eENVplus
INSPIRE Thematic data harmonisation: Land Cover, Natural Risk Zone and…

Carlo Cipolloni

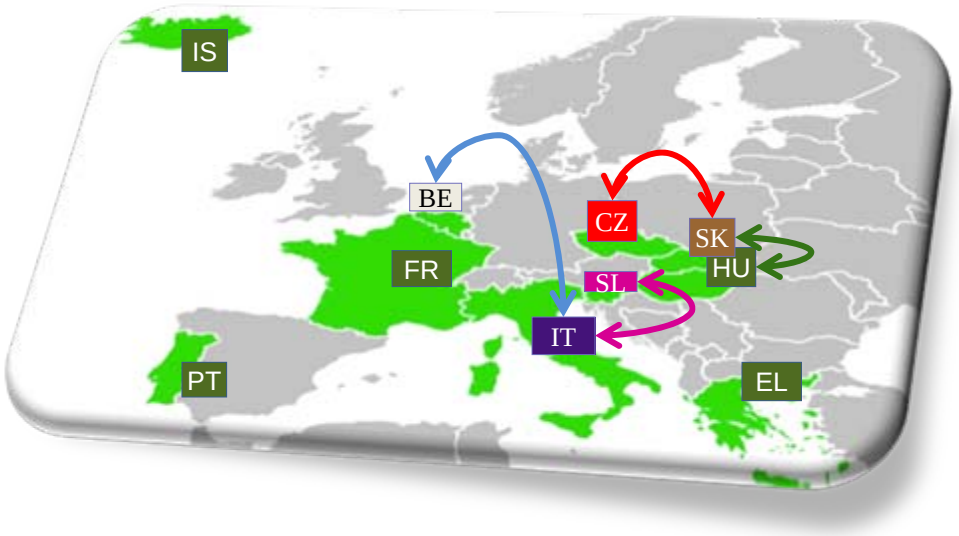
ISPRA

(*Italian Institute for Environmental Protection and Research*)

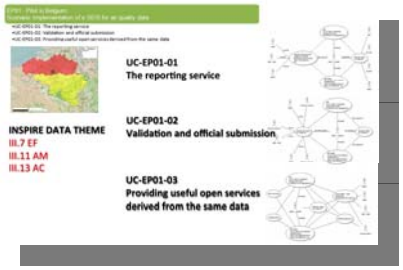
Stefania Morrone and Giacomo Martirano

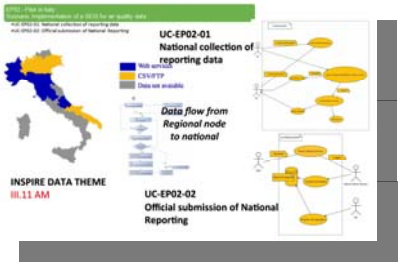
EPSIT

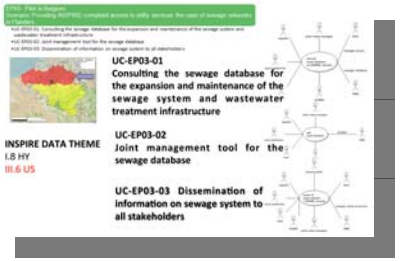
Pilots definition

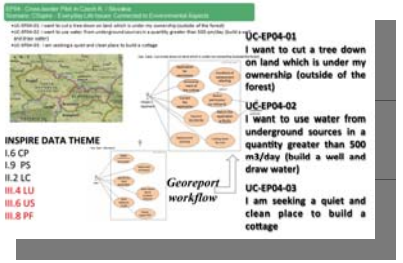


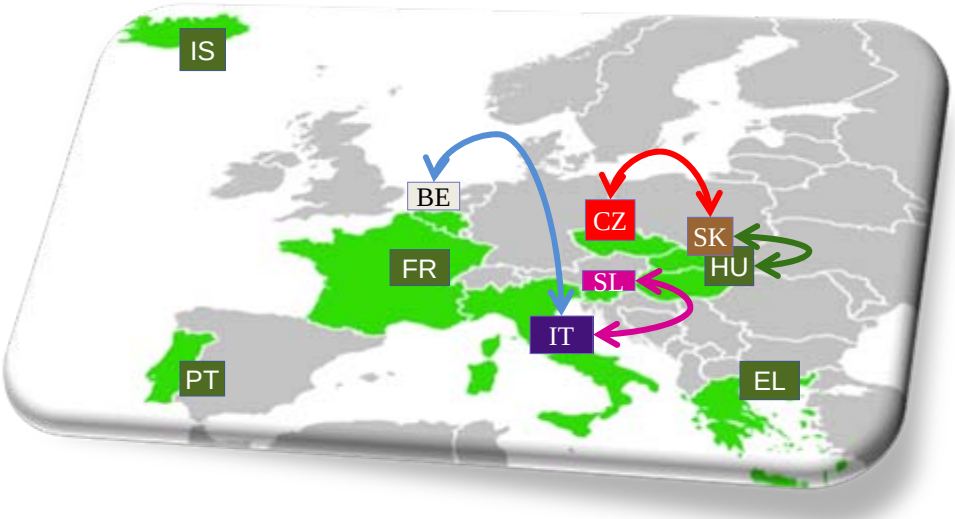
Pilots definition

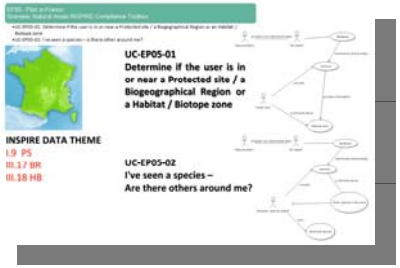


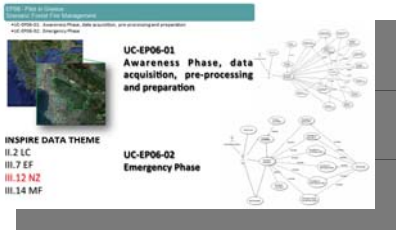


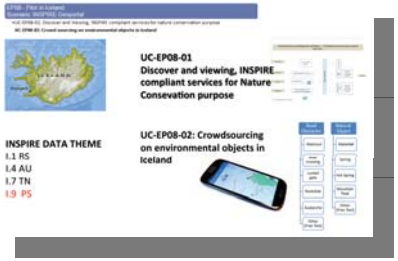


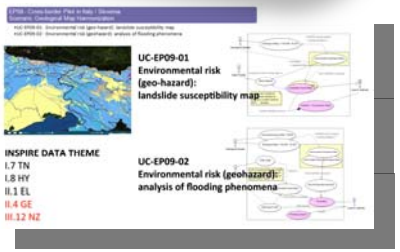


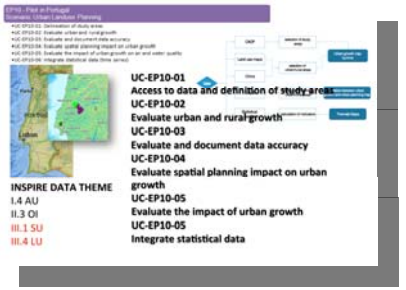








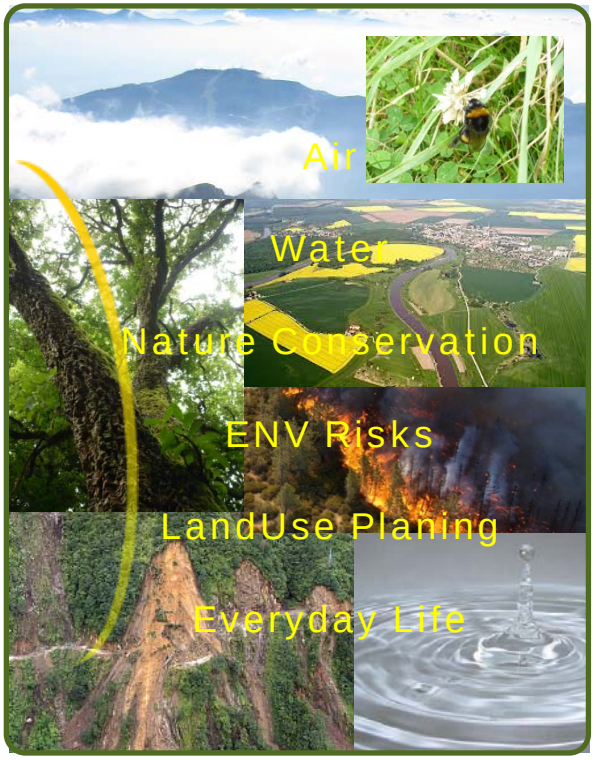




Pilot layers

Scenarios >> Pilots: INSPIRE Data Themes

- In 10 pilots, 9 Scenarios, 3 cross-border

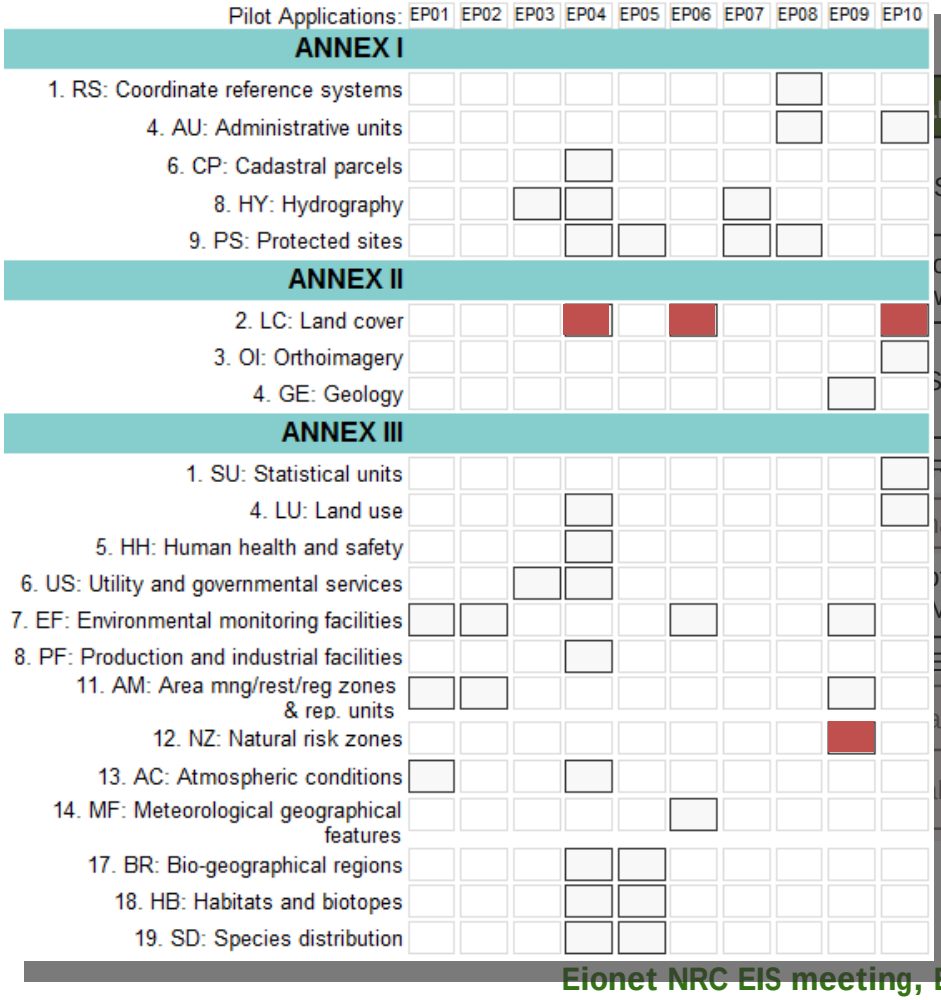


Scenario Title	ENV Aspect	Pilots
Implementation of a SEIS for air quality data	Air Quality	BELGIUM
		ITALY
Providing INSPIRE-compliant access to utility services: the case of sewage networks in Flanders	Water	BELGIUM
CSspire	Everyday life issues connected to Environmental aspects	CZECH REPUBLIC / SLOVAKIA
Natural Areas INSPIRE Compliance Toolbox	Nature Conservation	FRANCE
Forest Fire Management Scenario	Environmental Risk (Fire)	GREECE
Window on the Protected Areas - Mobile Conservation Map (WMA MCM)	Nature Conservation	HUNGARY / SLOVAKIA
INSPIRE Geoportal	Nature conservation	ICELAND
Geological Map Harmonization	Environmental Risk (Geohazard)	ITALY / SLOVENIA
Urban Ecological Landuse Planning	Ecological Landuse Planning	PORTUGAL

Pilot layers

Scenarios >> Pilots: INSPIRE Data Themes

- In 10 pilots, 9 Scenarios, 3 cross-border



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		ITALY
ompliant access to utility wage networks in Flanders	Water	BELGIUM
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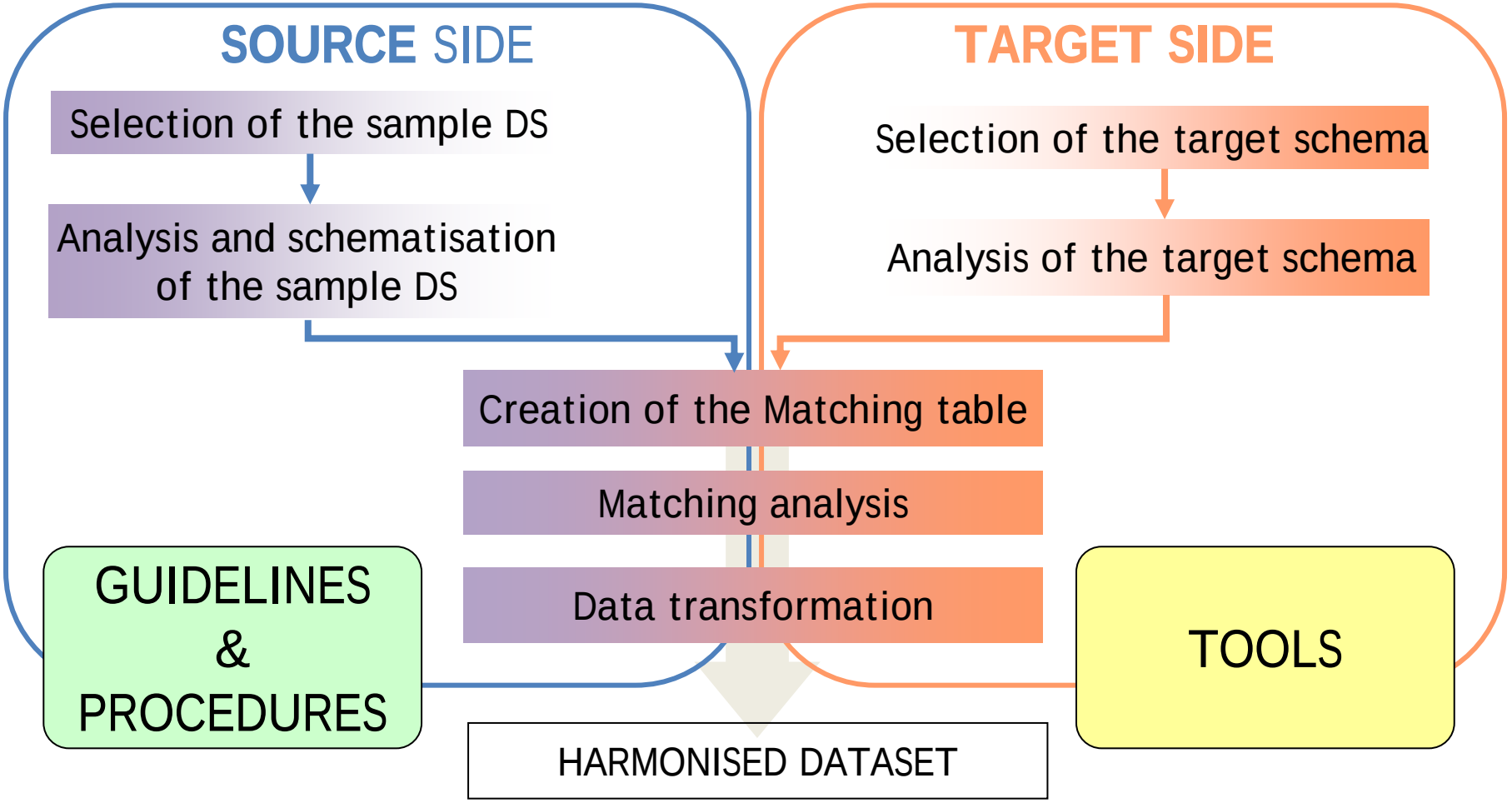
RE Compliance Toolbox	Nature Conservation	FRANCE
agement Scenario	Environmental Risk (Fire)	GREECE
tected Areas - Mobile Map (WMA MCM)	Nature Conservation	HUNGARY / SLOVAKIA
Geoportal	Nature conservation	ICELAND
ap Harmonization	Environmental Risk (Geohazard)	ITALY / SLOVENIA
l Landuse Planning	Ecological Landuse Planning	PORTUGAL

21 INSPIRE Data themes

Data harmonisation

The overall DH methodology



Data harmonisation

The HUMBOLDT Alignment Editor

- The HUMBOLDT Alignment Editor (HALE) is a tool for defining and evaluating conceptual schema mappings.
- HALE is currently being used intensively in the context of the eENVplus "WP3 Harmonisation and Validation" tasks.
- The Data Harmonisation Panel:
  - Supports a community of experts and organisations that have to deal with spatial data harmonisation.
  - Disseminates and exploits the HUMBOLDT Tools.
  - GISIG is one of the Data Harmonisation Panel Founding Members.
  - A joint collaborative initiative between the eENVplus project and the Data Harmonisation Panel is under development.

Target model

INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.I.4 INSPIRE Data Specification on Administrative units – Guidelines

Title	D2.8.I.4 INSPIRE Data Specification on *Administrative units* – Guidelines
Creator	INSPIRE Thematic Working Group Administrative units
Date	2010-04-26
Subject	INSPIRE Data Specification for the spatial data theme *Administrative units*
Publisher	INSPIRE Thematic Working Group Administrative units
Type	Text
Description	This document describes the INSPIRE Data Specification for the theme *Administrative units*
Contributor	Members of the INSPIRE Thematic Working Group Administrative units
Format	Portable Document Format (pdf)
Source	
Rights	public
Identifier	INSPIRE_DataSpecification_AU_v3.0.1.pdf
Language	En
Relation	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
Coverage	Project duration

Target model

INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.I.4 INSPIRE Data Specification
Guidelines

Title	D2.8.I.4 INSPIRE Data Specification on *Admi*
Creator	INSPIRE Thematic Working Group Administra
Date	2010-04-26
Subject	INSPIRE Data Specification for the spatial dat
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Type	Text
Description	This document describes the INSPIRE *Administrative units*
Contributor	Members of the INSPIRE Thematic Working
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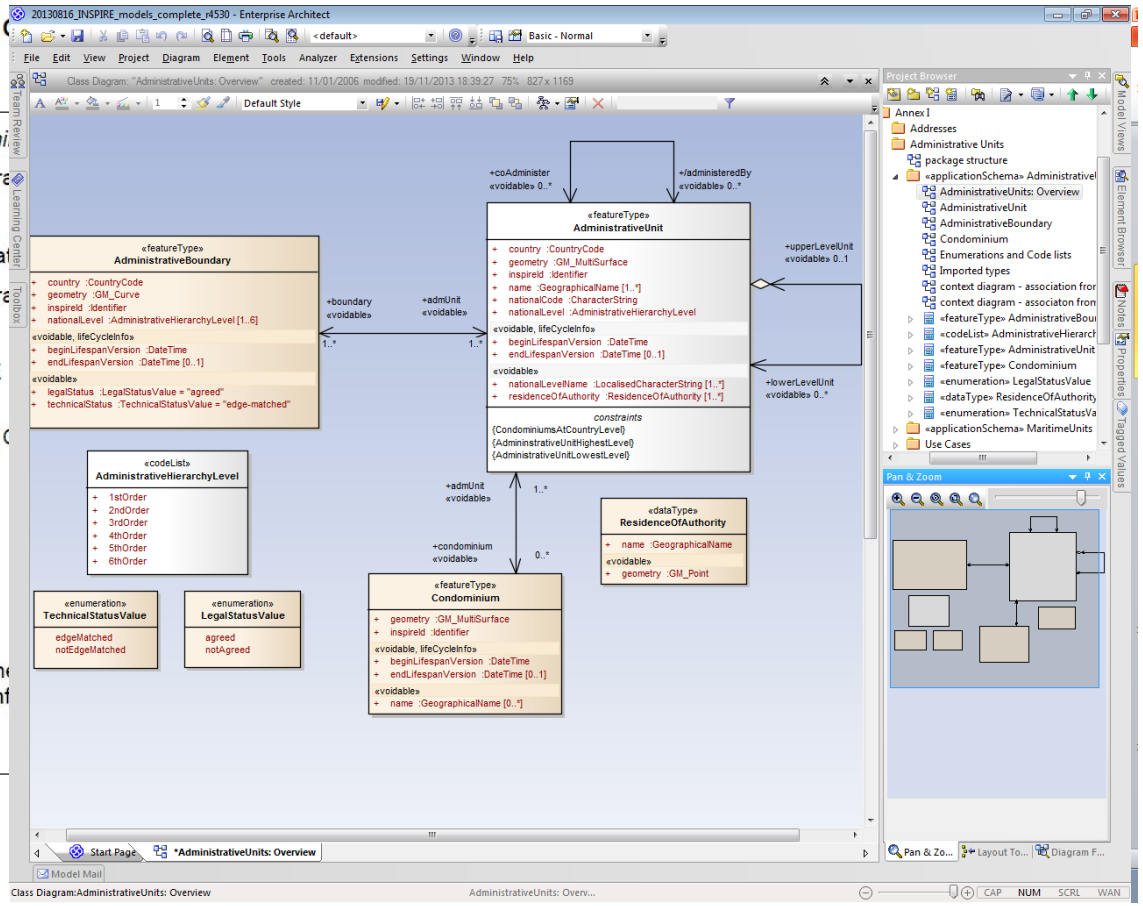
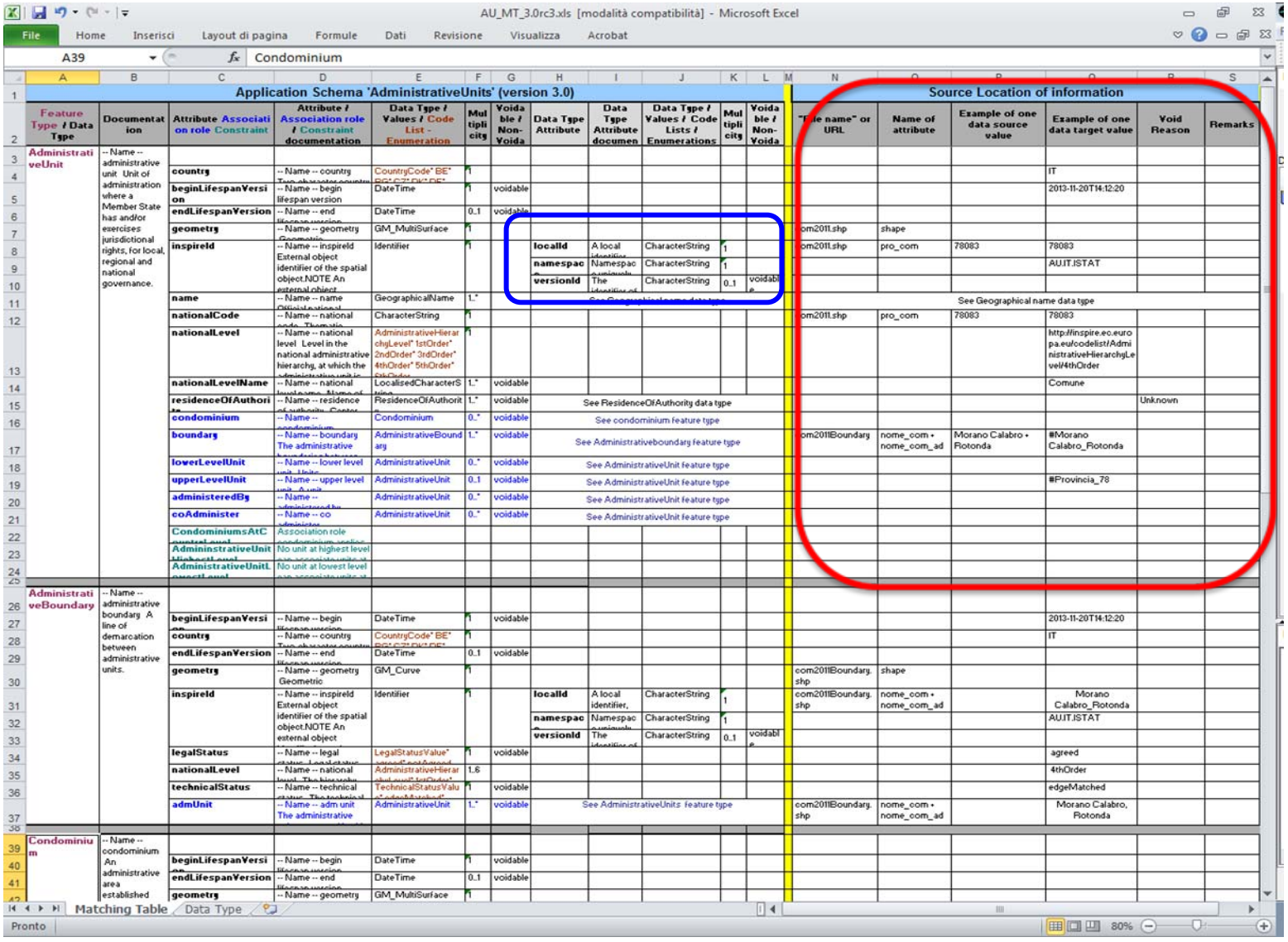


Mapping tables



AU_MT_3.0rc3.xls [modalità compatibilità] - Microsoft Excel

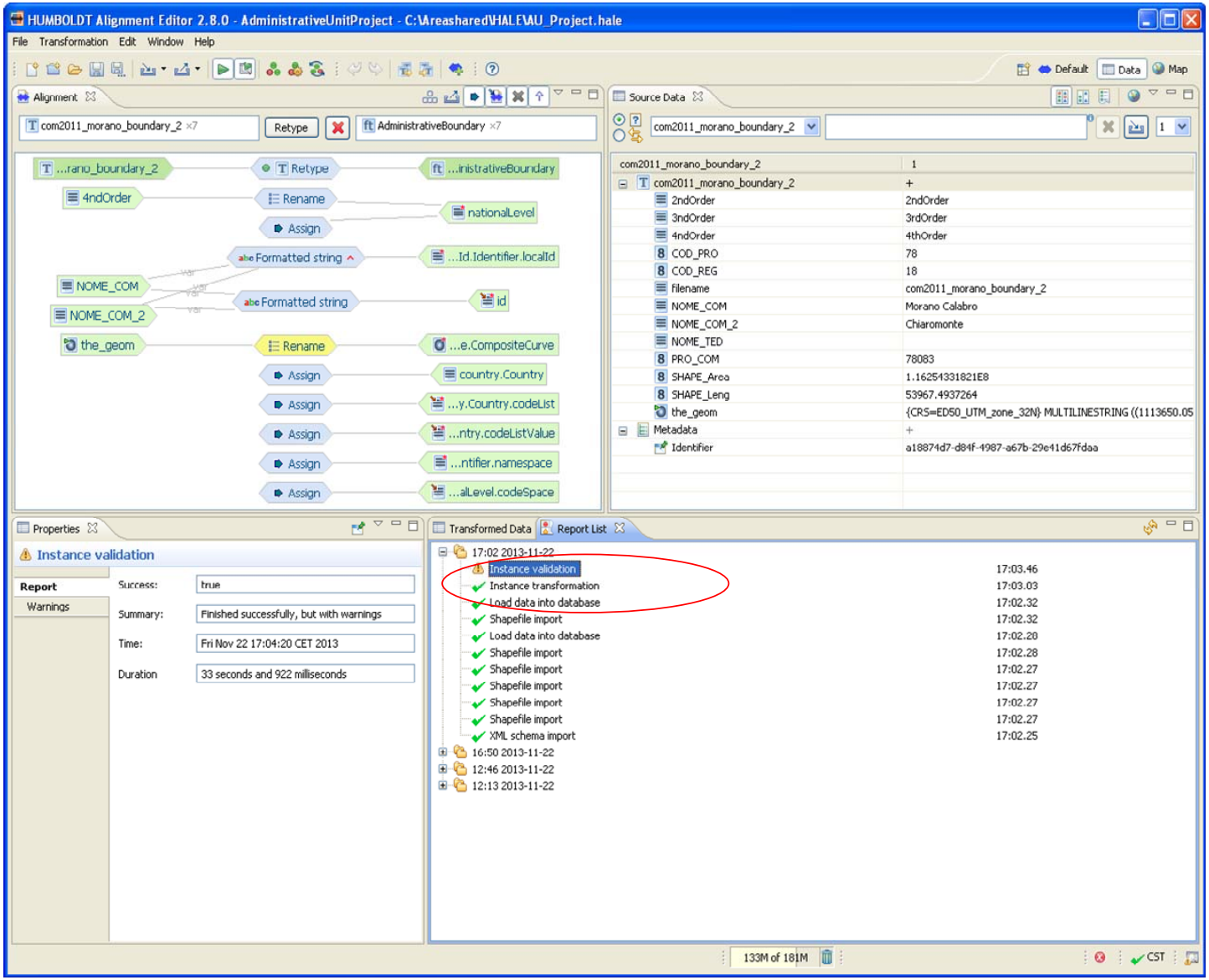
Application Schema 'AdministrativeUnits' (version 3.0)

Feature Type / Data Type	Documentation	Attribute Association role Constraint	Attribute / Association role / Constraint documentation	Data Type / Values / Code List - Enumeration	Multiplicity	Voidable / Non-Voida	Data Type Attribute	Data Type Attribute documen	Data Type / Values / Code Lists / Enumerations	Multiplicity	Voidable / Non-Voida	Source Location of information: "File name" or URL	Name of attribute	Example of one data source value	Example of one data target value	Void Reason	Remarks
AdministrativeUnit	-- Name -- administrative unit Unit of administration where a Member State has and/or exercises jurisdictional rights, for local, regional and national governance.																
		countrg	-- Name -- countrg	CountryCode* BE*	1										IT		
		beginLifespanVersion	-- Name -- begin lifespan version	DateTime	1	voidable									2013-11-20T14:12:20		
		endLifespanVersion	-- Name -- end	DateTime	0..1	voidable											
		geometrg	-- Name -- geometrg	GM_MultiSurface	1							com2011.shp	shape				
		inspireId	-- Name -- inspireId External object identifier of the spatial object.NOTE An external object	Identifier	1		localId	A local identifier,	CharacterString	1		com2011.shp	pro_com	78083	78083		
							namespac	Namespac	CharacterString	1					AU.IT.ISTAT		
							versionId	The identifier of	CharacterString	0..1	voidabl						
		name	-- Name -- name	GeographicalName	1..*		See Geographical name data type								See Geographical name data type		
		nationalCode	-- Name -- national code Thematic	CharacterString	1							com2011.shp	pro_com	78083	78083		
		nationalLevel	-- Name -- national level Level in the national administrative hierarchy, at which the	AdministrativeHierarchyLevel* 1stOrder* 2ndOrder* 3rdOrder* 4thOrder* 5thOrder*	1										http://inspire.ec.europa.eu/codelist/AdministrativeHierarchyLevel/4thOrder		
		nationalLevelName	-- Name -- national level name Name of	LocalisedCharacterS	1..*	voidable									Comune		
		residenceOfAuthori	-- Name -- residence of authority Centre	ResidenceOfAuthorit	1..*	voidable	See ResidenceOfAuthority data type									Unknown	
		condominium	-- Name -- condominium	Condominium	0..*	voidable	See condominium feature type										
		boundary	-- Name -- boundary The administrative	AdministrativeBoundary	1..*	voidable	See Administrativeboundary feature type					com2011Boundary	nome_com + nome_com_ad	Morano Calabro + Piotonda	#Morano Calabro_Piotonda		
		lowerLevelUnit	-- Name -- lower level unit Units	AdministrativeUnit	0..*	voidable	See AdministrativeUnit feature type										
		upperLevelUnit	-- Name -- upper level unit A unit	AdministrativeUnit	0..1	voidable	See AdministrativeUnit feature type								#Provincia_78		
		administeredBy	-- Name -- administered by	AdministrativeUnit	0..*	voidable	See AdministrativeUnit feature type										
		coAdminister	-- Name -- co administer	AdministrativeUnit	0..*	voidable	See AdministrativeUnit feature type										
		CondominiumsAtC	Association role condominium-cadastral unit														
		AdmininstrativeUnit	No unit at highest level														
		AdministrativeUnitL	No unit at lowest level														
AdministrativeBoundary	-- Name -- administrative boundary A line of demarcation between administrative units.																
		beginLifespanVersion	-- Name -- begin lifespan version	DateTime	1	voidable									2013-11-20T14:12:20		
		countrg	-- Name -- countrg	CountryCode* BE*	1										IT		
		endLifespanVersion	-- Name -- end lifespan version	DateTime	0..1	voidable											
		geometrg	-- Name -- geometrg Geometric	GM_Curve	1							com2011Boundary.shp	shape				
		inspireId	-- Name -- inspireId External object identifier of the spatial object.NOTE An external object	Identifier	1		localId	A local identifier,	CharacterString	1		com2011Boundary.shp	nome_com + nome_com_ad		Morano Calabro_Piotonda		
							namespac	Namespac	CharacterString	1					AU.IT.ISTAT		
							versionId	The identifier of	CharacterString	0..1	voidabl						
		legalStatus	-- Name -- legal status Legal status	LegalStatusValue* agreed*	1	voidable									agreed		
		nationalLevel	-- Name -- national level The hierarchi	AdministrativeHierarchyLevel* 1stOrder*	1..6										4thOrder		
		technicalStatus	-- Name -- technical status The technical	TechnicalStatusValue* edgeMatched*	1	voidable									edgeMatched		
		admUnit	-- Name -- adm unit The administrative	AdministrativeUnit	1..*	voidable	See AdministrativeUnits feature type					com2011Boundary.shp	nome_com + nome_com_ad		Morano Calabro, Piotonda		
Condominium	-- Name -- condominium An administrative area established																
		beginLifespanVersion	-- Name -- begin	DateTime	1	voidable											
		endLifespanVersion	-- Name -- end	DateTime	0..1	voidable											
		geometrg	-- Name -- geometrg	GM_MultiSurface	1												

Matching Table | Data Type

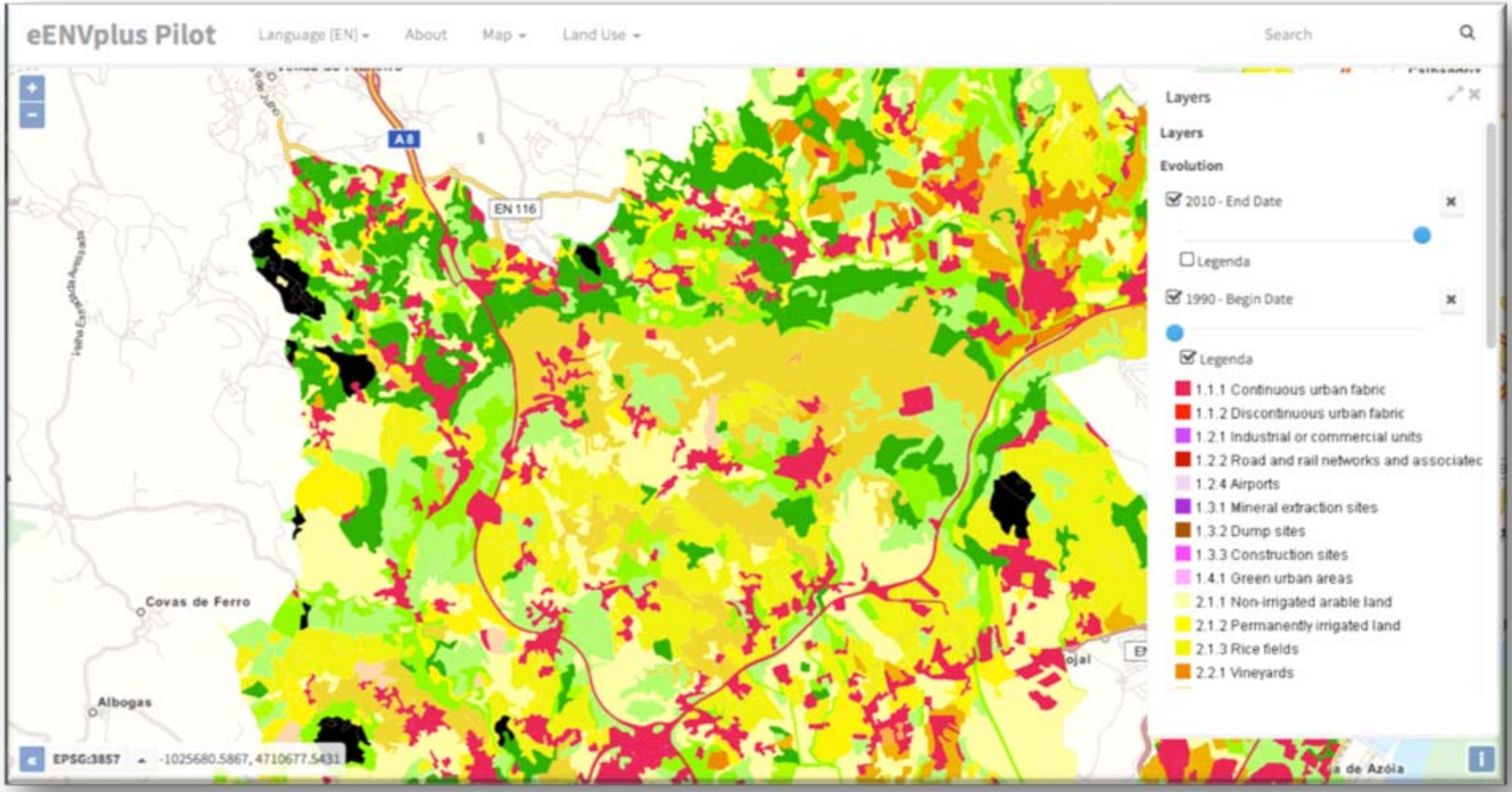
Pronto

Dataset transformation in gml



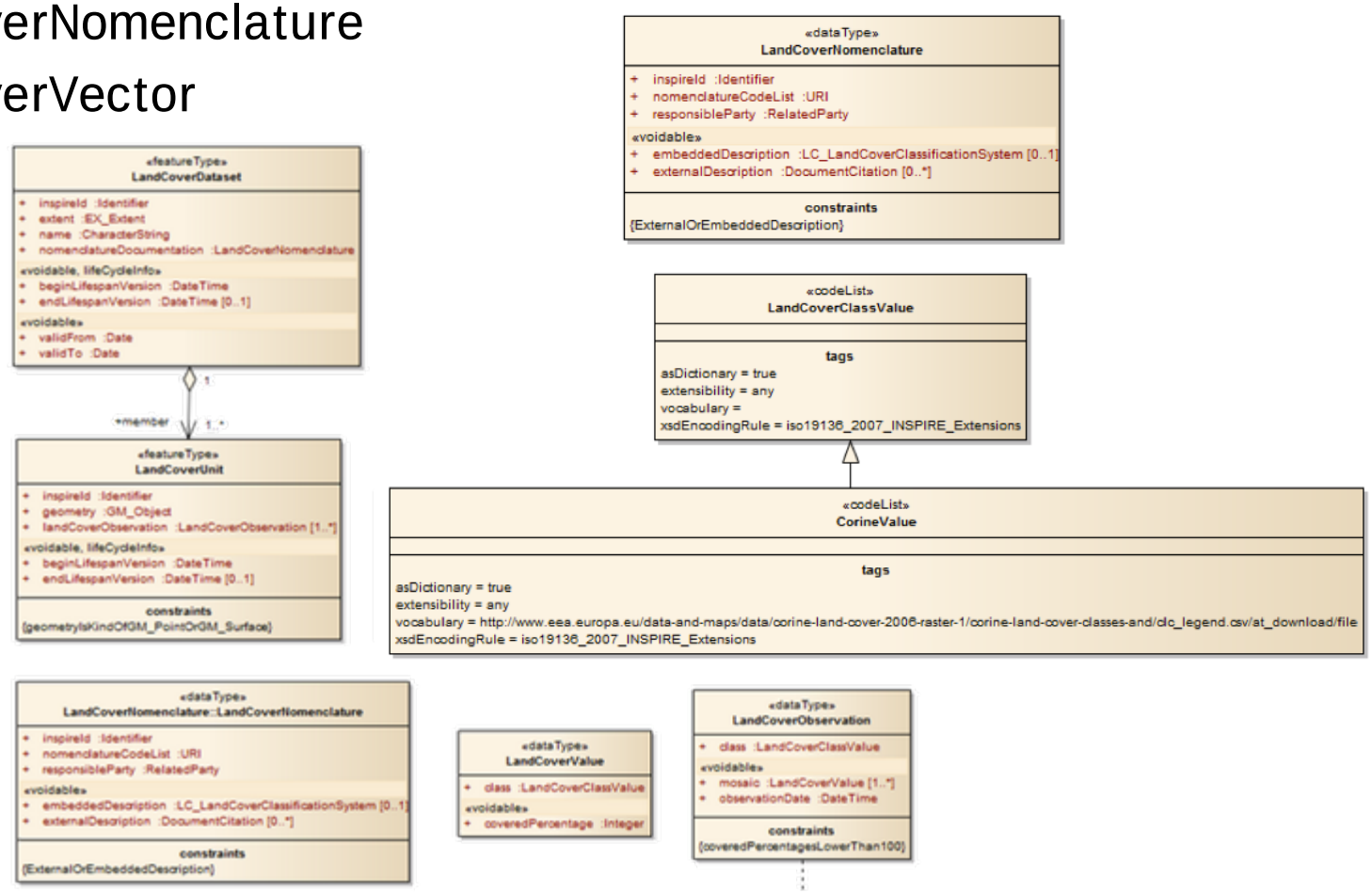
Some real examples

Land Cover change detection and planning indicators pilot



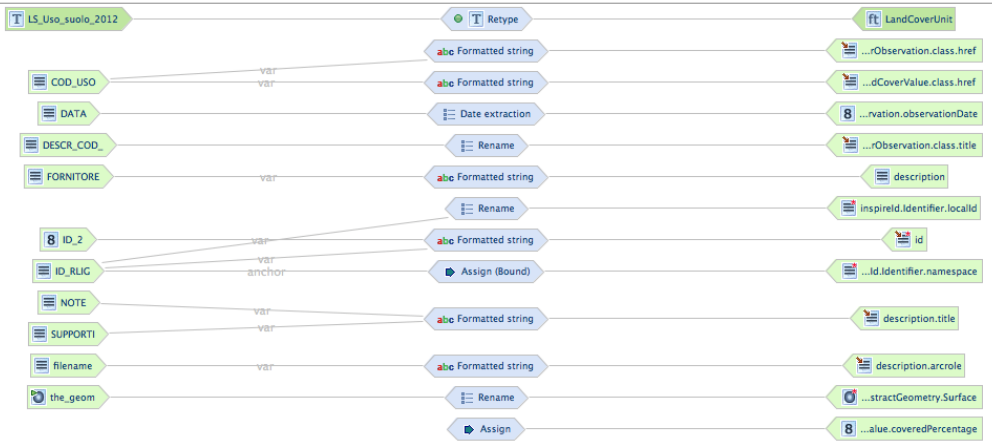
Pilot Land Cover schema

- The following application schemas were used:
  - LandCoverNomenclature
  - LandCoverVector



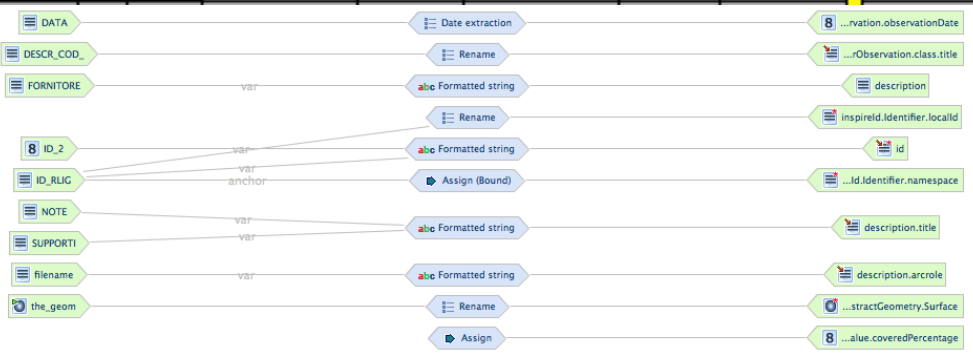
Pilot Land Cover schema

Application Schema 'LandCoverVector' (version 4.0)												Source Location of information				
Feature Type / Data Type	Documentation	Attribute Association role Constraint	Attribute / Association role / Constraint documentation	Data Type / Values / Code List -Enumeration	Multiplicity	Voidable / Non-Voidable	Data Type Attribute	Data Type Attribute documentation	Data Type / Values / Code Lists / Enumerations	Multiplicity	Voidable / Non-Voidable	"File name" or URL	Name of attribute	Example of one data source value	Remarks	Action
LandCoverDataset	-- Name -- Land Cover Data set A vector representation for Land Cover data. This representation allows Land Cover data being supported by a vector geometry.	inspireId	-- Name -- inspireId External object identifier of the	Identifier			localId	A local identifier	CharacterString	1		LS_Uso_suolo_2012	filename			
							namespace	Namespace uniquely	CharacterString	1				IT_RegioneLiguria_LCV_Dataset		
							versionId	The identifier of the	CharacterString	0..1	voidable					
		beginLifespanVersion	-- Name -- beginLifespanVersion	DateTime		voidable										
		endLifespanVersion	-- Name -- endLifespanVersion	DateTime	0..1	voidable										
		extent	-- Name -- extent	EX_Extent								LS_Uso_suolo_2012	the_geom	ComputeExtent(the_geom)		
		name	-- Name -- name	CharacterString								LS_Uso_suolo_2012	filename			
		nomenclatureDocumentation	-- Name -- nomenclatureDocumentation	LandCoverNomenclature			See "LandCoverNomenclature" DataType for references									
		validFrom	-- Name -- validFrom	Date		voidable										
		validTo	-- Name -- validTo	Date		voidable										
		member	-- Name -- element	LandCoverUnit	1..*							LS_Uso_suolo_2012	ID_RLIG+ID2	(ALCU_IDRLIG_(ID_RLIG)_IDint_(ID_2)	added field ID2 is a sequential ID	
LandCoverUnit	-- Name -- Land Cover Unit An individual element of the LC dataset represented by a point or polygon. Every unit support Land Cover information.	inspireId	-- Name -- inspireId External object identifier of the	Identifier			localId	A local identifier	CharacterString	1		LS_Uso_suolo_2012	ID_RLIG			
							namespace	Namespace uniquely	CharacterString	1				IT_RegioneLiguria_LCV_Unit		
							versionId	The identifier of the	CharacterString	0..1	voidable					
		geometry	-- Name -- geometry	GM_Object								LS_Uso_suolo_2012	the_geom			
		beginLifespanVersion	-- Name -- beginLifespanVersion	DateTime		voidable										
		endLifespanVersion	-- Name -- endLifespanVersion	DateTime	0..1	voidable										
		landCoverObservation	-- Name -- landCoverObservation	LandCoverObservation	1..*		See "LandCoverObservation" DataType for references									
		geometryStyleKindOfGM_Point	A Land Cover data set shall													
LandCoverObservation	-- Name -- Land Cover Observation Land Cover information interpreted at a specific time and place.	class	-- Name -- class	LandCoverClassValue								LS_Uso_suolo_2013	COD_USO	2511115	Non referenziabile!!! Manca link a	
		mosaic	-- Name -- mosaic	LandCoverValue	1..*	voidable	class	-- Name -- class --	LandCoverClassValue	1						
							coveragePercentage	-- Name -- coveragePerce	Integer	1	voidable					
		observationDate	-- Name -- observationDate	DateTime		voidable						LS_Uso_suolo_2012	data			
		coveredPercentageLowerTh	The sum of all													
LandCoverValue	-- Name -- Land Cover Value Generic class supporting	class	-- Name -- class	LandCoverClassValue												
		coveredPercentage	-- Name -- coveredPercentage	Integer		voidable										



Pilot Land Cover schema

Application Schema 'LandCoverVector' (version 4.0)												Source Location of information				
Feature Type / Data Type	Documentation	Attribute Association role Constraint	Attribute / Association role / Constraint documentation	Data Type / Values / Code List -Enumeration	Multiplicity	Voidable / Non-Voidable	Data Type Attribute	Data Type Attribute documentation	Data Type / Values / Code Lists / Enumerations	Multiplicity	Voidable / Non-Voidable	"File name" or URL	Name of attribute	Example of one data source value	Remarks	Action
LandCoverDataset	-- Name -- Land Cover Data set A vector representation for Land Cover data. This representation allows Land Cover data being supported by a vector geometry.	inspireId	-- Name -- inspireId External object identifier of the	Identifier			localId	A local identifier	CharacterString	1		LS_Uso_suolo_2012	filename			
							namespace	Namespace uniquely	CharacterString	1				IT_RegioneLiguria_LCV_Dataset		
							versionId	The identifier of the	CharacterString	0..1	voidable					
		beginLifespanVersion	-- Name -- beginLifespanVersion	DateTime		voidable										
		endLifespanVersion	-- Name -- endLifespanVersion	DateTime	0..1	voidable										
		extent	-- Name -- extent	EX_Extent								LS_Uso_suolo_2012	the_geom	ComputeExtent(the_geom)		
		name	-- Name -- name	CharacterString								LS_Uso_suolo_2012	filename			
		nomenclatureDocumentation	-- Name -- nomenclatureDocumentation	LandCoverNomenclature			See "LandCoverNomenclature" DataType for references									
		validFrom	-- Name -- validFrom	Date		voidable										
		validTo	-- Name -- validTo	Date		voidable										
		member	-- Name -- element	LandCoverUnit	1..*							LS_Uso_suolo_2012	ID_RLIG+ID2	#LCU_IDRLIG_[ID_RLIG]_IDint_[ID_2]	added field ID2 is a sequential ID	



Pilot Land Cover schema

```
<gml:featureMember>
    <lcv:LandCoverUnit gml:id="clc4">
        <gml:description xlink:href="http://www.dgterritorio.pt/cartografia_e_geodesia/projetos_em_curso/clc_2012/"/>
        <gml:location>
            <gml:Null>unknown</gml:Null>
        </gml:location>
        <lcv:inspireId>
            <base:Identifier>
                <base:localId>clc2012_loures</base:localId>
                <base:namespace>#clc2012_loures</base:namespace>
            </base:Identifier>
        </lcv:inspireId>
        <lcv:beginLifespanVersion xsi:nil="true"/>
        <lcv:geometry>
            <gml:MultiSurface gml:id="_73dd8ce6-2f57-46ae-8795-4acc8cf92bf3" srsName="http://www.opengis.net/def/crs/EPSG/0/4258" srsDimension="2">
                <gml:surfaceMember>
                    <gml:Polygon gml:id="_5bd531a9-41f6-421b-bcff-3c8c31db33cc">
                        <gml:exterior>
                            <gml:LinearRing>
                                <gml:posList>38.810943215158176 -9.123859642131588 38.810913038669106 -9.123862995708288 38.81101306047335 -9.12409615185891 38.8117870
                            </gml:LinearRing>
                        </gml:exterior>
                    </gml:Polygon>
                </gml:surfaceMember>
                <gml:surfaceMember>
                <gml:surfaceMember>
                <gml:surfaceMember>
            </gml:MultiSurface>
        </lcv:geometry>
        <lcv:landCoverObservation>
            <lcv:LandCoverObservation>
                <lcv:class xlink:href="http://inspire.ec.europa.eu/codelist/LandCoverClassValue/112"/>
                <lcv:mosaic xsi:nil="true"/>
                <lcv:observationDate xsi:nil="true"/>
            </lcv:LandCoverObservation>
```

Pilot Land Cover schema

```
<gml:featureMember>
    <lcv:LandCoverUnit gml:id="clc4">
        <gml:description xlink:href="http://www.dgterritorio.p
        <gml:location>
            <gml:Null>unknown</gml:Null>
        </gml:location>
        <lcv:inspireId>
            <base:Identifier>
                <base:localId>clc2012_loures</base:localId>
                <base:namespace>#clc2012_loures</base:namespac
            </base:Identifier>
        </lcv:inspireId>
        <lcv:beginLifespanVersion xsi:nil="true"/>
        <lcv:geometry>
            <gml:MultiSurface gml:id="_73dd8ce6-2f57-46ae-8795
                <gml:surfaceMember>
                    <gml:Polygon gml:id="_5bd531a9-41f6-421b-b
                        <gml:exterior>
                            <gml:LinearRing>
                                <gml:posList>38.810943215158176 -9.123859642131588 38.810913038669106 -9.123862995708288 38.81101306047335 -9.12409615185891 38.8117870
                            </gml:LinearRing>
                        </gml:exterior>
                    </gml:Polygon>
                </gml:surfaceMember>
                <gml:surfaceMember>
                <gml:surfaceMember>
                <gml:surfaceMember>
            </gml:MultiSurface>
        </lcv:geometry>
        <lcv:landCoverObservation>
            <lcv:LandCoverObservation>
                <lcv:class xlink:href="http://inspire.ec.europa.eu/codelist/LandCoverClassValue/112"/>
                <lcv:mosaic xsi:nil="true"/>
                <lcv:observationDate xsi:nil="true"/>
            </lcv:LandCoverObservation>
```

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European Commission

INSPIRE REGISTRY

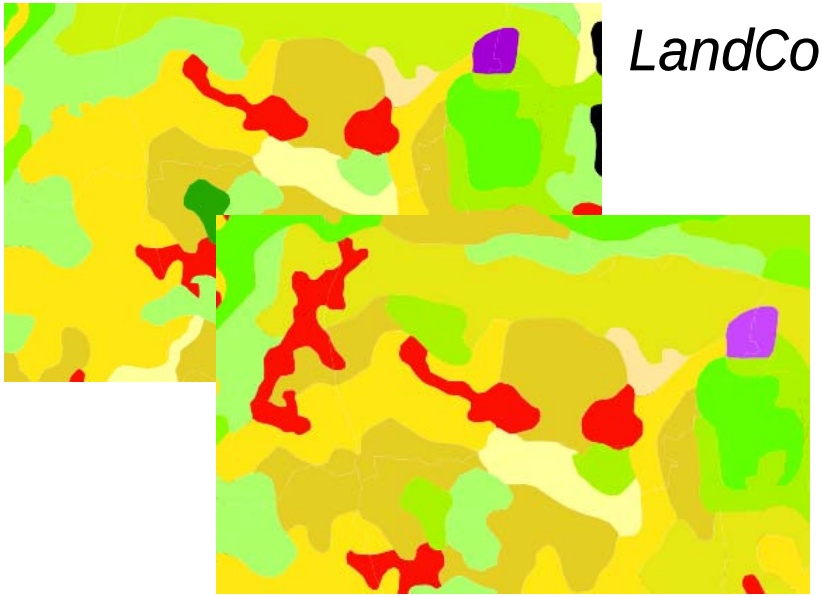
Enhancing access to European spatial data

European Commission > INSPIRE > INSPIRE registry > INSPIRE code list register > Land Cover Class

Land Cover Class

ID:	http://inspire.ec.europa.eu/codelist/LandCoverClassValue
This version:	http://inspire.ec.europa.eu/codelist/LandCoverClassValue:1
Latest version:	http://inspire.ec.europa.eu/codelist/LandCoverClassValue
Label:	**Land Cover Class**
Definition:	Land cover code list or classification.
Description:	An empty code list that act as a container for Corine, other european, national or local code list for LC nomenclature.
Theme:	Land Cover
Application schema:	Land Cover Nomenclature

Pilot Land Cover schema

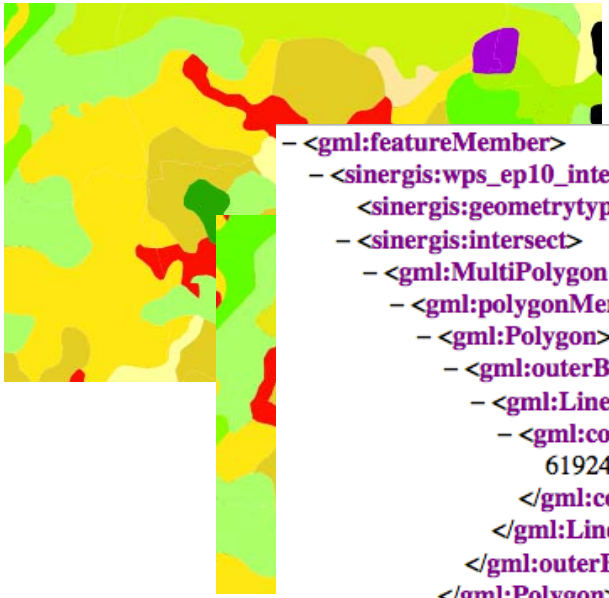


LandCover 1990

LandCover 1990

LC Change detection

Pilot Land Cover schema



LandCover 1990

```
– <gml:featureMember>
  – <sinergis:wps_ep10_intersect1430291256522 fid="wps_ep10_intersect1430291256522.fid--86198fe_1513e11d341_-7ab2">
      <sinergis:geometrytype>MULTIPOLYGON</sinergis:geometrytype>
    – <sinergis:intersect>
      – <gml:MultiPolygon srsName="http://www.opengis.net/gml/srs/epsg.xml#3064">
        – <gml:polygonMember>
          – <gml:Polygon>
            – <gml:outerBoundaryIs>
              – <gml:LinearRing>
                – <gml:coordinates decimal="." cs="," ts=" ">
                    619244.1658139,5077657.59765643 619258.05999493,5077666.97602308 619284.16549978,5077684.5968
                  </gml:coordinates>
                </gml:LinearRing>
              </gml:outerBoundaryIs>
            </gml:Polygon>
          </gml:polygonMember>
        + <gml:polygonMember></gml:polygonMember>
        + <gml:polygonMember></gml:polygonMember>
        + <gml:polygonMember></gml:polygonMember>
        + <gml:polygonMember></gml:polygonMember>
        </gml:MultiPolygon>
      </sinergis:intersect>
      <sinergis:area_a>11383415</sinergis:area_a>
      <sinergis:area_b>5502834</sinergis:area_b>
      <sinergis:attribute_aggregation_a>3</sinergis:attribute_aggregation_a>
      <sinergis:attribute_a>311</sinergis:attribute_a>
      <sinergis:attribute_aggregation_b>3</sinergis:attribute_aggregation_b>
      <sinergis:attribute_b>313</sinergis:attribute_b>
    </sinergis:wps_ep10_intersect1430291256522>
</gml:featureMember>
```

Land cover gml

eENVplus Pilot Land Cover Raster schema


```
<gml:FeatureCollection xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lcr="http://inspire.ec.europa.eu/schemas/lcr
    <gml:featureMember>
        <lcr:LandCoverGridCoverage gml:id="Fire.Access.Time_LCRaster">
            <gml:domainSet>
                <gml:RectifiedGrid dimension="2" gml:id="tiff_domain">
                    <gml:limits>
                        <gml:GridEnvelope>
                            <gml:low>156076 4498741</gml:low>
                            <gml:high>169386 4510891</gml:high>
                        </gml:GridEnvelope>
                    </gml:limits>
                    <gml:axisLabels>x y</gml:axisLabels>
                    <gml:origin>
                        <gml:Point gml:id="grid_origin_tiff" srsName="http://www.opengis.net/def/crs/EPSG/0/3046">
                            <gml:pos>156076.00 4510891.00</gml:pos>
                        </gml:Point>
                    </gml:origin>
                    <gml:offsetVector srsName="http://www.opengis.net/def/crs/EPSG/0/3046">20 0</gml:offsetVector>
                    <gml:offsetVector srsName="http://www.opengis.net/def/crs/EPSG/0/3046">0 -20</gml:offsetVector>
                </gml:RectifiedGrid>
            </gml:domainSet>
            <gml:rangeSet>
                <gml:File>
                    <gml:rangeParameters xlink:href="http://www.epsilon.gr/imported/files/001_20110310_014_001_FAT.tif"/>
                    <gml:fileReference>001_20110310_014_001_FAT.tif</gml:fileReference>
                    <gml:fileStructure>Record Interleaved</gml:fileStructure>
                </gml:File>
            </gml:rangeSet>
            <gmlcov:rangeType xlink:href="http://epsilon.gr/imported/files/FFM-Description_of_the_source_data_.pdf"/>
            <lcr:inspireId>
                <base:Identifier>
                    <base:localId>001_20110310_014_001_FAT.tif</base:localId>
                    <base:namespace>Fire.Access.Time</base:namespace>
                </base:Identifier>
            </lcr:inspireId>
```

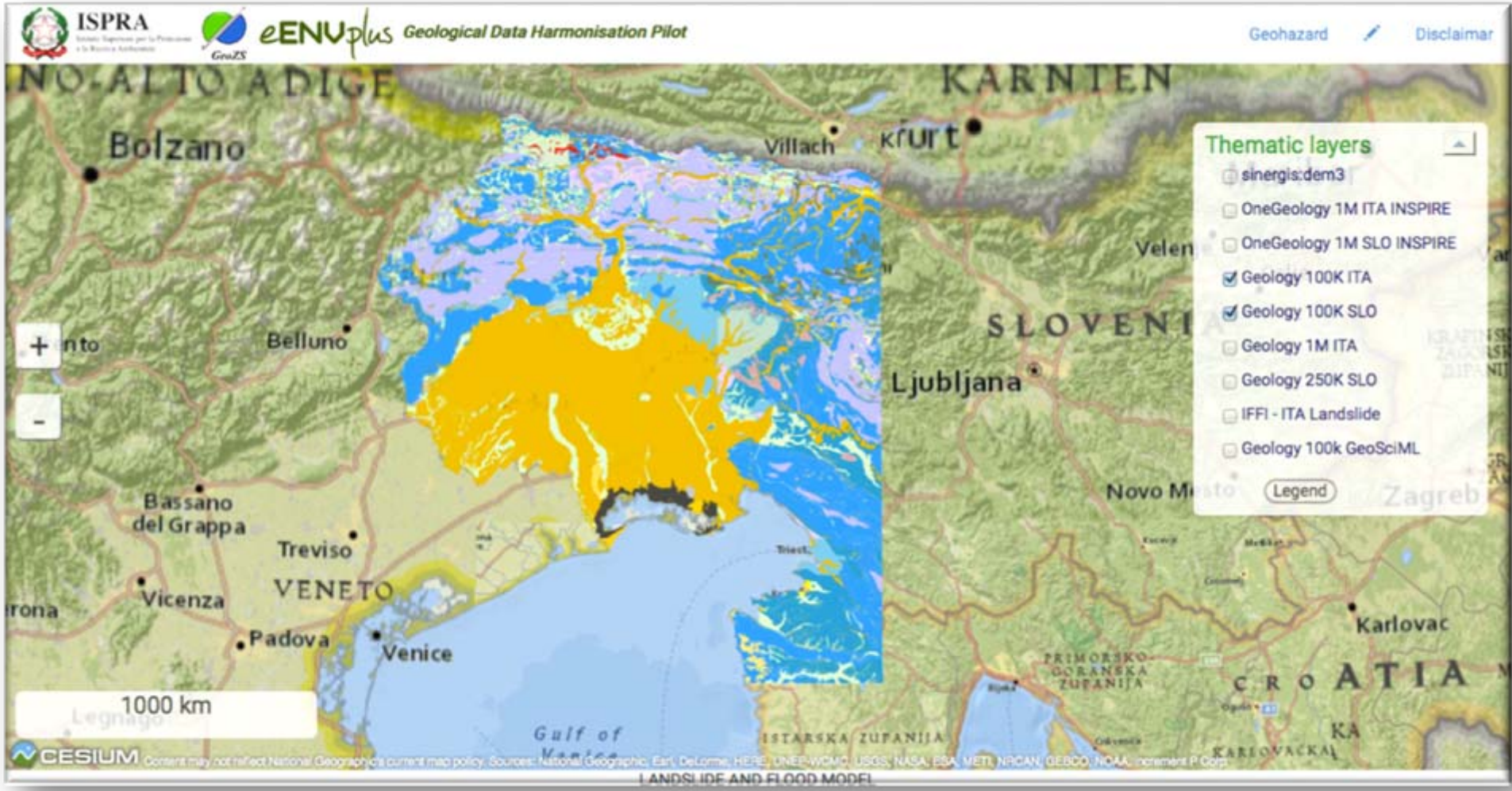
Link to the coverage

Link to the report

INSPIRE Ref.

Some real examples

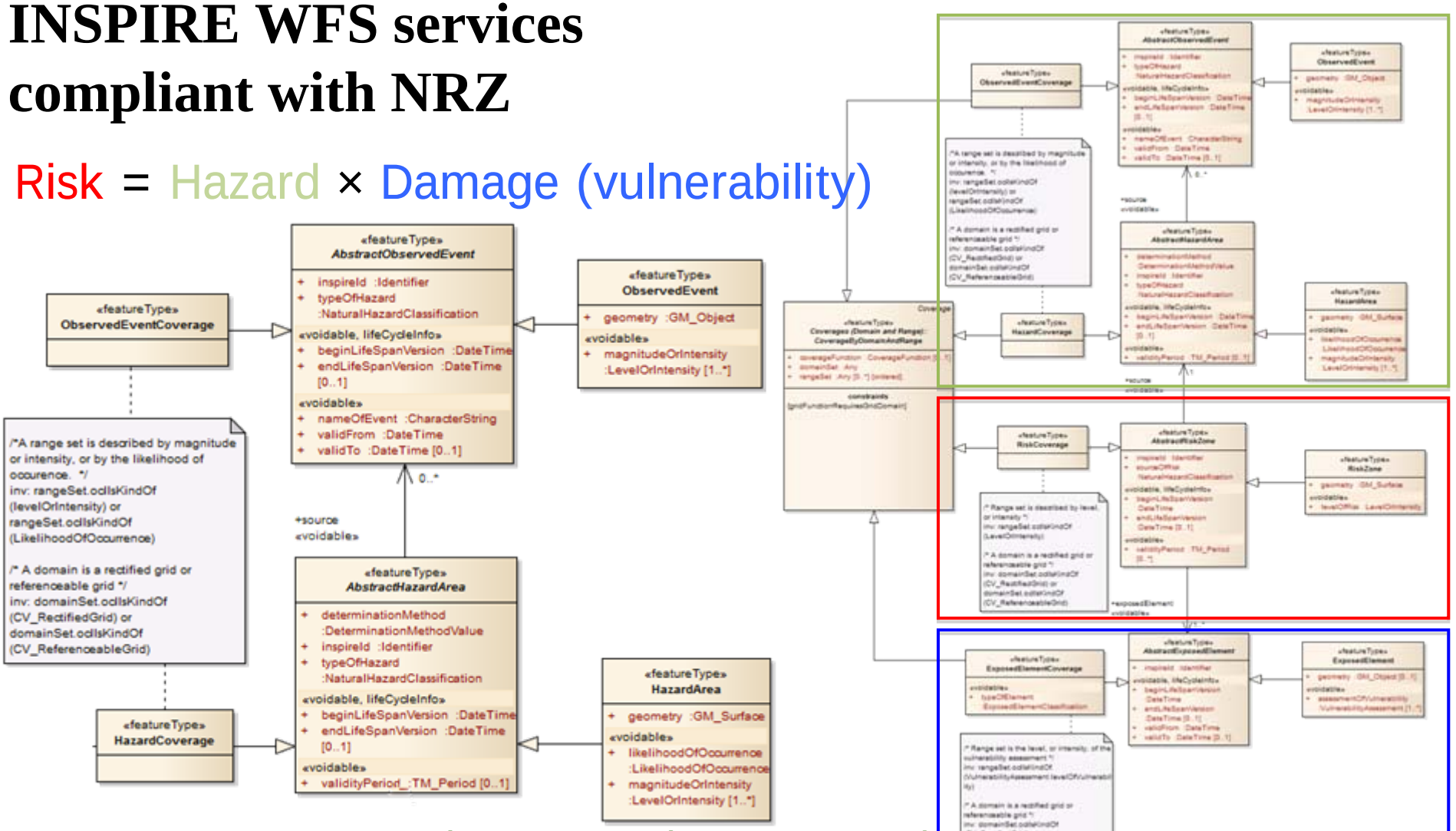
Cross-border Geological Map Harmonisation IT/SL to produce Geohzard maps



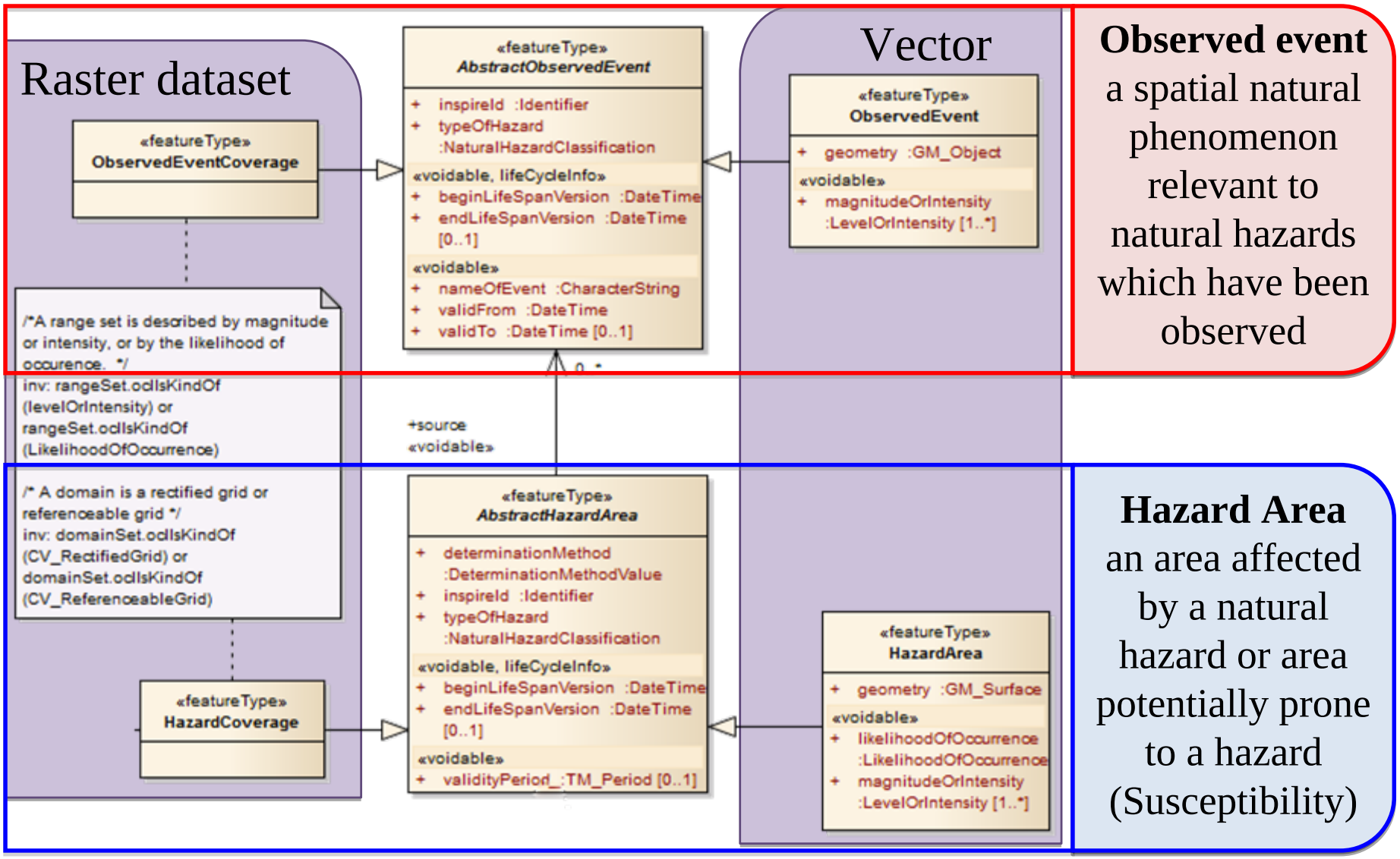
Natural Risk Zone data model

The pilot final output is a "hazard" Map provided in INSPIRE WFS services compliant with NRZ

Risk = Hazard × Damage (vulnerability)



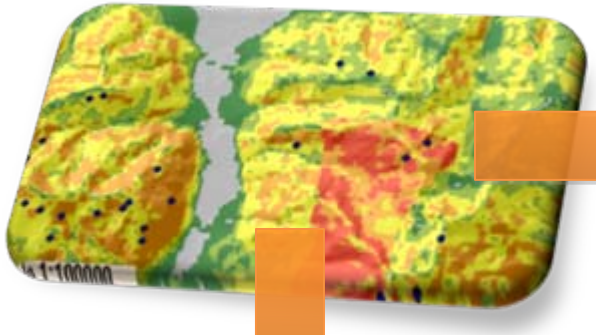
Natural Risk Zone data model



Observed event
a spatial natural phenomenon relevant to natural hazards which have been observed

Hazard Area
an area affected by a natural hazard or area potentially prone to a hazard (Susceptibility)

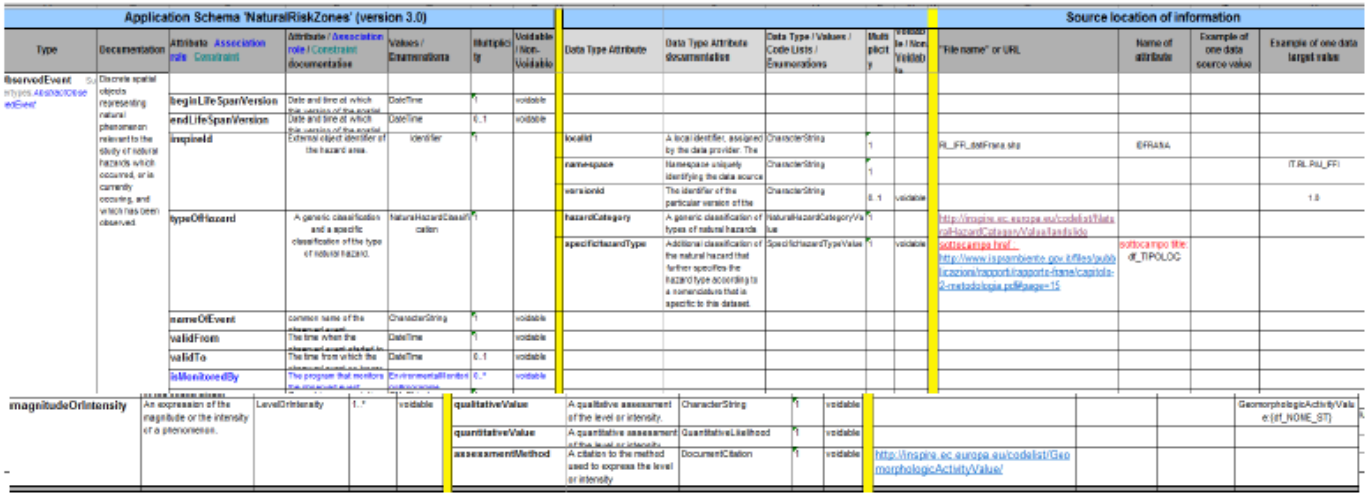
Some real examples



Landslide event subset is transformed in *ObservedEvent*

Landslide Susceptibility Map is transformed in semi-automatic system in *HazardArea*

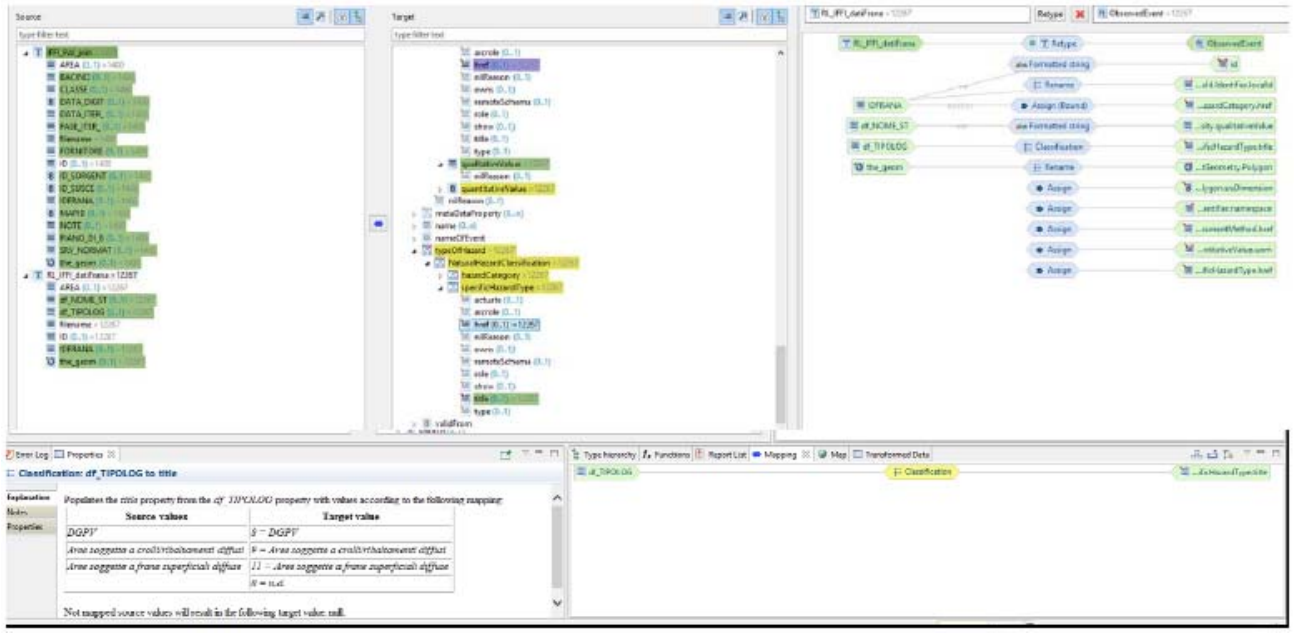
ObservedEvent NRZ



Application Schema 'NaturalRiskZones' (version 3.0)

Type	Documentation	Attribute / Association role	Attribute / Association role / Constraint documentation	Values / Enumerations	Multiplicity	Voidable / Non-Voidable	Data Type Attribute	Data Type Attribute documentation	Data Type / Values / Code Lists / Enumerations	Multiplicity	Voidable / Non-Voidable	Source location of information: "File name" or URL	Name of attribute	Example of one data source value	Example of one data target value
ObservedEvent	Discrete spatial objects representing natural phenomenon relevant to the study of natural hazards which occurred, or is currently occuring, and which has been observed.	beginLifeSpanVersion	Date and time at which this version of the spatial	DateTime	1	voidable									
		endLifeSpanVersion	Date and time at which this version of the spatial	DateTime	0..1	voidable									
		inspireId	External object identifier of the hazard area.	Identifier	1		localId	A local identifier, assigned by the data provider. The	CharacterString	1		RI_FR_dbfFrana.shp	ERFRANA		
							namespace	Namespace uniquely identifying the data source	CharacterString	1					IT.RI_PAI_FF
							versionId	The identifier of the particular version of the	CharacterString	0..1	voidable				1.0
		typeOfHazard	A generic classification and a specific classification of the type of natural hazard.	NaturalHazardClassification	1		hazardCategory	A generic classification of types of natural hazards	NaturalHazardCategoryValue	1		http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide			
							specificHazardType	Additional classification of the natural hazard that further specifies the hazard type according to a nationalistic that is specific to the dataset.	SpecificHazardTypeValue	1	voidable	sottocampo href: http://www.isprambiente.gov.it/files/pubblicazioni/rapporti/rapporto-frane/capitolo-2-metodologia.pdf#page=15	sottocampo title: df_TIPOLOG		
		nameOfEvent	common name of the	CharacterString	1	voidable									
		validFrom	The time when the	DateTime	1	voidable									
		validTo	The time from which the	DateTime	0..1	voidable									
		isMonitoredBy	The program that monitors	EnvironmentalMonitoringFacility	0..*	voidable									
magnitudeOrIntensity	An expression of the magnitude or the intensity of a phenomenon.	LevelOrIntensity		1..*	voidable	qualitativeValue	A qualitative assessment of the level or intensity.	CharacterString	1	voidable				GeomorphologicActivityValue (df_NOME_ST)	
						quantitativeValue	A quantitative assessment	QuantitativeLikelihood	1	voidable					
						assessmentMethod	A citation to the method used to express the level or intensity	DocumentCitation	1	voidable	http://inspire.ec.europa.eu/codelist/GeomorphologicActivityValue/				

Mapping the landslide events inventory with ObservedEvent vector part



Transform landslide subset (shapefile) to Gml file compliant with NRZ ObservedEvent schema part

Semantic harmonisation

```
<gml:featureMember>
  <nz-core:ObservedEvent gml:id="mf.3">
    <gml:description>2  - rotational / translational slide</gml:description>
    <gml:name>frane_2011_reg_LIG_EPSG3044_Monterosso</gml:name>
    <gml:boundedBy>
      <gml:Envelope srsDimension="2">
    </gml:boundedBy>
    <nz-core:beginLifeSpanVersion>2011-10-26T00:00:00+02:00</nz-core:beginLifeSpanVersion>
    <nz-core:endLifeSpanVersion nilReason="unknown" xsi:nil="true"></nz-core:endLifeSpanVersion>
    <nz-core:inspireId>
      <base:Identifier>
        <base:localId>INSPIRE_OE_id_2</base:localId>
        <base:namespace>http://sqi.isprambiente.it/ns/landslide</base:namespace>
        <base:versionId>1.0</base:versionId>
      </base:Identifier>
    </nz-core:inspireId>
    <nz-core:nameOfEvent>Frane_ottobre2011_Liguria</nz-core:nameOfEvent>
    <nz-core:typeOfHazard>
      <nz-core:NaturalHazardClassification>
        <nz-core:hazardCategory xlink:title="frana"></nz-core:hazardCategory>
        <nz-core:specificHazardType xlink:title="Rotational or translational slide"></nz-core:specificHazardType>
      </nz-core:NaturalHazardClassification>
    </nz-core:typeOfHazard>
    <nz-core:validFrom>2011-11-25T00:00:00+01:00</nz-core:validFrom>
    <nz-core:validTo>2011-11-27T00:00:00+01:00</nz-core:validTo>
    <nz-core:geometry>
    <nz-core:magnitudeOrIntensity>
      <nz-core:LevelOrIntensity>
        <nz-core:qualitativeValue xsi:nil="true"/>
        <nz-core:quantitativeValue uom="%">100.0</nz-core:quantitativeValue>
        <nz-core:assessmentMethod xsi:nil="true"/>
      </nz-core:LevelOrIntensity>
    </nz-core:magnitudeOrIntensity>
  </nz-core:ObservedEvent>
</gml:featureMember>
```

http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide/

Semantic harmonisation

```
<gml:featureMember>
  <nz-core:ObservedEvent gml:id="mf.3">
    <gml:description>2  - rotational / translational slide</gml:description>
    <gml:name>frane_2011_reg_LIG_EPSG3044_Monterosso</gml:name>
    <gml:boundedBy>
      <gml:Envelope srsDimension="2">
    </gml:boundedBy>
    <nz-core:beginLifeSpanVersion>2011-10-26T00:00:00+02:00</nz-core:beginLifeSpanVersion>
    <nz-core:endLifeSpanVersion nilReaso
    <nz-core:inspireId>
      <base:Identifier>
        <base:localId>INSPIRE_OE_id_2</b
        <base:namespace>http://sqi.ispra
        <base:versionId>1.0</base:versio
      </base:Identifier>
    </nz-core:inspireId>
    <nz-core:nameOfEvent>Frane_ottobre20
    <nz-core:typeOfHazard>
      <nz-core:NaturalHazardClassificati
        http://inspire.ec.euro
        <nz-core:specificHazardType xlin
      </nz-core:NaturalHazardClassificat
    </nz-core:typeOfHazard>
    <nz-core:validFrom>2011-11-25T00:00:
    <nz-core:validTo>2011-11-27T00:00:00
    <nz-core:geometry>
    <nz-core:magnitudeOrIntensity>
      <nz-core:LevelOrIntensity>
        <nz-core:qualitativeValue xsi:ni
        <nz-core:quantitativeValue uom="
        <nz-core:assessmentMethod xsi:ni
      </nz-core:LevelOrIntensity>
    </nz-core:magnitudeOrIntensity>
  </nz-core:ObservedEvent>
</gml:featureMember>
```

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European Commission

INSPIRE REGISTRY

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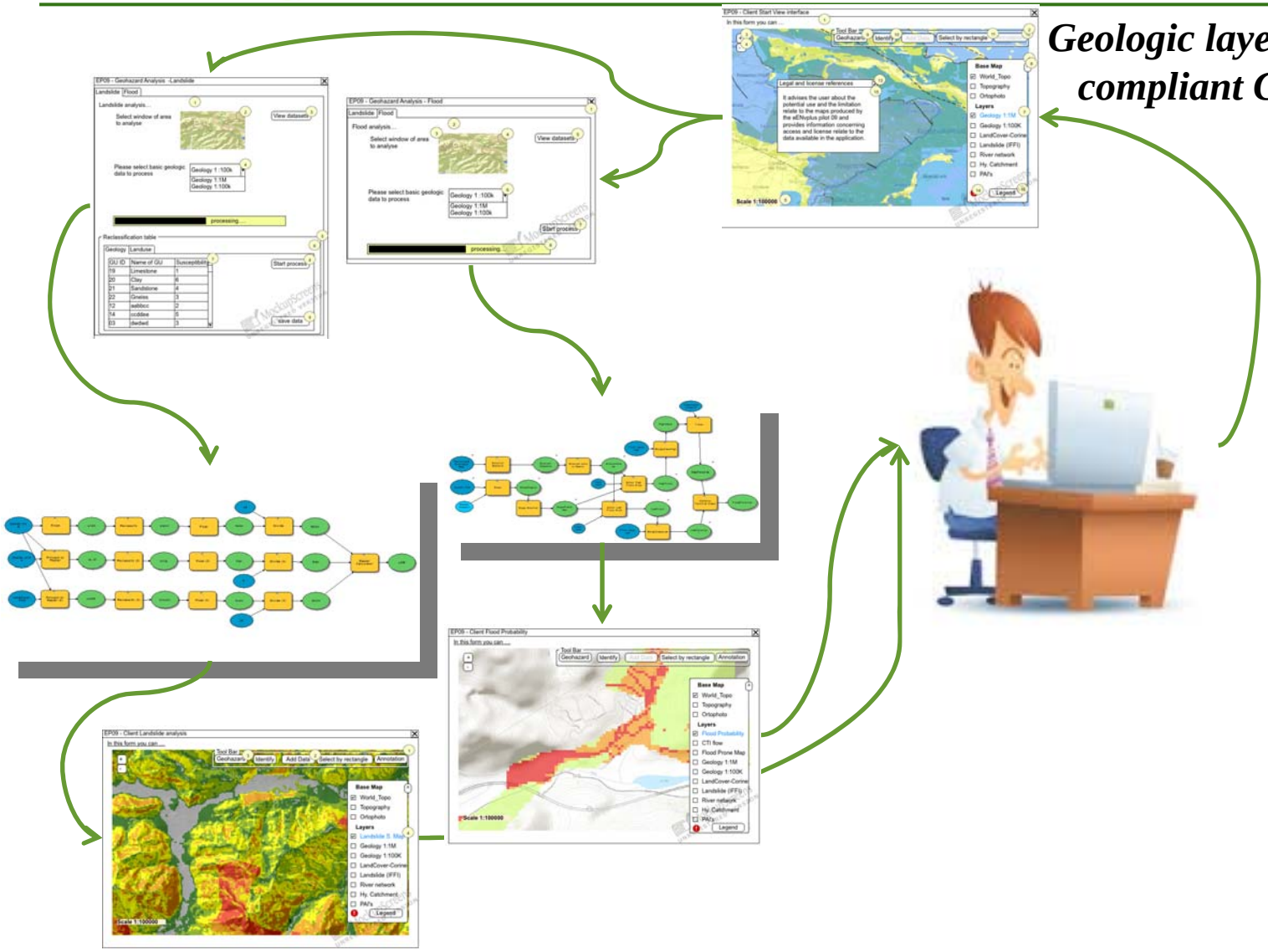
frana

ID:	http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide
Questa version:	http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide:1
La version più recente:	http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide
Etichetta:	**frana**
Definizione:	Processi di movimenti verso il basso lungo superfici inclinate di terreno, roccia e materiali organici dovuti a vari tipi di cedimento del terreno.
Descrizione: [Non disponibile in Italiano]	Some common terms used for describing different types of landslides include but are not restricted to slides, rock fall, debris flow.
Categoria tematica:	Zone a rischio naturale

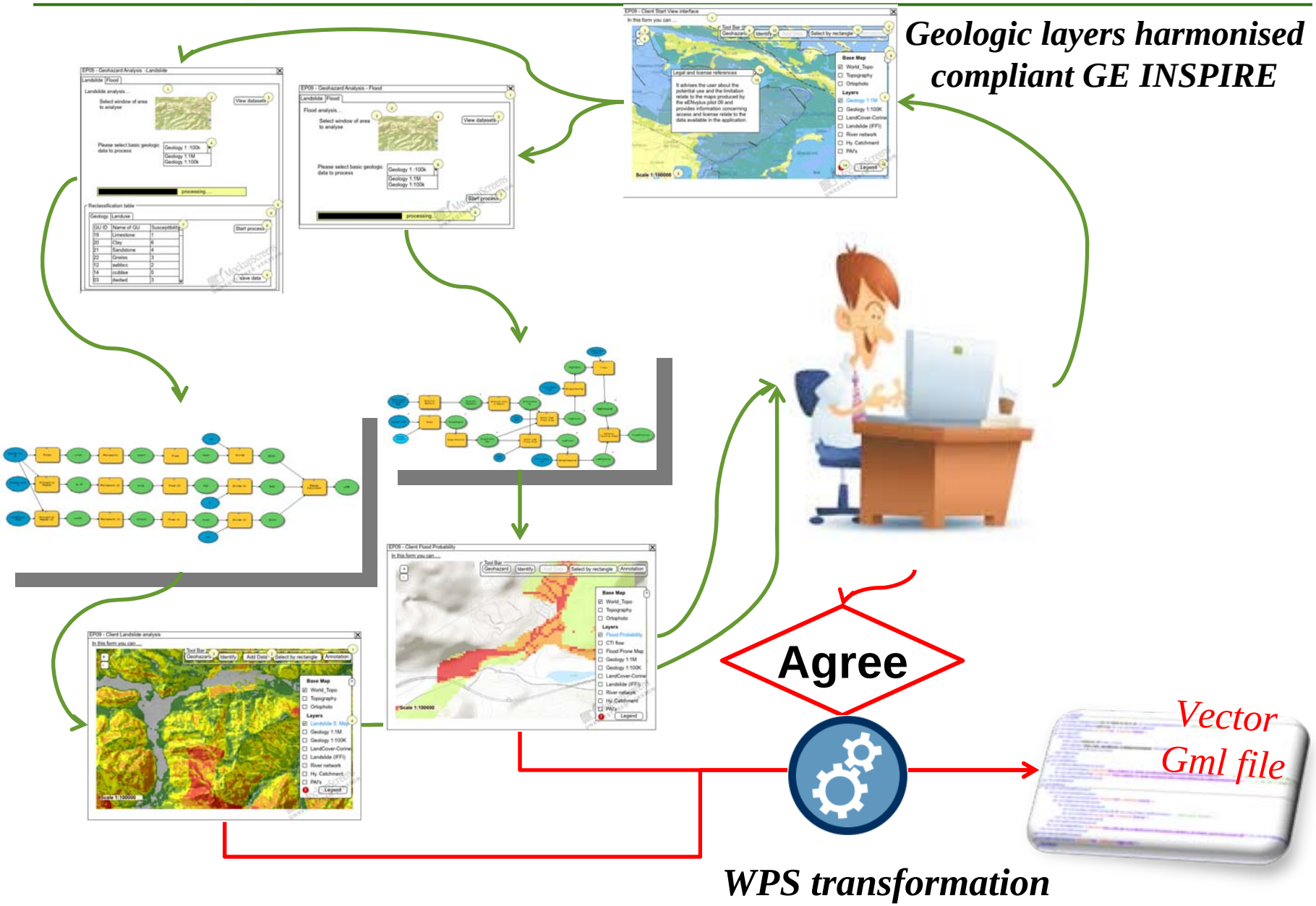
HazardArea NRZ

HazardArea NRZ

Geologic layers harmonised compliant GE INSPIRE



HazardArea NRZ



HazardArea NRZ


```
- <gml:featureMember>
  - <nz-core:HazardArea gml:id="sinergis-landslide_1429526077941_SHP.1">
    + <gml:boundedBy></gml:boundedBy>
      <nz-core:beginLifeSpanVersion>2015-05-21T17:05:14</nz-core:beginLifeSpanVersion>
      <nz-core:determinationMethod>modelling</nz-core:determinationMethod>
      <nz-core:endLifeSpanVersion nilReason="unknown" xsi:nil="true"/>
    - <nz-core:inspireId>
      - <base:Identifier>
          <base:localId>landslide_0</base:localId>
          <base:namespace>http://eenvplus.sinergis.it/geoEnvplus</base:namespace>
        </base:Identifier>
      </nz-core:inspireId>
    - <nz-core:typeOfHazard>
      - <nz-core:NaturalHazardClassification>
          <nz-core:hazardCategory xlink:href="http://inspire.ec.europa.eu/codelist/NaturalHazardCategoryValue/landslide"/>
          <nz-core:specificHazardType xlink:href="http://inspire.ec.europa.eu/codelist/SpecificHazardTypeValue/landslideSusceptibility"/>
        </nz-core:NaturalHazardClassification>
      </nz-core:typeOfHazard>
    - <nz-core:geometry>
      - <gml:Polygon gml:id="fid_0">
        - <gml:exterior>
          - <gml:LinearRing>
            - <gml:posList>
                848617.4465789263 5164329.332521281 848879.3802223038 5164329.332521281 848879.3802223038 5164242.13081637 848661.1021861559 5164242.13081637
                848661.1021861559 5164285.731668825 848617.4465789263 5164285.731668825 848617.4465789263 5164329.332521281
              </gml:posList>
            </gml:LinearRing>
          </gml:exterior>
        </gml:Polygon>
      </nz-core:geometry>
    - <nz-core:likelihoodOfOccurrence>
      - <nz-core:LikelihoodOfOccurrence>
          <nz-core:qualitativeLikelihood nilReason="missing" xsi:nil="true"/>
        - <nz-core:quantitativeLikelihood>
          - <nz-core:QuantitativeLikelihood>
              <nz-core:probabilityOfOccurrence>133</nz-core:probabilityOfOccurrence>
```


WPS transformation:

- *Convert coverage to vector (Gap Knowledge)*
- *Map Vector to gml HArea*

Thank you for the attention!

? Questions

WP7 Leader
Carlo Cipolloni
ISPRA
carlo.cipolloni@isprambiente.it