

ExpeER
Distributed Infrastructure for EXPERimentation
in Ecosystem Research

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SEVENTH FRAMEWORK PROGRAMME

Capacities

Integrating activities: Networks of Research Infrastructures (RIs)

Theme: Environment and Earth Sciences

DELIVERABLE D3.5

Deliverable title: OpenLayers interface

Abstract:

The report describes the development of a pilot map interface (using OpenLayers technology) to view spatial datasets (provided as WMS) within DEIMS Research site and Dataset registry portal. The development has been integrated into a metadata development portal (D3.4).

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PU Public (must be available on the website)	[X]
PP Restricted to other programme participants (including the Commission Services)	[]
RE Restricted to a group specified by the consortium (including the Commission Services) (precise to whom it should be addressed)	[]
CO Confidential, only for members of the consortium(including the Commission Services)	[]

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Executive Summary

This development demonstrates capability to display OGC Web Map Services (WMS) within the Drupal Ecological Information management system. DEIMS has been implemented for managing dataset documentation and site information as part of projects EnvEurope/Life+ and ExpeER/FP7. Previous map implementations were carried out in separate application that had a different look and feel to the rest of DEIMS. This new capability of DEIMS provides an overview of all the datasets in DEIMS that provide WMS services and offers the user the option to display the map layers in a single, easy to use interface within DEIMS.

http://data.lter-europe.net/ilter_deims/datasetWMS

1 Resources

The following resources were used for the implementation of the OpenLayers interface to visualise spatial data resulting from the ExpeER project. The development shows a demonstration on linking a spatial data service with the metadata portal.

- DEIMS Production instance: <http://data.lter-europe.net/deims>
- DEIMS Development instance: http://data.lter-europe.net/ilter_deims (location of WMS maps).
- Openlayers: <http://openlayers.org/>
- OpenLayers Drupal Module: <https://www.drupal.org/project/openlayers>
- OGC WMS: <http://www.opengeospatial.org/standards/wms>

2 Approach taken

Several datasets with WMS maps associated with them were documented using ExpeER/EnvEurope metadata standards in the DEIMS system. One OpenLayers map was created for each dataset provided by SYKE with WMS documentation.

3 Details of implementation

In order to accommodate this demonstration project, an additional field, “WMS Map Web Address” was added to the ExpeER/EnvEurope dataset metadata community profile. In this field, the user enters the URL of the OpenLayers map (the URL points to a Drupal view that has been created.) (see Figure 1).

WMS maps are created using the Drupal module: OpenLayers. OpenLayers is a system for displaying feature-rich maps in a web browser. OpenLayers is used within DEIMS to display the location of ExpeER sites on a map. The map clicking on the site provides summary metadata and allows the user to click on a link to open the site’s full metadata record.

The challenge presented in deliverable 3.5 is to provide WMS maps within DEIMS that correspond to datasets developed and documented by SYKE and others.

To create a WMS layer, one creates an OpenLayers map that references a specific WMS service. This WMS service describes a map with data. The data is documented in DEIMS as “Data Set” metadata, using the ExpeER/EnvEurope community metadata standard (see Deliverable T3.1).

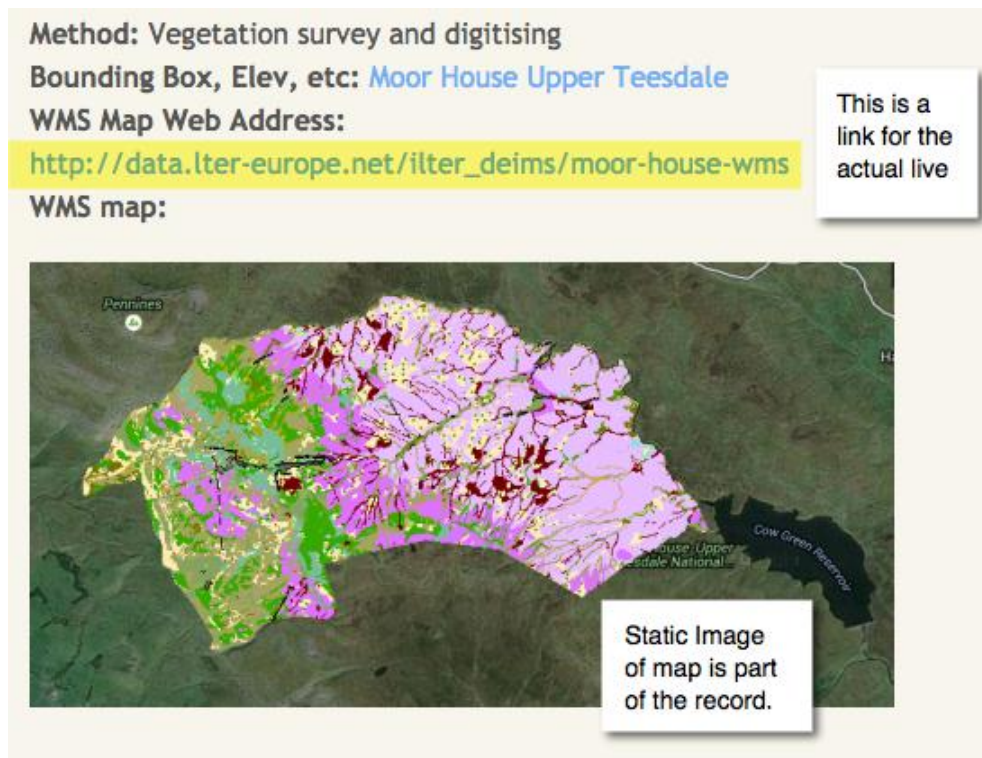


Figure 1 Dataset MD field showing the link to the WMS service for the dataset

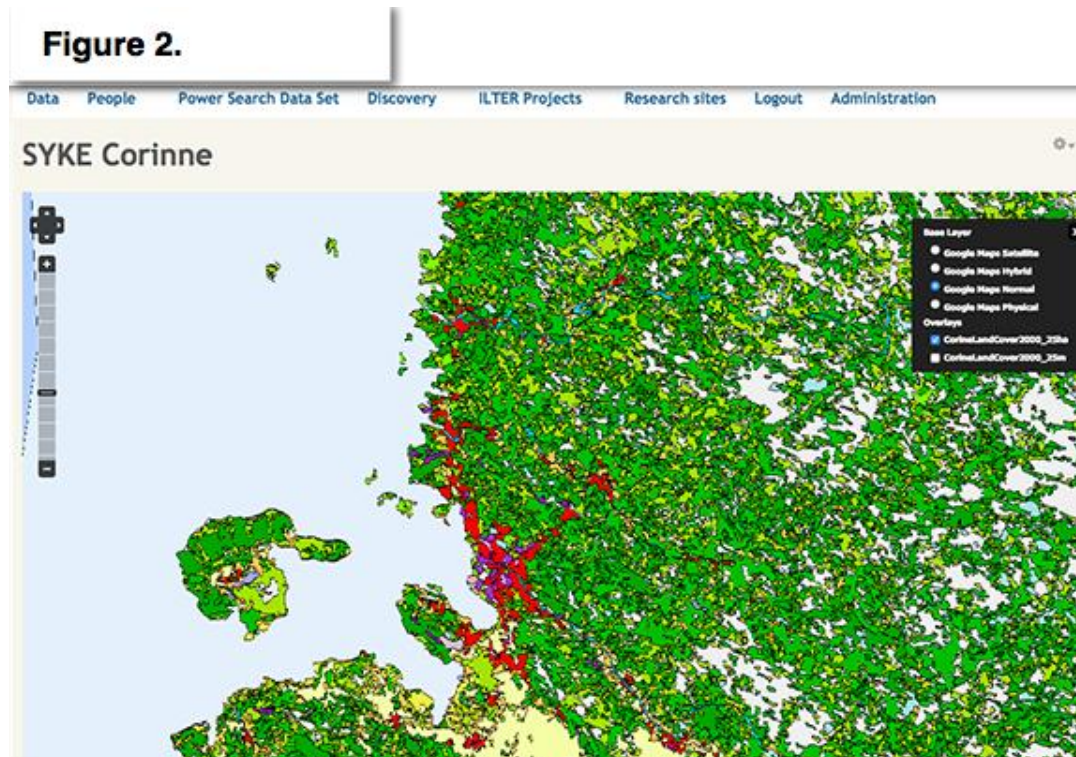


Figure 2 Example for OpenLayer map representation (e.g. CORINE)

Some of the WMS map layers can be entered directly in a DEIMS OpenLayers map. For some WMS layers, however, Geoserver was used as an intermediary. For example, the Moor House WMS layers produced by the UK Center for Ecology and Hydrology could be entered directly. On the other hand, because the Corine WMS was missing CRS records, Geoserver was used to consume the WMS Corine Land Cover service created by SYKE. Geoserver then re-projected the map in a format that is compatible with OpenLayers. Initially, Geoserver was used simply as a workaround to the projection problem; however, it adds capabilities to the DEIMS system and will be more tightly integrated into DEIMS in the near future.

Following are three screenshots of the Moor House site. Each figure shows a different layer:

Figure 3: Vegetation Layer on a Google Hybrid Map background.

Figure 4: Geology layer on a Google Normal Map background.

Figure 5: Soils layer on a Google Physical Map background.

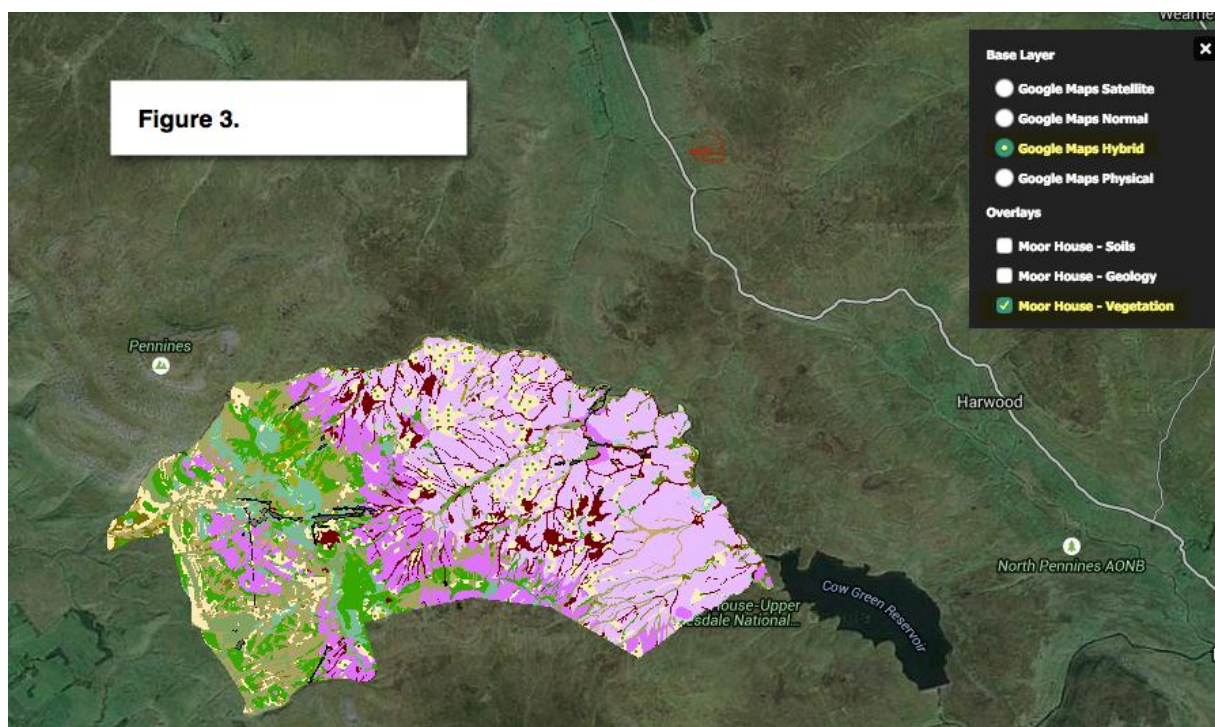


Figure 3 Vegetation Layer on a Google Hybrid Map background

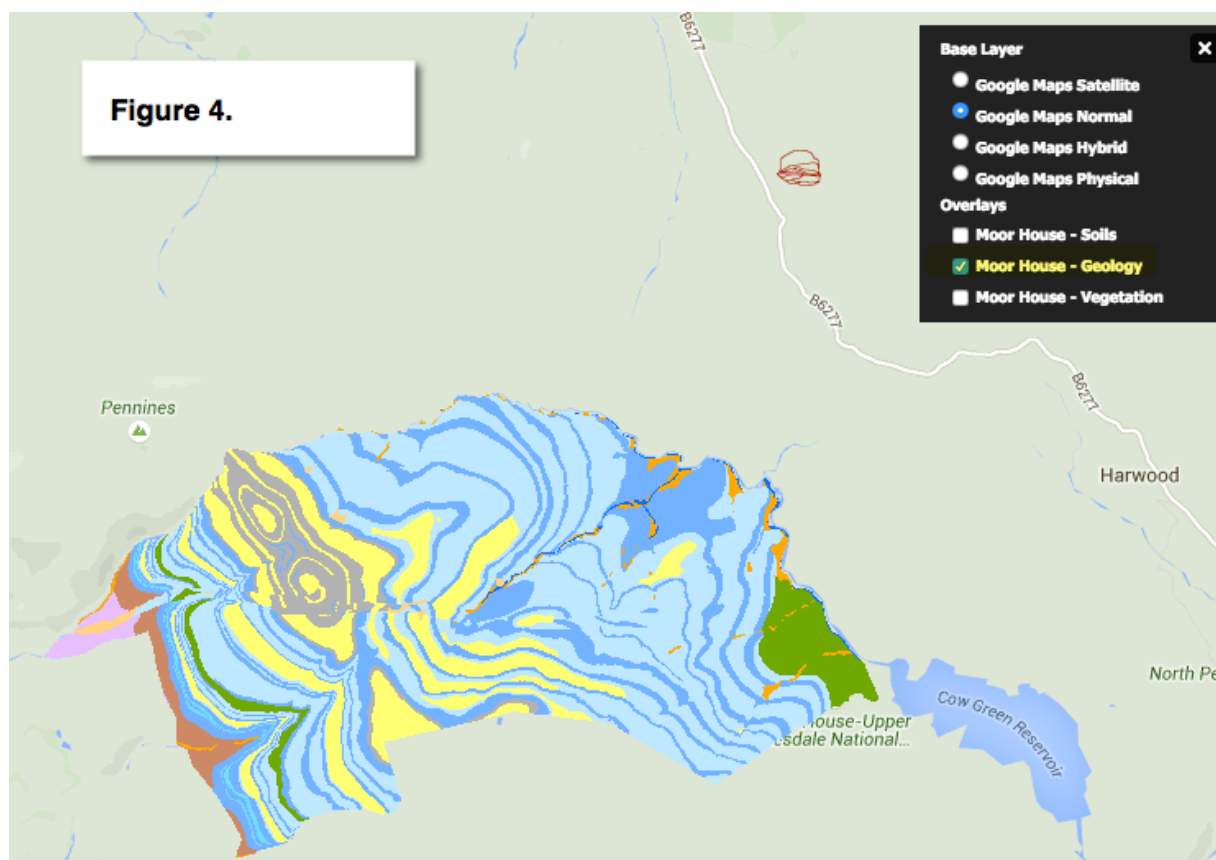


Figure 4 Geology layer on a Google Normal Map background

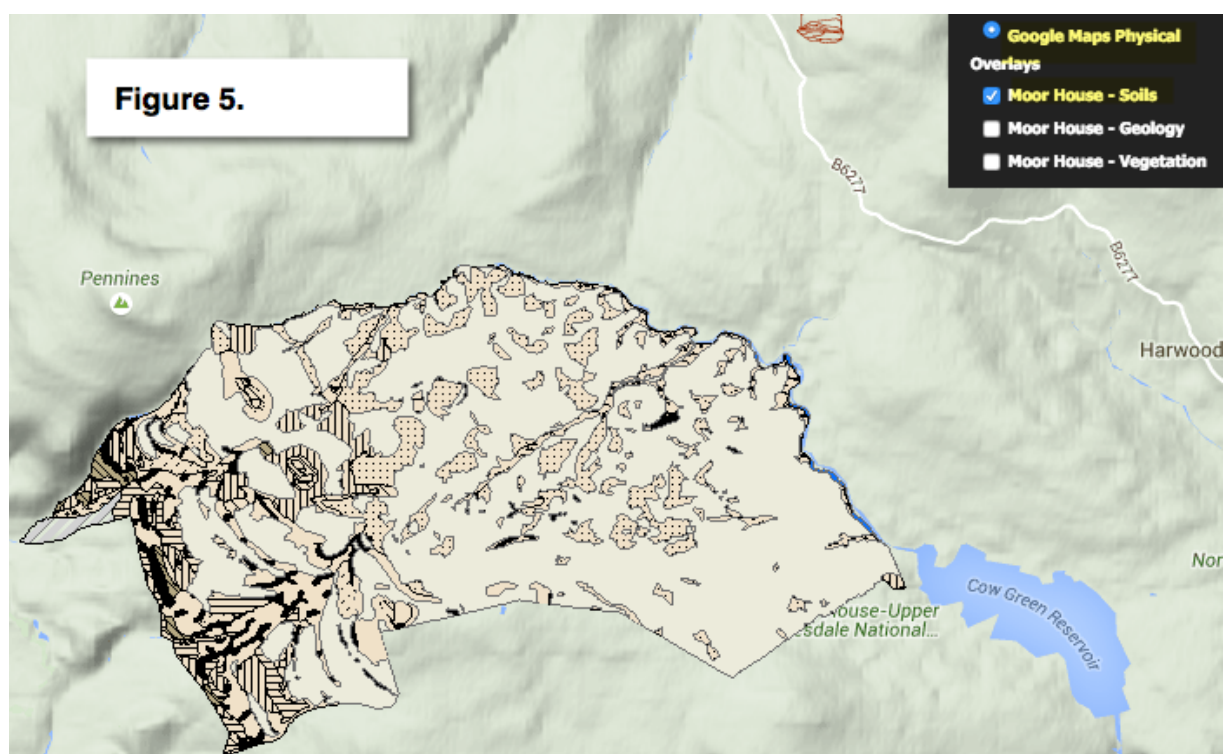


Figure 5 Soils layer on a Google Physical Map background

A separate OpenLayers map is created for each data set that has a WMS layer associated with it. Once the map is created, its URL is entered in the data set metadata record in the “WMS Map Web Address” field. When this record is viewed and the link is clicked, a new web browser window/tab is opened showing the corresponding map. Some maps may have more than one layer.

In addition to selecting different layers or backgrounds, the map can be zoomed in and out. Figure 6 shows the Corine Map (see also Figure 2), zoomed in.

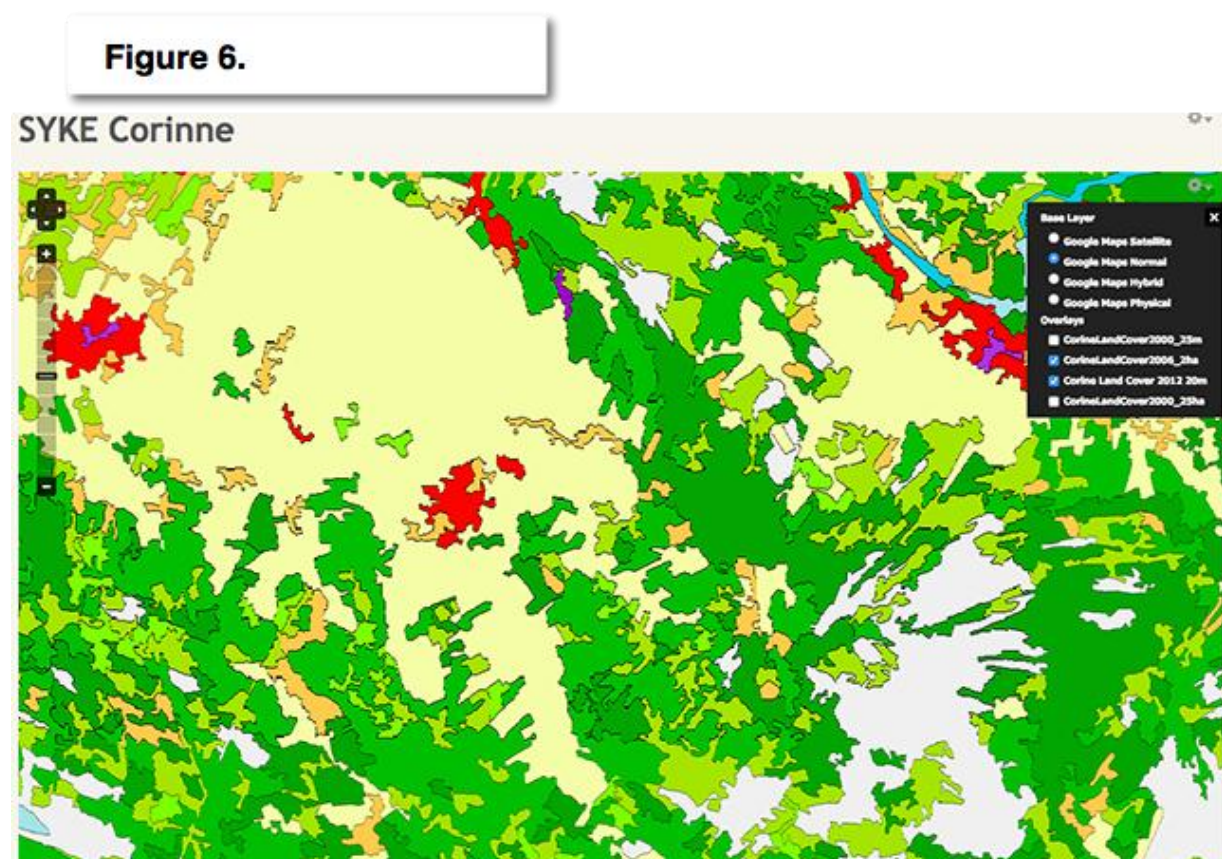


Figure 6 OpenLayer map representation of CORINE LandCover (SYKE) at higher zoom level

4 Conclusions and next Steps

4.1 Viewing WMS in future DEIMS versions.

A further development may include integrating the Cartaro distribution into DEIMS. < <https://www.drupal.org/project/cartaro> > (Cartaro is the web-mapping platform that brings the power of the best open source geospatial components into Drupal. With Cartaro you are able to set-up and run a geo-enabled and OGC standards-compliant website with not more than a few clicks. The geospatial components used in Cartaro are PostGIS, GeoServer, GeoWebCache and OpenLayers.)

Geonetworks, an open source spatial query system can be integrated into DEIMS. Geonetworks allows users to search OGC CSW services for data of interest (CSW is part of the INSPIRE standards. Using Geonetworks would allow user to search for spatial data from outside the DEIMS system (currently Geonetworks is used by DEIMS to produce ISO metadata as a link, but it is not integrated into DEIMS). Further development of DEIMS will explore integration of Geonetworks directly into the system.

4.2 Integration of WMS with metadata record

In addition to expanding the scope of the geospatial capabilities within DEIMS, a solution needs to be developed to embed a live WMS map directly in the metadata record of the dataset. The current solution of using a link to the map requires an extra step in the part of the user to see the map. However, WMS maps can take a long time to load and can be large in size, so the linking solution may turn out to be preferable a full embedding of the WMS map.