



# Wide Field Astronomy Unit (WFAU)

## Virtual Observatory Data Access service

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Target use cases :

- JOIN queries combining data from the catalogs at ROE
- JOIN queries combining data from the catalogs at ROE with data from external TAP services
- Space for storing user data, including query results and uploaded data

# Virtual Observatory Data Access service



Implemented using

- ADQL parser from CDS



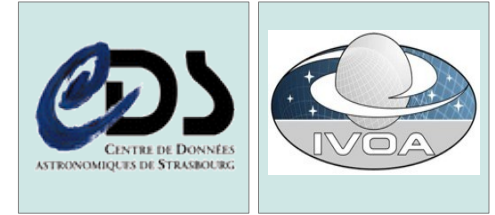
- SQL Server cluster at ROE



- OGSA-DAI DQP service from EPCC



# Virtual Observatory Data Access service



## ADQL Library <sup>v1.1</sup>

This CDS library lets parsing, manipulating and translating ADQL queries.

Getting started !

Download

### ADQL library from CDS

- ADQL syntax checking
- Data structure validation
- SQL dialect translation

### What is ADQL ?

ADQL is a SQL-like language which includes astronomical facilities to query a database. This language has been defined by the IVOA in the [Recommendation of 30 Oct 2008 \(Version 2.0\)](#) and is mainly used in the Table Access Protocol (TAP).

### Why this library ?

In order to help Java developers to parse, manipulate and translate ADQL queries quickly and with as few lines of code as possible.

#### Functionalities:

- Parse: read ADQL queries in text and transform them into a Java object (actually, a syntactic tree).
- Manipulate: the generated object can be manipulated so than modifying the original query.
- Translate: an interface and some implementations lets translating SQL into other languages like SQL.

Demo

### How to use it ?

- [Getting started](#): to start with this library.
- [Documentation](#): to have more details about all provided functionalities.
- [Javadoc](#): Java documentation of all available classes.
- **NEW!** [What's new ?](#): Last modifications of the library.

If you have any question about the ADQL library, you can [send it to the CDS](#).

This library is free: you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License.

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Last modification: 15-06-2012



Extensible architecture makes it easy to add customizations.

Validates and translates the the query components (tables, columns and fields) with the abstract structure in our metadata service.

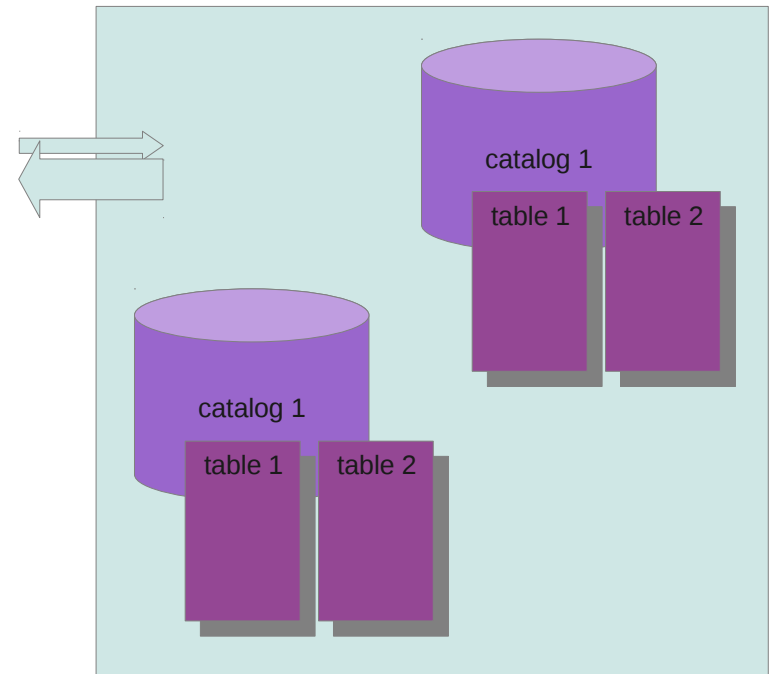
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## SQL Server cluster at ROE

- Supports cross catalog queries within the system
- All of the data is accessible from a single namespace

```
SELECT
    catalog1.dbo.table1.column1,
    catalog2.dbo.table2.column2,
FROM
    catalog1.dbo.table1
JOIN
    catalog2.dbo.table2
ON
    ....
WHERE
    ....
```

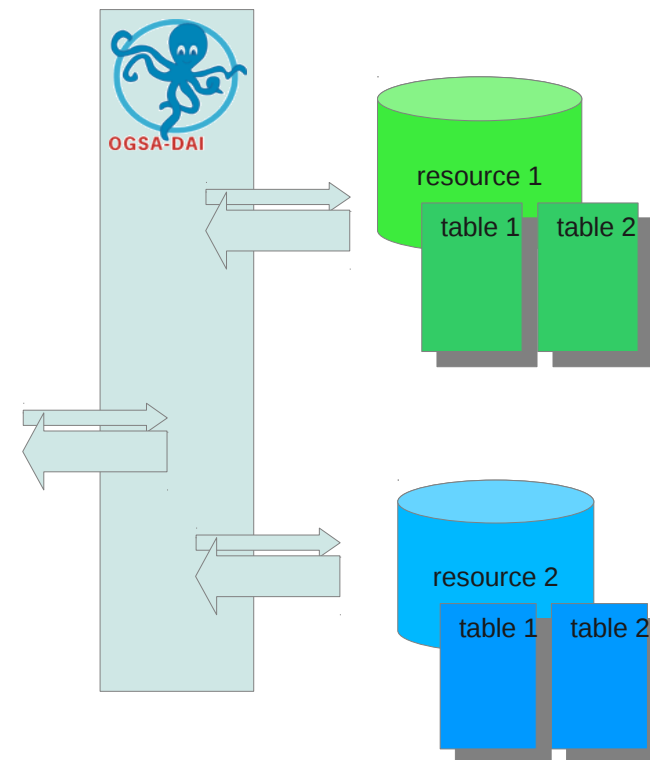


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## OGSA-DAI service from EPCC

- Middleware services enabling federation of heterogeneous data resources.
- Used in a wide range of applications including medical research, geographical information systems, meteorology, transport, computer-aided design, engineering and astronomy.



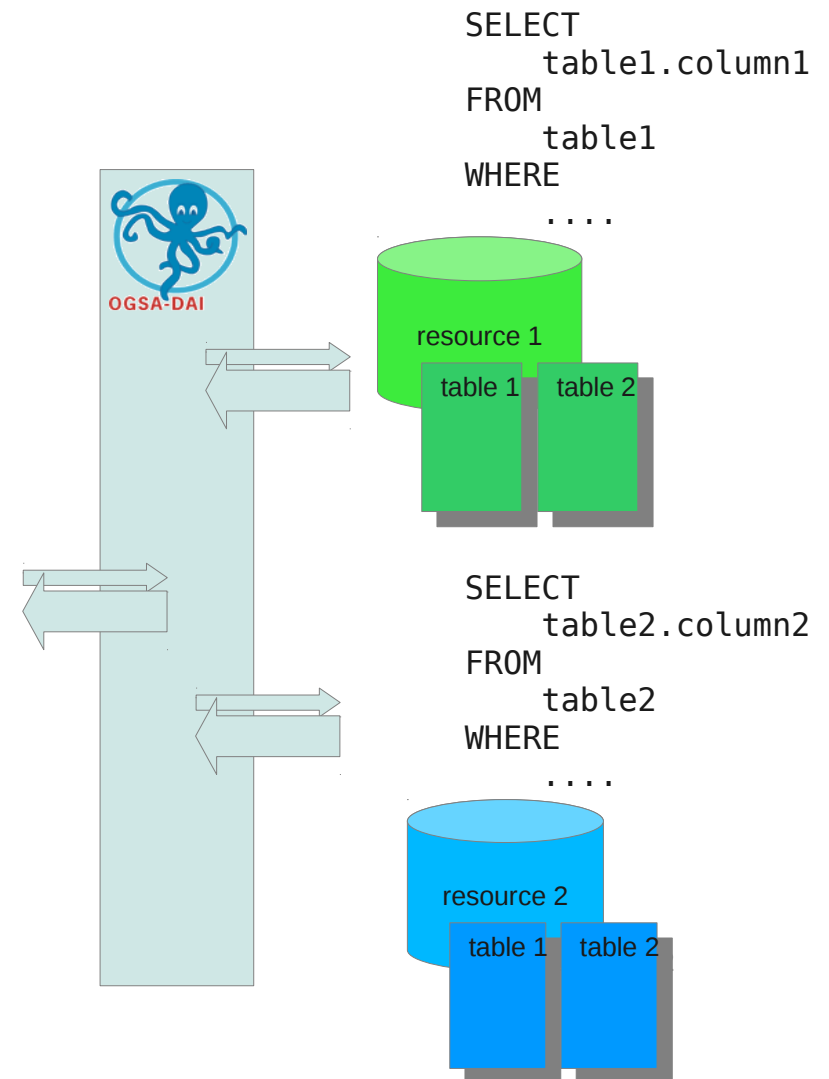
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## Distributed Query Processor (DQP)

- Splits a JOIN query into separate sub-queries for each resource
- Combines the results from each sub-query to recreate the original JOIN

```
SELECT
    resource1.table1.column1,
    resource2.table2.column2,
FROM
    resource1.table1
JOIN
    resource2.table2
    . . . .
```

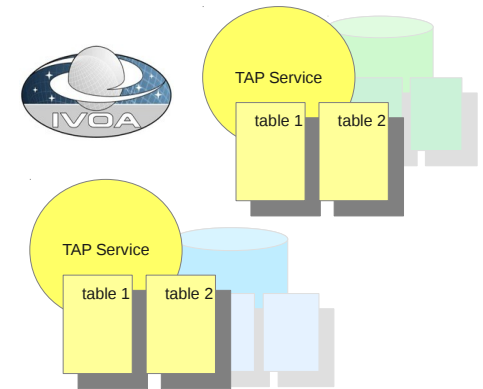


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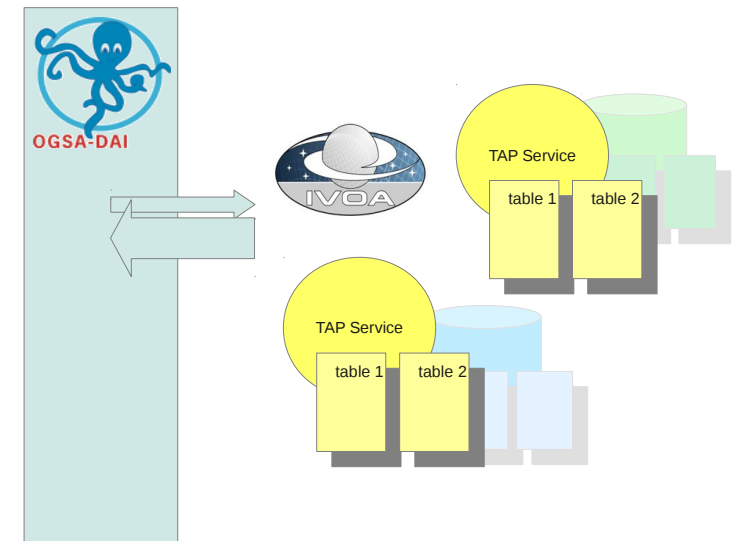
## IVOA TAP services

- Provides a common abstraction for databases
- Hides the implementation details
- Services from different data providers behave the same way



## OGSA-DAI astronomy extensions

- Developed for ROE by EPCC
- Enabling OGSA-DAI to use IVOA data services





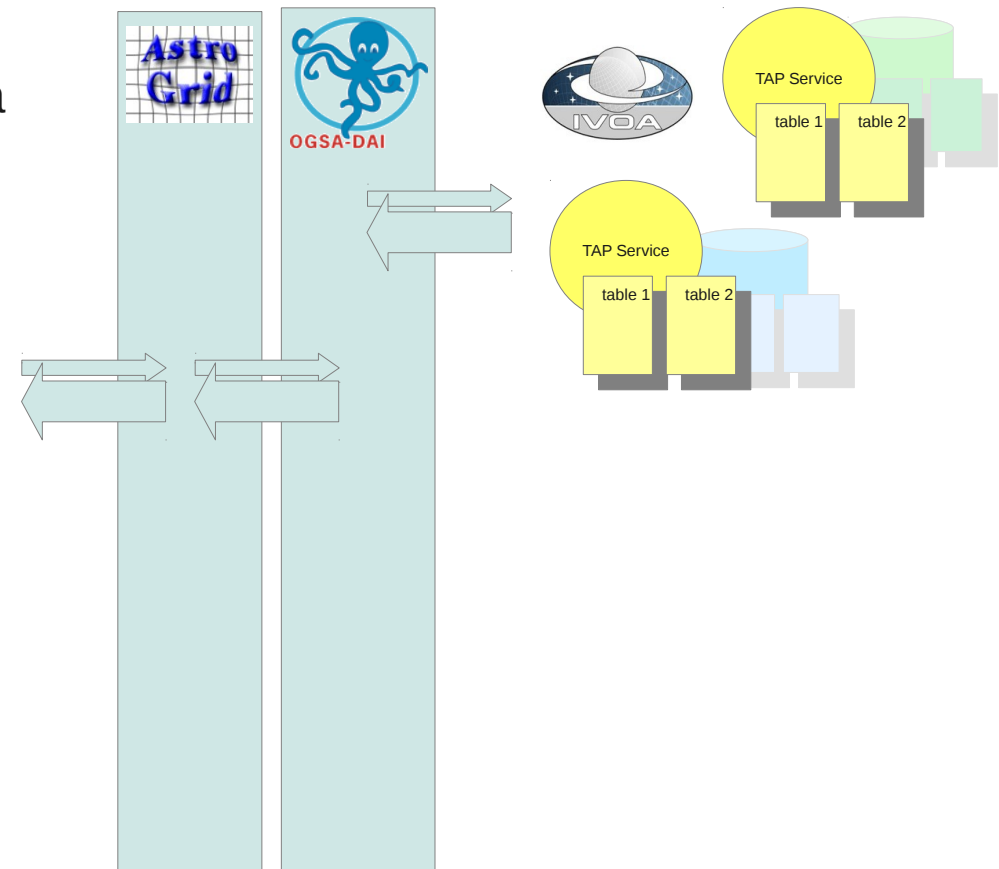
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## OGSA-DAI TAP Factory

- Prototype federated TAP service
- Developed for ROE by EPCC
- Using OGSA-DAI DQP to combine data from external TAP services
- Using AstroGrid DSA to provide TAP interface

```
SELECT
    service1.table1.column1,
    service2.table2.column2,
FROM
    service1.table1
JOIN
    service2.table2
```



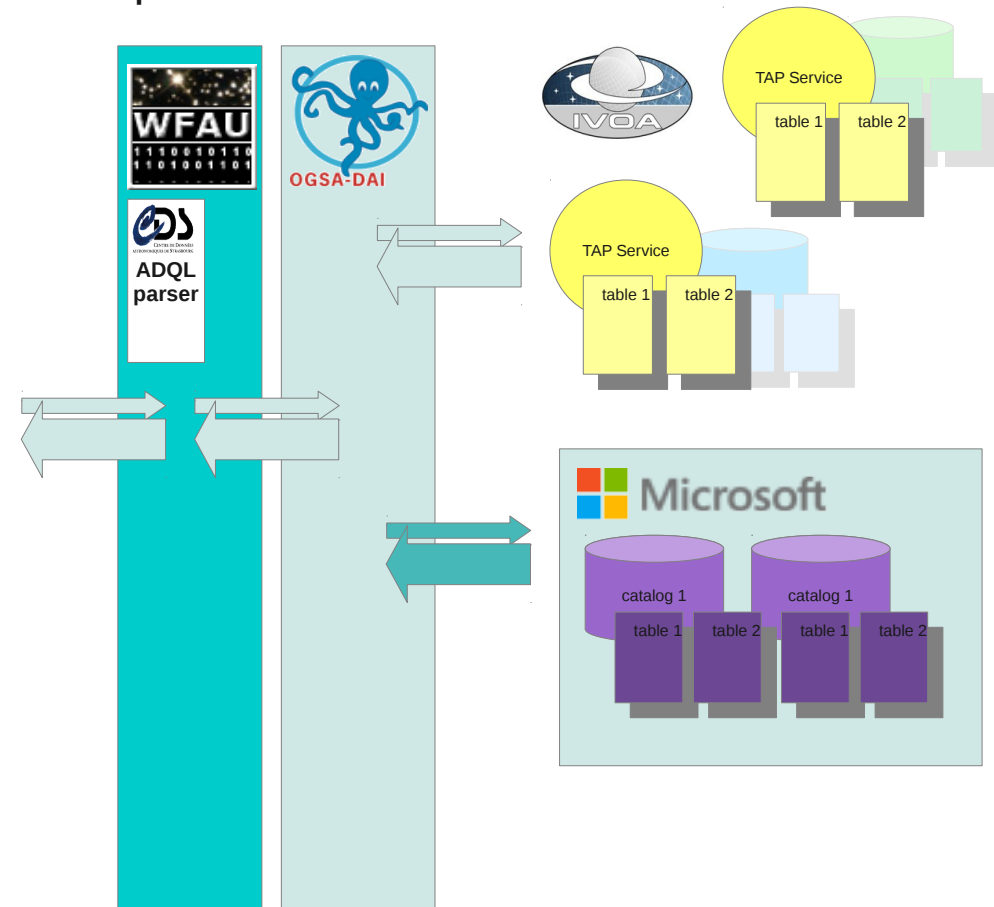
# Virtual Observatory Data Access service



## New data access service

- New metadata service to create a virtual 'data space'
- Combining local and remote data
- Local JOINS executed within SQL Server
- Remote JOINS processed by DQP

```
SELECT
    resource1.table1.column1,
    resource2.table2.column2,
FROM
    resource1.table1
JOIN
    resource2.table2
    . . .
```



# Virtual Observatory Data Access service



## New data access service

- User data appears within the same virtual space
- Results from ADQL queries automatically stored in users space
- Available for query in combination with local catalogs and remote TAP services

```
SELECT
    resource.table1.column1,
    userdata.table2.column2,
FROM
    resource.table1
JOIN
    userdata.table2
    . . . .
```

