direct text

GeoBase

National Hydro Network, Canada, Level 1 Data Model

Edition 1.0

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REVISION HISTORY

Date	Version	Description
September 2002	Draft 01	First draft for discussion with Nova Scotia
January 2003	Draft	Second draft after discussion with Nova Scotia and major review of the hydro network model through: • Proposal of options
March 2003	Alpha	Draft version after discussion and decisions made concerning NHNC1 scope and content with Nova Scotia and British Columbia
July 2003	Draft 02	Draft version after discussion and decisions made concerning the detailed NHNC1 model and content with Nova Scotia, British Columbia, and the Yukon. Meeting in Victoria, May 2003.
December 2003	Draft	Integration of UML model for both LRS and Segmented views of the NHNC1.
February 2004	Draft	English review; Remove the UML model for the Segmented view.
May 2004	Draft	Update from the March Workshop comments.
August 2004	2004.1	The object metadata attribute « date » is renamed « validity_date » in section 3.1.6.2 and at all other parts referring to object metadata. A new Feature type value is added for inland water (see section 3.1.5)

FUTURE WORK

Key word	Description

TABLE OF CONTENTS

ABBREVIATIONS

LRM	Linear Reference Method
LRS	Linear Reference System
NHNC1	National Hydro Network, Canada, Level 1
NID	National Identifier
NRCan	Natural Resources Canada

TERMS AND DEFINITIONS

1 Overview

The data model can (and must) extend beyond the smallest common denominator obtained with the partners. The model must therefore contain two levels of information: mandatory data (black boxes) and optional data (grey boxes). Data homogeneity will thereby be ensured by a minimum set of data. Beyond the minimum level, the model serves as a target for all partners. Over the years, we will therefore work towards raising the minimum and redefining new targets. Minimum content will be defined for attributive and geometric data (see Figure 1 – Specifications expansion).

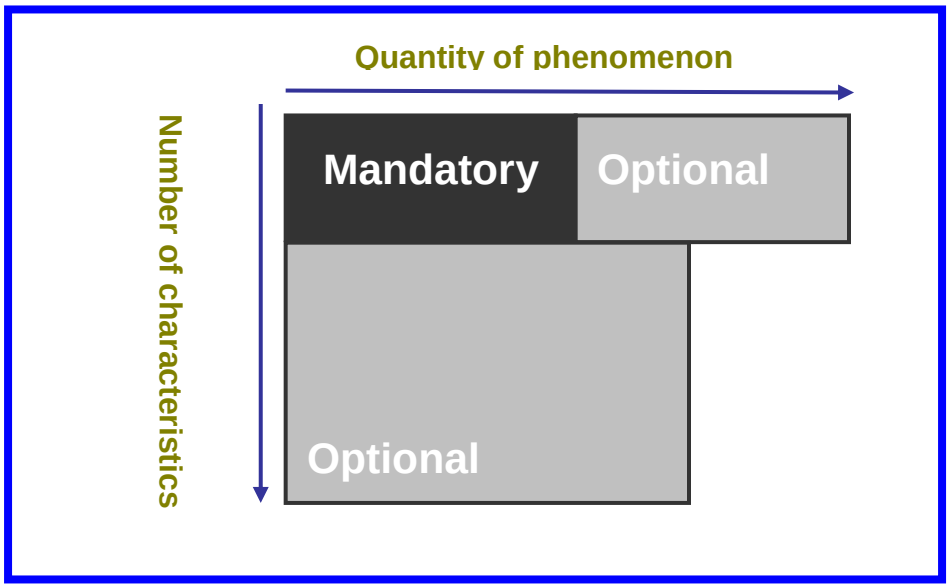


Figure 1 – Specifications expansion

2 LRS

The Linear Reference System (LRS) is considered the most viable approach for managing and distributing geospatial information when several distinct organizations are involved (distributed approach).

This method makes it possible to divide a standard spatial object into two parts: the geometric and attribute parts. The geometric part (Network Linear Component in the NHNC1) describes the position of the feature without describing its nature. The attribute part (or event) describes specific information observed along its linear geometric representation. Event information does not alter the geometric representation in any way. The event's position is given relatively from the beginning of the linear geometric representation. A Point Event is determined by a specific location, while a Linear Event is defined by a starting and ending measurement. Several Linear Methods (LRMs) can be used. (They are not discussed in this document). By using this approach we can share a common geometry while each application can add their set of attributes (events) in relationship with the Water Network geometry.

2.1 LRS model

Four packages constitute the NHNC1 : *Hydro Network*, *Hydrographic*, *Hydro Events* and *Metadata*. The *Hydro Network* package contains the set of classes that form the linear network. The *Hydrographic* package contains the set of classes that form the graphical representation of features related to the linear network. The *Hydro Event* package contains attributive information that are referenced to *Hydro Network* geometry.The *Metadata* package contains information that describes the data themselves (date, accuracy, and so on). The portion of toponymy associated to Hydro feature data is part of the National Toponymy Model. This model associates geometries with official names and the classes used from the Toponymy Model are described in an external package called *Toponymy* for better understanding (issues involving text placement on paper or computer screen are excluded from consideration at this point).

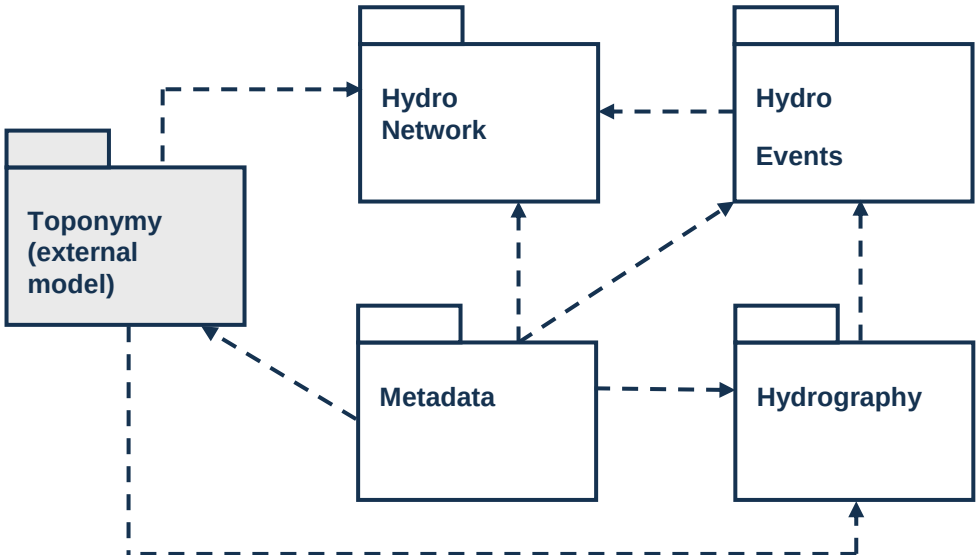


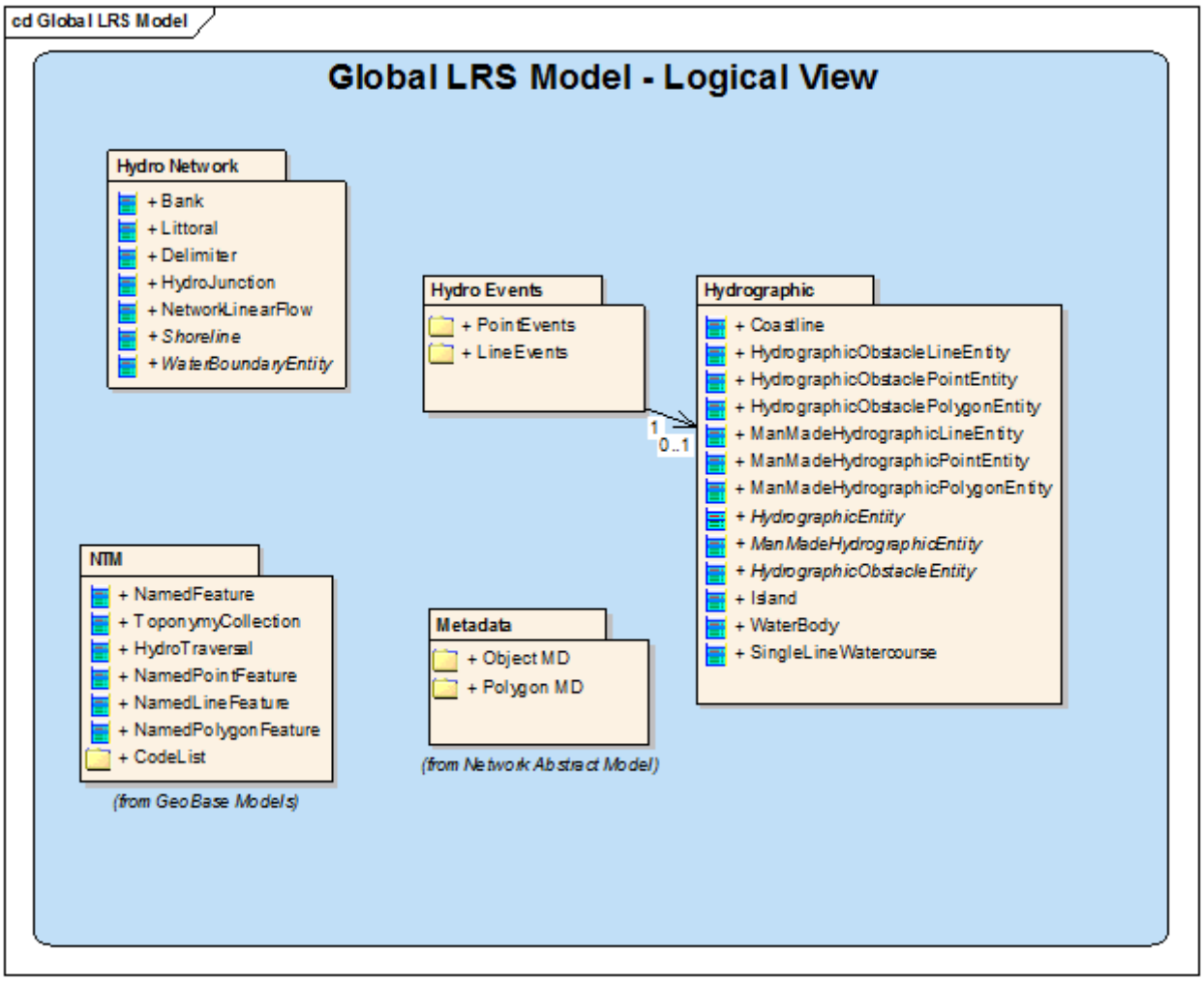
Figure 2 – Packages in the NHNC1 LRS model

3 Model

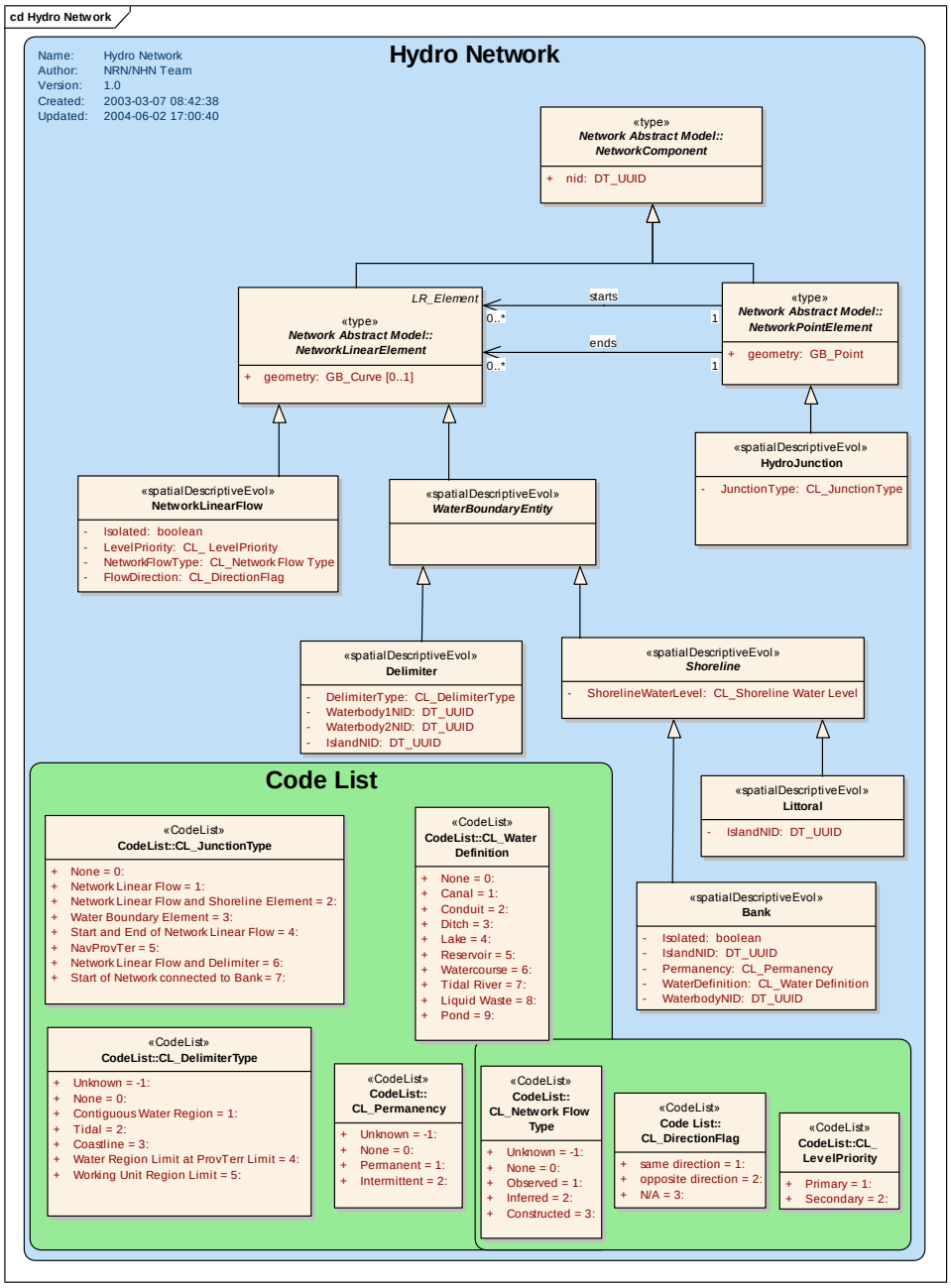
The model presented below include descriptions of five packages, including the description of relationships between classes belonging to different packages and the toponymy external package.

3.1 LRS model

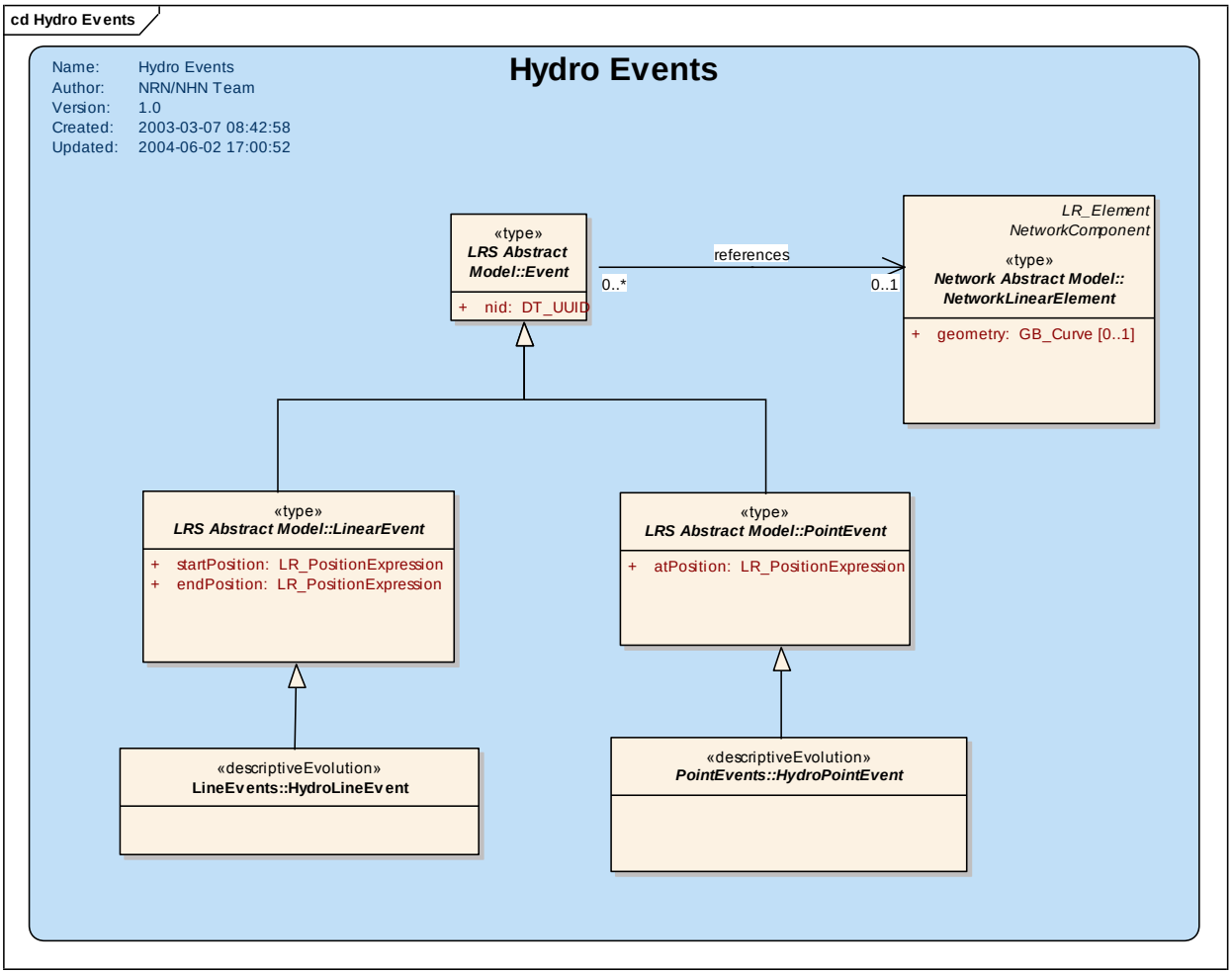
3.1.1 Logical view



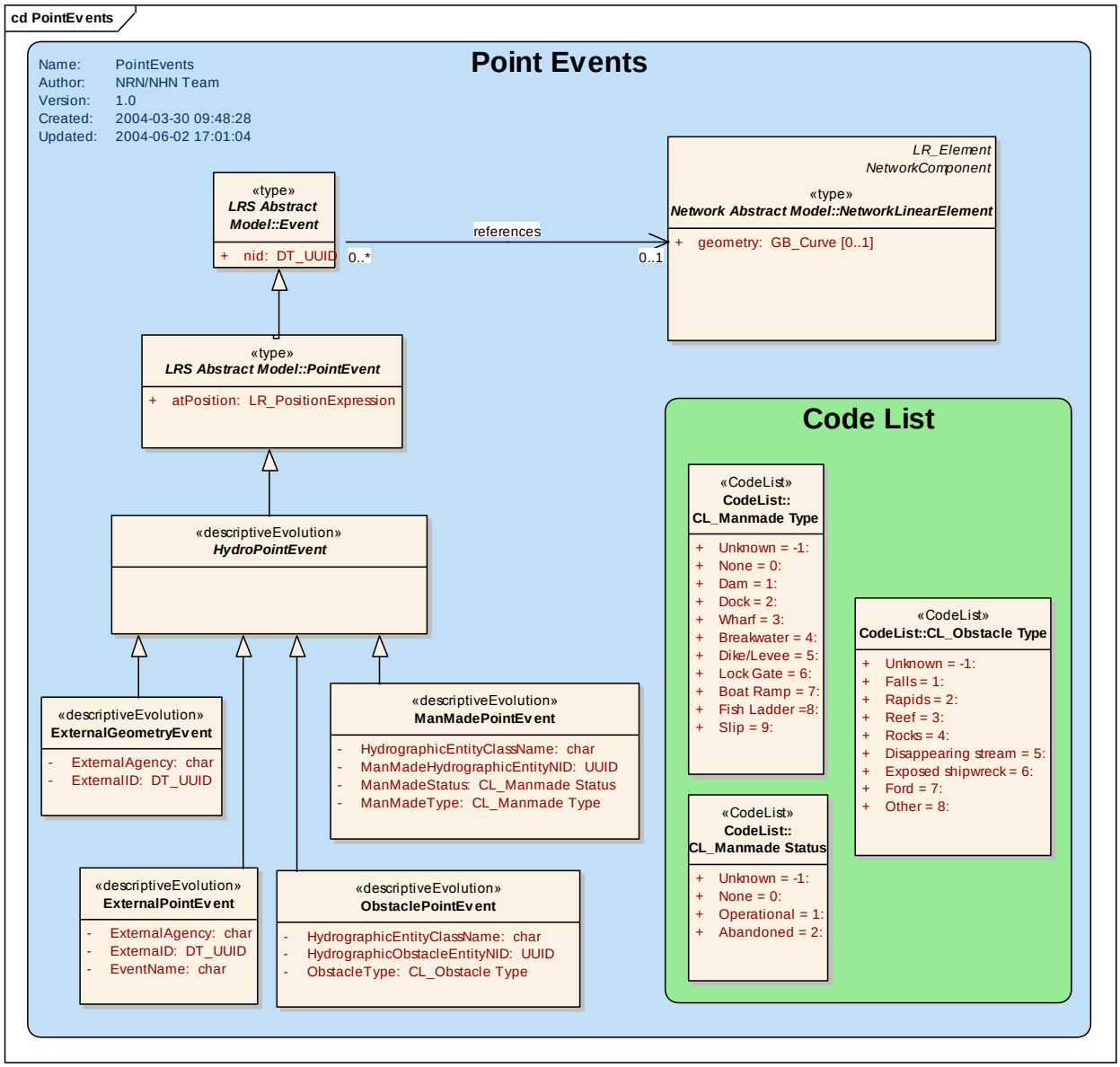
3.1.2 Hydro network



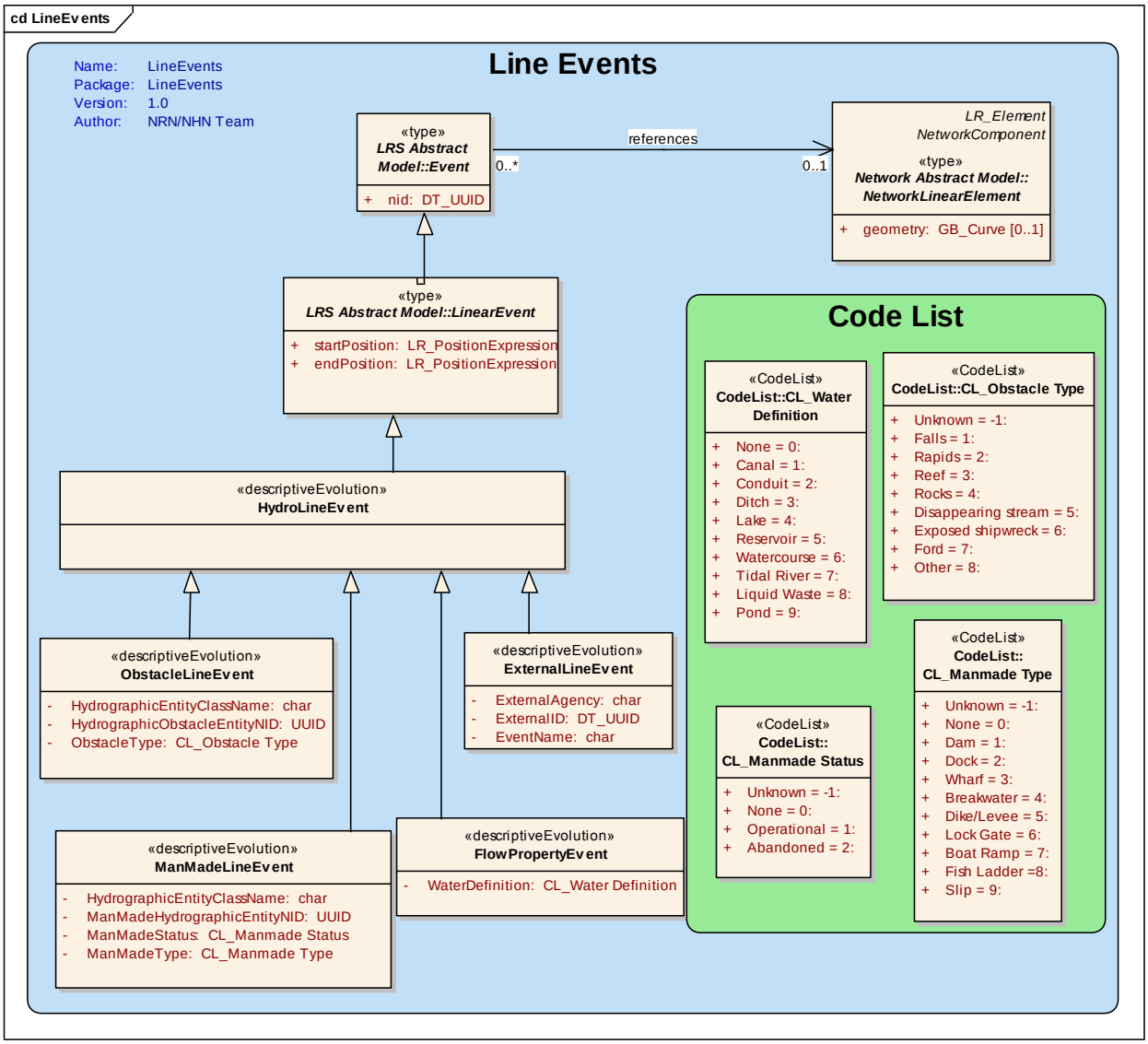
3.1.3 Hydro events



3.1.3.1 Point Events

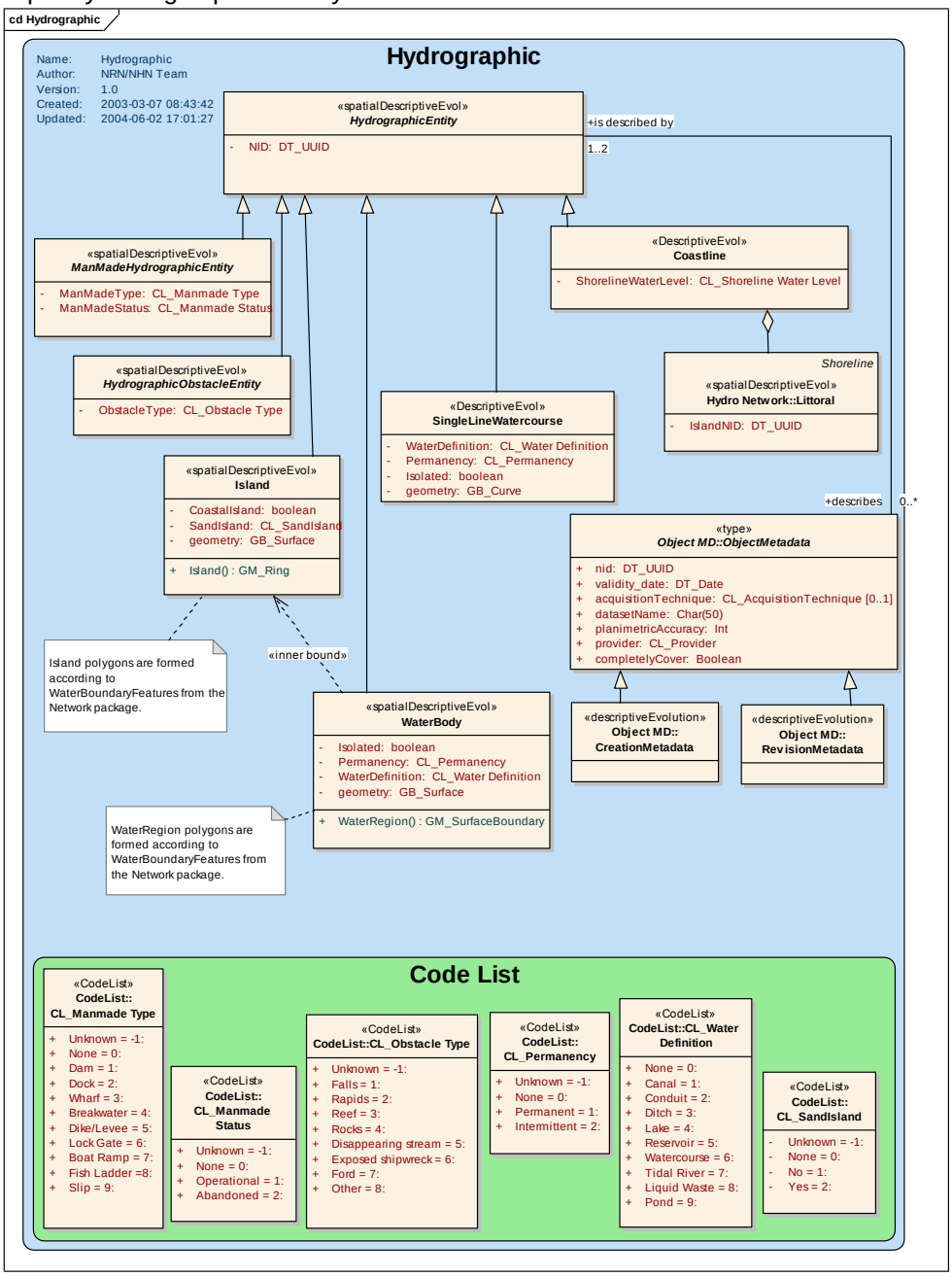


3.1.3.2 Line Events

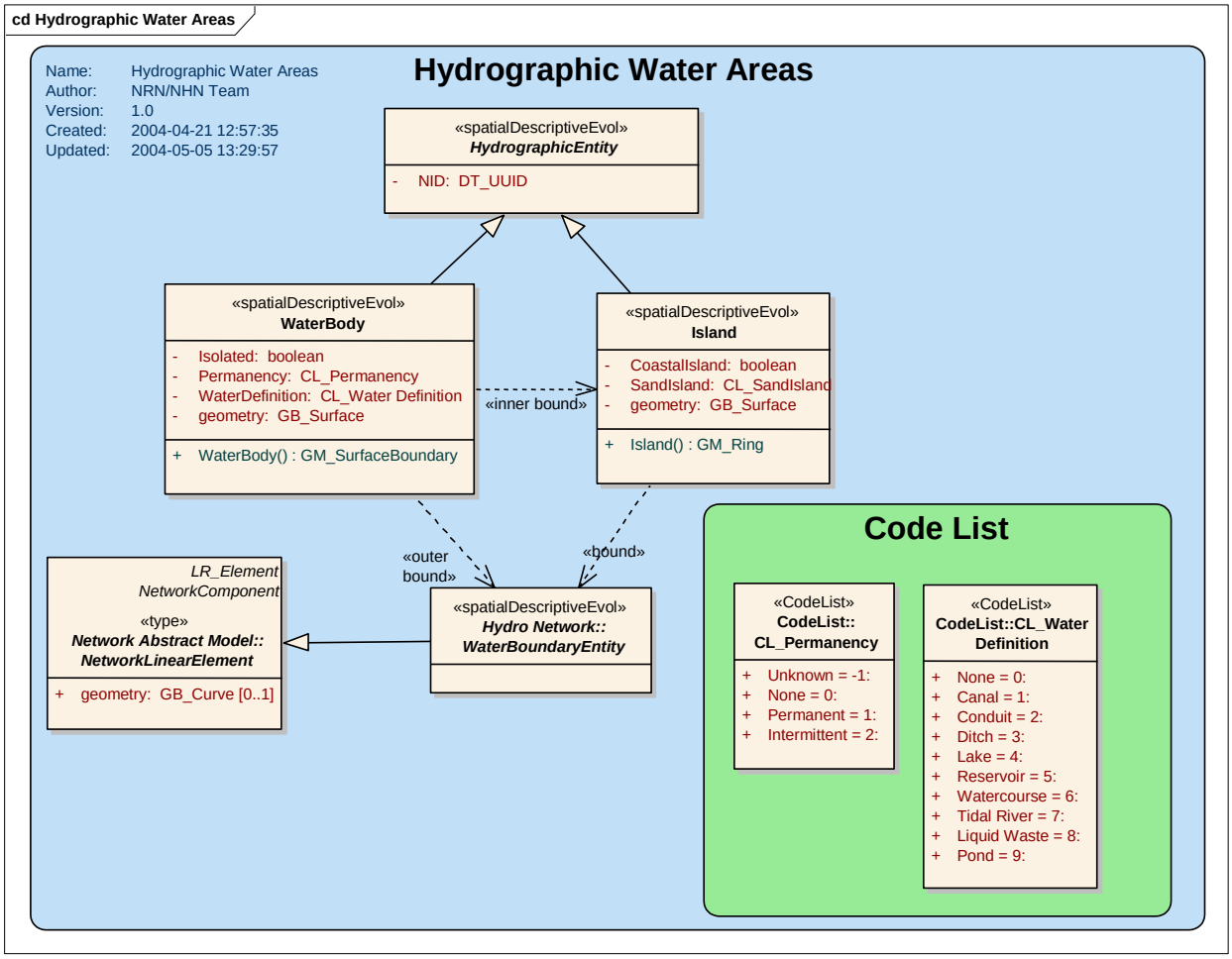


3.1.4 Hydrographic

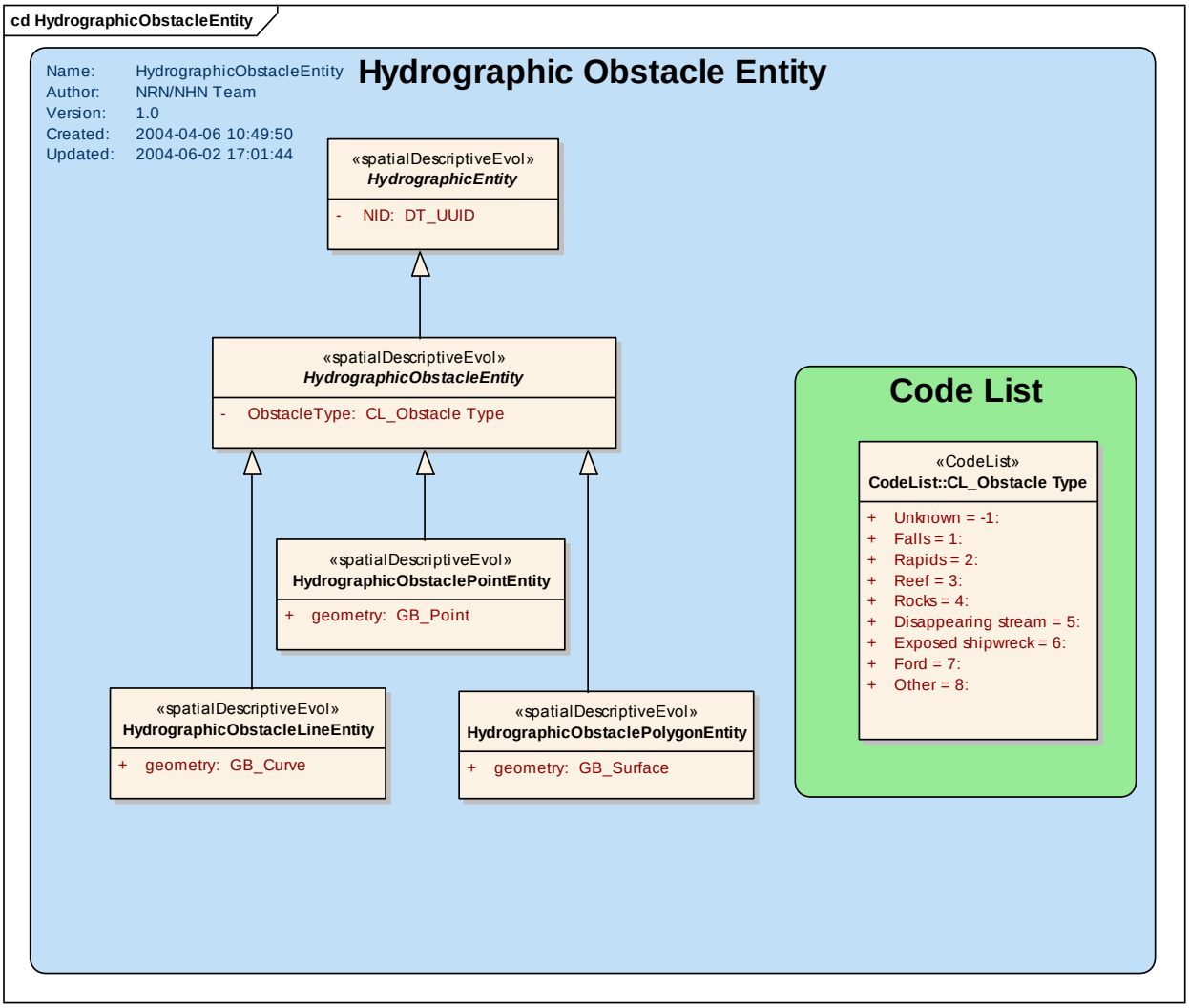
There are implied associations with all hydrographic features and the Hydro Network could be defined explicitly through spatial analysis.



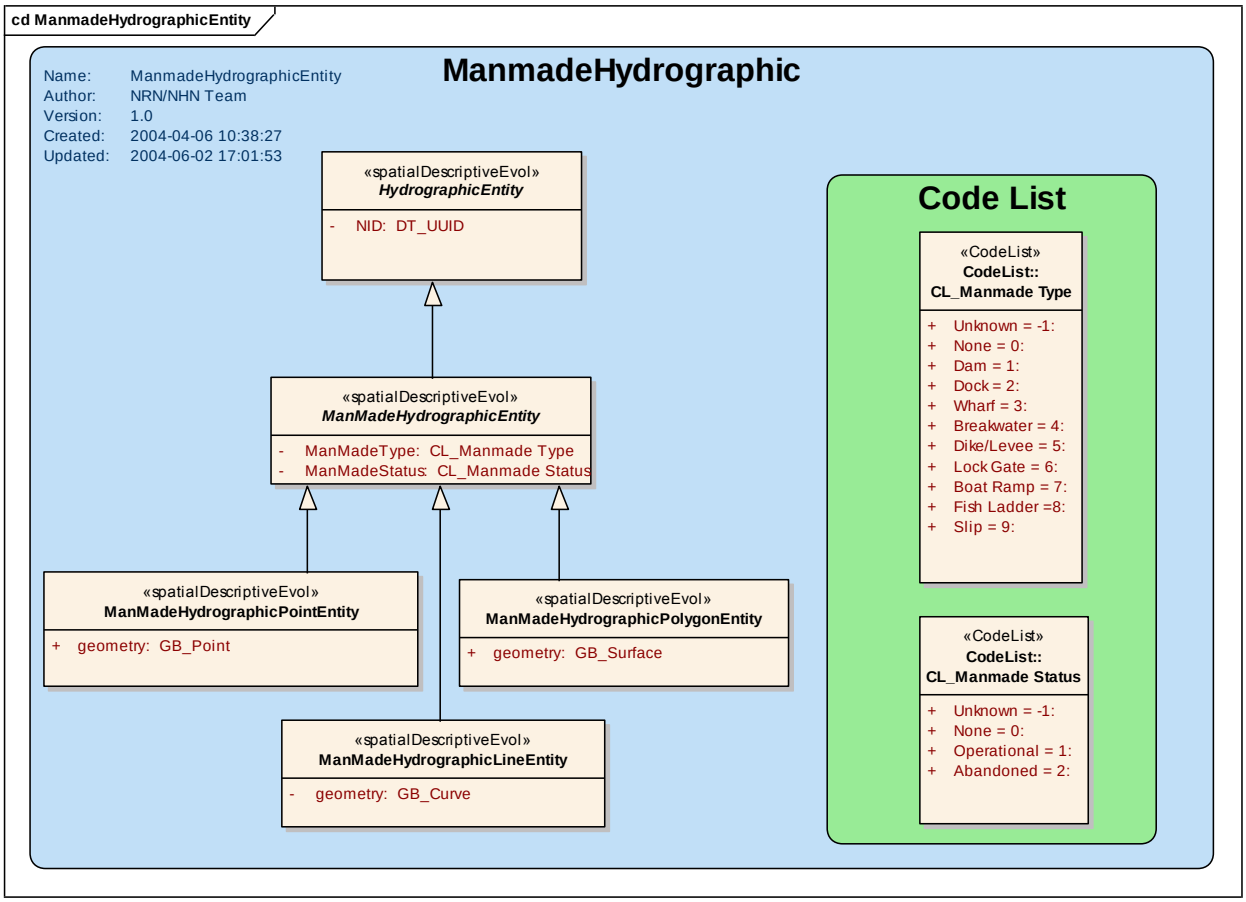
3.1.4.1 Hydrographic Water Areas



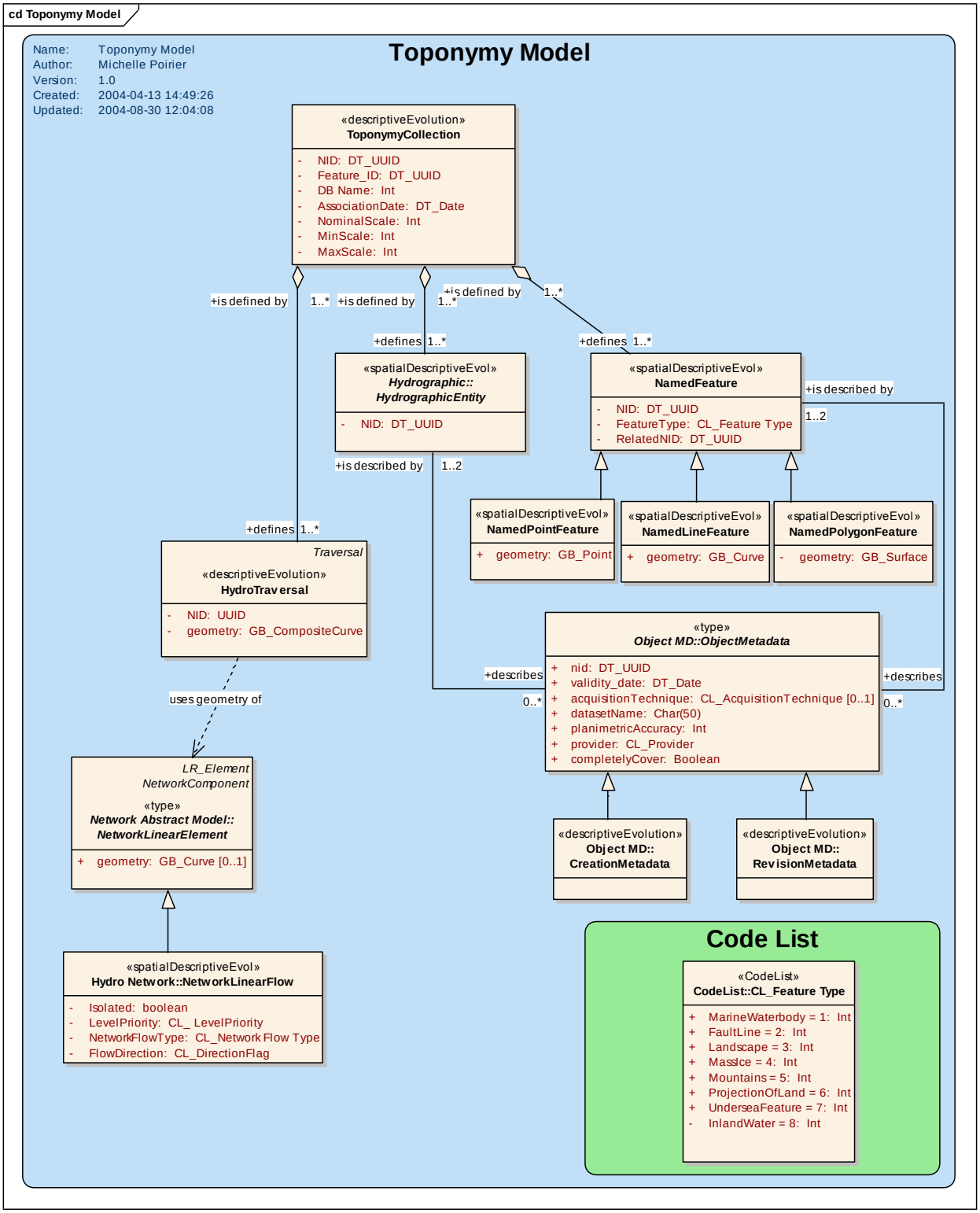
3.1.4.2 Hydrographic Obstacle



3.1.4.3 Manmade Hydrographic

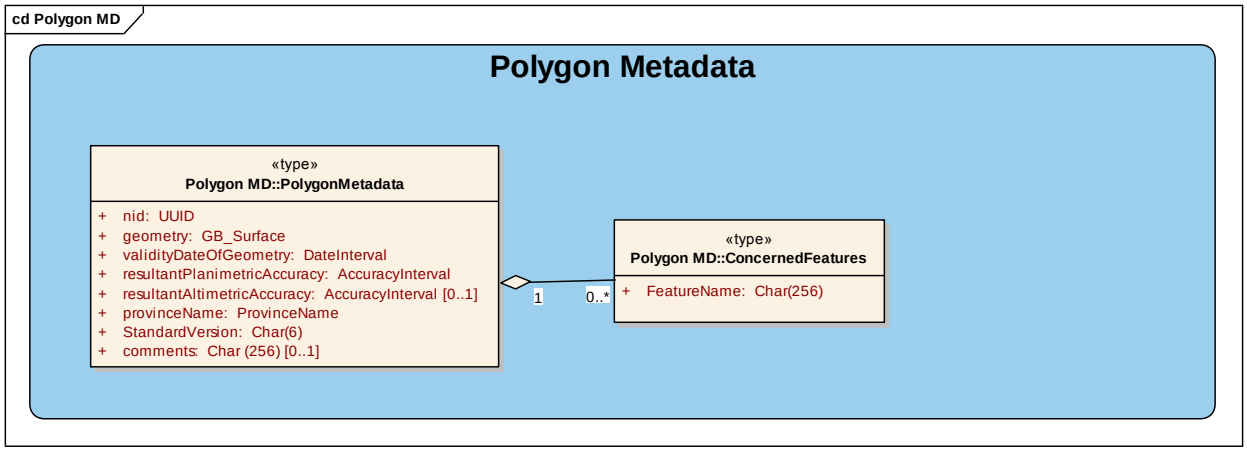


3.1.5 Toponymy (external package)



3.1.6 Metadata

3.1.6.1 Polygon Metadata



3.1.6.2 Object Metadata