MAPS AND SPECIFICATIONS : FROM DESIGN MODEL TO FINAL USER

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IICT

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Outline

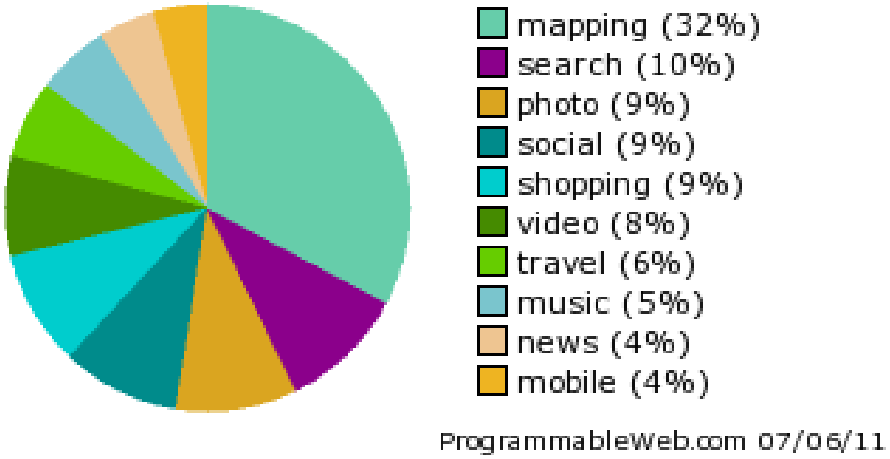
- Introduction and context
- Problematic
- Standardization of map symbology description
- Portrayal interoperability
- User interface interoperability
- Towards a thematic map description
- Conclusion

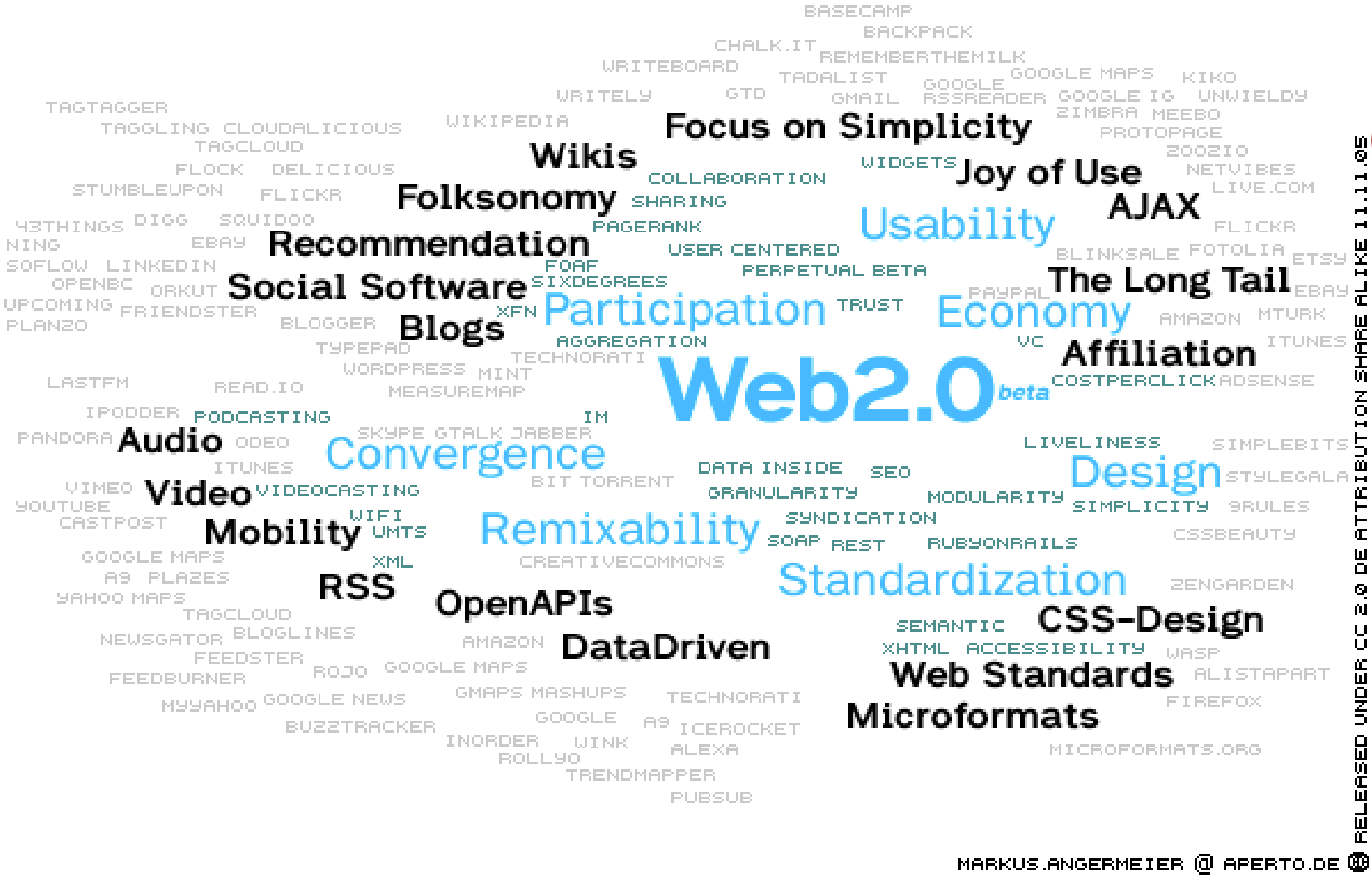
A research partnership

- 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




BASECAMP
BACKPACK
CHALK.IT
REMEMBERTHEMILK
WRITEBOARD
TADALIST
GOOGLE MAPS
KIKO
WRITELY
GTD
GMAIL
GOOGLE RSSREADER
GOOGLE IG
UNVIELDY
TAGTAGGER
ZIMBRA
MEEBO
TAGGLING
CLOUDALICIOUS
WIKIPEDIA
Focus on Simplicity
PROTOPAGE
TAGCLOUD
Wikis
2002IO
FLOCK
DELICIOUS
WIDGETS
Joy of Use
NETVIBES
COLLABORATION
STUMBLEUPON
FLICKR
Folksonomy
SHARING
LIVE.COM
AJAX
43THINGS
DIGG
SQUIDOO
PAGERANK
Usability
FLICKR
NING
EBAY
Recommendation
USER CENTERED
BLINKSALE
FOTOLIA
ETSY
SOFLOW
LINKEDIN
FOAF
PERPETUAL BETA
The Long Tail
OPENBC
ORKUT
Social Software
SIXDEGREES
PAYPAL
EBAY
UPCOMING
FRIENDSTER
XFN
Participation
TRUST
Economy
PLAN20
BLOGGER
Blogs
AMAZON
MTURK
AGGREGATION
VC
ITUNES
TYPEPAD
TECHNORATI
Affiliation
WORDPRESS
MINT
Web2.0
beta
LASTFM
READ.IO
MEASUREMAP
COSTPERCLICK
ADSENSE
IPODDER
PODCASTING
IM
PANDORA
Audio
ODEO
SKYPE GTALK JABBER
Convergence
LIVELINESS
SIMPLEBITS
ITUNES
DATA INSIDE
SEO
Design
VIMEO
Video
VIDEOCASTING
BIT TORRENT
GRANULARITY
STYLEGALA
YOUTUBE
MODULARITY
SIMPLICITY
9RULES
CASTPOST
WIFI
Mobility
UMTS
Remixability
SYNDICATION
SOAP
REST
RUBYONRAILS
CSSBEAUTY
GOOGLE MAPS
XML
CREATIVECOMMONS
A9
FLAZES
Standardization
ZENGARDEN
YAHOO MAPS
RSS
OpenAPIs
TAGCLOUD
SEMANTIC
CSS-Design
NEWSGATOR
BLOGLINES
AMAZON
DataDriven
XHTML
ACCESSIBILITY
WASP
FEEDSTER
ROJO
GOOGLE MAPS
Web Standards
ALISTAPART
FEEDBURNER
GMAPS MASHUPS
TECHNORATI
MYYAHOO
GOOGLE NEWS
FIREFOX
Microformats
BUZZTRACKER
GOOGLE
A9
ICEROCKET
INORDER
WINK
ALEXA
MICROFORMATS.ORG
ROLLYO
TRENDMAPPER
PUBSUB
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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 ...

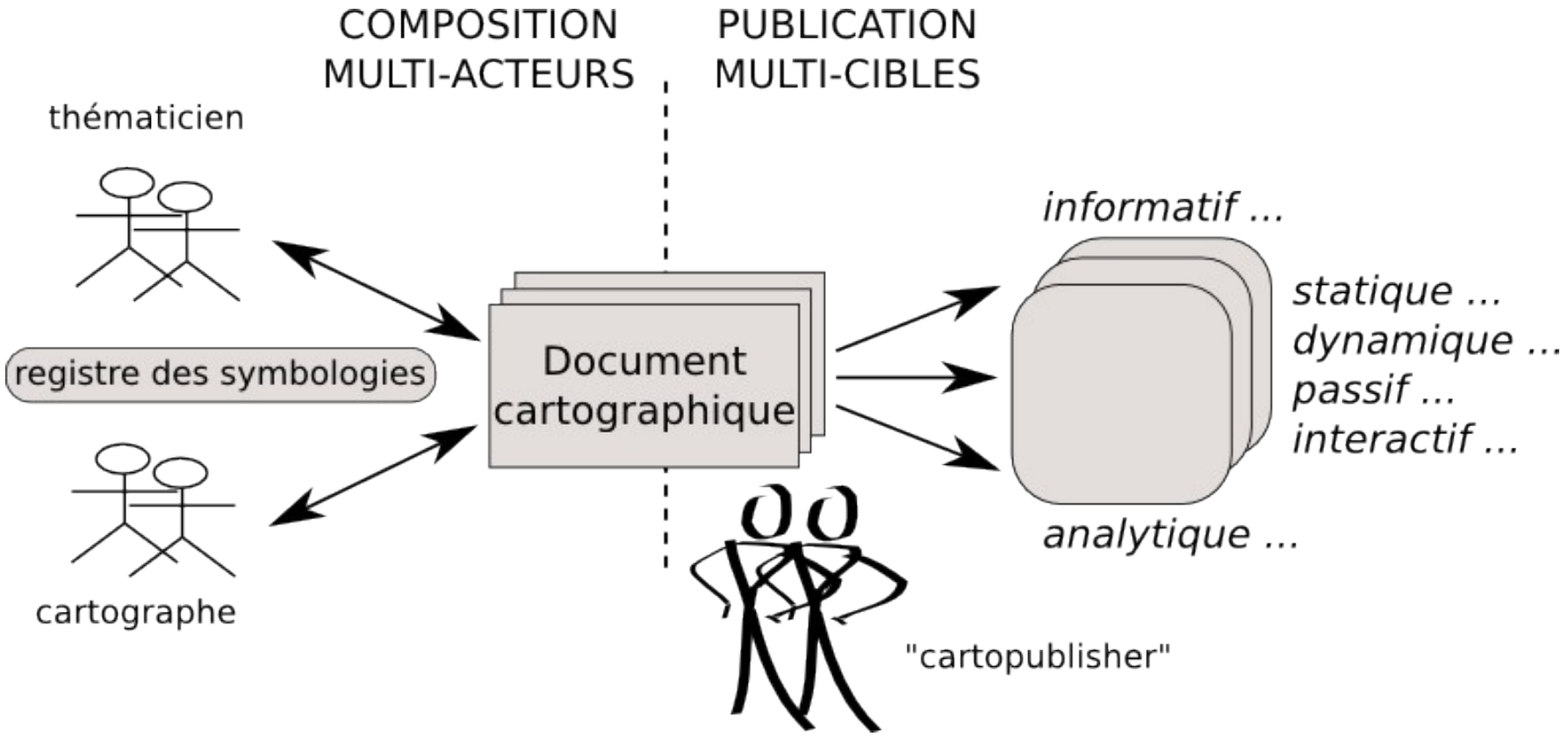
  “...many are smarter than the few”

Problematic

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

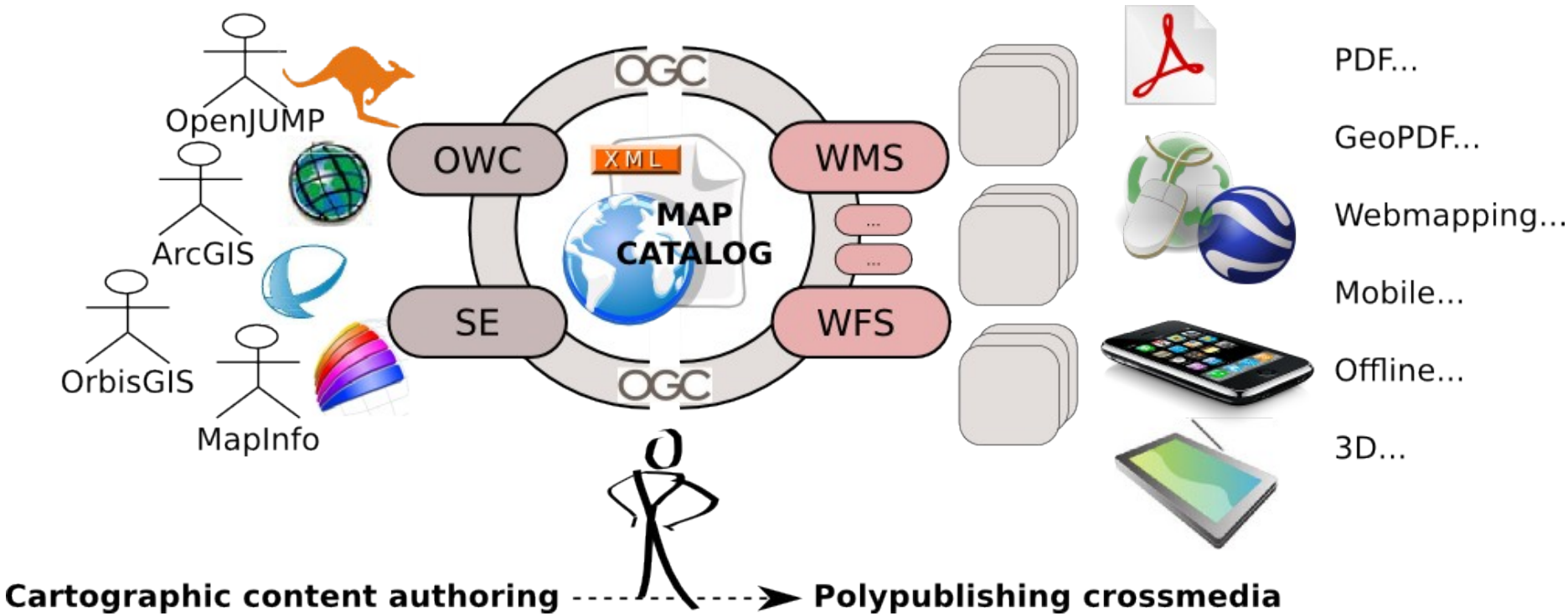
Towards collaborative authoring of cartographic content

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

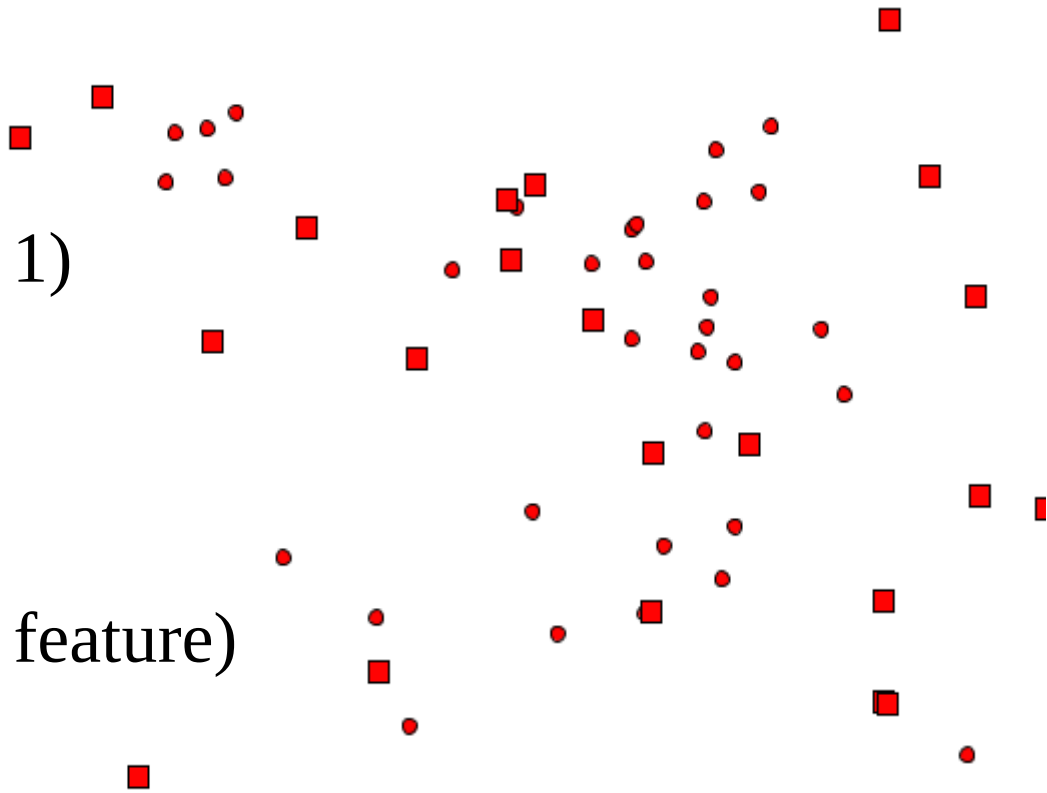
http://geosysin.iict.ch/se_styles/polygon.se

SE 1.1 – concept of filtered rule

- FeatureTypeStyle
  - Rule n°1

    Filter (match CAPITAL == 1)
    - PointSymbolizer
      - Mark 10x10 red square
  - Rule n°2

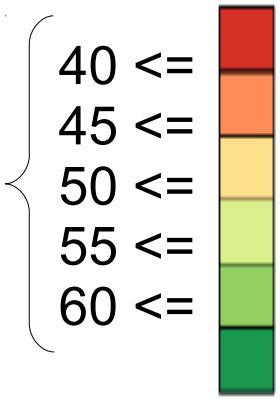
    ElseFilter (match any other feature)
    - PointSymbolizer
      - Mark Ø 7 red circle

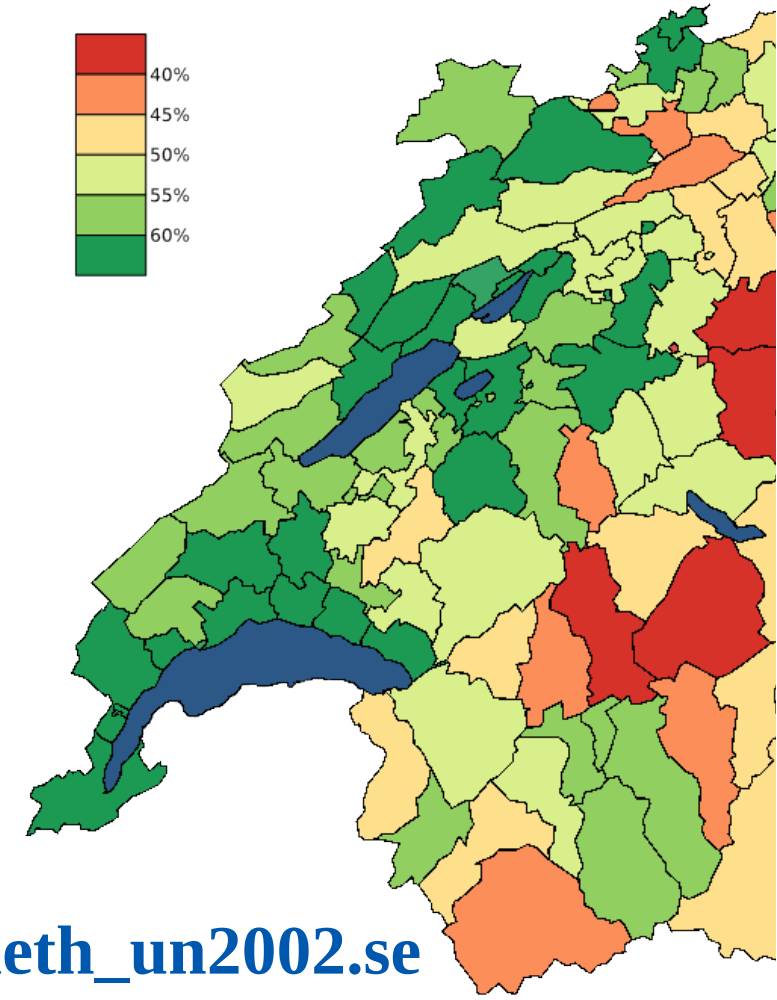


http://geosysin.iict.ch/se_styles/cities.se

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, ...

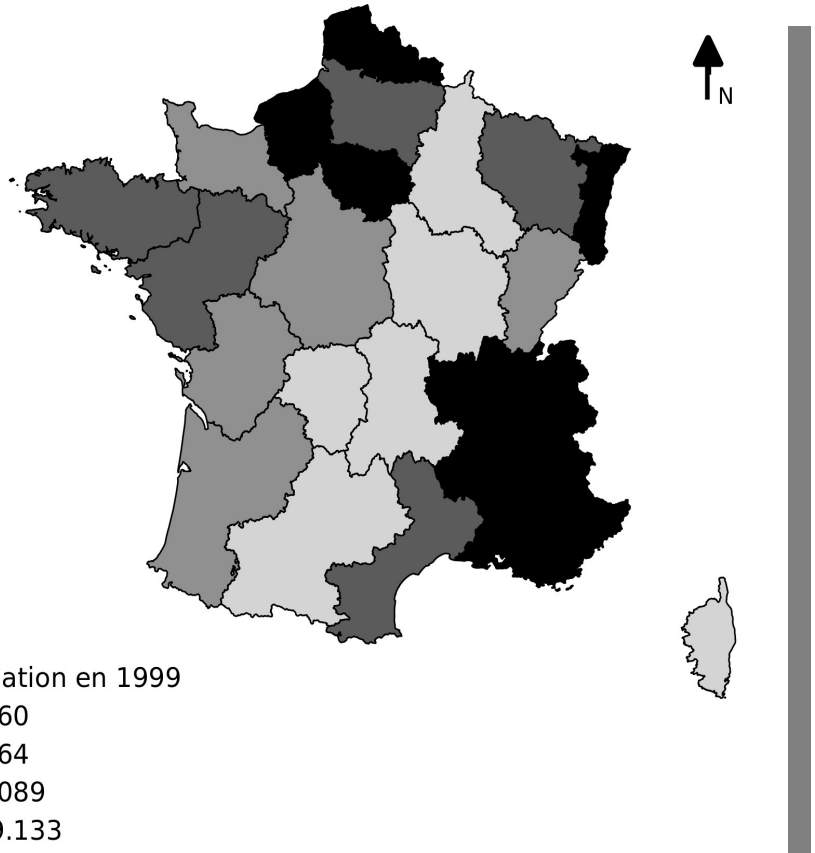
- Several Change Request Proposals posted to OGC
- Essential evolution of the standard
  - In 2010, revival of SLD/SE standard working group
  - Purpose : compile all proposals so as to enlarge the set of (carto)graphical instructions

    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*

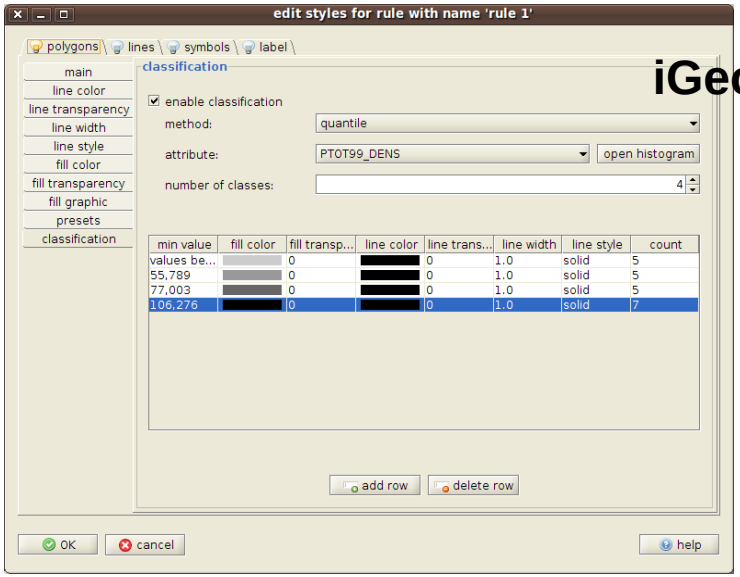
  (4 classes, quantiles, greyscale)
- *What ?*
  - *5 opensource tools*



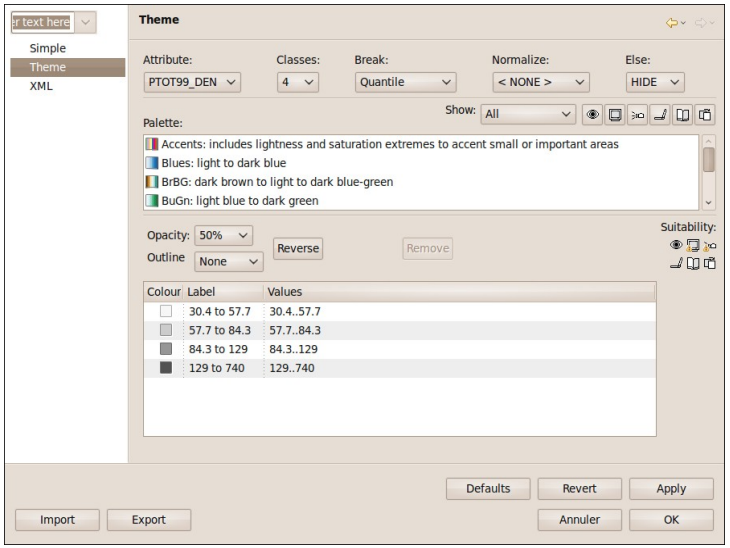
User interface interoperability ?

Name	Version	Supported SLD	Library dependencies
uDig	1.2.1	1.0	Geotools
gvSIG	1.1	1.0	Geotools + FMap
PuzzleGIS	1.7	1.0 + 1.1	GeoToolKit
AtlasStyler	1.6	1.0	Geotools
iGeoDesktop	0.4.1	1.0	Deegree

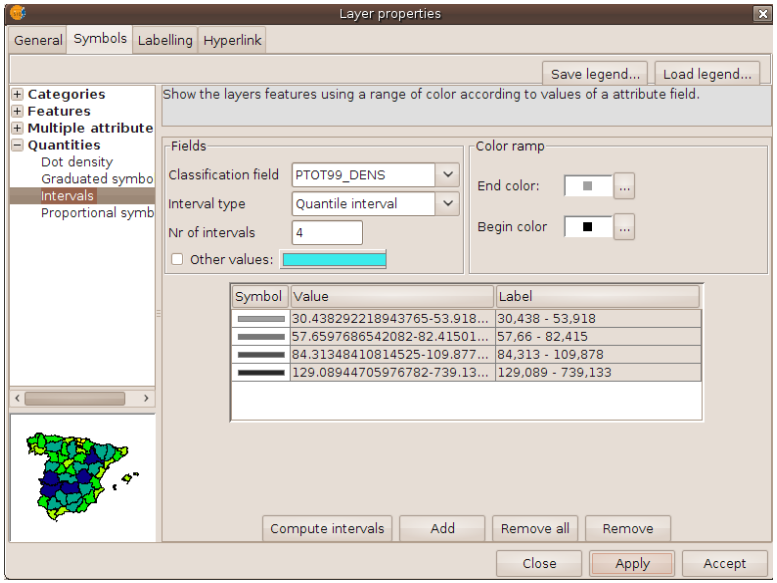
iGeoDesktop



uDig



gvSIG



User interface interoperability ?

- Is the tool able to read a SLD file?

	uDig	gvSIG	PuzzleGIS	AtlasStyler	IGeoDesktop	Score
uDig	1	0	0	0	0	1
gvSIG	1	1	0	0	0	2
PuzzleGIS	0	1	0	1	0	2
AtlasStyler	1	1	0	1	0	3
IGeoDesktop	0	0	0	0	1	1
Score	3	3	0	2	1	

User interface interoperability ?

- Is the tool able to render a SLD file?

	uDig	gvSIG	PuzzleGIS	AtlasStyler	IGeoDesktop	Score
uDig	1	0	0	0	0	1
gvSIG	0	0	0	0	0	0
PuzzleGIS	0	1	0	1	0	2
AtlasStyler	1	1	0	1	0	3
IGeoDesktop	0	0	0	0	1	1
Score	2	2	0	2	1	

User interface interoperability ?

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

	uDig	gvSIG	PuzzleGIS	AtlasStyler	IGeoDesktop	Score
uDig	1	0	0	0	0	1
gvSIG	0	0	0	0	0	0
PuzzleGIS	0	0	0	0	0	0
AtlasStyler	0	0	0	1	0	1
IGeoDesktop	0	0	0	0	1	1
Score	1	0	0	1	1	

User interface interoperability ?

- Some explanations

AtlasStyler

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

uDIG

```
<sld:FeatureTypeStyle>
   <sld:Name>name</sld:Name>
       <sld:FeatureTypeName>Feature</sld:FeatureTypeName>
       <sld:SemanticTypeIdentifier>generic:geometry</sld:SemanticTypeIdentifier>
       <sld:SemanticTypeIdentifier>colorbrewer:quantile:dynamic greyscale
       </sld:SemanticTypeIdentifier>
```

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)

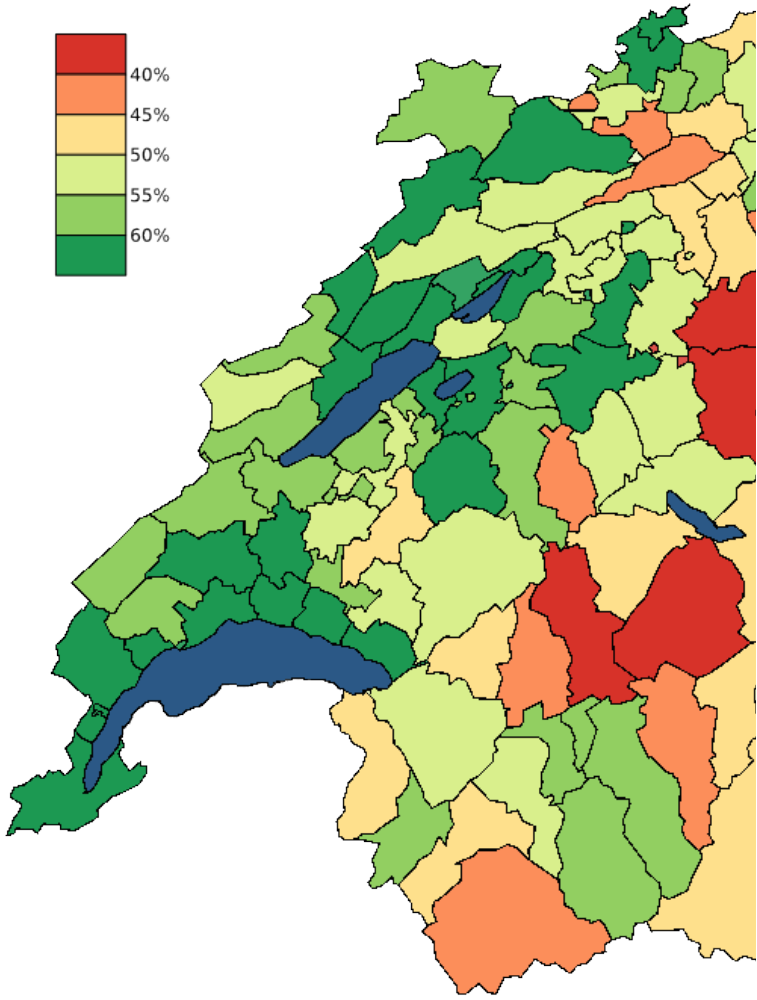
```
<Categorize fallbackValue="#FFFF00"> ...
<SemanticTypeIdentifier>categorizeMethod:quantile</SemanticTypeIdentifier>
                    </Categorize>
```

Towards a thematic map description

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

40 <=
45 <=
50 <=
55 <=
60 <=

        - **SemanticTypeIdentifier categorizeMethod :quantiles**



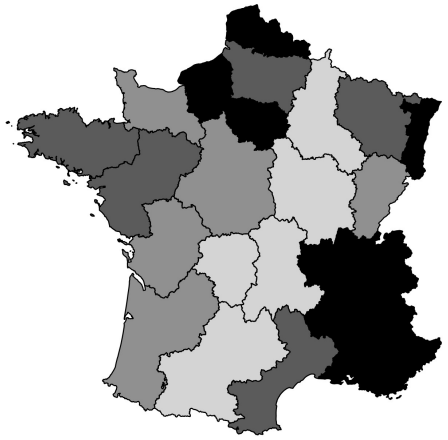
Towards a thematic map description

- 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...

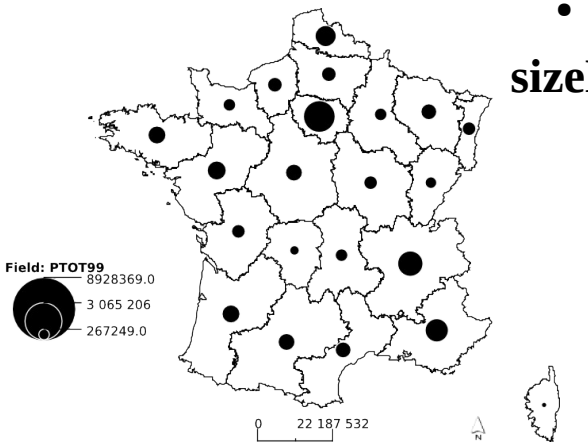
… does not make the effort of defining the different type of maps (ie proportional symbols).

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 !