VIRTUAL ASTRONOMICAL OBSERVATORY

VAO Portal Infrastructure and Integration

Project Definition Document

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1 Project Description

The VAO Portal is one of the high priority science initiatives for year one of the VAO project. The VAO Portal will delivery both basic and advanced search capabilities for the VAO Science web user with focus in year one on a basic source and metadata search functionality. As a foundation the VAO Portal can leverage the development team experience and underlying application and message exhange protocols developed for the NVO Search Portal. The new VAO Portal will connect the user to the other key VAO science initiatives, SED fitting and analysis, cross-matching, and Time Series applications, while also providing enhanced web technology search utilities for table and image viewing, with access to data. The advanced capabilities of the portal will be developed in the following years integrating more advanced semantic searching and visualization. Some of the dependent support projects will contribute to the portal science user capabilities such as the footprint visualization, and ADQL TAP query builder.

The VAO Portal will be integrated into the VAO Web Site, developed by the User Support work area of VAO. There will be additional VAO web site supported features that are outside the scope of the Portal effort.

1.1 Scientific Application Showcases

The following scientific applications will showcase the Portal as a tool for scientific research. As a result they will form the basis for end-user validation of the Portal. These showcases may also be used to prioritize the implementation of high-level requirements.

- Characterization of a microlensing event

2 Project Interdependencies

For year one, this project is expected to support the following other projects, primarily by providing links to their work:

- 1.2 Scalable Cross Match
- 1.3 Interoperable SED Access and and Analysis
- 1.4 Interoperable Time Series Access

- CANDELS science collaboration

For year one, this project is expected to depend on the following other projects:

- 1.6 Registry Improvements
- 1.8 VOView Library

This project is expected to depend on the following IVOA standards currently in development

- ObsTAP
- Registry and Data Service Standards

Other dependencies

There may possibly be dependencies on the VOInventory and Datascope applications evolved for the VAO Portal search capability. These interfaces need to be technically evaluated as candidates for the providing source Basic Search capability. Fast search performance is a primary requirement.

3 High-level Requirements

These requirements assume the following vocabulary:

resource

> A resource is a general term referring to a VO element that can be described in terms of who curates or maintains it and which can be given a name and a unique identifier. Just about anything can be a resource: it can be an abstract idea, such as sky coverage or an instrumental setup, or it can be fairly concrete, like an organisation or a data collection. This definition is consistent with its use in the general Web community as anything that has an identity (Berners-Lee 1998, IETF RFC2396). We expand on this definition by saying that it is also describable.

Req.#	Requirement statement	Verif. Method*
1.	**General Constraints**	
1.1	The portal shall provide a web browser-based graphical user interface for accessing VAO data and services.	D
1.2	The portal web page(s) shall be branded as VAO, not NVO.	D
2.	**Pointed Search**	
2.1	The portal shall allow the user to search for astronomical observations within a specified radius of a sky location specified either with an RA/Dec pair or a named object known to NED or Simbad.	D
2.2	The portal shall allow the user to upload a list sky positions to the portal.	D
2.3	The portal shall allow the user to search for astronomical observations near any of the sky positions specified in an uploaded list.	D
2.4	In response to a search near a sky location, the portal shall display a summary list of available resources that contain data in the region.	D
3.	**Keyword Search**	
3.1	In response to a search that could not be recognized as a sky location, the portal will display a summary of the registry entries that apply to the search terms.	D

4.	**Drill Down**	
4.1	From search result summaries, the portal shall allow the user to drill down to see lists of individual resources that are known to the VO.	D
4.2	When an individual resource is known to have a cone, SIAP or SSAP search service, the portal shall allow the user to search that resource at a specified sky position.	D
4.3	In response to an initial search near a sky position, the portal shall offer a link for searching near that position on all compliant VO services searchable from the registry. Rationale: The overhead in time and screen real estate of such a broad search is not something we want to incur automatically. The user should be aware they are requesting something that may take longer than a basic search. Note: This functionality is implemented in the NVO portal by Datascope.	D
5.	**Retrieval**	
5.1	The portal shall allow the user to download selected data products.	D
6.	**Usability and Documentation**	
6.1	The portal shall provide example queries.	D
6.2	For each user interface element the portal shall provide context sensitive help.	D
6.3	The portal shall provide feedback to the user about their interactions and updates to query results.	D

4 Roadmap

Information given here may be deprecated during the design phase.

This work is expected to result in the following types of products:

- a VAO service:
  - Basic Search Web service for source coordinate/name and resource/service metadata input and table or image viewing output
  - Advanced Web search which accepts semantically based queries and returns TBD data sets
- a data product
  - Integrated Web Portal with access points to the other science initiatives and search services to VAO resource and data services

The work for this project is expected to be delivered by these estimated release dates:

- June 2011 Production Release 1.0

Note: With the delivery date being very close, we do not expect to achieve all the requirements listed above. Instead we will deliver the ones that have been developed and tested by the delivery date. The primary year one goal will be to provide some usable service while developing some foundation and building blocks for an increasingly robust portal for year 2 and beyond.

This project will update the following existing products:

- VAO Web Site