

# Astrophysics Working Group

VOSpace

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- OGF Intellectual Property Policies are adapted from the IETF Intellectual Property Policies that support the Internet Standards Process.

# VOSpace

- Integrates
  - SRM style support for transport-agnostic access
  - SRB style support for a metadata catalog that supports queries and file listing
- Implementation
  - WSDL interface to SRB data grid

# VOSpace design

- Provide simple interface for accessing a collection
  - Get file
  - Put file
  - List files
- Intent is to be transport agnostic

# VOSpace Experiment

VOSpace server set up

VOSpace client set up

VOSpace commands

vospaceclient

getprotocols

<http://localhost:9090/VOSpaceServiceImpl>

vospaceclient

listnodes

<http://localhost:9090/VOSpaceServiceImpl>

min

# Extensions to VOspace

- Need resource concept and resource-namespace
  - A site can have multiple resources.
  - Need ability to differentiate between resources within a VO-Space instance
- Late-binding assumptions currently in VO-Space
  - Binding of transport protocol, storage resource, logical namespace – all done using late-binding
  - Need to take advantage of early binding
- Arrangement of images
  - Hierarchical arrangement needed to organize images
- Search across VO-Spaces
  - Currently fully P2P in VO-Space
  - An hybrid approach between fully centralized and fully P2P would be useful in large scale deployments

# Data Grids

- Need for world-wide Astronomy Data Grid
  - A hybrid approach between P2P and federations of data grids
    - Administrated chain / Master-slave / Central archive / Replicated
  - Local autonomy versus global consistency of collaboration
  - Collaborative management of community data
  - Unifying logical data namespace
  - Logical resource namespace
  - Protocol binding transparent, fixed for clients
  - Mature and demonstrated technology (More than a petabyte of data globally managed).
  - Global community
  - Ability to express and apply management policies

# Rule-Based data systems

- Rule-based access to collections
  - Rules controlling access policies
  - Rules controlling data deposition
  - Rules controlling integrity assertions
  - Rules controlling descriptive metadata
  - Rules controlling manipulation of data

## iRODS - integrated Rule-Oriented Data System

*Data Management  
Environment*

Conserved  
Properties

Control  
Mechanisms

Remote  
Operations

Management  
Functions

Data Management  
Infrastructure  
Physical  
Infrastructure

- Express management policies as rules controlling the execution of remote micro-services
  - Management policy --> set of Rules
  - Remote operation --> set of Micro-services
  - Assertions --> Persistent state information
- Support
  - Interactive transactions
  - Deferred transactions
  - A-periodic transactions

# OGF Grid File System

- Community based standards
  - OGF Grid File System standardization for data grids
  - Multiple communities, multiple countries, multiple perspectives
  - Define a hybrid protocol of XML and byte-level transfers
- Community based software
  - iRODS - automation of management policy execution
  - Open source project - multiple user groups
  - Concepts learned from existing systems
  - User and developer community

# More Information

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SRB:

<http://www.sdsc.edu/srb>

iRODS:

<http://irods.sdsc.edu/>

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