

Linking the Illawarra Data Repository to AURIN

Tim Davies

eResearch Australasia 2022



UNIVERSITY
OF WOLLONGONG
AUSTRALIA



Acknowledgement of Country

We acknowledge that Country for Aboriginal peoples is an interconnected set of ancient and sophisticated relationships.

The University of Wollongong spreads across many interrelated Aboriginal Countries that are bound by this sacred landscape, and intimate relationship with that landscape since creation.

From Sydney to the Southern Highlands, to the South Coast. From fresh water to bitter water to salt. From City to Urban to Rural.

The University Acknowledges the devastating impact of colonisation on our campuses' footprint and commit ourselves to truth-telling, healing and education.



Linking the Illawarra Data Repository to AURIN

TODAY'S PRESENTATION

- Who is AURIN?
- Who is SMART Infrastructure Facility?
- What is this project?
- What's great about projects like this!
- SMART Projects and our data.
- Technical Stuff.
- Beyond the life of this project.





AUSTRALIAN URBAN RESEARCH INFRASTRUCTURE NETWORK

- AURIN provides eResearch capabilities to the academic, government and private sectors.
- AURIN'S stakeholders are researchers, government, not-for-profits and industry.
- They provide access to analytical and mapping tools, as well as thousands of multidisciplinary, clean, spatialised and research ready datasets.
- Enables high-value research that investigates the most urgent and critical problems faced by Australia's cities and regions.
- This research positively impacts the lives and environments of Australians, both now and into the future.
- High Impact Projects.



SMART Infrastructure Facility

UNIVERSITY OF WOLLONGONG

- Modern research facility at the University of Wollongong
- Connect Research, Industry and Policy makers
- Research strengths across a range of fields
- Commercial Research
- Telstra AIOT Hub

smart
infrastructure facility



UNIVERSITY
OF WOLLONGONG
AUSTRALIA



What is this project?

- The project will develop a metadata and data management system, that will then be harvested by AURIN
- The project highlights the benefits of relationships that local research institutions can and do have with local data providers.
- The Illawarra Data Repository (IDR) is a collection of data sets that SMART researchers have collected, curated, and created since its inception in 2013.
- It is a regional, integrated data repository from the local Illawarra region that has a focus on electricity and water consumption, residential solid waste, demographics, transport, and various Internet of Things sensor data.

The screenshot shows the PetaJakarta.org website. At the top, there is a header with the PetaJakarta.org logo, a search bar, a map button, and links for 'Sign in' and 'English'. Below the header is a large search bar with the placeholder text 'Search ...' and a magnifying glass icon. Underneath the search bar, it says 'Search 7 data sets, services and maps, ...'. The main content area is divided into two sections: 'Browse by Topics' and 'Browse resources'. The 'Browse by Topics' section features three topic buttons: 'Inland waters' (with a water drop icon and a count of 2), 'Transportation' (with a truck icon and a count of 1), and 'Society' (with a speech bubble icon and a count of 2). The 'Browse resources' section features three resource buttons: 'Dataset' (with a database icon and a count of 6), 'Service' (with a cloud icon and a count of 1), and 'service-OGC:WFS' (with a calendar icon and a count of 1). At the bottom of the page, there is a navigation bar with three tabs: 'Latest news', 'Most popular', and 'Comments'. Below the navigation bar are three featured content blocks: 'PetaJakarta.org Major Open ...' (showing a map), 'PetaJakarta.org' (showing a silhouette of a person using a smartphone), and 'Vision Illawarra' (showing the 'VISION ILLAWARRA' logo and a lighthouse icon).

What's great about projects like this

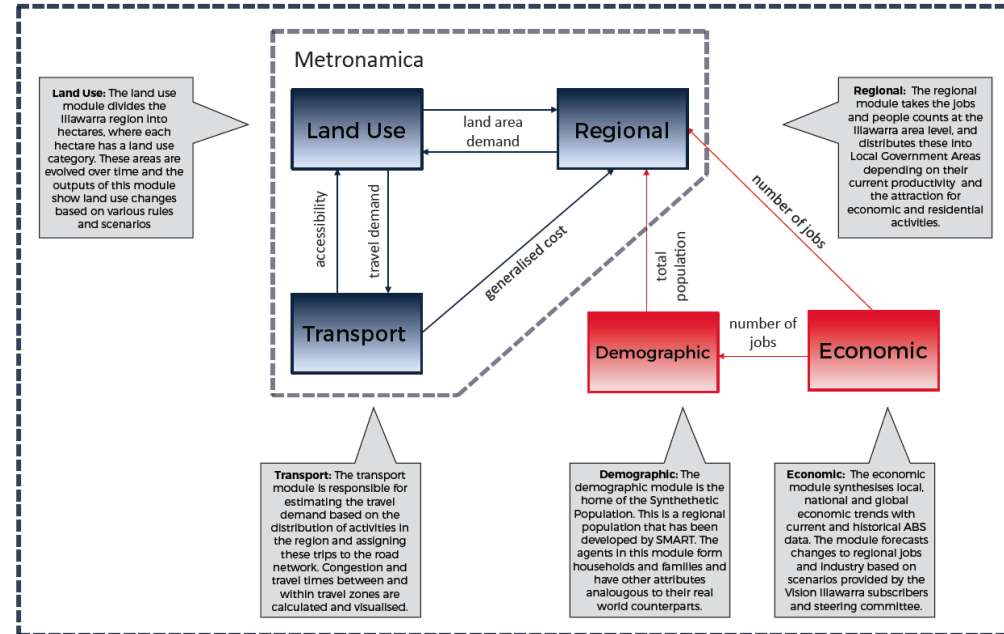
- Provides access to research data
- Prioritises data management and discovery
- Unlocks data that was hidden
- Benefits all the researchers at SMART, not just particular projects.



Research and Data

- Vision Illawarra
 - Publicly available local Dashboards
 - Strong relationships with local data providers
 - Modelling using Geonamica
 - Five interlinked modules
 - Forecasts 20 years into the future using scenarios advised from an advisory group

VISION ILLAWARRA

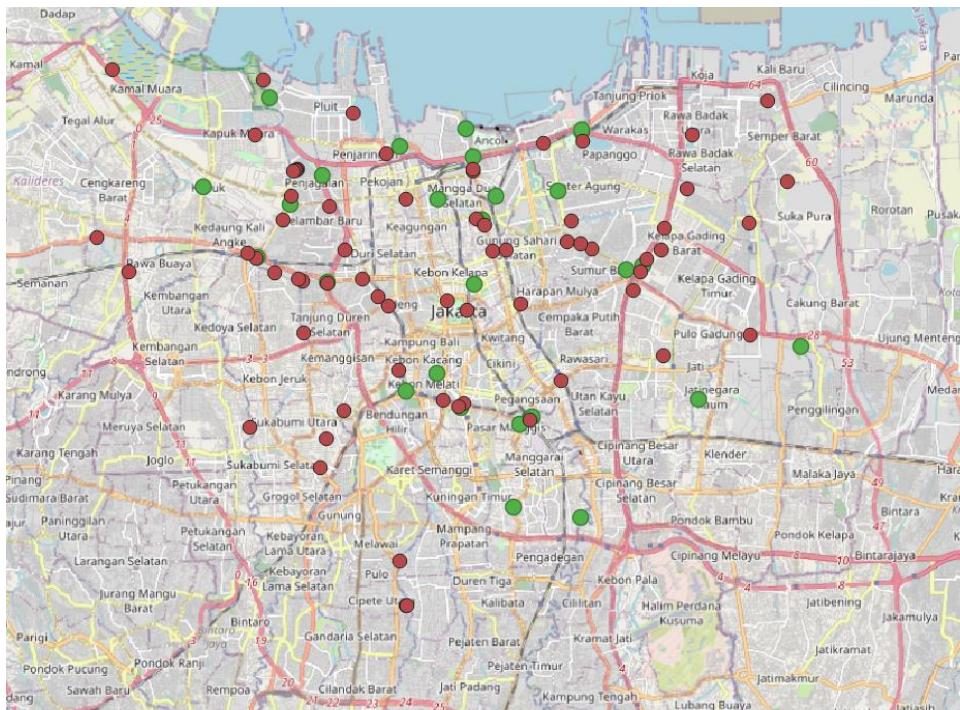


- SMART Air

- Real-time
- Air quality
- Pedestrian and Traffic count

























- Peta Jakarta

- High Impact Project
- Rivers, pumps and floodgates



Technical Stuff

- 3 VM's 2 cores 8GB RAM Ubuntu
 - Postgres database system + postgis
 - Geoserver
 - Geonetwork
- Geoserver – Harvests from our database. Turns our spatial data from the database into maps. First layer of Metadata
- Geonetwork– Harvests records from Geoserver.
- Metadata Standards - ISO19139
- Non spatial records – Dublin Core

Table Name	Object ID	Owner	Tablespace	Row Count Estimate
 metronamica_transport_...	16,816	postgres	pg_default	120,666,040
 synthetic_population	16,977	postgres	pg_default	69,298,920
 metronamica_transport_...	16,811	postgres	pg_default	33,105,540
 metronamica_transport_...	16,796	postgres	pg_default	33,030,700
 metronamica_transport_...	16,801	postgres	pg_default	24,440,880
 geonamica_transport_tri...	16,684	postgres	pg_default	24,438,616
 road_network_congestio...	16,909	postgres	pg_default	4,221,333
 transport_od_matrix_sa2	17,011	postgres	pg_default	3,554,613
 metronamica_transport_...	16,786	postgres	pg_default	3,035,700
 road_network_congestion	16,906	postgres	pg_default	1,582,971
 economy_industry_sector	16,639	postgres	pg_default	820,989
 economy_employment_i...	16,614	postgres	pg_default	794,880
 economy_income	16,629	postgres	pg_default	779,968
 utility_solid_waste	17,158	postgres	pg_default	653,079
 illawarra_addresses	16,700	postgres	pg_default	462,552
 utility_service_sa1	17,133	postgres	pg_default	337,712
 economy_work_status	16,644	postgres	pg_default	320,328
 people_age_gender	16,841	postgres	pg_default	187,680
 utility_electricity	17,058	postgres	pg_default	160,206
 abs_mesh_block_2016	16,428	postgres	pg_default	109,880
 landuse_dwelling_structu...	16,720	postgres	pg_default	104,865
 people_birthplace	16,846	postgres	pg_default	79,488
 calendar	16,471	postgres	pg_default	73,049
 people_language_at_ho...	16,866	postgres	pg_default	68,448

Beyond the life of the project

- How do we keep it running?
 - Dedicated IT support from UOW
 - One year developer support after the end date of the project.
- New Data
 - Training an AI model to detect contamination. Many thousands of images.
 - Sensors out in the Illawarra used to detect flooding. Rain gauges, covert monitoring.
 - Local energy use.
- Promotion
 - UOW Research Data Storage and Management group.
 - Other research groups can be involved and use the tools
 - Work with the Library to provide extras like DOI's.



U

Thanks
Questions?
Connect on LinkedIn

O



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

W