

Real Time Fake Analysis at PIC

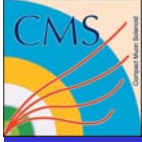
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CIEMAT

The Ciemat logo, featuring the word 'Ciemat' in a bold, black, sans-serif font.

Centro de Investigaciones
Energéticas, Medioambientales
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PIC
port d'informació
científica



Real Time Fake Analysis

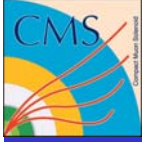
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■ Goals

- Demonstrate data can be analyzed in real time at the T1
 - Fast Feedback to reconstruction (e.g. calibration, alignment, check of reconstruction code, etc.)
- Establish automatic data replication to T2s
 - Make data available for offline analysis
- Measure time elapsed between reconstruction at T0 and analysis at T1

■ Architecture

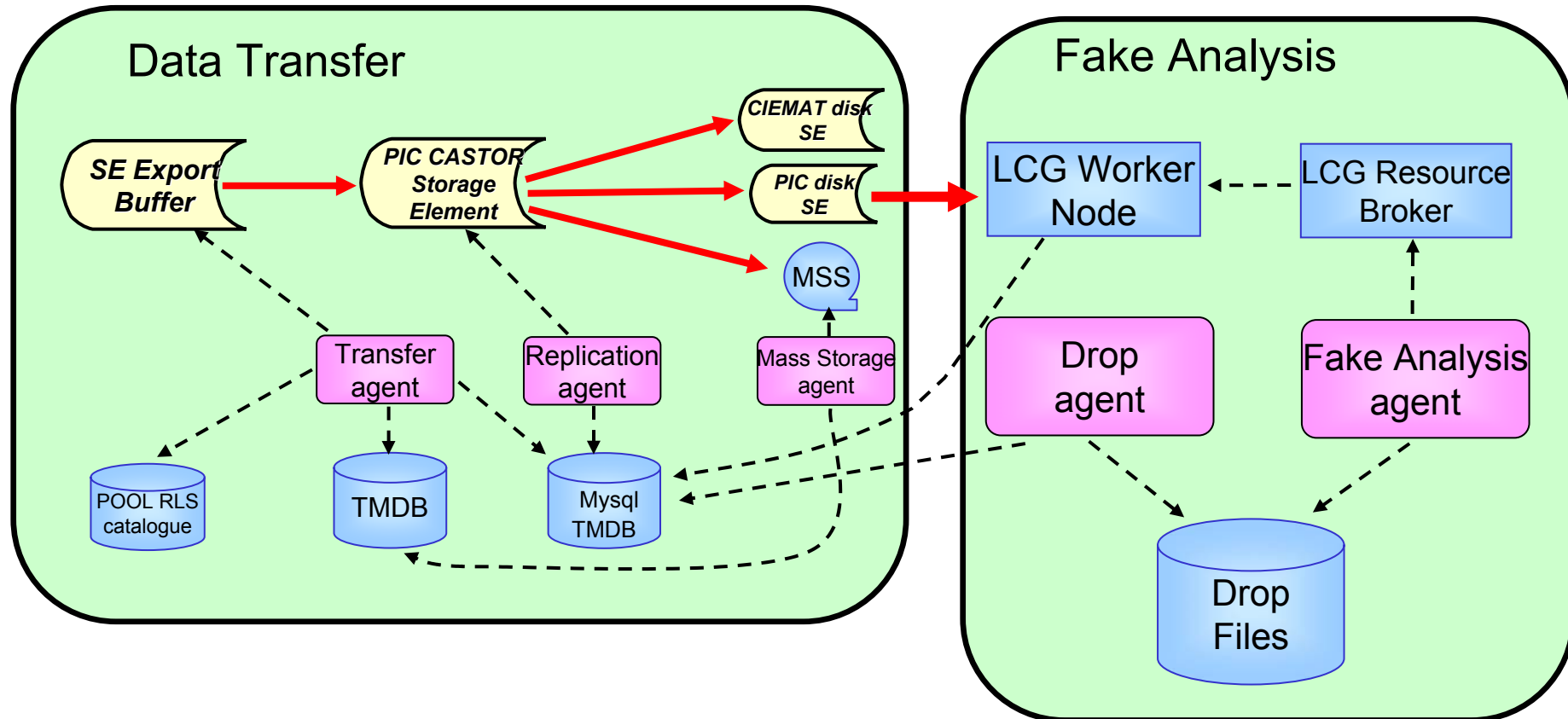
- Set of software agents communicating via local mysql DB
 - Replication, data set completeness, job preparation & submission
- Use LCG to run jobs
 - Private Grid Information System for CMS DC04
 - Private Resource Broker



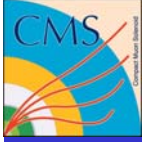
Hardware Setup

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- 3 LCG Storage Elements with gridFTP server
 - 1 SE attached to CASTOR with 3 TB stage pool
 - 1 disk SE with 1 TB at PIC
 - 1 disk SE with 80 GB at CIEMAT
- 2 LCG User Interface machines
 - Replication agent
 - Fake Analysis agents
- 1 LCG Resource Broker
 - Fake analysis job submission
- 154 LCG Worker Node CPUs
- 1 Gbps LAN



- Drop agent triggers job preparation/submission when all files are available
- Fake Analysis agent prepares xml catalog, orcarc, jdl script and submits job
- Jobs record start/end timestamps in mysql DB

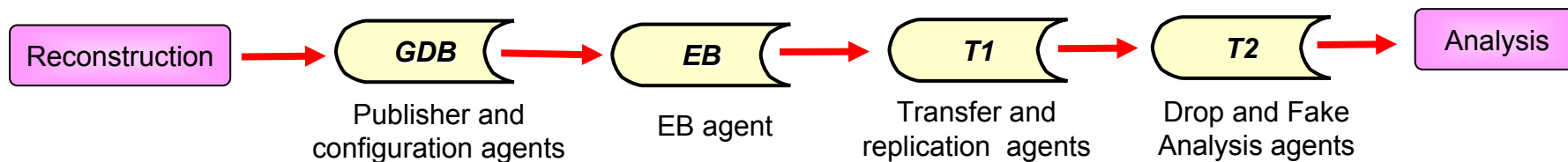
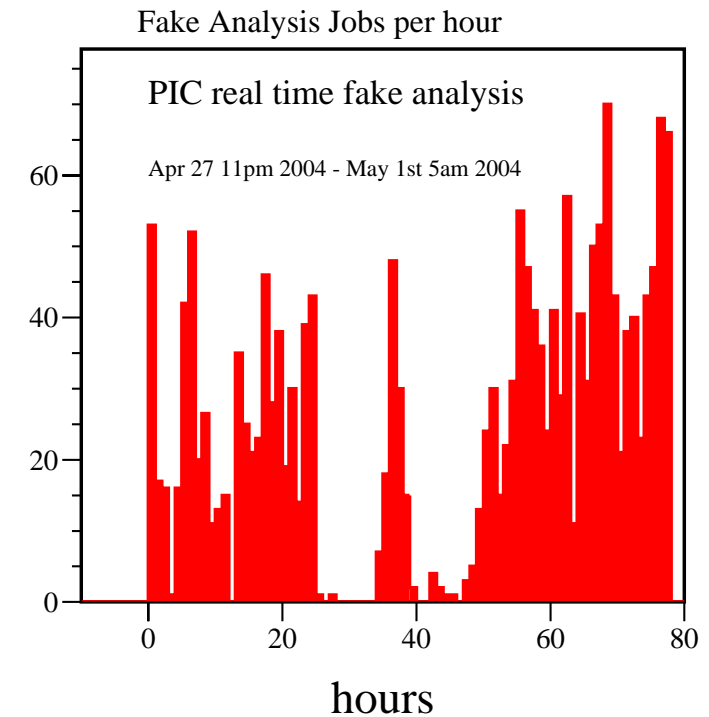
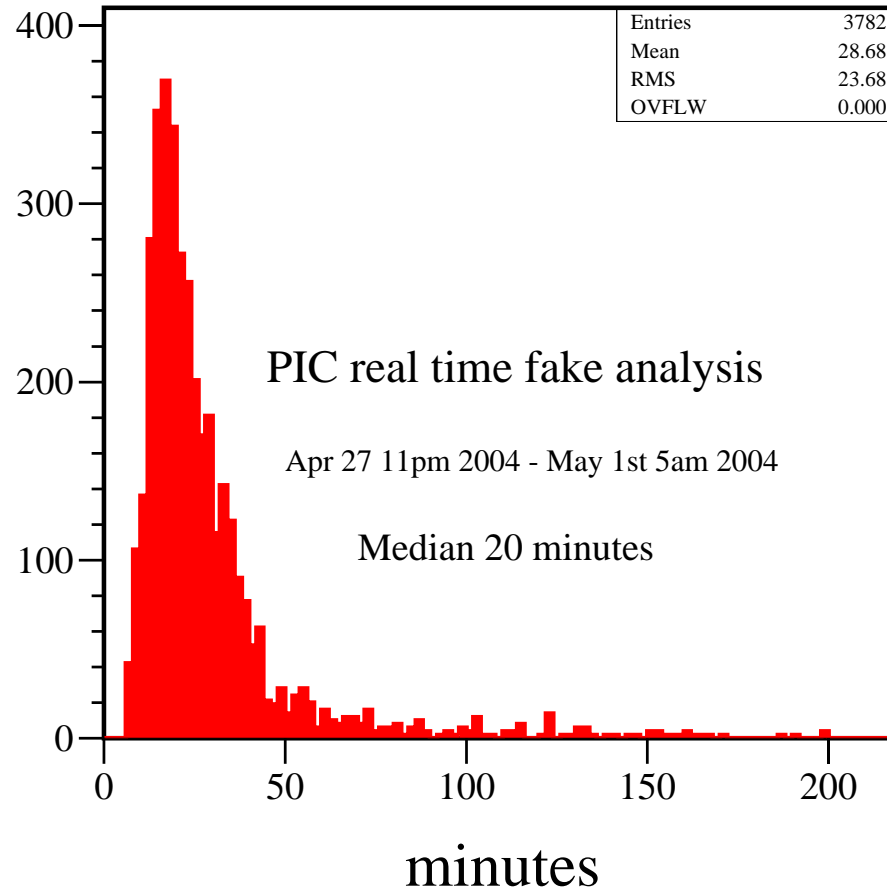


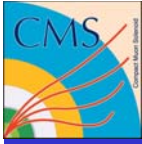
Fake Analysis Strategy

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- **Transfer agent** registers in mysql DB files at T1
- **Replication agent** replicates them to disk at T1/T2s
- **Drop agent** checks completeness of job data set at T1/T2s
 - Drop file contains GUIDs and PFNs of event data files and ZippedMETA file
- **Fake Analysis agent** prepares and submits jobs to LCG
 - Get DATASET, OWNER, RUNID, JOBID, GUIDs, PFNs from drop file
 - Prepare local xml catalog, orcarc file, envariables file, jdl script
 - Scripts from INFN fake analysis team adapted to PIC
- **Job submission & monitoring**
 - BOSS not used due to lack of time, big executables in InputSandbox
 - Instead, job submission, start, end timestamps recorded in mysql DB
- Job running on any data set
- Fake Analysis executable uploaded into SE

Time delay (File analyzed at T1) - (File on GDB)

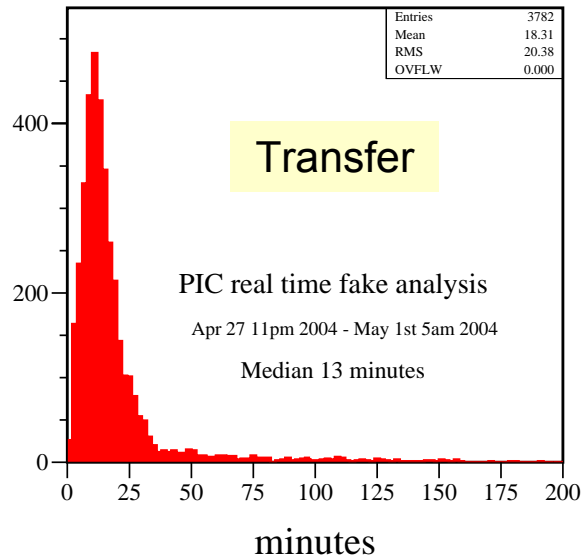




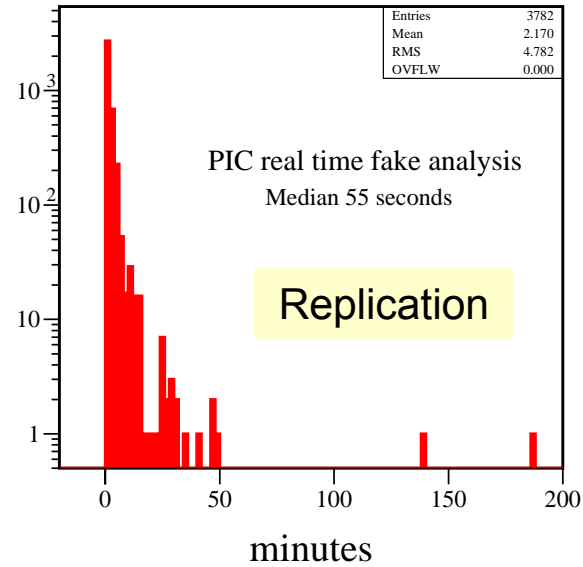
From GDB to analysis at T1



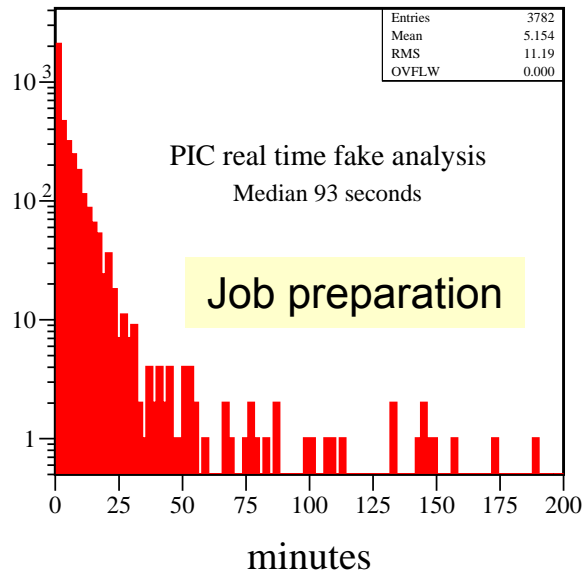
Time delay (File on GDB) - (File at T1)



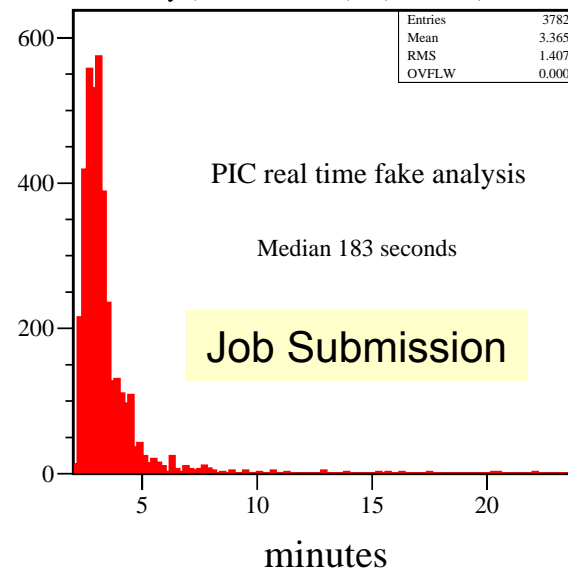
Time delay (File at T1) - (File at T2)

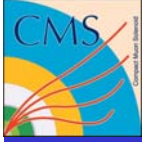


Time delay (File at T2) - (Job submitted)



Time delay (Job submitted) - (Job start)





Summary

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- Real Time fake analysis established at PIC during DC04
- 20 minutes median time between production and analysis
- Automatic data replication to CIEMAT T2 established making data available for offline analysis
- LCG2 successfully exercised for data replication and job submission
- Thanks to the INFN colleagues