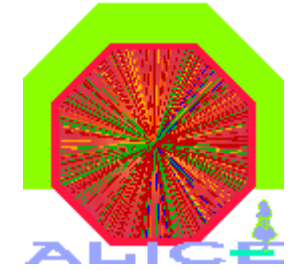
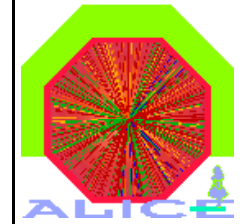


The ALICE Full Dress Rehearsal



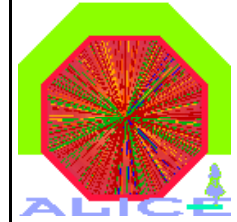
WLCG Collaboration Workshop
Victoria BC, 2 September 2007
Patricia Méndez Lorenzo (CERN)

Outlook



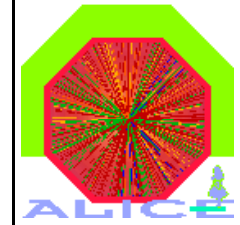
- FDR Elements
- FDR phase 1: Data registration and replication; Phase 1 reconstruction; CAF
- FDR phase 2: Conditions data - Shuttle
- FDR phase 3: Detector Algorithms, Quality Assurance
- Grid services

Dress Rehearsal Elements (I)



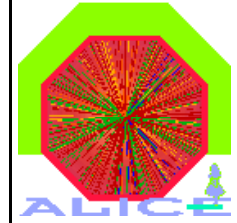
- **General purpose of the Dress Rehearsal**
 - *Combined tests of all steps needed to produce the ESDs from RAW*
- **Data flow and systems concerned (I)**
 - Generated and real data from detector commissioning: registration in CASTOR2 + Grid File Catalogue - **DAQ/WLCG services/Offline**
 - MC RAW for 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**

Dress Rehearsal Elements (II)



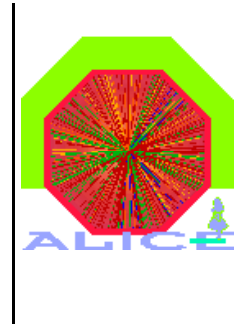
- **Data flow and systems concerned (II)**
 - Gathering and registration of conditions data - **DAQ/ECS/DCS/HLT/Offline**
 - Generation of conditions data through Detector Algorithms (DAs) in DAQ/DCS/HLT frameworks, store in File Exchange Servers (FXS)
 - Conditions data stored in DCS Archive DB
 - Shuttle 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)**
 - First pass reconstruction at T0 - **Offline/WLCG Services**
 - Quasi-online at T0 with 'good enough' condition data values
 - Processing starts after the Shuttle has declared end of operation for a given run and raw data has been registered

Dress Rehearsal Elements (III)



- **Major steps and systems concerned (III)**
 - Second pass reconstruction at T1 - **Offline/WLCG Services**
 - After pass 0 is complete and new condition object are available in OCDB
 - Second iteration of conditions data, derived from pass 1, and eventually refinement of the reconstruction code
 - Triggered by a successful T0 processing
 - Produces final ESDs
 - As a part of the same job - AOD production
 - Automatic validation procedures
 - A copy of the ESDs is stored at each T1
 - 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



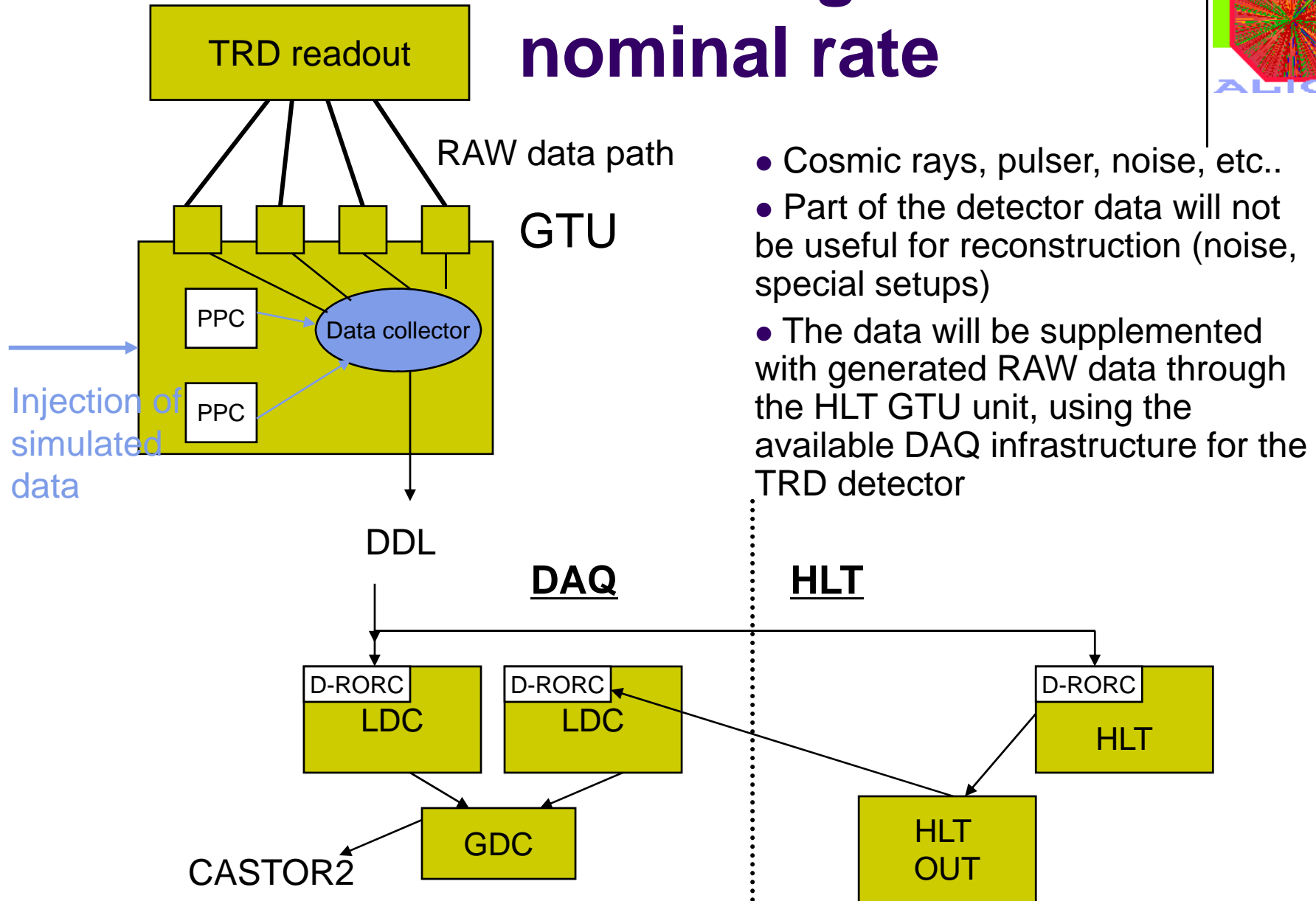
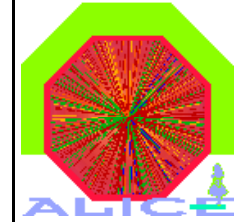
- **Data flow**

- Several detectors will begin commissioning in September
 - TPC, TRD, PHOS, HMPID
 - Cosmics, pulsers, laser tracks, black events, simulated RAW injection
 - An element of the TRD readout (Global Tracking Unit) will be used to inject simulated RAW - see next slides
 - Preparation of AliRoot for the reconstruction of these events well under way
 - The target transfer rates to CASTOR2/T1 depending on inclusion of detectors/type of data

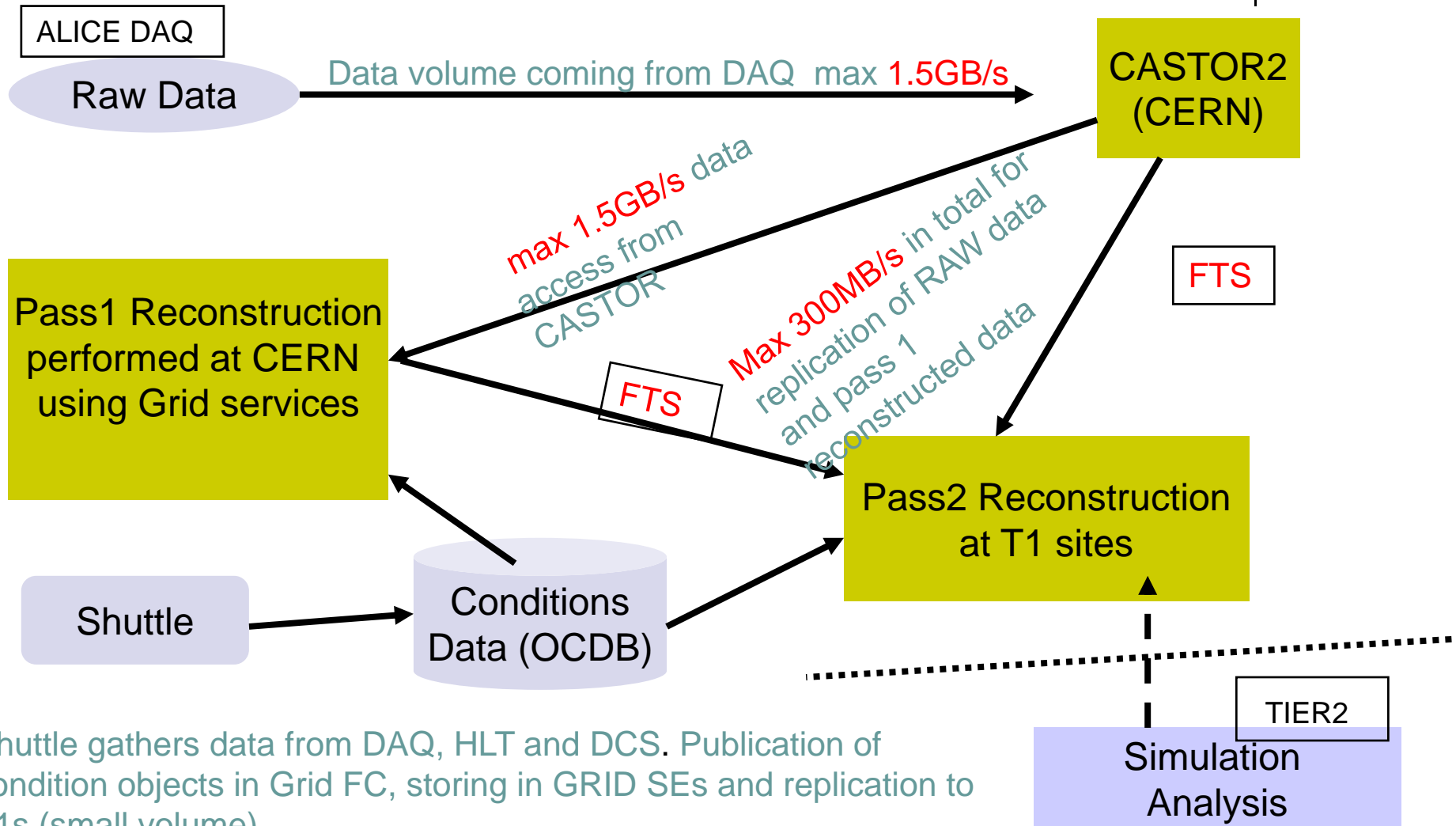
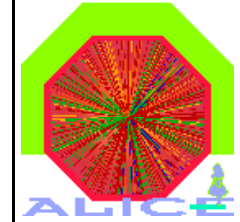
- **CAF facility at CERN will receive portions of the data**

- Automatically for special run types (f.e. calibration), small portions of the data will be copied on demand
- Access to data reserved for detector experts (10-20) at any given moment
- Events will be of various sizes, depending on the data type
- The data will be accessed in a random pattern
- The data will be copied from CASTOR2 to the CAF disk pool, access is only from CAF pool

Achieving the nominal rate

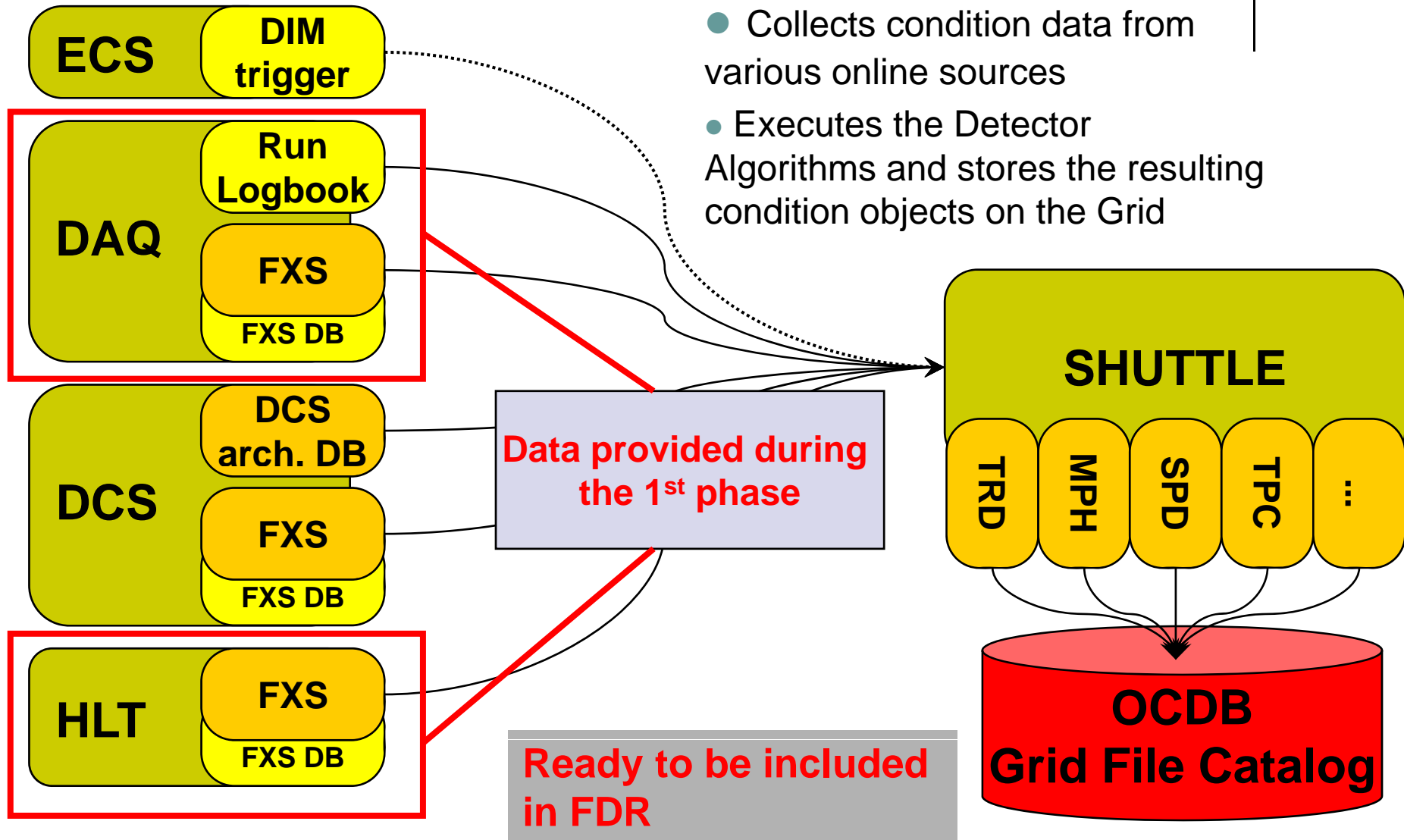
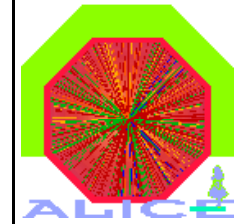


Transfers for the phase 1

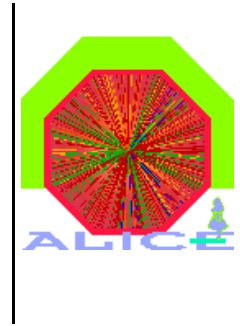


Shuttle gathers data from DAQ, HLT and DCS. Publication of condition objects in Grid FC, storing in GRID SEs and replication to T1s (small volume)

Data flow for Shuttle: phase 2

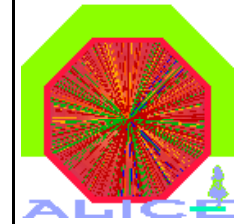


FDR phase 3



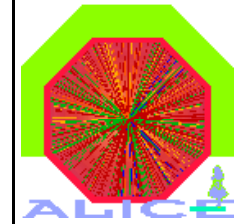
- **Inclusion of online DA/QA**
 - Set of programs running on the LDC PCs/DAQ monitoring system, collecting conditions data during the run
 - The output is provided to Shuttle via FXS at the end of the run
 - The framework for the DAs/QAs is provided by the DAQ group
 - FXS already in place, being used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

Plan of the FDR



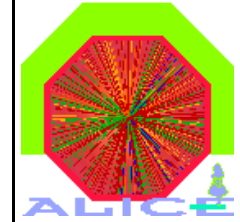
- **Mid September 2007**
 - Strategy and setup fully defined
- **October 2007 - FDR Phase 1**
 - Cosmic Rays data taking, calibration runs, special runs from detector commissioning
 - Registration in CASTOR2/Replication T0-T1, Pass 1 reconstruction, expert analysis
- **November-end 2007 - FRD Phase 1+2**
 - All elements 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

Grid services: general conditions



- **ALICE requires the services as provided during the Data Challenges**
 - VOBOXES deployed at all ALICE T0-T1-T2 sites
 - ALICE requires the latest version of the gLite3.1 VOBOX
 - Still under configuration, testing and deployment
 - This new configuration is mandatory to migrate to WMS3.1
 - All sites will have to be updated to the latest version
 - Pilot version in production deployed in voalice03@CERN
 - FTS service from T0-T1
 - This exercise tests also SRM2.2
 - FTS channel sharing and rates as during the T0-T1 exercise in 2006/2007

Grid services: CASTOR



- **Considerations**

- The interface has been successfully tested so far, minor problems are being fixed
- New xrootd expert in ARDA from September 2007
- The xrootd-CASTOR interface will be part of the next major Castor release which will be deployed during the 1st half of September 2007
- The xrootd-CASTOR setup needs to be defined in detail and the responsibilities between ALICE and IT clarified

Updated ALICE Computing Resources Requirements

DRAFT

Friday, August 18, 2006

The requirements for computing resources have been revised upon the request of the WLCG project leader. The updated requirements take into account the LHC startup scenario in 2007 and 2008 as announced by the CERN management and summarized in Tab. 1. 2009 is assumed to be the first standard year of data taking.

Tab. 1: *Running scenario*

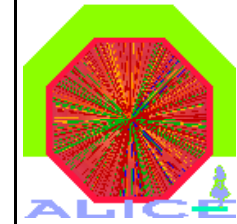
| year | Run time for physics (seconds) | |
|------|--------------------------------|-----------------|
| | pp | PbPb |
| 2007 | 6×10^5 | 0 |
| 2008 | 4×10^6 | 4×10^5 |
| 2009 | 1×10^7 | 1×10^6 |

The updated CPU, disk and permanent storage resources required by the ALICE Computing Model, reviewed and approved by the LHCC, are summarized in Tab. 2-5 for the years 2007-2009. Resources are split in the CERN Tier0 and Tier1, the CERN CAF and the external Tier1s and Tier2s.

Tab. 2: *Computing resources required in 2007, new and old data*

| New 2007 | CERN | | | | External | | | Total |
|--------------|-------|--------|-------|-------|----------|--------|-------|-------|
| | Tier0 | CAF | Tier1 | Total | Tier1s | Tier2s | Total | |
| CPU(MSI2K) | 0.053 | 0.026 | 0.90 | 0.90 | 3.03 | 4.17 | 7.19 | 8.09 |
| DISK(PB) | 0.014 | 0.0029 | 0.34 | 0.36 | 2.01 | 0.98 | 2.99 | 3.35 |
| MS (PB/year) | 0.066 | - | 0.33 | 0.39 | 1.97 | - | 1.97 | 2.37 |

| Old 2007 | CERN | | | | External | | | Total |
|--------------|-------|------|-------|-------|----------|--------|-------|-------|
| | Tier0 | CAF | Tier1 | Total | Tier1s | Tier2s | Total | |
| CPU(MSI2K) | 2.49 | 0.36 | 1.44 | 3.32 | 5.15 | 5.76 | 10.91 | 14.23 |
| | | | | -73% | -41% | -28% | -34% | -43% |
| DISK(PB) | 0.095 | 0.12 | 0.48 | 0.70 | 2.98 | 1.40 | 4.38 | 5.08 |
| | -85% | -98% | -26% | -49% | -32% | -30% | -32% | -35% |
| MS (PB/year) | 0.99 | - | 0.46 | 1.45 | 2.77 | - | 2.77 | 4.23 |
| | -93% | - | -28% | -73% | -29% | - | -29% | -44% |



- Numbers provided by ALICE to H. Renshall in August last year

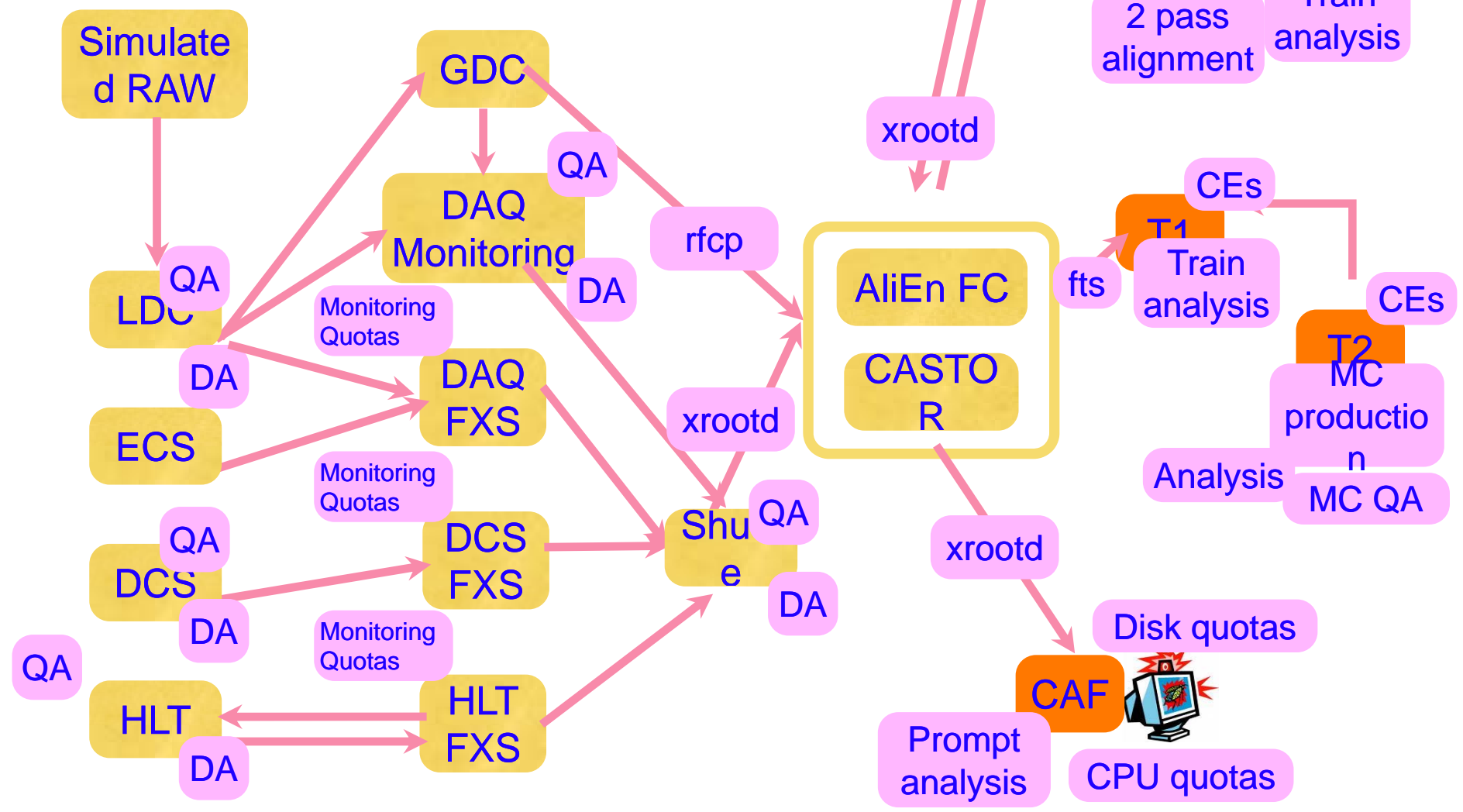
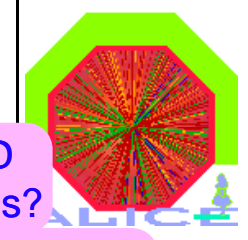
- The number of CPU and tape space have not changed

- Slightly smaller space on disk with no effects

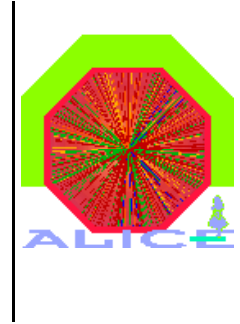
- ALICE is checking these numbers for possible updates

- To be provided after CHEP

ALICE FDR Schema



Summary



- The ALICE FDR is ready to begin in October 2007
- The main goal is the testing of all steps needed to produce ESDs from RAW data
 - Many individual elements and services are already tested
- FDR split in 3 phases:
 - Phase 1: Data registration and replication; Phase 1 reconstruction; CAF
 - Phase 2: Conditions data - Shuttle
 - Phase 3: Detector Algorithms, Quality Assurance
- Grid services:
 - VO-Boxes to be updated at all sites for the use of WMS3.1
 - FTS 2.0 (SRM2.2) (October-November 2007)
 - xrootd-CASTOR interface ready in September 2007
 - ALICE Computing resources requirements draft will be updated shortly after CHEP