histos: <input type="checkbox"/> checked TIER0 Histos: <input type="checkbox"/> checked Bug Report No: Comment: Shifter: Validation finished DBG Proc Status: <input type="checkbox"/> checked DBG Events: <input type="checkbox"/> checked

Contact: [Valeria Bartsch](#) and Anthony Rose, 09-06-10

Run details

Links to pre/post analysis histograms

Links to T0 DQ histograms **

Tick on the checks done, link savannah bugs, add comments (optional)

Are there events in the debug stream? Which?

Summary of debug stream analysis

Cost monitoring analysis

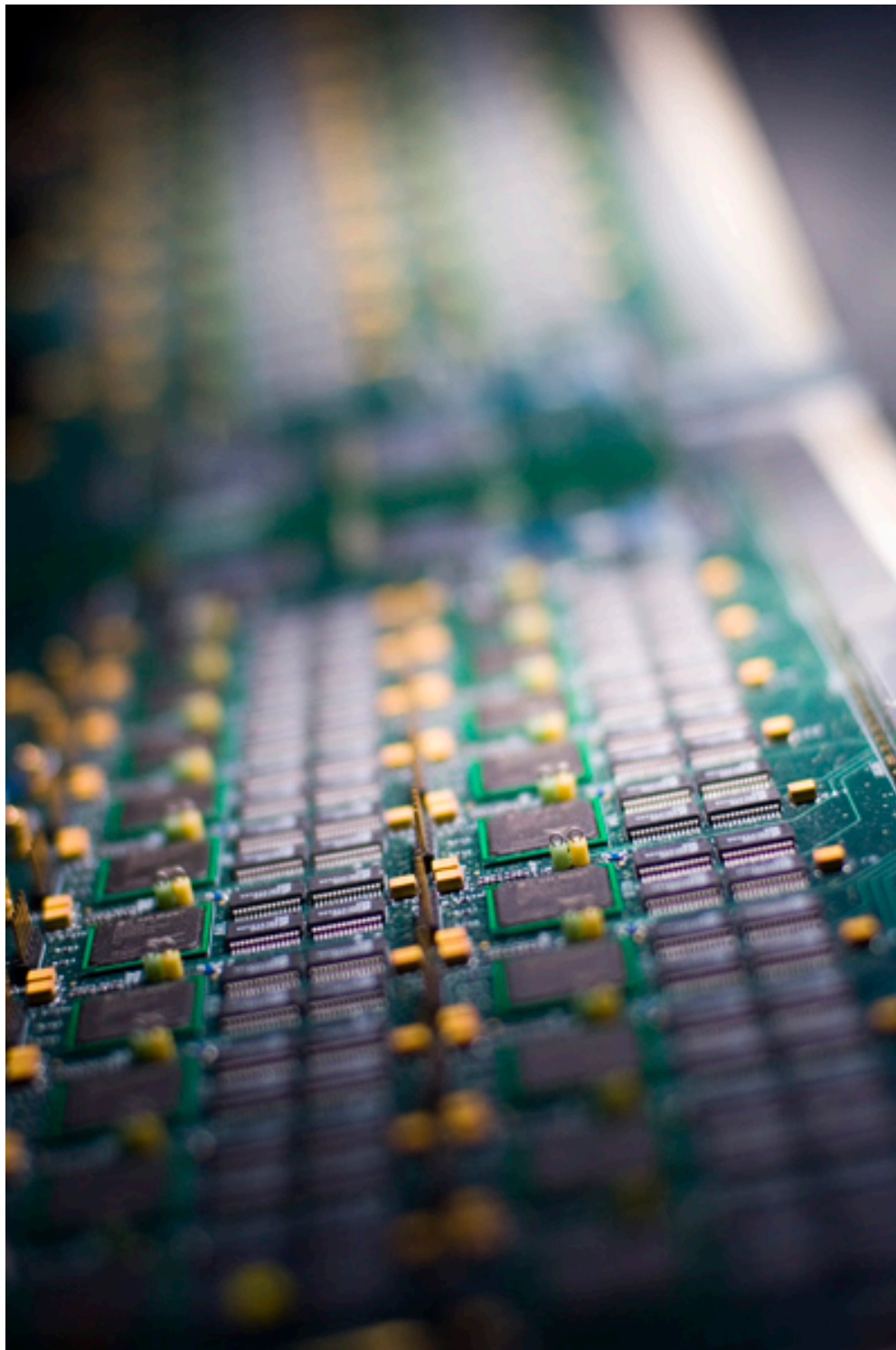
** for DQ checks, in next slides

- The HLT reprocessing is controlled by the TOM interface which is also used to **do ad-hoc re-processings** of old runs to test new software, debug errors, etc. At times do special checks on these reprocessings
- Running jobs can be monitored in the conTZole Task Lister: <https://atlas-tz-monitoring-caf.cern.ch/taskLister.html>
- Shifter must check **failing jobs** in reprocessing

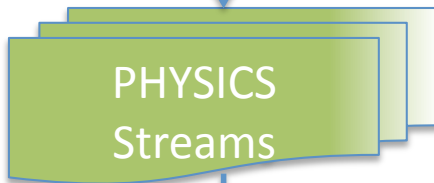
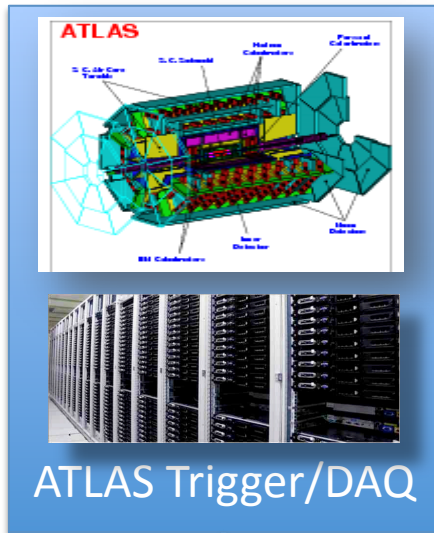
The screenshot shows the conTZole Task Lister interface. On the left, there are navigation links and filters. The main area contains a table of tasks with columns for Run No., Task Name, User, Task Information (ID, Type, Status), and Job Statistics (#Tot, #Done, #I, #TBI, #Abr, #TJF, #Events). A red box highlights a row where the status is 'TRUNCATED' and the #Events column shows '441 882'.

Run No.	Task Name	User	ID	Type	Status	#Tot	#Done	#I	#TBI	#Abr	#TJF	#Events
158268	data10_7TeV.00158268.physics_EnhancedBias.hltreproc.HIST.c270_c271_m250_...	trigmon	356132	hltqmerge	FINISHED	1	1	0	0	0	0	0
158268	data10_7TeV.00158268.physics_EnhancedBias.hltrecon.DESD_COLLICAND.c270_c2...	trigmon	356130	hltqmerge	FINISHED	852	852	0	0	0	0	1629814
158268	data10_7TeV.00158268.physics_EnhancedBias.Reproc.RAW.c270_c271.hltrecon...	trigmon	356123	hltrecon	TRUNCATED	885	884	18	0	1	4	1811562
158268	data10_7TeV.00158268.physics_EnhancedBias.hltreproc.HIST.c267_c268_m250_...	trigmon	356113	hltreproc	FINISHED	1	1	0	0	0	0	0

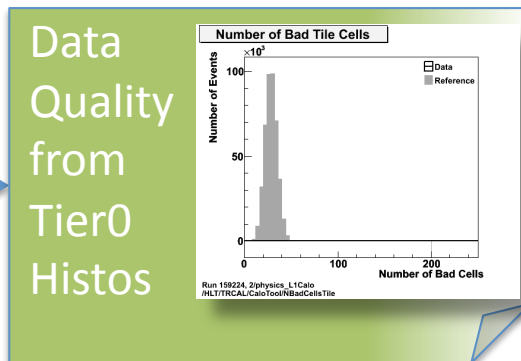
Below the table, there are controls for 'Update TOM Configuration' and a list of processes with their input types and status (On/Off).



TRIGGER DATA QUALITY ASSESSMENT



- The trigger software is monitored **online** – each trigger algorithm running on each working node publishes monitoring histograms
- ...and **offline** – monitoring algorithms run in **Tier0** during event reconstruction and produce histograms from online trigger data and comparisons from offline, etc
- Trigger Slice experts take care of checking the monitoring data from each run at the moment
- **But this will be increasingly the task of the offline trigger shifter... i.e. YOU**



Trigger DATA QUALITY

DQ Web Display List

https://atlasdqm.cern.ch/webdisplay/tier0/

Home Apple Yahoo! Google Maps YouTube Wikipedia News Popular

DQ Web Display List OfflineMonitoringTriggerShifterIn... Offline Monitoring Webpages

Tier 0 DQ Monitoring

Please consider to

Change source: Tier

Display results from

Submit

***Indicates reconstruct

For extra information on

Run Number	Iterati
160152	ES1: x3
160151	ES1: x3
160149	ES1: x3
160143	ES1: x3
160131	ES1: x3
160093	ES1: x3
160091	ES1: x3
160086	ES1: x3
160078	ES1: x3
160038	ES1: x3
160037	ES1: x3
	ES1: x3

Run 159224, 2/physics_L1Calo

- [Online Shifter](#) (click here to make an ONLINE shift entry)

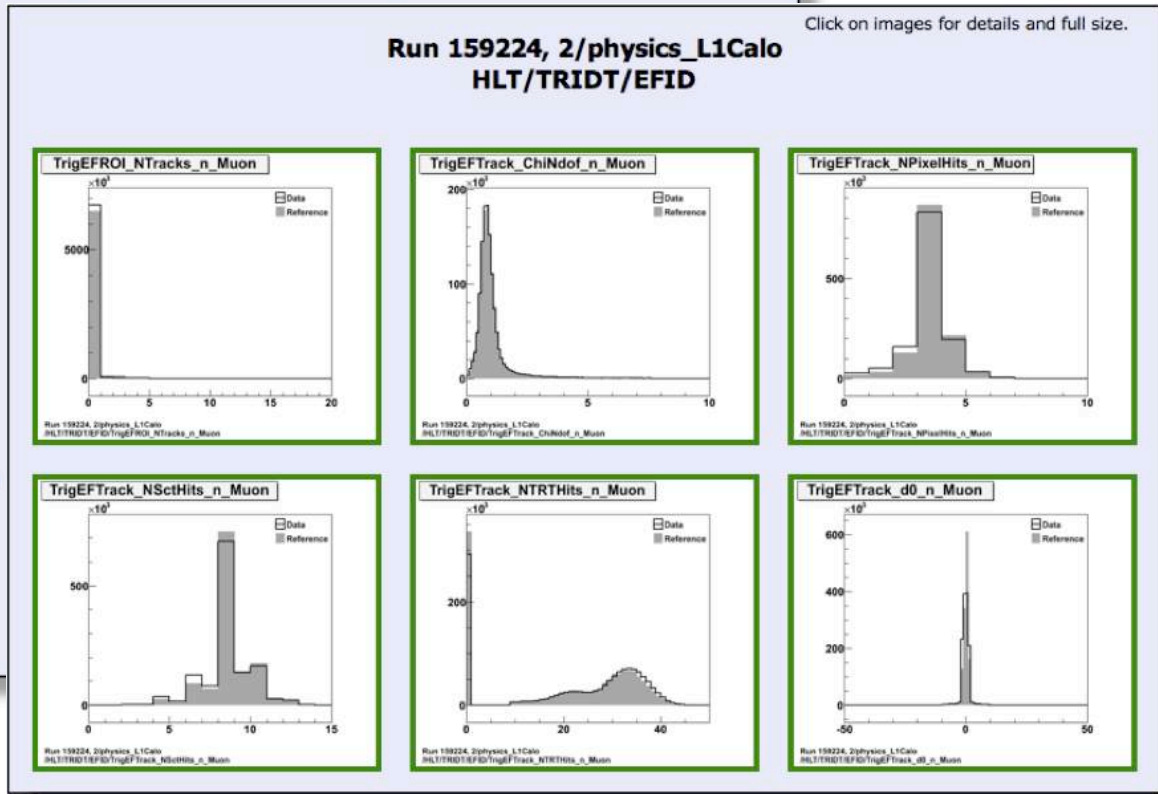
Run 159224, 2/physics_L1Calo: Monitoring and Automatic Checks

Flag Summaries f

Entire Run

DQ Tree

- Overall Status: **Red**
- CaloMonitoring: **Yellow**
- CentralTrigger: **Green**
- Global: **Green**
- HLT: **Red**
 - TRBJT: **Green**
 - TRBPH: **Green**
 - TRCAL: **Green**
 - TRELE: **Green**
 - TRGAM: **Green**
 - TRHLT: **Green**
 - TRIDT: **Green**
 - Common: Undefined
 - EFID: **Green**
 - IDSCAN: **Green**
 - Shifters: **Green**
 - SiTrack: **Green**
 - TRTSegFinder: **Green**
 - TRJET: **Green**
 - TRMBI: **Red**
 - TRMET: **Green**
 - TRMUO: **Green**
 - TRTAU: **Green**
- InnerDetector: **Red**
- JetTagging: **Green**
- Jets: Undefined



- Go to <https://atlasdqm.cern.ch/webdisplay/tier0/>
- Click on the stream and run that you like, e.g. 159224/L1Calo
- Look under HLT: each link corresponds to a trigger domain: e.g. HLT->TRIDT->EFID

- Once you determine if a run is good or bad, update the corresponding **Data Quality (DQ) flags** – only the “**ShiftOFFLINE**” flags are updated by the shifter
- To update DQ flags go to:
<https://atlasdqm.web.cern.ch/atlasdqm/DQBrowser/DBQuery.php>

Help DQMonitoring RunSummary DQP1 Twiki Atlas Operations

Data Quality DB Status browsing

Subsystem to be displayed:

Run info:
 Run number to: (optional)

Database info:
 DB instance Tag

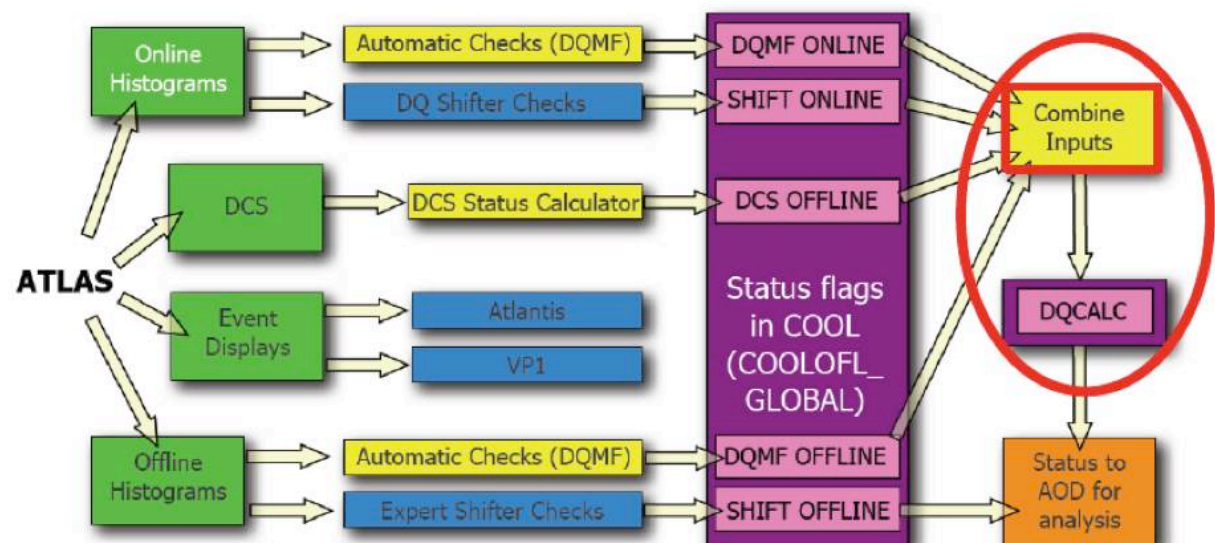
For experts **BULK UPLOAD**
 upload status with a text file of runs directly into SHIFT OFFLINE
[Format of runlist](#)

no file selected

System: [Options](#)

Good Flawed Bad

Data Quality Monitoring Framework



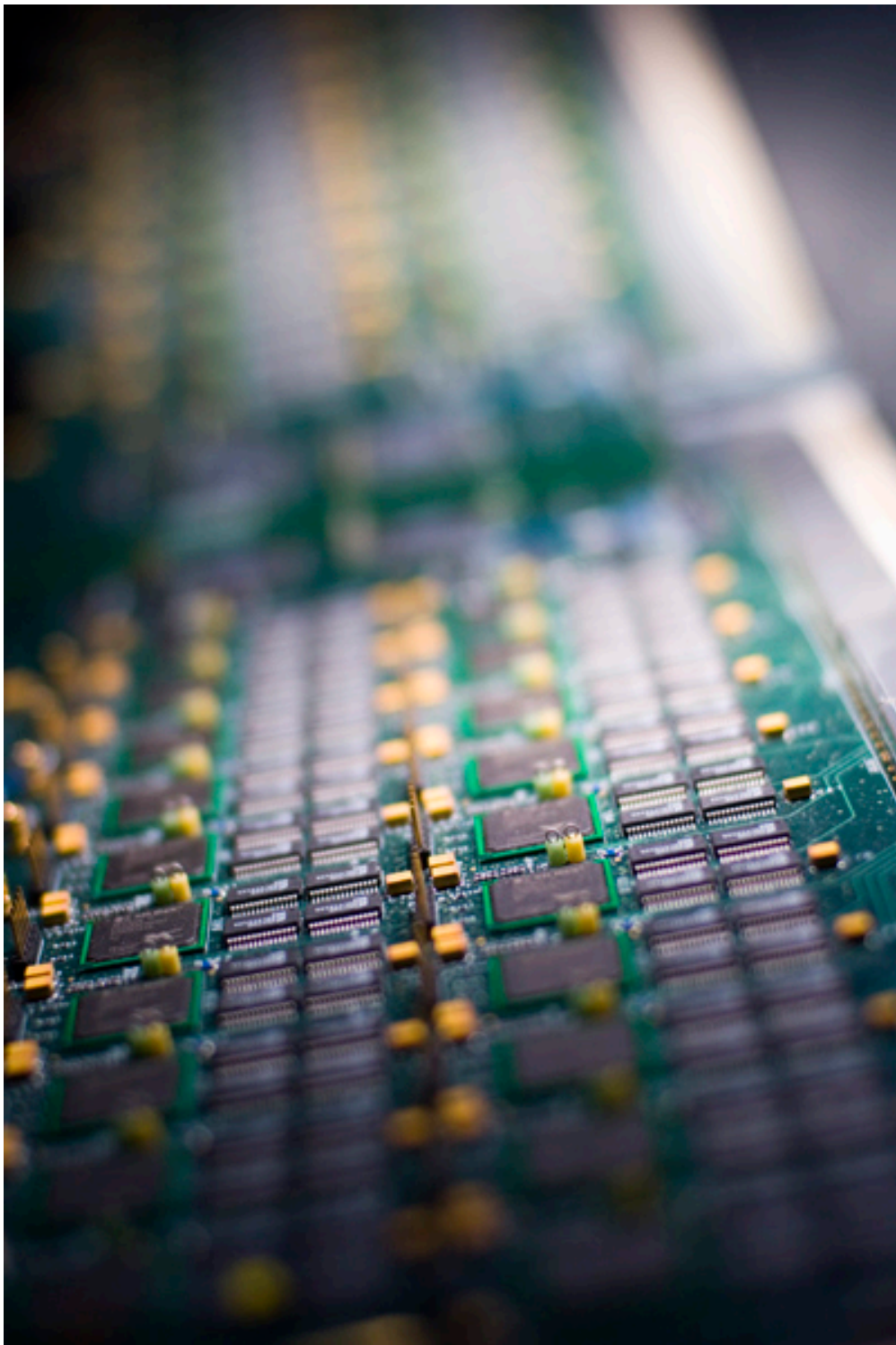
- Results from online and offline checks of histograms, and offline checks of DCS information **combined** with online DQ shifter inputs provide DQ status for each detector.
- Offline expert DQ shifter can override this **DQ decision**.
- Final DQ status for each sub-detectors passed to combined performance groups (e.g. egamma, jets/ETmiss, muons etc) who make decision about suitability for use in physics analysis.

- The flags are then combined with the DQ flags set online and automatically by DQMF and used to select data for analysis using the Good Run Lists
- The shifter can also choose different flags for different luminosity blocks according to stable beams/hlt active.

Search Result

Selection rule: find run 159796, 159810, 159814, 159821, 159831, 159835, 159950 / show dq tr and str debug/ nodef
Query command: [Click to expand/collapse command...]
Selection sequence: Checking for runs in run range [[159796, 159796], [159810, 159810], [159814, 159814], [159821, 159821], [159831, 159831], [159835, 159835], [159950, 159950]]
No. of runs selected: 7
Total no. of events: 24,218,715
Execution time: 2.2 sec

Run	Links	#LB	Start and endtime (CEST)	#Events	Data quality (SHIFTOFL)															
					TRTB (SHIFTOFL)	TRTEA (SHIFTOFL)	TRTEC (SHIFTOFL)	TRTTR (SHIFTOFL)	TRCAL (SHIFTOFL)	TRBJT (SHIFTOFL)	TRBPH (SHIFTOFL)	TRCOS (SHIFTOFL)	TRELE (SHIFTOFL)	TRGAM (SHIFTOFL)	TRJET (SHIFTOFL)	TRMET (SHIFTOFL)	TRMBI (SHIFTOFL)	TRMUO (SHIFTOFL)	TRTAU (SHIFTOFL)	TRIDT (SHIFTOFL)
159950	DS, RS, BS, AMI, DQ, NEMO, ELOG, DCS:SoR/ EoR	327 (116 s)	Thu Jul 22 2010 23:51:24 – Fri Jul 23, 10:25:55	891,784 (23.4 Hz)	U	U	U	n.a.	B	B	B	n.a.	R	G	B	B	B	B	R	B
159835	DS, RS, BS, AMI, DQ, NEMO, ELOG, DCS:SoR/ EoR	144 (118 s)	Thu Jul 22 2010 04:40:57 – 09:26:28	7,074,664 (413.0 Hz)	U	U	U	n.a.	B	B	U	n.a.	B	B	B	B	B	G	B	B
159831	DS, RS, BS, AMI, DQ, NEMO, ELOG, DCS:SoR/ EoR	134 (119 s)	Thu Jul 22 2010 00:00:13 – 04:27:25	9,251,152 (577.1 Hz)	U	U	U	n.a.	B	B	B	n.a.	B	B	B	B	B	B	B	B
159821	DS, RS, BS, AMI, DQ, NEMO, ELOG, DCS:SoR/ EoR	50 (115 s)	Wed Jul 21 2010 21:52:03 – 23:28:29	3,243,182 (560.5 Hz)	U	U	U	n.a.	B	B	B	n.a.	B	B	B	B	B	B	B	B



DOCUMENTATION



Atlas

ATLAS Homepage
ATLAS Collaboration

ATLAS TWIKI
Public Results
Physics
Detectors
Trigger
Computing
Data Preparation
Documentation Help
Help
Glossary

Create a LeftBar for this page

NEW TWiki Search
RicardoGoncalo
SSO logout

TWiki > Atlas Web > TriggerDAQ > AtlasTrigger > TriggerOperationManuals > OfflineMonitoringTriggerShifterInstructions
(25-Jul-2010, RicardoGoncalo)

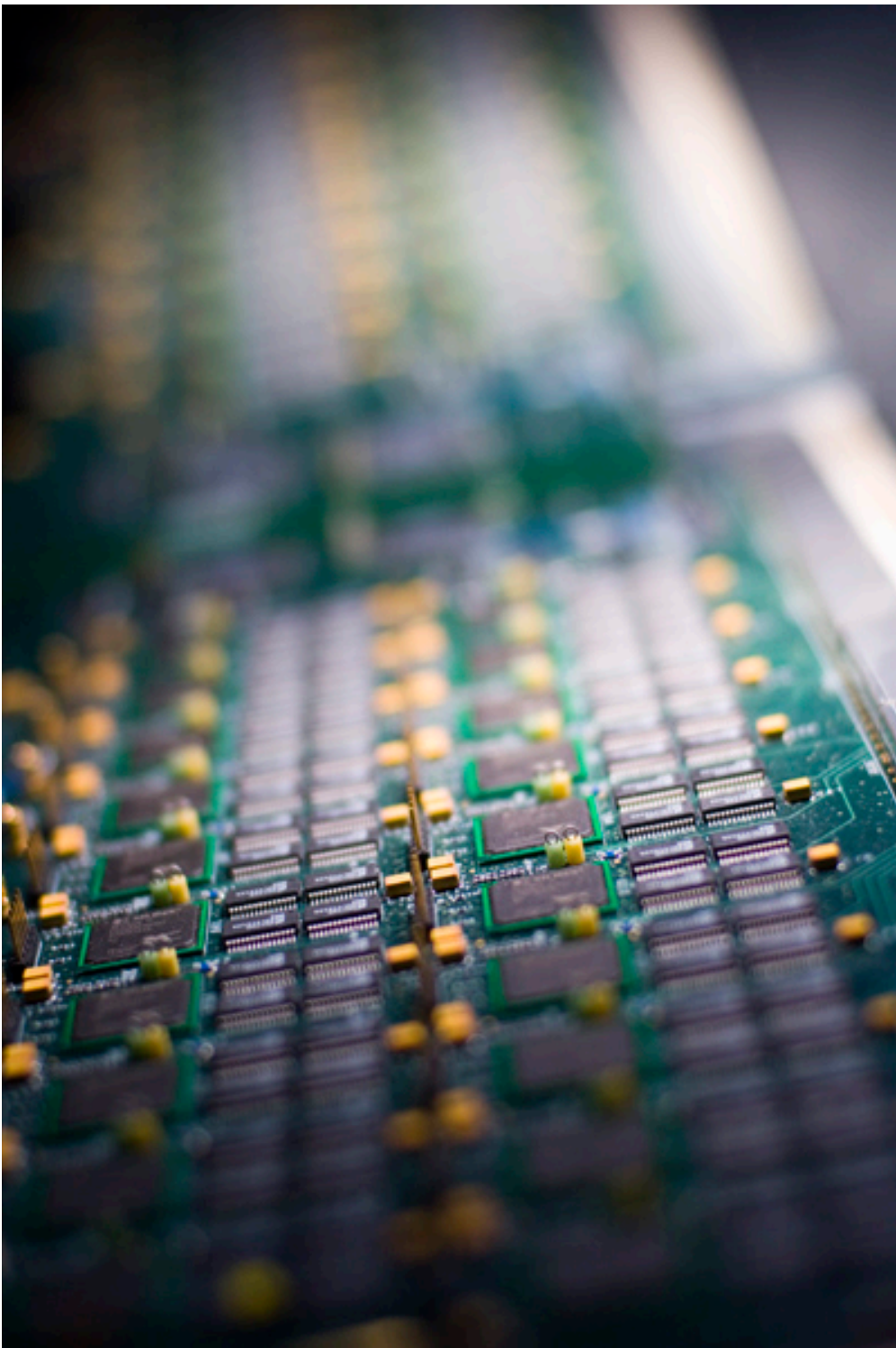
Edit Attach PDF

Not yet
Certified as
ATLAS
Documentation

Offline Monitoring Trigger Shifter Instructions

- ↓ [Introduction](#)
 - ↓ [Hours](#)
 - ↓ [Overview of the system](#)
 - ↓ [Your Duties:](#)
 - ↓ [Ask the expert:](#)
- ↓ [Setting up your working environment](#)
- ↓ [Your workflow while on shift](#)
 - ↓ [Look at the White board](#)
 - ↓ [Get an overview of recent runs](#)
 - ↓ [Look at the logbook \(#Elog\)](#)
 - ↓ [Look at the daily program](#)
 - ↓ [Work through the list of runs to be processed](#)
 - ↓ [Check the output from Jobs Re-running the Trigger](#)
 - ↓ [Document your work](#)
 - ↓ [Tidy up](#)
 - ↓ [Make a Shift Summary](#)
- ↓ [HOWTO perform specific tasks](#)
 - ↓ [Perform the DEBUG stream analysis](#)
 - ↓ [Analysing the debug stream events using cost monitoring ntuples](#)
 - ↓ [The Tier0 monitoring histogram interface](#)
 - ↓ [Update the Offline Data Quality Flags](#)
 - ↓ [The Checks to be done for every run](#)
 - ↓ [Check the Reprocessing histograms](#)
 - ↓ [Location in CASTOR of files produced by the Trigger reprocessing](#)

Go through the **instructions** and arrange to do a **shadow shift** before you take your first shift, so you can get used to the tools.



SUMMARY

- What do you need in order to do this shift?

- Follow **this training**
- Get a **savannah** account
- Go over **the instructions twiki**
- After the training you'll be able to **book your shift in OTP**
 - Look for “Trigger Offline Monitoring Shifter” (task 46640) in your OTP page
- **Shadow someone** before you do your first real shift

The screenshot displays the OTP interface for a 'Shifter' role. At the top, there are links for 'Add a requirement' and 'Email all members'. The main configuration area includes:

- Title: Trigger Offline Mon
- Recognition: Operation Task
- Capped At 8h:
- Shift Format: Complex
- Percentage: 0 (Set the percentage to 0% to remove shifts)

 Below the configuration is an 'Add Shift' section with a table:

From	To	Description
9	17	Day Shift
15	23	Evening Shift

 A calendar view shows the allocation of these shifts for July, August, and September 2010. A pop-up box indicates that the role is allocated to GOMEZ FAJARDO LUZ STELLA (100%) with an 'edit' button.

- What will you do during the shift?

- Check reprocessing and analysis of **DEBUG STREAM**
- Check TIER0 Trigger histograms for **OFFLINE DQ**
- Check results of **ad-hoc reprocessings** if necessary
- Always be **in contact with the offline trigger expert** – inform her/him of what you find

ATLAS	
Electronic logbook for the ATLAS experiment	
<input type="button" value="Submit"/> <input type="button" value="Preview"/> <input type="button" value="Back"/>	
Fields marked with * are required	
Entry time:	31.08.10 17:10
valid*:	valid
User*:	jgoncalo
Rem_IP*:	128.141.141.141
Author*:	<input type="text" value="Morais Silva Goncalo Ricardo Jose"/>
Message Type*:	<input type="text" value="Shift Summary"/>
ShiftSummary_Desk*:	<input type="text" value="Trigger"/>
Trigger_Topic*:	<input type="radio"/> Online <input checked="" type="radio"/> Offline
System Affected*:	<input type="checkbox"/> Pixel <input type="checkbox"/> SCT <input type="checkbox"/> TRT <input type="checkbox"/> ID C <input type="checkbox"/> Event Displays <input type="checkbox"/> Magnets <input type="checkbox"/> Safety <input type="checkbox"/> Other
Status*:	<input type="radio"/> open <input checked="" type="radio"/> closed
Subject*:	<input type="text" value="Trigger Offline Monitoring"/>
<input type="button" value="B"/> <input type="button" value="I"/> <input type="button" value="U"/> <input type="button" value="List"/> <input type="button" value="Globe"/> <input type="button" value="Image"/> <input type="button" value="Link"/> <input type="button" value="List"/> <input type="button" value="#"/> <input type="button" value="Smiley"/> <input type="text" value="FONT"/>	
<p>Blah... blah... blah...</p>	

- What will you do at the end of your shift?
1. Write an **informative** e-log summary
 - Remember to specify in the subject that this is trigger offline monitoring
 2. Write anything new in the Offline monitoring **Whiteboard** for the next shifter

- And remember, **all ATLAS data is important!**

- Good Data Quality Monitoring is essential for good physics data
- Data reprocessings are essential to maintain and improve the trigger
- The debug stream analysis is essential to debug the trigger... and it may even show new physics!

