Thematic Cartographic Web-Services

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Service-oriented architecture for thematic cartography on the web
Why?

The Web as distribution platform
Cloud computing and SaaS
Ubiquitous Web
Research Questions

Can the elements and the sequences of thematic cartography for the web be represented by one workflow?

Can the thematic cartographic work-flow be modeled with a service-oriented architecture?

Are the existing standards and technologies sufficient for the implementation of the service-oriented architecture?
Workflow

1. Map Purpose
2. Collect Data
3. Define Map Parameters
4. Construct Map
5. Evaluation / Publication

http://www.gitta.info/
Workflow

Map Purpose
Collect Data
Define Map Parameters
Construct Map
Evaluation / Publication
Workflow

Map Purpose

Collect Data

Define Map Parameters

Construct Map

Evaluation / Publication

- 2D Thematic Maps
- Vector Data
- Layer-based Approach
- Standard Techniques
Select Spatial Data

Analyze and Manipulate

Select Attribute Data

Analyze and Manipulate
Select Spatial Data

Analyze and Manipulate

Select Attribute Data

Analyze and Manipulate

Data Integration

Analyze and Manipulate

Map Creation

Map Layout / Output
Data Conversion Service

- Different Sources
- Standard Format GML

Map Creator
Data Conversion Service

Map Creator

Processing Services
- Uniform Interface

Basic Methods Services
Cartographic Procedure Service
Data Conversion Service

Map Creator

Processing Services

Symbology Repository

- Symbols
- Area and Line Symbology
- Typography
- Legend
- DiaML, SLD, SVG
OGC Web Services and Standards

Data Conversion Service

WFS
OGC Web Services and Standards

Data Conversion Service

Processing Services

WFS

WPS
OGC Web Services and Standards

- Data Conversion Service
- Processing Services
- Symbology Repository
  - WFS
  - WPS
  - SLD/SE
OGC Web Services and Standards

- Data Conversion Service
- Processing Services
- Symbology Repository
- Thematic Map Service

- WFS
- WPS
- SLD/SE
- WMS
- WFS
- CartoWS
Main Benefits

Interoperability
Main Benefits

Interoperability
Interactivity
Main Benefits

Interoperability

Interactivity

Integration in the Web and Automation
Limitations
Limitations

Loading Time
Computation Time
Limitations

- Loading Time
- Computation Time

Only 2D
Limitations

Loading Time
Computation Time

Only 2D

Web Browser Limitations
Research Questions

Can the elements and the sequences of thematic cartography for the web be represented by one workflow?
Select Spatial Data

Analyze and Manipulate

Select Attribute Data

Analyze and Manipulate

Data Integration

Data Generation

Analyze and Manipulate

Map Creation

Map Layout / Output

+ Choropleth Map
+ Dasymetric Map
+ Dot Map
+ Proportional Symbol Map

- Flow Map

+ Isarithmic Map
+ Cartogram
Research Questions

What are the elements and the sequence (work-flow) of thematic cartography on the web?  
**Depends on mapping technique**

Can the thematic cartographic work-flow be modeled with a service-oriented architecture?  
**Yes**

Are the existing standards and technologies sufficient for the implementation of the service-oriented architecture?  
**No**
Outlook

Further research on:
  - map description
  - symbology description
  - processing functionalities
Outlook

Further research on:
- map description
- symbology description
- processing functionalities

Implementation of:
- service functionalities
- rendering functionalities
Q + A