

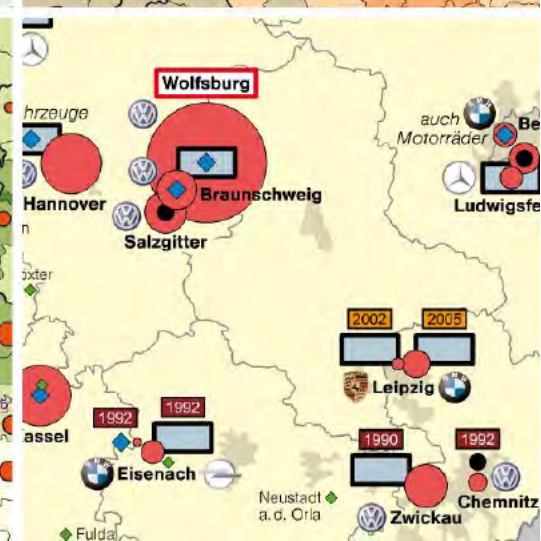
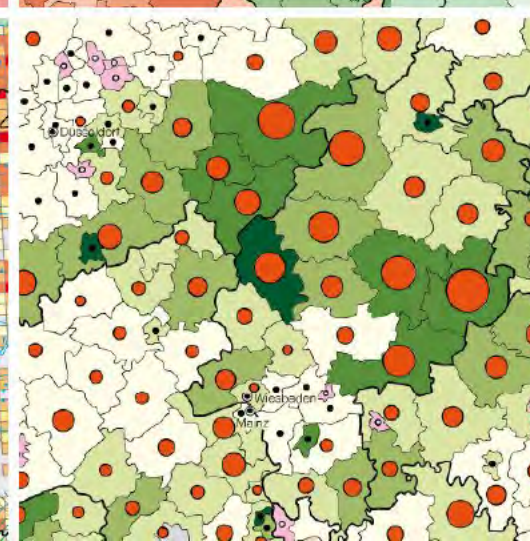
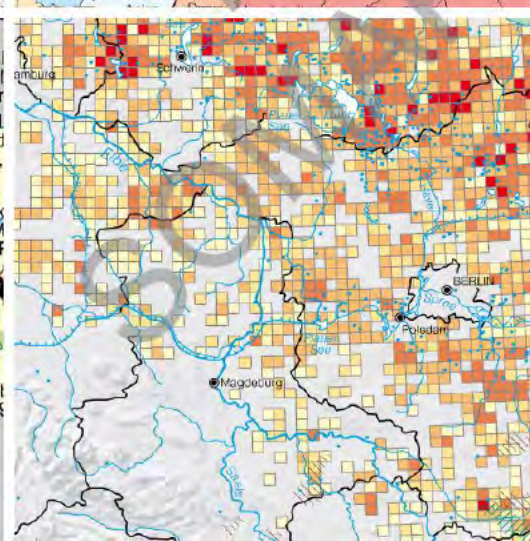
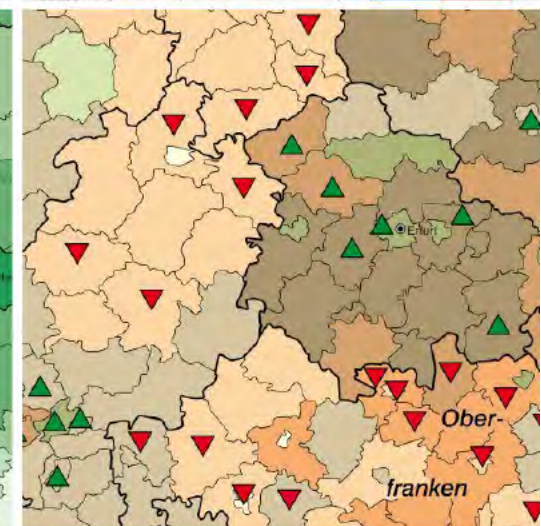
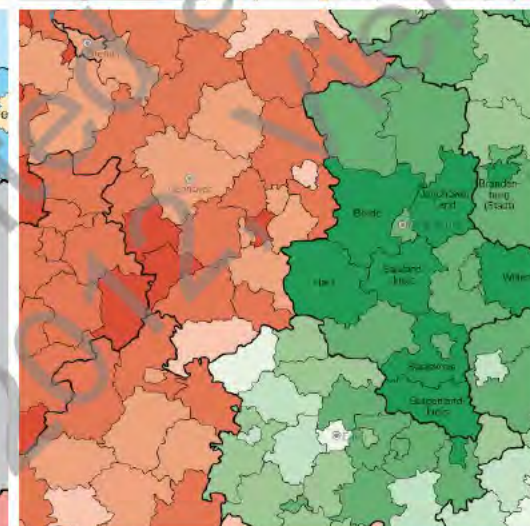
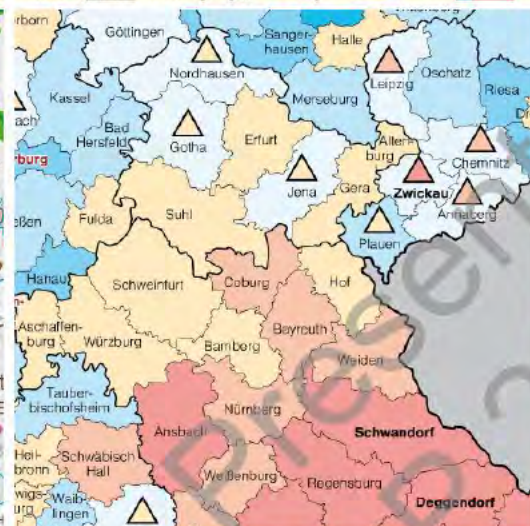
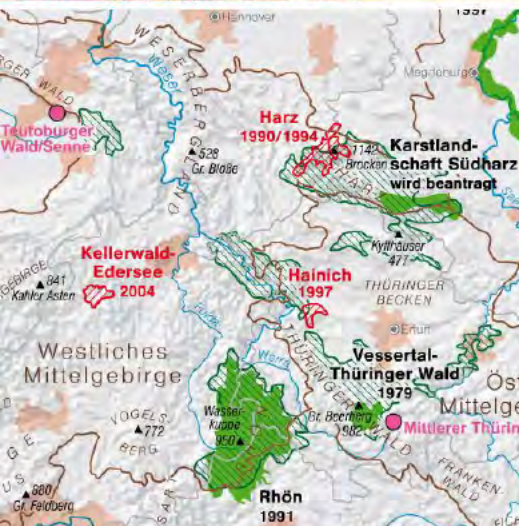
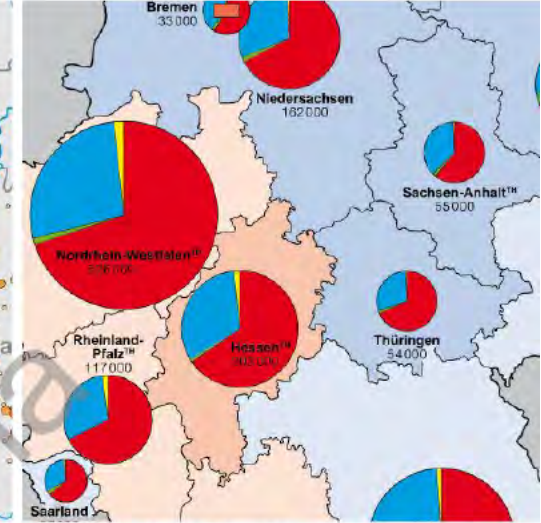
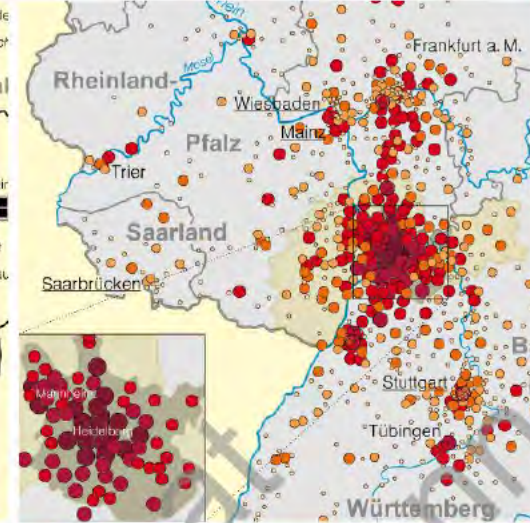
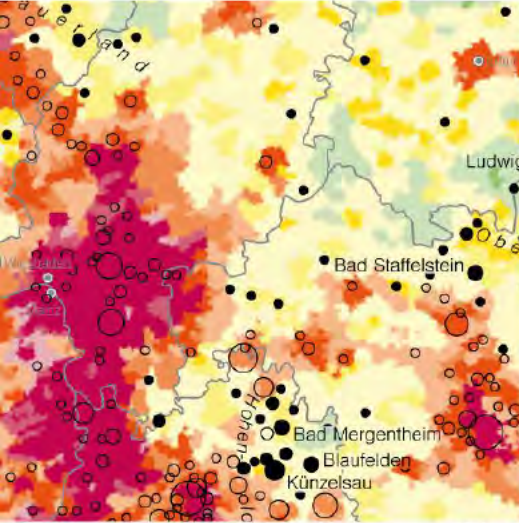


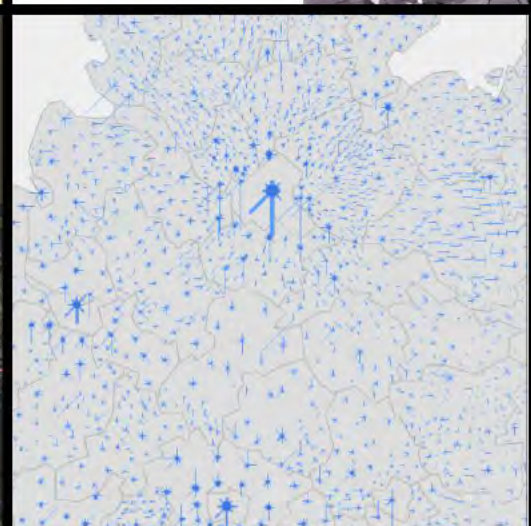
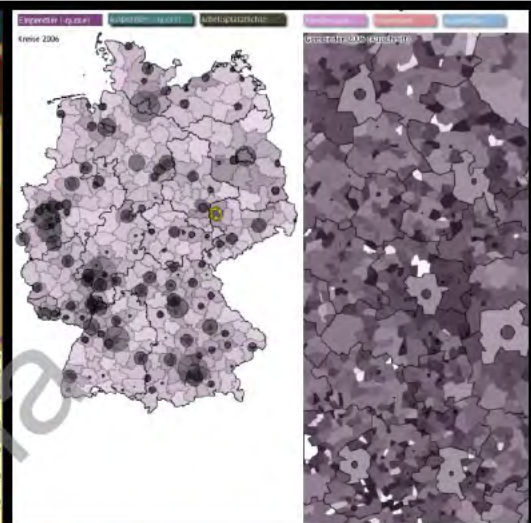
# Approaching a Software Framework for Cartographic Visualization

Sebastian Specht  
Leibniz-Institute for Regional Geography  
Leipzig

# Once upon a time...

Presented at  
SOMAP 2012, Vienna



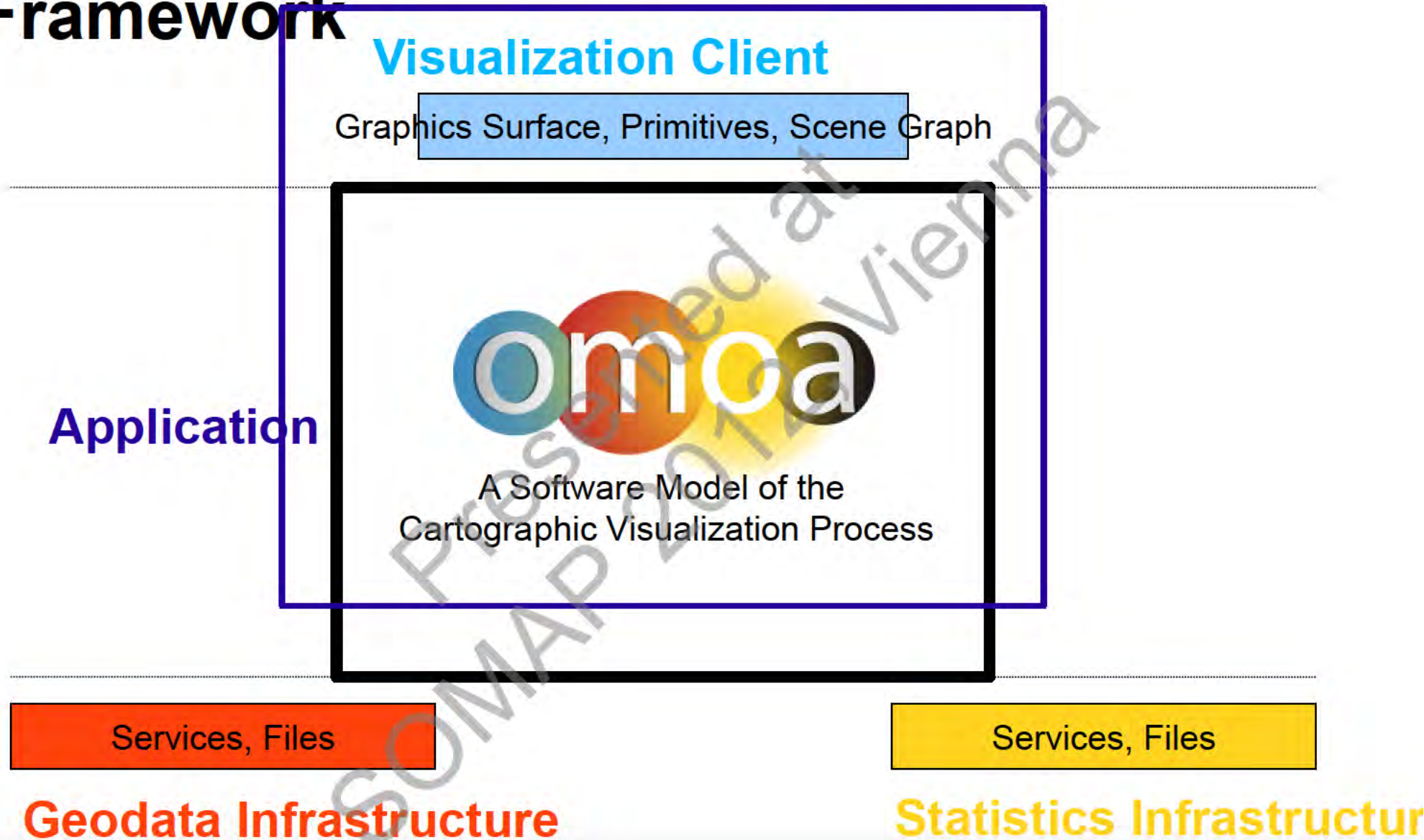


The freedom to make an exception.

The freedom to apply a rule (a million times).

Presented at  
SOMAP 2012, Vienna

# Environment of a Visualization Framework



# Our Cartographic Software Framework



Create data driven maps...  
...and have control over the visualization process.

# Our Cartographic Software Framework



“~omoa” [Swahili verb]:

to display, to reveal, bring to light

Open Source (LGPL)

Complexity must be grown  
from simple systems that already work.

Kevin Kelly  
(Out of Control, 1995)

# Requirements

Client-side Graphics, Multiple Environments

Cartographic Understanding of Geometric Data

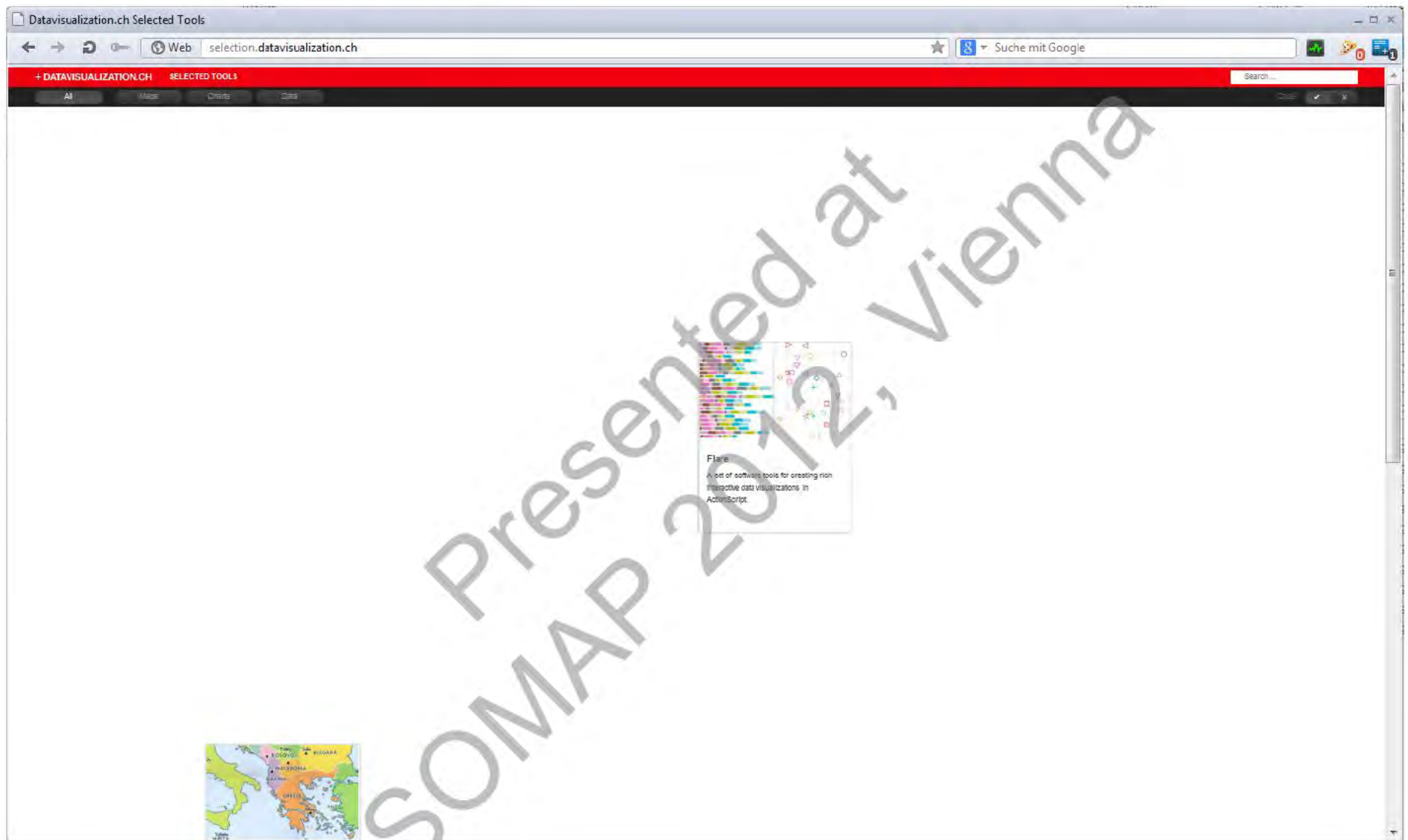
Abstraction of the Symbolization Process

Abstraction of Multidimensional Statistical Data

Possibility to Use and Extend

The screenshot displays the Data Visualization Catalogue website, which is a comprehensive directory of data visualization tools. The website has a clean, organized layout with a red header bar containing the site name and navigation links. Below the header, a grid of tool cards is presented, each featuring a representative visualization, the tool's name, and a brief description. The tools are categorized into sections like 'Arbor.js', 'CartoDB', 'Chroma.js', 'Circos', 'ColorBrewer', 'Cubism.js', 'D3.js', 'Dance.js', 'Data.js', 'DataWrangler', 'Degrafa', 'Envision.js', 'Flare', 'GeoCommons', 'Gephi', 'Google Chart Tools', 'Google Fusion Tables', 'Google Refine', 'Impure / Quadrigram', 'JavaScript InfoVis Toolkit', 'Kartograph', 'Leaflet', 'Many Eyes', 'MapBox', 'Output as JSON - Row Arrays', and 'Vega.js'. The website is viewed in a web browser window, with the address bar showing 'selection.datavisualization.ch' and the search bar containing 'Suche mit Google'.

# Some years ago...



# Abstractions within the Software Model

## Visualization Client

Map Views, Layers

Symbolization

Interaction

Spatial Data Model, Loader

Statistical Data Model, Loader

**Geodata Infrastructure**

**Statistics Infrastructure**



# Abstractions within the Software Model II

## Interfaces

Define Methods (and Public Variables)  
of a Certain Type of Objects

Substitution

Inversion of Control

Factory Methods

# Benefits of the Framework Approach

Enables Research

Prototyping / Substitute Functionality

Structured Development on an Atomic Level

Reuse and Share Functionality

# Connect

[omoa-project.org](http://omoa-project.org)  
[github.com/omoa](https://github.com/omoa)

