Virtual Observatory
Single Sign-on

U.S. National Virtual Observatory

National Center for Supercomputing Applications

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What is the Virtual Observatory?

- Network-based environment for doing astronomical research
- Worldwide federation of archives and services
  - Interoperate using standards
  - Standards body: International Virtual Observatory Alliance
- A community of separately-funded projects
  - U.S. National Virtual Observatory
  - 15 other national VOs

What is the Virtual Observatory?

Virtual Observatory Standards

www.ivoa.net/Documents

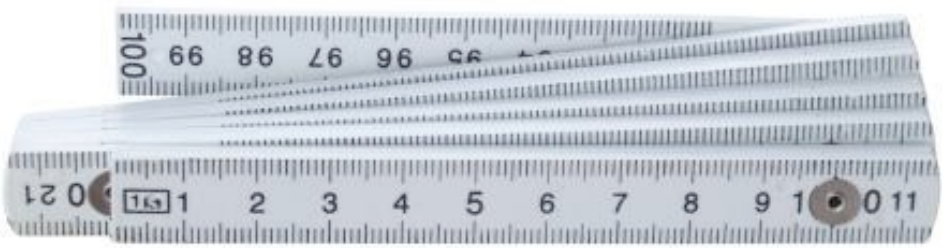
Data Models and Formats

- Images, Spectra, Tables
- Metadata, Catalogs

Service Protocols

- Data Discovery and Access
- Authentication
- Analysis services

Remote Storage



Virtual Observatory Services

www.us-vo.org

Data Discovery—What's available?

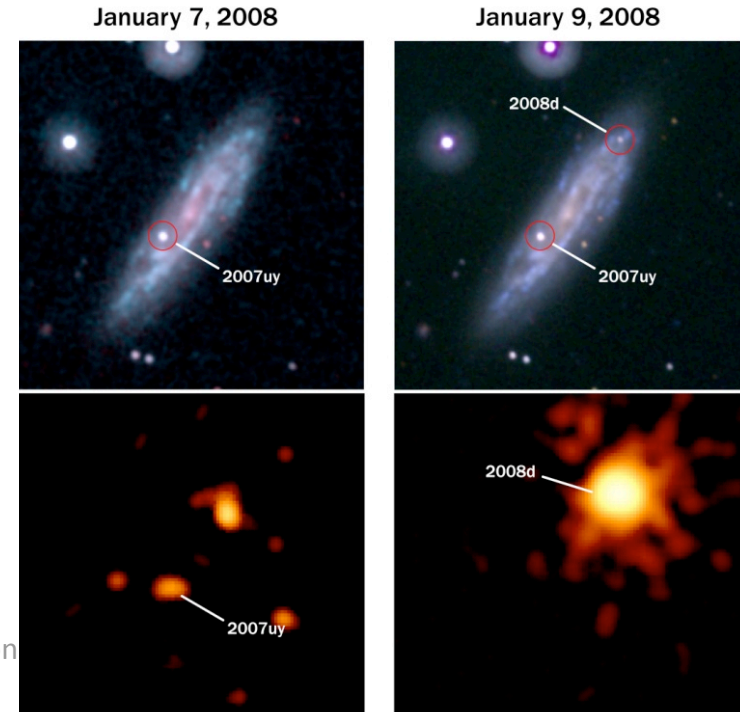
- Registry: Search based on subject
- DataScope: Search by sky position
- Open Sky Server: Cross-correlation of catalogs

Data Access

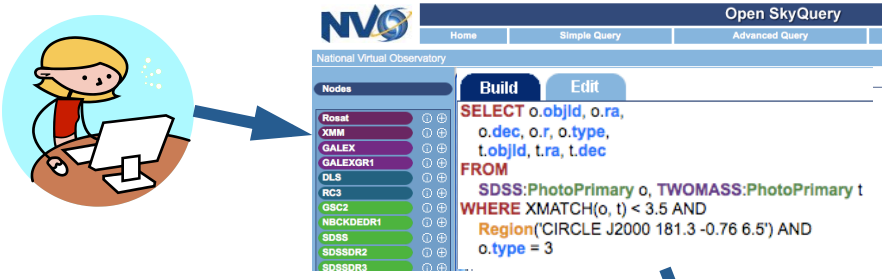
- Common interfaces for searching contents of archives

Portals

- Provide friendly browser-based access to services



Virtual Observatory Portals



There are many portals

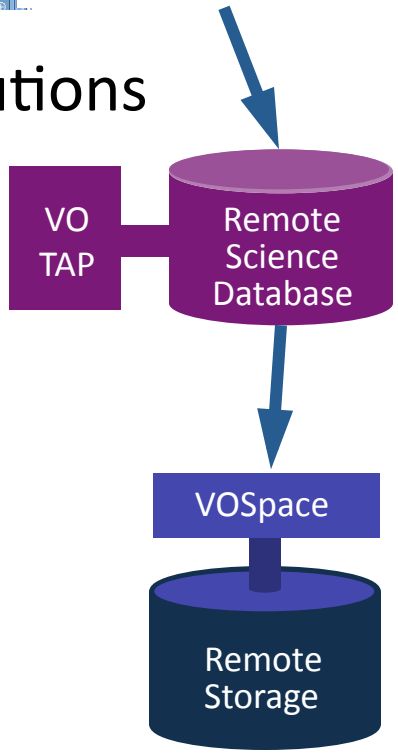
- Each specialized for a target community
- Distributed; managed by a variety of institutions

Most resources are open & free

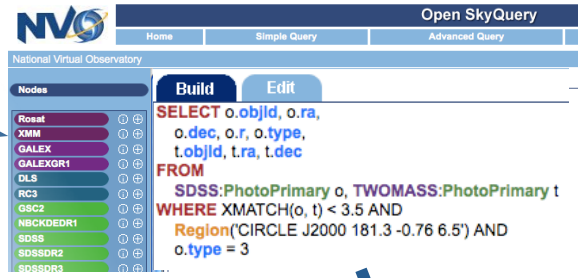
- Some are not
  - for example 1-year proprietary period
- But users want the same tools for open and proprietary data, and to mix data

Users derive new proprietary datasets

- Need secure remote storage



Centralized Authentication



Simple for Users

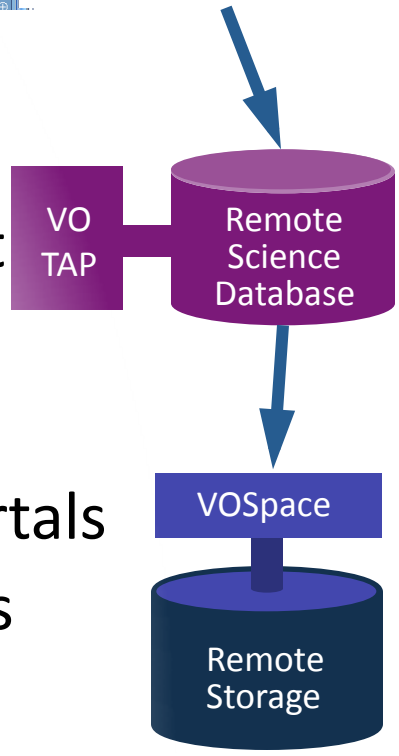
- Single identity for multiple services

Supports Developers

- Provide toolkit, documentation, support
- Built-in security (don't have to worry about mistakes; never see password)

Facilitates Community

- Share user identity among services and portals
- Interoperate smoothly with open resources
- Delegation to enable complex workflows



Authentication Issues

Weak vs. Strong

- Weak authn: I am the same person each time
- Strong authn: I really am who I claim to be
  - Rely on existing ID verification systems

Privacy

- Give users control over what to share with portals

Developers, developers

- Goal: Foster the creation of portals and services

Web Sign-on Mechanisms

Pubcookie (Web SSO Software)

- Web SSO; NCSA added MyProxy integration
- Mature but not standards-based
- Apache or IIS module (requires root)

OpenID

- Standard; Gaining widespread adoption
- Many toolkits exist; doesn't require web server integration
- NVO is in Alpha, rolling out to first customer soon (still need to implement credential delegation though)

Web Sign-on Auxiliaries

Registration

- PuRSe—evolved, re-written, patched
- Provides user services (password reminder, etc.)

Logging (Under Development)

- To take the place of old local authentication logs
- Privacy—admins should only see "their" users
- Correlation—track a user's path through invitation, registration, confirmation, login

Tue Dec 20 14:59:10 2005	Information	login	Login successfully from
Tue Dec 20 13:49:50 2005	Information	login	Login successfully from
Tue Dec 20 13:04:13 2005	Information	login	Login successfully from
Tue Dec 20 12:01:10 2005	Information	engine	user account loaded
Tue Dec 20 12:00:40 2005	Information	engine	user account loaded
Tue Dec 20 12:00:09 2005	Information	engine	user account loaded
Tue Dec 20 11:39:47 2005	Information	agent	Login: (192.16 on LauraB)

Lessons Learned

Toolkits are important

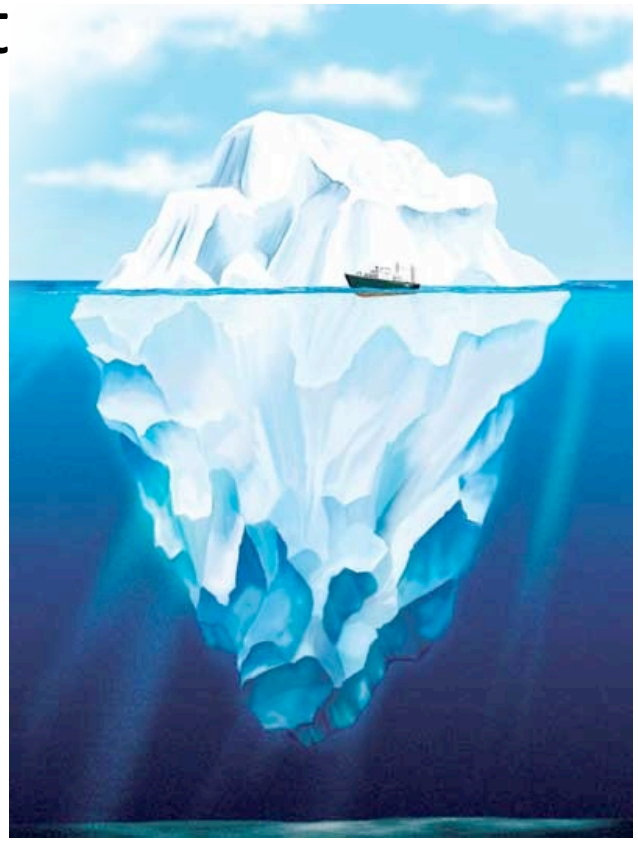
- Pubcookie can be hard to debug
- Globus is big to install—our devs prefer a self-contained MyProxy client
- People like their languages: OpenID is available in Perl, Python, Java, C, Ruby …

High Availability

- Never be down when a portal is up
- Redundancy is hard work

Lessons Learned

- Need logging—accessible, expressive, private
- For every production server, there are several development servers to support
- Most portals only need identity
- We are still getting used to it
  "I went to a DES URL
  but got an NVO login page"



Work in Progress

- Smoothing out OpenID wrinkles
  - Delegation
  - User Interface
  - Library Support
- Implementing Logging Service
- Questions / Comments?