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## **C5.41 Documentation for GIS webapplication available**

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<b>Dissemination Level</b>		
<b>PU</b>	Public	<b>X</b>
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

## C5.41 Documentation for GIS webapplication available

As described in the C5.65 and C5.66 component reports, an online GIS webapplication (the EDIT MapViewer Tool) for taxonomic visualisation of point occurrences and regional distribution has been developed by CSIC, in collaboration with RMCA and BGBM. Applications developed include:

- An interactive online tool for taxonomists, to visualise their data and download the result in a host of image formats (png, jpg,...) in print quality for publication.  
Demo URL : [http://edit.csic.es/edit\\_geo/prototype/edit\\_project.html](http://edit.csic.es/edit_geo/prototype/edit_project.html)
- A REST webservice offering the same functions in an automated way through an Application Programming Interface (API).  
API Documentation: <http://dev.e-taxonomy.eu/trac/wiki/GeoRestService>

To be useful, the online webtool must be accessible to people without prior knowledge of GIS (and similar) systems. The MapViewer tool is conceived in a very user-friendly way, but still some documentation is necessary to help first-time users or people unacquainted with GIS. This is delivered through instruction videos explaining the process step by step. 5 separate videos have been made to explain the different functions of the MapViewer Tool:

- Exploring the main interface
- Uploading and symbolising your data
- Using remote layers (WMS)
- GBIF browsing
- Future analysis

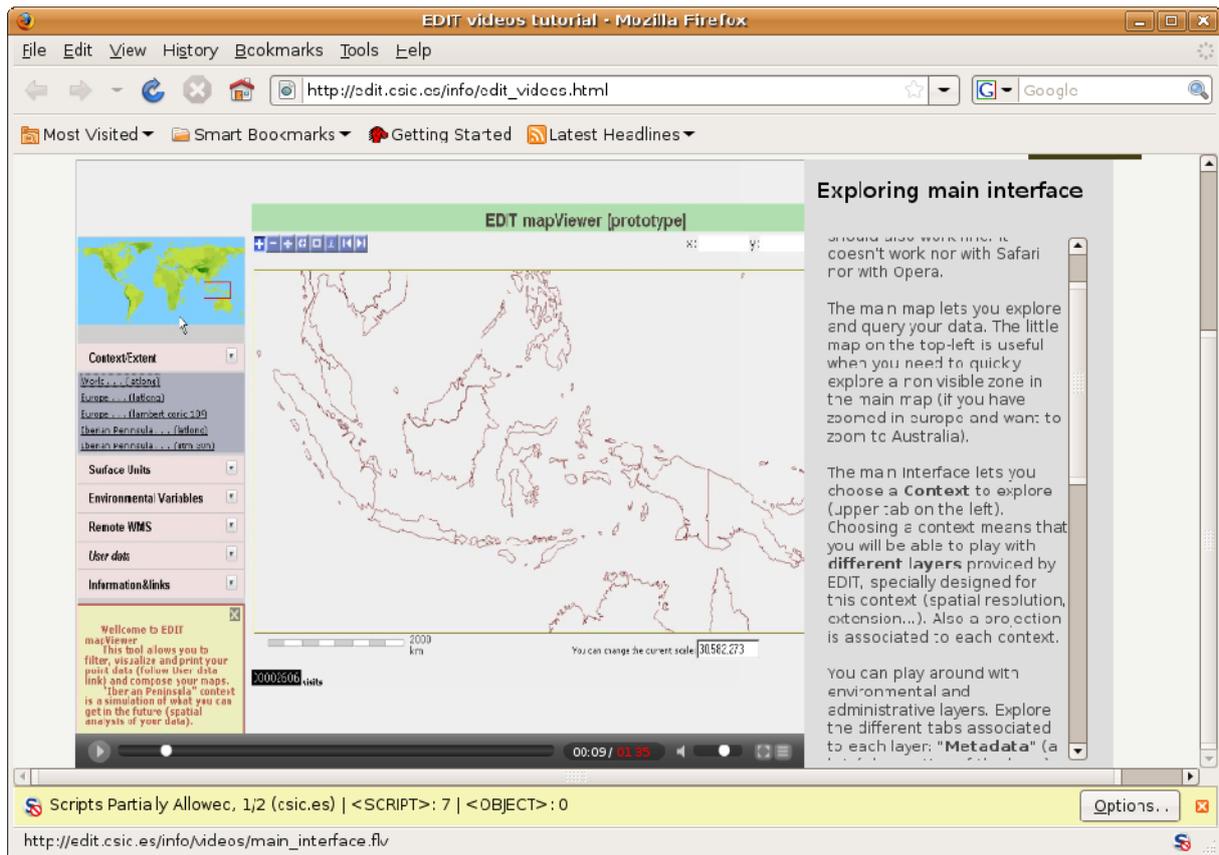
The videos are available at [http://edit.csic.es/info/edit\\_videos.html](http://edit.csic.es/info/edit_videos.html). Each of the videos is accompanied by an explanatory text description about the function that is demonstrated. The text appearing on the website is repeated in the Appendix, together with some screenshots that give an idea of the videos.

## Appendix: Documentation text and video screenshots for GIS applications

### Exploring the main interface

#### *EDIT mapViewer*

The main map lets you explore and query your data. The little map on the top-left is useful when you need to quickly explore a non visible zone in the main map (if you have zoomed in Europe and want to zoom to Australia).



The main interface lets you choose a context to explore (upper tab on the left). Choosing a context means that you will be able to use and combine different layers provided by EDIT, specially designed for this context (spatial resolution, extension...). Also a projection is associated with each context.

You can try out environmental and administrative layers. Explore the different tabs associated to each layer: "Metadata" (a brief description of the layer) and "Legend" (you can move up, down, make invisible or remove the layers).

"User data", "Spatial Completeness" and "Environmental Completeness" tabs are only present in the Iberian Context demo. User data symbolization is already possible with your own point data (check "Data upload" video to learn how to upload, symbolize and query) and in "Iberian Context" demo.

Spatial analysis tabs are a demo of what we want to achieve on the near future (check "Future analysis" video).

"Remote layers" let's you browse and add remote layers (explained on "Remote WMS" video).

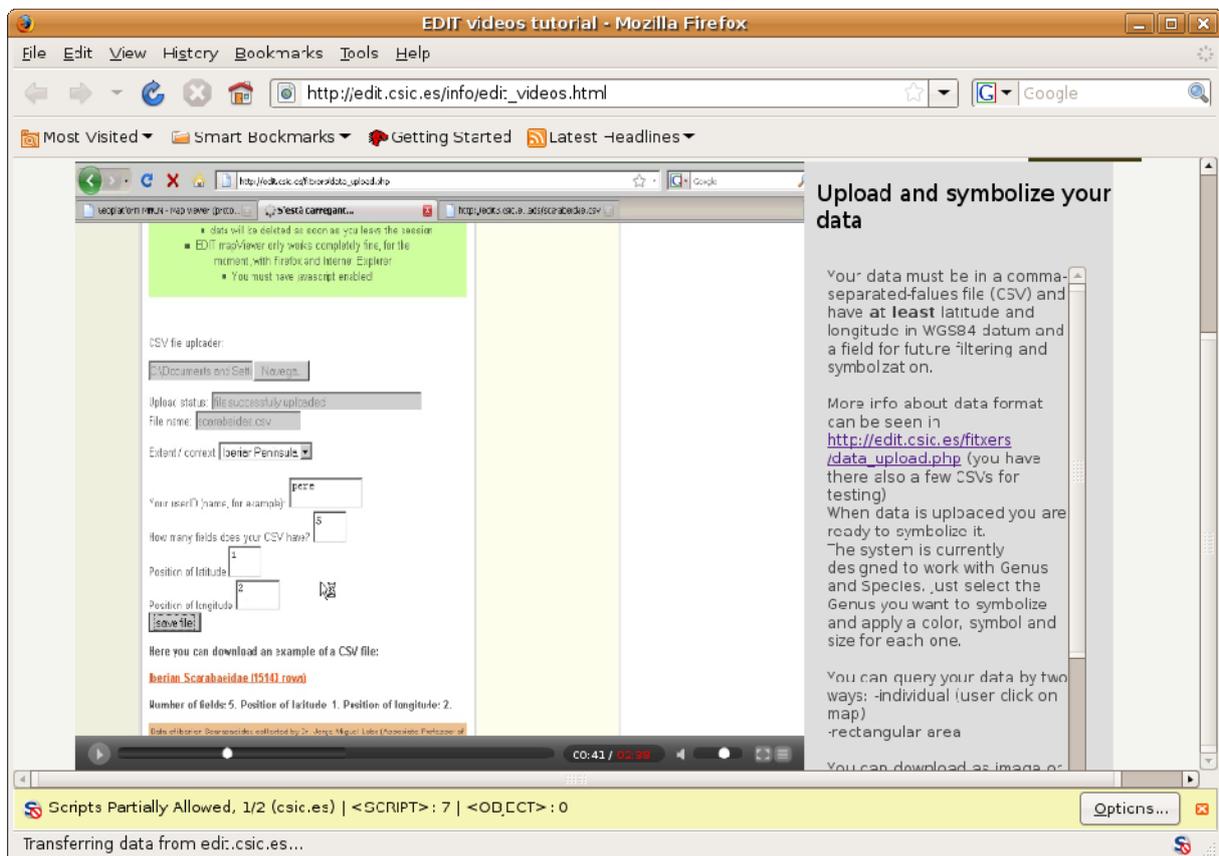
You can download as image or get a PDF of the current view in EDIT mapViewer. This tool has to be improved in order to get high-quality maps (about 300dpi). It currently only allows 72-90 dpi and some problems can appear when dealing with remote WMS.

## Upload and symbolize your data

Your data must be in a comma-separated-values file (CSV) and have at least latitude and longitude in WGS84 datum and a field for future filtering and symbolization.

More info about data format can be seen in [http://edit.csic.es/fitxers/data\\_upload.php](http://edit.csic.es/fitxers/data_upload.php) (you have there also a few CSV's for testing). When data is uploaded you are ready to symbolize it.

The system is currently designed to work with Genus and Species. Just select the Genus you want to symbolize and apply a colour, symbol and size for each one. You can query your data by two ways: individual (user click on map) or rectangular area.



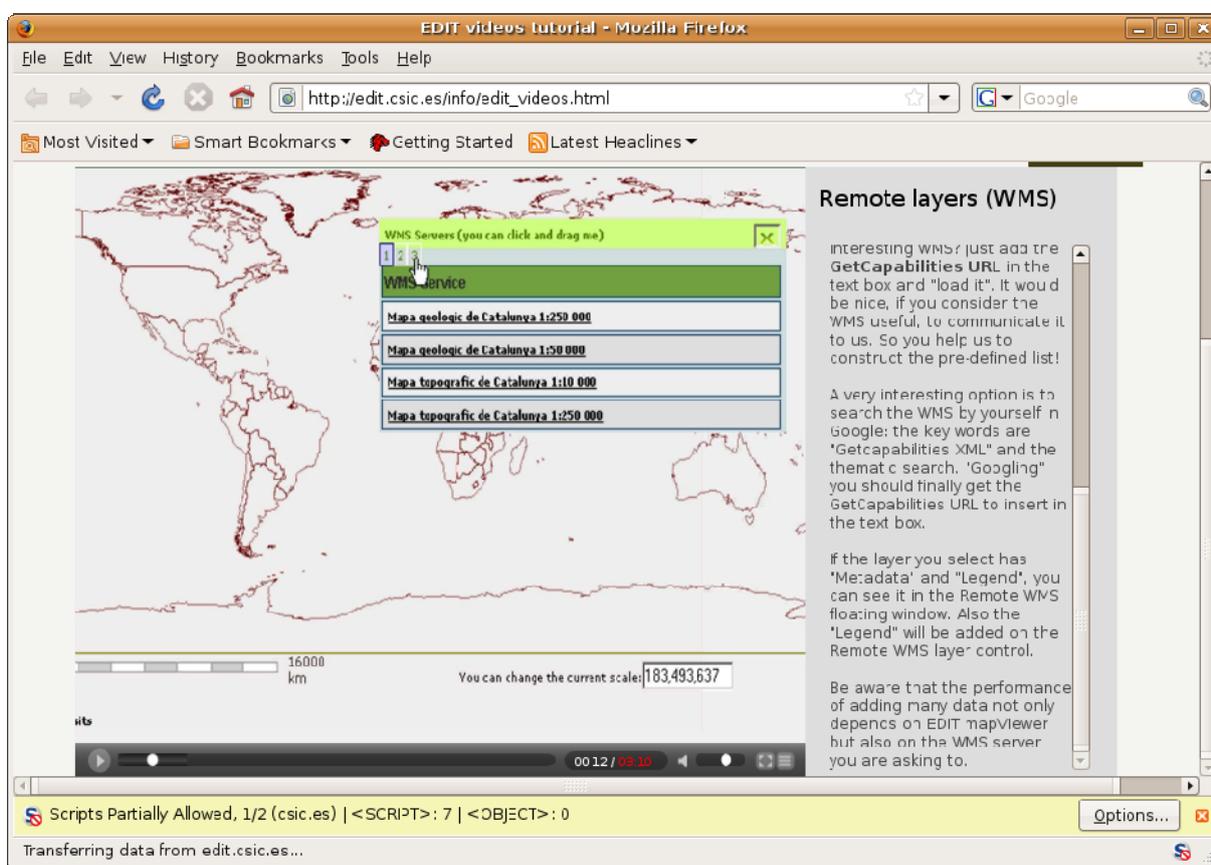
You can download as image or PDF the current view in EDIT mapViewer. This tool has to be improved in order to get high-quality maps (about 300dpi). It currently only allows 72-90 dpi and some problems can appear when dealing with remote WMS.

## Remote layers (WMS)

Use "Remote WMS" to search remote layers.

A Web Map Server (WMS) is a server that provides geographic information. Many different institutions share more and more different kind of geo-information, from aerial photographs to administrative data.

EDIT mapViewer offers you the possibility to explore remote WMS: -By thematic request: search in "wms-servers.com". It's not sure that you get what you need but you can give it a try. - By selecting a pre-defined list of WMS Servers. We are constructing this list. - Do you know any interesting WMS ? just add the GetCapabilities URL in the text box and "load it". It would be nice, if you consider the WMS useful, to communicate it to us. So you help us to construct the pre-defined list!



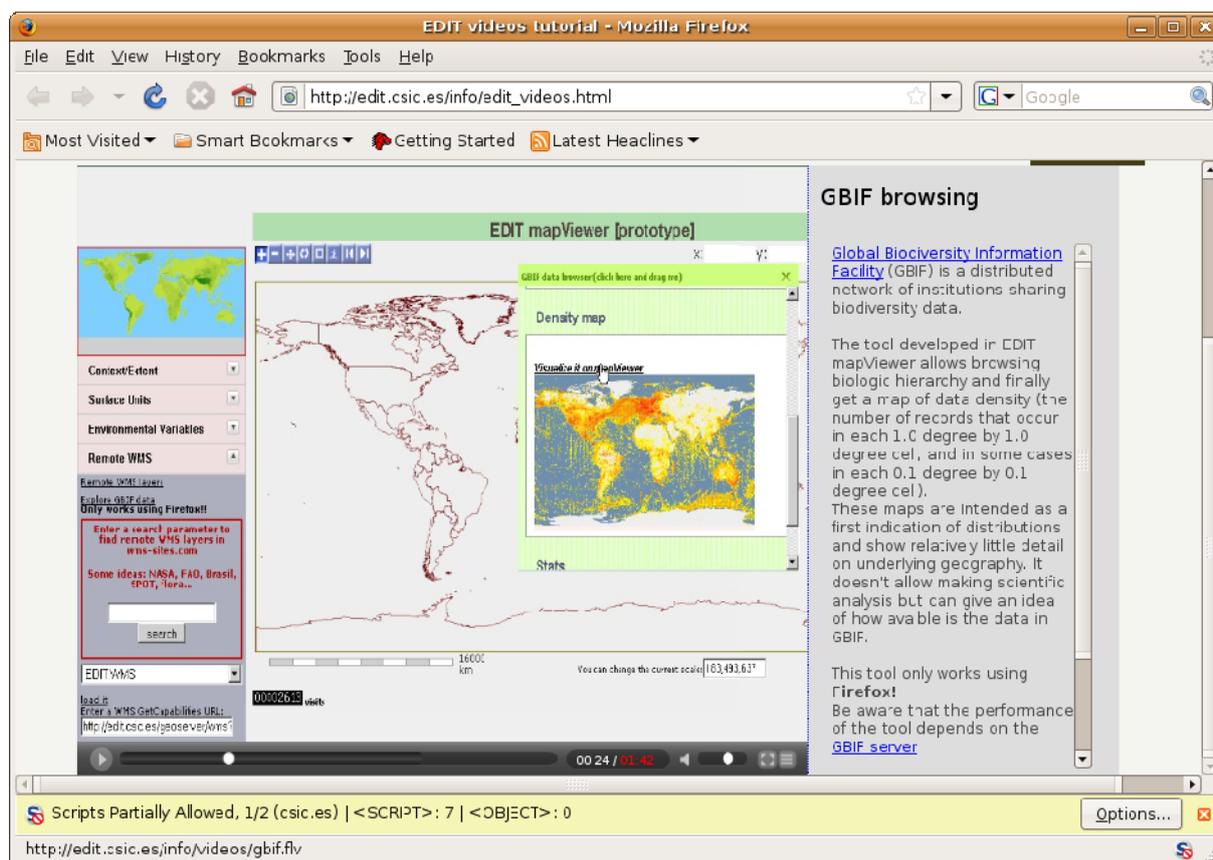
A very interesting option is to search the WMS by yourself in Google: the key words are "Getcapabilities XML" and the thematic search. "Googling" you should finally get the GetCapabilities URL to insert in the text box.

If the layer you select has "Metadata" and "Legend", you can see it in the Remote WMS floating window. Also the "Legend" will be added on the Remote WMS layer control. Be aware that the performance of adding many data not only depends on EDIT mapViewer but also on the WMS server you are asking to.

## GBIF browsing

Global Biodiversity Information Facility (GBIF) is a distributed network of institutions sharing biodiversity data.

The tool developed in EDIT mapViewer allows browsing biologic hierarchy and finally gives a map of data density (the number of records that occur in each 1.0 degree by 1.0 degree cell, and in some cases in each 0.1 degree by 0.1 degree cell).



These maps are intended as a first indication of distributions and show relatively little detail on underlying geography. It doesn't allow making scientific analysis but can give an idea of how available is the data in GBIF. This tool currently only works using Firefox!

Be aware that the performance of the tool depends on the GBIF server.

Browse till you get the desired level of classification and click on the left cross. If there is georeferenced information, just click on "Visualize it on mapViewer".

## Future analysis

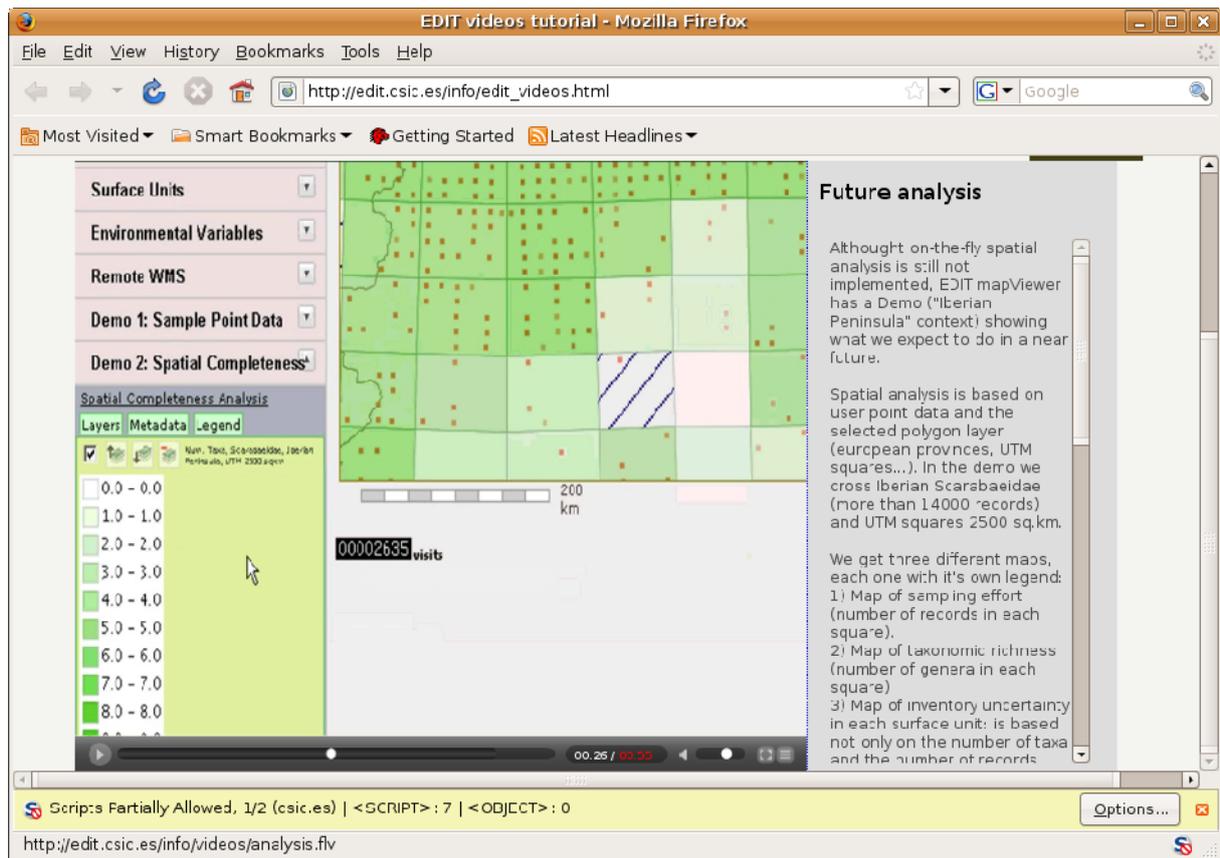
Although on-the-fly spatial analysis is still not implemented, EDIT mapViewer has a Demo ("Iberian Peninsula" context) showing what we expect to do in a near future.

Spatial analysis is based on user point data and the selected polygon layer (European provinces, UTM squares...). In the demo we cross Iberian Scarabaeidae (more than 14000 records) and

UTM squares 2500 sq.km.

We get three different maps, each one with it's own legend:

- 1) Map of sampling effort (number of records in each square).
- 2) Map of taxonomic richness (number of genera in each square)
- 3) Map of inventory uncertainty in each surface unit: is based not only on the number of taxa and the number of records, but also on the relative frequency of the taxa



The map of inventory uncertainty indicates the 'red' surface units where is necessary to carry on additional surveys in order to recover the spatial variation of the area, or where data on absences should be recorded.

As result of inventory uncertainty analysis we can construct a collector curve. It plots number of records (x axis) versus number of genera (y axis) on each surface unit. Since the more the sampling effort is carried out, the more genus are captured, capturing new genus gets progressively harder.

Also the slope at the end of the curve is important, and is based not only on the number of taxa and the number of records in each surface unit, but also on the relative frequency of the taxa. It represents the mean effort dedicated to discover the last species found in each surface unit.

Surface units which have been intensely surveyed and little slope at the end of the curve means that will be very difficult to find new genus here.

We can thus conclude that it is not necessary to carry out additional surveys.