egee

Enabling Grids for E-sciencE

SA1
All-Activity Meeting
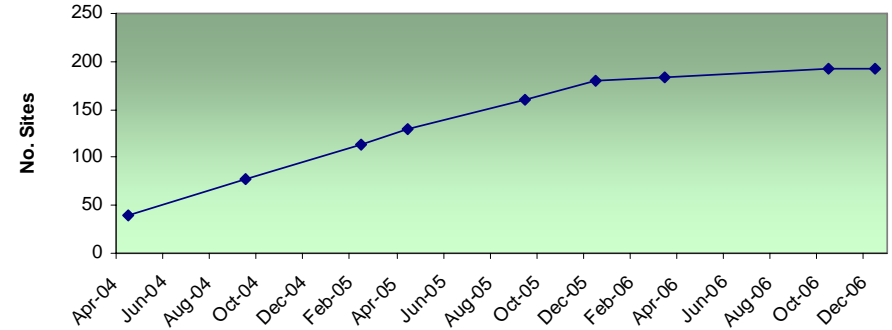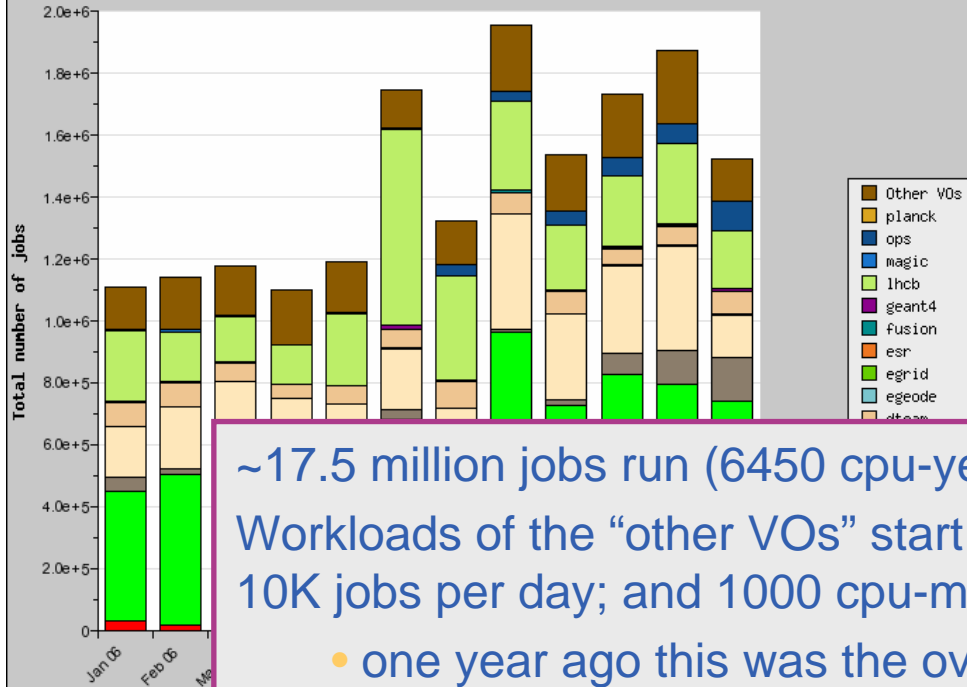
Ian Bird

Bologna

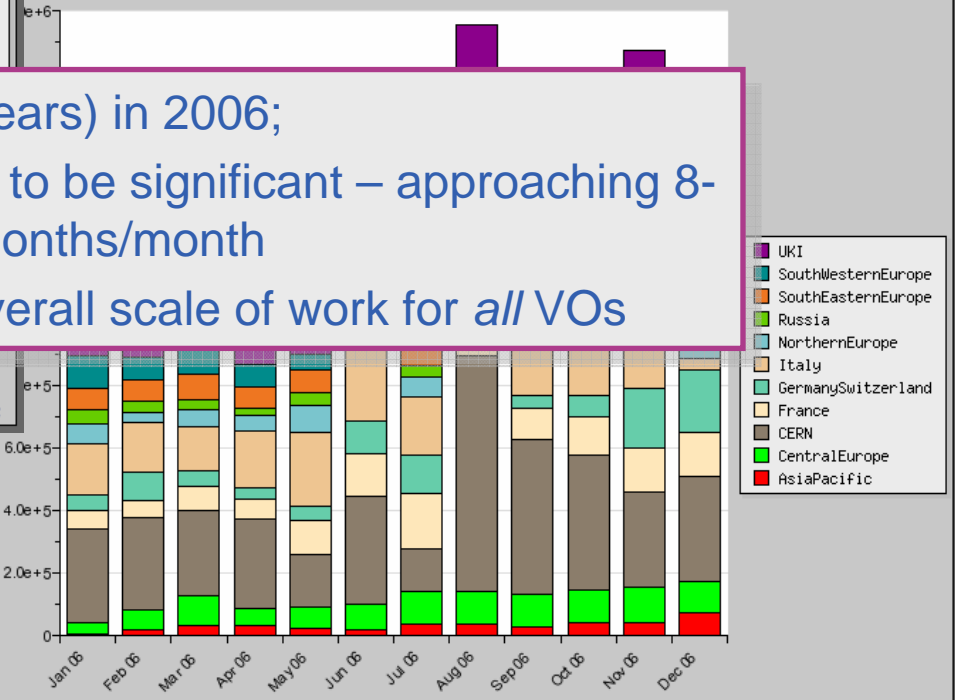*January 16-17 2007*

EGEE and gLite are registered trademarks

Enabling Grids for E-sciencE

PRODUCTION Total number of jobs by VO and DATE
January 2006 - December 2006

Legend:
- Other VOs
- planck
- ops
- magic
- lhcb
- geant4
- fusion
- esr
- egrid
- egeode
- dteam

PRODUCTION Total number of jobs by REGION and DATE
January 2006 - December 2006

Legend:
- UKI
- SouthWesternEurope
- SouthEasternEurope
- Russia
- NorthernEurope
- Italy
- GermanySwitzerland
- France
- CERN
- CentralEurope
- AsiaPacific

~17.5 million jobs run (6450 cpu-years) in 2006;

Workloads of the "other VOs" start to be significant – approaching 8-10K jobs per day; and 1000 cpu-months/month

- one year ago this was the overall scale of work for *all* VOs

(C) CESGA 'EGEE View': PRODUCTION / njobs / 2006:1-2006:12 / VO-DATE / ACCBAR-LIN / i   2007-01-14 14:00 UTC
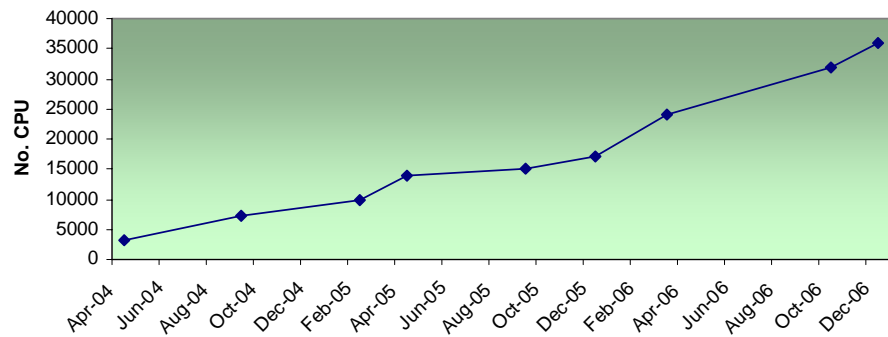
(C) CESGA 'EGEE View': PRODUCTION / njobs / 2006:1-2006:12 / REGION-DATE / ACCBAR-LIN / i   2007-01-14 14:01 UTC

EGEE Resources

egee

| Region	#countries	#sites	#cpu	#cpu DoW	disk (TB)
CERN	0	1	7800	1800	1000*
UK/I	2	23	7309	2010	2410
Italy	1	27	3336	2280	1350
France	1	10	3715	1252	1300*
De/CH	2	13	3237	1852	280*
Northern Europe	6	16	2655	1860	200
SW Europe	2	13	1125	898	200*
SE Europe	8	26	1286	1189	33
Central Europe	7	21	1759	1163	90
Russia	1	15	515	445	52
Asia-Pacific	8	19	1239	751	120
North America	2	8	2973	-	300
Totals	40	192	36949	20265	7335
PPS	14	24	2517	-	-

* Estimates taken from reporting as IS publishes total MSS space
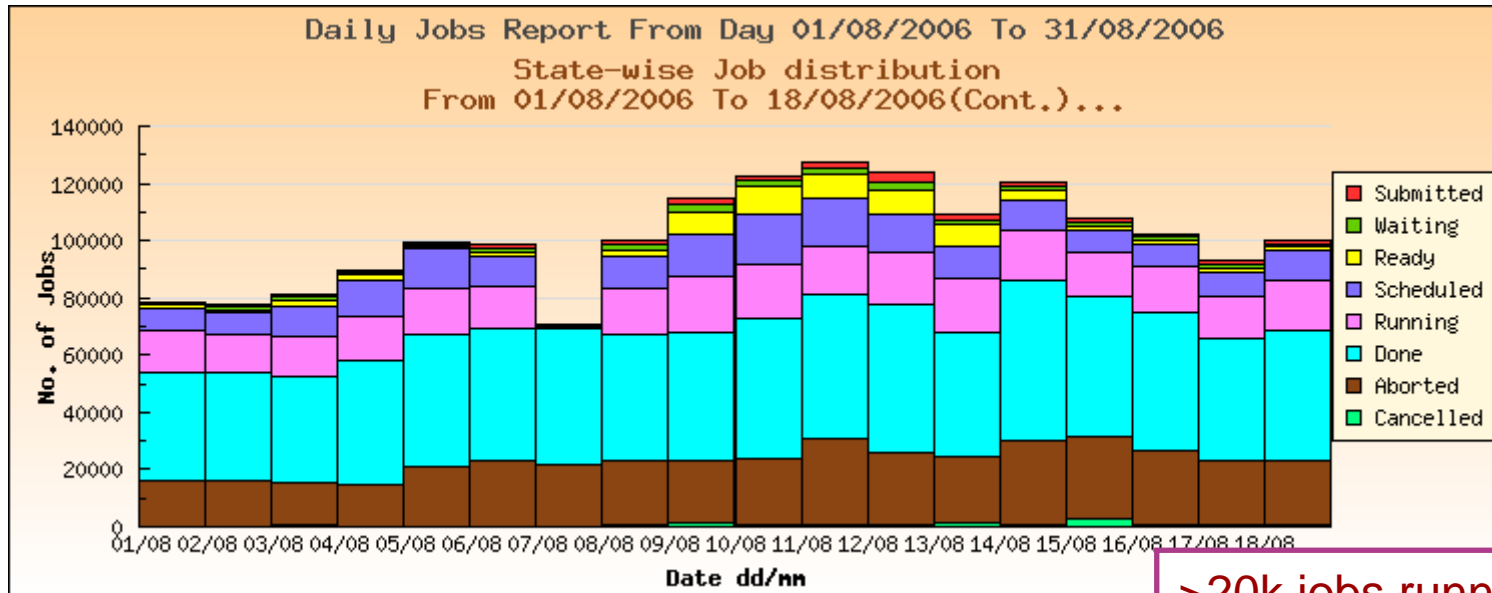
>20k jobs running simultaneously
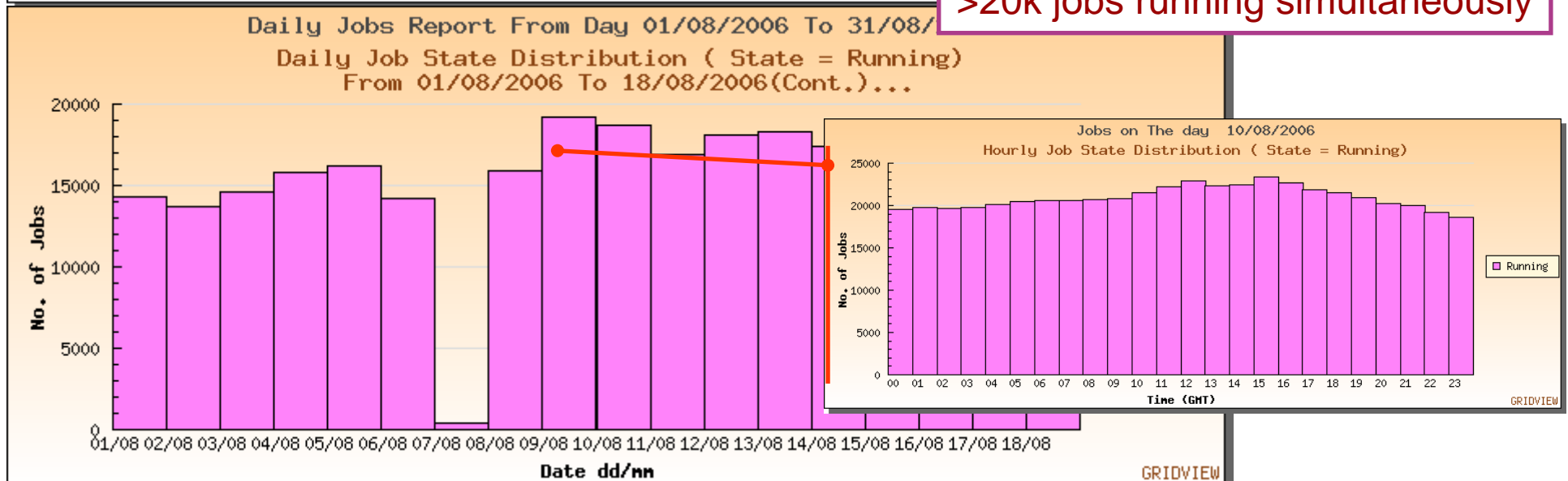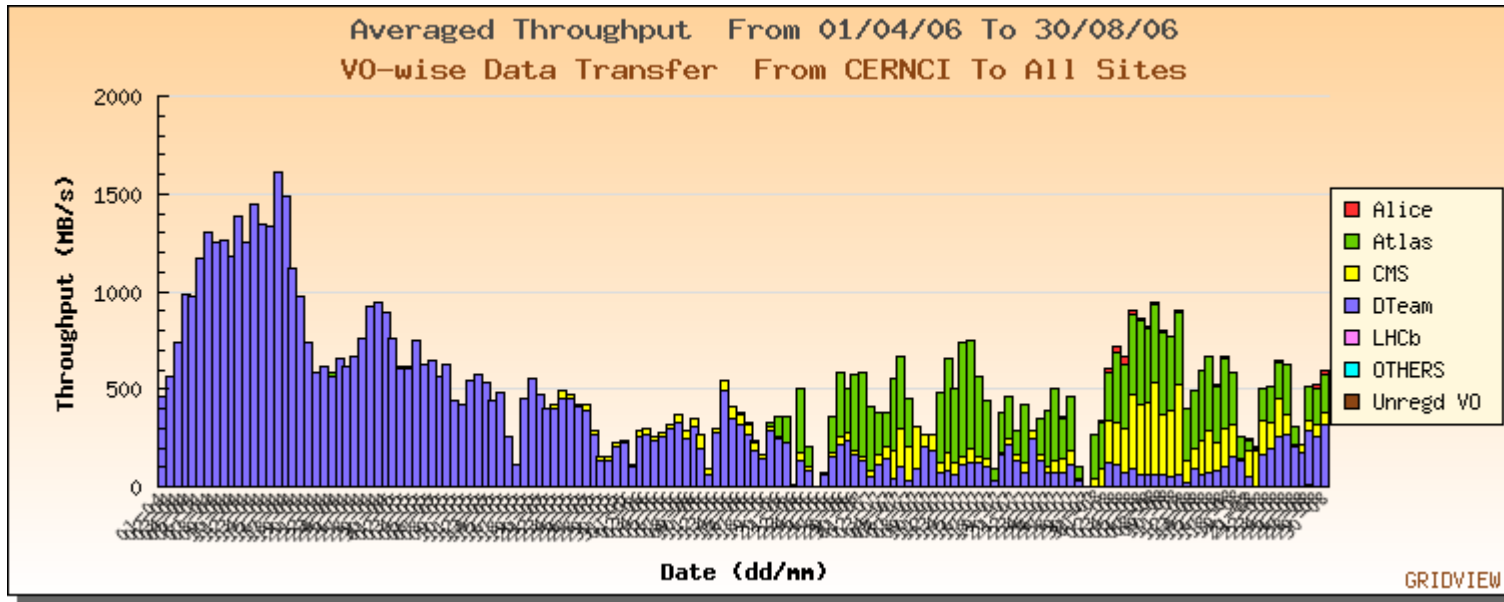
Large LHC experiments now transferring ~ 1PB/month each
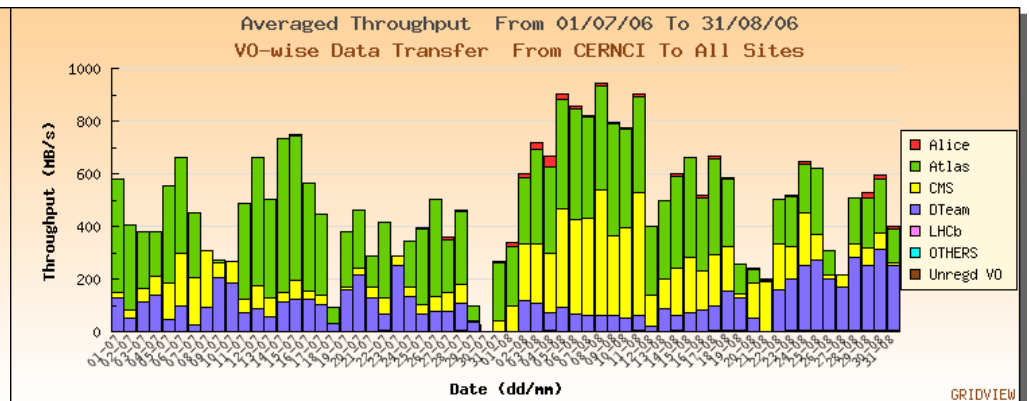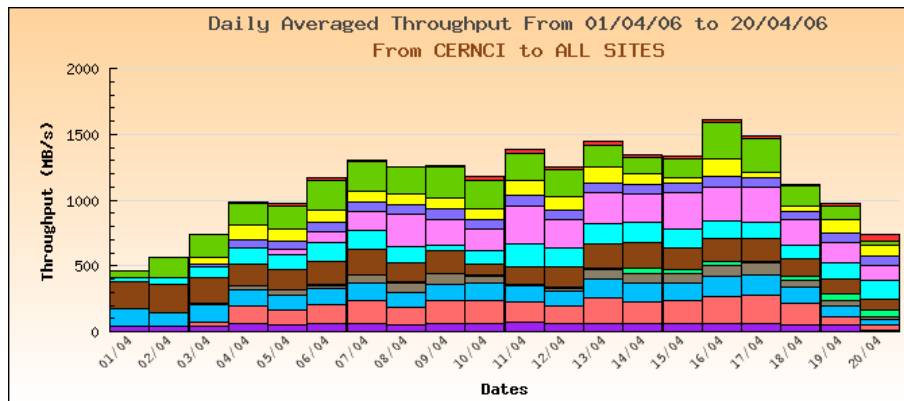
egee

Enabling Grids for E-sciencE

Enabling Grids for E-sciencE
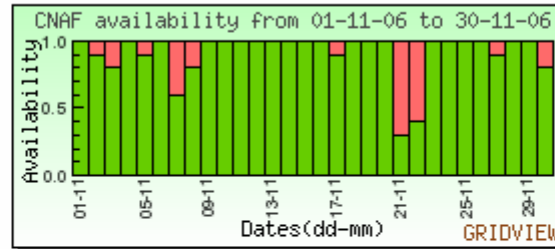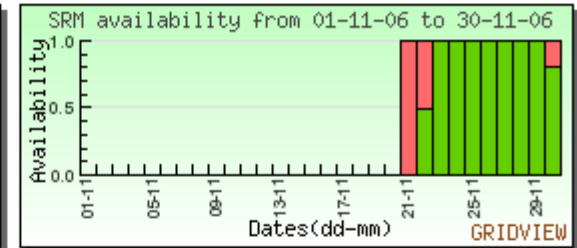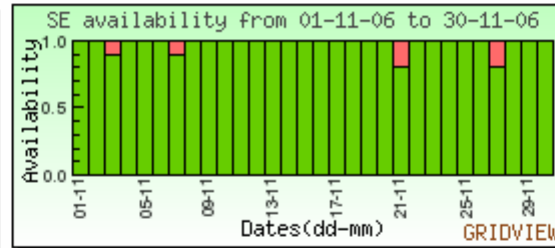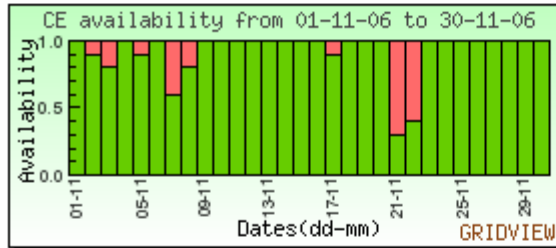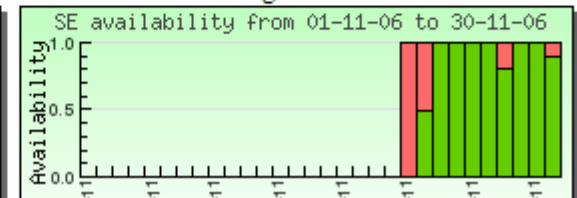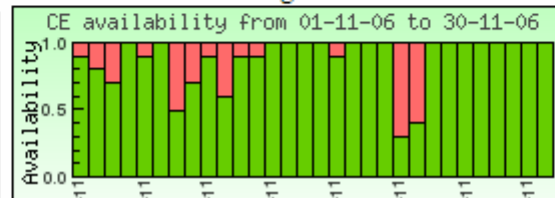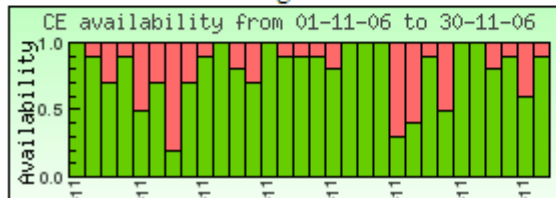
- **Improved release rollout**
  - Had been lots of complaints (communication, frequency of updates, config changes, planning)
  - Now: (efforts from both SA1 and SA3)
    - Regular updates of repository
    - Announce major changes at ops meeting
    - Announce critical updates with timeline for required updates by sites, otherwise sites do updates when they can
    - Documentation on releases has improved significantly
    - Announcements now have templates and people know where to look for information
    - Remaining issue: to clarify when reconfiguration of service is needed (developers now have to provide this info in Savannah before patch gets accepted)
- **PPS is mature and regular part of process**
  - But see issues …
- **Grid Operations is now becoming mature**
  - Procedures have evolved, interoperation with OSG main area of development

Enabling Grids for E-sciencE

- **Major problem: (see reviewer comment on porting!)**
  - With the current state of gLite, SA1 is not able to provide and maintain compatibility with the physical deployment environment.
    - There is no port to SLC4 – let alone the promised other OS's
  - This means we cannot even maintain operations at our current sites as they need to upgrade their hardware
  - Seems to be due to the complexity of the gLite packages, interdependencies, external dependencies and consequent problems to build and port
    - This has been raised as an issue for years but nothing has been done about it
  - This is now a crisis in the making – it is both a management and a technical problem

  - Serious risk that "gLite" loses credibility – which will mean that apps/projects will not want to use it, and sites will not want to deploy it

  - Before this is solved the chances of adding more functionality become remote

Enabling Grids for E-sciencE

- **Pre-production service: Is it value for money?**
  - The PPS has been used:
    - During gLite-3.0 deployment/testing
    - For major changes (eg SLC4 testing)
    - By certain VOs (SWITCH, DILIGENT) as a main platform
  - But by and large it is not heavily used
    - Use is rather intermittent, and mainly for small tests – it cannot reproduce the environment and scale of the LCG VOs production environments
    - EIS team (and ATLAS) use to check that bugs are fixed
  - To make it available for when it is needed it has to be kept up to date
    - Weekly release cycle
    - Well maintained and good response from the sites involved
    - All of the sites involved have volunteered and want to participate (~20 sites)
  - Perhaps the scale can be reduced to be more appropriate for the actual usage?
  - Use more as extended deployment testbed / extended certification (with SA3)?
    - Cover major deployment scenarios
  - Or, can it be made more usable by, more useful to, the VOs?
    - Need NA4 to help us answer this

Enabling Grids for E-sciencE

- **gLite CE breaks interoperability with other infrastructures, sites , and applications**
    - Only common interface will be through Condor-G
- **Lack of management ability of grid services**
    - Remains a major issue for site and service managers
    - Very little has changed yet
- **Web site and information, &**
- **UIG –**
    - Still see the need for help in getting users started
    - Not yet a framework even?
- **Resources for new VOs!**
    - See EGEE-3 discussion; this needs to be addressed by the resource owners

- **Preparation for LHC start-up**
  - This will be the main driving force behind how the infrastructure changes
  - Dress rehearsals start in June; expect accelerator start-up in November
  - Crucial that the infrastructure is ready, reliable, and stable
    - Must ensure that changes are not disruptive – probably even more important than new functionality
- **Middleware changes anticipated in deployment**
  - Migration to SLC4 + 64 bit support
  - SRMv2.2 support: In the Storage Elements, but also in the DM tools (GFAL, lcg-utils, FTS)
  - Move to the gLite WMS: but this is still not yet good enough to be deployed widely as a production service
  - Implementation and deployment of the gLite-CE
    - But this has its own problems – see slide
  - Replacement of gLiteIO/Fireman with LCF/GFAL (April?)
  - glexec provided as a tool – sites will decide how it can be used
  - Job priorities – following wg proposals

Enabling Grids for E-sciencE

Improvement of service reliability – also to respond to reviewers comments on understanding of the overall system and job failures

- **SAM – continue to develop – need to complete the set of tests**
  - Will publish availability/reliability of all sites (currently done for LCG Tier 1s)
- **Three working groups have been set up to focus on improving service and site reliability – all 3 are coordinated together**
  - Grid Monitoring
    - Pull together existing monitoring data, provide views for stakeholders
    - Not more development, but bringing together what exists, and fill in the gaps
    - Early deliverable – integrate remote monitors of a service into site fabric monitoring
  - Site Management
    - Set up through HEPiX, but relevant to all system admins.
    - Tools, best practices, recommendations, for improving site management
      - *E.g. recommend a set of tools to use for new sites*
  - System Analysis
    - Continue the work done by ARDA on experiment dashboards – but coordinated with the other groups
    - Provides a level of understanding from app p.o.v and can feedback to ops and other monitors
- **Need coordinated debugging with applications to find underlying failures – and fix them**

The CE Issue

- **Issue: gLite CE/Cream does not support all the submission interfaces we have now**

- **If we move to deploy the gLite CE only – will force other VOs to use Condor as *the standard* interface to CEs**

- **Alternatives:**
  - Accept and push Condor as the interface
  - Deploy an architecture similar to that proposed here

- **Risk if we do not do this:**
  - Break support for existing apps
  - Break co-existence with other grids at sites

- **What if national/campus grids deploy GT4??**

- **Blah must be the ONLY interface to the batch systems**
  - Logging, accounting, info providers, …

- **Cream must be added as a plugin to this architecture (i.e. no shortcuts around blah)**

CREAM   gLite-CE   GT4 pre-WS   GT4 WS

Job managers   ???

Info providers   Blah
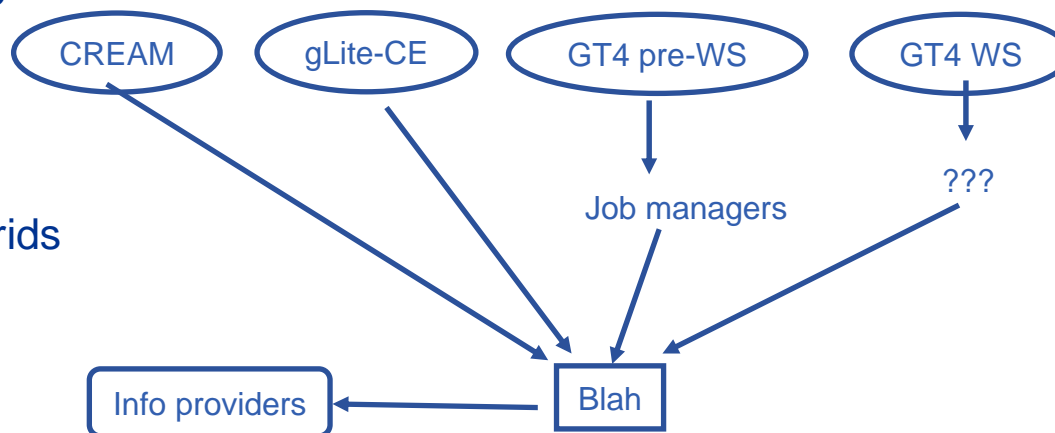
- **Complete 1st round of federation/partner reviews**
  - 1st set (CE, SEE) were done in November
  - 2nd set (DE/CH, NE, SWE, UKI) in February

- **GGUS:**
  - Workshops with VOs to improve user friendliness
    - 1st round with LCG VOs next week
    - 2nd round with other VOs planned for ???

- **Operations workshops**
  - Next week during wLCG collaboration meeting
  - June in US focus on interoperation
  - ?May? in Europe (default CERN) general operations workshop

Enabling Grids for E-sciencE

- **17. Investigate how the VO resource access policies relate to the above issues and objectives.**
  - This is outstanding – we have no good response

- **18. Data privacy issues may arise if the accounting data are not managed carefully. Appropriate access control policies should be explored to achieve that objective.**
  - Handled by accounting system

eGee

Enabling Grids for E-sciencE

No.	Title	Due
DSA1.1	Global Grid User Support (GGUS) Implementation Plan	1
DSA1.2	Operations Advisory Group (OAG) procedures and policy report	1
DSA1.3	**Grid Services security, vulnerability and risk analysis**	10
DSA1.4	**Assessment of production service status**	11
DSA1.5	**Grid Operations cookbook**	16
DSA1.6	Assessment of production grid infrastructure service status	22

egee

Enabling Grids for E-sciencE

No.	Title	Due
MSA1.1	Operations metrics defined	1
MSA1.2	Inventory of operations tools, procedures, & gap analysis	2
MSA1.3	Site operations policy agreement in place	5
MSA1.4	CERT teams in place – all ROCs, roles and procedures	6
MSA1.5	GGUS operational	6
MSA1.6	Security and availability policy	8
MSA1.7	**Assessment of GGUS support**	**11**
MSA1.8	**Operational accounting portal**	**15**