Practical Introduction to OrbisGIS V3.0

OrbisGIS

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Outline

1 - Presentation of OrbisGIS
2 - Start an OrbisGIS project
3 - OrbisGIS interface components
4 - Organize & Load your data
5 - Tools for navigation, selection and interrogation
6 - TOC : Table of contents
7 - Edit Legend
8 - Tools for displaying attributes
9 - Introduction to SQL
1 - Presentation of OrbisGIS … in few words

- GIS application dedicated to scientific spatial simulation.

- Developed by French IRSTV (Research Institute on Urban Sciences and Technics)

- Able to manipulate and create vectorial and raster spatial data.
  - GDMS (Generic Datasources Management System) for vector layers and attributes data,
  - GRAP (GeoRAster Processing) for raster data such as aerial photos or digital elevation models.

- Distributed under GPL 3 license.

- 100% Java

- Since the begining of 2008

- Last official release : V 2.2.0

- Last Beta release : V 3.0
1 - Presentation of OrbisGIS ... on Internet

http://www.orbisgis.org/

Mailing list
http://orbisgis.3871844.n2.nabble.com/

(... and soon for the V3.0)


Follow OrbisGIS on Twitter
http://twitter.com/OrbisGIS

info@orbisgis.org
2 - Start an OrbisGIS project

Launch the Java Web Start of OrbisGIS V3.0

Click on: http://geosysin.iict.ch/irstv-web/jws/orbисgis.jnlp
2 - Start an OrbisGIS project

Load or create a new workspace

- As much workspace as you want
- Use a workspace as default in order to skip this step (not definitive)
3 - OrbisGIS interface components … a multi-document based application

Add / Remove / Resize / Extract / Move (with drag & drop) windows
3 - OrbisGIS interface components

Add / Remove window

Extract / Remove window

Change workspace

Workspace : /home/petit/Workspace_Girona
3 - OrbisGIS interface components

The major components

- Geocatalog: the place where you manage datasources
- Editor – Map: the place where you display and edit spatial objects
- Editor – Table: the place where you consult attributes informations
- Geocognition: the place where you manage map and SQL queries
- SQL console: the place where you execute SQL statements
4 - Organize and load your data

Add a new map

→ A new map appears in the “Editors” view

→ TOC becomes enabled
4 - Organize and load your data

a- Add new datasources

b- Define the extension and select file

c- Clic on “Ok” → data is in the Geocatalog
5 - Tools for navigation, selection and interrogation
5 - Tools to manage OrbiGIS and for navigation

- A map must be open
- You must have at least one layer in the TOC
- Zoom + / - and Pan runs too with the mouse's wheel
5 - Tools for selection & interrogation

* At least one object must be selected
6 - TOC : Table of contents

- Make visible / invisible layers
- Order layers (with drag & drop)
- Rename layers (with double-click) → gives an alias
- Get tools with right-click
7 - Edit Legend … Unique symbol
7 - Edit Legend ... Thematic analysis

The image shows a screenshot of the Legend edition window in a GIS software, specifically OrbisGIS. The window is configured for a layer named 'Population structure' with the classification field set to 'Envelope.Area'. The software allows for interval classification and selection of unique symbols. The number of intervals is set to 4, with the first color selected as blue and the final color as red. The table below the window lists the intervals with their corresponding minimum and maximum values:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Init (included)</th>
<th>End (excluded)</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.416083775...</td>
<td>5022.5449180...</td>
<td>30.416 - 5022...</td>
</tr>
<tr>
<td></td>
<td>5022.5449180...</td>
<td>13393.673311...</td>
<td>5022.545 - 133...</td>
</tr>
<tr>
<td></td>
<td>13393.673311...</td>
<td>39367.191472...</td>
<td>13393.673 - 39...</td>
</tr>
<tr>
<td></td>
<td>39367.191472...</td>
<td>514492.56617...</td>
<td>39367.191 - 51...</td>
</tr>
</tbody>
</table>

The software also includes options for scale adjustment with a current scale indicator.
8 - Tools for displaying attributes

Table view

Simple query interface
8 - Tools for displaying attributes

Tools on field

Tools on lines

Tools are different if field is string or numeric
9 - Introduction to SQL

- Syntax coloring
- Execute queries
- Erase script
- Open .sql file
- Save script in a .sql file
- Search text
- Drag & Drop syntax from the Geocognition
9 - Introduction to SQL

Selection query

```sql
select * from Healt_services;
```

Query with a “where” condition

*With string*
```sql
select * from Healt_services where TIPUS='hospital';
```

*With numeric*
```sql
select * from Healt_services where ID > 5 ;
```

*Both types*
```sql
select * from Healt_services where ID > 5 and TIPUS='hospital';
```

Extract a part of a table

```sql
select the_geom, OBJECTID, FID_1 from Population_structure;
select *{except OBJECTID, FID_1} from Population_structure;
```

- Click on the map before executing your query
- OrbisGIS returns a new temporary .gdms layer in the TOC
- You can use “Create table” function to save the result in the Geocatalog
9 - Introduction to SQL

Compute mathematical operations on fields

\[
\text{select } *, (\text{FNODE} + \text{TNODE}) \text{ as } \text{NODE} \text{ from rivers;}
\]
\[
\text{select the_geom, } (\text{LENGTH}/1000) \text{ as Dist_km from rivers;}
\]

Store the result in a new table

Create table my_new_table as select * from Population_structure where SECCIO_ < 15;

💡 The result is stored in the Geocatalog. Then you have to drag & drop it in the TOC

Save the result directly in a file, on your computer

Select register('/my_directory/my_table.shp','my_table');
Create table my_table as select * from Population_structure;

→ you can choose different type of format (here .shp)
→ 'my_table' correspond to the layer's alias

Remove layer from OrbisGIS ...

drop table my_table;

... and directly on you computer

drop table my_table purge;

... if the layer exists

drop table if exists my_table;
9 - Introduction to SQL

Query chaining

```
create table table_1 as select * from Population_structure where OBJECTID < 3000;
create table table_2 as select * from table_1 where MITJANA_ED > 40;
```

Gives a new name to a field or to the result of an operation

```
create table table_3 as select the_geom, MITJANA_ED as MITJ from table_1
create table table_4 as select Count(the_geom) as Total from Population_structure
   where OBJECTID < 3000;
```

Alter table

```
alter table rivers add column id numeric;
```

Update table

```
update rivers set id = autonumeric();
or
update rivers set id='1';
```
Outline for tomorrow

- Introduction to spatial SQL
- Compare the calculation of the watersheds using two different DEM
- Production of spatial indicators
- Assessing the impact of rail roads on runoff
Any questions?