

Enabling Communities to integrate Earth, Space and Environmental Data - Australian Location Index

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Abstract

Location can be described and used to spatially integrate and enable data in a number of different ways. In 2018, the Location Index (LOC-I) project was initiated to bring together a number of government agencies aiming to build a framework to support critical government decision making and to contribute significantly to economic, social and environmental sustainability by linking foundation spatial data with observational data and providing a consistent way for seamless integration of data on people, business, and the environment. This GIS without GIS framework brings together modern technological approaches of Linked Data and Discrete Global Grid Systems (DGGS) as well as important aspects of Social Architecture to ensure relevance, transparency, openness and accessibility of multidisciplinary data for the Australian Government and non-government users. Using this approach, the Loc-I program aims to open a substantial opportunity to all stakeholders by providing a richer set of information to deliver better citizen-centric services, more efficient programs and improved policy advice. Through disseminating new capabilities across Commonwealth agencies, Loc-I objective is to provide users with: stable, persistent and repeatable access to the data increased interoperability with other datasets enhanced information sharing and a greater number of users and re-uses of the data reduced complexity in using of the data standardised governance of data and information and transparency in data management improved efficiency by reduced cost and time in collection, management and delivery governed and managed federated supply chains The Loc-I is looking at extending collaboration by introducing new use cases. A case study was developed to integrate satellite raster data (big data) with vector attribute data (little data). Using Digital Earth Australia Water Observations from Space (WOfS) and Australia Surface hydrology datasets, Geoscience Australia tested how to assign named waterbodies to WOfS giving attribution context to raster information through DGGS.

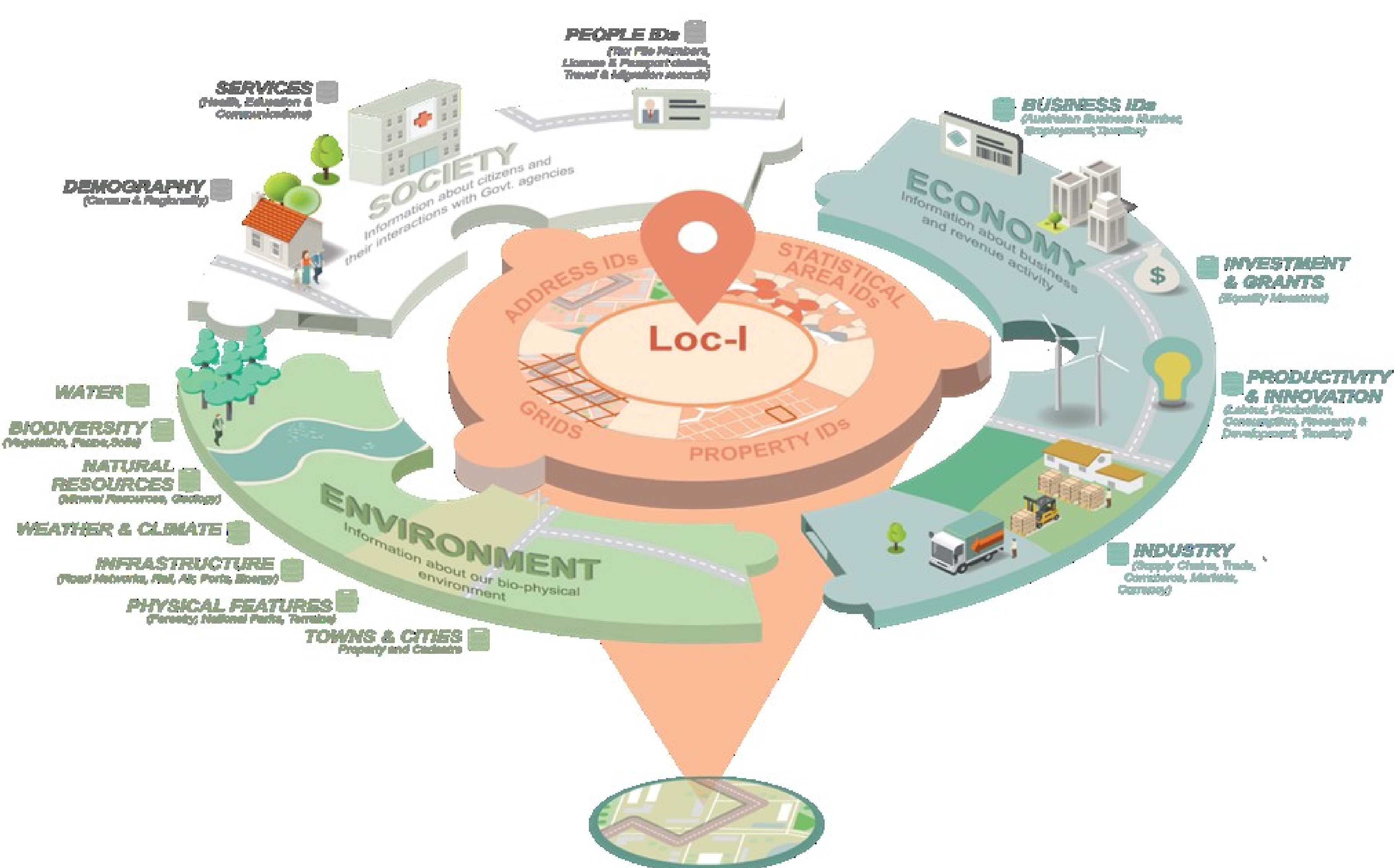
Building New Capabilities for Integrating Data on Earth, Space and Environment – Location Index Project



Everything happens at a place or location

In 2018, the Location Index (LOC-I) project was initiated as part of the Data Integration Partnership for Australia (DIPA) program aiming to build a framework that:

- supports critical government decision making;
- contributes significantly to economic, social and environmental sustainability
- integrates data on people, business, and the environment

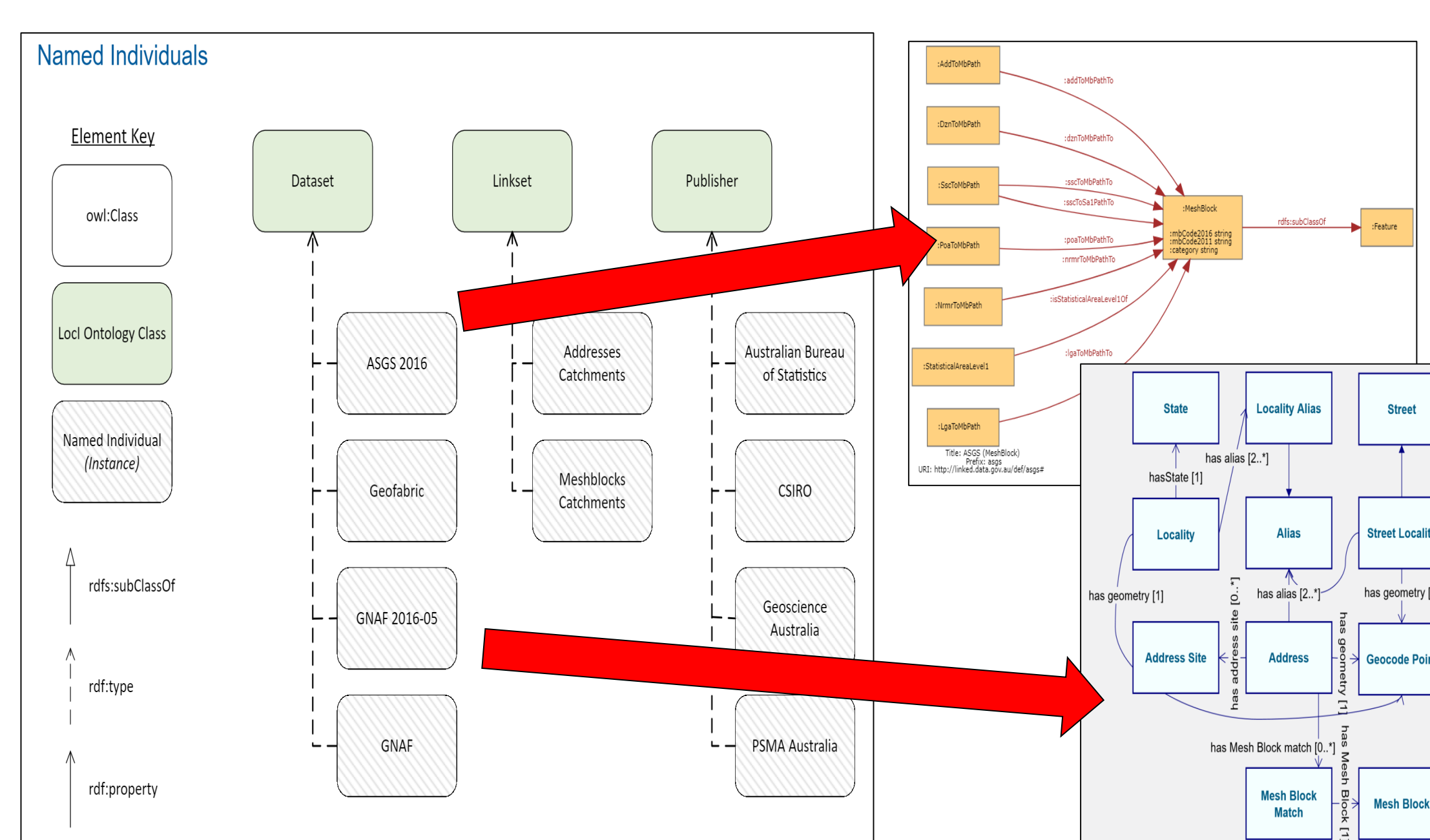


Building GIS without GIS

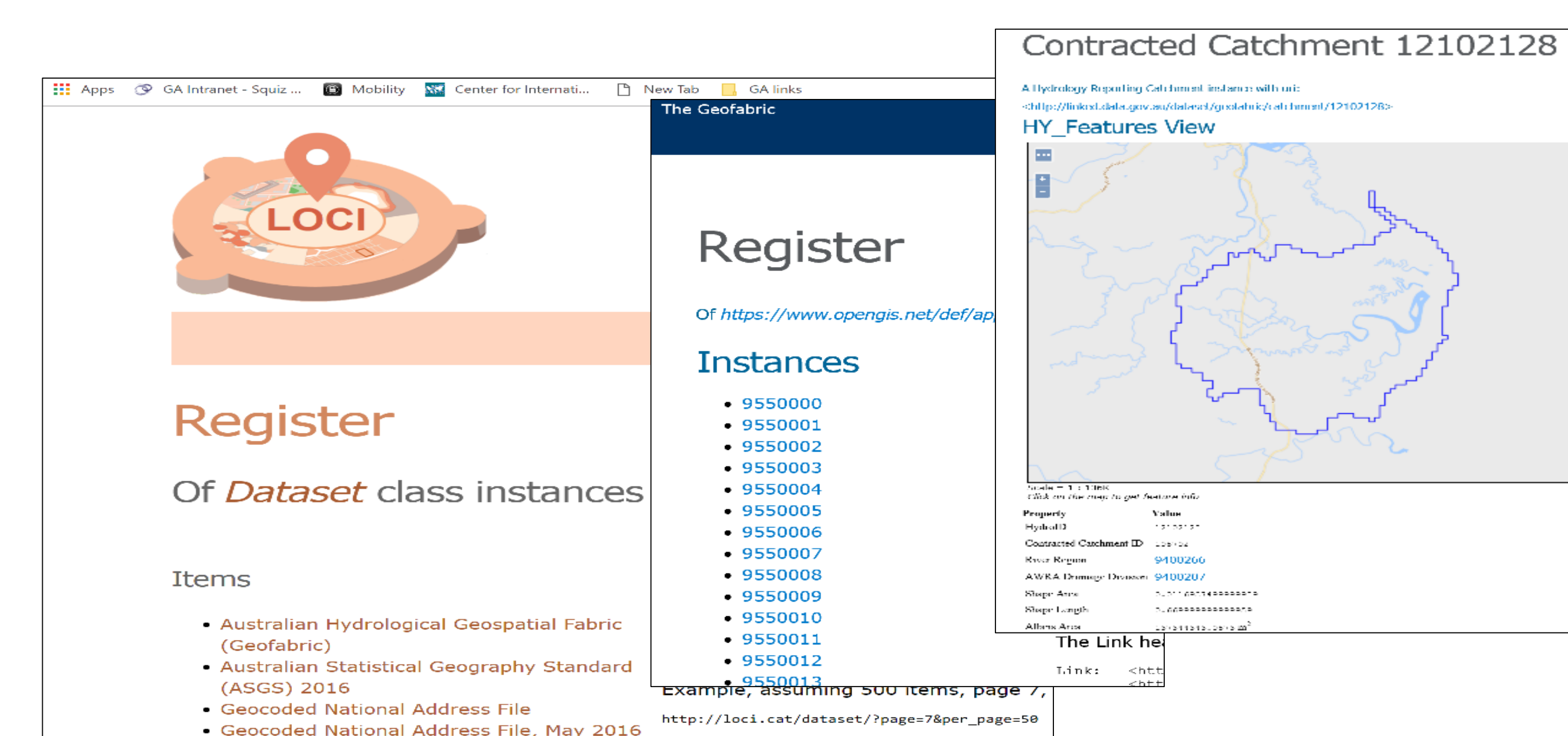
Semantic Integration of Linked Data

This GIS without GIS framework brings together modern technological approaches of Linked Data and Discrete Global Grid Systems (DGGS). The project also addresses important aspects of Social Architecture to ensure relevance, transparency, openness and accessibility of multidisciplinary data for the Australian Government and non-government users.

Relationships: ontologies & cross-walks



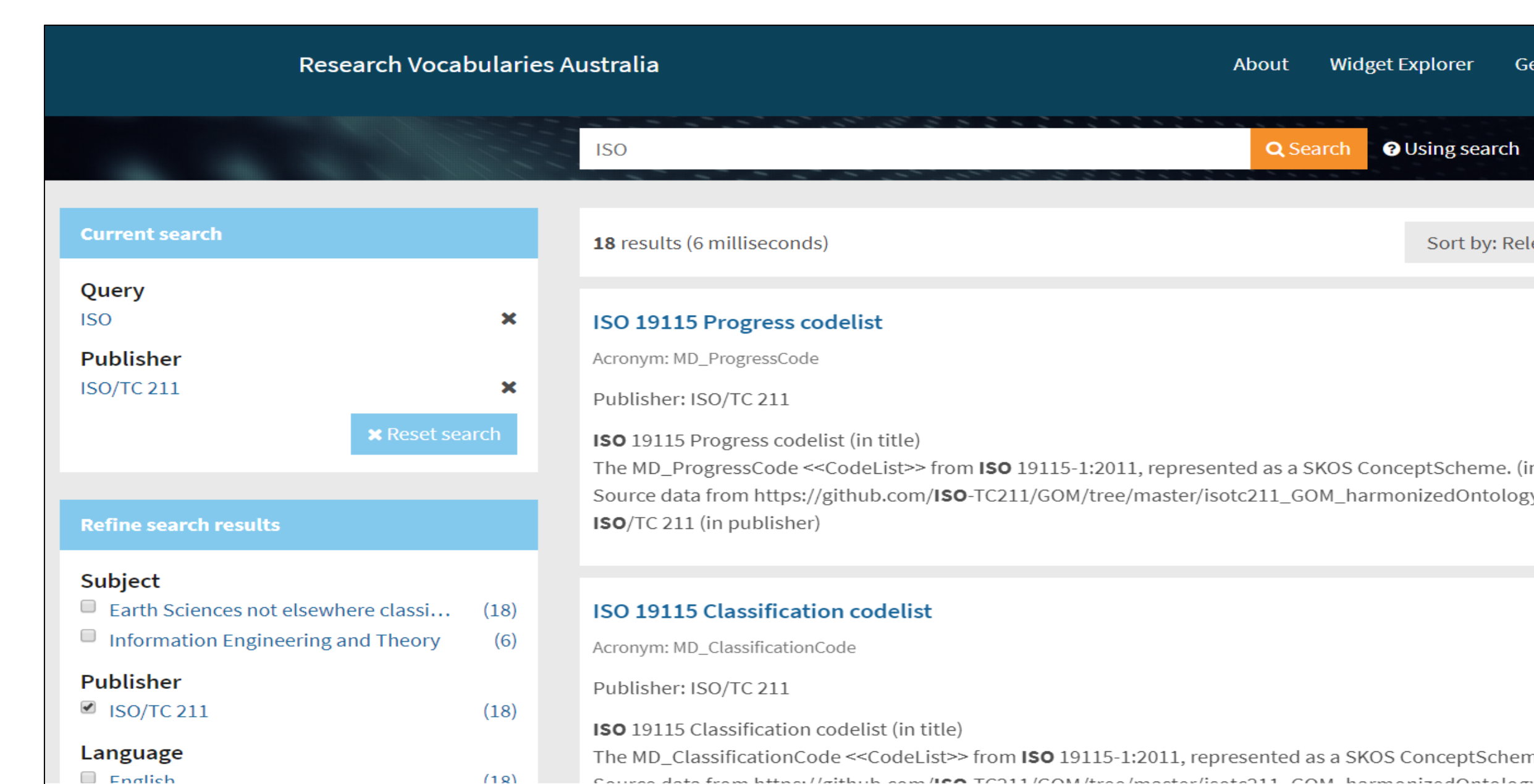
Access points: metadata based registries & landing pages



Pre-calculated indexes

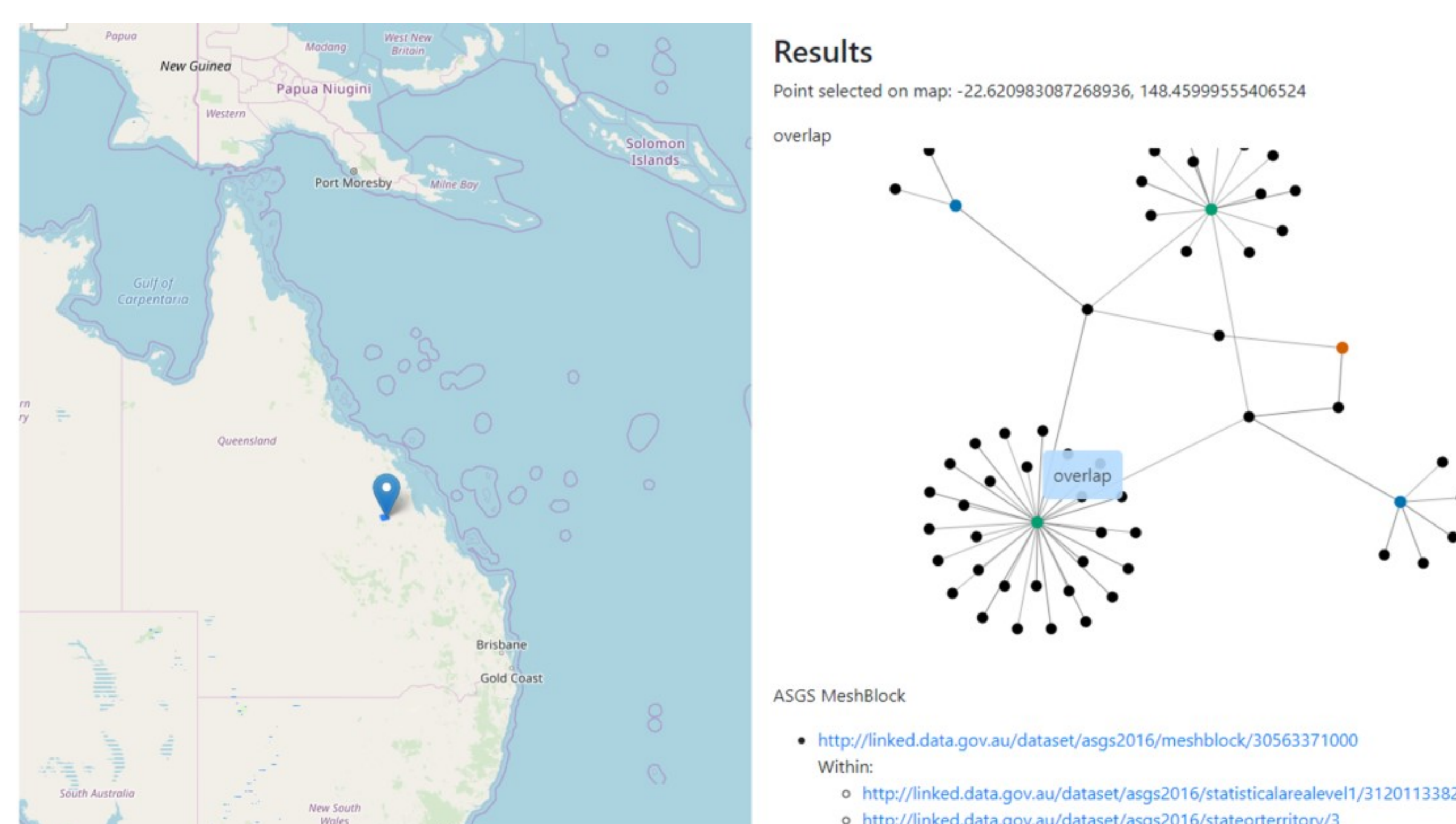
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Integration: common classification & tags

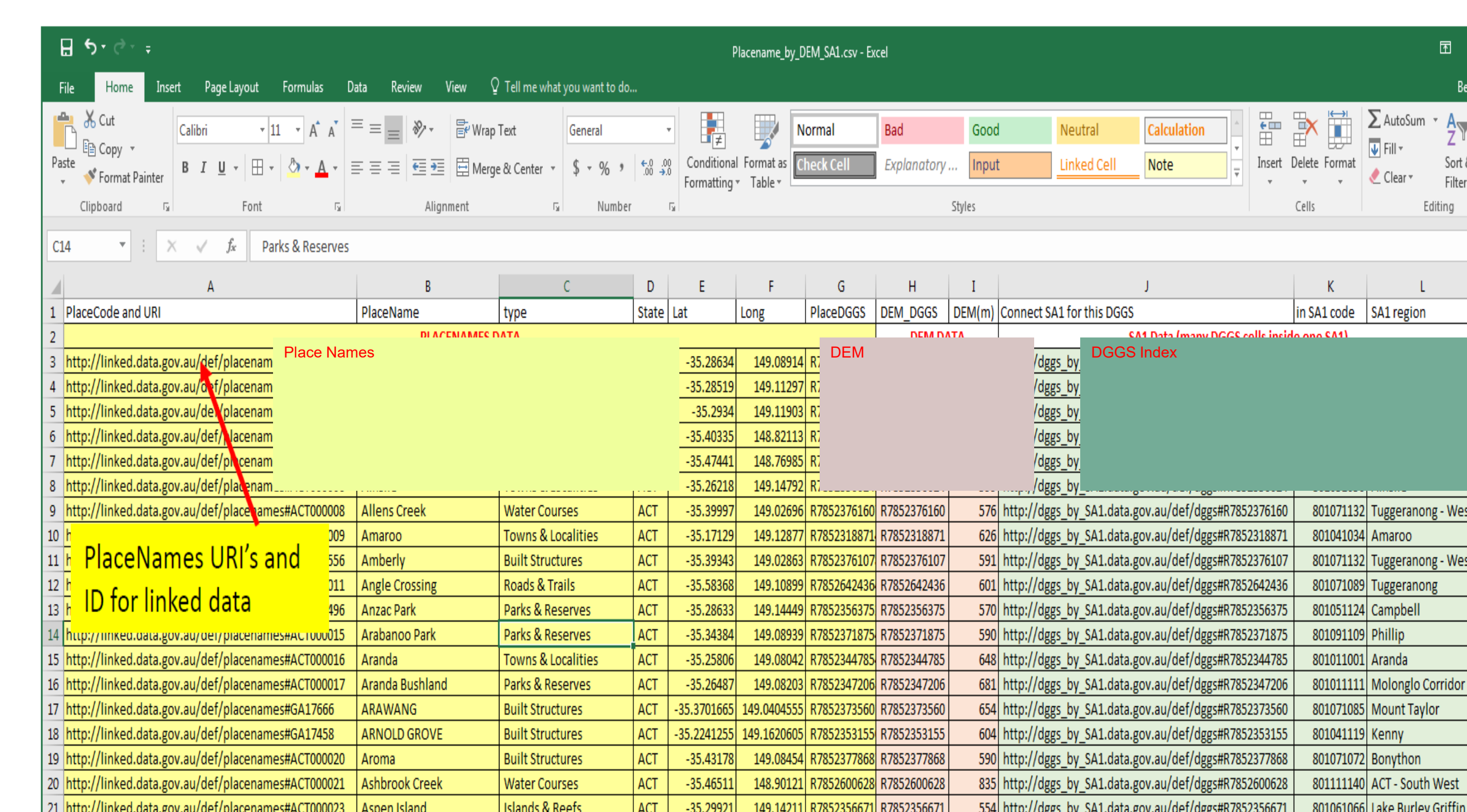


Capability to query across datasets – implementation examples

Linking through machine readable formats



Joining through Spatial Indexing



The Loc-I Objectives:

- stable, persistent and repeatable access to data
- standardised governance and transparency in data management
- increased interoperability
- enhanced information sharing
- reduced complexity and improve efficiency
- governed and managed federated supply chains

