



Griffith: Geomatics for GeoSciences

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**Coastal and Marine Resources Centre,
University College Cork**

**Geoscience 2010 Conference
4th November 2010**



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Outline of Presentation

- **Geomatics for GeoSciences project objectives**
- **International / European context**
- **Geomatics for GeoSciences progress**

Geomatics for GeoSciences project objectives

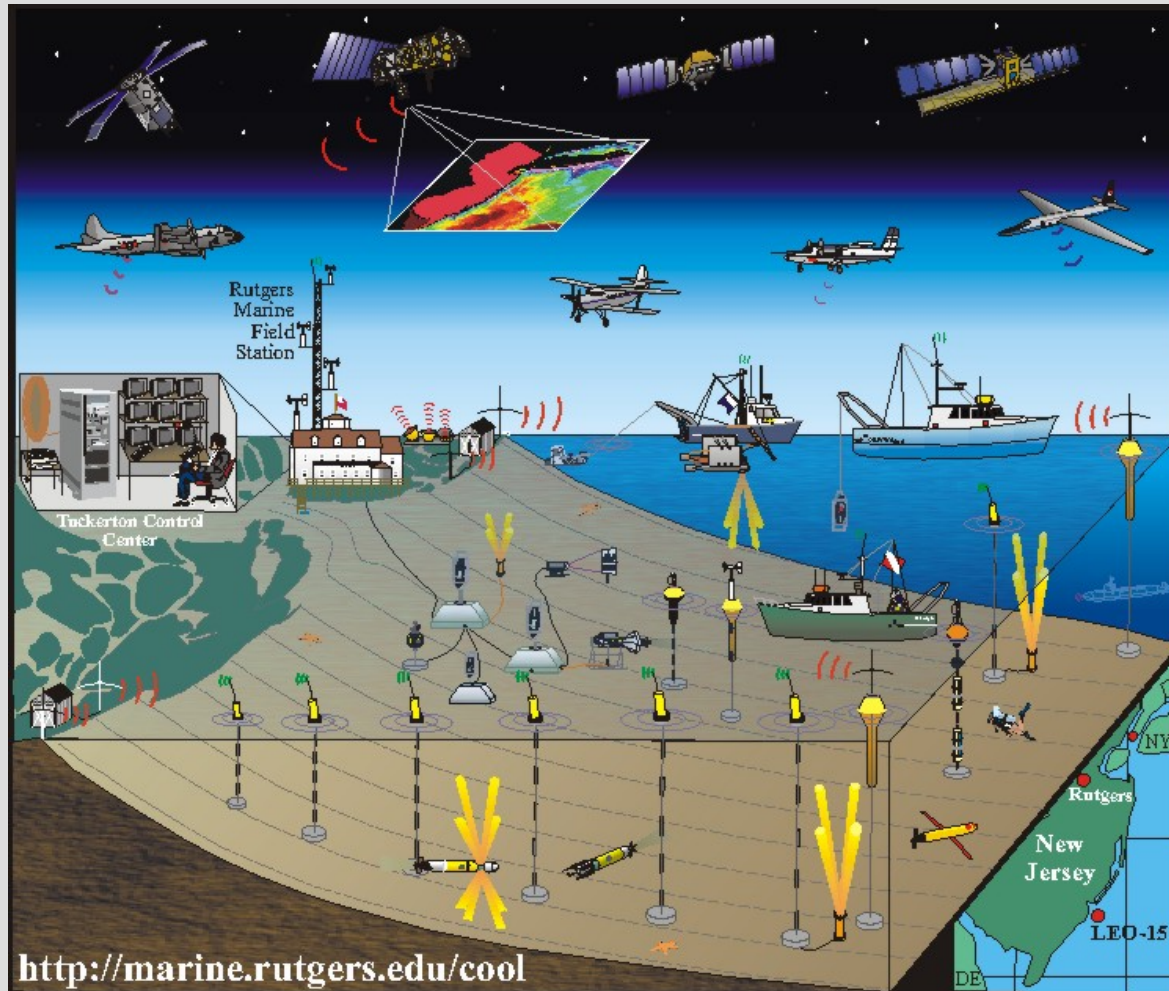
- 1. To facilitate open access to GSI data on a web enabled basis**
- 2. To achieve innovations in GeoScience data management and delivery**
- 3. To build capacity within and between the GSI and CMRC**
- 4. To engage the Irish GeoScience community by providing examples of the benefits of data sharing**

International / European Context



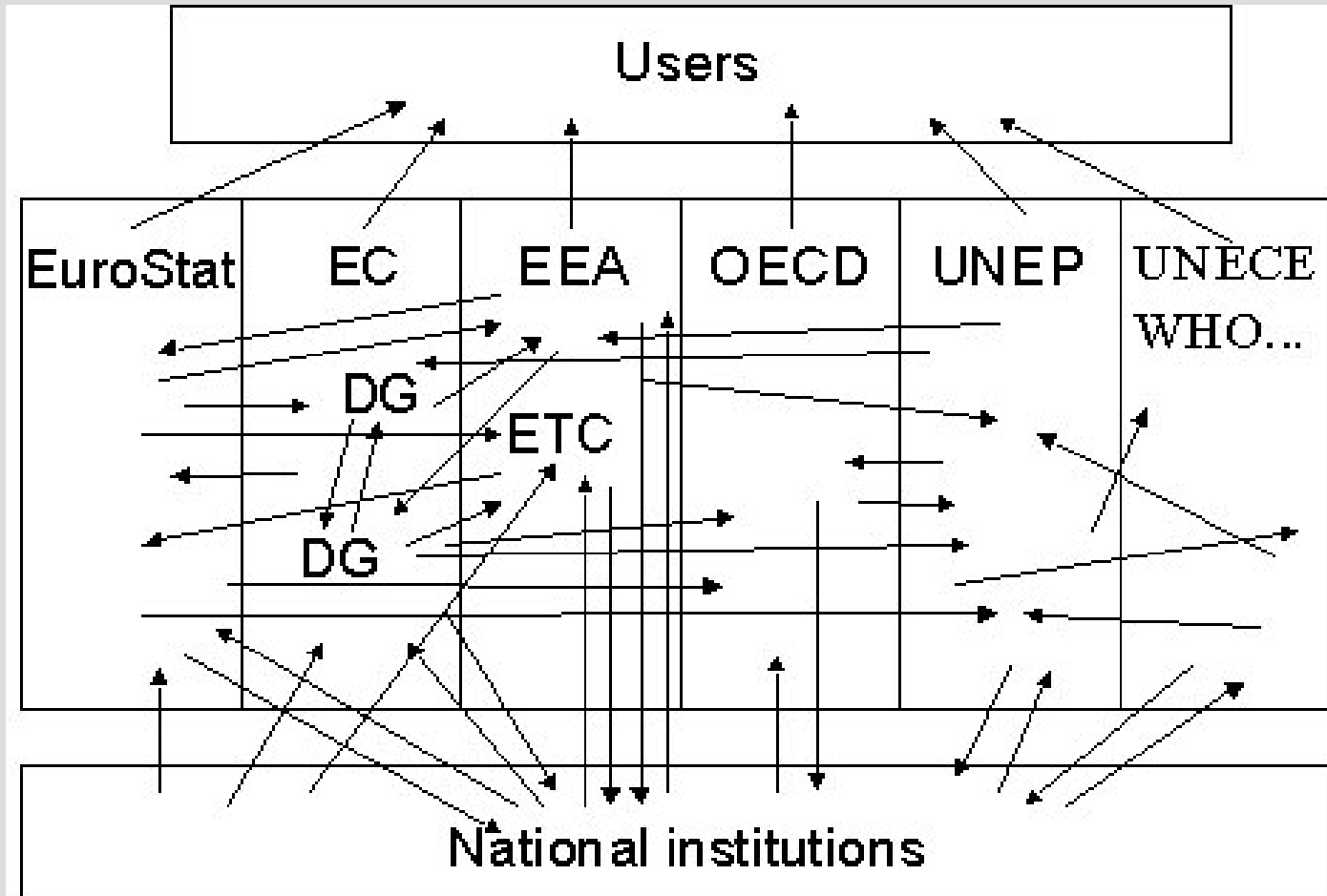
Data, data, and more data within organisations!

Organisations are becoming more data rich -
how to manage all this data?



Data sharing between organisations & users

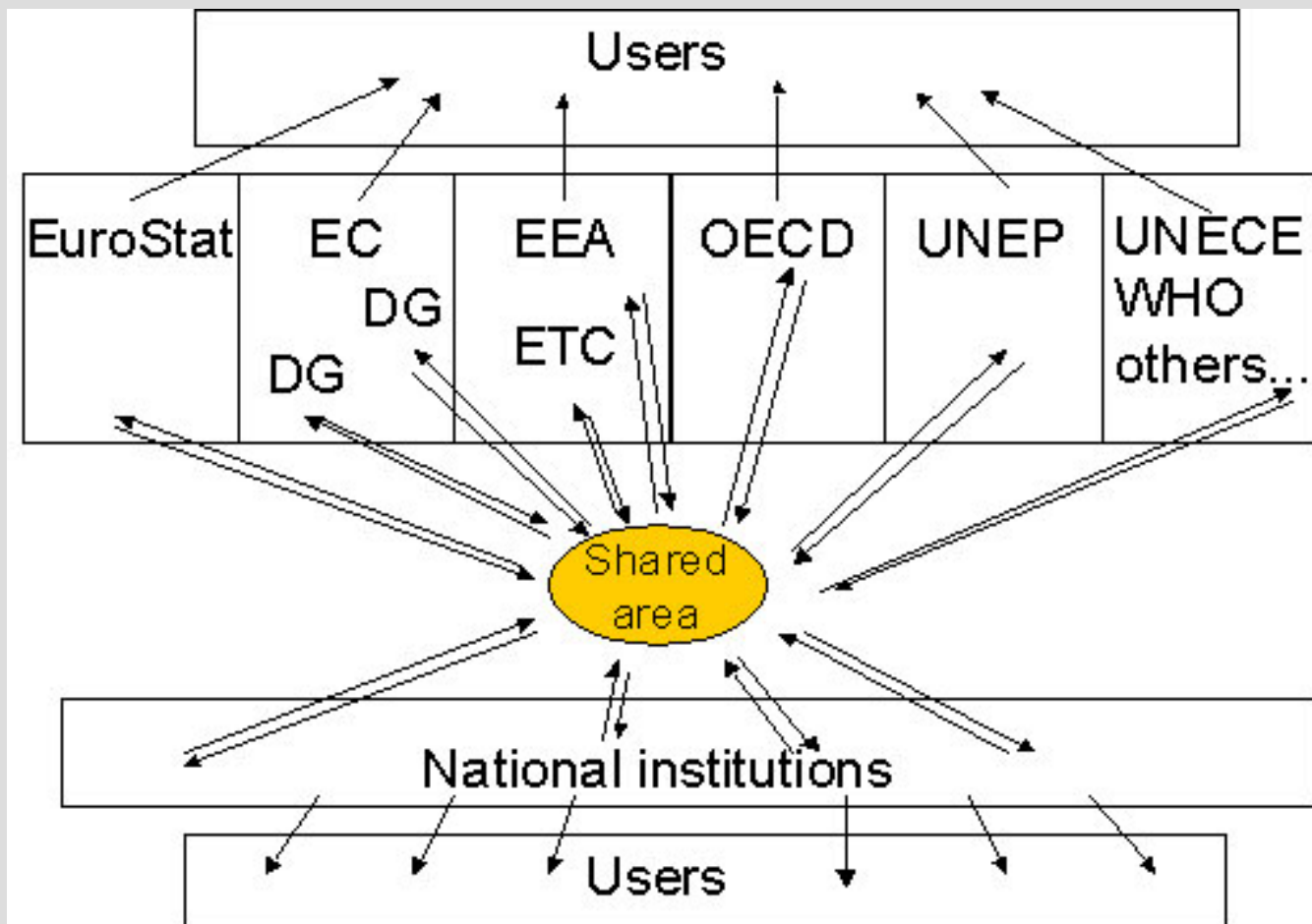
Moving away from fragmented data sharing...



(ref: <http://ec.europa.eu/environment/seis/why.htm>)

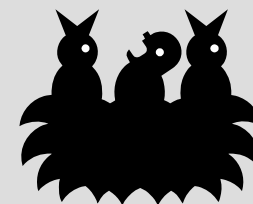
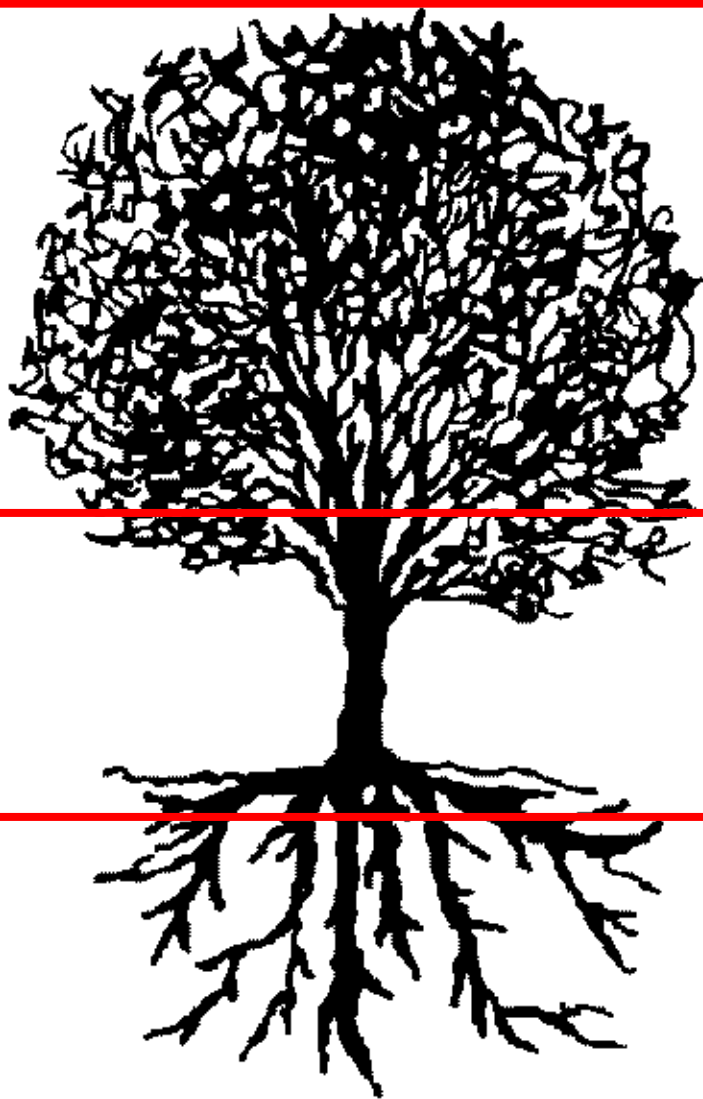
Data sharing between organisations & users

... towards more integrated data sharing systems



(ref: <http://ec.europa.eu/environment/seis/why.htm>)

How to improve means of data sharing?



**End user
applications**

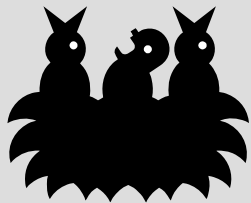
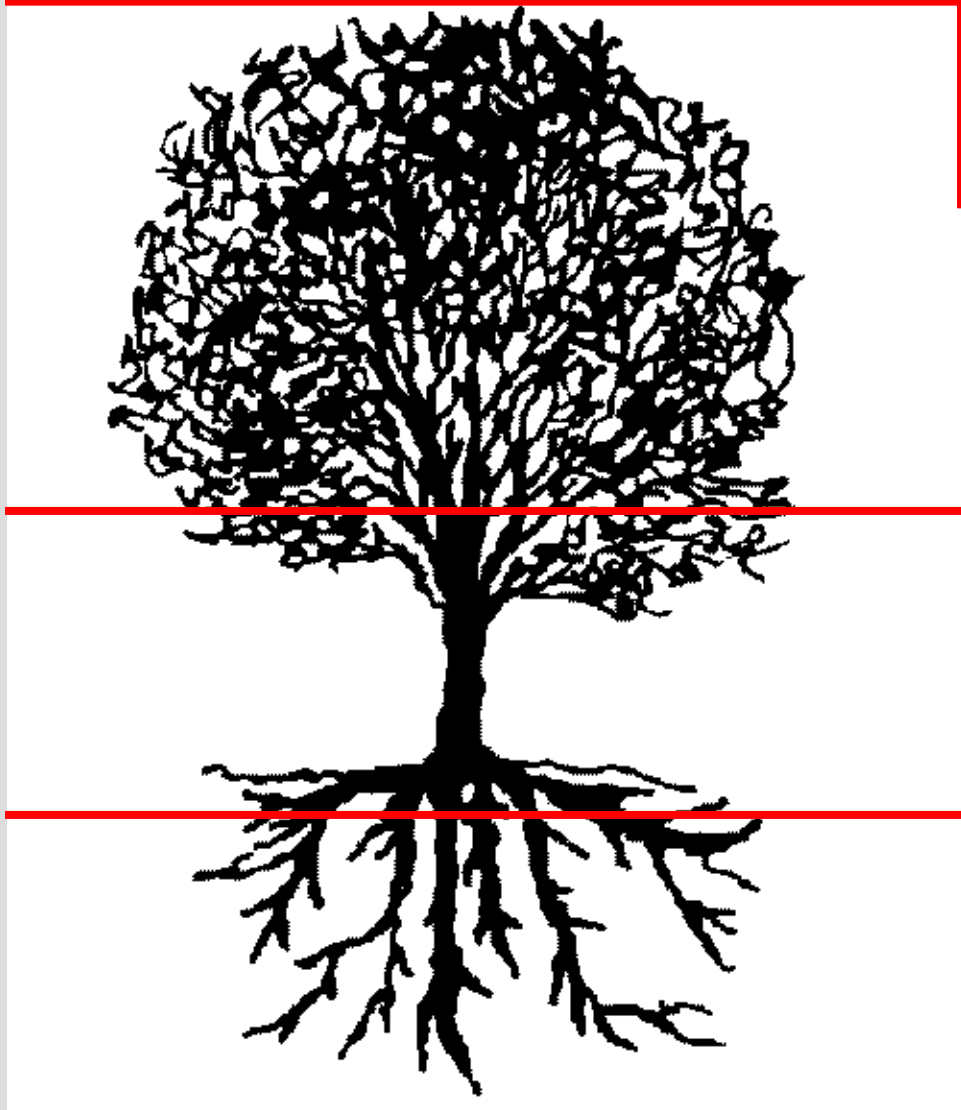
(e.g. geo-portal, DSS, EIA, risk
management, data
download, ...)

**Spatial Data
Infrastructure**

**Data held within an
organisation**

(i.e. internal databases, etc.)

How to improve means of data sharing in Europe?



End user applications
(e.g. geo-portal, DSS, EIA, risk management, data download, ...)

INSPIRE Directive:
Infrastructure for Spatial Information in the European Community

Data held within an organisation
(i.e. internal databases, etc.)

INSPIRE Directive

- **Main scope is the interoperable sharing and exchange of environmental data**
- **Legally aimed at public authorities**
 - **Expect to filter down into certain tender and research contracts (i.e. INSPIRE compliance)**
- **Technology driven**
 - **EC are empowered to develop technical specifications / implementation guidelines**
 - **These specifications based on existing international geomatics standards**
- **Roadmap: 2007 – 2019 (various milestones)**

INSPIRE Directive – Common Principles

- 1. Data should be collected only once and kept where it can be maintained most effectively.**
- 2. It should be possible to seamlessly combine spatial information from different sources and share it with many users and applications.**
- 3. It should be possible for information collected at one level/scale to be shared with all levels/scales (i.e. detailed for thorough investigations, general for strategic purposes)**

INSPIRE Directive – Common Principles

- 4. Geographic information needed for good governance at all levels should be readily and transparently available.**
- 5. Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.**

INSPIRE Spatial Data Themes

Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

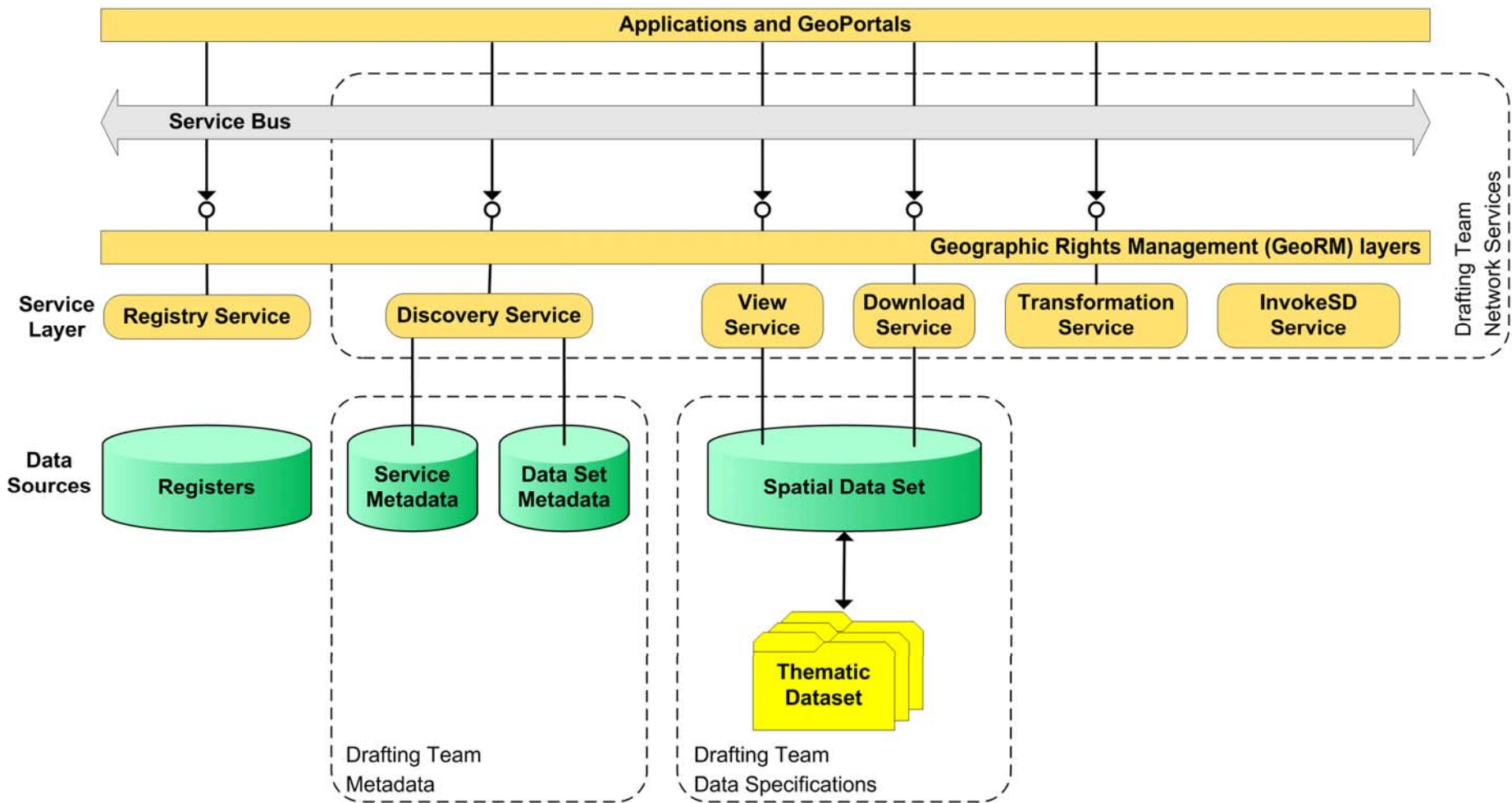
Annex II

10. Elevation
11. Land cover
12. Orthoimagery
13. Geology

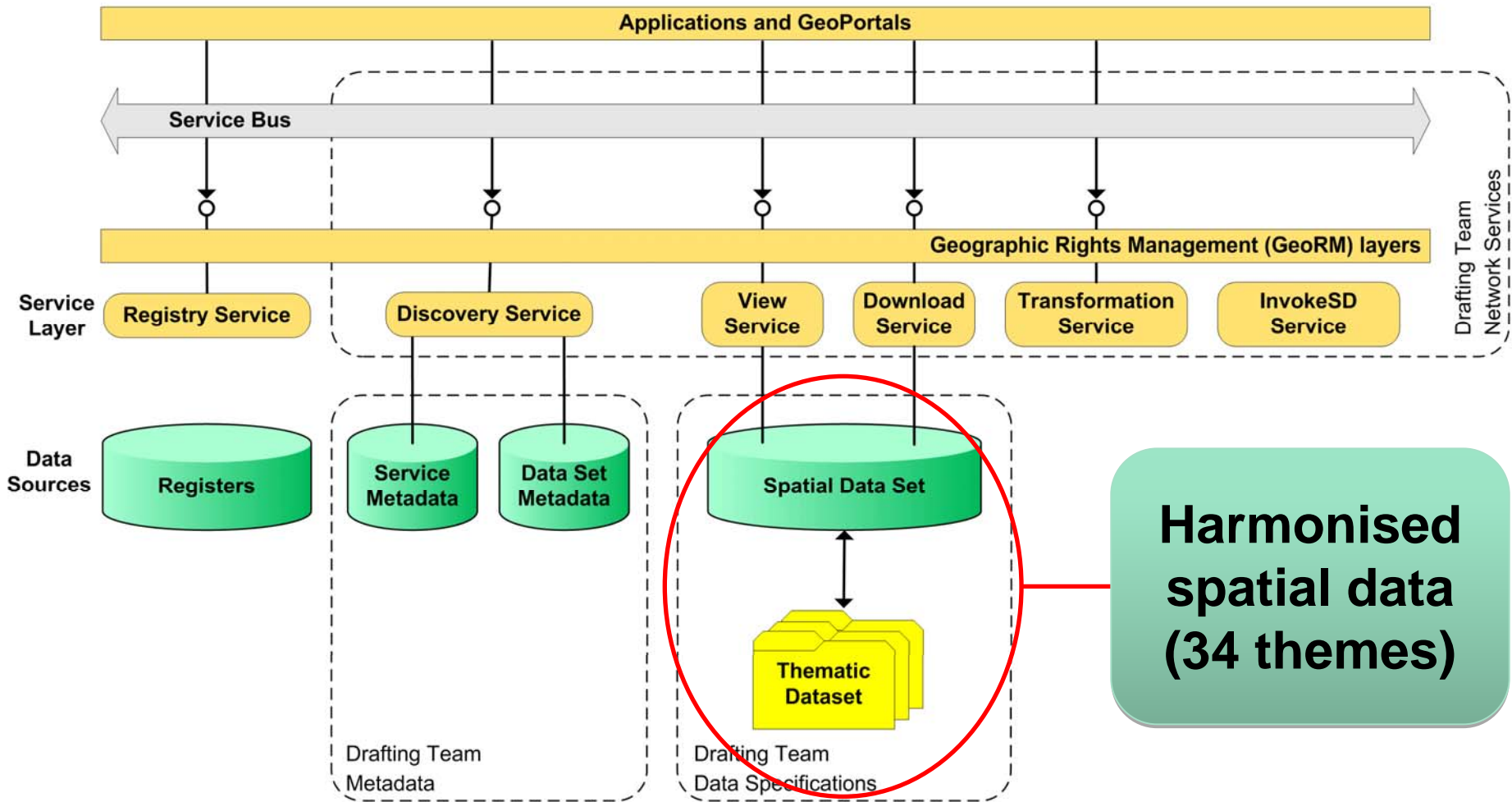
Annex III

14. Statistical units
15. Buildings
16. Soil
17. Land use
18. Human health and safety
19. Utility and governmental services
20. Environmental monitoring facilities
21. Production and industrial facilities
22. Agricultural and aquaculture facilities
23. Population distribution - demography
24. Area management / restriction / regulation zones and reporting units
25. Natural risk zones
26. Atmospheric conditions
27. Meteorological geographical features
28. Oceanographic geographical features
29. Sea regions
30. Bio-geographical regions
31. Habitats and biotopes
32. Species distribution
33. Energy resources
34. Mineral resources

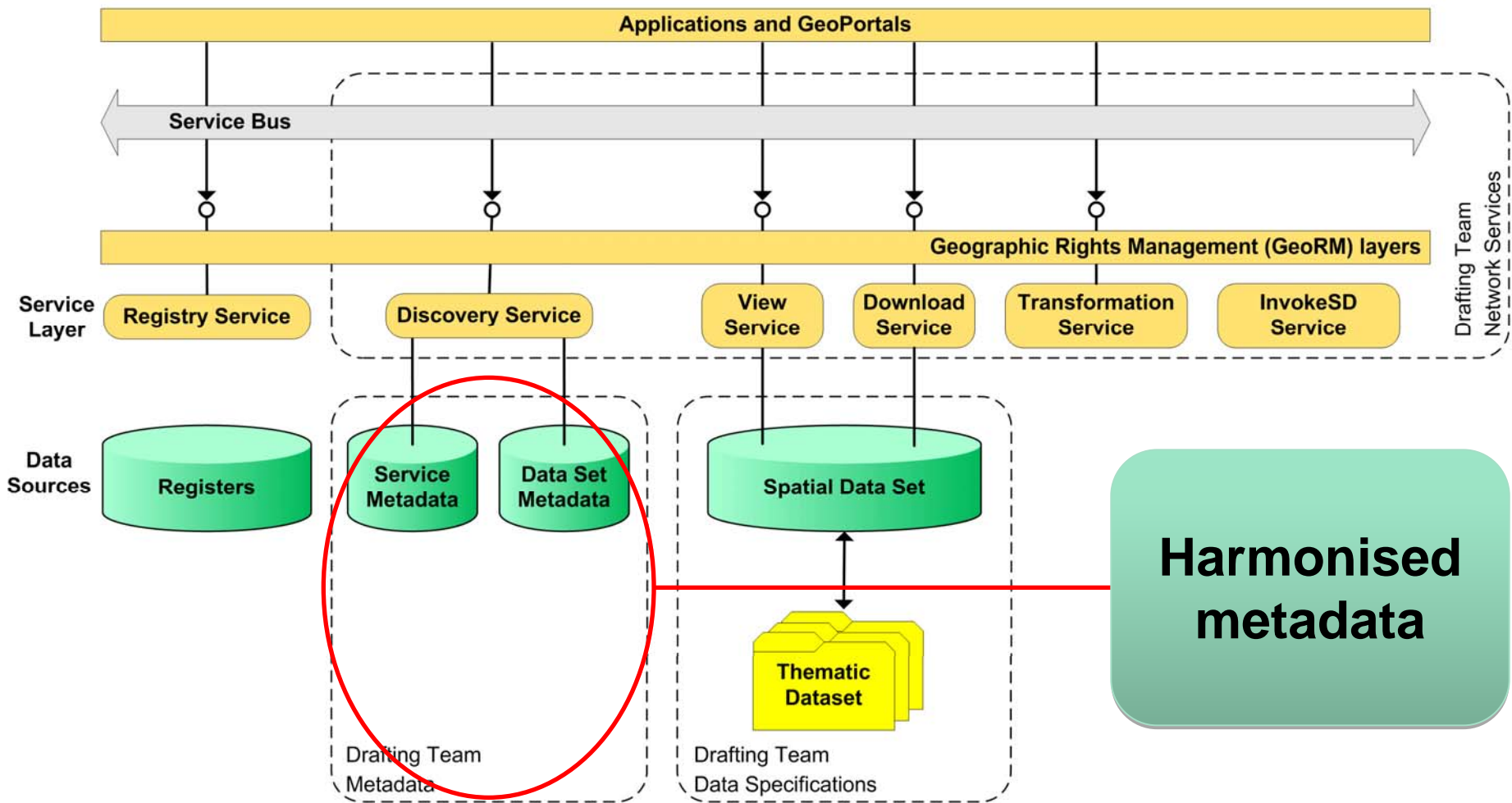
INSPIRE Directive Architecture



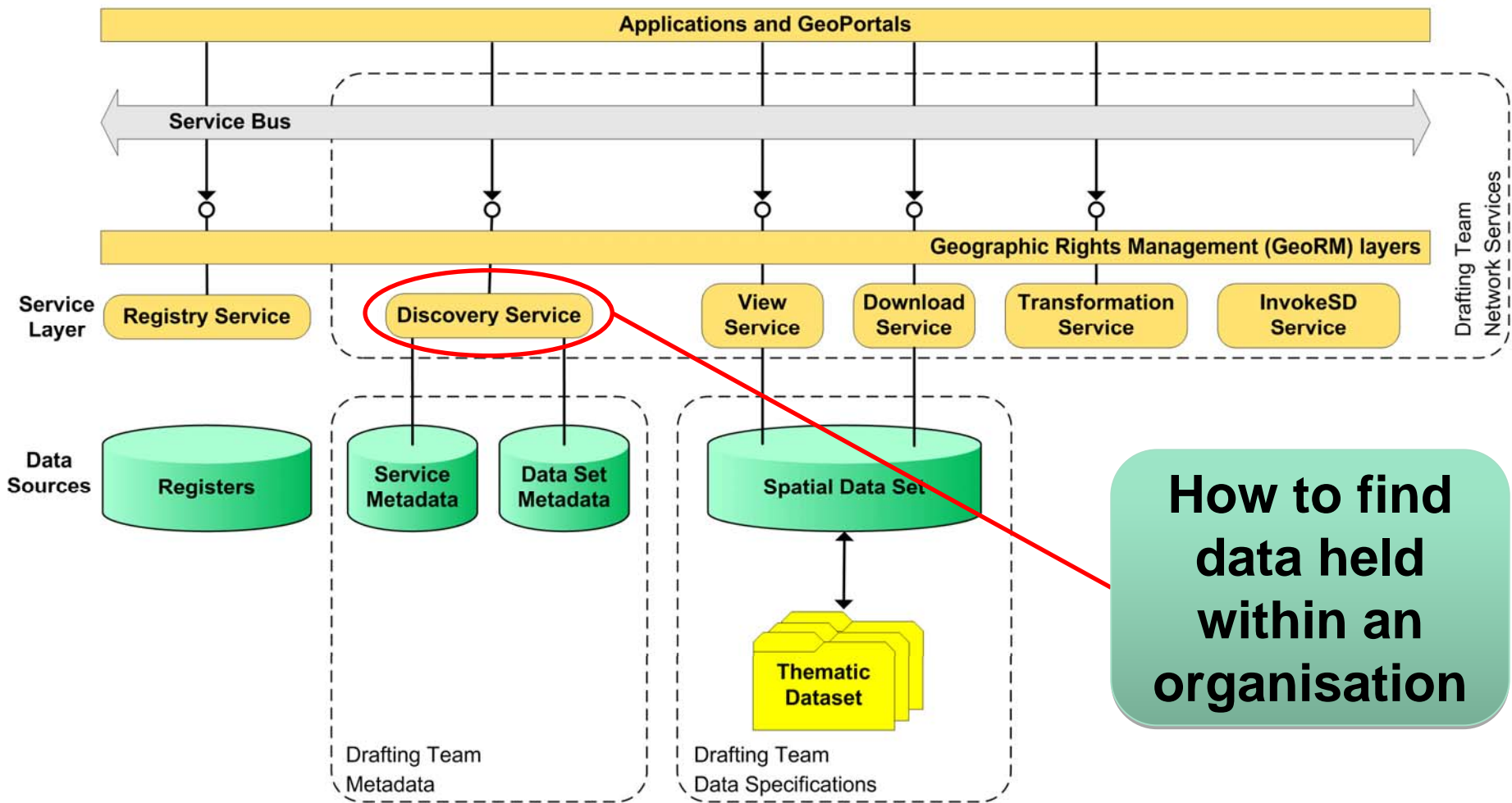
INSPIRE Directive Architecture



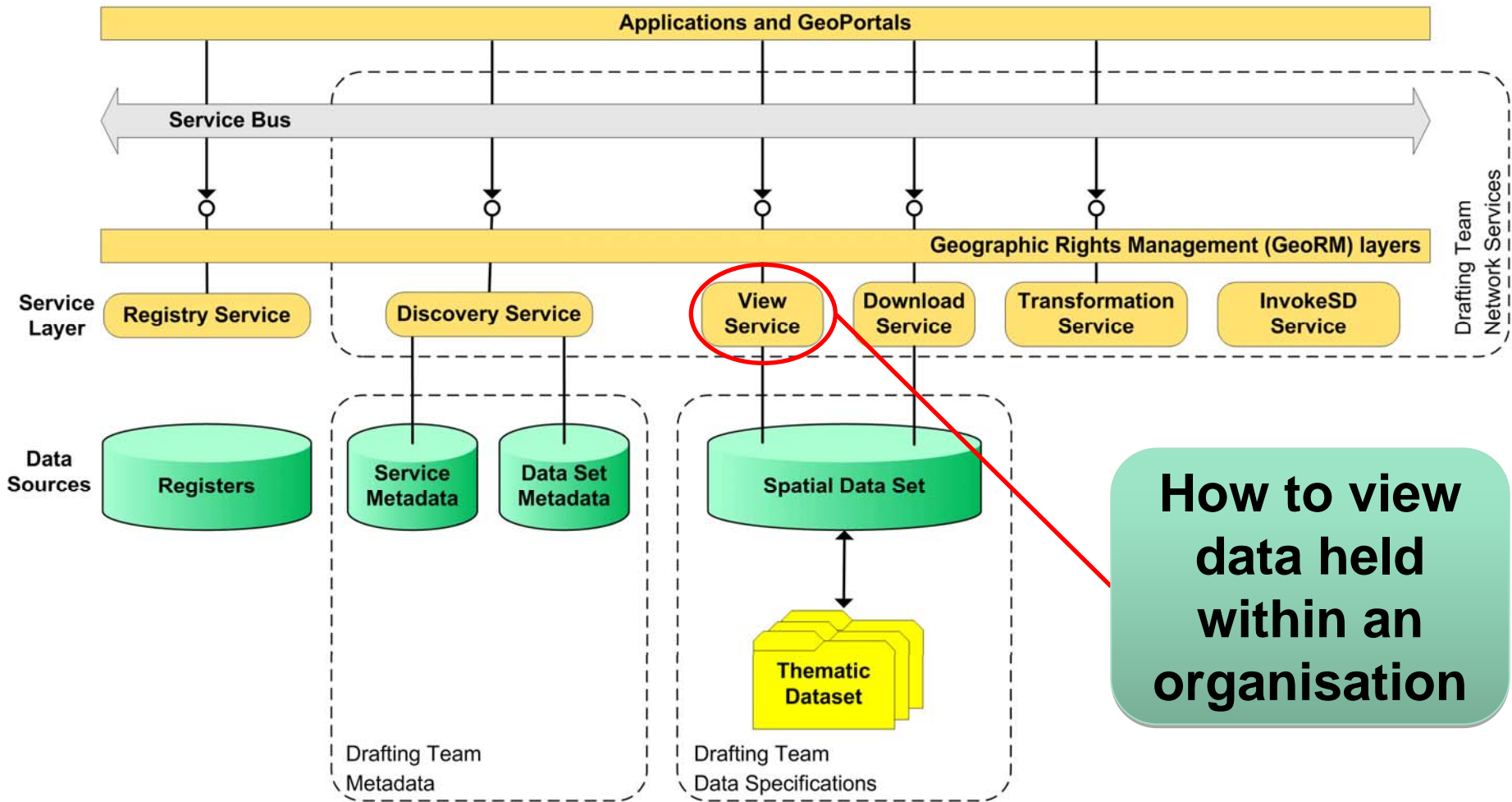
INSPIRE Directive Architecture



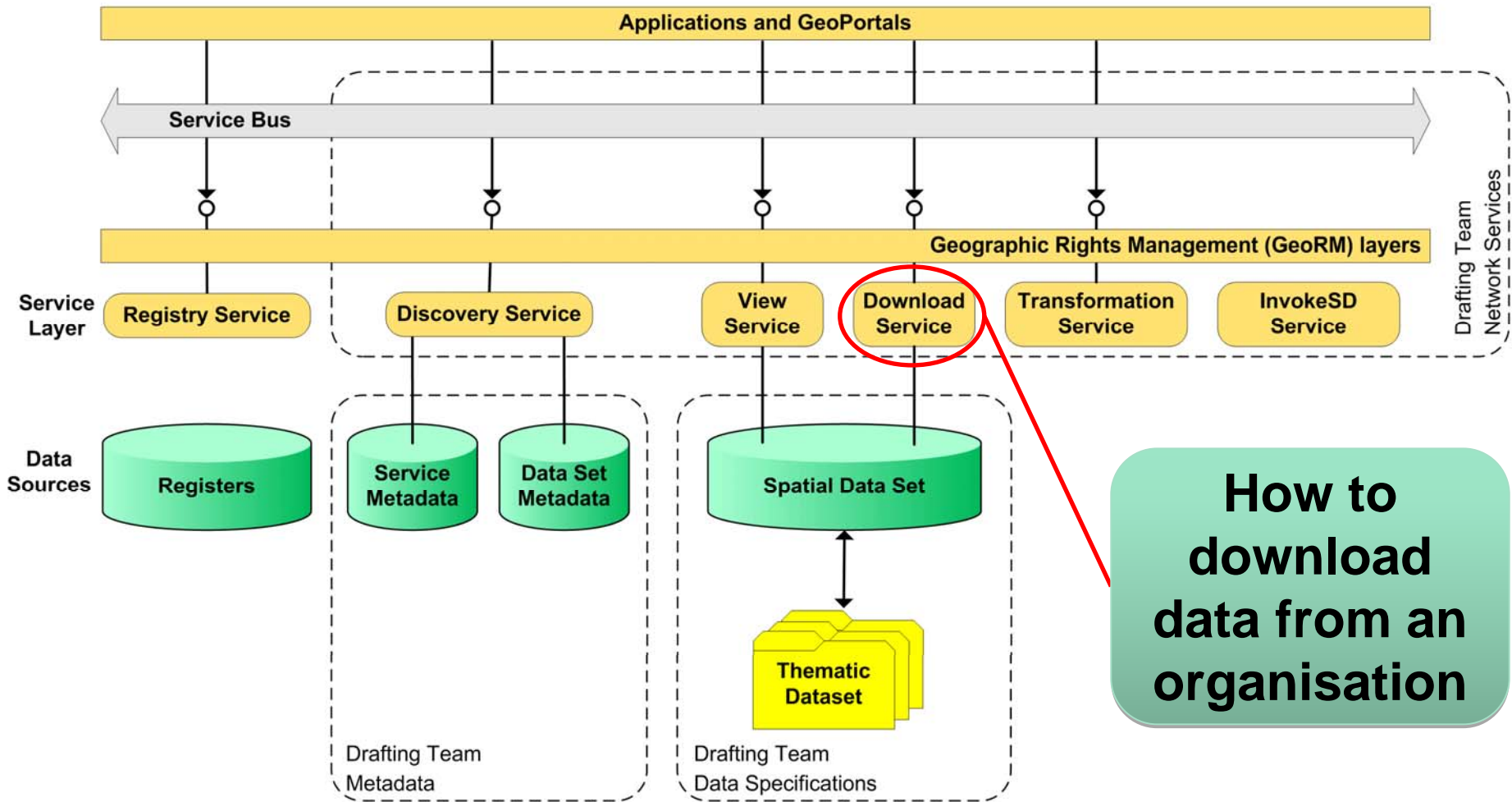
INSPIRE Directive Architecture



INSPIRE Directive Architecture



INSPIRE Directive Architecture



Geomatics for GeoSciences progress



Metadata

- **Dovetailed with the ISDE (Irish Spatial Data Exchange) project**
- **ISDE v2.0 drivers:**
 - **INSPIRE metadata compliance**
 - **Input to the Irish Spatial Data Initiative**
- **Collaboration:**
 - **Marine Institute (lead)**
 - **Coastal and Marine Resources Centre**
 - **Department of Environment, Heritage & Local Government**
 - **Geological Survey of Ireland**
 - **Environmental Protection Agency**
 - **...**

Metadata Catalogue Server

The screenshot shows the GeoNetwork metadata catalogue server interface. The browser window title is "GeoNetwork - The portal to spatial data and information - Mozilla Firefox". The address bar shows the URL "http://spatial.dcenr.gov.ie/geonetwork/srv/en/main.home". The page header includes the GeoNetwork logo and the tagline "Geographic data sharing for everyone". The navigation menu includes "Home", "Contact us", "Links", "About", "Help", and language options: "中文", "English", "Español", "Français", "Русский", "Deutsch", "Nederlands". There are also fields for "Username" and "Password" with a "Login" button.

The main content area is titled "FIND INTERACTIVE MAPS, GIS DATASETS, SATELLITE IMAGERY AND RELATED APPLICATIONS". It features a search interface with "What?" and "Where?" fields, a search button, and a "Search" button. Below the search interface, there are several search results:

- GROUND MOTION HAZARDS (GMES) TERRAFIRMA OVERALL**
Abstract: This data set consists of digital 'Ground motion hazards' data of Dublin and Cork provided by TerraFirma project. The project is utilising existing archives of Synthetic aperture radar inter...
Keywords: Geology, TerraFirma, ESA, PSInSAR, urban subsidence, Radar monitoring, landslides, 'Ground motion hazards', Mining, Landslides, Seismic activity, Volcanic deformation, Cork, Dublin.
Metadata
- LANDSLIDE DATABASE**
Abstract: A GSI national database containing records of all slides occurred in Ireland. Each entry contains information according to topic (Events, location, dimensions, mechanism, terrain, weather, ...
Keywords: Landslide, geohazards, Geological Survey of Ireland., Geology
Metadata
- TERRAFIRMA CORK**
Abstract: This data set consists of digital 'Ground motion hazards' data from Cork provided by the TerraFirma project. This project is utilising existing archives of Synthetic aperture radar inter...
Keywords: TerraFirma, ESA, PSInSAR, urban subsidence, Radar monitoring, landslides, 'Ground motion hazards', Mining, Landslides, Seismic activity, Volcanic deformation, Cork., Geology
Metadata
- ARCHAEOLOGY IN BRÉIFNE (ARCH)**
Abstract: Location of Archaeology events in breifne region. Not all Archaeology events are recorded. This is a set of events that can be visited by tourists. Purpose of data. To provide tourists with ...
Keywords: Geology, Archaeology, Cairn, Abbey, Castle, Tombs, Fort
Metadata
- DEPTH TO BEDROCK (GEOTECHNICALREPORTDATABASE)**

The left sidebar contains "CATEGORIES" and "RECENT CHANGES" sections. The "CATEGORIES" section lists: Applications, Audio/Video, Case studies, best practices, Conference proceedings, Datasets, Directories, Interactive resources, Maps & graphics, Other information resources, Photo. The "RECENT CHANGES" section lists: Bedrock Outcrops, Bedrock Boreholes, Bedrock geology 500k, Inch Index, Bedrock Geology 100k.

Software: GeoNetwork opensource deployed in GSI

ISDE portal

Irish Spatial Data Exchange - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://isdesearch.marine.ie/isdeportal/default.aspx

Irish Spatial Data Exchange

Irish Spatial Data Exchange

About ISDE | ISDE Search | Links | News | Contact

You are here: About ISDE


Search Metadata [Viewer](#) [Help](#)

Search for: in [Advanced Search Criteria](#)

Data Catalogue Source: All Marine Institute

Displaying 1 of 1 records

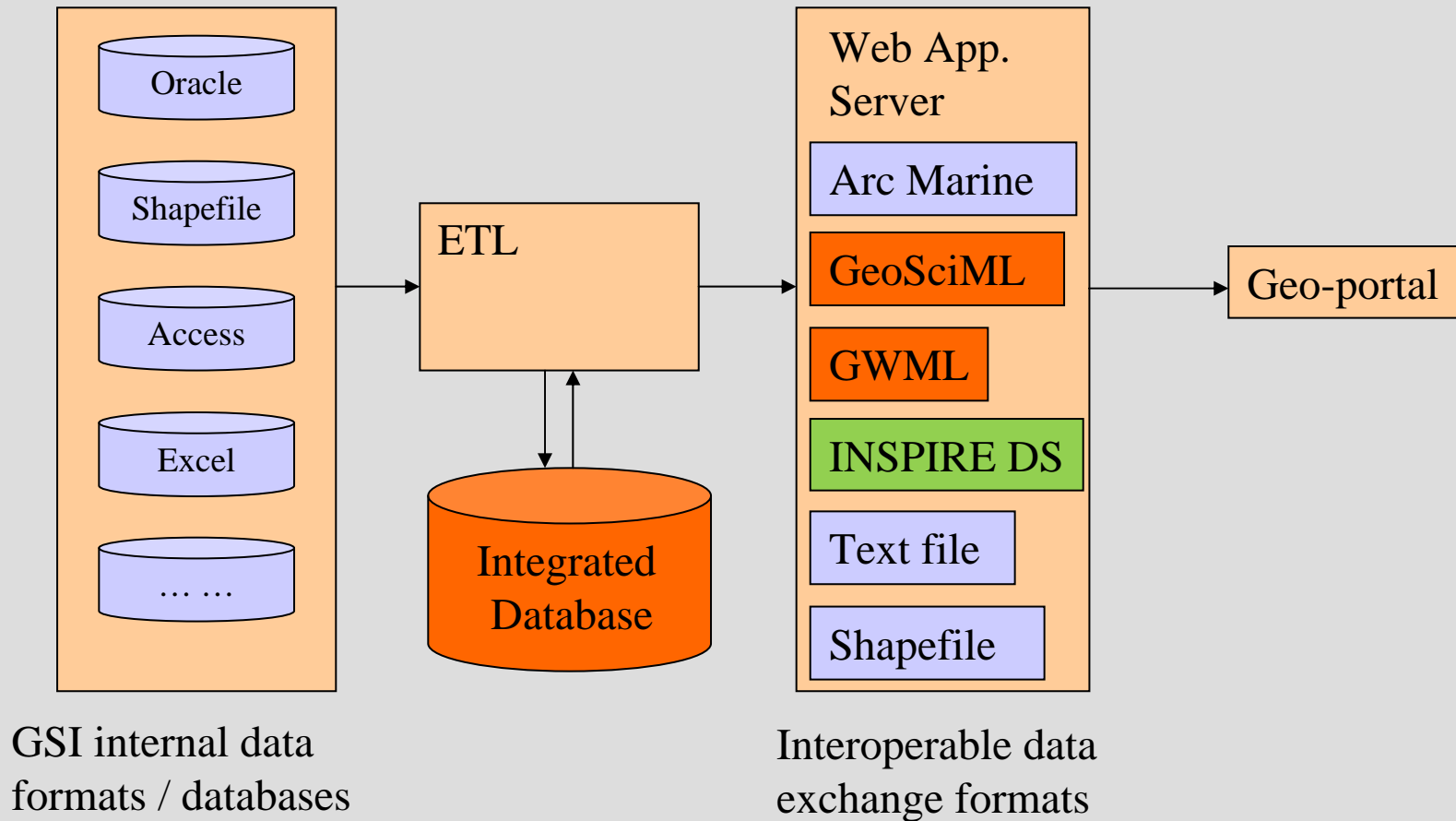
© 2010 Marine Institute and partners

Resource Title:	Landslide Database	
Resource Type:	dataset	
Data Owner:	Geological Survey of Ireland	
Geographical Bounding Box:	-9.941877, 53.512188, -5.743051, 55.063756	
	Show Full Metadata Record	
	Hide Summary	
Topic Category:		
Spatial Reference System:	GCS_WGS_1984	
Abstract:	A GSI national database containing records of all slides occurred in Ireland. Each entry contains information according to topic (Events, location, dimensions, mechanism, terrain, weather, Land use, impacts and references). Number of records entered so far is 117.	

[Online Resource \(Other\)](#)

Metadata search client

Data and databases



GeoSciML – borehole (data exchange format)

```
<?xml version="1.0" encoding="UTF-8" ?>
- <wfs:FeatureCollection numberOfFeatures="10" timeStamp="2010-10-29T16:34:09.858+01:00" xsi:schemaLocation="urn:cgi:xmlns:CGI:GeoSciML:2.0
  http://www.geosciml.org/geosciml/2.0/xsd/geosciml.xsd http://www.opengis.net/wfs http://127.0.0.1:8080/geoserver/schemas/wfs/1.1.0/wfs.xsd"
  xmlns:ogc="http://www.opengis.net/ogc" xmlns:gml="http://www.opengis.net/gml" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:gsml="urn:cgi:xmlns:CGI:GeoSciML:2.0" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:ows="http://www.opengis.net/ows" xmlns:wfs="http://www.opengis.net/wfs"
  xmlns:sa="http://www.opengis.net/sampling/1.0">
- <gml:featureMembers>
- <gsml:Borehole gml:id="fid--235dbcad_12bf89fe455_-7ff6">
  <gml:name codeSpace="http://www.ietf.org/rfc/rfc2141">urn:cgi:feature:Borehole:fid--235dbcad_12bf89fe455_-7ff6</gml:name>
  <gml:name>bhid.002-11</gml:name>
  <sa:sampledFeature xlink:href="urn:cgi:def:nil:OGC:unknown" xlink:role="urn:cgi:featureType:CGI:GeoSciML:2.0:GeologicUnit" />
- <sa:shape>
- <gml:LineString>
  <gml:posList>178600.0 150650.0 178600.0 150650.0</gml:posList>
  </gml:LineString>
  </sa:shape>
  <sa:length uom="urn:ogc:def:uom:UCUM:m">132.6</sa:length>
- <gsml:collarLocation>
- <gsml:BoreholeCollar gml:id="BoreholeCollarID_002-11">
  - <gsml:location>
    - <gml:Point>
      <gml:pos>178600.0 150650.0</gml:pos>
    </gml:Point>
    </gsml:location>
    <gsml:elevation srsDimension="1" srsName="urn:x-ogc:def:crs:EPSG:6.15:5701">137.6</gsml:elevation>
  </gsml:BoreholeCollar>
  </gsml:collarLocation>
- <gsml:indexData>
- <gsml:BoreholeDetails>
  <gsml:drillingMethod>unknown</gsml:drillingMethod>
  <gsml:inclinationType>inclined up</gsml:inclinationType>
  <gsml:coreCustodian xlink:href="urn:cgi:party:CSIRONR" />
  </gsml:BoreholeDetails>
  </gsml:indexData>
</gsml:Borehole>
- <gsml:Borehole gml:id="fid--235dbcad_12bf89fe455_-7ff5">
  <gml:name codeSpace="http://www.ietf.org/rfc/rfc2141">urn:cgi:feature:Borehole:fid--235dbcad_12bf89fe455_-7ff5</gml:name>
  <gml:name>bhid.002-2</gml:name>
  <sa:sampledFeature xlink:href="urn:cgi:def:nil:OGC:unknown" xlink:role="urn:cgi:featureType:CGI:GeoSciML:2.0:GeologicUnit" />
- <sa:shape>
```

Borehole locations (Republic of Ireland)



Griffith Geo-portal (under development)

The screenshot shows the Griffith GeoPortal web application running in Mozilla Firefox. The browser window title is "Welcome to Griffith GeoPortal - Mozilla Firefox" and the address bar shows the URL "http://griffith.ucc.ie/geoportal/viewer.html". The page header features the text "Griffith GeoPortal - under construction" and a navigation menu with links for HOME, DISCOVERY, VIEWER, DATA ACCESS, and CONTACT. The main content area is a map viewer with a left-hand sidebar containing a "Layers" panel and a "Search" panel. The "Layers" panel lists several data layers: Base Map, World Map, Bedrock Geologic, Bedrock 500k, Faults 500k, Irish Sea, Marine zones, and Ireland Water ING. The "Search" panel has a search input field and buttons for "Find:", "Next", "Previous", "Highlight all", and "Match case". The map itself displays a satellite-style view of the region around Ireland, with a blue outline highlighting the area of interest. The browser's status bar at the bottom shows "Done".

Griffith Geo-portal (under development)

IMAGIN_AREA_1_Boomer_30060500_L6519_with_Fix - Mozilla Firefox

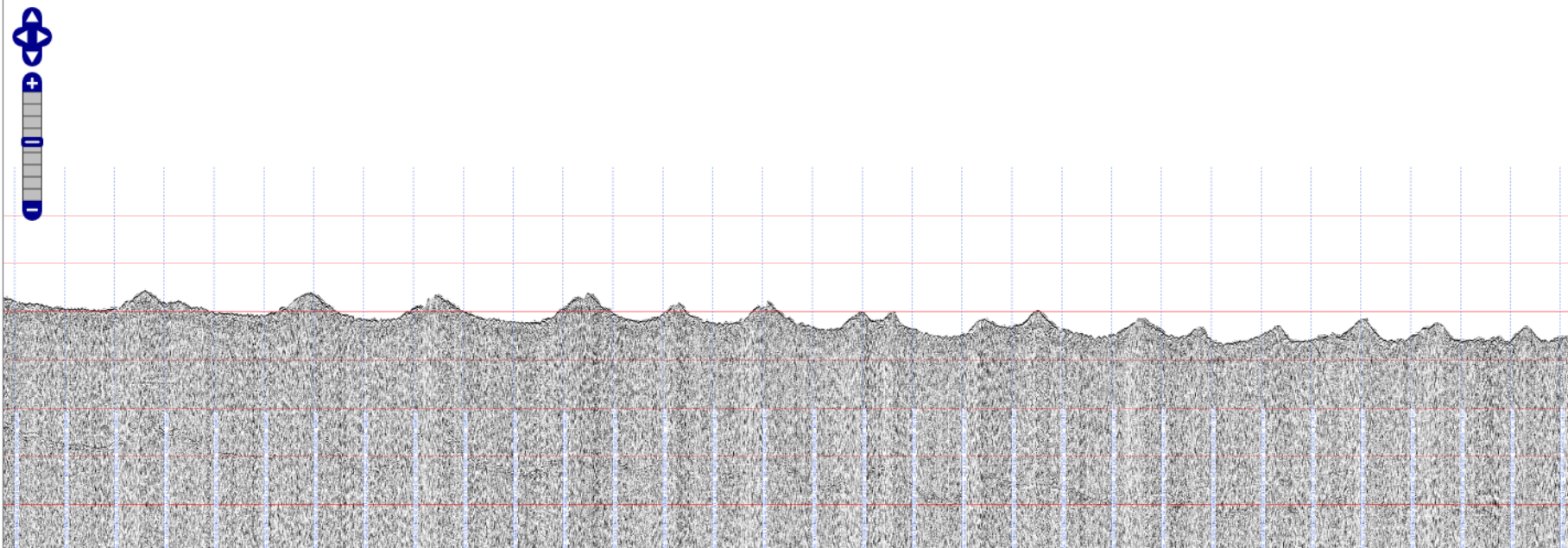
File Edit View History Bookmarks Tools Help

http://griffith.ucc.ie/boomer/IMAGIN_AREA_1_Boomer_30060500_L6519_with_Fix/openlayers.html

IMAGIN_AREA_1_Boomer_30060500...

IMAGIN_AREA_1_Boomer_30060500_L6519_with_Fix

Generated by [MapTiler/GDAL2Tiles](#). Copyright © 2008 [Klokan Petr Pridal](#). GDAL & [DSGeo](#) [GSoC](#)



17271.50000, -1166.00000

Find: [Next](#) [Previous](#) [Highlight all](#) Match case

Done

Leverage

- **INSPIRE**
 - **User of technical guidelines**
- **NDP ISDE project (MI, CMRC, GSI, ...)**
 - **INSPIRE metadata compliance, ...**
- **NDP GeoDI project (CMRC)**
 - **INFOMAR data management research project, ...**
- **FP7 Geo-seas (CMRC, GSI, ...)**
 - **Pan – European marine geology / geophysics data exchange, ...**
- **FP7 One Geology Europe (GSI, GSNI, BGS, ...)**
 - **GeoSciML, ...**
- **One Geology (GSI, GSNI, BGS, ...)**
 - **GeoSciML, ...**