



ALL-SKY
VIRTUAL
OBSERVATORY

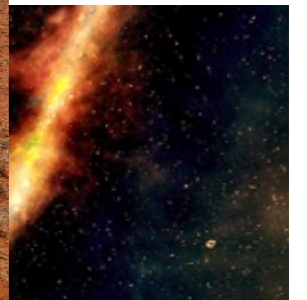
Bringing together the Australian sky

Coordination and interoperability challenges of the All-Sky Virtual Observatory



MWA Node

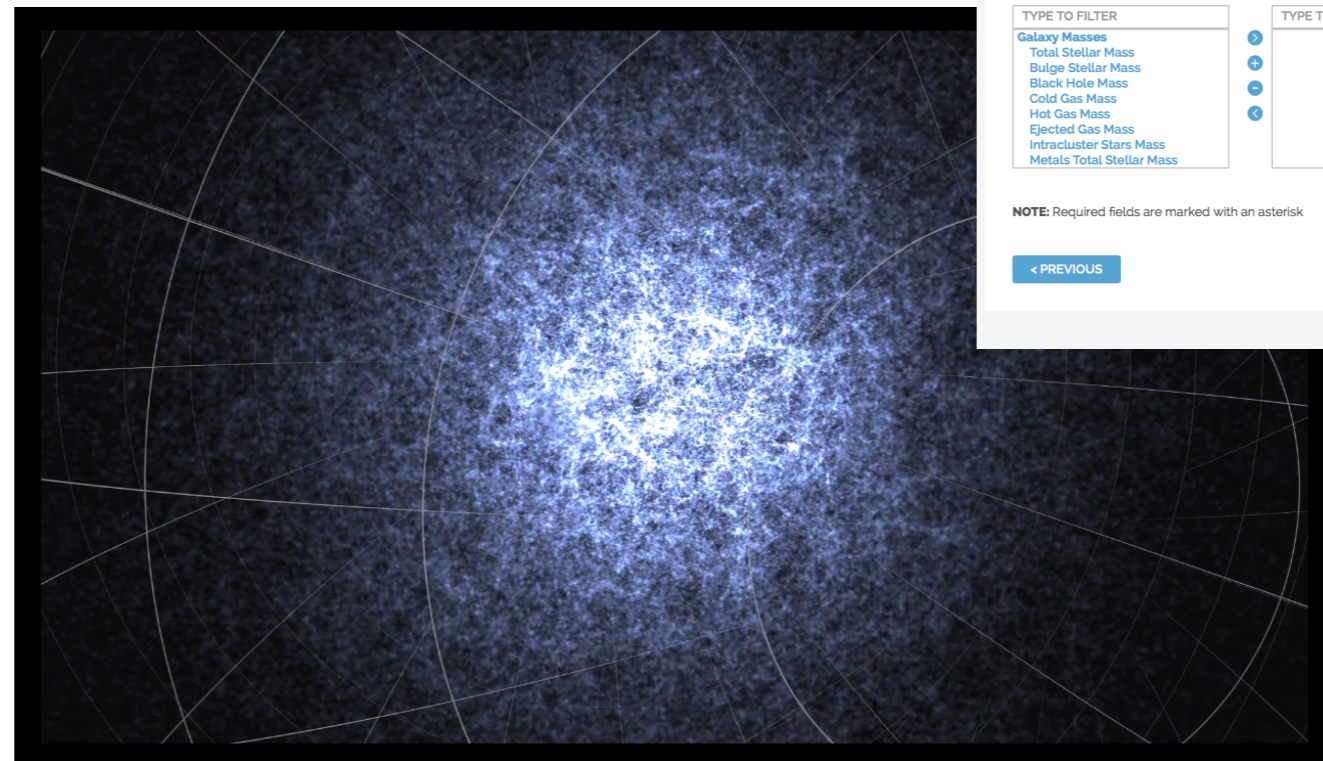
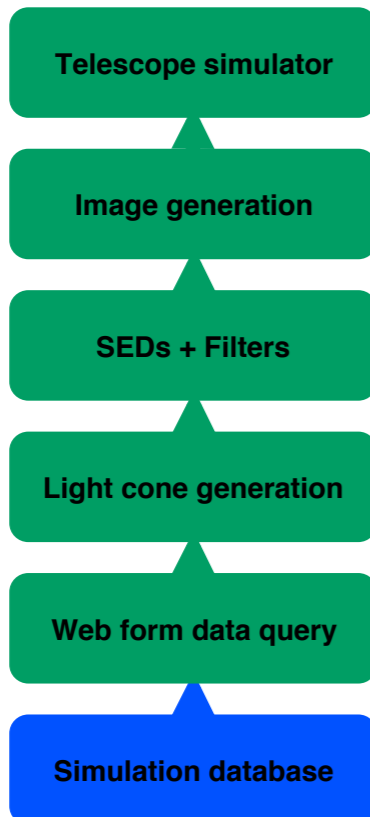
- Summary:
 - **International Consortium led by Curtin University**
 - Low frequency radio telescope (80-300 MHz)
 - Operations began mid-2013
 - Provides pre-processed uncalibrated data
 - One of the 4 SKA precursor telescopes
 - 28Pb publicly available data
 - Each observation 10-100 Gb's in size
 - MWA ASVO averages data into smaller volumes
 - MWA ASVO reduce barriers for astronomer not directly involved in the project by making manageable data



TAO Node



- Summary:
 - Led by Swinburne University
 - Cosmological and galaxy formation simulations for astronomers
 - Launched March 2014
 - Over 1000 virtual universes built



Skymapper Node

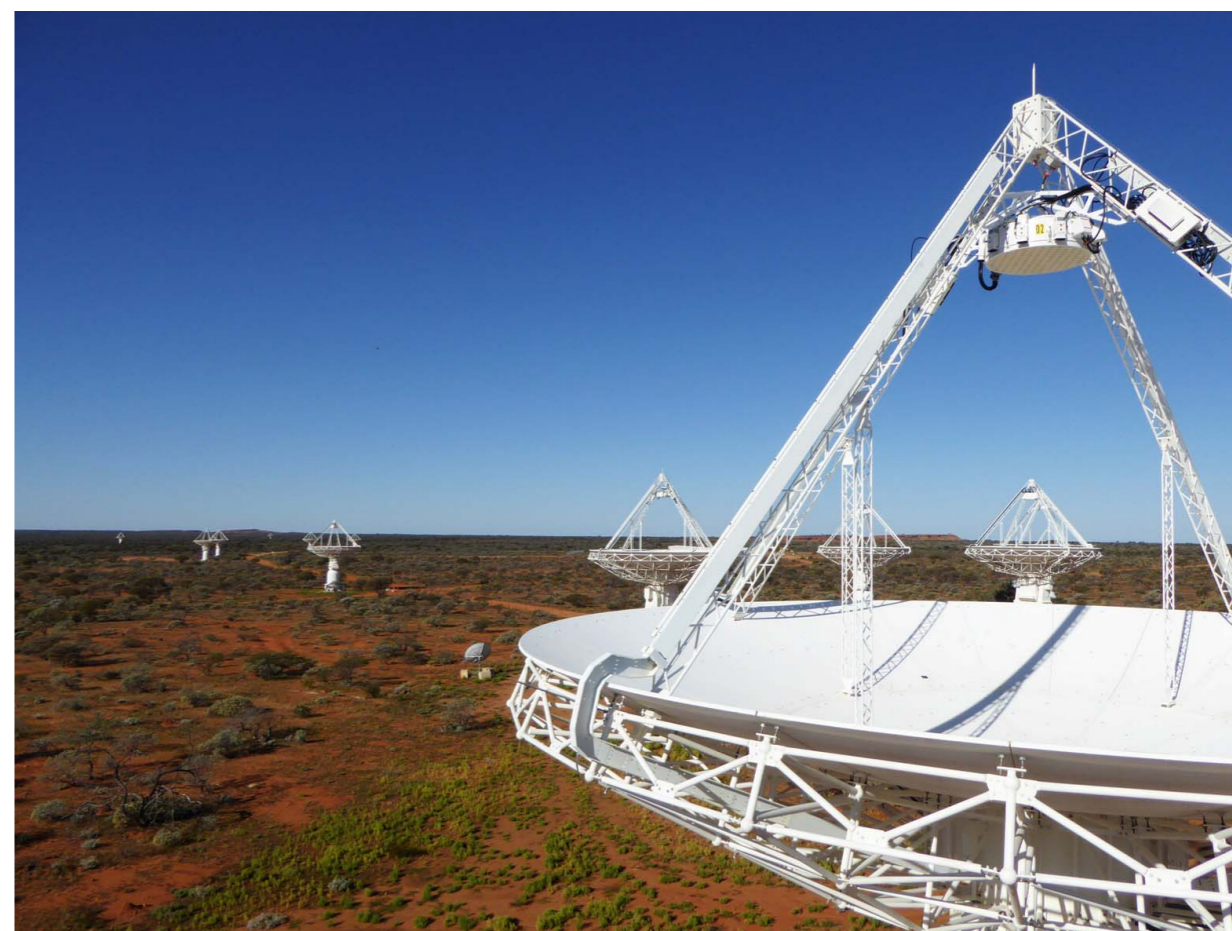
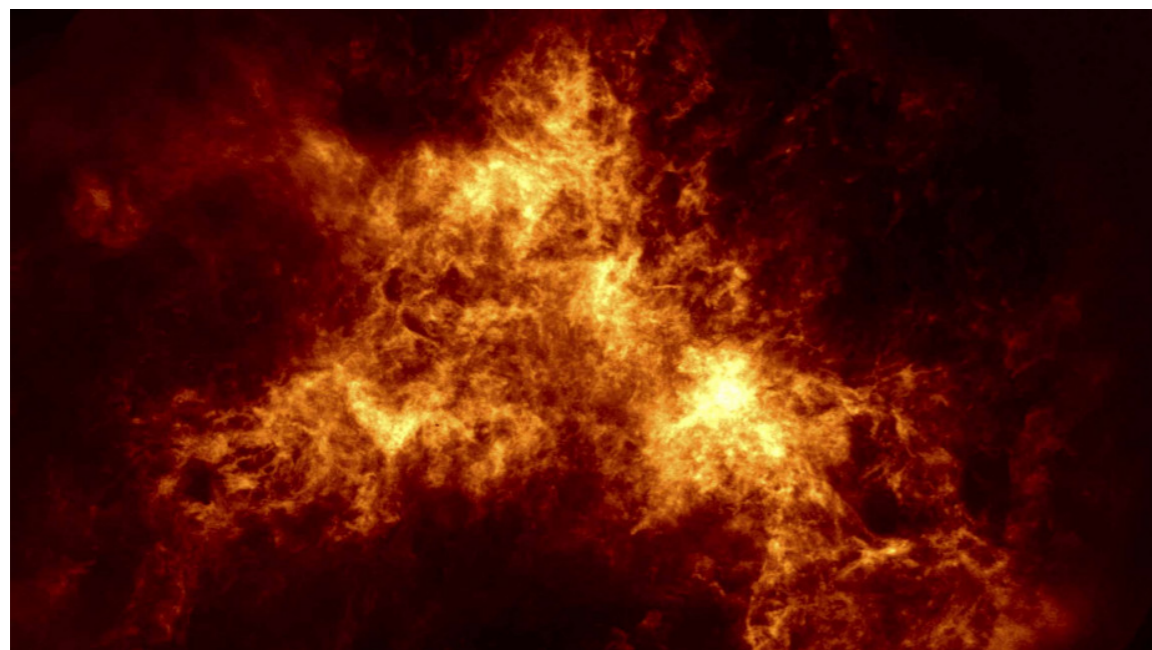
- Summary:
 - Consortium led by Australian National University
 - Specially built 1.3m telescope at SSO
 - Skymapper Southern Sky Survey
 - Digital record of the entire southern sky
 - Multi-epoch, multi-colour processed and calibrated data made available
 - Total survey 1 Pb data
 - 100 Mb data per second
 - First data release 2016



CASDA Node



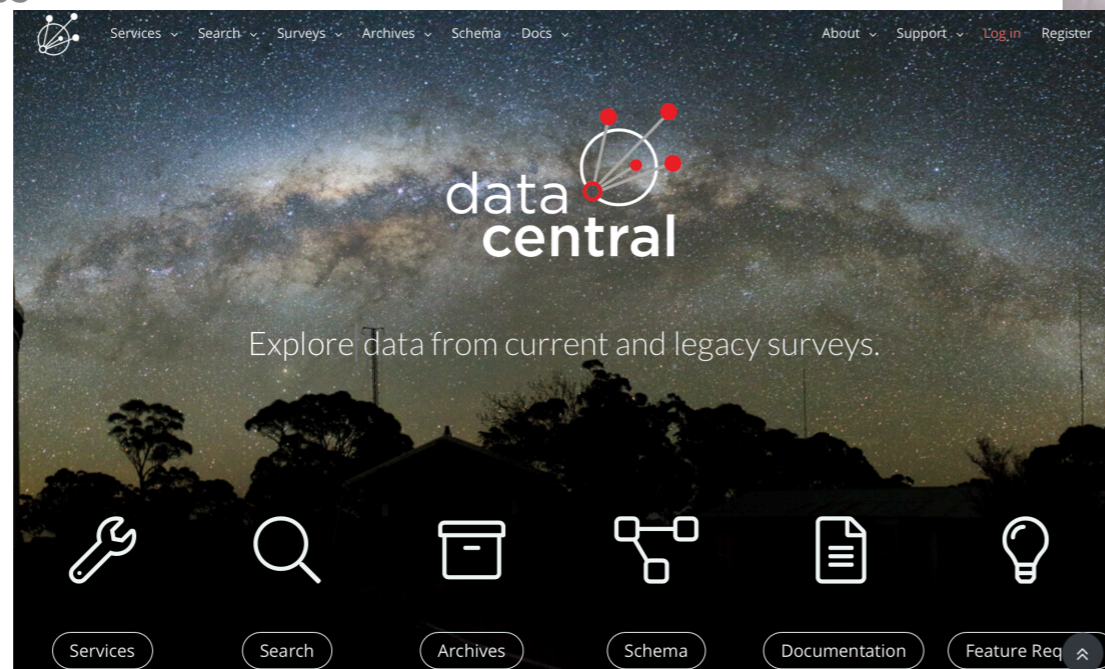
- Summary:
 - **Collaboration - CASS, CSIRO IM & T, Pawsey**
 - CSIRO ASKAP Science Data Archive
 - Data archive Australia SKA Pathfinder
 - Science ready data products
 - 5 Pb data per year (full operational mode)
 - First data release late 2015
 - 36 antenna radio telescope



Data Central Node



- Summary:
 - **AAO-MQ (previously AAO)**
 - Virtual Observatory
 - Launched 2017
 - 0.5Pb, 2020 1Pb
 - AAT legacy data archive, 40 years
 - Survey data (optical and other wavelengths)
 - UI and API access



Working as One: Challenges

- Five nodes acting as one
 - Each node has different infrastructure, requirements, user management, politics
 - Require “seamless” integration – from review of ASVO
 - Address FAIR principles (Findable, Accessible, Interoperable, Reusable)
- ▶ <https://www.and-s-nectar-rds.org.au/fair-tool>

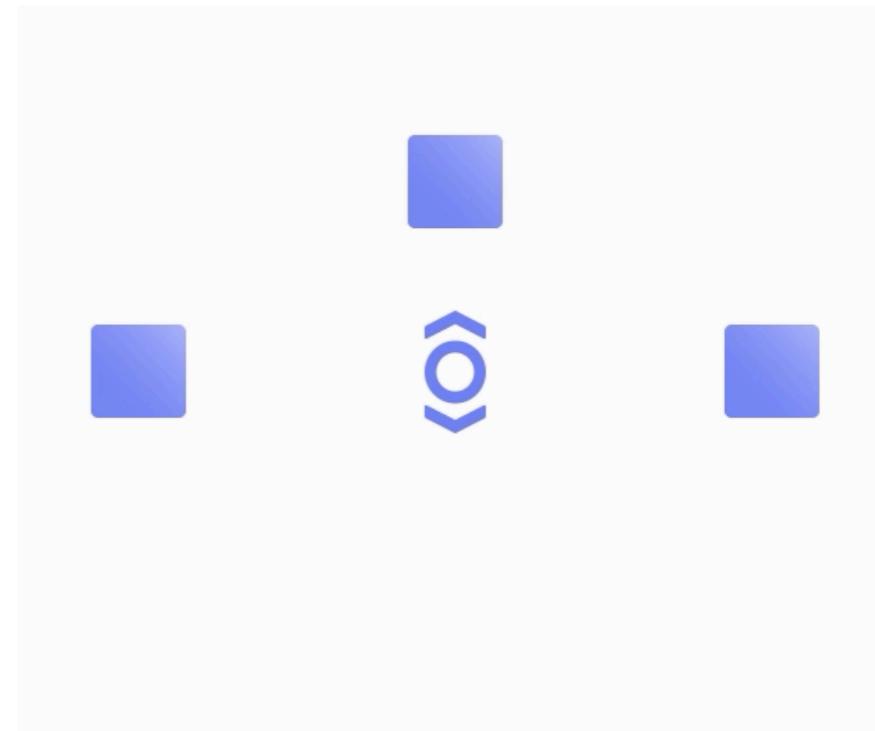


Working as One: Successes

- Trialling on-the-fly direct cross-matching between Data Central and SkyMapper
- Building shared tools
 - ▶ Spectrum viewer (SkyMapper/Data Central)
 - ▶ CASDA VO tools (CASDA/MWA)
 - ▶ pyvospace (MWA/all)
- Monthly technical meetings
- Biannual retreats
- Individual nodes are FAIR (self-reporting), can we make them FAIRer?

The Future: Unifying Access Control

- Single Sign-On using OAuth 2.0 & Open ID Connect
- Identified ORY/Hydra as lightweight Identity Provider system (<https://www.ory.sh>)
- Allows straightforward integration with your existing local IDP
- Runs in Docker
- Can we make this e.g. VO friendly?



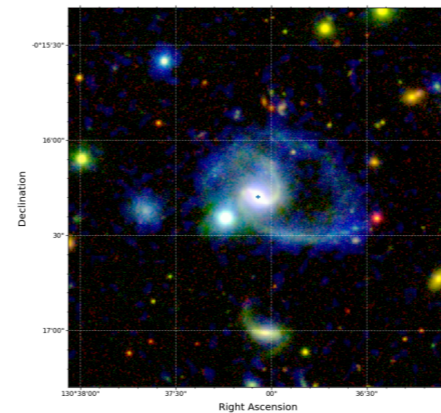
Summary

SERVICES

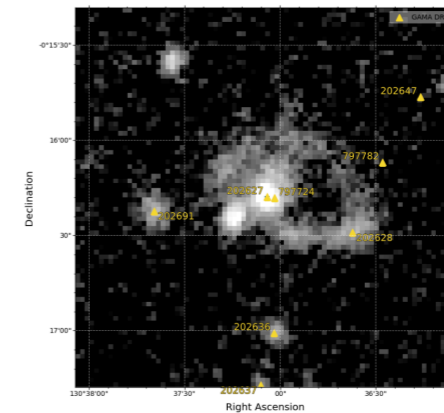
- As community we are working on a shared authorisation and authentication mechanism across the ASVO nodes
- Piloting direct querying across the nodes as well as other international astronomy data archives that use the IVOA standards

STRENGTHENING FAIR

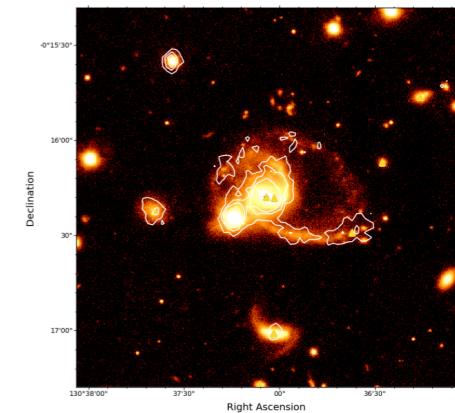
- Sharing knowledge between the nodes so that we strengthen and build our data together to be more FAIR
- Work together collaboratively
- Open data access



GAMA galaxy 202627: R: GAMA DR2 VISTA K-band, G: GAMA DR2 VST r-band, B: GAMA DR2 GALEX NUV



GAMA galaxy 202627, GAMA sources overlaid. Image: GAMA DR2 GALEX NUV (log scaling)



GAMA galaxy 202627. Image: VSTKIDS r-band (log scaling), contours: GALEX NUV (4, 8, 12)

Query
Submit a SQL/ADQL query to the Data Central database server.

New Query

Return records that match some criteria from the GAMA, SAMI and GALAH catalogues. If you are logged in, your query will be saved.

Title*

Notes

SQL/ADQL*

Reset

Schema Browser

The SQL query schema browser lets you explore catalogues in the Data Central database. It lets you look up catalogue names, column names, and column types for all the survey catalog data currently ingested in Data Central. Where available, catalogue/column meta-data will be displayed (version number, survey team member contact information, description etc). Data are organised as data_release > group > table (e.g., GAMA DR2 > InputCat > InputCatA).

Why is there a group level?
There are dozens of tables from multiple surveys/data releases in the Data Central database. Groups are used to collect scientifically-related tables together, in order to help users locate the correct table more quickly.

Click on a Data Release to get started.

Data Releases

SAMI DR1	GALAH DR1	GAMA DR2	DEVILS DR0	AAT Archive
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name: sami_dr1

Welcome to Document Central.
Liz Manning

82 Pages, 44 Images, 0 Documents

YOUR MOST RECENT EDITS

TITLE	DATE
Query Service Examples	5 hours, 26 minutes ago
Ingestion Requirements	1 month, 1 week ago
Catalogues	1 month, 1 week ago
Policies	1 month, 1 week ago
Editing content with Document Central	2 months ago

data central Services Data Archives Schema Docs V1

GALAH Data Release 2 Changelog

Data Release 2.1 (2018-05-09)

New Features

The `gala_dr2_id` column has now been populated with `Golr DR2 source_id`. As the input catalogue for GALAH DR2 is 2MASS, for cross matching we have used the `2mass_best_neighbour` table created by Golr.

Bug Fixes

There was a bug related to how the gravitational redshift correction that was applied to the `rv_obs`, `rv_obs_err`, `rv_obs_err_low` columns. The size of the effect is between -0.7 km/s and 0.1 km/s for `rv_obs`. Note that this bug did not affect the `rv_obs_err` columns. See the [Table Schema](#) for a description of these columns.