An interactive Carto Dashboard for Distributed Statistical Data in an SDI

http://www.nationaleatlas.nl

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An interactive Carto Dashboard for Distributed Statistical Data in an SDI

• what is it?
• where did it come from?
• how does it work?
• how does it ACTUALLY work?
An interactive Carto Dashboard for Distributed Statistical Data in an SDI?
An interactive Carto Dashboard for Distributed Statistical Data in an SDI

a system that can consume a combination of statistical data from the SDI, and cartographically integrate them, so that visual comparison of data from different providers or different data from a single provider is optimized.

The Carto Dashboard can be considered as a “smart data viewer”
A new role for the cartographer

providing
(cartographic knowledge for)
tools that implement cartographic intent:

“code that thinks like a cartographer”
Cartography from Code...?

or

"how I learned to stop worrying and love coding in cartography"

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A change in my world

My tools once were these:
A change in my world

...but now look like this:
A change in my world

Computers gave me this at first:

SYMAP line printer output (1965, by Howard Fisher)
A change in my world

...but have been improving since:
A change in my world

...and now allow me to do really nice interactivity:

A change in my world
Both were constructed using software

digitally drawn

coded (programmed)
A new role for the cartographer providing tools that implement cartographic intent
A new role for the cartographer

providing
(cartographic knowledge for)
tools that implement cartographic intent
The new role of the cartographer

providing
(cartographic knowledge for)
tools that implement cartographic intent:

“code that thinks like an atlas”
Statistics Dashboard

Building further on the NATIONAL ATLAS IN SDI prototype
The Dutch National Atlas within SDI

details in Dresden paper: Cartographic Journal, 50 : 3, pp. 225—231
Brief history of the Dutch National Atlas
Brief history of the Dutch National Atlas

Brief history of the Dutch National Atlas

Brief history of the Dutch National Atlas

after 1998 government involvement and funding ended

=> limited and fragmented academic projects to keep atlas alive

2000:
digital facsimile of 2nd edition
Atlas as part of a Spatial Data Infrastructure
Atlas as part of a Spatial Data Infrastructure presents a synthesis optimised for visualisation
Atlas as part of a Spatial Data Infrastructure

visualisation of separate data, not optimised for combinations (synergy)
Atlas as part of a Spatial Data Infrastructure

a combination of two different worlds
Mapping in a webservices environment
Mapping in a webservices environment as part of
Mapping in a webservices environment as part of
conceptual change needed

sub-optimal combination of arbitrary map layers
conceptual change needed

sub-optimal combination of arbitrary map layers

integrated mapping of data layers
Statistics Dashboard

Building further on the Atlas prototype

Specifically for Statistical Data
From Statistics Netherlands (CBS)
- Open Data, API using ODATA standard -
To be combined with other SDI data
Population dynamics; birth, death and migration per region

June 16 2014 | more info

Minimap
Options
Key (number)
Selection
Subjects
Population on 1 January
Sex
Males and females
Periods
2013

Enschede 158 627 (number)
Statistics Dashboard UI setup

choose map

MAP

simple render

subject

population

...etc...

no. of inhabitants

...etc...

per municipality

per province

2010

2013

population density

nature
DEMO TIME!
Statistics Dashboard

Building further on the Atlas prototype

Specifically for Statistical Data

Concentrating on comparison tools:

in theme: same place and time, different variables
in time: same variable, different times
in space: same variable, different places/aggregation
Statistics Dashboard

comparison tools

in theme: same place and time, different variables
Statistics Dashboard

comparison tools

in time: same variable, different times
Statistics Dashboard

comparison tools

in space: same variable, different places/aggregation
Statistics Dashboard UI setup

1. Choose map
2. Compare with

Subject:
- Population
- ...etc...
- Nature
- Population density

Per province:
- 2010
- 2013

Simple render:
- MAP

Overlay:
- MAP
  - Transparency

Side-by-side:
- MAP
- MAP

Swipe:
- MAP
- MAP

...etc...
How does it ACTUALLY work?

THE TECHNOLOGY
How does it ACTUALLY work?

THE TECHNOLOGY also is building further on the NATIONAL ATLAS IN SDI prototype
Architecture overview
- use data services (WFS) requests
- GeoJSON output where possible
- use data services (WFS or REST) requests
- GeoJSON or CSV data output
ATLAS utility services & basedata
"name": [
  "Bevolkings-dichtheid",
  "Population Density"
],
"data_unit": [
  "inwoners per km2",
  "inhabitants per km2"
],
"mapunits": [
  {
    "name": [
      "gemeente",
      "municipality"
    ],
    "mapdates": [
      {
        "date": "2011",
        "geo_data": 0,
        "attrib_data": 0,
        "FK": "GM_CODE",
        "attrib": "BEV_DICHTH",
        "label": "GM_NAAM"
      },
      {
        "date": "2013",
        "geo_data": 2,
        "attrib_data": 2,
        "FK": "GM_CODE",
        "attrib": "BEV_DICHTH",
        "label": "GM_NAAM"
      }
    ]
  }
],
"maptype": "area_value",
"classification": {
  "type": "manual",
  "colours": "Greens",
  "numclasses": "5",
  "classes": [0,400,800,1600,3200,6400]}
"geo_sources": [
  {
    "unitname": [
      "gemeente",
      "municipality"
    ],
    "description": [
      "Gegeneraliseerde gemeentegrenzen afkomstig uit de Basisgeografische Informatie voor de Algemene Ruimtelijke Planningswet, "Municipalities of the Netherlands, generalised from the Basisgeografische Informatie voor de Algemene Ruimtelijke Planningswet",
      "date": "2011",
      "FK_attrib": "GM_CODE",
      "source": [
        "Kadaster",
        "Kadaster"
      ],
      "serviceType": "localfile",
      "serviceURL": "/data/gemeenten/geo.topojson",
      "serviceTypeName": "",
      "serviceOutputFormat": "topojson"
    ]
  }
]
Atlas Viewer:
- based on the Open Web Platform: HTML5 + SVG + CSS + JavaScript
- uses D3 library
FUTURE WORK

Practical:
• make “compare to…” chooser context aware
• add more comparison methods
• add more Open Data connectors
• etc., etc…
FUTURE WORK

Practical:
• make “compare to…” chooser context aware
• add more comparison methods
• add more Open Data connectors
• etc., etc…

Theoretical:
• formalising map specifications for further automating thematic map creation
Thank you!

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