



CAENTI

Coordination Action of the European Network of Territorial Intelligence

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<http://www.territorial-intelligence.eu>



Interactive Map for caENTI, built on Web Mapping Technology

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Warming up: Web Mapping Technology

- Is a technology to deliver interactive maps across the Internet

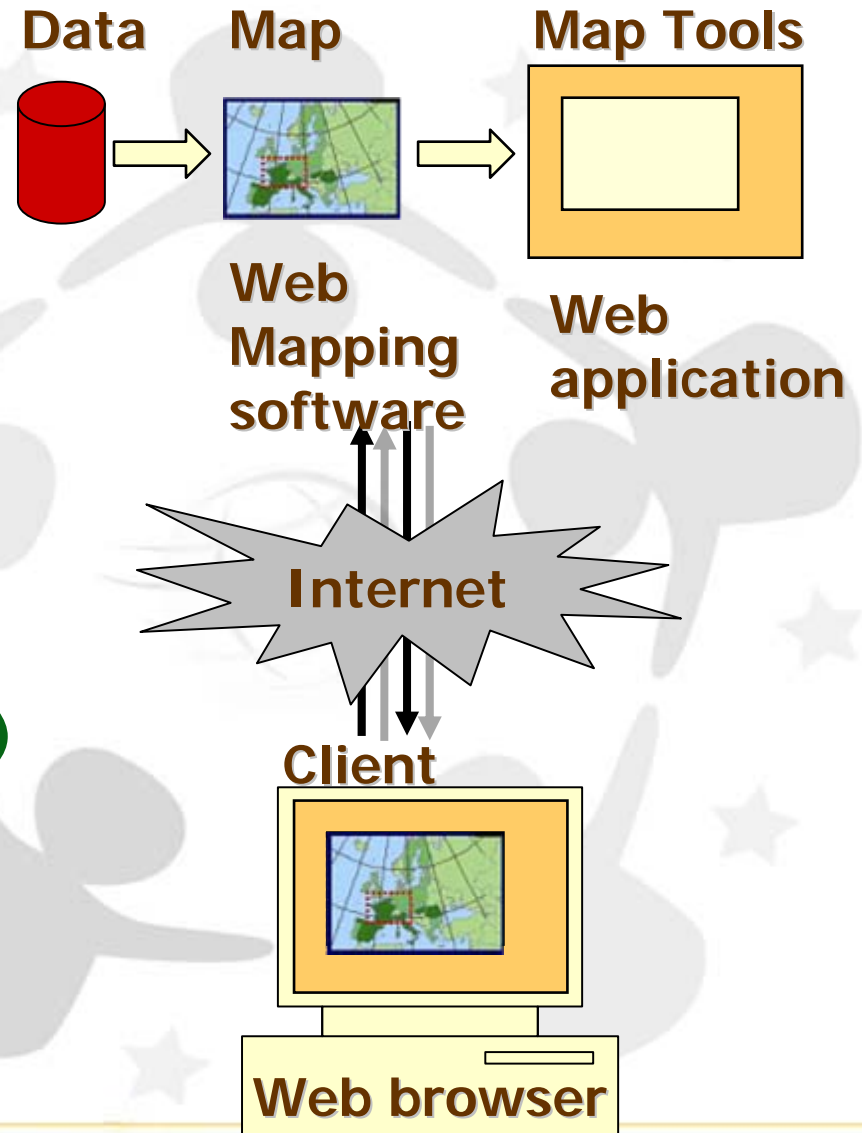
- 4 basic components

- Server side:

- Data
 - Web Mapping software (Map)
 - Web application (Map Tools)

- End user's side:

- Web browser

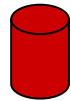


caENTI Interactive Map

Objective:

- to create Interactive map of EU for visual presentation of selected caENTI socio-economic indicators

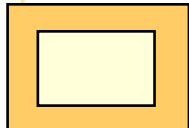
Steps:



1. to obtain and prepare the geographical and attribute *Data* and *Metadata* to be presented on the Map
2. to select an appropriate *Software* (Web Mapping, Tools)



3. to prepare a *Map* with the selected Web Mapping software



4. to prepare an Internet application, that combines the Map with needed visual and contextual *Tools*

Data Preparation

Data are essential for successful application!

They were obtained from different sources (under coordination of C. Breuer):

- **Geographical data: EuroGeographics (shapefiles; levels NUTS0 to NUTS3 and USE1 to USE6)**
- **Indicator data: Eurostat (statistical data for EU), local sources (statistical data for smaller level)**

Statistical data were unified, and linked to geographical data based on NUTS code.

Only 6 indicators were selected for map presentation.

Data Presented on the Map

<i>Indicator</i>	Level od detail				
	NUTS0	NUTS1	NUTS2	NUTS3	LAU2*
<i>Total population</i>	EU+	EU+	EU+	EU+	Belgium Hungary (few units)
<i>Density of population</i>	EU+	EU+	EU+	EU+	Belgium
<i>Active population</i>	EU+	EU+	EU+	EU+	
<i>Unemployment rate</i>	EU+	EU+	EU+	EU+	Belgium Hungary (few units)
<i>Net income available for household</i>	EU, total for spatial unit	EU, total for spatial unit	EU, total for spatial unit		Belgium (few units)
<i>Average size of household</i>	EU (few units)				Belgium (few units)

Legend:

spatial unit

data for this spatial unit are available on the Interactive map

spatial unit

work in progress

Due to different data availability it is not possible to follow indicator data in all levels, and all spatial units.

In the near future LAU2 data will be obtained for France and Spain.

Selected Metadata

Group	Name	Dublin Core	ISO 19115	Type
Dataset	Title	DC Title	CI Citation title	Required
	Metadata of Indicator Data			Required
	Title	Main demographic indicators (dgen) Collection: Population (dpop) Density of population		Required
	Keywords	Population, Density		Required
	Description	Density of population by EUROSTAT for NUTS 1, 2 and 3 level in EU 27, excluding overseas areas		Required
	Definition	= Total population within spatial entity / Surface of spatial entity		Required
	Units	[number of people/km ²]		Required
Creator	Date of Validity	2008-08-28		Required
	Language	English		Optional
	Authoring organisation	Eurostat		Optional
	Contact person	Unit F1 - Luxembourg Eurostat		Required
Spatial	Coverage	EU 27, excluding overseas areas		Required
	Spatial Reference System	None		Required
	Reference Scale	None		Required
	Completeness	complete		Optional
	Attribute Accuracy			Optional
	Attribute Accuracy			Optional
	Distributor	Eurostat		Optional
Distributor	Constraints			Optional
	Format	xls		Optional
Format	Version			Optional
	Dataset Format Version	DC.Format	MD_Format.version	Optional

Selection of Software

- **Commercial solutions**
 - very expensive
 - out-of-box solution (easy to install and use)
 - no possibilities to make proprietary solutions
- **Open source solutions**
 - free
 - installation and usage demands skills
 - developer is free to add new modules => more suitable for scientific and research use
- **We followed the recommendations, given by 2 main open-source geospatial organisations:**
 - *Open Geospatial Consortium (OGC)*: among other also standard for delivery of map across the web (*Web Mapping Server standard – WMS*)
 - *Open Source Geospatial Foundation (OSGeo)*: organization that supports and promotes the highest-quality open source geospatial software

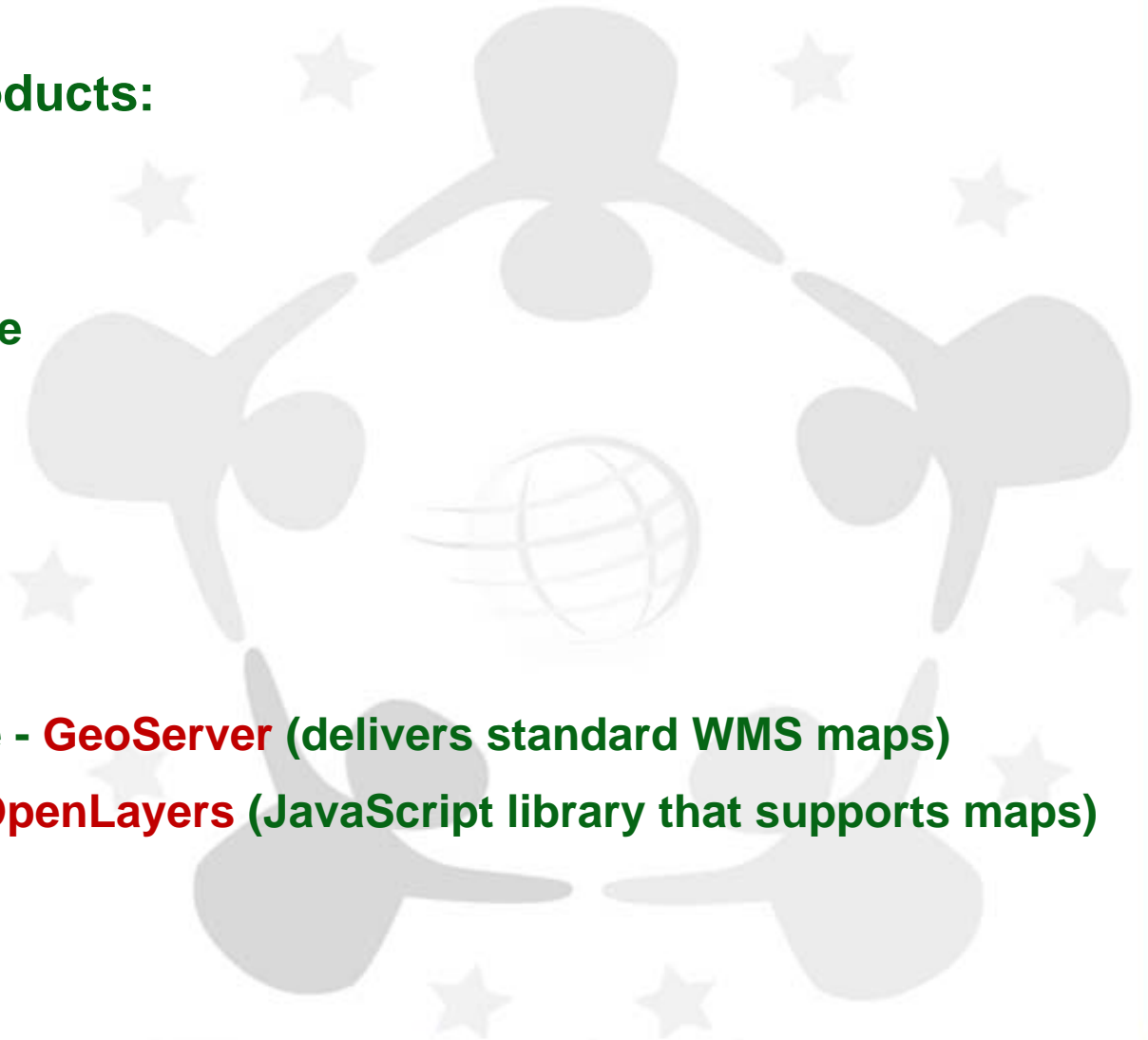
Testing of Software

- **Tested open-source products:**

- **GeoServer**
- **MapServer**
- **Open Source MapGuide**
- **OpenLayers**
- **MapBender**

- **Selected:**

- **Web Mapping software - GeoServer** (delivers standard WMS maps)
- **Map Tools software - OpenLayers** (JavaScript library that supports maps)



Scheme of the Solution



Map

(based on WMS standard)

Task list:

- * install Geoserver
- * configure Geoserver
- * upload the pre-processed Data
- * design layers from data with XML based SLD scheme

Map Tools to explore the map

(HTML and JavaScript-based Web application including OpenLayers library)

Task list:

- * design the web-page graphically
- * implement WMS calls GetMap, GetLegend and getFeatureInfo
- * implement needed tools from the OpenLayers library
- * design proprietary tools

Web Application (demo)



<http://gis.zrc-sazu.si/besancon/CaentiMap.html>

Conclusions

Interactive map of caENTI enables visual presentation of 6 selected socio-economic indicators for EU countries in different levels of detail (NUTS0 to LAU2). This allows technical teams of caENTI member states to get appropriate visual and contextual information.

The solution is based on Web Mapping technology, the selected open source softwares are GeoServer (web mapping) and OpenLayers (map tools).

To display himself a map, end user needs just web browser and basic computer skills.