EGEE Services and Status in Taiwan

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Grid Computing Centre, Academia Sinica (ASGC)

EGEE Workshop in Taiwan

Aug. 23, 2005

Outline

- Participation in LCG/EGEE of Taiwan
- EGEE Services of Taiwan
- Fostering e-Science Applications in Asia

Participation in EGEE of Taiwan

- From LCG toward e-Science
- Build up a reliable grid-based research infrastructure in Academia Sinica and Taiwan
- Sharing and collaboration in global scale
- Fostering grid computing and e-Science applications in Asia

EGEE Geographical Extensions

- **EGEE is a truly international under-taking**
- **Collaborations** with other existing European projects, in particular:
  - **GÉANT, DEISA, SEE-GRID**
- **Relations** to other projects/proposals:
  - **OSG: OpenScienceGrid (USA)**
  - **Asia: Korea, Taiwan, EU-ChinaGrid**
  - **BalticGrid: Lithuania, Latvia, Estonia**
  - **EELA: Latin America**
  - **EUMedGrid: Mediterranean Area**
  - **…**
- **Expansion of EGEE infrastructure in these regions is a key element for the future of the project and international science**

Summary

- EGEE **is a first attempt to build a worldwide Grid infrastructure for data intensive applications from** many scientific domains
- **A** large-scale production grid service **is already deployed and being used for HEP and BioMed applications with new applications being ported**
- **Resources & user groups are** expanding
- **A process is in place for** migrating new applications **to the EGEE infrastructure**
- **A** training programme **has started with many events already held**
- **"*next generation*" middleware is being tested** (gLite)
- **First project review by the EU successfully passed in Feb'05**
- **Plans for a** follow-on project **are being prepared**

LCG/EGEE Deployment Milestone

- Staffs Stationed at CERN: Sept 2002
- LCG-0 deployed: March 19, 2003
- EDG testbed deployed: March, 2003
- ASGCCA approved: June 12th, 2003
- LCG-1 testbed Ready: July 30, 2003
- LCG-2 deployed: Feb 2, 2004
- GOC operational in Taiwan: Apr 2, 2004
- GGUS operation in Taiwan: May 2, 2004
- Mass Storage Service Installed: July 15, 2004
- Regional Operation Center Services: Jan, 2005
- EGEE Testbed Installed: Mar, 2005
- Service Challenge: Apr, 2005 ~
- pre-production Site: July. 2005
- 1st EGEE Workshop in Taiwan: Aug. 2005

Contributions of Taiwan in LCG/EGEE

- Collaborate ATLAS & CMS Teams in Taiwan
  - Acting as Tier-1 and Tier-2 Site
- LCG/EGEE
  - Production CA Services
  - LCG Core Site
  - 2nd Grid Operation Center (GOC)
  - 2nd Global Grid User Support (GGUS) Center
  - Participate LCG Technology Development
    - Data Management
    - Grid Technology
    - Certification & Testing
    - Application Software
    - ARDA
    - 3D (Distributed Deployment of Database)
    - Operation and Management

EGEE Participation

- Joined EGEE as a non-funded member from 2004
- NA3: Training and Induction
- NA4: Application
  - High Engergy Physics
  - HealthGrid
  - Diligent
- SA1: Support and Operation Management
  - CIC/ROC
- JRA1: Middleware Re-engineering
  - gLite pre-production site
  - gLite Testbed

EGEE Services of Taiwan

- Production CA Services
- APROC
- VO Support
- pre-production site
- User Support
- MW and technology development
- Application Development
- Education and Training
- Promotion and Outreach
- Scientific Linux Mirroring and Services
- TWGrid

ASGCCA Services

- Providing Services for Taiwan and LCG/EGEE Users in Asia Pacific Countries, who can not find domestic CA services.
- Production Services Started from July 2003, approved by EDG

	User Certificate	Host Certificate	Service Certificate	Total
Issued	82	110	1	193
Effected	50	87	1	138
Revoked	32	23	0	55

http://ca.grid.sinica.edu.tw

VO Services

- VO Supported
  - Atlas
  - CMS
  - Biomed
- VOMS services
  - deployed from Apr. 2005
  - TWGRID VO established for domestic Services in Taiwan
  - Working on a “Asia-eScience” VO for collaboration general e-Science services in Asia Pacific Areas

Asia Pacific Regional Operations Centre (APROC)

APROC Services

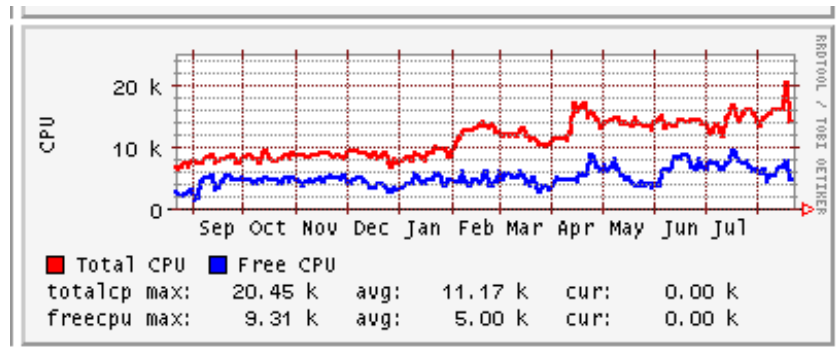
- Monitoring and Control
- Certification Authority
- Core Infrastructure Center (CIC)
- VOMS Service
- Regional Operation Center (ROC)
- Middleware Deployment and Consultation
- User and Resource Support

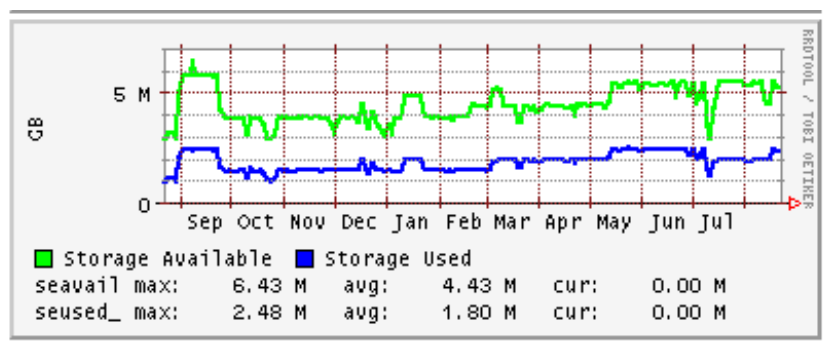
LCG/EGEE Monitoring

- APROC monitors the health of Grid Resource Centers within the region in order to detect problems or potential sources of problems proactively.
- Primary tools used for Grid monitoring:
  - SFT: Site Functional Test
    - http://lcg00121.grid.sinica.edu.tw/roc-report
  - GStat: http://goc.grid.sinica.edu.tw/gstat
  - Ganglia: http://lcg00121.grid.sinica.edu.tw/ganglia
  - SCMS: http://pragma001.grid.sinica.edu.tw/scmsweb
  - CE and SE Certificate Lifetimes: http://goc.grid-support.ac.uk/gridsite/monitoring
  - GridICE: http://goc.grid-support.ac.uk/gridsite/monitoring
  - Real Time Grid Monitor
  - Taipei LCG Accounting: http://lcg00121.grid.sinica.edu.tw/accounting

ROC Monitoring: GStat

- Tool to display and check information published by Grid site GIIS
  - Missing entries
  - Invalid information
  - Core service checks
  - Usage Statistics
- http://goc.grid.sinica.edu.tw/gstat/





GStat: 20:58:01 08/21/05 GMT

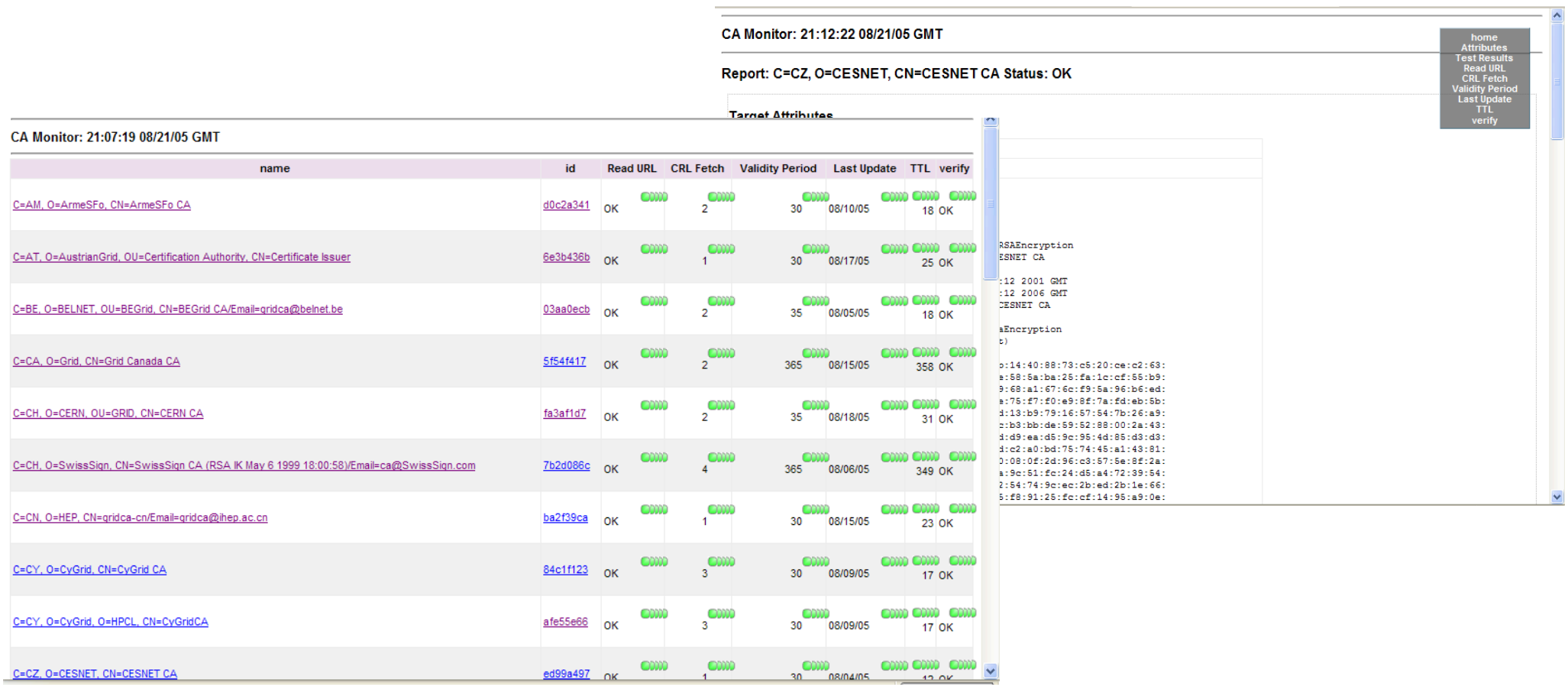
home alert table service regional service metrics links prod test seegrid

ServDuplicate

AEGIS01-PHY-SCL JL	ALBERTA-LCG2 OK	BEIJING-LCG2 CT	BG-INRNE OK	BG01-IPP OK	BG02-IM
BG04-ACAD OK	BHAM-LCG2 SD	BIFI OK	BITLab-LCG SD	BNL-LCG2 SD	BRISTOL-PP-LCG
BUDAPEST OK	CARLETONU-LCG2 SD	CAVENDISH-LCG2 OK	CEA-DAPNIA-SACLAY SD	CERN-CIC OK	CERN-PROD
CESGA-EGEE OK	CGG-LCG2 CT	CIEMAT-LCG2 OK	CNAF-T1 JL JL	CNB-LCG2 JL	cpDIASie
CSCS-LCG2 OK	csQUBuk JL	csTCDie OK	csUCCie SD	CY01-LCG2 OK	CYFRONET-IA64
CYFRONET-LCG2 OK	DESY-HH OK OK	Durham OK	egee.man.poznan.pl OK	ekplcg2 OK	ESA-ESRIN
FZK-LCG2 JS	giAITie OK	giDCUie OK	giDITie OK	giITCie JL	giITTAie
giITTRie OK	giNUIMie OK	giRCSIie OK	giULie JL	giWITie SD	GOG-Singapore
GR-01-AUTH OK	GR-02-UoM OK	GR-03-HEPNTUA OK	GR-04-FORTH-ICS OK	GR-05-DEMOKRITOS CT	GSI-LCG2 OK
HEPHY-UIBK OK	Hephy-Vienna OK	HG-01-GRNET OK	HPC2N OK	HPTC-LCG2ia64 CT	HR-01-RBI
IC-LCG2 OK	IEPSAS-Kosice SD	ifae OK	IFCA-LCG2 OK	IFIC-LCG2 OK	IISAS-Bratislava
IN2P3-CC OK	IN2P3-CPPM OK	IN2P3-LAL OK	IN2P3-LAPP	IN2P3-LPC JS OK	INFN-BARI
INFN-BOLOGNA OK	INFN-BOLOGNA-CMS OK	INFN-CAGLIARI OK	INFN-CATANIA OK	INFN-CNAF JL	INFN-FERRARA
INFN-FIRENZE OK	INFN-FRASCATI OK	INFN-LNL-2 OK	INFN-MILANO OK	INFN-NAPOLI SD	INFN-NAPOLI-ATLAS
INFN-PADOVA OK	INFN-PERUGIA OK	INFN-PISA2 OK	INFN-ROMA1 OK	INFN-Roma1-CMS JS	INFN-ROMA1-VIRGO
INFN-ROMA2 SD	INFN-TORINO CT	INTA-CAB OK	IPSL-IPGP-LCG2 OK	ITEP OK	ITWM
JINR-LCG2 SD	Lancs-LCG2 OK	LCG KNU CT	LIP-LCG2 JS	ManHEP-LCG2 JL	MK-01-UKIM II
mpUCDie OK	NCP-LCG2 SD	NIKHEF-ELPROD OK	NSC OK	obsARMuk OK	OSG JL CT
OXFORD-01-LCG2 OK	PAKGRID-LCG2 SD	pic OK	prague_cesnet_lcg2 OK	PragueLCG2 OK	QMUL-eScience

CA Monitor

- Monitor CA CRL tests created as plugins
  - CRL availability
  - Performance: download latency
  - CRL expiration check
  - CRL signature verification
  - Results history
- http://goc.grid.sinica.edu.tw/camonitor



CA Monitor: 21:12:22 08/21/05 GMT

Report: C=CZ, O=CESNET, CN=CESNET CA Status: OK

Target Attributes

home
Attributes
Test Results
Read URL
CRL Fetch
Validity Period
Last Update
TTL
verify

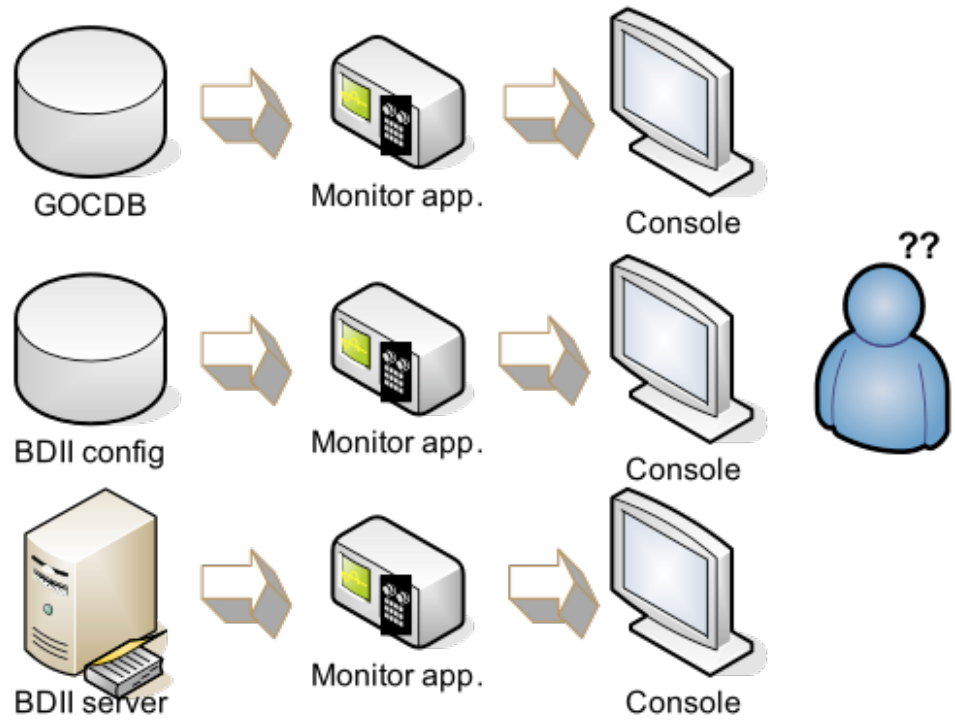
CA Monitor: 21:07:19 08/21/05 GMT

name	id	Read URL	CRL Fetch	Validity Period	Last Update	TTL	verify
C=AM, O=ArmeSFo, CN=ArmeSFo CA	d0c2a341	OK	2	30	08/10/05	18	OK
C=AT, O=AustrianGrid, OU=Certification Authority, CN=Certificate Issuer	6e3b436b	OK	1	30	08/17/05	25	OK
C=BE, O=BELNET, OU=BEGrid, CN=BEGrid CA/Email=gridca@belnet.be	03aa0ecb	OK	2	35	08/05/05	18	OK
C=CA, O=Grid, CN=Grid Canada CA	5f54f417	OK	2	365	08/15/05	358	OK
C=CH, O=CERN, OU=GRID, CN=CERN CA	fa3af1d7	OK	2	35	08/18/05	31	OK
C=CH, O=SwissSign, CN=SwissSign CA (RSA IK May 6 1999 18:00:58)/Email=ca@SwissSign.com	7b2d086c	OK	4	365	08/06/05	349	OK
C=CN, O=HEP, CN=gridca-cn/Email=gridca@ihep.ac.cn	ba2f39ca	OK	1	30	08/15/05	23	OK
C=CY, O=CyGrid, CN=CyGrid CA	84c1f123	OK	3	30	08/09/05	17	OK
C=CY, O=CyGrid, O=HPCL, CN=CyGridCA	afe55e66	OK	3	30	08/09/05	17	OK
C=CZ, O=CESNET, CN=CESNET CA	ed99a497	OK	1	30	08/04/05	12	OK

RGMA Unified Monitoring

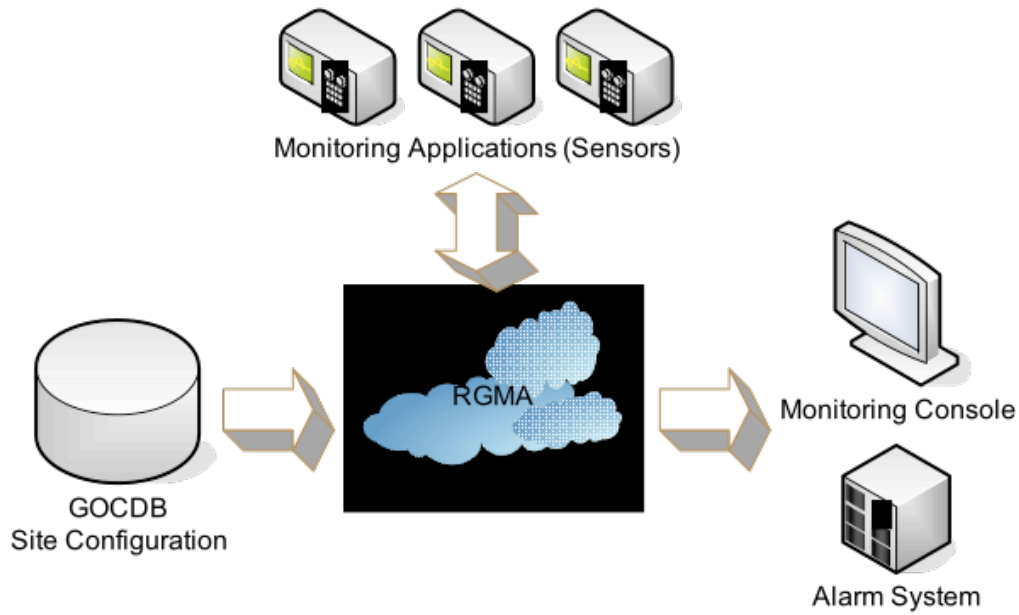
in Collaboration with CERN and RAL GOC

- Inconsistent site configuration sources
  - Monitoring tools don't have same coverage
  - Correlation more difficult
- Difficult to correlate test results
  - Manually search through many web pages
  - Time consuming especially with 160 EGEE sites!
- Need a view with only alerts
  - Don't need to be flooded with information



R-GMA Unified Monitoring
(continued)

- Site configurations are consistent
  - Only from GocDB
- Data is sent to single data transport (RGMA)
  - Shared data format
- In development
  - Single Console to display all data
  - Single alarm system to monitor all data
- http://goc.grid.sinica.edu.tw/gocwiki/RgmaUnifiedMonitoringSystem



Job Monitoring with R-GMA

(in Collaboration with CERN)

- Job Status Monitoring
  - Logging and Bookkeeping service can be queried by RGMA. Bookkeeping server produces job state change "events".
  - This tool provides information about the status of job after it has been submitted to the RB.
  - The information is retrieved by querying the JobStatusRaw table (published via R-GMA). It is intended to be run on an UI.
  - The command returns information for a specified job (given the job id). Standard R-GMA type of queries are supported (see usage).
- Job Monitoring
  - This tool can be used to monitor the process of a job currently running on a WN.
  - Gives information about all statistics for a given job_id, e.g.: local_id, vo, wallclocktime, virtual/real memory, CPU time, DN etc...
  - The information is retrieved by querying the JobMonitor table (published via R-GMA). It is intended to be run on an UI.
  - The command can return information either for a single job (given the job id), for a user (specifying the DN) or for a whole VO (by name). Standard R-GMA type of queries are supported (see usage).

Core Infrastructure Center (CIC)

CIC Services	Description
Operate Infrastructure Services	1. VO services : For VO services this will include the VO server itself (either LDAP VO server or VOMS service), and may eventually include the registration process web server for the VO. 2. VO-specific services : Responsibility for managing the VO membership remains with the VO itself(VO manager).This includes database services for replica services for a VO(or set of VOs), and may include other database services depending on the needs of the VO.
Regional Operation Center	1. Monitoring of sites and services,and proactive troubleshooting. 2. Performance monitoring–Metrics and important parameters to be monitored will be developed as part of the CIC program of work. 3. Control sites'participation in production service. 4. Regularly monitor the accessibility of operational services and resources at Resource Centres and take remedial action as necessary.
Support ROC for Operation Problems	1. The CICs will eventually provide (between them) a 24x7 operational and support service. If a ROC cannot resolve a problem,or it is a problem with one of the VO services run by a CIC, or problems not related to a specific region the CIC will take responsibility for the problem coordination and resolution. Similarly if the problem is with another organization of network infrastructure it will be a CIC that manages the issue.

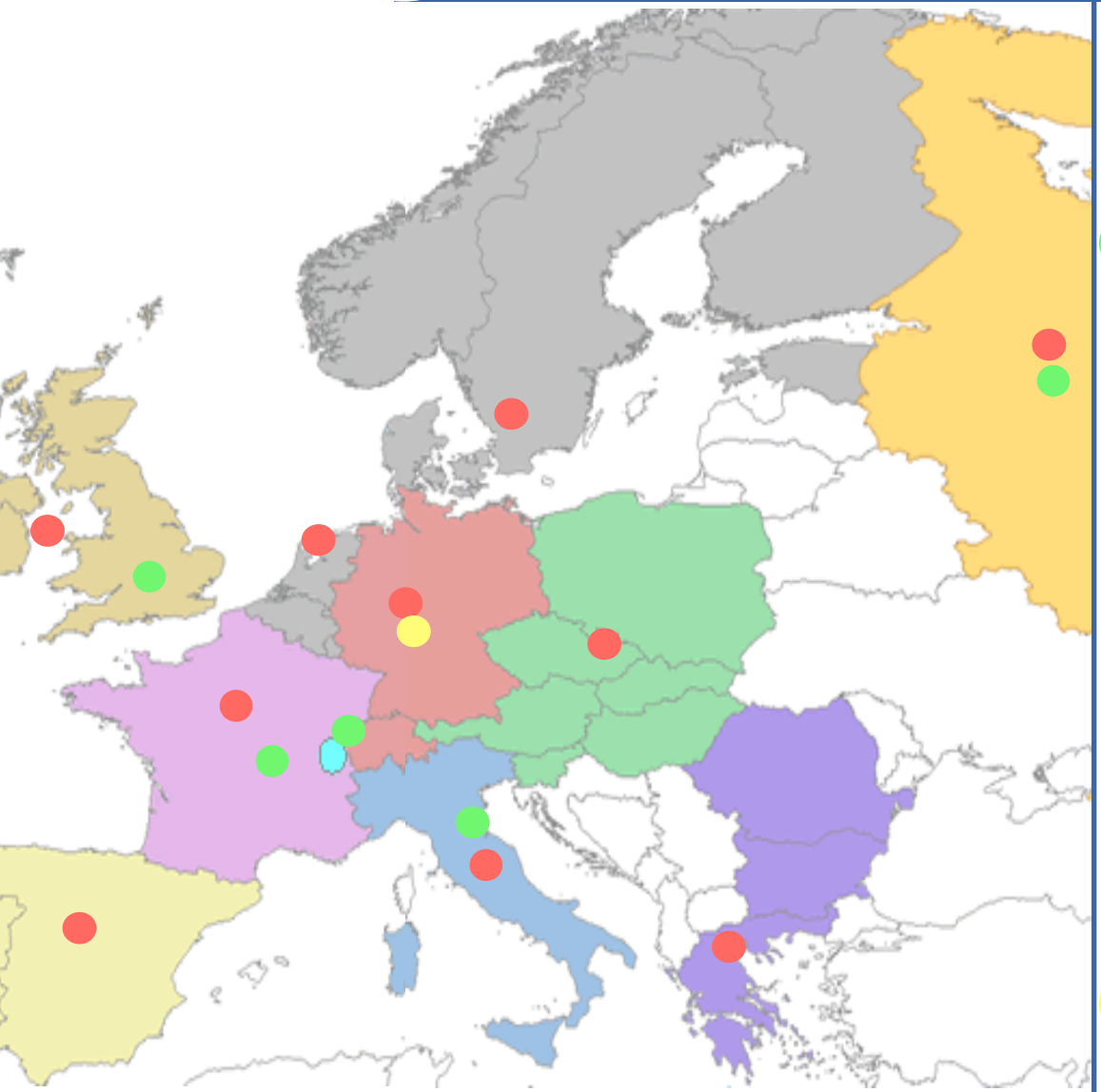
VOMS (Support) Services

- Help on how to best use the middleware for specific use-case
- Communication with developers for implementation of specific features
- Tools, APIs, specific distributions of single middleware components
- A testbed to play with, strictly controlled, with prompt support reaction
- Specific Tutorials (addressed to a specific VO)
- Monitor VO specific services, signal problems
- Site monitoring, interact with local site support

ROC Services

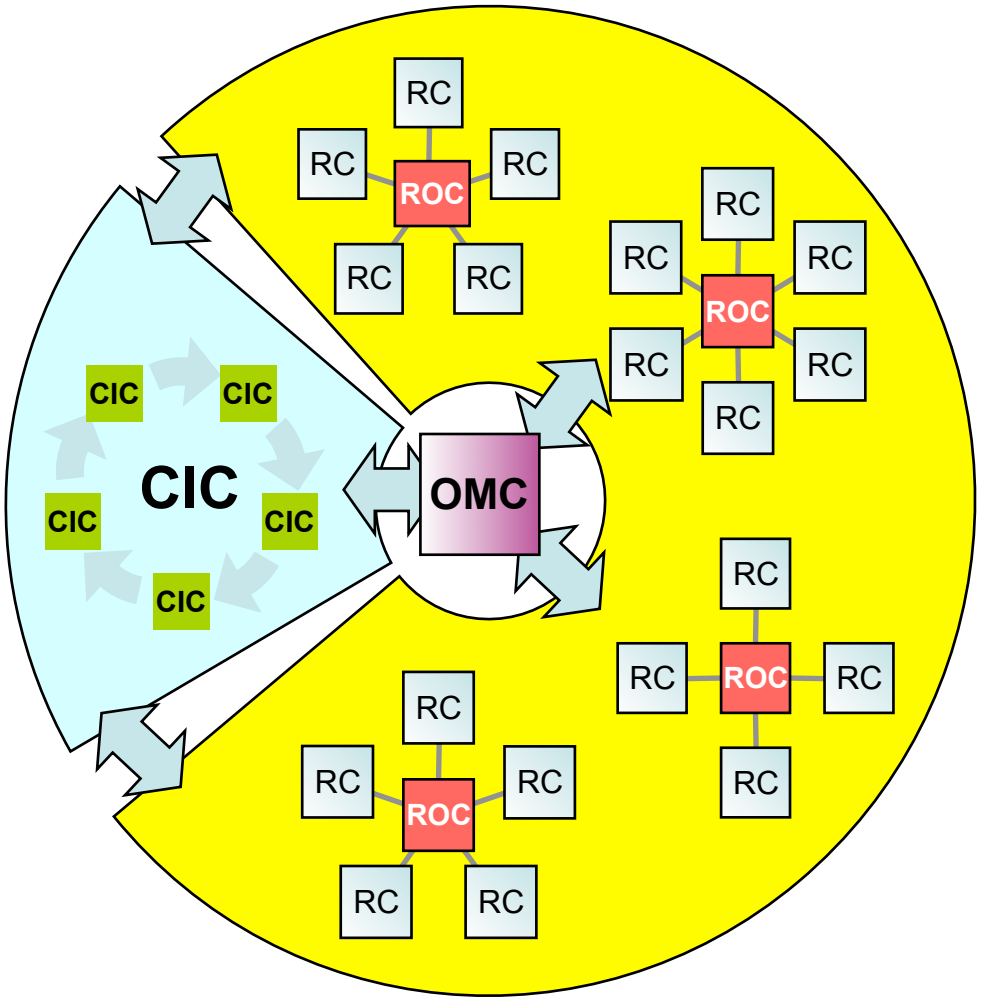
- Certification
  - Responsible for certifying and customizing the middleware release for the region where necessary.
  - Certification Testbed
  - Host CVS packages repository when necessary
  - Provide configuration and installation tools for regional sites
- Management
  - Coordinate and certify the upgrade or new middleware installation with the Resource Centers defining plans and timetables
  - Keep repository of Resource Center configurations
  - Interact with OMC and corresponding teams in ROC's to provide an agreed general EGEE infrastructure system architecture and deployment plan
  - Provide and develop testing/certification procedures to verify and validate Resource Center and Grid services for VO applications
- Grid Support
  - develop specific procedures to recover or proactively avoid congestion or faulty situation in resource centers
  - Coordination of support procedures and ticket-database exchange procedures to provide interoperability among ROC's support systems and give users 'transparent' problem resolution.
  - Responsibility to escalate problems to CIC or middleware developers.

SA1 – Operations Structure



- **Operations Management Centre (OMC):**
  - At CERN – coordination etc
- **Core Infrastructure Centres (CIC)**
  - Manage daily grid operations – oversight, troubleshooting
  - Run essential infrastructure services
  - Provide 2nd level support to ROCs
  - UK/I, Fr, It, CERN, + Russia (M12)
  - Taipei will also run a CIC
- **Regional Operations Centres (ROC)**
  - Act as front-line support for user and operations issues
  - Provide local knowledge and adaptations
  - One in each region – many distributed
- **User Support Centre (GGUS)**
  - In FZK – manage PTS – provide single point of contact (service desk)
  - Not foreseen as such in TA, but need is clear

Grid Operations

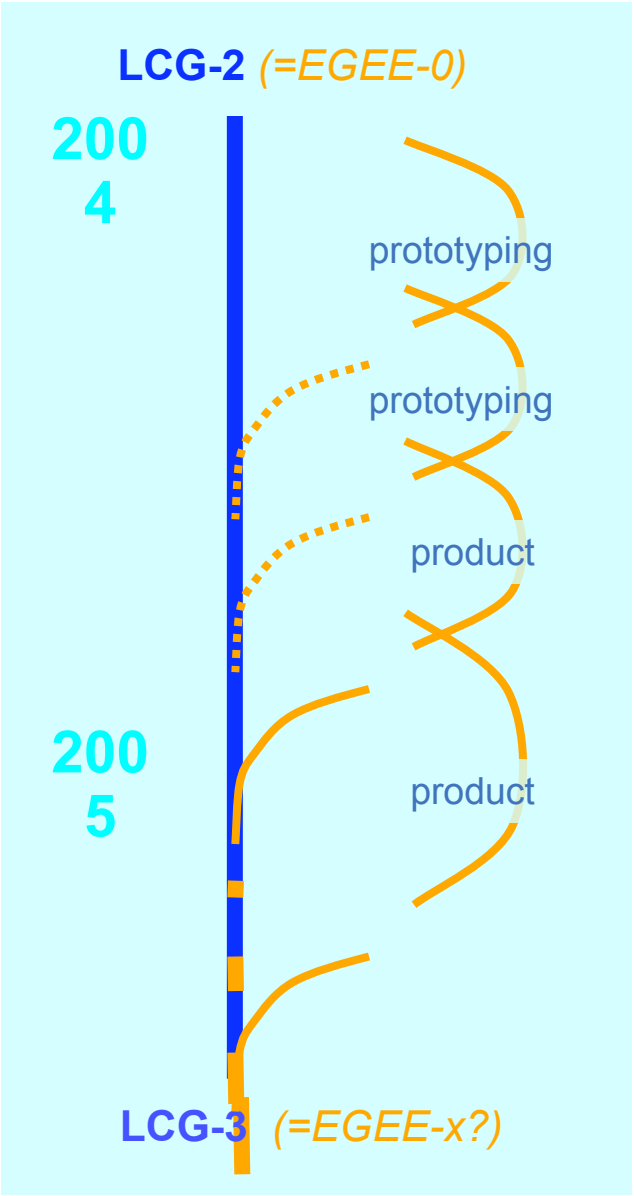


RC - Resource Centre
ROC - Regional Operations Centre
CIC – Core Infrastructure Centre

- **The *grid* is flat, but**
- ***Hierarchy* of responsibility**
  - Essential to **scale the operation**
- **CICs act as a single Operations Centre**
  - Operational oversight ***(grid operator)*** responsibility
  - rotates weekly between CICs
  - Report problems to ROC/RC
  - ROC is *responsible* for ensuring problem is resolved
  - ROC oversees regional RCs
- **ROCs responsible for organising the operations in a region**
  - Coordinate deployment of middleware, etc
- **CERN coordinates sites not associated with a ROC**

Operations focus

- **Main focus of activities now:**
  - Improving the operational reliability and application efficiency:
    - Automating monitoring → alarms
    - Ensuring a 24x7 service
    - Removing sites that fail functional tests
    - Operations interoperability with OSG and others
  - Improving user support:
    - Demonstrate to users a reliable and trusted support infrastructure
  - Deployment of gLite components:
    - Testing, certification → pre-production service
    - Migration planning and deployment – while maintaining/growing interoperability
  - ☞ Further developments now have to be driven by experience in real use



Security

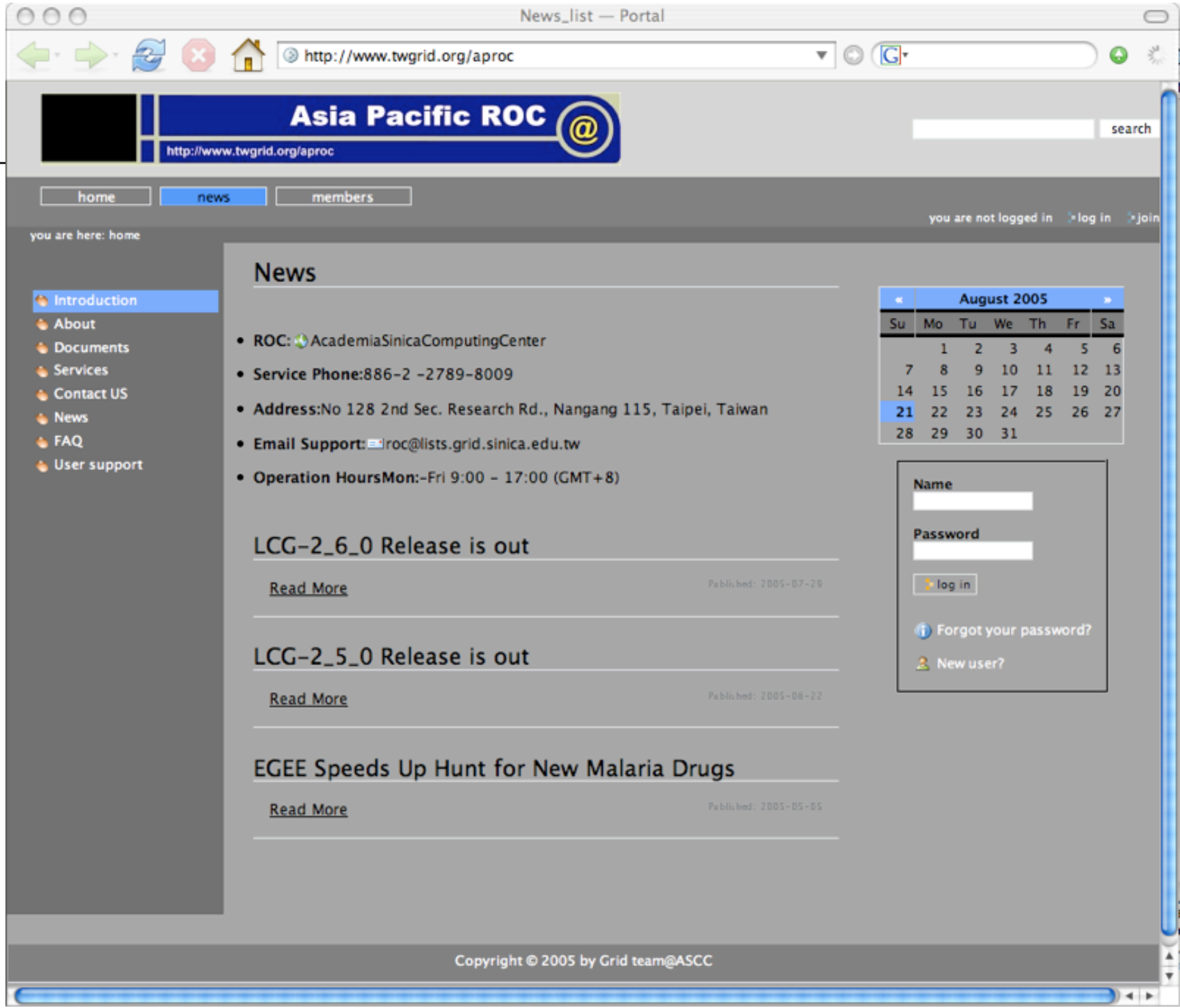
- Incident Response
  - Minimize security risks by fast responds
  - Ensure best practice
  - EGEE wide team to react on security incidents
  - Members from ROCs/RCs
- Coordination of security related aspects of:
  - Architecture
  - Deployment
  - Operation
  - Include standardization work
- Service Challenge
  - Evaluation the effectiveness of current procedures
  - Gaining experiences and updating the procedures iteratively
  - Feedback to MW development team
  - Appropriate exercises for further SC

Information Services

- Document Repository
  - technology, project, event, service, service challenge
- Webpages
- Mailing List

ROC Services

APROC Website (www.twgrid.org/aproc)



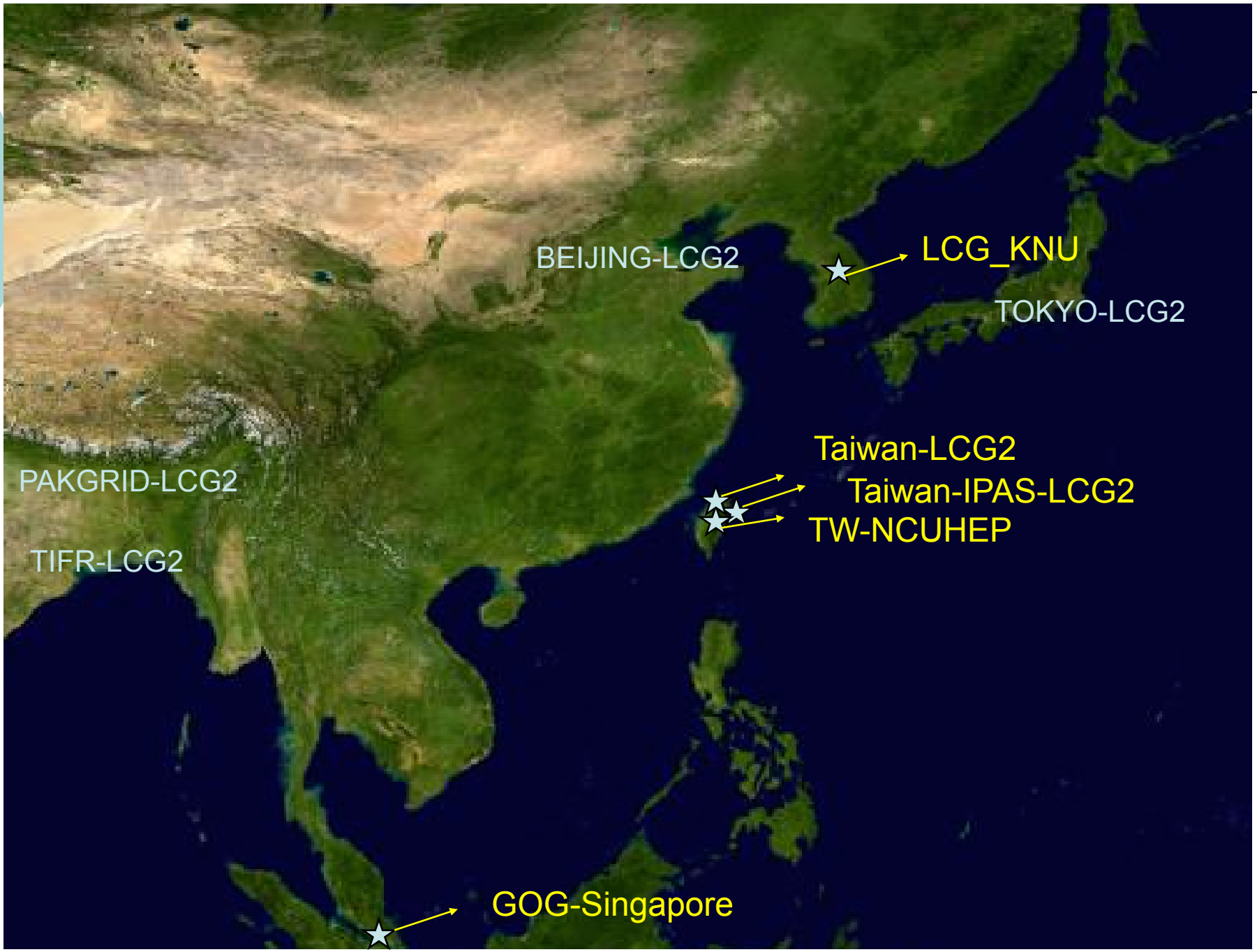
Regional Operation Center

- Deployment Support:
  - Certify early release of middleware of support site configs
  - Maintain and document installation/administration problems.
  - new site startup services:
  - registration
  - certification
  - coordination of region wide upgrades, changes and installation
- User Support
  - Consultancy service to provide a service directly to the experiments
  - Helpdesk services (also integrated with GGUS):
  - Documentation: provide up-to-date documentation for AsiaPacific LCG users
  - Training: organise and provide training sessions, seminars, tutorials, etc in the use of the LCG system and services
- Resource planning and scheduling
- System support:
  - certification and testing for Resources Centers (RC).
  - packaging and configuration:
  - certification testbed - to verify new m/w installation for region

ROC (II)

- Grid operation:
  - Build and operate a distributed Grid Operations Centre, to perform performance monitoring, problem identification, troubleshooting and general operational oversight. The ROC is running Site Functional Test (SFT) for the RCs within AsiaPacific region.
  - Infrastructure and grid service operation: to operate the grid-specific services (information providers, resource brokers, authentication and authorization services, etc. please refer to ASCC CA and ROC website

Asia Pacific Resource Centers



Resources from Regional Centers

	Taiwan-LCG2	Taiwan-IPAS-LCG2	Taiwan-NCUHEP	Taiwan-NTU_HEP	GOG-Singapore	LCG-KNU	PAKGRID-LCG2	NCP-LCG2	TIFR-LCG2	BEIJING-LCG2	Tokyo-LCG2	Australia	New Zealand
# CPU	400	50	60	50	90	38	2	4	26	70	84	96+	?
Disk (TB)	40	5	5	5	0.08	0.05	0.05	?	0.05	3.00	0.87		?
VO	Dteam, Alice, Atlas, CMS, BioMed	Dteam, Atlas	Dteam, CMS	CMS	Dteam, Atlas, CMS	Dteam	Dteam, CMS	CMS	Dteam, CMS	Dteam, CMS, Atlas	Dteam, Atlas	Atlas	CMS
	Tier-1 Center, 32+ CPUs dedicated for OSG	ATLAS Tier-2	Federated CMS Tier-2	OSG Site, Federated CMS Tier-2		32 CPUs for Grid3/OSG	Pakinstan	Pakinstan	India Tier-2		Regional Center	University of Melbourne, NorduGrid site, ATLAS Tier-2	U. Auckland and U. Canterbury

APROC website

- Integrated into TWGRID site.
- www.twgrid.org/aproc
- Update news, documents, and technical reports regularly.
- Integrate TRS together.

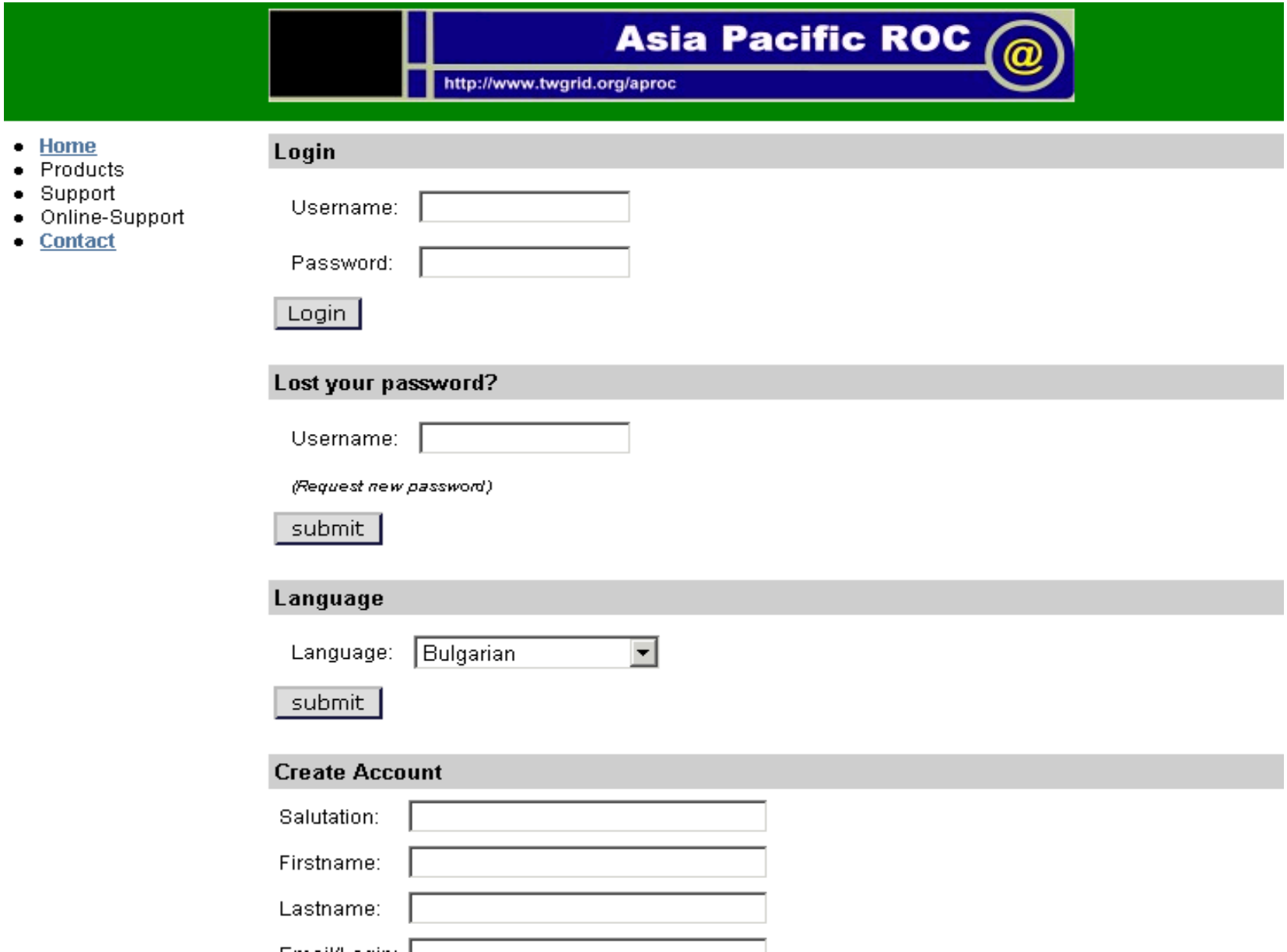
GGUS services

User Support Services

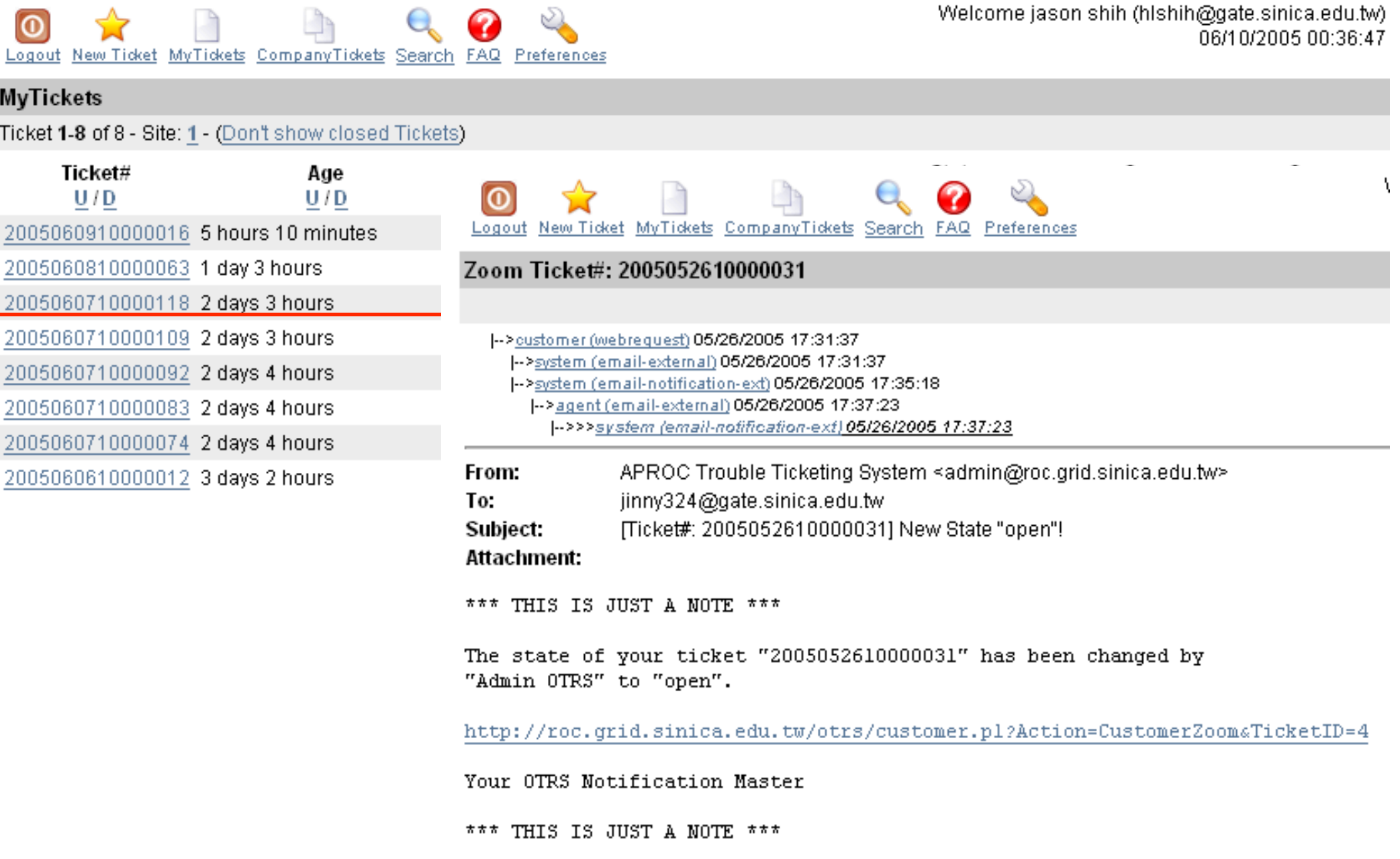
- APROC is responsible for First Line Support of GGUS.
- In addition to FLS, APROC starts to receive tickets from GGUS since June 2005.
- Ticket Processed: 29 (Aug.'05), 11(Jun.'05)
- Integrating with GGUS.
  - GGUS tickets can be redirect to TRS automatically.
  - Will transfer tickets from our region to GGUS automatically in the future.
- QOS:
  - Knowledge-base issues
  - Practical experiences of LCG/EGEE/OGS MW
  - Sharing problem solving experiences via the system
  - Prompt reply (within 24Hr)
- Automatically FAQ migration, parsing keyword of resolved tickets

TRS system: Customer Interface

http://roc.grid.sinica.edu.tw/otrs/index.pl



Snapshot of customer tickets



#There are 19 tickets to ROC_Asia/Pacific , and 17 tickets have solved.

ID	Affected site	Type of problem	solution
3099	Taiwan-LCG2	SE certificate lifetime is due to expire within 5 days	We have updated SE certificate
3129	Taiwan-NCUCC-LCG2	GIIS is down	site stable for a couple of days
3040	TW-NCUHEP	It seems that SE is down, thus both replication and RGMA is not working.	There was a problem with the yaim configuration see https://savannah.cern.ch/bugs/?func=detailitem&item_id=8770
3404	LCG_KNU	SubCluster info not published (no tag)	Decimal point made "ldap_add:Invalid syntax" error. and it seems that this error break additional ldap process. When I removed decimal point, subcluster tag publish error was fixed.
3650	Taiwan-IPAS-LCG2	Job submission failed	One of WNs has wrong time configured. It was probably because of this. I corrected it and did some simple test and these tests worked fine
3697	LCG_KNU	Error on SE	The university of KNU have blocked TCP port 7777(it used by napster). so we couldn't connect to rls1172.cern.ch. After release the restriction, KNU can now insert files into default SE.
3757	LCG_KNU	Job submission failed	KNU have resolve the job submission fail

Certification Testbed

- Deploy certification testbed using LCG2.6.0.
- This testbed will be used for certifying new middleware and integrated with other ROCs.
- Certificate the new MW release participating to the certification of the gLite release and adding new, specific middleware components.
- Produce and verify the installation procedures
- Testbed Configuration
  - UI, RB, BDII, classic SE, MON, CE , WN, PX (shared), Oracle10g based LFC, and VOMS (shared)

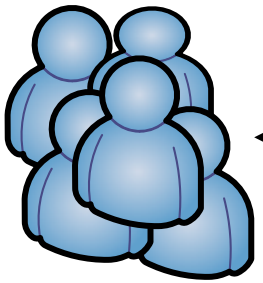
Production Testbed

- Working with technology team to deploy gLite testbed and join the preproduction infrastructure under the management of APROC
- Migration strategies will betested
- Stress test middleware components
- Open to the experiments applications to verify middleware, e.g., ARDA
- WMS, UI, LB, RGMA, IO Service, VOMS, Oracle Single Catalog, CE, and 12 WN will be available soon.

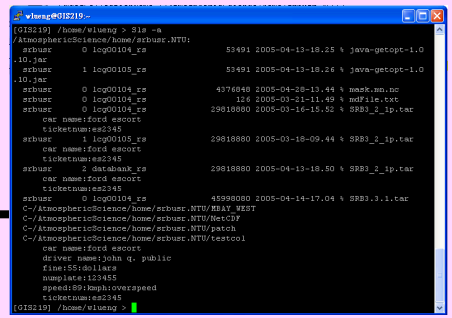
Grid Applications

- Data Grid for Digital Archives
- Atmosphere Databank
- MPIBlast
- BioPortal

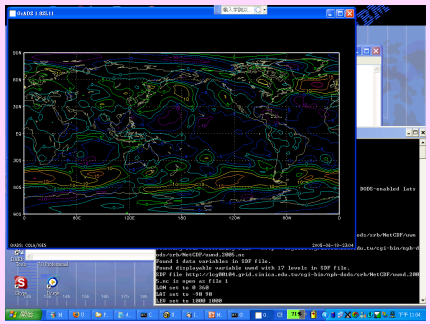
Atmosphere Databank Architecture



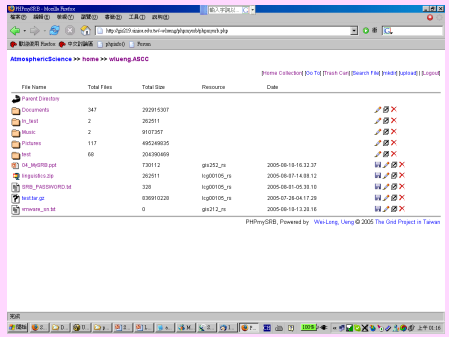
Users



Command Lines



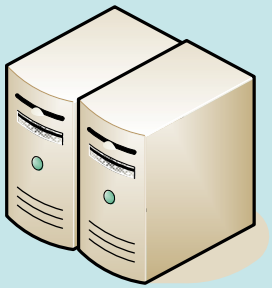
Applications



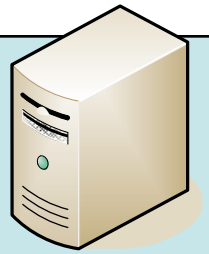
Portal/Web Client

Linux

ASCC/srb002



ASCC/lcg00104(TB)
ASCC/lcg00105(TB)

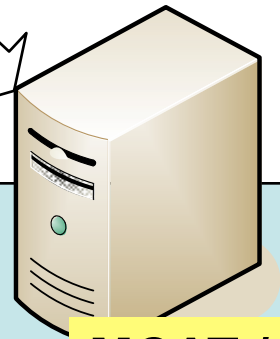


NTU/monsoon(TB)

NTU/dbar_rs1, dbar_rs_2

NCU/databank

NTNU/dms

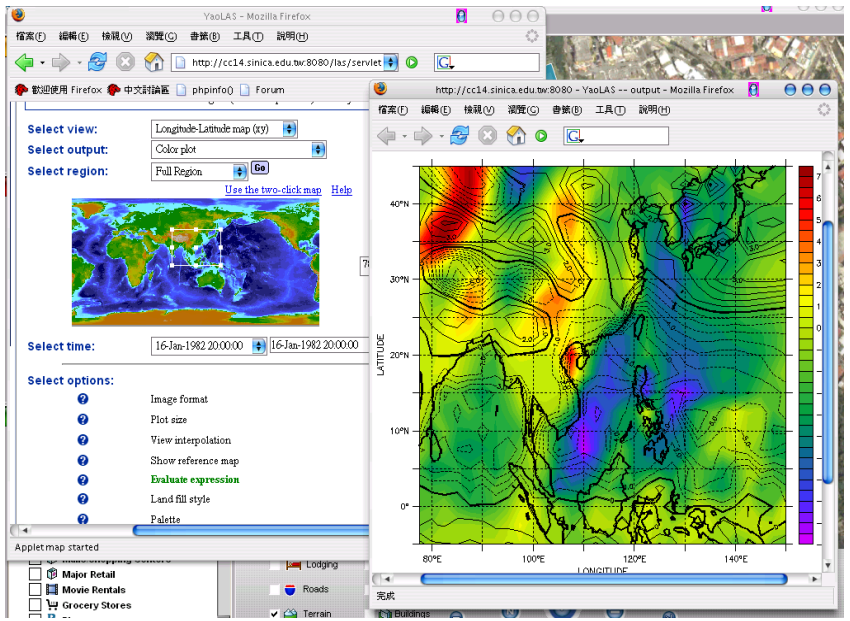


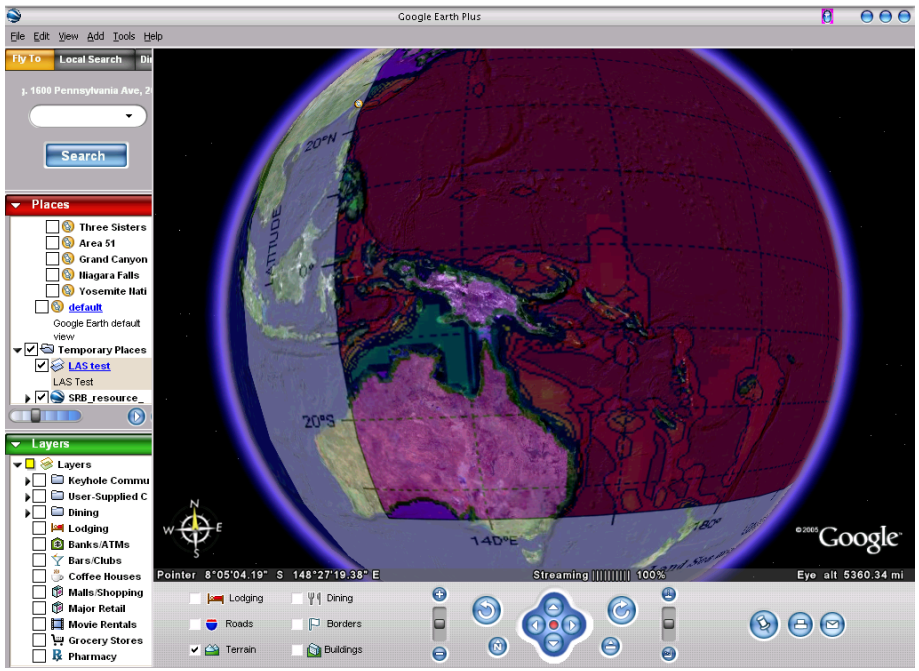
MCAT / srb001

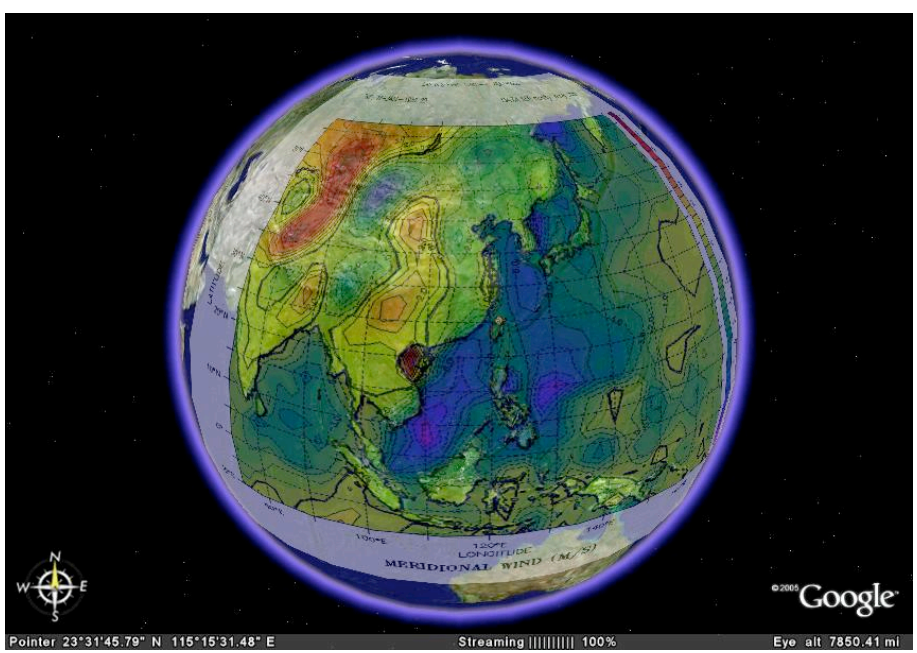
windows

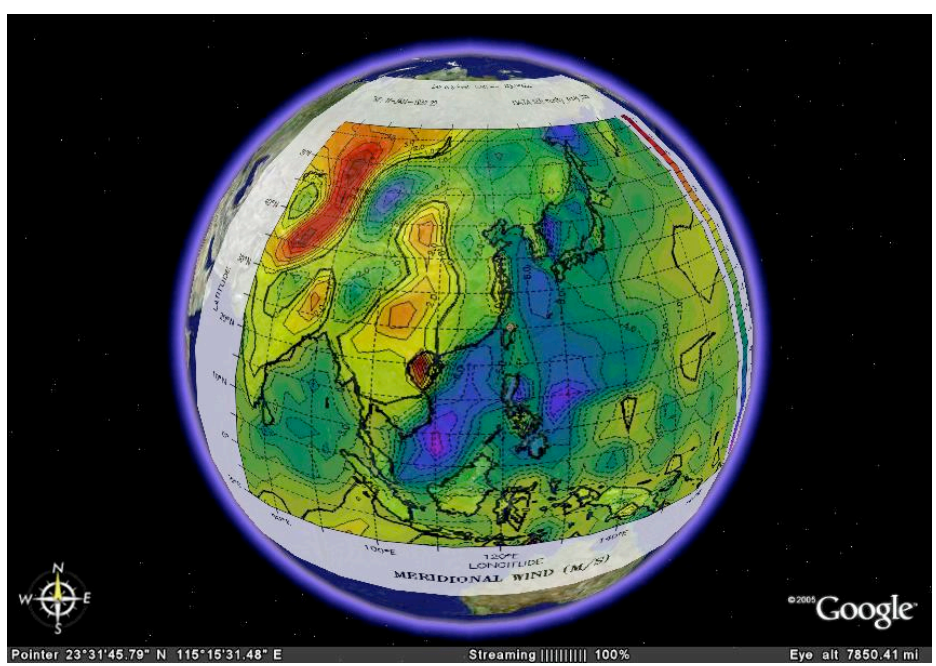
ASCC/gis212(TB)
ASCC/gis252(TB)

- Use LAS (Live Access Server) to access the dataset from the SRB System, and integrate with Google Earth

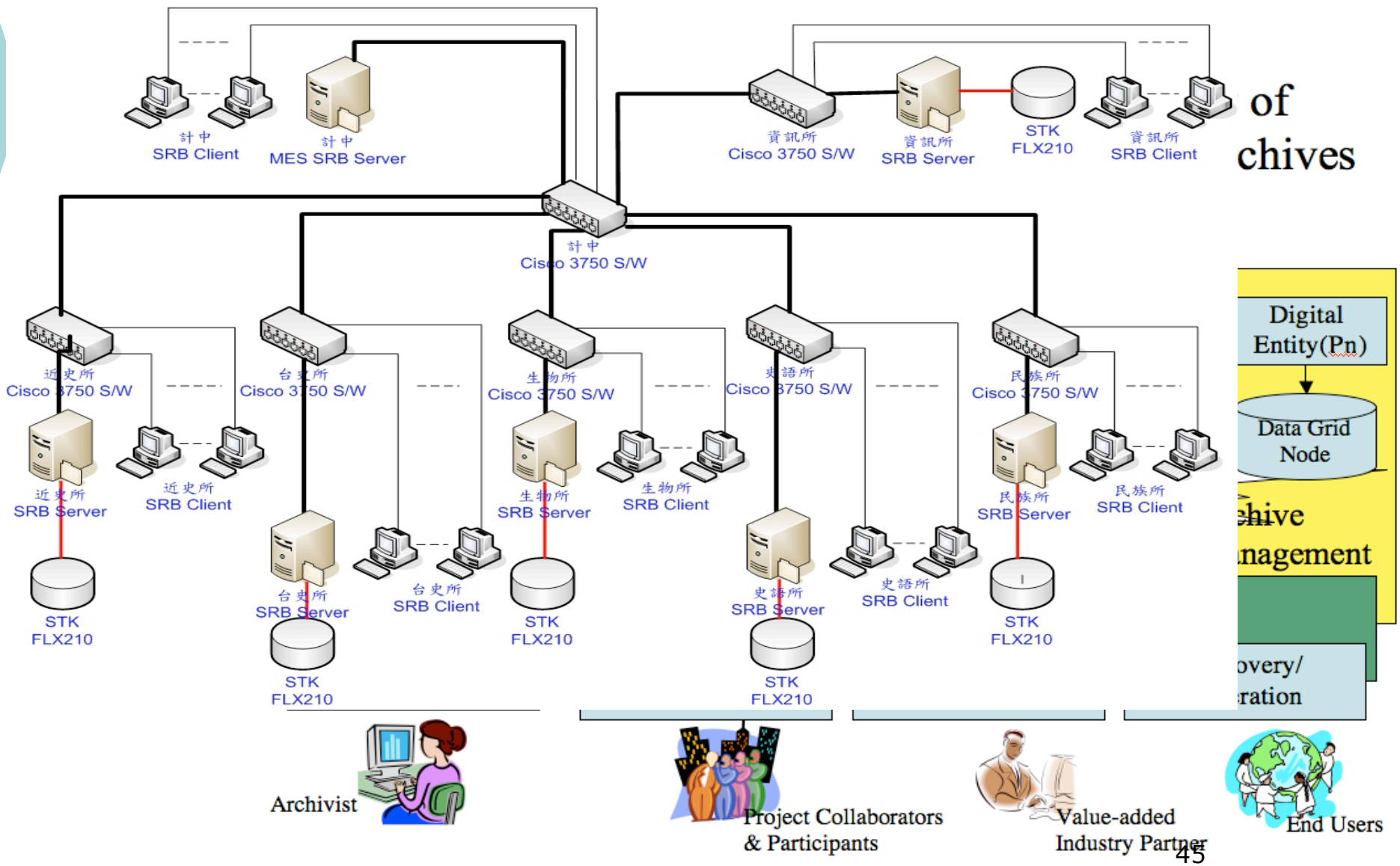








Data Grid for Digital Archives



MPIBlast-g2

ASCC
中央研究院計算中心
ACADEMIA Sinica
Computing Centre

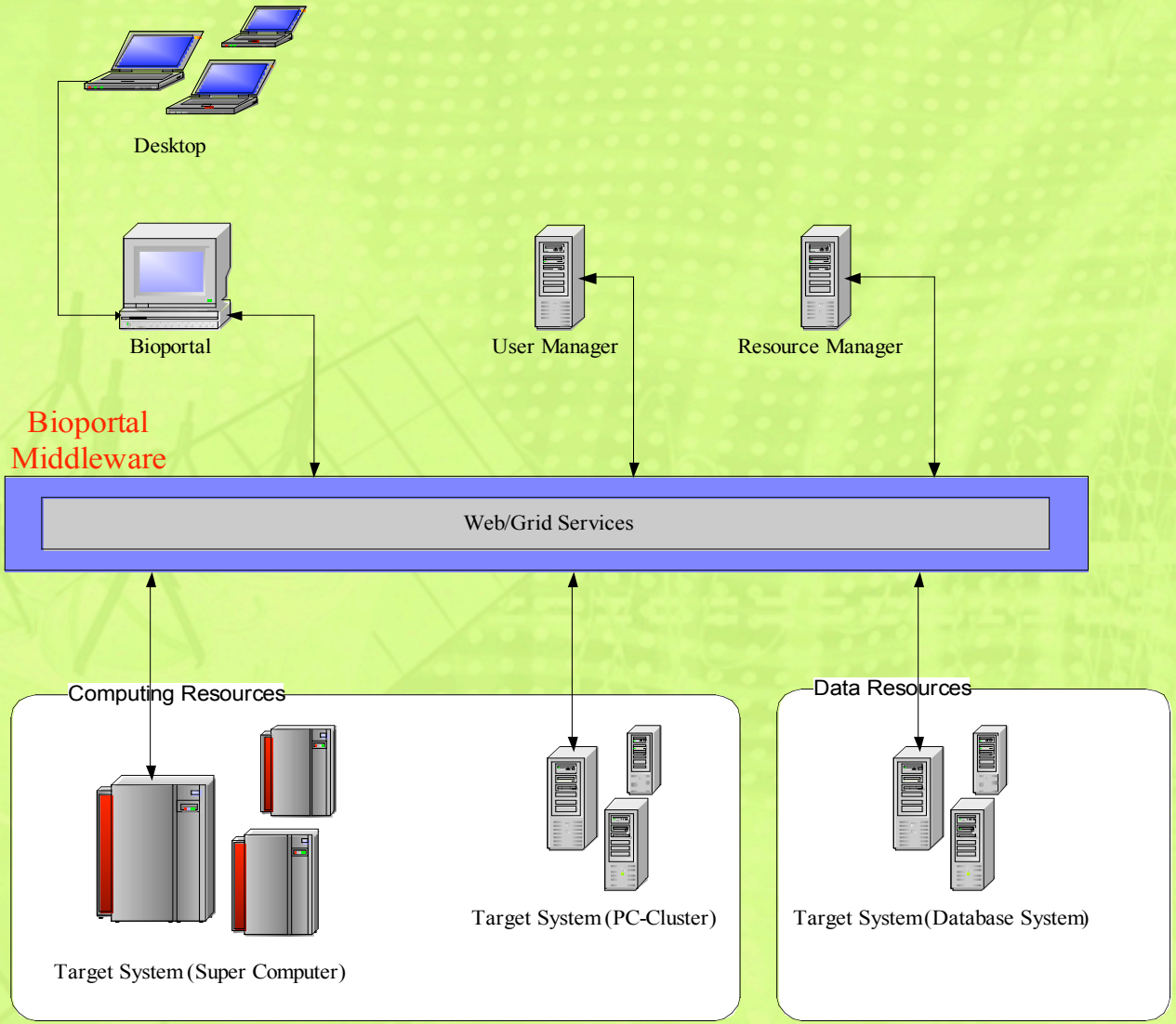
Bioinformatics
Institute
A*STAR

KiSTi
www.kisti.re.kr

SDSC

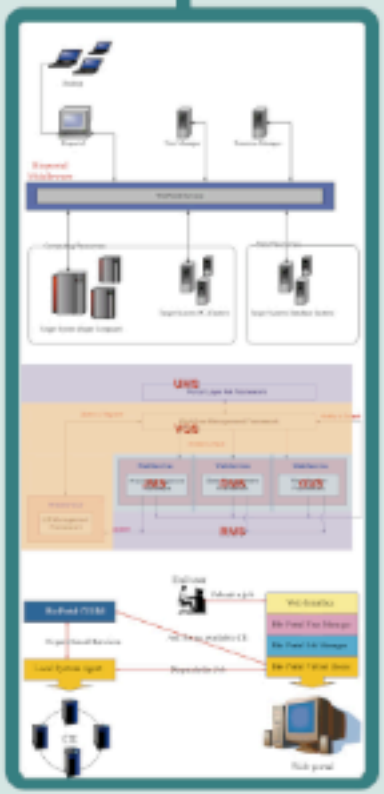
The Next Generation Bioportal and Campus BioGrid

- Core technology
  - Java and XML
  - Web/Grid Services
- Advantages
  - Secure Environment and Single-Sign-On
  - Easy-to-deployed workflow container
  - Modular and reusable analysis tool packages
  - Producer-Consumer model of resource sharin
- Collaborators
  - Dr. Jan-Ming Ho (IIS, AS)
  - Dr. Wen-Chang Lin (IBMS, AS)
  - Dr. Chen-Hsin Chen (ISS, AS)
  - Dr. Y. C. Yang (Y. M. Univ.)



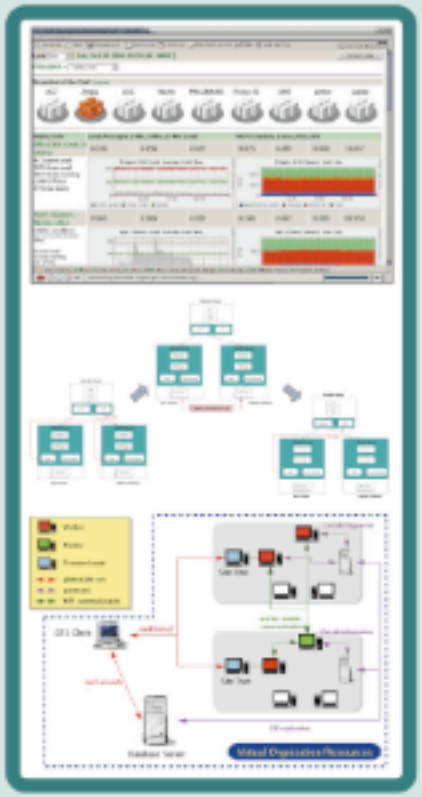
BioPortal

BioCluster

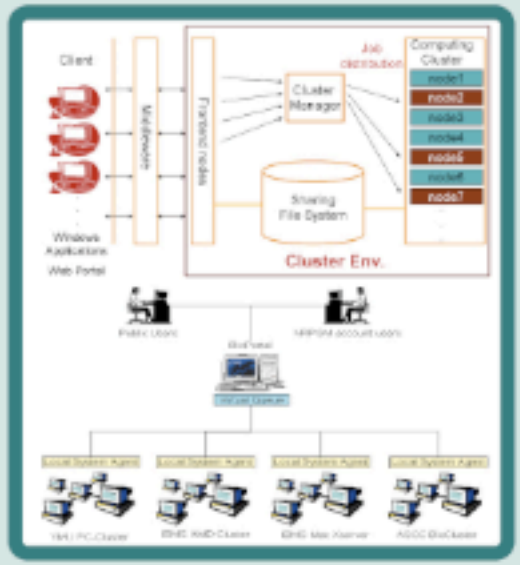


Sharing geographically distributed bioinformatics computing resources

- **Core technology**
  - Java and XML
  - Web/Grid Services
- **Functionalities**
  - Secure Environment
  - Workflow container
  - Modular and reusable analysis tool packages
  - Producer-Consumer model of resource sharing



- **4-CPU PC Cluster**
- **Middleware**
  - GT2.x
  - MPICH-G2
  - SCMSWeb
- **Gridified Application**
  - mpiBLAST-g2
  - CRASA-g2



- **64 CPU AMD K-7 PC-Farm**
  - Providing public services for high throughput computing
  - Lots of basic analysis tools
- **16 CPU AMD 64-bits Opteron Cluster**
  - Providing HPC and HTC services for campus researchers on human genome analysis
  - Parallel BLAST, CRASA
- **20 CPU Apple X-Server**
- **4 CPU AMD K-7 PC-Cluster from National Yang-Ming University**
  - Dedicate resource for R (the statistical analysis tool)

- **Available tools**
  - AutoDock
  - BLAST suite
  - BIO101
  - CRASA, CRASAViewer
  - GCG SeqWeb
  - OPAAS
  - R
  - SMD
  - WebMol

Grid Technology Development

- Evaluate latest grid relative software/ system/technology.
- Grid Middleware testing
  - testbed
- Deployment of grid related technology
- Interoperation of Grid MW
- Database Technology and AP Development for LCG

Current Tasks

- Cooperate with LCG ARDA group
  - Atlas & CMS analysis tool integration
  - Testing
- CMS high-level monitoring system development
- gLite testbed and pre-production site
- LFC (LCG File Catalog) installation on Oracle 10g (stress test next)

Industrial Program

- NSC-Quanta Collaboration
  - To help Quanta Blade System have best performance for HPC and Grid Computing
  - Quanta is the largest Notebook manufacturer in the world
  - Participants: AS, NTU, NCTS, NTHU, NCHC
  - Scientific Research Disciplines: Material Science, Nano-Technology, Computational Chemistry, Bioinformatics, Engineering, etc.
  - Performance Tuning, Grid Benchmarking
- Microsoft
  - Extending the EGEE MW to Windows platform for e-Science applications

Education and Training

- To encourage more research groups join Grid Computing research and application development
- Host Grid Technology and Application Workshop, and related tutorial in the Northern, Southern, Middle and Eastern Taiwan, at least once a year.
  - Around 400 attendants in the past 6 events from May, 2004
- Will host Workshop and Tutorial for Asian Countries in cooperation with EGEE NA2

Education and Training

Event	Date	Attendant	Remarks
China Grid LCG Training	May 16-18,'04	40	Beijing, China
ISGC'04	Jul.26,'04	50	AS, Taipei
Grid Workshop	Aug.16-18,'04	50	Shang-Dong, CN
NTHU	Dec.22-23,'04	110	Shin-Chu
NCKU	Mar.9-10,'05	80	Tainan
ISGC'05	Apr.25,'05	80	AS, Taipei
Tung-Hai U	June, 2005	100	Tai-chung
APAN Taiwan	Aug. 2005		AS, Taipei
Hua-Lian/ Tai-Tung	Sep., 2005		Planning

International Collaboration

- APGrid
- APAN
- LCG/EGEE
- Grid3/OSG
- GGF
- Globus
- PNC/ECAI
- PRAGMA

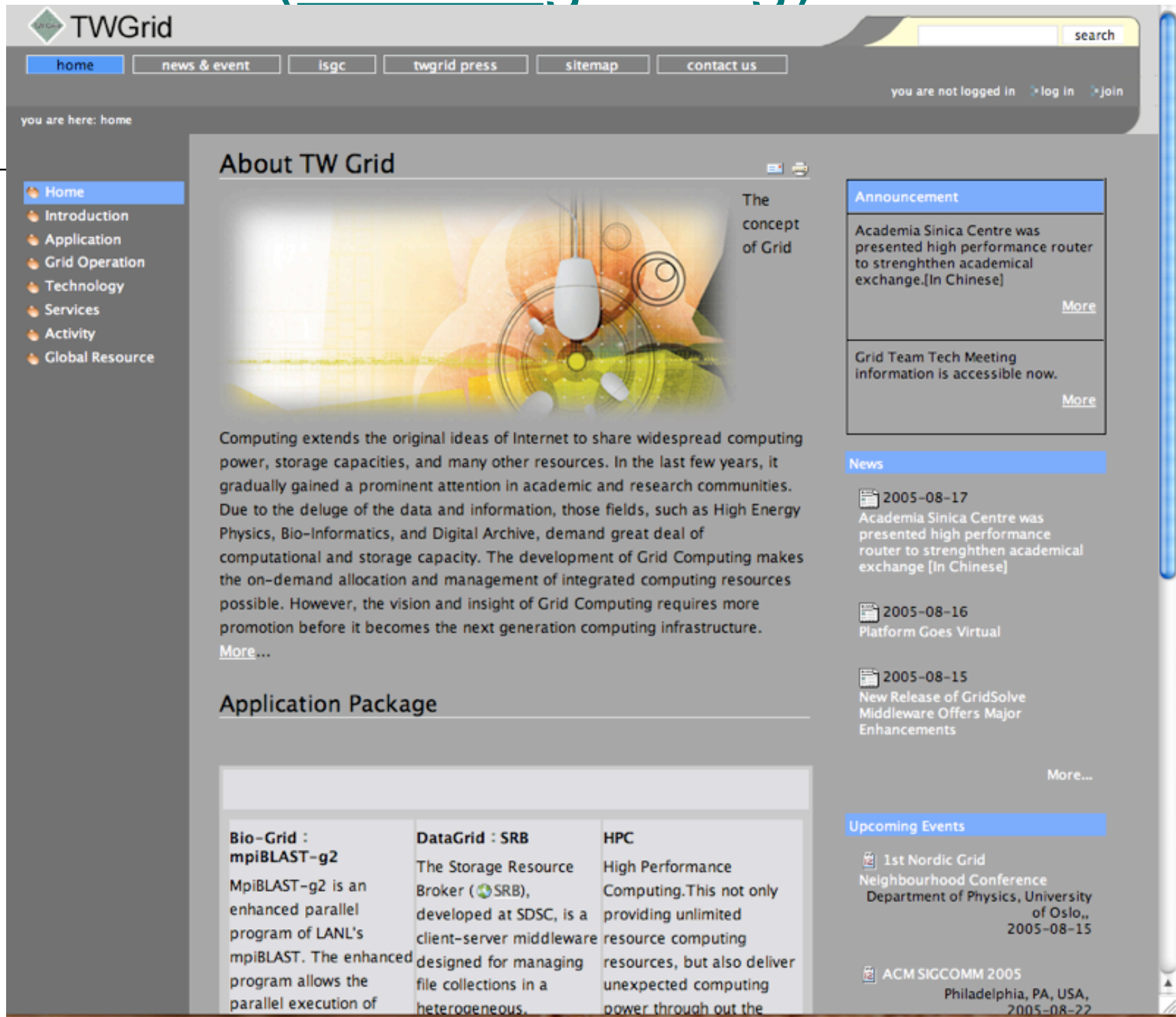
Outreach

- Objectives (ref. EGEE Website)
- Approaches
  - regular EGEE workshop in Taiwan and AP
  - in corporation with Education/Training activities
- EGEE related talks in ISGC
- NZ Model

Scientific Linux Services

- One of the official mirror site
- Provide installation and regular update Services
- SL downloading and updating task:
  - ftp://div3.sinica.edu.tw/sci-linux/304 (for internal use only)
  - ftp://slc.grid.sinica.edu.tw/pub/scientific/303/i386/ (public access)
- Download the scientific linux in DVD ISO format from the following link:
  - ftp://slc.grid.sinica.edu.tw/pub/scientific/303/iso_ascc
- Customize YUM Update
  - Synchronized with FNAL official site daily
  - 5-10 times faster and saves time querying and downloading from official SL repository.
- http://www.twgrid.org/Services/

TWGrid Portal (www.twgrid.org)



TWGrid Infrastructure is Online

Taiwan Tier-1 in CERN Courier

CERN COURIER

Academia Sinica drives e-science in Asia-Pacific

The Academia Sinica Grid Computing Centre (ASGC) in Taipei is currently the only LCG Tier-1 Centre in the Asia-Pacific area, with 400 KSI2K computing capacity, 50 TB disk space and a 35 TB tape library dedicated to the LCG. Since 2004, Academia Sinica has provided the services of a regional operation centre (ROC), site monitoring, virtual-organization (VO) support, middleware deployment, certificate authority (CA) and global Grid-user support (GGUS – mainly first-line support and FAQs). The centre supports not only Tier-2 sites in Taiwan, but also Grid operations in South Korea, Singapore and other Asia-Pacific countries that are not supported by other Tier-1 sites.

To support service and data challenges, a maximum 1.6 Gbit/s transmission rate was achieved in the 2 Gbit network bandwidth between CERN and Taiwan in June 2005. During the CMS service challenge, ASGC received 20 TB of data from CERN at an average rate of 56 Mbit/s from 14 July to 14 August. The ASGC Tier-1 Centre provided 12% of the LCG-2 computing jobs, second only to the 14% of CERN in the ATLAS data challenge in 2004. Academia Sinica will work closely with Tokyo University and other Tier-2 sites in this region for the ATLAS and CMS service challenges in the near future.

ASGC is engaging in collaboration and sharing of information by taking advantage of e-science applications in the Asia-Pacific area. ASGC is also working with different partners to help form and support application-driven e-science communities in the Asia-Pacific region, to improve the next-generation research infrastructure and build up the e-science applications. Hosting the International Symposium on Grid Computing (ISGC) since

Grid tutorial at the Academia Sinica Grid Computing Centre.

The ASGC team with director Simon Lin (front row, second from right).

The data centre at the ASGC with 400 KSI2K computing capacity.

2003, Academia Sinica provides a platform for the co-operation of the Asia-Pacific region, Europe and America.

In addition to applications from high-energy physics, such as the ATLAS and CMS applications running in Taiwan, the centre also supports the biomedical VO in EGEE. Local VO services for users of the TWGrid include bio-informatics, atmospheric-sciences applications, earth sciences and digital libraries. Another VO for general applications in the Asia-Pacific region is currently being constructed.

In total, 30 staff take care of Grid technology, application development, operations, deployment and support for the users. For phase two of the EGEE project, Taiwan will extend its partnership to the areas of middleware re-engineering and integration (JRA1), training (NA3) and outreach (NA2), while keeping a strong presence in operations (SA1) and application support (NA4).

Eric Yen, ASGC

Tsai moves from the South East to the Far East

Min Tsai is an excellent example of how Grid computing helps international collaboration. In September he will move to his native Taiwan, leaving CERN where he has been acting as liaison for the South-Eastern European Grid-enabled e-Infrastructure Development (SEE-GRID) project. He will take up the role of deputy manager of the first Asian Regional Operations Centre (ROC) for the Enabling Grids for E-science (EGEE) project at Academia Sinica in Taipei.

Tsai's path to Grid computing is unusual. Neither a computer scientist nor a physicist, he studied mechanical engineering in the US then worked in industry in telecommunications and networking. Hired because of his networking background, he arrived at Academia Sinica just over a year and a half ago to help set up Grid computing there. His first assignment was to go to CERN and learn hands-on about Grid operations by working in the Grid Deployment group, and after six months he was offered the liaison position for SEE-GRID.

Providing deployment support for the SEE-GRID partners has proved an excellent way for him to learn about all aspects of the Grid. When he didn't know the solution to a problem himself, someone in his vicinity at CERN could usually help him, providing a very fast turnaround. Partly as a result of this, the SEE-GRID project has been able to rapidly deploy production services at sites in the 10 participating countries. Tsai emphasizes the importance of the SEE-GRID partners themselves in supporting each other. In particular countries already belonging to an EGEE federation, such as Greece, Romania and Bulgaria, have provided support to new partners such as Croatia, Macedonia and Turkey.

Heading east: Min Tsai is moving from CERN to EGEE, Taiwan, where he will also support Grid partners in Singapore and South Korea.

The Asian ROC was officially launched this spring and has a staff of seven with support from other teams. Tsai's responsibilities as deputy to Chiang Gen-Tao include supporting partners in Singapore, South Korea and Taiwan. There are discussions with Japan about joining this ROC, and other countries in the region are rapidly getting involved in Grids, so his SEE-GRID liaison experience should prove highly valuable.

One of his goals this autumn will be to establish a Core Infrastructure Centre (CIC) in Taiwan. This means taking responsibility for monitoring, problem tracking and the operation of core Grid services. Other goals include improving the availability of Grid services in the Asia-Pacific region – which is critical for user acceptance – and increasing communication and coordination with regional partners.

Tsai underlines the importance of face-to-face meetings, such as the quarterly meetings in SEE-GRID. He said, "Telephones and e-mail are very useful, but really getting to know the people involved at different sites makes a big difference when it comes to helping them with deployment or production issues."

François Grey, IT/DI, CERN

Fostering e-Science Applications in Asia

- Coordinate e-Science Community for better support and cooperation
- Education: Tutorial/Workshop held at least once a year
- Hosting LCG/EGEE Asia Workshop and ISGC every year
- Extending e-Science Community
- Facilitate the Formation of Application Driven Community
- System installation, management and consultant service