

## Exercise 7: Advanced Map Styling with SLD

### Goal

In this exercise you will learn some advanced symbolization techniques using SLD and QGIS mapserver.

### Part 1: SLD Rules and Feature Filtering

Open the “admin.sld” file from “C:\Workspace\wamp\Apache2\cgi-bin\qgis\_map\_server” directory and focus on the rules available in the eu\_countries layer.

Symbolization can be applied also to single features if they are properly filtered according to a unique identifier (e.g. object id, name). In this step, delete the rules from “admin.sld” for the eu\_countries layer and create new rules in order to apply a specific symbolization to Switzerland (by using the <PropertyIsEqualTo>). The new rules can be created by following the example below. Understand how the first rule filters and applies a specific symbolization to Switzerland.

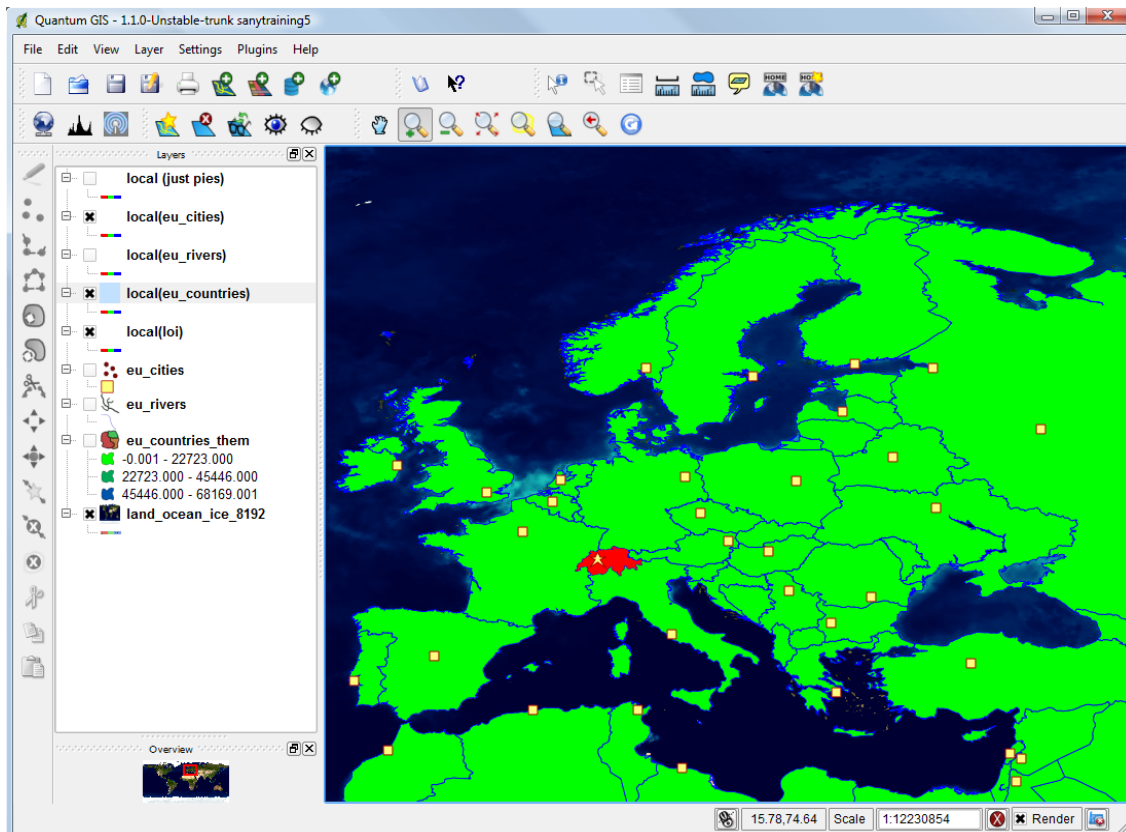
```

<Rule>
  <Filter>
    <PropertyIsEqualTo><PropertyName>ctry_name</PropertyName>
    <Literal>Switzerland</Literal></PropertyIsEqualTo>
  </Filter>
  <PolygonSymbolizer>
    <Fill>
      <CssParameter sld:name="fill">#ff0000</CssParameter>
    </Fill>
  </PolygonSymbolizer>
</Rule>
<Rule>
  <PolygonSymbolizer>
    <Stroke>
      <CssParameter sld:name="stroke">#0000ff</CssParameter>
      <CssParameter sld:name="stroke-width">0.3</CssParameter>
    </Stroke>
    <Fill>
      <CssParameter sld:name="fill">#00ff00</CssParameter>
    </Fill>
  </PolygonSymbolizer>
</Rule>

```

Allow yourself enough time to further modify the rules and symbology according to your wishes (e.g. you may try to apply additional rules to the eu\_countries layer).

Similarly, change the SLD for the eu\_cities layer and then apply a different symbolization for the city of Bern (a feature in eu\_cities where the property “sort\_name” is equal with “BERN”). Well-known names for point symbols are for example: rectangle, circle, star, cross.



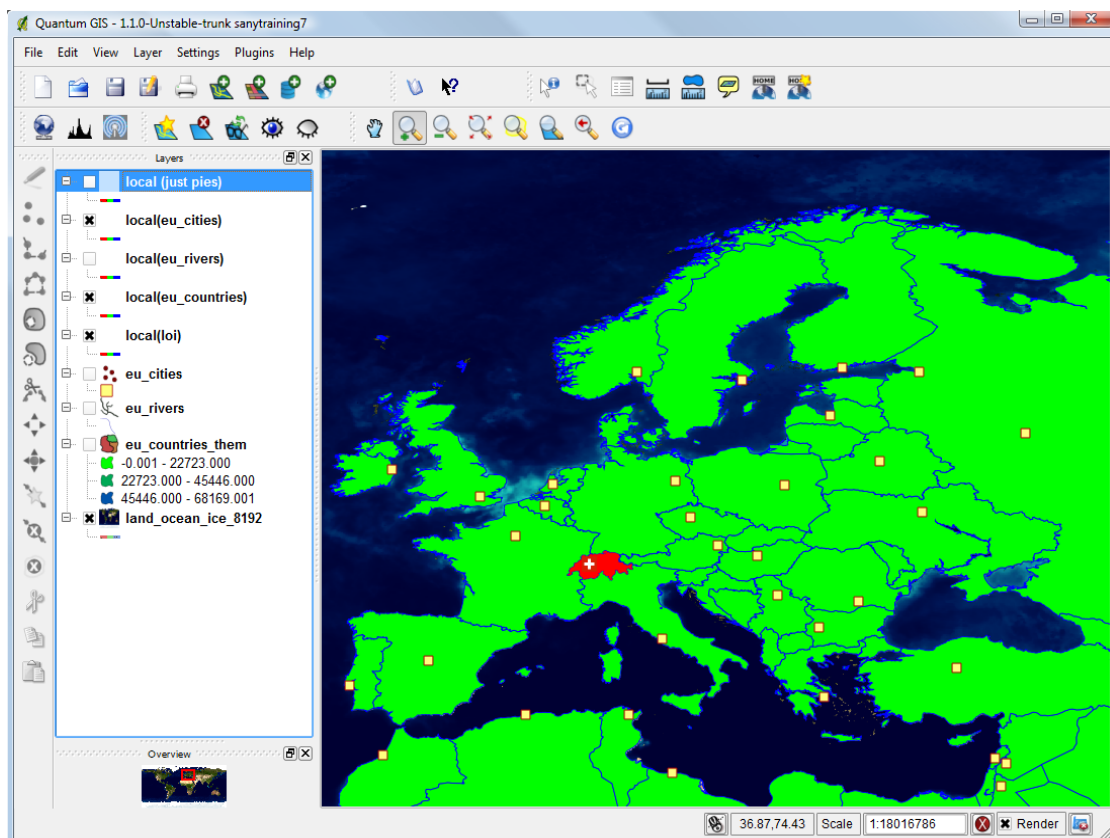
## Part 2: Advanced Point Symbolization

In this step, please continue editing the custom symbolization for the city of Bern. Delete the content of the Mark element and introduce an

`<SvgSymbol xmlns="http://www.opengis.net/sld"></SvgSymbol>` element.

Inside the newly created element paste the contents of the file "swissflag.svg" (available on "<http://karlinapp.ethz.ch/giscience2010/>"). The result should be similar with the following SLD excerpt:

```
<PointSymbolizer xmlns="http://www.opengis.net/sld">
  <Graphic xmlns="http://www.opengis.net/sld">
    <Mark xmlns="http://www.opengis.net/sld">
      <SvgSymbol xmlns="http://www.opengis.net/sld">
        <svg width="100%" height="100%" viewBox="0 0 30 30" xmlns="http://www.w3.org/2000/svg"
xmlns:xlink="http://www.w3.org/1999/xlink">
          <!-- From http://commons.wikimedia.org/wiki/Image:Flag_of_Switzerland.svg -->
          <g xmlns="http://www.w3.org/2000/svg">
            <!-- After http://commons.wikimedia.org/wiki/Image:Flag_of_Switzerland.svg -->
            <rect height="30" width="30" id="rect2215" x="0" y="0" style="fill:#d81e05" />
            <rect height="6" width="20" x="5" y="12" id="rect2217" style="fill:#ffffff" />
            <rect height="20" width="6" x="12" y="5" id="rect2219" style="fill:#ffffff" />
          </g>
        </svg>
      </SvgSymbol>
    </Mark>
    <Size xmlns="http://www.opengis.net/sld">5</Size>
  </Graphic>
</PointSymbolizer>
```



### Part 3: Advanced Area Symbolization

Now edit the eu\_countries layer inside the “admin.sld” file. In the SLD of eu\_countries, locate the first PolygonSymbolizer (to one pertaining to Switzerland), and then locate the Fill element. Now, replace the content of the Fill element with an area pattern as illustrated in the example below:

```
<Fill xmlns="http://www.opengis.net/sld">
  <pattern width="30" height="30" x="0" y="0">
    <g xmlns="http://www.w3.org/2000/svg">
      <!-- After http://commons.wikimedia.org/wiki/Image:Flag_of_Switzerland.svg -->
      <rect height="30" width="30" x="0" y="0" style="fill:#d81e05" />
      <rect height="6" width="20" x="5" y="12" style="fill:#ffffff" />
      <rect height="20" width="6" x="12" y="5" style="fill:#ffffff" />
    </g>
  </pattern>
</Fill>
```

### Discussion of the Exercise

You now have the know-how for creating complex symbolization for topographic maps to use in a Spatial Data Infrastructure.

### Links:

- As further guidance, you may also consult the tutorial reader from:

[http://karlinapp.ethz.ch/qgis\\_wms/giscience2010/QGISmapserverTutorialatGIScience2010\\_reader.pdf](http://karlinapp.ethz.ch/qgis_wms/giscience2010/QGISmapserverTutorialatGIScience2010_reader.pdf).