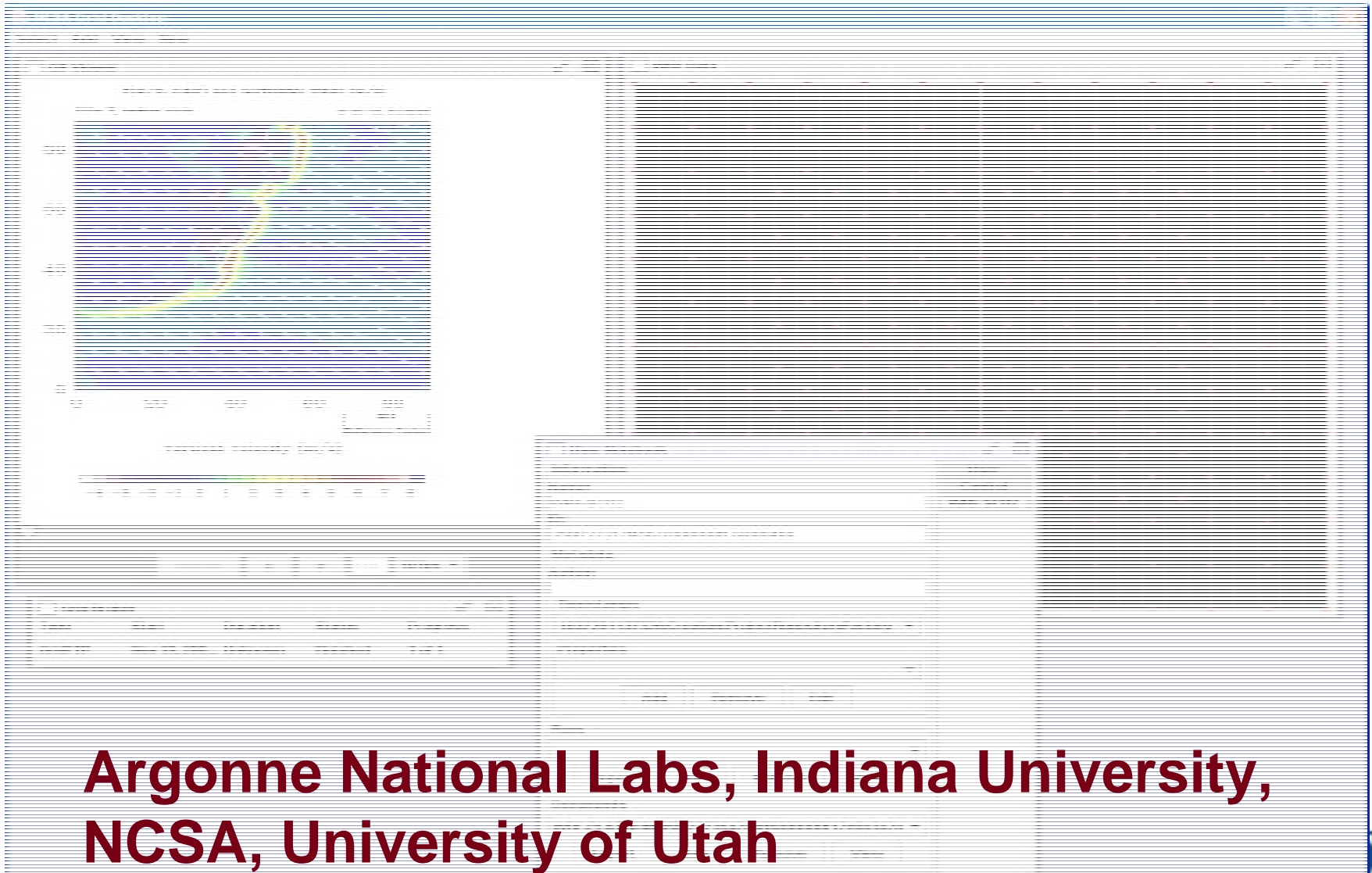


# Alliance Portal Project



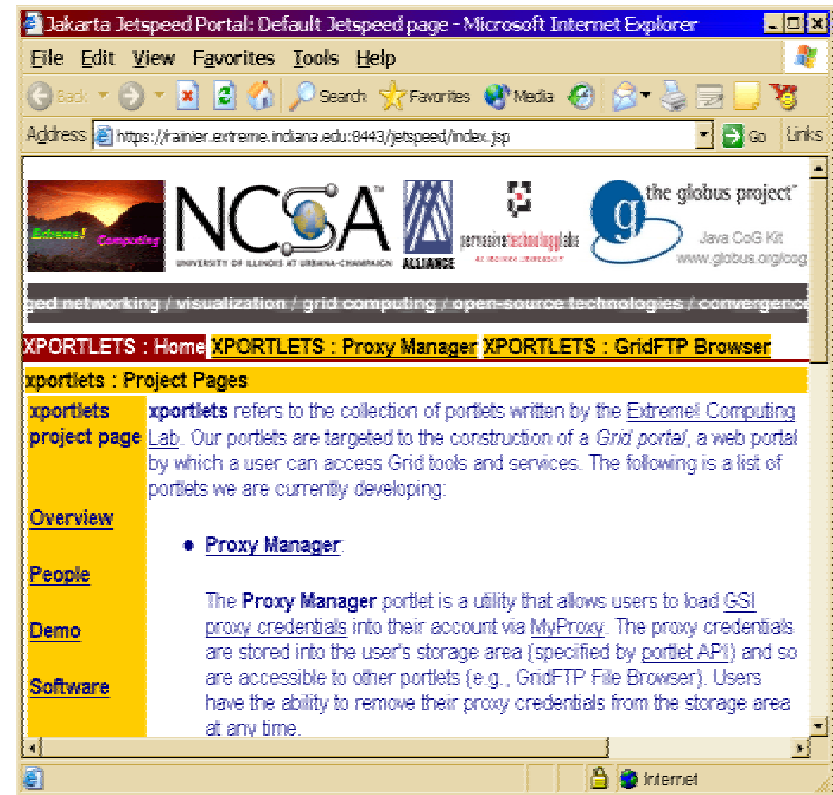
**Argonne National Labs, Indiana University,  
NCSA, University of Utah**

# Alliance Portal Project

- **Alliance Portal**
  - access point and programming system for using and building grid applications.
- **Two basic types**
  - **Grid Access Portals**
    - Provide tools to access standard grid resources, and launch and manage jobs
  - **Grid Science Portals**
    - Provide domain-specific view of set of applications that run on the grid.

# Alliance Portal Functionality

- **Functionality includes:**
  - Management of user proxy certificates
  - Monitoring and control of scientific simulations (e.g., MEAD: WRF model for weather forecasting and prediction)
  - Access to OGSA services via SDEs
  - Access to news and newsgroups via message passing
  - Job submission and control of batch and interactive jobs




# Alliance Portal Interface

Jakarta Jetspeed Portal: Default Jetspeed page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media

Address <https://rainier.extreme.indiana.edu:8443/jetspeed/index.jsp> Go Links

     the globus project™  
Java CoG Kit  
[www.globus.org/cog](http://www.globus.org/cog)

ged networking / visualization / grid computing / open-source technologies / convergence

**XPORTLETS : Home** **XPORTLETS : Proxy Manager** **XPORTLETS : GridFTP Browser**

**xportlets : Project Pages**

**xportlets project page** **xportlets** refers to the collection of portlets written by the [Extreme! Computing Lab](#). Our portlets are targeted to the construction of a *Grid portal*, a web portal by which a user can access Grid tools and services. The following is a list of portlets we are currently developing:

[Overview](#)

[People](#)

[Demo](#)

[Software](#)

- [Proxy Manager](#):  
The **Proxy Manager** portlet is a utility that allows users to load [GSI proxy credentials](#) into their account via [MyProxy](#). The proxy credentials are stored into the user's storage area (specified by [portlet API](#)) and so are accessible to other portlets (e.g., [GridFTP File Browser](#)). Users have the ability to remove their proxy credentials from the storage area at any time.

Internet

# Alliance Portal Interface

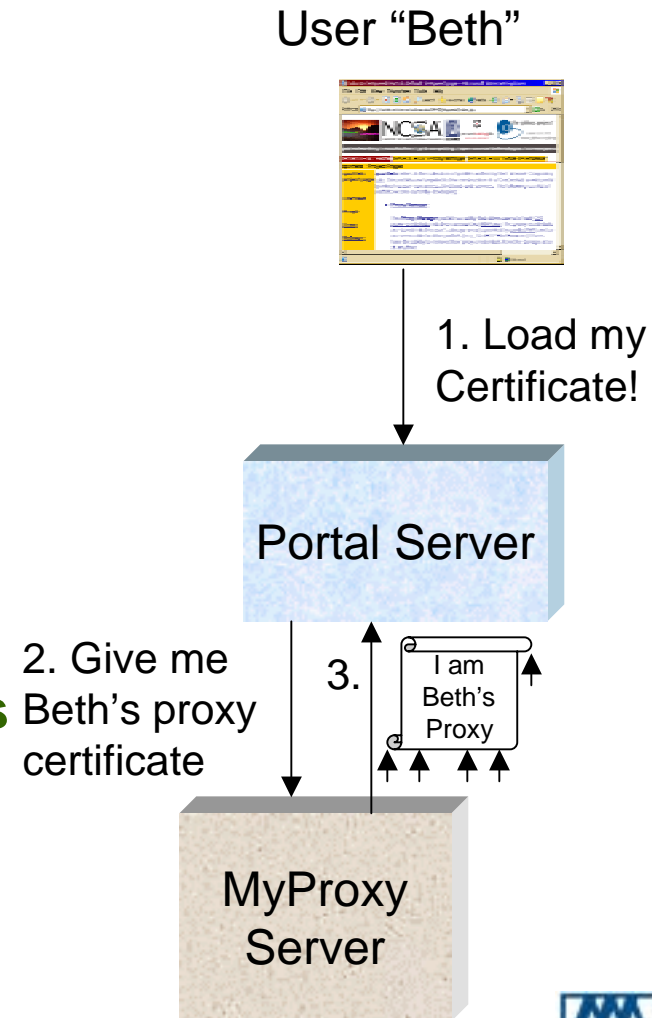
The screenshot displays the NCSA Grid Desktop interface with several components:

- GF Viewer:** A weather visualization window showing temperature and horizontal wind vectors. The title is "T(m/s, color) and horizontal winds (m/s)". The plot shows a coastal region with a color scale for temperature ranging from -4 to 8. Below the plot is a "Vertical Velocity (m/s)" color scale ranging from -4 to 8. The plot is titled "00m T, surface winds" and "0-01-02 01:00:00".
- WRF Data:** A window displaying a grid of red dots on a black background, representing a data grid.
- User Notebook:** A window showing metadata for a user notebook. It includes fields for Name, ID, Metadata, Author, Timestamps, Properties, Runs, and Documents. The Name field contains "WRF-SC02". The ID field contains "35b727311795b7c00000f17e004b9". The Timestamps field contains "1037201137326:Creation:ProjectRepositoryFactory". The Properties field is empty. The Runs field is empty. The Documents field contains "WRF\_PLATNUM:35b7273542a9f090000f17e0a342a".
- Grid Broker:** A window showing a table of grid broker activities.

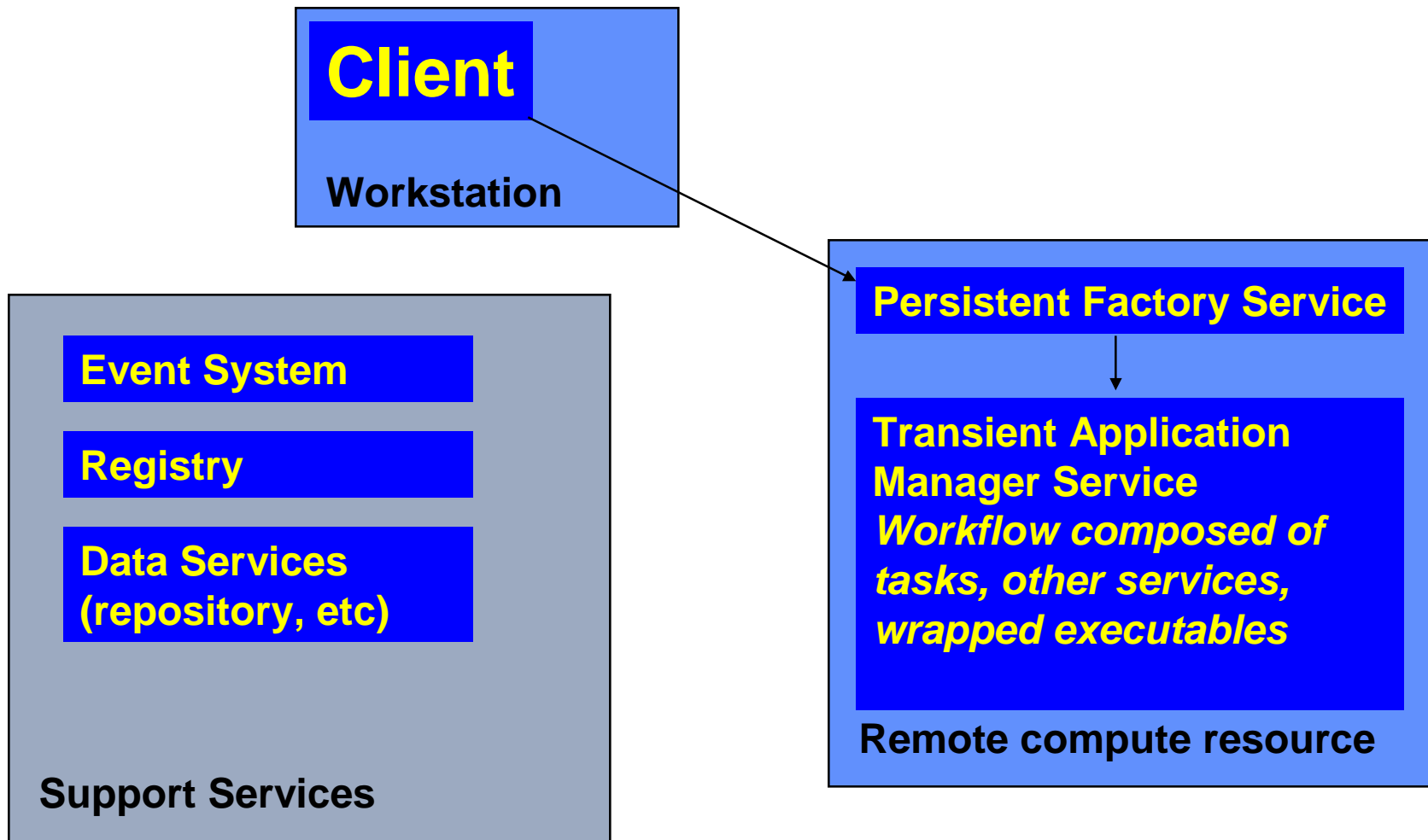
Type	Start	Duration	Status	Progress
GridFTP	Nov 19, 200...	Unknown	finished	1 of 1

# Alliance Portal Infrastructure

- **The Proxy Manager:**
  - User contacts portal server to do “grid” things on behalf of user.
  - To make this possible, server needs “Proxy Certificate”
    - User has previously stored proxy cert in secure MyProxy Server, stored with temporary password.
    - User gives portal server the password and portal server contacts proxy server and loads proxy.
    - The portal server holds proxy cert on behalf of user for “short amount of time”



# Alliance Portal Infrastructure



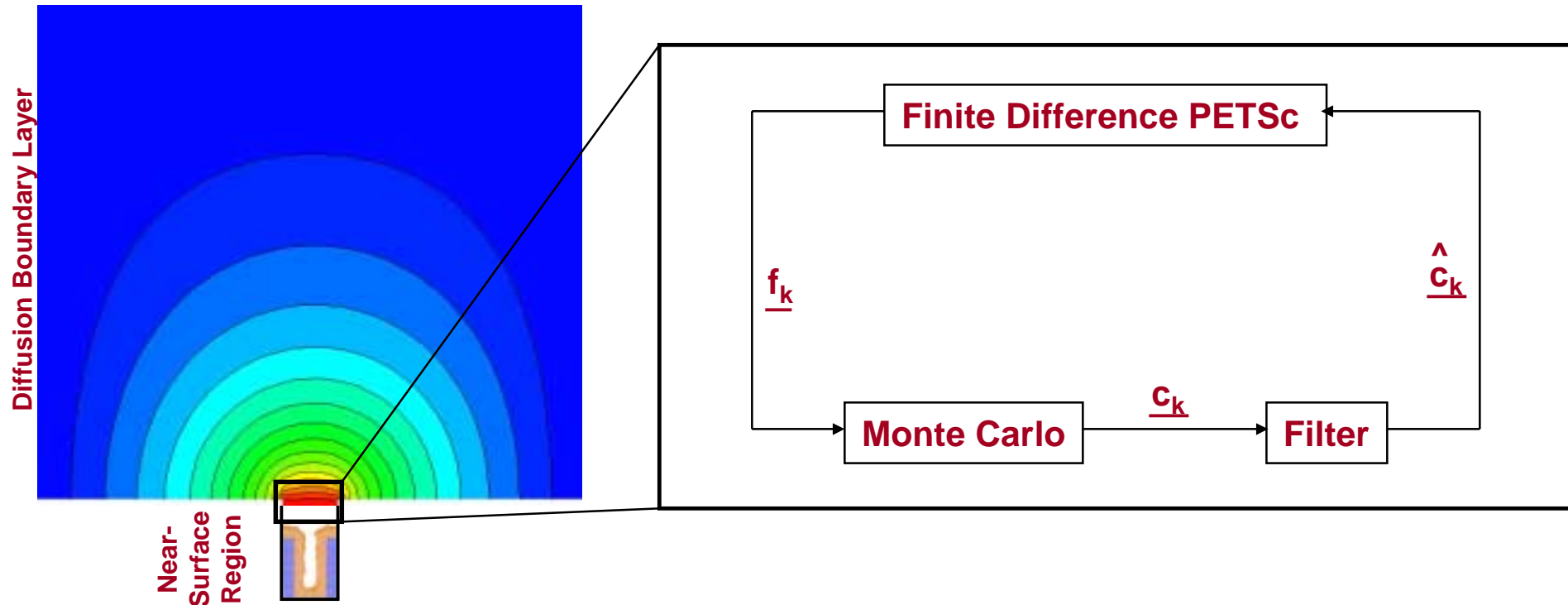
# Classes of Applications

- **Concurrent Multiscale Modeling**
  - **Copper Electrodeposition**
- **Parameter Studies**
  - Sensitivity and Estimation: Copper Electrodeposition
  - Datamining: Severe Storm Simulation

# Concurrent Multiscale Modeling

- **Copper Electrodeposition**
  - Richard Alkire, Richard Braatz
- **“Multiscale Simulations of Copper Electrodeposition onto a Resistive Substrate”, Drews et al., AIChE Annual Meeting 2002**

# Linked Monte Carlo-Continuum Simulations of Copper Deposition in a Trench



$\underline{f}_k$  – Vector of fluxes passed at time step  $k$

$\underline{c}_k$  – Vector of concentrations passed at time step  $k$

$\hat{\underline{c}}_k$  – Vector of filtered concentrations passed at time step  $k$

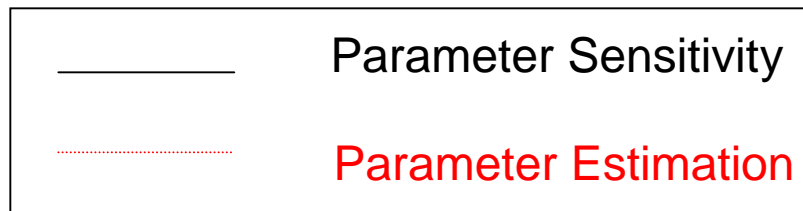
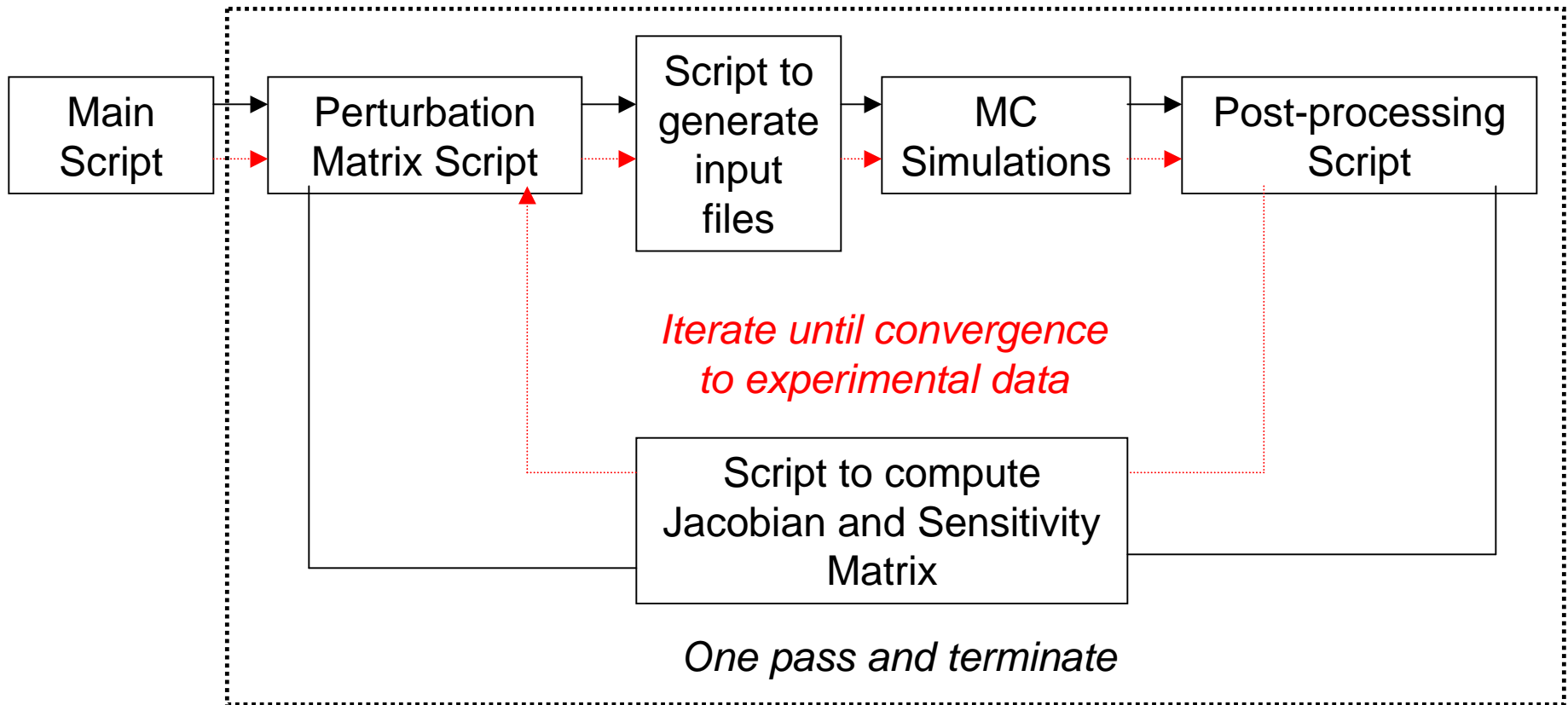
# Classes of Applications

- **Concurrent Multiscale Modeling**
  - Copper Electrodeposition
- **Parameter Studies**
  - Sensitivity and Estimation: Copper Electrodeposition
  - Datamining: Severe Storm Simulation

# Classes of Applications

- **Concurrent Multiscale Modeling**
  - Copper Electrodeposition
- **Parameter Studies**
  - **Sensitivity and Estimation: Copper Electrodeposition**
  - Datamining: Severe Storm Simulation

# Parameter Sensitivity & Estimation Methods



# Tasks for Parametric Sensitivity

- **Parametric sensitivity consists of:**

**File  
Preparation  
and Staging**

- Represent input file as xml
- Make appropriate transformation
- Generate correct input files in appropriate directories
- Copy or sym link invariant files
- Copy or sym link executables

**Job  
Submission**

- Create condor .cmd file
- Condor parametric submission
- Monitor until finished

**Post  
Processing**

- Derive/extract appropriate quantities (XML intermediary?)
- Build matrix with output/observables

**Jacobian  
Evaluation**

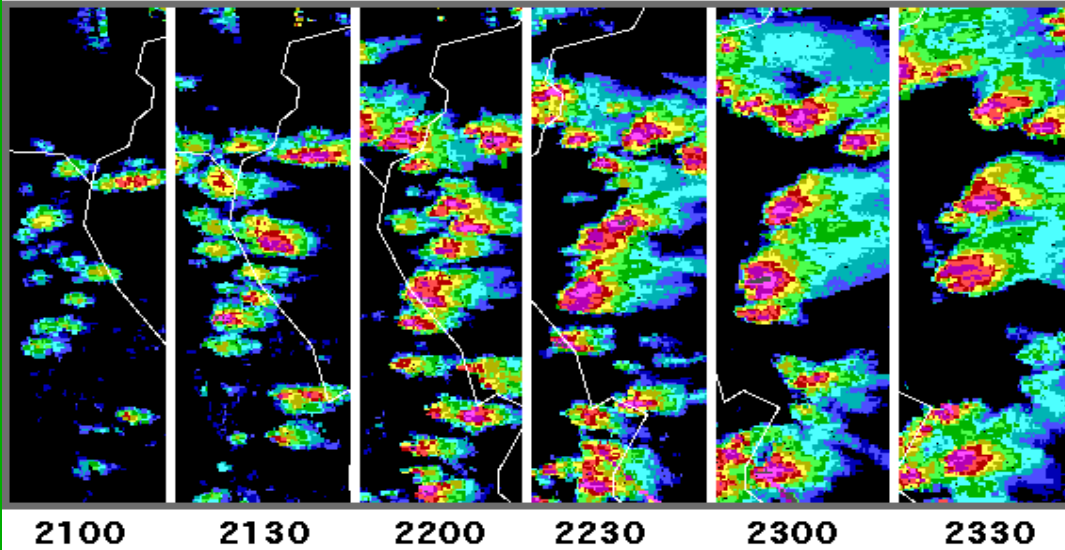
- Read matrix, deviations
- Generate derivatives
- Present results

# Classes of Applications

- **Concurrent Multiscale Modeling**
  - Copper Electrodeposition
- **Parameter Studies**
  - Sensitivity and Estimation: Copper Electrodeposition
  - **Datamining: Severe Storm Simulation**

# Composite Radar Reflectivity 19 April 1996

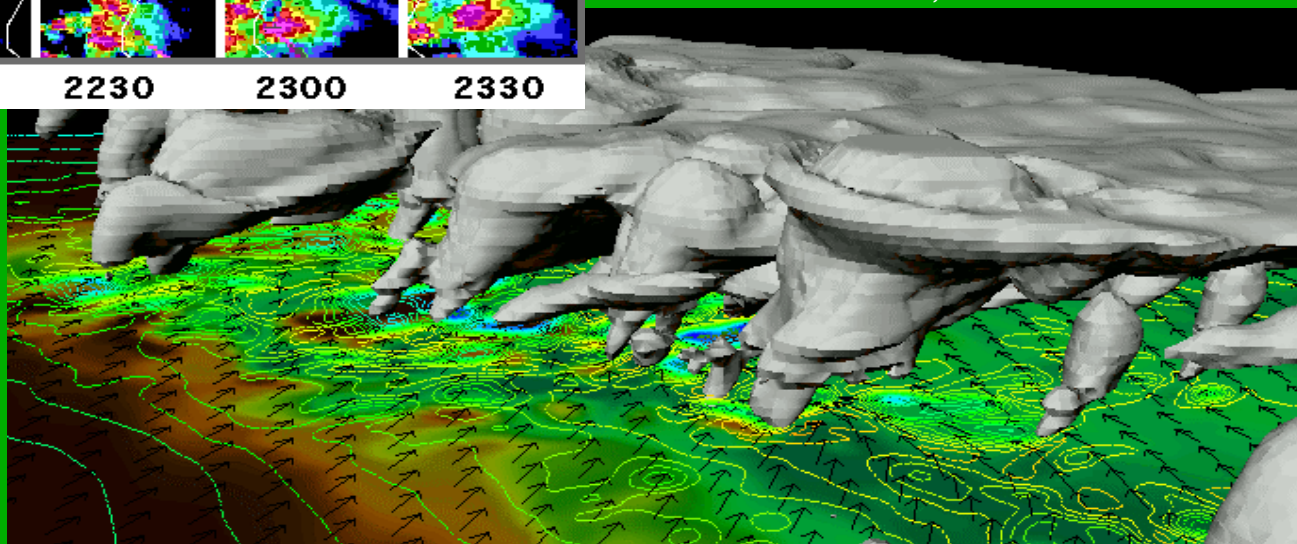
All times UTC



← Real World

1 km MM5, real data initialization

Model →



**Robert Wilhelmson, Brian Jewett**

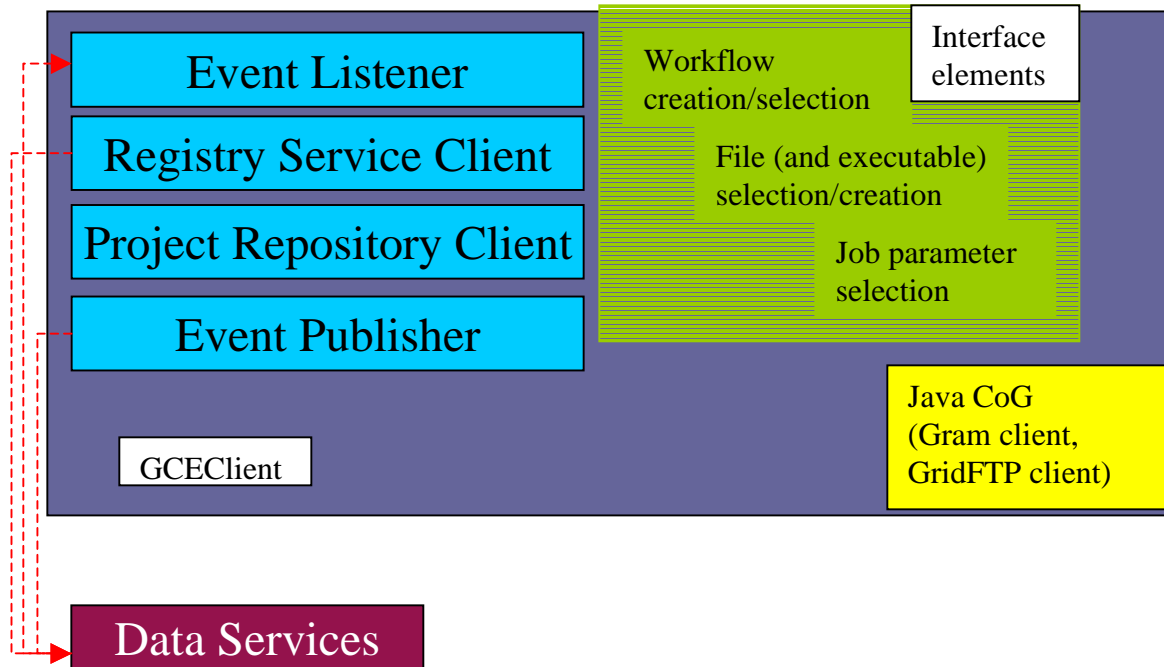
# Severe Storm Simulation Challenges

- **Make & manage *many* simulations**
  - Define and configure the parameter space
  - Create/archive job configuration metadata
  - Seamlessly (?) submit, execute & monitor all jobs without manually working through (around? despite?) the batch system
  - Treat post-analysis, visualization, feature detection and assessment as an integral part of the job workflow
  - Save metadata associated with results & analysis

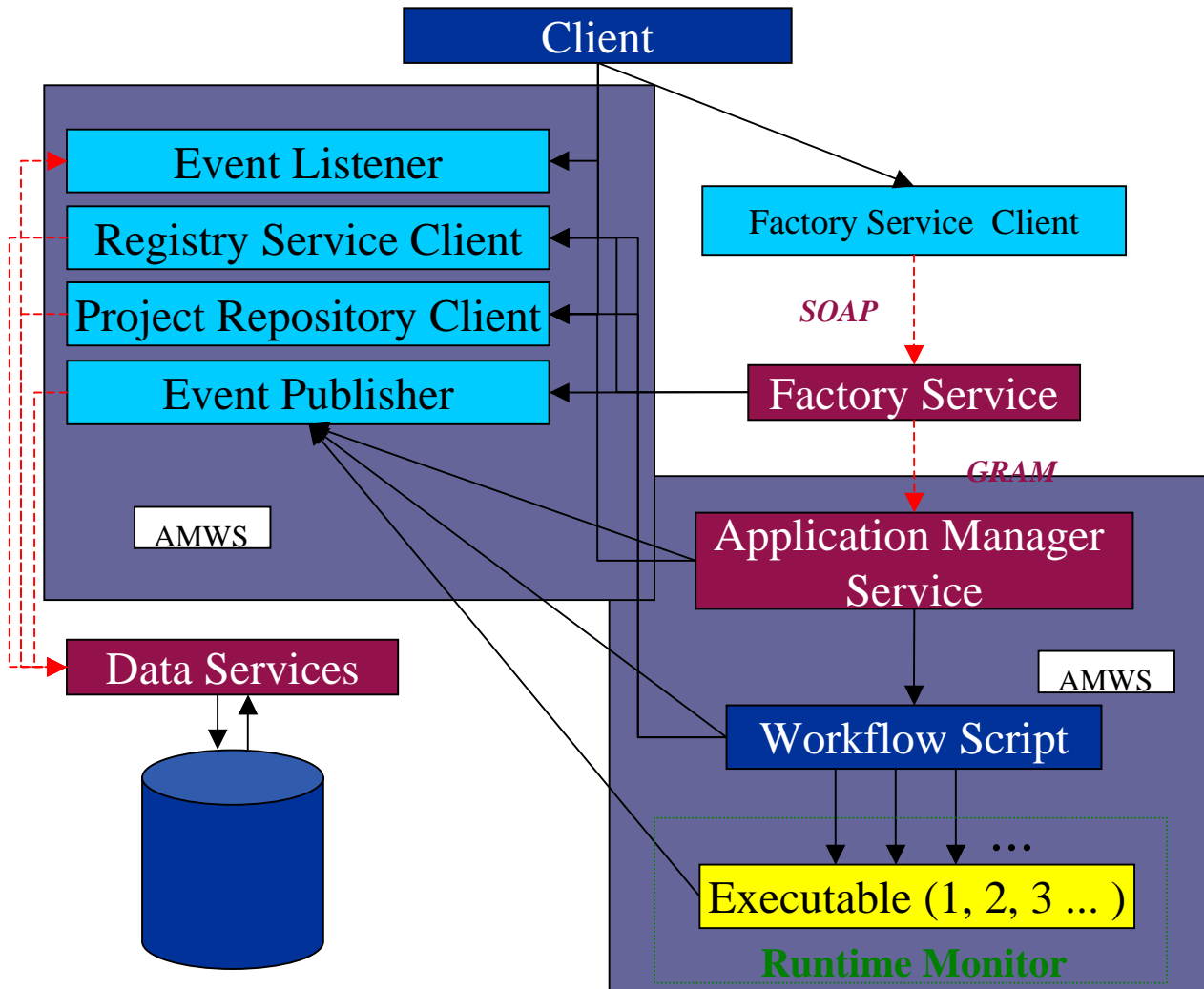
# Severe Storm Simulation Challenges

- **Keep track of the work**
- **Effectively interrogate the data**
  - **Metadata tied to and permanently associated with the data**
  - **Searching by input & output characteristics**
  - **Improved data organization & retrieval**

# Client in detail

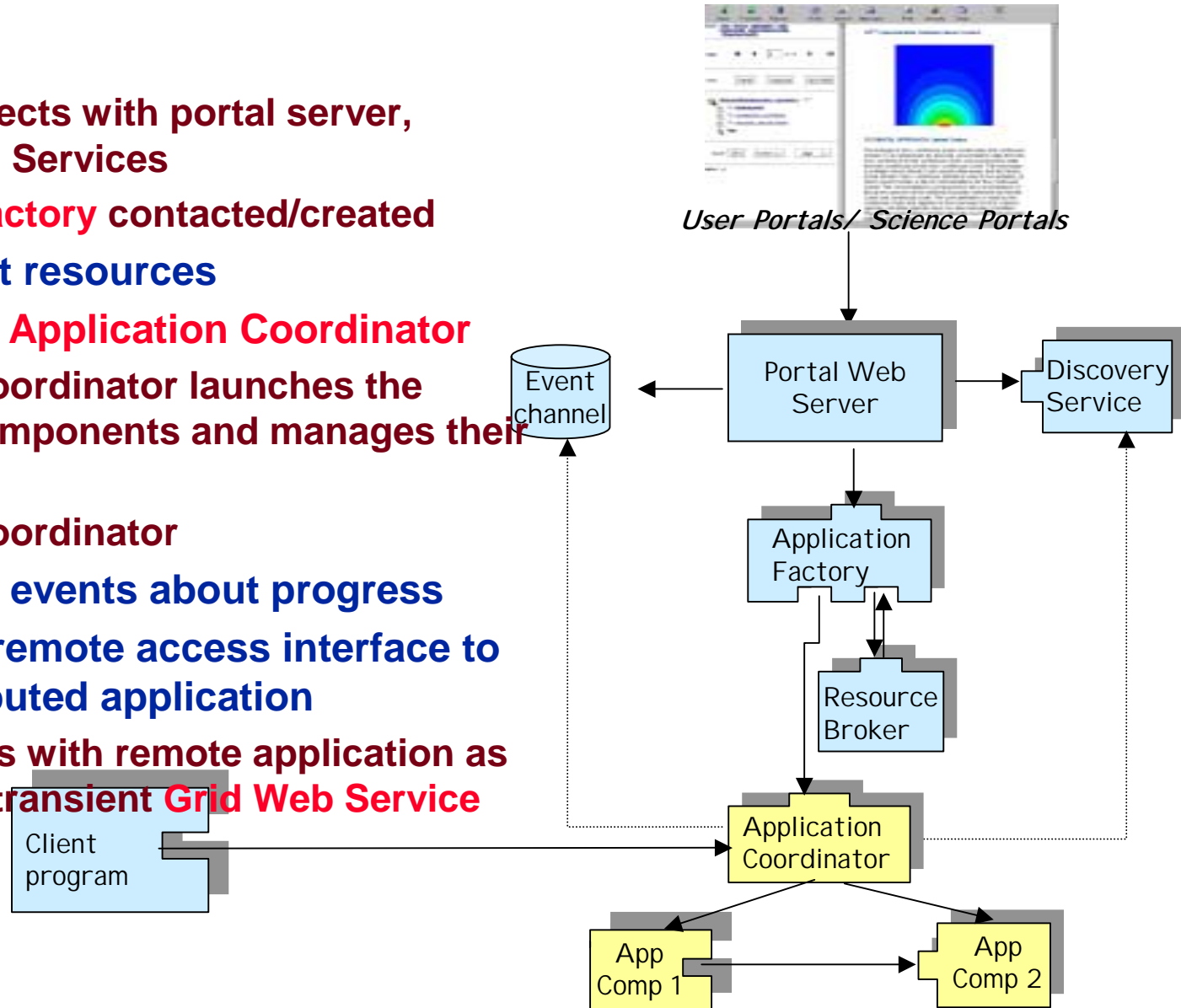


# Application Manager Web Service



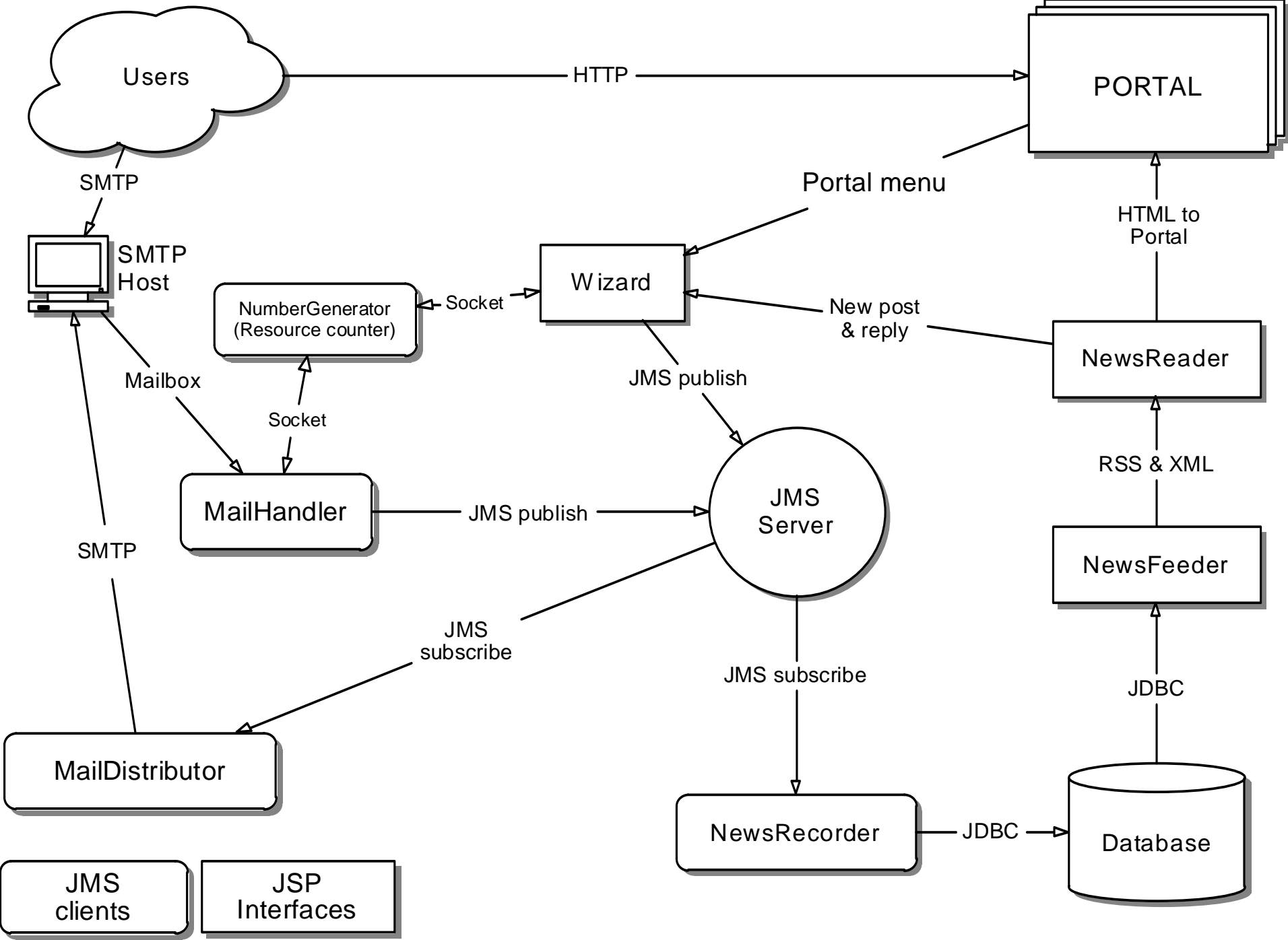
# Distributed Application Orchestration

1. **Browser connects with portal server, accesses Grid Services**
2. **Application Factory contacted/created**
  - **May select resources**
  - **Launches Application Coordinator**
3. **Application Coordinator launches the application components and manages their interactions**
4. **Application Coordinator**
  - **Publishes events about progress**
  - **Provides remote access interface to the distributed application**
5. **Client interacts with remote application as a distributed, transient Grid Web Service**



# XML Metadata Management

- **General Problem: manage metadata about documents and resources.**
- **Management pieces:**
  - **Schema Wizards generate valid metadata nuggets**
  - **Publishers and subscribers manage access controls, persistent and immediate info delivery**
  - **Hierarchical URIs organize the metadata.**
  - **Recorders and feeders wrap persistent storage.**
  - **Metadata browsers and searchers navigate URI trees.**



# Applications

- **Newsgroups (shown here).**
- **Citation/reference collection managers**
- **Gateway metadata browsers**

## Newsgroup List

- [Bug Reports](#)
- [General](#)
- [OKC](#)
- [Portal](#)
- [Reports](#)
- [SysAdmin](#)
- [Test](#)

Message chunk Size:  View Mode: **threaded**

Message chunk Size:  Message #:  Search:  By: Search By

[Non-Threaded](#) | [First](#) | [<< Previous](#) | [Next >>](#) | [Last](#)

- 1 [weekly report](#)  
AHMET SAYAR *Wed Oct 02 17:39:59 EST 2002*
- 2 [Weekly Report](#)  
cevat ikibas *Fri Sep 13 15:27:01 EST 2002*
- 3 [weekly report](#)  
Gurhan Gunduz *Mon Sep 09 19:31:59 EST 2002*
- 4 [weekly report](#)  
AHMET SAYAR *Tue Sep 03 14:33:00 EST 2002*
- 5 [weekly report](#)





<b>Sender</b>	AHMET SAYAR <asayar@indiana.edu>
<b>Subject</b>	weekly report
<b>Comment</b>	
<b>Distribution</b>	Community Grids Project Reports
<b>Organization</b>	Indiana University
<b>Update</b>	gzoos://ptluis/newsgroups/cgreports/44
<b>Keywords</b>	
<b>Message</b>	<p>GPDK on noahsark (with globus 2.0): I have installed GPDK on noahsark. But I have encountered a problem that I have not encountered during installation on grids. I have to click every button ("User Profile", "Submit Job" etc) twice for it to work properly. After one click the "Status Panel" vanishes and the main window contains some error statements, exceptions. First I will try to solve this problem on noahsark.</p> <p>GPDK on grids (with globus 1.3): Since I have this problem with noahsark, I have been running on grids to submit jobs to remote hosts. As I mentioned at my previous email I had a problem with this. Right now, I solved this problem. For the next step I will try to use grid services from another computers that do not have my own delegated credential (i.e. I will use</p>

## marlon pierce's Permission for Newsgroups

**In order to make request you need to have email address in the email section.**

Please use the following chart to make requests and configure your account. Each column is labeled with rA, wA, aA, eN, aN, ccN as described below.

### Permissions

- rA, read access: You want to read messages using the NewsReader.
- wA, write access: You want to send messages to this newsgroup.
- aA, admin access: You want to administer this newsgroup.

### Configuration

- eN, email notification: You want to receive other people's messages.
- aN, attachment notification: You want to receive attachments messages might have.
- ccN, CC notification: You want to receive your message as well.

### marlon pierce's Current Access:

Group Name	rA	wA	aA	eN	aN	ccN	Email Address
bugreports	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
cgnews	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
cgreports	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
okc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
portal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
sysadmin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>
test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="marpierc@indiana.edu"/>

***If you want to change your access rights or make new requests for newsgroups, Please use the form shown below.***

Admin Control  
Newsgroup

**Group Name : cgreports**

rA: read Access(reading access for newsgroup)  
 wA: write Access(writing access to the newsgroup)  
 aA: admin Access  
 eN: email Notify  
 aN: attachment Notify  
 ccN: CC Notify

**Current User Access Rights**

username	rA	wA	aA	eN	aN	ccN	Email Address
qpei	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="qpei@indiana.edu"/>
mvarank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="mvarank@indiana.edu"/>
maysan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="maysan@indiana.edu"/>
kakim	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="kakim@cs.indiana.edu"/>
galip	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="gaydin@indiana.edu"/>
shrideep	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="shrideep@grids.ucsf.indiana.edu"/>
asayar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="aseyar@indiana.edu"/>
dbc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="dbc@peren@indiana.edu"/>
jake	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="jake@grids.ucsf.indiana.edu"/>
balsoy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="balsoy@grids.ucsf.indiana.edu"/>
yanyan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="yayan@indiana.edu"/>
Foxdemo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="gcf@grids.ucsf.indiana.edu"/>

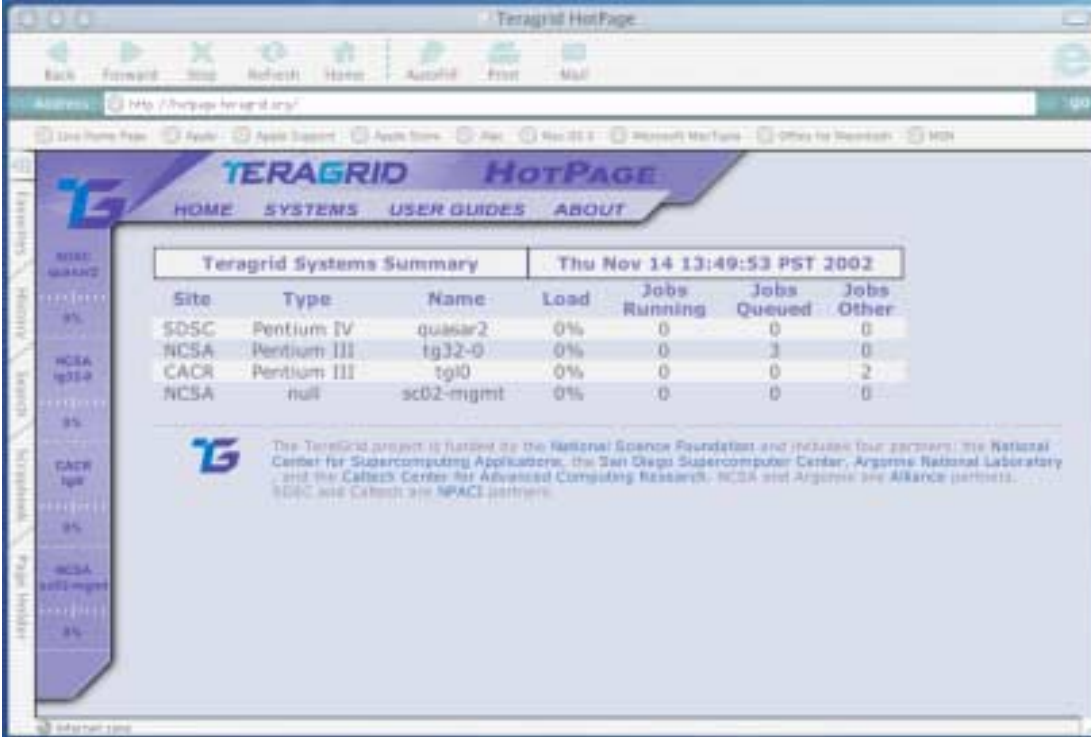
- og [\[modify/add/d\]](#)
- bugreports [\[modify/add/d\]](#)
- cgnews [\[modify/add/d\]](#)
- cgreports [\[modify/add/d\]](#)
- cgreports/old [\[modify/add/d\]](#)
- database [\[modify/add/d\]](#)
- gateway [\[modify/add/d\]](#)
- ges [\[modify/add/d\]](#)
- globus [\[modify/add/d\]](#)
- gxos [\[modify/add/d\]](#)
- hpjava [\[modify/add/d\]](#)
- hwtest [\[modify/add/d\]](#)
- java-for-cse [\[modify/add/d\]](#)
- java-mpl(1) [\[modify/add/d\]](#)
- javagrandeforum(1) [\[modify/add/d\]](#)
- jms [\[modify/add/d\]](#)

## News Message Composer

Sender	Ozgur Balsoy < ozgur@csit.fsu.edu >
Organization	<input type="text"/>
Distribution	Gateway
Category	General
Comment	<input type="text"/>
Keywords	<input type="text"/>
Filing Date	<input type="text" value="11/17/2002"/>
Attachments	<input type="button" value="Add/Remove Attachments"/>
Subject	<input type="text"/>

Message

# TeraGrid HotPage



The screenshot shows a web browser window titled "TeraGrid HotPage" with the address "http://hotpage.teragrid.org". The page features a navigation menu with "HOME", "SYSTEMS", "USER GUIDES", and "ABOUT". A "TeraGrid Systems Summary" table is displayed, along with a sidebar on the left showing site status indicators.

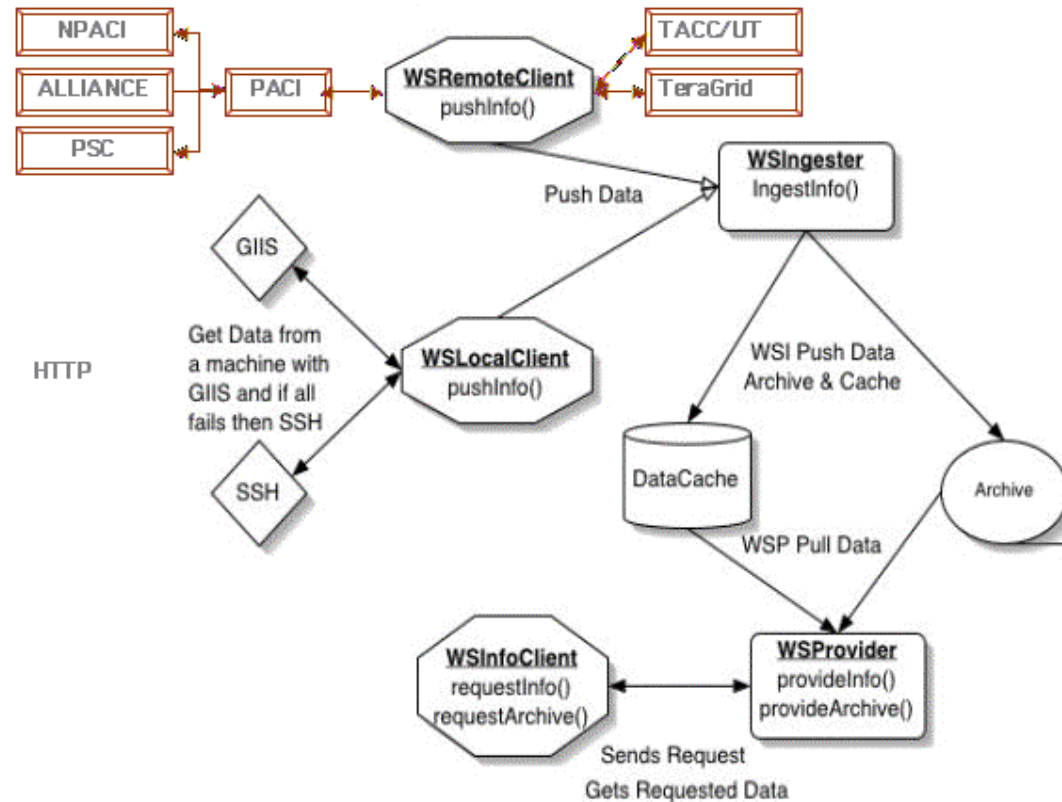
TeraGrid Systems Summary				Thu Nov 14 13:49:53 PST 2002		
Site	Type	Name	Load	Jobs Running	Jobs Queued	Jobs Other
SDSC	Pentium IV	quasar2	0%	0	0	0
NCSA	Pentium III	tg32-0	0%	0	3	0
CACR	Pentium III	tg10	0%	0	0	2
NCSA	null	sc02-mgmt	0%	0	0	0

The TeraGrid project is funded by the National Science Foundation and includes four partners: the National Center for Supercomputing Applications, the San Diego Supercomputer Center, Argonne National Laboratory, and the Caltech Center for Advanced Computing Research. NCSA and Argonne are Alliance partners. SDSC and Caltech are NPAC partners.

Informational Portal: all resources; interactive '03  
Java Server Pages: new HTML  
Information Archival Web Services (IAWS)


# Information Archival Web Service

- VO Approach for organizing Data
- XML structure
- Data producers:
  - Web service clients



# UT Grid Computing Portal

UTGrid Web Portal



University of Texas at Austin  
Grid Computing Portal

**Information**  
[Available Systems](#)  
[Grid Status](#)


**File Manipulation**  
[File Upload](#)  
[List Portal Files](#)  
[List Remote Files](#)  
[Transfer to Remote](#)  
[Transfer to Portal](#)  
[3rd Party Transfer](#)

**Scientific Apps**  
[MGF Application](#)

**Demo Apps**  
[PLDemo](#)

[Log Out](#)

Dept	System/ Processors	Peak GFLOPs	Memory GBytes	Work Disk GBytes	Name	Grid SW	Network	Status	Load	Jobs
CS	Linux PC	1.5	.1	52	alta	Q		+	<div style="width: 10%;"></div>	
CS	Linux PC	1.5	.1	52	solitude	Q		+	<div style="width: 10%;"></div>	
TACC	Cray SV1 / 16	19	16	485	aurora	Q		+	<div style="width: 20%;"></div>	<a href="#">13R-10-30</a>
TACC	Linux Cluster / 2	1	.5	13	brazos	Q		+	<div style="width: 10%;"></div>	
TACC	Linux PC	2	1	10	cool	Q	Q	+	<div style="width: 20%;"></div>	
TACC	IBM Regatta-HPC / 64	333	128	532	longhorn	Q		+	<div style="width: 10%;"></div>	<a href="#">3R-10</a>
TACC	LSF Multi-Cluster/ 22	37	14	173	lsf	Q		+	<div style="width: 10%;"></div>	<a href="#">0R-20-30</a>
TACC	Linux Cluster / 4	2	1	13	padre	Q		+	<div style="width: 10%;"></div>	
TACC	Cray/Dell Cluster / 4	19	8	8	q	Q		+	<div style="width: 10%;"></div>	
TACC	Linux PC	2	1	10	sanantonio	Q	Q	+	<div style="width: 20%;"></div>	
TACC	IBM IA-64 Cluster / 40	128	80	140	santarita	Q	Q	+	<div style="width: 10%;"></div>	<a href="#">0R-10</a>
TACC	Sun Workstation	2	1	2	tahoka	Q		+	<div style="width: 10%;"></div>	
TACC	IBM IA-32 Cluster / 64	64	32	20	tejas	Q	Q	+	<div style="width: 20%;"></div>	<a href="#">4R-60</a>
TICAM	Alpha Cluster / 16	16	8	71	zaphod	Q		+	<div style="width: 10%;"></div>	
<b>Total:</b>		<b>627</b>	<b>290</b>	<b>1581</b>						

Click on column headers to sort.  
 Click the magnifying glass logo  for more information about grid software status or network connectivity.

Data pulled live from IAWS Query Web Service for Alliance, NPACI, TeraGrid, and Texas.