Planning and status of the Full Dress Rehearsal

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Dress Rehearsal Elements

- **General purpose of the Dress Rehearsal**
  - *Combined tests of all steps needed to produce the ESDs from RAW*
- **Data flow and systems concerned**
  - Generated and real data from detector commissioning: registration in CASTOR2 + Grid File Catalogue - *DAQ/WLCG services/Offline*
    - MC RAW for the detectors not yet being commissioned
    - Cosmics, pulser, other data for detectors already in the cavern
    - **Registration in CASTOR2 and Grid FC already well tested and working**
  - Replication of RAW to T1s - *Offline/WLCG services*
    - Synchronous to RAW registration, the RAW is replicated to a T1
    - Replicate using FTD/FTS utilities
    - Replication shares are determined from the contribution factors of the T1s
    - The replication is random, depending on resources/channel availability
    - **Replication with FTS is exercised, however not with FTS v.2.0 and SRM v.2.2**
  - Gathering and registration of conditions data - *DAQ/ECS/DCS/HLT/Offline*
    - Generation of conditions data through Detector Algorithms (DAs) in DAQ/DCS/HLT frameworks, store in File Exchange Servers (XFS)
    - Conditions data stored in DCS Archive DB
    - Shuttle operation, including Shuttle DAs, registration of condition objects and metadata in Grid FC, automatic replication of conditions data to T1s
    - **Shuttle is operational in standalone mode with generated input data, real DAs and full registration of conditions objects on the GRID (OCDB)**
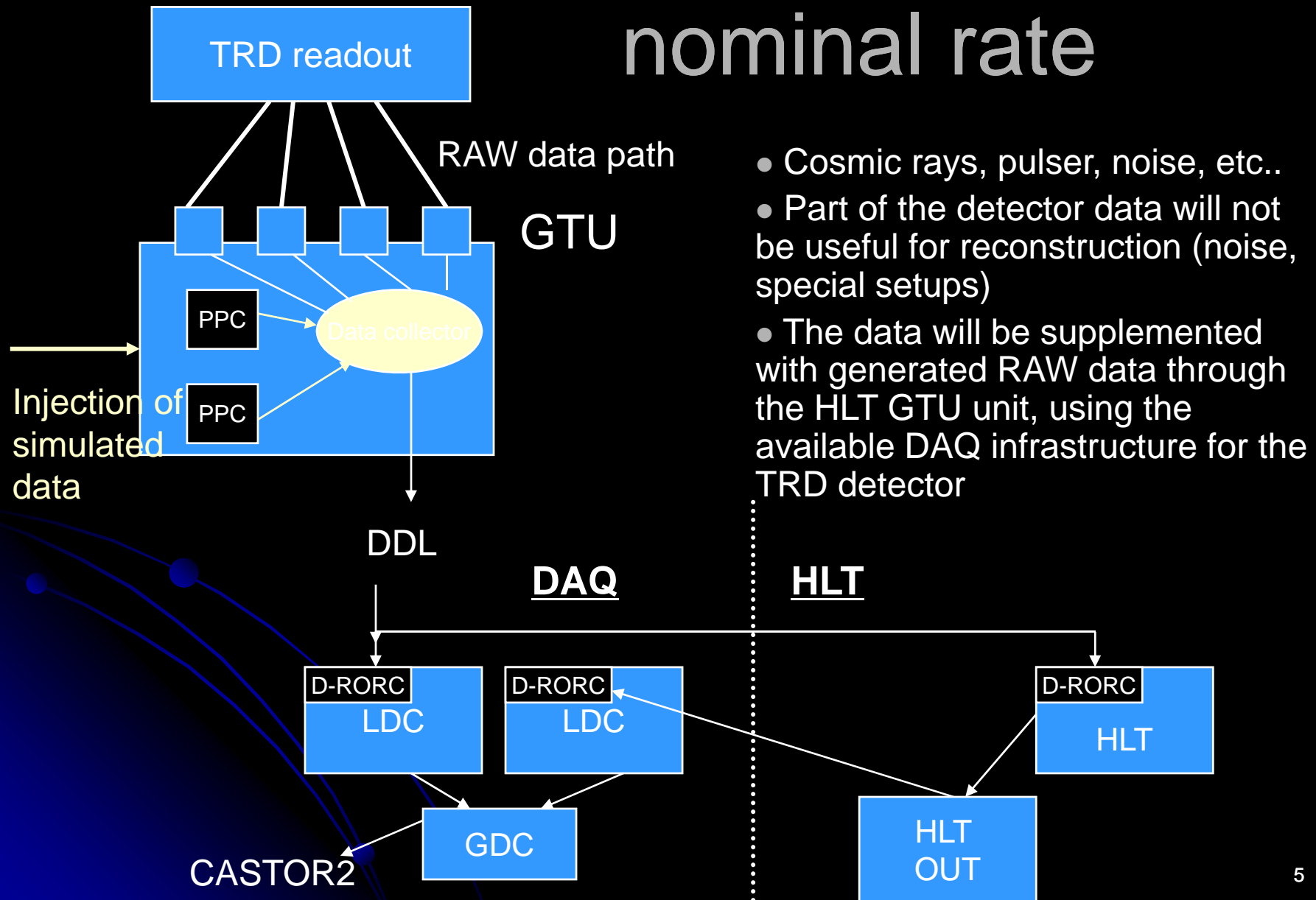
Dress Rehearsal Elements (cont.)

- **Major steps and systems concerned (2)**
  - First pass reconstruction at T0 - *Offline/WLCG Services*
    - Processing starts after the Shuttle has declared end of operation for a given run
    - Shuttle provides a trigger, launching a standard reconstruction job
    - DAs in AliRoot process and register in OCDB a second-order condition objects
  - Second pass reconstruction at T1 - *Offline/WLCG Services*
    - After first pass s complete and new condition object are available in OCDB
    - Triggered by a successful T0 processing
    - Produces final ESDs
    - As a part of the same job - AOD production
    - Data quality assessment
    - Automatic validation procedures
    - A copy of the ESDs is stored at each T1
    - Expert batch (Grid) and interactive (CAF) analysis of ESDs
  - Asynchronous data flow to CAF, registration and analysis - *Offline/WLCG services*
    - Parts of RAW (on demand), calibration and alignment runs, parts of ESDs copied to CAF disk pool
    - Detector expert special calibration tasks
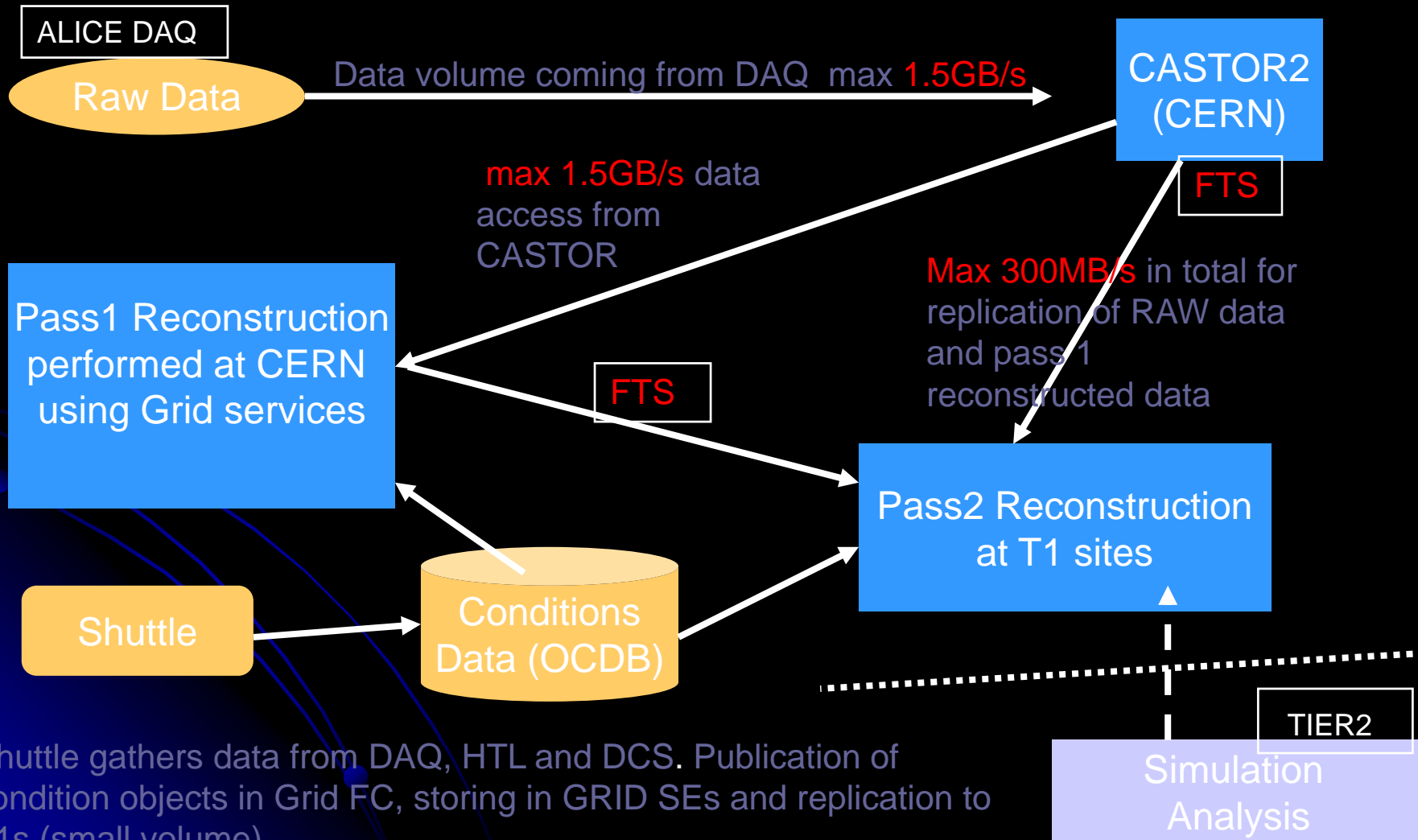   - First and second pass ESDs analysis

FDR phase 1

- Several detectors started datataking in September
  - PHOS, HMPID, EMCAL
- Other detectors planed for November-December
- Working parts - registration in CASTOR2 and AliEn
- Missing parts - replication of RAW and automatic reconstruction on the GRID

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Achieving the nominal rate

TRD readout

RAW data path

GTU

PPC

Data collector

PPC

Injection of simulated data

DDL

DAQ

HLT

D-RORC
LDC

D-RORC
LDC

D-RORC
HLT

GDC

HLT OUT

CASTOR2

- Cosmic rays, pulser, noise, etc..
- Part of the detector data will not be useful for reconstruction (noise, special setups)
- The data will be supplemented with generated RAW data through the HLT GTU unit, using the available DAQ infrastructure for the TRD detector

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Data transfers

ALICE DAQ

Raw Data

Data volume coming from DAQ max 1.5GB/s

CASTOR2 (CERN)

FTS

max 1.5GB/s data access from CASTOR

Pass1 Reconstruction performed at CERN using Grid services

FTS

Max 300MB/s in total for replication of RAW data and pass 1 reconstructed data

Pass2 Reconstruction at T1 sites

Shuttle

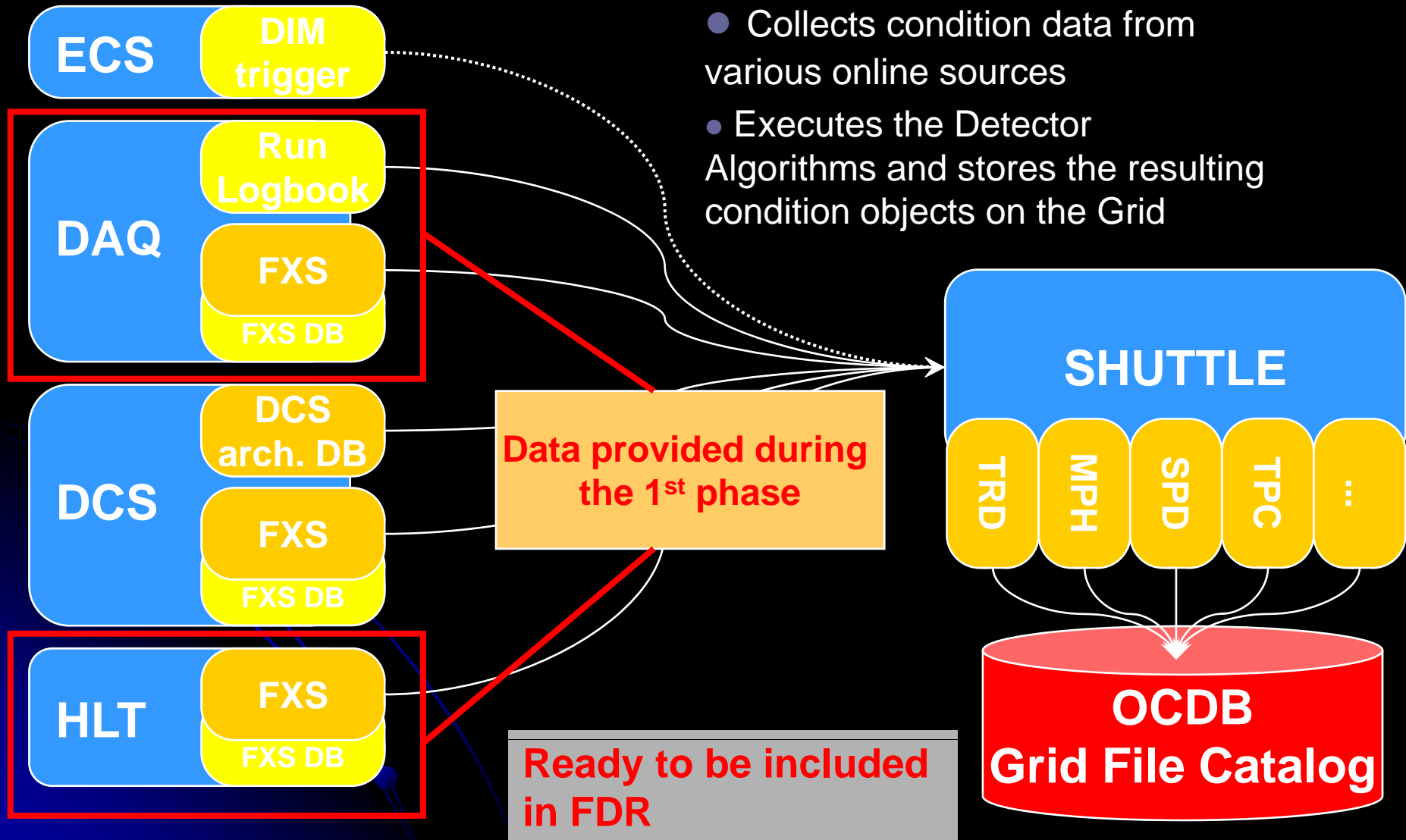Conditions Data (OCDB)

Shuttle gathers data from DAQ, HTL and DCS. Publication of condition objects in Grid FC, storing in GRID SEs and replication to T1s (small volume)

TIER2

Simulation Analysis

Data for Shuttle: phase 2
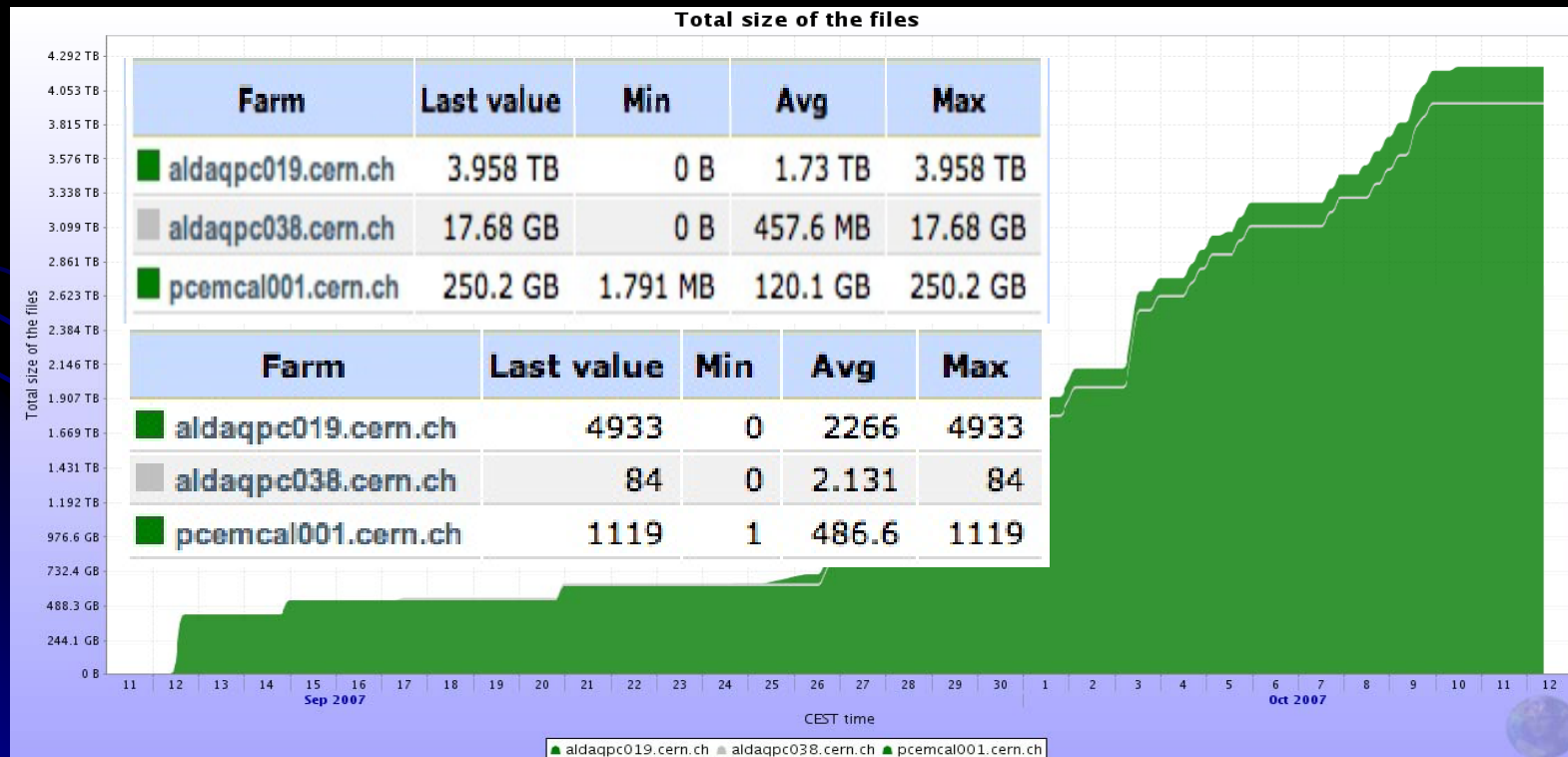
3rd phase of the FDR

- **Inclusion of online DA/QA**
  - Set of programs running on the LDC PCs/DAQ monitoring system, collecting conditions data during the run
  - The output is provided to Shuttle via FXS at the end of the run
  - The framework for the DAs/QAs is provided by the DAQ group
  - XFS already in place, being used by the Shuttle

Plan of the FDR

- **Mid September 2007**
  - Strategy and setup fully defined
- **October 2007 - FDR Phase 1**
  - Cosmic Rays data taking, calibration runs, special runs from detector commissioning
  - Registration in CASTOR2/Replication T0-T1, Pass 1 reconstruction, expert analysis
- **November-end 2007 - FRD Phase 1+2**
  - All elenments of Phase 1
  - Pass 1 and Pass 2 reconstruction
  - Conditions data with Shuttle
- **February-May 2008 - FDR Phase 1+2+3**
  - All elements of Phase 1+2
  - Gradual inclusion of DA and QA

Status of FDR - phase 1

- Phase 1 - DAQ registration, replication to T1, automatic reconstruction:
  - DAQ registration - working 100%, no failures since start of exercise (1 month)

Total size of the files

Farm	Last value	Min	Avg	Max
aldaqpc019.cern.ch	3.958 TB	0 B	1.73 TB	3.958 TB
aldaqpc038.cern.ch	17.68 GB	0 B	457.6 MB	17.68 GB
pcemcal001.cern.ch	250.2 GB	1.791 MB	120.1 GB	250.2 GB

Farm	Last value	Min	Avg	Max
aldaqpc019.cern.ch	4933	0	2266	4933
aldaqpc038.cern.ch	84	0	2.131	84
pcemcal001.cern.ch	1119	1	486.6	1119

Status of FDR - phase 1

- Replication - postponed
  - Current rate is 0.2 MB/sec (target p+p = 60 MB/sec)
  - The replication machinery is rather heavy and involves the cooperation of many groups
- Automatic reconstruction - *not done*
  - None of the currently running detectors has provided an AliRoot version for this
  - There is reconstruction on the Grid, but done by the experts themselves
- Typical reason:
  - Too many changes needed in the code
  - Configuration parameters need changing (and are in the code)
  - Format of raw data is different
  - The AliRoot version used is the Head
    - This last point is something we are working on - make the Head available for detector reconstruction of test beam/comissioning data, but this is *very risky!*

FDR - next phase

- Inclusion of shuttle - real conditions data from detector tests
  - DCS data - only HMPID provided partial info on data from detector
    - There is a bit of confusion - DCS and HMPID will sort it out
  - FXS files - none do far
- We will start the Shuttle in production (triggered by ECS) as planned
  - It is essential that there is at least some *valid* detector data in the stream (useful in the subsequent reconstruction)

External dependencies

- The FDR it tightly coupled with the WLCG Common Computing Readiness Challenge (CCRC'08) - see Patricia's talk
  - We cannot modify/postpone critical tasks
- We will try to find the best possible compromise between detector needs and fabric testing
  - However tasks are not infinitely flexible!
  - We may be forced to do some of the fabric tests with dummy data

Organisation

- Detector groups have nominated FDR experts
  - They will be the contact point for all tasks related to the FDR and will coordinate within the detector sub-groups
  - The list also contains experts from DAQ, DCS, HLT, Offline
- Planning
  - The planning tool is filled with detector tasks per FDR period
  - These will be assigned to the nominated FDR experts
  - The expected completion dates will be filled respecting the FDR planning (see before)… and as usual modified only after a thorough discussion
  - We will need a synthetic plan from detector groups on testbeams and commissioning exercise
- Regular slot FDR meeting - Thursday at 15:30 CEST

Conclusions

- The FDR has started
- The plan has not received any criticism, so we assume it is accepted by everybody
  - There are elements in the plan that cannot be changed due to external (CCRC'08) obligations
- The progress is steady, however Phase 1 is rather simple
  - We expect serious hurdles with the inclusion of conditions data gathering in the picture
- The detector groups involvement is absolutely essential for the success of the FDR