

# Diversity in Data, Tools, Users, and Impacts: the AURIN Journey

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The Australian Urban Research Infrastructure Network (AURIN) is the single largest e-Research resource for finding and accessing data and analytical tools related to the study of and planning for, Australia's urban and regional centres. The growth of AURIN has been characterized by rapid diversification across several core elements of this NCRIS-funded project. This presentation will describe and explore some of the emergent themes related to AURIN's diversification, and importantly, highlight some of the key lessons learned along the way, and future challenges that AURIN will face.

## **A BRIEF HISTORY OF AURIN**

Established in 2010, AURIN's primary objective was to support transparent, rigorous, evidence-based decision making and policy development relating to the sustainable and productive development of Australia's towns, cities and communities. The project delivered on this objective by building and deploying bespoke eResearch infrastructure connecting the government and academic sectors with spatial data and spatial analytical and visualization tools, and a comprehensive training and outreach program to embed the infrastructure successfully in those sectors. The result of this growth and deployment has seen – in some instances - entirely unanticipated diversification in data access, analytical tools, user profiles, and research and policy impacts.

## **DIVERSITY OF DATA**

AURIN now provides access to over 5000 harmonised, spatialised, authoritative datasets covering all aspects of Australia's human settlements. These datasets touch on standard urban research domains such as land use, transport, health, education, housing, demographic and socio-economic characteristics. More recently, demand has grown for datasets related to industry, economy, crime, energy and water consumption, and sustainability, as well as more niche datasets related to oil vulnerability, adaptive capacity, community resilience, urban food landscapes, and access to crisis services. This diversification in data subject matter is aligned with a concomitant diversification of licensing frameworks, incorporating Creative Commons in most instances, alongside custodian-specific licensing conditions, with the goal of making as much data as possible "F.A.I.R.-ly" available, for as many end-users as possible. This model of tailoring licensing and access frameworks to data custodians' intellectual property or business needs (especially where the Creative Commons framework is not appropriate) has resulted in an increasing brand identity for the AURIN platform - as a safe, secure and reliable means to publish previously siloed or commercially sensitive for re-use by the research, planning and policy sectors. The corollary of this shift is the diversification of our data custodian base; over 110 organisations now provide datasets of varying scope, depth and breadth for inclusion in geospatial eResearch agendas. These organisations include private industry, local government, state government, federal government, NFP/NGO and academic sectors, and range in size from the Australian Bureau of Statistics to the Australian City Farms and Community Gardens Network.

## **DIVERSITY OF TOOLS**

Providing eResearch infrastructure which delivers value to a broad church of users has been a considerable challenge. Consider for example the research needs, experience, methodologies, time-constraints of a mid-career academic urban researcher, and those of an early career Local Government urban planner. Both should nonetheless stand to gain from the AURIN project whose primary objective is to enable evidence-based decision making around human settlements. As a result, in addition to an increasingly diverse data landscape, AURIN has deployed an equally diverse ecosystem of analytical tools and workflows to meet the needs of this broad user base. This includes the multi-platform approach for the delivery of data on the AURIN workbench - incorporating the AURIN Map, AURIN APIs and flagship AURIN Portal – as well the suite of tools within the AURIN Portal. These tools range from basic visualization and mapping, to complex spatial statistical workflows, as well as bespoke analytical routines, such as the Walkability tools. This diversity of analytical power and complexity – coupled with a comprehensive training and outreach program – ensure that AURIN remains a high value resource for users from most sectors and capabilities.

## **DIVERSITY OF USERS**

The broadening of AURIN's value proposition – the data and the tools – coupled with a relatively painless onboarding process, has encouraged an attendant growth and diversification of the types of end users gaining utility and insights from the project. The majority of the user base remains in the academic sector, with approximately 85% of AURIN's users working or studying at an Australian University. Nonetheless, user growth in the government sector in 2019 has exceeded the growth of the previous three years combined, with much of this user base diversification occurring in regional local government organisations eager to deploy AURIN's data and analytical power outside of the major metropolitan regions. In the academic sector, we have observed growth of users in areas that were entirely unexpected. Currently, the majority of AURIN's users are undergraduate students, rather than postgraduate or staff. This has resulted from the widespread adoption of AURIN as an integral teaching resource for a large number of courses where it is imperative that students understand the concept of "place" in their disciplines, without the onerous task of having to spend a semester learning how to operate a complex desktop GIS. AURIN is now a core component of undergraduate and Masters courses in planning, health, transport, and geography at major universities in Sydney, Melbourne, Perth, Hobart and Canberra. More fundamentally, we have expanded our core sector base to include not just the Academic and Government sectors. We have now welcomed the Not for Profit/Non-Governmental Organisations into the fold, allowing full and free access to the AURIN workbench to this sector, to ensure that the benefits of the project are distributed as widely and as equitably as possible.

## **DIVERSITY OF IMPACTS**

The inevitable endpoint of the diversification of in AURIN's data, tools users is a proliferation in the real-world impacts of the project, within research, planning and policy making. Research empowered by AURIN has emerged across all domains related to human settlements across the country. These include impacts in traditional domains such as health, where AURIN has enabled improved understanding of national Hepatitis B and C infection and treatment patterns, to neighbourhood-scale analyses of walking behavior in school children. It has also enabled an analysis of the impact of transport-oriented developments on neighbouring property values, to detecting the impact of methane leaks on metropolitan scale housing markets; and transport research investigating pedestrian-vehicle crashes. In parallel to this

has been the adoption of AURIN in domains entirely unexpected at the inception of the project: How do we use cellular networks to improve the navigation of UAVs in cities? Can we explain why male and female same-sex couples choose to live in different places? How have the changes to the live music scene played out in geographic space? How do we determine the soft power of cultural institutions like museums? It is these unexpected outcomes which highlight the increasing impact and value of AURIN across disciplines and research methodologies, to understand changing patterns in human behavior and corresponding changes in demand for infrastructure and services, across our suburbs and towns.