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Executive Summary

A key outcome from RISE is the definition of a process – a repeatable methodology – for developing, adopting and maintaining data product specifications. RISE has tested the methodology with use cases, at the example of Diffuse Nutrient Leakage Reporting to the Water Framework Directive.

This document contains the RISE harmonised data product specification. Each data theme in RISE – namely Hydrography, Land cover and Elevation – is described by one data product specification with clauses specified in ISO 19131.

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Reference documents

The following referenced documents are indispensable for the application of this document.

RISE19 Methodology & Guidelines on Use case & Schema Development. Version 1.2, September 2007.

RISE 18 Use Case Document 'Diffuse nutrient leakage reporting to the Water Framework Directive'. Version 1.5, September 2007.

RISE 23 Conceptual Schema in UML. V1.1. September 2007.

ISO 19110:2005, Geographic Information – Methodology for feature cataloguing.

ISO/DIS 19131, Geographic Information – Data Product Specification

ISO/TS 19139:2006, Geographic information — Metadata — XML schema implementation

EC, 2000: Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Official Journal of the European Communities, L327, Dec 22 2000.

http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_327/l_32720001222en00010072.pdf (accessed March 7, 2007)

EC, 2003: Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance Document No.9, Implementing the Geographical Information System Elements (GIS) of the Water Framework Directive. Produced by Working Group 3.1. – GIS. Office for Official Publications of the European Communities, Luxembourg, 2003. ISBN: 92-894-5129-7. ISSN: 1725-1087.

http://forum.europa.eu.int/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos9sgisswgs31p/ EN_1.0_&a=d (accessed March 7, 2007)

Keil, M., Kiefl, R., Strunz, G. May 2005: CORINE Land Cover 2000 – Europaweit harmonisierte Aktualisierung der Landnutzungsdaten für Deutschland.

http://www.corine.dfd.dlr.de/media/download/clc2000_endbericht_de.pdf (accessed March 8, 2007)

Vogt, J. (ed.) December 2002: Implementing the GIS elements of the Water Framework Directive. Guidance Document. JRC Publication EUR20544 EN.

<http://www.ec-gis.org/docs/F2305/GIS-GD.PDF> (accessed March 7, 2007)

1. Introduction

The overall aim of RISE is to facilitate the production of data product specifications on the conceptual and implementation level consistent with the relevant international and industrial standards. A key outcome from RISE is, therefore, the definition of a process – a repeatable methodology – for developing, adopting and maintaining data product specifications. The definition of the repeatable methodology in particular addresses issues concerning the harmonisation of heterogeneous data sources.

The repeatable methodology is described in the RISE deliverable 19 "Methodologies and Guidelines on Use case and Schema Development" [1]. It is based on the standards and guidelines laid down by OGC and ISO (ISO 19100 series of standards).

RISE has tested and improved the methodology with use cases. The first step in this process has been a high level description of the use cases, documented in use case templates and a checklist (see RISE18 "Use Case Document 'Diffuse Nutrient Leakage Reporting to the Water Framework Directive'" [2]). Then, a conceptual schema has been developed in UML. This UML schema and the development process are described in deliverable 23 "Conceptual Schema in UML" [3]. The UML model becomes part of the data product specification which will be implemented in a RISE Test Environment (RTE) and tested.

This document contains the harmonised data product specification with clauses specified in ISO 19131 "Data Product Specification".

"Product" in the traditional sense does not really fit in the context of RISE, because RISE aims a harmonised (virtual) product which will be created on the fly by applying filters and queries on the existing data. But even if ISO 19131 does not fit perfectly to the scope of RISE, the consortium partners finally decided that the ISO standard shall be used because the known difficulties could be overcome and would not warrant a deviation from established templates.

The RISE harmonised data product specification complements the specification of the source dataset:

- For those data specifications elements where the RISE harmonised data product specification defines requirements, it requires operation to be assigned to the source dataset.
- For those data specification elements where the RISE harmonised data product specification does not define requirements, no gaps have been identified (i.e. the source dataset does not need to be harmonised).

The RISE harmonised data product specification is created to test and improve the RISE methodology. Therefore, it only does define requirements to the harmonised (virtual) data product where

- the requirements to the harmonised data product are justified by user requirements that have been identified in the RISE use case development,
- the data requirements can be satisfied from source datasets provided by consortium partners for Sweden and Norway (for Hydrography and Land cover) or France (for Elevation), and
- the harmonisation approach is feasible; in the context of RISE this means that the harmonisation can be achieved with automatic procedures.

As a result of the conditions above, the development of the harmonised data specification focuses on the aspect of semantics for Hydrography and Land cover (where we expect that data translation tools allow for automated conversion) and grid structure for elevation (where we expect sampling algorithms to allow for automated conversion). Many other elements of data specification are neglected in the process. This does not mean that neglected elements such as constraints between feature types, detailed rules on vector geometry or rules on topology are less important for the nutrient leakage use case.

Following the proposal in the RISE description of work, the harmonised data product specification includes a multi-lingual feature catalogue. Feature type names, attribute type names and attribute values are provided in English with names in German, French and Swedish language added by means of the 'Alias' field.

2. Data specification: Hydrography

2.1. Overview

2.1.1. Informal Description

This data specification originates from RISE (Reference Information Specifications for Europe), a project funded by the 6th Framework Programme of the European Commission. A key outcome from RISE is the definition of a repeatable methodology for developing, adopting and maintaining harmonised data product specifications. The definition of the repeatable methodology in particular addresses issues concerning the harmonisation of heterogeneous data sources. Then specification has been developed to test the RISE methodology.

The harmonisation process in RISE works on source data from national authorities. The source data is transformed on-the-fly into data which may serve as input to a model for the calculation of diffuse nutrient leakage parameters.

The specification serves the use case “Diffuse Nutrient Leakage reporting for WFD”. It is based mainly on user requirements that stem from the situation in Sweden and Norway. Keeping that in mind the specification is applicable to data from all European countries.

This data specification defines the requirements for harmonised data on Hydrography. The product includes the water bodies (rivers, lakes, sea) and the water basins describing the watersheds.

2.1.2. Data product specification metadata

This section provides metadata about the creation of this data product specification.

Dataset title:	RISE Prototype - Hydrography
Dataset reference date:	2007-09-01
Dataset responsible party:	RISE Consortium
Dataset language:	English
Dataset topic category:	Hydrography

2.1.3. Terms and definitions

The terminology used in this specification refers to the Water Framework Directive:

[WFD] EC, 2000: Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Official Journal of the European Communities, L327, Dec 22 2000. http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_327/l_32720001222en00010072.pdf (accessed March 7, 2007)
Translated into all official languages of the European Union.

Further to the Directive, definition and description of terms can be found in:

[WFD GIS Guidance document] EC, 2003: Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance Document No.9, Implementing the Geographical Information System Elements (GIS) of the Water Framework Directive. Produced by Working Group 3.1. – GIS. Office for Official Publications of the European Communities, Luxembourg, 2003. ISBN: 92-894-5129-7. ISSN: 1725-1087. http://forum.europa.eu.int/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos9sgisswqs31p/ EN_1.0_&a=d (accessed March 7, 2007)

Vogt, J. (ed.) December 2002: Implementing the GIS elements of the Water Framework Directive. Guidance Document. JRC Publication EUR20544 EN. <http://www.ec-gis.org/docs/F2305/GIS-GD.PDF> (accessed March 7, 2007)

[SSWS] : Swedish Surface Water Standard

2.1.4. Abbreviations

RISE Reference Information Specifications for Europe

WFD Water Framework Directive

2.2. Specification Scope

This data specification has only one scope, the general scope.

NOTE: The term 'specification scope' originates from the International Standard ISO19131. 'Specification scope' does not express the purpose for the creation of a data specification or the potential use of data, but identifies partitions of the data specification where specific requirements apply.

2.3. Data product identification

Title:	RISE Prototype – Hydrography
Abstract:	The product includes the water bodies (rivers, lakes, sea) and the water basins describing the watersheds.
Purpose:	The RISE (Reference Information Specifications for Europe) project develops a prototype to test its methodology for creating harmonised data specifications. The prototype serves the RISE Use Case of 'Diffuse Nutrient Leakage Reporting to the Water Framework Directive'. Within the RISE Test Environment, data from heterogeneous national sources will be transformed on-the-fly into a harmonised application schema.
Topic category:	Hydrography
Spatial representation	Vector data
Spatial Resolution:	The actual tests will be performed on data with resolution between 1: 50.000 and 1: 250.000.
Geographic description:	This specification is applicable all countries in the European Community. NOTE: The actual tests in the RISE prototype will be carried out with data of the cross-border water basin Enningdalsälven / Enningsdalselva in Sweden and Norway.

2.4. Data content and structure

The Hydrography data in the RISE Prototype is structured by features. An application schema expressed in UML details the content and an associated feature catalogue provides the semantics of the model elements.

Feature-based data

The application schema for Hydrography data in the RISE Prototype is based on UML model of the Water Framework Directive. It integrates two major groups of features: the water bodies including rivers, lakes, sea and groundwater (where groundwater is out of scope for RISE); and the water basins describing the watersheds.

The feature type WaterBody is subtyped by SurfaceWaterBody and GroundwaterBody, where the latter is present in the WFD schema but left out in the RISE application schema. SurfaceWaterBody has subtypes FreshWaterBody and SalineWaterBody, where SalineWaterBody includes TransitionalWaters and CoastalWaters but these are not detailed further in RISE. FreshWaterBody is subtyped by RiverWaterBody and LakeWaterBody which have different spatial characteristics. RiverWaterBody is divided into one or many RiverSegments. RiverWaterBody has line geometry. LakeWaterBody and SalineWaterBody have polygon geometry.

An instance of FreshWaterBody or SalineWaterBody belongs to exactly one RiverBasin. River Basins are aggregated to RiverBasinDistricts which are governed by a Water Management Authority. RiverBasin may be subdivided into RiverSubBasins. RiverBasin, RiverSubBasin and RiverBasinDistrict all have polygon geometry.

2.4.1. Application Schema

The following graph shows the Hydrography Schema in the context of the overall RISE Application schema in UML:

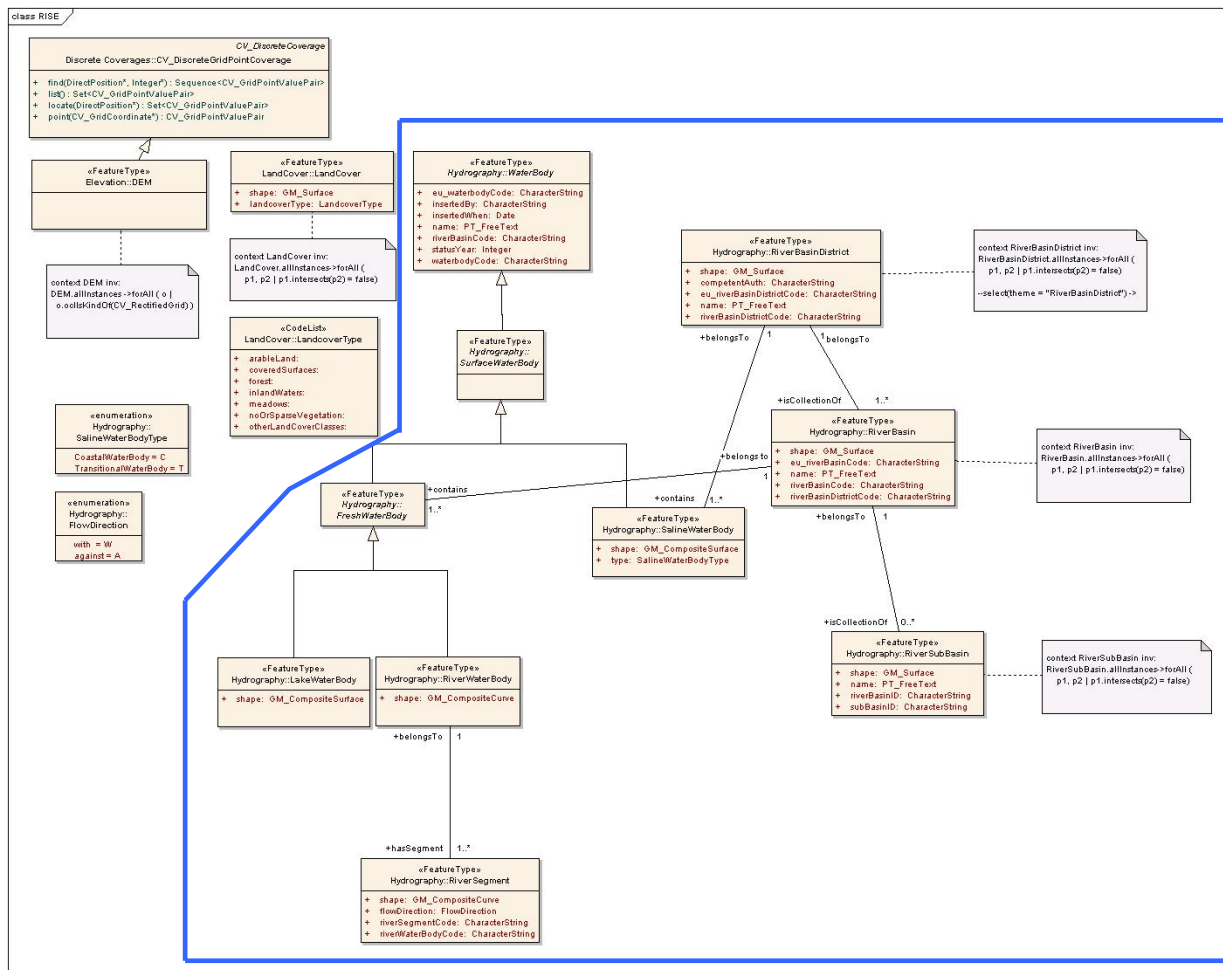


Figure 1: RISE UML Model, with Hydrography elements highlighted.

2.4.2. Feature Catalogue

Feature Catalogue

- Name: RISE Prototype - Hydrography
- Scope: This Feature Catalogue describes the Hydrography data in the RISE Prototype. It is based on definitions and classification of the Water Framework Directive.
- Version Number: 1.0
- Version Date: 2007-03-01
- Producer: RISE Consortium

The Feature Catalogue is divided into the two main categories “Water Bodies” and “Water Basins”. Within a category, feature types are listed in alphabetic order.

Feature Category: Water Bodies

Feature Type

Name: **FreshWaterBody**

Definition: Bodies of fresh water, excluding Coastal Water and Transitional Water Bodies

Aliases: Deutsch: Süßwasserkörper
Français: Masse d’eau de surface continentale
Svenska: Sötvattenförekomst [WFD]

Feature Type

Name: **LakeWaterBody**

Definition: Body of standing inland surface water [WFD GIS Guidance document]

Aliases: Deutsch: Binnenseekörper
Français: Masse d’eau lac
Svenska: Sjöförekomst [WFD]

Feature Attribute Names shape

Feature Attribute

Name: **shape**

Definition: Spatial representation of the feature type

Aliases: Deutsch: Geometrietyp
Français: forme
Svenska: Form

Value Data Type: GM_CompositeSurface

Feature TypeName: **RiverSegment**

Definition: Part of a River Water Body. A River Water Body may consist of one to many component river segments.

Aliases: Deutsch: Flussabschnitt
 Français: Tronçon de rivière
 Svenska: VattendragsSegment [WFD]

Feature Attribute Names shape
 flowDirection
 riverSegmentCode
 riverWaterBodyCode

Feature AttributeName: **shape**

Definition: Spatial representation of the feature type

Aliases: Deutsch: Geometrietyp
 Français: forme
 Svenska: Form

Value Data Type: GM_CompositeCurve

Feature AttributeName: **flowDirection**

Definition: Flow direction with respect to digitized direction [WFD GIS Guidance Document]

Aliases: Deutsch: Fliessrichtung
 (in Bezug auf die Digitalisierichtung)
 Français: Sens d'écoulement de l'eau
 (par rapport au sens de digitalisation)
 Svenska: Flödesriktning [SSWS]

Value Data Type: enumerated:

Feature Attribute Values:

Label	Definition
W	with Deutsch: in Digitalisierichtung Français: Sens du tronçon Svenska: Medströms
A	against Deutsch: gegen die Digitalisierichtung Français: Sens inverse Svenska: Motströms

Feature Attribute

Name:	riverSegmentCode
Definition:	Unique code for the segment [WFD GIS Guidance Document]
Aliases:	Deutsch: Kennzahl des Flussabschnitts Français: Code du segment de rivière Svenska: Kod för VattendragsSegment
Value Data Type:	CharacterString

Feature Attribute

Name:	riverWaterBodyCode
Definition:	Unique code of RiverWaterBody to which this segment belongs [WFD GIS Guidance Document].
Aliases:	Deutsch: (nationale) Kennzahl der Wasserkörpers Français: Code de la masse d'eau rivière Svenska: Kod för vattendragsförekomst
Value Data Type:	CharacterString

Feature TypeName: **RiverWaterBody**

Definition:	A body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course [WFD GIS Guidance Document]
Aliases:	Deutsch: Flusskörper Français: Masse d'eau rivière Svenska: Vattendragsförekomst [WFD]
Feature Attribute Names	shape

Feature Attribute

Name:	shape
Definition:	Spatial representation of the feature type
Aliases:	Deutsch: Geometrietyt Français: forme Svenska:Form
Value Data Type:	GM_CompositeCurve

Feature TypeName: **SalineWaterBody**

Definition:	Saline Water Body includes Coastal Water and Transitional Water Bodies.
Aliases:	Deutsch: salzhaltiger Wasserkörper Français: Masse d'eau (de surface) littorale Svenska: Saltvattenförekomst [WFD]
Feature Attribute Names	shape type

Feature Attribute

Name:	shape
Definition:	Spatial representation of the feature type
Aliases:	Deutsch: Geometriotyp Français: forme Svenska: Form
Value Data Type:	GM_CompositeSurface

Feature Attribute

Name:	type
Definition:	Type of Saline Water Body.
Aliases:	Deutsch: Art des salzhaltigen Wasserkörpers Français: Type de la masse d'eau littorale Svenska: Typ av saltvattenförekomst
Value Domain Type:	enumerated
Feature Attribute Values:	

Label	Definition
CoastalWaterBody	Coastal water means the surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters. (Source: Water Framework Directive) Deutsch: Küstengewässer [WFD] Français: Masse d'eau côtière Svenska: Kustvattenförekomst [WFD]

TransitionalWaterBody Transitional Waters Bodies are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows. (Source: Water Framework Directive)

Deutsch: Übergangsgewässer [WFD]
 Français: Masse d'eau de transition
 Svenska: Övergångszon (In SSWS only described as transitional zone)

Feature Type

Name: **SurfaceWaterBody**

Definition: Inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters (Source: Water Framework Directive)

Aliases: Deutsch: Oberflächenwasserkörper [WFD]
 Français: Masse d'eau de surface
 Svenska: Ytvattenförekomst [SSWS]

Feature Type

Name: **WaterBody**

Definition: Coherent sub-unit in the river basin (district) to which the environmental objectives of the Water Framework Directive must apply (Source: WFD GIS Guidance Document, Glossary of Terms. See also: Horizontal Guidance on the application of the term water body)

Aliases: Deutsch: Wasserkörper
 Français: Masse d'eau
 Svenska: Vattenförekomst [SSWS]

Feature Attribute Names eu_waterbodyCode,
 insertedBy,
 insertedWhen,
 name,
 riverBasinCode,
 statusYear,
 waterbodyCode

Feature Attribute

Name: **eu_waterbodyCode**

Definition: Unique code for a waterbody at EU level.
 Note: this attribute type is equivalent to the attribute EuropeanCode in the WFD schema.

Unique European Codes are provided by the following format:

MS#1#2...#22, where

MS is a 2 character Member State identifier, in accordance with ISO 3166-1-Alpha-2 country codes, and #1#2...#22 is an up to 22 character feature code that is unique within the Member State.

Special advice is given:

- Alphabetical characters shall always be upper case
- Special characters must be avoided, such as "\$", "!", "&", "ä", etc.
- Digits should be used where practical.

[WFD GIS Guidance Document]

Aliases: Deutsch: europäische Kennzahl des Wasserkörpers
Français: Code européen de la masse d'eau
Svenska: Europeisk kod för vattenförekomst

Value Data Type: CharacterString

Feature Attribute

Name: **insertedBy**

Definition: Acronym of operator
[WFD GIS Guidance Document]

Aliases: Deutsch: Kurzname des Bearbeiters
Français: Acronyme de l'opérateur
Svenska: Införd av

Value Data Type: CharacterString

Feature Attribute

Name: **insertedWhen**

Definition: Moment of insertion in the database
[WFD GIS Guidance Document]

Aliases: Deutsch: Datum des Eintrags in die Datenbank
Français: Date d'insertion
Svenska: Införingsdatum

Value Data Type: Date

Feature Attribute

Name: **name**

Definition: Locally used name
[WFD GIS Guidance Document].

Aliases: Deutsch: Name
 Français: Nom
 Svenska: Namn

Value Data Type: PT_FreeText

Feature Attribute

Name: **riverBasinCode**

Definition: The code of the parent river basin.
 [WFD GIS Guidance Document]

Aliases: Deutsch: (nationale) Kennzahl des Einzugsgebiets
 Français: Code du bassin versant
 Svenska: Kod för avrinningsområde [SSWS]

Value Data Type: CharacterString

Feature Attribute

Name: **statusYear**

Definition: Year of the reporting of waterbody characterization.
 [WFD GIS Guidance Document]

Aliases: Deutsch: Jahr des Berichts zur Eingruppierung des
 Wasserkörpers
 Français: Année de rapportage
 Svenska: Rapporteringsår

Value Data Type: Integer

Feature Attribute

Name: **waterBodyCode**

Definition: Unique code for a waterbody within the Member State.
 Note: this attribute type is equivalent to the attribute
 MSCode in the WFD schema.
 precise structures are a matter for each Member State
 to decide upon.
 (Source: WFD GIS Guidance Document)

Aliases: Deutsch: (nationale) Kennzahl des Wasserkörpers
 Français: Code de la masse d'eau
 Svenska: Kod för vattenförekomst

Value Data Type: CharacterString

Feature Category: Water Basins**Feature Type**Name: **RiverBasin**

Definition: Area of land from which all surface run-off flows through a series of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta (Source: Water Framework Directive).

Aliases: Deutsch: Einzugsgebiet [WFD]
 Français: Bassin versant
 Svenska: Avrinningsområde för ytvattensystem som mynnar i havet [WFD]

Feature Attribute Names shape
 eu_riverBasinCode
 name
 riverBasinCode
 riverBasinDistrictCode

Feature AttributeName: **shape**

Definition: Spatial representation of the feature type

Aliases: Deutsch: Geometriotyp
 Français: forme
 Svenska: Form

Value Data Type: GM_Surface

Feature AttributeName: **eu_riverBasinCode**

Definition: unique code for a river basin at EU level.

Aliases: Deutsch: europäische Kennzahl des Einzugsgebiets
 Français: Code européen du bassin versant
 Svenska: Europeisk kod för vattendistrikt

Value Data Type: CharacterString

Feature Attribute

Name:	name
Definition:	Locally used name [WFD GIS Guidance document]
Aliases:	Deutsch: Name Français: Nom Svenska: Namn
Value Data Type:	PT_FreeText

Feature Attribute

Name:	riverBasinCode
Definition:	unique code for a river basin within Member State. Note: This attribute type is equivalent to the MSCode attribute in the WFD schema.
Aliases:	Deutsch: (nationale) Kennzahl des Einzugsgebiets Français: Code du bassin versant Svenska: Kod för avrinningsområde
Value Data Type:	CharacterString

Feature Attribute

Name:	riverBasinDistrictCode
Definition:	Code for the River Basin District the River basin belongs to. [WFD GIS Guidance Document]
Aliases:	Deutsch: (nationale) Kennzahl der Flussgebietseinheit Français: Code du district de bassin Svenska: Kod för vattendistrikt
Value Data Type:	CharacterString

Feature TypeName: **RiverBasinDistrict**

Definition:	Area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under article 3(1) of the Water Framework Directive as the main unit for management of river basins. [WFD]
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Aliases: Deutsch: Flussgebietseinheit [WFD]
 Français: District de bassin
 Svenska: Vattendistrikt [WFD]

Feature Attribute Names shape
 competentAuth
 eu_riverBasinDistrictCode
 name
 riverBasinDistrictCode

Feature Attribute

Name: **shape**

Definition: Spatial representation of the feature type

Aliases: Deutsch: Geometriotyp
 Français: forme
 Svenska: Form

Value Data Type: GM_Surface

Feature Attribute

Name: **competentAuth**

Definition: Code of the competent authority for the River Basin District. An competent authority means an authority or authorities defined under Article 3(2) or 3(3) of the Water Framework Directive. [WFD GIS Guidance Document]

Aliases: Deutsch: zuständige Behörde [WFD]
 Français: Autorité compétente
 Svenska: Behörig myndighet

Value Data Type: CharacterString

Feature Attribute

Name: **eu_riverBasinDistrictCode**

Definition: unique code for a river basin district at EU level. Note: This attribute type is equivalent to the EuropeanCode attribute in the WFD schema.

Aliases: Deutsch: europäische Kennzahl der Flussgebietseinheit
 Français: Code européen du district de bassin
 Svenska: Europeisk kod för vattendistrikt

Value Data Type: CharacterString

Feature Attribute

Name:	name
Definition:	Locally used name [WFD].
Aliases:	Deutsch: Name Français: Nom Svenska: Namn
Value Data Type:	PT_FreeText

Feature Attribute

Name:	riverBasinDistrictCode
Definition:	Unique code for a river basin district within Member State. Note: This attribute type is equivalent to the MSCode attribute in the WFD schema.
Aliases:	Deutsch: (nationale) Kennzahl der Flussgebietseinheit Français: Code du district de bassin Svenska: Kod för vattendistrikt
Value Data Type:	CharacterString

Feature TypeName: **RiverSubBasin**

Definition:	Area of land from which all surface run-off flows through a series of streams, rivers and, possibly, lakes to a particular point in a water course (normally a lake or river confluence). [WFD].
Aliases:	Deutsch: Teileinzugsgebiet [WFD] Français: Sous-bassin versant Svenska: Delavrinningsområde
Feature Attribute Names	shape name riverBasinID subBasinID

Feature Attribute

Name:	shape
Definition:	Spatial representation of the feature type
Aliases:	Deutsch: Geometrietyt Français: forme Svenska: Form
Value Data Type:	GM_Surface

Feature Attribute

Name:	name
Definition:	Locally used name
Aliases:	Deutsch: Name Français: Nom Svenska: Namn
Value Data Type:	PT_FreeText

Feature Attribute

Name:	riverBasinID
Definition:	Unique identifier for the river basin. The ID establishes the relationship between a RiverSubBasin and its parent RiverBasin
Aliases:	Deutsch: Identifikator des Einzugsgebiets Français: Identifiant du bassin versant Svenska: Avrinningsområdesid
Value Data Type:	CharacterString

Feature Attribute

Name:	subBasinID
Definition:	Unique identifier for the RiverSubBasin
Aliases:	Deutsch: Identifikator des Teileinzugsgebiets Français: Identifiant du sous-bassin versant Svenska: Delavrinningsområdesid
Value Data Type:	CharacterString

2.5. Reference systems

Spatial reference system:

Horizontal coordinate reference system: ETRS89

Map projection: UTM (Universal Transverse Mercator)

Vertical coordinate reference system: EVRF2000

Temporal reference system: Gregorian calendar

2.6. Data quality

The analysis of the RISE use case confirms the requirements on data quality as defined in the Water Framework Directive and the WFD GIS Guidance document.

The RISE specification inherits the rules on data quality from the WFD.

Reference:

[WFD]

[WFD GIS Guidance document]

RISE does not define additional requirements for data quality.

2.7. Data capture

The analysis of the RISE use case confirms the requirements on data capture as defined in the Water Framework Directive and the WFD GIS Guidance document.

The RISE specification inherits the data capture criteria from WFD.

Reference:

[WFD]

[WFD GIS Guidance document]

RISE does not define additional requirements for data capture.

2.8. Data maintenance

The requirements on data maintenance have not been elaborated in RISE

2.9. Portrayal

Not applicable.

The RISE harmonised data is considered input to the diffuse nutrient leakage model. Portrayal is not an issue in that part of the process.

2.10. Data product delivery

Delivery medium information:

units of delivery: feature

medium name: online via WFS, version 1.1

Delivery format information:

format name: RISE GML application schema

format version: 1.0

specification: The XML Schema for the GML application schema is provided in a single schema document RISE.xsd.
(http://www.eurogeographics.org/eng/03_RISE_downloads.asp)
Every feature instance delivered shall validate against RISE.xsd and conform to all other requirements specified in this data product specification including all constraints not captured in the XML Schema document. The XML Schema document was derived automatically from

the application schema specified in subclause 2.4 according to the rules specified in GML 3.1.1 Annex E (http://portal.opengeospatial.org/files/?artifact_id=4700).

file structure: XML document with a wfs:FeatureCollection element as specified by WFS 1.1 as the root element

languages: eng

character set: utf8

2.11. Metadata

The requirements on metadata have not been elaborated in RISE.

3. Data specification: Land Cover

3.1. Overview

3.1.1. Informal Description

This data specification originates from RISE (Reference Information Specifications for Europe), a project funded by the 6th Framework Programme of the European Commission. A key outcome from RISE is the definition of a repeatable methodology for developing, adopting and maintaining harmonised data product specifications. The definition of the repeatable methodology in particular addresses issues concerning the harmonisation of heterogeneous data sources. Then specification has been developed to test the RISE methodology.

The harmonisation process in RISE works on source data from national authorities. The source data is transformed on-the-fly into data which may serve as input to a model for the calculation of diffuse nutrient leakage parameters.

The specification serves the use case “Diffuse Nutrient Leakage reporting for WFD”. It is based mainly on user requirements that stem from the situation in Sweden and Norway. Keeping that in mind the specification is applicable to data from all European countries.

This data specification defines the requirements for harmonised data on Land Cover. Further to the user requirements from the actual WFD reporting, some user requirements have been estimated for the diffuse nutrient leakage reporting as it will be in 2010. The RISE land cover classes are based on the CORINE classification, but the grouping has been introduced by experts in RISE without consulting the WFD bodies.

3.1.2. Data product specification metadata

This section provides metadata about the creation of this data product specification.

Dataset title:	RISE Prototype – Land Cover
Dataset reference date:	2007-03-01
Dataset responsible party:	RISE Consortium
Dataset language:	English
Dataset topic category:	Land Cover

3.1.3. Terms and definitions

The terminology used in this specification is based on CORINE Land Cover (CLC). Details and deviations can be looked up in the feature catalogue under 2.4.2

3.1.4. Abbreviations

CORINE	Coordinated Information on the European Environment
CLC	CORINE Land Cover
RISE	Reference Information Specifications for Europe

3.2. Specification Scope

This data specification has only one scope, the general scope.

NOTE: The term 'specification scope' originates from the International Standard ISO19131. 'Specification scope' does not express the purpose for the creation of a data specification or the potential use of data, but identifies partitions of the data specification where specific requirements apply.

3.3. Data product identification

Title:	RISE Prototype – Land Cover
Abstract:	The product includes land cover areas as required for the diffuse nutrient leakage reporting to the Water Framework Directive’.
Purpose:	This specification is created in the RISE project to test the repeatable methodology for developing, adopting and maintaining harmonised data product specifications. It serves the RISE Use Case of 'Diffuse Nutrient Leakage Reporting to the Water Framework Directive'. Within the RISE Test Environment, data from heterogeneous national sources will be transformed on-the-fly into a harmonised application schema.
Topic category:	Land cover
Spatial representation	Vector data
Spatial Resolution:	The actual tests will be performed on data with resolution between 1: 50.000 and 1: 250.000.
Geographic description:	Europe. Note: this is the geographic area as intended in the RISE Use Case of Diffuse Nutrient Leakage Reporting to the Water Framework Directive. The actual tests in the RISE prototype will be carried out with data of the cross-border water basin Enningdalsälven / Enningsdalselva in Sweden and Norway.

3.4. Data content and structure

The Land Cover data in the RISE Prototype is structured by features. An application schema expressed in UML details the content and an associated feature catalogue provides the semantics of the model elements.

Feature-based data

The application schema for Land cover data in the RISE Prototype constitutes a single feature type LandCover, with an attribute type landcoverType. Land cover classes are expressed in a codelist. RISE proposes seven entries to the codelist. LandCover has polygon geometry and polygon topology.

3.4.1. Application Schema

The following graph shows the LandCover Schema in the context of the overall RISE Application schema in UML:

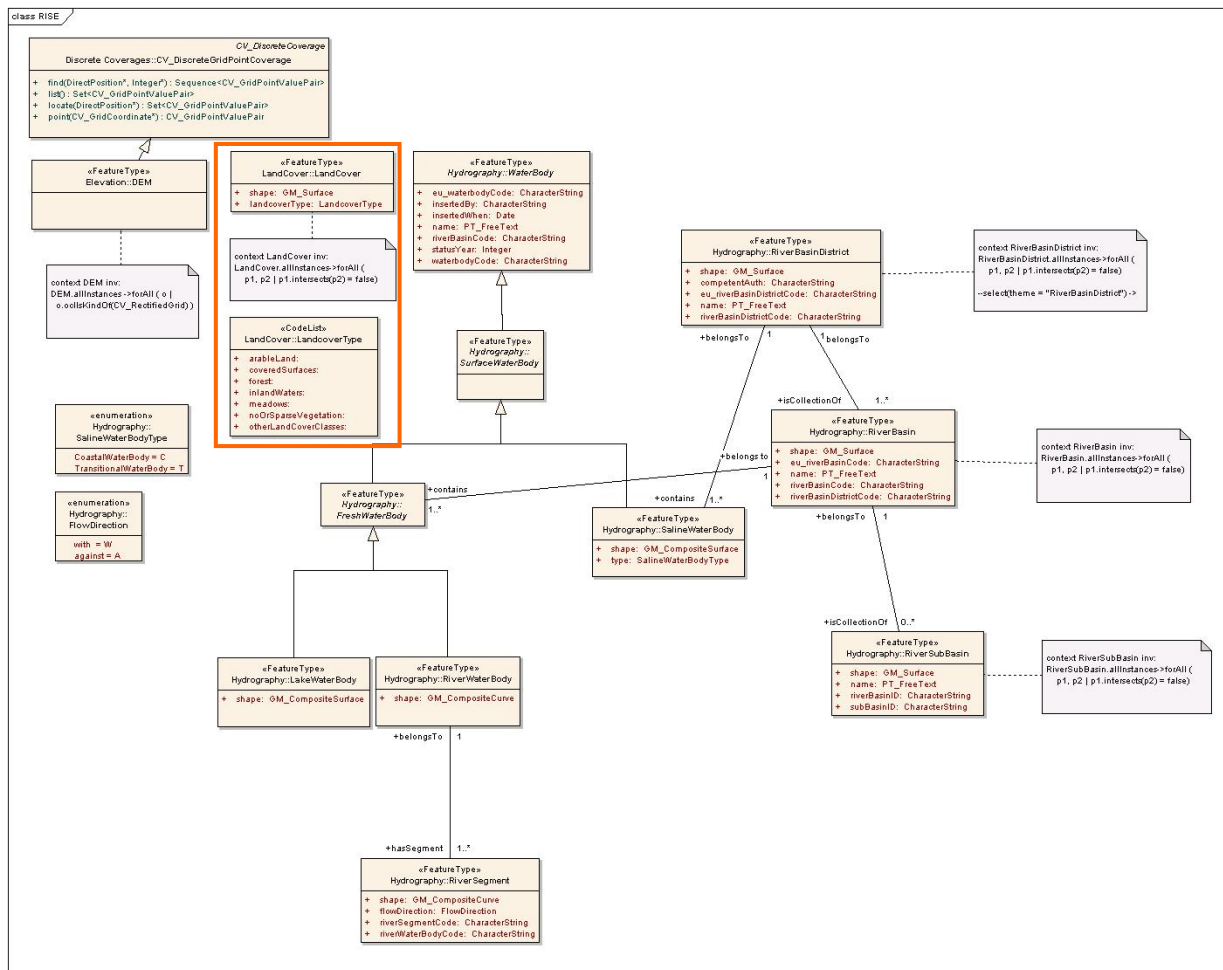


Figure 2: RISE UML Model, with Land cover elements highlighted.

3.4.2. Feature Catalogue

Feature Catalogue

- Name: RISE Prototype – Land Cover
- Scope: This Feature Catalogue describes the Land cover data in the RISE Prototype. It proposes a grouping of land cover classes from CORINE for the purpose of the RISE Use Case.
- Version Number: 1.0
- Version Date: 2007-03-01
- Producer: RISE Consortium

Feature Type

Name: **LandCover**

Definition: LandCover is a feature type describing different classes defined for the purpose of Nutrient leakage modelling

Aliases: Deutsch: Bodenbedeckung
 Français: Occupation du sol
 (In IGN database :zone d'occupation du sol)
 Svenska: Marktäcke [CLC]

Feature Attribute Names shape
 landcoverType

Feature Attribute

Name: **shape**

Definition: Spatial representation of the feature type

Aliases: Deutsch: Geometrietyt
 Français: forme
 Svenska: Form (the term 'Shape' is used in Sweden as well)

Value Data Type GM_Surface

Feature Attribute

Name: **landcoverType**

Definition: type of landcover

Aliases: Deutsch: Art der Bodenbedeckung
 Français: Nature d'occupation du sol
 Svenska: Typ av marktäcke

Value Data Type char

Value Domain Type: enumerated

Feature Attribute Values:

Label	Definition
arableLand	Crop land for agricultural purposes. Similar to CORINE class group 2.1 (arable land), 2.2 (permanent crops) and 2.4.4 (agro-forestry areas) Deutsch: Landwirtschaftliche Flächen [CLC] Français: Terres arables [CLC] Svenska: Åkermark [CLC]

coveredSurfaces	<p>All areas covered by human constructions. Similar to CORINE class group 1 (artificial surfaces).</p> <p>Deutsch: bebaute Flächen [CLC] Français: Territoires artificialisés [CLC] Svenska: Anlagda ytor [CLC]</p>
forest	<p>Forest and inland wetlands. Similar to CORINE class group 3 (forest and semi-natural areas) except 3.2.</p> <p>Deutsch: Wald [CLC] Français: Forêts [CLC] Svenska: Skog [CLC]</p>
inlandWaters	<p>Lakes and broad rivers. Similar to CORINE class group 5.1 (inland waters).</p> <p>Deutsch: Wasserflächen im Landesinnern [CLC] Français: Eaux continentales [CLC] Svenska: Inlandsvatten [CLC]</p>
meadows	<p>Land used for grazing. Similar to CORINE class group 2.3 (pastures), 2.4 (heterogeneous areas) except 2.4.4 (agro-forestry areas) and 3.2.1 (natural grassland).</p> <p>Deutsch: Grünland [in CLC "Grünland" is for 2.3] Français: Prairies (In CLC, "prairies" is for 2.3) Svenska: Betesmark (in CLC, « betesmark » is for 2.3)</p>
noOrSparseVegetation	<p>Open spaces with little or no vegetation including glaciers. Similar to CORINE class group 3.3 (open spaces with little or no vegetation).</p> <p>Deutsch: Offene Flächen ohne Vegetation / mit geringer Vegetation [CLC] Français: Espaces ouverts, sans ou avec peu de végétation [CLC] Svenska: Öppen mark med ingen eller sparsam vegetation [CLC]</p>
otherLandCoverClasses	<p>Moors and heathland. Similar to CORINE class group 3.2.2 (moors and heathland), 3.2.3 (sclerophyllous vegetation) and 3.2.4 (transitional woodland/shrub).</p> <p>Deutsch: sonstige Bodenbedeckungsklassen, hier: Moor und Heide Français: Autres classes d'occupation du sol Svenska: Övriga marktäckte klasser</p>

3.5. Reference systems

Spatial reference system:

Horizontal coordinate reference system: ETRS89

Map projection: UTM (Universal Transverse Mercator)

Vertical coordinate reference system: EVRF2000

Temporal reference system: Gregorian calendar

3.6. Data quality

The analysis of the RISE use case confirms the requirements on data quality as defined in the CORINE Land Cover 2000 Specification.

The RISE specification inherits the rules on data quality from the CLC 2000. RISE does not define additional requirements for data quality.

3.7. Data capture

The analysis of the RISE use case confirms the requirements on data quality as defined in the CORINE Land Cover 2000 Specification, such as:

Minimum mapping unit is 25 ha (250.000 m²),
Minimum width 100 m.

The RISE specification inherits the rules on data capture from the CLC 2000. RISE does not define additional requirements for data capture.

3.8. Data maintenance

The requirements on data maintenance have not been elaborated in RISE.

3.9. Portrayal

Not applicable.

The RISE harmonised data is considered input to the diffuse nutrient leakage model. Portrayal is not an issue in that part of the process.

3.10. Data product delivery

Delivery medium information:

units of delivery: feature
medium name: online via WFS, version 1.1

Delivery format information:

format name: RISE GML application schema
format version: 1.0
specification: The XML Schema for the GML application schema is provided in a single schema document RISE.xsd.
http://www.eurogeographics.org/eng/03_RISE_downloads.asp
Every feature instance delivered shall validate against RISE.xsd and conform to all other requirements specified in this data product specification including all constraints not captured in the XML Schema document. The XML Schema document was derived automatically from the application schema specified in subclause 3.4 according to the rules specified in GML 3.1.1 Annex E
(http://portal.opengeospatial.org/files/?artifact_id=4700).
file structure: XML document with a wfs:FeatureCollection element as specified by WFS 1.1 as the root element
languages: eng
character set: utf8

3.11. Metadata

The requirements on metadata have not been elaborated in RISE.

4. Data specification: Elevation

4.1. Overview

4.1.1. Informal Description

This data specification originates from RISE (Reference Information Specifications for Europe), a project funded by the 6th Framework Programme of the European Commission. A key outcome from RISE is the definition of a repeatable methodology for developing, adopting and maintaining harmonised data product specifications. The definition of the repeatable methodology in particular addresses issues concerning the harmonisation of heterogeneous data sources. Then specification has been developed to test the RISE methodology.

This data specification defines the requirements for harmonised data on Elevation. It serves the use case “computation of IDPR (Indice Développement Persistence des Réseaux)”, based on a procedure applied by BRGM in France. This IDPR is computed by comparing the network of “thalwegs” or “theoretical hydro” (deduced from the DEM) with the network of “real hydro”. That application presents ‘artificial’ user requirements as it does not directly relate with Nutrient Leakage reporting, and the cross-border issue is added by RISE while the current procedure is used only within France.

The harmonisation process in RISE works on source data from national authorities. The source data is transformed on-the-fly into data which may serve as input to a model for the calculation of a harmonised DEM.

4.1.2. Data product specification metadata

This section provides metadata about the creation of this data product specification.

Dataset title:	RISE Prototype - Elevation
Dataset reference date:	2007-09-01
Dataset responsible party:	RISE Consortium
Dataset language:	English
Dataset topic category:	Elevation

4.1.3. Terms and definitions

Terminology refers to the ISO 19100 series of standards, and to the French specifications on computation of IDPR.

4.1.4. Abbreviations

BRGM	Bureau de recherches géologiques et minières
DEM	Digital Elevation Model
IDPR	Indice Développement Persistence des Réseaux
RISE	Reference Information Specifications for Europe

4.2. Specification Scope

This data specification has only one scope, the general scope

NOTE: The term ‘specification scope’ originates from the International Standard ISO19131. ‘Specification scope’ does not express the purpose for the creation of a data specification or the potential use of data, but identifies partitions of the data specification where specific requirements apply.

4.3. Data product identification

Title:	RISE Prototype – Elevation
Abstract:	The product includes elevation, provided as a DEM.
Purpose:	This specification is created in the RISE project to test the repeatable methodology for developing, adopting and maintaining harmonised data product specifications. The prototype serves the RISE Use Case of computation of IDPR (Indice Développement

Persistence des Réseaux). Within the RISE Test Environment, data from heterogeneous national sources will be transformed on-the-fly into a harmonised application schema.

Topic category: Elevation
 Spatial representation: Coverage
 Spatial Resolution: spacing of 50 meters, corresponding to map scale 1: 50.000

Geographic description: This specification is applicable to the terrestrial part of all countries in the European Community. The actual tests in the RISE prototype will be carried out with sample data from France, Norway and Sweden.

4.4. Data content and structure

The following graph shows the Elevation Schema in the context of the overall RISE Application schema in UML:

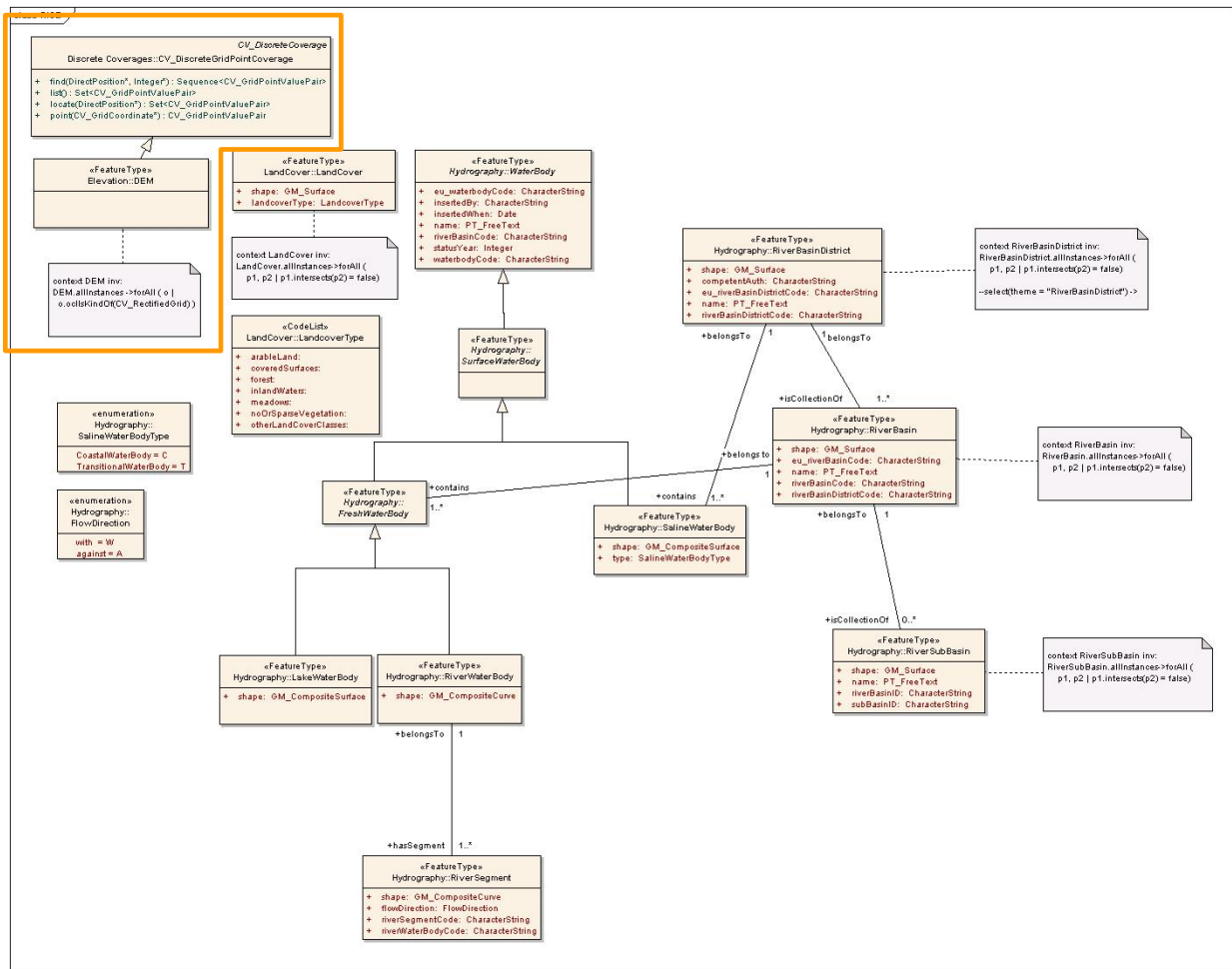


Figure 3: RISE UML Model, with Elevation elements highlighted.

The Elevation data in the RISE Prototype is provided in coverage structure by DEM. The harmonisation process includes re-sampling of input data to a uniform pan-European grid. Measurement unit of elevation data is meter.

Identifier management:	no requirements defined
Coverage description:	regular Grid with a spacing of 50 meters.
Coverage Type:	Rectified Grid Coverage

4.5. Reference systems

Spatial reference system:

Horizontal coordinate reference system: ETRS89

Map projection: UTM (Universal Transverse Mercator)

Vertical coordinate reference system: Coordinate reference system: normal height of the UELN_95/98 in EVRF2000

Temporal reference system: not applicable

4.6. Data quality

The following requirements on data quality were identified in the RISE use case (computation of IDPR):

Completeness: The data set shall cover the area with no gaps.

Vertical accuracy: 8-10 meters

Other quality rules may be inherited from the specifications of the source datasets. Those rules are not subject to harmonisation, but should be described in the metadata.

4.7. Data capture

No requirements on data capture have been identified in the RISE use case (computation of IDPR). Data capture rules may be inherited from the specifications of the source data, and should be described in the metadata.

4.8. Data maintenance

No requirements on data maintenance have been identified in the RISE use case (computation of IDPR). Data maintenance rules may be inherited from the specifications of the source data, and should be described in the metadata.

4.9. Portrayal

Not applicable. The RISE use case (computation of IDPR) does not require portrayal of the data.

4.10. Data product delivery

Delivery medium information: Online via WCS, version 1.0.

Output-format options includes GeoTIFF.

4.11. Metadata

The requirements on metadata have not been elaborated in RISE.