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# Publishing in the VO

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# Outline

- What is a Data Centre?
- What does “publishing in the VO” mean?
- Why publishing in the VO?
- How publishing in the VO?

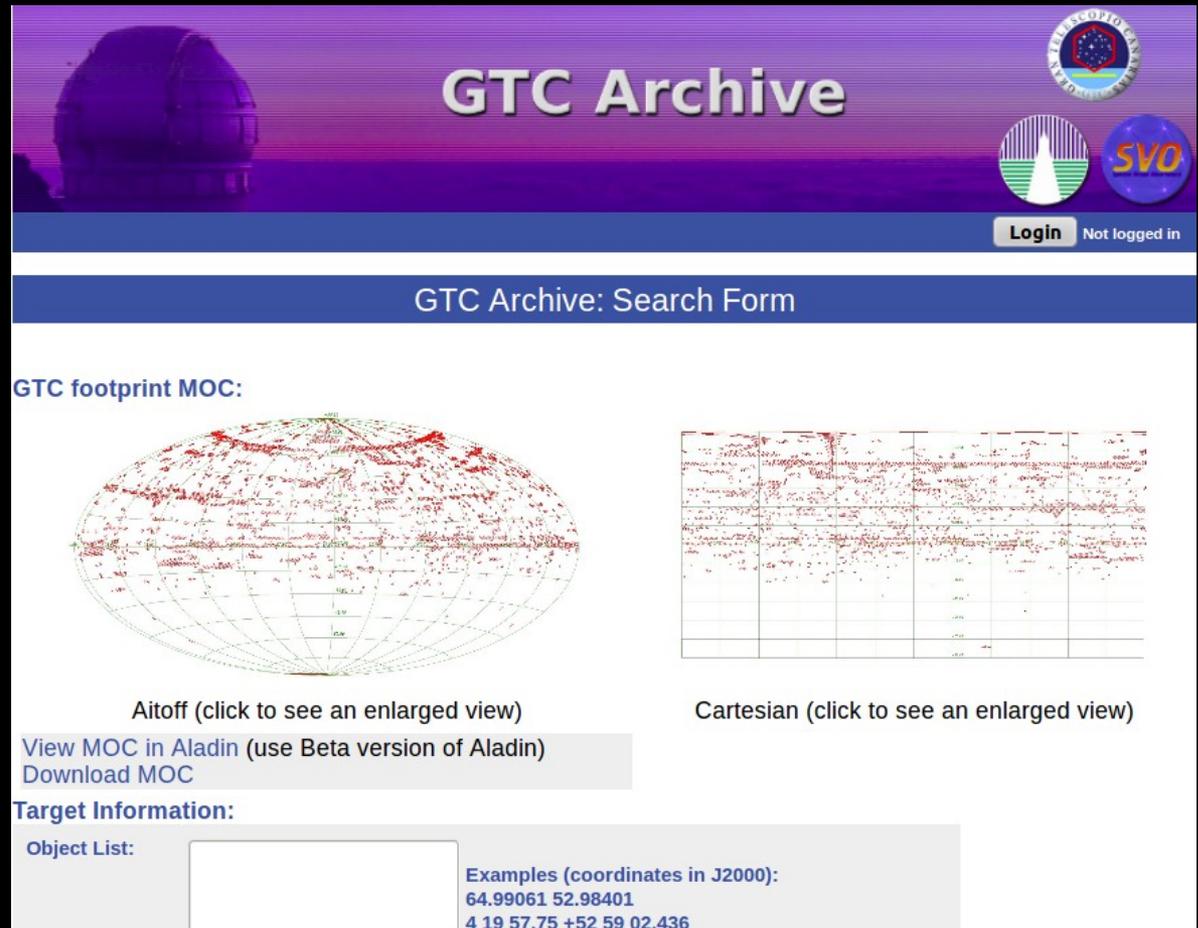
# What is a Data Centre?



- Euro-VO: Not limiting but very inclusive definition.
  - From large DCs to individual researchers.
  - Not only data but also services and tools.
    - Service to community
    - Sustainability
    - Concern for quality

# What is data publishing?

- Offering data to the community.
  - How can they get them?
- Web pages



The screenshot shows the GTC Archive website interface. At the top, there is a header with the text "GTC Archive" and logos for the University of Sydney and SVO. Below the header is a search form. The main content area displays "GTC footprint MOC:" with two visualizations: an Aitoff projection and a Cartesian grid. Below the Aitoff projection are links to "View MOC in Aladin" and "Download MOC". Below the Cartesian grid is a link to "Cartesian (click to see an enlarged view)". At the bottom, there is a "Target Information:" section with an "Object List:" input field and "Examples (coordinates in J2000):" with the coordinates "64.99061 52.98401" and "4 19 57.75 +52 59 02.436".

**GTC Archive**

University of Sydney SVO

Login Not logged in

GTC Archive: Search Form

GTC footprint MOC:

Aitoff (click to see an enlarged view)

Cartesian (click to see an enlarged view)

[View MOC in Aladin \(use Beta version of Aladin\)](#)  
[Download MOC](#)

Target Information:

Object List:

Examples (coordinates in J2000):  
64.99061 52.98401  
4 19 57.75 +52 59 02.436

# Is this enough? → NO

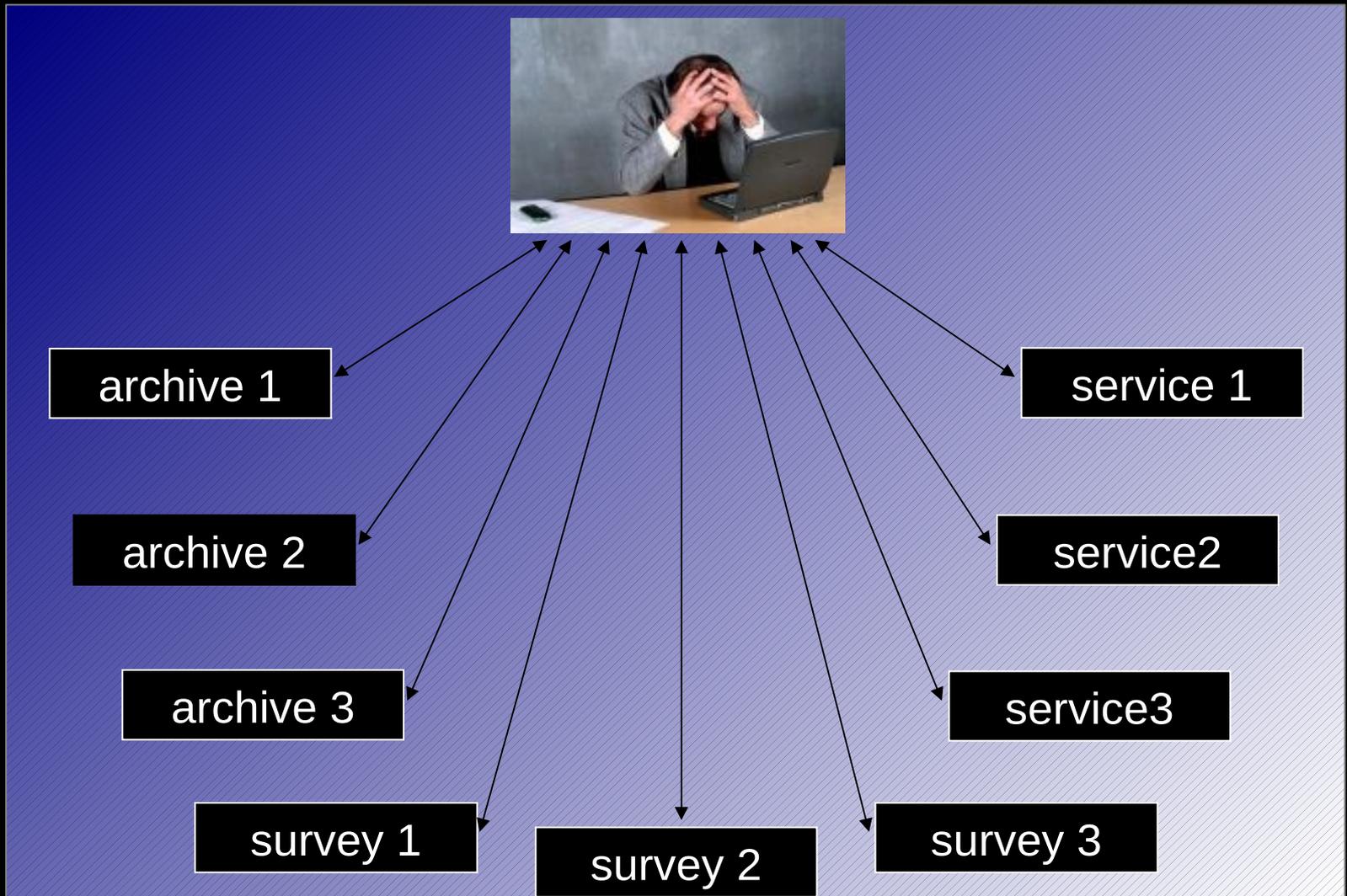
- The “discovery problem”.



Where are the data I am interested in?

# Is this enough? → NO

- The “data access problem”.



# Is this enough? → NO

- The “data comparison problem”.

Barbara A. MIKULSKI ARCHIVE OF SPACE TELESCOPES

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NASA Datacenters

MAST Services

MAST and the VO

Newsletters & Reports

Data Use Policy

Dataset Identifiers

Acknowledgments

**Hubble**

**Hubble Legacy Archive**

**HSTonline**

**HST Press Release Images**

**DSS**

**JWST SID Archive**

**K2 EPIC**

**Kepler Data**

**Kepler Targets**

**SwiftUVOT**

**XMM-OM**

**BEFS (ORFEUS)**

**Copernicus-raw**

**Copernicus-coadd**

**EPOCH**

**EUVE**

**FUSE Observations**

**FUSE Exposures**

**GalexView**

**GALEX**

**GSC**

**HPOL**

**HUT**

**IMAPS (ORFEUS)**

**IUE**

**TUES (ORFEUS)**

**UIT**

Space Telescopes (MAST) is a NASA funded project to provide the astronomical community a [variety of astronomical](#) data sets in the visible and infrared parts of the spectrum. MAST is located at the Space Telescope Science Institute (STScI).

Using the MAST Data Discovery Portal

Search

Viewer

Other Archives

Coordinates):

Search

MAST

**News**

**April 01, 2014:**

HLA Starclusters Project

**March 17, 2014:**

NGC 2174 - HST 24th Anniversary Image and High Level Science Products

**March 10, 2014:**

Hubble Source Catalog Beta 0.3 Release

**March 07, 2014:**

Links to SIMBAD from Kepler search results

**March 03, 2014:**

HST Frontier Fields V1.0 Release for MACS J0416.1-2403, Epoch 1

**Missions**

**Hubble**

**Hubble Legacy Archive**

**HSTonline**

**DSS**

**JWST**

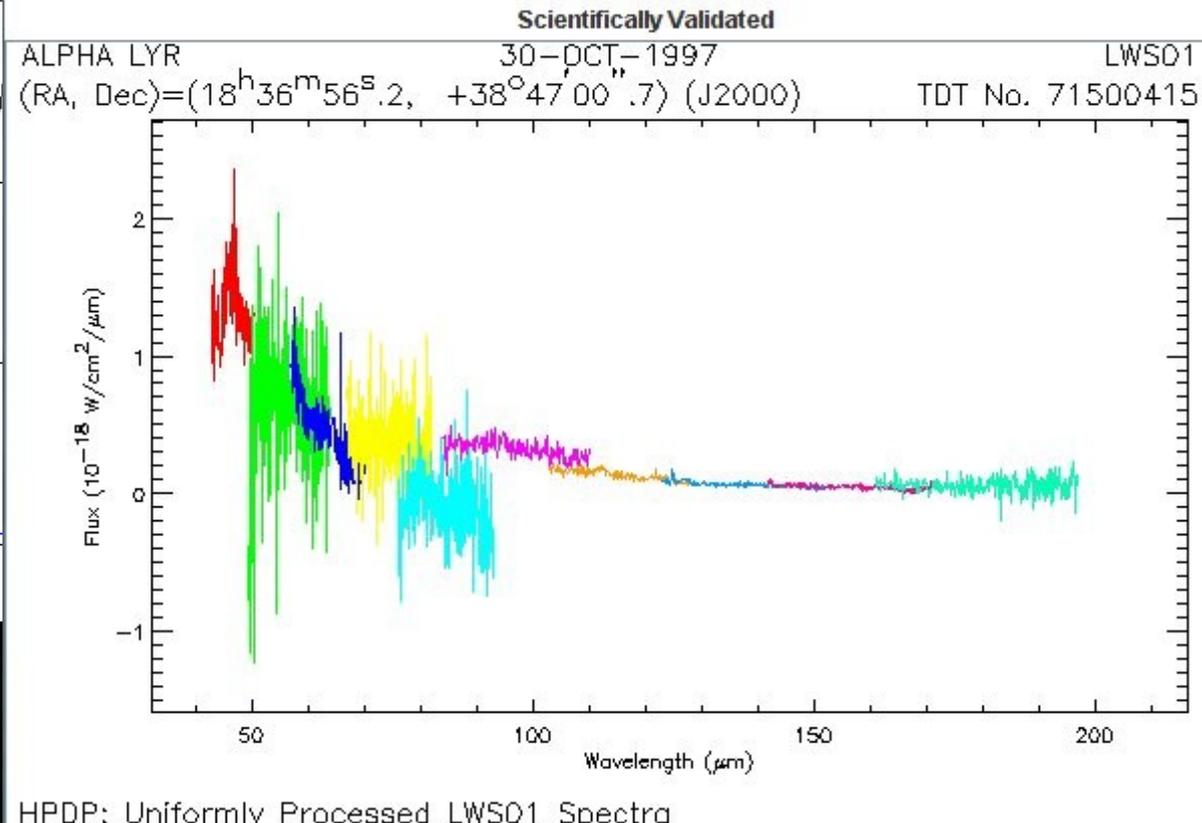
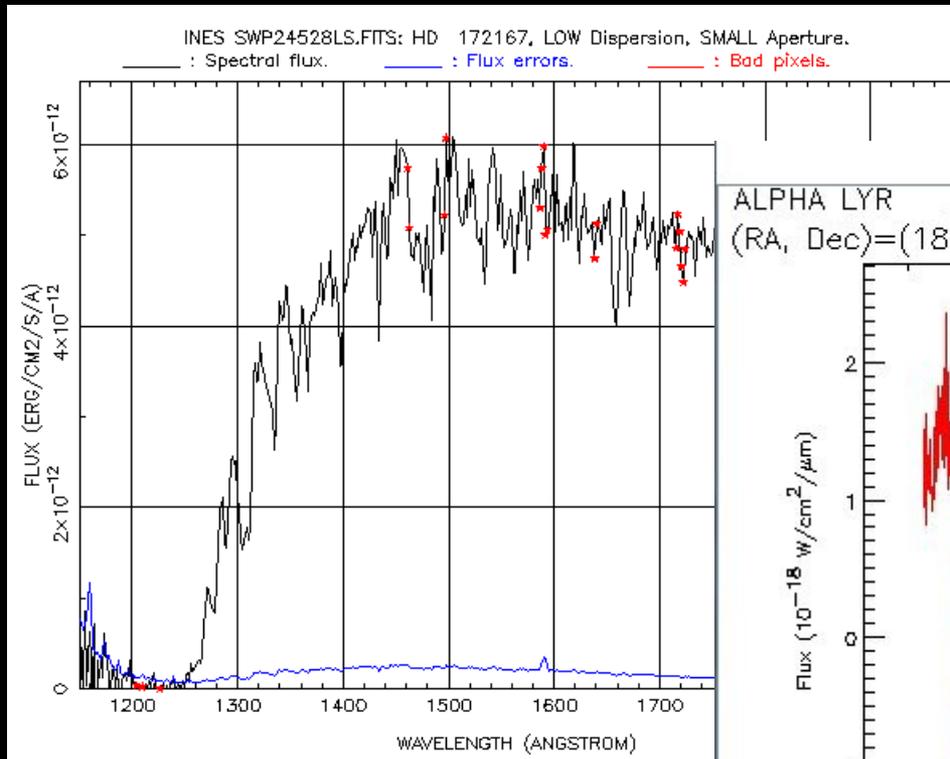
**K2**

<https://archive.stsci.edu/searches.html#missions>

# Is this enough? → NO

- The “data comparison problem”.

<u>Full</u>	<u>NOMAD1</u>	<u>Bmag</u>	<u>r</u>	<u>Vmag</u>	<u>Rmag</u>	<u>Jmag</u>	<u>Hmag</u>	<u>Kmag</u>
		<u>mag</u>		<u>mag</u>	<u>mag</u>	<u>mag</u>	<u>mag</u>	<u>mag</u>
I	1287-0310018	0.020	T	0.094		-0.177	-0.029	0.129



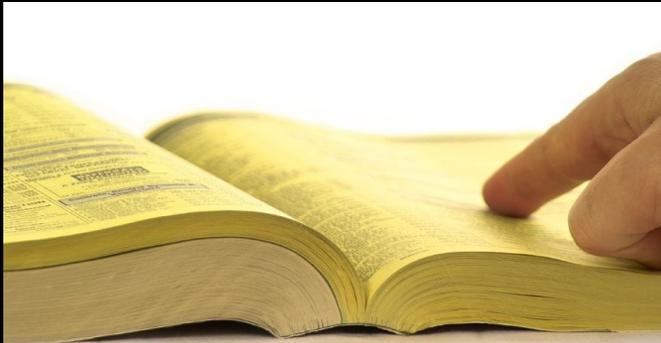
# The solution: Standardization



- A standard framework is required. VO provides it

# Virtual Observatory → Standardization

- VO gives answers to the previously mentioned issues (discovery, access, comparison).



*International  
Virtual  
Observatory  
Alliance*

Simple Image Access Specification  
Version 1.0

IVOA Recommendation 2009-11-16



*International  
Virtual  
Observatory  
Alliance*

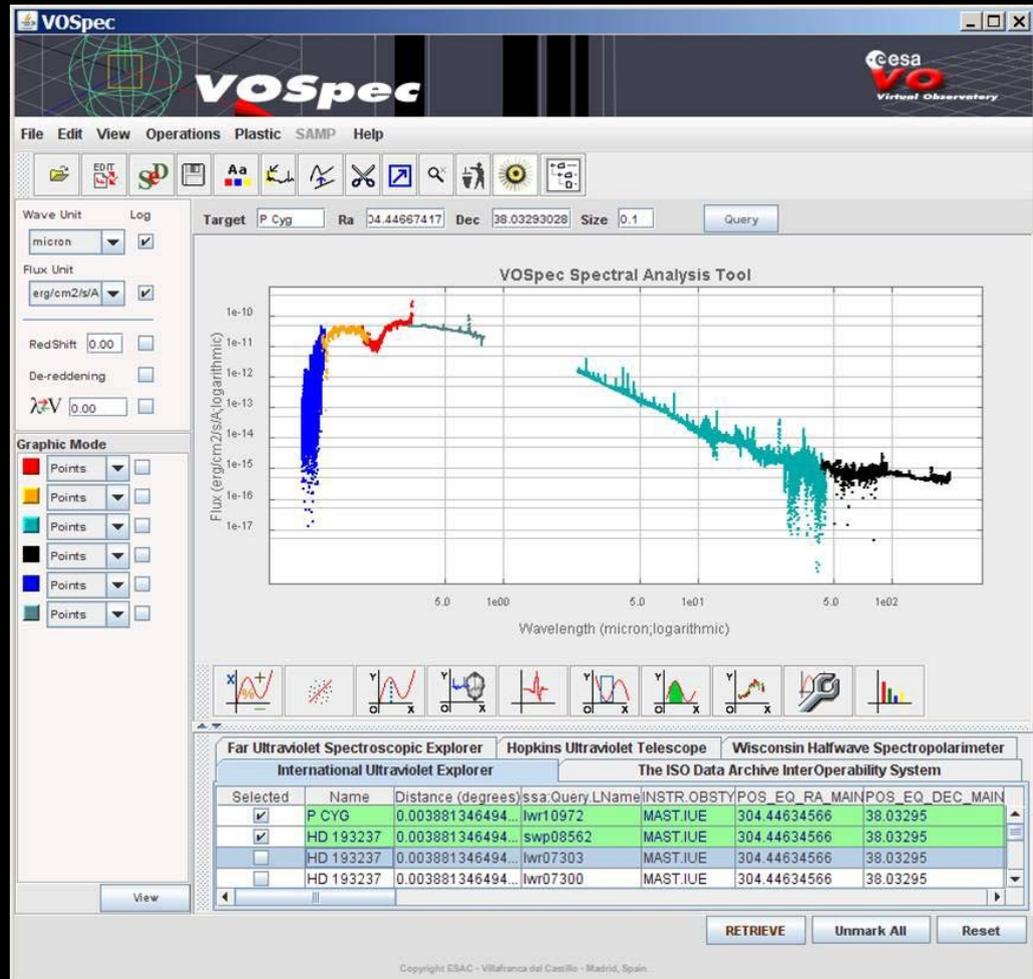
IVOA Spectral Data Model  
Version 2.0  
IVOA Working Draft 20120907

## Example:

<http://myimages.org/cgi-bin/VOimg?POS=180.567,-30.45&SIZE=0.0125>

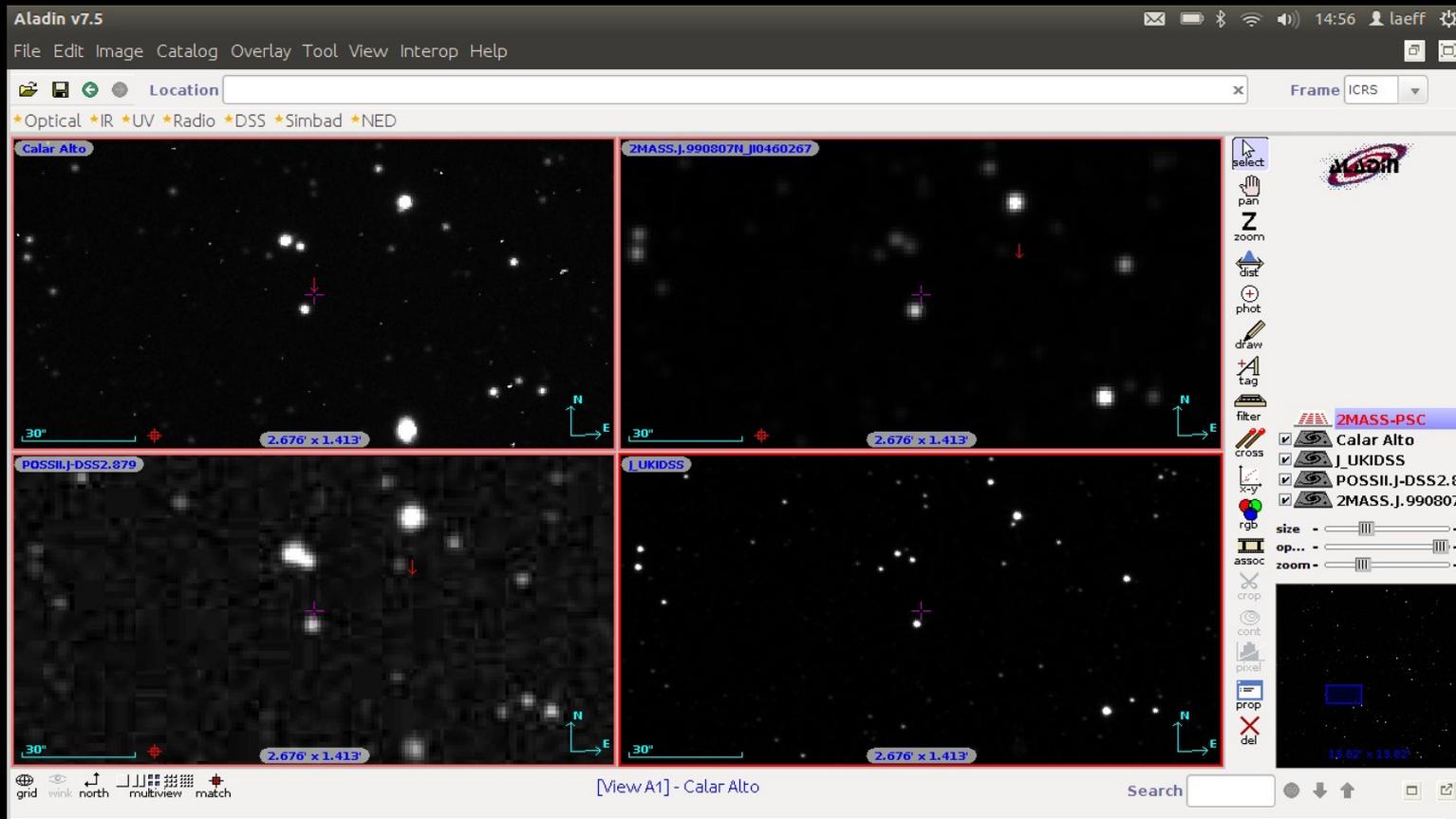
# Why publish in the VO?

- Reason 1: Being part of the VO means being part of a vast distributed information system → visibility.



# Why publish in the VO?

- Reason II: Do not reinvent the wheel. Take advantage of the huge intellectual investment that people has put in the VO in the last years and use the already existing standards and services → **efficiency.**

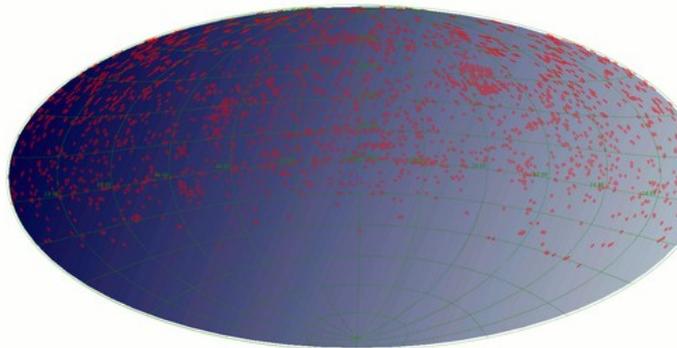


# Taking advantage of VO



Calar Alto Archive: Search Form

CAHA footprint MOC:



Aitoff (click to see an enlarged view)

View MOC in Aladin (use Beta version of Aladin)  
Download MOC



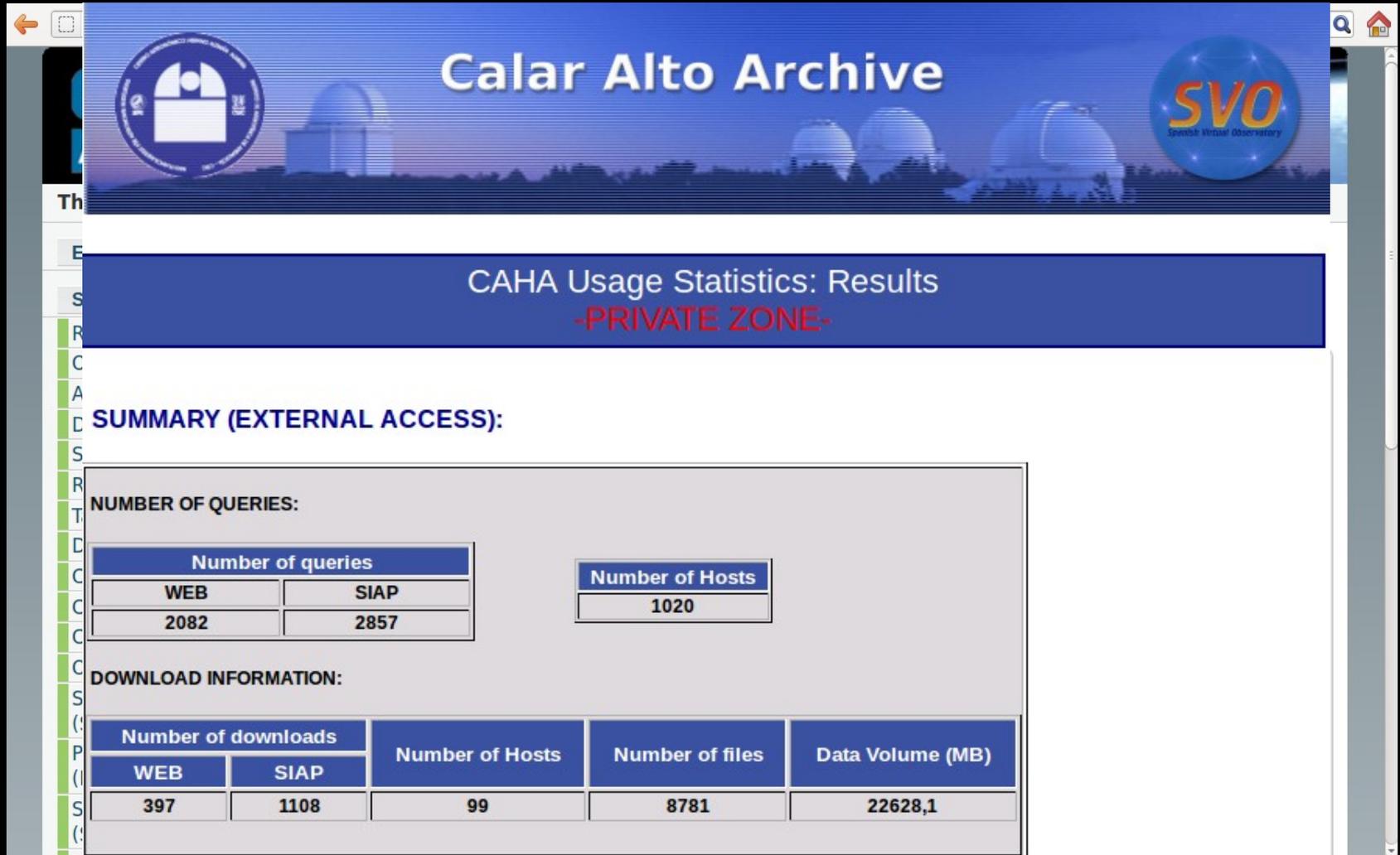
International  
Virtual  
Observatory  
Alliance

IVOA DataLink Protocol  
Version 1.0

IVOA Note May 3, 2013

# Why publish in the VO?

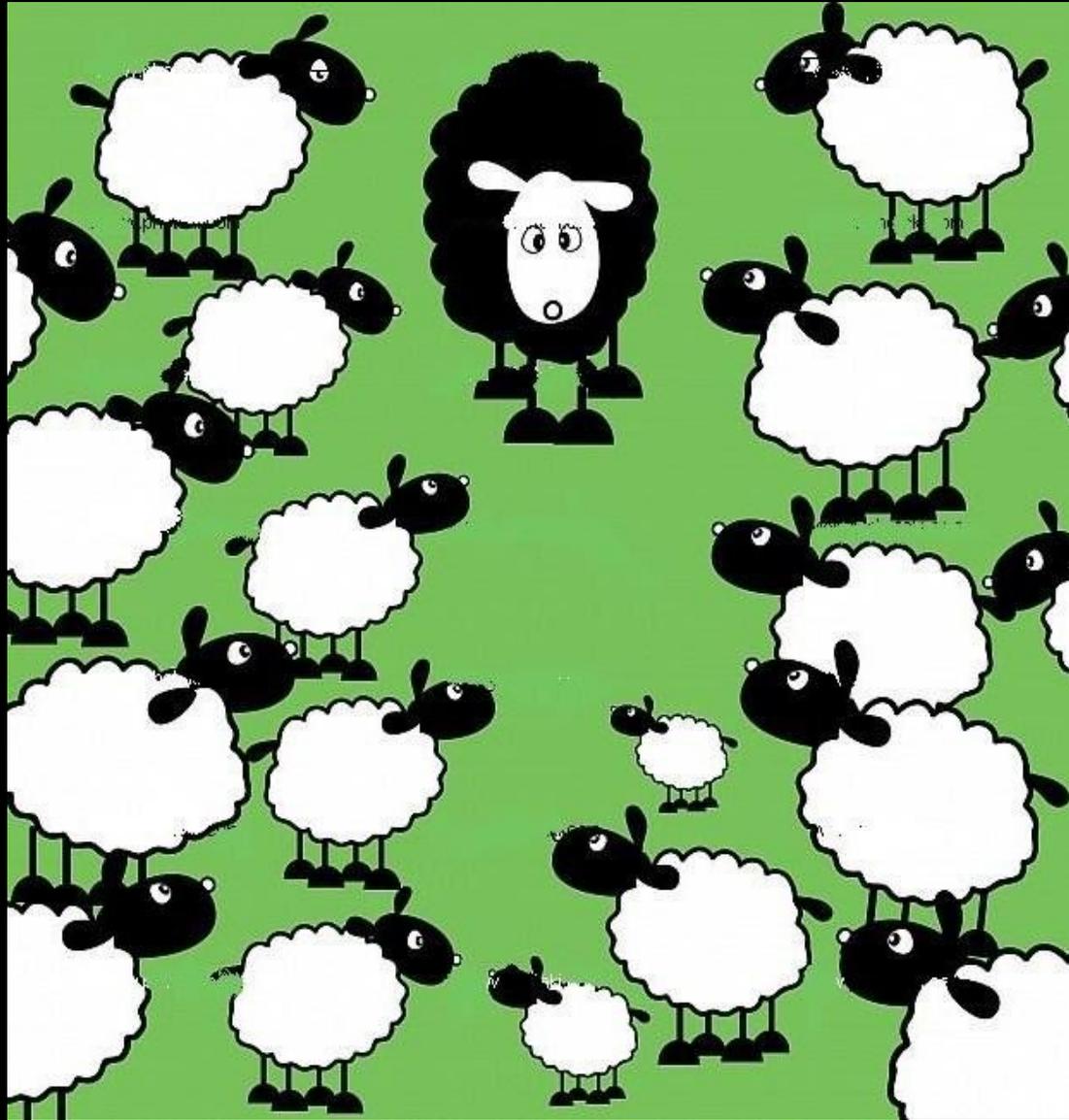
- Reason III: Usage.



# Why publish in the VO?

- Reason IV: Political aspects.
- VO: key research infrastructure for Astronet.
- Networking of data centres: Integration into a common framework is a key issue both for Astronet and the EC.
- Enabling the worldwide dissemination of astronomical data.

# Why publish in the VO?



# How to publish in the VO?

- See next presentations
- Some tips
  - Have VO in mind when building a new system or re-engineering an existing one.
  - If the archive already exists → VO is just a translation layer.
  - Sufficient continuous local expertise is needed to be a data publisher. No end-to-end publishing tools.