



**IBERGRID**

**4th** IBERIAN GRID INFRASTRUCTURE CONFERENCE, BRAGA, PORTUGAL, MAY 24 - 28, 2010



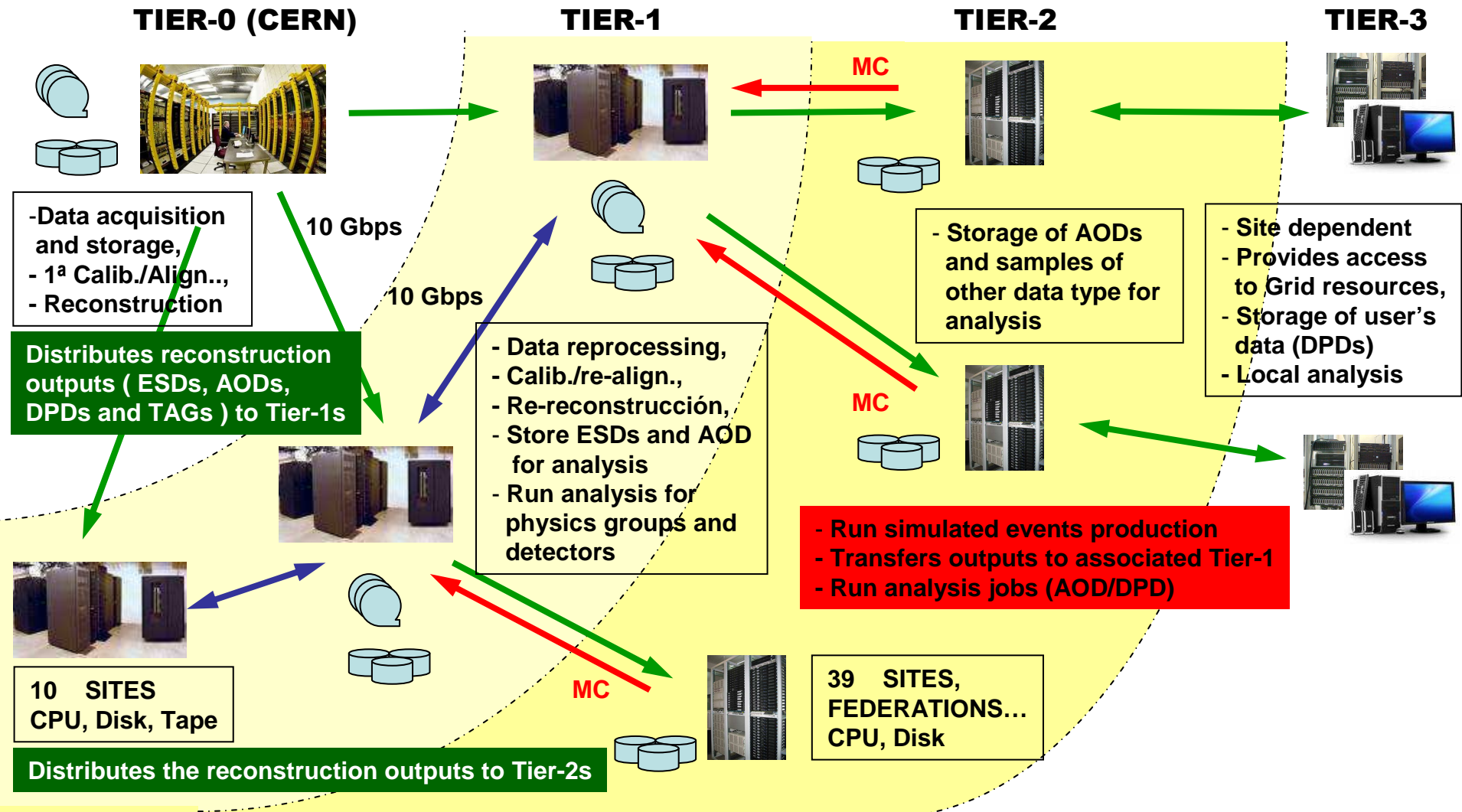
## CONTRIBUTION OF THE IBERIAN GRID RESOURCES TO THE PRODUCTION OF SIMULATED PHYSICS EVENTS FOR THE ATLAS EXPERIMENT



**M. KACI**  
**IFIC - Valencia**  
**for the Atlas Iberian Collaboration**

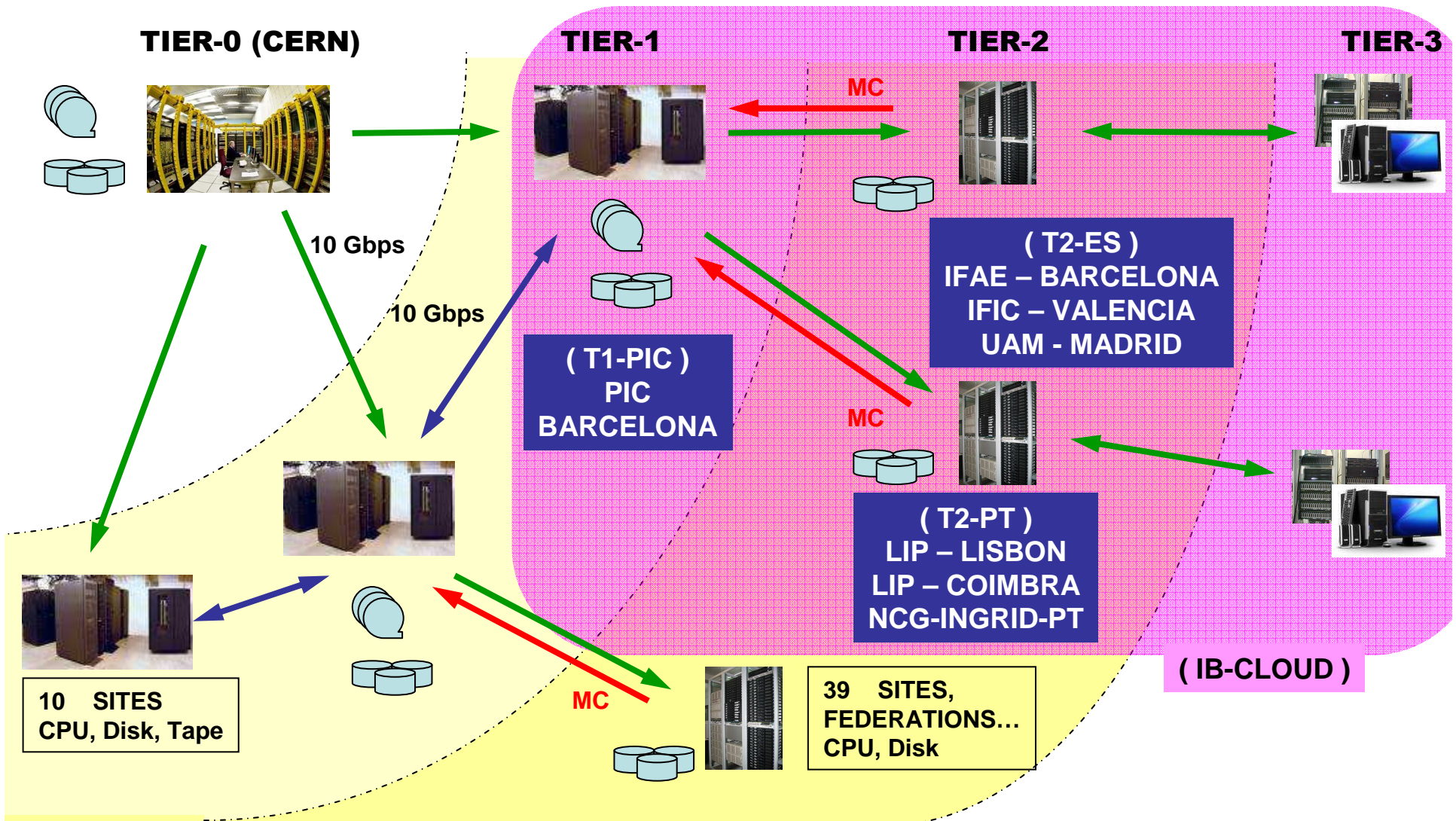


### THE ATLAS HIERARCHICAL COMPUTING MODEL



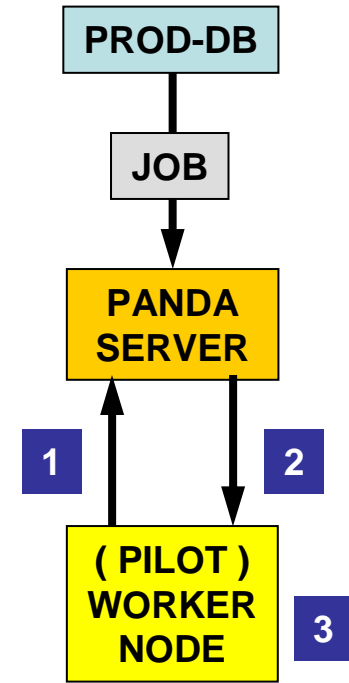
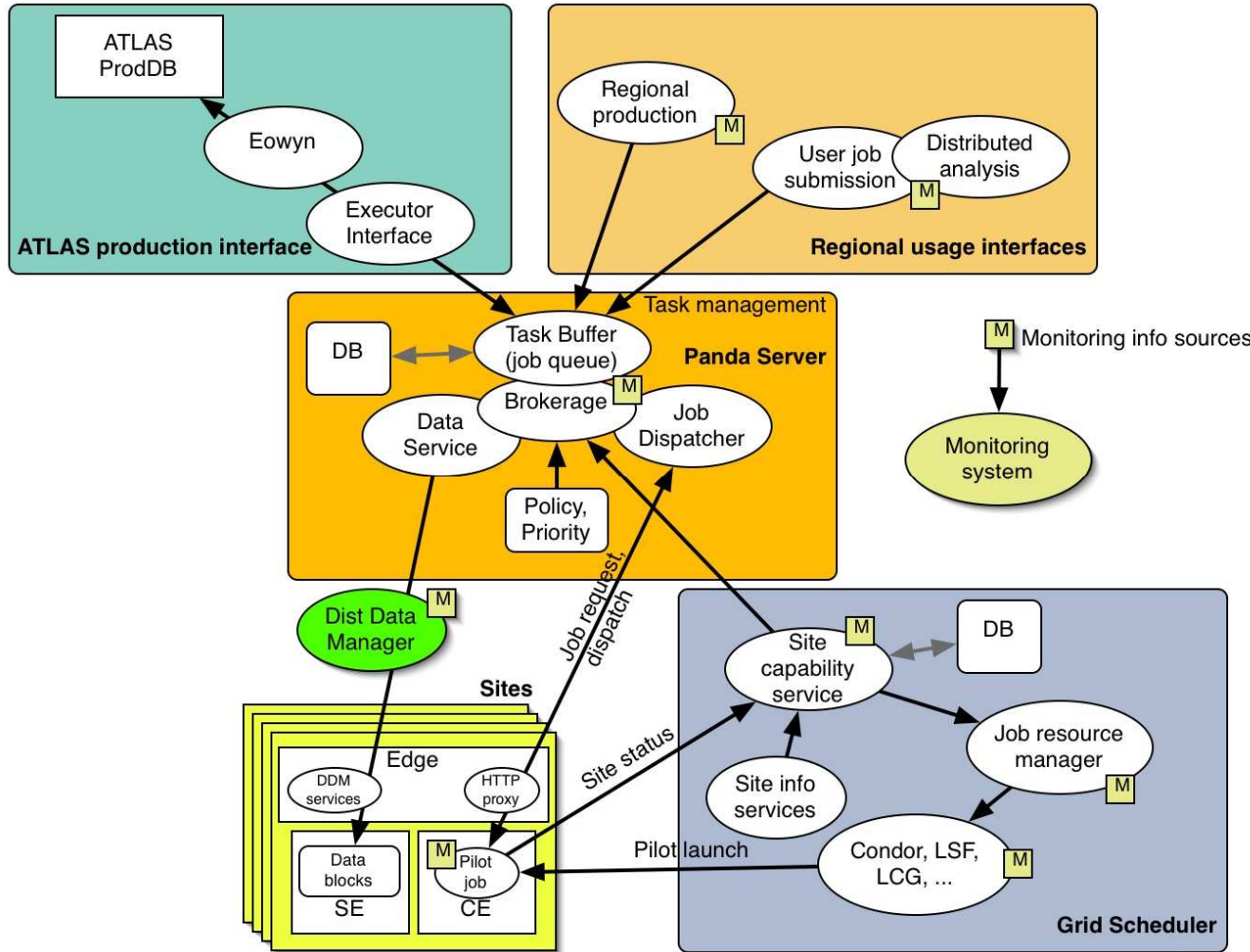


## THE ATLAS IBERIAN CLOUD





# THE ATLAS DISTRIBUTED PRODUCTION SYSTEM : PANDA

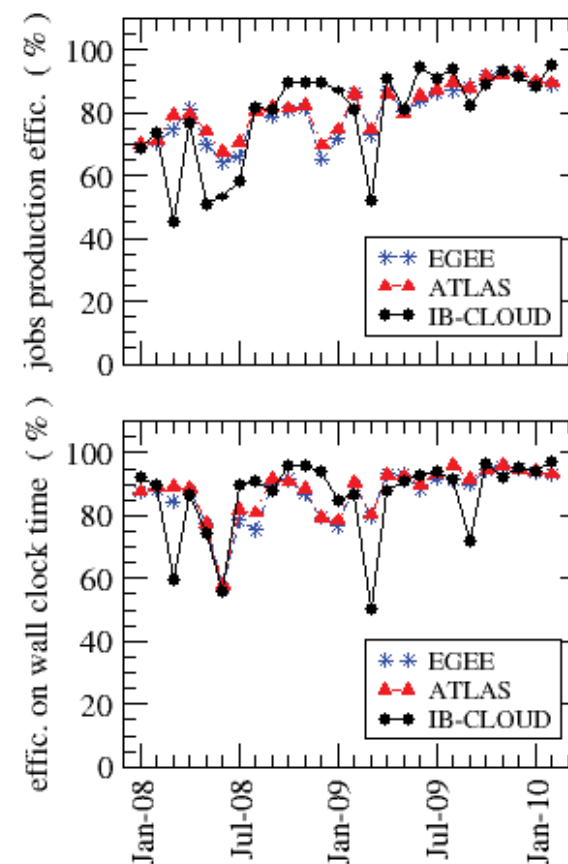
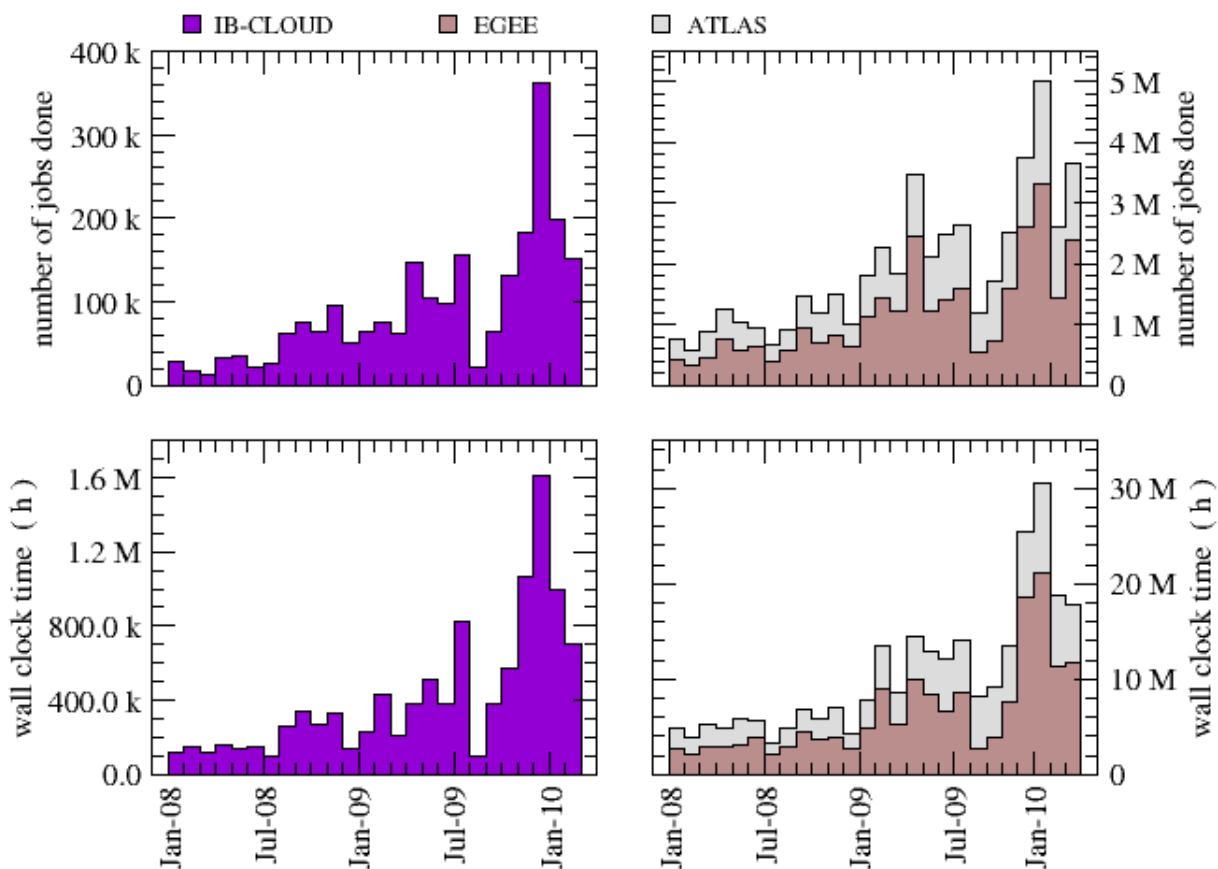


Pilot runs on a Worker Node

- 1** Pilot send a Request
- 2** Pilot receives a Job
- 3** Pilot runs the Job



### THE CONTRIBUTIONS OF THE IB-CLOUD TO ATLAS ( I )

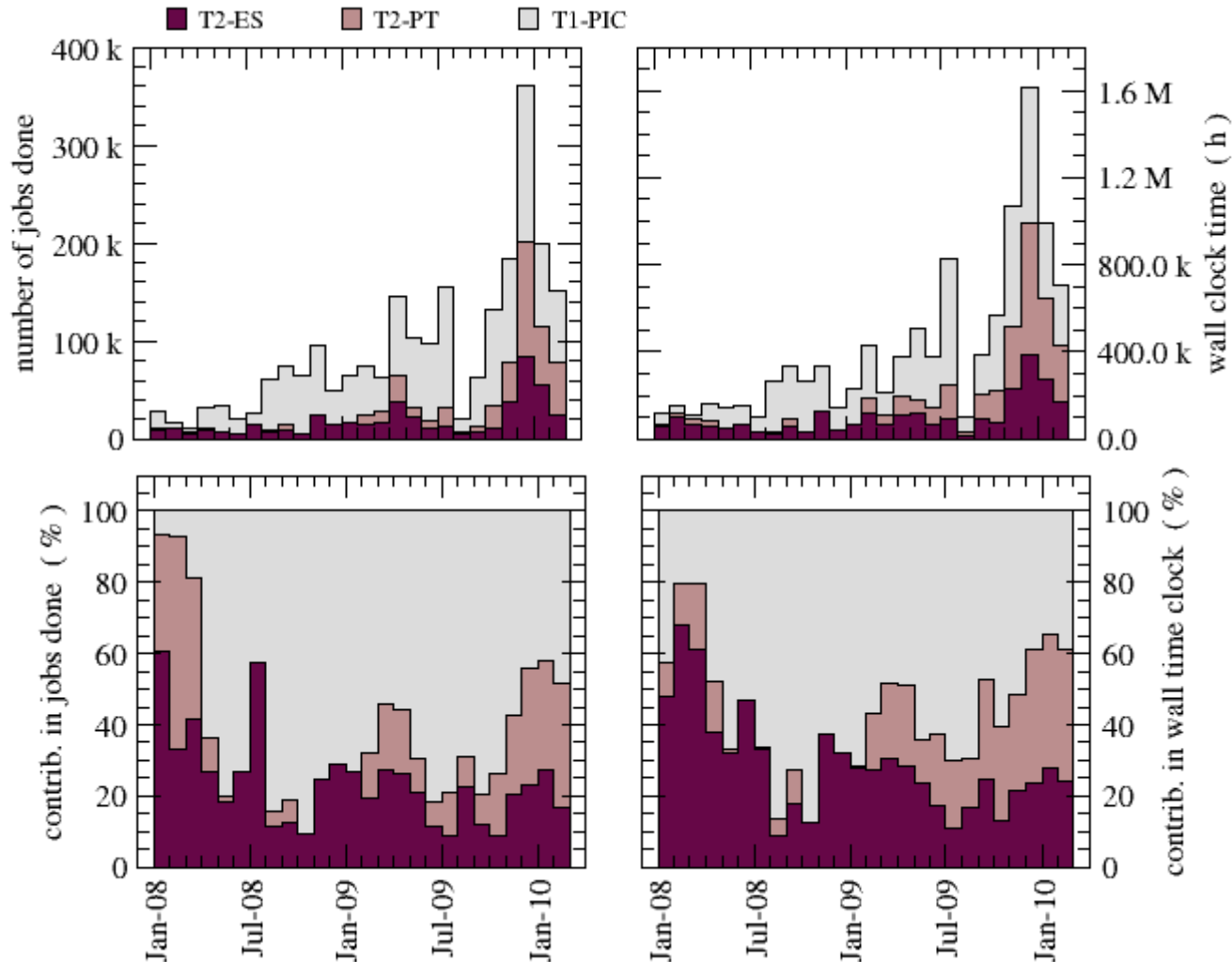


**IB-Cloud, ATLAS and EGEE show the same trend:  
 IB-Cloud is contributing continuously quite proportionally  
 43k Jobs per month in 2008, 122k Jobs in 2009, and during  
 Oct-2008 to Feb-2009: more than 1 million Jobs**

**IB-Cloud efficiencies are similar  
 to those of ATLAS and EGEE,  
 except in a couple of months...**



## THE CONTRIBUTIONS OF THE IB-CLOUD TO ATLAS ( II )



The simulated physics events production activity is dominated by that of T1-PIC over the two years

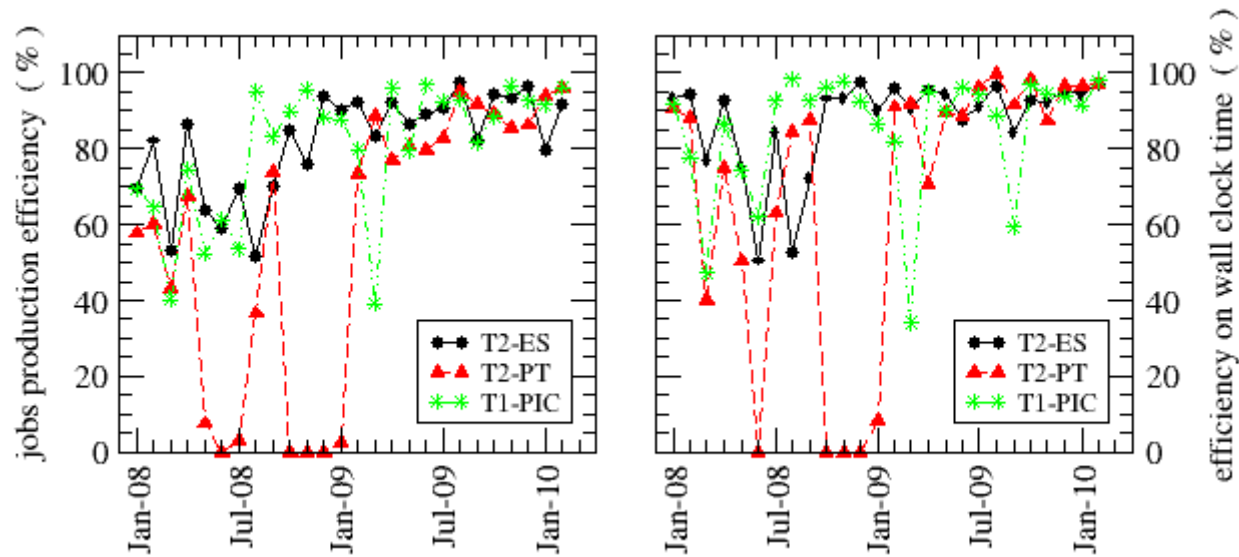
Globally, T2-ES and T2-PT contribute quite equally to the simulation activity within the IB-Cloud

Downtimes for T2-PT around January 2009

Integration of NCG-PT since October 2009



### THE CONTRIBUTIONS OF THE IB-CLOUD TO ATLAS ( III )



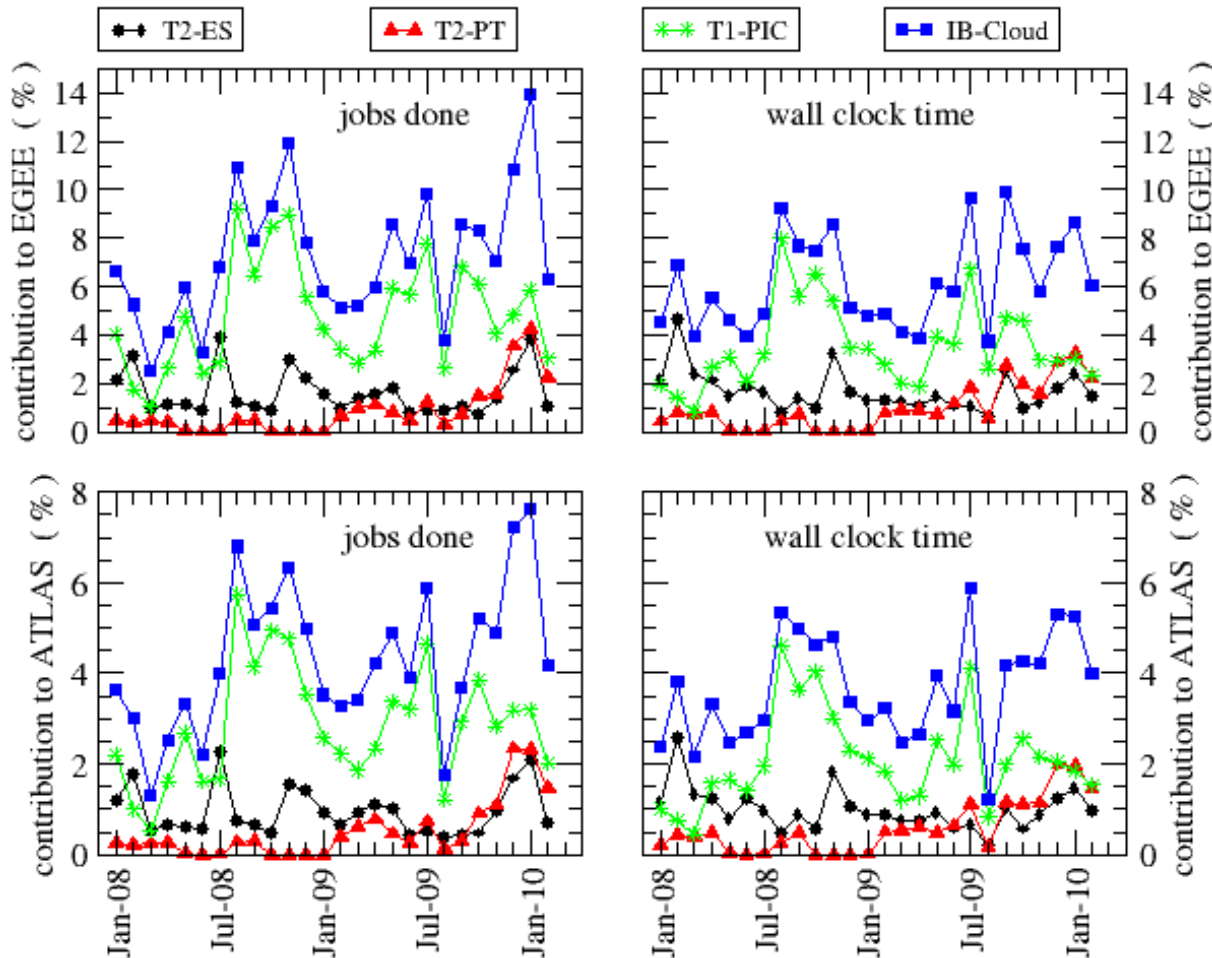
**As a general observation, Walltime efficiencies are better than Jobs efficiencies**

**Efficiencies are fluctuating a lot during 2008 then seem to stabilize in 2009**

**During Oct-2009 to Feb-2010 Jobs efficiency = 90% and Walltimes efficiency = 95%**



### THE CONTRIBUTIONS OF THE IB-CLOUD TO ATLAS ( IV )



The measured contributions fluctuate with time :

**JOBS:**  
 Peaks reaching  
 IB-Cloud / EGEE = 12% - 14%  
 IB-Cloud / ATLAS = 8%

**WALLTIMES:**  
 Peaks reaching  
 IB-Cloud / EGEE = 10%  
 IB-Cloud / ATLAS = 6%

T1-PIC contributes more than T2-ES and T2-PT ( and more in Jobs than in Walltimes)

Since NCG-PT joined T2-PT ( octobre 2009 ) the contribution of T2-PT is higher than that of T2-ES





**THE CONTRIBUTIONS OF THE IB-CLOUD TO ATLAS ( V )**

**Increm.  
from 2008  
to 2009**

Number of Jobs	2008	2009	2010 (*)
IB-Cloud	5.1x10 <sup>5</sup> ( 75.3% )	1.5x10 <sup>6</sup> ( 86.8 % )	3.5x10 <sup>5</sup> ( 91.4% )
EGEE	7.2x10 <sup>6</sup> ( 74.0% )	1.9x10 <sup>7</sup> ( 86.3 % )	3.8x10 <sup>6</sup> ( 88.7% )
ATLAS	1.2x10 <sup>7</sup> ( 76.2% )	3.1x10 <sup>7</sup> ( 86.3 % )	6.2x10 <sup>6</sup> ( 89.7% )
IB-Cloud / EGEE	7.2 %	7.6 %	9.2 %
IB-Cloud / ATLAS	4.2 %	4.8 %	4.6 %

**185%  
167%  
154%**

Walltimes	2008	2009	2010 (*)
IB-Cloud	2.3x10 <sup>6</sup> ( 84.5% )	6.7x10 <sup>6</sup> ( 88.8 % )	1.7x10 <sup>6</sup> ( 95.4% )
EGEE	3.7x10 <sup>7</sup> ( 80.5% )	1.1x10 <sup>8</sup> ( 91.5 % )	2.3x10 <sup>7</sup> ( 93.3% )
ATLAS	6.2x10 <sup>7</sup> ( 82.5% )	1.7x10 <sup>8</sup> ( 92.0 % )	3.7x10 <sup>7</sup> ( 93.8% )
IB-Cloud / EGEE	6.2 %	6.3 %	7.3 %
IB-Cloud / ATLAS	3.7 %	4.0 %	4.6 %

**194%  
185%  
172%**



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## SUMMARY AND CONCLUSION

**As the LHC starts operating just few months ago and ATLAS is collecting its first data, it is a good time to make a review about the use of the Iberian infrastructure and also show the usefulness of the distributed computing in ATLAS.**

**This work aimed at showing a quantitative analysis of the performance of the Iberian Grid resources, through the simulation production activity in ATLAS, which provide not only a snapshot of the existing capabilities but also a main trends associated with the iberian computing infrastructure.**

**The response of the iberian infrastructure to the ATLAS distributed production system for simulated events production is at least as good as the response of the global ATLAS resources.**

**In the future, it will be interesting to follow the potential impact of the iberian computing resources as soon as full operation of LHC starts.**



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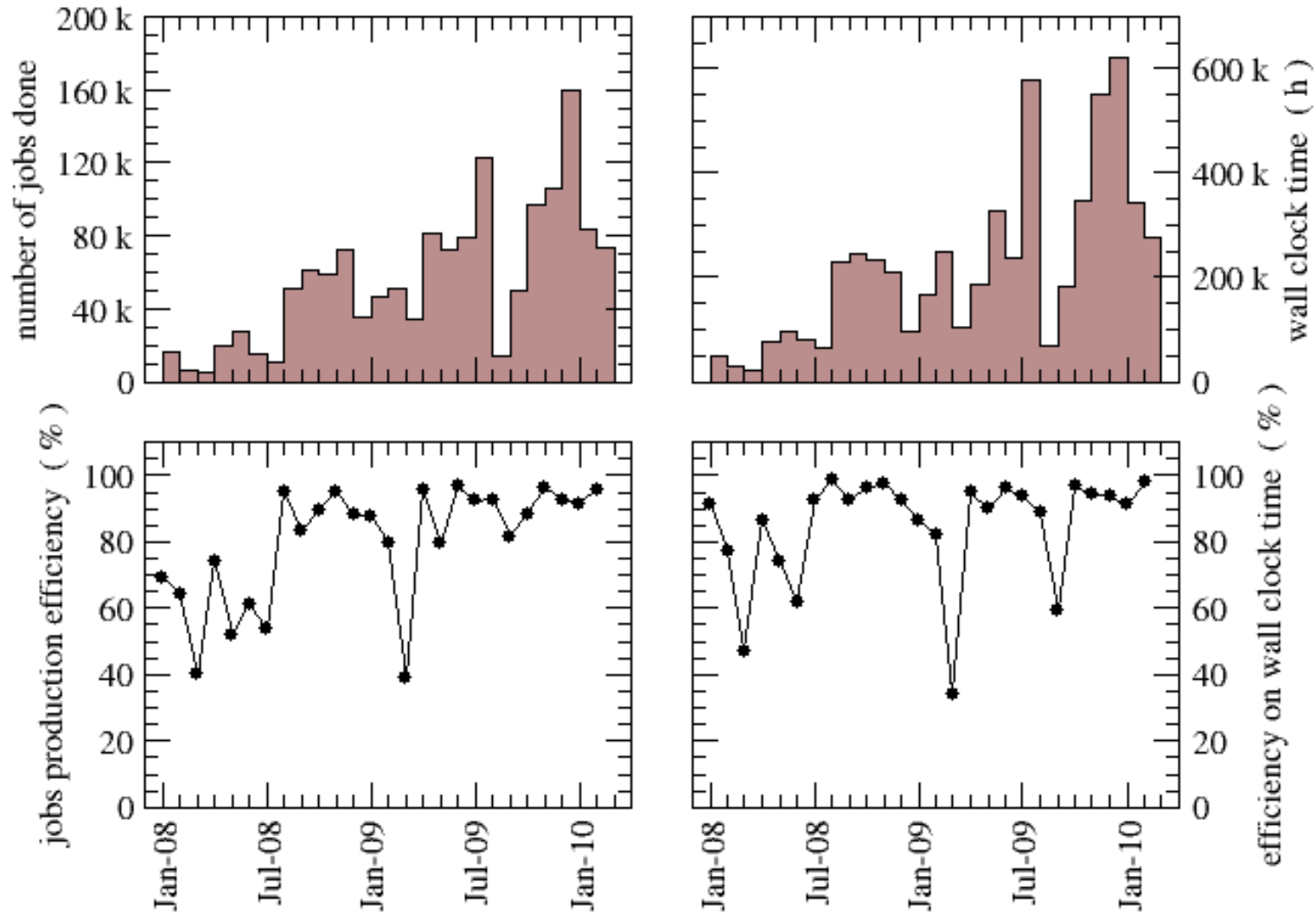
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**BACKUP SLIDES**

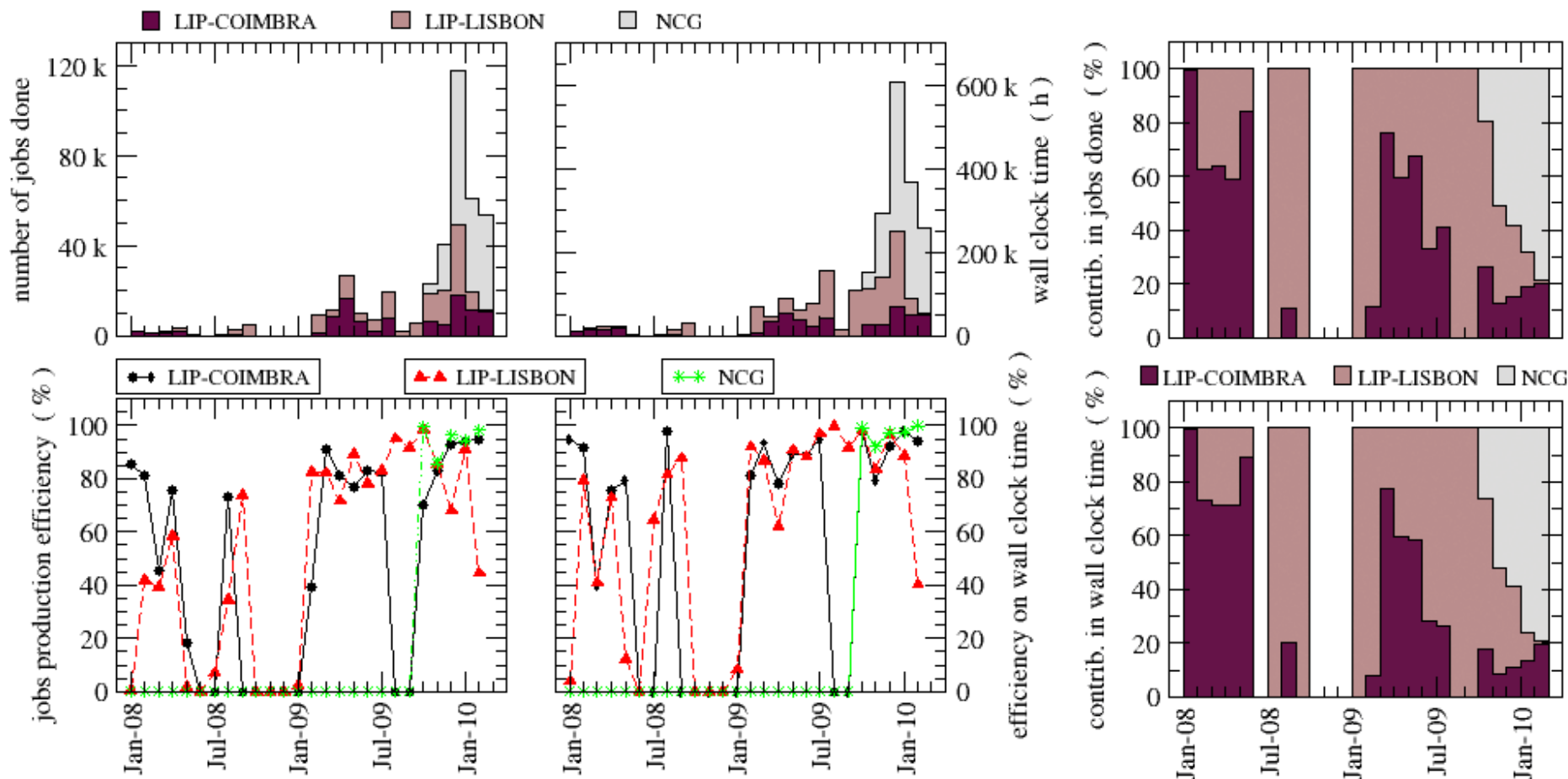


### THE SIMULATED PHYSICS EVENTS PRODUCTION AT T1-PIC





### THE SIMULATED PHYSICS EVENTS PRODUCTION AT T2-PT





### THE SIMULATED PHYSICS EVENTS PRODUCTION AT T2-ES

