

Building clients for the AuScope Spatial Information Services Stack

Mathew Wyatt¹, Ryan Fraser², Robert Woodcock³

¹CSIRO, Perth, Australia, mathew.wyatt@csiro.au

²CSIRO, Perth, Australia, ryan.fraser@csiro.au

³CSIRO, Perth, Australia, robert.woodcock@csiro.au

INTRODUCTION

The Spatial Information Services Stack (SISS) (Figure 1.) is eResearch infrastructure being developed by AuScope Grid to service the Australian geoscience community. The SISS implementation has been designed to allow easy publishing and discovery of complex geoscience information across Australia using Open Geospatial Consortium (OGC) standards. By deploying the SISS at their institutions, data providers, state surveys and academia provide a common interface to their information. This removes the need for individual institutions to develop customised data portals for their specific data formats and database schemas, and in particular allows a single client to access data from multiple providers. Once the OGC web services are established, clients of the data providers are able to use an application of choice, or build a customised application to suite their workflow. This represents a power shift from the data provider, into the hands of the client.

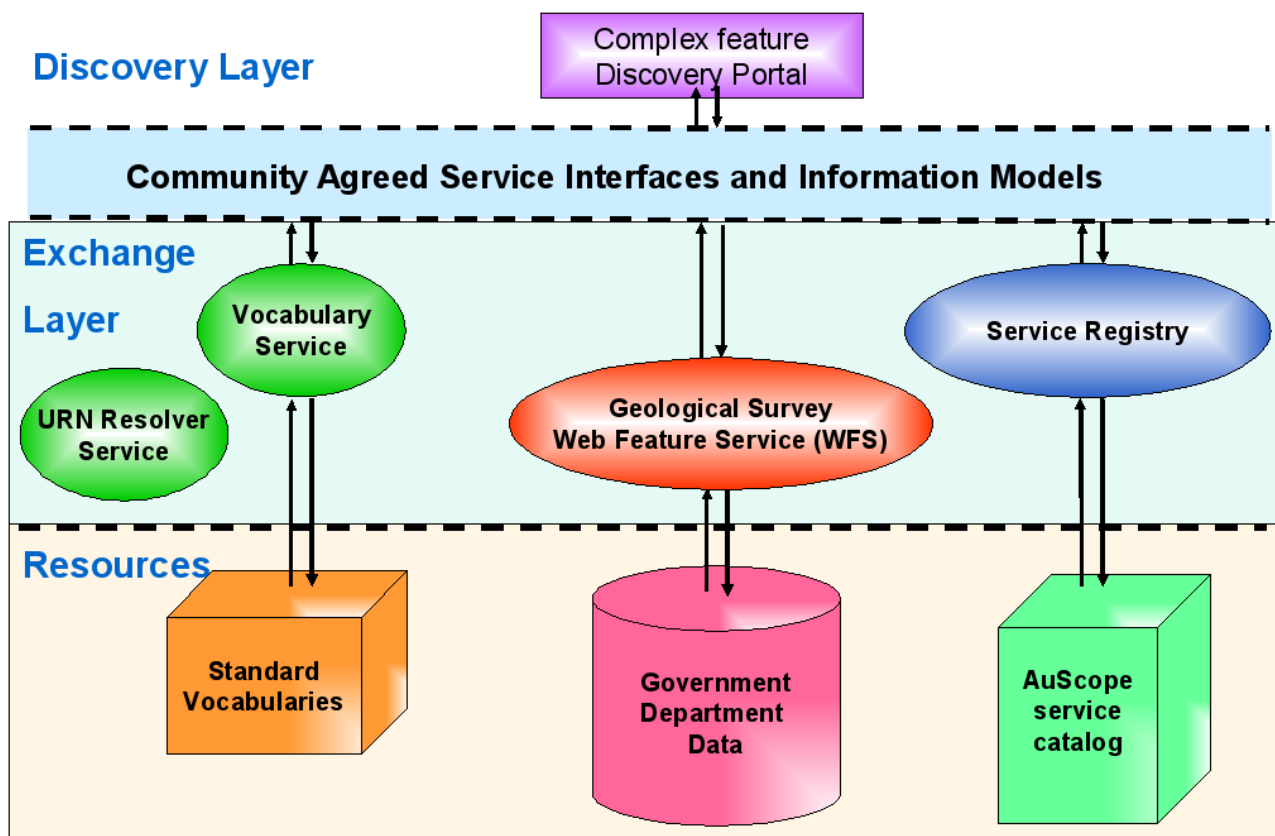


Figure 1: Spatial Information Services Stack

A demonstration of the power of the SISS lies in the implementation of Mineral Occurrence data access model in the AuScope Discovery Portal[2]. The Mineral Occurrence data access model is an example of a standard developed under the leadership of the Australian Government Geoscience Information Committee (GGIC). It is a community developed data access standard for the representation of earth resources that have economic value. Each Australian Federal, State and Territory Geological Survey has its own database, each with its own format and sets of attributes and vocabularies, storing information on mineral occurrences, commodities, historical production, reserves and resources, mineral deposit classification and the like.

Using the SISS, it has been possible to map the Mineral Occurrence data access model to the underlying databases at

both at the Department of Primary Industries and Resources of South Australia (PIRSA) and GeoScience Victoria (GSV) with their cooperation. With this deployment it is now possible to access the Mineral Occurrence information from these two state agencies through the same mechanisms. An example of an operation on these services is shown in Figure 2. The AuScope Portal is used to search the available services (accessing separate databases from separate institutions via standard services and data transfer models) for mineral occurrences where the commodity name is Silver. The result of that search is the location of all of the commodity occurrences across Victoria and South Australia. With the remaining state and territory agencies coming on line later this year, the result of this search (and other queries) will span the entire continent.

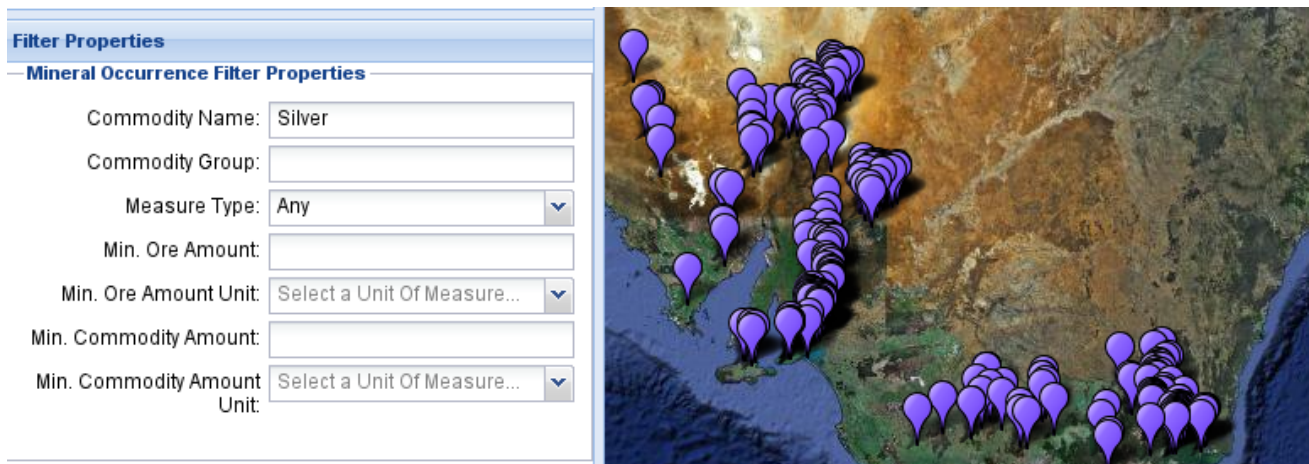


Figure 2: AuScope Portal displaying results of a mineral occurrence query

In order to function, the portal makes use of the following elements of the SISS:

- Service Registry – responsible for the registry and discovery of online services. Using this service, data services can be seamlessly added into the federation, and automatically discovered by the portal.
- Web Feature Service(WFS)[1] – with all providers using a WFS interface, the portal is able to interact with every institution in exactly the same way.
- Vocabulary Service – using this service, the portal is able to automatically populate Graphical User Interface (GUI) components with 'known' or 'restrictive' terms. Updates to what shows in the GUI can be managed in the vocabularies, which removes the need for complex GUI logic.
- Uniform Resource Name (URN) Resolver – in the SISS, each piece of data has a unique persisted identification represented by a URN. URN's are not resolvable by Domain Name Services (DNS), which is why the portal uses the URN resolver in order to locate the location of data elements.
- Community Schema's – when an information model is developed and standardised by a community, client interfaces are able to be made to the specification.

REFERENCES

1. *Web Feature Service*. <http://www.opengeospatial.org/standards/wfs>.
2. *AuScope Portal*. Available from: <http://portal.auscope.org/gmap.html>, accessed 29 Jun 2009.