3D Cadastre in Australian and New Zealand Jurisdictions: Similarities and Differences

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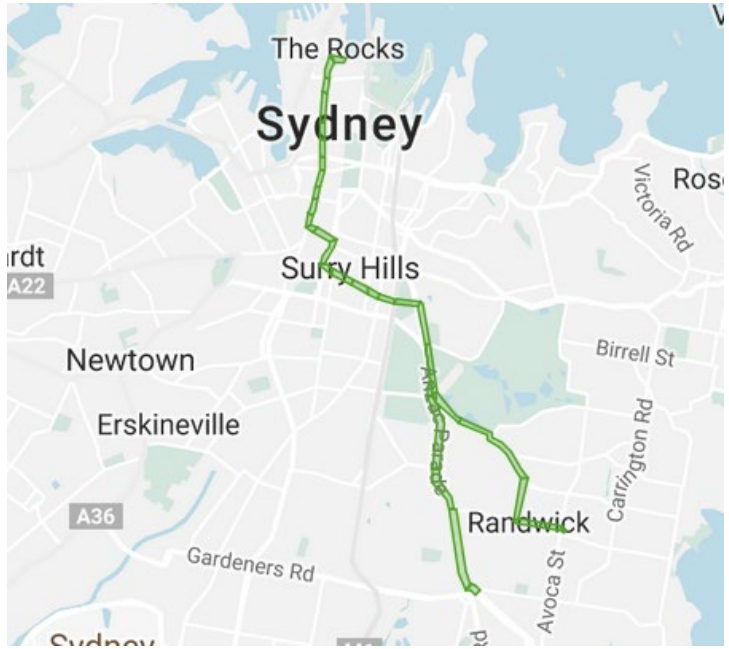
THE CENTRE FOR SPATIAL DATA INFRASTRUCTURES & LAND ADMINISTRATION
Est. 2001

Why we need 3D Digital Cadastre?

Current land administration systems are predicated on **silo-based** and **fragmented 2D approaches**, which **do not** provide a **reliable**, **unambiguous** and **coordinated** representation of the **legal** and **physical** aspects of **underground** and **aboveground** areas.

Example: The inaccuracy and unreliability of 2D plans resulted in several delays and disruptions in a railway project in Sydney

If there had been a **comprehensive and accurate 3D digital model** of underground properties during the planning phase, the railway project could have been completed **at least one and a half years sooner**, at **less cost** and a **much lower level of risk**.



Aim and Scope of This Study

Aim: To develop an overarching framework comprising differences and similarities in current practices pertaining to subdividing legal ownership of vertically stratified properties in all Australian and New Zealand (ANZ) jurisdictions.

- ***For Victoria, 3D cadastre practices were initially studied and this work aimed to expand it for other jurisdictions***

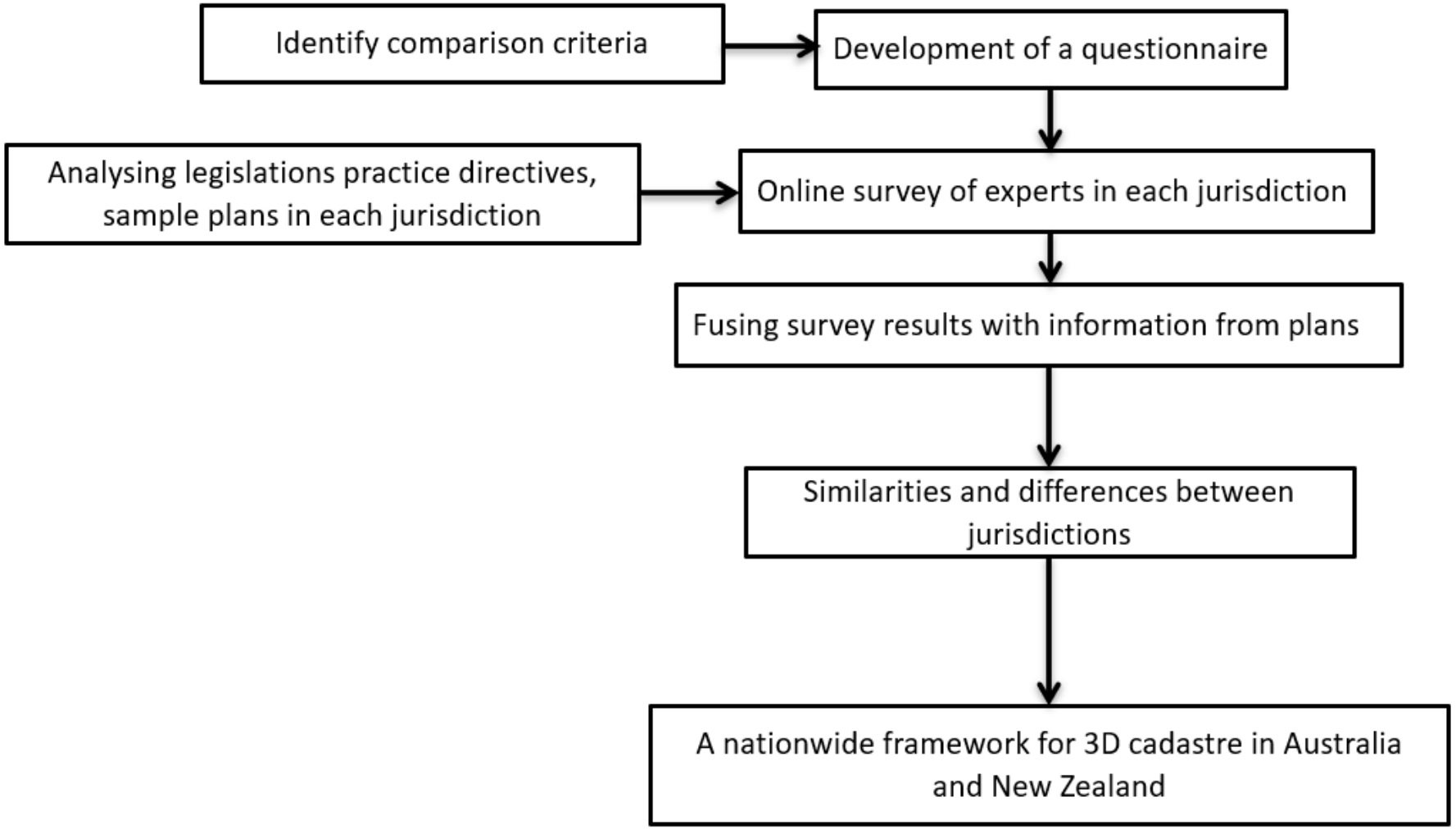
Scope: Limited to technical aspects of 3D cadastre practices associated with multi-storey building developments in ANZ jurisdictions.

Potential Deliverables

1. **A taxonomy of legal boundaries and legal interests defined in vertical developments within each jurisdiction**

2. **A nationwide framework comprising data elements of 3D cadastre. This framework would provide the foundation for supporting 3D digital cadastre at a national level.**

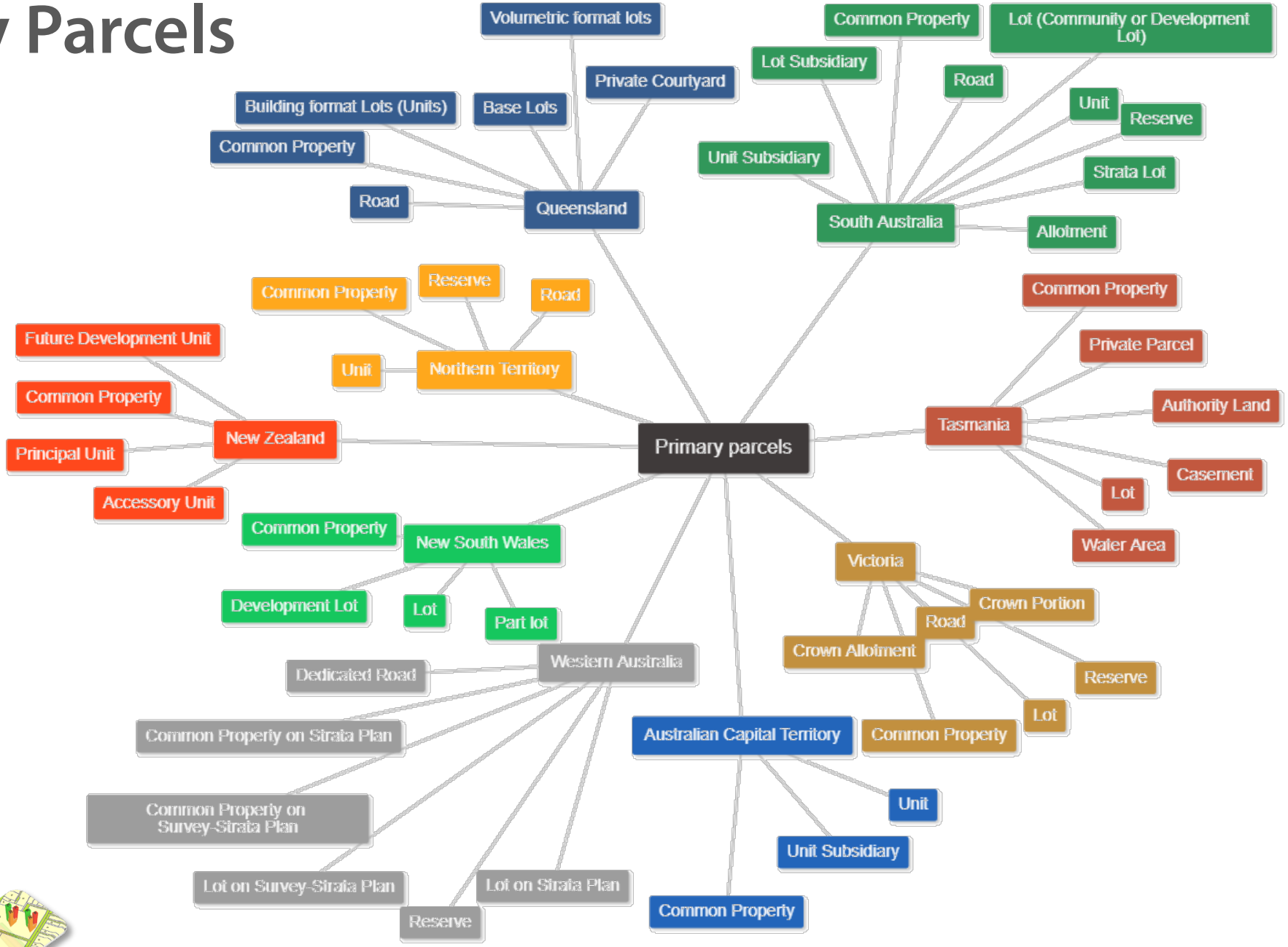
Research Approach



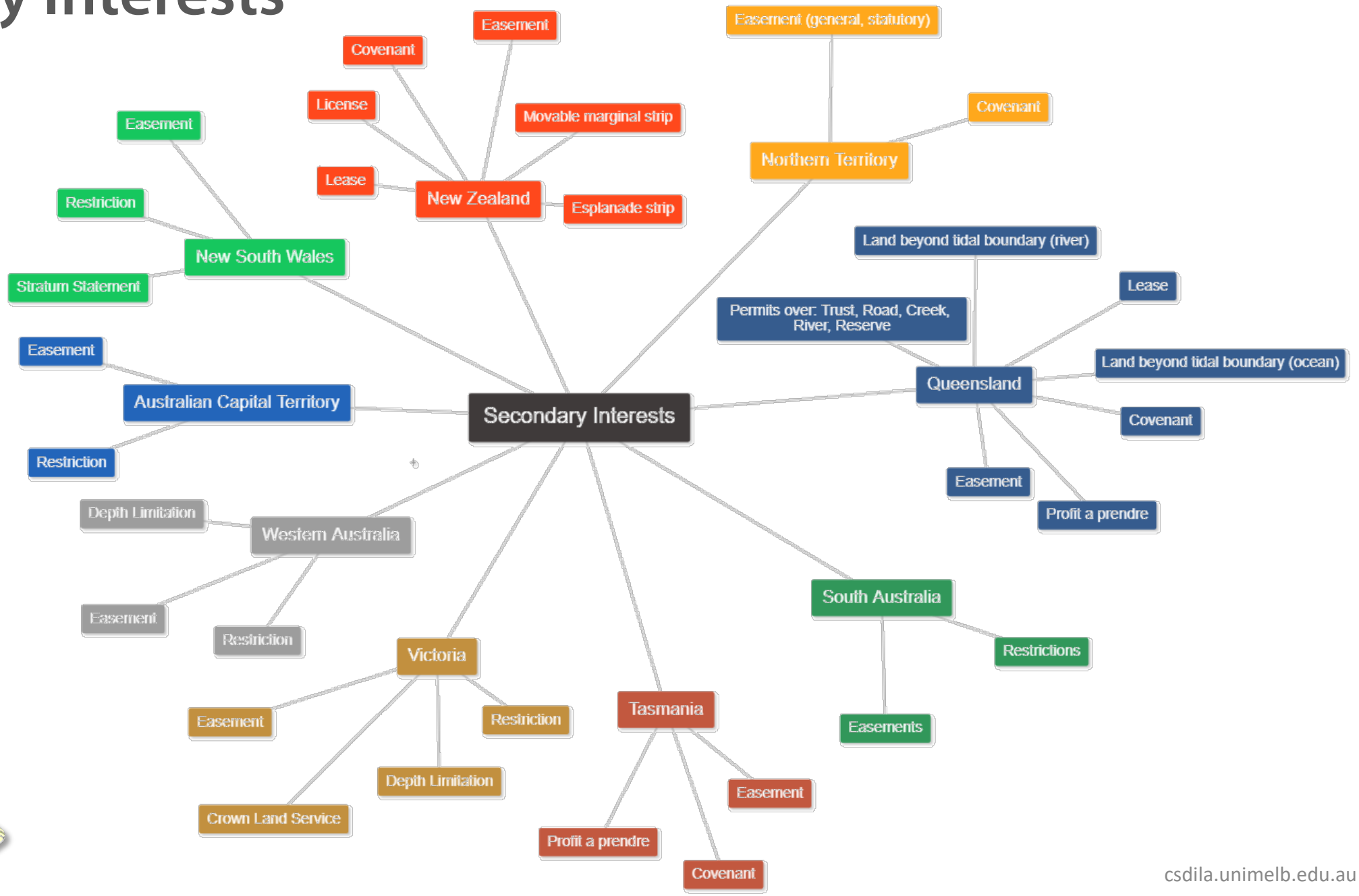
Comparison Criteria

- Types of primary parcels and their shape
- Types of secondary interests and their shape
- Spatial relationships between primary and secondary parcels
- Legal boundary types

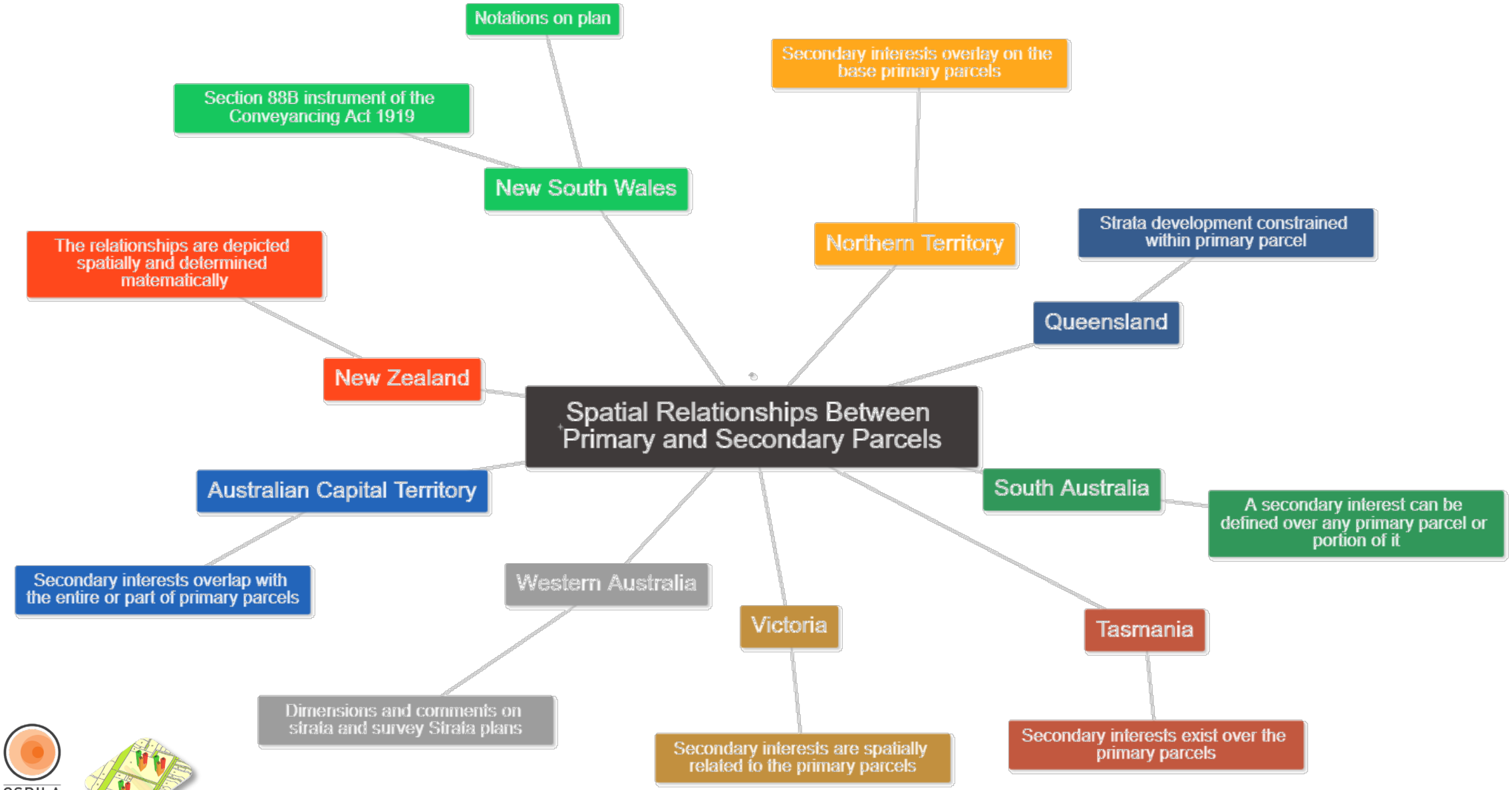
Primary Parcels



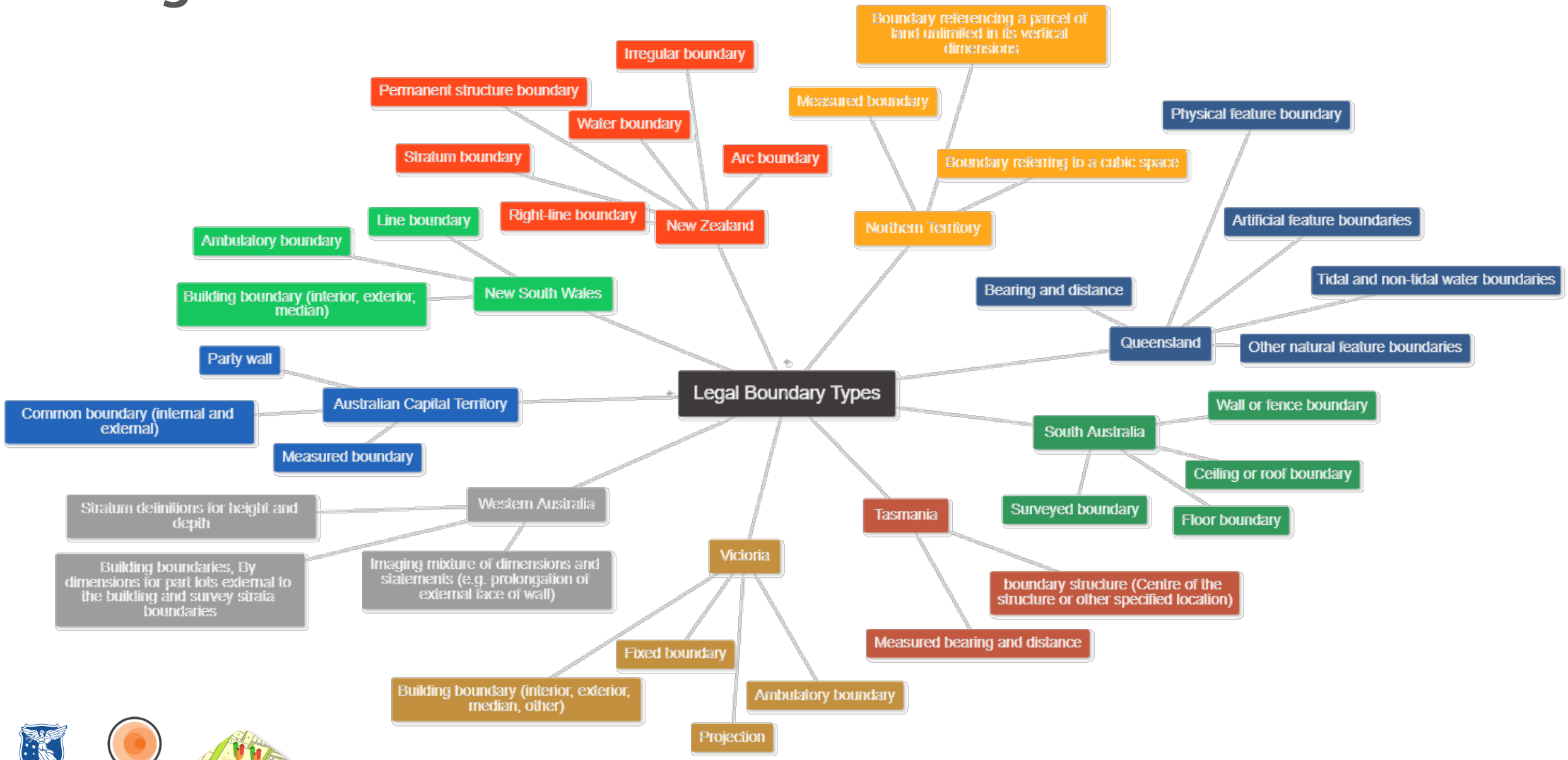
Secondary Interests



Spatial Relationships



Legal Boundaries



Similarities

- One main similarity is that legal boundaries are typically delineated by either referencing physical structures or fixed survey measurements.

- Common property as a primary parcel and easement as a secondary interest have similar purposes in all Australia and New Zealand jurisdictions.

Differences

- **The differences mainly refer to the different types and terminologies used for primary land parcels and secondary interests in each jurisdiction.**

- **Similar ownership concepts are named differently in each jurisdiction. For instance, the "Lot" primary parcel, which defines the ownership space of a private property, in Victoria is the same as "Unit" parcel in Northern Territory.**

Differences

- Each jurisdiction uses its own 2D representation of 3D cadastral data. For instance, floor plans and cross section diagrams are used in Victoria while isometric views are used in Queensland.

- All jurisdictions, except VIC, have specific legislations for 3D cadastre. VIC jurisdiction considers a unified legislation, under Subdivision Act 1988, for dealing with any type of land and property ownership.
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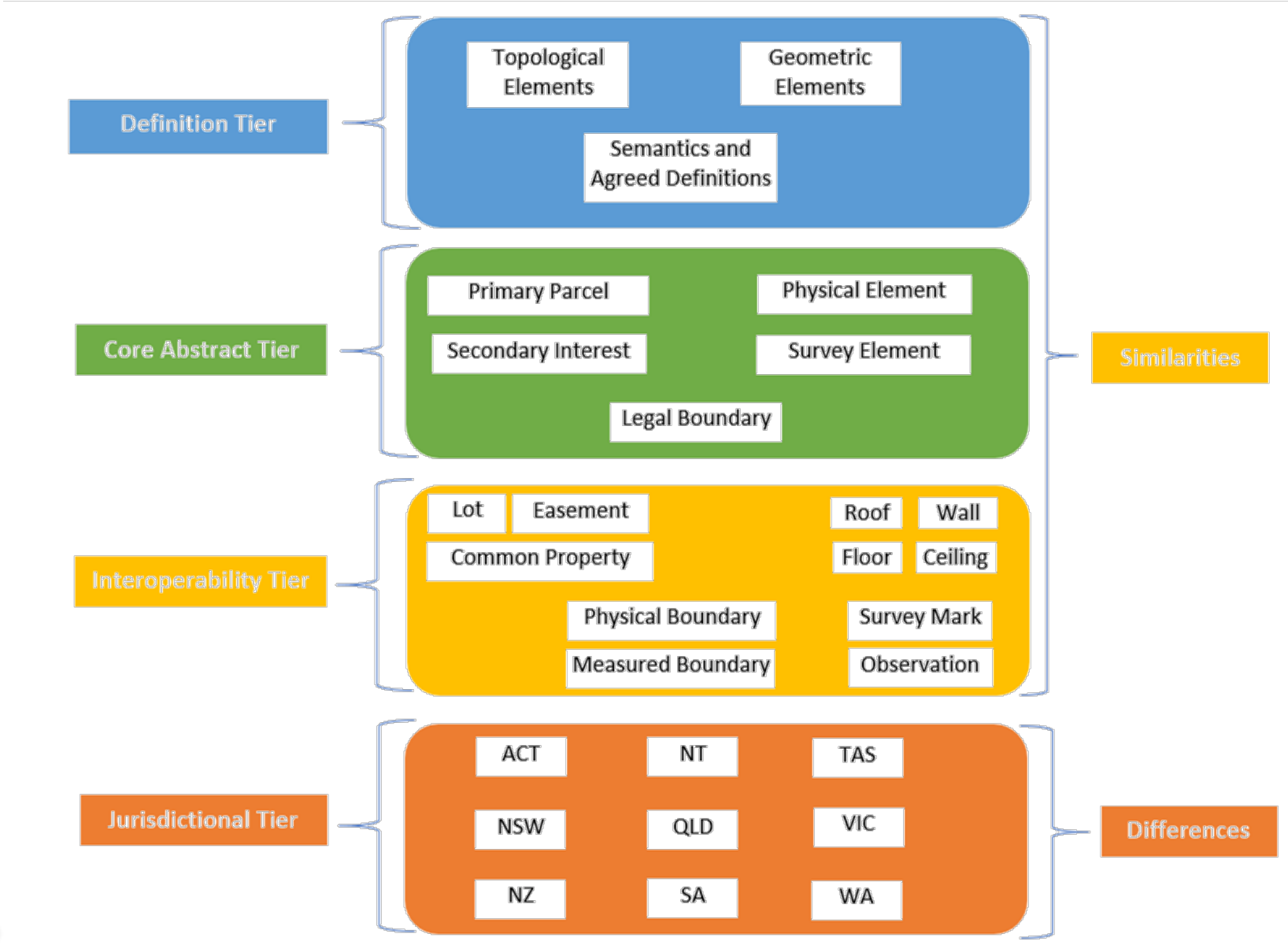
Framework for 3D Cadastre in Australia and New Zealand



Final Key Messages

- Developing a data model for is fundamentally important for realisation of 3D digital cadastral systems.
  - 3D CSDM in Australia and New Zealand (LADM country profile?)

- The data model provides the basis for the lifecycle of digital cadastral data including data capturing, validation, visualisation, storage, query and analysis.

- The IFC standard can be considered as an appropriate encoding for exchanging 3D digital cadastral data during subdivision processes including planning permit, certification, and registration.
- A technical encoding based on CityGML or InfraGML standards would provide a suitable approach for storing all 3D cadastral and survey information within a 3D digital cadastral database