

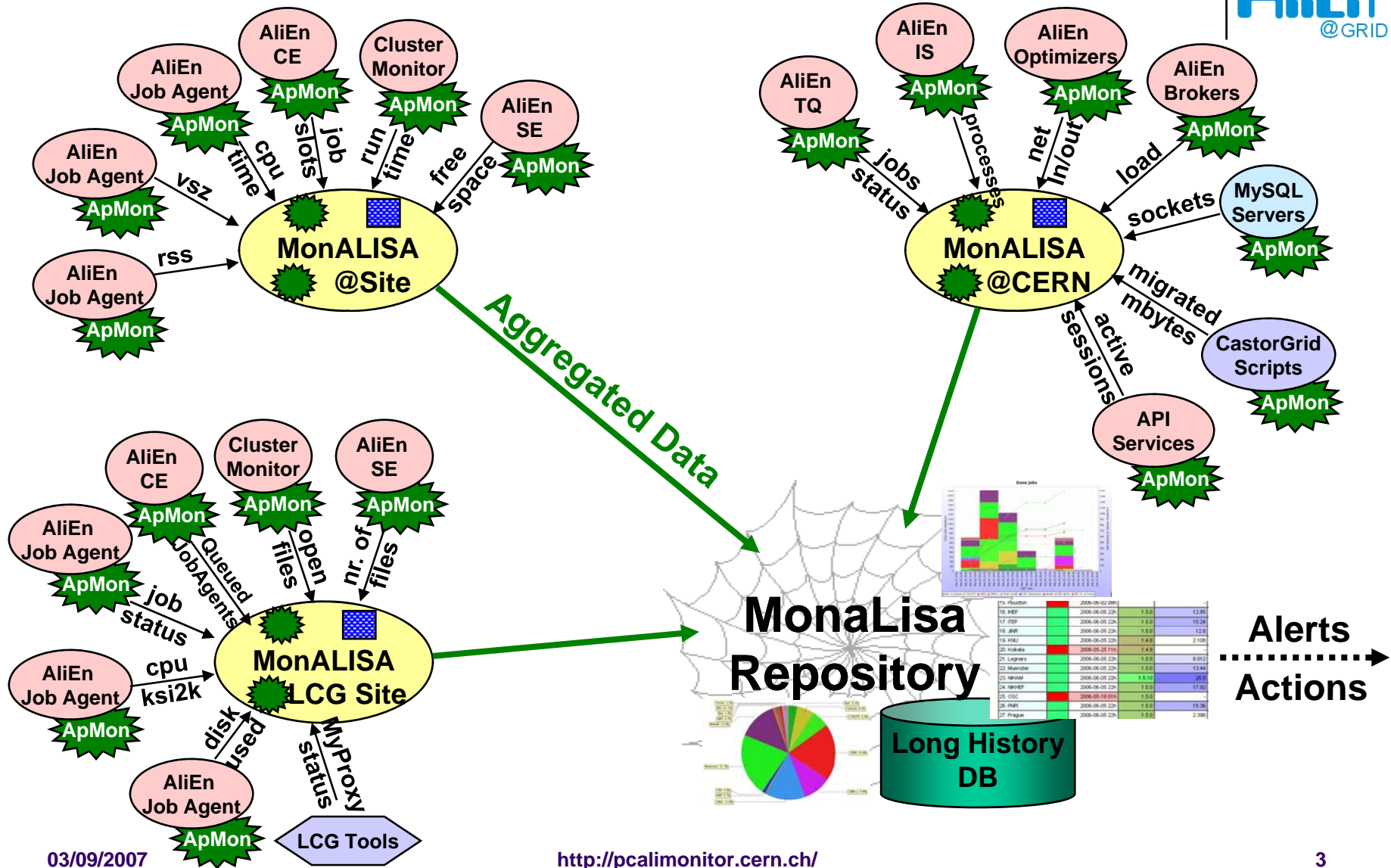




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# Data collection and storage



# Data collection and storage



- MonALISA services gather ~300K unique parameters with a rate of 250Hz
- Out of these ~40K (raw and derived) time series are stored in the repository DB with a rate of 30Hz
- New series can be defined on the fly, changes to the collection filters are applied right away without any service restart
- The DB is now 150GB (1.5G data points)
- We use the following archival schema for old data:
  - 2 minutes bins for the last 2 months
  - 30 minutes bins for the last 6 months
  - 2.5 hours bins for more (almost 2 years already)
- Users are calling dynamic charts every 5 seconds on average
- In these conditions the load on the repository machine is negligible (0.3-0.5)



# Visualization methods

- Various type of charts, with different detail levels
  - System overview as the global map
  - General interest widgets in all the pages
  - General purpose charts, based on a simple configuration file: history as points, areas or bars, pie charts, bar charts, spider charts etc
  - Specialized pages
  - Daily/weekly/monthly reports

# Visualization methods



**ALICE Repository**

- ALICE Repository
- Google Map
- Running trend
- Job Information
- SE Information
- Services
- Network Traffic
- FTD Transfers
- CAF Monitoring
- SHUTTLE
- LOG exp. monitoring
- Build system

close all

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**Running jobs trend**

4537  
Jobs

**Running jobs trend**

→ → → →  
24h 12h 6h 1h

(click arrows for detailed view)

FZK (152)

1 hour 1 day 1 week 1 month 1 year

Running jobs

600  
500  
400  
300  
200  
100  
0

22 23 24 25 26 27 28 29

Aug 2007

FZK

Map Satellite Hybrid

SPbSU  
PNPI  
JINR  
RRC-KI Troitsk  
SINP ITEP  
IHEP  
BITP KNU IC  
Prague Cyfronet  
Kosice  
KFKI  
UPB  
ISS NIHAM  
Bari  
Athens  
Cagliari  
Catania  
Trujillo  
Madrid  
Birmingham RAL  
NIKHEF SARA Muenster Poznan WUT  
GRIF\_DAPNIA IPNO  
Subatech CERN-L Strasbourg\_IRES  
CERN\_gLite CERNMAC CERN  
Clermont CCIN2P3 CNAF Legnaro Bologna Florence  
Torino

POWERED BY Google

200 mi 500 km

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● Running Jobs ● ML Service Down ● No Active Jobs ● ML Service Down & no running jobs

[Find your location](#)

Map options



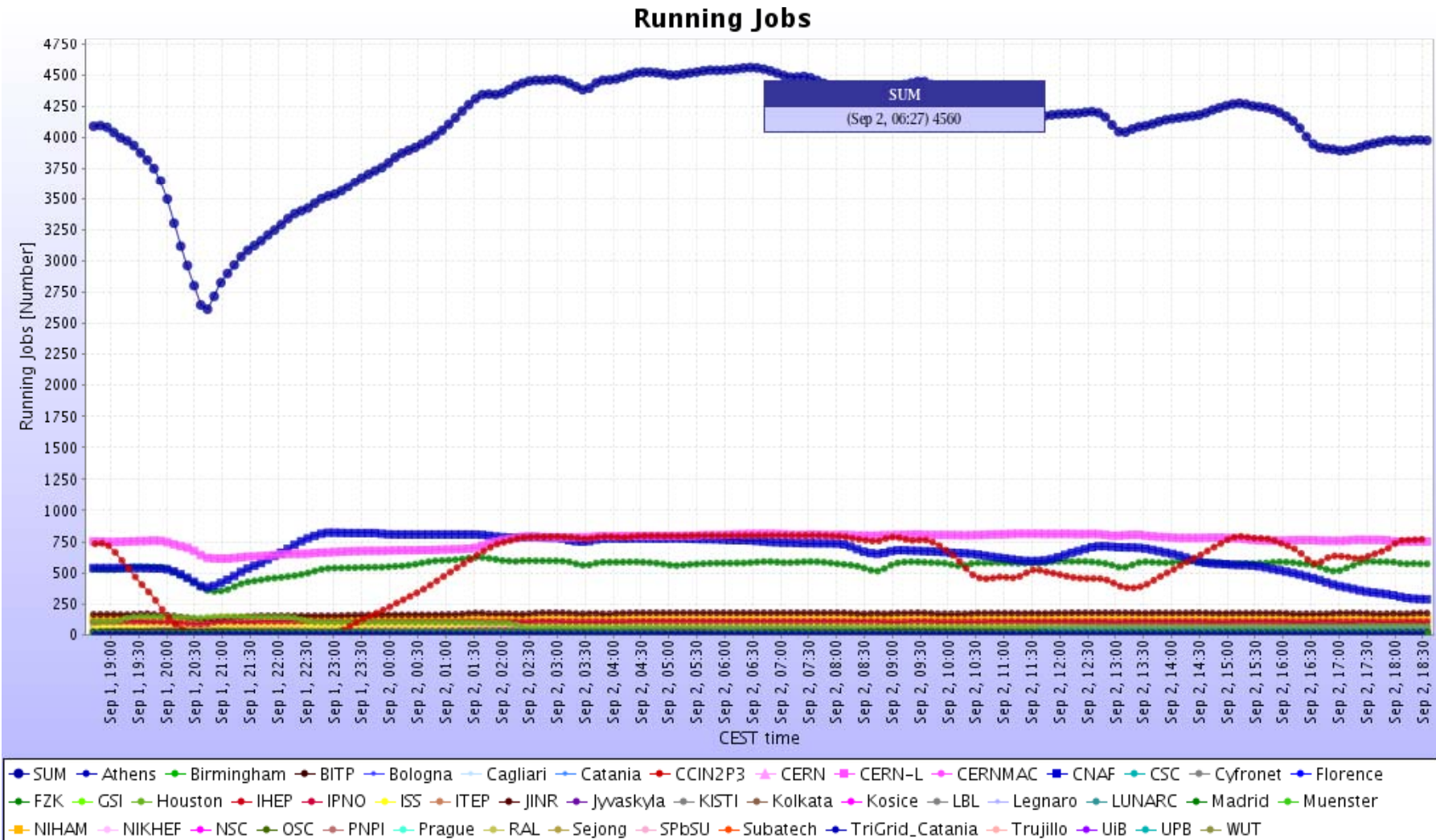
# Vizualisation methods

Running jobs trend							
Site name ▲	Running jobs	KSI2K units (used/pledged)	Last 24 hours	Last 12 hours	Last 6 hours	Last hour	Status ▼
1. Aalborg	-	0 / 30	✘	✘	✘	✘	⚠
2. Athens	3	3 / 5	➡	➡	➡	➡	
3. Bari	-	0 / 50	✘	✘	✘	✘	
4. Birmingham	11	5 / 50	➡	➡	➡	➡	
5. BITP	19	20 / 210	➡	➡	➡	➡	
6. Bologna	13	14 / 11	➡	➡	➡	➡	
7. Cagliari	18	22 / 38	➡	➡	➡	➡	
8. Catania	49	12 / 225	✘	✘	➡	➡	
9. CCIN2P3	801	1328 / 286	➡	➡	➡	➡	
10. CERN	0	0 / 250	✘	✘	✘	✘	
11. CERN-L	768	875 / 500	➡	➡	➡	➡	✔
12. CERN_gLite	-	- / 500	✘	✘	✘	✘	✘
13. CERNMAC	3	- / 5	➡	➡	➡	➡	✔
14. Clermont	-	- / 75	✘	✘	✘	✘	✘
15. CNAF	266	709 / 286	➡	➡	➡	➡	⚠
16. CSC	4	5 / 4	➡	➡	➡	➡	✔
17. Cyfronet	29	31 / 33	➡	➡	➡	➡	✔

Click for persistent window

CE :  
 Sep 2 18:56:35 info Reading the configuration file from /user/aliprod/.alien/alice.conf  
 Sep 2 18:56:35 info The local configuration is not allowed to define services  
 Sep 2 18:56:35 info The local configuration is not allowed to define services  
 Sep 2 18:56:35 info The local configuration is not allowed to define services  
 Sep 2 18:56:35 info The local configuration is not allowed to define services  
 Sep 2 18:56:35 info The local configuration is not allowed to define services  
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 Doing PID-only check for CE... DEAD. Exit code 1

# Vizualisation methods

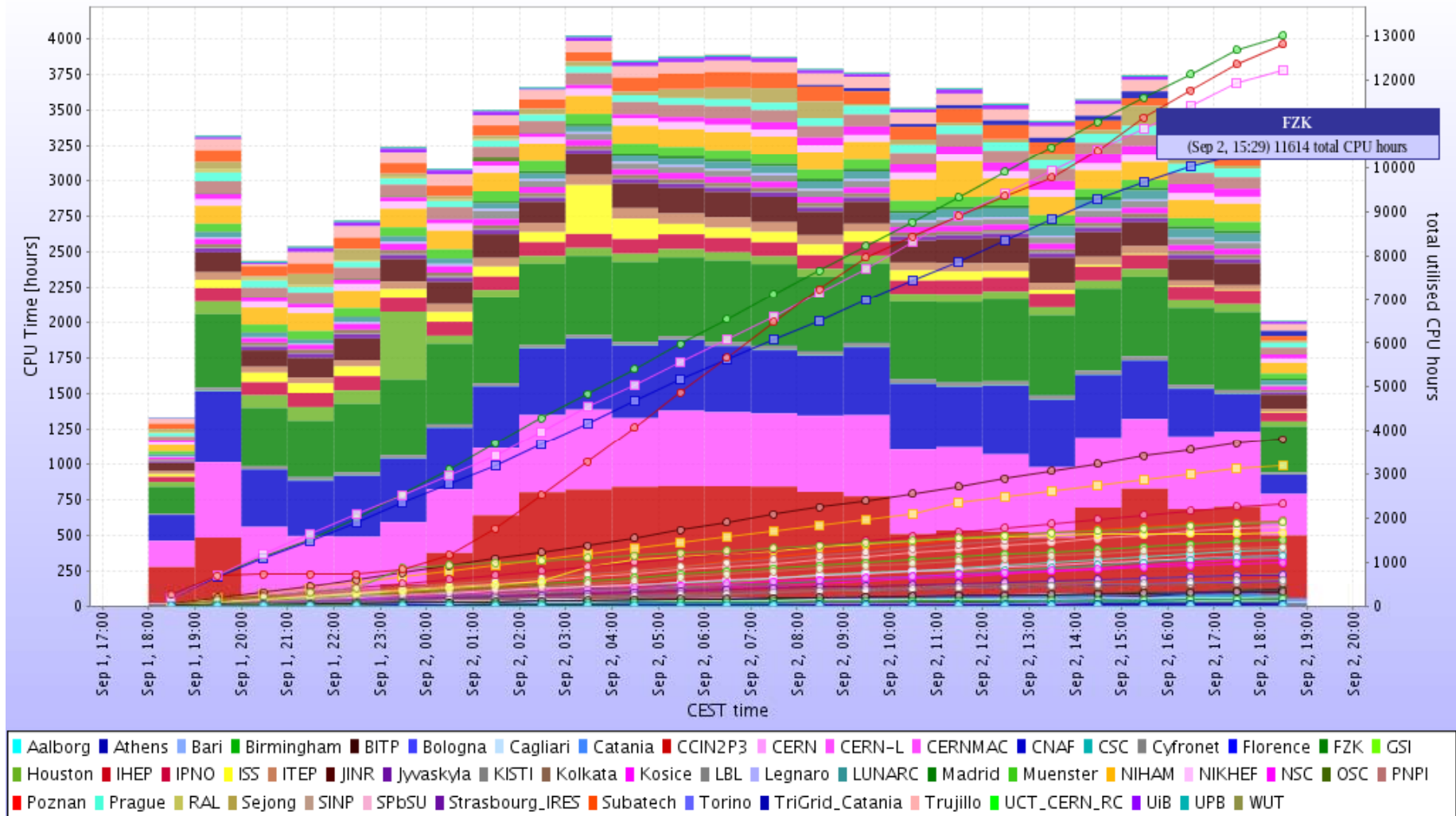




# Vizualisation methods



Total CPU time for ALICE jobs





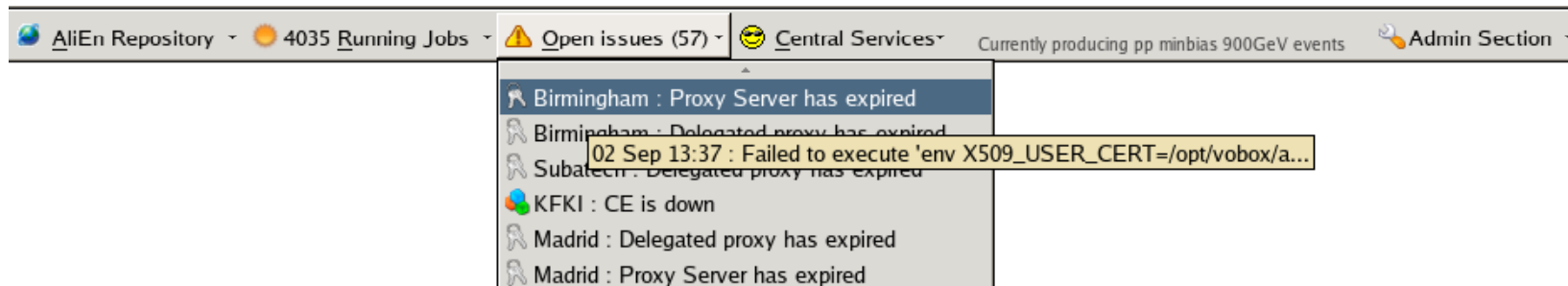
# Process automation

- The monitoring information is used by an automatic decision taking framework to:
  - Submit new jobs (by watching the queue parameters)
  - Restart site services (whenever the VoBox-level monitoring finds out that a service is not accessible + the central services are ok)
  - Send notifications when the problem didn't go away after an automatic restart
  - Dynamically modify the DNS aliases of the central services for an efficient load balancing
- Most of the actions are defined in plain text configuration files, making the system easily and dynamically tunable to fit the ever changing needs

# Tools



- Anybody can subscribe to be notified by email or through RSS feeds in case of problems with various components of the system: central/site services, storages, proxies, general announcements and so on: <http://pcalimonitor.cern.ch/xml.jsp>
- A Firefox toolbar helps to quickly spot current issues:



- Certificate-based administrative interface helps the Grid managers with day-to-day operations (site services management, production jobs, software packages, pledged resources tracking etc)



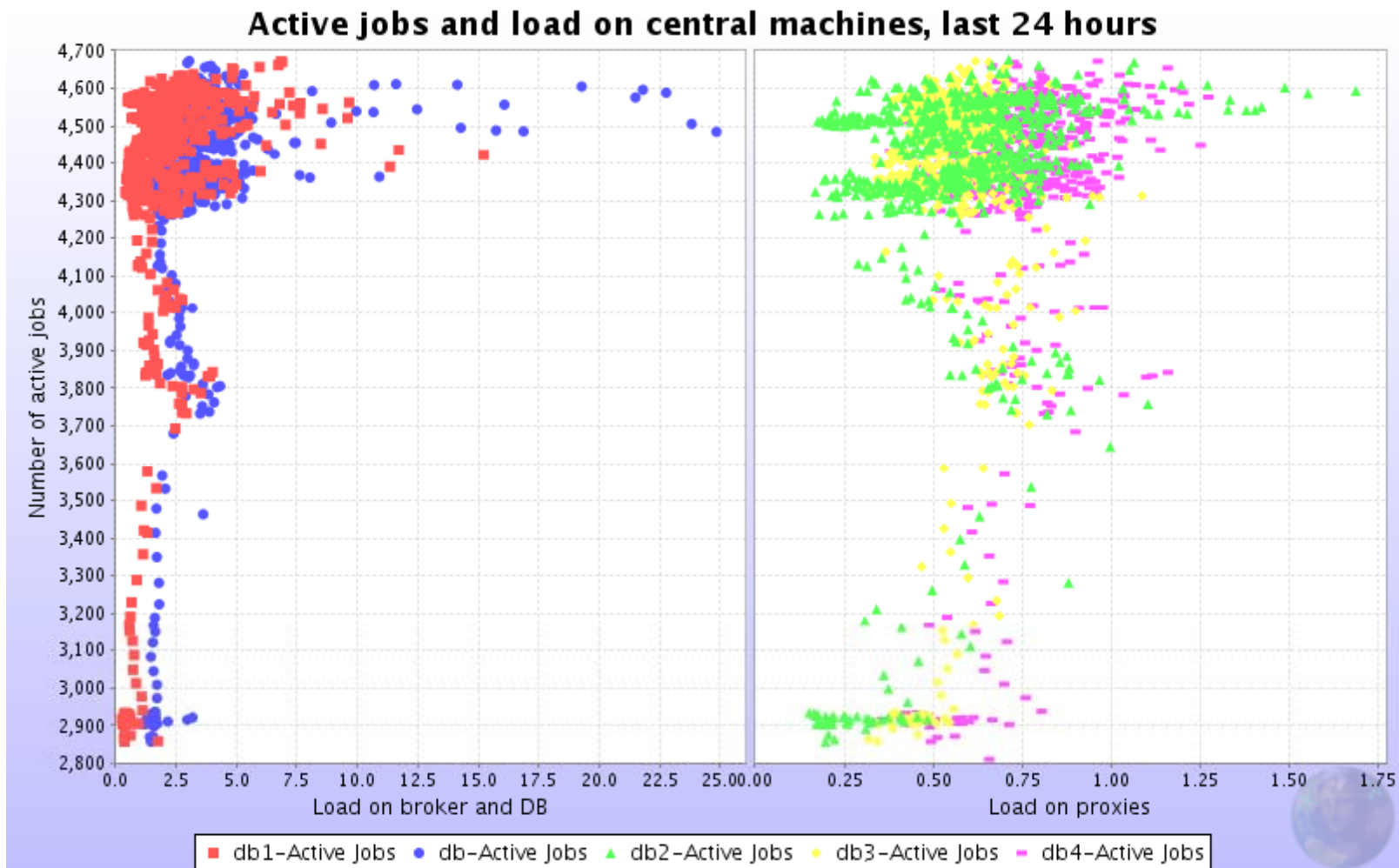
# Monitoring data analysis

- Until recently users were restricted to use only predefined charts
- Now we have implemented a completely customizable interface through which users can define their own charts:

<http://pcalimonitor.cern.ch/correlations/>

- Evolution in time for some parameters
- Values histograms
- Scatter plots (for correlating 2 time series)
- Possibility to define derivate series on the fly (sum / difference / average of primary series)

# Monitoring data analysis





# Future plans

- Increase the detail level for user jobs
- More flexibility in defining custom charts
- Add other sources of events to which users can subscribe to (eg. SAM tests)
- We are opened to suggestions, so please let us know what you would like to see!