ALICE and the LCG Service Data Challenge 3

P. Cerello (INFN – Torino)

LCG-SC meeting

Taipei

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ALICE 2005 Plan

- Physics Data Challenge
  - Baseline requirements on computing time and storage capability
  - But if the system allows for more, we will try do more
  - Until July 2005, simulate MC events on available (ALICE and LCG) resources
  - Register them in the AliEn DC and store them at CERN
- ASAP make the Physics and Service Challenges converge on the same system

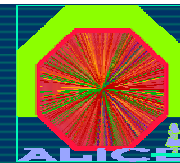# ALICE and LCG Service Challenge 3

- Use case 1: RECONSTRUCTION
  - Sample (bunches of) "RAW" events stored at T0 from our Catalogue
  - Reconstruct at T0
  - Ship from T0 to T1's
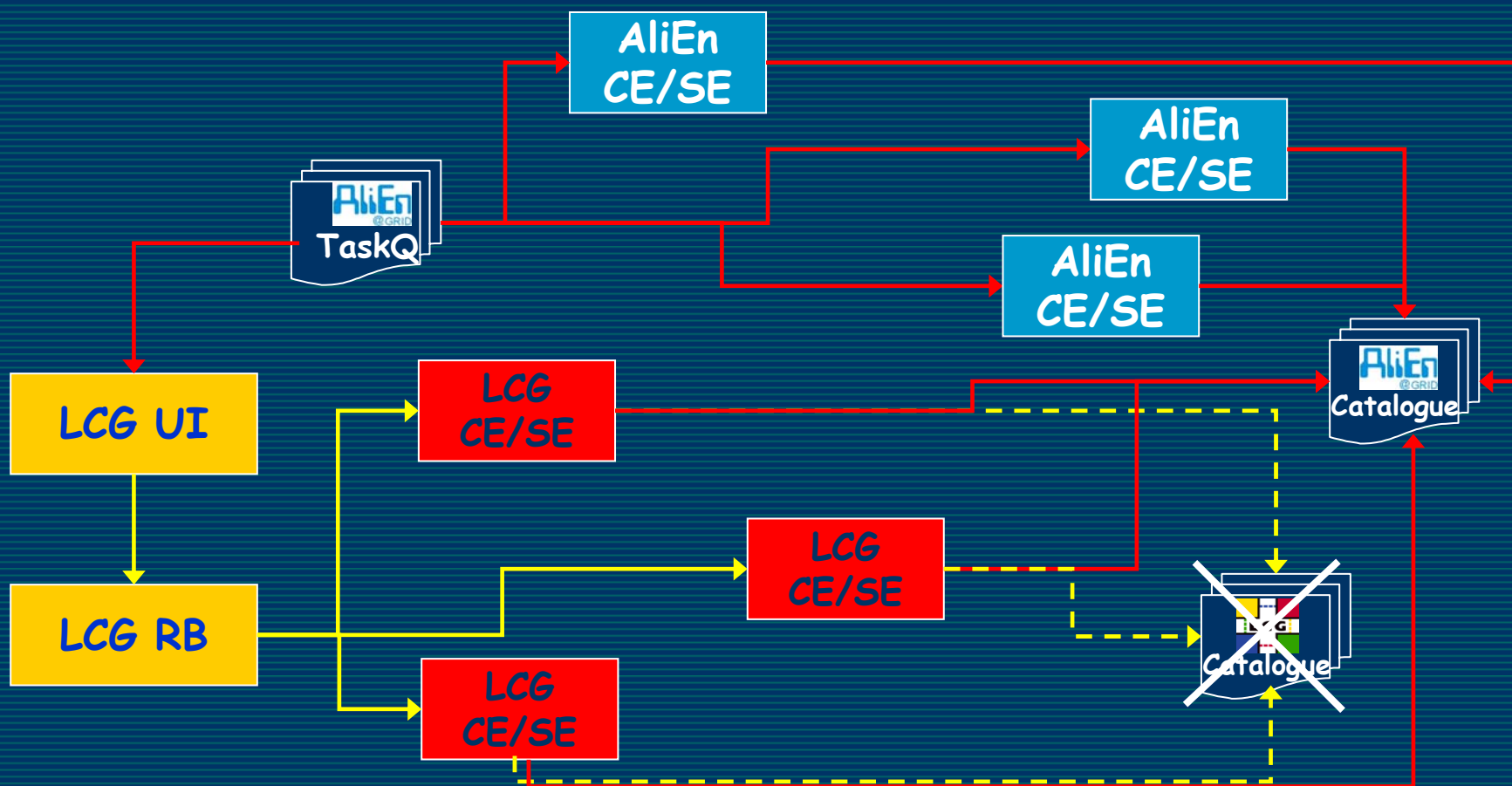 - Reconstruct at T1 with calibration data
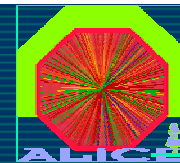 - Store/Catalogue the output

ALICE and LCG Service Challenge 3

☐ Use Case 2: SIMULATION

- ■ Simulate events at T2's
- ■ Ship from T2 to T1's
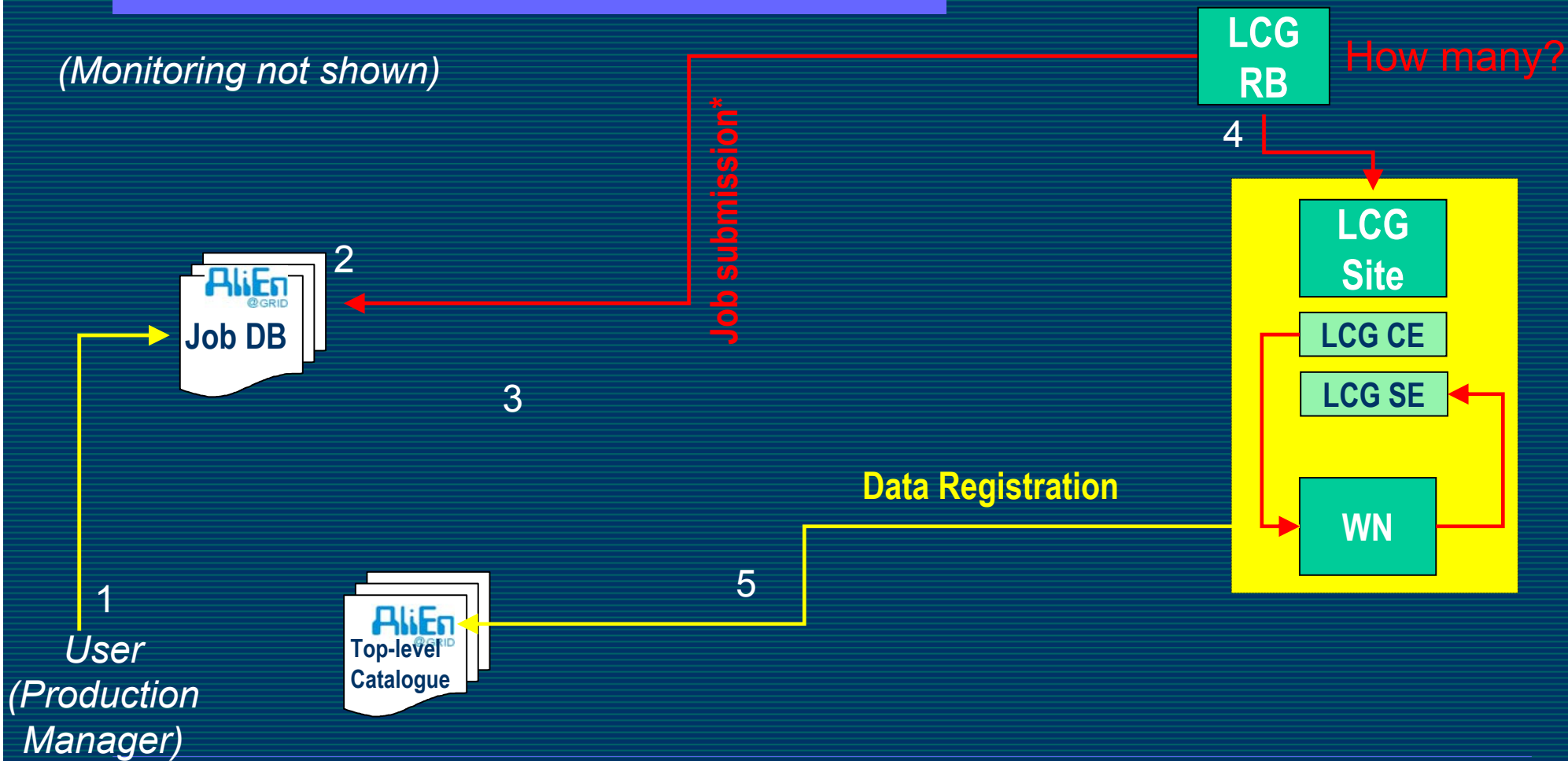- ■ Reconstruct at T1's and store/catalogue the output (Use Case 1)

ALICE DC2005/SC3 layout
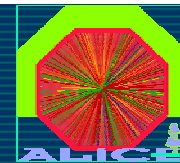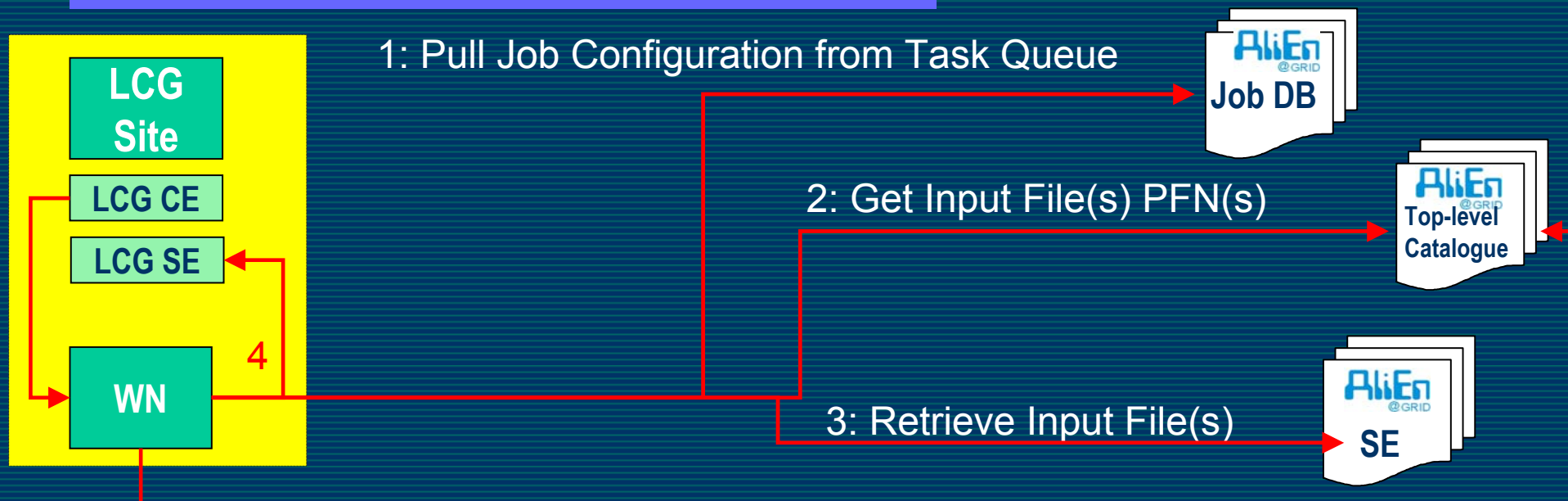
ALICE SC3 layout

(Monitoring not shown)

LCG RB

How many?

Job submission*

Job DB

2

3

4

LCG Site

LCG CE

LCG SE

WN

Data Registration

5

1

User (Production Manager)

Top-level Catalogue

ALICE Reconstruction

1: Pull Job Configuration from Task Queue

Job DB

2: Get Input File(s) PFN(s)

Top-level Catalogue

LCG Site

LCG CE

LCG SE

4

WN

3: Retrieve Input File(s)

SE

0: WMS (UI/RB/LB)   5: Output Data Registration

1: -

2: FTS

3: FTS

4: SRM

5: -

ALICE Simulation

LCG Site

LCG CE

LCG SE

WN

3

1: Pull Job Configuration from Task Queue

AliEn @GRID
Job DB

2: Get Input File(s)

AliEn @GRID
Top-level Catalogue
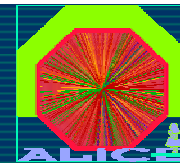
4: Output Data Registration
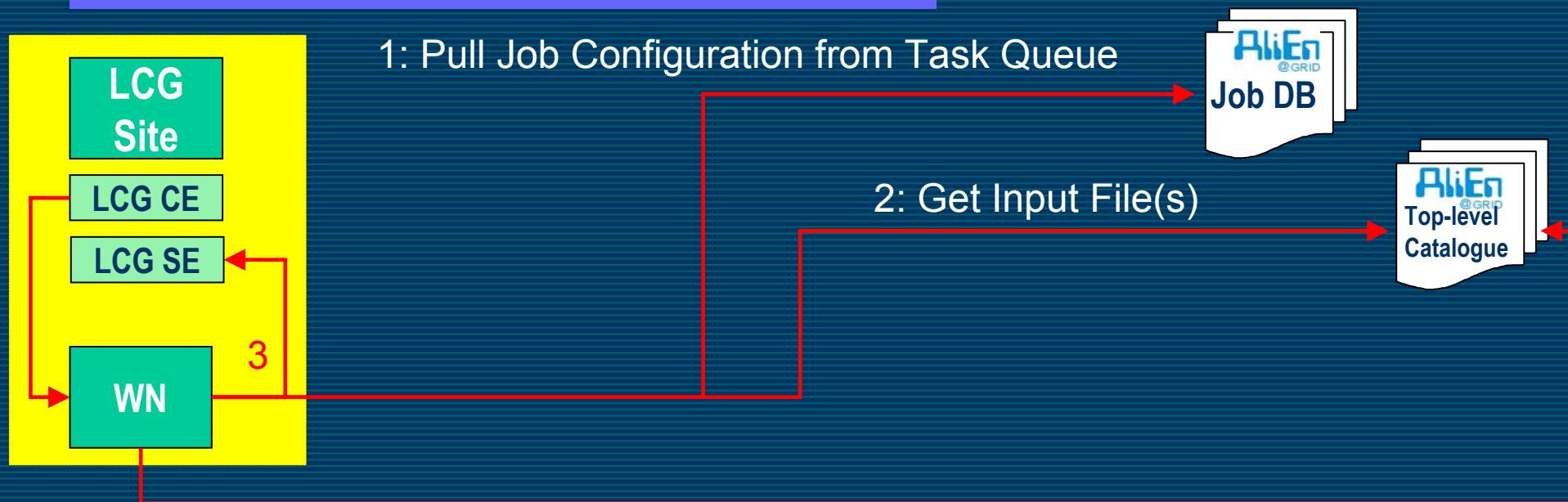
0: WMS (UI/RB/LB)
1: -
2: FTS
3: SRM
4: -

ALICE and LCG Service Challenges

- In other words:
  - Mimic our data (raw-like + simulated) flow
  - test the reconstruction
  - measure the performance of the LCG/SC3 for different services:
    - Job completion efficiency
    - Data transfer efficiency
    - Storage Element efficiency

  - As new sites keep coming in, increase the scale of the exercise
 - As new middleware comes in, add more functionality (batch analysis?)

ALICE & LCG SC3: Data Flows

- ☐ Reconstruction: run at T1s
  - ■ Assume 2000 CPUs availability and central Pb-Pb events
  - ■ 1 Job = 1 Input event, 50 Rec. Events after merging with physics signals
  - ■ Input: 1 GB on T0 SE
  - ■ Output: 500 MB on T1 SE
  - ■ Job duration: 1 h -> 48000 Jobs/day
    -> **48 TB/day (600 MB/s)** from T0 -> T1s
- ☐ Simulation
  - ■ Assume 2000 CPUs availability and central Pb-Pb event
  - ■ 1 Job = 1 Event
  - ■ Input: few KB on AliEn TQ
  - ■ Output: 1 GB on T1 SE
  - ■ Job duration: 10 h -> 4800 Jobs/day
    -> **4.8 TB/day (60 MB/s)** from T2 -> T1

ALICE and LCG Service Challenge 3

- What would we need for SC3?
  - AliRoot deployment on LCG/SC3 sites   - ALICE
  - AliEn server (ongoing) with: - ALICE
    - task queue for SC3 jobs
    - File catalogue
  - UI(s) for submission to LCG/SC3   - LCG
  - WMS + CE/SE Services on SC3   - LCG
  - Appropriate amount of storage resources   - LCG
  - Appropriate JDL files for the different tasks - ALICE
  - Access to the ALICE AliEn Data Catalogue from LCG
    -ALICE/LCG
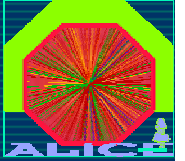
ALICE and LCG Service Challenge 3

- We will measure the LCG performance in average conditions

- We need support from LCG and we are putting some of our manpower in for SC3

- We are willing to start as soon as possible so as to be ready for:

- SC4, that should see the convergence of our whole team on using the "LCG Production Service" in analysis mode