

Contents

Annex D (informative) ServiceTypeValue codelist	2
Annex E (informative) Checklists for data interoperability	4
Annex F (informative) Portrayal analysis	5
Annex G (informative) Extended Utility Networks Application Schemas	6
G.1 “Common Extended Utility Networks Elements” application schema	6
G.1.1 UML Overview	6
G.1.2 Feature catalogue	7
G.2 “Extended Electricity Network” application schema	16
G.2.1 UML Overview	16
G.2.2 Feature catalogue	17
G.3 “Extended Oil-Gas-Chemicals Network” application schema	18
G.3.1 UML Overview	18
G.3.2 Feature catalogue	19
G.4 “Extended Thermal Network” application schema	21
G.4.1 UML Overview	21
G.4.2 Feature catalogue	22
G.5 “Extended Water Network” application schema	23
G.5.1 UML Overview	23
G.5.2 Feature catalogue	24
G.6 “Extended Sewer Network” application schema	26
G.6.1 UML Overview	26
G.6.2 Feature catalogue	26
Annex H (informative) “Telecommunications Network” Application Schema	29
H.1 UML Overview	29
H.2 Feature catalogue	30
H.2.1 Spatial object types	30
H.2.2 Code lists	30
H.2.3 Imported types (informative)	31
H.3 INSPIRE-governed code lists	31
H.3.1 Values of code list TelecommunicationsAppurtenanceTypeValue	31
H.3.2 Values of code list TelecommunicationsCableMaterialTypeValue	33

Annex D (informative) ServiceTypeValue codelist

Note: Items in red originate directly from COFOG

Main group	First level	Second level	COFOG	
public administration office	general administration office			
	specialized administration office			
public order and safety	administration for public order and safety		GF03	
	police service		GF0301	
	fire-protection service		GF0302	
		fire station		
		siren		
		hydrant		
		anti-fire water provision		
		fire detection and observation site		
	rescue service			
		rescue station		
		rescue helicopter landing site		
		marine rescue station		
	civil protection site			
	emergency call point			
	standalone First Aid equipment			
defence				
	barrack			
	camp			
environmental protection	administration for environmental protection		GF05	
	environmental education centre			
health	administration for health		GF07	
	medical products, appliances and equipment		GF0701	
	outpatient service		GF0702	
		general medical service	GF070201	
		specialized medical services	GF070202	
		paramedical service	GF070204	
	hospital service		GF0703	
		general hospital		
	specialized hospital			

Main group	First level	Second level	COFOG
		nursing and convalescent home service	GF070304
	medical and diagnostic laboratory		

education			GF09
	administration for education		
	early childhood education		
	primary education		
	lower secondary education		
	upper secondary education		
	post-secondary non-tertiary education		GF0903
	short-cycle tertiary education		
	bachelor or equivalent education		
	master or equivalent education		
	doctoral or equivalent education		
	education not elsewhere classified		
	subsidiary services to education		GF0906

social service			GF10
	administration for social protection		
	specialized service of social protection		
	housing		GF1006
	child care service		
	charity and counselling		

Annex E

(informative)

Checklists for data interoperability

As mentioned in Annex F of the "'Data Specifications" Methodology for the development of data specifications", the TWG-US identified several user requirements for some sub-themes that are listed hereunder:

C.1 User requirements for "Utility Networks"

C.1.1 Checklist for Flemish (Belgium) Environment Agency

C.2 User requirements for "Administrative and social governmental services"

C.2.1 Checklist for the Use case TWG_US_GD_map_case (ref. Annex B.1.2)

C.2.2 Checklist for Spanish EIEL Database

C.2.3 Checklist for Málaga (Spain) Province Council

C.2.4 Checklist for French Statistical Environmental Observatory

C.2.5 Checklist for German State's Administrations and Organizations concerned with security issues

C.3 User requirements for "Waste Management"

C.3.1 Checklist for Austrian Environmental Data Management System EDM

C.3.2 Checklist for Piemonte (Italy) Regional Waste Information System

Several tables, based on Annex F of the "'Data Specifications" Methodology for the development of data specifications" framework, have been developed, but due to the size of the current document, such requirement information will not be provided directly within the data specification. Anyway, interested persons can contact the TWG members to get it if wanted.

Annex F (informative) Portrayal analysis

Unfortunately no European-wide accepted standard for map symbolisation exists, which could be applied for the more than 50 different service types of the administrative and social governmental services application schema.

In a bachelor thesis [Kaden 2011¹] the great diversity of existing symbols in European geoportals and printed maps is shown. Figure E.1 contains some symbols, which are used for the portrayal of police stations:

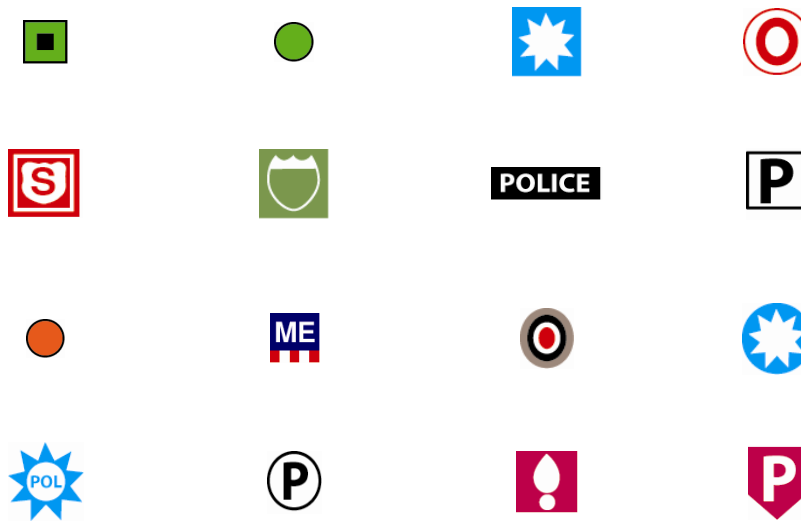


Figure F.1: Map symbols for police stations used in European geoportals and maps (sources see [Kaden 2011])

Based on this survey, the TWG US has abstained from proposing a common style for the subtheme Governmental Services. The provision of a harmonized, widely accepted cartographic symbology of such a broad scope wasn't seen as a realistic aim. Instead of that a fine-grained layer structure according to the items of the ServiceTypeValue code list has been proposed (see chapter 11.1.1).

¹ [Kaden 2011]

Nancy Kaden: "Spezifikation von Darstellungsregeln für das INSPIRE-Thema "Versorgungswirtschaft und staatliche Dienste" (Bachelor Thesis)
http://www2.htw-dresden.de/~fegis/DA/DA_KADEN_2011/Bachelorarbeit.pdf

Annex G (informative) Extended Utility Networks Application Schemas

G.1 “Common Extended Utility Networks Elements” application schema

G.1.1 UML Overview

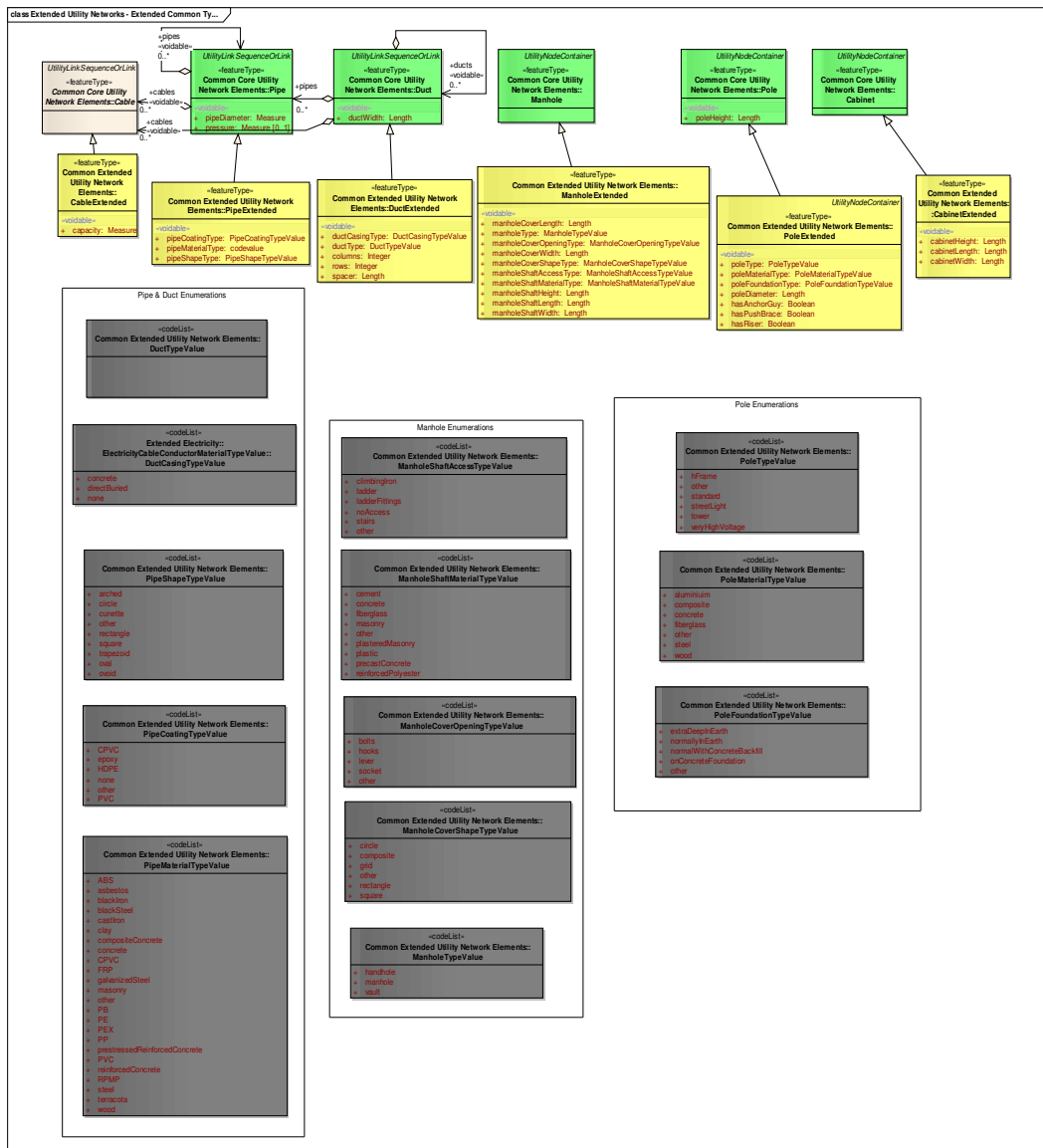


Figure 1 – UML class diagram: Overview of the “Extended Utility Networks - Extended Common Types”

G.1.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Common Extended Utility Network Elements
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>CabinetExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>CableExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>DuctExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>DuctTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>ManholeCoverOpeningTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>ManholeCoverShapeTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>ManholeExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>ManholeShaftAccessTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>ManholeShaftMaterialTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>ManholeTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PipeCoatingTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PipeExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>PipeMaterialTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PipeShapeTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PoleExtended</i>	Common Extended Utility Network Elements	«featureType»
<i>PoleFoundationTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PoleMaterialTypeValue</i>	Common Extended Utility Network Elements	«codeList»
<i>PoleTypeValue</i>	Common Extended Utility Network Elements	«codeList»

G.1.2.1 Spatial object types

G.1.2.1.1 *CabinetExtended*

CabinetExtended	
Name:	Cabinet (Extended)
Subtype of:	Cabinet
Definition:	Extends the Cabinet feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: cabinetHeight	
Value type:	Length
Definition:	The height of the cabinet.
Description:	The height is the vertical extend measuring across the object - in this case, the cabinet - at right angles to the lenght.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: cabinetLength	
Value type:	Length
Definition:	The lenght of the cabinet.
Description:	Lenght refers to the longest dimension of an object - in this case, the cabinet.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: cabinetWidth	

CabinetExtended	
Value type:	Length
Definition:	The width of the cabinet.
Description:	The measurement of the object - in this case, the cabinet - from side to side.
Multiplicity:	1
Stereotypes:	«voidable»

G.1.2.1.2 *CableExtended*

CableExtended	
Name:	Cable (Extended)
Subtype of:	Cable
Definition:	Extends the Cable feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: capacity	
Value type:	Measure
Multiplicity:	1
Stereotypes:	«voidable»

G.1.2.1.3 *DuctExtended*

DuctExtended	
Name:	Duct (Extended)
Subtype of:	Duct
Definition:	Extends the Duct feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: ductCasingType	
Value type:	DuctCasingTypeValue
Definition:	Type of the Duct casing.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: ductType	
Value type:	DuctTypeValue
Definition:	Type of the Duct.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: columns	
Value type:	Integer
Definition:	Number of pipe columns.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: rows	
Value type:	Integer
Definition:	Number of pipe rows.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: spacer	
Value type:	Length
Definition:	Spacer size, in case there's built-in spacers.
Multiplicity:	1

DuctExtended	
Stereotypes:	«voidable»

G.1.2.1.4 ManholeExtended

ManholeExtended	
Name:	Manhole (Extended)
Subtype of:	Manhole
Definition:	Extends the Manhole feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: manholeCoverLength	
Value type:	Length
Definition:	The length of the manhole cover.
Description:	Length refers to the longest dimension of an object - in this case, the manhole cover.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeType	
Value type:	ManholeTypeValue
Definition:	Type of the manhole.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeCoverOpeningType	
Value type:	ManholeCoverOpeningTypeValue
Definition:	Manhole cover opening.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeCoverWidth	
Value type:	Length
Definition:	The width of the manhole cover.
Description:	The measurement of the object - in this case, the manhole cover - from side to side.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeCoverShapeType	
Value type:	ManholeCoverShapeTypeValue
Definition:	Manhole cover shape.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeShaftAccessType	
Value type:	ManholeShaftAccessTypeValue
Definition:	Manhole shaft access.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeShaftMaterialType	
Value type:	ManholeShaftMaterialTypeValue
Definition:	Manhole shaft material.
Multiplicity:	1
Stereotypes:	«voidable»

ManholeExtended	
Attribute: manholeShaftHeight	
Value type:	Length
Definition:	Manhole shaft height.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeShaftLength	
Value type:	Length
Definition:	Manhole shaft length.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: manholeShaftWidth	
Value type:	Length
Definition:	Manhole shaft width.
Multiplicity:	1
Stereotypes:	«voidable»

G.1.2.1.5 *PipeExtended*

PipeExtended	
Name:	Pipe (Extended)
Subtype of:	Pipe
Definition:	Extends the Pipe feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: pipeCoatingType	
Value type:	PipeCoatingTypeValue
Definition:	Pipe coating.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: pipeMaterialType	
Value type:	codevalue
Definition:	Pipe material.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: pipeShapeType	
Value type:	PipeShapeTypeValue
Definition:	Pipe shape.
Multiplicity:	1
Stereotypes:	«voidable»

G.1.2.1.6 *PoleExtended*

PoleExtended	
Name:	Pole (Extended)
Subtype of:	PoleUtilityNodeContainer
Definition:	Extends the Pole feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: poleType	
Value type:	PoleTypeValue
Definition:	Type of the pole.

PoleExtended	
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: poleMaterialType	
Value type:	PoleMaterialTypeValue
Definition:	Pole material.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: poleFoundationType	
Value type:	PoleFoundationTypeValue
Definition:	Pole foundation type.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: poleDiameter	
Value type:	Length
Definition:	Diameter of the pole.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: hasAnchorGuy	
Value type:	Boolean
Definition:	Indicates whether a pole has anchor guy.
Description:	An <i>anchor guy</i> is a wire or set of wires running from the top of the pole to an anchor installed in the ground and consists of wires, appropriate fastenings and the anchor. The anchor guy is usually installed at a distance from the pole that is 0.25 to 1.5 of the height of the attachment such that the slope is about 1:1. Sidewalk guys have a horizontal strut that is attached about halfway down the pole to provide pedestrian clearance. The guy runs from the top of the pole to the top of the strut, then down to the anchor.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: hasPushBrace	
Value type:	Boolean
Definition:	Indicates whether a pole has push braces.
Description:	<i>Pushbraces</i> support or brace a pole when it is not feasible to use an anchor guy. A pushbrace is a pole or other member that is placed at an angle to help support the unbalanced pole and is often used on the inside curve of mountain roads. The poles that pushbraces support are grouped into classes based on their circumference 6 feet from the butt of the structure.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: hasRiser	
Value type:	Boolean
Definition:	Indicates whether a pole has risers.
Description:	A <i>riser</i> is a cylindrical or channel enclosure attached to a pole or structure to provide protection for underground conduit as it transitions from overhead to underground.
Multiplicity:	1
Stereotypes:	«voidable»

G.1.2.2 Code lists

G.1.2.2.1 DuctTypeValue

DuctTypeValue

Name:	Duct type value (Extended)
Definition:	Codelist containing a classification of duct types.
Extensibility:	open
Identifier:	http://inspire.ec.europa.eu/codelist/US/DuctTypeValue
Values:	The allowed values for this code list comprise the values specified in <i>Annex C</i> and additional values at any level defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.2 ManholeCoverOpeningTypeValue

ManholeCoverOpeningTypeValue

Name:	Manhole cover opening type value (Extended)
Definition:	Codelist containing a classification of manhole cover opening types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/ManholeCoverOpeningTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.3 ManholeCoverShapeTypeValue

ManholeCoverShapeTypeValue

Name:	Manhole cover shape type value (Extended)
Definition:	Codelist containing a classification of manhole cover shape types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/ManholeCoverShapeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.4 ManholeShaftAccessTypeValue

ManholeShaftAccessTypeValue

Name:	Manhole shaft access type value (Extended)
Definition:	Codelist containing a classification of manhole shaft access types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/ManholeShaftAccessTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.5 ManholeShaftMaterialTypeValue

ManholeShaftMaterialTypeValue

Name:	Manhole shaft material type value (Extended)
Definition:	Codelist containing a classification of manhole shaft material types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/ManholeShaftMaterialTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.6 ManholeTypeValue

ManholeTypeValue

ManholeTypeValue

Name:	Manhole type value (Extended)
Definition:	Codelist containing a classification of manhole types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/ManholeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.7 PipeCoatingTypeValue

PipeCoatingTypeValue

Name:	Pipe coating type value (Extended)
Definition:	Codelist containing a classification of pipe coating types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/PipeCoatingTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.8 PipeMaterialTypeValue

PipeMaterialTypeValue

Name:	Pipe material type value (Extended)
Definition:	Codelist containing a classification of pipe material types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/PipeMaterialTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.9 PipeShapeTypeValue

PipeShapeTypeValue

Name:	Pipe shape type value (Extended)
Definition:	Codelist containing a classification of pipe shape types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/PipeShapeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.10 PoleFoundationTypeValue

PoleFoundationTypeValue

Name:	Pole foundation type value (Extended)
Definition:	Codelist containing a classification of pole foundation types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/PoleFoundationTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.11 PoleMaterialTypeValue

PoleMaterialTypeValue

Name:	Pole material type value (Extended)
Definition:	Codelist containing a classification of pole material types.
Extensibility:	any

PoleMaterialTypeValue	
Identifier:	http://inspire.ec.europa.eu/codelist/US/PoleMaterialTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.2.12 PoleTypeValue

PoleTypeValue	
Name:	Pole type value (Extended)
Definition:	Codelist containing a classification of pole types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/US/PoleTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.1.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.1.2.3.1 Boolean

Boolean	
Package:	Truth
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.1.2.3.2 Cabinet

Cabinet	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	Simple cabinet object which may carry utility objects belonging to either single or multiple utility networks.
Description:	Cabinets represent mountable node objects that can contain smaller utility devices and cables.

G.1.2.3.3 Cable

Cable (abstract)	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A utility link or link sequence used to convey electricity or data from one location to another.

G.1.2.3.4 Duct

Duct	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A utility link or link sequence used to protect and guide cable and pipes via an encasing construction.
Description:	A Duct (or Conduit, or Duct-bank, or Wireway) is a linear object which belongs to the structural network. It is the outermost casing. A Duct may contain Pipe(s), Cable(s) or other Duct(s). Duct is a concrete feature class that contains information about the position and characteristics of ducts as seen from a manhole, vault, or a cross section of a trench and duct.

G.1.2.3.5 *DuctCasingTypeValue*

DuctCasingTypeValue	
Package:	Extended Electricity
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	Type of duct casings.

G.1.2.3.6 *Integer*

Integer	
Package:	Numerics
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.1.2.3.7 *Length*

Length	
Package:	Units of Measure
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.1.2.3.8 *Manhole*

Manhole	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	Simple container object which may contain either single or multiple utility networks objects.
Description:	Manholes perform following functions: <ul style="list-style-type: none">• Provide drainage for the conduit system so that freezing water does not damage the conduit or wires.• Provide a location for bending the conduit run without damaging the wires.• Provide a junction for conduits coming from different directions.• Provide access to the system for maintenance.

G.1.2.3.9 *Measure*

Measure	
Package:	ProductionAndIndustrialFacilitiesExtension
Reference:	INSPIRE Data specification on Production and Industrial Facilities [DS-D2.8.III.8]
Definition:	Declared or measured quantity of any kind of physical entity.

G.1.2.3.10 *Pipe*

Pipe	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A utility link or link sequence for the conveyance of solids, liquids, chemicals or gases from one location to another. A pipe can also be used as an object to encase several cables (a bundle of cables) or other (smaller) pipes.

G.1.2.3.11 Pole

Pole	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	Simple pole (mast) object which may carry utility objects belonging to either single or multiple utility networks.
Description:	Poles represent node objects that can support utility devices and cables.

G.1.2.3.12 UtilityNodeContainer

UtilityNodeContainer (abstract)	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A point spatial object which is used for connectivity, and also may contain other spatial objects (not necessarily belonging to the same utility network).
Description:	Nodes are found at either end of the UtilityLink.

G.1.2.3.13 codevalue

codevalue	
Package:	EncodingRules
Reference:	Geographic information -- Encoding [ISO 19118:2011]

G.2 “Extended Electricity Network” application schema

G.2.1 UML Overview

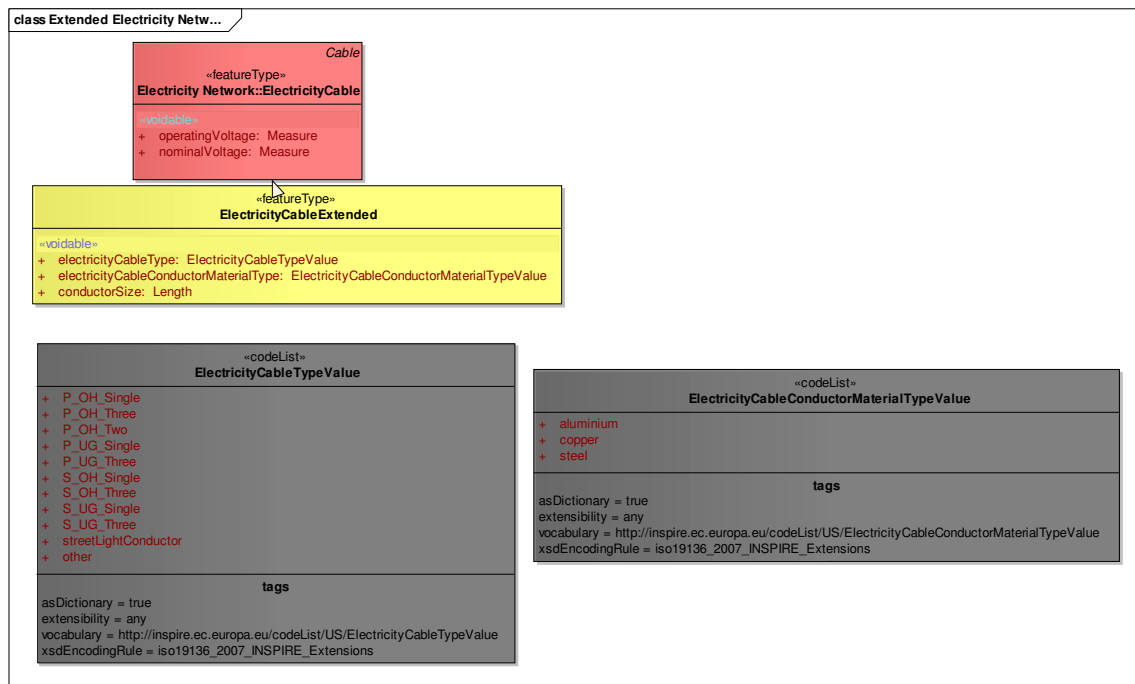


Figure 2 – UML class diagram: Overview of the “Electricity Networks”

G.2.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Extended Electricity
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>ElectricityCableConductorMaterialTypeValue</i>	Extended Electricity	«codeList»
<i>ElectricityCableExtended</i>	Extended Electricity	«featureType»
<i>ElectricityCableTypeValue</i>	Extended Electricity	«codeList»

G.2.2.1 Spatial object types

G.2.2.1.1 *ElectricityCableExtended*

ElectricityCableExtended	
Name:	Electricity cable (Extended)
Subtype of:	ElectricityCable
Definition:	Extends the ElectricityCable feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: electricityCableType	
Value type:	ElectricityCableTypeValue
Definition:	Type of electricity cable.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: electricityCableConductorMaterialType	
Value type:	ElectricityCableConductorMaterialTypeValue
Definition:	Cable conductor material type.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: conductorSize	
Value type:	Length
Definition:	Size of the conductor.
Multiplicity:	1
Stereotypes:	«voidable»

G.2.2.2 Code lists

G.2.2.2.1 *ElectricityCableConductorMaterialTypeValue*

ElectricityCableConductorMaterialTypeValue	
Name:	Electricity cable conductor material type value (Extended)
Definition:	Codelist containing a classification of electricity cable conductor material types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/ElectricityCableConductorMaterialTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.2.2.2.2 *ElectricityCableTypeValue*

ElectricityCableTypeValue	
Name:	Electricity cable type value (Extended)
Definition:	Codelist containing a classification of electricity cable types.

ElectricityCableTypeValue

Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/ElectricityCableTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.2.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.2.2.3.1 ElectricityCable

ElectricityCable

Package:	Electricity Network
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A utility link or link sequence used to convey electricity from one location to another.

G.2.2.3.2 Length

Length

Package:	Units of Measure
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.3 “Extended Oil-Gas-Chemicals Network” application schema

G.3.1 UML Overview



Figure 3 – UML class diagram: Overview of the “Oil-Gas-Chemicals Networks”

G.3.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Extended Oil-Gas-Chemicals
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>OilGasChemicalsPipeExtended</i>	Extended Oil-Gas-Chemicals	«featureType»
<i>OilGasChemicalsPipeTypeValue</i>	Extended Oil-Gas-Chemicals	«codeList»

G.3.2.1 Spatial object types

G.3.2.1.1 *OilGasChemicalsPipeExtended*

OilGasChemicalsPipeExtended	
Name:	Oil, gas and chemicals pipe (Extended)
Subtype of:	OilGasChemicalsPipe
Definition:	Extends the OilGasChemicalsPipe feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: oilGasChemicalsPipeType	
Value type:	OilGasChemicalsPipeTypeValue
Definition:	Type of oil/gas/chemicals pipe.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: averageVolume	
Value type:	Volume
Definition:	Average volume of the pipe.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: maxCapacity	
Value type:	Measure
Definition:	Maximum capacity of the pipe.
Multiplicity:	1
Stereotypes:	«voidable»

G.3.2.2 Code lists

G.3.2.2.1 *OilGasChemicalsPipeTypeValue*

OilGasChemicalsPipeTypeValue	
Name:	Oil, gas and chemicals pipe type value (Extended)
Definition:	Codelist containing a classification of oil, gas and chemical pipe types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/OilGasChemicalsPipeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.3.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.3.2.3.1 *Measure*

Measure	
Package:	ProductionAndIndustrialFacilitiesExtension
Reference:	INSPIRE Data specification on Production and Industrial Facilities [DS-D2.8.III.8]
Definition:	Declared or measured quantity of any kind of physical entity.

G.3.2.3.2 OilGasChemicalsPipe

OilGasChemicalsPipe	
Package:	Oil-Gas-Chemicals Network
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A pipe used to convey oil, gas or chemicals from one location to another.

G.3.2.3.3 Volume

Volume	
Package:	Units of Measure
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.4 “Extended Thermal Network” application schema

G.4.1 UML Overview

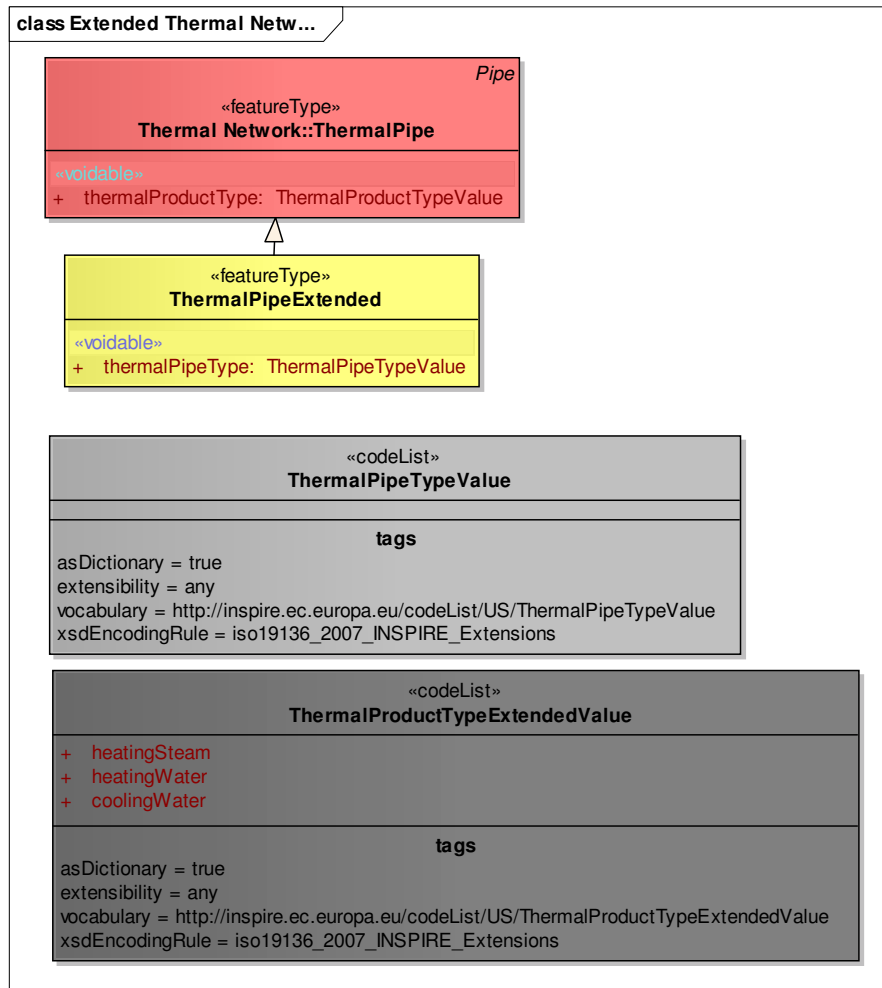


Figure 5 – UML class diagram: Overview of the “Extended Thermal Networks”

G.4.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Extended Thermal
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>ThermalAppurtenanceTypeExtendedValue</i>	Extended Thermal	«codeList»
<i>ThermalPipeExtended</i>	Extended Thermal	«featureType»
<i>ThermalPipeTypeValue</i>	Extended Thermal	«codeList»
<i>ThermalProductTypeExtendedValue</i>	Extended Thermal	«codeList»

G.4.2.1 Spatial object types

G.4.2.1.1 *ThermalPipeExtended*

ThermalPipeExtended	
Name:	Thermal pipe (Extended)
Subtype of:	ThermalPipe
Definition:	Extends the ThermalPipe feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: thermalPipeType	
Value type:	ThermalPipeTypeValue
Definition:	Type of thermal pipe.
Multiplicity:	1
Stereotypes:	«voidable»

G.4.2.2 Code lists

G.4.2.2.1 *ThermalAppurtenanceTypeExtendedValue*

ThermalAppurtenanceTypeExtendedValue	
Name:	Thermal appurtenance type value (Extended)
Definition:	Codelist containing a classification of the extension of thermal appurtenance types.
Extensibility:	open
Identifier:	http://inspire.ec.europa.eu/codelist/ThermalAppurtenanceExtendedTypeValue
Values:	The allowed values for this code list comprise the values specified in <i>Annex C</i> and additional values at any level defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.4.2.2.2 *ThermalPipeTypeValue*

ThermalPipeTypeValue	
Name:	Thermal pipe type value (Extended)
Definition:	Codelist containing a classification of thermal pipe types.
Extensibility:	open
Identifier:	http://inspire.ec.europa.eu/codelist/ThermalPipeTypeValue
Values:	The allowed values for this code list comprise the values specified in <i>Annex C</i> and additional values at any level defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.4.2.2.3 *ThermalProductTypeExtendedValue*

ThermalProductTypeExtendedValue	
Name:	Thermal product type value (Extended)
Definition:	Codelist containing a classification of the extension of thermal product types.

ThermalProductTypeExtendedValue

Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/ThermalProductTypeExtendedValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.4.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.4.2.3.1 *ThermalPipe*

ThermalPipe

Package:	Thermal Network
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A pipe used to disseminate heating or cooling from one location to another.

G.5 “Extended Water Network” application schema

G.5.1 UML Overview

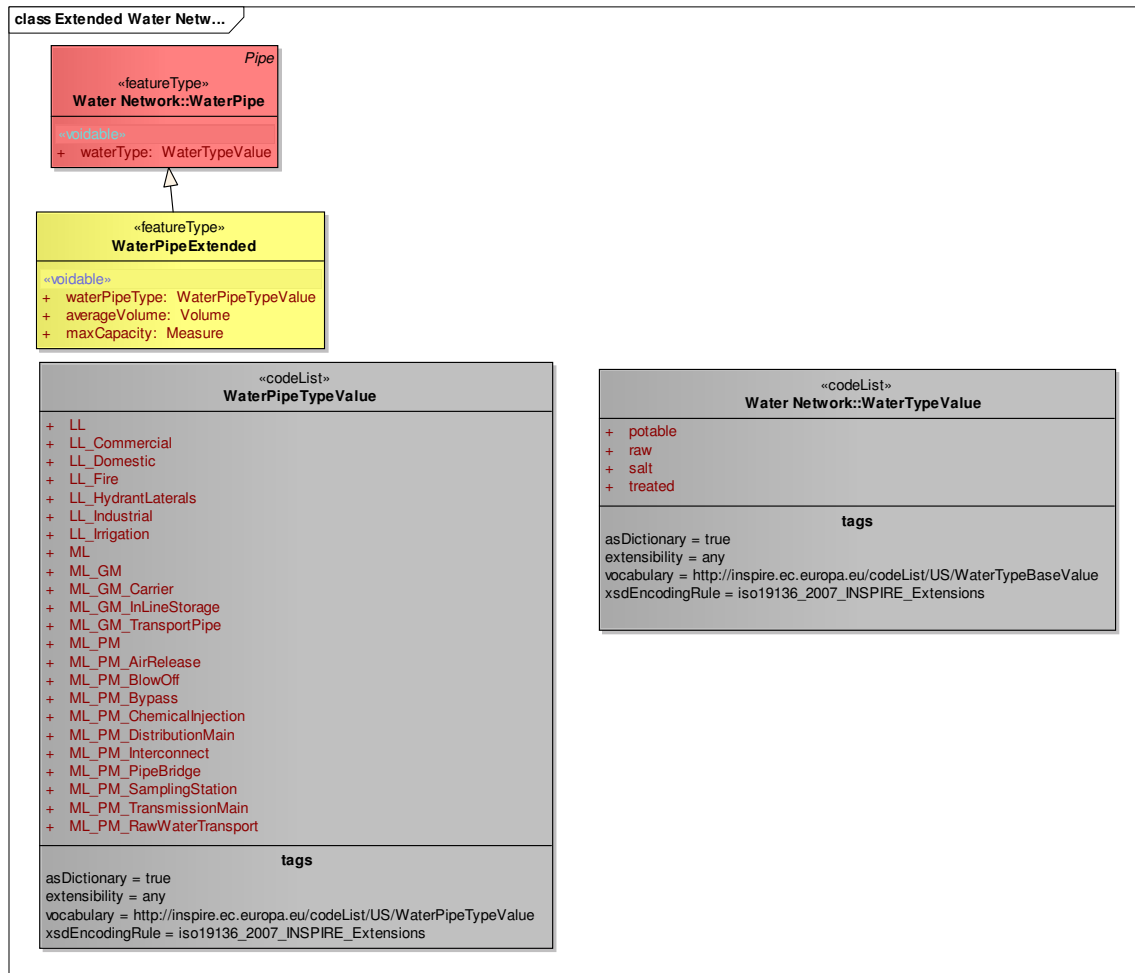


Figure 6 – UML class diagram: Overview of the “Extended Water Networks”

G.5.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Extended Water
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>WaterPipeExtended</i>	Extended Water	«featureType»
<i>WaterPipeTypeValue</i>	Extended Water	«codeList»

G.5.2.1 Spatial object types

G.5.2.1.1 *WaterPipeExtended*

WaterPipeExtended	
Name:	Water pipe (Extended)
Subtype of:	WaterPipe
Definition:	Extends the WaterPipe feature in the Core Utility Network Profile.
Stereotypes:	«featureType»

WaterPipeExtended	
Attribute: waterPipeType	
Value type:	WaterPipeTypeValue
Definition:	Type of water pipe.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: averageVolume	
Value type:	Volume
Definition:	Average volume of the pipe.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: maxCapacity	
Value type:	Measure
Definition:	Maximum capacity of the pipe.
Multiplicity:	1
Stereotypes:	«voidable»

G.5.2.2 Code lists

G.5.2.2.1 WaterPipeTypeValue

WaterPipeTypeValue	
Name:	Water pipe type value (Extended)
Definition:	Codelist containing a classification of water pipe types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/WaterPipeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.5.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.5.2.3.1 Measure

Measure	
Package:	ProductionAndIndustrialFacilitiesExtension
Reference:	INSPIRE Data specification on Production and Industrial Facilities [DS-D2.8.III.8]
Definition:	Declared or measured quantity of any kind of physical entity.

G.5.2.3.2 Volume

Volume	
Package:	Units of Measure
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

G.5.2.3.3 WaterPipe

WaterPipe	
Package:	Water Network
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A water pipe used to convey water from one location to another.

G.6 “Extended Sewer Network” application schema

G.6.1 UML Overview

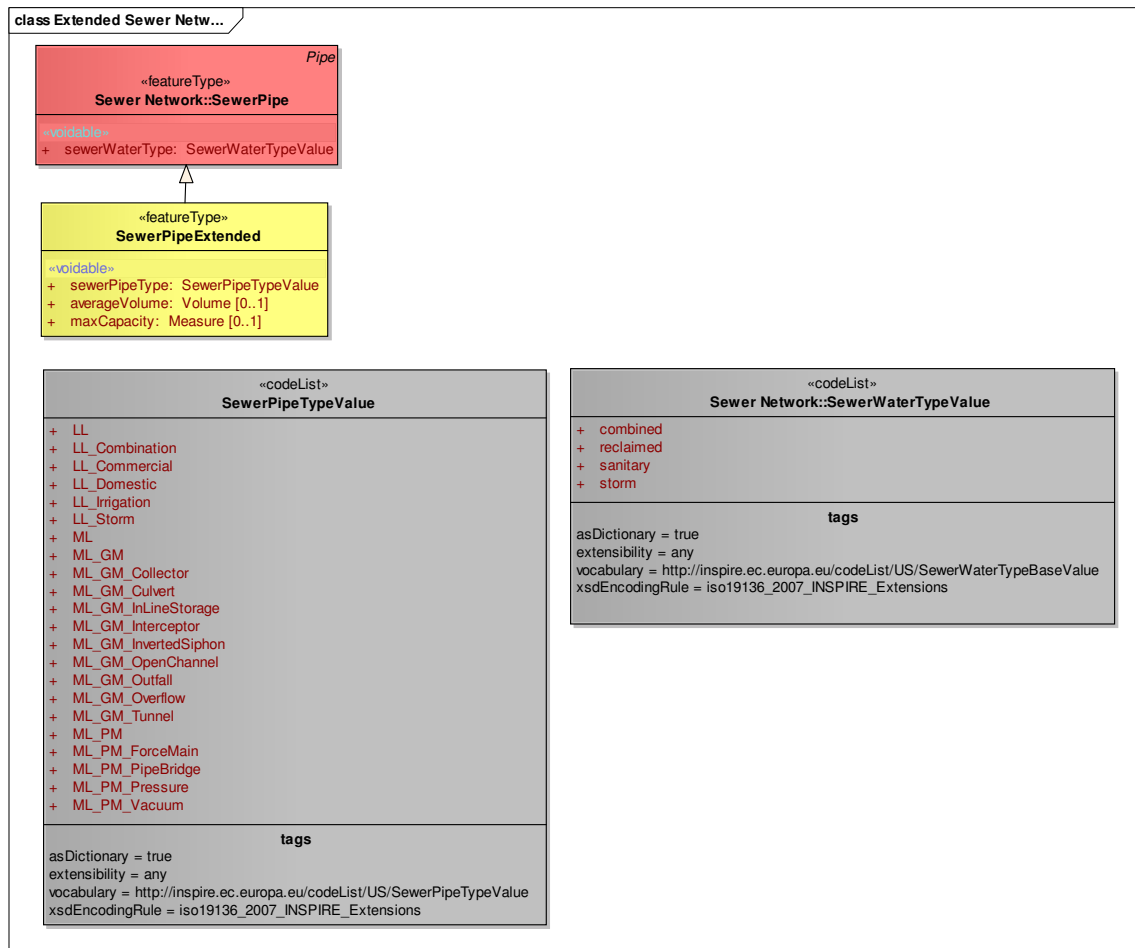


Figure 6 – UML class diagram: Overview of the “Extended Sewer Networks”

G.6.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Extended Sewer
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>SewerPipeExtended</i>	Extended Sewer	«featureType»
<i>SewerPipeTypeValue</i>	Extended Sewer	«codeList»

G.6.2.1 Spatial object types

G.6.2.1.1 SewerPipeExtended

SewerPipeExtended	
Name:	Sewer pipe (Extended)
Subtype of:	SewerPipe

SewerPipeExtended	
Definition:	Extends the SewerPipe feature in the Core Utility Network Profile.
Stereotypes:	«featureType»
Attribute: sewerPipeType	
Value type:	SewerPipeTypeValue
Definition:	Type of sewer pipe.
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: averageVolume	
Value type:	Volume
Definition:	Average volume of the pipe.
Multiplicity:	0..1
Stereotypes:	«voidable»
Attribute: maxCapacity	
Value type:	Measure
Definition:	Maximum capacity of the pipe.
Multiplicity:	0..1
Stereotypes:	«voidable»

G.6.2.2 Code lists

G.6.2.2.1 SewerPipeTypeValue

SewerPipeTypeValue	
Name:	Sewer pipe type value (Extended)
Definition:	Codelist containing a classification of sewer pipe types.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/SewerPipeTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

G.6.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

G.6.2.3.1 Measure

Measure	
Package:	ProductionAndIndustrialFacilitiesExtension
Reference:	INSPIRE Data specification on Production and Industrial Facilities [DS-D2.8.III.8]
Definition:	Declared or measured quantity of any kind of physical entity.

G.6.2.3.2 SewerPipe

SewerPipe	
Package:	Sewer Network
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A sewer pipe used to convey wastewater (sewer) from one location to another.

G.6.2.3.3 Volume

Volume	
Package:	Units of Measure

Volume

Reference: Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

Annex H (informative)

“Telecommunications Network” Application Schema

H.1 UML Overview

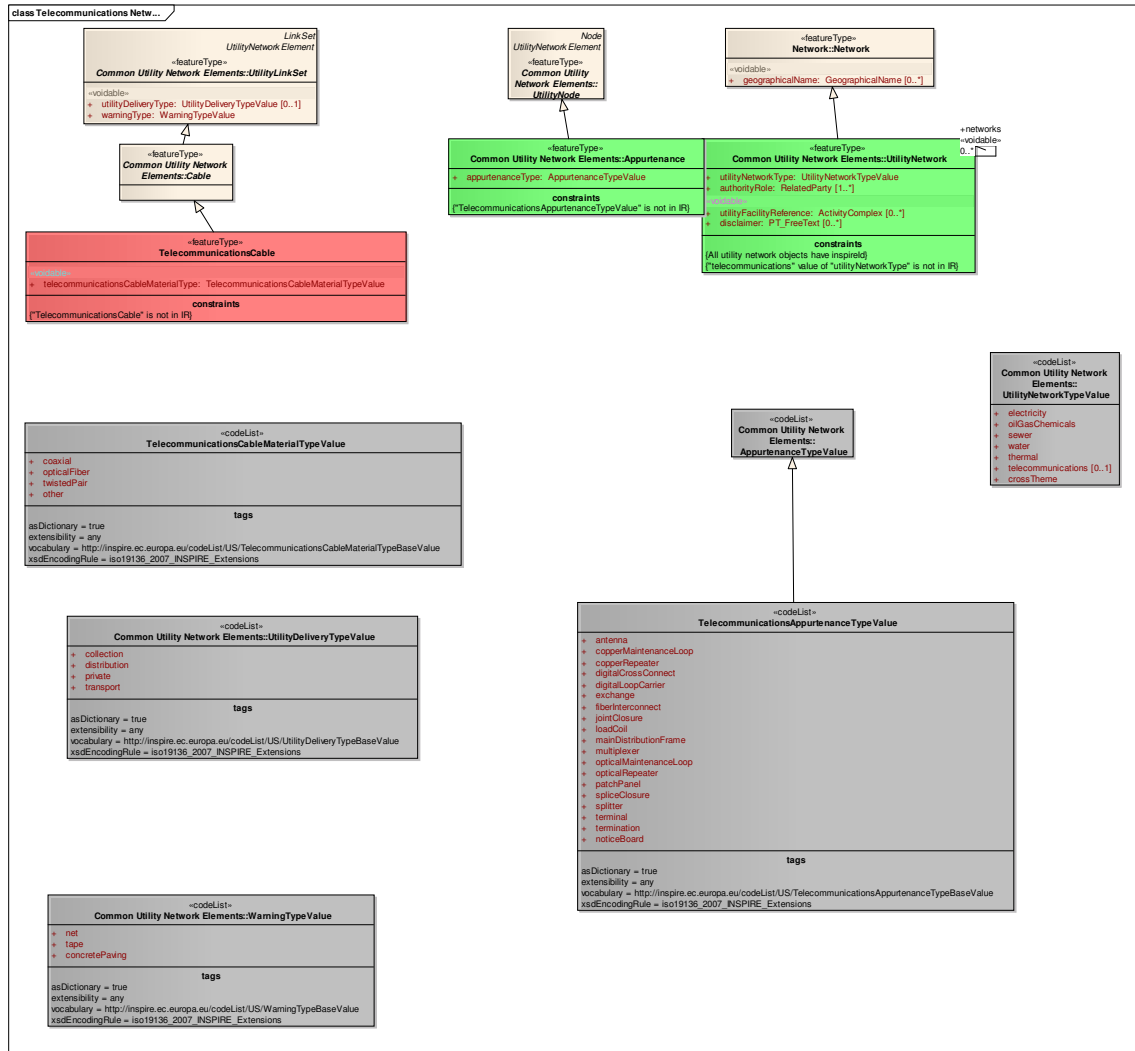


Figure 1 – UML class diagram: Overview of the “Telecommunications Network”

H.2 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Telecommunications Network
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>TelecommunicationsAppurtenanceTypeValue</i>	Telecommunications Network	«codeList»
<i>TelecommunicationsCable</i>	Telecommunications Network	«featureType»
<i>TelecommunicationsCableMaterialTypeValue</i>	Telecommunications Network	«codeList»

H.2.1 Spatial object types

H.2.1.1 TelecommunicationsCable

TelecommunicationsCable	
Name:	telecommunications cable
Subtype of:	Cable
Definition:	A utility link or link sequence used to convey data signals (PSTN, radio or computer) from one location to another.
Stereotypes:	«featureType»
Attribute: telecommunicationsCableMaterialType	
Name:	telecommunications cable material type
Value type:	TelecommunicationsCableMaterialTypeValue
Definition:	Type of cable material.
Multiplicity:	1
Stereotypes:	«voidable»
Constraint: "TelecommunicationsCable" is not in IR	
Natural language:	
OCL:	

H.2.2 Code lists

H.2.2.1 TelecommunicationsAppurtenanceTypeValue

TelecommunicationsAppurtenanceTypeValue	
Name:	telecommunications appurtenance type
Definition:	Classification of telecommunication appurtenances.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/TelecommunicationsAppurtenanceTypeValue
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

H.2.2.2 TelecommunicationsCableMaterialTypeValue

TelecommunicationsCableMaterialTypeValue	
Name:	telecommunications cable material type
Definition:	Classification of telecommunications cable materials.
Extensibility:	any
Identifier:	http://inspire.ec.europa.eu/codelist/TelecommunicationsCableMaterialTypeValue

TelecommunicationsCableMaterialTypeValue	
Values:	The allowed values for this code list comprise any values defined by data providers. <i>Annex C</i> includes recommended values that may be used by data providers.

H.2.3 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

H.2.3.1 Cable

Cable (abstract)	
Package:	Common Utility Network Elements
Reference:	INSPIRE Data specification on Utility and Governmental Services [DS-D2.8.III.6]
Definition:	A utility link or link sequence used to convey electricity or data from one location to another.

H.3 INSPIRE-governed code lists

H.3.1 Values of code list TelecommunicationsAppurtenanceTypeValue

Value	Name	Definition	Description	Parent value
antenna	antenna	Antenna.	An antenna (or aerial) is a transducer that transmits or receives electromagnetic waves. In other words, antennas convert electromagnetic radiation into electric current, or vice versa.	
copperMaintenanceLoop	copper Maintenance Loop	Copper (twisted-pair) maintenance loop.	A copper maintenance loop is a coil of slack copper cable that is used to support future joining or other maintenance activities.	
copperRepeater	copper Repeater	Copper repeater.	A copper repeater is copper line conditioning equipment that amplifies the analog or digital input signal.	
digitalCrossConnect	digital Cross Connect	Digital cross connect (DXC).	A digital cross connect is a patch panel for copper cables that are used to provide digital service. Fibers in cables are connected to signal ports in this equipment.	
digitalLoopCarrier	digital Loop Carrier	Digital loop carrier (DLC).	A digital loop carrier is a device that multiplexes an optical signal in to multiple lower level digital signals. Fibers in cables are connected to signal ports in this equipment.	
exchange	exchange	Exchange (switch).	The exchange (central office) is the physical building used to house the inside plant equipment (distribution frames, lasers, switches etc).	
fiberInterconnect	fiber Interconnect	Fiber interconnect (FIC).	A fiber interconnect terminates individual fibers or establishes a connection between two or more fiber cables. Fibers in cables are connected to signal ports in the equipment.	

Value	Name	Definition	Description	Parent value
jointClosure	joint Closure	Joint closure (copper or fiber).	A protective joint closure for either copper or fiber-optic cable joints. A cable joint consists of spliced conductors and a closure.	
loadCoil	load Coil	Load coil.	A load coil is a copper line conditioning equipment. Standard voice phone calls degrade noticeably when the copper portion of a phone line is greater than 18 kilofeet long. In order to restore call quality, load coils are inserted at specific intervals along the loop.	
mainDistributionFrame	main Distribution Frame	Main distribution frame (MDF).	A main distribution frame is often found at the local exchange (Central Office) and is used to terminate the copper cables running from the customer's site. The frame allows these cables to be cross connected using patch cords to other equipment such as a concentrator or switch.	
multiplexer	multiplexer	Multiplexer (MUX).	A multiplexer is a device that combines multiple inputs into an aggregate signal to be transported via a single transmission channel. Fibers in cables are connected to signal ports in this equipment.	
opticalMaintenanceLoop	optical Maintenance Loop	Optical maintenance loop.	An optical maintenance loop is a coil of slack fiber cable that is used to support future splicing or other maintenance activities.	
opticalRepeater	optical Repeater	Optical repeater.	An optical repeater is a device that receives an optical signal, amplifies it (or, in the case of a digital signal, reshapes, retimes, or otherwise reconstructs it), and retransmits it as an optical signal. Fibers in cables are connected to signal ports in this equipment.	
patchPanel	patch Panel	Patch panel.	A patch panel is device where connections are made between incoming and outgoing fibers. Fibers in cables are connected to signal ports in this equipment.	
spliceClosure	splice Closure	Splice closure.	A splice closure is usually a weatherproof encasement, commonly made of tough plastic, that envelops the exposed area between spliced cables, i.e., where the jackets have been removed to expose the individual transmission media, optical or metallic, to be joined. The closure usually contains some device or means to maintain continuity of the tensile strength members of the cables involved, and also may maintain electrical continuity of metallic armor, and/or provide external connectivity to such armor for electrical grounding. In the case of fiber optic cables, it also contains a splice organizer to facilitate the splicing process and protect the exposed fibers from mechanical damage. In addition to the seals at its seams and points of cable entry, the splice closure may be filled with an encapsulate to further retard the entry of water.	

Value	Name	Definition	Description	Parent value
splitter	splitter	Splitter.	A splitter is a transmission coupling device for separately sampling (through a known coupling loss) either the forward (incident) or the backward (reflected) wave in a transmission line. Fibers in cables are connected to signal ports in this equipment.	
terminal	terminal	Terminal.	Terminals are in-loop plant hardware, specifically designed to facilitate connection and removal of distribution cable, drop or service wire to and from cable pairs at a particular location. Terminals are a class of equipment that establishes the end point of a section of the transmission network between the CO and the customer.	
termination	termination	Termination.	Terminations are a generic feature class for the end points of cables. These may be considered similar to service drops to buildings. They represent a point at which the telephone company network ends and connects with the wiring at the customer premises.	
noticeBoard	notice Board			

H.3.2 Values of code list TelecommunicationsCableMaterialTypeValue

Value	Name	Definition	Description	Parent value
coaxial	coaxial	Coaxial cable.	A coaxial cable, or coax, is an electrical cable with an inner conductor surrounded by a flexible, tubular insulating layer, surrounded by a tubular conducting shield.	
optical Fiber	optical Fiber	Fibre-optic cable.	A fiber optic cable is composed of thin filaments of glass through which light beams are transmitted to carry large amounts of data. The optical fibers are surrounded by buffers, strength members, and jackets for protection, stiffness, and strength. A fiber-optic cable may be an all-fiber cable, or contain both optical fibers and metallic conductors.	
twisted Pair	twisted Pair	Twisted pair (copper) cable.	A copper cable is a group of metallic conductors (copper wires) bundled together that are capable of carrying voice and data transmissions. The copper wires are bound together, usually with a protective sheath, a strength member, and insulation between individual conductors and the entire group.	
other	other	Other.		