



# ISO Standards and the Australian Spatial Data Infrastructure

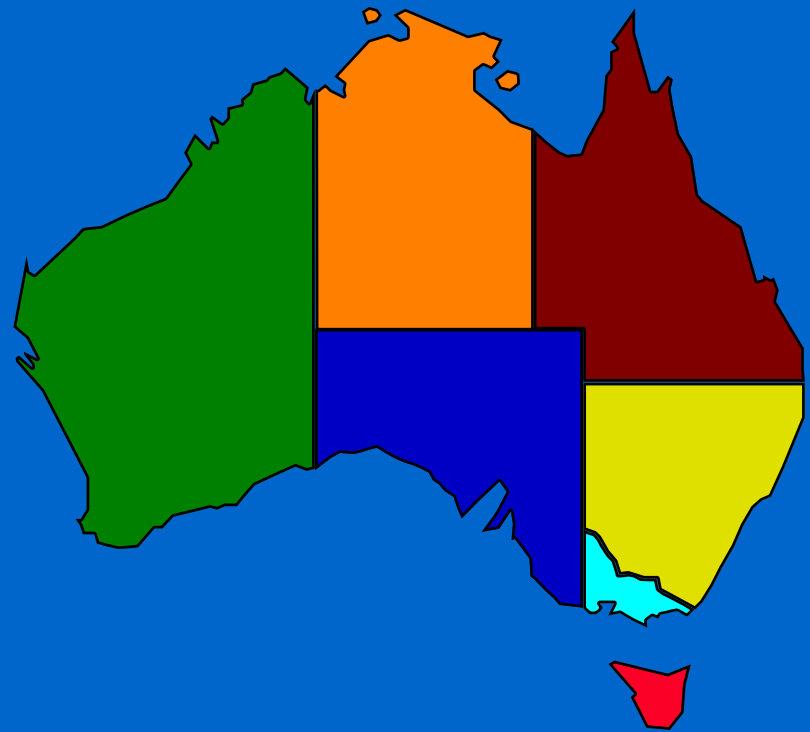


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Australia

# AUSTRALIA – PRE-1901

Until 1901, a grouping of British colonies rather than a single nation.

- Different defense forces
- Different railway gauges
- Border Posts
- Etc



# AUSTRALIA – POST 1901

## **Federation in 1901**

- Areas of common interest referred to the Federal Government

## **Land Administration was retained by the States**

- Eight jurisdictions responsible for land administration



# Jurisdictional LIS

- Each jurisdiction has its own computer-based land administration system
  - Textual Component - Owner and Valuation
  - Spatial Component - Digital Cadastral
- Mostly only used within parent jurisdiction
- Major data models for each system component

# National Projects

- Data sub-sets need to be bought together for national projects
- Problems
  - Different legislative frameworks
  - Different terminology
  - Different conventions
  - Different data models

# National Cadastral Data Model

- Developed by ICSM during 1996/97.
- Published on ICSM's Web Site.
- Provided a model for the transfer of parcel-based data.
- Is suitable for database implementation.
- Provided a dictionary for common terminology

# Updating to ISO 19100

- Data Model in UML (ISO 19103)
- Uniform Geometry Description (ISO 19107)
- Uniform Date/Time Descriptions (ISO 19108)
- Consistency in Application Schema (ISO 19109)
- Feature Catalogue (ISO 19110)
- Metadata (ISO 19115)
- Encoding in XML (ISO 19118)

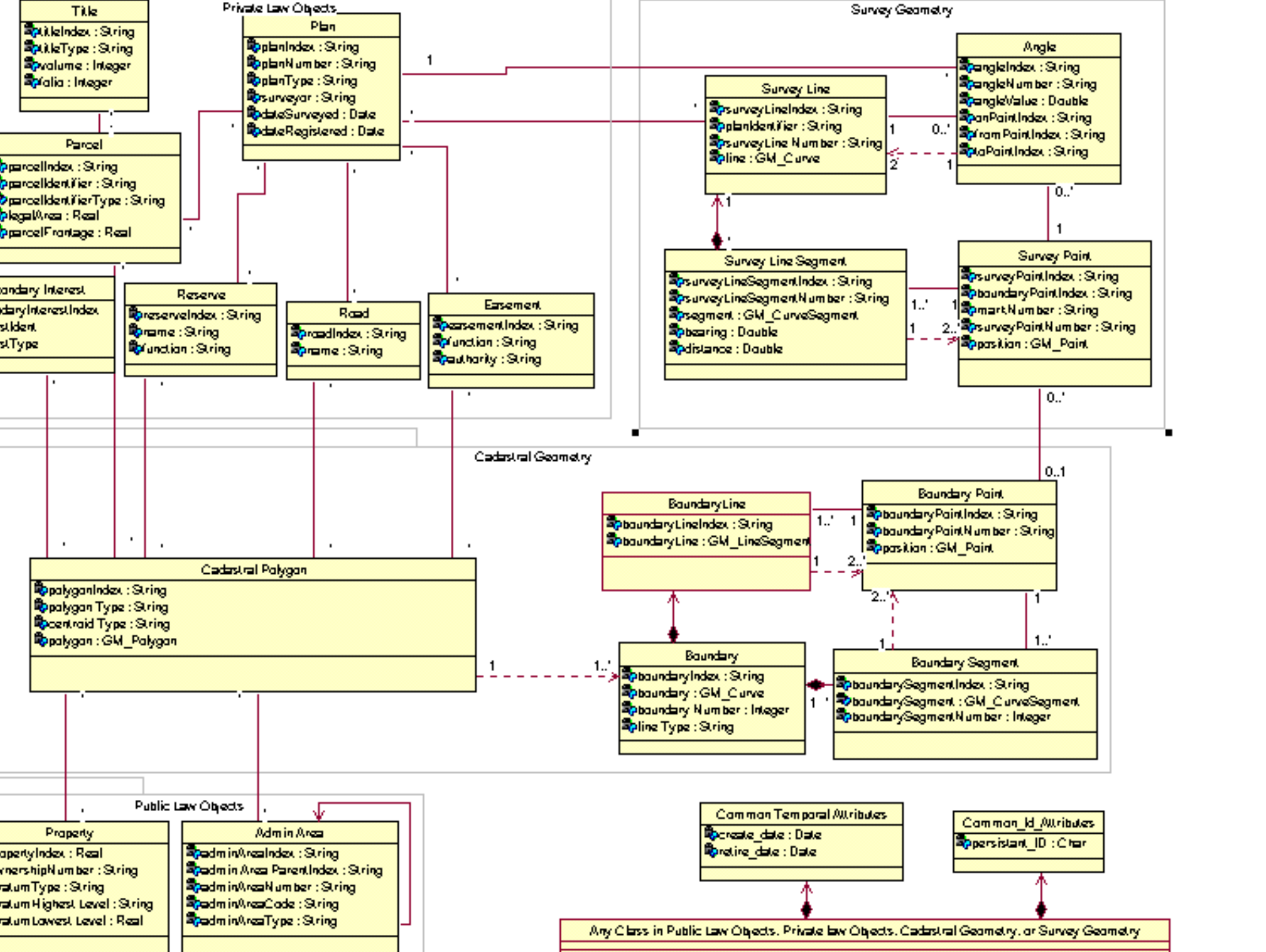


# Data Model

- UML
- Conceptual Model
- Implementation Model for Databases
  - Include Association Classes



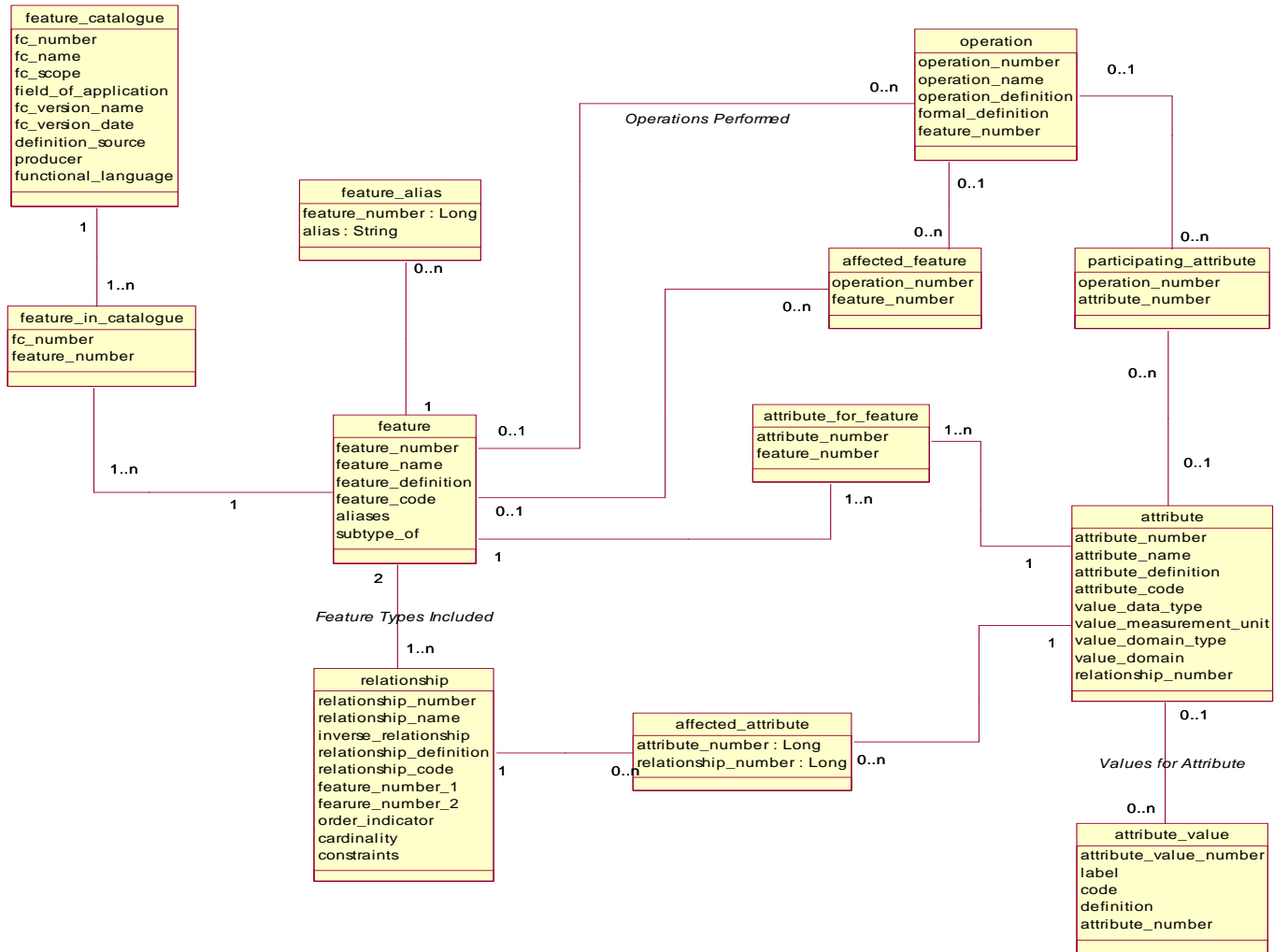




# Feature Catalogue

- Seeking to comply with ISO 19110
- Developed as Access Data Base
  - Easy to distribute
  - Allows reports to be produced
  - Assists data management
- Can include other data themes

# FEATURE CATALOGUE



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# Encoding

- Following ISO 19118 as far as possible
- Encoding standard is not yet stable
- XML Schema and DTD are being developed in parallel with the data model and feature catalogue
- Trial implementation between two jurisdictions later this year

# XML Schema, XML DTD

```
<complexType name="Parcel">
  <sequence>
    <element name="parcelToPlan" type="ref_Plan"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="parcelTo Title" type="ref_Title"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="parcelTo Property" type="ref_Property"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="parcelTo StreetAddress"
      type="ref_StreetAddress" minOccurs="0"
      maxOccurs="unbounded"/>
    <element name="parcelTo FeatureTypeCode"
      type="ref_FeatureType" minOccurs="0"
      maxOccurs="unbounded"/>
    <element name="parcelTo AreaPoint" type="AreaPoint"
      minOccurs="0" maxOccurs="unbounded"/>
    <element name="parcelTo CadastralPolygon"
      type="ref_CadastralPolygon" minOccurs="0"
      maxOccurs="unbounded"/>
  </sequence>
  <attributeGroup ref="IM_ObjectIdentity"/>
  <attribute name="datasetID" type="string"/>
  <attributeGroup ref="CommonTemporal"/>
  <attribute name="uniqueParcelIdentifier" type="string"/>
  <attribute name="legalArea" type="string"/>
  <attribute name="parcelFrontage" type="string"/>
</complexType>
```

```
<! – Parcel Attributes -- >
```

```
<!ELEMENT uniqueParcelIdentifier %CharacterString;>
<!ELEMENT legalArea %CharacterString;>
<!ELEMENT parcelFrontage %CharacterString;>
<!ENTITY % ParcelAttributes '(uniqueParcelIdentifier, legalArea,
  parcelFrontage)'
```

```
<! – Parcel Relationships -- >
```

```
<!ELEMENT parcelToPlan %ref_Plan;*>
<!ELEMENT parcelToTitle %ref_Title;*>
<!ELEMENT parcelToProperty %ref_Property;*>
<!ELEMENT parcelToStreetAdress %ref_StreetAddress;*>
<!ELEMENT parcelToFeatureTypeCode %ref_FeatureType;?>
<!ELEMENT parcelToAreaPoint %ref_AreaPoint;*>
<!ELEMENT parcelToCadastralPolygon
  %ref_CadastralPolygon;*>
<!ENTITY % ParcelElements '(parcelToPlan, parcelToTitle,
  parcelToProperty, parcelToStreetAdress,
  parcelToFeatureTypeCode, parcelToAreaPoint,
  parcelToCadastralPolygon)'
```

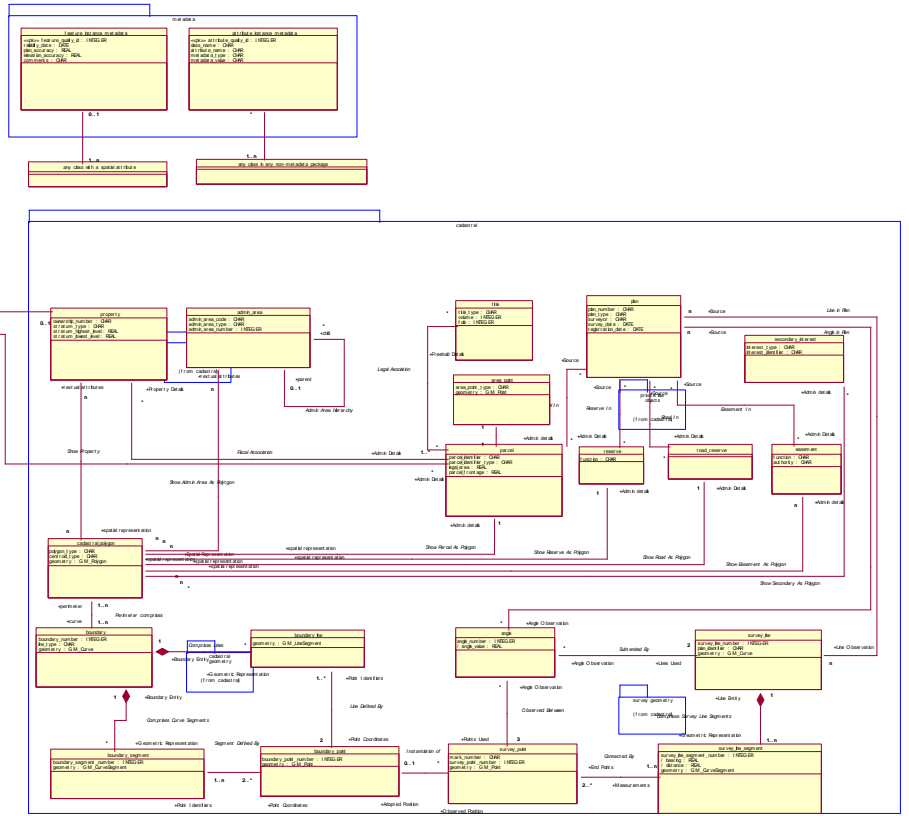
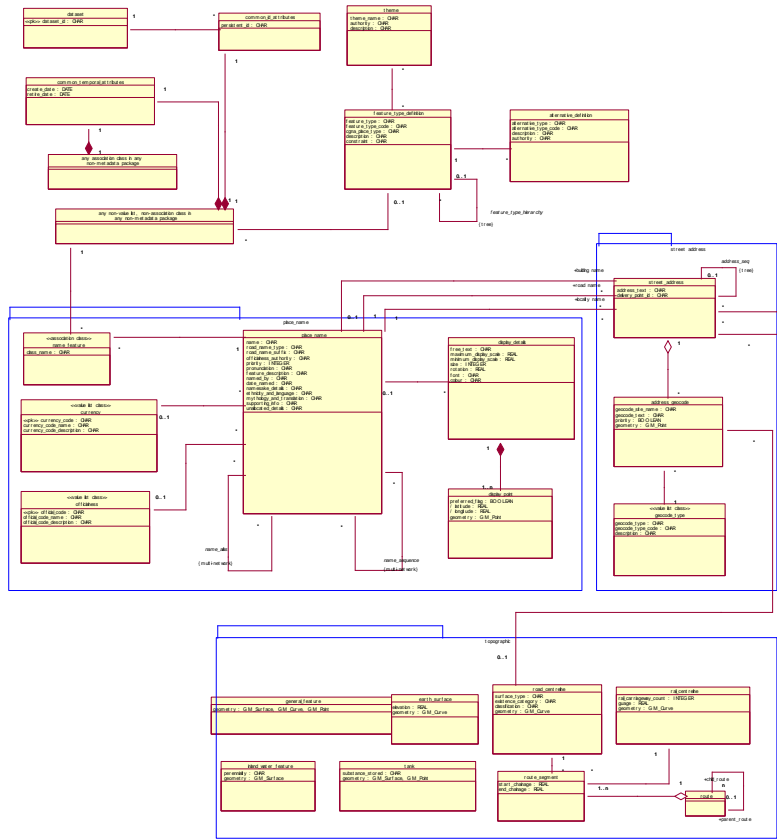
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# Spatial Data Infrastructure

- Institutional Framework
- Standards and Specifications
- Fundamental Datasets
- Clearinghouse

# Harmonising With Other Themes

- Themes
  - Cadastre, Topography, Place Names, Street Address
  - Traditionally have had a ‘silo’ mentality to data.
  - Each data model has been developed individually
- All data sets have certain common characteristics
  - Persistent identifiers
  - Create and retire dates
  - Feature level metadata
  - Geometric primitives





# Lessons

- Need for an integrated approach
  - Document decisions
  - Tackle data model, feature catalogue and encoding simultaneously if possible
- One size does not fit all
  - Application - data transfer?, data storage?
  - High-level conceptual model with specific implementation models
  - Issue when harmonising themes