

Land Information Ontario

NRVIS/OLIW Data Management Model For Transport Line (v.2) Fact Sheet Edition

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Refer to the *DMM Users-Guide to the Fact Sheet Edition* for additional details about the context of information collected for a Data Management Model.

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1. Preface

Data modeling involves identifying the things of importance to an organization (entities), the properties of those things (attributes) and how they are related to one another (relationships). This document provides the logical view of the data model. Appendix 1 provides details on understanding data models.

2. Overview

Transport Line (TRANSLIN) *version 2*

Identifies a manmade linear feature in the transportation network other than road.

This is a NRVIS 3.0 and an OLIW Data Class

Abstract Class:

SPSLINE -

Abstract Spatial Single-Line User Object. One and only one node to node arc forms a single object. Examples include geological fault line, contour lines, and roads at 1:600,000 scale.

Custodian: (ESTABLISHED)

Ministry of Natural Resources (MNR), Science and Information Resources Division (SIRD), Information Resources Management Branch (IRMB), Base Data Infrastructure (BDI)

Geographic Unit Types:

Aerial Cableway (4)

A transportation device for freight or passengers consisting of a carrier and a cable supported by towers.

Bridge - Pedestrian/Cycle (24)

A raised structure built for the use of pedestrians and/or cycles in crossing major roads or obstructions such as streams, rivers, and deep depressions along trails.

Bridge - Railway (26)

A part of the railway built on a raised structure and serving to span an obstacle, river, road, or another railway, etc.

Bridge - Railway And Roadway (30)

A part of the road and railway built on a raised structure and serving to span an obstacle, river, road, or another railway, etc.

Bridge - Roadway (28)

A part of the road built on a raised structure and serving to span an obstacle, river, another road, or railway, etc

Culvert - Railway (40)

A transverse and totally enclosed drain under a railway.

Culvert - Roadway (42)

A transverse and totally enclosed drain under a roadway.

Parking Lot Limit (83)

Boundary of an area used for parking vehicles.

Road - Edge (107 -Expired)

This GUT corresponds to the Ontario Base Map feature of the same name. Roadways are shown as linear features along their centre lines. Multi-lane roadways with four or more contiguous lanes are digitised to scale, to the edge of the pavement using the road edge feature code.

For more information, see Digital Topographic Data Base Overview Version 2 OMNR Provincial Mapping Office, 1994.

Road - Under Construction - Edge (166 -Expired)

This GUT corresponds to the Ontario Base Map feature of the same name.

Tunnel - Railway (139)

A part of a railway built under an obstacle, a river, a road, or a railway.

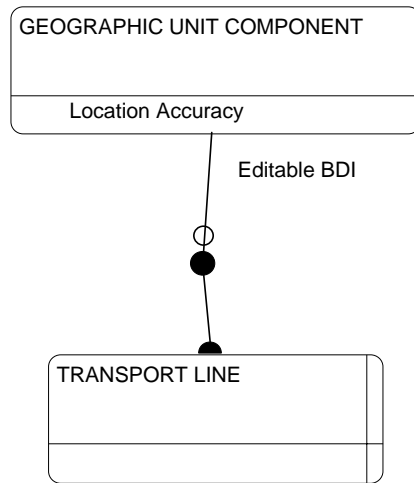
Tunnel - Roadway (141)

A part of a roadway built under an obstacle, a river, a road, or a railway

3. Logical Data Model (Business View)

Refer to the Appendix 1 guide on how to read an Entity Relationship Diagram (ERD).

Business View Logical Data Model
Data Class: Transport Line
Subset: TRANSLIN



4. Data Dictionary

Refer to the Appendix 2 for guide on how to interpret a data dictionary.

Entity : GEOGRAPHIC UNIT COMPONENT

Description :

A Geographic Unit that may be included in a Geographic Unit Consolidation.

Location Accuracy

Character (variable length string) 25 Mandatory

The degree of conformity or closeness of a measurement within the database to its true value in the world.

Class : Description

Valid values in NRVIS_LOCATION_ACCURACY.

Subtype Of GEOGRAPHIC UNIT

Each GEOGRAPHIC UNIT COMPONENT May be One and only one FIRE DETAIL(s). Exclusive :

Each GEOGRAPHIC UNIT COMPONENT May be One and only one GEOGRAPHIC UNIT SENSITIVITY(s). Exclusive :

Each GEOGRAPHIC UNIT COMPONENT May be Defined By One or more DRAWING SCALE(s). Exclusive :

Entity : TRANSPORT LINE

Description :

Identifies a manmade linear feature in the transportation network other than road.

Contains: Aerial Cableway, Bridge - Pedestrian/Cycle, Bridge - Railway, Bridge - Railway and Roadway, Bridge - Roadway, Culvert - Railway, Culvert - Roadway, Parking Lot Limits, Tunnel - Railway, Tunnel - Roadway

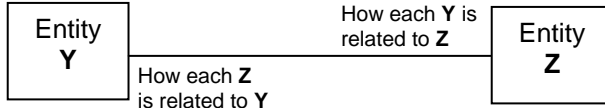
Subtype Of GEOGRAPHIC UNIT COMPONENT

Appendix 1: Reading an Entity-Relationship Diagram

A modeler can define the data needs of a business using an **entity relationship diagram** (ERD). An ERD is a schematic representation showing entities and their relationship to other entities. An **entity** is a data object and a **relationship** is a model of the association between objects of one or more different entities. In an ERD, entities are rectangles connected to other entities by relationship lines. (official definition excerpt from the *Information Modeling Handbook for the OPS – Ontario Government Management Board Secretariat Corporate Architecture Branch*)

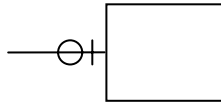
You will encounter the following symbology in an ERD.

General Notation: Text that describes a relationship between entities.

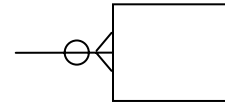


Relationship Cardinality Symbols:

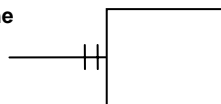
There *may* be **zero or one** occurrence of this entity. This means that the entity is optional.



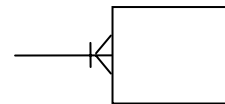
There *may* be **zero or more** occurrences of this entity. The relationship is optional.



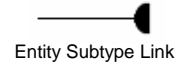
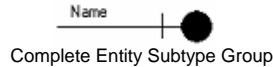
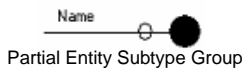
There *must* be **one and only one** occurrence of this entity. This means that the relationship is mandatory.



There *must* be **one or more** occurrences of this entity. The relationship is mandatory.

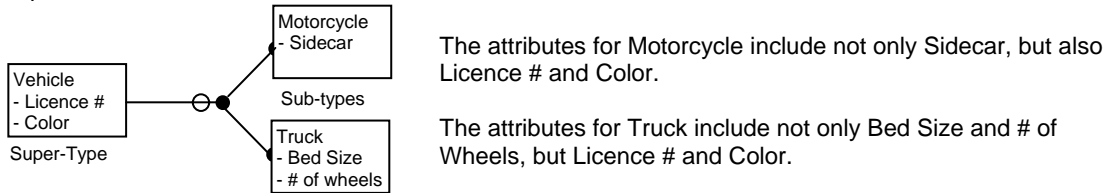


Entity Sub-type Groups: Entity subtype group icons link sub-type entities to the super-type entity. All subtype entities inherit the characteristics of the super-type entity. For example:



Group icons link subtype entities to the super-type entity. All subtype entities inherit the characteristics of the super-type entity. For example:

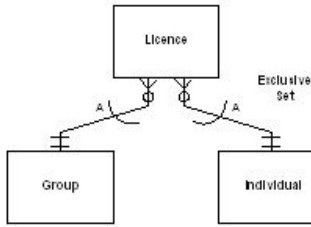
The circle indicates that the definition of subtypes for the super-type Vehicle is only partially complete. A line in this same location would indicate that all possible subtypes have been defined – indicating it as complete.



Types of vehicles that have not be explicitly defined would inherit only the characteristics of the Vehicle entity e.g. Car, ATV.

Exclusive Set:

An Exclusive Set describes a relationship between entities where, at any one time, only one of the relationships can be true. For example:



A Group *may* be the holder of one or more Licences.

An Individual *may* be the holder of one or more Licences.

A Licence *must* be Issued to one and only one Group **or** One and only one Individual.

One licence cannot be issued to both a group and an individual.

Additional Examples:

Interpreted as :

An Instructor *must* be teaching One or More Courses.

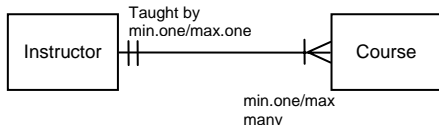
A Course *must* be taught by One and Only One Instructor.

An Instructor cannot exist unless they teach a course.

A Course cannot exist unless it has an Instructor. Tag-Team teaching by Instructors is not permitted.

A newly hired Instructor, not yet assigned to a course, may therefore not be part of this entity.

If the business rules dictate that this is not so, the relationship is incorrect. (See next example)



Interpreted as :

An Instructor *may* be teaching One or More Courses.

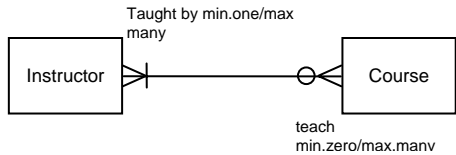
A Course *must* be taught by One or More Instructors.

A newly hired Instructor, not yet assigned to a course, can exist.

A new inexperienced Instructor, can be paired up with an experienced Instructor to teach a course until they are confident to teach solo.

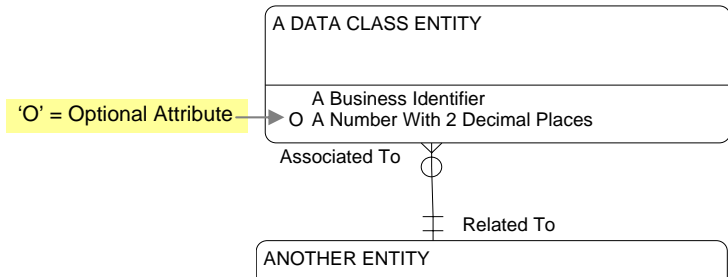
A Course cannot exist unless it has an Instructor.

Once again, if the business rules dictate that this is not so, the relationship is incorrect.



Appendix 2: Interpreting a Data Dictionary

General guidelines on how to interpret a Business View Logical Model Data Dictionary



Entity : A DATA CLASS ENTITY

2 Description :
This is an example of a Entity Description

4 A Business Identifier
This is the main Business Identifier.

8 Class : Business Identifier

4 A Number With 2 Decimal Places
This is an example of a Data Item description.
This is an example of an Attribute Description.

8 Class : Measurement

9 This is an example of a Business Definition.

10 Each A DATA CLASS ENTITY Must be Associated To One and only one ANOTHER ENTITY(s). Exclusive :

Character (variable length string) 25 Mandatory

Numeric 3 2 Optional

1. Entity Block
2. Entity Name and Description
3. Attribute Block
4. Attribute name (underlined) with item description (below). Sometimes, the item is also described at the attribute level to describe its specific usage within an entity.
5. Field Type. E.g.: Character, Numeric, Date etc...
6. Field Length and where applicable – number of decimal places. The maximum capacity for a field's content is determined by the Item's set length. With the examples above...
 - The 1st item, has been defined as a Character (Variable length string) field, with a maximum length of 25 characters.
 - The 2nd item has been defined a Numeric field with a width of 3 including 2 decimal places. (9.99)
 Other numeric definition examples: 99.99 would be defined as 4 2, 999.9 as 4 1, 999 as 3 0 etc...
 Whenever numeric data items are defined, it is good practice to include an example in the item's description.
7. Attribute Optionality within Entity. Optional attributes are prefixed with an 'O' within an Entity's ERD.
8. Logical Class of the Data Item. Examples include:
 - Business Identifier: a field used by a business area as a reference to obtain more information.
 - Code: Where values are stored as a code – with the full value sometimes stored in a corresponding lookup table.
 - Date: For storing date information e.g.: Year, full or partial dates, character dates etc...
 - Description: For storing long descriptions.
 - Flag: Where the field is used to store a condition that may be used by the business area to trigger an event.
 - Identifier: Where field is used to store an identifier e.g.: a Licence Number.
 - Indicator: Usually Boolean e.g. Yes/No
 - Measurement: The unit of measure is also defined e.g.: mm, feet, kilograms etc...
 - Name: Where field is used to store a name. e.g.: Lake Rome
 - Quantity: Where a field stores a value that measures quantity. E.g.: Number of Moose Observed: 12
9. Business Definition. E.g.: *Valid Values in NRVIS_2NUM Lookup Table*
10. Entity Relationship Description