MAPS AND SPECIFICATIONS:
FROM DESIGN MODEL TO FINAL USER

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Outline

- Introduction and context
- Problematic
- Standardization of map symbology description
- Portrayal interoperability
- User interface interoperability
- Towards a thematic map description
- Conclusion
A research partnership

- IICT/SYSIN unit research:
  - Media Engineering department of HEIG-VD
  - SCAPC2 project: Standard Centered Authoring and Publication of Cartographic Content

- IRSTV institute:
  - SOGVILLE project: Système d'Observation Géographique de la VILLE
  - funded by the GeoPAL project.
Introduction

- More and more map users and map makers
- Tons of mapping mashups (32% !)
- Thanks to Web 2.0
- Relatively basic maps
Collaborative platforms

- Wikipedia
  
  “...the free encyclopedia that anyone can edit.”

- OpenStreetMap
  
  “...a free editable map of the whole world. It is made by people like you.”

- The wisdom of crowds ...
  
  “...many are smarter than the few”
Problematic

- A clear trend for cartographic content sharing!
- How does this trend impact the business of the cartographer?

Towards collaborative authoring of cartographic content
Collaborative authoring ...

... share and build together a cartographic document
... involving several actors with complementary skills
Use of common standards

... various cartographic tools
... is OGC Symbology Encoding ready?
Standardization of symbology description

- Recent concern that needs further considerations
- OGC Symbology Encoding seems a first choice
  - SLD – Styled Layer Descriptor to define a customized symbology to be applied by an OGC Web Map Service
  - SE – Symbology Encoding, birth in 2005
  - technical specification dedicated to portrayal interoperability
  - level of abstraction ready to address the wide range of possible map representations
  - set of graphical instructions to control a map renderer
SE 1.1 – simple area symbolization

- **FeatureTypeStyle**
  - **Rule**
    - **PolygonSymbolizer**
      - **Fill**
        - solid gray
      - **Stroke**
        - 1px wide black pencil

http://geosysin.iict.ch/se_styles/polygon.se
SE 1.1 – concept of filtered rule

- FeatureTypeStyle
  - Rule n°1
    Filter (match CAPITAL == 1)
    - PointSymbolizer
      - Mark 10x10 red square
  - Rule n°2
    ElseFilter (match any other feature)
    - PointSymbolizer
      - Mark Ø 7 red circle

http://geosysin.iict.ch/se_styles/cities.se
SE 1.1 – Choropleth map

- FeatureTypeStyle
  - Rule
    - PolygonSymbolizer
      - Fill color
        - Categorize
          ONU_2002

http://geosysin.iict.ch/se_styles/choropleth_un2002.se
Towards a next release of SE standard

- Few research projects about this idea of a common way to describe map symbology
  CartoML, DiaML, SE-Thematic, ...
- Several Change Request Proposals posted to OGC
- Essential evolution of the standard
  - In 2010, revival of SLD/SE standard working group
  - **Purpose**: compile all proposals so as to enlarge the set of (carto)graphical instructions

http://www.opengeospatial.org/projects/groups/sldse1.2swg
User interface interoperability?

• Why?
  • Evaluate the use of the SLD specification and its usage for thematic map sharing

• How?
  • Create a choropleth map
    (4 classes, quantiles, greyscale)

• What?
  • 5 opensource tools
User interface interoperability?

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<th>Version</th>
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<th>Library dependencies</th>
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<tr>
<td>iGeoDesktop</td>
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User interface interoperability?

- Is the tool able to read a SLD file?

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Score

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User interface interoperability?

- Is the tool able to render a SLD file?

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### User interface interoperability?

- Is the tool able to fully fill in the cartographic UI based on a SLD file?

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User interface interoperability?

• Some explanations

AtlasStyler

```xml
<sld:FeatureTypeStyle>
  <sld:Name>
    QUANTITIES_COLORIZED_POLYGON:VALUE#PTOT99_DENS:NORM#null:METHOD#QUANTILES:PALETTE#Grays
  </sld:Name>
  <sld:FeatureTypeName>regions_francais</sld:FeatureTypeName>
  ...
</sld:FeatureTypeStyle>
```

uDIG

```xml
<sld:FeatureTypeStyle>
  <sld:Name>name</sld:Name>
  <sld:FeatureName>Feature</sld:FeatureName>
  <sld:SemanticTypeIdentifier>generic:geometry</sld:SemanticTypeIdentifier>
  <sld:SemanticTypeIdentifier>colorbrewer:quantile:dynamic greyscale</sld:SemanticTypeIdentifier>
</sld:FeatureTypeStyle>
```
Towards a thematic map description

• Add semantic information to qualify a map?

“The SemanticTypeIdentifier is experimental and is intended to be used to identify what the feature style (or coverages in case of usage inside a CoverageStyle) is suitable to be used for using community-controlled name(s).” (OGC 05-077r4)

```xml
<Categorize fallbackValue="#FFFF00"> ...
<SemanticTypeIdentifier>categorizeMethod:quantile</SemanticTypeIdentifier>
</Categorize>
```
Towards a thematic map description

- **FeatureTypeStyle**
  - **Rule**
    - **PolygonSymbolizer**
      - Fill color
        - Categorize
          - ONU_2002
            
            
```
\[
\begin{align*}
40 & \leq \\
45 & \leq \\
50 & \leq \\
55 & \leq \\
60 & \leq \\
\end{align*}
\]
```

- **SemanticTypeIdentifier**
  - categorizeMethod : quantiles
Towards a thematic map description

- As a result …
  - All classification methods may be well identified (well known names),
  - SemanticTypeIdentifier may be moved to be supported by other elements,
  - This proposal doesn't prevent bad uses and...

… does not make the effort of defining the different type of maps (ie proportional symbols).
Towards a thematic map description

- **FeatureTypeStyle**
  - **Rule**
    - PolygonSymbolizer
      - Fill color
    - Categorize
      PTOT99_DENS
    - SemanticTypeIdentifier
categorizeMethod : quantiles ?

- **FeatureTypeStyle**
  - **Rule**
    - PointSymbolizer
      - Graphic
        - Mark : Circle
      - Size
        - SQRT(PTOT99_DENS)/Max value
        - SemanticTypeIdentifier
sizeMethod : linearArea ?
Conclusion

• Two levels of interoperability ...
  • Related to a set of graphical instructions to control a map renderer (SE standard)
  • Related to a semantic description to cover the cartographic UI needs.

• Is SE standard ready to guarantee these two levels ?
• You're welcome to join the SE group !