

The coastal data in the regional and national territorial data repertory

Genova 24 Aprile 2012
Anna Cerrato - Regione Liguria



Comitato Permanente Sistemi Geografici

Supporto alle Regioni per l'implementazione del RNDT

ooo

Report

**Metadati:
analisi e validazione dei file XML**



REGIONI

REGIONI	File md trasmesso dati (D) / servizi (S)	Schema XSD	Problemi riscontrati	Recepimento modifiche
Emilia Romagna*	D/S	ISO	② ③ ⑥	in corso
Friuli Venezia Giulia*	D	ISO	② ① ⑤ ① ⑦	in corso
Lazio*	D/S	ISO	④ ② ③ ④ ⑥ ⑧	in corso
Liguria*	D/S	ISO	③ ④ ⑤ ⑥	✓
Piemonte*	D	RNDT	② ③ ⑤ ⑥	in corso
Puglia	D	RNDT	-- ⁶	–
Sardegna*	D/S	ISO	② ⑥	in corso
Toscana*	D	ISO	② ③ ⑤ ⑥	in corso
Umbria*	D	RNDT	-- ⁷	–
Valle D'Aosta*	D	ISO	① ② ③ ④ ⑥	in corso
P.A. Bolzano	D/S	ISO	④ ⑤ ⑦	in corso
P.A. Trento*	D	ISO	① ② ③	in corso

Tab. 1 – Sintesi dell'analisi dei file XML.

www.rndt.gov.it



BASE DI DATI DI INTERESSE NAZIONALE



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BENVENUTI NEL RNDT

Il Repertorio Nazionale dei Dati Territoriali è lo strumento per ricercare, attraverso i metadati, i dati territoriali - e relativi servizi - disponibili presso le pubbliche amministrazioni, per valutarne l'idoneità allo scopo e ottenere le opportune indicazioni sulle loro condizioni di accesso e utilizzo.

Che cos'è il RNDT >>

Il portale del RNDT è in continua evoluzione. Per qualsiasi segnalazione o richiesta di informazioni, [contattaci](#).



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ACCESSO AL CATALOGO
Ricerca Metadati nel RNDT



Area riservata per la PA
GESTIONE METADATI
Editor, upload e validazione




Archivio documentale RNDT
ARCHIVIO DOCUMENTI
Riferimenti tecnici e normativi

SIC Coast


Interfaccia Cartografica - Microsoft Internet Explorer provided by Regione Liguria

Batimetrie


navigazione



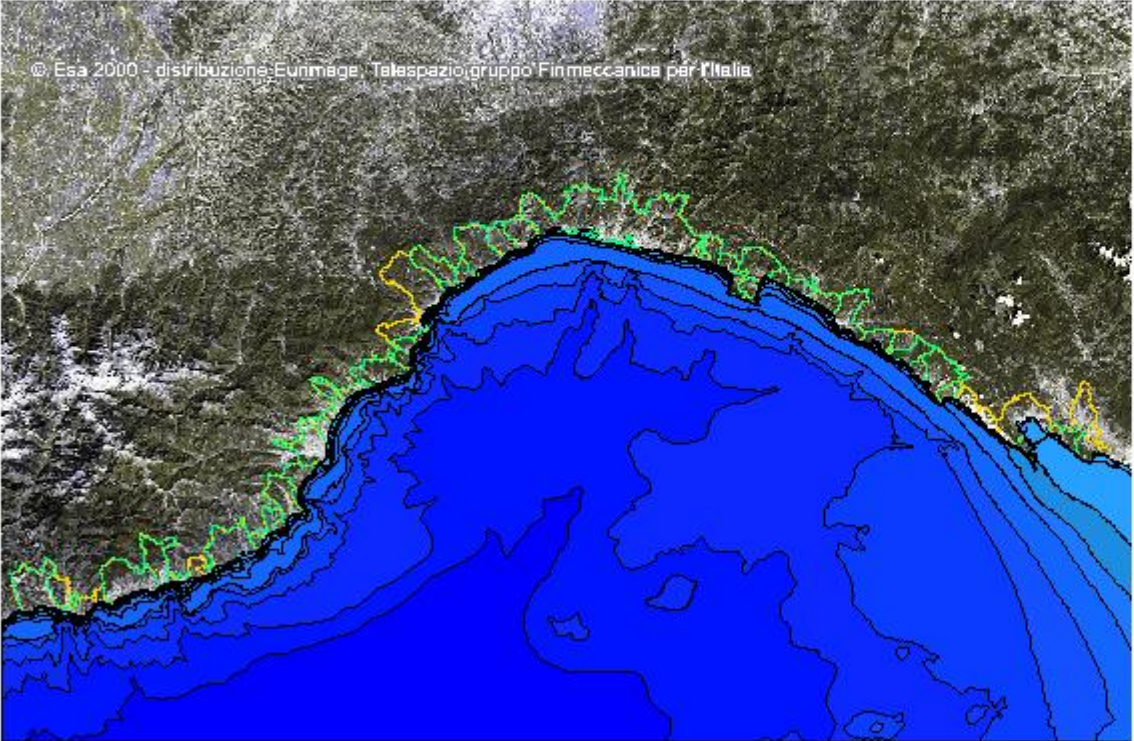
misure



avanzate



HELP



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☒ Spiagge

☒ Opere di Difesa Costiera

☒ Costa Alta

☒ PUD - Progetto Utilizzo demanio Marittimo - Stato di Progetto

☒ PUD - Progetto Utilizzo demanio Marittimo - Stato Attuale

☒ PUD - Progetto Utilizzo demanio Marittimo con Nulla Osta

☒ **Batimetrie**

☒ Comuni Costieri

☒ Ortoimmagine Satellitare

CTR 1:5000

Ortofoto IT2000 - sc. 1:10000

Scala 1: 1391400



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▶ [carte tematiche](#)

- ▼ [acque interne](#)
- ▼ [acque marine](#)
- ▼ [agricoltura](#)
- ▼ [ambiente](#)
- ▼ [biologia](#)
- ▼ [climatologia e meteorologia](#)
- ▼ [economia](#)
- ▼ [informazioni geoscientifiche](#)
- ▼ [pianificazione del territorio e catasto](#)
- ▼ [reti, infrastrutture e servizi di comunicazione](#)
- ▼ [salute](#)
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▶ [immagini satellitari e aeree](#)

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PUD - Progetto Utilizzo Demanio Marittimo

[DOWNLOAD/CONVERSIONE](#)

[VISUALIZZATORE CARTOGRAFICO](#)

[SERVIZIO WMS](#)

[SERVIZIO WFS](#)

[METADATI](#)

Origine del dato:	Digitalizzazione da cartografie comunali
Anno:	2012
Scala:	1:5000
Rappresentazione:	GAUSS BOAGA - MERCATORE TRASVERSO CONFORME DI GAUSS
Ellissoide e Datum:	INTERNAZIONALE (HAYFORD) - ROMA40
Copertura:	Costa ligure
Note:	Le aree sono state acquisite sulla base dei Progetti di Utilizzo del Demanio Marittimo, introdotti dalla L.13 del 1999 e realizzati dai Comuni: per ogni PUD è stato acquisito stato di fatto e progetto. L'aggiornamento dei Piani avviene sulle base delle indicazioni della L.R. 22 del 14/07/2008 che aggiorna la legge precedente. Il livello fa parte del Sistema Informativo della Costa consultabile dal sito www.regione.liguria.it/territorioambienteinfrastrutture/costa/sicoast

Livelli

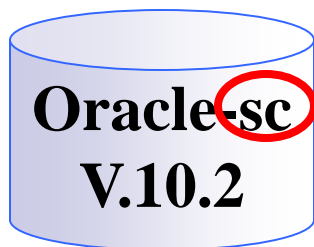
- PUD - Progetto Utilizzo Demanio Marittimo - Stato Attuale
- PUD - Progetto Utilizzo Demanio Marittimo - Stato di Progetto
- PUD - Progetto Utilizzo Demanio Marittimo con Nulla Osta


```
<?xml version="1.0" encoding="UTF-8" ?>
<gmd:MD_Metadata xsi:schemaLocation="http://www.isotc211.org/2005/gmd http://schemas.opengis.net/csw/2.0.2/profiles/apiso/1.0.0/apiso.xsd"
  xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:cat="http://www.opengis.net/cat/csw" xmlns:csw="http://www.opengis.net/cat/csw/2.0.2"
  xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmi="http://www.isotc211.org/2005/gmi" xmlns:gmx="http://www.isotc211.org/2005/gmx"
  xmlns:srv="http://www.isotc211.org/2005/srv" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:ins="http://www.inspire.org" xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:gml="http://www.opengis.net/gml">
- <gmd:fileIdentifier>
  <gco:CharacterString>r_liguri:D.1223.2012-04-23</gco:CharacterString>
</gmd:fileIdentifier>
- <gmd:language>
  <gmd:LanguageCode
    codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resources/Codelist/ML_gmxCodelists.xml#LanguageCode"
    codeListValue="ita">ita</gmd:LanguageCode>
</gmd:language>
- <gmd:characterSet>
  <gmd:MD_CharacterSetCode codeList="http://www.isotc211.org/2005/resources/CodeList/gmxCodelists.xml#MD_CharacterSetCode"
    codeListValue="8859part1">8859part1</gmd:MD_CharacterSetCode>
</gmd:characterSet>
- <gmd:parentIdentifier>
  <gco:CharacterString>r_liguri:D.1223.2012-04-23</gco:CharacterString>
</gmd:parentIdentifier>
- <gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeList="http://www.isotc211.org/2005/resources/CodeList/gmxCodelists.xml#MD_ScopeCode"
    codeListValue="dataset">dataset</gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
- <gmd:contact>
- <gmd:CI_ResponsibleParty>
  - <gmd:organisationName>
    <gco:CharacterString>REGIONE LIGURIA - Settore Sistemi Informativi e Telematici Regionali</gco:CharacterString>
  </gmd:organisationName>
  - <gmd:contactInfo>
  - <gmd:CI_Contact>
    - <gmd:address>
      - <gmd:CI_Address>
        - <gmd:electronicMailAddress>
          <gco:CharacterString>infoter@regione.liguria.it</gco:CharacterString>
        </gmd:electronicMailAddress>
        </gmd:CI_Address>
      </gmd:address>
      <gmd:onlineResource>
```

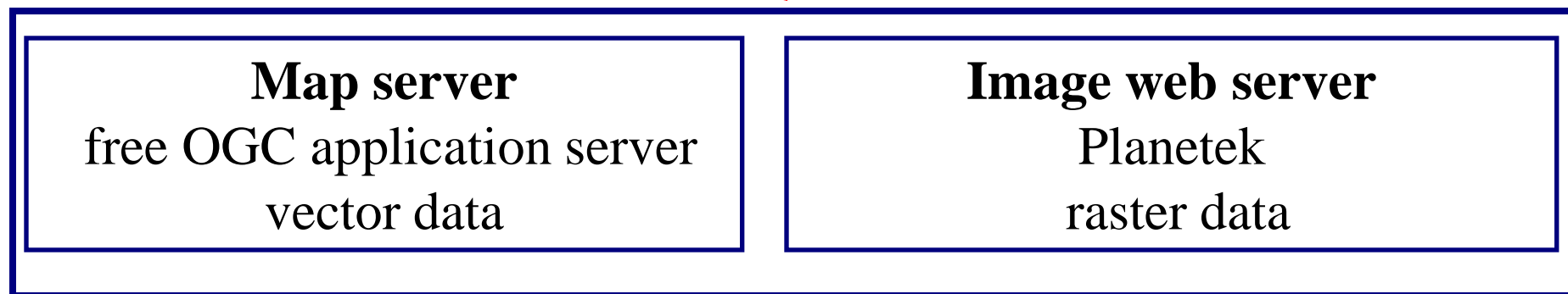
Experience from data providers in using transformation tools

**4 items- project NatureSDIplus:
3 for Protected Sites and
1 for Biogeographical region**

Geographic data



Meta data



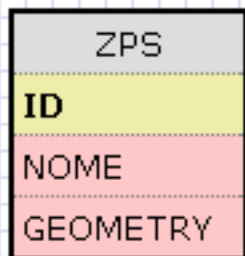
WEBGIS - CARTOWEBNET

Transformation

Starting Situation

Oracle Spatial database with the following features (tables):

- **Sites of Community Importance: SIC**
- **Special Protection Areas: ZPS**
- **Regional Protected Areas: AP**



ZPS
ID
NOME
GEOMETRY

The table ZPS had the following fields:

- ID (varchar) : id of the area (PK)
- NOME (varchar) : name of the area
- GEOMETRY (sdo_geometry): geometry of the area

Target

- GML file conforming to the INSPIRE Application Schema: Protected Sites “simple” mode.

«featureType» ProtectedSite
+ applicationSchema: ApplicationSchema\Value + geometry: GM_Object + inspireID: Identifier
«avoidable»
+ legalFoundationDate: DateTime + legalFoundationDocument: CI_Citation + siteDesignation: DesignationType [1..*] + siteName: GeographicalName [0..*] + siteProtectionClassification: ProtectionClassification\Value [1..*]

Schema transformation

■ The tools used to carry out the schema mapping:

□ **SafeSoftware FME**: ETL extraction, transformation, load

□ **Altova Mapforce**: graphical data mapping, conversion, and integration tool that maps data between any combination of XML

FME

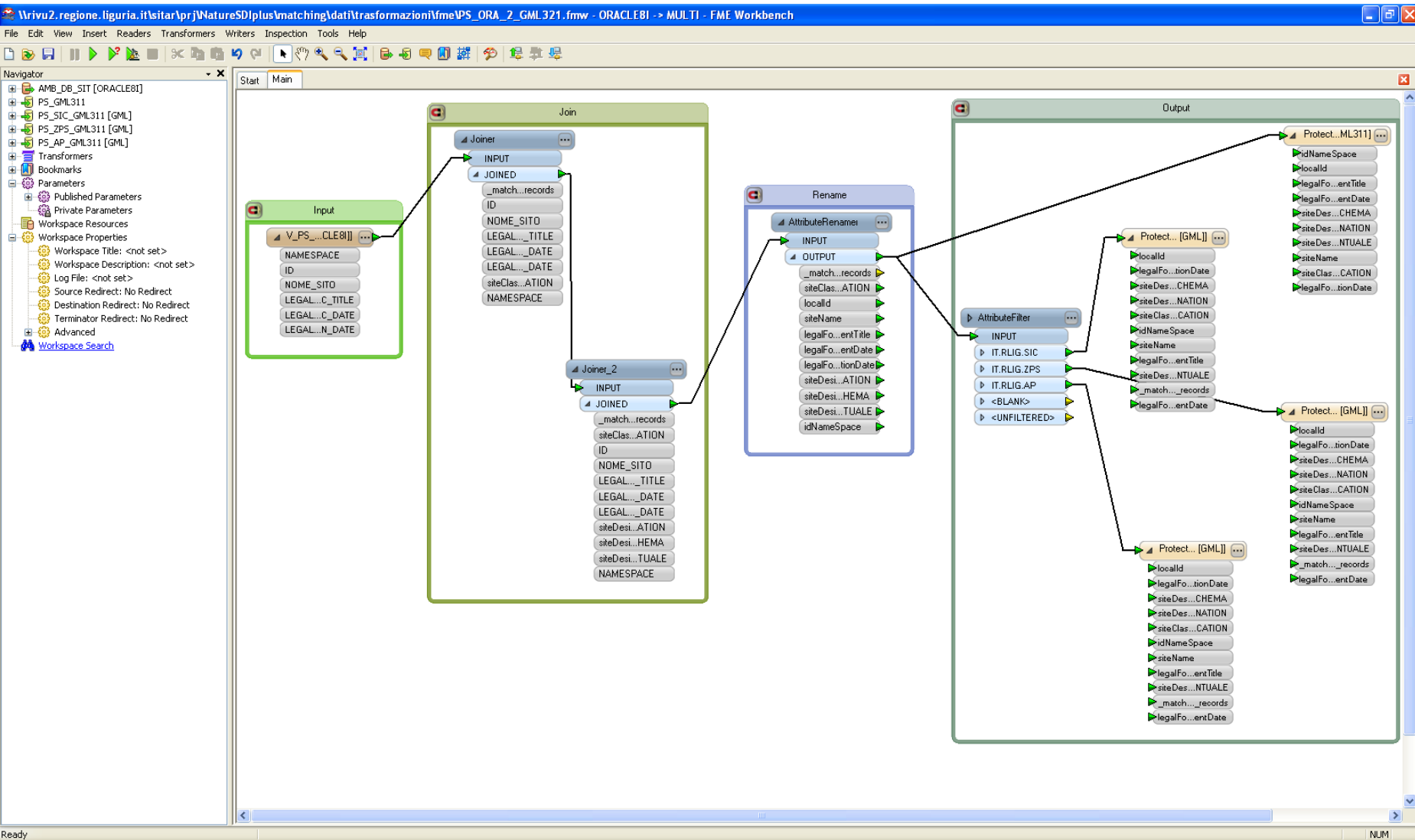
- We used FME to actually perform the transformation of the data.
- FME is an ETL tool that allows the transformation of data from various formats and the definition of complex operations on the data.
- An FME workbench has been setup to execute the transformation from the source data to a temporary GML.

FME

■ **FME:** Oracle SC -> GML 3.1.1. non Standard INSPIRE

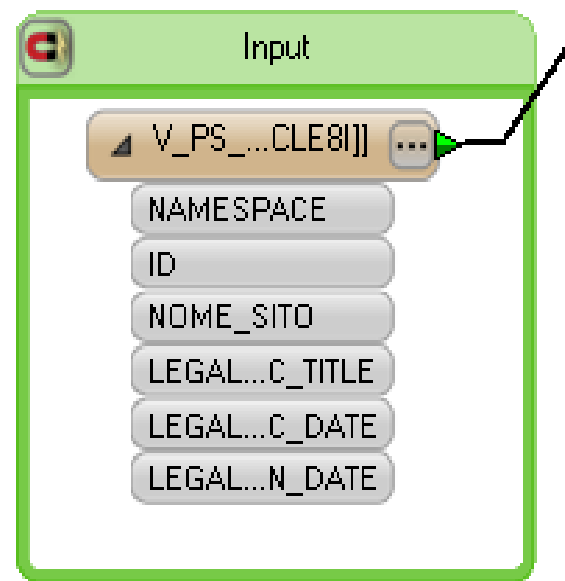
■ **Altova Mapforce:** GML 3.1.1. non Standard INSPIRE ->
GML 3.2.1. Standard INSPIRE

FME Workbench



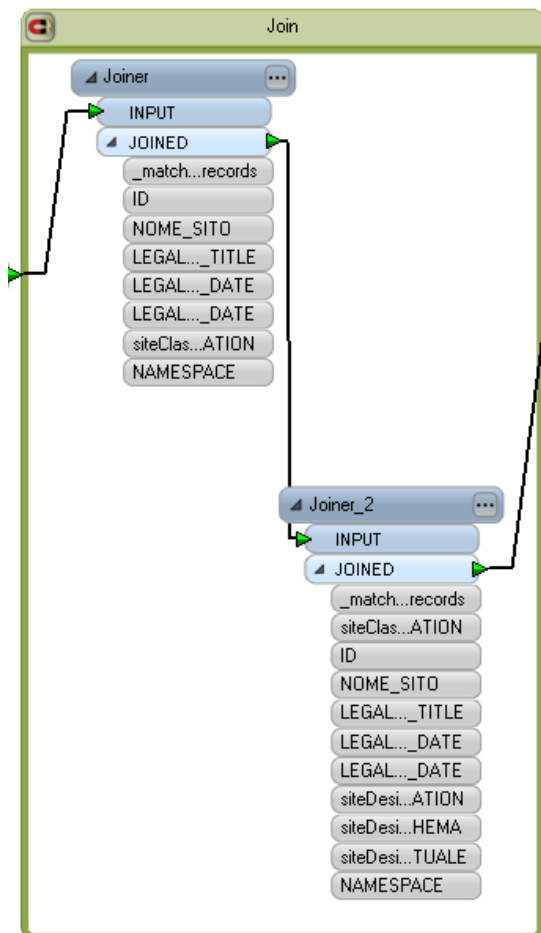
Input

Oracle view
V_PS_PROTECTED_SITES



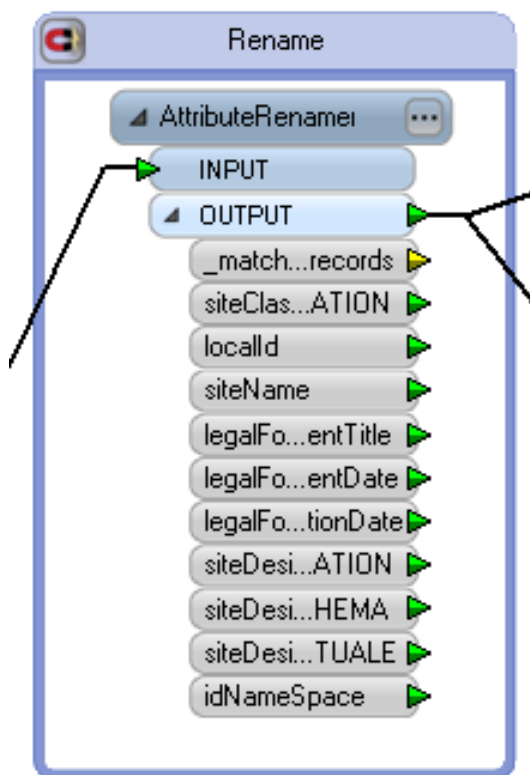
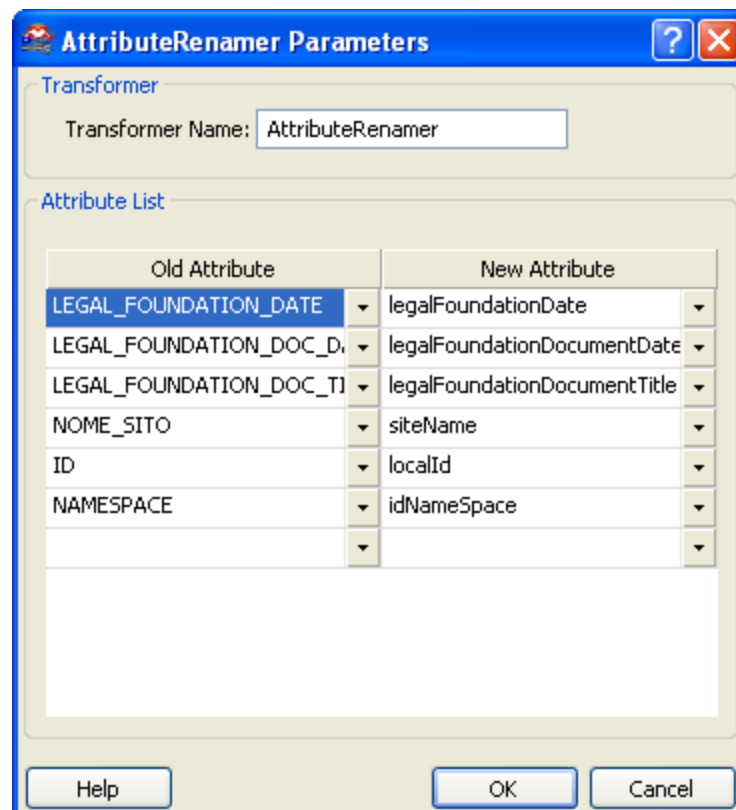
Join

Join to compose the site classification and site designation of type 1:M (create a list of classification and designation as children of each Protected Site)



AttributeRenamer

Attribute renaming to the INSPIRE specification.

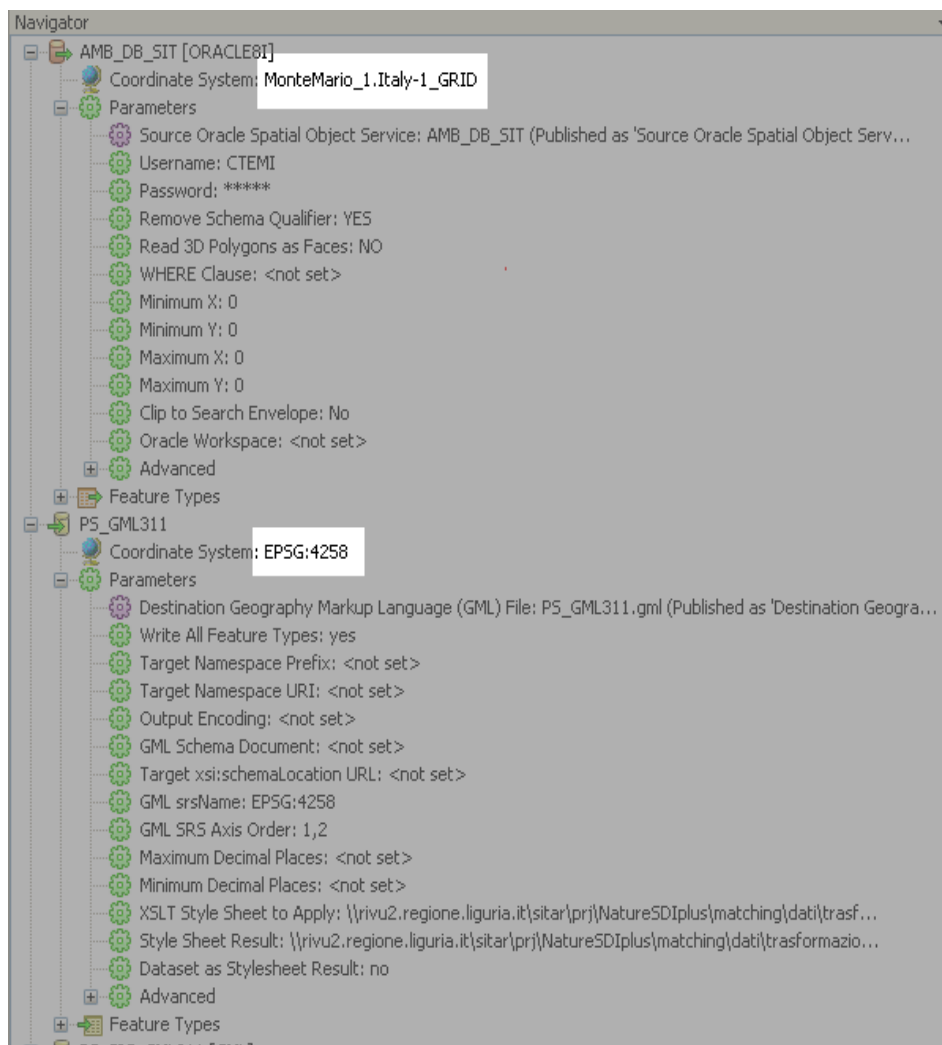
The 'AttributeRenamer Parameters' dialog box shows the 'Transformer' section with the 'Transformer Name' set to 'AttributeRenamer'. The 'Attribute List' section contains a table mapping old attributes to new attributes.

Old Attribute	New Attribute
LEGAL_FOUNDATION_DATE	legalFoundationDate
LEGAL_FOUNDATION_DOC_D	legalFoundationDocumentDate
LEGAL_FOUNDATION_DOC_T	legalFoundationDocumentTitle
NOME_SITO	siteName
ID	localId
NAMESPACE	idNameSpace

Buttons: Help, OK, Cancel

CRS Conversion

From the national
Gaus-Boaga system
(MonteMario_1.Italy-
1_GRID) to ETRF89
(EPSG:4258) using
official IGM grid files
to guarantee the
highest level of
precision



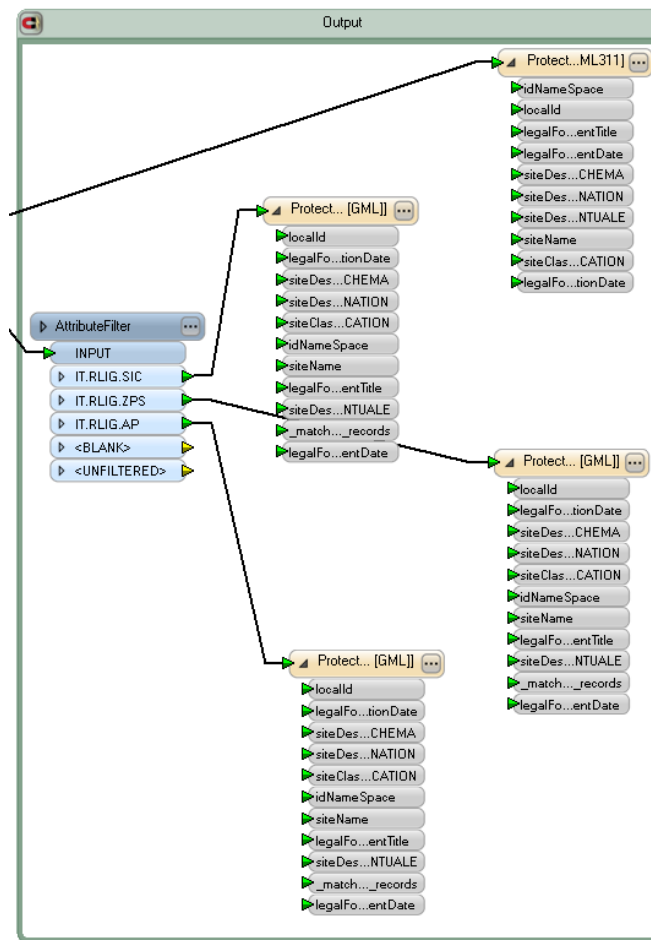
Temporary GML 3.1.1 files

IT.RLIG.60.gml, contains the “Special Protection Areas” dataset.

IT.RLIG.623.gml, contains the “Sites of Community Importance” dataset.

IT.RLIG.1400.gml, contains the “Regional Protected Areas” dataset

PS.ProtectedSite.gml, contains all the 3 datasets.



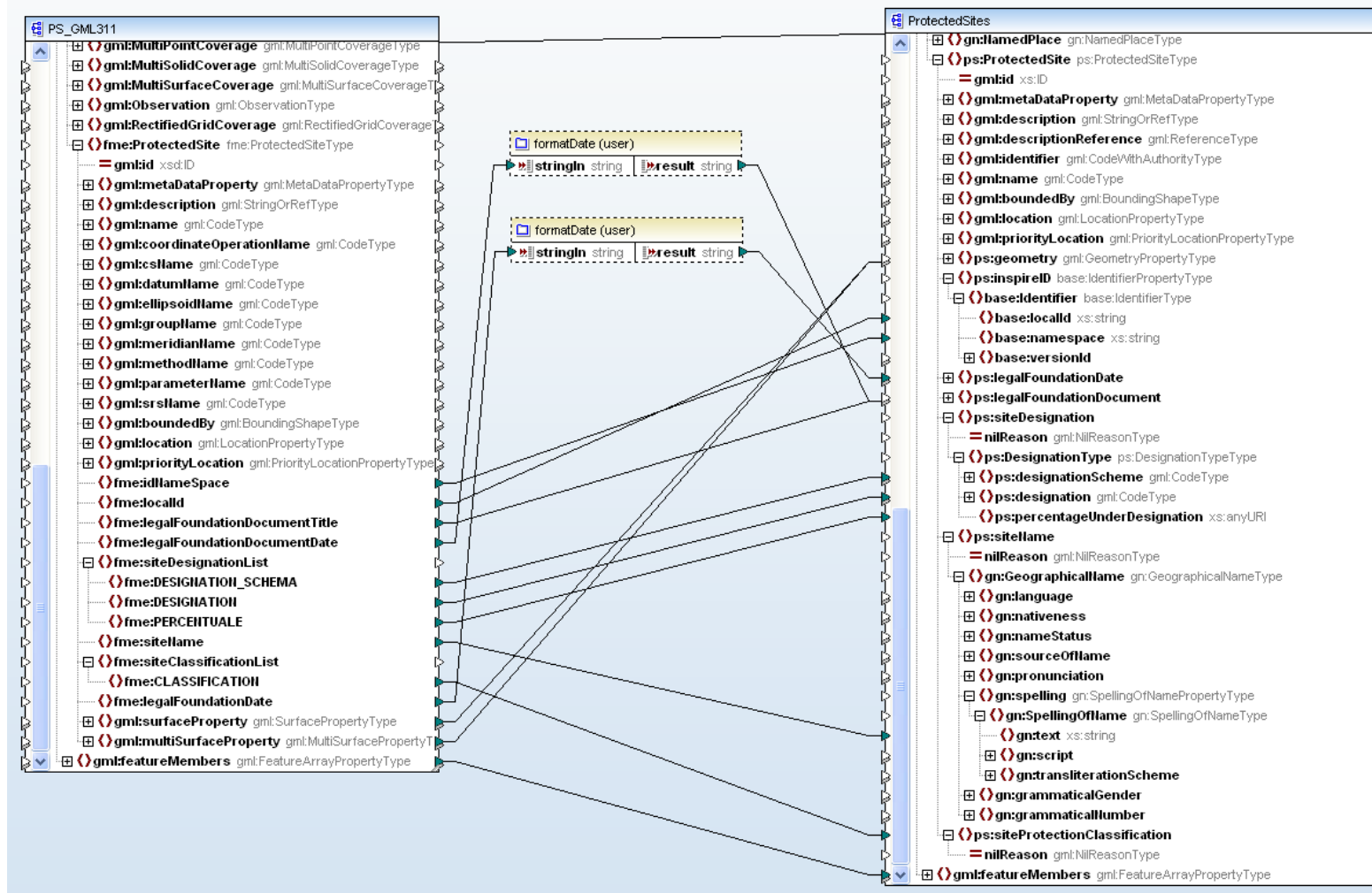
XSLT

- FME 2010 is limited in the XML/GML support
 - ☐ **Does not allow the user to define a custom schema (xsd: specify the xml structure to read it) for the output**
 - ☐ **Does not support GML V 3.2.1**
- ☐ The new version of FME (2011) supports the 3.2.1 GML and allows complex transformations on the GML. So in the future it should be possible to implement the entire transformation using FME, without the need of developing an xslt.

Mapforce

- We had to develop a XSLT to transform the 3.1.1 GML generated by FME to a 3.2.1 GML with the correct Application Schema (INSPIRE compliant).
- To develop the XSLT we used Altova Mapforce.

■ Mapforce is a visual tool that allows user to visually define the mapping between different schemas and to perform the transformations.



After defining the mapping rules Mapforce can generate an XSLT file that accomplish the transformation.

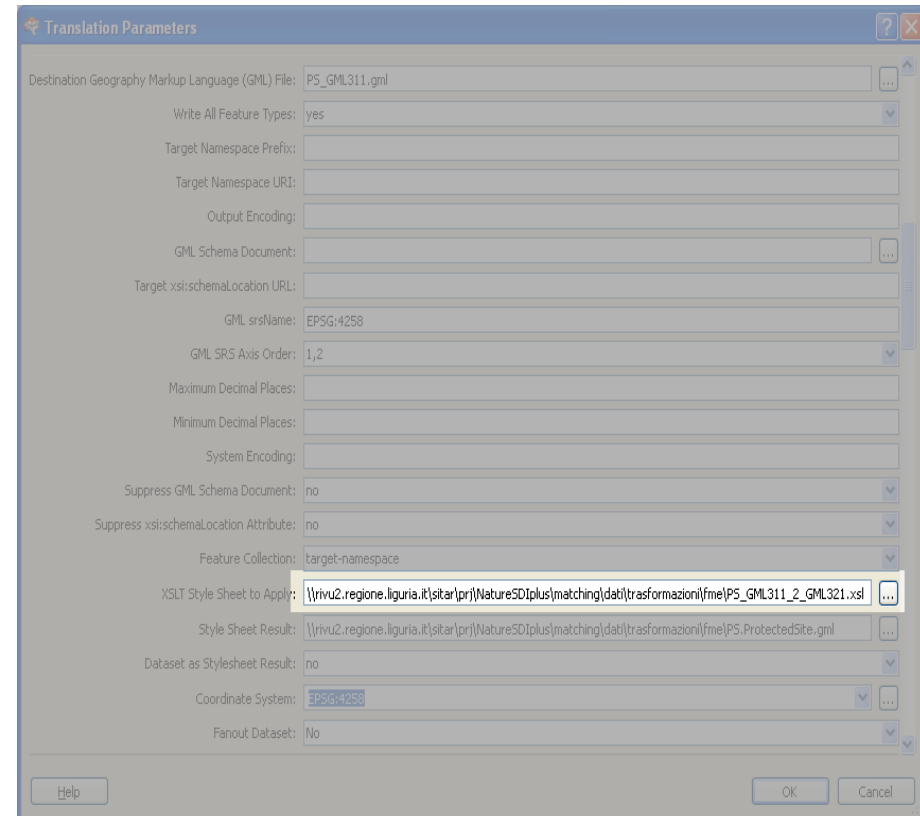
```

12 <xsl:output method="xml" encoding="UTF-8" indent="yes"/>
13 <xsl:template match="/gml2:FeatureCollection">
14   <gml:FeatureCollection>
15     <xsl:attribute name="xsi:schemaLocation">
16       <xsl:sequence select="http://www.opengis.net/gml/3.2 M:InspireData/schemas/ProtectedSites.xsd"/>
17     </xsl:attribute>
18     <xsl:for-each select="gml2:featureMember">
19       <gml:featureMember>
20         <ProtectedSite>
21           <geometry>
22             <inspireID>
23               <base:Identifier>
24             </inspireID>
25           </inspireID>
26           <xsl:for-each select="fme:ProtectedSite">
27             <xsl:for-each select="fme:legalFoundationDate">
28               </xsl:for-each>
29             <legalFoundationDocument>
30               <gmd:CI_Citation>
31                 <gmd:title>
32                   <xsl:for-each select="fme:ProtectedSite">
33                     <xsl:for-each select="fme:legalFoundationDocumentTitle">
34                       <gco:CharacterString>
35                         <xsl:sequence select="xs:string()"/>
36                       </gco:CharacterString>
37                     </xsl:for-each>
38                   </xsl:for-each>
39                 </gmd:title>
40                 <gmd:date>
41                   <gmd:CI_Date>
42                     <gmd:date>
43                       <xsl:for-each select="fme:ProtectedSite">
44                         <xsl:for-each select="fme:legalFoundationDocumentDate">
45                           </xsl:for-each>
46                         <gmd:date>
47                           <gmd:CI_Date>
48                             <gmd:date>
49                               </gmd:date>
50                             </gmd:CI_Date>
51                           </gmd:date>
52                         </gmd:CI_Citation>
53                       </legalFoundationDocument>
54                     </siteDesignation>
55                     <DesignationType>
56                       <xsl:for-each select="fme:ProtectedSite">
57                         <xsl:for-each select="fme:siteDesignationList">
58                           <xsl:for-each select="fme:DESIGNATION_SCHEMA">
59                             <designationScheme>
60                               <xsl:sequence select="xs:string()"/>
61                             </designationScheme>
62                           </xsl:for-each>
63                         </xsl:for-each>
64                       </xsl:for-each>
65                     <xsl:for-each select="fme:ProtectedSite">
66                       <xsl:for-each select="fme:siteDesignationList">
67                         <xsl:for-each select="fme:DESIGNATION">
68                           <designation>
69                             <xsl:sequence select="xs:string()"/>

```

FME + XSLT

- In FME it's possible to define a xml transformation to apply to the output GML(GML3.1.1. to GML3.2.1.)
- So, after having developed the xslt, we have included the transformation in the FME workbench, in order to have a single auto-consistent tool to generate the INSPIRE GML3.2.1. file.



GML

■ The result of the transformation are the following GML files:

- ☐ IT.RLIG.60.gml, contains the “Special Protection Areas” dataset.
- ☐ IT.RLIG.623.gml, contains the “Sites of Community Importance” dataset.
- ☐ IT.RLIG.1400.gml, contains the “Regional Protected Areas” dataset
- ☐ PS.ProtectedSite.gml, contains all the 3 datasets.

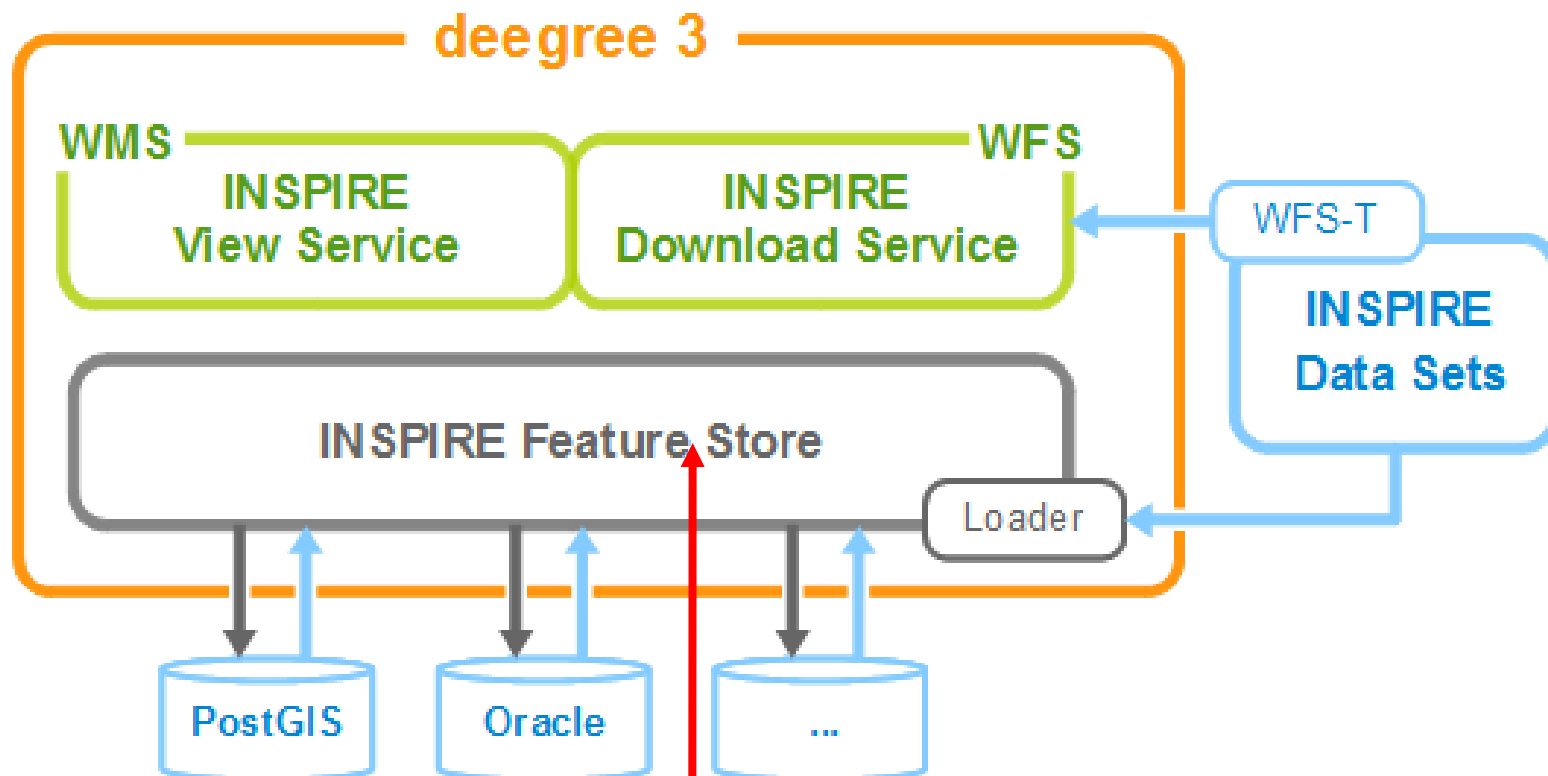
■ The files are published at the following address:

- ☐ <http://www.cartografiarl.regione.liguria.it/InspireData/>

OGC Services

- OGC web services (WMS/WFS/CSW) have been set up using deegree3
- deegree is a geospatial application server with implementations of OGC Web Services.
- It is open source, Java , standards-compliant (OGC, ISO).
- The latest version (deegree3) comes with a preconfigured setup for implementing INSPIRE View (WMS) and Download (WFS) Services for all Annex I data themes.

deegree3 inspireNode



GML3.2.1

OGC Services: configuration

- The WFS and CSW configuration is straightforward as long as the data loaded in the feature store is a valid INSPIRE GML (i.e. the GML conforms to an INSPIRE Application Schema) or a valid metadata.
- The WMS service has been configured as follows:
- 4 WMS layers have been defined:
 - The first layer corresponds to the INSPIRE theme “ProtectedSite” and represent the entire Dataset. This layer is styled using the INSPIRE specifications
 - The other 3 layers correspond to the original 3 datasets (SIC, ZPS e AP). The styles for these layer use the default styles defined in the metadata repository of Regione Liguria.

Thank you!

cerrato@regione.liguria.it
www.regione.liguria.it
www.cartografia.regione.liguria.it