ANZLIC COMMITTEE ON SURVEYING & MAPPING

SUMMARY OF THE ICSM ROADS WORKING GROUP DATA MODEL

Background

The ICSM Roads Working Group Data Model was developed in response to the need to establish and maintain a nationally consistent approach to capturing roads information. The model is not designed to handle full navigation attribution or geometry requirements but is a means for aggregating existing government information into a form that makes it suitable for ingestion into more highly-developed navigation datasets.

The model was developed based on:

- Analysis of existing data models and business rules of ICSM Roads Working Group members and their predecessor agencies, namely:
    - ACT Environment and Sustainable Development Directorate (formerly ACT Planning & Land Authority)
    - Land and Property Information New South Wales
    - Northern Territory Department of Lands and Planning
    - Land Information New Zealand
    - Queensland Department of Environment and Resource Management
    - South Australian Department for Environment and Natural Resources
    - Tasmanian Department of Primary Industry, Parks, Water and Environment
    - Victorian Department of Sustainability and Environment
    - Landgate
    - Geoscience Australia
    - PSMA Australia
- Assessment of broad user requirements for "navigation-ready" datasets, including emergency management, road traffic & transport authorities, other government agencies, and industry users (including those developing navigation datasets based on government data).

Existing attribution and new user requirements were categorised to determine their ease of maintenance and their "fundamentality", that is how widely used that attribute is. The more widely used an attribute is, the more fundamental it is and the more justification for government-controlled datasets to maintain that attribute. The categories are:

CATEGORY	EASE OF MAINTENANCE	FUNDAMENTALITY
1	Currently captured and maintained.	Fundamental feature or attribution
2F	Relatively easy to capture and maintain.	Fundamental feature or attribution
2N	Relatively easy to capture and maintain	Not regarded as fundamental
3F	Possibly difficult to capture and maintain	Fundamental feature or attribution.
3N	Possibly difficult to capture and maintain	Not regarded as fundamental.

The model

The features and attributes in the model as developed by the Roads Working Group and implemented by PSMA Australia are listed below and are current for February 2012. Definitions for each of the domain values, and an implemented can be found in the Transport & Topography Product Description located at http:/www.psma.com.au/psma/wp-content/uploads/TransportandTopographyProductDescription.pdf.

ROAD. ***A defined path for the transfer of goods or movement of vehicles, people or animals. It does not have a fixed track for vehicular movement like a railway. This model definition includes cycleways and foot tracks.*** **[Line feature]**

FIELD	DESCRIPTION	DOMAIN	CATEGORY
NAME	Name of the road as used for addressing. For ramps, this will be the ramp identification number.	[open]	1
ALIASNAME	Alternative name for road.	[open]	1,2F,3F
ROADTYPE	STREET, ROAD, LANE etc.	[open. New roads should conform to review of AS4819]	1
ROADSUFFIX	As per AS4819.	North, South, East, West	1
SPEEDLIMIT	Signposted speed limit.	[open, but would include school zones]	3N
ONTYPE	Relationship of the road to the ground or other road infrastructure.	Unknown OnBridge InTunnel OnGround Other	1,2F,3F
SURFACE	Type of road surface.		1
STATUS	Whether the road can be used.	Operational UnderConstruction Disused Unknown Closed Proposed Notional	1
FUNCTIONALCLASS	Road hierarchy used to assign or determine the relative importance of the road compared to the entire road network.	National or State Highway Arterial Road Subarterial Road Collector Road Local Road Access Road Pedestrian Thoroughfare Bus Thoroughfare Undetermined	1

DIRECTION	Direction in which traffic can travel. CF Direction of addressing.	BothWays OneWay Alternating Undetermined	2N
LANECOUNT	Code for number of lanes on the road carriageway.	One MoreThanOne Undetermined	3F
SEASONALITY	Whether the road is open all year round or may be closed at certain times of year due to weather or season conditions.	SubjectToSeasonalClosure Undetermined	3F
AUTHORITY[1]	Authority in which the road is vested, and who is overall responsible for the road.	StateAuthority StateAuthorityTransport StateAuthorityForestry StateAuthorityNationalParks LocalAuthority OtherGovernmentAuthority UnknownGovermentAuthority Private RoadCrossesCadastre LikelyNonPublic	2F
USERACCESS	Who has the right to use the road (compare AUTHORITY)	Inclusive Tollway Authorised[2] Exclusive	2F,3F
TRAFFICABILITY	The type of vehicle which can use the road.	AllVehicles 4WDOnly PedestriansOnly SubjectToHeightWeightLimits Undetermined	1
ROADSUBTYPE	Classification of road based on structural or design characteristics.	Motorway DualCarriageway[3] StandardRoad Roundabout[4] EntryExitRamp[5] VehicularTrack[6]	2F

[1] The AUTHORITY and USERACCESS fields are used to determine whether a road is part of the "public road network". Roads with AUTHORITY = "Private" have a default USERACCESS = "Exclusive"; roads with AUTHORITY equivalent to one of the government values will have a default USERACCESS = "Inclusive" unless other information shows that it should be "Authorised".

[2] Authorised roads can apply to either private roads or government-controlled roads, such as some roads in national parks or state forest, cemeteries, sports grounds, hospitals, shopping centres, schools, caravan parks, retirement villages, universities, gated communities or other residential complexes.

[3] Dual Carriageways are those roads with a barrier separating individual carriageways. They will be shown as individual line segments regardless of the width between them and each carriageway attributed as "Dual
Carriageway"

[4] Roundabouts will be shown as lines if they are greater than 20m. All roundabouts will be shown as points.

[5] Entry/exit ramps are only associated with Freeways/Motorways. They are generally one lane and sealed. Their functional hierarchy may vary depending upon individual jurisdiction business requirements.

		Pathway Connector FerryRoute	
CAPTURESOURCE	Authority from which the feature or attribute was captured.	Undetermined StateTerritoryTopoMapping StateTerritoryTourismMapping StateTerritoryOtherLandsProgram CollaborativeTopoMapping NationalTopoMapping DefenceTopoMapping NationalOtherMapping LocalGovernment TransportAuthority EmergencyServices Forestry NationalParks WaterAuthority PowerAuthority Other	1
CAPTUREDATE	Reliability date.	[open]	1
CAPTURETYPE	Method by which the feature or attribute was captured/updated.	Unknown Derived DerivedFromCadastre DerivedFromScannedMap GPS GPSDifferential GPSMobile Trace TraceStereophotography TraceOrthophotography TraceOtherImage TraceDigitising EngineeringSurveyData Estimated Other	1
HORIZONTALACCURACY	Horizontal accuracy of feature in metres.	[open]	1

Fields dropped from earlier versions of the model:

SPEED LIMIT. Although regarded as an important attribute particularly by industry users, speed limits are a very dynamic and difficult to maintain attribute. Speed limits are also commonly modelled using "dynamic segmentation" (where values can change at any point along a road segment) rather than as an attribute applying to an entire road segment. There are currently other projects within the road traffic and transport authorities looking at how best to model speed limits and the RWG will adopt these proposals once they are finalised.

[6] Vehicular tracks will have a TravelDirection = "Alternating".

TRAFFICABILITY. This was originally an attribute designed to show what types of vehicles could use a road; examples included 4WD only, subject to height/weight limits, or pedestrians, and was designed for emergency management use. It was found when implementing the model that these attributes could be handled elsewhere in the model; for example 4WD only roads are also shown as Surfacetype = Unimproved. The attribute was therefore redundant.

FERRY ROUTE were originally designed as a separate feature but were found to be better modelled as a Subtype (along with Pathways) of Roads.

ROUTE. A collection of road segments that form a customary, regular or publicised line of travel. [Line or aspatial]

ROUTENUMBER	Number identifying the route.	[open or list]	1
NAME	Name of route (if it exists).	[open]	3F
ROUTETYPE	Type of route.	NationalRoute StateRoute Tourist Cycleway HeavyHaulage NationBuilding Undetermined	3F
CAPTURESOURCE	Authority from which the feature or attribute was captured.	See under ROAD.	1
CAPTUREDATE	Reliability date.	See under ROAD.	1
CAPTURETYPE	Method by which the feature or attribute was captured/updated.	See under ROAD.	1

CROSSING POINT. A structure built to facilitate a road passing over or under another physical feature. [Point]

CROSSINGSUBTYPE	Type of crossing.	Bridge Tunnel Ford Floodway Culvert Other	1
NAME	Name of the feature.	[open]	2F,3F
HEIGHTLIMIT	Height limit of vehicles using the crossing.	[open]	2N,3N
WEIGHTLIMIT	Weight limit of vehicles using the crossing.	[open]	2N,3N
CONSTRUCTIONMATERIAL	The material the structure is made from.	Undefined Concrete Steel Timber	3N

		Masonry	
CROSSINGSTRUCTURE	Design of structure.	Undetermined Beam Cantilever Arch Suspension CableStayed Truss Drawbridge	3N
CAPTURESOURCE	Authority from which the feature or attribute was captured.	See under ROAD.	1
CAPTUREDATE	Reliability date.	See under ROAD.	1
CAPTURETYPE	Method by which the feature or attribute was captured/updated.	See under ROAD.	1
HORIZONTALACCURACY	Horizontal accuracy of feature in metres.	[open]	1

<u>TRAFFIC CONTROL DEVICE</u>. A feature used to control, calm, slow or impede the movement of traffic on a transport feature.

TRAFFICCONTROLDEVICESUBTYPE	Type of traffic control device	Roundabout[7] TrafficLight LevelCrossing Toll Gate StockGrid Barrier FixedSpeedCamera PedestrianCrossing Other	
CAPTURESOURCE	Authority from which the feature or attribute was captured.	See under ROAD.	1
CAPTUREDATE	Reliability date.	See under ROAD.	1
CAPTURETYPE	Method by which the feature or attribute was captured/updated.	See under ROAD.	1
HORIZONTALACCURACY	Horizontal accuracy of feature in metres.	[open]	1

[7] See Footnote regarding representation of Roundabouts in the Road class.

The future

This model is open to change as requirements evolve. PSMA Australia will continue to implement any changes in the model into its own products. The ICSM Roads Working Group welcomes any feedback which can be sent to icsm@ga.gov.au.

ICSM Roads Working Group

February 2012