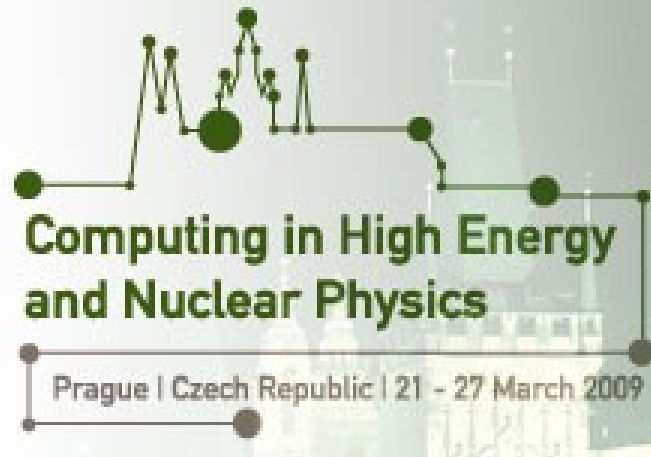


# Use of glide-ins in CMS for production and analysis



On behalf of the CMS Offline and Computing Projects

Sanjay Padhi

University of California, San Diego (UCSD)

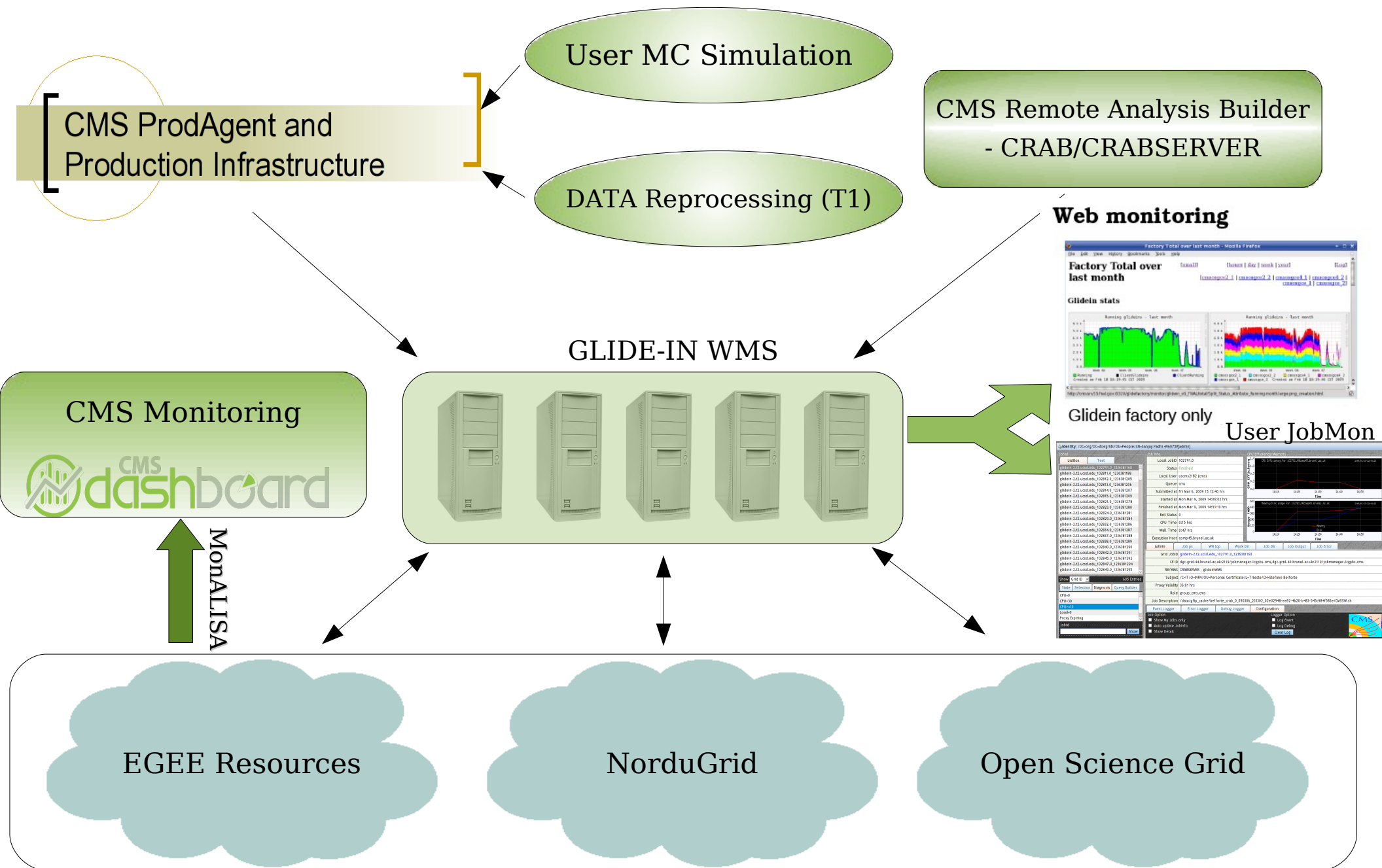
With

Oliver Gutsche (FNAL), Kristian Hahn (MIT), Burt Holzman (FNAL),  
Dave Mason (FNAL), Haifeng Pi (UCSD), Igor Sfiligoi (FNAL),  
Eric Vaandering (FNAL), Frank Wuerthwein (UCSD)

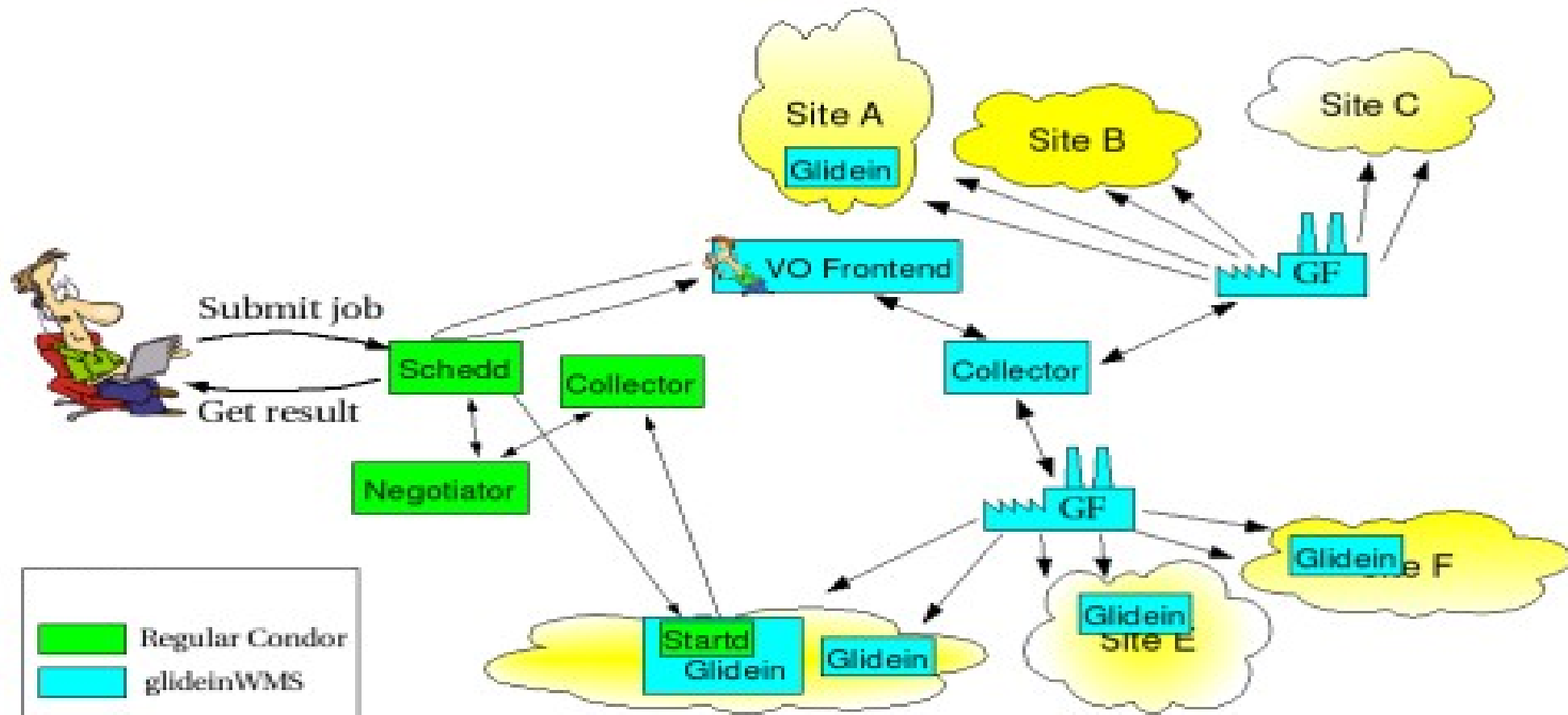
# Outline

- Components using glide-in based WMS
- GlideinWMS
- Scalability of the system
- Use of glideinWMS for Data Reprocessing
  - Data reprocessing at the Tier 1s.
  - Events Merging
- Use of glideinWMS for Data analysis @ T2s
  - Analysis experience during CCRC-08
  - Integration of glideinWMS with Crabserver
  - JobRobots using glideinWMS via Crabserver
  - Recent results
  - Use for Monte Carlo Simulations
- Coherent Monitoring interface to the system
  - JobMon and Pseudo-Interactive tools
- Experience using next generation CREAM CE

## Components using glide-in based WMS



# Glide-in based WMS



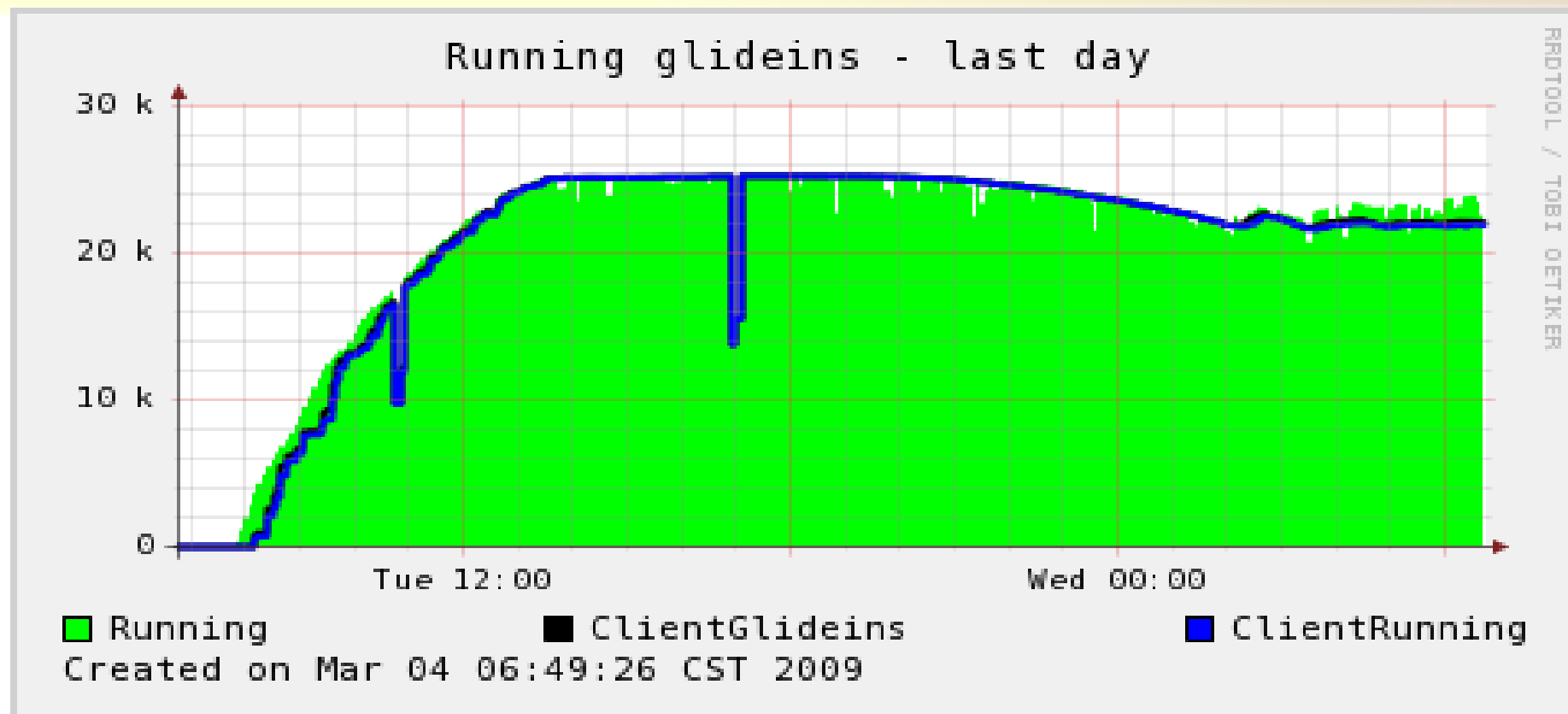
Glide-ins are Grid jobs that start regular Condor daemons

i.e are pilots implemented with Condor

Glide-in WMS is an autonomous glide-in submission system

Uses GSI authentication for all interactions with Condor daemons over the network

# Scalability of glideinWMS

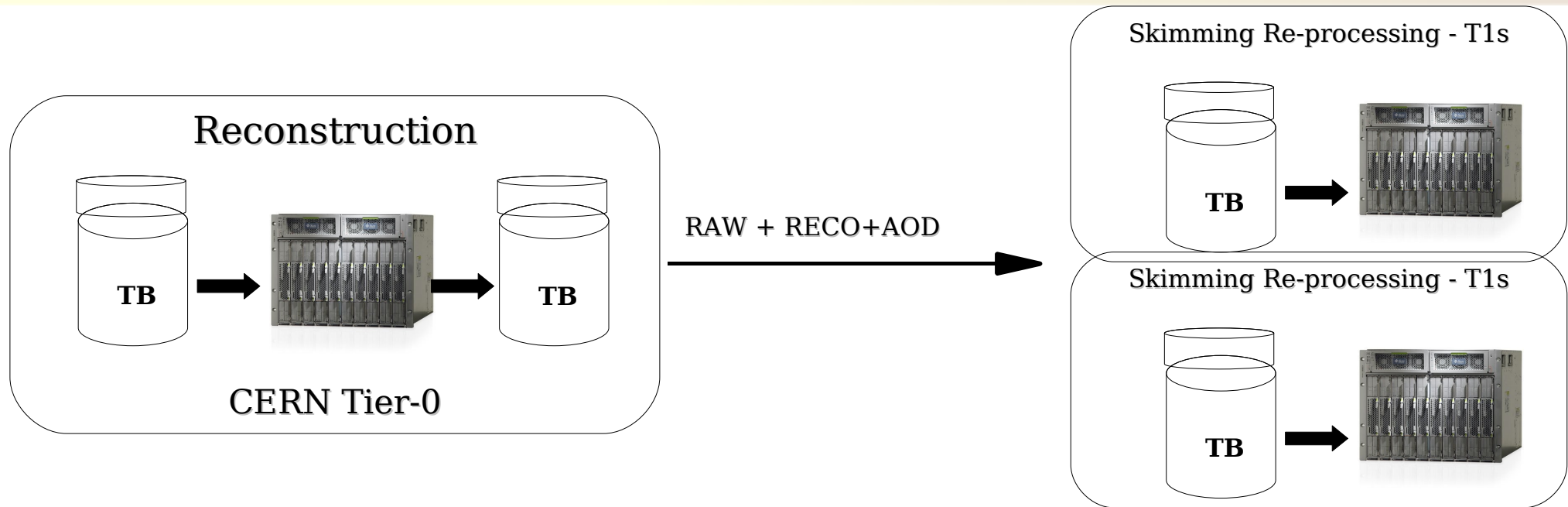


Using a test setup the glide-ins along with clients (user jobs) were tested intensively  
For details:

- **“Interoperability and Scalability within glideinWMS”**  
by D. Bradley, ID-218, CHEP 09.
- Scaled up to running 22,000 – 25,000 clients/jobs in parallel
- Submitted more than 500K jobs, running on average of 3 hour duration

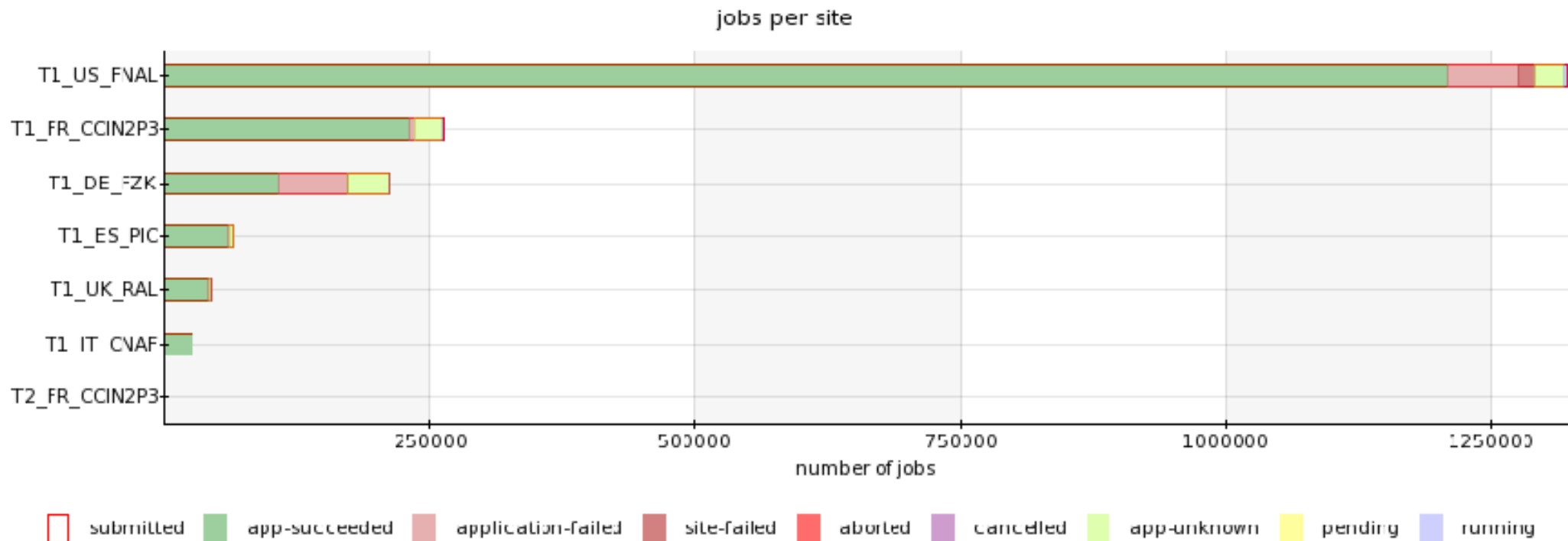
# Use of glideinWMS for DATA Reprocessing

# Use of glideinWMS for DATA Reprocessing



- ◆ Tier-1s receive a continuous stream of RAW and reconstructed data
- ◆ Data skimming and re-reconstructions are performed at the Tier1s.
- ◆ Data transfers are managed by PhEDEx
- ◆ Description of Data files organized in blocks are kept in global DBS
- ◆ ProdAgent, is used to Skim and re-process → uses glideinWMS
- ◆ Late binding features in glide-ins provides a homogeneous pool of T1 resources
  - Ensures proper CMSSW ENV, publishes installed Versions at the site/WNs
  - Provides reliability in reprocessing jobs/workflows (Shields from faulty WNs)

# DATA Reprocessing @ Tier1s

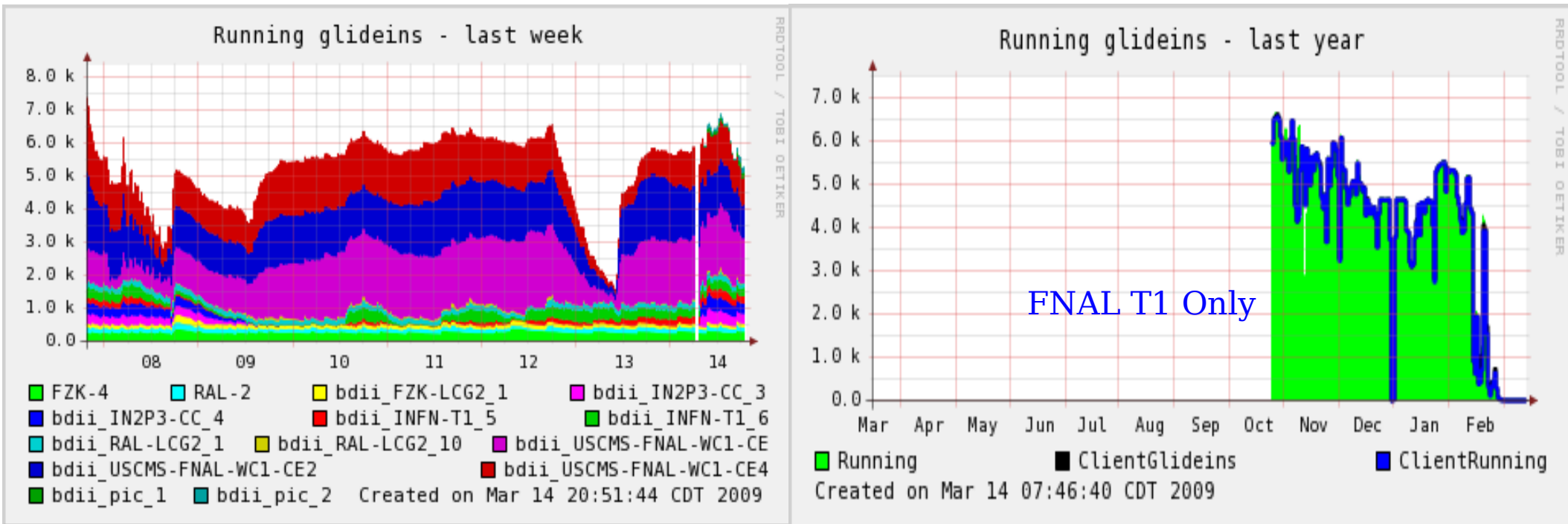


Results shown starting Jan 2009: Overall very good efficiency !!!

site	Info	current status				grid exit status					application exit status					status		
		Sub	Pend	Run	Term	Done	Canc	Abort	Unk	Grid%	Succ	AppFail	SiteFail	AllFail	Unk	App%	Site%	Overall%
T1_DE_FZK	<a href="#">Link</a>	211988	0	70	211918	0	0	0	211918	0	109982	63669	3	63672	38261	63.33	100	51.9
T1_ES_PIC	<a href="#">Link</a>	65615	0	0	65615	0	0	0	65615	0	51048	1205	0	1205	3362	98.06	100	93.04
T1_FR_CCIN2P3	<a href="#">Link</a>	263885	0	655	263230	0	0	0	263230	0	232748	5397	0	5397	25085	97.73	100	86.42
T1_IT_CNAF	<a href="#">Link</a>	27912	0	233	27679	0	0	0	27679	0	27482	192	0	192	5	99.31	100	99.29
T1_UK_RAL	<a href="#">Link</a>	45604	0	187	45417	0	0	0	45417	0	42540	845	0	845	2032	98.05	100	93.67
T1_US_FNAL	<a href="#">Link</a>	1323278	0	3353	1319925	0	0	0	1319925	0	1208873	66580	16437	83017	28035	93.57	98.75	91.59
T2_FR_CCIN2P3	<a href="#">Link</a>	524	0	0	524	0	0	0	524	0	311	11	0	11	2	97.89	100	97.52



# DATA Reprocessing @ Tier1s



Data Reprocessing, skimming, merging etc. requires a large number of resources  
Many of the task workflows are short jobs.

CEs can afford a rate  $\sim 0.1\text{Hz}$  submissions (I. Sfiligoi, ID 216, CHEP 07)

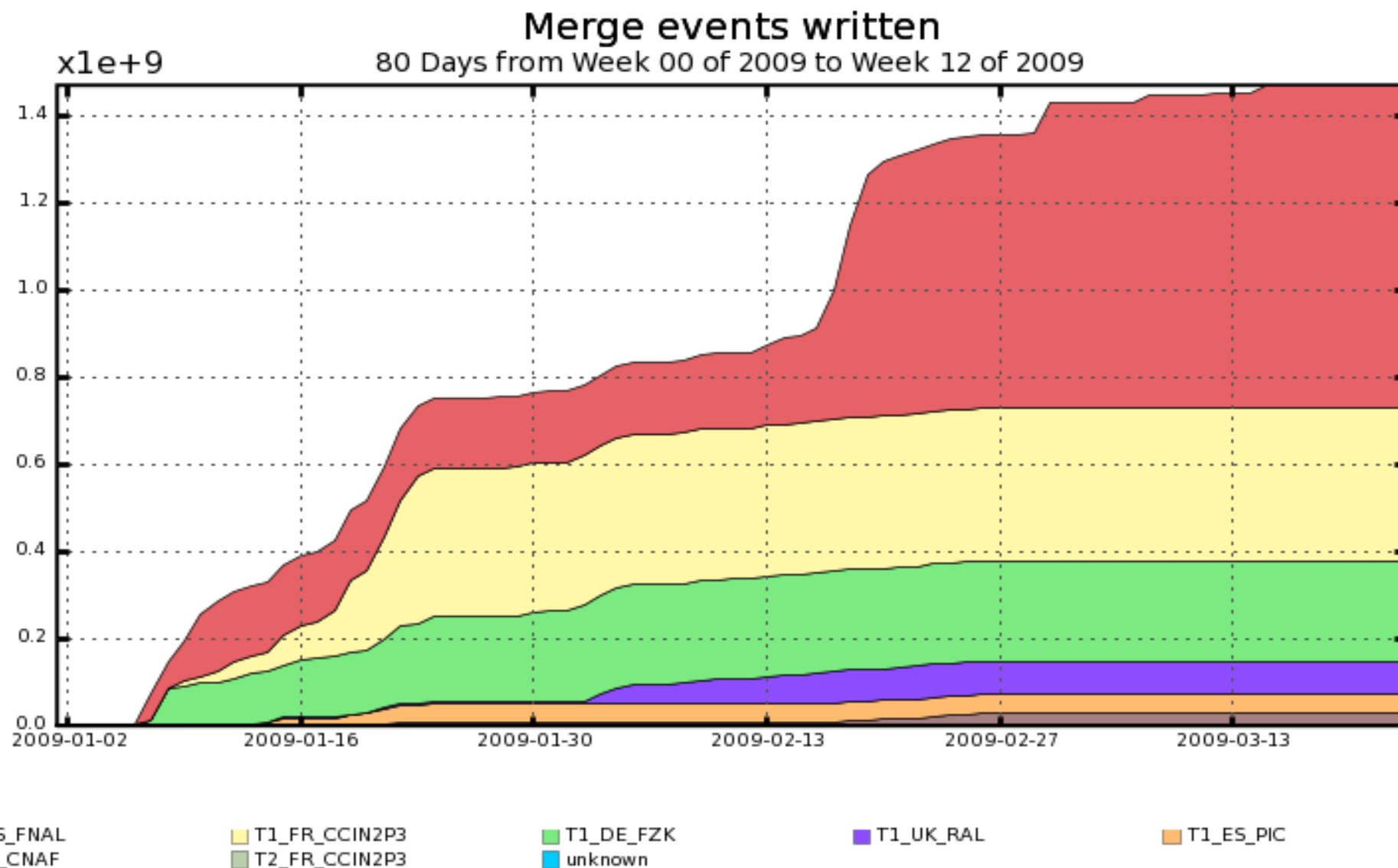
- In order to fill 6000 CPUs will require 16.67 hours.

Allow “long” lived glide-ins

- each can pull jobs sequentially until expiry of their lifetime/proxy
- Scalable solution required at FNAL in order to “fill” the resources

**Prodagent can use glideinWMS in a production mode for all reprocessing activities**

# Events processed using glideinWMS

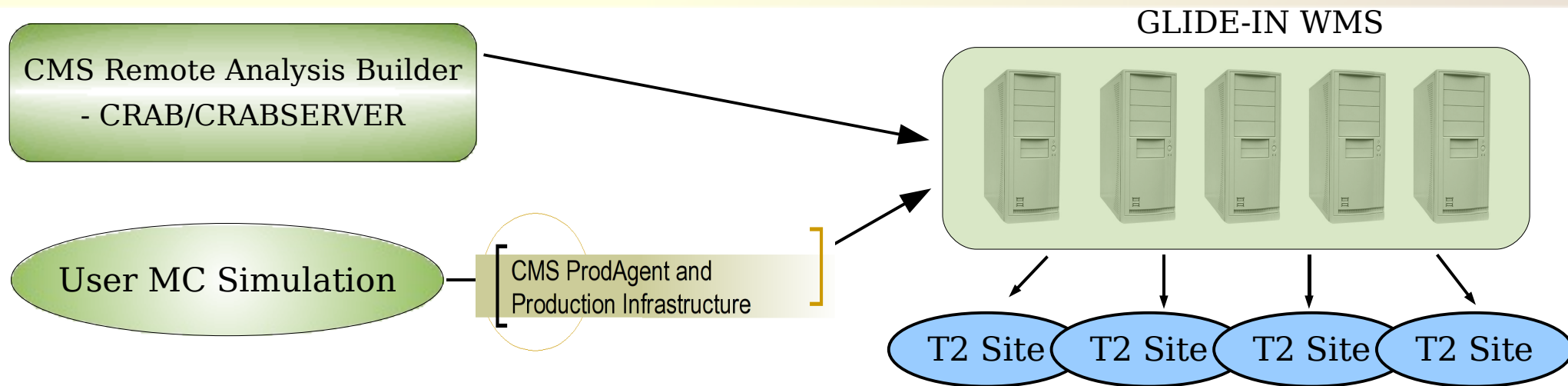


Total: 24,961,648 , Average Rate: 3.57 /s

**Results shown starting Jan 2009 (80 days) - Very successful workflow**

# Use of glideinWMS for DATA analysis

# Use of glideinWMS for DATA analysis



- CMS Remote Analysis Builder (CRAB) uses both late & early binding WMS
  - On early binding - See talk by [Giuseppe CODISPOTI, ID-139, CHEP 09](#)
- Interacts with data discovery services (DBS and DLS) to split task into smaller jobs
- Provides input to the WMS the SE names
- SE to CE mapping is then performed using BDII
- Jobs with “DESIRED\_Gatekeepers” are then matched via glideinWMS
- Gfactory sends glide-ins to the desired sites.
- Once the glide-ins ensure the reliability of the node along with requested CMSSW
  - Jobs directly flow to the Worker Node
- BOSSLite is used to interact:
  - with the glideinWMS scheduler to provide instantaneous updates

## Analysis experience during CCRC-08

Various analysis exercises were performed during CCRC-08

Goal was to gain overall understanding (See - A. FANFANI, ID 213, CHEP 09)

- of the performance and readiness of the CMS Tier-2 sites for data analysis

CRAB client using glideinWMS and gliteWMS were used

Site performance was evaluated based on increasing in complexity of the jobs

- Long running CPU intensive jobs with moderate I/O
- Long running I/O intensive jobs
- Short-running jobs with local stage out of O(10MB) files

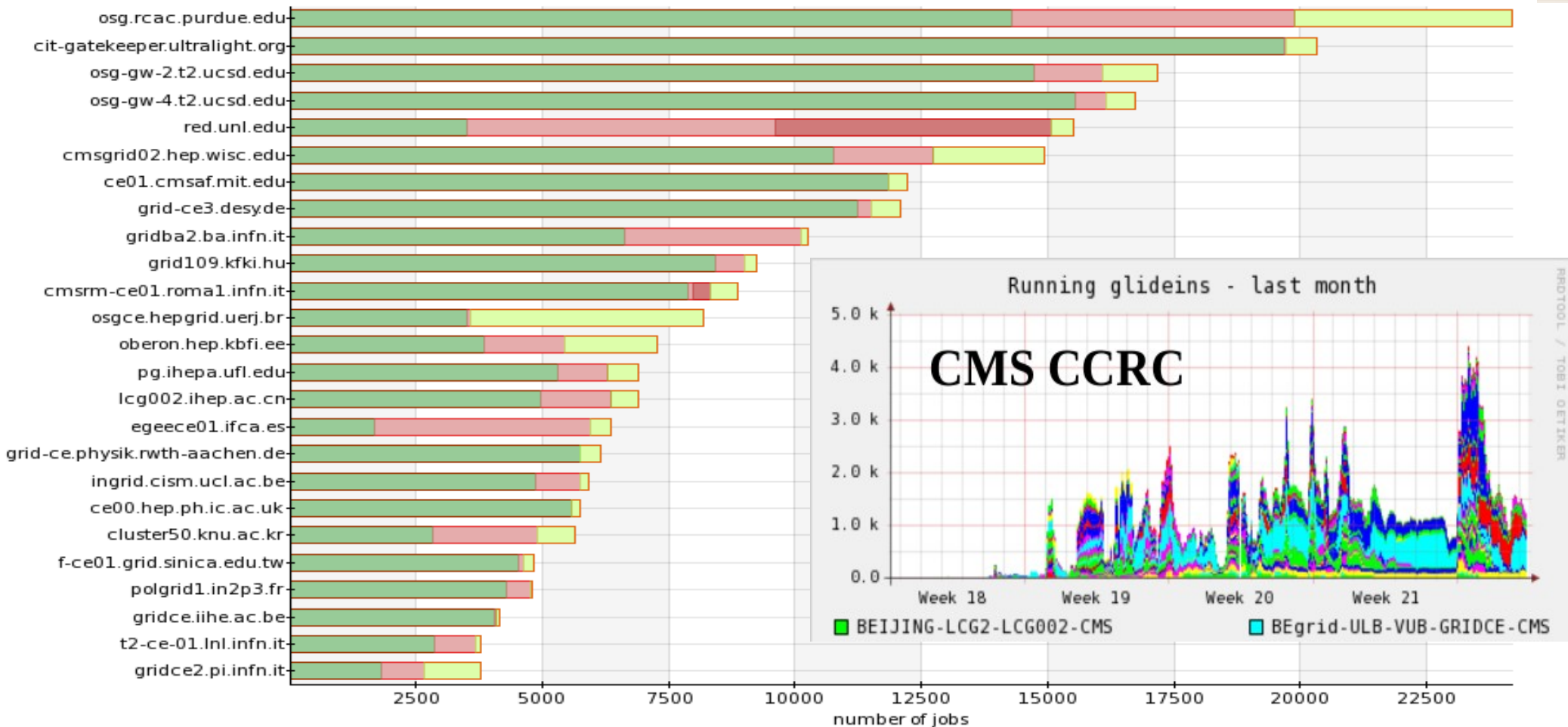
- ◆ Over 40 sites across EGEE, OSG and Nordugrid were involved

- ◆ Mix of errors at a few sites due to catastrophic storage failures

**Overall success rate (without SE issues) ranged from 92-99%**

**(Based: more than 100k submitted jobs)**

# Experience during CCRC-08

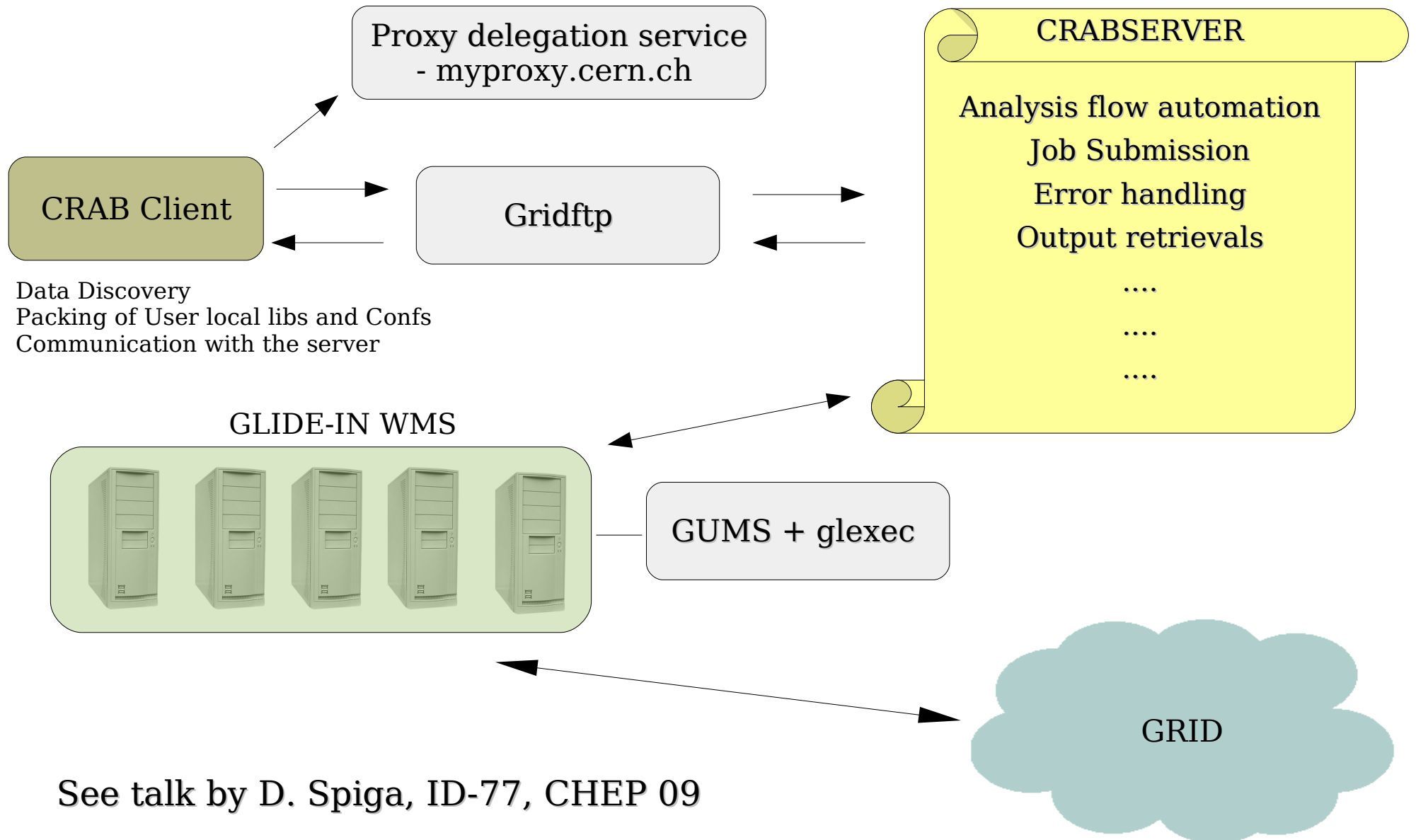


For the first time ARC interface was used in CMS !!!

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ce	current status									Grid%	application exit status						
	Sub	Pend	Run	Term	Done	Canc	Abort	Unk	Succ		AppFail	SiteFail	AllFail	Unk	App%	Site%	
lcg002.ihep.ac.cn	6901	0	0	6901	0	0	0	6901	0	4963	1384	1	1385	553	78.18	99.99	
node07.datagrid.cea.fr	1722	0	0	1722	0	0	0	1722	0	1673	40	0	40	9	97.66	100	
oberon.hep.kbfi.ee	7273	0	0	7273	0	0	0	7273	0	3846	1590	0	1590	1837	70.75	100	
osg-ce.sprace.org.br	1093	0	0	1093	0	0	0	1093	0	721	1	0	1	371	99.86	100	
osg-gw-2.t2.ucsd.edu	17177	0	0	17177	0	0	0	17177	0	14736	1362	0	1362	1079	91.54	100	
osg-gw-3.t2.ucsd.edu	104	0	0	104	0	0	0	104	0	51	51	0	51	2	50	100	
osg-gw-4.t2.ucsd.edu	16739	0	0	16739	0	0	0	16739	0	15534	636	0	636	569	96.07	100	
osg.rcac.purdue.edu	24207	0	0	24207	0	0	0	24207	0	14277	5622	2	5624	4306	71.74	99.99	
osgce.hepgrid.uerj.br	8194	0	0	8194	0	0	0	8194	0	3506	54	0	54	4634	98.48	100	
pg.ihepa.ufl.edu	6906	0	0	6906	0	0	0	6906	0	5296	997	1	998	612	84.14	99.99	
polgrid1.in2p3.fr	4781	0	0	4781	0	0	0	4781	0	4298	449	0	449	34	90.54	100	
red.unl.edu	15500	0	0	15500	0	0	0	15500	0	3517	6106	5450	11556	427	23.33	64.84	
sepeti.csc.fi	745	0	0	745	0	0	0	745	0	566	167	0	167	12	77.22	100	
t2-ce-01.lnl.infn.it	3796	0	0	3796	0	0	0	3796	0	2858	820	0	820	118	77.71	100	
total: 48	275411	0	0	275411	0	0	0	275411	0	206340	36984	5794	42778	26293	82.83	97.9	

# Integration of glideinWMS with Crabserver





# JobRobots using Crabserver based glideinWMS

JOB DETAILED VIEW

total: 25987 (seeing 0 to 50 )

prev 50 next 50

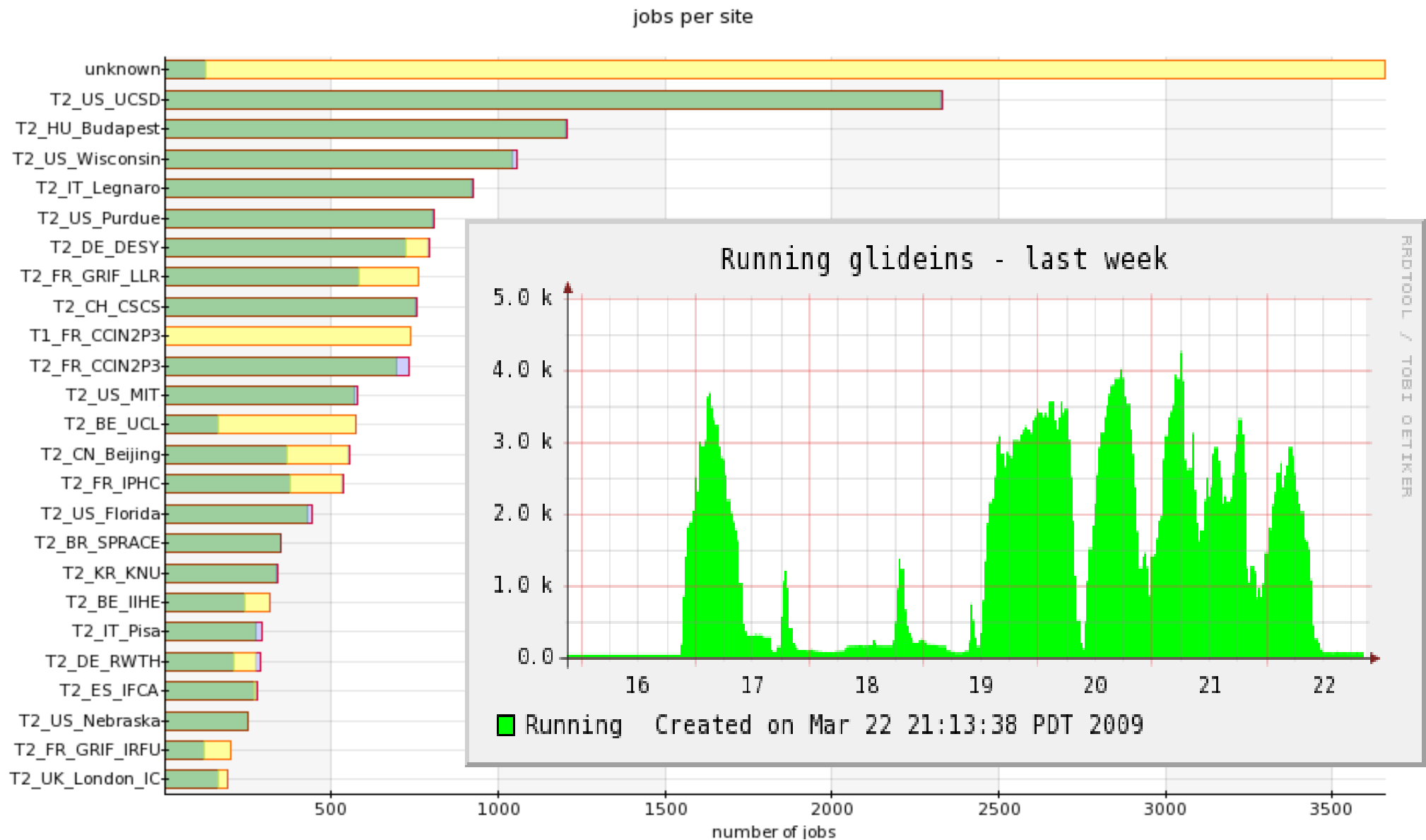
num	JobId	Site	Grid Status	ExitCode	IdInTask	NEvReq	NEvProc	Submitted	Started	Finished	Task	IP	Target
1	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/1">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/1</a>	T2_BE_IH	DONE	0	1	642	642	2009-02-23 00:10:14	2009-02-23 00:40:50	2009-02-23 00:50:55	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
2	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/10">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/10</a>	T2_BE_IH	DONE	8001	10	0	0	2009-02-23 00:10:15	2009-02-23 00:42:41	2009-02-23 00:42:50	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
3	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/100">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/100</a>	T2_BE_IH	DONE	0	100	642	642	2009-02-23 00:10:21	2009-02-23 01:04:58	2009-02-23 01:13:48	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
4	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/11">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/11</a>	T2_BE_IH	DONE	0	11	642	642	2009-02-23 00:10:15	2009-02-23 00:42:39	2009-02-23 00:53:43	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
5	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/12">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/12</a>	T2_BE_IH	DONE	8001	12	0	0	2009-02-23 00:10:15	2009-02-23 00:42:41	2009-02-23 00:42:53	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
6	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/13">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/13</a>	T2_BE_IH	DONE	0	13	642	642	2009-02-23 00:10:15	2009-02-23 00:43:19	2009-02-23 00:53:43	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
7	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/14">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/14</a>	T2_BE_IH	DONE	0	14	642	642	2009-02-23 00:10:15	2009-02-23 00:43:40	2009-02-23 00:55:11	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
8	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/15">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/15</a>	T2_BE_IH	DONE	8001	15	0	0	2009-02-23 00:10:15	2009-02-23 00:43:39	2009-02-23 00:43:49	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
9	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/16">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/16</a>	T2_BE_IH	DONE	0	16	642	642	2009-02-23 00:10:15	2009-02-23 00:44:02	2009-02-23 00:57:06	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
10	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/17">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/17</a>	T2_BE_IH	DONE	8001	17	0	0	2009-02-23 00:10:15	2009-02-23 00:46:35	2009-02-23 00:46:46	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
11	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/18">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/18</a>	T2_BE_IH	DONE	0	18	642	642	2009-02-23 00:10:15	2009-02-23 00:46:19	2009-02-23 00:58:27	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
12	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/19">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/19</a>	T2_BE_IH	DONE	8001	19	0	0	2009-02-23 00:10:15	2009-02-23 00:46:17	2009-02-23 00:46:28	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
13	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/2">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/2</a>	T2_BE_IH	DONE	0	2	642	642	2009-02-23 00:10:14	2009-02-23 00:40:50	2009-02-23 00:51:00	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
14	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/20">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/20</a>	T2_BE_IH	DONE	0	20	642	642	2009-02-23 00:10:15	2009-02-23 00:46:19	2009-02-23 00:58:06	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE
15	<a href="https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/21">https://glidein/00d2173d96cb6bc45c1271ee10ca54017f665126/21</a>	T2_BE_IH	DONE	0	21	642	642	2009-02-23 00:10:15	2009-02-23 00:46:22	2009-02-23 00:59:01	belforte_crab_0_090223_010949	193.190.247.140	44_Selected_SE

**Entertaining about ~25k JobRobot jobs (span of days) !!!**

[The Job Robot is a tool to automatically create/submit analysis tasks to the grid.]



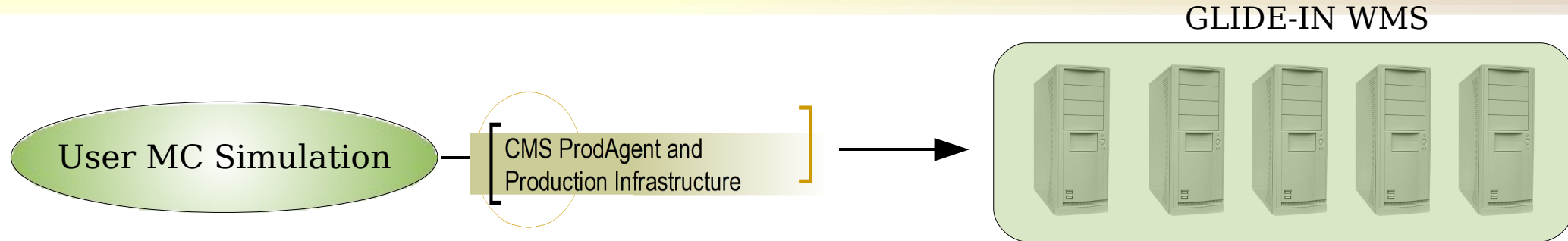
# Recent results using Crabserver and glideinWMS



**Results from last week:**

**Running more than 3.0 K CPUs over 38 CMS T2 sites using Crabserver**

# User Monte Carlo Simulation



## Production Request Form

CMSSW cfg file	<input type="text"/>	<input type="button" value="Browse..."/>
CMSSW version	<input type="text" value="CMSSW_2_1_12"/> ▼	
Dataset Name	<input type="text"/>	
Total Number of Event	<input type="text"/>	
Number of Job	<input type="text"/>	
Priority 1(L)-10(H)	<input type="text"/>	

Essentially http frontend for users:

- ◆ Uses X509 authentication
- ◆ Creates production work flows
- ◆ Jobs are then submitted to glideinWMS
- ◆ Once the task is finished:
  - ◆ Local DBS publication

## User Registration

# Coherent monitoring interface to the system

# User JobMon using glideinWMS

The JobMon (See: S. Sarkar, ID 259, CHEP 09) enables users to track jobs in details

The input to the monitoring framework is taken from ClassAds of the glideinWMS

- Uses X509 authentication
- CPU, Memory usage as a function of time
- Provides summary information

Queries are based on various machine/job attributes:

- CEs, Submission time, CPU efficiencies are supported

Supports (after proper authentication) the users to be able to use:

- “ls, cat, top” etc on the real-time running jobs at the WNs
- can use the pseudo-interactive tools in order to debug applications.

Similar developments from dashboard (A user-centric monitoring view)

- See: Edward Karavakis, ID 121, CHEP 09

# User JobMon using glideinWMS

Identity: /DC=org/DC=doegrids/OU=People/CN=Sanjay Padhi 496075#[admin]

Jobid

ListBox Text

glidein-2.t2.ucsd.edu\_102791.0\_1236381160  
glidein-2.t2.ucsd.edu\_102811.0\_1236381188  
glidein-2.t2.ucsd.edu\_102812.0\_1236381205  
glidein-2.t2.ucsd.edu\_102813.0\_1236381206  
glidein-2.t2.ucsd.edu\_102814.0\_1236381207  
glidein-2.t2.ucsd.edu\_102815.0\_1236381209  
glidein-2.t2.ucsd.edu\_102821.0\_1236381278  
glidein-2.t2.ucsd.edu\_102823.0\_1236381280  
glidein-2.t2.ucsd.edu\_102824.0\_1236381281  
glidein-2.t2.ucsd.edu\_102829.0\_1236381284  
glidein-2.t2.ucsd.edu\_102832.0\_1236381286  
glidein-2.t2.ucsd.edu\_102834.0\_1236381287  
glidein-2.t2.ucsd.edu\_102837.0\_1236381288  
glidein-2.t2.ucsd.edu\_102838.0\_1236381289  
glidein-2.t2.ucsd.edu\_102840.0\_1236381290  
glidein-2.t2.ucsd.edu\_102842.0\_1236381291  
glidein-2.t2.ucsd.edu\_102845.0\_1236381292  
glidein-2.t2.ucsd.edu\_102847.0\_1236381294  
glidein-2.t2.ucsd.edu\_102849.0\_1236381295

Job Info

Local JobID	102791.0
Status	Finished
Local User	uscms2182 (cms)
Queue	cms
Submitted at	Fri Mar 6, 2009 15:12:40 hrs
Started at	Mon Mar 9, 2009 14:06:02 hrs
Finished at	Mon Mar 9, 2009 14:53:19 hrs
Exit Status	0
CPU Time	0:15 hrs
Wall Time	0:47 hrs
Execution Host	comp45.brunel.ac.uk

CPU Efficiency/Memory

CPU Efficiency for 102791.0@comp45.brunel.ac.uk 2009/03/13-23:18:19

Memory/Disk usage for 102791.0@comp45.brunel.ac.uk 2009/03/13-23:18:19

Admin Job ps WN top Work Dir Job Dir Job Output Job Error

Grid JobID [glidein-2.t2.ucsd.edu\\_102791.0\\_1236381160](#)

CE ID dgc-grid-44.brunel.ac.uk:2119/jobmanager-lcgpbs-cms,dgc-grid-40.brunel.ac.uk:2119/jobmanager-lcgpbs-cms

RB/WMS CRABSERVER - glideinWMS

Subject /C=IT/O=INFN/OU=Personal Certificate/L=Trieste/CN=Stefano Belforte

Proxy Validity 36:01 hrs

Role group\_cms.cms

Job Description /data/gftp\_cache/belforte\_crab\_0\_090306\_233302\_02e02948-ea92-4b20-b483-545c984f583e/CMSSW.sh

Event Logger Error Logger Debug Logger Configuration

Job Option

- ☐ Show My Jobs only
- ☐ Auto update JobInfo
- ☐ Show Detail

Logger Option

- ☐ Log Event
- ☐ Log Debug

Clear Log

Queue  LoadAll

CEID

RB

WN

Subject

Submitted on

Started on

Update List

605 Entries

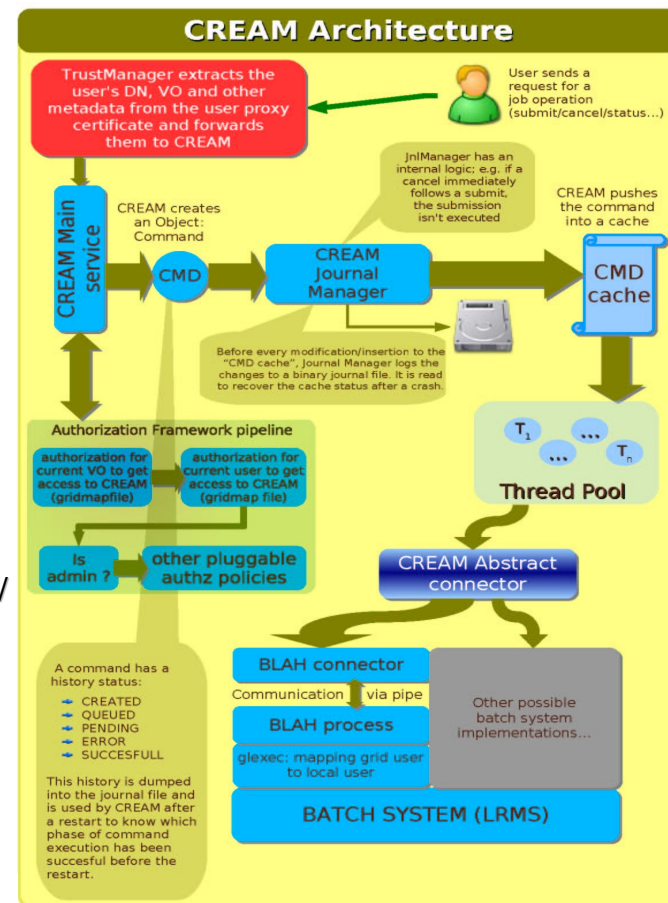
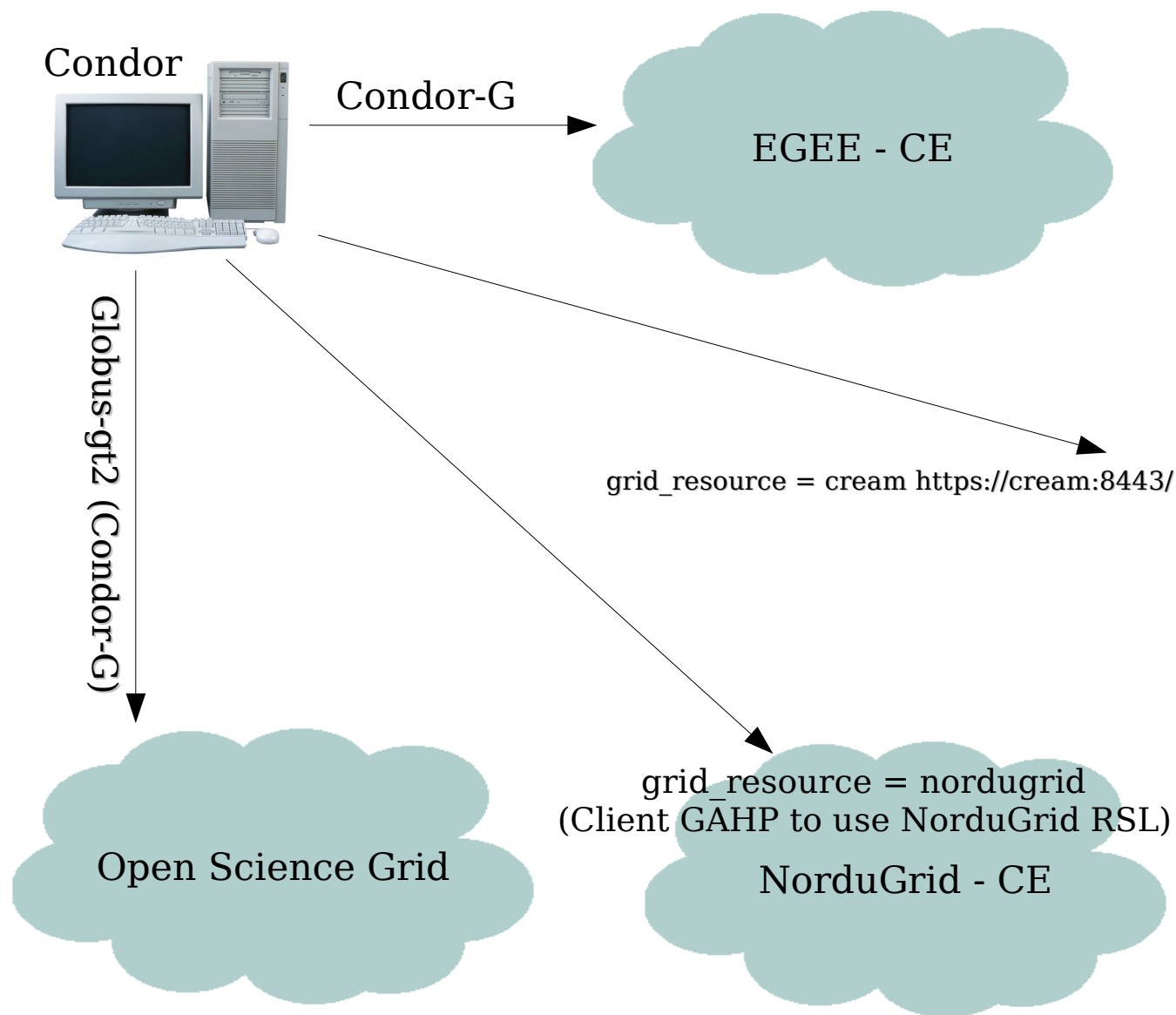
State Selection Diagnosis Query Builder

Developers

Powered by jQuery

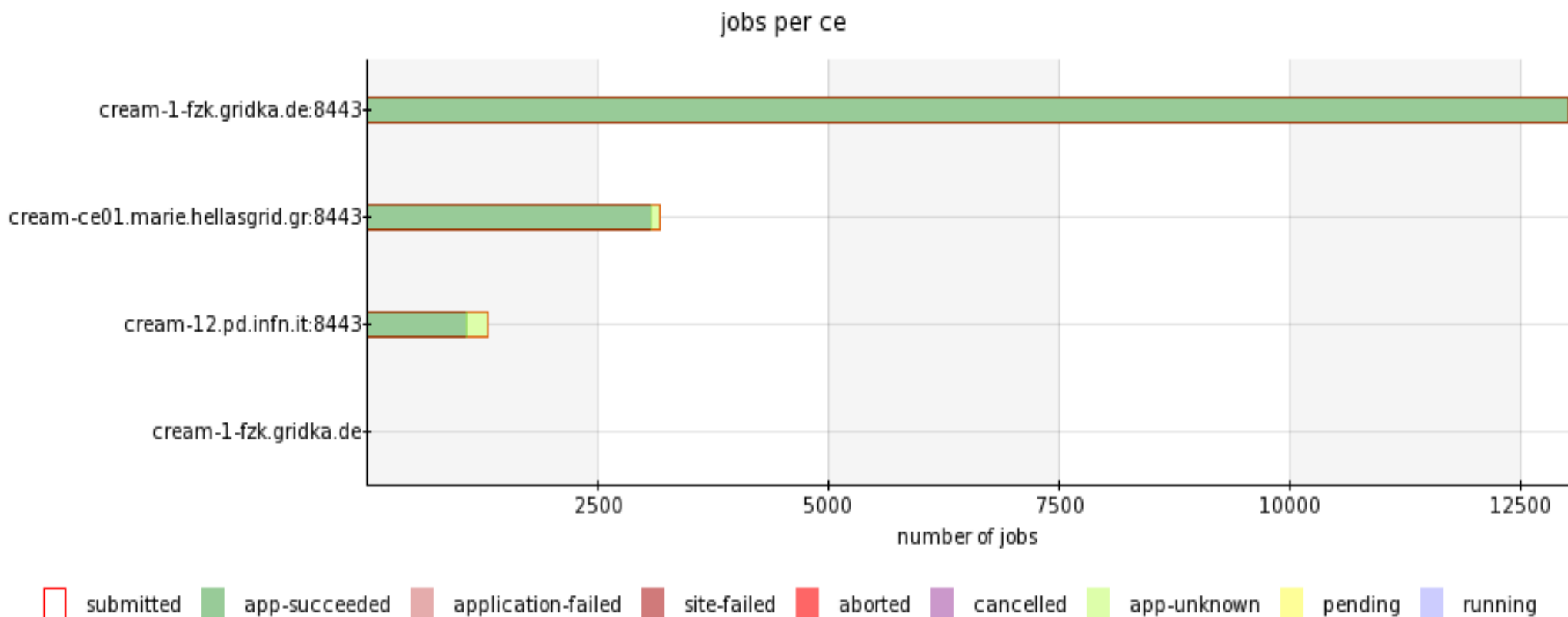
# Experience using next generation CREAM CE

# Interoperability with Condor



**Interoperability is based on GAHP modules in Condor**

# Condor tests with CREAM CE (Successful Jobs)



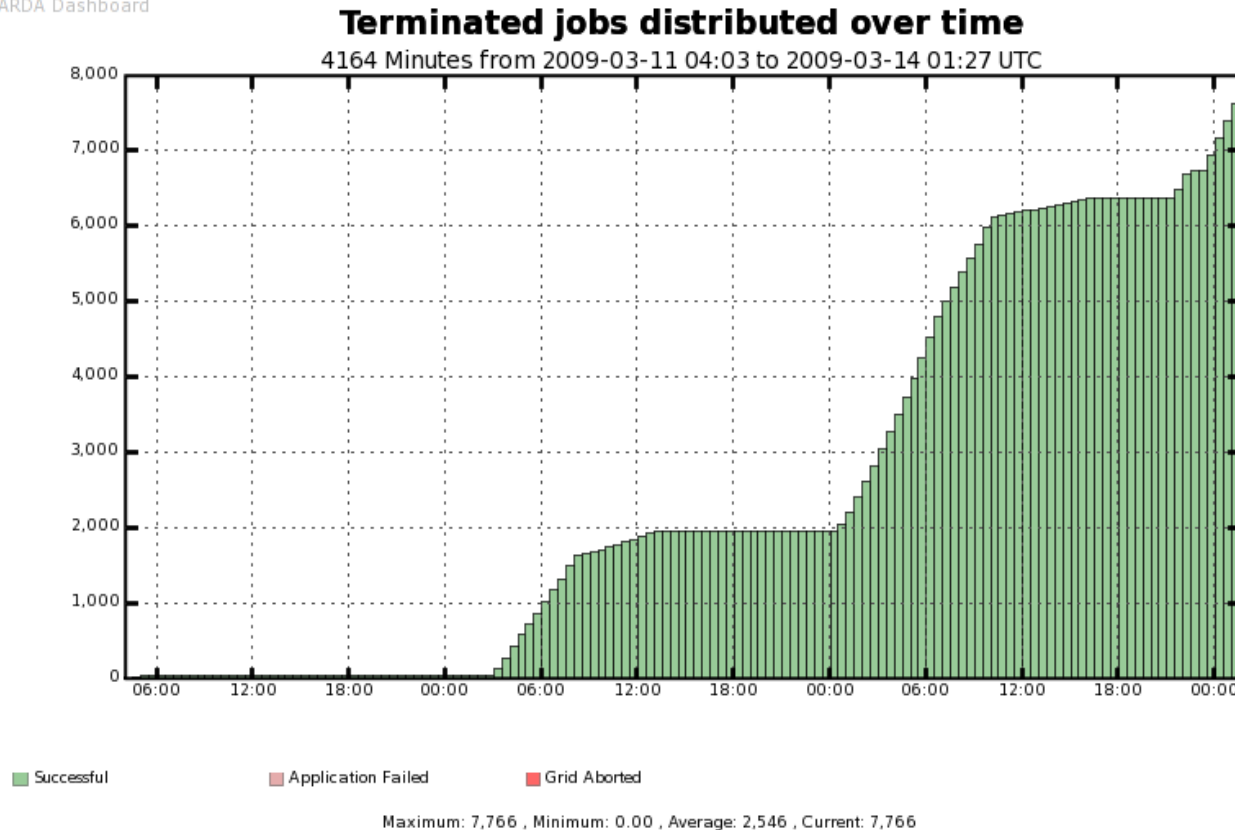
## Results from last Week:

ce	current status					grid exit status					application exit status						
	Sub	Pend	Run	Term	Done	Canc	Abort	Unk	Grid%	Succ	AppFail	SiteFail	AllFail	Unk	App%	Site%	
cream-1-fzk.gridka.de	17	0	0	17	0	0	0	17	0	17	0	0	0	0	100	100	
cream-1-fzk.gridka.de:8443	13037	0	0	13037	0	0	0	13037	0	13037	0	0	0	0	100	100	
cream-12.pd.infn.it:8443	1314	0	0	1314	0	0	0	1314	0	1088	0	0	0	226	100	100	
cream-ce01.marie.hellasgrid.gr:8443	3184	0	0	3184	0	0	0	3184	0	3077	0	0	0	107	100	100	



# Condor tests with CREAM CE

ARDA Dashboard



385 LastHoldReason = "CREAM error: CREAM\_Job\_Cancel Error: job status does not match"

100 LastHoldReason = "CREAM error: CREAM\_Job\_Purge Error: EOF detected during communication"

234 LastHoldReason = "CREAM error: CREAM\_Job\_Register Error: EOF detected during communication. "

1 LastHoldReason = "CREAM error: CREAM\_Job\_Status Error: EOF detected during communication. "

2000 LastHoldReason = "Failed to create proxy delegation"

165 LastHoldReason = "Unspecified gridmanager error"

**About 25% of the jobs failed – Major source of errors are due to proxy renewal/delegation**  
**Engaged with the developers – Work in progress to address these issues**

## Summary and Conclusions

GlideinWMS is widely used in CMS for central data reprocessing & skimming @T1s

- provides the capability to fill a very large number of resources quickly and sustaining the usage with short jobs ( $\sim 1/2$  hour)

Provides a homogeneous pool of resources over heterogeneous grid environments.

Crab-based user analysis efficiency benefits significantly from late binding methods

Job monitoring tools provide CMS users detailed information for their jobs:

- provides tools for users to access jobs interactively for debugging.

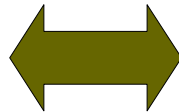
Interface to the next generation CE has been created using Condor client

Recent successful results using CREAM CE looks promising.

# Appendix- Condor GAHP and CREAM CE

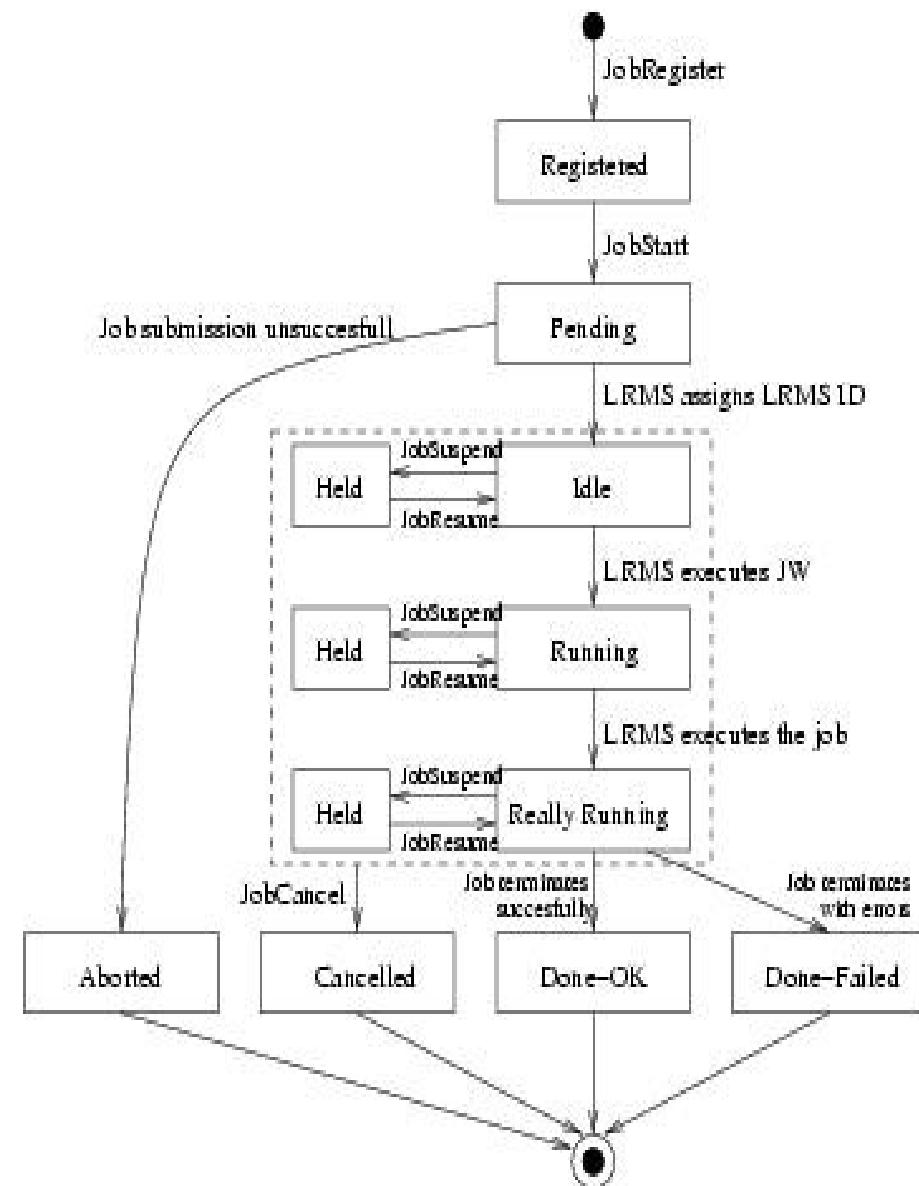
Condor-GAHP (Translates the states and maps to CREAM IDs)

GM_SUBMIT	REGISTERED
GM_PENDING	PENDING
GM_PENDING	IDLE
GM_RUNNING	RUNNING
GM_RUNNING	REALLY-RUNNING
GM_HELD	HELD
GM_CANCEL	CANCELLED
GM_DONE	DONE-OK
GM_FAILED	DONE-FAILED
GM_ABORTED	ABORTED
GM_ERROR	UNKNOWN



GAHP[10522] -> '32655' 'NULL' '1' 'CREAM500503337' 'DONE-OK' '0' 'NULL'  
 GAHP[10522] -> '32656' 'NULL' '1' 'CREAM650881586' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32657' 'NULL' '1' 'CREAM323014883' 'DONE-OK' '0' 'NULL'  
 GAHP[10522] -> '32658' 'NULL' '1' 'CREAM897757278' 'DONE-OK' '0' 'NULL'  
 GAHP[10522] -> '32659' 'NULL' '1' 'CREAM901297268' 'DONE-OK' '0' 'NULL'  
 GAHP[10522] -> '32660' 'NULL' '1' 'CREAM101916692' 'DONE-OK' '0' 'NULL'  
 GAHP[10522] -> '32662' 'NULL' '1' 'CREAM854095215' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32661' 'NULL' '1' 'CREAM108996394' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32663' 'NULL' '1' 'CREAM327701067' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32664' 'NULL' '1' 'CREAM156148436' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32665' 'NULL' '1' 'CREAM758758977' 'IDLE' 'NULL' 'NULL'  
 GAHP[10522] -> '32666' 'NULL' '1' 'CREAM041113197' 'IDLE' 'NULL' 'NULL'

## CREAM Job States



# Appendix - Condor tests with CREAM CE (Successful Jobs)



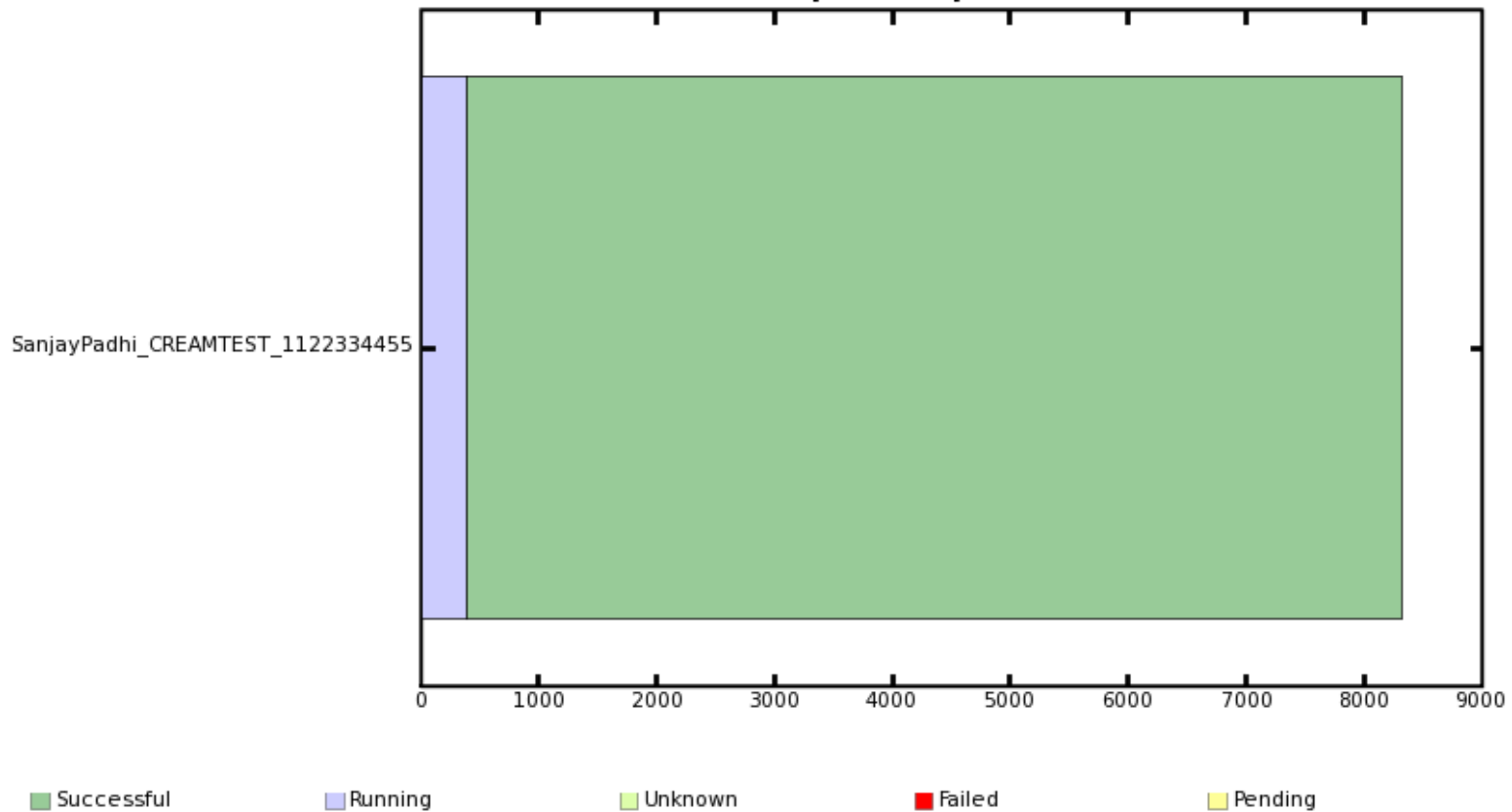
## TASK MONITORING

Select a User: Sanjay

Select a Time Range: Last 3 Days

TaskMonitorId		Num of Jobs	Pending	Running	Successful	Failed	Unknown	Consumed Time	Plots
SanjayPadhi_CREAMTEST_1122334455	 	8319	0	378	7935	0	6	<a href="#">Time Info</a>	<a href="#">Plot Selection</a>
Sum Total		8319	0	378	7935	0	6	-	-

Graphical Representation



Maximum: 8,319 , Minimum: 8,319 , Average: 8,319