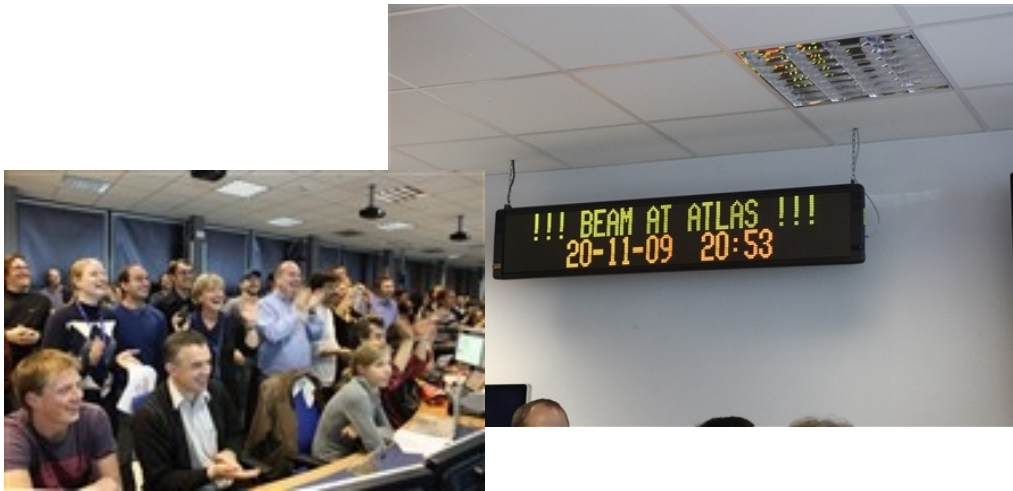# Data analysis on the ATLAS Spanish Tier2

G. Amorós, C. Borrego, M. Campos, A. Fernández, M. Gila, S. González, M. Kaci, A. Lamas, J. Nadal, E. Oliver, C. Osuna, A. Pacheco, J.J. Pardo, J. del Peso, J. Salt, J. Sánchez, M. Villaplana
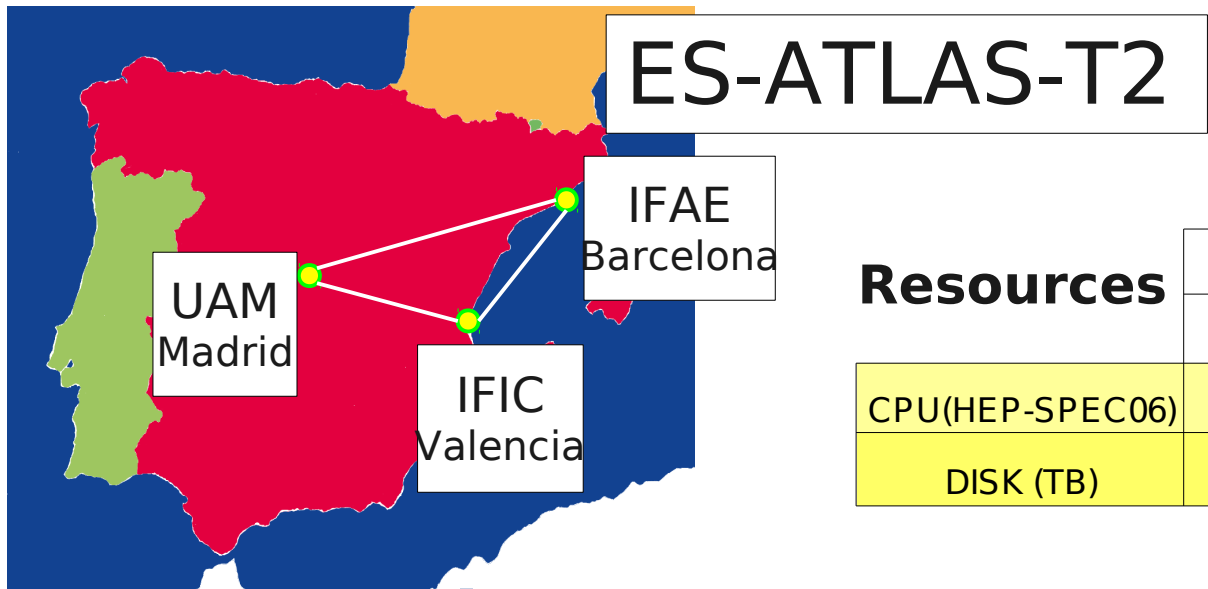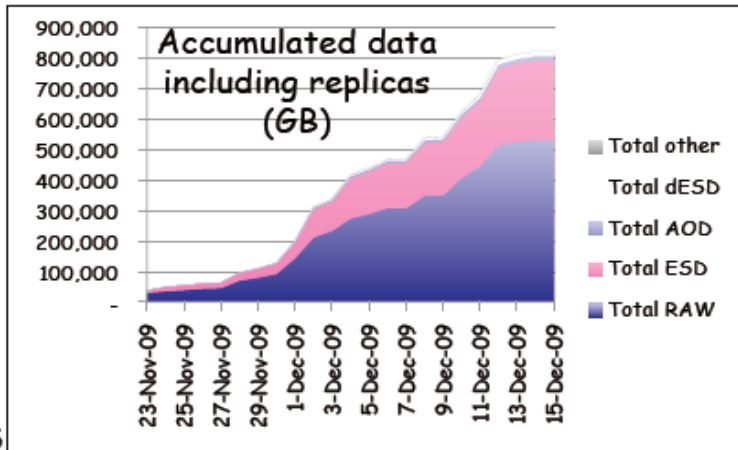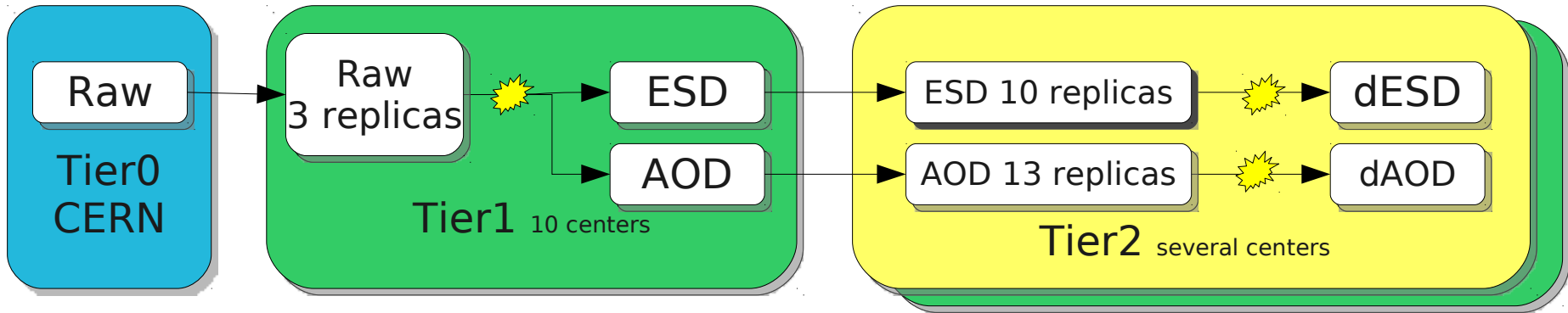
Introduction

LHC started 20Nov

First collisions 23Nov (900GeV)

One million events reached! (before 7TeV)

ES-ATLAS-T2

IFAE
Barcelona

UAM
Madrid

IFIC
Valencia

Resources	ES-ATLAS-T2	
	Pledge'09	Provided (Nov-Dec)
CPU(HEP-SPEC06)	5396	5341
DISK (TB)	656	750

Data Management

Raw

Tier0
CERN

Raw
3 replicas

ESD

AOD

Tier1 10 centers

ESD 10 replicas

AOD 13 replicas

dESD

dAOD

Tier2 several centers

Accumulated data including replicas (GB)

| Site	SpaceToken	Total	Used	Free	%
UAM	ATLASDATADISK	55879 GB	12935 GB	42944 GB	23
	ATLASMCDISK	55879 GB	35348 GB	20530 GB	63
IFAE	ATLASDATADISK	69849 GB	16491 GB	53357 GB	23
	ATLASMCDISK	93132 GB	30492 GB	62640 GB	32
IFIC	ATLASDATADISK	114612 GB	42285 GB	72327 GB	36
	ATLASMCDISK	143953 GB	69214 GB	74739 GB	48

Access to the data
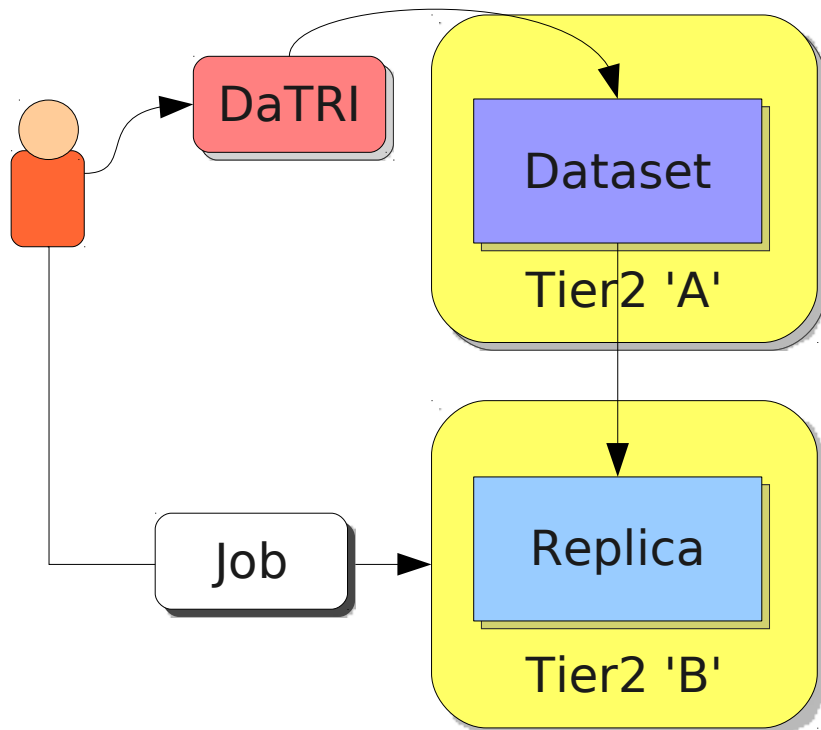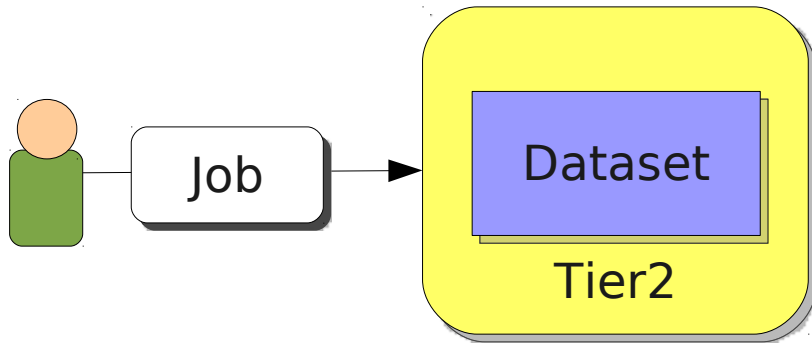
- Jobs run where the data are located.
- User can ask for a replica in other site.
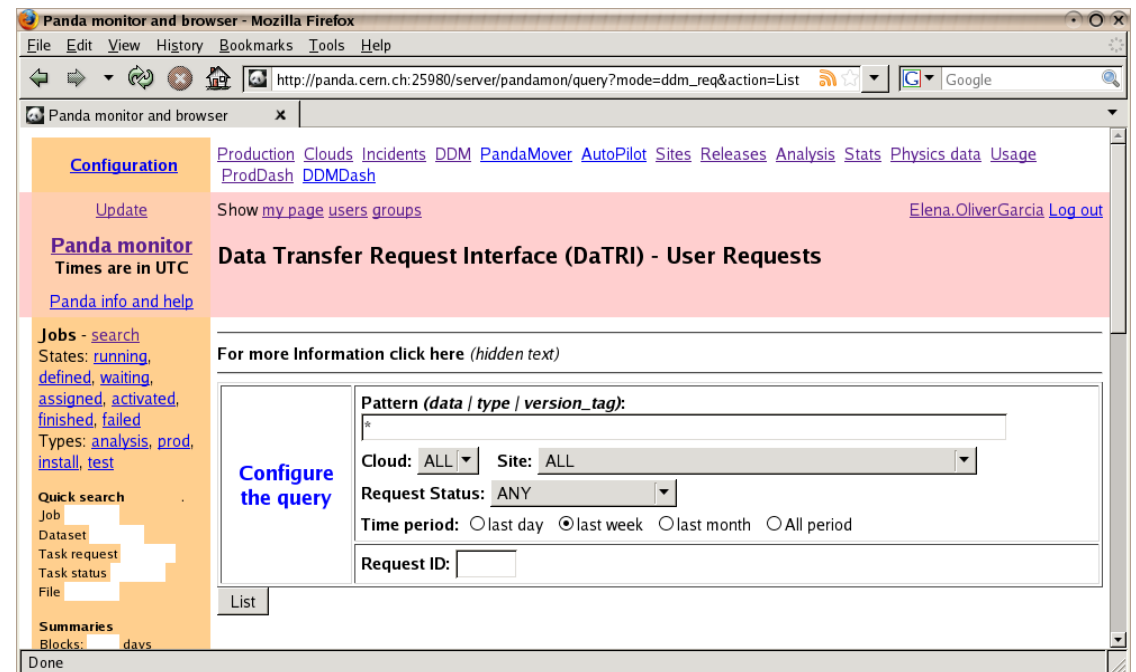
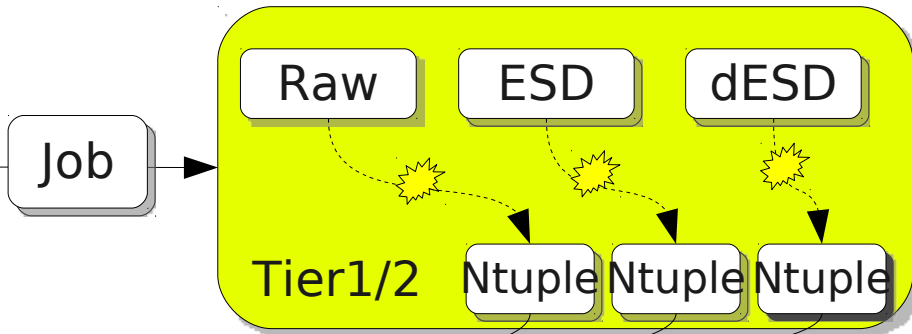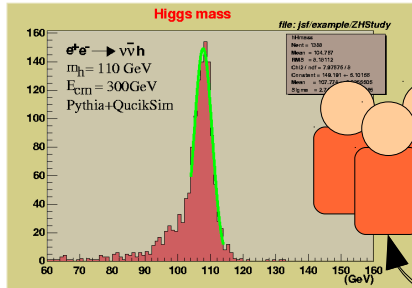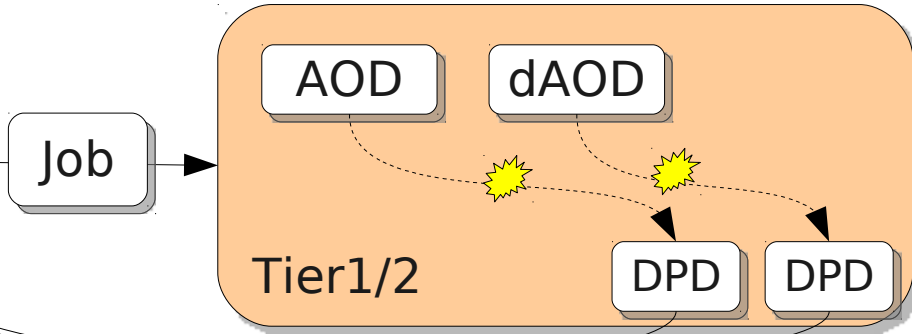# ATLAS Analysis Types
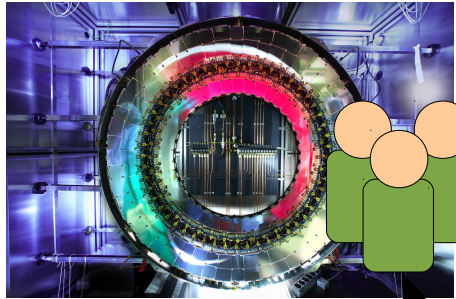
Detector and combined performance
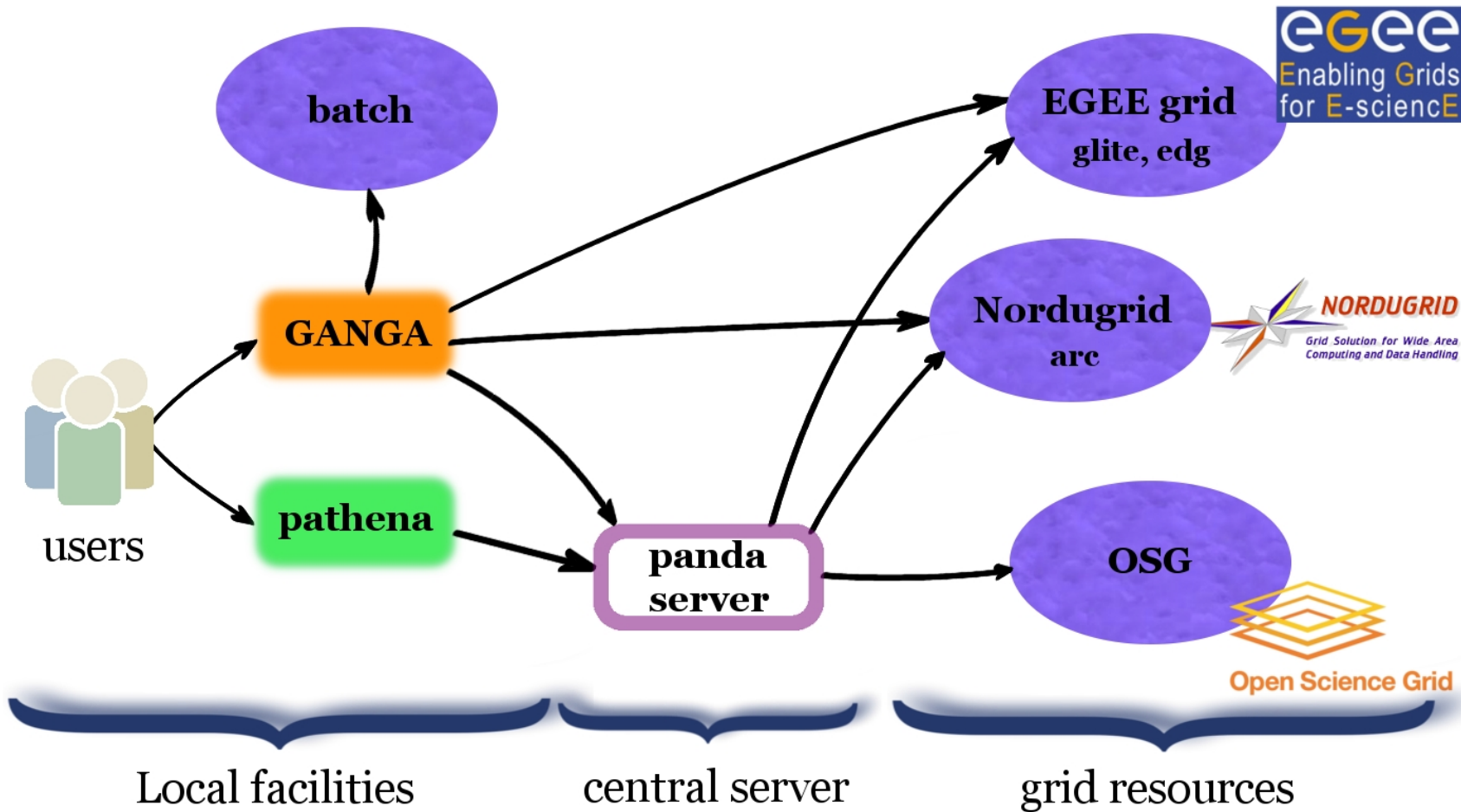
Analysis with different inputs

Physics Analysis

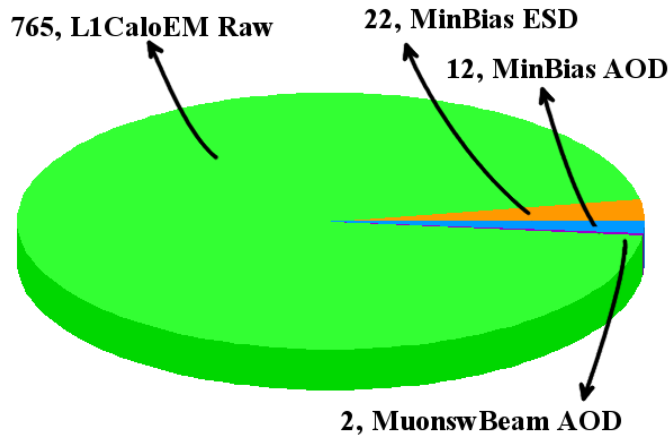Output from storage site to user local facility (DQ2 or DaTRI)

ATLAS Distributed Analysis

Analysis in ES-ATLAS-T2 with first data
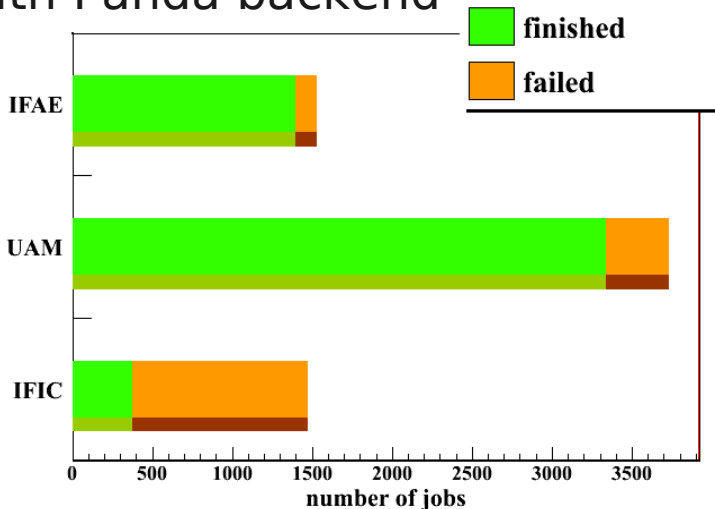
Ganga with LCG backend

Ganga or pathena with Panda backend

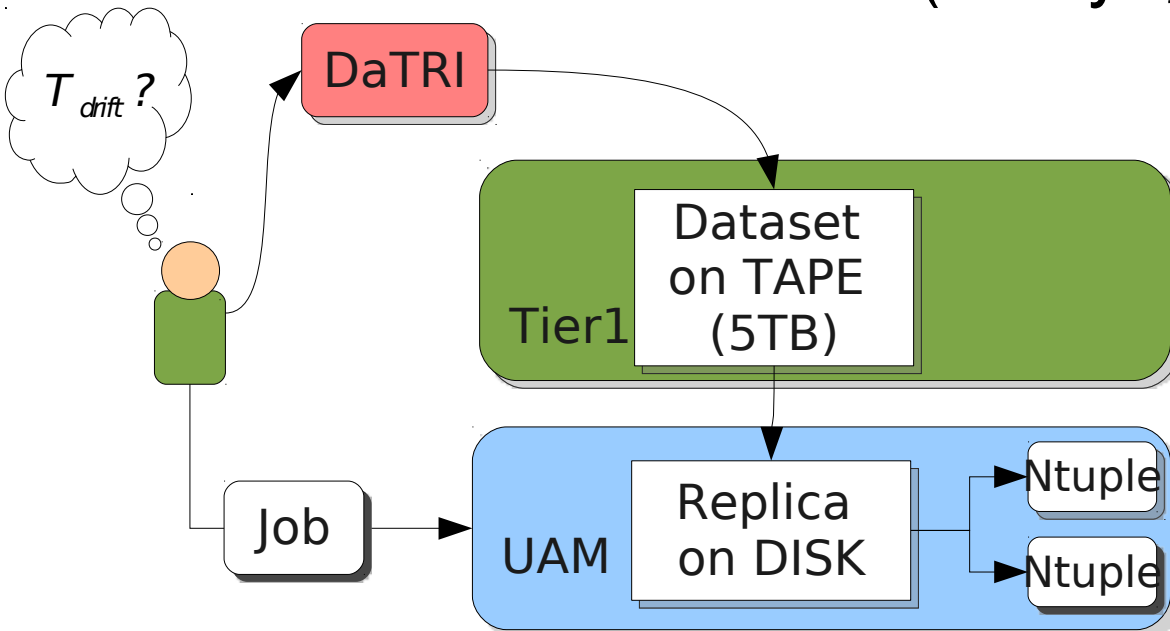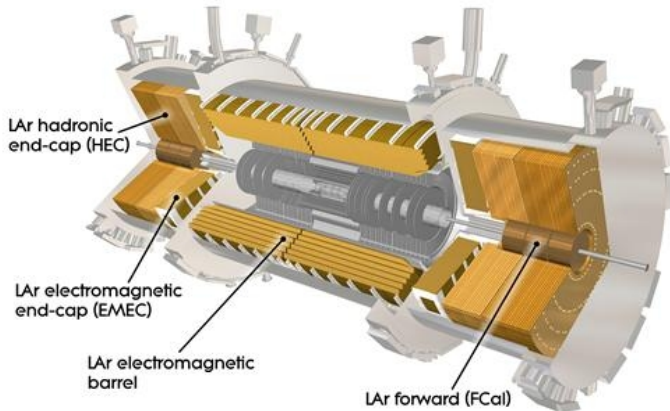Monitoring analysis jobs depends on the backend

Users acceded Raw data, ESD, and AOD.

'Panda' jobs around 6800 and 'LCG' around 800 (2009-11-23 to 2010-03-09)

Example1: Liquid Argon drift time

LAr hadronic end-cap (HEC)

LAr electromagnetic end-cap (EMEC)
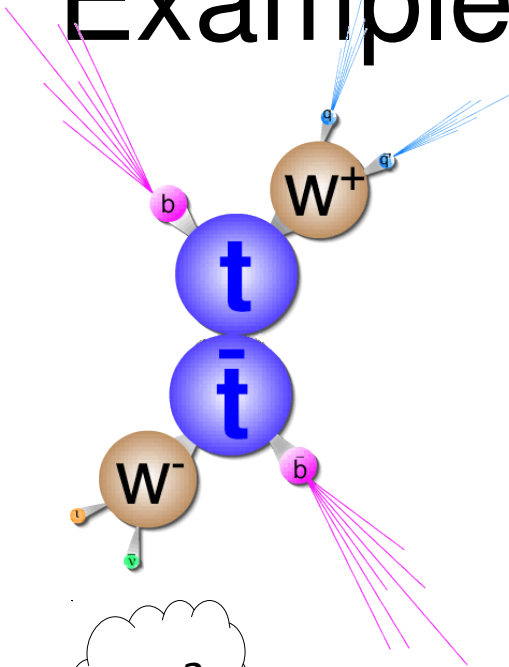
LAr electromagnetic barrel

LAr forward (FCal)

- For high accuracy of drift time → energy determination of 17000 cells, 5TBytes of datasets Raw.
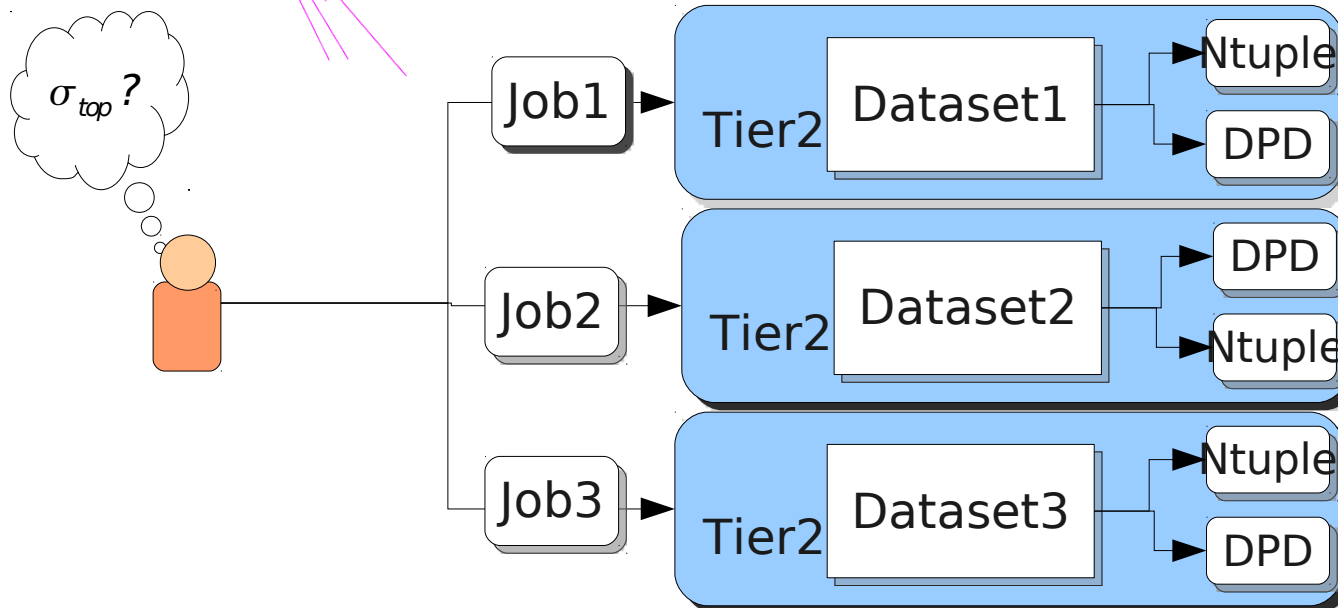
- Data transfered in 100MBytes/s (3 days, high latency)

T_{drift} ?

DaTRI

Tier1 — Dataset on TAPE (5TB)

UAM — Job → Replica on DISK → Ntuple / Ntuple

- 2000 jobs (2 hours per job).

- 200 core at UAM → 20 hours

Example2: Top physics analysis

- 80 MC AOD datasets -> need + CPU and storage

- Input 13 TB and Output (DPD y Ntuples) 1.5TB

- Jobs run 2 weeks

σ_{top} ?

Job1 → Tier2 | Dataset1 → Ntuple, DPD

Job2 → Tier2 | Dataset2 → DPD, Ntuple

Job3 → Tier2 | Dataset3 → Ntuple, DPD

Conclusions

- Receiving and storing the produced data, thanks to the high availability of its sites and the reliable services provided by the team managers

- Providing easy and quick access to these data to users

- Providing the required distributed analysis tools to allow users to use the data and produce experimental results