Pledged and Unpledged Resources at ATLAS

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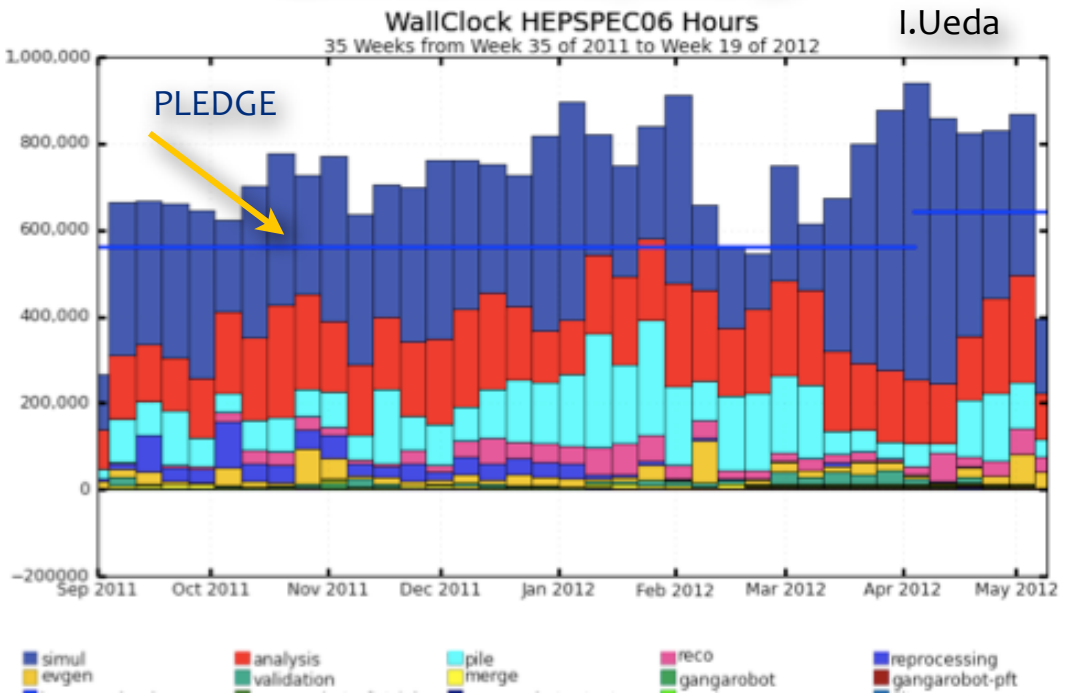
Optimizing the Use of (Over)Pledged Resources

- ATLAS has shown to be efficient at using all the CPU available resources:
  - We made use of all CPU resources (pledged and unpledged) available to us:

ATLAS Computing Usage Report for 2011 (March 2012)

	Location	Predicted	Utilizable disk	Actual
CPU [kHS06]	CERN	74		82
	Tier-1	202	→	244
	Tier-2	275		405

CERN+Tier-1+Tier-2 (no Tier-3)



- The major activity is the MC production, but to stress the point (again) this is not a 'Grid Warming' activity:
  - More MC -> more Physics results
  - We under-estimated our needs in 2011
- User and Group analysis also important contributors in critical periods.

- A computing task of performing MC digitization and reconstruction (with trigger simulation) is the most complex computing and software operation in ATLAS.

Critical Periods

- While the ATLAS grid activity is (mostly) filling the grid resources in full in 2011/2012 there are periods when **throughput is essential** , mainly before the big conferences or special events (e.g. December 2011 CERN Council Higgs results).
  - In such instances ATLAS asks sites for more (unpledged) CPU resources...
  - ...while we are also aiming for optimizing the throughput by introducing as much **flexibility** as possible:
    - Use of 'Tier-3s'.
    - Developments are taking place to use Cloud capacities and e.g. opportune resources (diskless clusters...).
    - Spill-over of MC digitization and reconstruction from Tier-1s to powerful Tier-2s.
    - Optimizing the data placement and dynamic replication.
  - ... and we are also updating our monitoring to take our new features into account.
    - Does REBUS accounting need modifications as well?
- Feedback/suggestions from sites on how to improve on this further to solve critical 'congestions' is very welcome.