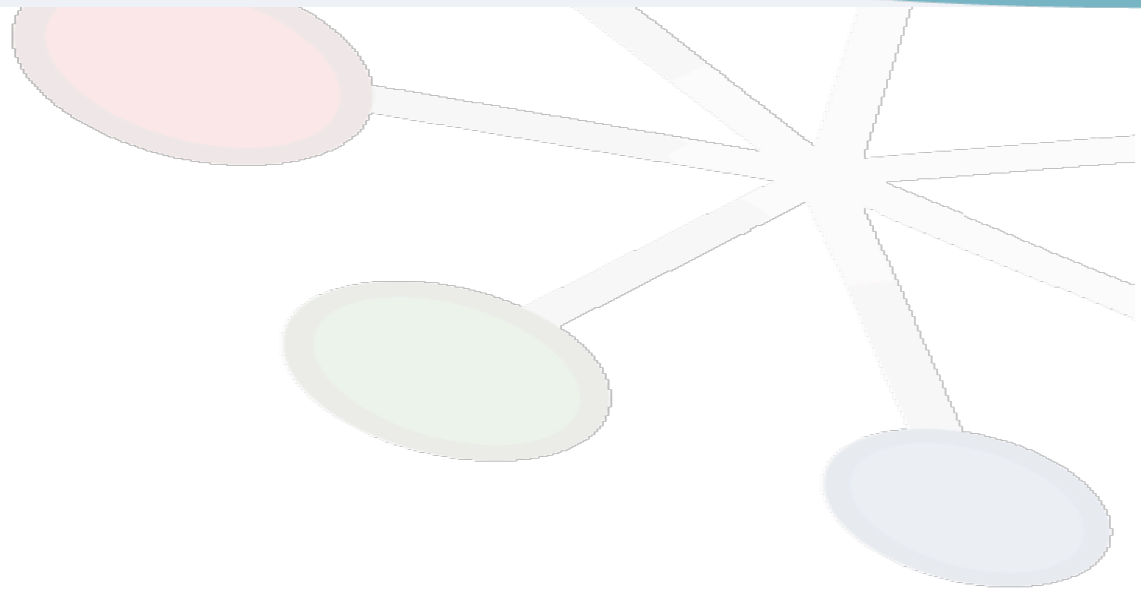




LHCb Status report to LHCC-LCG referees



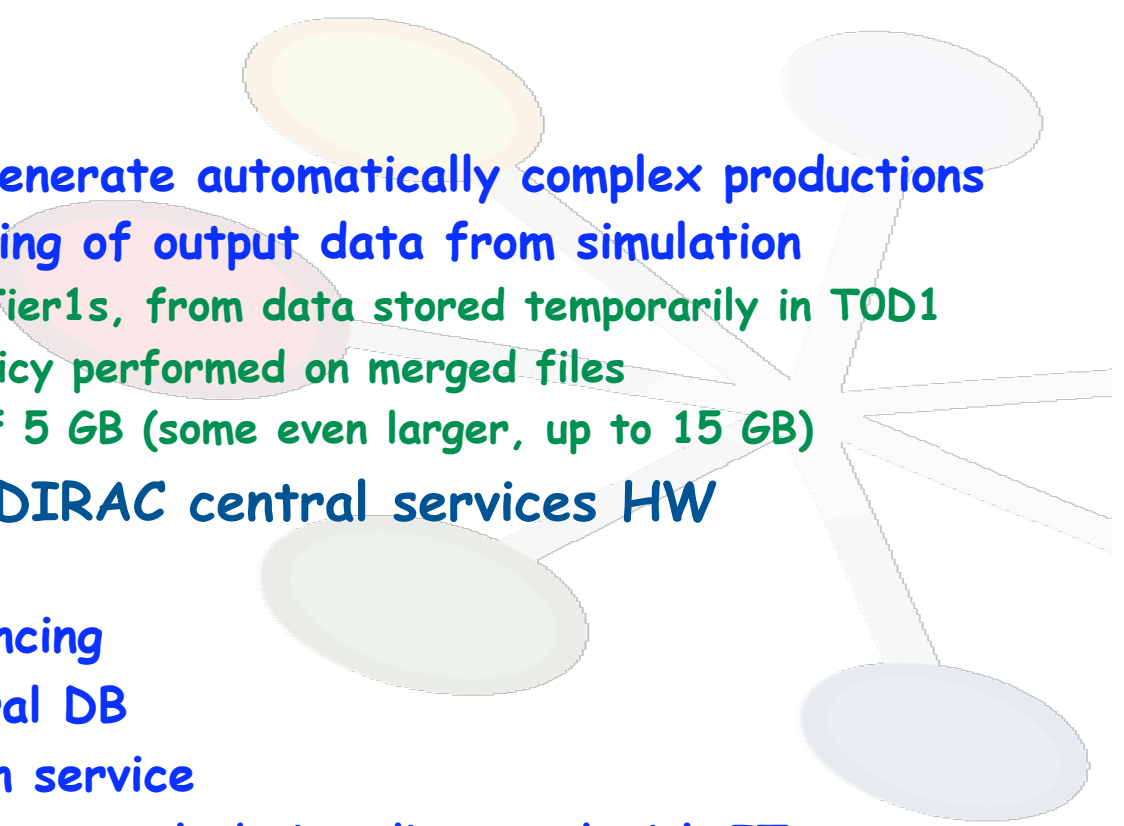


- All applications moved to latest LCG-AA releases
 - All applications support for slc5-64 bit
 - No problem with slc4 compatibility with ROOT
 - Older versions deprecated, will not be ported to slc5
 - Since September 15th, DIRAC runs natively on slc5
- Software distribution and environment setting
 - Major re-engineering of the SW distribution
 - Now used as well for Dirac client distribution
 - ☆ Relies on LCG-AA deployment of middleware
- SL(C)4 compatibility
 - Using compatibility libraries, slc4 applications run on slc5
 - All SLC5 CEs are integrated in LHCb resources



DIRAC and production system

- Many releases of DIRAC
 - Optimisation of pilot job submission
 - Web interface for production requests
 - Many bug fixes...
- Production system
 - New scripts to generate automatically complex productions
 - Systematic merging of output data from simulation
 - ☆ Performed on Tier1s, from data stored temporarily in TOD1
 - ☆ Distribution policy performed on merged files
 - ☆ Merged files of 5 GB (some even larger, up to 15 GB)
- New proposal for DIRAC central services HW implementation
 - Better load balancing
 - Failover on central DB
 - New certification service
 - Provision of HW currently being discussed with IT





- Commissioning of MC production (April-May)
 - Physics application software
 - Geant4 tuning
 - Generator and decay settings tuning
 - Completed end May
- MC09 simulation production
 - Large samples for preparing 2009-10 data taking
 - Uncertainties on LHC configuration
 - ☆ Energy, v : average number of collisions/crossing (important for b physics)
 - ☆ Chosen 5 TeV/beam (optimistic) and $v = 1$, no spill-over
 - ☆ Not so far from real foresee settings (3.5 TeV)
 - * No major simulation will be redone at 3.5 TeV
 - Samples requested
 - ☆ 10^9 events minimum bias (10^6 jobs)
 - * 28 TB (no MC truth)
 - ☆ Signal and background samples: from 10^5 up to 10^7 each



○ FEST/STEP'09

□ Data transfers: OK (70 MB/s)

- ☆ Some minor problems with Tier1 transfers

□ Data reconstruction

- ☆ Jeopardised by CondDB access: bad usage of LFC in CORAL for getting Oracle credentials

- * Moved to using sQlite snapshot
- * Now using encrypted credentials rather than LFC
- * Would like CORAL-LFC to work... being fixed

□ Re-processing

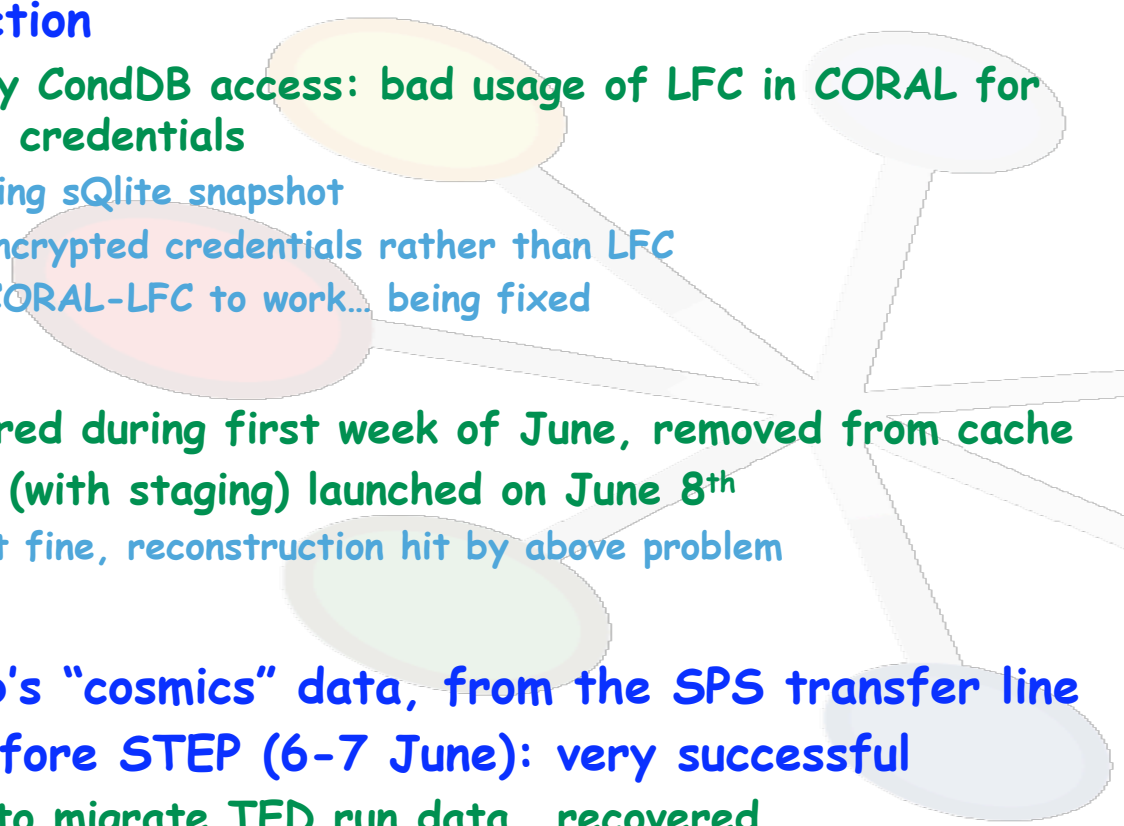
- ☆ Data transferred during first week of June, removed from cache
- ☆ Re-processing (with staging) launched on June 8th
 - * Staging went fine, reconstruction hit by above problem

○ TED run

□ These are LHCb's "cosmics" data, from the SPS transfer line

□ Run WE just before STEP (6-7 June): very successful

- ☆ Castor failed to migrate TED run data... recovered
- ☆ Next TED run in October



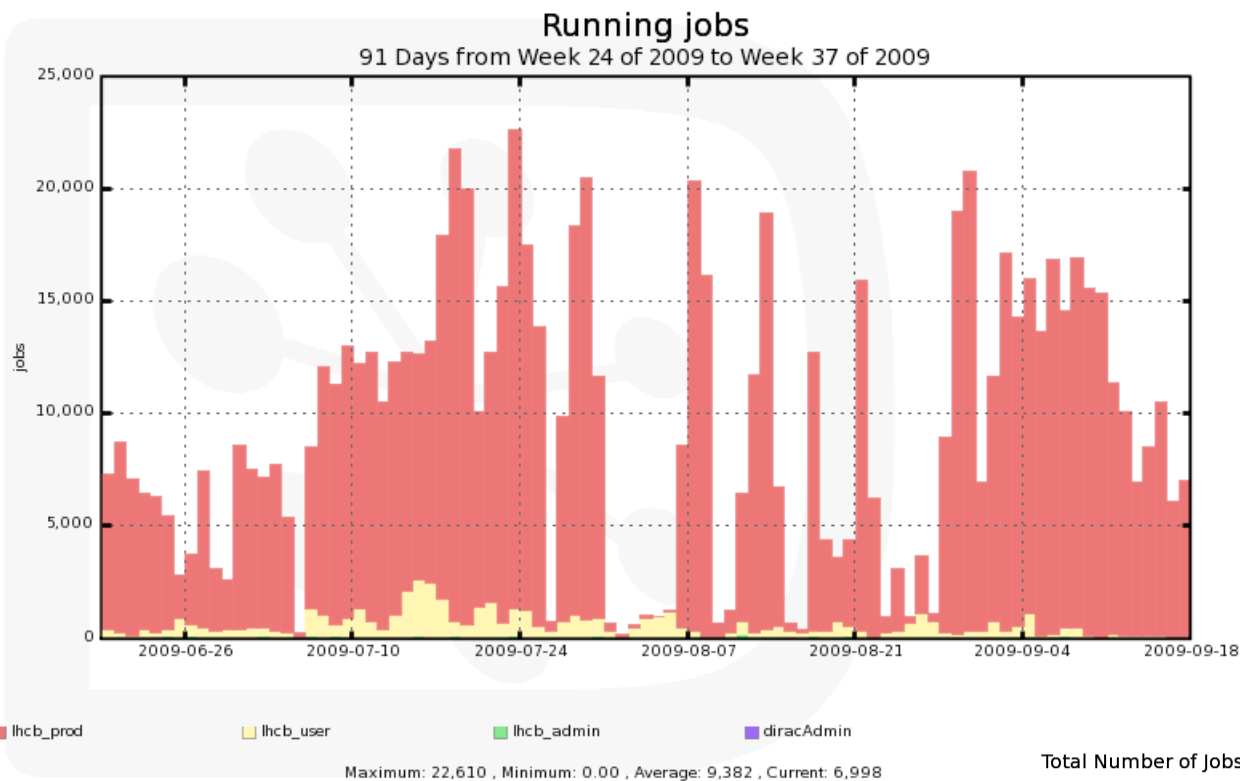


- Data management problems
 - File locality at dCache sites
 - ☆ "Nearline" reported even after BringOnline
 - SRM overloads
 - gsidcap access problem (incompatibility with ROOT plugin)
 - ☆ Fixed by quick release of dcache_client (and our deployment)
 - SRM spaces configuration problems
 - ☆ Fixed at site, need for a migration of files
 - Massive files loss at CERN
 - ☆ 7,000 files definitely lost (no replicas anywhere else)
 - ☆ Others could be located and replicated back to CERN
- DIRAC scalability
 - Improved by redistribution of services (VOBoxes at CERN)
 - Running over 20,000 jobs concurrently on over 100 sites
- Software distribution
 - In many cases, local SW repository is unreliable or non-scalable...
 - ☆ Causes jobs to crash all at once I_09



Production and user jobs

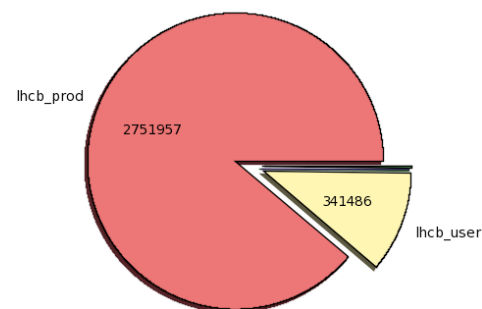
LHCb STATUS REPORT



Since June:

- Over 3 million jobs
- 11% are analysis jobs

Total Number of Jobs by UserGroup (Sum: 3098374)



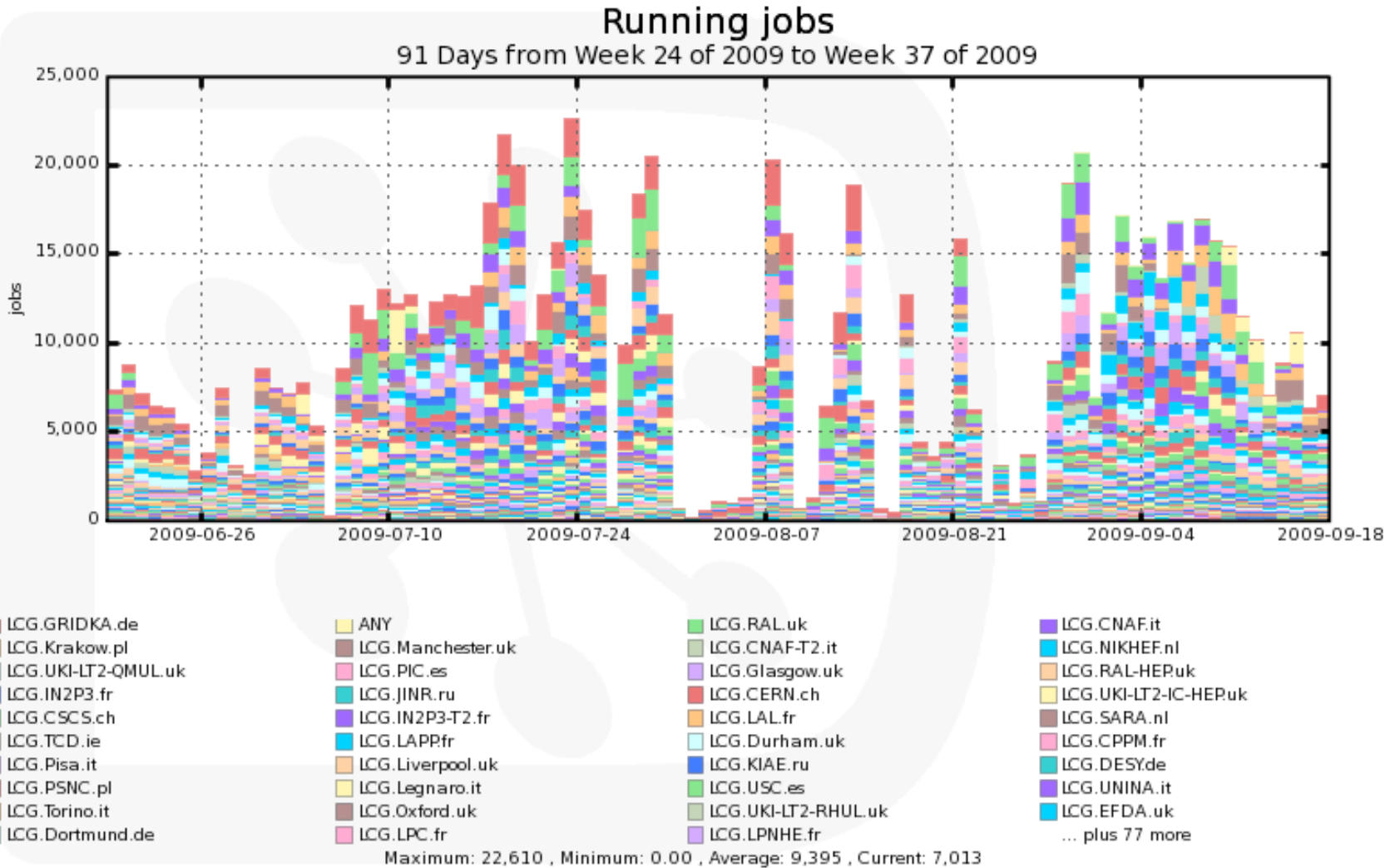
lhcb_prod (2751957) lhcb_user (341486) lhcb_admin (4911) diracAdmin (20)





Used sites

LHCb STATUS REPORT



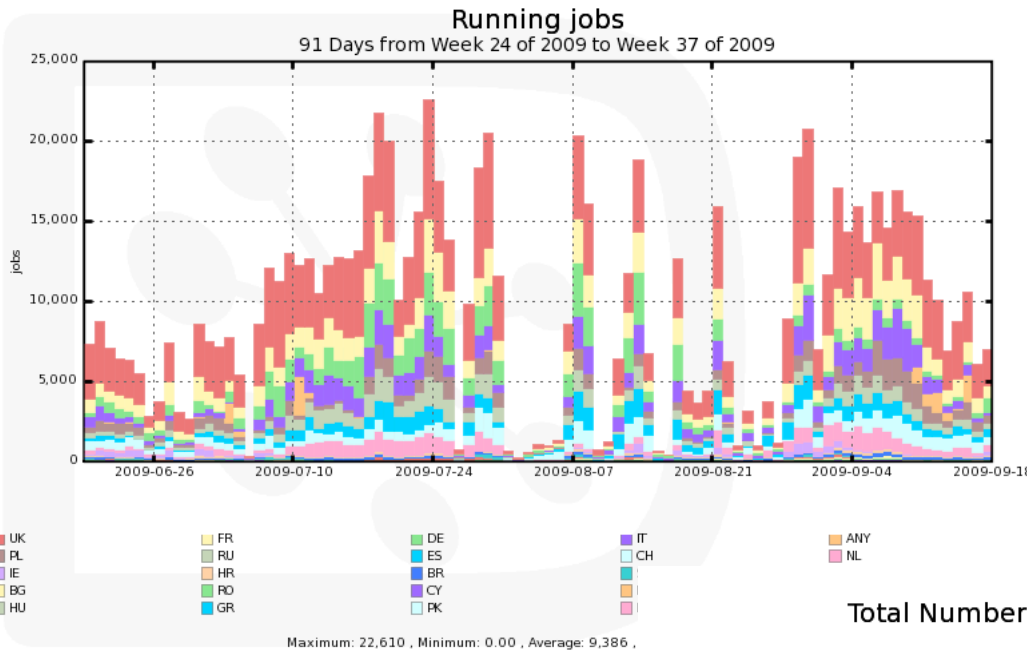
116 sites hit



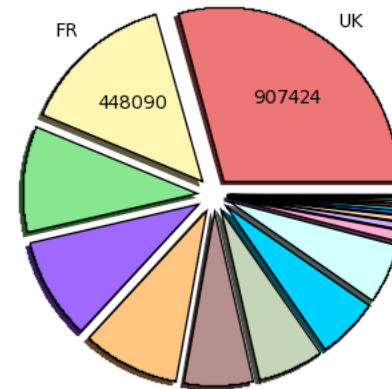


Countries' contribution

LHCB STATUS REPORT



Total Number of Jobs by Country (Sum: 3098726)



23 countries

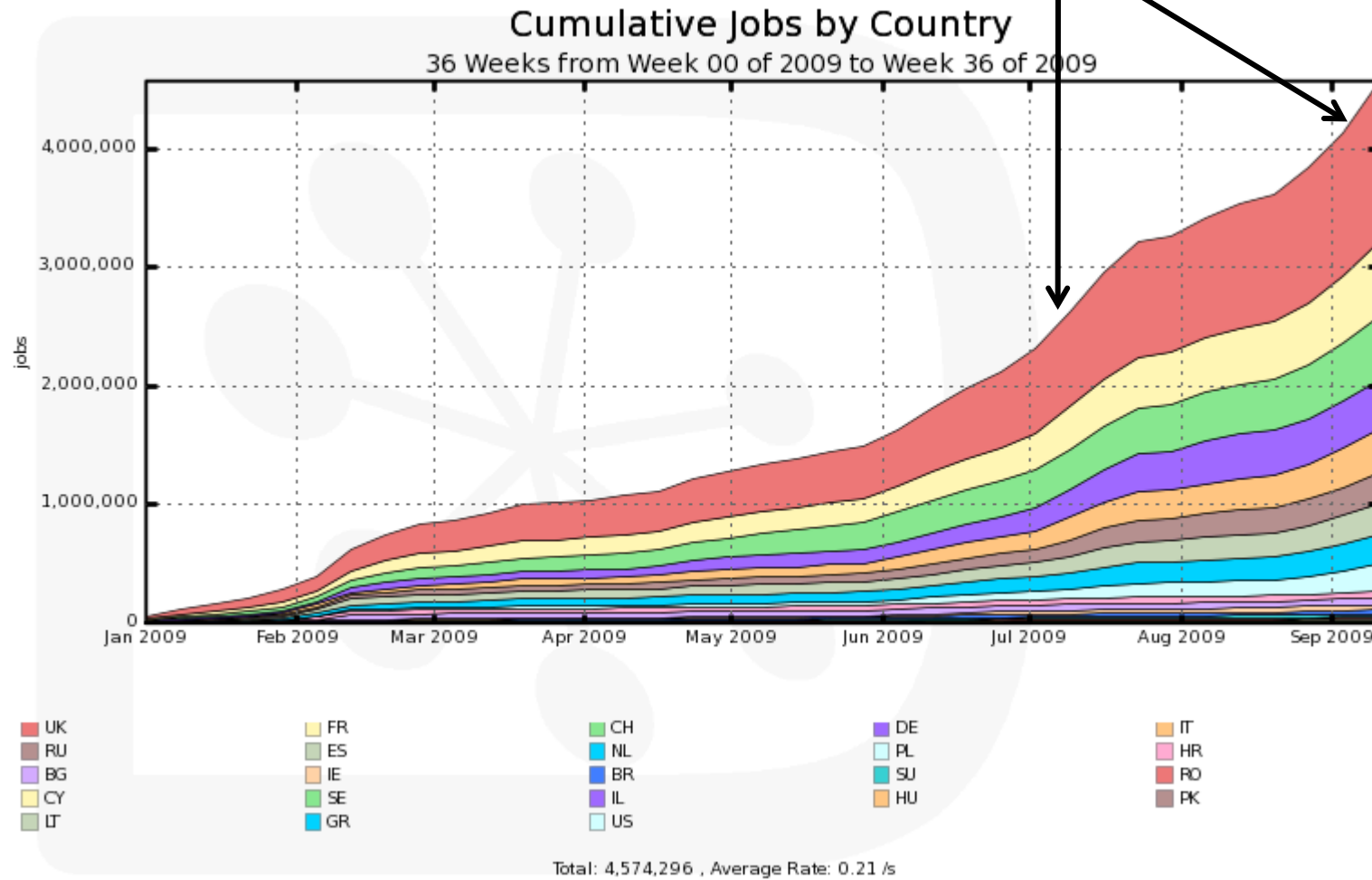
UK (907424)	FR (448091)	CH (306670)	DE (295714)	IT (279940)
RU (197446)	PL (190444)	NL (175166)	ES (173662)	IE (323240)
HR (20137)	BR (18843)	SU (115231)	SE (102231)	CY (93388)
BG (9046)	RO (6670)	IL (4193)	PK (670)	HU (609)
GR (425)	LT (170)			



Jobs run in Q2

Over 45,000 jobs /day

LHCB STATUS REPORT

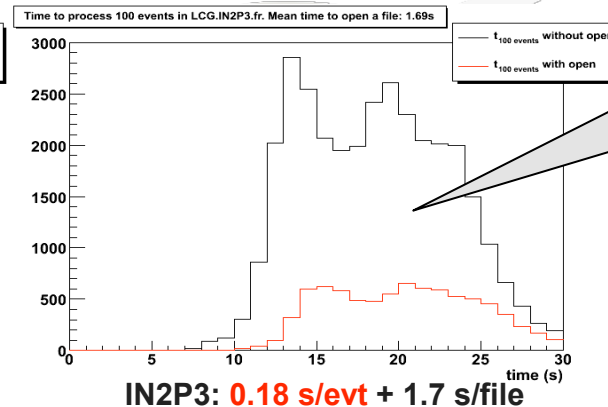
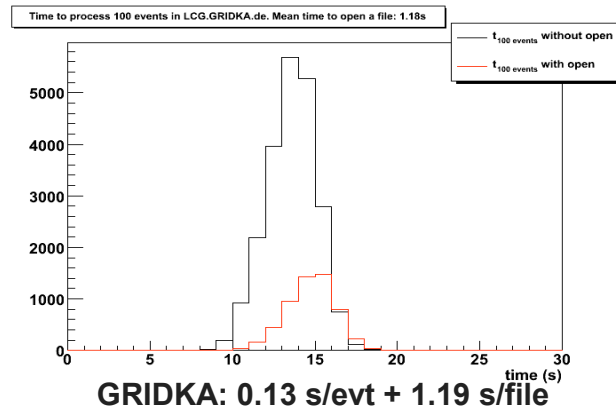
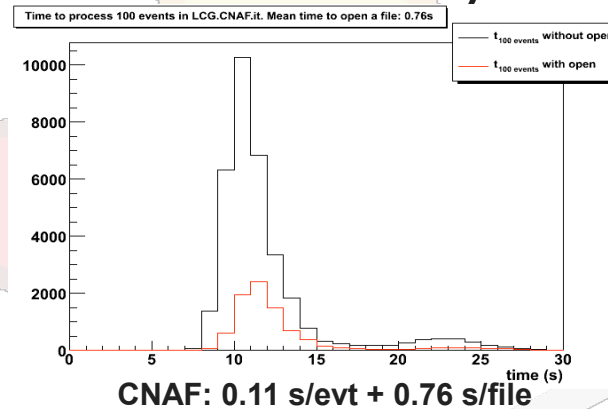




- Goal: improve data access for analysis
- Presented at the May GDB (R.Graciani, A.Puig, Barcelona)

Results (Detail Performance)

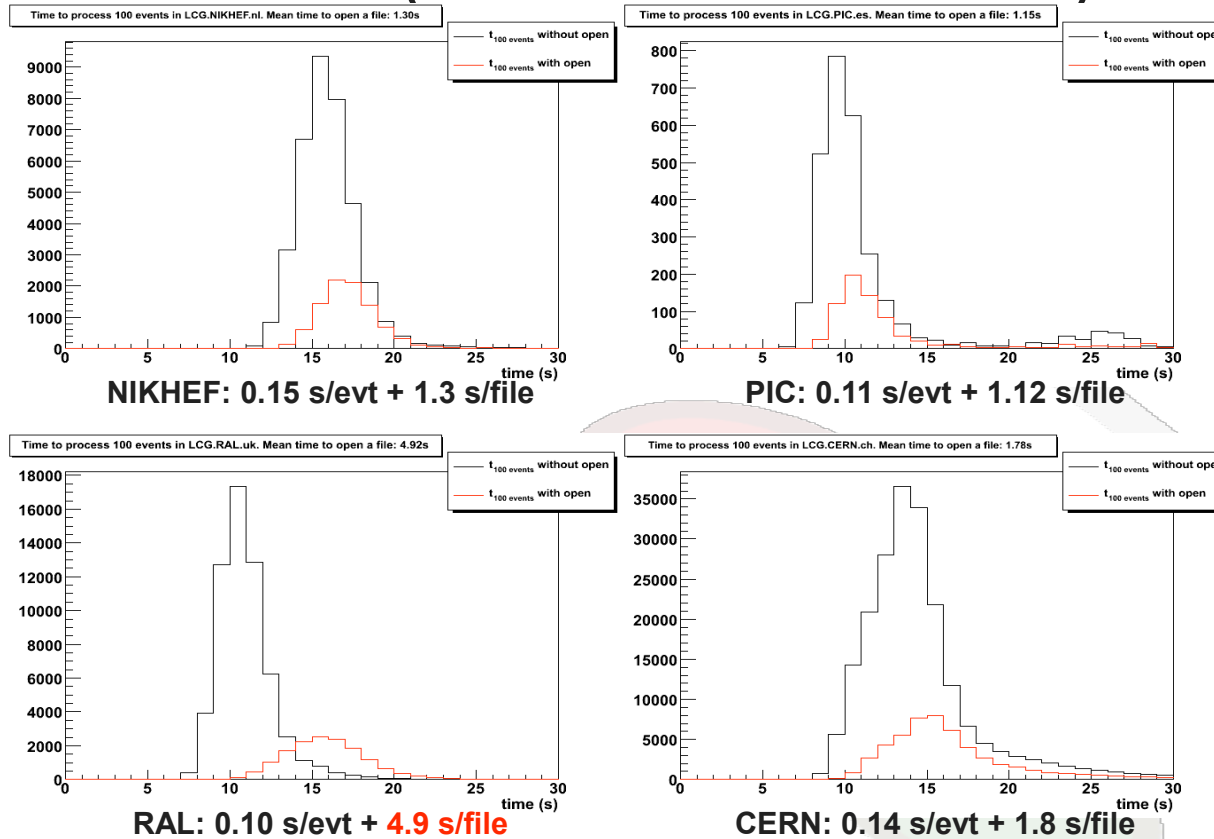
- Distribution of Wall Clock time to process 100 consecutive events.
- **Distribution of Wall Clock time to process 100 consecutive events including a new file opening.**
- The difference of the means represents the file opening time.



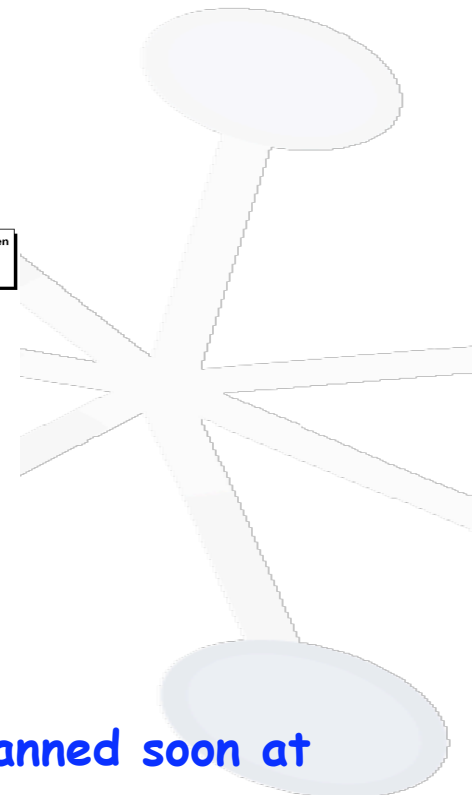
Understood feature
(2 sets of WNs)



Results (Detail Performance)



- File opening time is non-negligible
 - Would benefit from xrootd access (tests planned soon at CERN)
 - Sites should upgrade to latest SE (e.g. RAL to Castor 2.1.8)





- New requirements presented to CRSG and LHCC

- April to July
- Valid for 6 months after date

- CRSG report

- Thanks to the reviewers for their effort in reproducing our numbers...
- LHCb will carefully review the evolution of resource usage when first data come
- LHCb will fully critically review the Computing Model during the first shutdown

- October 2009 resources

- Sites got the disk spaces breakdown
- Waiting for CPU pledges to be in place
- Look forward to full provision of 2010 CPU resources in April
 - ☆ Disk capacity can be ramping up during the year...

		CPU(kHS06)	Disk(TB)	Tape(TB)
	CERN	15	720	1000
Oct'09	Tier-1	31	1740	1000
	Tier-2	31	20	0
	CERN	21	1290	1500
Apr'10	Tier-1	41	3290	1800
	Tier-2	36	20	0
	CERN	23	1290	1800
Oct'10	Tier-1	44	3290	2400
	Tier-2	38	20	0



- Preparation of 2009-10 data taking is going on
 - Simulation running full steam
 - FEST regular activities (HLT, transfer, reconstruction)
- DIRAC consolidation
 - More redundancy and scalability
 - Working on HW setup
- Issues
 - Migration to slc5 completed
 - Still frequent data management issues (configuration, SW, data loss)
 - Regular analysis performance tests are being put in place
 - ☆ Using ganga robot
- Outlook
 - Continue simulation and analysis of MC
 - Run regular FEST tests (full chain)
 - LHCb will be ready when first collisions come

