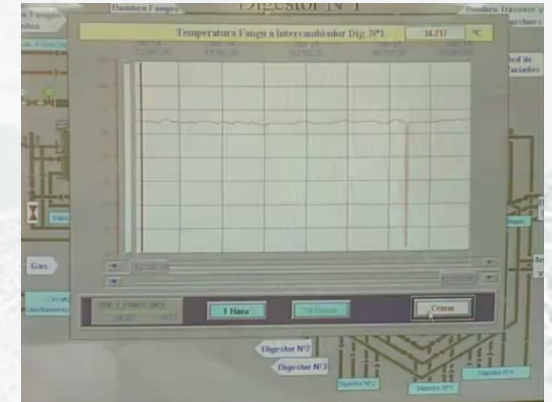


# UTILITY NETWORKS DATA CONFORMANCE TO INSPIRE:

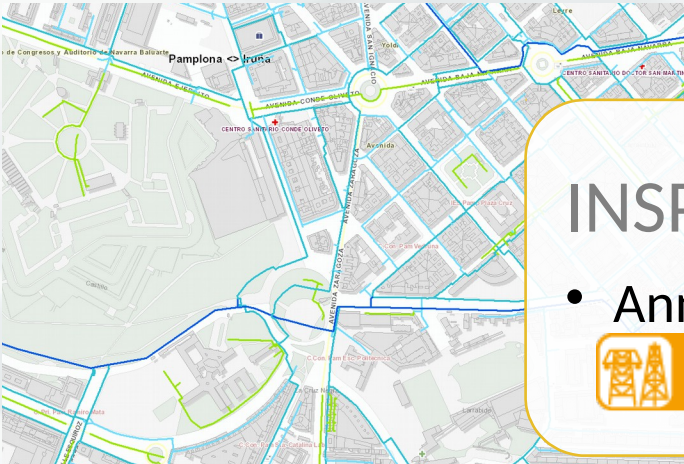
End user's usefulness



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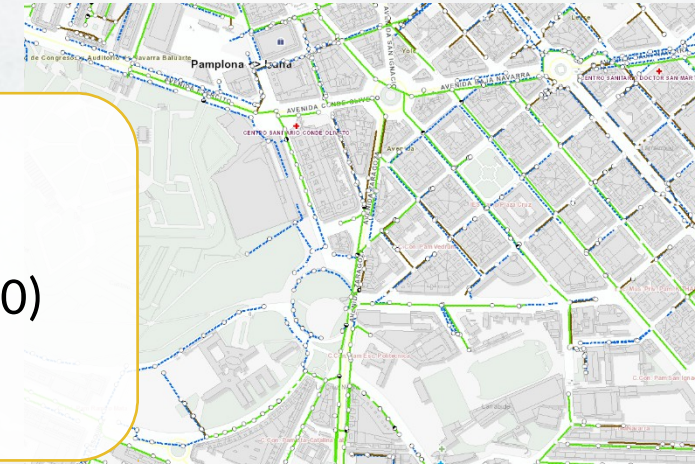


## INSPIRE Data

- Annex III. Theme 6



Utility and governmental services



## IPR

- Open data. (CC-by 3.0)

## Content

- Water Supply network
- Sewage network



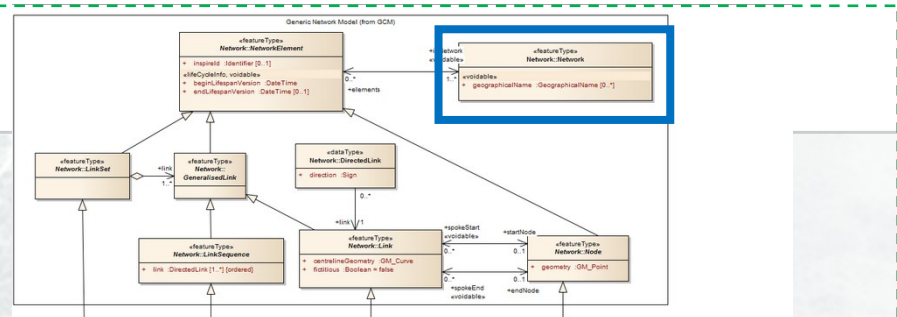
## Metadata

- 26 layers
- 22 layers

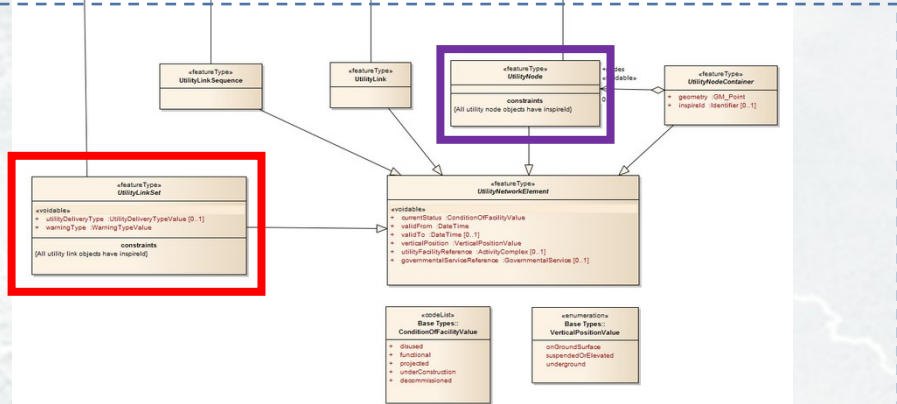




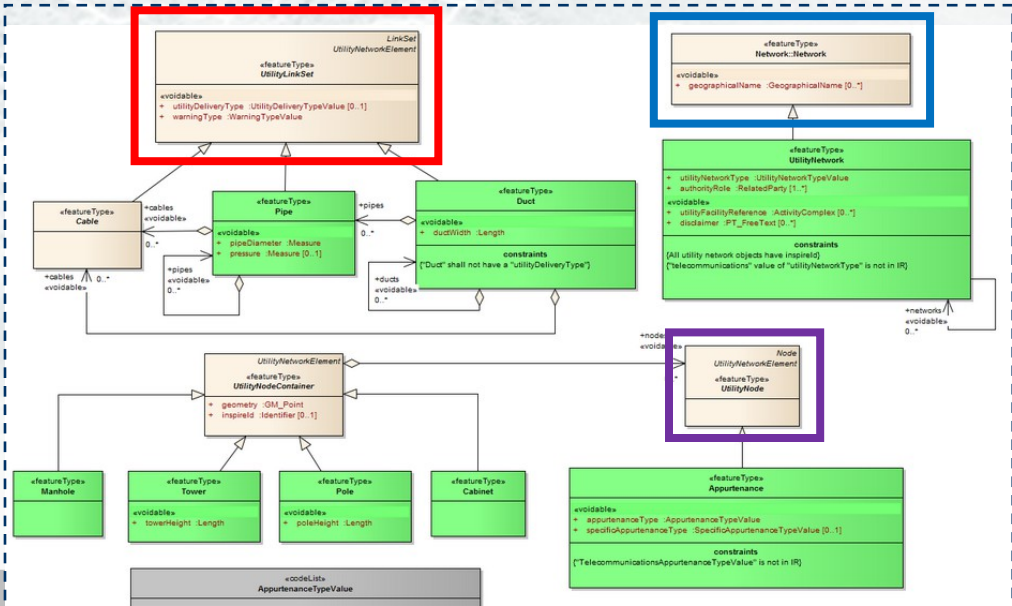
## Generic Network Model (from GCM)



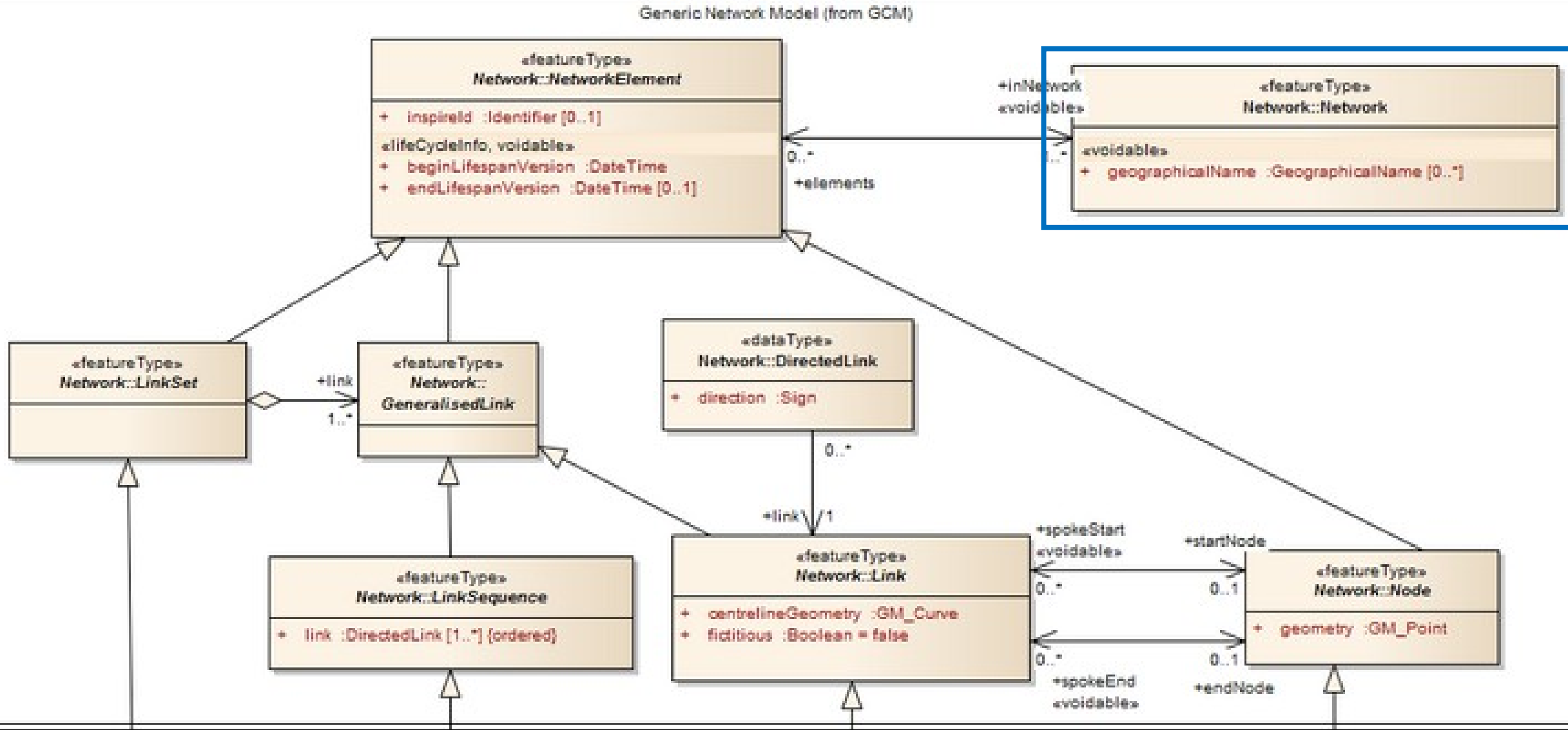
## Utility Network Profile - Abstract Types



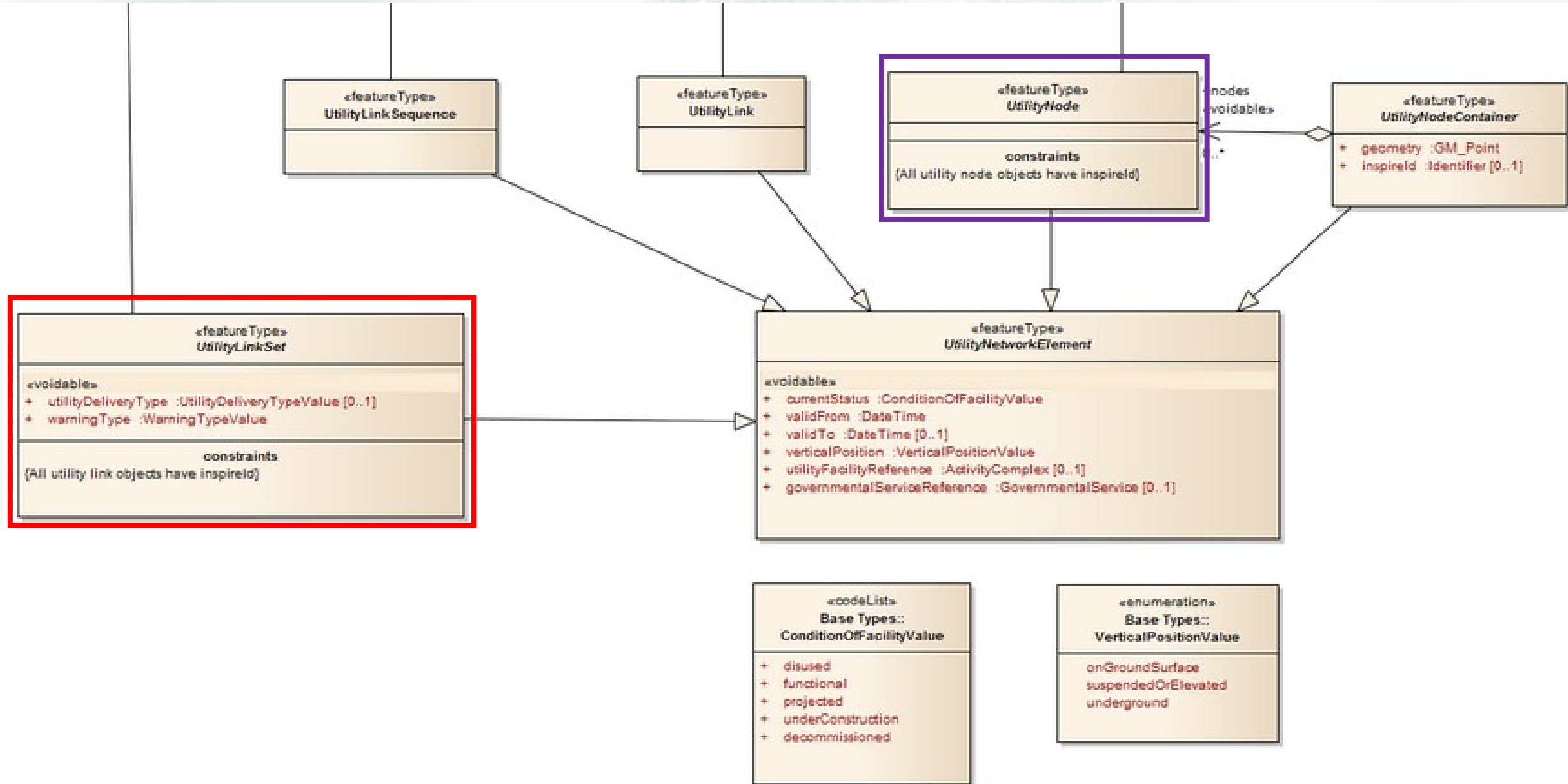
## Utility Network Profile - Common Types



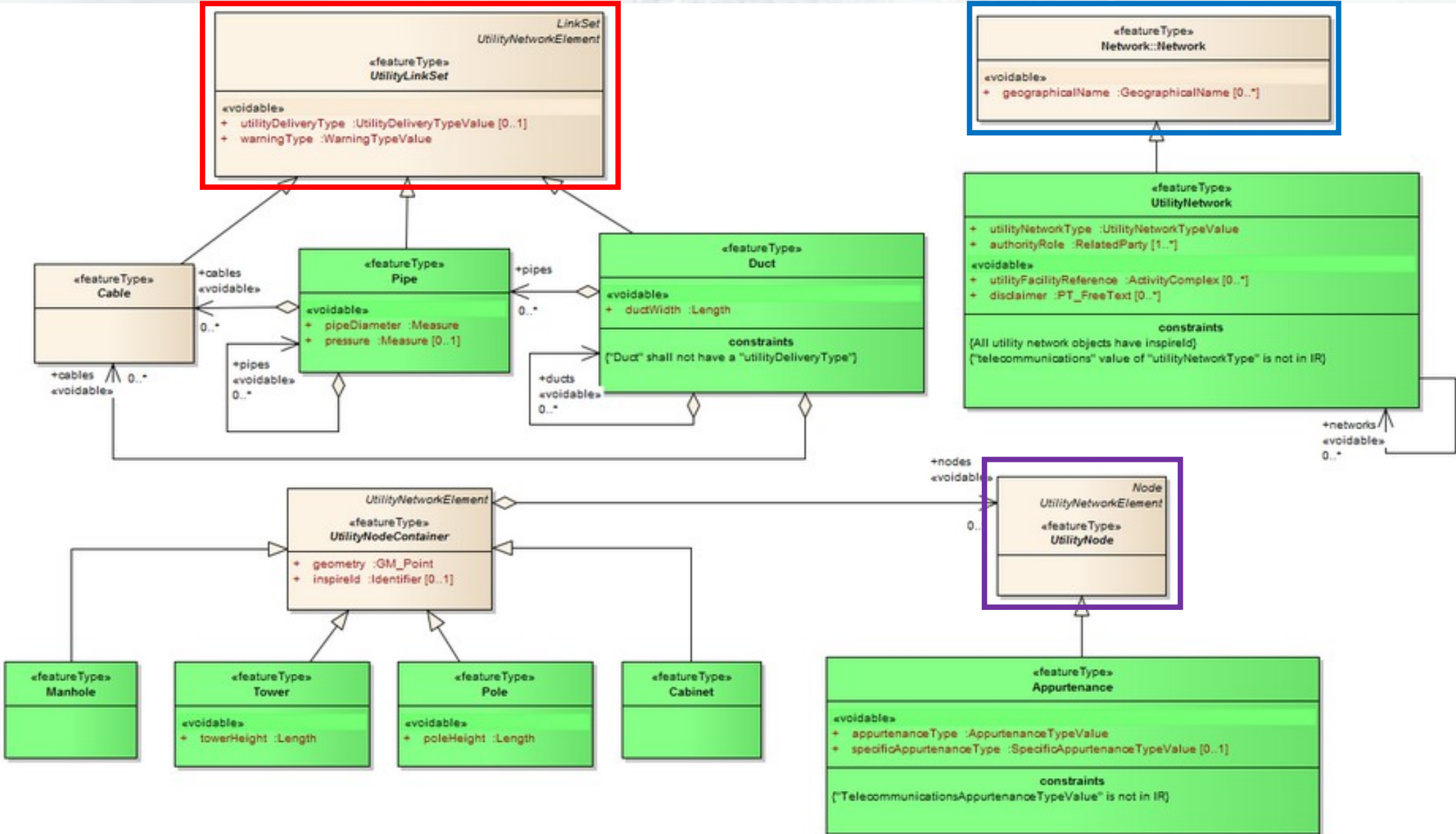
# Generic Network Model (from GCM)



# Utility Network Profile - Abstract Types



# Utility Network Profile - CommonTypes





DATA LOGIC NAME (*)	DESCRIPTION LOGIC NAME (*)	INPUT_OUT PUT DATA	DATA TYPE (*)	INSPIRE (<DataTheme>.<AttributeName>)
REDABA_Lin_Acometida.Geometry	Rushes. Segment of the water network described according its type in the whole network	INPUT	Geometry	Utility and Government Services.Common Utility Network Elements.UtilityLink.centrelineGeometry
REDABA_Lin_Acometida.FEATURE	ID feature in the data model SITNA	INPUT	Number	
REDABA_Lin_Acometida.CONEXION	Description connection type element	INPUT	Text	
REDABA_Lin_Acometida.MATERIAL	Description of the material that is manufactured element	INPUT	Text	Utility and Government Services.WaterPipeExtended.waterpipeMaterialType
REDABA_Lin_Acometida.IDACOMETID	Code Rush	INPUT	Text	
REDABA_Lin_Acometida.TIPO	Description of type in which elements are classified layer	INPUT	Code list	Utility and Government Services.WaterPipeExtended.waterPipeType
REDABA_Lin_Acometida.ESTADOSERV	Description of Service Item	INPUT	Code list	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.currentStatus
REDABA_Lin_Acometida.DIAMETRO	Information concerning the diameter of element	INPUT	Number	Utility and Government Services.CommonExtendedCommon Utility Network Elements.Pipe.pipeDiameter
REDABA_Lin_Acometida.TITULAR	Name of person or entity that is the owner of any property (plots, equipment,	INPUT	Text	Common Utility Network Elements.UtilityNetwork.authority role
REDABA_Lin_Acometida.FECHAINSTA	Installation Date element	INPUT	Date	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.validFrom
REDABA_Lin_Acometida.GEOM_LONG	Length of the geographic object in meters (value calculated from the geometry)	INPUT	Number	Utility and Government Services.WaterPipeExtended.waterPipeLength
REDABA_Lin_Derivacion.Geometry	Rushes. Derivation. Segment of the water network described according its type in the whole network	INPUT	Geometry	Utility and Government Services.Common Utility Network Elements.UtilityLink.centrelineGeometry
REDABA_Lin_Derivacion.FEATURE	ID feature in the data model SITNA	INPUT	Number	
REDABA_Lin_Derivacion.IDDERIVACI	Bypass Code Rush	INPUT	Text	
REDABA_Lin_Derivacion.CONEXION	Description connection type element	INPUT	Text	
REDABA_Lin_Derivacion.MATERIAL	Description of the material that is manufactured element	INPUT	Text	Utility and Government Services.WaterPipeExtended.waterpipeMaterialType
REDABA_Lin_Derivacion.IDPTOCONSU	Code point of consumption	INPUT	Text	
REDABA_Lin_Derivacion.DIAMETRO	Information concerning the diameter of element	INPUT	Number	Utility and Government Services.CommonExtendedCommon Utility Network Elements.Pipe.pipeDiameter
REDABA_Lin_Derivacion.ESTADOSERV				Utility and Government Services.Common Utility Network

Data\_model

CODE LIST VALUE

DATA\_TYPE\_VALUE





DATA LOGIC NAME (*)	DESCRIPTION LOGIC NAME (*)	INPUT_OUTPUT DATA	DATA TYPE (*)	INSPIRE (<DataTheme>.<AttributeName>)
REDSAN_Sym_Pozo.PATES	Type of Pate	INPUT	Text	
REDSAN_Sym_Pozo.CLASEAGUA	Type of water which leads	INPUT	Code list	
REDSAN_Sym_Pozo.IDPOZO	Well code	INPUT	Text	Utility and Government Services.swAppurtenance.Alternativeld
REDSAN_Sym_Pozo.TITULAR	Name of the person or entity that is listed as the owner of some good (plots, etc)	INPUT	Text	Common Utility Network Elements.UtilityNetwork.authority role
REDSAN_Sym_Pozo.CADANGLE	Information relating to texts in CAD (text rotation)	INPUT	Number	
REDSAN_Sym_Pozo.ZTERRENO	Dimension of land	INPUT	Number	Utility and Government Services.Sewer.Appurtenance.swAppurtenanceGroundLevelReference
REDSAN_Sym_Pozo.PROFUNDID	Depth of the element	INPUT	Number	Utility and Government Services.Sewer.Appurtenance.swAppurtenanceDepthMeasure
REDSAN_Sym_Pozo.ESTADOSERV	Description of the State of service element	INPUT	Code list	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.currentStatus
REDSAN_Sym_Pozo.TIPO	Description of the type in which the elements of the coat are sorted	INPUT	Code list	Utility and Government Services.Common Utility Network Elements.Appurtenance.appurtenanceSpecificType
REDSAN_Sym_Pozo.FECHACONST	Date of construction of the element	INPUT	Date	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.validFrom
REDSAN_Sym_PtoVertido.Geometry	Special points. Dumping point (outfall)	INPUT	Geometry	Utility and Government Services.Common Utility Network Elements.Appurtenance.geometry
REDSAN_Sym_PtoVertido.FEATURE	Feature ID on SITNA data model	INPUT	Number	Utility and Government Services.swAppurtenance.Alternativeld
REDSAN_Sym_PtoVertido.PROTECEXTE	Description of external protection	INPUT	Text	
REDSAN_Sym_PtoVertido.IDENTRASAL	Input / output code	INPUT	Text	
REDSAN_Sym_PtoVertido.TITULAR	Name of the person or entity that is listed as the owner of some good (plots, etc)	INPUT	Text	Common Utility Network Elements.UtilityNetwork.authority role
REDSAN_Sym_PtoVertido.CADANGLE	Information relating to texts in CAD (text rotation)	INPUT	Number	
REDSAN_Sym_PtoVertido.ESTADOSERV	Description of the State of service element	INPUT	Code list	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.currentStatus
REDSAN_Sym_PtoVertido.FECHACONST	Date of construction of the element	INPUT	Date	Utility and Government Services.Common Utility Network Elements.UtilityNetworkElement.validFrom
REDSAN_Sym_PtoVertido.TIPO	Description of the type in which the elements of the coat are sorted	INPUT	Code list	Utility and Government Services.Common Utility Network Elements.Appurtenance.appurtenanceSpecificType


Data\_model

CODE LIST VALUE

DATA\_TYPE\_VALUE




## Needs

-  in-situ, geo-referenced, on-line and real-time monitoring of distribution systems

## Purpose

-  More efficient management and operations minimizing expenses

## Aim


-  leveraging the real time information of sensor data enhanced with geographical access and visualization.

## Benefit


-  high-level meta-model that allows browsing sensors, networks, parameters, built-in alarms, etc.
-  Friendly and easy to use




## Operations

-  Network operators can access to the location of a planned work through the GIS, and check the expected infrastructure (sensors, network components) and current state before and after his task has been completed.


## Low Pressure Prevention

-  Water Network managers can define standing queries over sensor streaming data in order to prevent future problems. Sample of query: water pressure sensors that are giving a value below threshold TLowPressure in time windows larger than 5 minutes.


## Built-in Alarms

-  Water Network managers can access to underlying SCADA or Smart sensors alarms through GIS in an integrated form. For instance: the door of a deposit is opened.

## Network maintenance planning

-  Water Network managers can query the relation of water leakages provided by the SCADA and make a better decision considering geographical and cost/benefit issues.



 **Water modelling tools** are used in order to make different estimations. These modelling tools are also a fundamental mechanism in order to predict the behaviour of the networks when important changes are being planned.

 Sensor data **estimations** in points where sensors might not be available.




 **Simulations** in water network using existing models for predictions

Fundamental for Decisions makers

## Public Administrations










## Companies offering public services.

-  Network operators
-  Water Network managers
-  Technicians in different areas of planning and network maintenance





## OUR APPROACH: THE “HUB”





-  **Data integration:** Geospatial or not (INSPIRE & PSI)
-  **Combine services** geoweb & linked data (WMS/WFS & GeoSPARQL)
-  **Interoperability** Relational DB and triple/quad to store different information (RDBMS & RDF)
-  Common Access to allow **cross queries** (spatial & text)
-  Components viewing (maps, diagrams & other graphics)
-  **Specific services** routing, spatial analysis, modelling, etc.
-  Easy to implement in existing environments

CHALLENGE



## BENEFITS

### **Innovative as** combines

-  Public sector infrastructures
-  Open Standards
-  Easy-to-implement
-  Services oriented architecture

 Offering **new business models** common and reusable for different use cases


 We are talking about **LOCAL DATA**


 Interesting at regional but ...also at European Level?

 Obligation to make Underground Utility information available?

 What can INSPIRE afford?

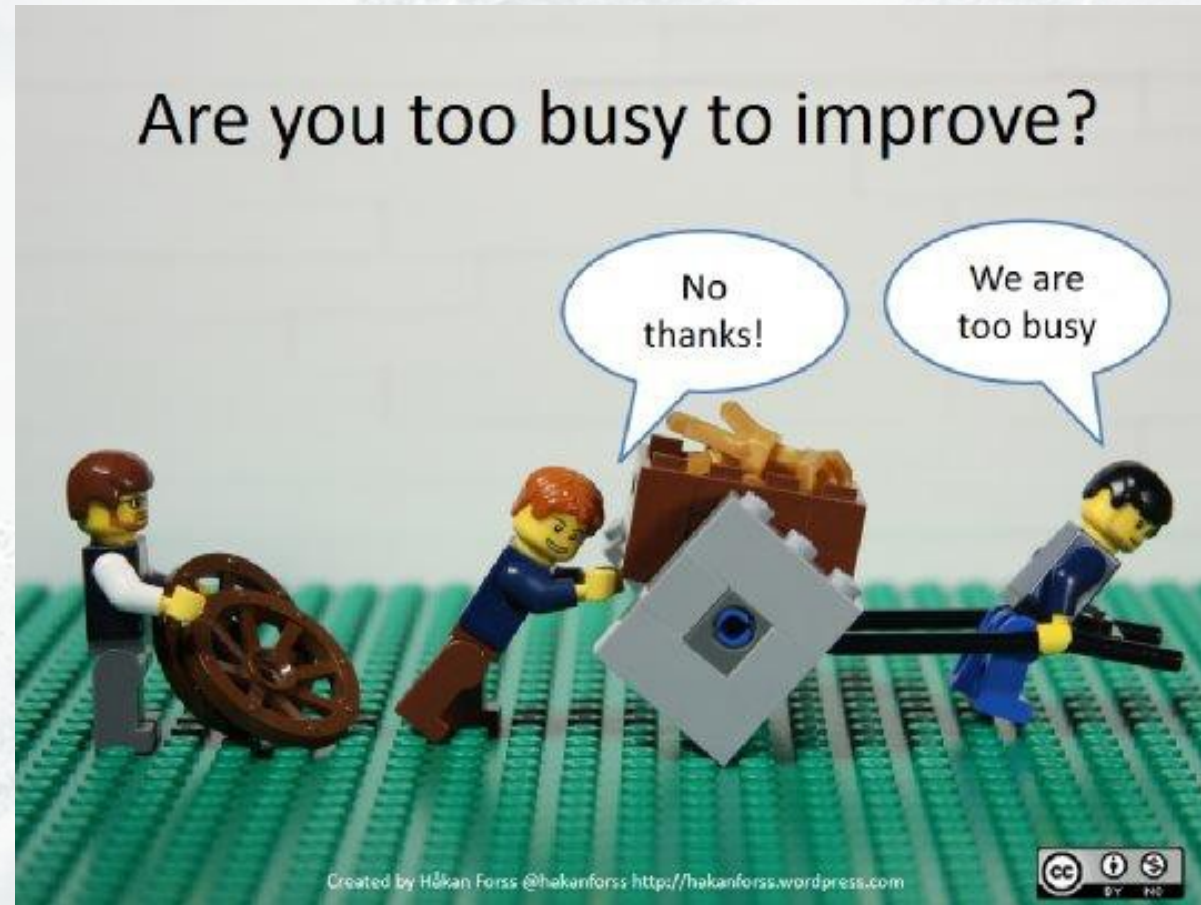
## **Users need to know** the added value of common Data Model

 Learning about INSPIRE: principles, benefits, how to implement, how to sell

 Advantages include the **use of standard services** that could be offered by third parties.

 The **hub** concept in GSC offers a possible solution





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[www.geosmartcity.eu](http://www.geosmartcity.eu)