

Open Science Grid:
Beyond the Honeymoon

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What is OSG ?

(Shortcut: EDG->EGEE = Grid3->OSG)

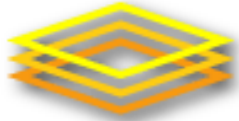
- OSG the Consortium
 - Collaboration of contributors building the grid
- OSG the Grid
 - The collection of services which do work
- OSG the collection of Virtual Organizations (VO)
 - The scientist and the resources they control
- OSG the “project”
 - The construction and persistent operation of the core

<http://www.opensciencegrid.org>



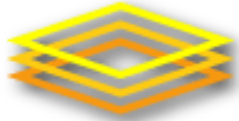
What's Happening ?

- July 20, 2005 “Grand Opening”
 - Currently operating a Grid
- Preparing Release 0.4 for December 2005
 - “Release” is a definition of a function set
- Integrating new participants
 - Council members: TACC
 - Grid participants: DOSAR, Dartmouth, Dark Energy Survey, Accelerator, Nanohub, ...
- Developing Partnership plans
 - EGEE/LCG and TeraGrid primary focus

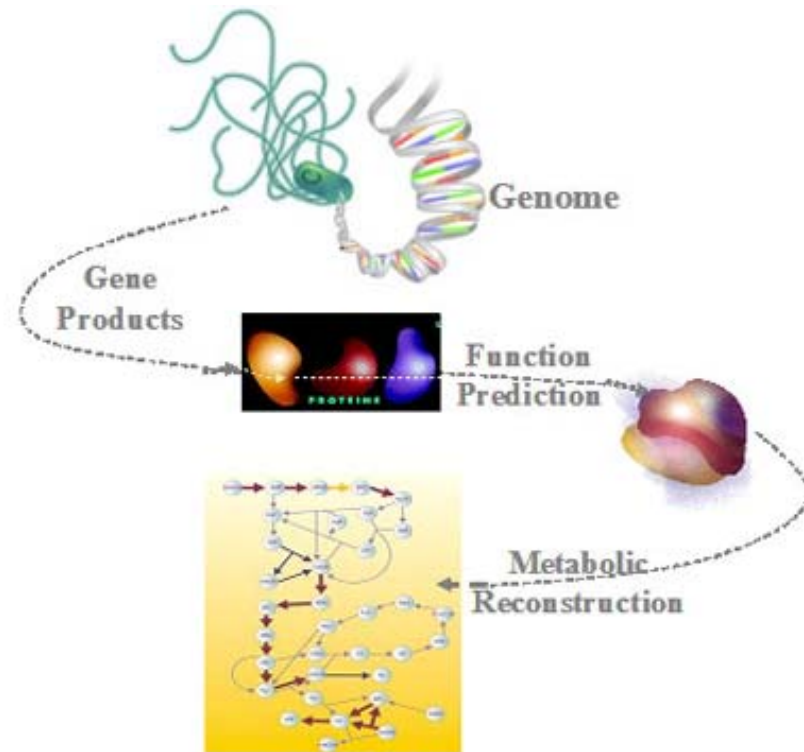


Who is using OSG ?

- The Virtual Organizations
 - High Energy and Nuclear Physics
 - CMS, ATLAS, STAR, DZero, CDF, Fermilab
 - Physics and Astronomy
 - LIGO, SDSS, Auger, DES
 - Biology
 - fMRI, GADU, GRASE, GLOW
 - Engineering
 - GRASE, GLOW
 - Computer Science
 - iVDGL, GLOW
- User Support is entirely provided by the VOs



One science success story



High-Throughput Genome Analysis using GADU/GNARE

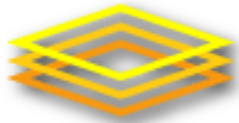
- Genome Analysis and Update tool (GADU)
 - Comparative analysis of newly published genomes against known set
 - 1 bacteria genome sparks 12,000 step processing job
 - Auto processing frees researchers
 - Rapid turn around and publication boosts whole community
- See article in Science Grid This Week:

http://www.interactions.org/sgtw/2005/0713/iow_20050713.html



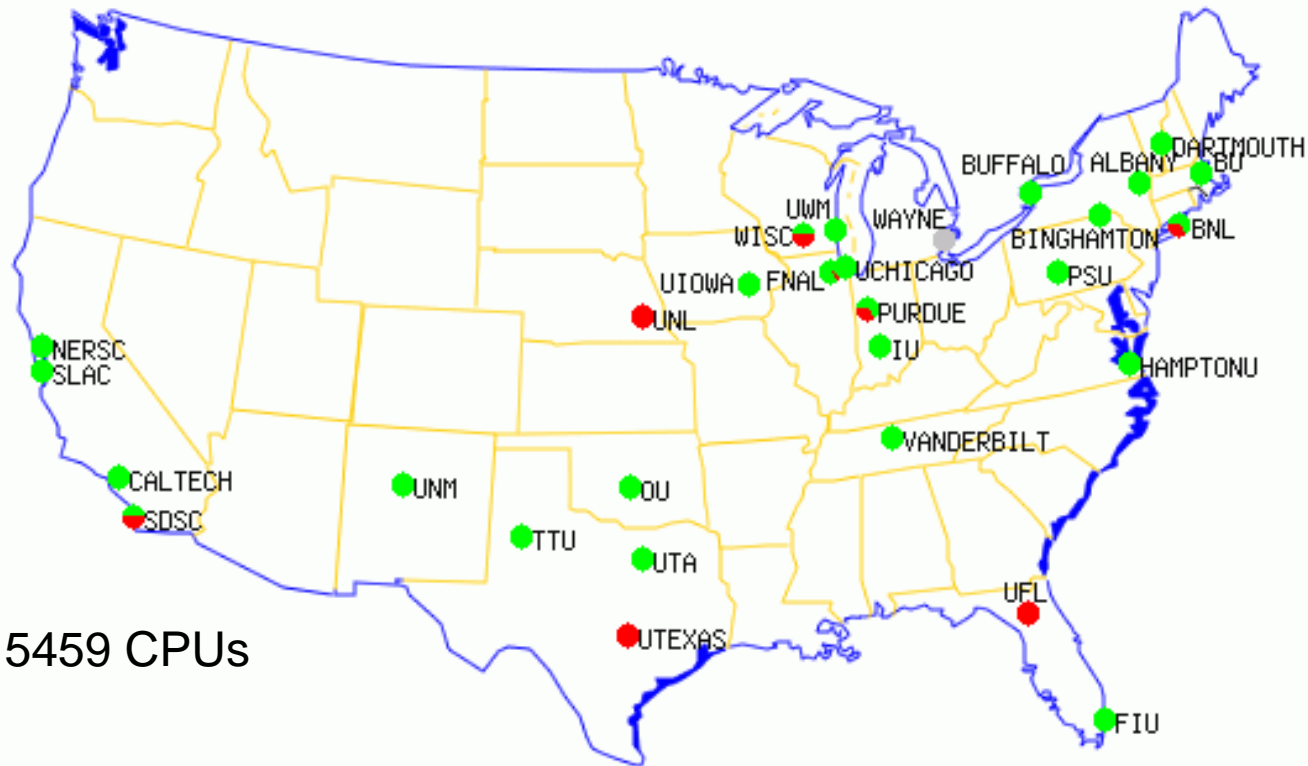
Learning to Share

- Share the resources
 - Expressing policy clearly is tough
 - Biggest concern is access at time of owner need
- Share the information
 - Willingness, but different terminology and assumed context
 - Have to avoid “lecture mode”
- Share the frustrations
 - Have to avoid the “blame game”



Open Science Grid

OSG Production

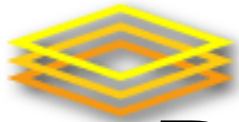


46 CEs, 15459 CPUs

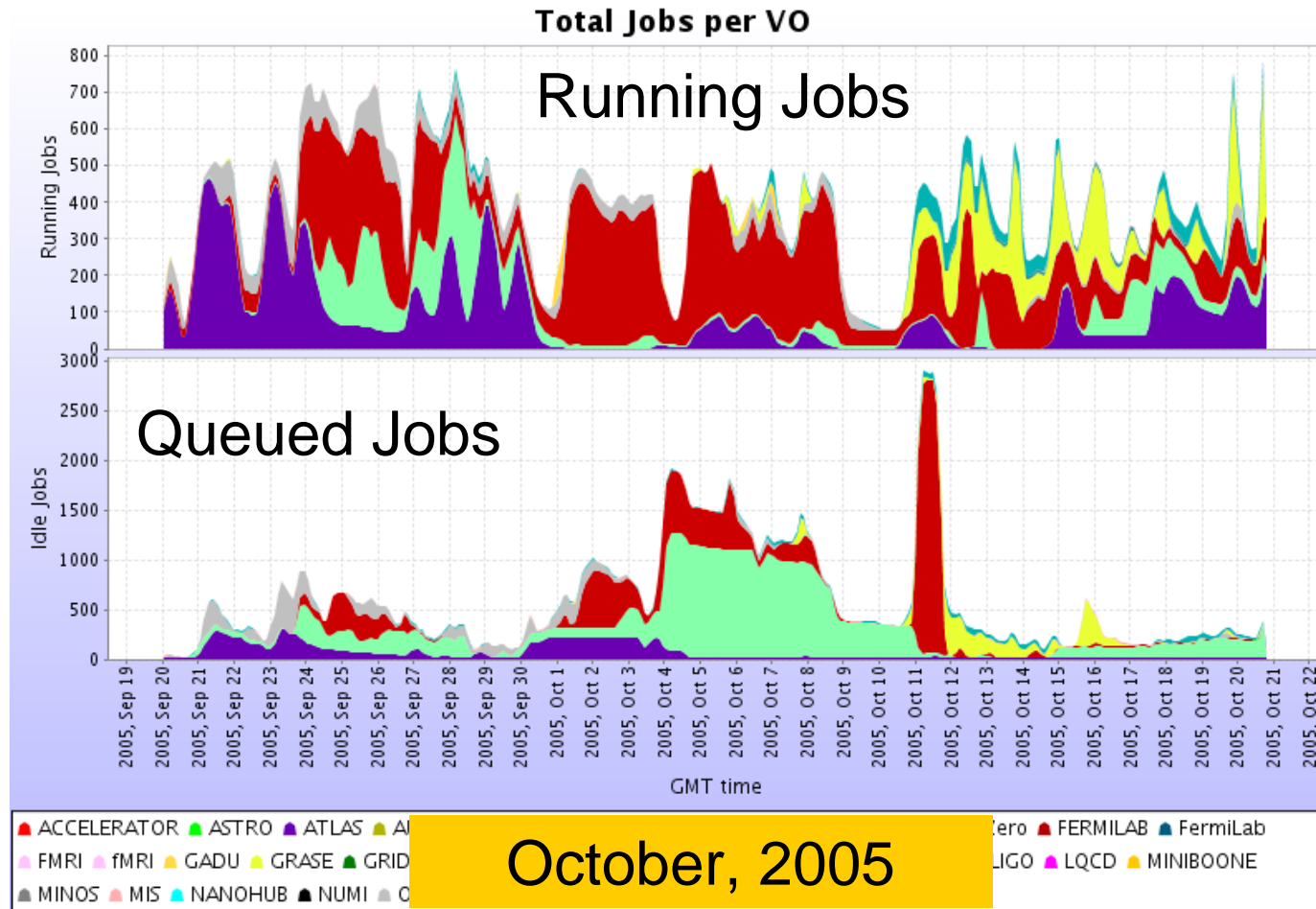
6 SEs

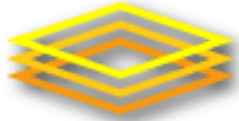
<http://osg-cat.grid.iu.edu/>

Fri Oct 21 15:36:51 GMT 2005



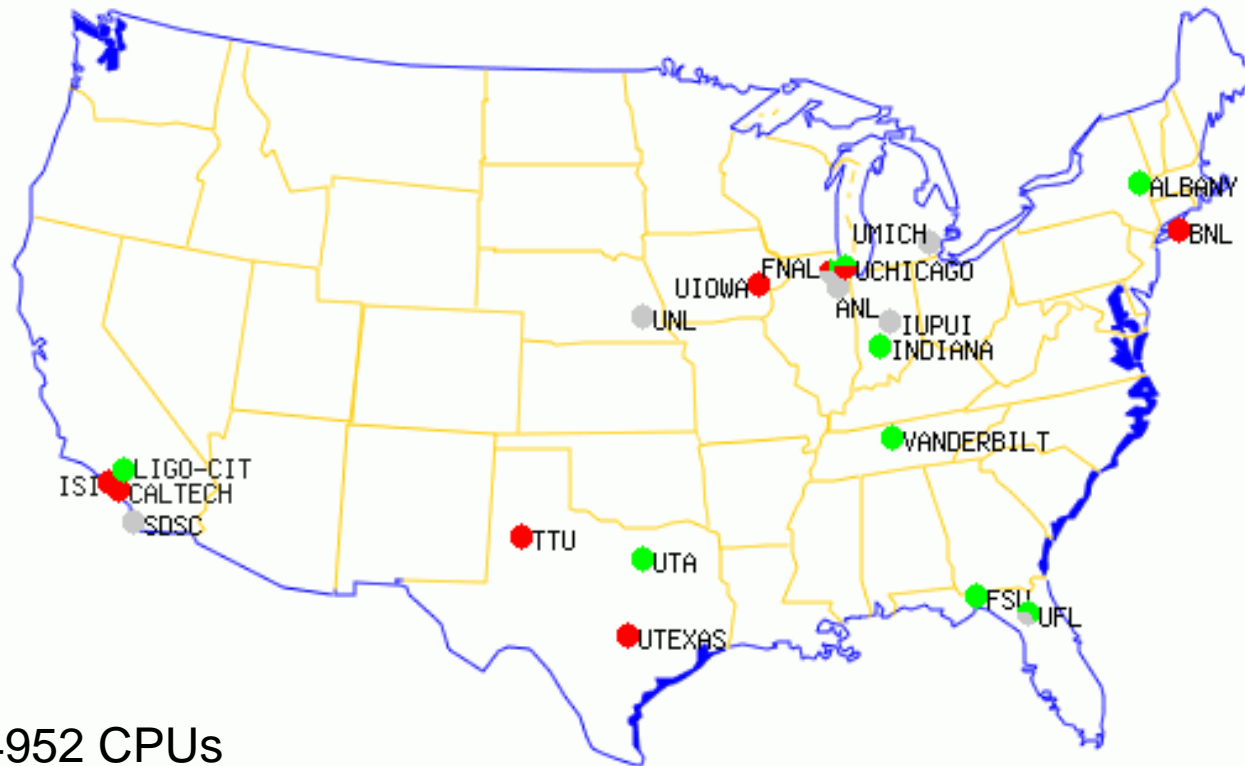
Recent Production Statistics





Open Science Grid

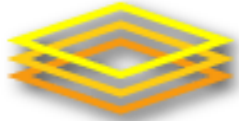
OSG Integration



30 CEs, 4952 CPUs

<http://osg-itb.ivdgl.org/gridcat/>

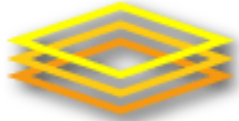
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Service Oriented Architecture

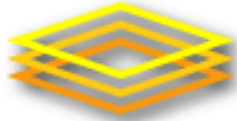
“Interfaces not Implementations”

- We strive, with mixed success, to define functional requirements to allow multiple implementations
- Pragmatic pressures often require specification by implementation
- We are strongly guided by the EGEE architecture
- Path to Nirvana likely to be long...



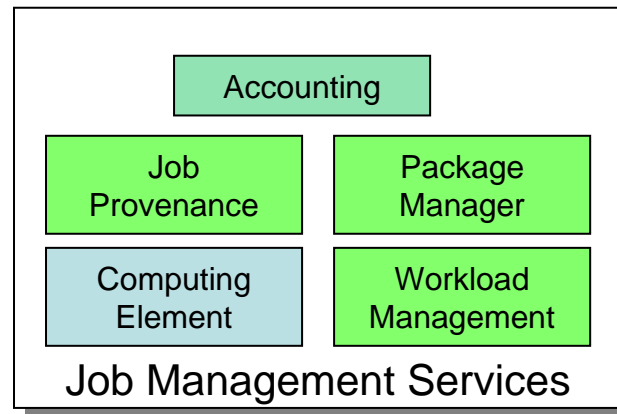
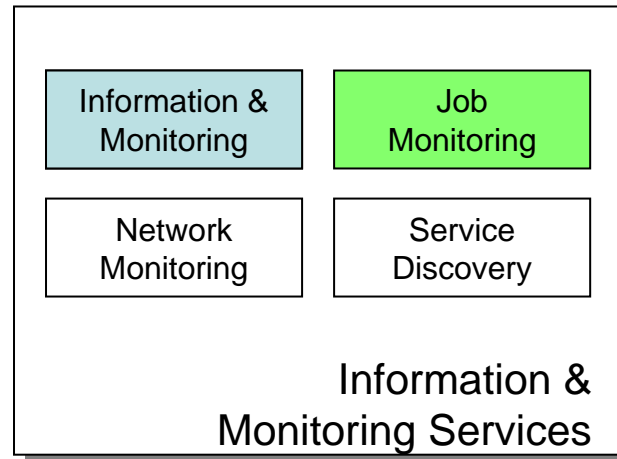
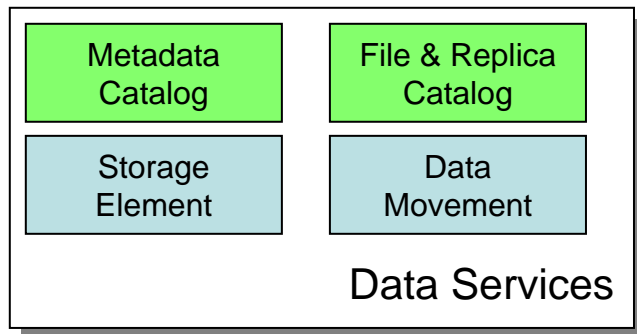
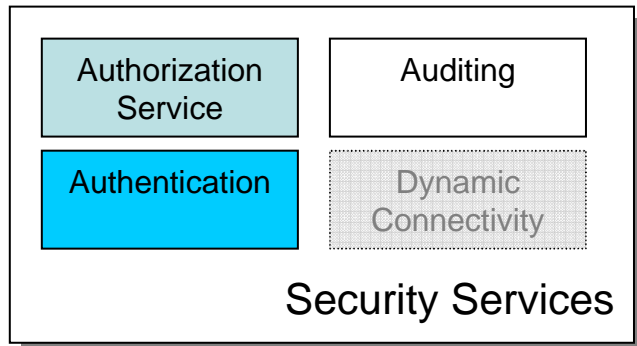
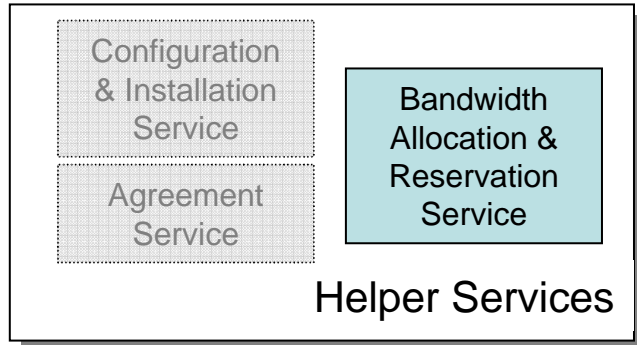
Standards-based, open software

- However, inherent tension:
 - Evolving community means new ways of doing things
 - Production requirement value stability highly
- OSG Software
 - VDT is primary software integrator
 - Pacman used for software distribution
 - Software distributed is reference implementation
 - Integration Testbed (ITB) highly valued
- OSG infrastructure does not distribute nor manage application software

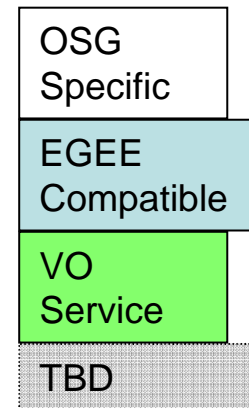


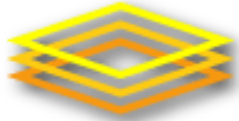
OSG Services

Release 0.4



Key:





Release 0.4 Focus Areas

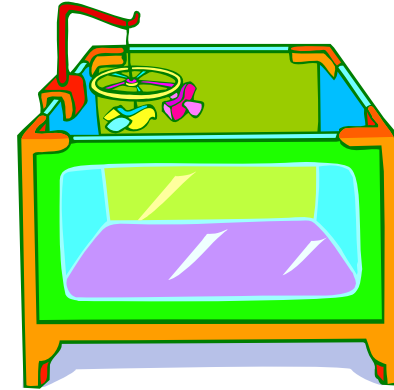
- Deployment Document (OSG Doc #300) is definition document of functional requirements for services
- Storage
 - CE/SE Data Integration
 - Access Methods
 - Authorization and Access Control
 - Resource Allocation Management
 - High throughput network utilization

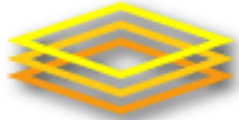




Release 0.4 Focus Area

- Edge Services Framework
 - VO's need specialized persistent services to most efficiently utilize resources (CE)
 - Provide framework for providing VO control of a sandboxed environment
 - Working with Globus team on Xen Virtual Machine technology
 - First focus on operations advantages, then on security options

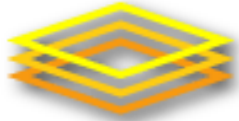




Release 0.4 Focus Area

- Web Services
 - VDT 1.3.7
 - incorporates Globus v4
 - WS GRAM
 - MDS4, service container, ...
 - Deploying now on ITB
 - Simplify integration and evaluation of gLite components
 - Evaluate and understand Clarens
 - Begin understanding and evaluation of OGSA

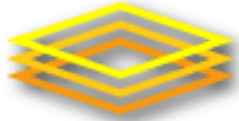




Release 0.4 Focus Area

- Operational Efficiencies
 - Grid function
 - Higher utilization
 - Performance metrics
 - not robust
 - nor well understood
 - OSG growth
 - Current operations overhead too high
 - Registration human mediated
 - Monitoring and response as well





Release 0.4 Focus Area

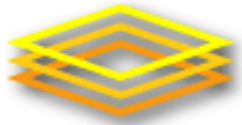
- Workload Management
 - Service Catalogs
 - Clarend Discovery service
 - GridCat
 - Job Placement
 - Most everyone using Condor tools
 - Accounting
 - Have agreed on GGF UR format with EGEE and TeraGrid
- Remains VO scope component in this release





What's Next ?

- Develop sustaining funding plan for core infrastructure
 - Have no core staff now.
 - Meeting with US funding agencies this week
- Develop “Grid of grids” framework
 - EGEE model currently direct contact of resources
 - TeraGrid working on gateway with OSG
- Determine participation thresholds/model
 - TANSTAAFL (“There Ain’t No Such Thing As A Free Lunch” - Robert Heinlein)
- Answer the “What’s in it for me?” question
 - How do we broker exchanges of value ?
- Oh yes, and get the science done !



How will this Grid be Used ?

