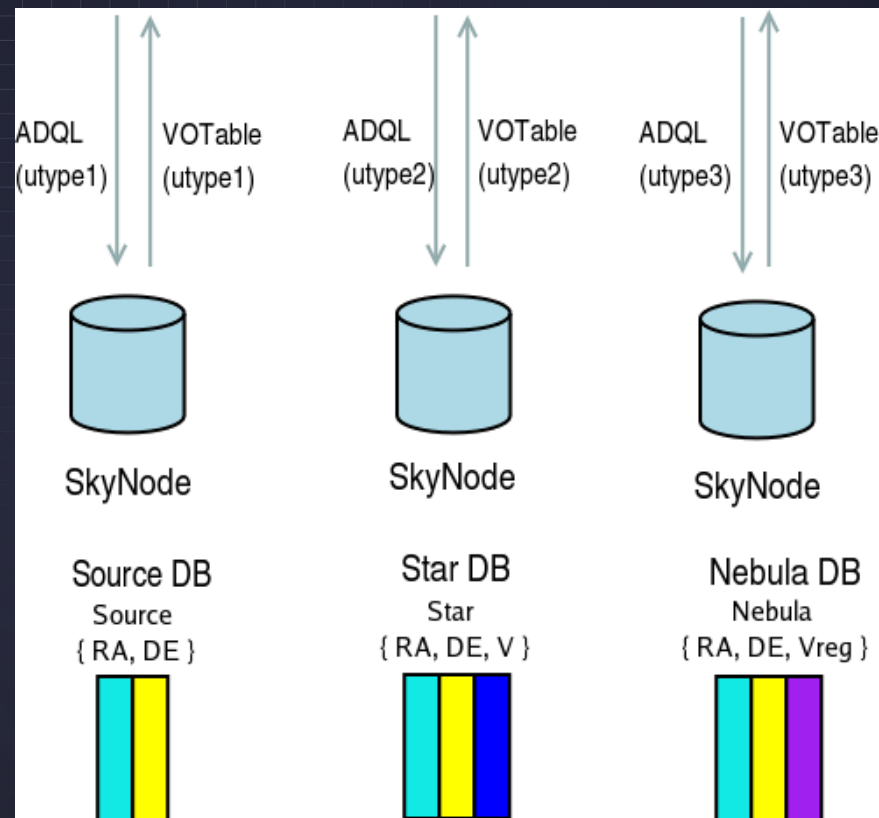
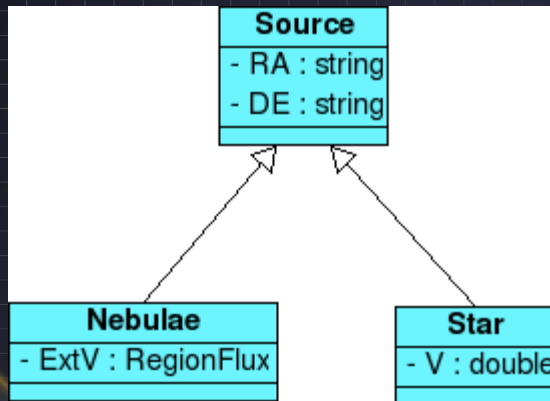


Achieving A Unified Query Layer

I.Brian Thomas, Edward Shaya,
University of Maryland

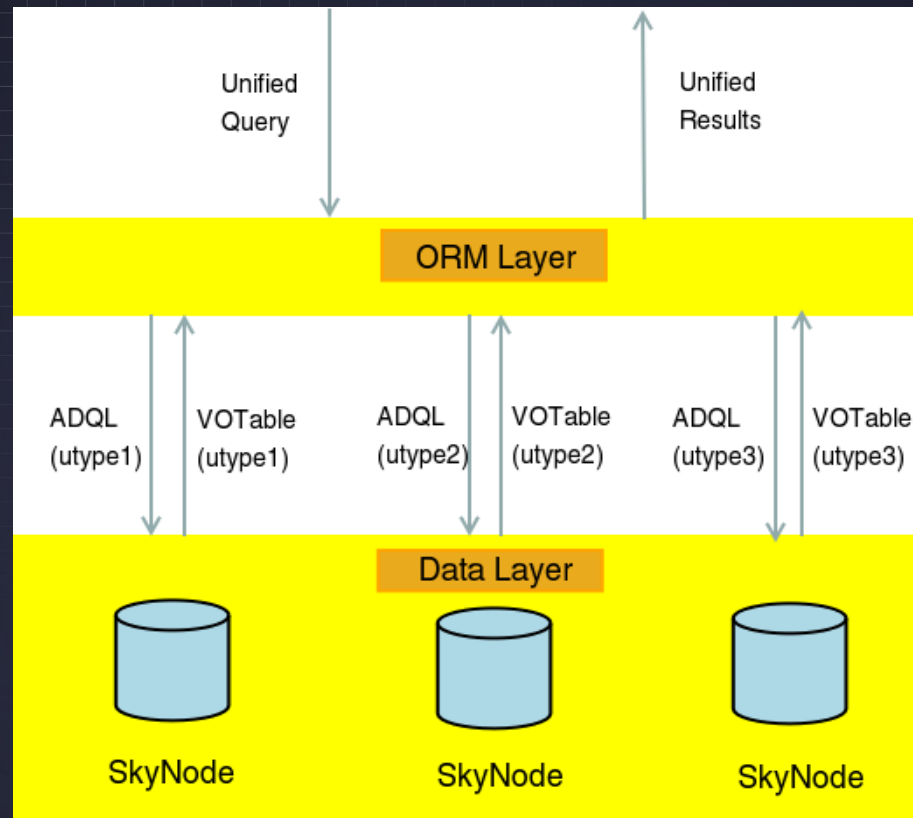
The Problem

- Must expose local schema, results returned in terms of the local schema, no good idea of the objects in the archive.



Solution

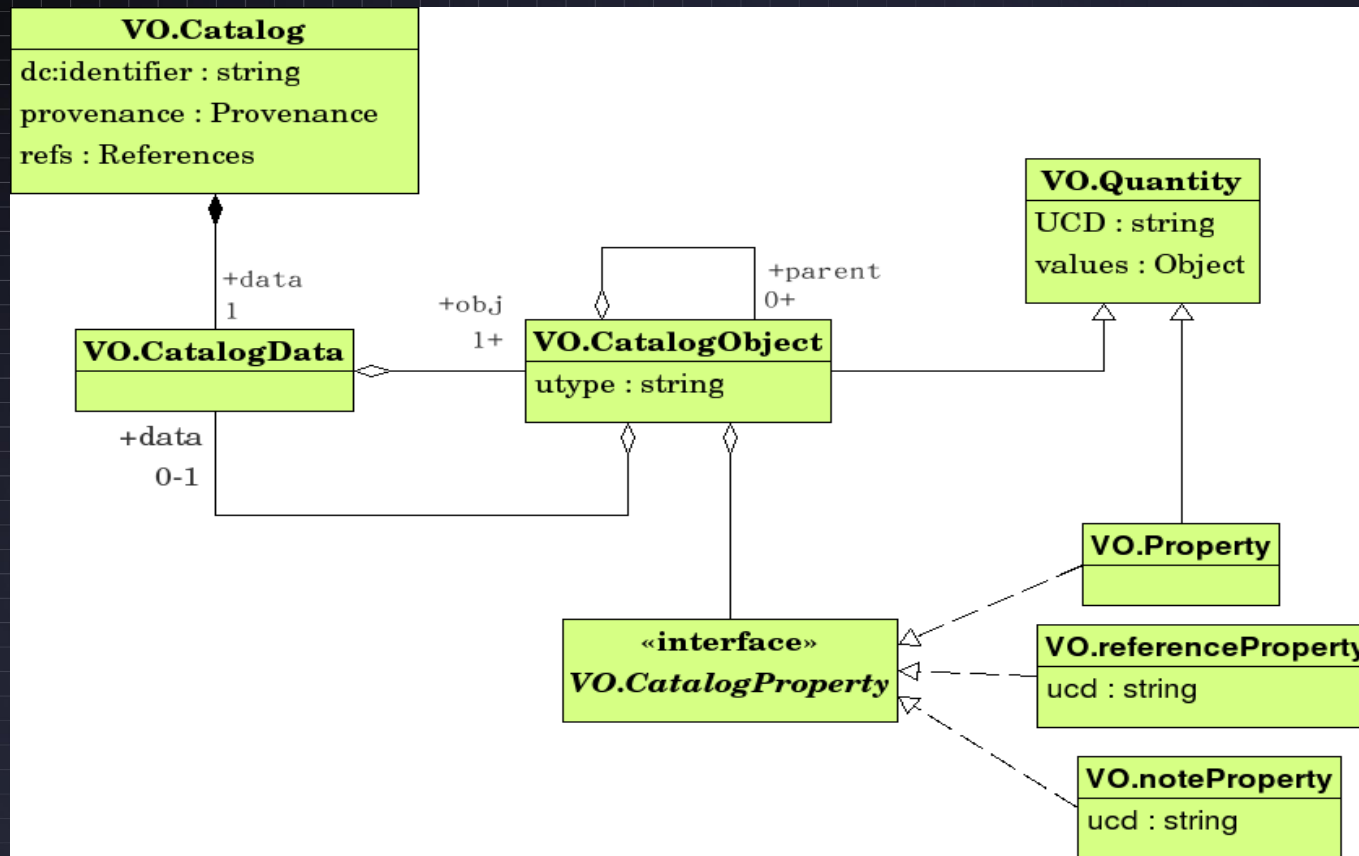
- Use an ORM (Object-Relational Mapping) Layer.



Implementation Choice

- **Use Standard Technologies:** XQuery on XML documents that describe the underlying data repositories
 - XQuery : developed from Quilt, W3C standard (<http://www.w3c.org/XML/Query>)
 - Need to add an extension what carries some SQL-like statements
 - Unifying Data Model in XML
 - Analysis shows object-container model (utype on each object)
 - Contains resource descriptions that act with the SQL-like statements in the XQuery

Data Model : A Catalog of Objects



Basic Search

XQuery search for sources with RA property > 30.0

```
for $obj in //Catalog/data//object
  where $obj[@utype='source']
return <results> { $obj } </results>
```

Finds nodes in the StarDB which have values as:

```
<object name="hd043434434">
  <property>...<values dbId="starCat" dbTable="cat1" dbCol="ra" /></property>
  <property>...<values dbId="starCat" dbTable="cat1" dbCol="de" /></property>
  <property>...<values dbId="starCat" dbTable="cat1" dbCol="V"/></property>
</object>
```

** ORM layer uses meta-data to construct simple SQL and then fill in the values*

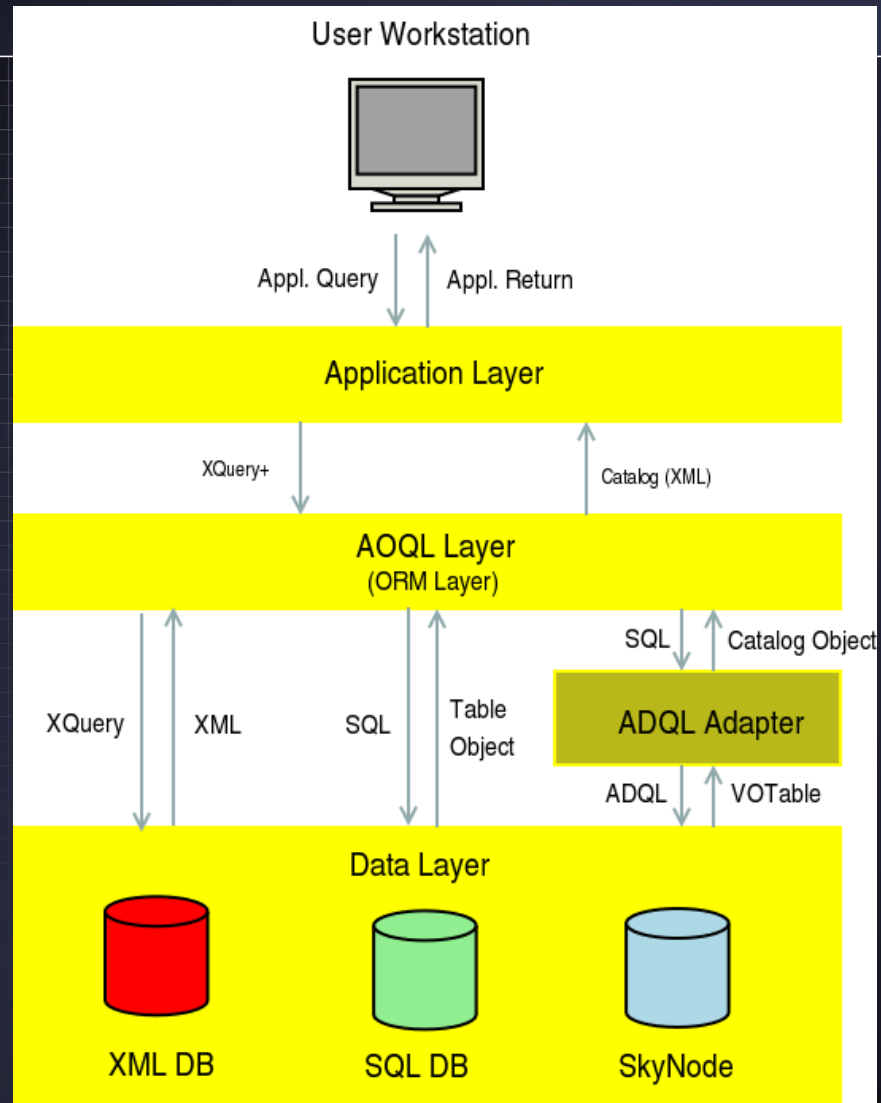
Mapping Mechanism in Search

```
XQuery search for sources with RA property > 30.0
for $obj in //Catalog/data//object
  where $obj[@utype='source']
return <results> {
  data_select ( $obj where $obj/property[@ucd = "pos.eq.ra.main"] > 30.0 )
} </results>
```

Yellow bit directs the layer to fill in the values nodes based on RA > 30.

Only corresponding RA, DE and V values are returned.

Application



Summary

- * Software to be checked into NVO CVS real soon!
- * Looking go collaborate with others.