Status of the DESY Grid Centre

Closed Session Annex

Volker Guelzow & the Grid Crew
DESY IT
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HELMHOLTZ ASSOCIATION

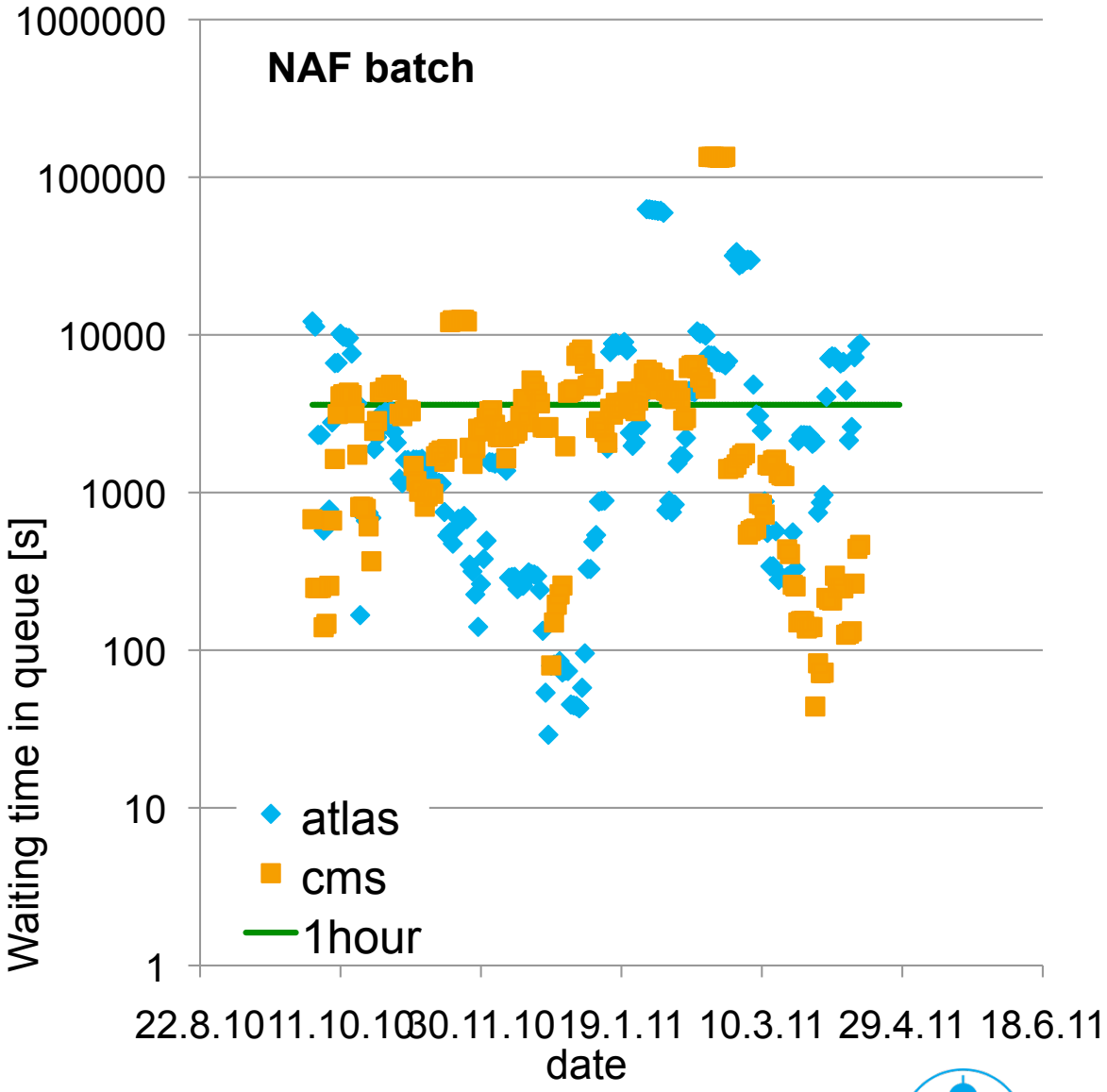
DESY

NAF: Current open questions and discussions

- Requests from the user community
  - Increase stability and reliability of NAF AFS
  - Lustre management tools (group quotas, old-file-deletion, synchronization with dCache)
  - Interactive and graphical software stack, faster X-access (other protocols like NX)
  - Install CernVM-FS for experiment software (NAF&Grid)
- NAF provider view:
  - Many of these requests make sense, and we think could be useful
  - Some requests are very difficult: e.g. Lustre product has deficiencies and lacks features
  - Other requests have to be discussed because of lack of manpower or are difficult to integrate into current NAF setup as targeted to a national community
- Currently 2 FTE to run NAF, 4 FTE are needed for production, support & constant further evolvement
- ~ 300-400 k€/year from basic funding

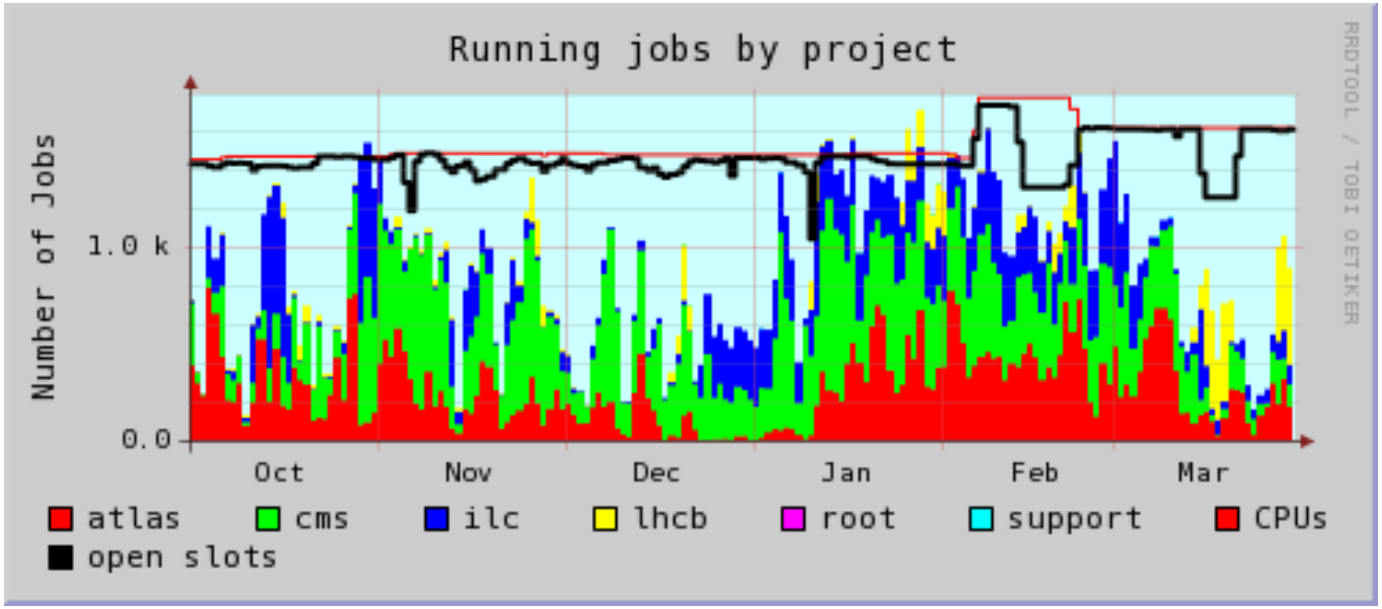
Average waiting time from job submission to job start @NAF

- waiting time per job: Running average over one week
  - ATLAS and CMS
- Mostly below under one hour, sometimes over
- … sizing of the NAF OK



NAF parameter

- Size of the NAF: ~ 1 Tier 2 with special adaptions for interactive use
- Interactive System requires waiting times less than 1 hour for batch
- Fast disks and high I/O rates, large memory(>=4 GB/core)
- Fast filesystems
- Tier 3 features



T2 requirements for Germany

	2011 CPU [HS06]	2012 CPU [HS06] SRC	2013 CPU [HS06] SRC	2011 Disk [TB]	2012 Disk [TB] SRC	2013 Disk [TB] SRC
Atlas Total T2	278000	295000	315000	34200	47000	53000
CMS Total T2	319500	350000	350000	19900	26000	26000

Worldwide requested by the experiments
(source: CRRB April 2011)

	CPU2011	CPU 2012	CPU 2013	Disk 2011	Disk 2012	Disk 2013
Atlas	27800 HS	29500 HS	31500 HS	3420 TB	4700 TB	5300 TB
CMS	23960 HS	26300 HS	26300 HS	1490 TB	1950 TB	1950 TB
Per centre:						
Av. Atlas	9300 HS	10000 HS	10500 HS	1240 TB	1560 TB	1800 TB
Av. CMS	12780 HS	17600 HS	17600 HS	1000 TB	1300 TB	1300 TB

Resulting requirements for Germany (Atlas 10%, CMS 7,5%)

DESY

Required T2 Resources invest

- Basic Factors: 1 HepSpec06 including Rackspace, Network, Infrastructure costs 26€ (2011) Invest, est.: 20€ (2012)
- Storage: 400$/TB (2011) including space, network, infrastructure
- lifetime for CPU: 3 years, storage: 5 years
- For calculation: increase + 3 (5) year depreciation

	2011[€]	2012[€]	2013[€]
Atlas cpu	312.000	290.000	220.000
Atlas disk	720.000	760.000	600.000
CMS cpu	364.000	260.000	160.000
CMS disk	376.000	320.000	240.000

Invest needed for Germany in total

Required T2 Resources Power Consumption

- Basic Factors: Energy in newest technology: 26W/TB online; 2,5 W/HS06 (CPU) including cooling
- 0.11€/kWh -> 1000 €/kWa (2011) , assumption: 2012 same costs
- Old technology factor 1.5

	2011 [T€]	2011 [KW]	2012 [T€]	2012 [KW]
Atlas cpu	34	34	25	25
Atlas disk	48	48	60	60
CMS cpu	48	48	44	44
CMS disk	39	39	51	51

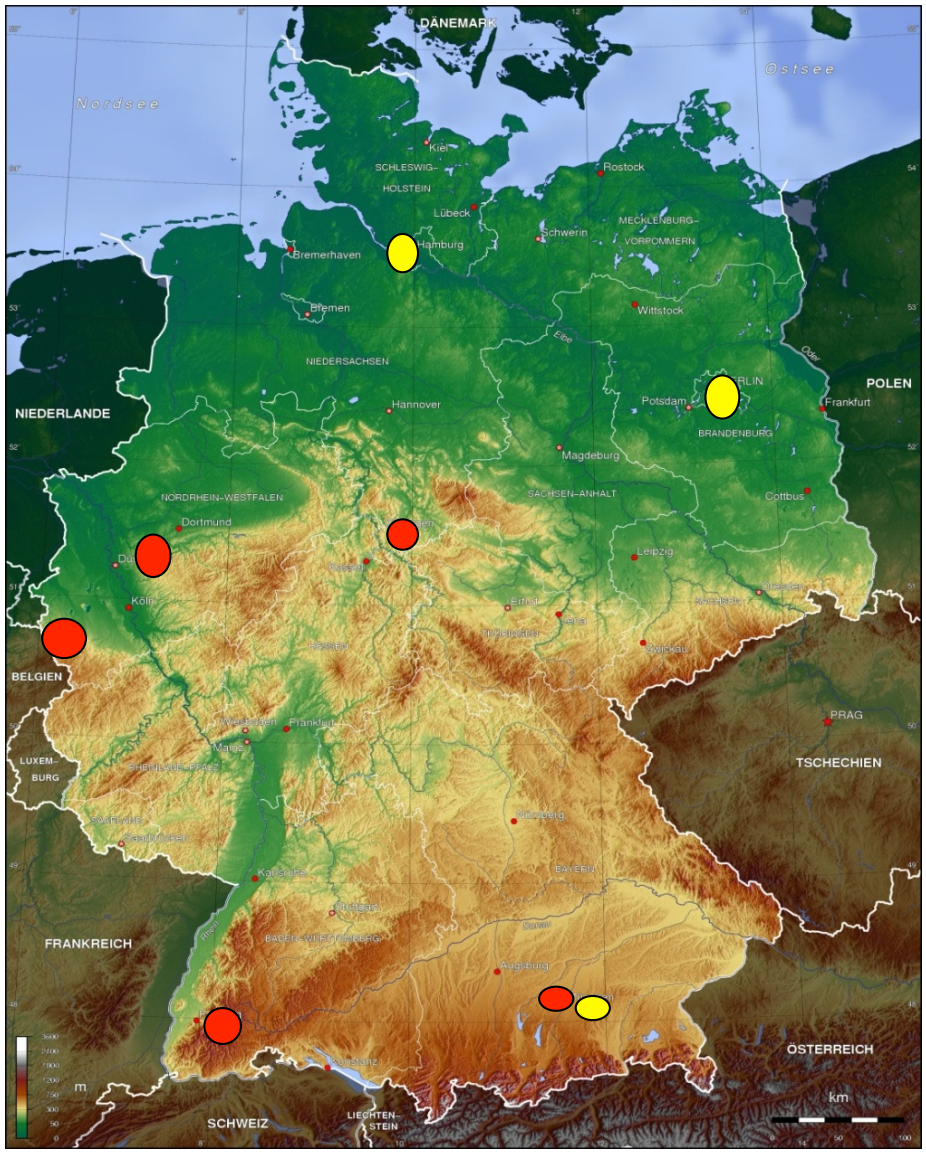
Energy costs/ average T2

Required T2 Resources (closed session)

	2011[T€]	2011 fund.	2012[T€]	2012 fund	2013[T€]	2013 fund
Atlas cpu	312	ok	290	Half year HA, Desy+ MPI ok	220	NO HA funds, Desy+ MPI ok
Atlas disk	720	ok	760		600	
CMS cpu	364	ok	260		160	
CMS disk	376	ok	320		240	
		~160 T€/Uni		~80 T€/Uni		

- For DESY: Finance the NAF (~ 300-400 k€, size of a Tier 2),
- Available: basic funding and „Ausbauinvestitionen“ from POF

The German T2‘s



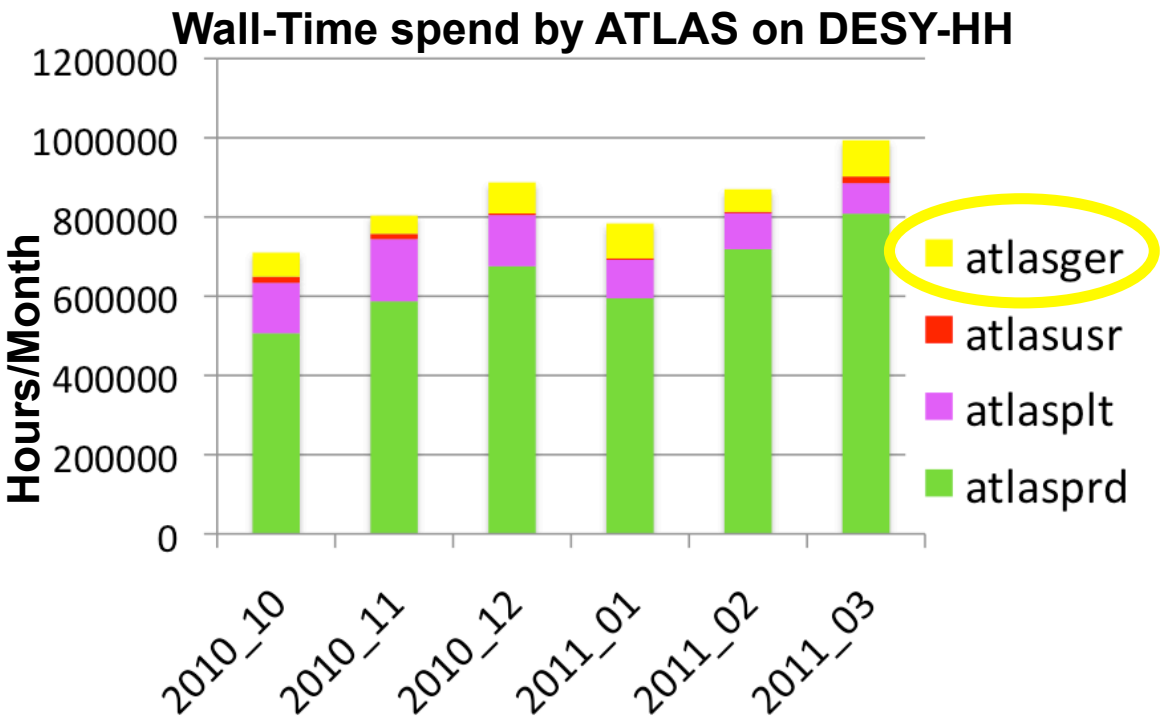
HGF Alliance funding for Universities:

Pledges for Germany http://lcg.web.cern.ch/LCG/Resources/WLCGResources-2010-2012_15DEC2010.pdf	CPU 2011 [HS]	CPU 2012 [HS]	Disk 2011 [TB]	Disk 2012 [TB]
A DESY	6200	6600	1050	1350
C DESY	11800	12900	640	900
A Goettingen	3800	4000	400	590
C Aachen	6600	8700	330	435
A Munich	9220	11560	1040	1340
A FR/Wupp	4633	4917	633	733
A FR/W Freiburg	4610	5780	518	668
Summe CMS	18400	21600	970	1335
Summe Atlas	28463	32857	3641	4701
SumDESY	18000	19500	1690	2250
SumNonDESY	28863	34957	2921	3786
GrandTotAllT2 WW	725324	776203	60454	71998

Critical issues?

- Further development of the NAF
- Staffing of the NAF
- T2 financing for Universites & Tier 2 strategy for Germany
- Possible implications for DESY
- Follow up financing for LHCone

Details on German contribution to Grid usage



- German usage (VOMS group /atlas/de) significant - NAF part of the Grid
- Some German usage hidden in ATLAS-Pilot usage
  - Due to the nature of pilot jobs, the site cannot know how much
- Production dominates
  - we are also “Big T2” for ATLAS: Load from other clouds)