Australian Government
Geoscience Australia

ICSM Metadata Working Group Meeting #2

8th - 9th October 2018

Melbourne

GEOSCIENCE AUSTRALIA IS THE AUTHORITY ON PROVIDING FUNDAMENTAL GEOGRAPHIC INFORMATION FOR THE NATION

Welcome

Amelia Chapman

ICSM Member

Victorian Department of Environment, Land, Water and Planning

Agenda

Day 1: 10am - 4.30pm

1. Re-cap meeting #1 Canberra
2. DELWP demonstration – George Mansour
3. DCAT update – Dr Simon Cox
4. Issues for consideration
    - DC2020 – Esther Carey
    - Federated metadata infrastructure
    - Maritime S121 – Anna Potter
5. GDA2020 and ATRF – Nicholas Brown
6. MDWG Roadmap – Andrew Whiting

Day 2: 9am - 12pm

1. Re-cap meeting day #1
2. Issues for consideration
    - JSON, GeoJSON, API's
    - ESRI and other application integration
    - DCAT, CKAN alignment
3. MDWG Profile Sub-Group – Irina Bastrakova
4. MDWG Administration

Logistics

- WiFi
- Amenities
- Lunch
- Dinner
  - The Hof Downtown, 737 Bourke Street
  - Booking from 6 for 6.30pm

Expected meeting outcomes

- Endorsement of the roadmap
- Roles and responsibilities assigned
- Endorsement of the Profile Sub Group Recommendations
- Recognition of GDA2020 and guidance on how the MDWG will address

MDWG Meeting #1 – Canberra 13th June - Summary

- ✓ 32 individuals representing agencies from the Governments, Research, peak spatial bodies, EM & Agriculture Sectors.
- ✓ Since the workshop, the membership has grown to approximately 60 individuals. This clearly indicates the importance of the MDWG

General outcomes:

- ✓ Strong agreement that the working group is highly relevant
- ✓ Agreed series of TOR's noting they can change over time
- ✓ Agreed to create a roadmap articulating what the MDWG is planning to undertake and when
- ✓ Agreed to establish a Profile Sub Group, Roadmap sub group and a Technical Sub Group.

Meeting 1 Action Items

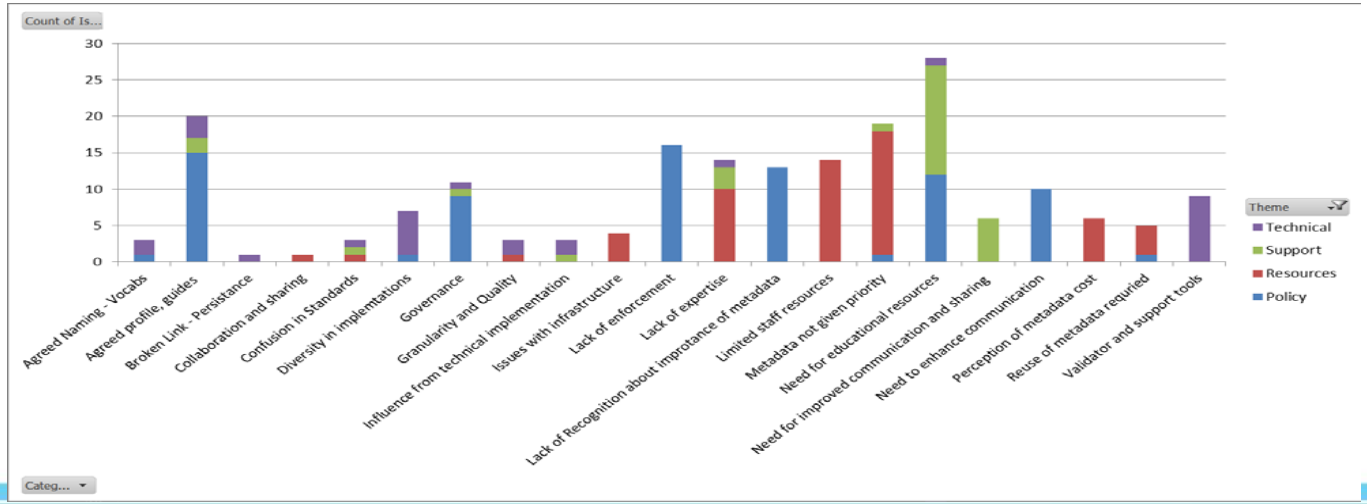
#	Action	Who	Status	Comment
1	Generate Workshop report with Terms Of Reference (Within 6 weeks)	GA – Graham Logan	Complete	Report sent to members
2	Formally establish the MDWG **Profile Sub Group** (refer to Appendix 2 for membership). Arrange a meeting within 3 week of the workshop	MDWG Secretariat - GA	Complete	Profile group active - Reporting due at meeting
3	Formally establish the MDWG **Roadmap Sub Group** (refer to Appendix 2 for membership). Arrange a meeting within 3 week of the workshop	MDWG Secretariat - GA	Complete	Profile group active - Reporting due at meeting
4	Members to contact the MDWG Secretariat (Andrew.whiting@ga.gov.au) if they are interested in been involved with the **Technical Sub Group**	All MDWG	Complete	No Feedback.
5	Consider a shared **community profile** based of 19115-1 & 19115-3	MDWG	Open	
5.1	· Collate existing profiles related to the new 19115-1 standard	Profile Sub Group	Open	
5.2	· Assess profiles and prepare report outlining the commonality, pros and cons of each profile	Profile Sub Group	Open	
5.3	· Based off the report the MDWG will discuss the current profiles and make recommendations on the relevance, - Value / Cost and look and feel of a ANZLIC based profile. Discuss the formality of the profile	MDWG	Open	Cover at meeting
6	ABARES to provide their profile to the MDWG Secretariat (Andrew.whiting@ga.gov.au) for registration distribution to the Profile Sub Group	Evert Bleys: ABARES	Complete	
7	ANDS to provide their service elements profile to the MDWG Secretariat (Andrew.whiting@ga.gov.au) for registration distribution to the Profile Sub Group	Melanie Barlow: ANDS	Complete	
8	Establish a **web presence** to host all MDWG documentation and communication items – Gov Teams or ICSM website	MDWG Secretariat - GA	Complete	Website is established and sufficient for mean time
9	Develop a **roadmap** for where the MDWG are aiming to go including strategic directions, key milestones and core items for consideration based off the workshop report (Action item 1)	Roadmap Sub Group	Open	
10	Establish a **technical sub group** for the socialisation and knowledge gathering on what technologies exist for managing metadata, their pros / cons, implications and management of a catalogue of options for use. MDWG members are to indicate their interest in this group by emailing MDWG Secretariat (Andrew.whiting@ga.gov.au).		Open	No Feedback
11	Invite the DTA and AIMS to the working group	MDWG Secretariat - GA	Complete	
12	Arrange face to face meeting – 3 months' time September 2018	MDWG Secretariat - GA	Complete	
13	Report to ICSM the establishment of the MDWG, and ensure ICSM working groups are aware of the MDWG and appreciate its role. PCG and PCTI need to appreciate the impact of metadata and utilise this function.	GA – ICSM Secretariat	Complete	Presented at PCTI, will report to ICSM
14	MDWG representative to de-brief EMSINA on the outcomes of the workshop and the groups associated work plan	MDWG Secretariat - GA	Open	

Recap of Workshop 1

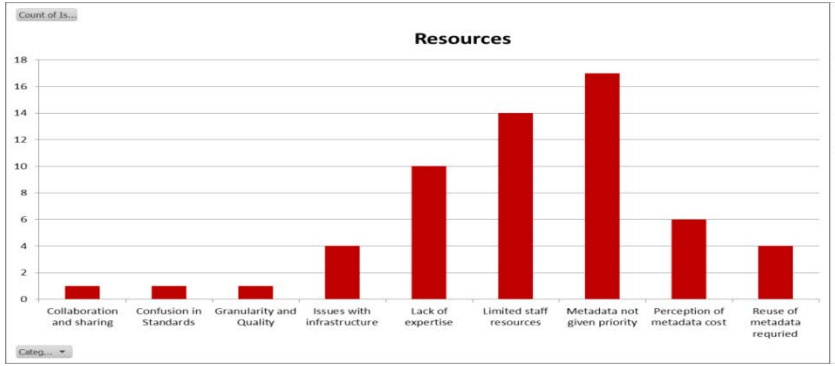
- Two activities organised to collect view of participants

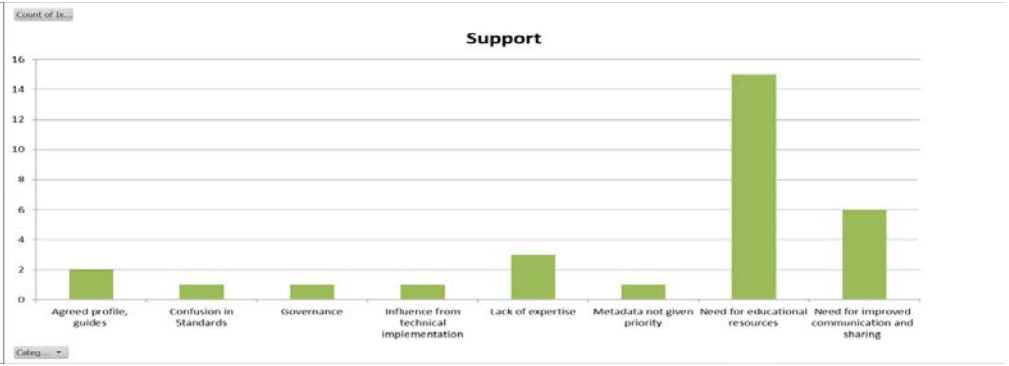
Activity 1: Metadata issues and challenges

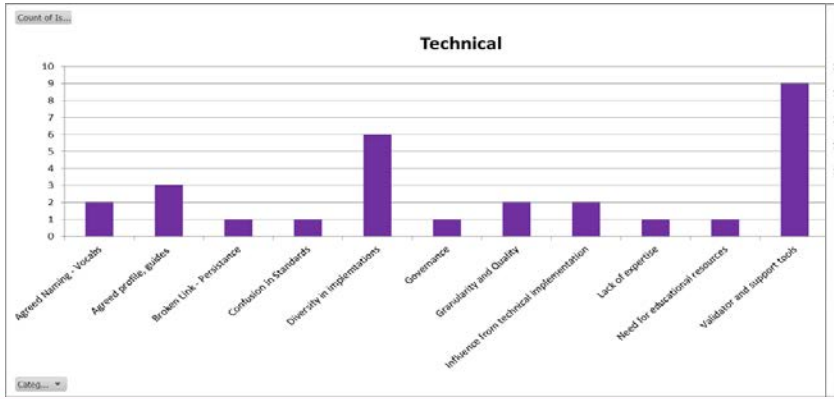
- ✓ Participants asked to identify as many issues that they face with metadata
- ✓ Issues were then grouped, counted, categorised and graphed

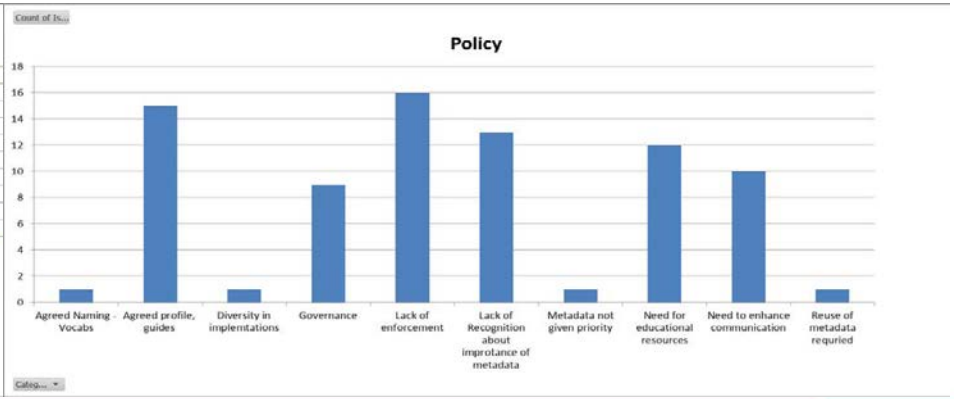


Categorised Issues and Challenged







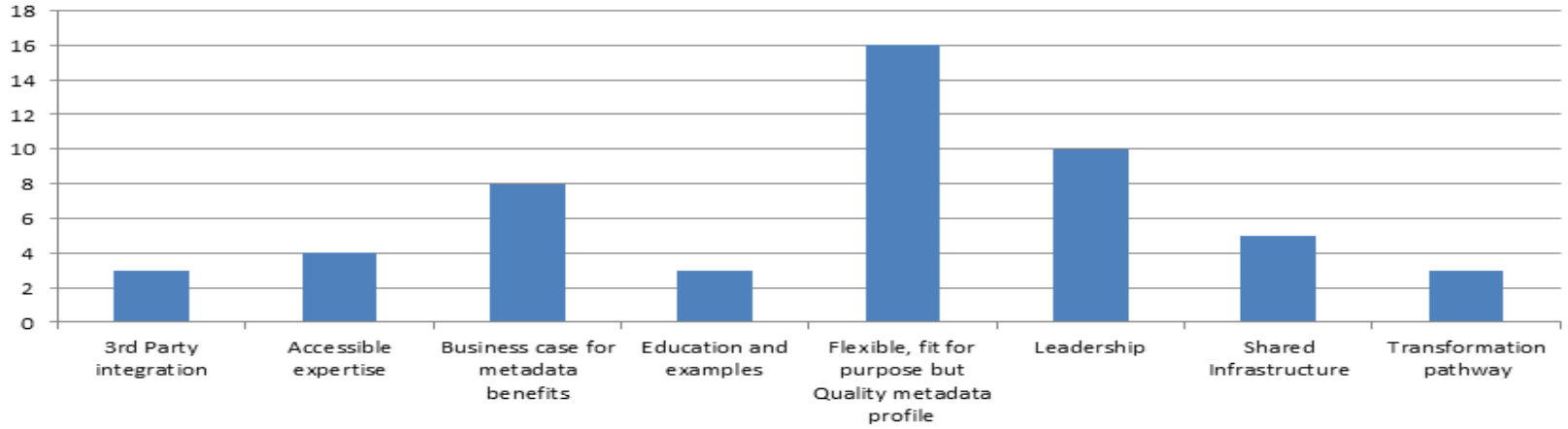


Key Findings

1. The need for guides, profiles, tools and supporting documentation so that users can consistently apply metadata in the same way and to reduce confusion and diversity in approaches.
2. The need for communication material to support education and help inform managers, data custodians and user of the importance of metadata
3. The need to build up skills and resources to support metadata application and reduce the potential burden of maintenance upkeep.

Activity 2 Requirements

- ✓ Participants asked to list requirements for their agency requirements to improve metadata capability
- ✓ Requirements grouped, counted and graphed



	Classification	Working Group Requirement
1	Flexible, fit for purpose but Quality metadata profile	Develop a easy to understand, flexible, fit for the majority of purposes profile which clearly articulates what each element is and why It is important. Ensure the profile can be easily extended to meet the specific needs of individual organisation needs.
2	Leadership	Need ongoing leadership identifying what is the preferable standard for implementation and management. Articulation on how to utilise the standard, education on the value and importance of metadata, and the ongoing monitoring and championship of metadata.
3	Business case for metadata benefits	Clearly articulate the case for change to the new version of the metadata standards. The case needs to include benefits, dis-benefits, requirements and implications. This case needs to target decision makers, metadata system managers, and data custodians to improve the overall understanding of the importance, whilst providing a framework to assist decision making about planning requirements.
4	Shared Infrastructure	Assess the viability of a hosted, federated metadata system to assist agencies without the capability, capacity and or business barriers to manage standards compliant metadata, which can be disseminated. *Where does data.gov.au fit*. Ensure tools are available to assist in the creation and compliance assessment of metadata records.
5	Accessible expertise	Make discoverable what expertise is available to advise and assist end users on the implementation and management of the standard, profiles and technology options. Ensure best practice frameworks are easy to understand and can be utilised by all key stakeholders including technical experts, data managers and decision makers to support the uptake of the standards consistently.
6	3rd Party integration	Ensure the new profiles and supporting technologies can enable seamless integration between different users and application choices including crowd sourced data and common applications such as ESRI.
7	Education and examples	Based off the agreed profile, develop a suite of examples, which clearly articulate what a quality metadata record looks like. This resource will provide real world examples, which can be easily adopted to meet the needs of non-expert.
8	Transformation pathway	Develop a roadmap and a national picture to measure the status of metadata capability nationally. Ensure there is a clear path on how to migrate from existing standards base to the new standards, including associated tooling and mapping.

Summary

1. Workshop 1 defined issues, challenges and requirements
2. Information fed into Roadmap Working Group
3. Issues and requirements informed work of Profile Working Group

Jurisdiction Demonstration

George Mansour

Victorian Department of Environment, Land, Water & Planning

Data Catalogue Vocabulary (DCAT) update

Dr Simon Cox

CSIRO

Issues for Consideration

1. **National Archives DC2020** (Digital Continuity Policy)- Esther Carey, National Archives of Australia

2. **Federated – Shared metadata capability** – Andrew Whiting, GA

3. **Maritime S121 and metadata** – Anna Potter, GA

GDA2020 and ATRF – Managing through metadata

1. Nicholas Brown – GA

2. Group Discussion

- What role does the MDWG provide?
- ICSM paper on GDA2020
- How is your organisation planning to record GDA2020

MDWG Roadmap

- Meeting Action items 1 & 10, the Metadata Roadmap Sub Group was established to begin develop a roadmap
- Membership comprised of:
  - Byron Cochrane
  - Jacqueline LeLievre
  - Kristy Van Putten
  - Graham Logan
  - Irina Bastrakova
  - Andrew Whiting
  - Margie Smith

The Roadmap

- Using the requirements identified from Activity 1 & 2 at the Canberra workshop
- A series of granular tasks were identified and aligned to meet the requirements
- The tasks were then classified and generally prioritised
- Forming the Detailed roadmap

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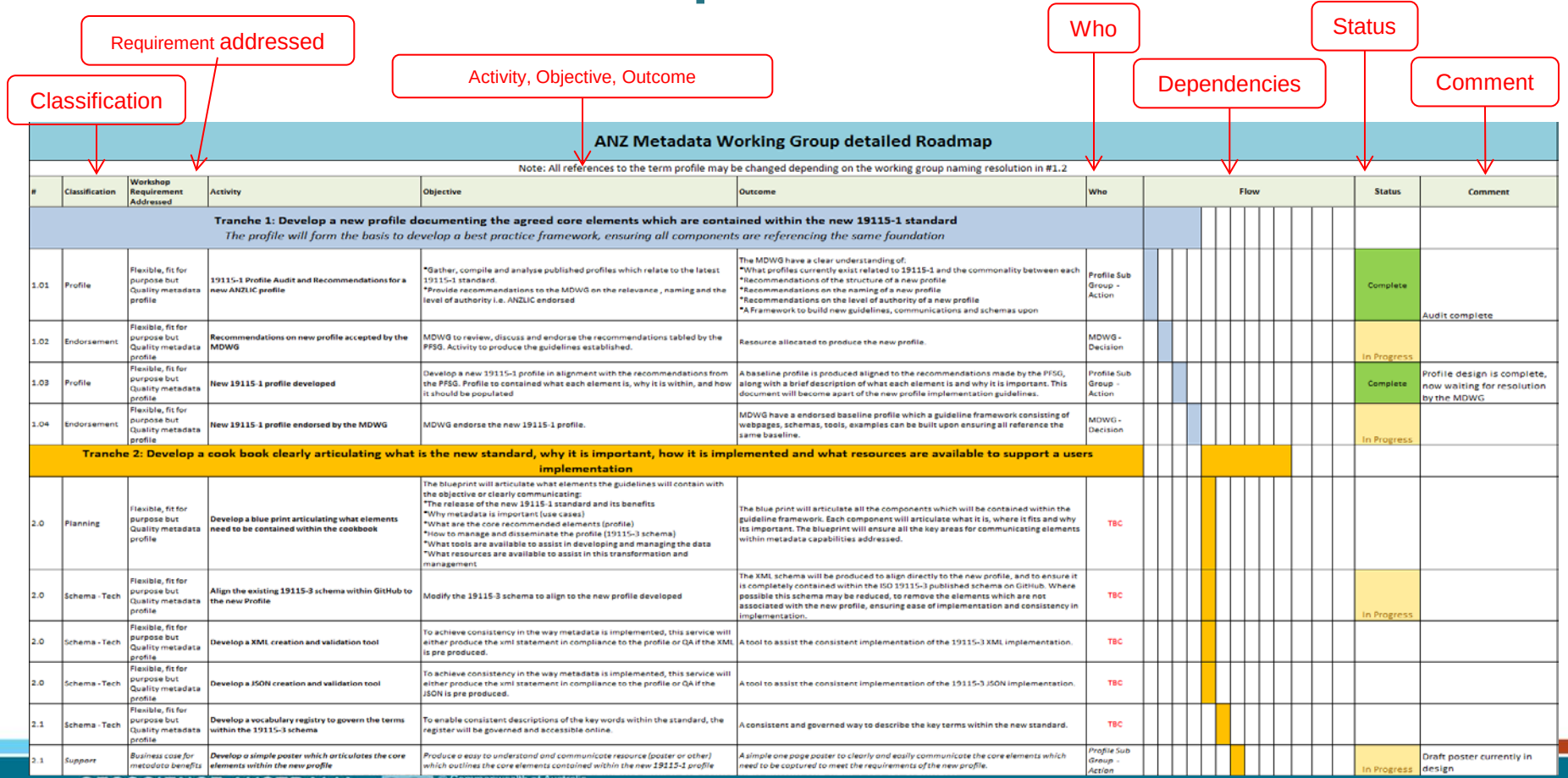
The Detailed Roadmap structure



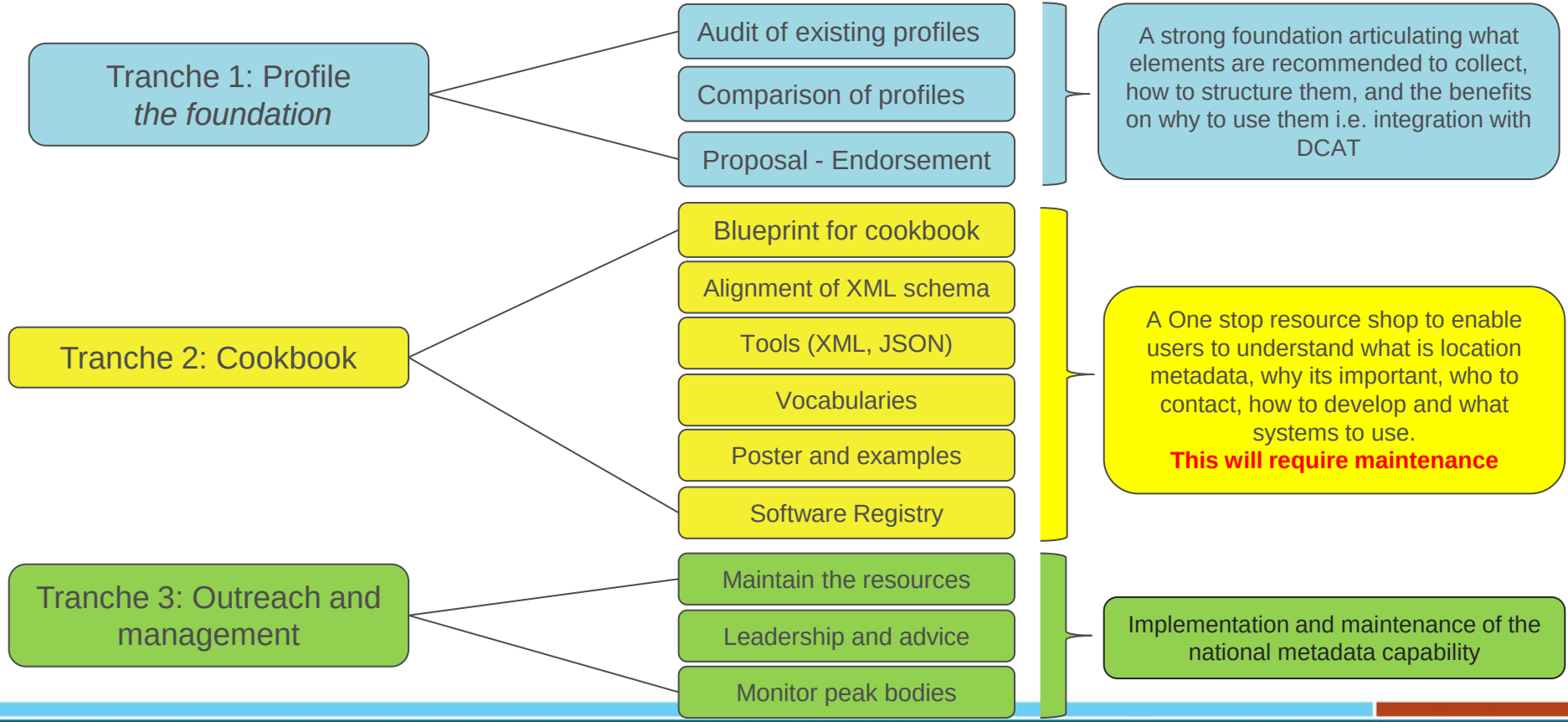
ANZ Metadata Working Group detailed Roadmap

Note: All references to the term profile may be changed depending on the working group naming resolution in #1.2

#	Classification	Workshop Requirement Addressed	Activity	Objective	Outcome	Who	Flow	Status	Comment
			Tranche 1: Develop a new profile documenting the agreed core elements which are contained within the new 19115-1 standard *The profile will form the basis to develop a best practice framework, ensuring all components are referencing the same foundation*						
1.01	Profile	Flexible, fit for purpose but Quality metadata profile	**19115-1 Profile Audit and Recommendations for a new ANZLIC profile**	*Gather, compile and analyse published profiles which relate to the latest 19115-1 standard. *Provide recommendations to the MDWG on the relevance , naming and the level of authority i.e. ANZLIC endorsed	The MDWG have a clear understanding of: *What profiles currently exist related to 19115-1 and the commonality between each *Recommendations of the structure of a new profile *Recommendations on the naming of a new profile *Recommendations on the level of authority of a new profile *A Framework to build new guidelines, communications and schemas upon	Profile Sub Group - Action		Complete	Audit complete
1.02	Endorsement	Flexible, fit for purpose but Quality metadata profile	**Recommendations on new profile accepted by the MDWG**	MDWG to review, discuss and endorse the recommendations tabled by the PFSG. Activity to produce the guidelines established.	Resource allocated to produce the new profile.	MDWG - Decision		In Progress	
1.03	Profile	Flexible, fit for purpose but Quality metadata profile	**New 19115-1 profile developed**	Develop a new 19115-1 profile in alignment with the recommendations from the PFSG. Profile to contained what each element is, why it is within, and how it should be populated	A baseline profile is produced aligned to the recommendations made by the PFSG, along with a brief description of what each element is and why it is important. This document will become apart of the new profile implementation guidelines.	Profile Sub Group - Action		Complete	Profile design is complete, now waiting for resolution by the MDWG
1.04	Endorsement	Flexible, fit for purpose but Quality metadata profile	**New 19115-1 profile endorsed by the MDWG**	MDWG endorse the new 19115-1 profile.	MDWG have a endorsed baseline profile which a guideline framework consisting of webpages, schemas, tools, examples can be built upon ensuring all reference the same baseline.	MDWG - Decision		In Progress	
			Tranche 2: Develop a cook book clearly articulating what is the new standard, why it is important, how it is implemented and what resources are available to support a users implementation						
2.0	Planning	Flexible, fit for purpose but Quality metadata profile	**Develop a blue print articulating what elements need to be contained within the cookbook**	The blueprint will articulate what elements the guidelines will contain with the objective or clearly communicating: *The release of the new 19115-1 standard and its benefits *Why metadata is important (use cases) *What are the core recommended elements (profile) *How to manage and disseminate the profile (19115-3 schema) *What tools are available to assist in developing and managing the data *What resources are available to assist in this transformation and management	The blue print will articulate all the components which will be contained within the guideline framework. Each component will articulate what it is, where it fits and why its important. The blueprint will ensure all the key areas for communicating elements within metadata capabilities addressed.	TBC			
2.0	Schema - Tech	Flexible, fit for purpose but Quality metadata profile	**Align the existing 19115-3 schema within GitHub to the new Profile**	Modify the 19115-3 schema to align to the new profile developed	The XML schema will be produced to align directly to the new profile, and to ensure it is completely contained within the ISO 19115-3 published schema on GitHub. Where possible this schema may be reduced, to remove the elements which are not associated with the new profile, ensuring ease of implementation and consistency in implementation.	TBC		In Progress	
2.0	Schema - Tech	Flexible, fit for purpose but Quality metadata profile	**Develop a XML creation and validation tool**	To achieve consistency in the way metadata is implemented, this service will either produce the xml statement in compliance to the profile or QA if the XML is pre produced.	A tool to assist the consistent implementation of the 19115-3 XML implementation.	TBC			
2.0	Schema - Tech	Flexible, fit for purpose but Quality metadata profile	**Develop a *JSON* creation and validation tool**	To achieve consistency in the way metadata is implemented, this service will either produce the xml statement in compliance to the profile or QA if the JSON is pre produced.	A tool to assist the consistent implementation of the 19115-3 JSON implementation.	TBC			
2.1	Schema - Tech	Flexible, fit for purpose but Quality metadata profile	**Develop a vocabulary registry to govern the terms within the 19115-3 schema**	To enable consistent descriptions of the key words within the standard, the register will be governed and accessible online.	A consistent and governed way to describe the key terms within the new standard.	TBC			
2.1	*Support*	*Business case for metadata benefits*	***Develop a simple poster which articulates the core elements within the new profile***	*Produce a easy to understand and communicate resource (poster or other) which outlines the core elements contained within the new 19115-1 profile*	*A simple one page poster to clearly and easily communicate the core elements which need to be captured to meet the requirements of the new profile.*	*Profile Sub Group - Action*		In Progress	Draft poster currently in design

Generalised roadmap

Structured into three core Tranches



Day 1 Re-Cap and Closing

Dinner: booking at 6 pm at The Hof Downtown, 737 Bourke Street http://thehof.com/menu/

Issues for consideration

1. New issues related to Metadata
   - JSON, GeoJSON, and integration with API's
   - ESRI and other application integration
   - Metadata alignment with GetCaps, DCAT1 and CKAN

2. Scope of the MDWG. Do we consider 19115-2 (Imagery & Gridded Info)

Metadata Profile Sub Group

Metadata Profile Sub Group was formed to focus on:

- ✓ Assessing the content of metadata profiles, including implementations, practices and elements supplied by GA, ABARES and Defence
- ✓ Compiling and defining a set of core elements that should be considered for implementing the metadata.
- ✓ Providing recommendation to the ICSM Metadata Working Group (MDWG) on core set of elements to ensure consistency in resource description and interoperability between metadata catalogues.

Metadata Profile Sub Group - work extension

- Substituted Technical Sub-Group to look at ‘technical’ aspects related to:
  - Metadata implementation examples
  - Tools and applications
  - Documentation: Technical, User guides, etc.

Membership

Australian Government
Geoscience Australia

ardc
australian research data commons
Formerly ands nectar RDS

CSIRO CISCO

Australian Government
Department of Agriculture and Water Resources

Australian Government
Department of Defence

NCI

Land Information New Zealand
Toitū te whenua

Australian Government
Department of the Environment
Australian Antarctic Division

Australian Government
Bureau of Meteorology

Activities

- ✓ Cross-walks between provided metadata profiles were developed.

  - ➢ Detailed crosswalk between GA and ABARES metadata profiles
  - ➢ High level crosswalk to identify common elements between ISO 19115-1 (GA, ABARES, AAD), RIF-CS (ARDC) and DCAT (V1.1) standards
  - ➢ Review and feedback was provided by GA, ABARES, AAD, BoM, ARDC, LINZ and Aus. Defence
- ✓ GDA2020: consultation with experts in GA and LINZ, identified list of relevant elements in ISO19115-1
- ✓ GA Metadata Profile of ISO19115-1:2014 was finalised and published (https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search?node=srv#/metadata/4fce6238-8d55-499c-bff5-98518552f4b4)
- ✓ Home page for the GA Metadata profile and supporting documentation and tools, including schemaron for GA profile, some code lists (http://pid.geoscience.gov.au/def/schema/ga/ISO19115-1-2014)
- ✓ Membership was extended to include NCI
- ✓ Terrestrial Ecosystem Research Network (TERN) assessed and is adopting GA Metadata Profile.

Element Selection Approach

- Major focus - Adequate Resource description to ensure:
  - ✓ Streamline and simplify discovery of data; and reduce time on its finding
  - ✓ Improve authoritative access to data and reduce the risk of breaching security and legal restrictions
  - ✓ Enable machine-to-machine access and integration of data across multiple information standards and disciplines
  - ✓ Prepare for modern and future technologies (e.g. Machine Learning, Linked Data,) thus stimulating innovation and data re-use

- Associated tasks
  - ✓ Enable development and share of common codes, APIs and infrastructures to reduce a need for duplicated development and coast of maintenance

Common Elements – Metadata Record

ISO Element	ISO (default)	GA (ISO)	ABARES (ISO)	AAD (ISO)*	ARDC (RIF-CS)	RIF-CS element	DCAT (https://w3c.github.io/dxwg/dcat/)
Metadata	M	M	M	M	M		dcat:Catalogue
Identifier	O	M	M	M	M	Key	dct:identifier
Date	M	M	M	M	M	Collection @dateAccessioned	dct:issued/dct:modified
Responsible party	M	M	M	M	O	Related Party	dcat:contactPoint
Locale	C (M)	M	M	M	N/A		dct.language
Metadata Scope: Scope Code	M	M	M	M	M	Type and subtype (e.g. Collection/Service)	dct:subject
Legal Constraints	O	O	M	M	O	Description 'notes'	dct.rights
Reference for Legal	O	O	O	O	O	Licence	dct.license
Security Constraints	O	M	M	O	O	Description 'notes'	
Reference for Security	O	M	O	O	O	Licence	

* When implemented in the ISO19115-1

Common Elements - Resource

ISO Element	ISO (default)	GA (ISO)	ABARES (ISO)	AAD (ISO)*	ARDC (RIF-CS)	RIF-CS element	DCAT https://w3c.github.io/dxwg/dcat/
Data Identification		M	M	M	M		
Locale	M	M	M	M	N/A		dct.language
Abstract	C (M)	M	M	M	M	Description 'full'	dct.description
Purpose	M	O	M	O	O	Description 'lineage'	dct.description
Status	O	O	M	M	O	Description 'lineage'	
Topic Category	O	M	M	M	O	Subject	dcat:keyword
Point of contact	C	M	M	M	M	Related Party	dct:contactPoint
Extent: geographic description	O	O	M	M	O		dct.spatial
Extent: bounding box	O	C	C	M	O	Spatial Coverage	dct.spatial
Extent: vertical	O	C	O	O	N/A		dct.spatial
Extent: temporal	O	C	M	M	O	Temporal Coverage	dct.temporal
Spatial Reference System	O	C	O	N/A	O		
Type	O	C	M	N/A	O	Spatial Coverage	dct:confirmsTo
Code	O	C	M	N/A	O		dct:confirmsTo
Authority	O	C		N/A	N/A		dct:confirmsTo
Citation	M	M	M	M	M	Citation Metadata	
Title	M	M	M	M	M	Title	dct.title
Identifier (uri)	O	M		M	M	Identifier	dcat:identifier
Date	O	M	M	M	M	Date	dct:issued/dct:modified
Cited Responsible party	O	M	M	M	M	Contributor	dct:creator
Edition	O	O	C	O	O	Version	dct:confirmsTo
Series	O	O	C	O	O	Context	prov:wasMemberOf
Cited Responsible party (publisher)	O	C	M	N/A	M	Publisher	dct:publisher

Common Elements - Resource

Package	ISO element	GA (ISO)	ABARES (ISO)	AAD (ISO)*	ARDC (RIF-CS)	RIF-CS element	DCAT (https://w3c.github.io/dxwg/dcat/)
Keywords	O	M	M	N/A	M		
ABS Field of Research	O	M	O	M	M	Subject	dcat:keyword
ABARES Keyword	O	N/A	M	O	N/A	Subject	dcat:keyword
other keywords	O	O	O	O	O	Subject	dcat:keyword
Format	O	M	O		N/A		
Maintenance	O						
Frequency Update	O	M	M	O	N/A		
Lineage	O	M	M	O	M		
Statement	O	M	M	N/A	M	Description 'lineage'	prov:has_Provenance
Source	O	O	C				dct:source
Constraints	O	M	M	M	M		
Legal	O	M	M	O	M	Rights	dct.rights
Reference for Legal	O	M	O	O	M	Licence	dct.license
Security	O	M	M	O	O	Rights	
Reference for Security	O	M	O	O	O	Rights	
Distribution	O	C	M	O	M		dcat:distribution
Format	O	C	M	O	M	Format	dct:format
Distributor	O	O	M	O	M	Related Party	dct:publisher
Online Resource	O	O	M	O	O	Location url	dcat:accessURI/dcat.downloadURL/dcat:endpointDescription
Associated Resource	O	O	O	N/A	O	RelatedInfo	dct:relation

Elements to define GDA 2020

GDA2020:

- Time of collection to enable dynamic datum transformations
- Reference System Information (geographic and temporal)
- History of Transfer

Class	Element	Description
Temporal Extent		Time period covered by the content of the resource (e.g. date/time when the resource was collected, described)
Reference System		Record information about reference system
	Reference System Type	Type of the reference system (e.g. Geographic Identifier)
	Authority	Citation of the registering authority defining and maintaining the reference system (e.g. EPSG)
	Code	Unique code identifying the reference system within this registering authority
Lineage		
	Statement or Process Steps	Information about history of resource generation, including spatial coordinate transfers

Next Steps

- Metadata:
  - Continue mapping to other profiles and standards
- Cookbooks:
  - Use Guides
  - Implementation Examples (human readable)
  - XML Examples
  - Technical documentation
- Tools:
  - Metadata creation, editing, maintenance
  - Conversion from ISO 19115 to ISO 19115-1
  - Conversion from ISO19115-1 to DCAT, CKAN, RIF-CS, etc.
  - Metadata Validation
  - Vocabulary system: managing & publishing common vocabularies

MDWG Administration

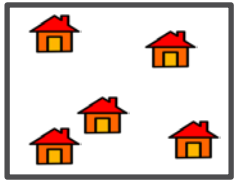
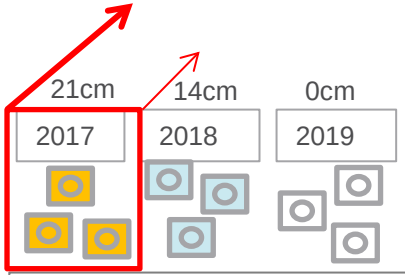
1. Any other business:
   - What applications does everybody currently use to manage metadata

2. ICSM website and Trello

3. Next meeting location and date

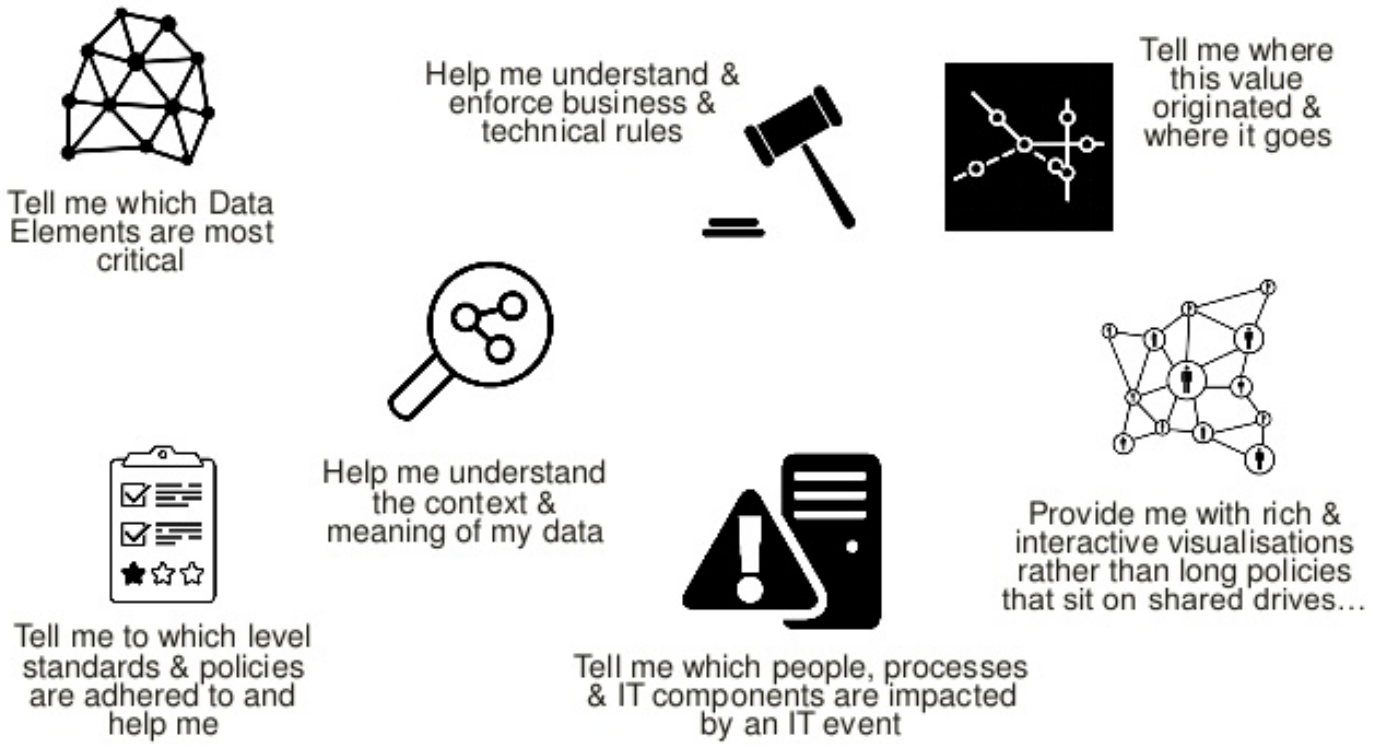
4. Action items

Data response to SBAS and ARTF – impact upon metadata – Assuming GDA2020 is in place.

	Data Type	Data collection Method	End Product	Metadata
Scenario 1	Buildings  50 m	 Image taken on 22 Aug 2017	 All buildings collected on same date as image Each building has centroid within a 50m tolerance	Update Product Metadata statement
Scenario 2	Utility stop valve  5cm	DGPS – 30 seconds per point  Accuracy no less than 5cm	 7cm variance each year meaning in 1 year, the point is outside of its tolerance. 3 years variance between starting and finishing. The original points are now **21cm** off position in relation to the new datasets	Update Product Metadata statement Maintain feature level metadata Make feature level metadata discoverable consistently?

Spatial Metadata – Victorian Government

Department of Environment, Land, Water and planning



VICTORIA State Government | Environment, Land, Water and Planning

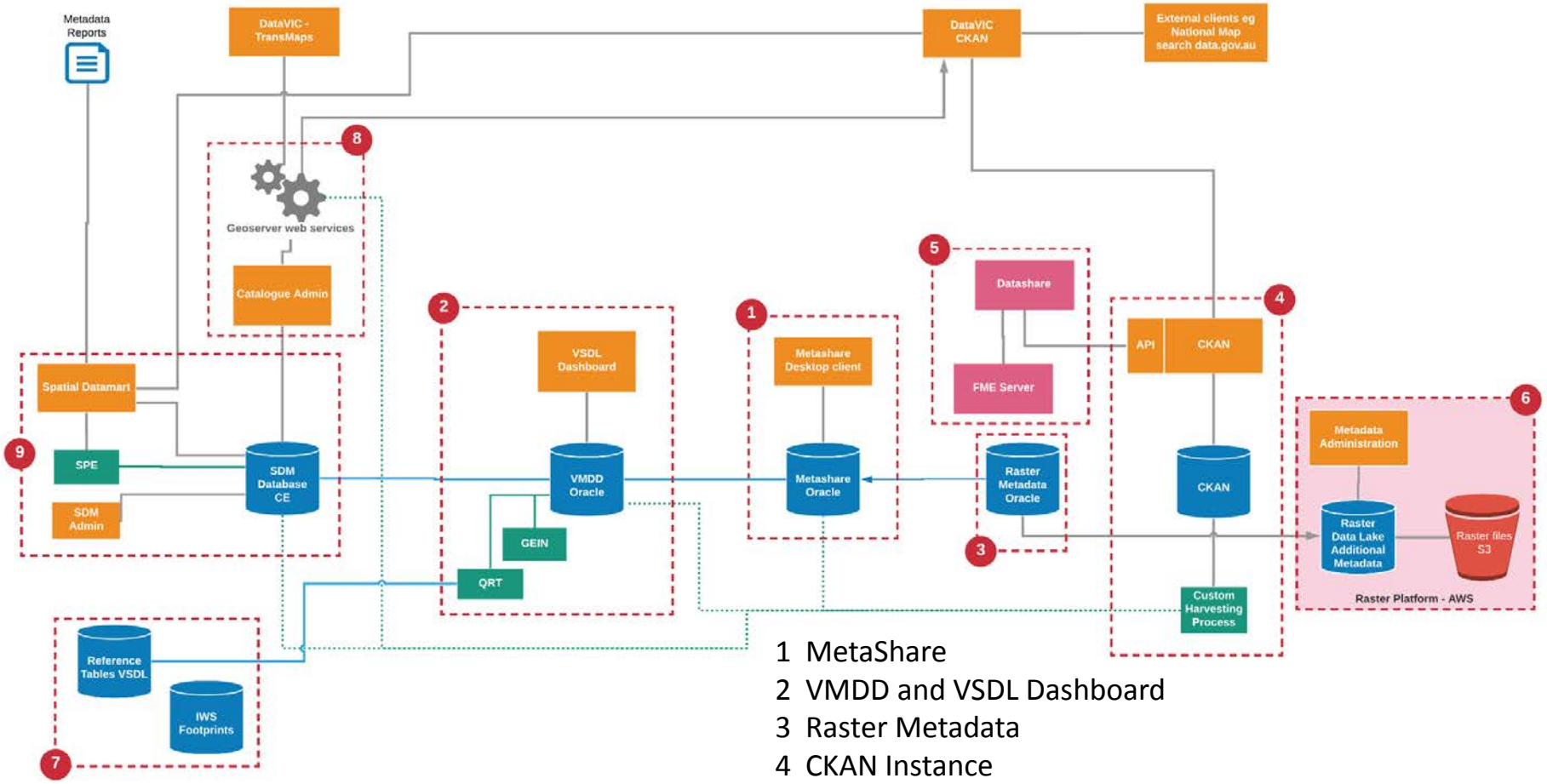
Spatial MetaShare 5.1.3

- MetaShare has been around for about 25 years
- Originally a Sybase database
- Converted to a Windows application with an Oracle database March 2015
- ISD with Cenitex load and administer the application
  - Cenitex adds the application to the computer assigned
  - ISD managers assign user credentials
  - ISD managers educate and support custodians
  - Supports only vector data (delivery)
  - Limited support for raster records
- The conversion was quick and inexpensive
  - Lost functions from the Sybase application
- Its structured, maintained by custodians, administered by ISD
  - The updates are ad-hoc
  - Administrators monitor as much as they can and when they are told of any updates and changes
  - Most custodians know the system well and manage without much guidance.
- Most of the users / custodians are DELWP internal
- The application can only be accessed within the DELWP firewall
- Metadata is crucial to the Search, Discovery and Delivery of data

Metadata: Product Description

Term	Definition
ANZLIC ID	A unique identifier enabling metadata records to be discovered and differentiated within a structured data library.
Attribute	A characteristic of a feature that may occur as a type or an instance.
Custodian	An organisation responsible for ensuring the accuracy, currency, distribution of their data and the terms and conditions of access and use.
Data type	Specification of a value domain with operations allowed on values in this domain Refer to AS/NZS ISO 19103
Dataset	Identifiable collection of data. Maybe as small as a single feature or feature attribute contained within a larger dataset. A hardcopy map maybe considered a dataset. Refer to AS/NZS ISO 19115
Domain	A well-defined set both necessary and sufficient, as everything that satisfies the definition in the set and everything that does not satisfy the definition is necessarily outside the set. Refer to ISO/TS 19103
The Department	Meaning the Department of Environment, Land, Water & Planning (DELWP).
Entity	A unit of data that can be classified and have stated relationship with other entities.
Feature	An abstraction of real-world phenomena. A feature may occur as a type or an instance. Feature type or instance shall be used when only one is meant. The feature structure of the feature based data model can be summarised as: feature instance = [spatial object + attribute object]
Metadata	Metadata is 'data about data' and provides a synopsis about the data lineage, accuracy and details about access permissions. Refer to ISO 19115 Geographic information — Metadata
Persistent Feature Identifier (PFI)	The unique code provide at creation of the feature which remains until the feature is retired.
Product	Dataset or dataset series that conforms to a data product specification.
Quality	Totality of characteristics of a product that bear on its ability to satisfy stated and implied needs. Refer to: ISO 19113 Geographic information — Quality principles ISO 19114 Geographic information — Quality evaluation procedures
The State	Victoria.
Unique Feature Identifier (UFI)	Each feature is uniquely identified and renewed with each change.

DELWP Metadata Current State



1 MetaShare
2 VMDD and VSDL Dashboard
3 Raster Metadata
4 CKAN Instance
5 DataShare
6 Raster Platform
7 VSDL Reference Data
8 Web Services
9 Spatial Data Mart

A New World

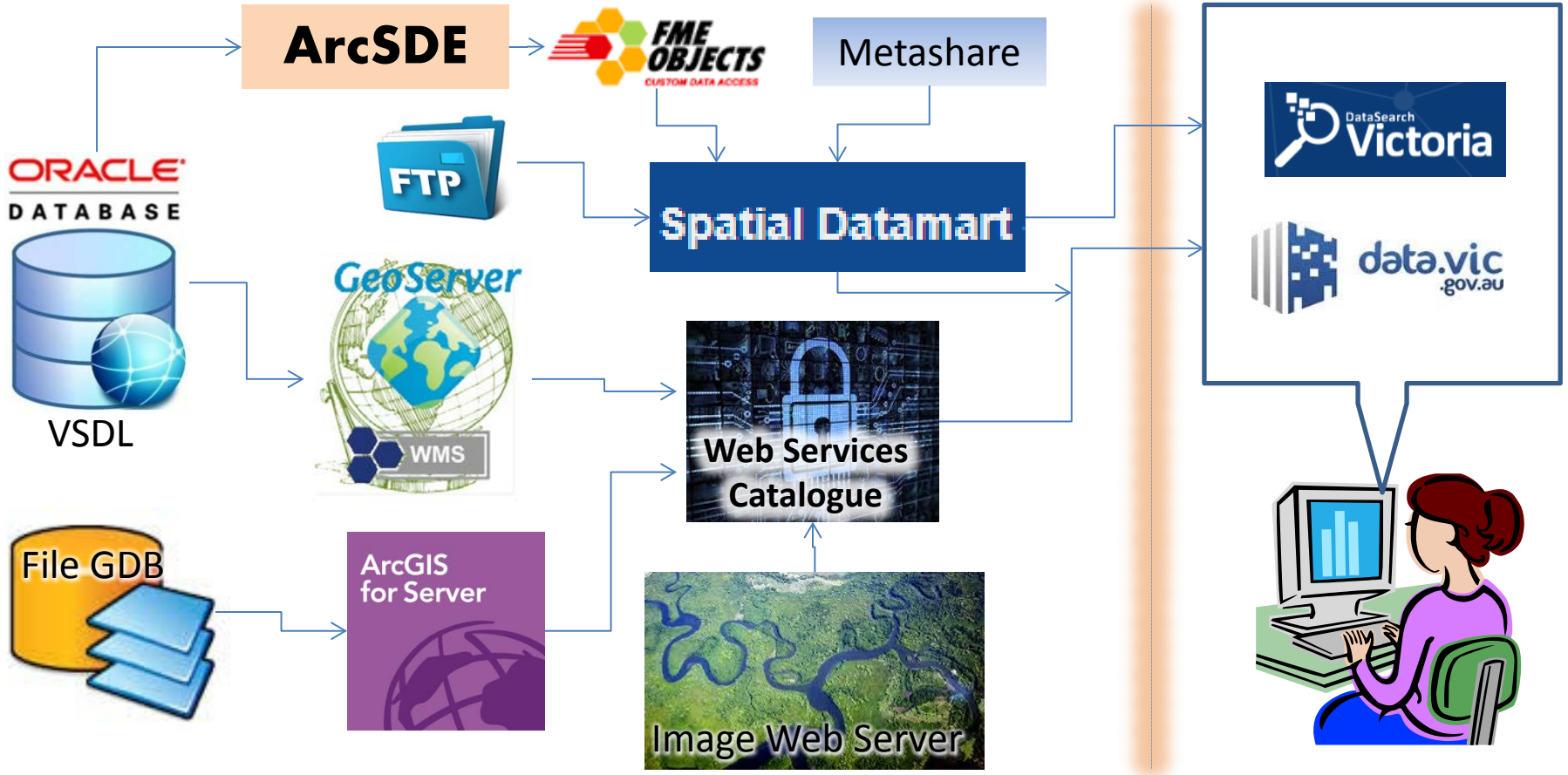
Replace MetaShare with GeoNetwork

- The most urgent requirement is to replace the MetaShare system in order to remove the dependence on deprecated desktop-based software and to implement a metadata system which complies with the current metadata standards
- GeoNetwork is an open source software package which supports the AS/NZS ISO 19115.1:2015 standard, the current standard endorsed by ANZLIC
- GeoNetwork differs from MetaShare in that the metadata records are stored in XML format rather than a set of relational database tables

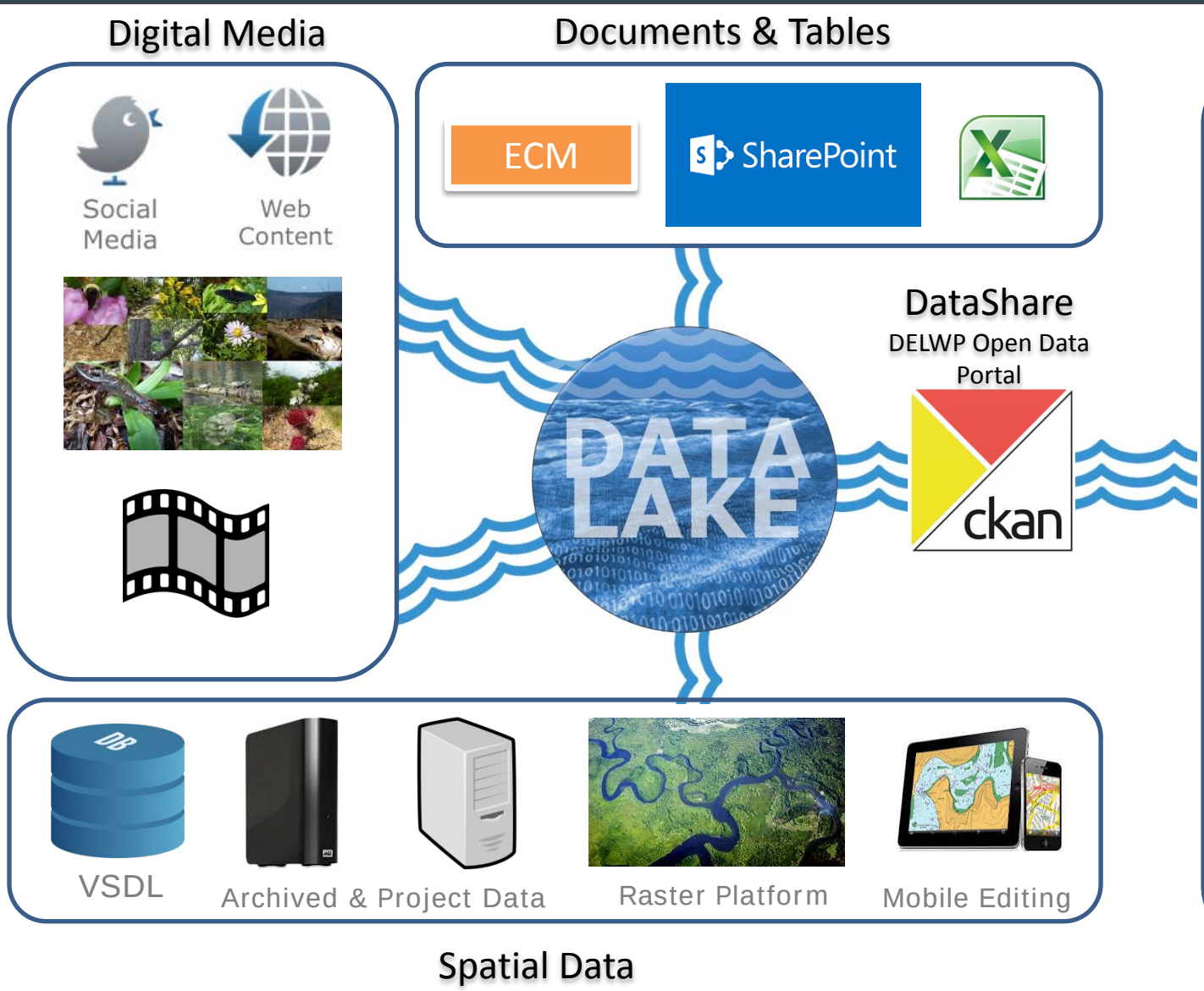
With some configuration, GeoNetwork will provide DELWP with:

- A repository for descriptive metadata
- A metadata management system which supports the uploading, entry and maintenance of metadata by metadata administrator(s) and custodians
- A metadata search portal which allows the discovery and viewing of metadata by DELWP staff and the public
- A security system which controls who can create and edit metadata and whether it can be found and viewed by the public or only by internal groups
- A metadata report which can be linked from MapShare or other applications
- The ability to make metadata available via a CSW service, allowing the metadata service to be federated with national and other metadata portals
- The ability to automatically harvest metadata records from a variety of other sources

DELWP Open Data Current State



DELWP Open Data Future State

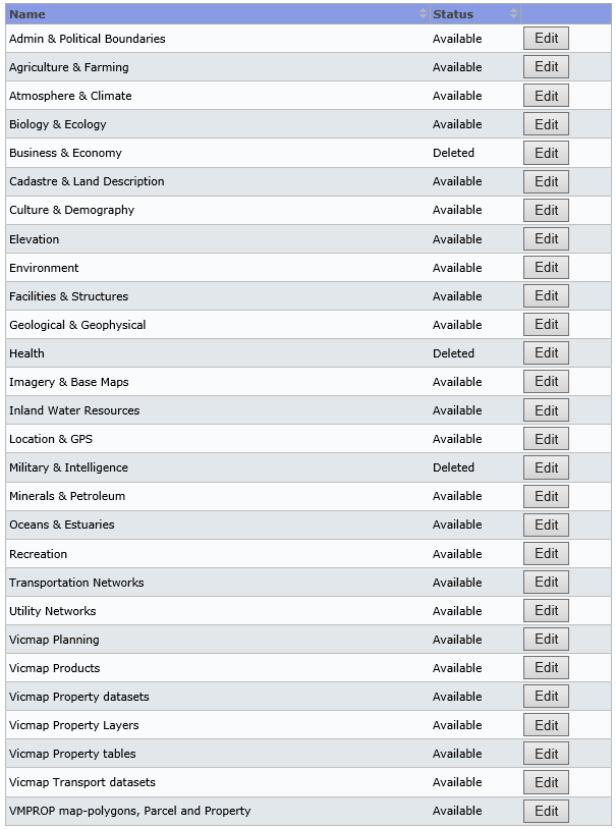


Other Spatial Data

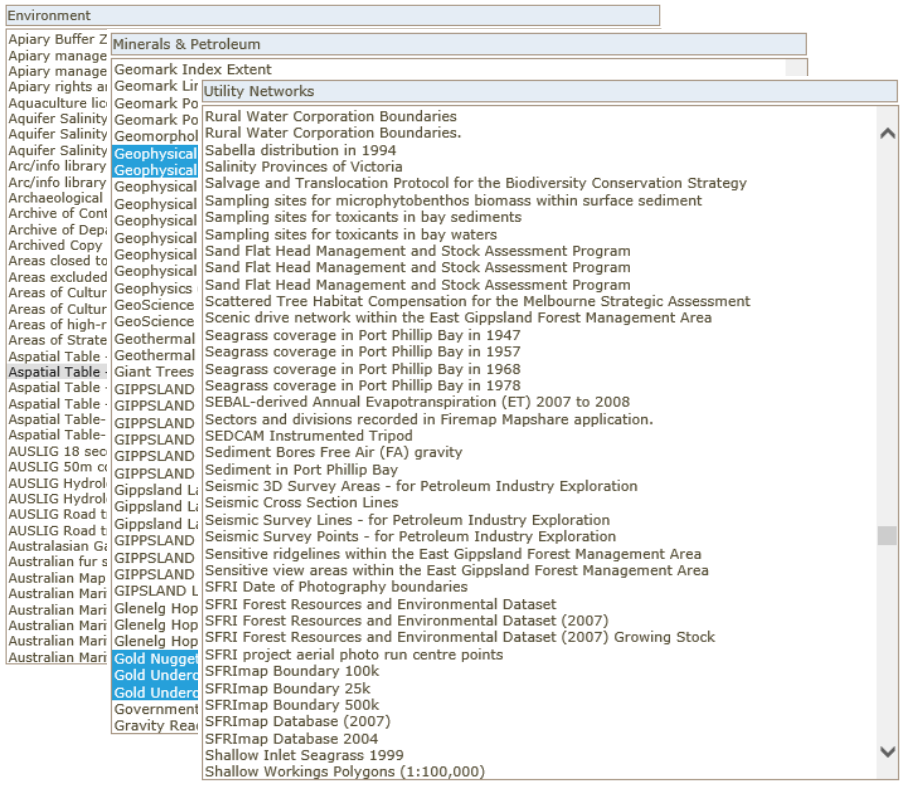
Metadata

- Spatial MetaShare 5.1.3 (approximately 5,000 descriptive records)
- Victorian Spatial Data Library Dashboard (spatial metadata)

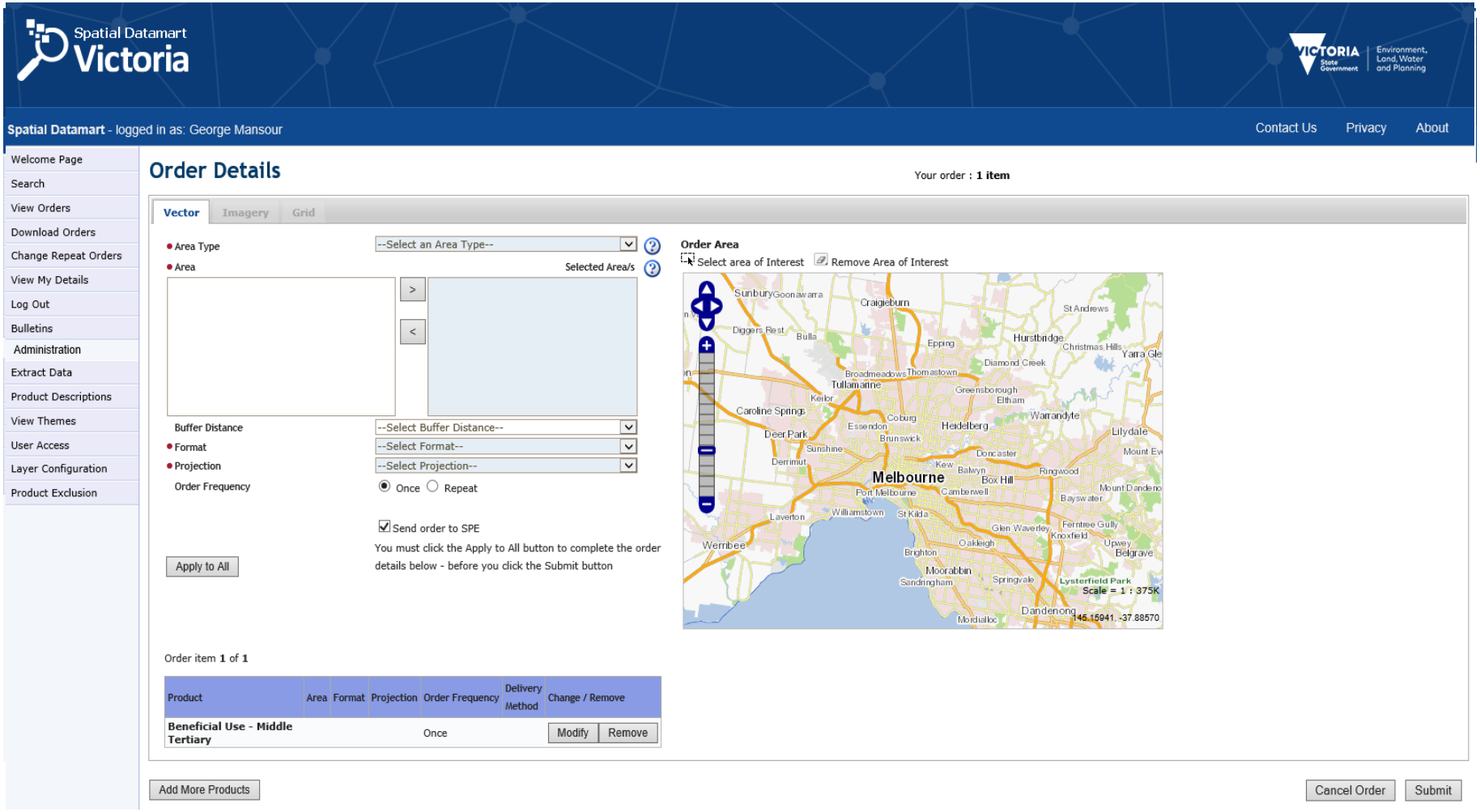
Spatial Data



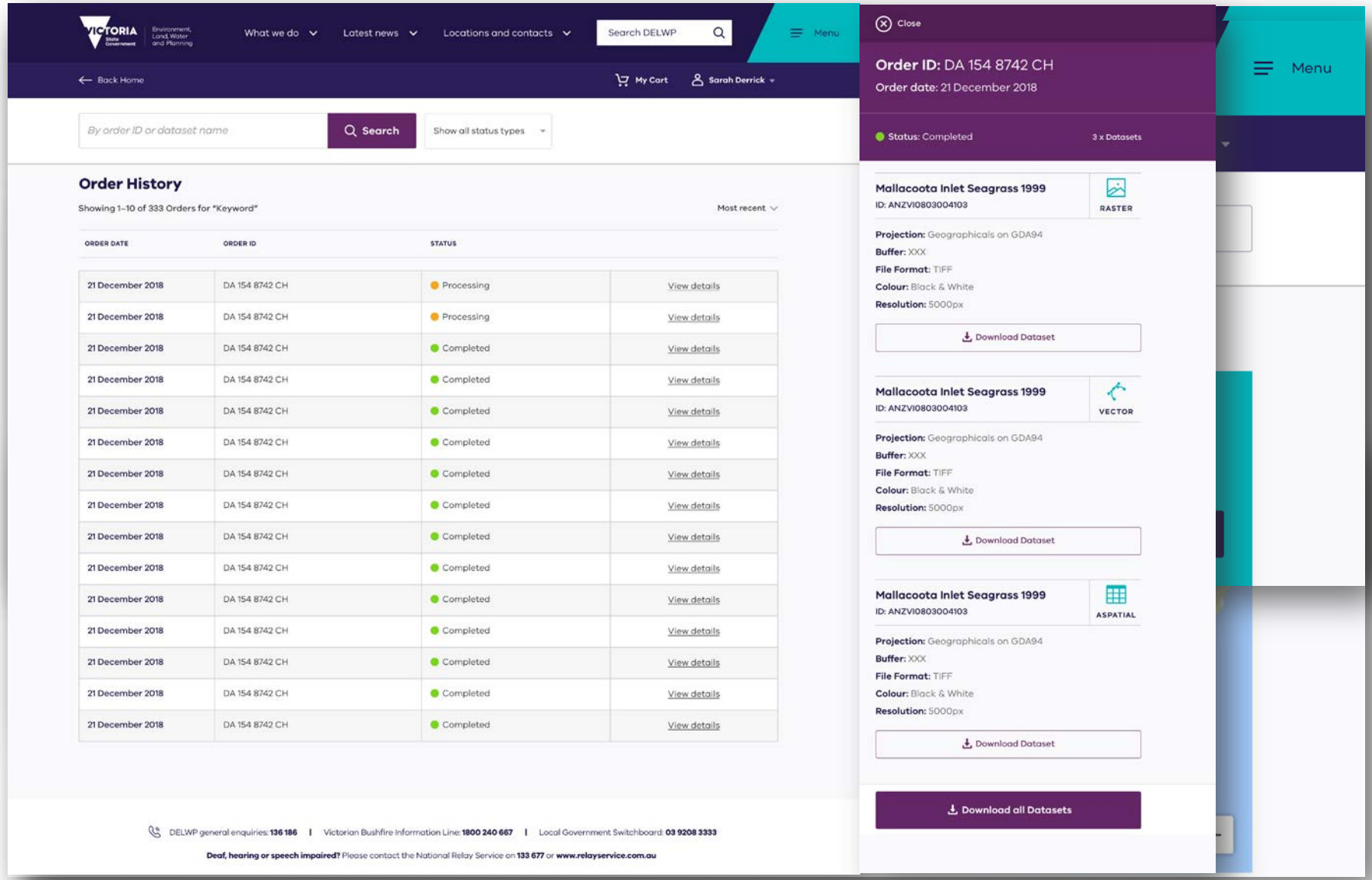
Name	Status	
Admin & Political Boundaries	Available	Edit
Agriculture & Farming	Available	Edit
Atmosphere & Climate	Available	Edit
Biology & Ecology	Available	Edit
Business & Economy	Deleted	Edit
Cadastre & Land Description	Available	Edit
Culture & Demography	Available	Edit
Elevation	Available	Edit
Environment	Available	Edit
Facilities & Structures	Available	Edit
Geological & Geophysical	Available	Edit
Health	Deleted	Edit
Imagery & Base Maps	Available	Edit
Inland Water Resources	Available	Edit
Location & GPS	Available	Edit
Military & Intelligence	Deleted	Edit
Minerals & Petroleum	Available	Edit
Oceans & Estuaries	Available	Edit
Recreation	Available	Edit
Transportation Networks	Available	Edit
Utility Networks	Available	Edit
Vicmap Planning	Available	Edit
Vicmap Products	Available	Edit
Vicmap Property datasets	Available	Edit
Vicmap Property Layers	Available	Edit
Vicmap Property tables	Available	Edit
Vicmap Transport datasets	Available	Edit
VMPROP map-polygons, Parcel and Property	Available	Edit



Current Delivery Method



Future Delivery Method



The End

NATIONAL ARCHIVES OF AUSTRALIA

Digital Continuity 2020 and metadata

Karuna Bhoday and Esther Carey

National Archives of Australia

Federal departments – East Block, Commonwealth Offices, Parkes, Canberra, 1972. Now National Archives Office. NAA, A6180, 2/5/72/19

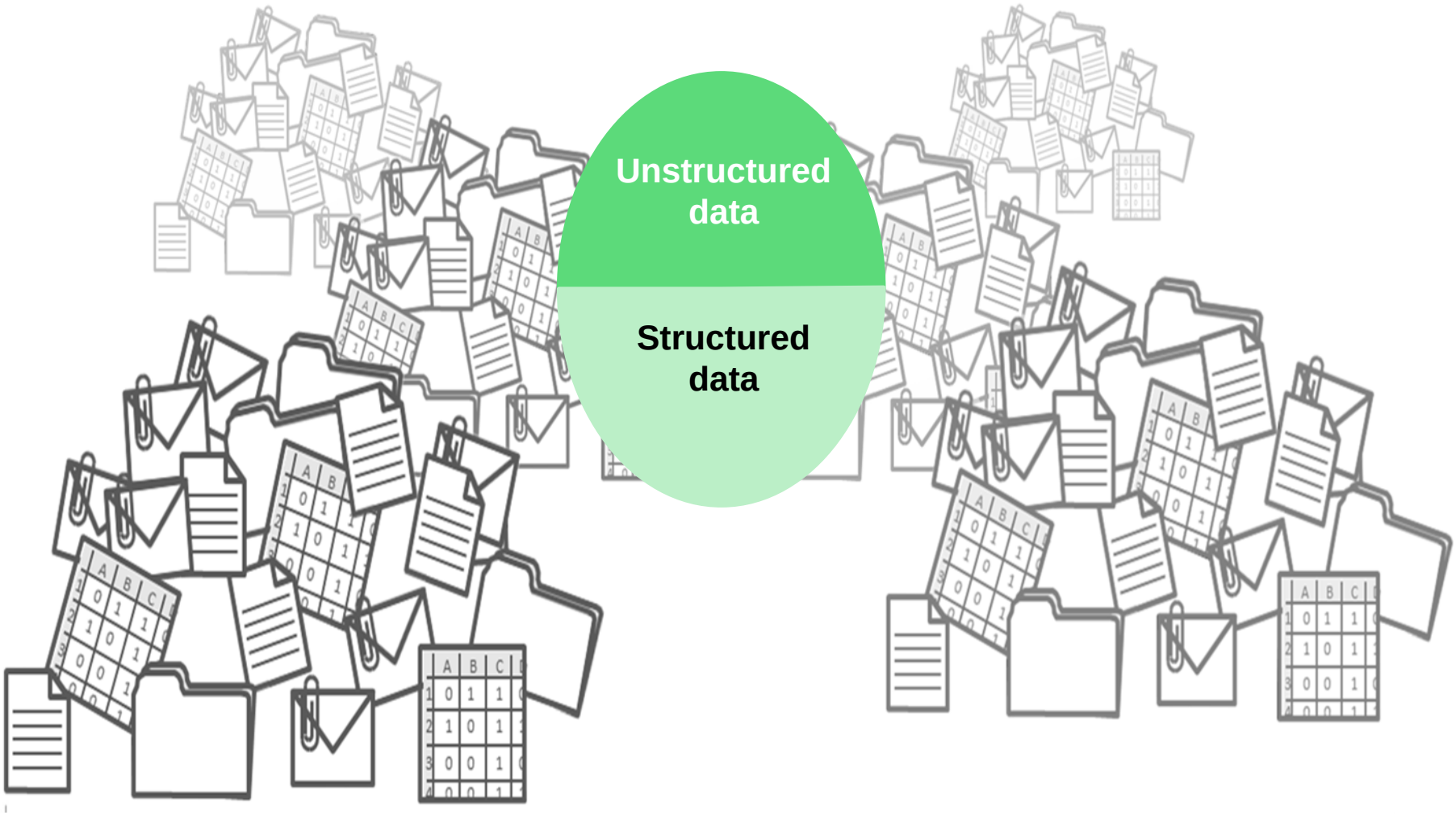
Responsibilities under the *Archives Act 1983*

- guiding Australian Government agencies to create authentic, reliable and useable business information
- preserving Australia's most valuable government records and encourage their use by the public

Sets standards and policies for information which

- support government outcomes
- underpin transparency and accountability
- protect rights and entitlements of Australians

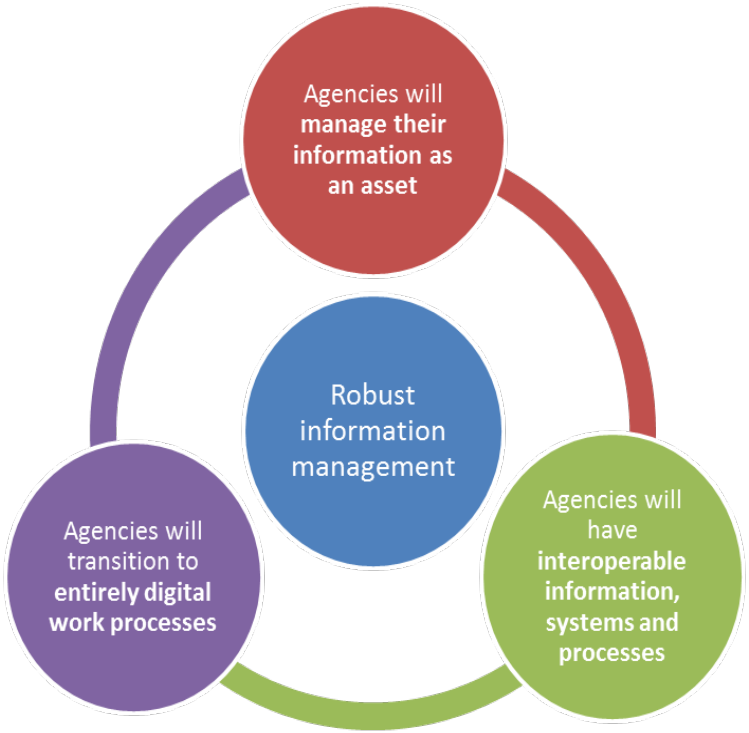
Business Information



Digital Continuity 2020

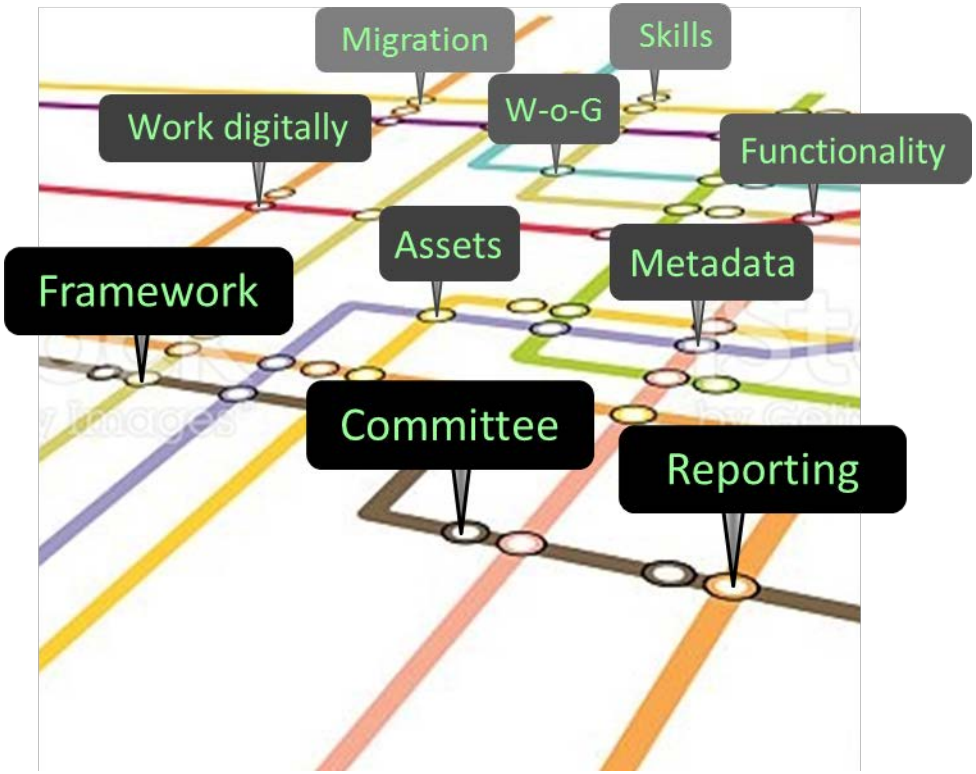
- Builds on achievements of the 2011 Digital Transition Policy
- Whole-of-government approach to digital information governance
- Complements the Australian Government's digital transformation agenda and underpins digital economy

Digital Continuity 2020



Each year government agencies report on their progress towards these principles through a survey and the results are reported to the Minister (annually) and the Prime Minister (every four years)

Digital Continuity 2020



Principle 3: Information systems and processes are interoperable

Focus on metadata and standards

AS ISO 15489 and AS ISO 23081

AS ISO 15489: ‘data describing the context, content and structure of records and their management over time’

AS ISO 23081: ‘structured or semi-structured information that enables the creation, registration, classification, access, preservation and disposal of records through time and across domains’

AS ISO 23081: says metadata ‘can be used to identify, authenticate and contextualise records and the people, processes and systems that create, manage, maintain and use them and the policies that govern them’

AS ISO 23081: says ‘during the existence of records or their aggregates, new layers of metadata will be added’

AS ISO 23081: says metadata ‘ensures authenticity, reliability, usability and integrity over time’

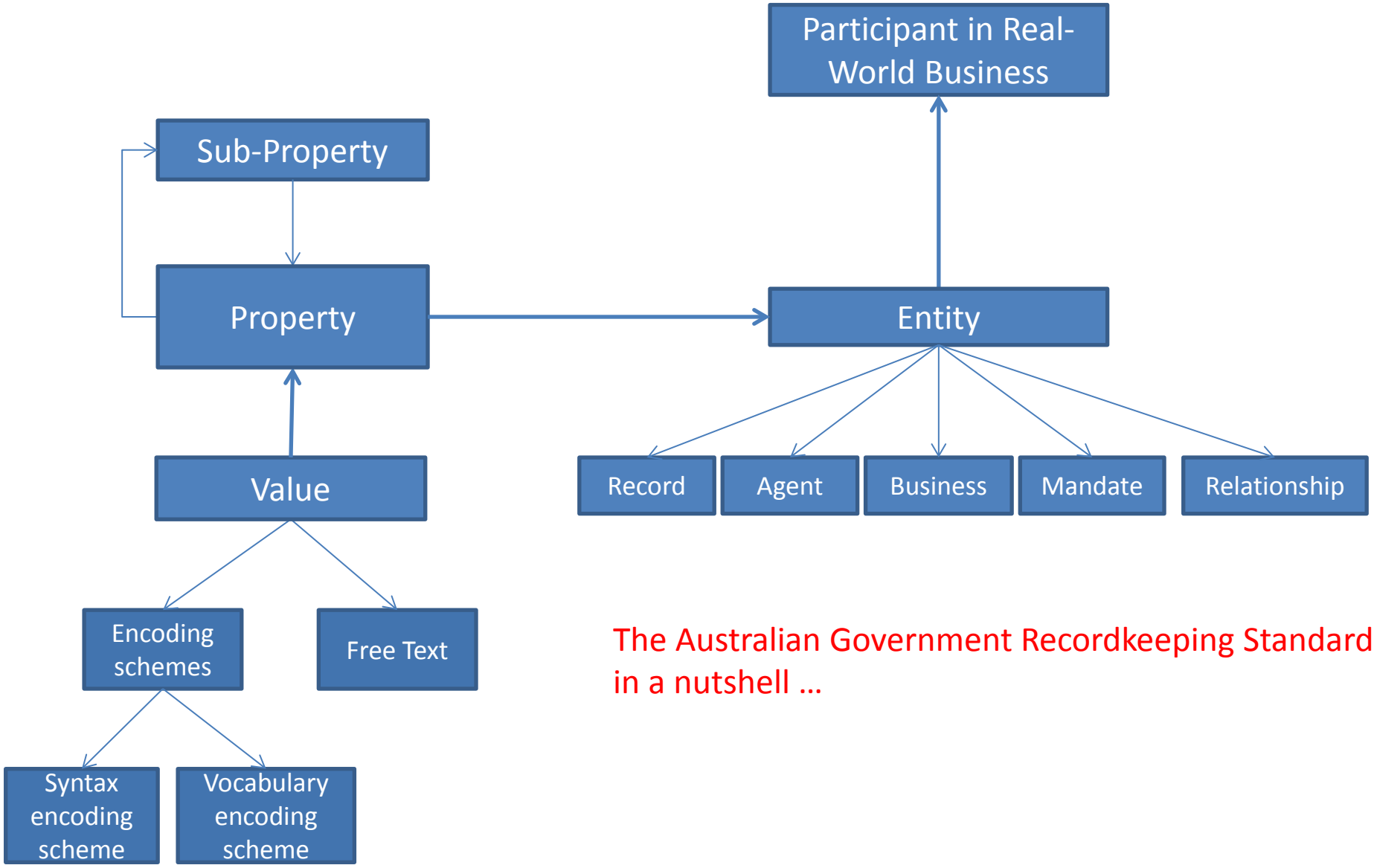
Australian Government Recordkeeping Standard

- Developed in 2008 in collaboration with Archives New Zealand
- Based on AS ISO 23081
- AGRkMS has two parts
  - Part 1 includes background, scope, application and major features
  - Part 2 schema, lists and implementation requirements

The *Australian Government Recordkeeping Metadata Standard* describes information about records and the context in which they are captured and used in Australian Government agencies.

Legislation, rules, procedures, strategy, policy, governance

Functions and activities that the agencies undertake in doing business



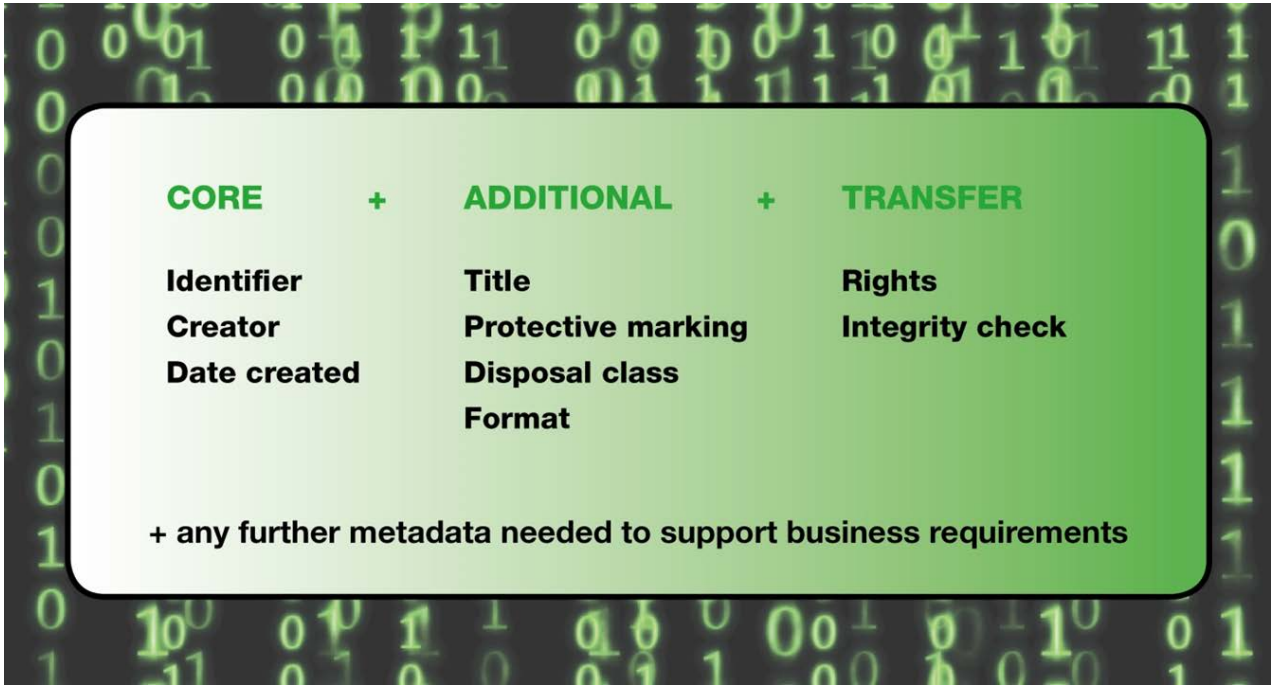
The Australian Government Recordkeeping Standard in a nutshell …

Minimum metadata set

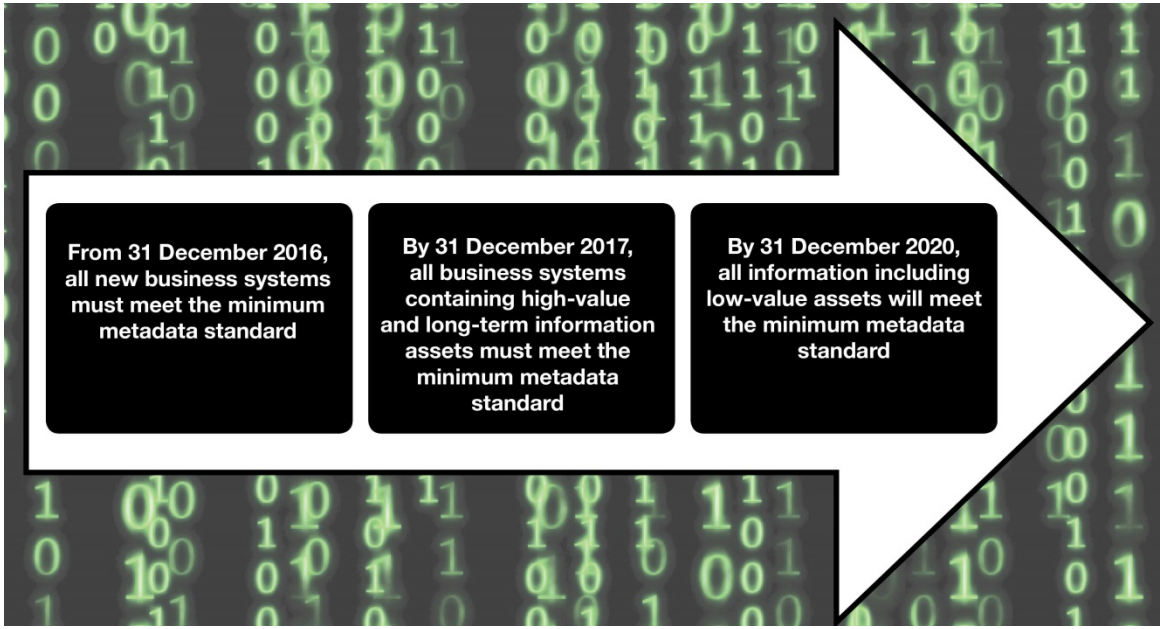
The minimum metadata set is a practical application of the Australian Government Recordkeeping Metadata Standard (AGRkMS)

- identifies metadata properties essential for agency management of business information or transfer to the Archives and other agencies
- supports the Digital Continuity 2020 principles of interoperable systems and processes
- is extensible and facilitates metadata implementation and information use in agencies
- is a minimum standard approach to metadata for information management

Minimum Metadata Set



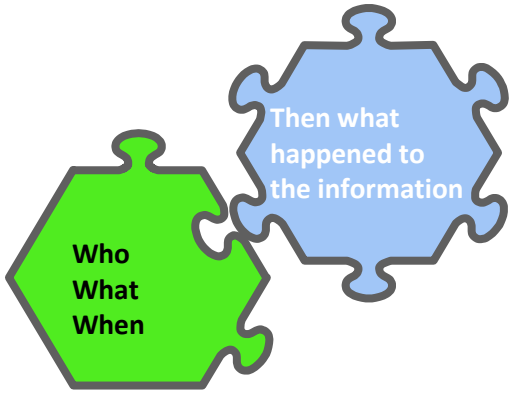
Targets for metadata under Digital Continuity 2020



Types of information management metadata

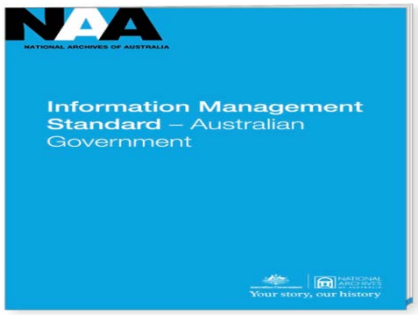
Point of capture:

- Identifier
- Creator
- Creation date
- Business context



Process:

- Viewed
- Migration
- Sentenced
- Destroyed
- Transferred



Information Management Standard

Principle 3: Business information is adequately described

Describe business information so that it can be found, understood and accessed appropriately when needed. Information that describes an information asset is known as metadata.

Recommended actions

3.1 Analyse and describe what needs to be known about business information so that all needed information can be dependably found, understood and used.

Business information can be found if it contains or links to:

- identifying information such as a unique identifier or title
- related information such as documents linked within a file structure
- tools which have been used to enable consistency in description such as thesauruses or data dictionaries.

Business information can be understood if it contains or is persistently linked to description about:

- its context such as who created it, when and for what purpose
- its history and use, such as when it was captured into a system, who has accessed or viewed it, and if it has been changed and by whom.

Business information can be accessed appropriately when needed if it contains or is linked to description about:

- its format
- its security status
- rights to, or restrictions on, individual and public access.

3.2 Determine what level of description is adequate.

Adequate description of business information:

- provides sufficient detail to meet identified business needs and other uses for the content, such as public reuse
- is of good quality including that it is accurate, complete and can be understood
- will vary depending upon the intended use and significance of the information as well as any risk associated with the business activity.

3.3 Design or provide tools and systems that:

- where possible automate the collection and management of descriptive information
- enable staff to enter descriptive information in a consistent manner
- where required, standardise description to support sharing and interchange of quality data between internal and external systems.

Questions

BOURKE STREET FROM SPRING STREET, 1857.

Australian Government

National Archives of Australia

naa.gov.au

Australian Government
Geoscience Australia

Boundaries and Georegulation

(previously Maritime Jurisdiction Advice)

Anna Potter
Geoscientist
National Location Information Branch
Geoscience Australia

Geoscience Australia, Boundaries & Georegulation

Central Role Government co-ordination – legal certainty in the spatial administration of the marine jurisdiction

Marine cadastre – spatial extension of the Federal Register of Legislative Instruments, Marine Gazetteer

Legal reform of baseline definition - from ambulatory to fixed

Drafting advice on spatial aspects of marine legislation

Advice to Cwth, State and Pacific on spatial/legal framework of marine space

Advice to Government on intn'l boundaries & negotiations

International engagement on Standards and processes.

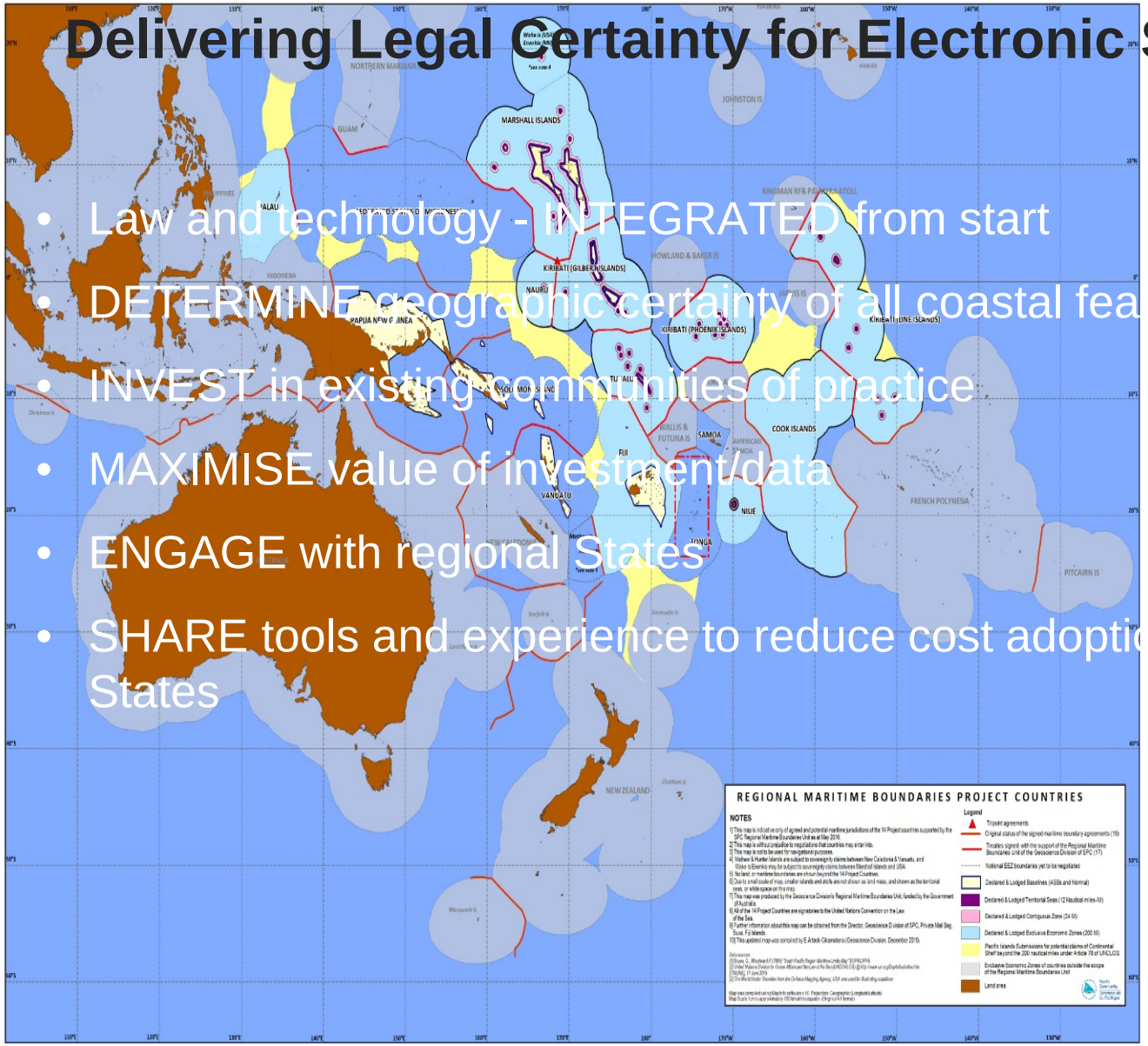
Advocacy of Australia's State Practice

Delivering Legal Certainty for Electronic Spatial Data

1. Achieve legal certainty and long term stability in the location of maritime limits and boundaries through technical and legal response
2. A framework deployable by ALL States based on international standards
3. Integrated framework to implement maritime and terrestrial georegulation
4. Capacity to support smart uses – geofencing, integrated marine planning
5. Extensible to subsidiary regulatory zones – Fisheries, Petroleum, Minerals, Environment…

Delivering Legal Certainty for Electronic Spatial Data

- Law and technology - INTEGRATED from start
- DETERMINE geographic certainty of all coastal features
- INVEST in existing communities of practice
- MAXIMISE value of investment/data
- ENGAGE with regional States
- SHARE tools and experience to reduce cost adoption by States



Pacific Community
Communauté du Pacifique

Australian Government

GRID ARENDAL
A Centre Collaborating with UNEP

COMMONWEALTH SECRETARIAT

Our stakeholders

Improving Marine Space Governance

Problem:

Poor access to spatial component of offshore regulation and the basis of Government decision making.

Lack of legal certainty in spatial data used to administer marine space

Why:

•No centralized discovery, agencies do not publish information

•No mechanism to include electronic spatial data in legislation – required to give certainty for electronic spatial data

•Absence of policies and standards to support above

Solution

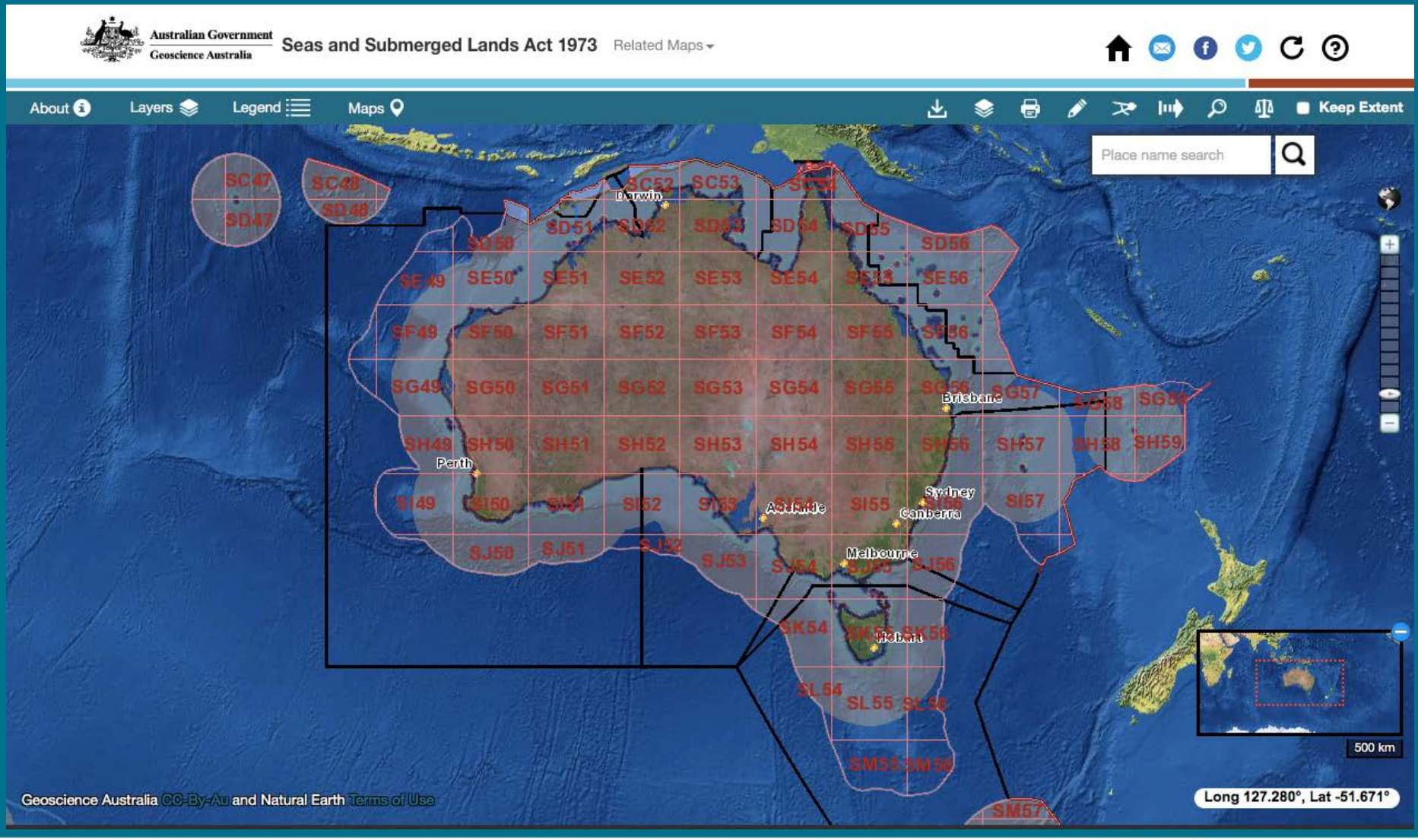
Framework for creating and distributing legally authoritative spatial data – changes to drafting practice/FRLI AMSIS/Marine Cadastre

International Standards for exchange maritime boundary data, including sectoral boundaries S121…

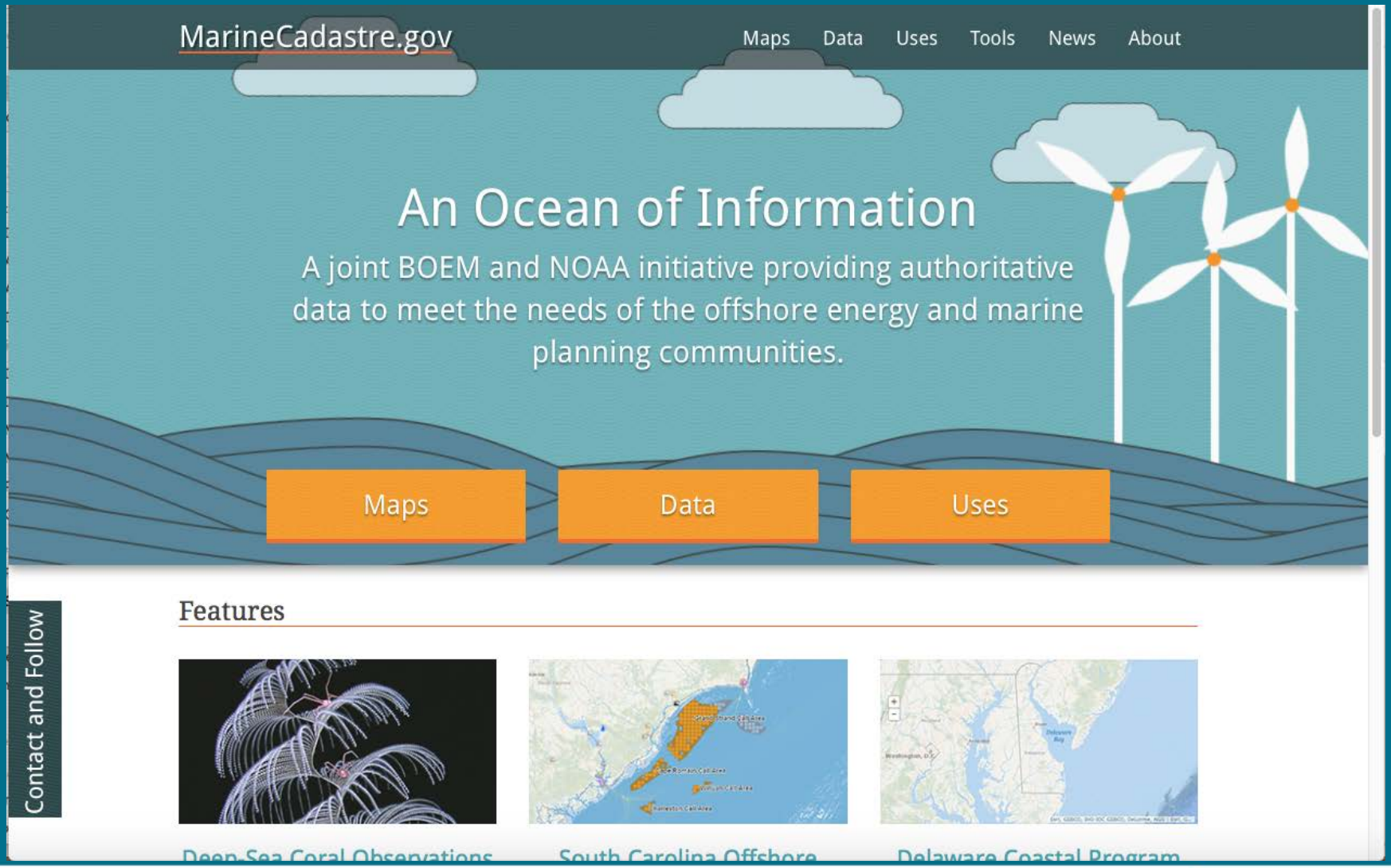
Facilitate responsible agencies to release their own spatial regulation, and sectorally specific decision making datasets

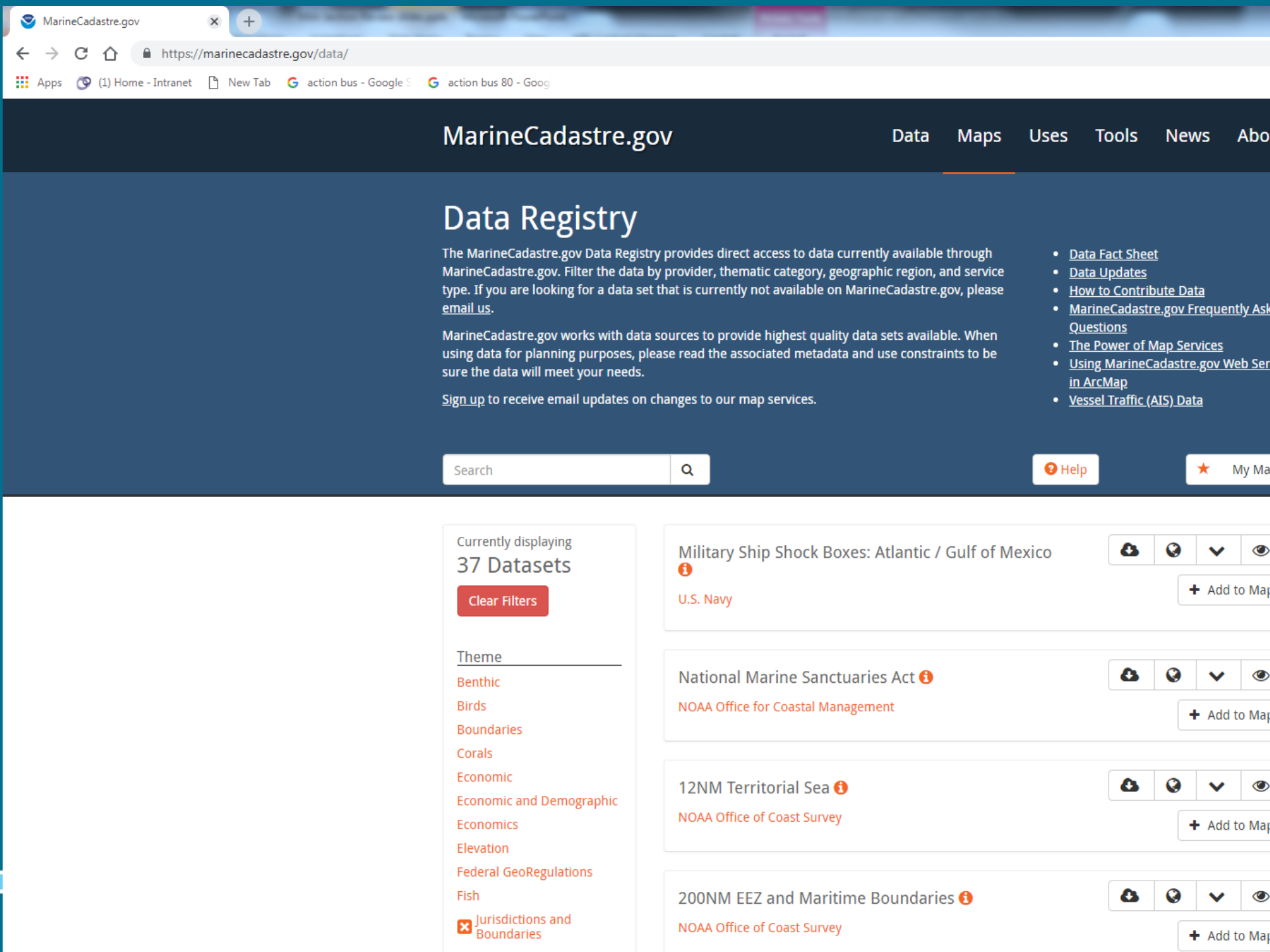
Build a community of practice for communication between agencies and countries.

AMSIS



US Marine Cadstre – International co-ordination




MarineCadastre.gov
https://marinecadastre.gov/data/
Apps
(1) Home - Intranet
New Tab
action bus - Google
action bus 80 - Goog
MarineCadastre.gov
Data
Maps
Uses
Tools
News
Abo
Data Registry
The MarineCadastre.gov Data Registry provides direct access to data currently available through MarineCadastre.gov. Filter the data by provider, thematic category, geographic region, and service type. If you are looking for a data set that is currently not available on MarineCadastre.gov, please email us.
MarineCadastre.gov works with data sources to provide highest quality data sets available. When using data for planning purposes, please read the associated metadata and use constraints to be sure the data will meet your needs.
Sign up to receive email updates on changes to our map services.
Data Fact Sheet
Data Updates
How to Contribute Data
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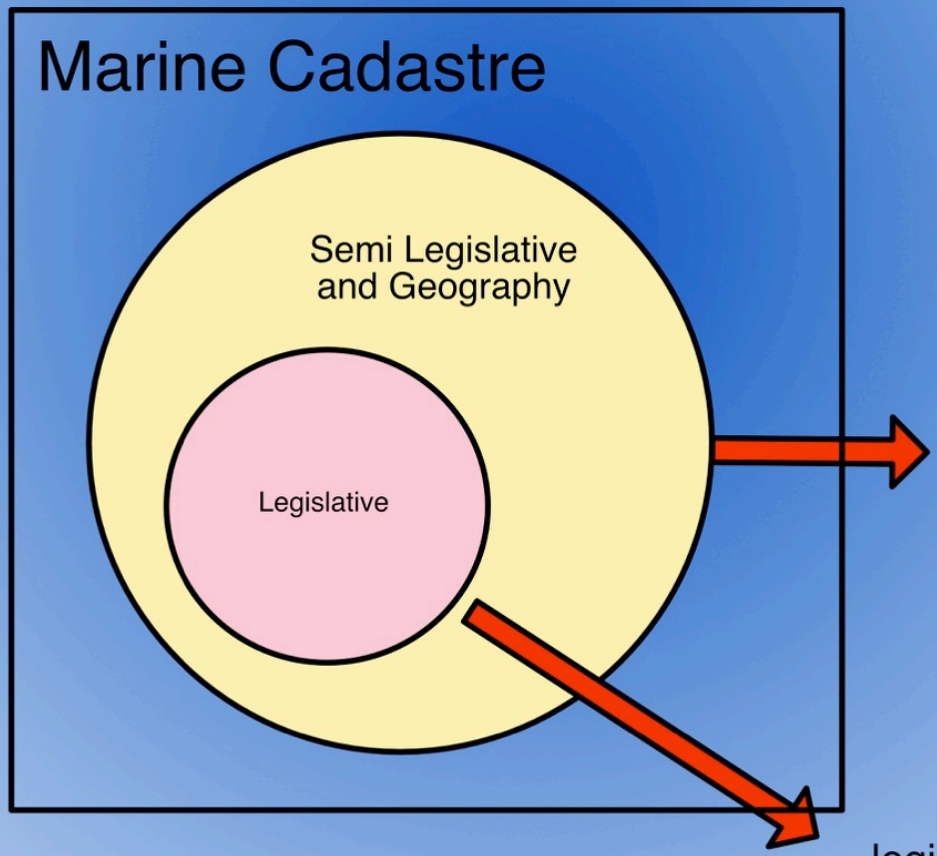
Using MarineCadastre.gov Web Ser
in ArcMap
Vessel Traffic (AIS) Data
Search
Help
My Ma
Currently displaying
37 Datasets
Clear Filters
Theme
Benthic
Birds
Boundaries
Corals
Economic
Economic and Demographic
Economics
Elevation
Federal GeoRegulations
Fish
Jurisdictions and Boundaries
Military Ship Shock Boxes: Atlantic / Gulf of Mexico
U.S. Navy
Add to Map
National Marine Sanctuaries Act
NOAA Office for Coastal Management
Add to Map
12NM Territorial Sea
NOAA Office of Coast Survey
Add to Map
200NM EEZ and Maritime Boundaries
NOAA Office of Coast Survey
Add to Map

Raw Industry data
survey data
Science data

Offshore survey data
fishing obs
oceanography
weather
environmental obs
science and industry studies



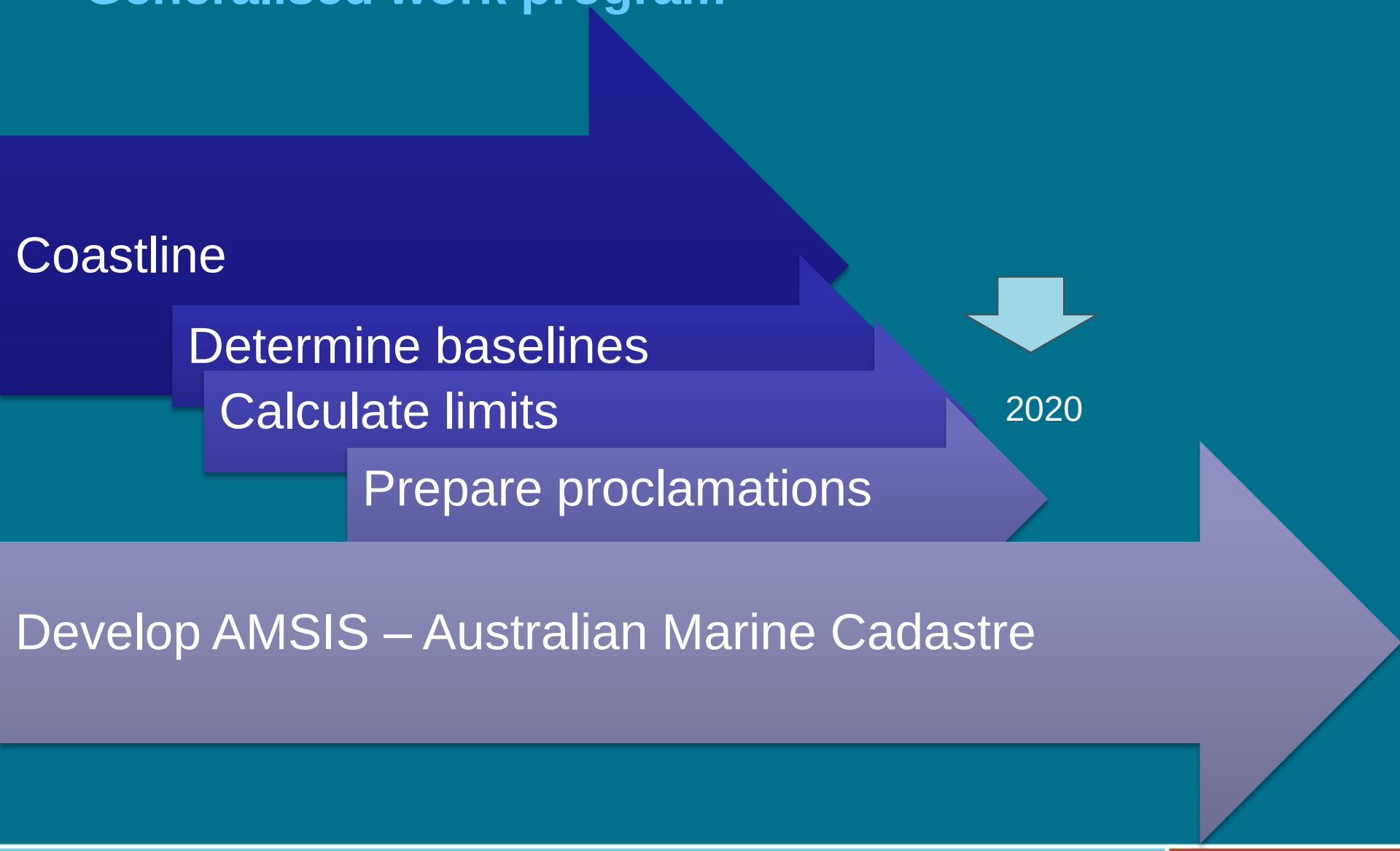
Infrastructure
prospectivity
physical geography
geology
Hydrography/Navigation
shipping density and makeup
fishing effort/fish distribution
official distribution of
protected species
.....etc

Legislation and
legislative instruments
Gazettals

Metadata priorities

- Discoverability and basic utility for non-technical users
- Structured keywords to allow automated generation of content
- Ability to link to FRLI/source of legal information

Generalised work program



Our Role

Lead S121 standard development

- Chair committee (40 countries); Build data model

Influence broad implementation of standard

- Reduce unnecessary complexity in standard
- Build and deliver implementation tools
- Build/use collaborative relationships to drive use

Coordination marine agencies to improve visibility and authority of georegulatory information

- AMSIS/marine cadastre
- Direct support
- Collaboration with AGD on legal aspects

Ongoing requirements

Complete mapping of the coastline, integrate with freshwater data (coastline and water network)

Resolve revised baselines with States (before 2020)

Support for Australia's delimitations (ET..) (ongoing)

Complete continental shelf delineation (?)

Establishment of S121 standard at IHO (by 2018)

Adoption of S121 at FRLI as mechanism for schedules in Acts (in 2019)

Proclamation of digital maritime limits (2020)

Support establishment of digital repository for maritime boundary at UN DOALOS (underway)

Ongoing requirements

Finish AHS LADS surveys over Australian reefs

Software enhancements to reduce costs of generating maritime boundary data (productivity)

Enhancements to Interactive maps

Shallow water bathymetry collation and visualisation to support MB definition and delimitation

Coastal outputs of Cube extended to all areas less than 50m (desirable to extend to Pacific)

Opportunities

Primary mechanism for MSP/operational/admin - Improved management of Australia's marine space

AMSIS/ Marine Cadastre is opportunity for GA to deliver greater value from large data holdings

- Integration of terrestrial information, EO data,
- Value add defence 50k data
- Extension of minimum dependency model of managing information

Greater maturity in online delivery framework (Shared service cloud delivery, better web services, portal design/usability)

Cwth agencies to invest in delivering data that supports their sectoral needs, co-ordination between sectors.

Australian Government
Geoscience Australia

Phone: +61 2 6249 9111

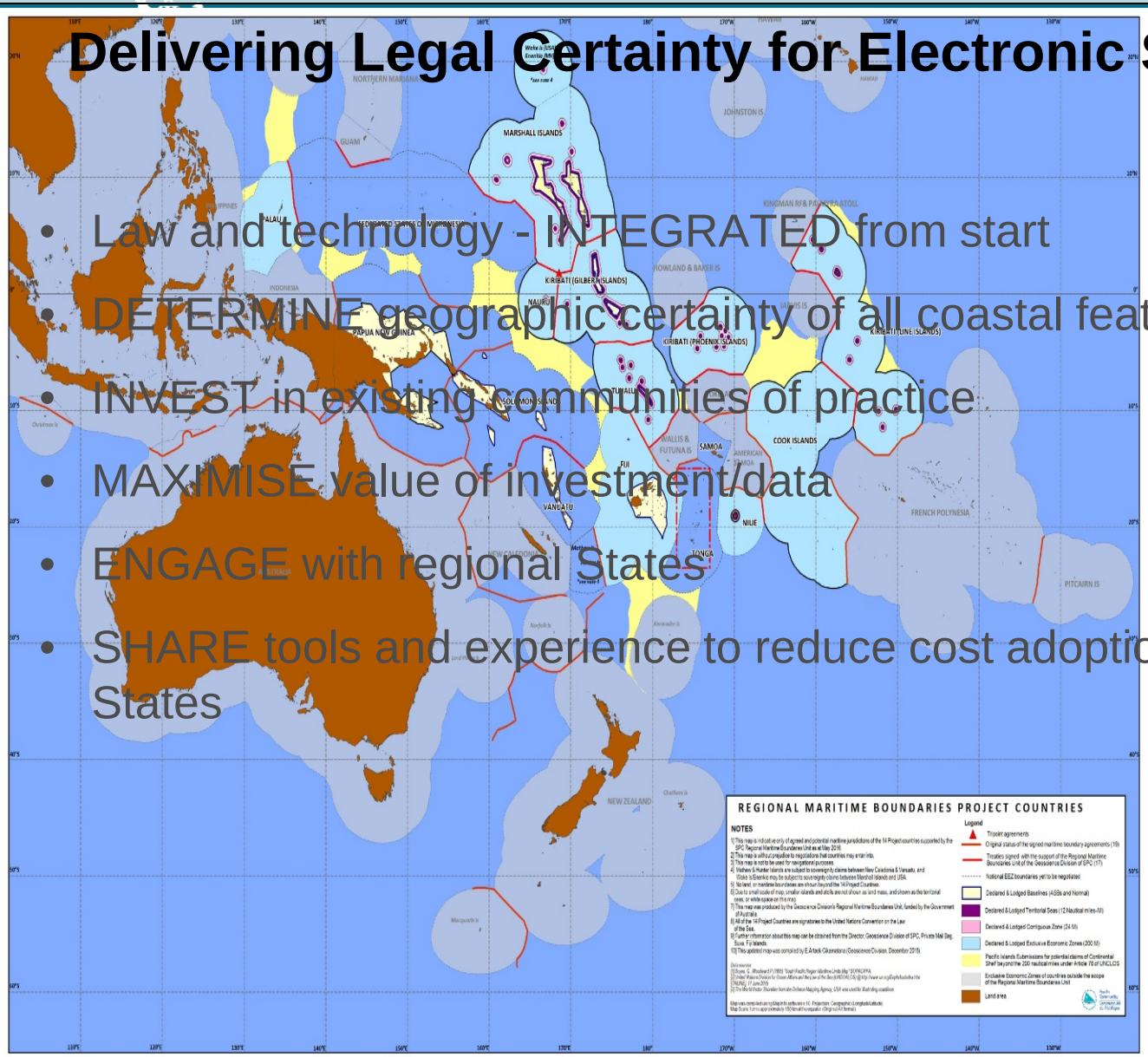
Web: www.ga.gov.au

Email: clientservices@ga.gov.au

Address: Cnr Jerrabomberra Avenue and Hindmarsh Drive, Symonston ACT 2609

Postal Address: GPO Box 378, Canberra ACT 2601

Delivering Legal Certainty for Electronic Spatial Data



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Pacific Community
Communauté du Pacifique

Australian Government

GRID ARENDAL
A Centre Collaborating with UNEP

COMMONWEALTH SECRETARIAT

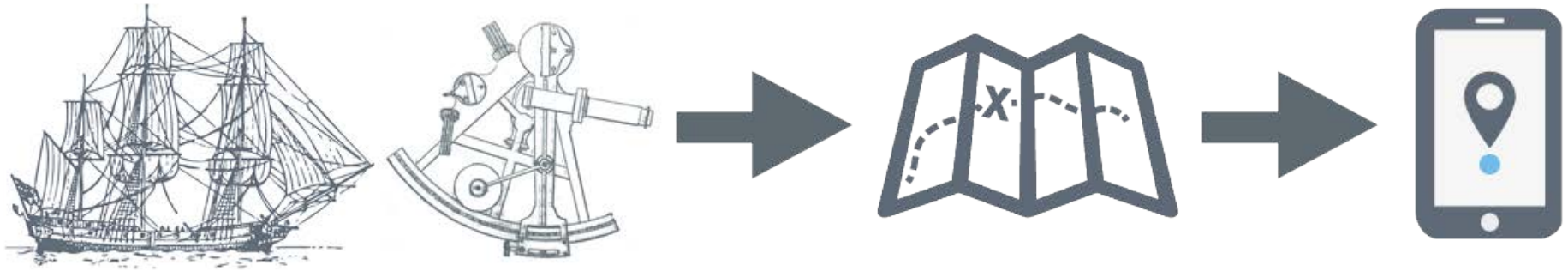
Australian Government
Geoscience Australia

Australia's new datums and why they are useless without metadata standards

Nicholas Brown, Craig Harrison, Roger Fraser and John Dawson

National Geodesy Section Leader
Geoscience Australia
Chair of Permanent Committee on Geodesy

Why - Positioning, Navigation and Timing (PNT)



~$1.1b

Adopting precise positioning technology in the mining industry was estimated to have increased output by $1 085 million in 2012 alone.

Mining

~$723m

Precise positioning technology in the construction sector was estimated to have increased output by $723 million in 2012.

Construction

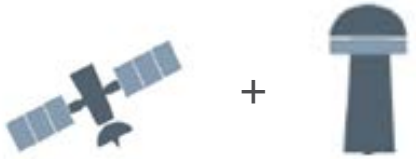
~$466m

Precise positioning technology was estimated to have increased yields by up to $466 million in 2012.

Agriculture

Source: ACIL Allen Consulting, 2013

Our Vision



An integrated national positioning capability to accelerate the adoption and development of location-based technology and applications in Australia

NPI NATIONAL POSITIONING INFRASTRUCTURE CAPABILITY

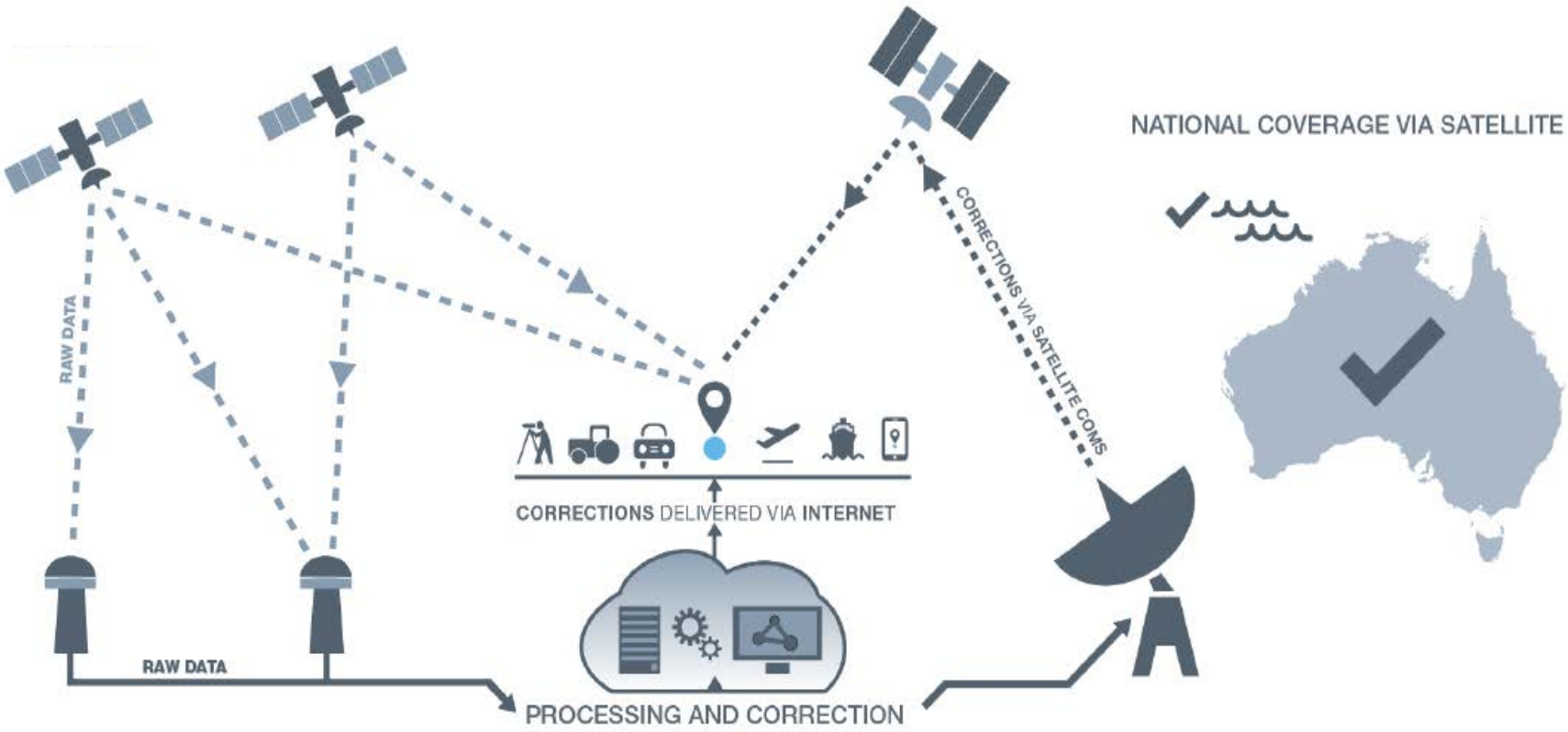
- Precise Positioning anywhere, anytime at centimetre level
- Improved access to GNSS data and products for existing and new industries

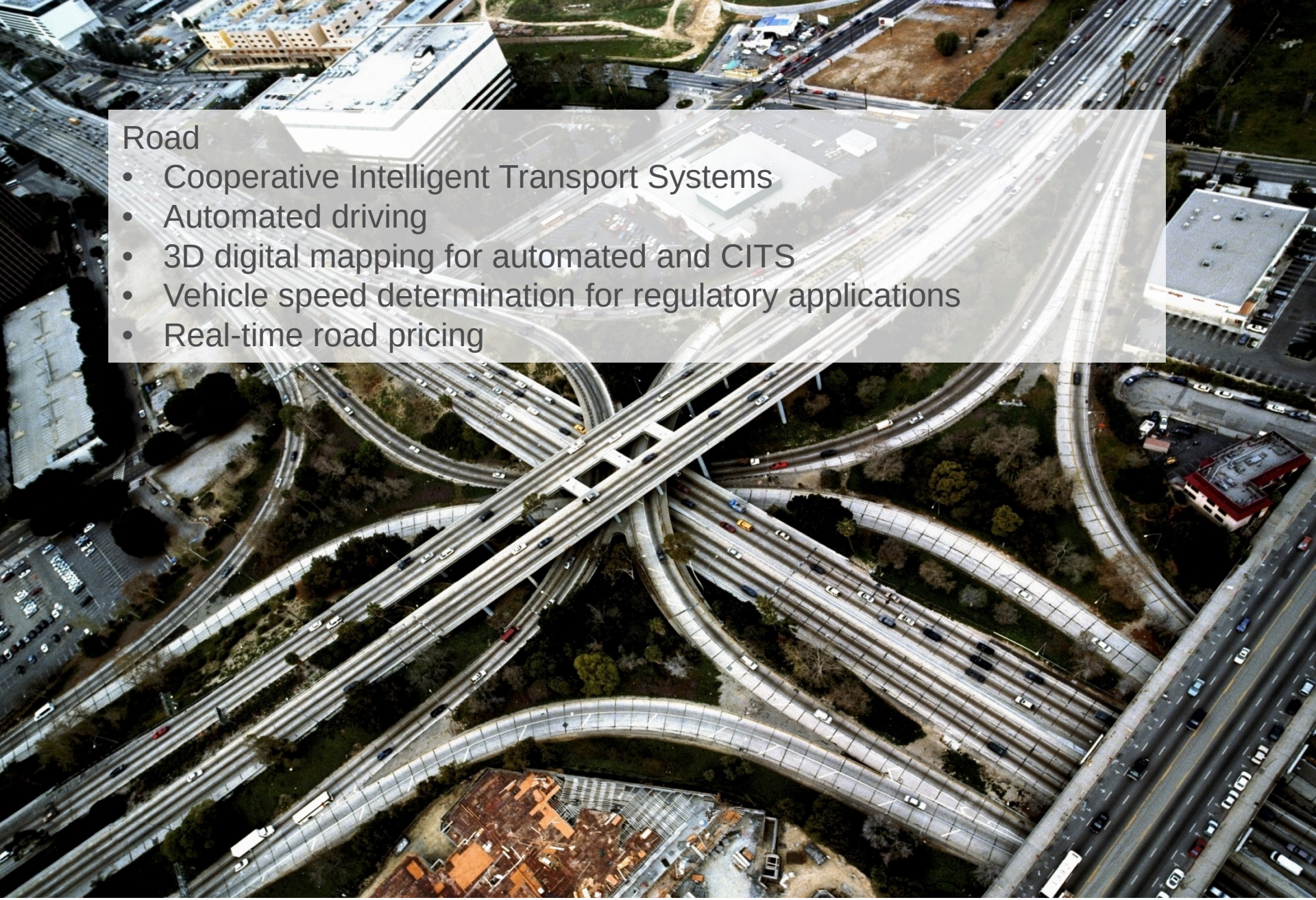
Budget 2018-19 – NPIC and SBAS

2018-19 Australian Federal Budget

- $64 million for National Positioning Infrastructure Capability (NPIC)
- $161 million for a Satellite-Based Augmentation System (SBAS)
- Ongoing operational budget

Satellite-Based Augmentation System (SBAS)





Road

- Cooperative Intelligent Transport Systems
- Automated driving
- 3D digital mapping for automated and CITS
- Vehicle speed determination for regulatory applications
- Real-time road pricing

General Aviation

- Approach Procedures with Vertical guidance (APV)
- Helicopter procedures

Image source: Royal Flying Doctor Service of Australia

Rail

- Advanced train management systems
- Track surveys
- Track worker and track vehicle safety systems

Construction

- Personal safety
- Aerial surveys

UAV Aviation

- High-precision drone applications for agriculture and forestry
- Aerial surveys

Agriculture – livestock

- Virtual fencing for strip grazing
- Behavioural modelling to enable early disease detection
- Quantification of reproductive relationships
- Intelligent spatial analytics

Resources

- Mine safety
- Automation of mine sites and supply chains

Consumer

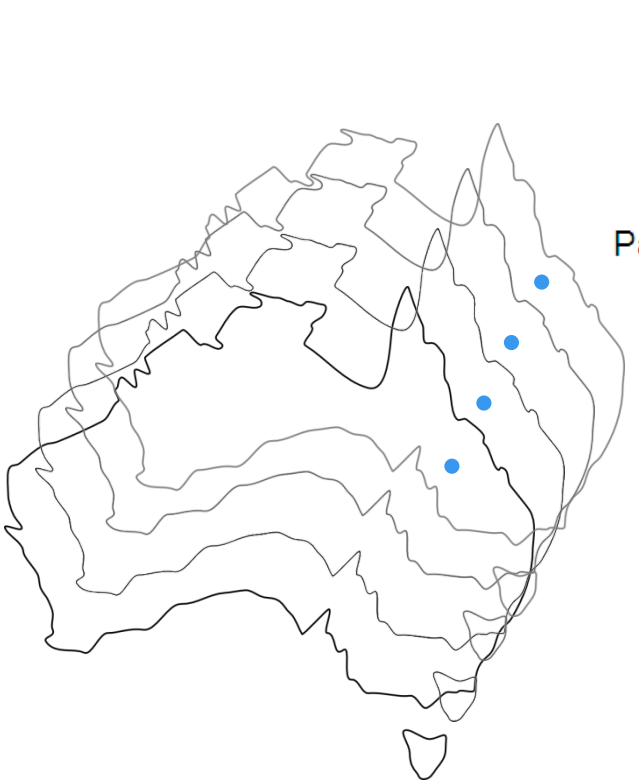
- Safe guidance for the visually impaired
- Parcel delivery

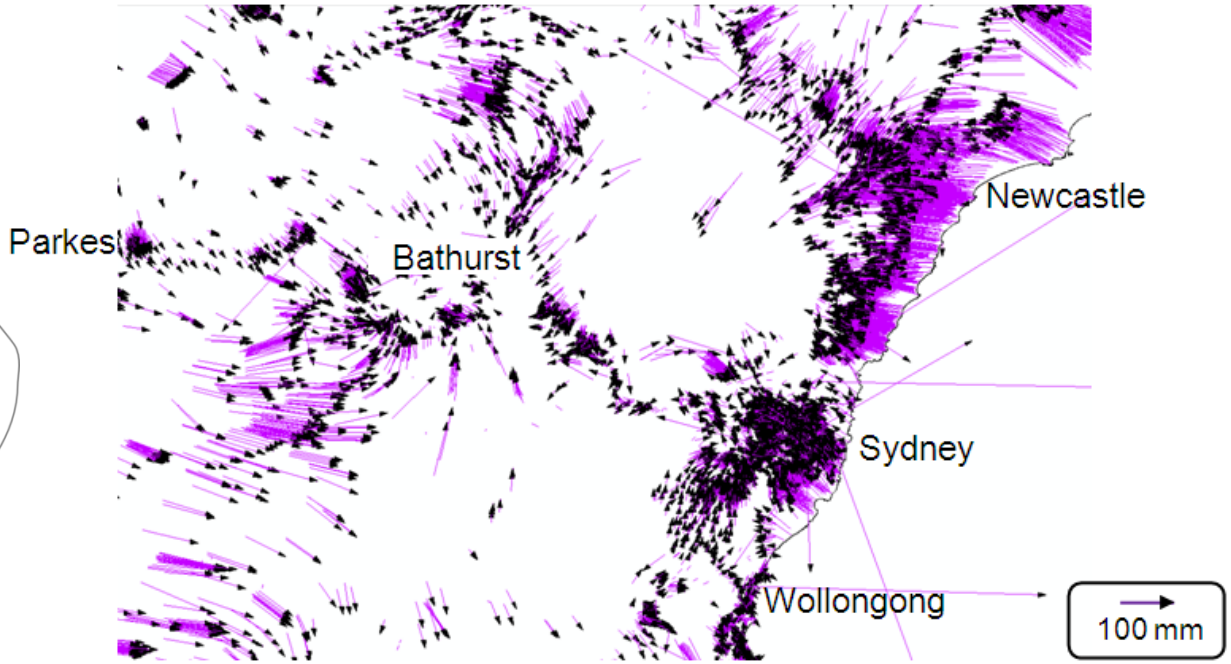
Maritime

- Close quarters positioning for improved port operations
- Under keel clearance monitoring for improved productivity
  - Port Hedland; 10 cm = extra $200M/yr of iron ore exports
- Safer navigation
- Tracking of container movements in intermodal container terminal

Data can only be as accurate as your datum

- Need to remove biases and distortions and biases in GDA94





Source: Joel Haasdyk and Tony Watson, LPI NSW, APAS Conference 2013

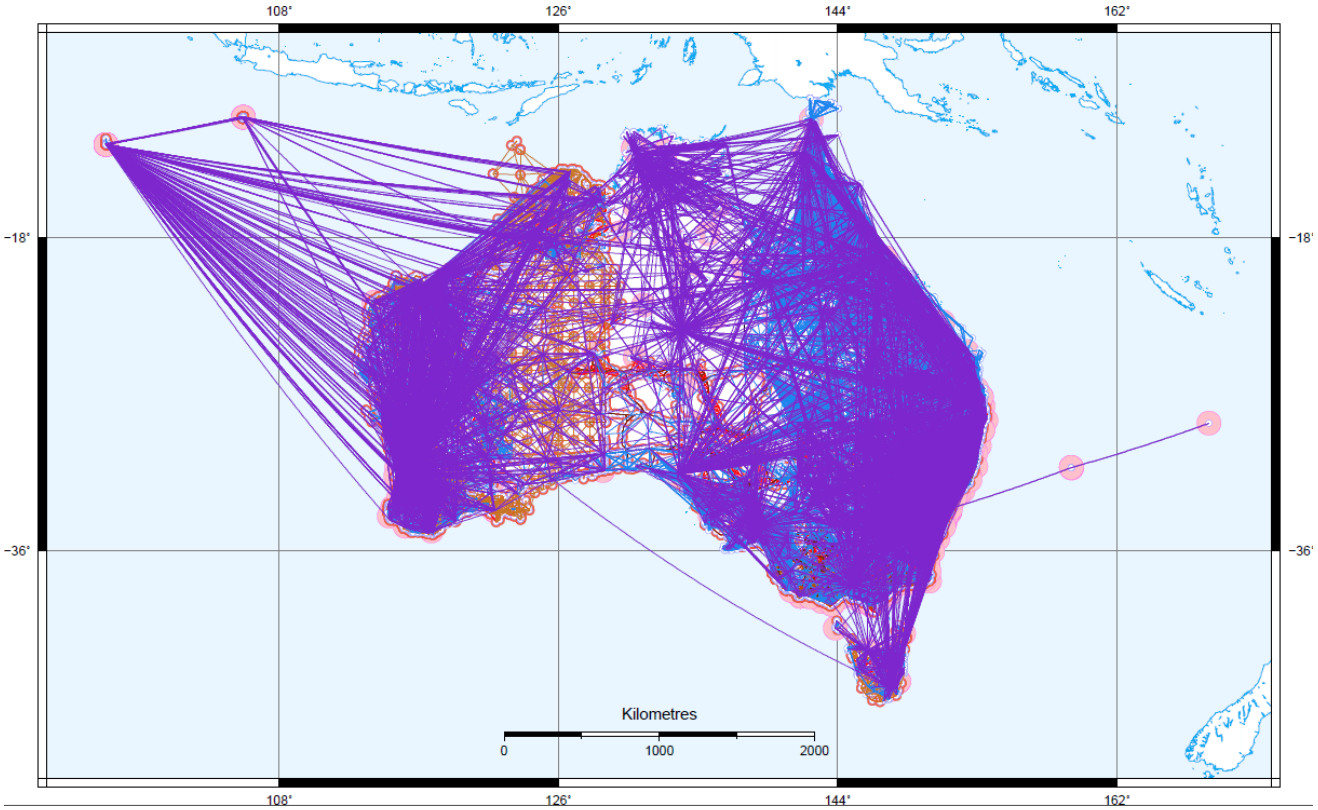
New national datum – GDA2020

- Determination made in October 2017
- Update from 21 to 109 reference sites
- ~2 million measurements (GNSS + terrestrial)
- ~250,000 stations
- Rigorous national adjustment using DynaNet

National Measurement (Recognized-Value Standard of Measurement of Position) Determination 2017

I, Dr R. Bruce Warrington, Chief Metrologist, National Measurement Institute, make the following determination.

Dated 11 October 2017



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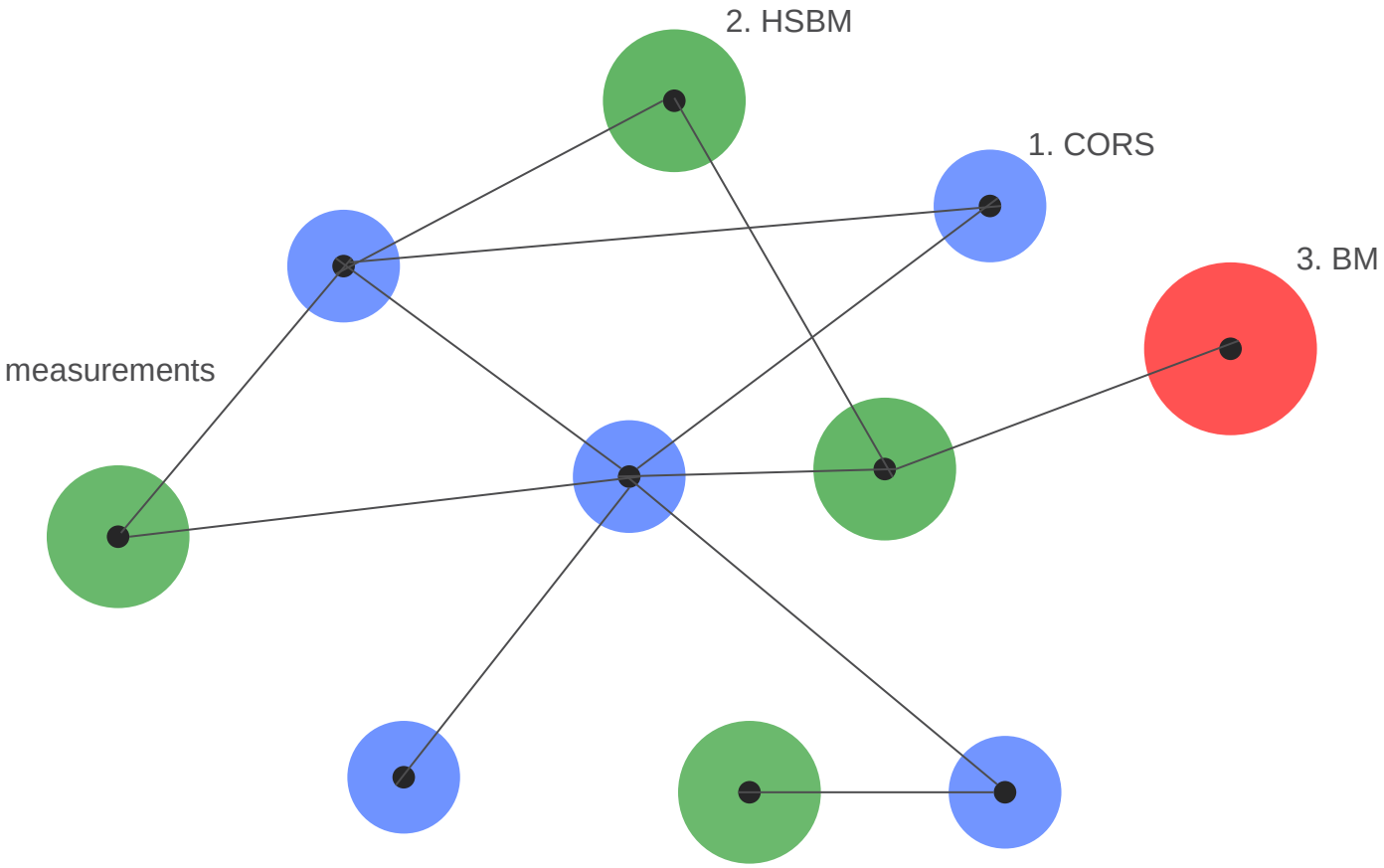
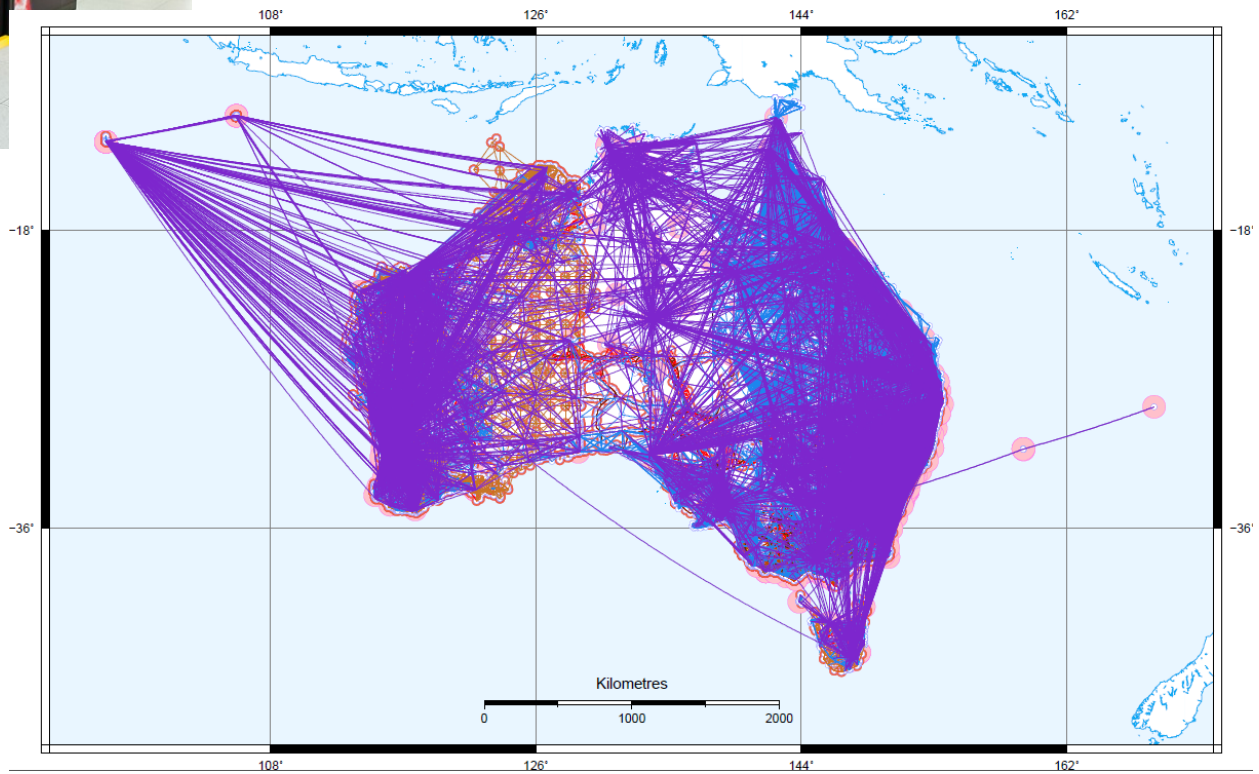


NCI Supercomputer



- 250,000 stations
- 2M measurements
- 2.8TB RAM
- ~5 hours

Time dependent reference frame

- Location-based data can only be as accurate as the datum to which it is aligned
- Some applications require real-time, high-precision positioning such as the intelligent transport sector (e.g. autonomous vehicles and mining) and location-based services (e.g. asset management and emergency services)
- ICSM has endorsed a plan developed by PCG to introduce a time-dependent reference frame in 2020. This time-dependent reference frame will be called the **Australian Terrestrial Reference Frame (ATRF)**
- GDA2020 will be retained for as long as is needed

Crustal Motion

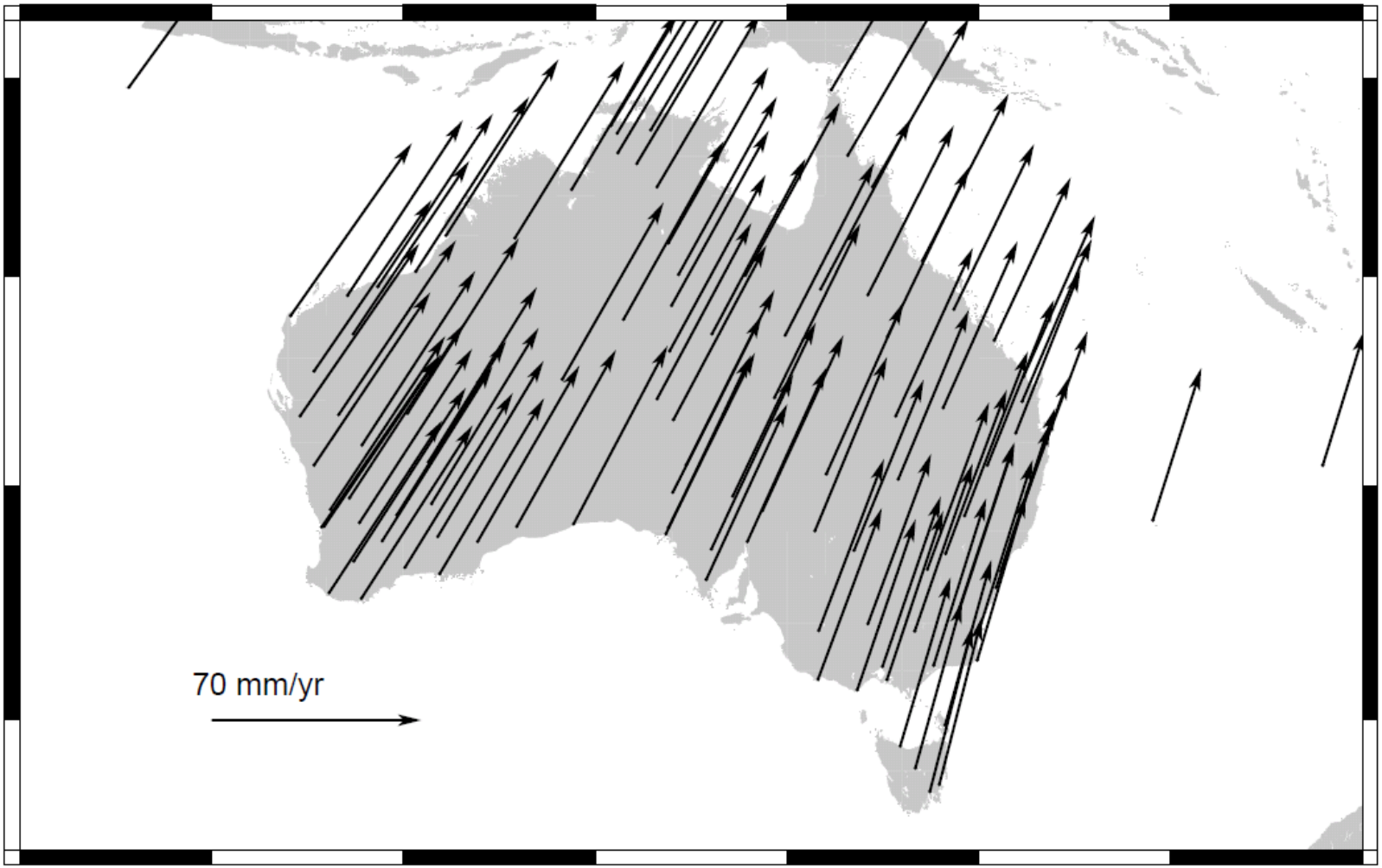


Plate Motion Model

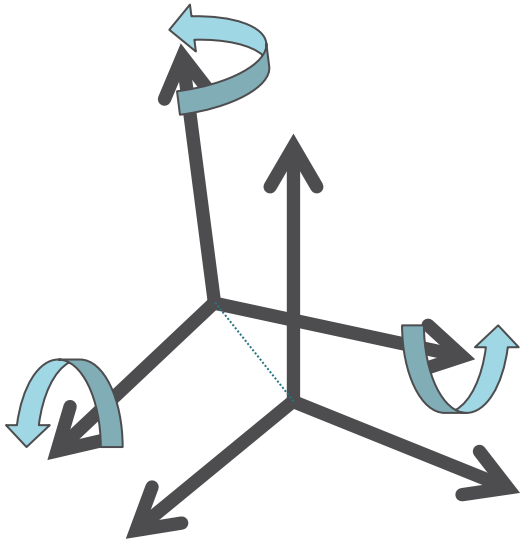
- GDA2020 / ITRF2014 can be converted to ATRF using the Australian plate motion model
- The model describes motion of the Australian tectonic plate based on continental plate motion
- Computed from 109 reference sites which define GDA2020
- Only **rotation velocities** of the 14-parameter transformation

Table 1: Transformation parameters for ITRF2014 to GDA2020 along with their one-sigma uncertainties (1σ). Units are in metres (m) and m/yr for the translation and their rates, respectively, parts-per-million (ppm) and ppm/yr for scale and its rate, respectively, and arcseconds and arcseconds/yr for rotations and their rates, respectively. The reference epoch t_0 is 2020.0.

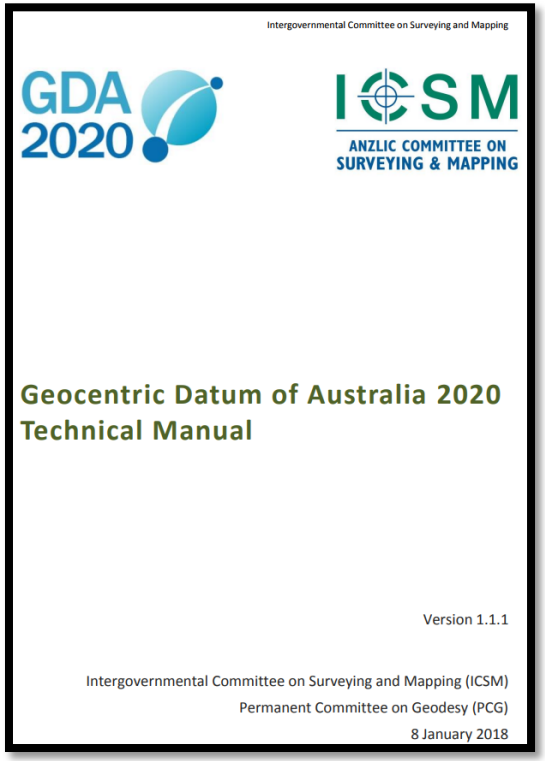
	$t_x, \dot{t}_x$	$t_y, \dot{t}_y$	$t_z, \dot{t}_z$	$s_c, \dot{s}_c$	$r_x, \dot{r}_x$	$r_y, \dot{r}_y$	$r_z, \dot{r}_z$
rates	0.00	0.00	0.00	0.00	0.00	0.00	0.00
uncertainty	0.00	0.00	0.00	0.00	0.00	0.00	0.00
rates	0.00	0.00	0.00	0.00	0.00150379	0.00118346	0.00120716
uncertainty	0.00	0.00	0.00	0.00	0.00000417	0.00000401	0.00000370

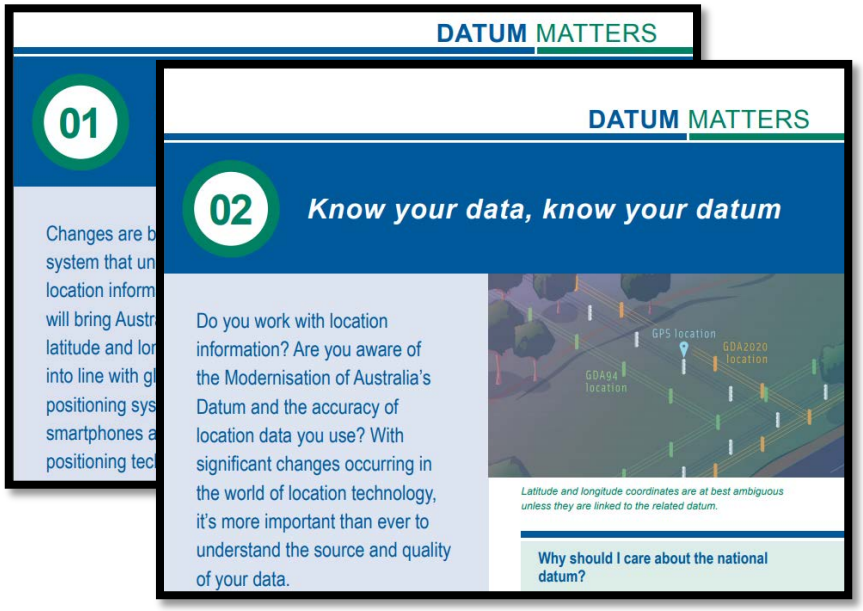
GDA94 – GDA2020 Transformation

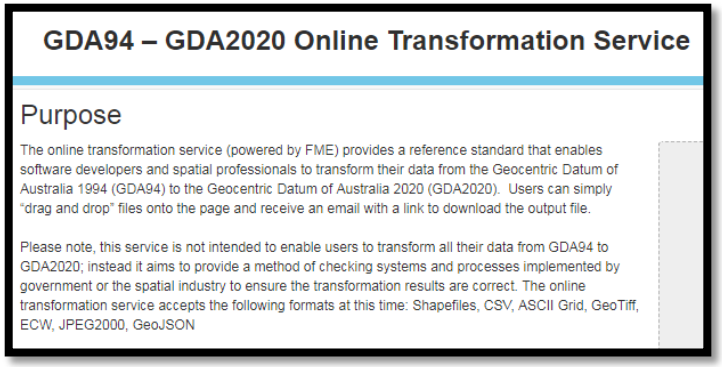
- Use common points from GDA94 Determination and GDA2020 Determination
- 21 reference points from GDA94 AFN minus MAC1, COCO and XMIS due to seismic displacement
- Solve for the 7-parameters (3 x rotation, 1 x scale and 3 x translation) using CATREF software

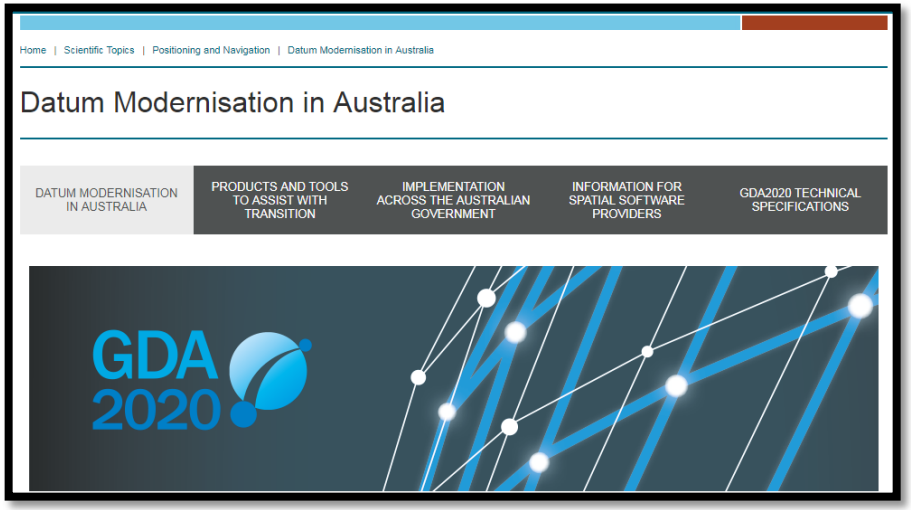


GDA2020 Products and Services









eGeodesy

- The ubiquitous nature of positioning now means we need to share our data and metadata with a new [and non-spatial] audience [sometimes in real time].
- Many of the standards we use are still text based (e.g. site logs, RINEX, SINEX)
- In order to service user demands our geodetic data and the associated metadata need to be **standardised, discoverable**, **interoperable** and **authoritative**
- The continual increase in the volume and complexity of data means we also need to generate, transfer and use data and metadata via a machine readable form
- There is a need to develop a standard to encode and exchange geodetic data and metadata

Standards

Standards

International Organisation for Standardization

ISO 19136:2007

- TimeSeriesML
- Observations and Measurements
- ISO19111 – Spatial Ref. by. Coords
- ISO19127 – Geodetic Register
- ISO19161 – ITRS

+ GeodesyML (proposed GML Application Schema)

Extending GML

- GML provides a rich set of primitive objects like (geometry, coordinate reference system, time etc.)
- But not detailed / specific standards
  - e.g. GML can not be used to describe everything about a GNSS, VLBI, SLR, DORIS site.
- The geodetic standard needs objects like antenna, receiver, cable, adjustments etc.
- GML Application Schemas extend GML to meet the needs of a specific community of interest (e.g. SensorML, GeoSciML, GeodesyML (proposed))

GeodesyML

Helping you share, search and store geodetic data and metadata

Beta version now available for testing

Is GeodesyML for me?

Learn more about how the Geodesy Markup Language (GeodesyML) can help you share, search and store geodetic data and metadata

I am part of the geodetic community and am interested in finding out more

Read More »

GeodesyML for Managers

Find out how Implementing GeodesyML can help you improve the interoperability and discoverability of your geodetic data

I manage geodetic networks and work with users of geodetic data

Read More »

GeodesyML for IT Specialists

Technical information for IT specialists supporting geodesy programs including schemas, examples and code

I support geodesy staff with databases, programming and web services

Read More »

GeodesyML includes

- Standard way to encode and exchange:
  - GNSS related data and metadata
  - Terrestrial observations
  - Reference frames
  - Adjustments
  - Measurements
  - Site
  - Quality
  - Local Ties
- GeodesyML has been accepted by the IGS Board as the XML Standard to encode and transfer site log information.
- Future work will extend GeodesyML for the other techniques SLR, VLBI, DORIS.

You have not logged in and are not authorised to edit ALIC.

Australian Government
Geoscience Australia
GNSS Site Manager
ALIC

You have not logged in and are not authorised to edit ALIC.

Site Information

GNSS Receivers

New GNSS Receiver

Current GNSS Receiver (Since 2018-05-21)

Delete

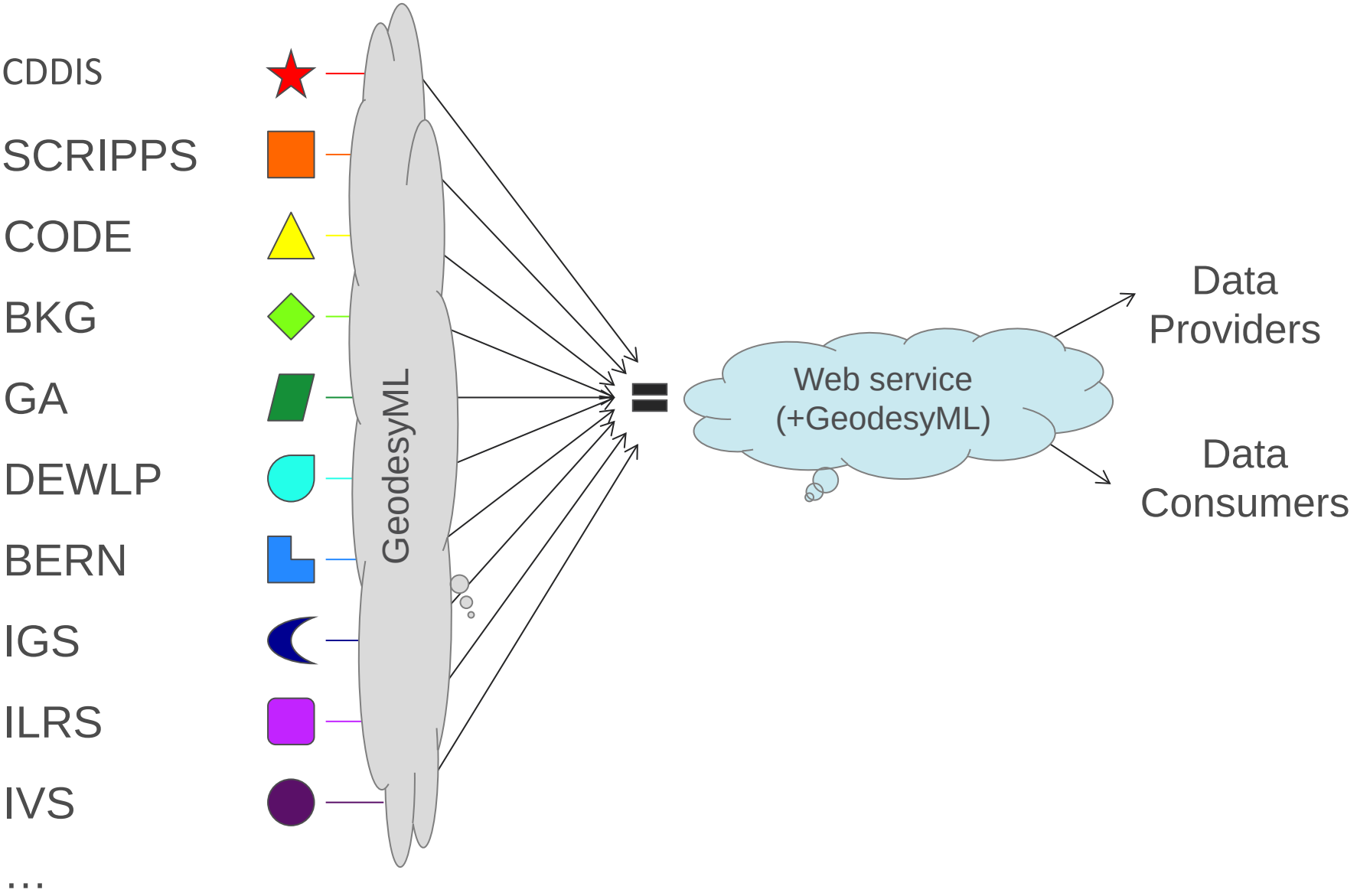
Receiver Type	LEICA GR25
Serial Number	1830439
Firmware Version	4.20.232/6.524
Satellite Systems	☑ GPS ☑ GLO ☑ GAL ☑ BDS ☑ QZSS ☐ SBAS ☐ IRNSS
Elevation Cutoff Setting (degrees)	0
Temperature Stabilization (°C)	
Date Installed (UTC) *	2018-05-21 00:35:00
Date Removed (UTC)	
Notes	Firmware update only

Previous GNSS Receiver (2017-02-23 – 2018-05-21)

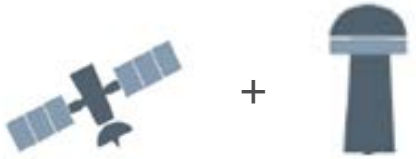
Delete

Previous GNSS Receiver (2017-01-31 – 2017-02-23)

Delete



Our Vision



An integrated national positioning capability to accelerate the adoption and development of location-based technology and applications in Australia

Australian Government
Geoscience Australia

Australia's new datums and why they are useless without metadata standards

Nicholas Brown, Craig Harrison, Roger Fraser and John Dawson

National Geodesy Section Leader
Geoscience Australia
Chair of Permanent Committee on Geodesy

ANZ Metadata Working Group

Meeting 2 Report
8-9 October 2018, Melbourne

ICSM
ANZLIC COMMITTEE ON SURVEYING & MAPPING

Background:

Following the inaugural meeting of the Metadata Working Group meeting on 13 June 2018, the group's second meeting was held in Melbourne on the 8-9th October 2018, to progress the working group's roadmap, the 19115-1 profile audit exercise and other actions since that initial meeting. The group recognised that such face to face meetings are important forums to raise and discuss any issues, ideas and innovations that the group should be focused upon, whilst providing a forum to exchange information.

Meeting summary:

Amelia Chapman and Craig Sandy from Land Use Victoria, opened the meeting each day, both emphasizing the importance of quality metadata, the critical work being undertaken by this group and how the outputs underpin much of the other ICSM working groups focused activities, in particular, the implementation of GDA2020. Amelia also acknowledged the wider membership of the group beyond the usual spatial and land agencies that form the majority of ICSM members. Craig noted that good metadata is more vital than ever, but it needs to be easy for users to produce, manage but more importantly understand and use.

Since the original meeting in Canberra, the group has nearly doubled in membership, now 60 strong and including representatives from a broad scope of government agencies and research bodies. Many of these members are not actively engaged with the group, however are very interested in what the group is working upon and what are the key decision and deliverables related to metadata. Communities such as the Emergency Management Spatial Information Network Australia (EMSINA) continued to offer their support and interest in being a open community to test the outputs from the working group.

Major Deliverables since meeting #1

1. The Road Map Sub Group (RMSG) developed a roadmap to articulate what are the key deliverables the MDWG need to deliver, and what is each deliverables dependencies. This roadmap provides the framework for the group to focus efforts, assign resources and priorities, identify synergies with other initiatives, and openly communicate what the group has delivered. (Refer to Attachment A).

2. The profile subgroup identified, analysed and compared how different agencies have implemented ISO 19115-1. The goal was to look for consistency in the selection of metadata elements and record how these elements have been implemented. In doing this, the resulting information provides data custodians and metadata users guidance about which of the possible 7000 elements contained within the standard, are seen as important within each business and also whether those elements have been implemented as optional or mandatory. This choice is driven by the business requirements of each agency. However, there is general consistency in which elements that are thought to be important and also how these elements then map to other metadata exchange formats, such as RIF-CS and DCAT.

   By showing multiple approaches, custodians can make better informed choices about what elements they choose to implement and whether to make them mandatory or not. Through showing mapping to other exchange formats, custodians can now see the consequences of the element implementation within their own profile and maximise their potential for information exchange based on their business needs. (Refer to Attachment B)

Meeting Outcomes

- The Terms of Reference were endorsed out of session by the group. (Refer to Attachment C)
- The Tabled MDWG roadmap was endorsed
- The profile sub-group recommendations were endorsed, and the recommended minimum set of elements were accepted as v1.0. The mapping spreadsheet, and the recommended minimum elements will be circulated further for comment out of session.

- The establishment of the technical sub-group to be incorporated into the Profile Sub Group.
- **The next meeting to be held at the offices of DEWLP in Melbourne, 21st and 22nd February 2019.**

DELWP Presentation and Demonstration

George Mansour presented and gave a demonstration on the Victorian Department of Environment, Land, Water and Planning (DELWP) current metadata systems, and the modernisation of existing business and systems architecture. DELWP's goal is to streamline metadata management for data custodians, consolidate multiple bespoke systems, and upgrade applications, which are anywhere up to 20 years old. In undertaking this review, DELWP is currently considering the benefits in using the latest version of GeoNetwork which is aligned to the latest version of the 19115-1 standard.

The group discussed the challenge DELWP is facing, with aging bespoke metadata systems. Aging metadata systems is not uncommon, and this demonstration and associated discussion was found to be valuable as it stimulated on common issues faced. The MDWG agreed the show and tell should be a core part of the future working group agendas, as it stemmed healthy discussion and identifies synergies with other member's organisations.

Action: *Jurisdictional demonstrations to be included in future MDWG meeting agendas.*

Shared metadata infrastructure

Andrew Whiting led discussion on a capability for a shared metadata infrastructure, which could be based on the same pattern demonstrated by ELVIS. The concept being, a shared infrastructure to host metadata (not the specific data), whilst ensuring custodial roles and responsibilities are maintained.

The principle of the agenda item is to explore if the concept of a centralised shared infrastructure to host metadata, for data custodians who do not have the capability or capacity to do so. The metadata is maintained solely by the data custodian, however the system management, and maintenance is managed centrally, releasing the physical resource required for managing the system, for those who participate. This capability would support custodians that don't have the required skills for the interpretation of complex metadata standards, and the systems know-how for developing, managing and maintaining a dedicated metadata system, but there is strong need for good governance.

A discussion followed, questioning; How would this tool differ from what is already provided to data.gov.au? The ASDD was a great concept, however it was not successful long term, how is this different? Who would utilise such a service? It was agreed that there are many different catalogues existing, but few are consistent in the application of standards, and many of these catalogues are for harvesting metadata rather than hosting.

Actions:

- *Define what this shared metadata infrastructure capability is in further detail*
- *Establish a strong relationship with data.gov.au and explore their scope for hosting metadata, whilst ensuring custodians business requirements can be stained*

International Standards Organisation (ISO) update

Chris Body from Standards Australia gave an update on ISO/OGC work, which is improving productivity through standards. New developments and harmonisation is occurring between Australia and New Zealand, with an expectation for accelerated implementation and influencing. Chris urged ICSM to become more actively involved in standards, as there is a very strong and powerful mandate for ICSM to do so, particularly with the backing and influence of the many government agencies who support and already participate in ICSM. Shanti noted that while we have many standards, there is no one developing policy to endorse or mandate use. There is a need to have a champion to ensure standards are observed, adopted and enforce implementation.

Standards and the Maritime Domain

Anna Potter from Geoscience Australia spoke to marine regulations and the standards work which is currently being undertaken to enable information connectivity, for informed and consistent evidence based decision-making. Through work at Geoscience Australia, in collaboration with international forums, they are

developing common standards, tools, access points and vocabularies that have international use and impact. The challenge for the maritime domain is communicating core information to high-level decision makers, in the simplest way; not a technical way. To enable all these functions to work, standard compliant metadata is essential. Therefore, the marine community is interested in the activities of the MDWG.

GDA2020, ATRF and Metadata

Nick Brown from Geoscience Australia reported on the importance of metadata for the implementation of GDA2020 and the Australian Terrestrial Reference Frame (ATRF). The datum's fundamentally are dependent upon standards compliant metadata. There is a need to take the GDA2020 and future ATRF technologies available to be usable for all, not just technical or subject matter experts.

The implementation of GDA2020 is the responsibility of the jurisdictions and the data custodians, however it is important the implementations need to be done in a consistent manner. Officially, the new 2020 datum was determined and published in October 2017. The uptake of this datum and the supporting standards are essential for the success of the program. ESRI is adopting some, but not all, standards as part of GDA2020 update. Other software vendors are not implementing GDA2020 changes in their foreseeable updates, and this will affect how jurisdictions can implement changes in their systems. As the capability for jurisdictions to work with the GDA2020 compliant data is dependent upon the software being compatible.

GDA2020 is another static datum, with all the coordinate references projected to where the position will be in the year 2020. The introduction of ATRF will be built upon GDA2020 as a foundation. Therefore, data custodians will be required to move to GDA2020 before being able to utilise the ATRF capabilities. ATRF will be maximised by the high precision sectors, due to the nature of their requirements. It is not envisaged all data custodians will move towards the ATRF capabilities due to the data not reflecting the accuracy the ATRF realises.

To enable ATRF as a dynamic datum, the requirement for quality, time stamped feature level metadata will be essential. The time stamping and articulation of this through consistent metadata will be important, to avoid the Rail Gauge Issue.

Nick also said that eGeodesy is working on positioning applications that are being used everywhere in real time. The Geodesy Markup Language (GeodesyML) is a standard way of describing (encoding) and sharing geodetic data and metadata, that was created by geodesists, but now they needed assistance to take it through ISO for formal recognition.

At this stage, it was un-determined what specific action items the MDWG need to address. However there was a broad discussion articulating the need for consistency in the way features are timestamped. Furthermore there is interest in how to describe compliance – conformance to GDA2020. This is a activity which will need to be specifically addressed in due course.

Action: *MDWG Secretariat to keep in touch with Nicholas Brown, monitoring GDA2020 developments and requirements of the group*

Data Catalogue Vocabulary (DCAT)

Simon Cox demonstrated the development, adoption and benefits of the Data Catalogue Vocabulary (DCAT) and the semantic web, with the alignment and integration across communities and disciplines.

DCAT was published initially in January 2014, with the intent to make a standard for exchanging data between different catalogues online. The DCAT is closely aligned to the Dublin Core Metadata Initiative. The Dublin Core metadata initiative is a set of vocabulary terms that can be used to describe digital resources.

Simon also discussed the new application released by Google, the Google Public Data portal. The portal is based off the Schema.org standard. This standard is very similar to DCAT.

Federal Government Digital Continuity Policy – DC2020

Esther Carey and Karuna Bhoday from the National Archives of Australia (NAA) spoke and stimulated allot of discussion about the Federal governments Digital Continuity Policy (DC2020), and its requirements for quality metadata. Currently the NAA is focusing working efforts with record management teams within different

agencies. Further information surrounding the DC2020 can be found at http://www.naa.gov.au/information-management/digital-transition-and-digital-continuity/digital-continuity-2020/index.aspx

The working group questioned:

- What records are impacted by the policy? *All records are impacted*
- IS DC2020 only for Federal government? *It only effects Federal government agencies, however there are similar initiatives within the state and territory governments. Members are advised to check if their work is impacted by a similar initiative.*

Roadmap Sub Group update

Andrew Whiting thanked the team for contributing to the production of the roadmap and introduced the activities associated with its production. In preparing for the roadmap, activity One (identifying the barriers for organisation in managing metadata) and Two (the requirements to improve organisation metadata capabilities) from the MDWG Canberra meeting were taken into consideration and used as the basis for the requirements for the roadmap to address.

The roadmap is structured around three core tranches.

- **Tranche 1:** Identification, comparison and recommendation of a series of elements which are preferable to consistently enable the 19115-1 standard. This tranche is the foundation as all other activities will be developed upon.
- **Tranche 2:** Production of a cookbook to enable users to easily understand what is the standard, why it is important, what can be used to develop, manage metadata, and how to do so. The cookbook resources will continually be maintained online.
- **Tranche 3:** Communication, outreach, advice and the provision of a forum for metadata custodians to socialise, seek feedback and advice for all items related to location metadata.

The working group endorsed the concept of the three tranches for the metadata roadmap for communication purposes, however noted perhaps the name of tranche 2 – Cookbook, may need to be re-considered. The second element to the roadmap is the detail task and activity framework, which outlines what the core deliverables associated with each tranche. Each deliverable has an objective, outcome dependency, and status.

With the working endorsing the three tranches for communication purposes, the working group agreed, the detailed deliverables need to flexible in nature to maximise efforts when resources or opportunities exist. The working group also noted, all associated deliverables would be made transparent and accessible online.

Action items:

- *Prepare a web presence articulating the roadmap tranches*
- *Circulate to the MDWG the deliverables roadmap spreadsheet for further feedback*
- *Explore a Trello board to monitor the activities associated with the roadmap*
- *Have the roadmap status as a standing item on the groups agenda for status reporting*

Attachments:

- MDWG Meeting 2 report

Geoscience Australia 19115-1 Profile update

Irina Bastrakova from Geoscience Australia updated the working group on the status of the Geoscience Australian ISO19115-1 profile. Since the last meeting, GA's profile was concluded and formally published (https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search?node=srv#/metadata/4fce6238-8d55-499c-bff5-98518552f4b4 .

All supporting documentation is available open and accessible through GA's website (http://pid.geoscience.gov.au/def/schema/ga/ISO19115-1-2014). Supporting resources include a schema-tron for the QA/QC of the xml for transformation into GeoNetwork, the GA profile and the supplementary code lists.

Profile Sub Group update

The Metadata Profile Sub Group introduced the activities they had undertaken since the Canberra meeting. The groups core activity was to identify, and document how different agencies have implemented the revised ISO19115-1 standard, and to make recommendations back to the MDWG on a set of core elements which should be recommended by the working group.

The first step undertaken was to share, and compare what current implementations of 19115-1 currently exist, what are the chosen elements within each implementation, and identify what are the common elements between each. The comparison assessed the GA, ABARES, AAD and Defence implementations.

In order to assess what the group believed were the minimum set of elements; a table was presented detailing the cross-walks between the provided metadata profiles (Refer to Attachment A). A high level crosswalk identifies the common elements between ISO 19115-1 (GA, ABARES, AAD), implementations, whist also showing the mapping to the RIF-CS (ARDC) and DCAT (V1.1) standards was also included. There was a major focus by the Profile Group to ensure the profile work contained adequate resources to ensure the metadata record:

- Simplifies and Streamlines the discovery of data; reducing the users time on finding data through the use of key words, vocabularies and reference lists
- Improve authoritative access to data and reduce the risk of breaching security and legal restrictions
- Enable machine-to-machine access and integration of data across multiple information standards and disciplines, and
- Prepares for modern and future technologies (e.g. Machine Learning, Linked Data,) thus stimulating innovation and data re-use

As an outcome of this activity, the profile sub group believe the profile should not be seen as a mandatory compliance framework, explicitly defining the mandatory elements for collection. Rather a guiding framework which articulates who has currently implemented the ISO19115-1 standard, and which of the 7000 elements within where chosen to meet their business needs and requirements. By showing multiple approaches, custodians can make better informed choices about what elements they choose to implement and whether to make them mandatory or not. Through showing mapping to other exchange formats, custodians can now see the consequences of the element implementation within their own profile and maximise their potential for information exchange based on their business needs.

The working group accepted the approach the PSG has recommended, and support the minimum set of elements proposed as version 1.0, with the requirement the elements be circulated to the MDWG for further comment. The MDWG noted there now needs to be a clear narrative wrapping the intent of the profile proposal, as well as further notation articulating what each of the elements identified are. The MDWG also noted, it will be important to undertake a exercise to compare all the jurisdiction mappings, whilst understanding what infrastructures and systems currently exist to host and manage metadata.

Action items:

- *Produce a narrative clearly articulating the proposed profile framework – explicitly articulating what it is and why it is different to past ANZLIC profile activities*
- *Clearly articulate and describe what each of the elements is within the recommended profile comparison*
- *Continue to make additions to the mapping spreadsheet – and document each of the jurisdiction mappings*
    - *George Mansour to share with the PSG DELWP's chosen elements, for inclusion in the mapping document*
- *Circulate the profile comparison to the MDWG for any further comment and feedback*
- *Develop and undertake a survey to identify what each MDWG's metadata capabilities are identifying what systems or applications currently develop, manage or disseminate metadata*

Attachments:

1. Attachment A - Metadata Profile mapping v0.2.xlx
2. Metadata Profile Overview statement

Moving forward, the Profile sub group reflected upon the fact, the group needs to now expand to include the Technical working group. As the group will need to begin assessing what tools, applications and supporting documentation will be required to support the profile work. Kate Roberts (BOM), Ian Beitzel (Qld), Aaron Sedgman (GA) and Adam Rice (DTA) wished to be included into this working group.

The tools which the Profile – Technical Sub group will consider include:

- A online, metadata creation, and QA / QC too which is compliant to the 19115-1 and 19115-3 standard
- Conversion tool to support custodians who wish to upgrade from ISO 19115 to ISO 19115-1
- Conversion tool to enable the transformation between ISO19115-1 to other metadata formats such as DCAT, CKAN, RIF-CS, Schema.org etc
- Vocabulary systems, and
- How API's will integrate and work with metadata contained within existing systems. The OGC as well as PSMA are currently undertaking a significant amount of work with relation to API's, and therefore need to be engaged with this associated activity.

Actions:

- *MDWG members interested in the technical working group to contact Irina.Bastrakova@ga.gov.au*
- Kate Roberts (BOM), Ian Beitzel (Qld), Aaron Sedgman (GA) and Adam Rice (DTA) wished to be included into this working group
- *PSMA to be invited to the MDWG, with relation to the API associated activities*

Standard 19115-2

Irina Bastrakova tabled the 19115-2:2009 (Metadata extensions for imagery and gridded data) standard, to seek the MDWG interest for the inclusion of this standard within the groups scope of focus. This standard is currently under review.

The MDWG agreed, the 19115-2 standard needs to be considered and included as a standard of focus.

ACT, VIC, QLD governments as well as Defence showed significant interest in partaking in any associated activities related to this standard. ACT government will have a significant amount of new imagery arriving soon. It is critical for ACT to ensure the data is well documented, consistent in the way this is documented, and importantly have a framework standard to push back to the imagery provider. QLD discussed recent data acquisitions received have had associated metadata now compliant to any standard, and also agree of the importance of the metadata being consistently compliant to a standard.

Shanti Rowlison articulated their need to also reference the 19165 (Preservation of digital data and metadata) standard for archiving purposes. The MDWG agreed this needs to be considered when looking at the 19115-2 standard.

Before the work is undertaken on these standards, the ICSM imagery working group needs to be consulted with, to work collaboratively on this activity. The end product may be a specification similar to the ICSM LiDAR specification.

The review of these standards, and the production of a specification will benefit many other sectors, appreciating this the sub group undertaking this activity will need to consider including other data providers especially industry.

Actions:

- *Approach the Imagery Working Group, with a recommendation that the MDWG believe the 19115-2 and the 19165 standards need to be considered and worked upon. Open a discussion around a specification for data collection*
- *Defence, ACT, VIC, QLD and GA to discuss what are the common requirements related to 19115-2, and 19165. Consider how these requirements would be addressed within the associated standards*
- *Defence, ACT, VIC, QLD and GA to discuss further and report back to MDWG and the profile sub-group.*

Meeting Administration

MDWG content

The working group agreed, all concluded documents will be published and made transparent on the ICSM website. To assist managing the roadmap and associated projects, Trello and GovTeams will be explored and established.

Next Meeting

The next meeting will be in 7-8th February 2019 again in Melbourne, and Jacqueline from DELWP kindly offered to host this meeting. The working group agreed, Melbourne is a good location due to the ease in access from all capital cities. The working group also noted, the meeting should be two days in length to enable deeper discussion with relation to core activities such as elements within the profiles.

Agenda

- Todd Baker from DPIPWE Tasmania offered to present on the Tasmanian metadata systems capabilities
- Adam Rice from DTA offered to present on what is occurring within data.gov.au
- Marcus Blake from ABS offered to present on what is occurring within the ABS
- Kate Roberts raised the meeting will need to focus on Web Service metadata to ensure the EMSINA community is satisfied, Irina agreed to this, and noted this will be a core element at the next meeting

Actions:

1. *Explore Trello and GovTeams for the hosting and management of the roadmap activities*

Report Attachments:

1. Attachment A - Metadata Profile mapping v0.2.xlx
2. Metadata Profile Overview statement
3. MDWG roadmap

Attendees:

ABS	Marcus Blake	marcus.blake@abs.gov.au
ABS	Richard Dunsmore	richard.dunsmore@abs.gov.au
ACT	Kristy Van Putten	kristy.vanputten@act.gov.au
Australian Antarctic Division	Dave Connell	Dave.Connell@aad.gov.au
BOM	Kate Roberts	kate.roberts@bom.gov.au
Defence	Shanti Rowlison	shanti.rowlison@defence.gov.au
Defence	Rohan Hill	rohan.hill@defence.gov.au
DTA	Adam Rice	adam.rice@digital.gov.au
GA	Irina Bastrokova	irina.bastrakova@ga.gov.au
GA	Andrew Whiting	andrew.whiting@ga.gov.au
GA	Nicholas Brown	nicholas.brown@ga.gov.au
GA	Graham Logan	graham.logan@ga.gov.au
GA	Anna Potter	Anna.Potter@ga.gov.au
GA	Aaron Sedgman	Aaron.Sedgmen@ga.gov.au
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Tasmania	Todd Baker	Todd.Baker@dpipwe.tas.gov.au
TC/211	Chris Body	chris.body@iinet.net.au
Victoria	Jacqueline LeLievre	Jacqueline.LeLievre@delwp.vic.gov.au
Victoria	George Mansour	george.mansour@delwp.vic.gov.au

By telephone:

ANZLIC	Ann Beaumaris	Ann.Beaumaris@industry.gov.au

Actions

Current Meeting

#	Action Meeting 9 Oct 2018	Who
15	Jurisdictional demonstrations to be included in future MDWG meeting agendas	MDWG Secretariat
16	Shared Metadata Infrastructure # Define what this shared metadata infrastructure capability is in further detail # Establish a strong relationship with data.gov.au and explore their scope for hosting metadata, whilst ensuring custodians business requirements can be stained	Andrew Whiting
17	MDWG Secretariat to keep in touch with Nicholas Brown, monitoring GDA2020 developments and requirements of the group	MDWG Secretariat
18	Prepare a web presence articulating the roadmap tranches	RMSG and Secretariat
19	Circulate to the MDWG the deliverables roadmap spreadsheet for further feedback	MDWG Secretariat
20	Explore a Trello board or other, to monitor the activities associated with the roadmap	MDWG Secretariat
21	Have the roadmap status as a standing item on the groups agenda for status reporting	MDWG Secretariat
22	Produce a narrative clearly articulating the proposed profile framework – explicitly articulating what it is and why it is different to past ANZLIC profile activities	Profile Sub Group
23	Clearly articulate and describe what each of the elements is within the recommended profile comparison	Profile Sub Group
24	Continue to make additions to the mapping spreadsheet – and document each of the jurisdiction mappings # George Mansour to share with the PSG DELWP's chosen elements, for inclusion in the mapping document	Profile Sub Group , George Mansour
25	Circulate the profile comparison to the MDWG for any further comment and feedback	MDWG Secretariat
26	Develop and undertake a survey to identify what each MDWG's metadata capabilities are identifying what systems or applications currently develop, manage or disseminate metadata	Profile Sub Group
27	MDWG members interested in the technical working group to contact Irina.Bastrakova@ga.gov.au	All
28	Kate Roberts (BOM), Ian Beitzel (Qld), Aaron Sedgman (GA) and Adam Rice (DTA) wished to be included into this working group	
29	PSMA to be invited to the MDWG, with relation to the API associated activities	Irina Bastrakaova
30	Approach the Imagery Working Group, with a recommendation that the MDWG believe the 19115-2 and the 19165 standards need to be considered and worked upon. Open a discussion around a specification for data collection	Irina Bastrakaova
31	Defence, ACT, VIC, QLD and GA to discuss what are the common requirements related to 19115-2, and 19165. Consider how these requirements would be addressed within the associated standards	
32	Defence, ACT, VIC, QLD and GA to discuss further and report back to MDWG and the profile sub-group.	
33	Explore Trello and GovTeams for the hosting and management of the roadmap activities	MDWG Secretariat

Previous Meeting

#	Action Meeting 13 June 2018	Status
1	Generate Workshop report with Terms Of Reference (Within 6 weeks)	Complete
2	Formally establish the MDWG Profile Sub Group (refer to Appendix 2 for membership). Arrange a meeting within 3 week of the workshop	Complete
3	Formally establish the MDWG Roadmap Sub Group (refer to Appendix 2 for membership). Arrange a meeting within 3 week of the workshop	Complete
4	Members to contact the MDWG Secretariat (Andrew.whiting@ga.gov.au) if they are interested in been involved with the Technical Sub Group	Complete
5	Consider a shared community profile based of 19115-1 & 19115-3	Complete
5.a	Collate existing profiles related to the new 19115-1 standard	Complete
5.b	Assess profiles and prepare report outlining the commonality, pros and cons of each profile	Complete
5.c	Based off the report the MDWG will discuss the current profiles and make recommendations on the relevance, - Value / Cost and look and feel of a ANZLIC based profile. Discuss the formality of the profile	Complete
6	ABARES to provide their profile to the MDWG Secretariat (Andrew.whiting@ga.gov.au) for registration distribution to the Profile Sub Group	Complete
7	ANDS to provide their service elements profile to the MDWG Secretariat (Andrew.whiting@ga.gov.au) for registration distribution to the Profile Sub Group	Complete
8	Establish a web presence to host all MDWG documentation and communication items – Gov Teams or ICSM website	Complete
9	Develop a roadmap for where the MDWG are aiming to go including strategic directions, key milestones and core items for consideration based off the workshop report (Action item 1)	Complete
	Establish a technical sub group for the socialisation and knowledge gathering on what technologies exist for managing metadata, their pros / cons, implications and management of a catalogue of options for use. MDWG members are to indicate their interest in this group by emailing MDWG Secretariat (Andrew.whiting@ga.gov.au).	Complete
11	Invite the DTA and AIMS to the working group	Complete
12	Arrange face to face meeting – 3 months' time September 2018	Complete
13	Report to ICSM the establishment of the MDWG, and ensure ICSM working groups are aware of the MDWG and appreciate its role. PCG and PCTI need to appreciate the impact of metadata and utilise this function.	Complete
14	MDWG representative to de-brief EMSINA on the outcomes of the workshop and the groups associated work plan	Complete