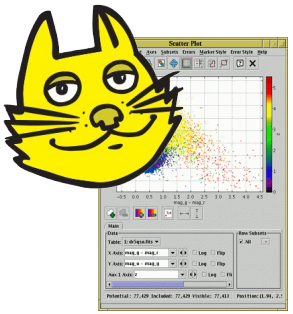
Working with ADQL

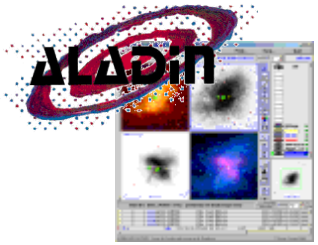
Astronomy Data Query Language

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat



Aladin

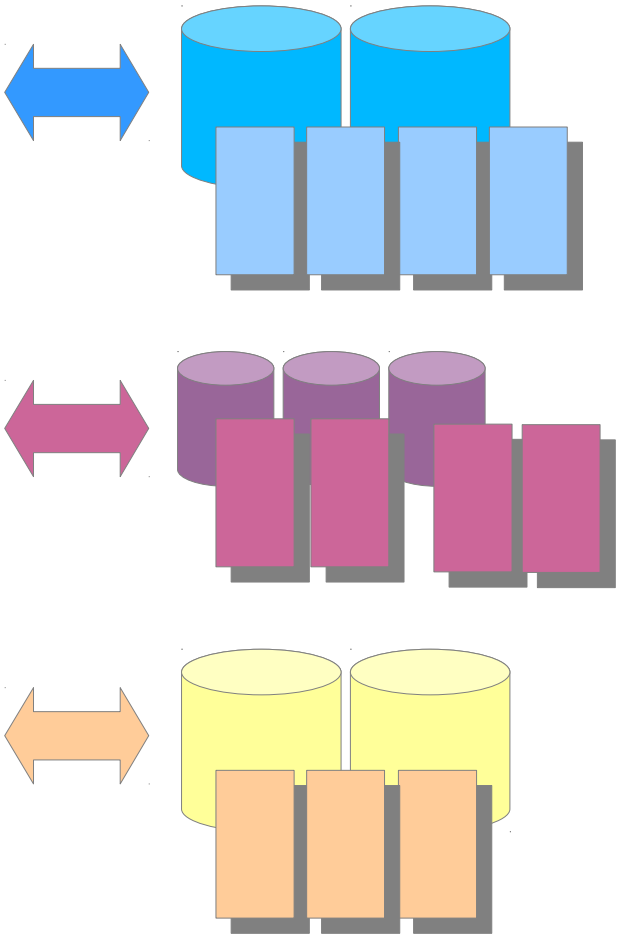


The problem

Different platforms

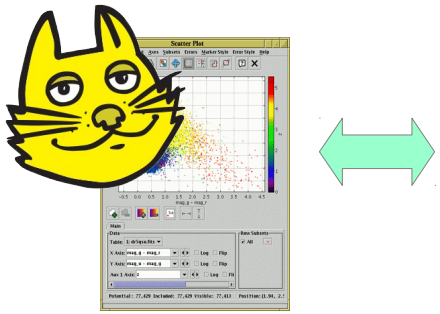
Different languages

Different formats

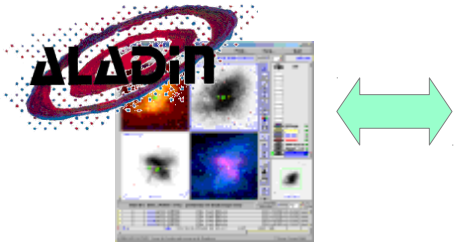


D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat

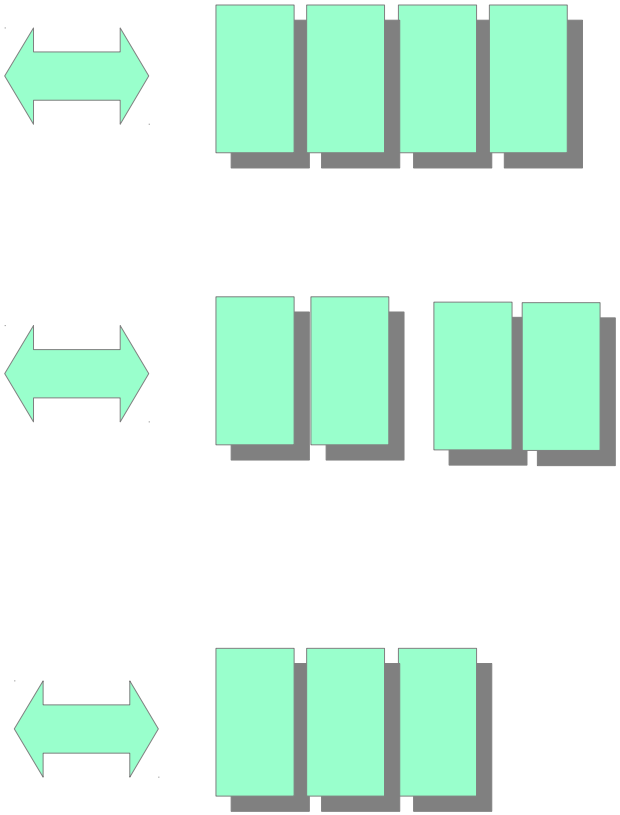


Aladin



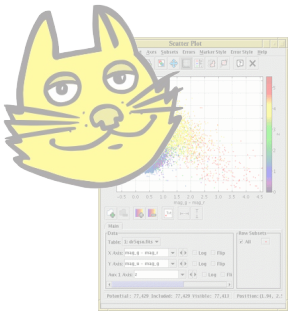
The abstraction

The data



D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat



Aladin

Virtual Observatory

Registry

TAP

TAP

TAP

Database

Database

Database

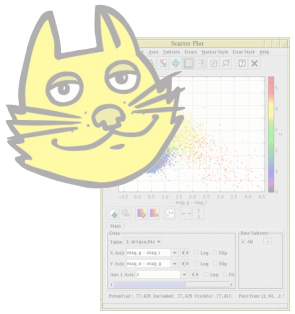
Database

Data discovery
Registry

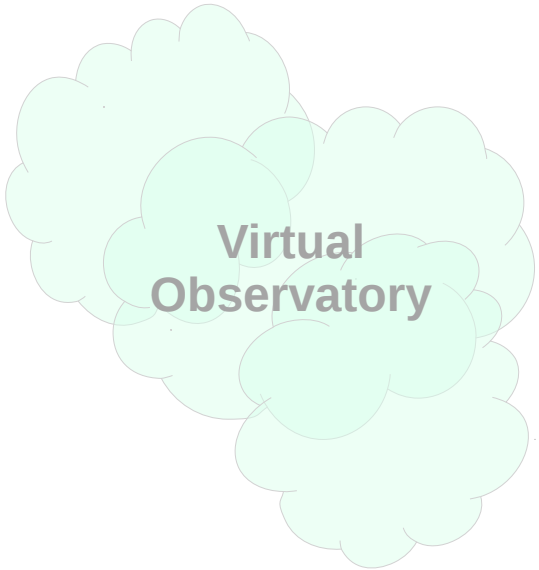
Data access
Table Access Protocol

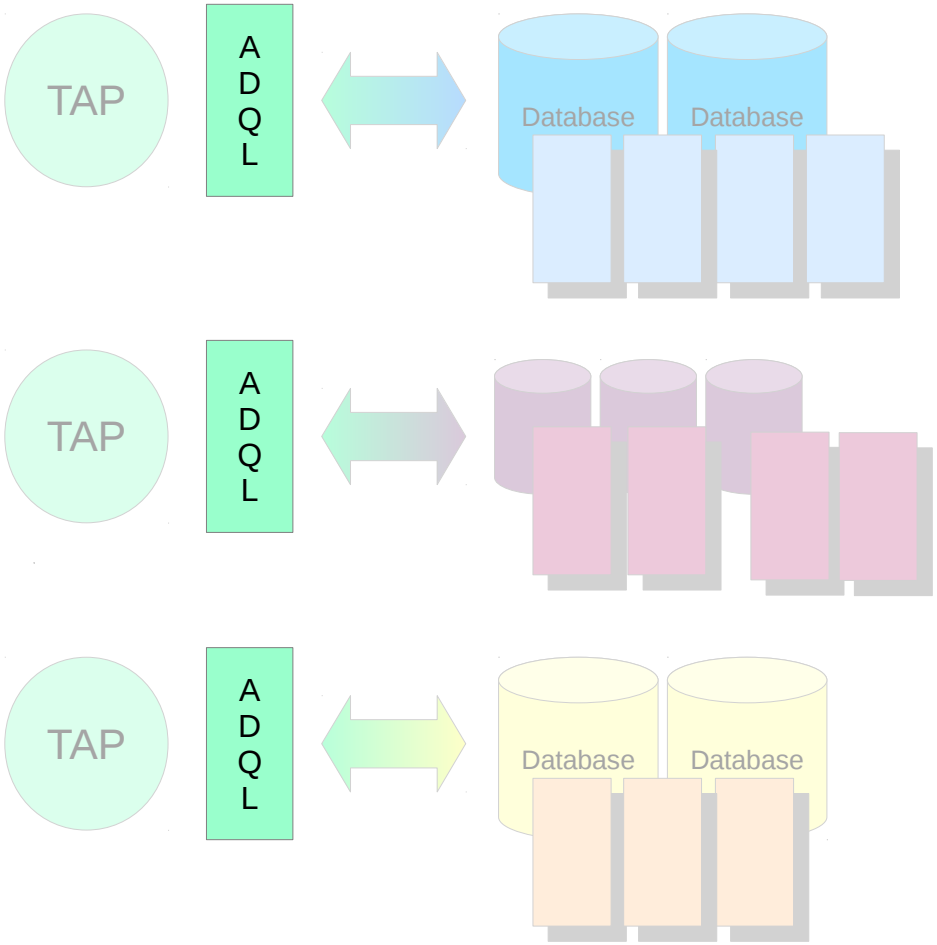
D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat



Aladin



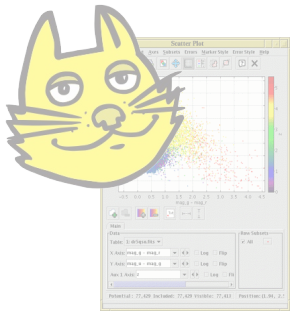


Astronomy Data Query Language

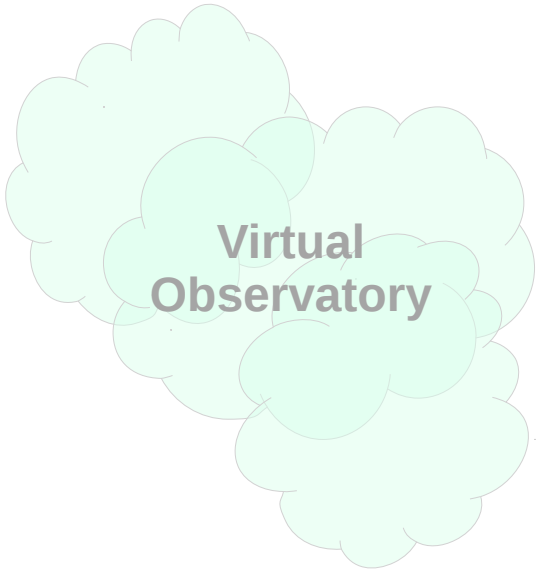
`SELECT … FROM table WHERE …`

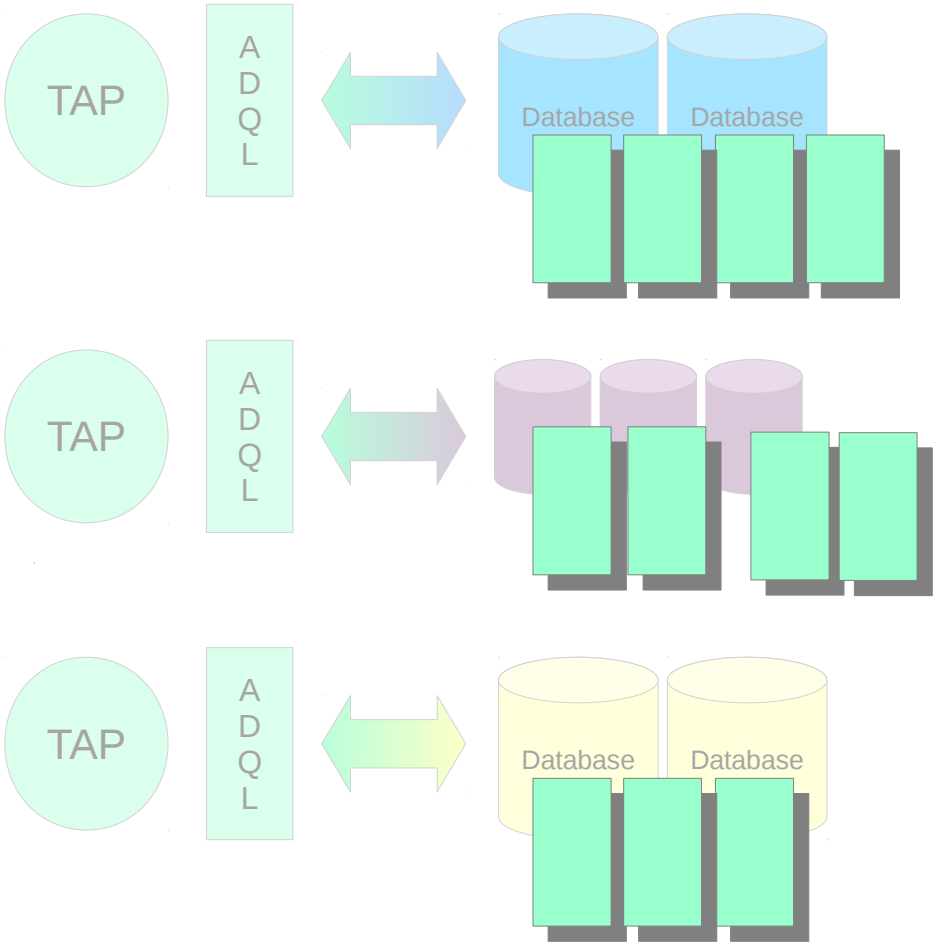
D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat



Aladin



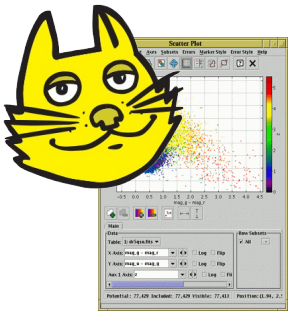


Observation Core Data Model

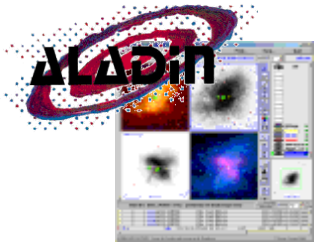
- who
- what
- when
- where

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Topcat



Aladin



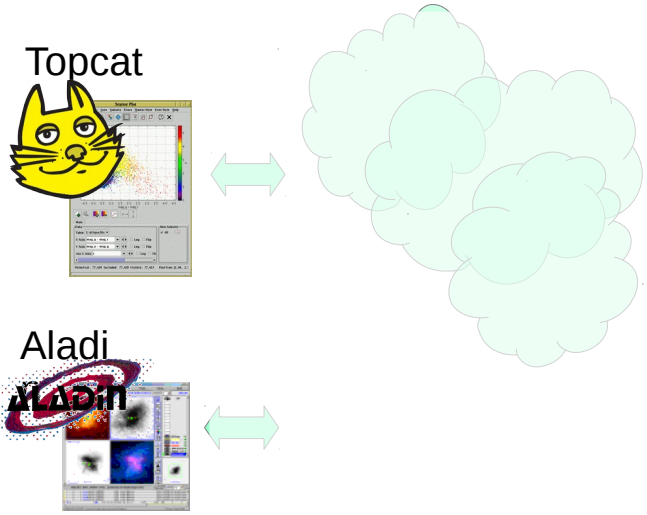
Virtual Observatory

The data

Registry
Table Access Protocol
Astronomy Data Query Language
Observation Core Data Model

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Data provider role



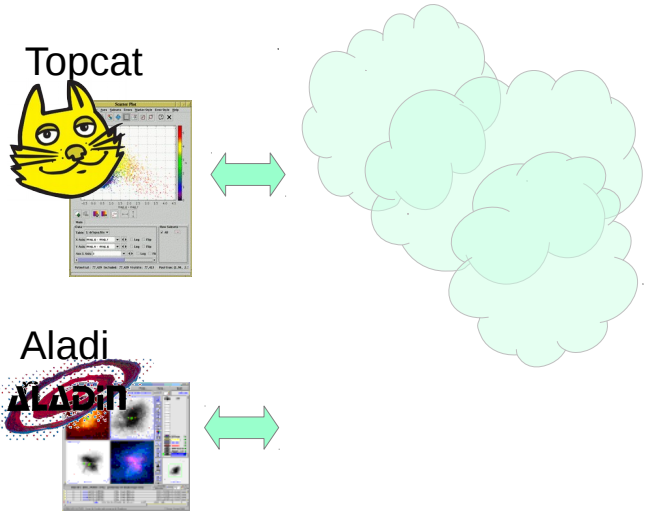
Observation Core Data Model

TAP schema

- tables
  - columns
    - name
    - type
    - units
    - UCD

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Software developer



TCP/IP
HTTP
REST
…

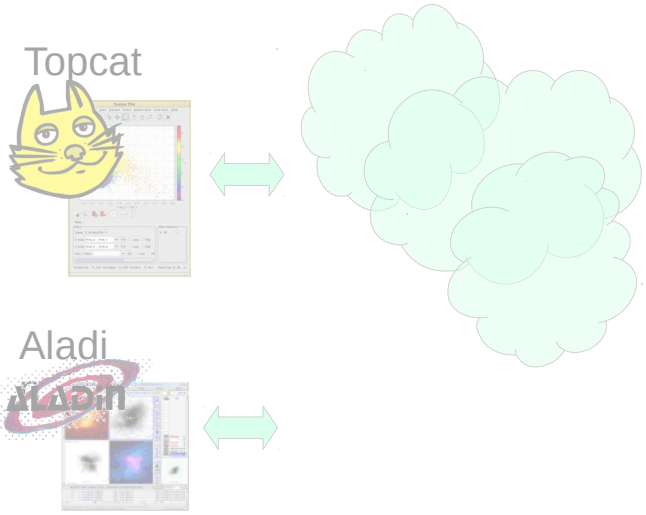
Java
Spring
Hibernate
JDBC
…

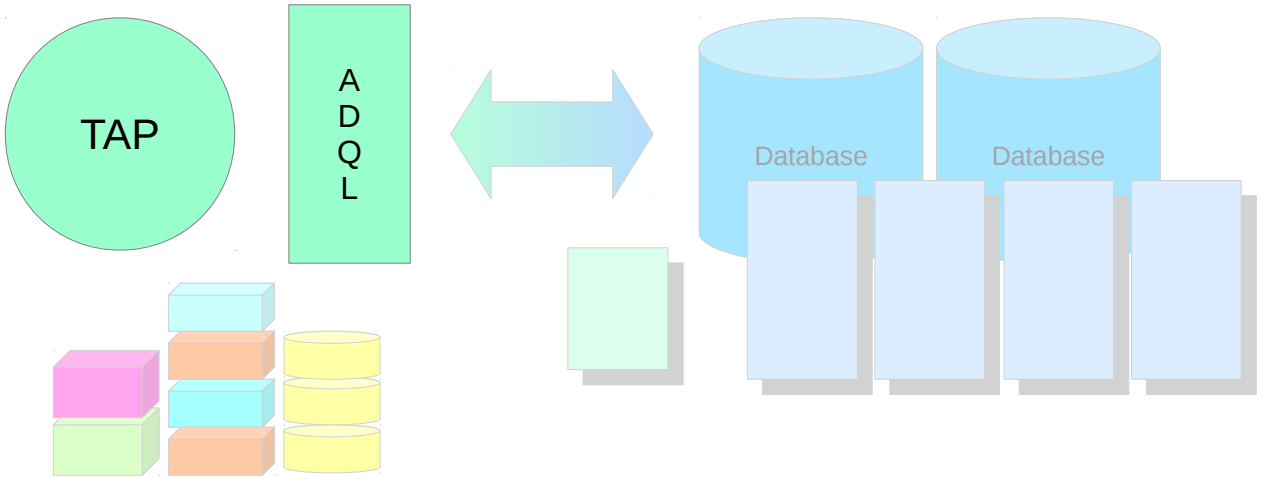
Python
Django
Flask
WebPy
…

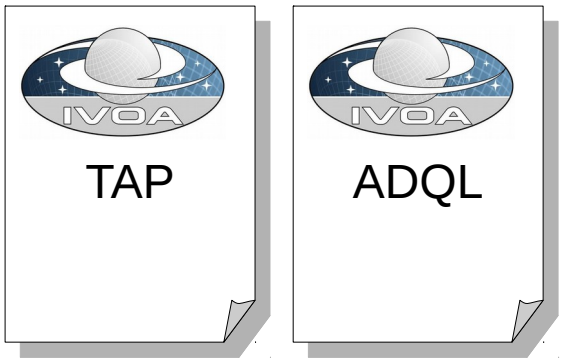
PostgreSQL
MySQL
SQLServer
Oracle
…

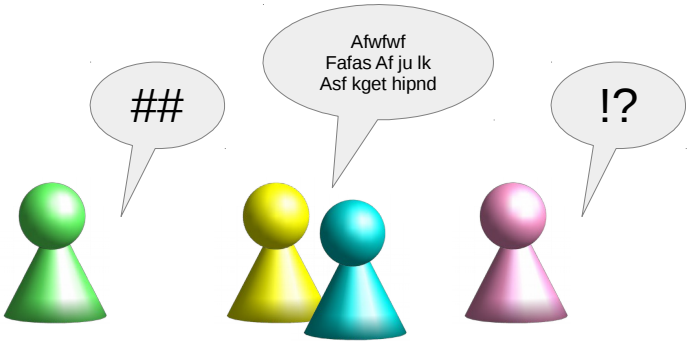
D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

IVOA member



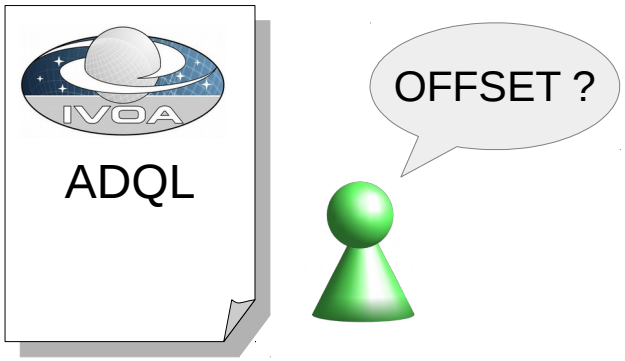


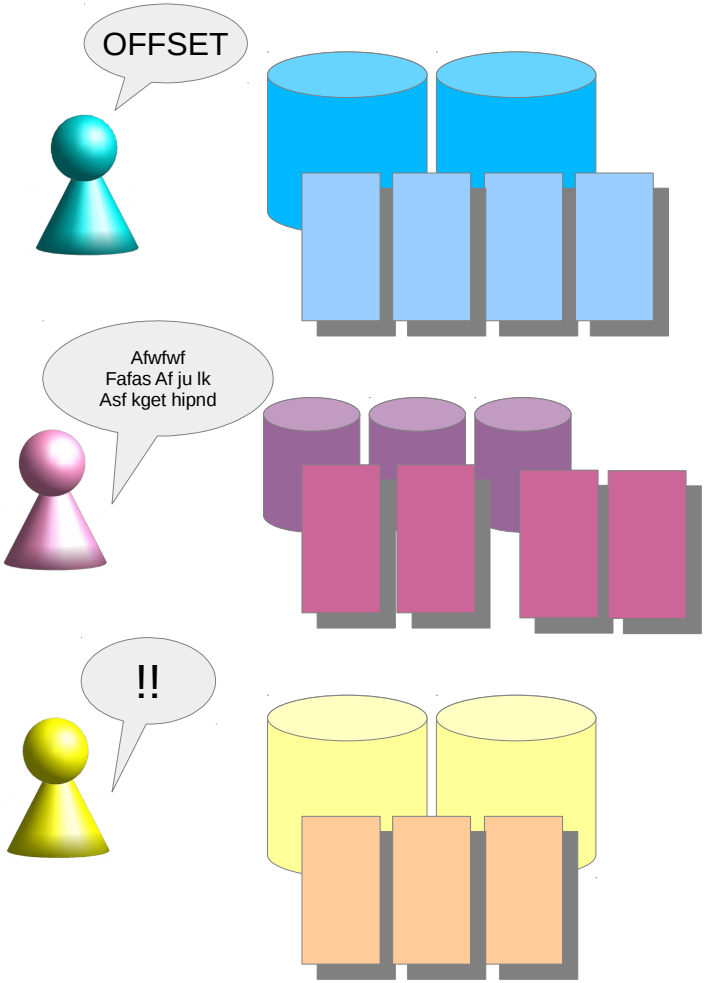




D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Initial proposal and
group discussion



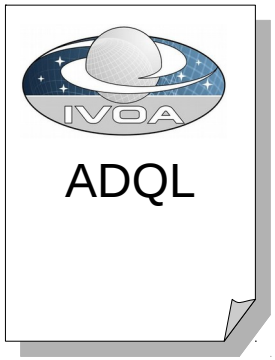


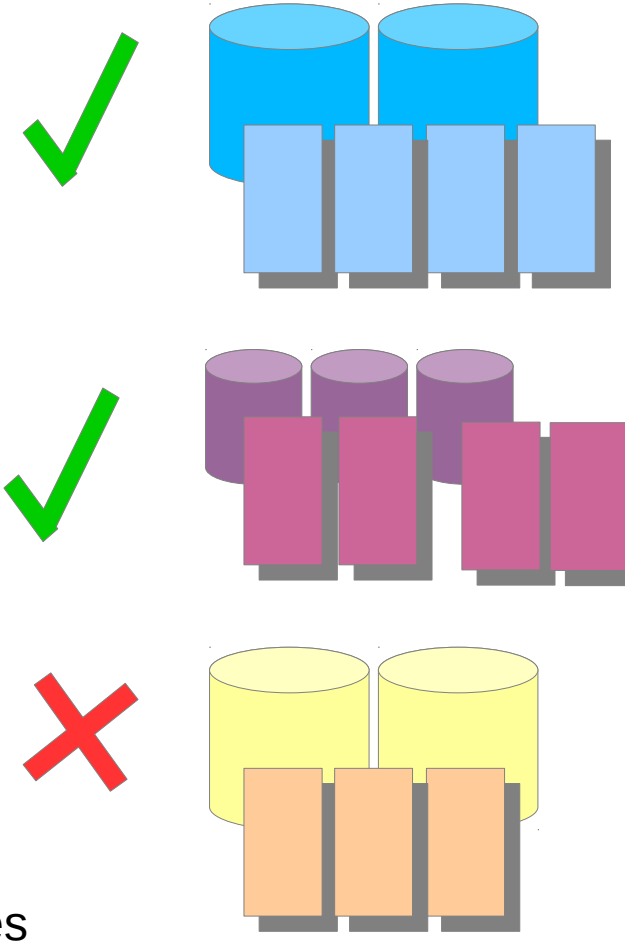

```
SELECT
      ….
FROM
      ….
WHERE
      ….
OFFSET n
```

Sometimes
the complicated ones are easy,
and sometimes
the simple ones are hard.

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Consensus and
updated specification





```
SELECT
      ….
FROM
      ….
WHERE
      ….
OFFSET n
```

Optional features
vs
range of platforms

What do we do if Oracle does
not support OFFSET

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Cosmopterix

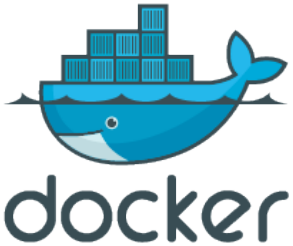
Docker containers, providing basic install of each database platform.

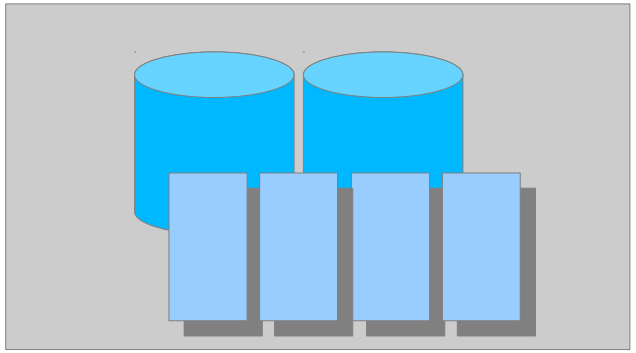
A simple platform for experimenting with ADQL syntax.

GitHub project
- contributions welcome

https://github.com/ivoa/cosmopterix

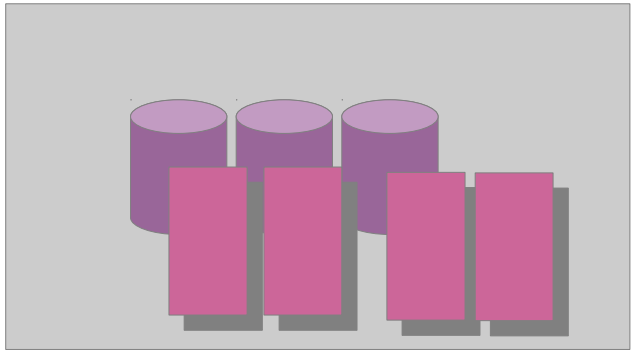
D.Morris
Institute for Astronomy,
Edinburgh University
June 2016





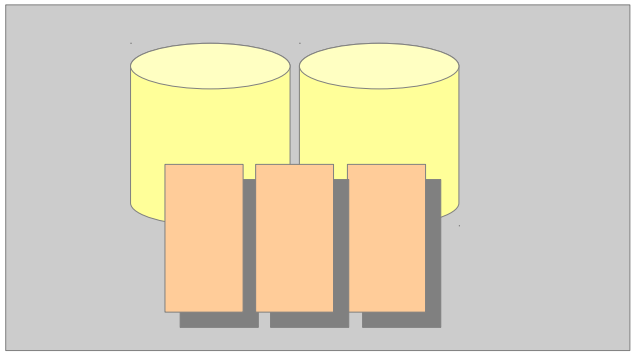
Working

- PostgreSQL
- MySQL
- MariaDB
- HSQLDB
- Apache Derby
- Oracle (*)



Future

- H2
- SQLite
- SQLServer
- Qserv
- SpiderEngine
- Hadoop



Lyonetia

A place to share example ADQL and SQL queries.

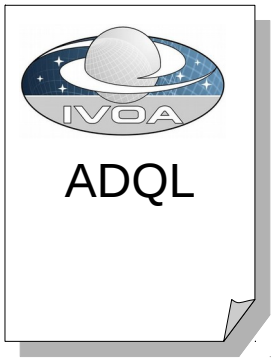
Initial goals
- Provide source material for ADQL parser tests
- Provide source material for ADQL query tests

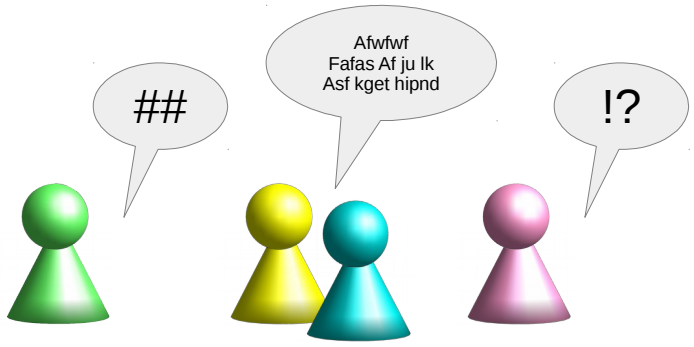
Medium term goals
- Provide reference material for science use cases

Long term goal
- Future work on validating the BNF grammar

GitHub project
- contributions welcome

https://github.com/ivoa/lyonetia





D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Open to collaboration

Public GitHub projects.
Make a clone, add your changes and send me a pull request.

Lyonetia – ADQL queries

https://github.com/ivoa/lyonetia

Cosmopterix- Docker containers

https://github.com/ivoa/cosmopterix

ADQL-2.1 working draft

http://www.ivoa.net/documents/ADQL/20160502/index.html

ADQL document - LaTex source

https://volute.g-vo.org/viewvc/volute/trunk/projects/dal/ADQL/

D.Morris
Institute for Astronomy,
Edinburgh University
June 2016

Dave Morris
dmr@roe.ac.uk