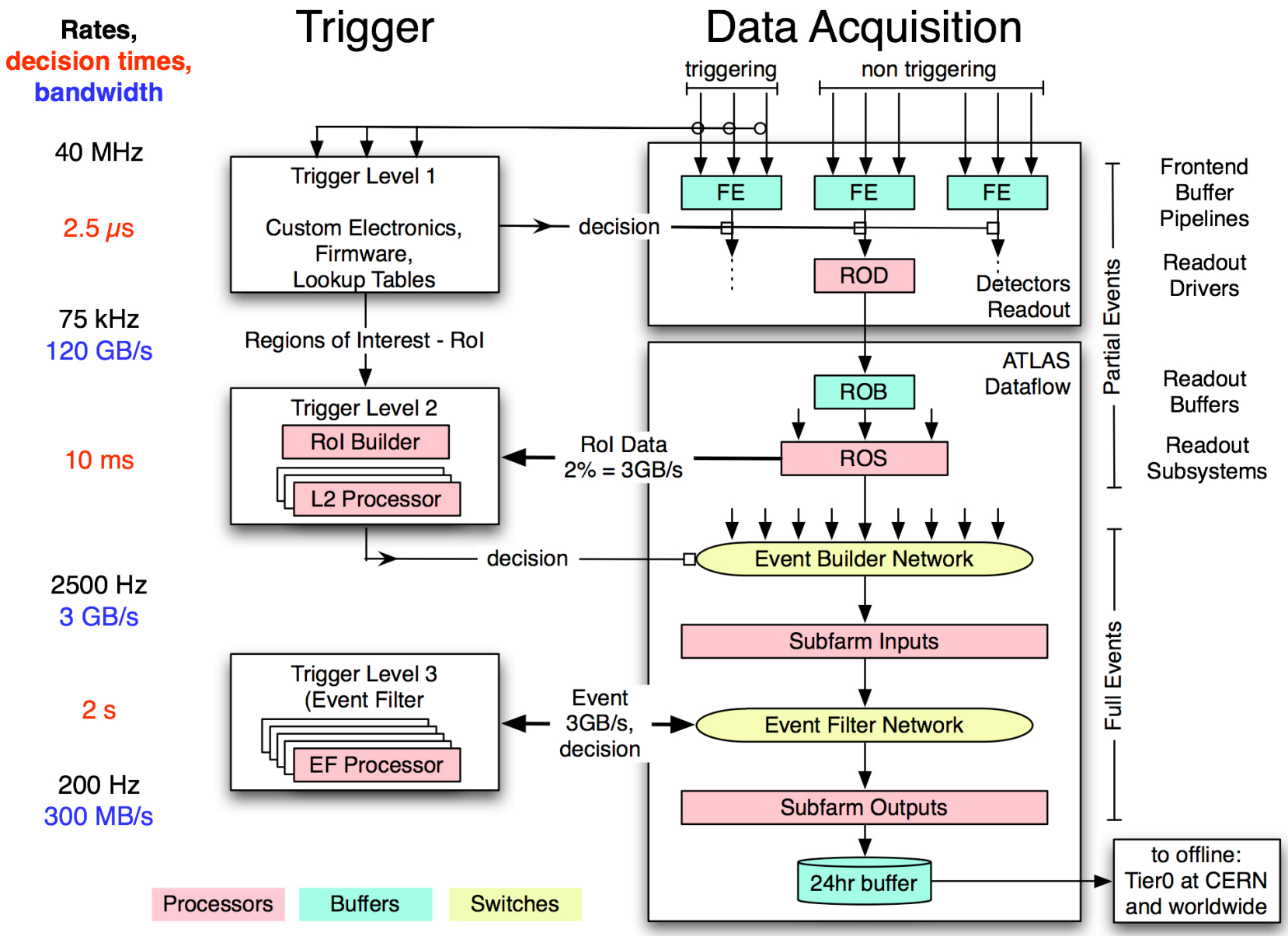
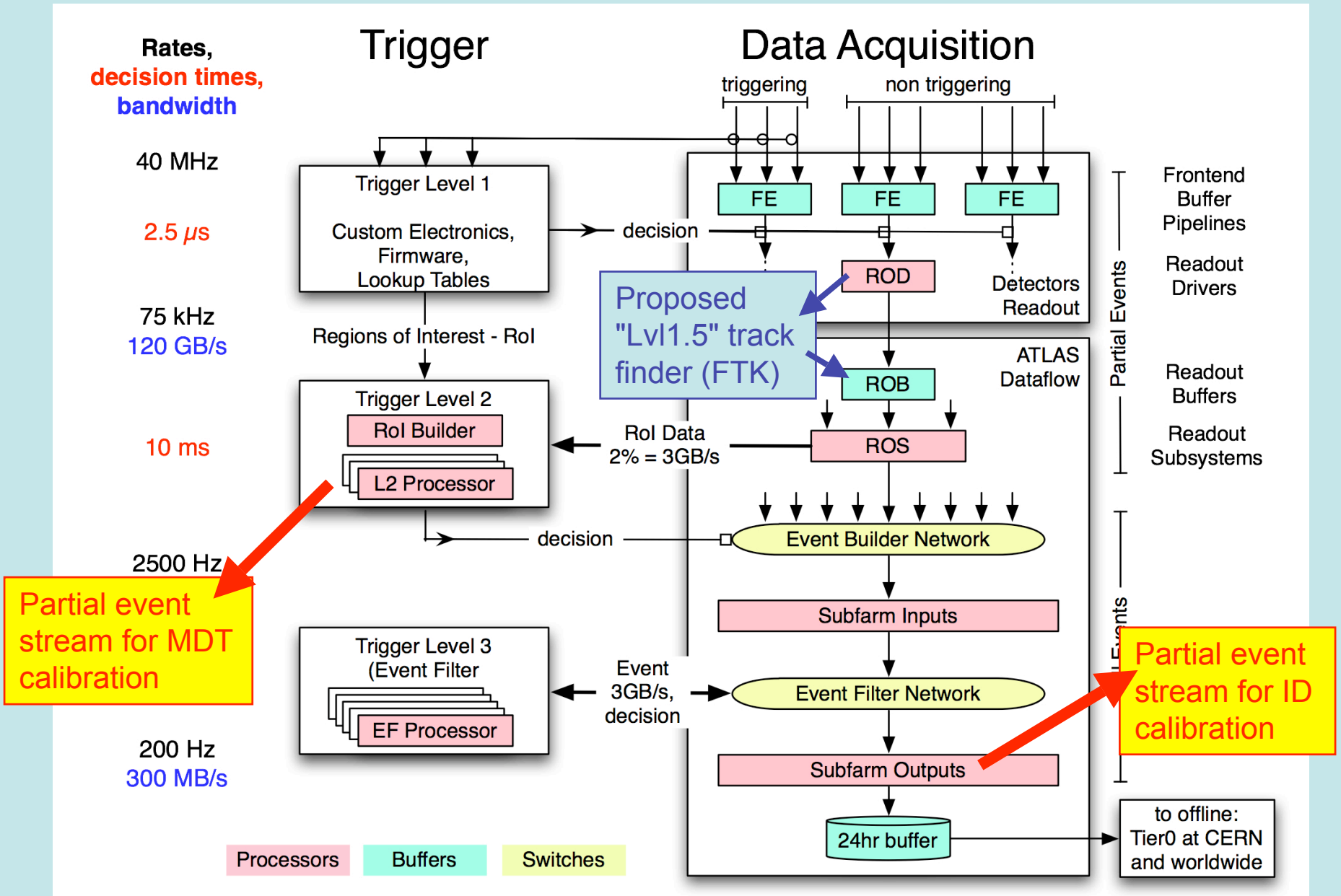
Recent HLT development
TR - Mx - FDR planning

- *Offline, HLT & TDAQ*
  - *"Global Release Co-ordination" meetings*
  - *Calibration streams*
  - *Hardware track finder proposal*
- *ATLAS Mx, TR, FDR plans*

TDAQ overview



TDAQ overview

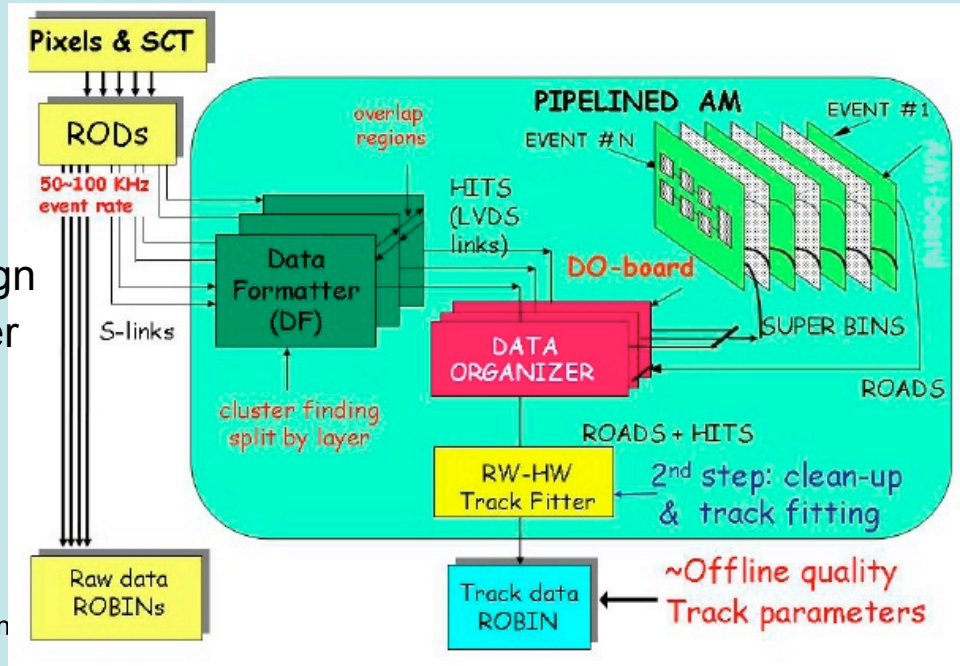


Infrastructure work on HLT level

- Data stream to MDT centres
- Accompanied by conditions data replication to MDT centres
- see Oliver's slide

- Similar request by ID groups - but much lower rate, no need to branch off Lvl2
- Stream of partial events to be produced by SFOs
  - form sub-events based on list of ROBs
- In addition to other SFO streams (5* RAW physics, express, other calib)

- Proposed hardware track trigger preceding Lvl2
- Alternative to the fully SW-based Lvl2
- Interesting for B and tau physics
- Based on CDF experience, but much bigger lookup tables
  - "Proposal to prepare a technical design report for FTK, a hardware track finder upgrade to the ATLAS trigger"
  - Main author Mel Shochet / Chicago
  - 1-year R&D period will probably be recommended



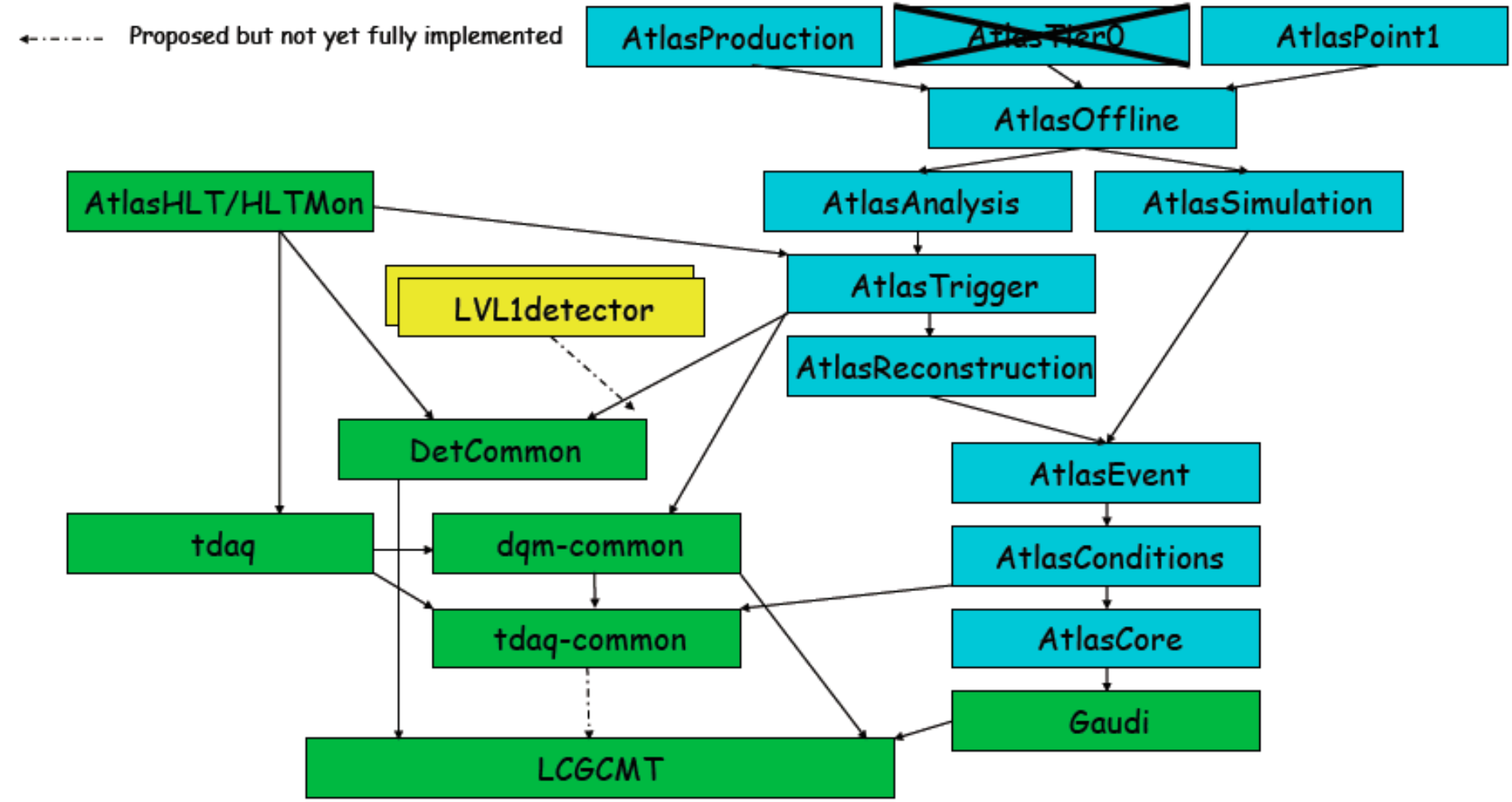
Offline, TDAQ, and HLT software releases

- Co-ordinated by GRC - Global Release Co-ordination group
- Led by David Quarrie, Livio Mapelli
- ~ bi-weekly meetings

- Very successful in speeding up the time it takes from offline release availability to usage at Point1, in HLT Selection & Monitoring
- HLT nightlies tied in with offline nightlies
- LCG is common denominator - next release LCG-54
- Important: patching strategy

- Installation at Point1 now via RPMs for online, offline, HLT
  - Derived from Pacman kits so identical contents

Project Dependencies



Global Release Coordination Meeting - 14 Jan 2008

David Quarrie

Schedule for 13.2.0 and 14.0.0

- 13.2.0: 29 Jan
  - Targetted towards M6
  - Based upon LCG_53f for compatibility with tdaq-1.8.4
- 14.0.0: 26 Feb
  - Targetted towards global cosmics, FDR-2 and simulation for first physics data
  - Baseline for reconstruction for first physics data
- 15.0.0: May?
  - No decision yet, but could be used for reconstruction and analysis of first physics data in order to incorporate feedback from FDR-2 and global cosmics
- Problem is that 13.2.0 might be a bit too early for M6
  - Implies copying tags from main branch into 13.2.1 (tendency for divergence)
  - Possible alternative might be to put LCG_54 into main nightlies (13.X.0) and LCG_53f into "migration" nightly (c.f. 13.X.0-MIG0) for some time
    - Build 13.2.0 closer to M6

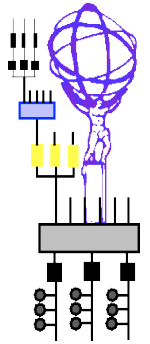
Global Release Coordination Meeting - 14 Jan 2008 David Quarrie

Patching Strategy

- Treat AtlasPoint1 and AtlasProduction as essentially identical apart from timescales
  - AtlasPoint1 used for Point1/Tier0 and Calibration Tier-2 processing
  - AtlasProduction used for remote processing and reprocessing of ATLAS data
- Patch tags go to both AtlasPoint1 (point1) and AtlasProduction (pcache) nightlies
  - Apart from AtlasSimulation tags which don't go to AtlasPoint1
- Validation based on RTT & FCT tests
  - Need to extend the Point1-specific tests
- AtlasPoint1 patches deployed within ~24 hours
  - After validation and as needed
- AtlasProduction patches deployed every 2 weeks
- Nightlies in support of this setup for 13.0.40.X already and will be for all future releases

Global Release Coordination Meeting - 14 Jan 2008 David Quarrie

TDAQ releases



- ***tdaq-01-08-04***
  - *Built on 18-Dec-07*
  - *Content – Release notes*
  - *Externals – LCG_53f*
  - *Installed in Point 1*
  - *To be used for M6*
- ***tdaq-common-01-09-00 (tdaq-common-02-00-00 ?)***
  - *hltinterface, EventStorage, EventFormat , …*
  - *New Boost version*
  - *Build date (preliminary) – End of Jan 08*
- ***tdaq-01-09-00***
  - *Content – TDAQ Release Planning twiki page*
  - *New externals*
  - *Synchronized with Offline 14.0.X*
  - *Build date: End of Feb 08*

AtlasHLT 13.2.0 Nightlies

- Compiles since last week
  - Mostly workaround for problems related to as-needed flags, <constituent>_shlibsflags, trivial fixes
  - Private builds on pcatb cluster so far (to repeat quickly)
  - New CMT warnings from TDAQCPolicy and TDAQCExternal...
- Today: rel_1 opt on AFS
  - not all web links correct yet
  - Some integration tests don't finish (kill by hand)

Next-future planning

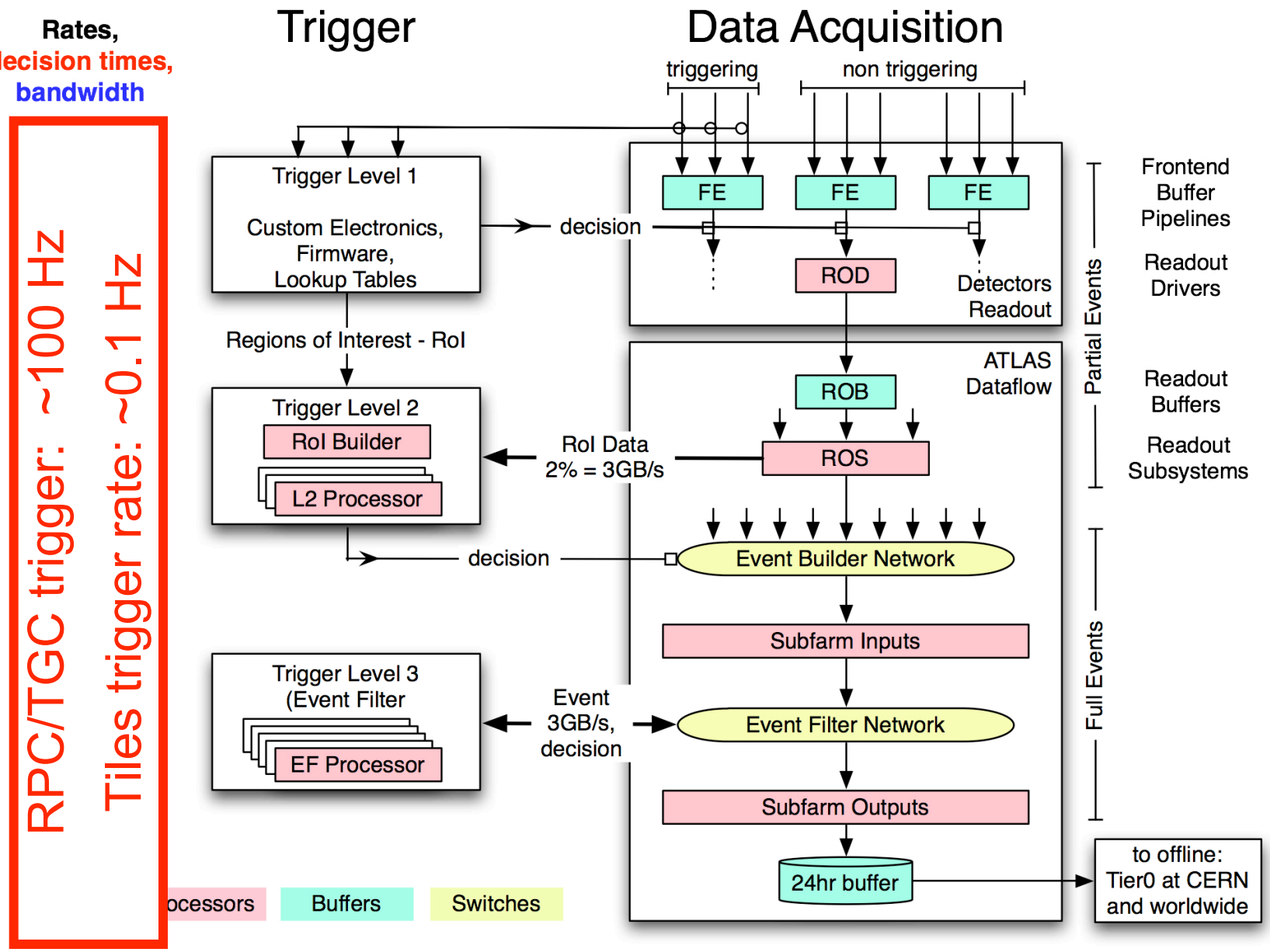
- FDR - Full Dress Rehearsal
- 2 periods with increasing amount of data
- Co-ordinator: Dave Charlton
  - FDR-1: week of 4 Feb
    (mainly 10^{31}, 4 physics streams + express + ID calib)
  - FDR-2: ~ week of 5 May (mainly 10^{32})

- TR -TDAQ Technical Runs
  - Next: week of 4 Feb, i.e. in parallel to FDR-1, share SFOs

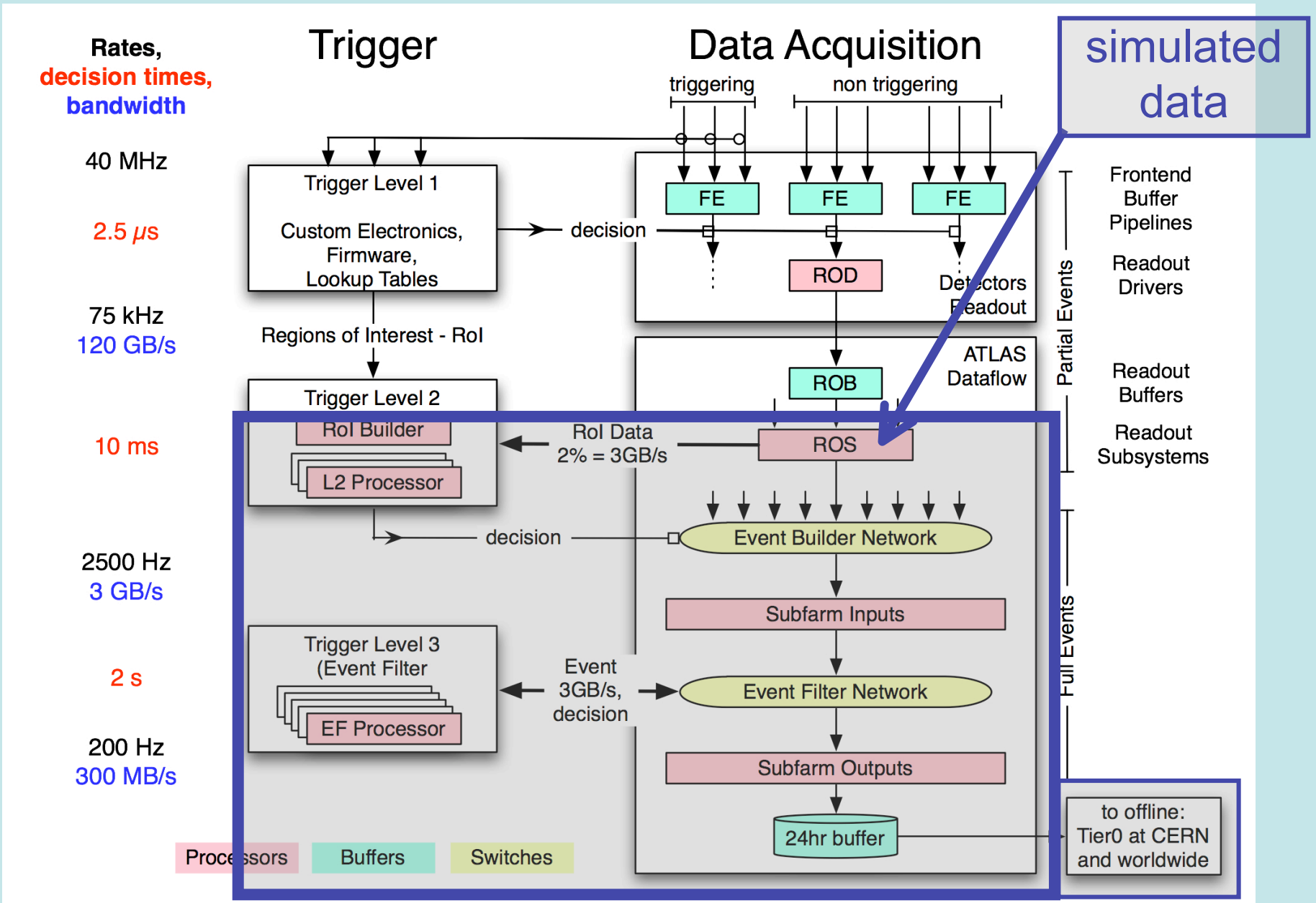
- Mx - integration/cosmics milestones
  - M6: week of 3 March

- Px - commissioning runs
  - P3: week of 25 Feb

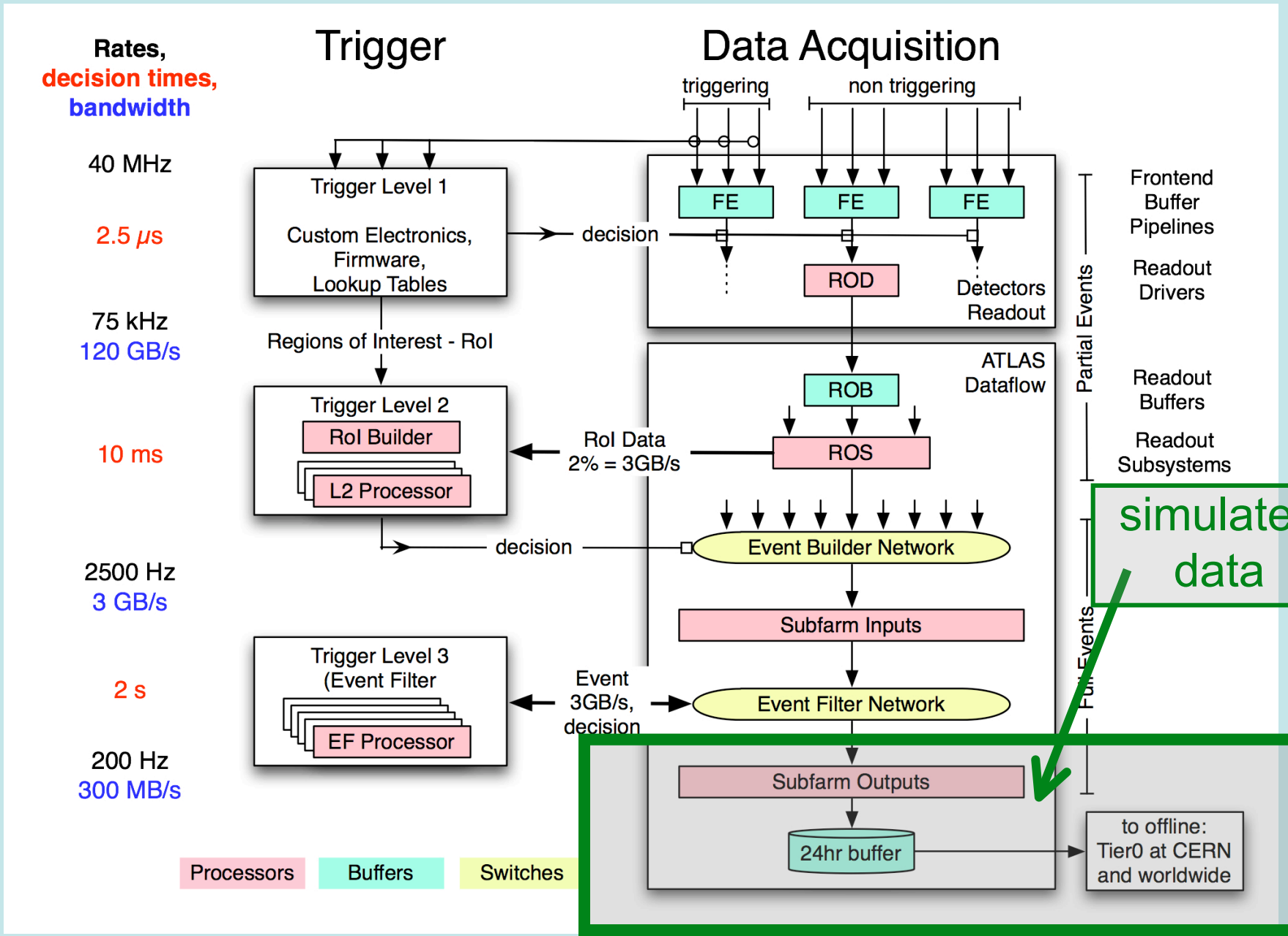
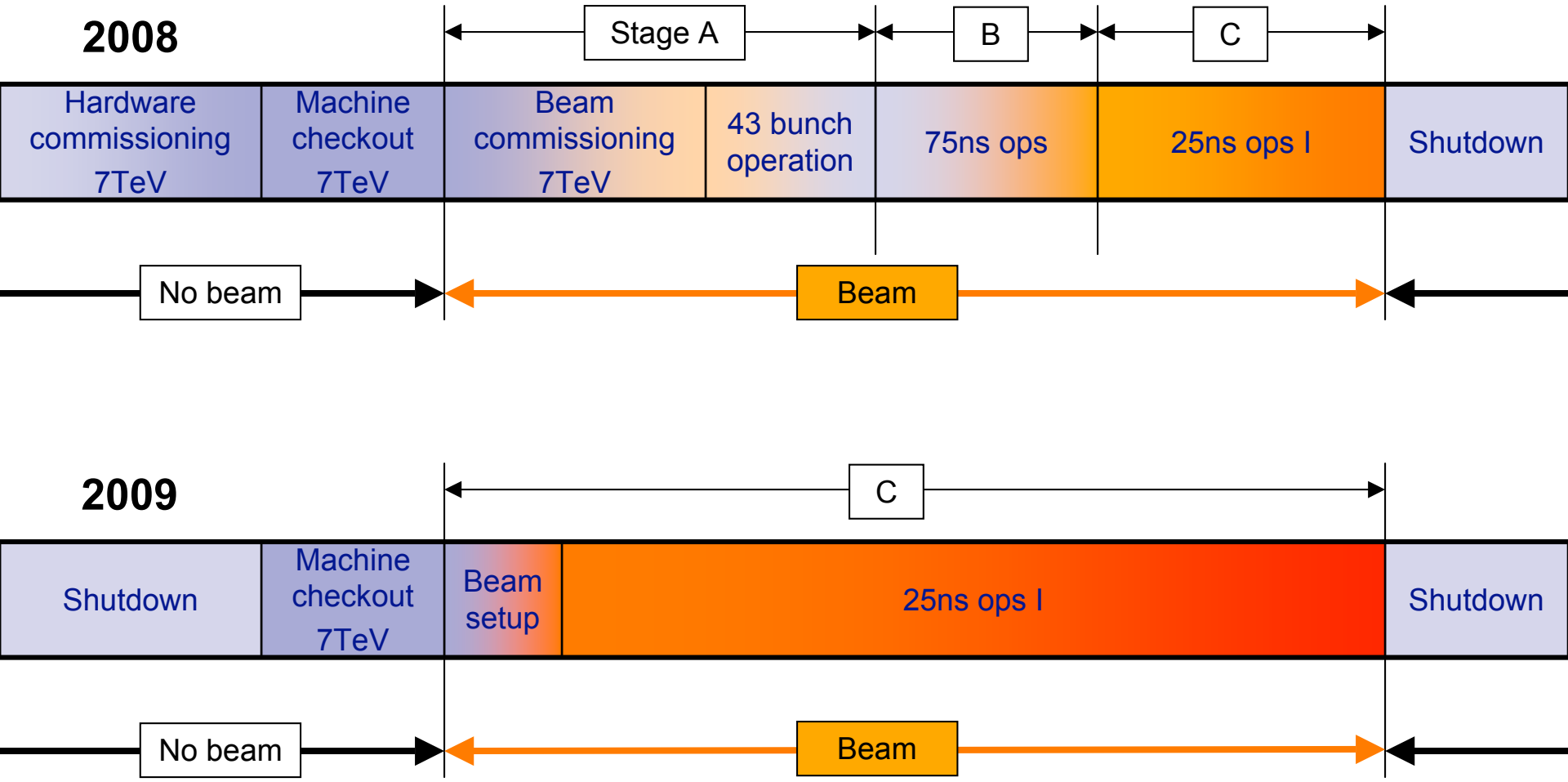
Mx scope


Rates,
decision times,
bandwidth
RPC/TGC trigger: ~100 Hz
Tiles trigger rate: ~0.1 Hz
Trigger
Data Acquisition
triggering
non triggering
Trigger Level 1
Custom Electronics,
Firmware,
Lookup Tables
decision
FE
FE
FE
ROD
Detectors
Readout
Regions of Interest - RoI
ATLAS
Dataflow
ROB
Trigger Level 2
RoI Builder
L2 Processor
RoI Data
2% = 3GB/s
ROS
decision
Event Builder Network
Subfarm Inputs
Trigger Level 3
(Event Filter
EF Processor
Event
3GB/s,
decision
Event Filter Network
Subfarm Outputs
24hr buffer
to offline:
Tier0 at CERN
and worldwide
Partial Events
Full Events
Frontend
Buffer
Pipelines
Readout
Drivers
Readout
Buffers
Readout
Subsystems
ocessors
Buffers
Switches

TR scope


Rates,
decision times,
bandwidth
Trigger
Data Acquisition
simulated data
triggering
non triggering
40 MHz
2.5 μs
Trigger Level 1
Custom Electronics,
Firmware,
Lookup Tables
decision
FE
FE
FE
ROD
Detectors Readout
Frontend Buffer Pipelines
Readout Drivers
75 kHz
120 GB/s
Regions of Interest - RoI
ATLAS Dataflow
ROB
Partial Events
Readout Buffers
Trigger Level 2
RoI Builder
L2 Processor
RoI Data
2% = 3GB/s
ROS
Readout Subsystems
10 ms
decision
Event Builder Network
2500 Hz
3 GB/s
Subfarm Inputs
Trigger Level 3
(Event Filter
EF Processor
Event
3GB/s,
decision
Event Filter Network
2 s
Full Events
Subfarm Outputs
200 Hz
300 MB/s
24hr buffer
to offline:
Tier0 at CERN
and worldwide
Processors
Buffers
Switches

FDR scope
(online side - emphasis is on offline)



Staged commissioning plan for protons