Middleware Services for Atlases as Part of Spatial Data Infrastructures

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Demo time!

www.nationaleatlas.nl
demo shows the “public face”

what’s the story behind it?
Brief history of the Dutch National Atlas after 1998 government involvement and funding ended => limited and fragmented academic projects to keep atlas alive

Prototype of 3rd edition
Atlas as part of a Spatial Data Infrastructure

a combination of two different worlds
Mapping in a webservices environment

where the atlas is “just another SDI node”...
Architecture
- use data services (WFS) requests
- GeoJSON where possible
Architecture
Atlas Viewer:
- based on the Open Web Platform
- uses D3 library
Architecture: middleware

ATLAS
utility services & basedata
Architecture: middleware

ATLAS utility services & basedata
"mapgroups": [
{
"groupnum": "0",
"groupname": "Statistic Core Data per Municipality",
"groupDescription": "Municipal data consists of the geometry of all municipalities",
"date": "2011",
"defaultLabelAttribute": "GM NAAM",
"source": "Central Bureau for Statistics (CBS)",
"serviceType": "WFS",
"serviceVersion": "1.1.0",
"serviceURL": "http://geoservices.cbs.nl/ArcGis/rest/services/wfs?",
"serviceName": "nataclas%3AWijkenBuurten2011%3AGemeenten_2011",
"serviceOutputFormat": "json",
"maps": [
{
"data_attribute": "GM CODE",
"unit": "",
"name": "Municipality code",
"maptype": "area_colour"
},
{
"data_attribute": "GM NAAM",
"...": ""
}]}
Architecture

SPATIAL AGGREGATOR SERVICE

```
"serviceType": "WFS",
"serviceVersion": "1.1.0",
"serviceURL": "http://geoserver.itc.nl/natatlas/spatialaggregator?",
"serviceTypeName": "gem2prov",
"serviceOutputFormat": "json",
"maps": [
{
"data_attribute": "aant_inw",
"unit": "inhabitants",
"name": "Population",
"maptype": "point_size",
"spatial_aggregation": "union",
"attribute_aggregation": "sum"
}
{
"data_attribute": "bev_dichth",
"unit": "inhabitants per km2",
"name": "Population density",
"maptype": "area_value",
"spatial_aggregation": "union",
"attribute_aggregation": "round_average"
}
],
```
Architecture: middleware

SPATIAL AGGREGATOR SERVICE

- SDI Node: [OGC WFS @ CBS]
- Database: [PostGIS]
- SpatialAggregator: [Python]
- Data Integration & Mapping: [D3 javascript]

Diagram:
- request for unaggregated data: [WFS GetFeatures]
- Result: [GeoJSON stream]
- parse data to SQL
- data storage: [SQL INSERT]
- result: [success/error]
- aggregated data request: [SQL GROUP BY]
- result: [attribute data & GeoJSON fragment per row]
- parse data to GeoJSON stream
- aggregated GeoJSON
Architecture: middleware

SPATIAL AGGREGATOR SERVICE

very much a “proof-of-concept”
- tightly coupled to CBS WFS
- use of PostGIS is pragmatic, not robust
- more attention to interface needed
Conclusions

the test bed shows:
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that a (National) Atlas as an integral part of a (National) SDI is feasible
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provides many advantages (up-to-date, flexible, extensible, interoperable)
What’s next?

work in slow progress (funding ended 2009)

core is implemented, still lots more needed

viewer:
  better UI, combinations of maps

atlas services:
  atlas metadata formalisation
Thank you!

follow the progress at:

www.nationaleatlas.nl
(follow the english)

code on gitHub:
https://github.com/kobben/NatAtlas

For details see: Cartographic Journal 50:3, pp. 225–231