Computational and Data GRIDS

Bringing the HPC Resources to NZ Researchers

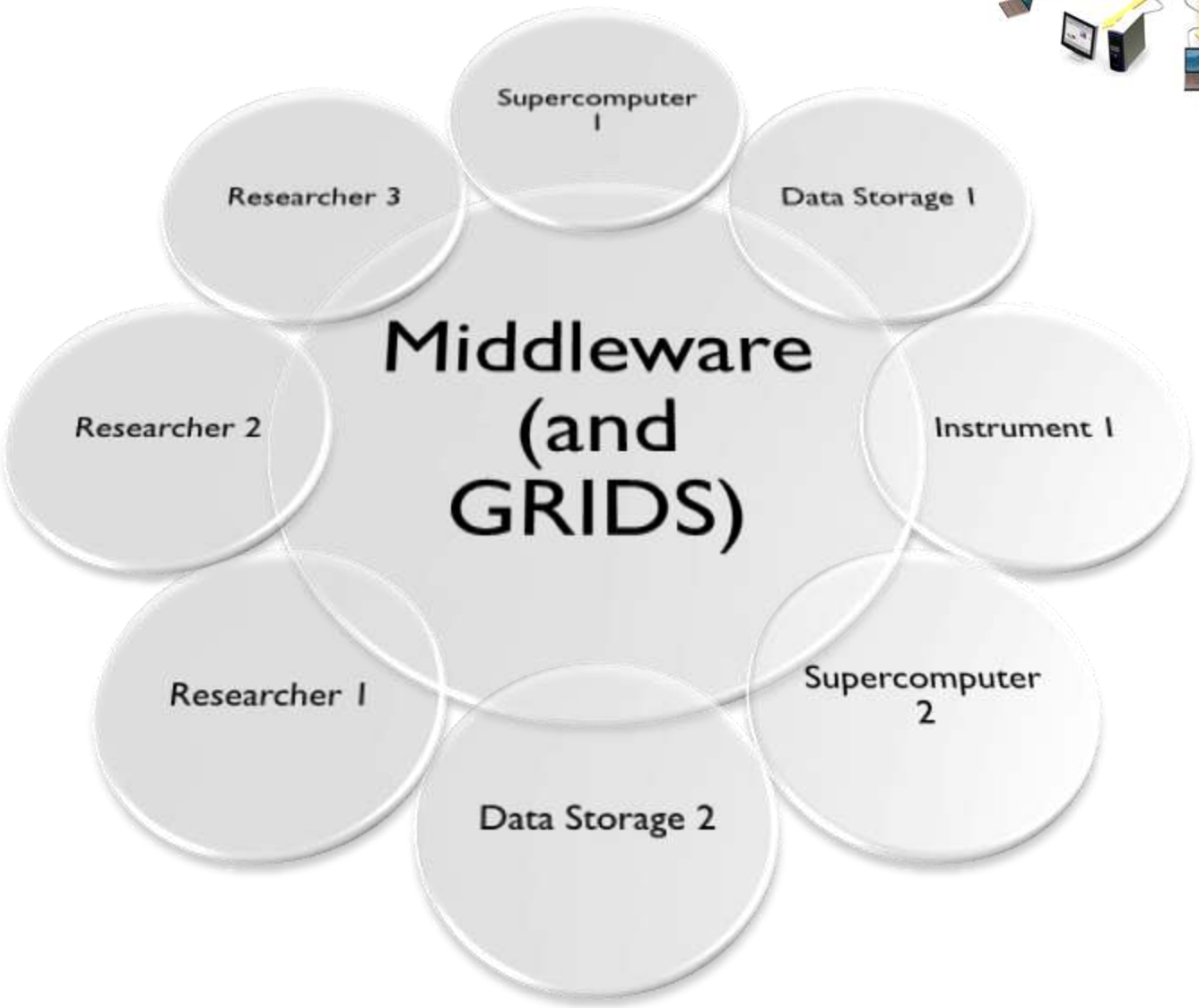
BeSTGRID Goal: to streamline access

Connect the resources and transparently present them to the community

To match users and their jobs to the best computational resources for their needs

"Not-so-low-hanging fruit"

BeSTGRID

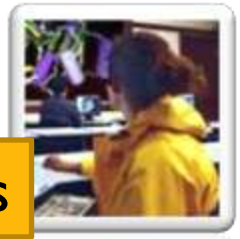

Supercomputer 1
Data Storage 1
Instrument 1
Supercomputer 2
Data Storage 2
Researcher 1
Researcher 2
Researcher 3
Middleware (and GRIDS)

BeSTGRID

Strategy: Alignment with APAC GRID

- APAC Grid – Australian Partnership for Advanced Computing GRID
- BeSTGRID will aim to **align** technically with APAC GRID
- Will facilitate future **interoperability** and possible partnership in future

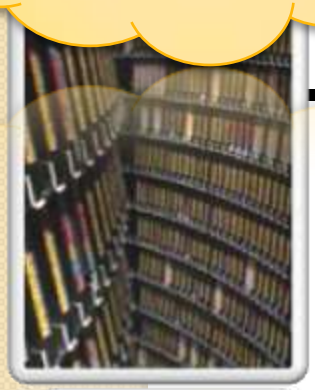
APAC National Grid



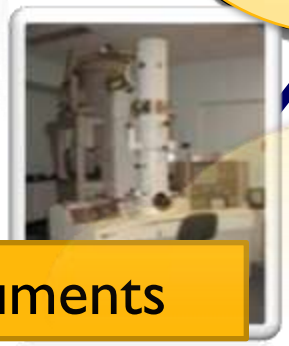
Research Teams

Sensor Networks

Data Centres



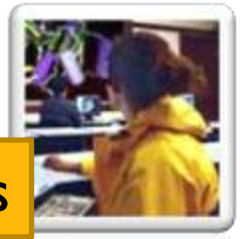
National Grid
a virtual system of computing, data storage and visualisation facilities



Instruments

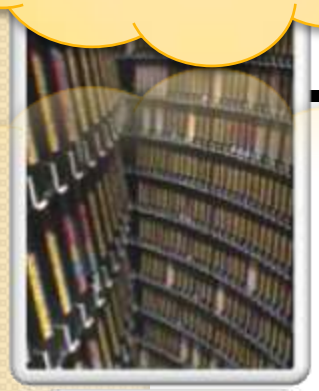
Other Grids:
Institutional
International

APAC National Grid



Research Teams

Data Centres



QPSF

ac3

IVEC

APAC NATIONAL FACILITY

SAPAC

ANU

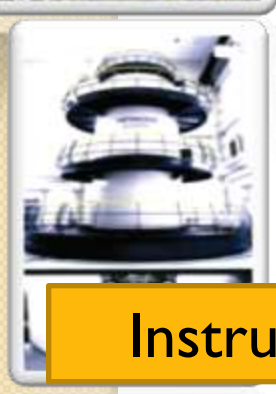
CSIRO

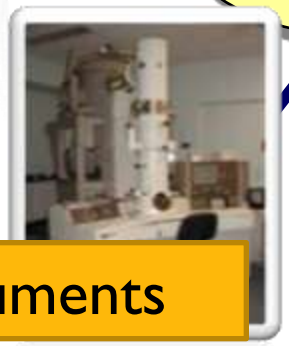
TPAC

VPAC

Sensor Networks

Other Grids:
Institutional
International





Instruments

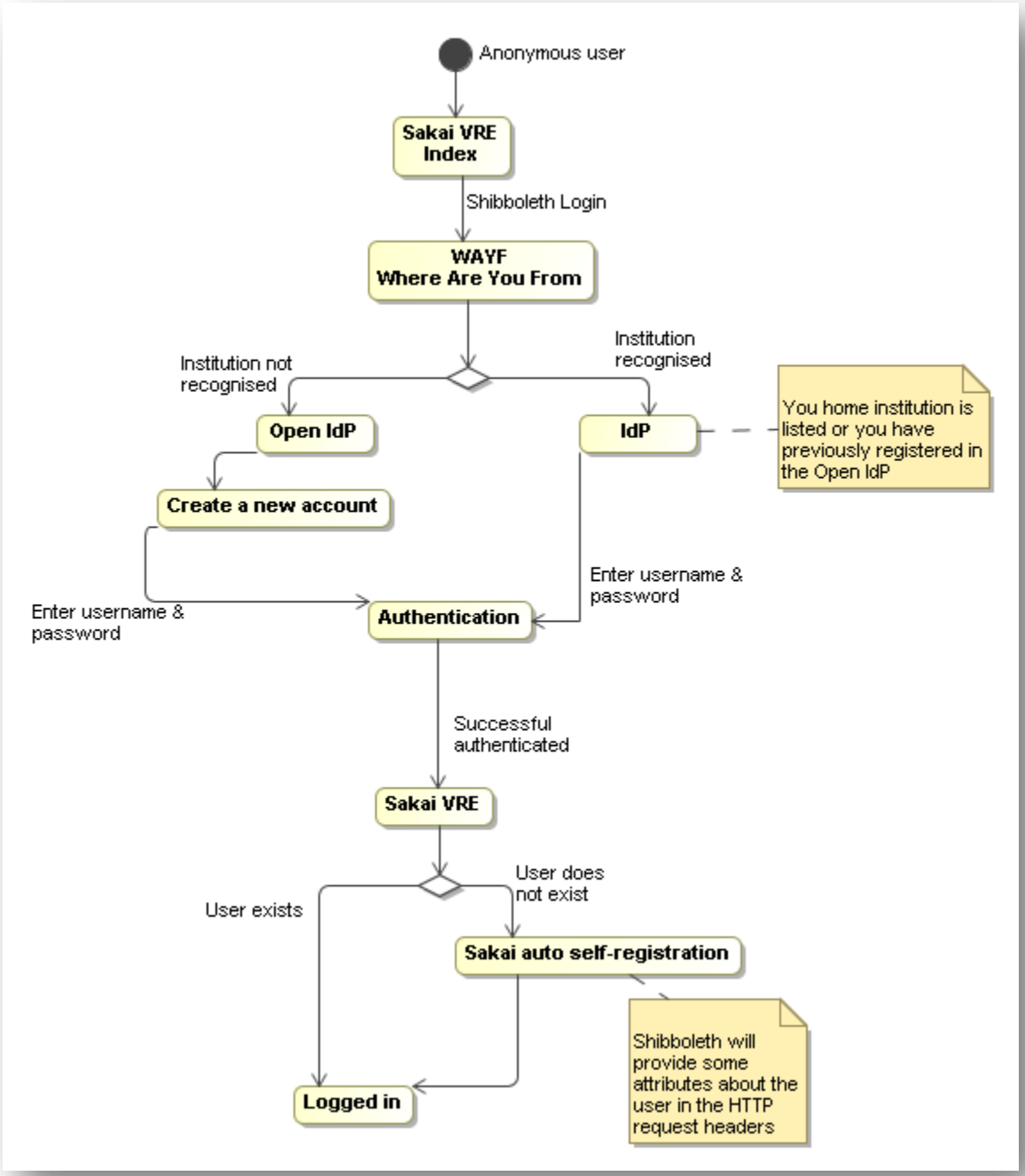
Federated Identity and Access Management

- Australian Access Federation (related to MAMS)
- Shibboleth
- APAC Certificate Authority

Shibboleth.

BeSTGRID

Shibbolised Sakai-VRE

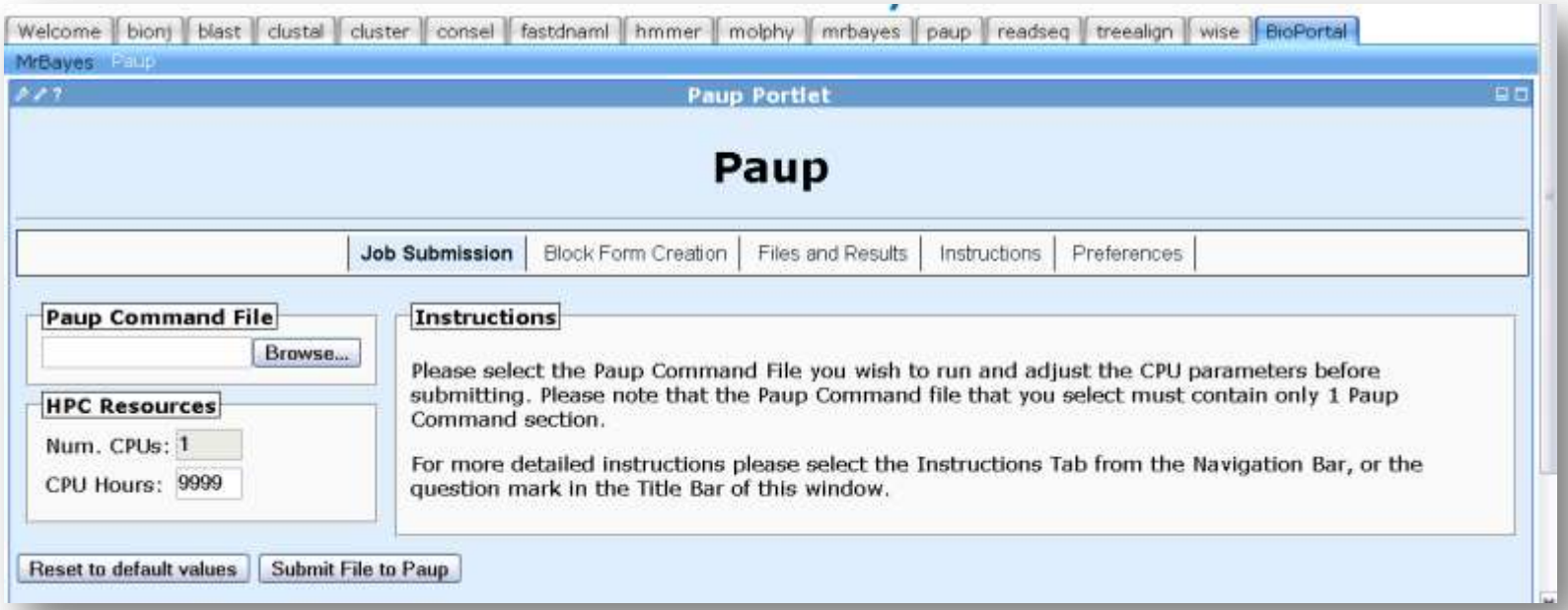


BeSTGRID

Portals and Web Services for the GRID

BeSTGRID

BeSTGRID's NZ Bioportal

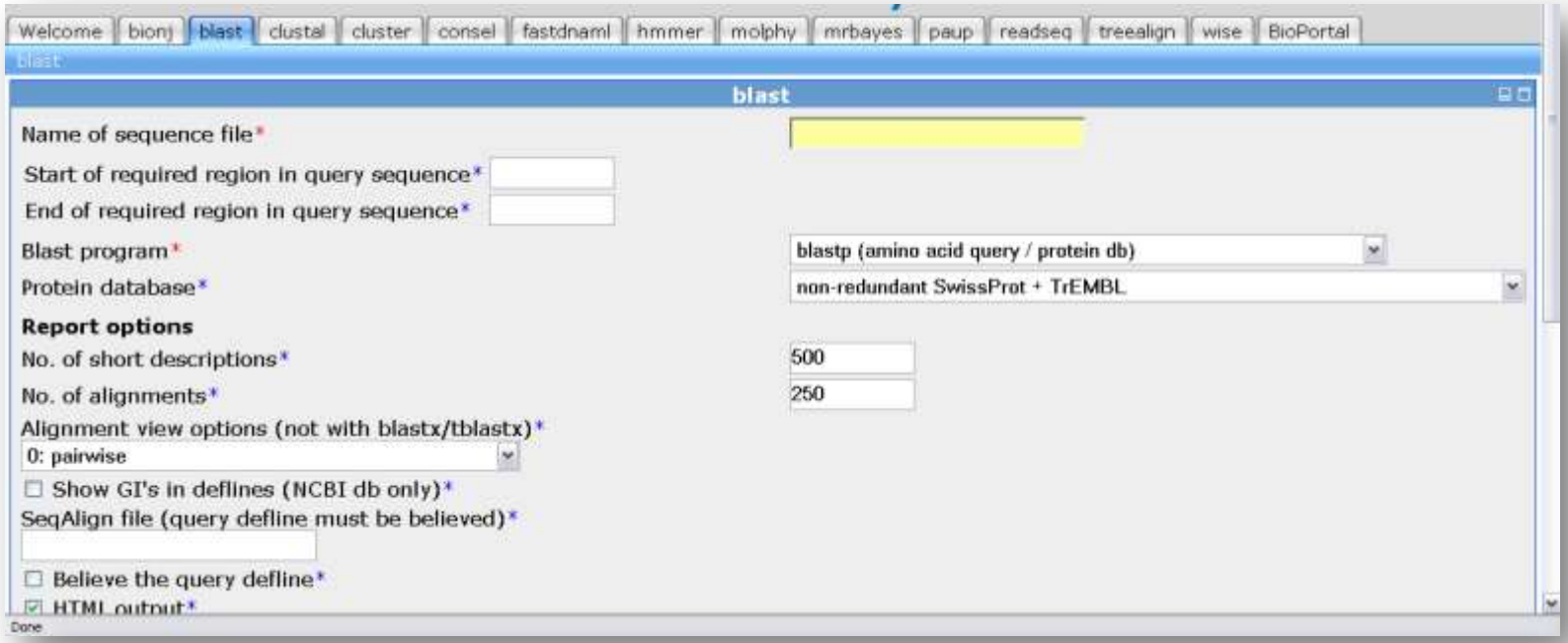


BeSTGRID

JCU
JAMES COOK UNIVERSITY

powered by gridsphere

BeSTGRID's NZ Bioportal



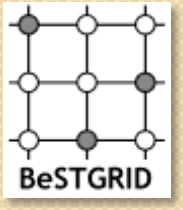
BeSTGRID

JCU JAMES COOK UNIVERSITY

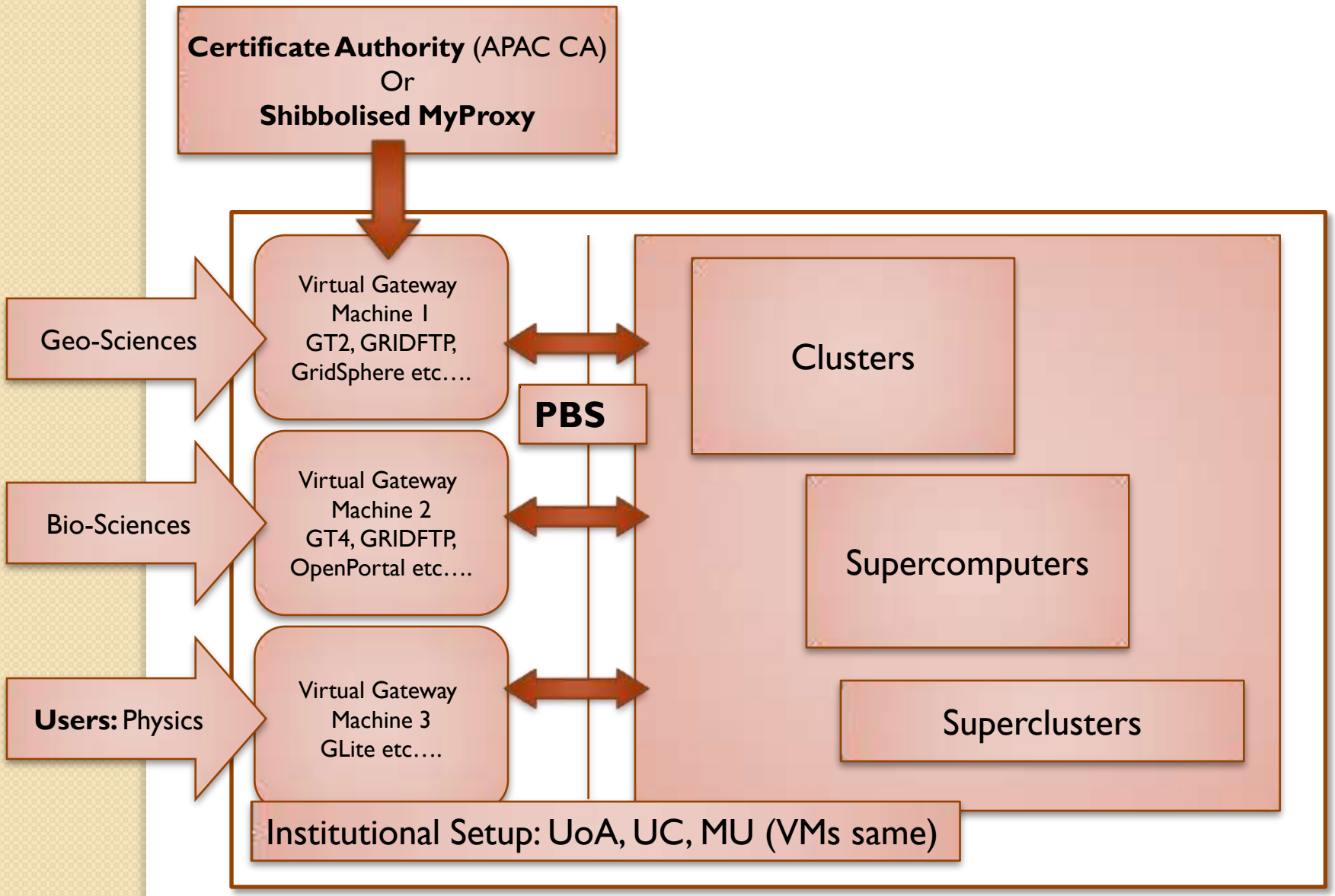
powered by gridsphere

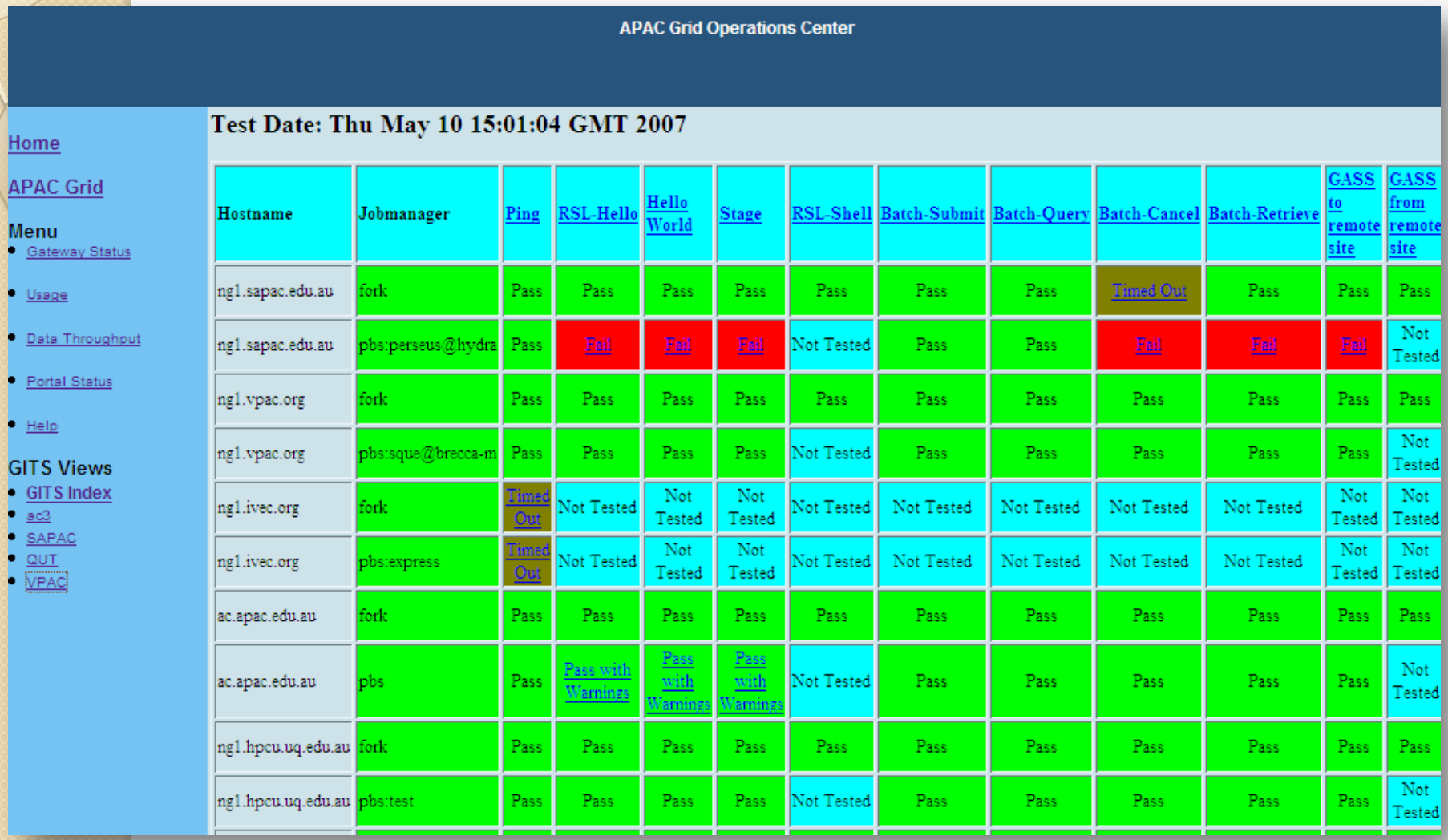
Virtual Gateways of APAC Grid

- Key APAC Grid Feature: Use of "Virtual Gateways" for each discipline (involving Xen Virtual Machines)
- Virtual Gateways provide compatibility with both US and European GRID efforts (i.e. Globus v2 vs. Globus v4 vs. Glite etc)



Architecture Diagram





APAC Grid Operations Center

Home

APAC Grid

Menu

- Gateway Status
- Usage
- Data Throughput
- Portal Status
- Help

GITS Views

- GITS Index
- ac3
- SAPAC
- QUT
- VPAC

Test Date: Thu May 10 15:01:04 GMT 2007

Hostname	Jobmanager	Ping	RSL-Hello	Hello World	Stage	RSL-Shell	Batch-Submit	Batch-Query	Batch-Cancel	Batch-Retrieve	GASS to remote site	GASS from remote site
ng1.sapac.edu.au	fork	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Timed Out	Pass	Pass	Pass
ng1.sapac.edu.au	pbs:perseus@hydra	Pass	Fail	Fail	Fail	Not Tested	Pass	Pass	Fail	Fail	Fail	Not Tested
ng1.vpac.org	fork	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
ng1.vpac.org	pbs:sque@brecca-m	Pass	Pass	Pass	Pass	Not Tested	Pass	Pass	Pass	Pass	Pass	Not Tested
ng1.ivec.org	fork	Timed Out	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested
ng1.ivec.org	pbs:express	Timed Out	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested
ac.apac.edu.au	fork	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
ac.apac.edu.au	pbs	Pass	Pass with Warnings	Pass with Warnings	Pass with Warnings	Not Tested	Pass	Pass	Pass	Pass	Pass	Not Tested
ng1.hpcu.uq.edu.au	fork	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
ng1.hpcu.uq.edu.au	pbs:test	Pass	Pass	Pass	Pass	Not Tested	Pass	Pass	Pass	Pass	Pass	Not Tested

BeSTGRID

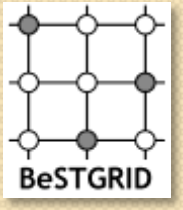
Grid Services (in VMs)

- A range of services are provided to support users of the grid, some of which run on the gateway servers and some of which run only at specific sites.
- Application support
  - Gridsphere Portals
  - Apache/tomcat
  - Authentication and Authorisation CA PKI and Shib via MyProxy/GRIDShib
  - Myproxy
  - AuthTool?
  - VOMS/VOMRS?
- Data Management
  - GridFTP sourced from VDT/globus
  - SRB
- Information Services
  - MDS2, MDS4 sourced from VDT/globus
  - GIIS
- Job Management
  - GRAM2, GRAM4 sourced from VDT/globus
  - Nimrod?
  - LCG (from EGEE)?
- Computers Servers run compatible PBS based schedulers and IBM Load Leveler
- Have clients for GridFTP and SRB installed to support remote data access

BeSTGRID

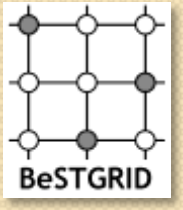
Adding a machine to the GRID

- user account
  - name: globus, UID: 646464
  - group: bestgrid, GID: 646464
- mount NFS directory from BeSTGRIDGATEWAY to /home/globus/.globus
- /etc/hosts: added IPs of BeSTGRIDGATEWAY
- iptables: added rules to accept tcp and udp protocols for BeSTGRIDGATEWAY
- pbs_mom:
  - installation directory: /opt/torque
  - client's binaries: /usr/local/bin/
  - pbs_mom binaries: /usr/local/sbin/
  - libraries: /usr/local/lib/
  - /etc/ld.so.conf: added /usr/local/lib
  - run pbs_mom under root account



Future

- Portals
- Linking in more systems to Grid
- Knowledge transfers to other NZ Universities and CRIs
- Beginnings of a National GRID framework
- Partnership with PRAGMA and EGEE
- Establish industrial links
  - NZSC (cluster)
  - Bio-industries (Biomatters,Cartesian GRIDspeed etc)



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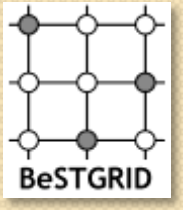
www.bestgrid.org