

WEBOVÉ SLUŽBY – KARTOGRAFICKÁ VIZUALIZACE

Vizualizace ve webových službách OGC

- Styled Layer Descriptor (SLD)
 - vytvořeno jako vizualizační rozšíření WMS
 - popis stylů
 - verze 1.0, 1.1, 1.1.0
- Symbology Encoding (SE)
 - doprovodná OGC specifikace k SLD
 - stylovací jazyk pro zapsání vizualizace
 - využití nejen ve WMS, ale i WFS/WCS
 - verze 1.1.0

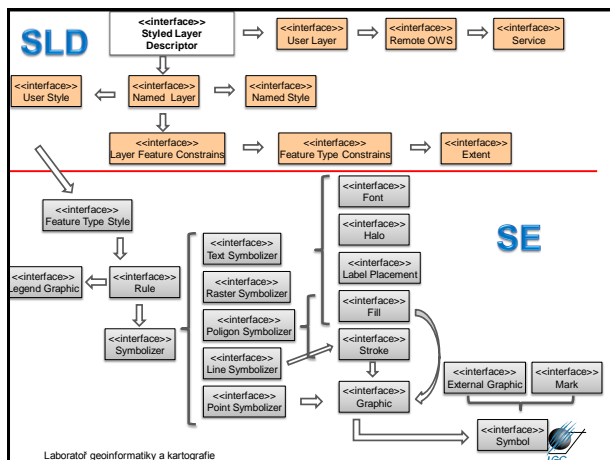
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Vizualizace ve webových službách OGC

- SLD umožňuje
 - stylovat všechny prvky stejně
 - používá se **FeatureTypeStyle** element
 - stylovat prvky odlišně na základě určitého atributu
 - operace **DescribeLayer** vrací typy prvků vrstvy (nebo přímo vrstvy) – přidáno navíc k podkladové WMS specifikaci
 - operace **DescribeFeatureType** (WFS) nebo **DescribeCoverageType** (WCS) pro zjištění atributů
 - poslat legendu pomocí volitelné operace **GetLegendGraphic**

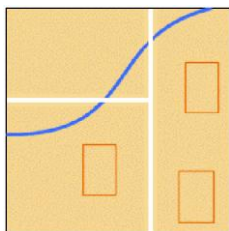
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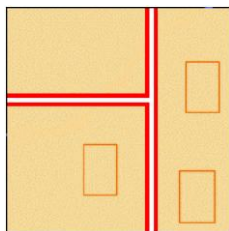
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Kombinace SLD s WMS

<http://yourfavoritesite.com/WMS?REQUEST=GetMap&BBOX=0.0,0.0,1.0,1.0&LAYERS=Rivers,Roads,Houses&STYLES=CenterLine,CenterLine,Outline>



<http://yourfavoritesite.com/WMS?REQUEST=GetMap&BBOX=0.0,0.0,1.0,1.0&LAYERS=Roads,Roads,Houses&STYLES=Casing,CenterLine,Outline>



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Převzato z: OGC Styled Layer Descriptor profile of the Web Map Service Implementation Specification, 2007



Základní syntaxe SLD stylu

```
<StyledLayerDescriptor version="1.1.0">
  <NamedLayer>
    <Name>Rivers</Name>
    <NamedStyle>
      <Name>CenterLine</Name>
    </NamedStyle>
  </NamedLayer>
  <NamedLayer>
    <Name>Roads</Name>
    <NamedStyle>
      <Name>CenterLine</Name>
    </NamedStyle>
  </NamedLayer>
  <NamedLayer>
    <Name>Houses</Name>
    <NamedStyle>
      <Name>Outline</Name>
    </NamedStyle>
  </NamedLayer>
</StyledLayerDescriptor>
```

vrstva (odpovídá LAYER ve WMS)

styl (odpovídá STYLES ve WMS)

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Převzato z: OGC Styled Layer Descriptor profile of the Web Map Service Implementation Specification, 2007



SE – definice vizualizačních pravidel

Rule

- Name
- Title
- Abstract
- LegendGraphic
- Filter
- ElseFilter
- MinScaleDenominator
- MaxScaleDenominator
- LineSymbolizer
- PolygonSymbolizer
- PointSymbolizer
- TextSymbolizer
- RasterSymbolizer

```
<xs:element name="Rule">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:Name" minOccurs="0"/>
      <xs:element ref="#id:Title" minOccurs="0"/>
      <xs:element ref="#id:Abstract" minOccurs="0"/>
      <xs:element ref="#id:LegendGraphic" minOccurs="0"/>
      <xs:choice minOccurs="0">
        <xs:element ref="#id:Filter"/>
        <xs:element ref="#id:ElseFilter"/>
      </xs:choice>
      <xs:element ref="#id:MinScaleDenominator" minOccurs="0"/>
      <xs:element ref="#id:MaxScaleDenominator" minOccurs="0"/>
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:element ref="#id:LineSymbolizer"/>
        <xs:element ref="#id:PolygonSymbolizer"/>
        <xs:element ref="#id:PointSymbolizer"/>
        <xs:element ref="#id:TextSymbolizer"/>
        <xs:element ref="#id:RasterSymbolizer"/>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

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SE – LineSymbolizer

LineSymbolizer

- Geometry
- Stroke

- Geometry

- PropertyName

- Stroke

- GraphicFill
- GraphicStroke
- CssParameter

```
<xs:element name="LineSymbolizer">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:Geometry" minOccurs="0"/>
      <xs:element ref="#id:Stroke" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Geometry">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="ogc:PropertyName"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

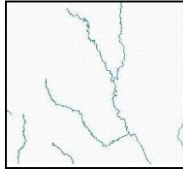
<xs:element name="Stroke">
  <xs:complexType>
    <xs:sequence>
      <xs:choice minOccurs="0">
        <xs:element ref="#id:GraphicFill"/>
        <xs:element ref="#id:GraphicStroke"/>
      </xs:choice>
      <xs:element ref="#id:CssParameter" minOccurs="0"
        maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

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SE – LineSymbolizer

```
<LineSymbolizer>
  <Geometry>
    <ogc:PropertyName>centerline</ogc:PropertyName>
  </Geometry>
  <Stroke>
    <CssParameter name="stroke"=#0000ff/>
    <CssParameter name="stroke-width">2</CssParameter>
  </Stroke>
</LineSymbolizer>
```



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SE – PolygonSymbolizer

PolygonSymbolizer

- Geometry
- Fill
- Stroke

- Fill

- GraphicFill
- CssParameter

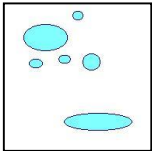
```
<xs:element name="PolygonSymbolizer">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:Geometry" minOccurs="0"/>
      <xs:element ref="#id:Fill" minOccurs="0"/>
      <xs:element ref="#id:Stroke" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Fill">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:GraphicFill" minOccurs="0"/>
      <xs:element ref="#id:CssParameter" minOccurs="0"
        maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

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SE – PolygonSymbolizer



```
<PolygonSymbolizer>
  <Geometry>
    <ogc:PropertyName>the_area</ogc:PropertyName>
  </Geometry>
  <Fill>
    <CssParameter name="fill"=#aaaaa/>
  </Fill>
  <Stroke>
    <CssParameter name="stroke"=#0000aa/>
  </Stroke>
</PolygonSymbolizer>
```

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SE – TextSymbolizer

TextSymbolizer

- Geometry
- Label
- Font
- LabelPlacement
- Halo
- Fill

- LabelPlacement

- PointPlacement
- LinePlacement

- PointPlacement
- AnchorPoint
- Displacement
- Rotation

```
<xs:element name="TextSymbolizer">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:Geometry" minOccurs="0"/>
      <xs:element ref="#id:Label" minOccurs="0"/>
      <xs:element ref="#id:Font" minOccurs="0"/>
      <xs:element ref="#id:LabelPlacement" minOccurs="0"/>
      <xs:element ref="#id:Halo" minOccurs="0"/>
      <xs:element ref="#id:Fill" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="LabelPlacement">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:PointPlacement"/>
      <xs:choice>
        <xs:element ref="#id:LinePlacement"/>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="PointPlacement">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="#id:AnchorPoint" minOccurs="0"/>
      <xs:element ref="#id:Displacement" minOccurs="0"/>
      <xs:element ref="#id:Rotation" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

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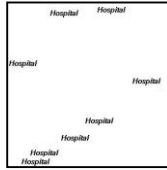


SE – TextSymbolizer

```

<TextSymbolizer>
  <Geometry>
    <ogc:PropertyName>locatedAt</ogc:PropertyName>
  </Geometry>
  <Label>
    <ogc:PropertyName>hospitalName</ogc:PropertyName>
  </Label>
  <Font>
    <CssParameter name="font-family">Arial</CssParameter>
    <CssParameter name="font-family">Sans-Serif</CssParameter>
    <CssParameter name="font-style">italic</CssParameter>
    <CssParameter name="font-size">10</CssParameter>
  </Font>
  <Fill>
    <CssParameter name="fill">#000000</CssParameter>
  </Fill>
  <Halo/>
</TextSymbolizer>

```



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SE – RasterSymbolizer

RasterSymbolizer

- Geometry
- Opacity
- ChannelSelection
- OverlapBehavior
- ColorMap
- ContrastEnhancement
- ShadedRelief
- ImageOutline

```

<xs:element name="RasterSymbolizer">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="sld:Geometry" minOccurs="0"/>
      <xs:element ref="sld:Opacity" minOccurs="0"/>
      <xs:element ref="sld:ChannelSelection" minOccurs="0"/>
      <xs:element ref="sld:OverlapBehavior" minOccurs="0"/>
      <xs:element ref="sld:ColorMap" minOccurs="0"/>
      <xs:element ref="sld:ContrastEnhancement" minOccurs="0"/>
      <xs:element ref="sld:ShadedRelief" minOccurs="0"/>
      <xs:element ref="sld:ImageOutline" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

ChannelSelection

- RedChannel
- GreenChannel
- BlueChannel
- GrayChannel

```

<xs:element name="ChannelSelection">
  <xs:complexType>
    <xs:choice>
      <xs:sequence>
        <xs:element ref="sld:RedChannel"/>
        <xs:element ref="sld:GreenChannel"/>
        <xs:element ref="sld:BlueChannel"/>
      </xs:sequence>
      <xs:element ref="sld:GrayChannel"/>
    </xs:choice>
  </xs:complexType>
</xs:element>

```

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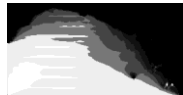


SE – RasterSymbolizer

```

<?xml version="1.0" encoding="UTF-8"?>
<StyledLayerDescriptor xmlns="http://www.opengis.net/sld"
  xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.opengis.net/sld
    http://schemas.opengis.net/sld/1.0.0/StyledLayerDescriptor.xsd" version="1.0.0">
  <userLayer>
    <name>Raster_layer</name>
    <layerFeatureConstraints>
      <featureTypeConstraint/>
    </layerFeatureConstraints>
    <userStyle>
      <name>Raster</name>
      <featureTypeStyle>
        <featureTypeName>Feature</featureTypeName>
        <rule>
          <rasterSymbolizer>
            <opacity>1.0</opacity>
            <channelSelection>
              <grayChannel>
                <sourceChannelName>1</sourceChannelName>
                <contrastEnhancement>
                  <histogram/>
                </contrastEnhancement>
              </grayChannel>
            </channelSelection>
          </rasterSymbolizer>
        </rule>
      </featureTypeStyle>
    </userStyle>
  </userLayer>
</StyledLayerDescriptor>

```



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