



Land Information Ontario

NRVIS/OLIW Data Management Model For Contour (V.6) Fact Sheet Edition

Version 1.0

Issued: March 5, 2009

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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.

This document was generated using *DMM Edition Template Version: 2.3*

Published January, 2009
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Table of Contents

<i>1. Preface</i>	4
<i>2. Overview</i>	4
<i>3. Logical Data Model (Business View)</i>	5
<i>4. Data Dictionary</i>	5
<i>Appendix 1: Reading an Entity-Relationship Diagram</i>	6
<i>Appendix 2: Interpreting a Data Dictionary</i>	8

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

Contour (CONTLIN) version 6

Linear segments that connect contiguous points of the same elevation that are compiled and used to describe terrain relief. Includes:

- Contour Land
- Contour Land Approximate
- Contour Land Auxiliary/Interpolated
- Contour Land Depression

This is a NRVIS 3.4.3 and an OLIW 2009 Data Class

Abstract Class:

SPSLINE -

Spatial Single-Line: An object is represented by ONE and ONLY ONE line segment. Line segments MUST be continuous. Examples: geological fault lines, roads at a 1: 600,000 scale.

Information Owner (IO): *(Established)*

Ministry of Natural Resources (MNR), Science and Information Resources Division (SIRD), Geographic Information Branch (GIB), Geographic Information Ontario, Base Data Infrastructure

Geographic Unit Types:

Contour - Land (2693)

Linear segments that connect contiguous points of the same elevation that are compiled and used to describe terrain relief. Includes:

- Contour Land
- Contour Land Approximate
- Contour Land Auxiliary/Interpolated
- Contour Land Depression

This Data Class is associated to the following Information Class(es). Where applicable, please refer to the Data Management Model document for any Data Classes listed under each Information Class.

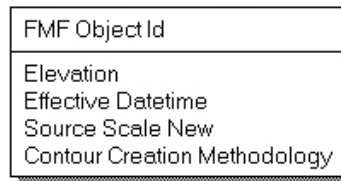
Information Class: Base Data Infrastructure

3. Logical Data Model (Business View)

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

CONTOUR
Logical Data Model - Business View
 January 2009

SIMPLE CLASS CONTOUR



4. Data Dictionary

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

Entity: SIMPLE CLASS CONTOUR

Description:

A continuous line formed of vertices located at a constant elevation from mean sea level (MSL). It is used for a description of the terrain relief.

<u>FMF Object Id</u>	INTEGER	13	Mandatory
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System generated identifier, unique at the application level.

Class: Identifier

<u>Elevation</u>	NUMBER	11 1	Mandatory
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Amount in metres that a geographic entity is above mean sea level.

Class: Measurement

<u>Effective Datetime</u>	DATE		Mandatory
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For subscription: Date/time that the record was created in the LIO database. For publication: Date/time that the record was created in the source database.

Class: Date

<u>Source Scale New</u>	CHARACTER (variable length string)	15	Optional
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The scale of the vector base, the cell resolution of a grid, or the pixel resolution of an image used to record the location of the feature. Examples: For a vector source or aerial photography: 1:10,000 1:20,000 1:250,000. For a grid or imagery source: 1 km, 10 m, 15 seconds.

Class: Measurement

<u>Contour Creation Methodology</u>	CHARACTER (variable length string)	25	Optional
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The method used to generate the lines for contours. For example, contours could be generated using a digital terrain model or digitized from hard copy maps.

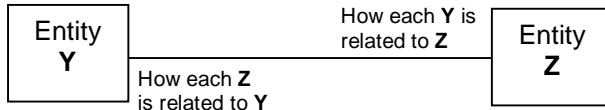
Class: Description

Appendix 1: Reading an Entity-Relationship Diagram

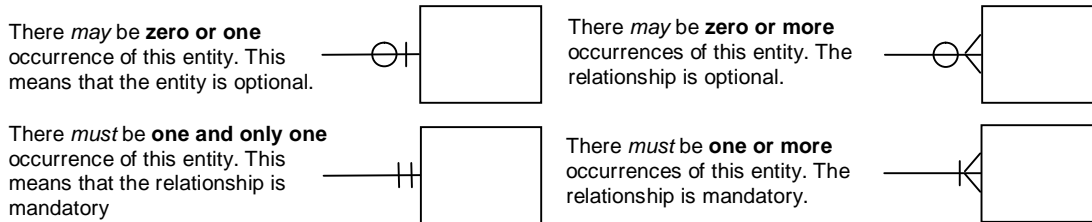
A modeler can define the data needs of a business using an **entity relationship diagram** (ERD). An ERD is a schematic representation showing entities and their relationship to other entities. An **entity** is a data object and a **relationship** is a model of the association between objects of one 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.

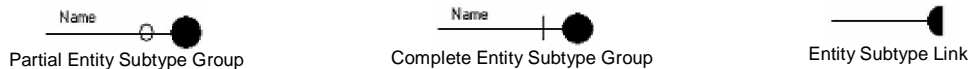
General Notation: Text that describes a relationship between entities.



Relationship Cardinality Symbols:

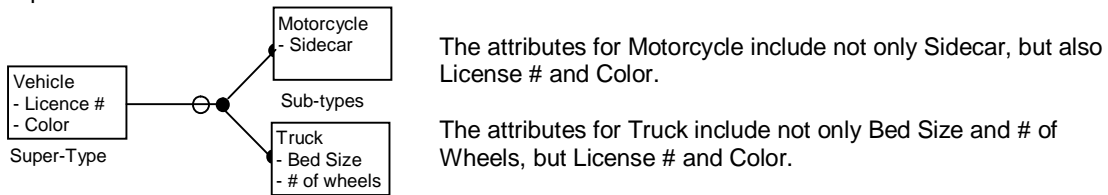


Entity Sub-type Groups: Entity subtype group icons link sub-type entities to the super-type entity. All subtype entities inherit the characteristics of the super-type entity. For example:



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

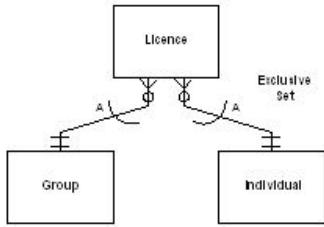
The circle indicates that the definition of subtypes for the super-type Vehicle is only partially complete. A line in this same location would indicate that all possible subtypes have been defined – indicating it as complete.



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

One license 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 are breached, the relationship between entities is incorrect. (See next example)

Interpreted as:

An Instructor *may* be teaching one or more Courses.

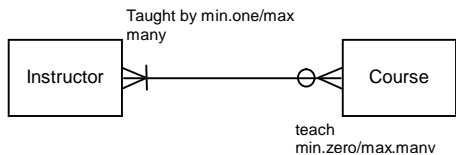
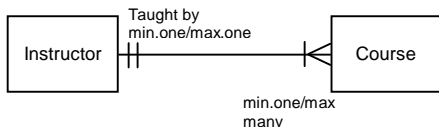
A Course *must* be taught by one or more Instructors.

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.

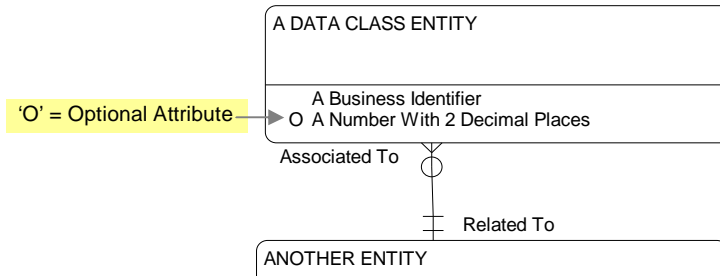
A Course cannot exist unless it has an Instructor.

Once again, if the business rules are breached, the relationship between entities is incorrect.



Appendix 2: Interpreting a Data Dictionary

General guidelines on how to interpret a 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 as 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