

# **SKUA, vocabularies, and a shared semantic store**

Norman Gray

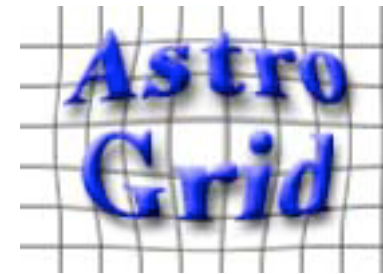
VO-TECH / AstroGrid / Uni. Leicester / Uni. Glasgow, UK

Semantic Astronomy Workshop, Caltech  
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*norman gray*

logos

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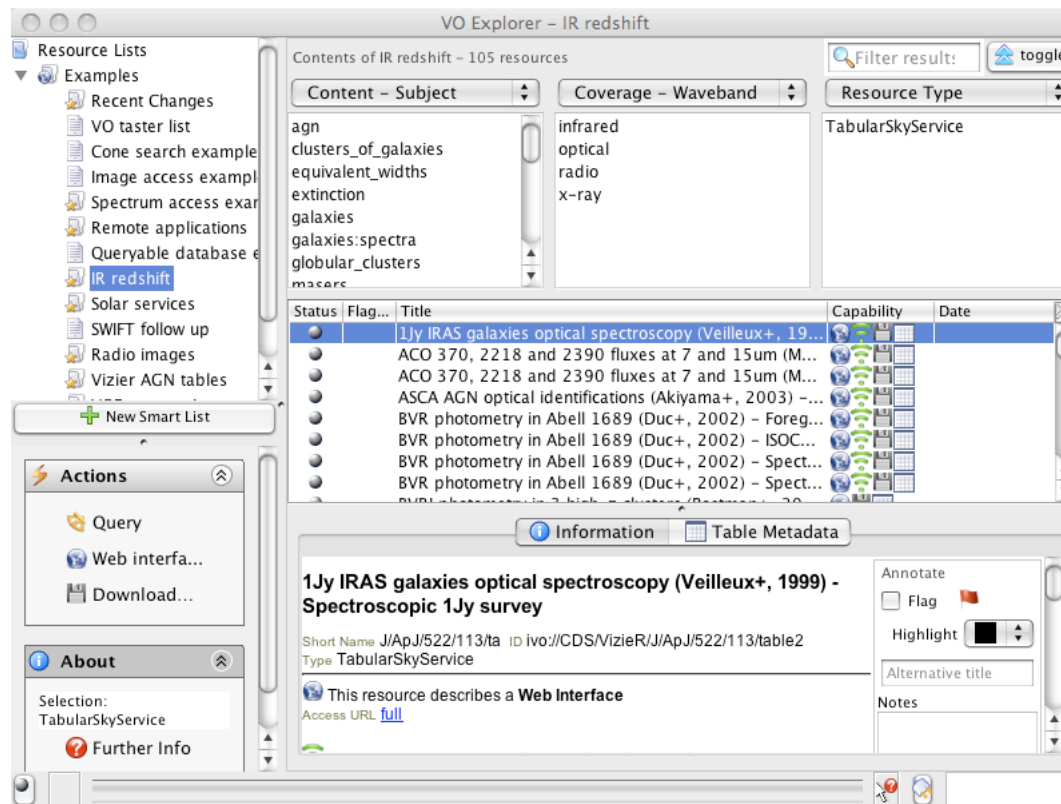
the web of strings

Google™

jordan

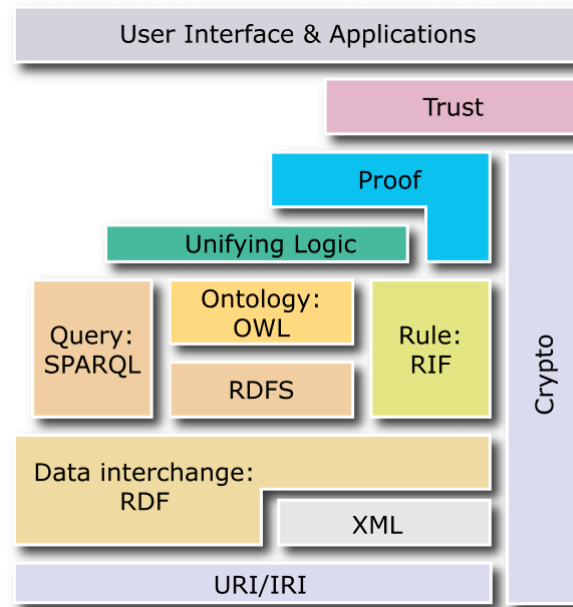
Google Search I'm Feeling Lucky

Google is clever, but it's not psychic



faceted browsing – clever string searching

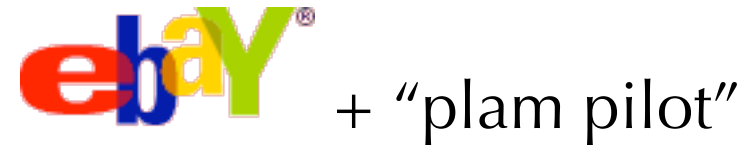
# the semantic web



but where's the metadata going to come from?  
asking for `<#CompactObject>` and getting `<#BlackHole>` is easy

from the users?

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<http://www.well.com/~doctorow/metacrap.htm>

self-interest helps, **if the UI is right**

...so does cunning

but this is still playing tricks with strings, and astronomy can surely do better

\_\_\_\_\_from the registry?

- | 566/761 registry entries have a non-empty <subject>

- | keywords like 'AGN', 'Survey Source', 'Galaxy Cluster' & 'cluster of galaxies', and 'Binaries:cataclysmic'

- | not too bad, but could be better

\_\_\_\_\_from the data sources?

Peter: metadata has to be added at the source

Ultimately yes, but you have to make it worth their while

\_\_\_\_\_from vocabularies?

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<http://www.ivoa.net/twiki/bin/view/IVOA/VocabulariesWorkingArea>

■ the bridge from strings to semantics?

■ Working Draft very soon

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## vocabularies

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- | vocabularies are for searching, broadly considered
- | SKOS encapsulates Library experience, including a lightweight operational semantics for broader/narrower
- | vocabularies target humans, not machines, and so will provide support for UIs, plus...
- | Concepts are formal, but labels are strings
- | concepts have contexts from broader/narrower/related

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but whose vocabulary?

- | A&A has 311 terms, AOIM has 208, and IAU-93 has 2951

- | use the most natural and familiar vocabulary

- | mapping between vocabularies seems to be a key notion, facilitated by SKOS `broaderMatch`, `narrowerMatch` and `exactMatch`

- | ...and it's surely true for ontologies, too

<http://explicator.dcs.gla.ac.uk>

\_\_\_\_\_can we help applications help users?

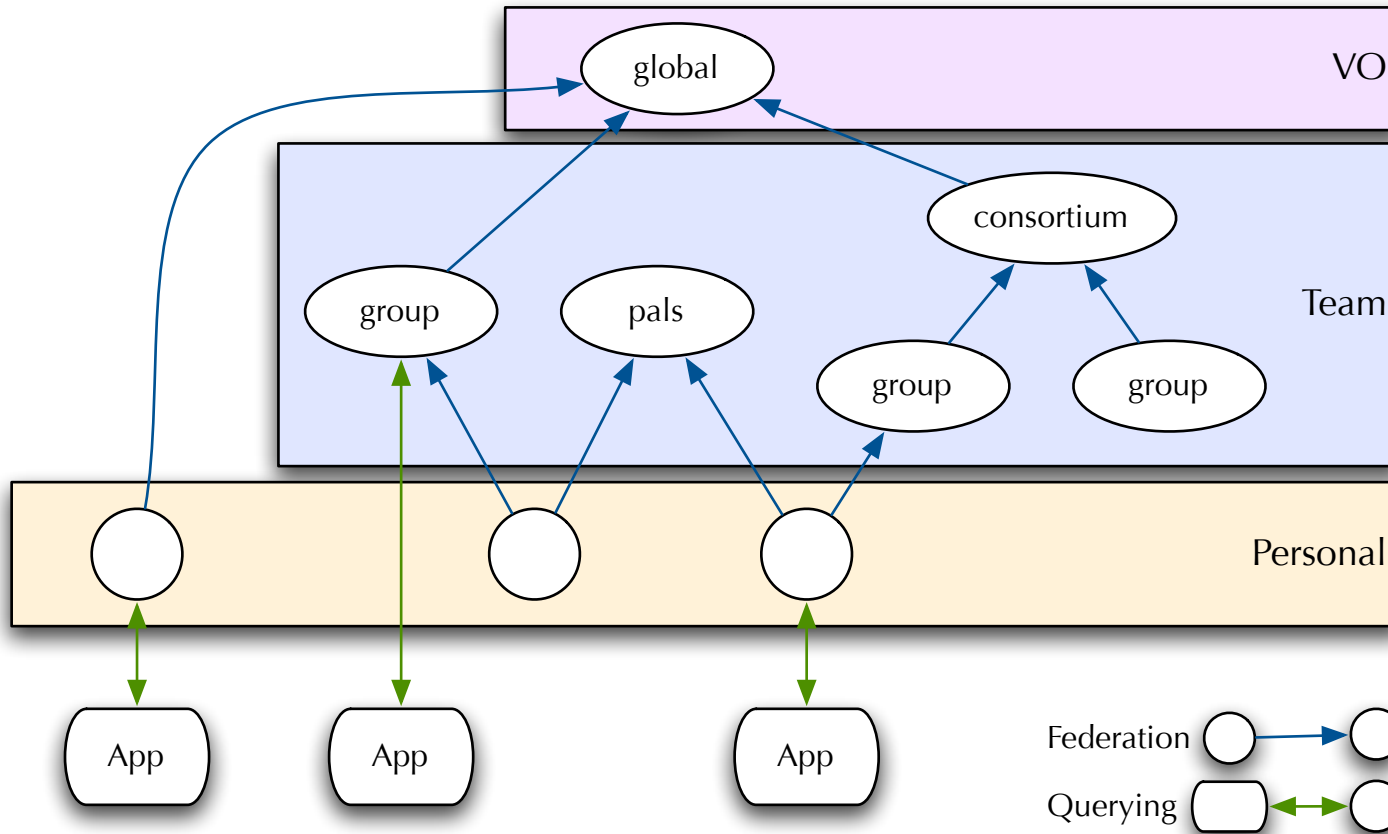


[myskua.org](http://myskua.org)

**JISC**

*norman gray*

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federated, astronomically aware, triple stores

- | federation means everything seems local: “distributed knowledgebase [...] locally available” (Deborah)
- | some built-in astronomical knowledge in nodes
- | SPARQL endpoints, and a string-to-concept service?
- | global information includes VO registry
- | UI for sharing, but mostly aimed at application developers
- | a layer of Kirk's AstroInfomatics semantic layer?

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# my skua knowledge

```
@prefix skua: <http://myskua.org/2008/02/18/#> .  
@prefix dc: <http://purl.org/dc/elements/1.1/> .  
@prefix iau93: <http://ivoa.net/vocabularies-0.04/IAUT93#>.
```

```
[] a skua:Bookmark;  
  skua:ref [  
    a skua:webpage;  
    skua:uri <ivo://NED>;  
    dc:title "IPAC grand central"  
  ];  
  skua:concernsConcept iau93:InfraredPhotometry;  
  skua:tagged "usethis".
```

# shared skua knowledge

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@prefix skua: <http://myskua.org/2008/02/18/#> .

@prefix dc: <http://purl.org/dc/elements/1.1/> .

@prefix iau93: <http://ivoa.net/vocabularies-0.04/IAUT93#>.

[] a skua:Bookmark;

skua:ref [

skua:uri <ivo://CDS/VizieR/V/92A/ubvbeta>

];

skua:concernsConcept iau93:Photometry.

# skua queries, i

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```
prefix skua: <http://myskua.org/2008/02/18/#>
```

```
select ?u
```

```
where
```

```
{
```

```
    ?bm skua:ref [ skua:uri ?u ].
```

```
    ?bm skua:tagged "usethis".
```

```
}
```

## skua queries, ii

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```
prefix skua: <http://myskua.org/2008/02/18/#>
prefix iau93: <http://ivoa.net/vocabularies-0.04/IAUT93#>
prefix skos: <http://www.w3.org/2004/02/skos/core#>
```

```
select ?u
where
{
    ?bm skua:ref [ skua:uri ?u ].
    { ?bm skua:concernsConcept iau93:Photometry }
    UNION
    { ?bm skua:concernsConcept ?c .
      iau93:Photometry skos:narrower ?c. }.
}
```

---

## result: skua queries, ii

```
<?xml version="1.0"?>
<sparql xmlns="http://www.w3.org/2005/sparql-results#">
  <head><variable name="u"/></head>
  <results>
    <result>
      <binding name="u"><uri>ivo://NED</uri></binding>
    </result>
    <result>
      <binding name="u"><uri>ivo://CDS/VizieR/V/92A/ubvbeta</uri></binding>
    </result>
  </results>
</sparql>
```

# skua applications

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- | save and share state for `paperscope.sourceforge.net`

- | save and share bookmarks and annotations for AstroGrid  
VOExplorer

- | suggestions service

- | spacebook (Tony)

- | **mashups**

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SO...

This makes it easy for application authors to use RDF, vocabularies, and semantic services, and easy for them to pass on the benefits to their users (who don't know about Semantics).

We help the applications authors help the users to make the link to Semantic Astronomy.

