Virtual Observatory and China-VO

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Virtual Observatory

Virtual Observatory (VO) is a data-intensively online astronomical research and education environment, taking advantages of advanced information technologies to achieve seamless, global access to astronomical information. VO is the response of the astronomical community to the challenges posed by the modern massive and complex data sets.

The VO is:

- A set of international standards to share complex data
- A modular set of tools to work with distributed data
- A simple environment to publish data to
- An essential part of the research astronomer's toolkit
- A catalyst for world-wide access to astronomical archives
- A vehicle for education and public outreach

The VO is not:

- A replacement for building new telescopes
- A centralized repository for data
- A data quality enforcement organization

IVOA

International Virtual Observatory Alliance (IVOA) was formed in June 2002 with a mission *to* ***facilitate the international coordination and collaboration necessary for the development and deployment of the tools, systems and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory***.

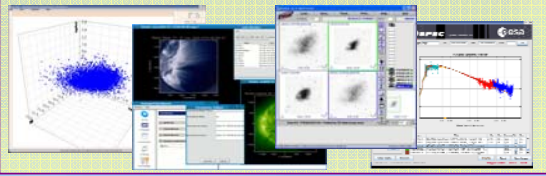
By July 2005, IVOA includes 16 funded VO projects from Armenia, Australia, Canada, China, Europe, France, Germany, Hungary, India, Italy, Japan, Korea, Russia, Spain, the United Kingdom, and the United States.

IVOA coordinates nine working groups focusing on interoperability specifications, five interests groups in areas such as applications and theory.

VO's power for HOU

- Standardization, Interoperability and Transparency.
- Automatically data discovery and federation.
- Powerful data processing, data mining and visualization tools.

- Standard data encoding and exchange format: VOTable
- Standard Metadata description: Resource Metadata
- Standard data access interfaces:
  - SkyNode interface for catalog
  - Simple Image Access
  - Simple Spectrum Access
  - VO Query Language
- Standard information package for immediate event to drive robot telescope: Sky Event Reporting Metadata (VOEvent)

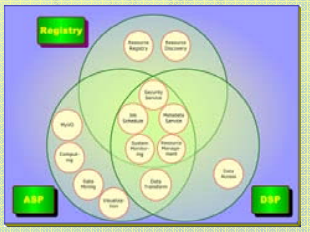


China-VO

Chinese Virtual Observatory (China-VO) is a consortium initiated by National Astronomical Observatory of China (NAOC) and Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) project in 2002. In the same year, China-VO became a member of the IVOA. "China-VO test-bed research and development" is an 1.0M Yuan project aimed at building a data-grid environment for Chinese Astronomy in three years, which is sponsored by NSF China.

The main targets of the project include "an operational China-VO platform based on Grid" and "uniform data access service supporting IVOA standard interfaces".

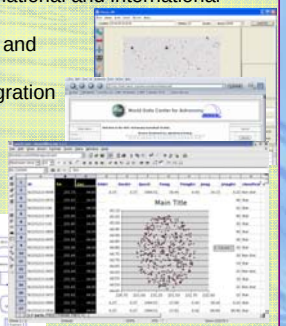
China-VO adopts "Service Oriented Architecture".



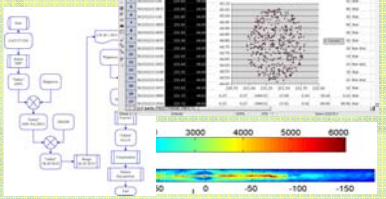
Service Oriented Architecture of China-VO

R&D Focuses of the China-VO

- China-VO Platform Construction
  - Globus Services
  - Web Services
- Transparent Data Access to national and international datasets
- Application tool development and legacy application integration
- Astronomical instrument integration
  - LAMOST 4m telescope (NAOC)
  - Xionglong 2m telescope (NAOC)
  - Lijing 2.4m telescope (YNAO)
- Education



Focusing on application, VO tools and specific requirements



(A toolkit under developing in the China-VO)

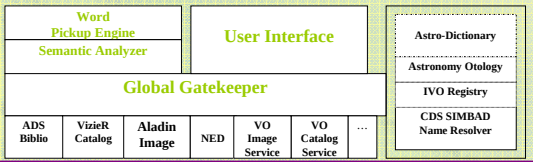
SkyMouse:

- Touch the sky with your mouse
- An intelligent client for VO services
- A commodity for astronomers and students

Planned Features:

- Word pick up from the screen
- Automatic Resource Discovery
- User-defined Output
- Uniformed interfaces for:
  - documents
  - images
  - catalogs
- VO-ready

SkyMouse Architecture



Global Hands-On Universe Conference 2005

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References:
[IVOA] http://www.ivoa.net/
[China-VO] http://www.china-vo.org/