

## 3 CREATING A WFS SERVER

### 3.1 MAP-FILE FOR SINTANA

The **ARK** system allows for some useful spatial features for the input data. For example the map view allows an overview of all the maps inserted while the micro view will show a map with the chosen feature in the middle.

In order to use the spatial functions of the **ARK** program it is necessary to setup a map-file for the project.

1. The first part of the map file presents the over all map features like the physical size of the map and the real world extent together with the background colour, output formats and paths to other features.

```
MAP
EXTENT          1.621540 44.150600 37.955200 56.989600
SIZE            600 400
SHAPEPATH      "C:/ms4w/Apache/htdocs/students/hro106/sintana/data/mapping/"
IMAGECOLOR     171 214 205
FONTSET
"C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/fonts/fonts.list"
SYMBOLSET
"C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/symbols/symbols35.sym"
DEBUG ON

OUTPUTFORMAT
NAME PNGNOINT
DRIVER "GD/PNG"
MIMETYPE "image/png"
IMAGEMODE PC256
FORMATOPTION "INTERLACE=OFF"
EXTENSION "png"
END

IMAGETYPE      PNG

WEB
IMAGEPATH 'C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/tmp/'
IMAGEURL 'mapserver/tmp/'
MAXSCALE 75000
MINSCALE 10
LOG 'mapserver/mapfiles/MS_ERRORLOG.txt'
END
```

2. The projection is WGS 84 ( code 4326)

```
PROJECTION
"init=epsg:4326"
END
```

3. The scalebar feature

```
SCALEBAR
IMAGECOLOR 182 189 199
LABEL
COLOR 0 0 0
SIZE LARGE
END
STYLE 1
SIZE 200 2
```

```

COLOR 0 0 0
UNITS METERS
INTERVALS 2
TRANSPARENT TRUE
STATUS EMBED
POSITION 1r
END

```

## 4. The legendfeature

```

LEGEND
  KEYSIZE 12 12
  LABEL
    FONT arial
    TYPE TRUETYPE
    SIZE 10
    COLOR 0 0 0
  END
  STATUS ON
END

```

## 5. The first ( bottom) layer with country map of Europe using the field Country as label

```

LAYER
  NAME "Europe"
  STATUS DEFAULT
  CONNECTION
  "C:/ms4w/Apache/htdocs/students/hro106/sintana/data/mapping/Europe.shp"
  CONNECTIONTYPE OGR
  GROUP "cor"
  LABELITEM "Country"
  METADATA
    "lyrname" "Countries"
    "grpname" "Europe"
  END
  SIZEUNITS PIXELS
  STATUS ON
  TEMPLATE
  "C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/templates/dummy_template.html"
  TOLERANCEUNITS PIXELS
  TRANSPARENCY 0
  TYPE POLYGON
  UNITS METERS
  CLASS
    NAME "Countries"
    STYLE
      COLOR 236 238 172
      OUTLINECOLOR 97 97 97
    END
    LABEL
      SIZE 12
      TYPE truetype
      FONT arial
      COLOR 97 97 97
    END
  END
END

```

## 6. The two layers covering a line and a polygon shapefile for the rivers and lakes in Europe

```

LAYER
  NAME "Rivers_poly"
  STATUS DEFAULT
  CONNECTION
  "C:/ms4w/Apache/htdocs/students/hro106/sintana/data/mapping/Rivers_poly.shp"
  CONNECTIONTYPE OGR
  GROUP "cor"
  METADATA
    "lyrname" "Rivers poly"
    "grpname" "Europe"
  END
  SIZEUNITS PIXELS
  STATUS ON

```

```

TEMPLATE
"C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/templates/dummy_templ
ate.html"
TOLERANCEUNITS PIXELS
TRANSPARENCY 0
TYPE POLYGON
UNITS METERS
CLASS
    NAME "Rivers poly"
    STYLE
        COLOR 171 214 205
        OUTLINECOLOR 106 173 181
    END
END
END

LAYER
NAME "Rivers_lines"
STATUS DEFAULT
CONNECTION
"C:/ms4w/Apache/htdocs/students/hro106/sintana/data/mapping/Rivers_lines.shp"
CONNECTIONTYPE OGR
GROUP "cor"
METADATA
    "lyrname" "Rivers lines"
    "grpname" "Europe"
END
SIZEUNITS PIXELS
STATUS ON
TEMPLATE
"C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/templates/dummy_templ
ate.html"
TOLERANCEUNITS PIXELS
TRANSPARENCY 0
TYPE LINE
UNITS METERS
CLASS
    NAME "Rivers lines"
    STYLE
        COLOR 106 173 181
        WIDTH 2
    END
END
END

```

7. The last (top) laver covers the points of the **Sintana project** finds

```

LAYER
NAME "Sintana"
STATUS ON
CONNECTION
"C:/ms4w/Apache/htdocs/students/hro106/sintana/data/mapping/Sintana.shp"
CONNECTIONTYPE OGR
GROUP "sin"
LABELITEM "Place_name"
LABELMAXSCALE 51
METADATA
    "lyrname" "Sintana Mapping"
    "grpname" "Sintana"
END
SIZEUNITS PIXELS
TEMPLATE
"C:/ms4w/Apache/htdocs/students/hro106/sintana/mapserver/templates/dummy_templ
ate.html"
TOLERANCEUNITS PIXELS
TYPE POINT
UNITS METERS
CLASS
    NAME "Sintana"
    STYLE
        COLOR 204 51 51
        SYMBOL "square"
        SIZE 5
    END
    LABEL
        SIZE 10

```

```

                                TYPE truetype
                                FONT arial
                                COLOR 97 97 97
                                END
                                END
                                END
                                END # end of map file

```

In order to serve the data which has been setup and described in the map-file it is necessary to build a **WFS** server. This one is built by Stuart Eve from **L – P : Archaeology** who has generously allowed me to include it to this development. The script basically receives requests through **HTTP** GET and returns an image or a **GML** file:

```

dl('php_mapscript.dll');
$request = ms_newowsrequestobj();
//now we need to set up the request parameters and loop through them adding them to
the request object
foreach ($_REQUEST as $key =>$value){
$request->setParameter($key,$value);
}
ms_ioinstallstdouttobuffer();
//this mapfile path is set in config/settings
if($request->getValueByName('SERVICE') == 'WMS'){
$Map = ms_newMapobj("$wms_map");
}
if($request->getValueByName('SERVICE') == 'WFS'){
$Map = ms_newMapobj("$wfs_map");
}
$Map->owsdispatch($request);
$contenttype = ms_iostripstdoutbuffercontenttype();
if ($contenttype == 'image/png'){
    header('Content-type: image/png; mode=24bit');
    ms_iogetStdoutBufferBytes();
}
if ($contenttype == 'image/png; mode=24bit'){
    header('Content-type: image/png; mode=24bit');
    ms_iogetStdoutBufferBytes();
}
if ($contenttype == 'application/vnd.ogc.wms_xml'){
$buffer = ms_iogetstdoutbufferstring();
    header('Content-type: text/xml');
echo $buffer;
}
if ($contenttype == 'application/vnd.ogc.gml'){

```

```

$buffer = ms_iogetstdoutbufferstring();
header('Content-type: text/xml');
echo $buffer;
}

if ($contenttype == 'text/xml'){
$buffer = ms_iogetstdoutbufferstring();
header('Content-type: text/xml');
echo $buffer;
}

if ($contenttype == 'text/html'){
$buffer = ms_iogetstdoutbufferstring();
header('Content-type: text/html');
echo $buffer;
}

ms_ioresethandlers();
?>

```

### 3.2 USING MAPSERVER TO CREATE A WFS SERVER THROUGH A MAP-FILE

Through a few additions to the map-file already set up for the **Sintana project** to show the spatial data in the **ARK** system in addition to a **WFS** server, it is possible to setup a **WFS** server.

The extra stuff to make map-file server **WFS** could be added to the map-file, however, this breaks the spatial setup of the **ARK** system so instead a copy (sintana\_wfs.map) is used and the following code is added:

1. Under the WEB part the metadata stating the **WFS** title, the online resource which is the **WFS** server called and at least one projection should be set.

```

METADATA
  "wfs_title"           "Sintana wfs service"
  "wfs_onlineresource"
  "http://ark.lparchaeology.com/examples/sintana/sintana_wfs.php?"
  "wfs_srs"            "EPSG:4326 EPSG:42101 EPSG:4269 EPSG:4326"
END

```

2. For each layer the metadata stating the layer title, the feature id ( which is the field name in the shape-file – like the one used as label) and whether to include all the features in the map should all be set.

```

"wfs_title"    "Europe" ## REQUIRED
"gm1_featureid" "Country" ## REQUIRED
"gm1_include_items" "all"

```

3. It is also a good idea to set the projection for each layer:

```
PROJECTION
  "init=epsg:4326"
END
```

4. Each layer must have dump set to true:

```
DUMP TRUE
```

With all these things added to the original map-file the last thing needed is to add the actual **WFS** server which is a **PHP** script that receives the requested URL in much the same way as the above web-service for textual data and outputs **GML** (geographic markup language) which is a sort of **XML**. This server is the same as the online resource above:

```
http://ark.1parchaology.com/examples/sintana/sintana\_wfs.php
```

Online or on the university network only:

```
http://ay-dehus:8080/students/hro106/sintana/sintana\_wfs.php
```

This file uses the mapscript extension and can be called with the following three requests:

1. The getCapabilities request receives a **GML** document describing the capabilities and the feature types of the WFS server.

```
sintana/sintana\_wfs.php?SERVICE=WFS&VERSION=1.0.0&REQUEST=getcapabilities
```

2. The getFeature request receives a similar document with the features and their spatial data depending on the feature type called with the TYPENAME part of the URL.

```
sintana/sintana\_wfs.php?SERVICE=WFS&VERSION=1.0.0&REQUEST=getfeature&TYPENAME=Europe
```

3. Finally it is possible to call the describeFeatureType request which returns a **GML** document with all the feature types and their elements.

```
sintana/sintana\_wfs.php?SERVICE=WFS&VERSION=1.0.0&REQUEST=DescribeFeatureType
```