AGLDWG AGM 2022 Project Presentations

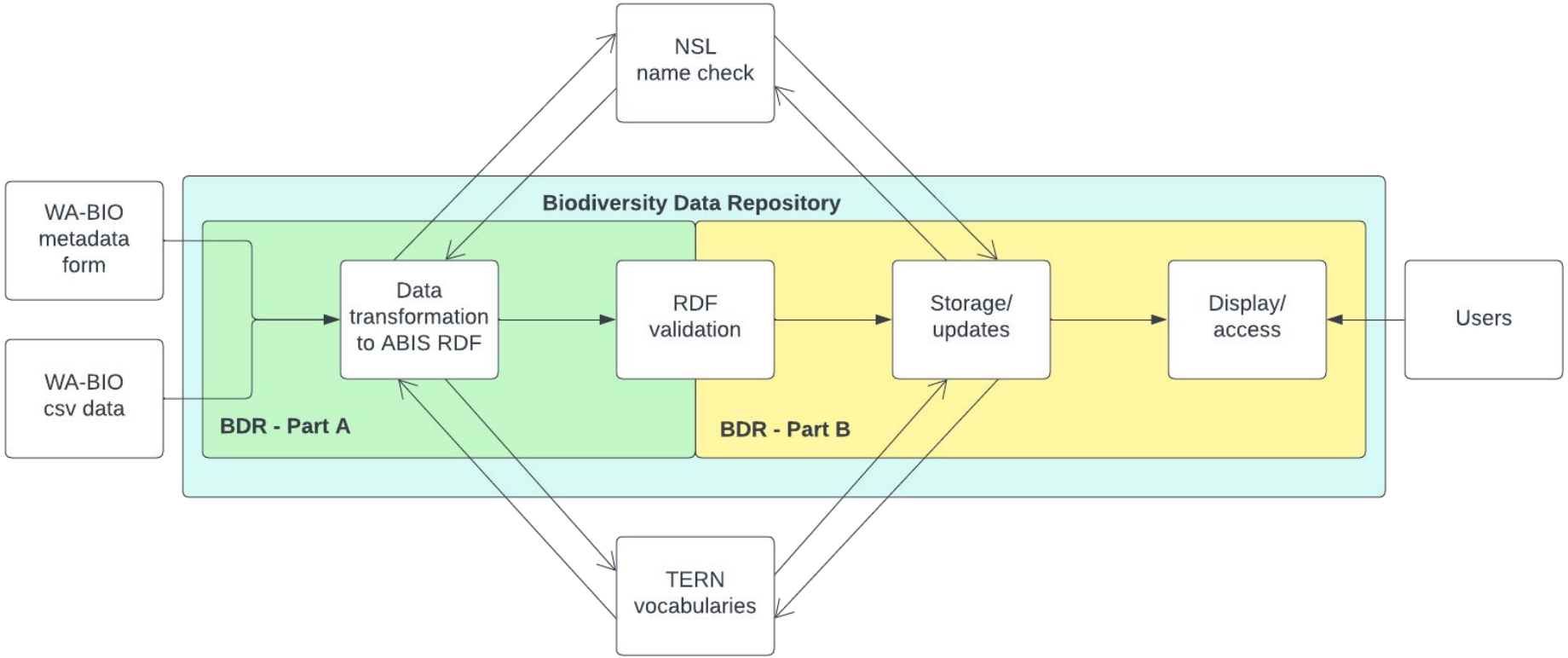
By multiple AGLDWG members

Presentations Index

1. Biodiversity Data Repository - Mieke Strong, Gaia Resources
2. RDF* Student Project at ANU - Nicholas Car, ANU, for Xuguang Song (student)
3. ARDC & vocabularies - Rowan Brownlee, ARDC
4. Indigenous Data Network Semantic Catalog - Sandra Silcot, Indigenous Data Network
5. Finance Knowledge Graph - John Machin, Dept. Finance
6. ASGS Edition 3 – Web Linked Data - Jarrod Lange
7. ANZ National Address Moel Candidate - Nicholas Car, Kurrawong AI
8. Geoscience Australia Report - Irina Bastrakova, GA
9. Linked Data Projects at TERN - Edmond Chuc, TERN
10. FutureSOILS Project - Sergio rodriguez-Mendes, ANU

Biodiversity Data Repository

Mieke Strong
Gaia Resources



“RDF-star extends RDF with a convenient way to make statements about other statements.”

– RDF-Star and SPARQL-Star,
https://w3c.github.io/rdf-star/cg-spec

RDF*

(RDF-Star)

By Nicholas Car
for Xuguang Song

RDF-Star is a “community specification” but the W3C has just started calling for WG participants

```
PREFIX :     <http://www.example.org/>

:employee38 :familyName "Smith" .

<< :employee38 :jobTitle "Assistant Designer" >>
     :accordingTo :employee22 .
```

- employee38 has a familyName of "Smith" – *asserted*
- employee38 has a jobTitle of 'Assistant Designer' – *quoted*

Student Project

Xuguang Song @ ANU is working in 2022 on:

- Turtle-Star parser (→ reified RDF) implemented in RDFLib
- Turtle-Star serializer current focus of work
- Previous ANU student work has investigated aspects of RDF-Star
  RDFLib has had previous attempts at RDF-Star implementations

ARDC & vocabularies

AGLDWG AGM 2022

04 August 22

PRESENTED BY

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ARDC & vocabularies, 2022

- ADA, ARDC & CODATA: Vocabularies forum & workshop - Nov 2022, ANU & online
- Vocabulary service roadmap update
- Service extension for health & medical
- IRISS project & ABS classifications
- NEESFF guide to earth science vocabularies

Subscribe to the **ARDC CONNECT** newsletter

THANK YOU

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Australian-Research-Data-Commons

Indigenous Data Network Semantic Catalog

- IDN's IIRC project one of four in ARDC Funded HASS-I Commons (LDACA, ADA, NLA-Trove)
- IDN part of Uni of Melbourne - Dr Marcia Langton and many partners
- Focus on "Indigenous Data Capability" - many meanings
- 3 streams: Social (Governance), Technical(Catalog), Data Assets (Case studies)
- Establishing a "supermodel", a specifically "indigenous" view of:
  - Organisations (Indigenous, Government, Research, GLAM, Other)
  - Resources (Datasets mainly, but many things relevant to "capability")
  - Dimensionality: for example: place/geospatial (LOC-I interoperability), temporal (longitudinal collections), thematics, "indigeneity"
- Vocabularies and semantic relationships linking people/resources in order to operationalise CARE and FAIR principles
- Useful tooling and services designed to benefit, empower & facilitate Indigenous agendas:
  - self-assessments and assessments at scale of CARE and FAIR;
  - ODRL to operationalise Indigenous Data Governance and Sovereignty
  - Indigenous Data Catalog and Knowledge Graph - many contributors, many views
- Highly distributed and fragmented landscape
- This project is about prototyping, possibilities and proofs of concept – aim to evolve over long term a federated "ecosystem" (NOT trying to be an Indigenous Library of Congress!).
- Many shared challenges with HASS (long tail of research data; preservation a huge issue)
- For more info: https://idnau.org/ and https://github.com/idn-au/

Sandra Silcot, IIRC Tech Lead, IDN. 4th Aug 2022, for AGLDWG.

Australian Government
Department of Finance

Finance Knowledge Graph

structure.gov.au

Added 2022-23 Budget information… *then removed it*

Updated to reflect new Administrative Arrangements

Ready for the upcoming Budget!

What's next? What do you think?

Some options for the next service include:

1. Further improvement and addition to structure.gov.au (new views, new data?)
2. Persistent IDs for bodies, outcomes, and what else?
3. Keyword look-up and linking of governance terms in legislation, regulation, Budget documents, Performance documents

Appropriation subtype	2021-22	
	Estimated Actual	Budget Estimate
Special Accounts	1,000,000.00	1,000,000.00
	0.00	0.00
Non-operating	0.00	0.00
Operating	4,037,819,000.00	4,037,819,000.00
Special Appropriation	328,845,000.00	328,845,000.00
Subtotal	**4,366,664,000.00**	**4,366,664,000.00**
External Revenue	132,632,000.00	132,632,000.00
Non-operating	0.00	0.00
Operating	1,179,450,000.00	1,175,544,000.00
Special Appropriation	0.00	0.00
Subtotal	**1,312,082,000.00**	**1,308,176,000.00**
Total	**5,679,746,000.00**	**5,675,840,000.00**

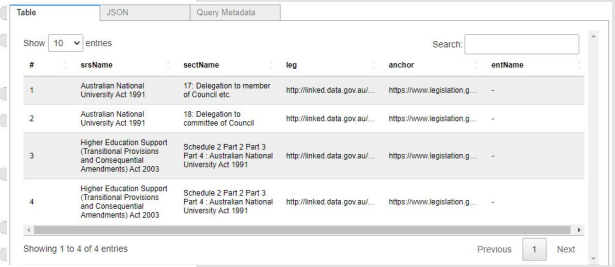


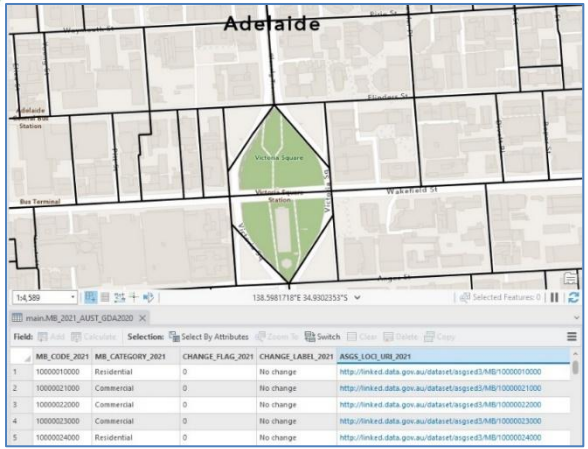
Table | JSON | Query Metadata

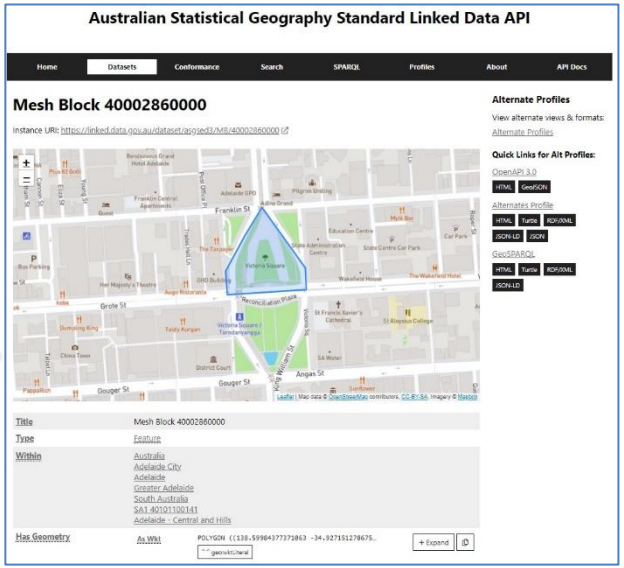
Show 10 entries Search:

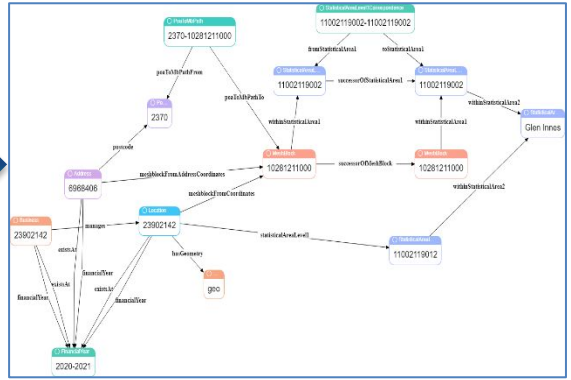
#	srsName	sectName	leg	anchor	entName
1	Australian National University Act 1991	17: Delegation to member of Council etc	http://linked.data.gov.au/...	https://www.legislation.g...	-
2	Australian National University Act 1991	18: Delegation to committee of Council	http://linked.data.gov.au/...	https://www.legislation.g...	-
3	Higher Education Support (Transitional Provisions and Consequential Amendments) Act 2003	Schedule 2 Part 2 Part 3 Part 4 : Australian National University Act 1991	http://linked.data.gov.au/...	https://www.legislation.g...	-
4	Higher Education Support (Transitional Provisions and Consequential Amendments) Act 2003	Schedule 2 Part 2 Part 3 Part 4 : Australian National University Act 1991	http://linked.data.gov.au/...	https://www.legislation.g...	-

Showing 1 to 4 of 4 entries Previous 1 Next

ASGS Edition 3 – Web Linked Data







URI Dataset Link: https://asgs.linked.fsdf.org.au/dataset/asgsed3

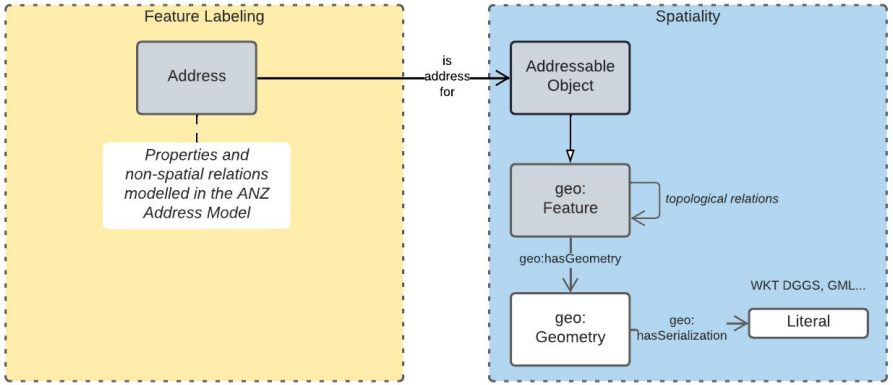
ANZ National Address Model - Candidate

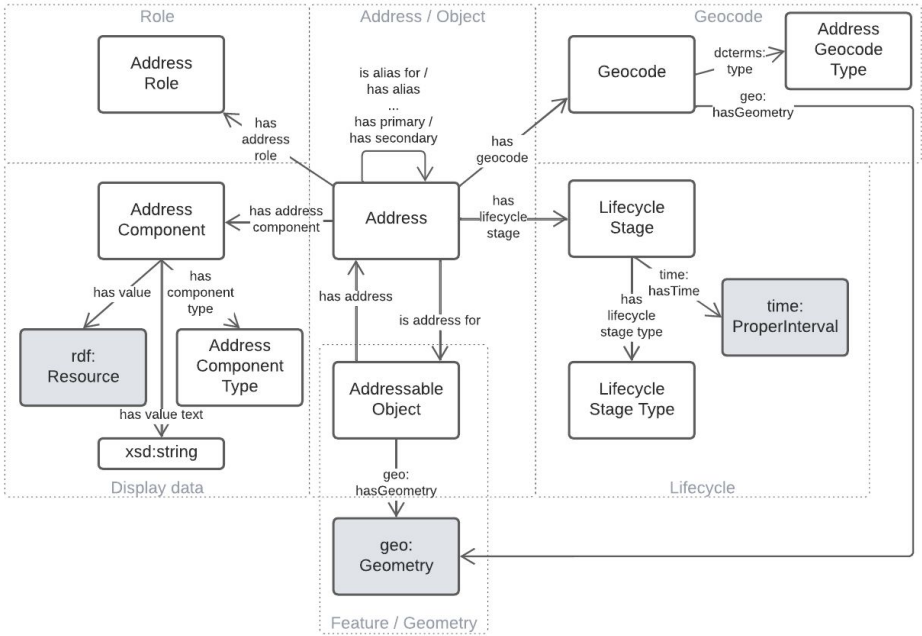
A Semantic Web data model used for address information

By Nicholas Car
https://w3id.org/profile/anz-address

"...a Semantic Web data model used for address information. It caters specifically for Australian & New Zealand's address modelling needs"

Motivated by a Qld State Government Address DB upgrade proposal, based on ICSM Address Strategy.





AGLDWG AGM, August 2022: Geoscience Australia Report

Achievements:

- Continue Linked Data implementation:
  - **New!** Digital Atlas of Australia: Operationalisation of the Location Index Project, including:
    - Datasets/ OGC API
    - Vocabulary
    - Ontologies and other resources
  - Other GA's Linked Data resources:
    - Datasets/ OGC API
    - Vocabulary
- Aligning with International community:
  - **New!** GA is now a member of DataCite – agreement to mint DOI for samples

Future Plans:

- Linked Data, OGC API & vocabularies as integral part of the Digital Atlas of Australia & GA Portal
- Publication of new vocabularies for GA database control lists
- Development of visualization and analytics capabilities for LD datasets
- Development of LD API for Discrete Global Grid System
- Research activity with Esri Inc.: testing OGC LD APIs within Esri environment
- Participation in OGC activities (e.g. GeoDCAT)

Linked Data projects at TERN

Edmond Chuc

TERN Data Services and Analytics

tern
Ecosystem Research Infrastructure

Projects

- TERN Data Discovery Portal (TDDP) and SHaRED metadata submission tool
  - Observable properties, survey sites, organisations, people, etc are described as Linked Data using SKOS and schema.org
- TERN Ontology
  - Specialisation of SSN/SOSA, PROV-O for the ecological domain
  - Uses other standards such as GeoSPARQL, SHACL
  - Used as the domain model in ABIS, Biodiversity Data Repository (BDR)
- EcoPlots
  - Implements TERN Ontology
- Natural Resource Management (NRM) field survey protocols
  - Standardised survey protocols
  - Controlled vocabularies
  - Mobile app
  - Send data to the BDR as RDF adhering to the TERN Ontology

Australian Government
Department of Climate Change, Energy, the Environment and Water

tern

tern
Ecosystem Research Infrastructure

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

We at TERN acknowledge the traditional owners and their custodianship of the lands on which TERN operates. We pay our respects to their ancestors and their descendants, who continue cultural and spiritual connections to country.

TERN is enabled by NCRIS.

Our work is a result of collaborative partnerships with many universities and institutions.

To find out more please go to **tern.org.au.**

Project Overview

Future proofing agricultural soils of southern and central NSW from acidification and soil organic carbon decline

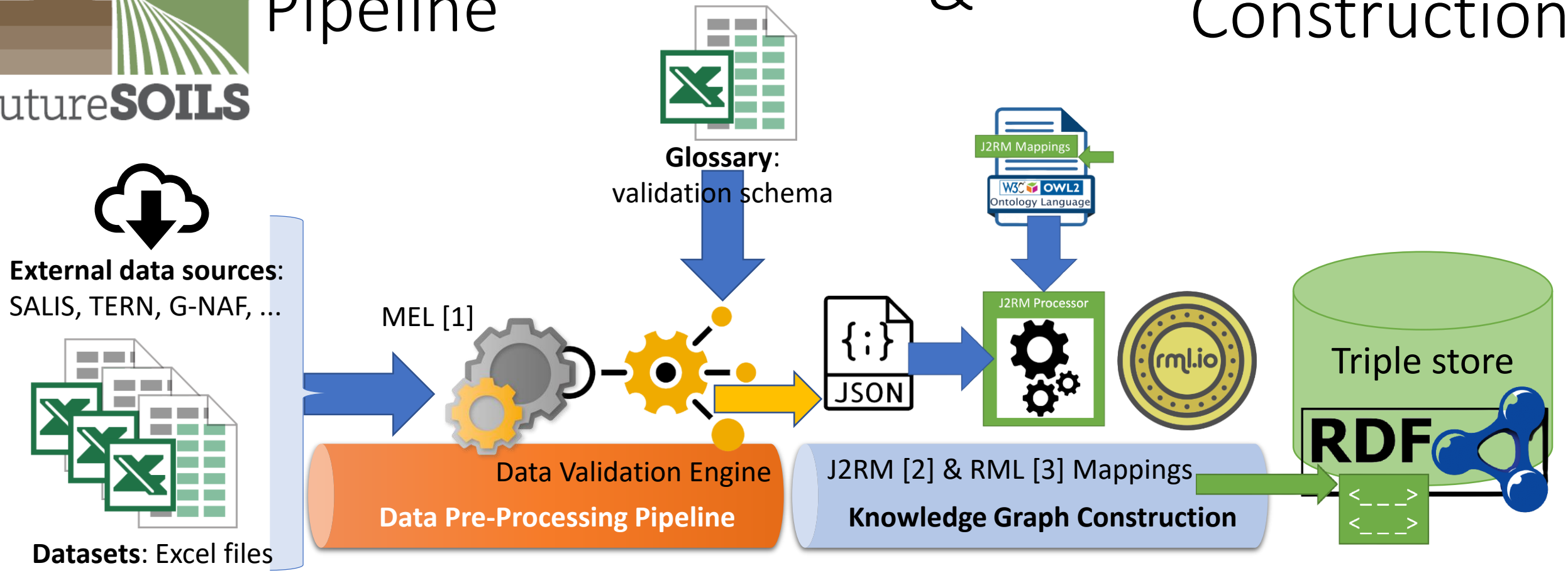
- ***What is it about?***
  - Acid soils cover more than 20 million ha of NSW, limiting agricultural production and causing economic loss of more than $400 million annually;
  - The project provides land managers and their advisors with new knowledge and tools to effectively manage soil acidification and declining soil organic carbon.

- ***Where is the data coming from?***
  - Soil chemical properties representing diverse farm management practices sourced from:
    - Commercial farming paddocks in central and southern NSW
    - Historic and current acid soil research sites
  - Temporal data from research sites for model validation

- ***Key outputs from project:***
  - Updated acid soil management guidelines informed by an online decision-support system.

Acknowledgements
This is a project funded by the Australian Government through the National Landcare Program to improve on-farm management of acid soils and to increase soil organic carbon (SOC).
NLP Project code: 4-CS70YJ8
We thank all participating partners:

Data Pre-Processing Pipeline & Knowledge Graph Construction



[1] Rodríguez Méndez S.J., Omran P.G., Haller A., Taylor K. (2021). **MEL: Metadata Extractor & Loader**. *Proceedings of the ISWC 2021 Demos and Industry Tracks - co-located with The 20th International Semantic Web Conference* (ISWC 2021). CEUR Workshop Proceedings. Vol. 2980. Published at: http://ceur-ws.org/Vol-2980/paper399.pdf

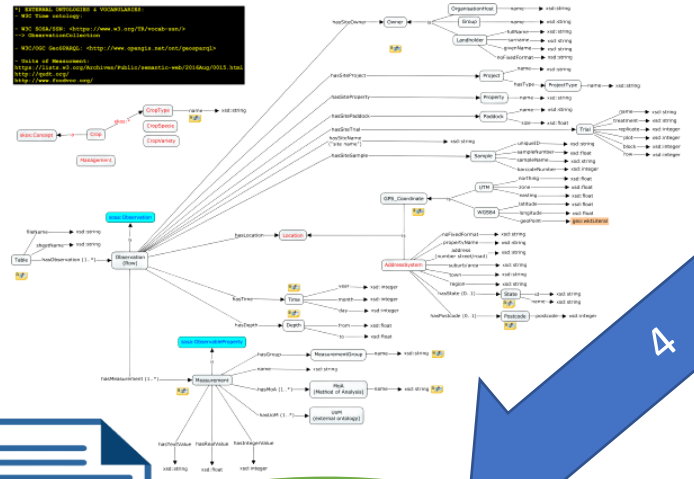
[2] Rodríguez Méndez S.J., Haller A., Omran P.G., Wright J., Taylor K. (2020). **J2RM: an Ontology-based JSON-to-RDF Mapping Tool**. *Proceedings of the ISWC 2020 Demos and Industry Tracks: From Novel Ideas to Industrial Practice - co-located with The 19th International Semantic Web Conference* (ISWC 2020). CEUR Workshop Proceedings. Vol. 2721. Pp. 368-373. Published at: http://ceur-ws.org/Vol-2721/paper593.pdf

[3] RDF Mapping Language (RML). https://rml.io/specs/rml/

Knowledge Graph & Predictive Model

FutureSOILS

Data Flow



W3C OWL 2 Ontology Language

Triple store

RDF

1

2

3

4

Knowledge Deployment:

The learnt patterns are customised in different scenarios including, completing the KG regarding given data, predicting the future outcome of different alternatives.

Knowledge Discovery:

Mining patterns in the data in the form of numeric-logical models via Representation Learning, Neuro-symbolic Learning, Transfer Learning, and Rule Learning.

DSS

Users

Machine Learning Models

Features of the Predictive Model:

- Scalable
- Graph-based
- Explainable
- Capable of handling time, spatial, uncertainty aspects of data.

2022 Australian Computer Science Week

Decision-Support System Architecture