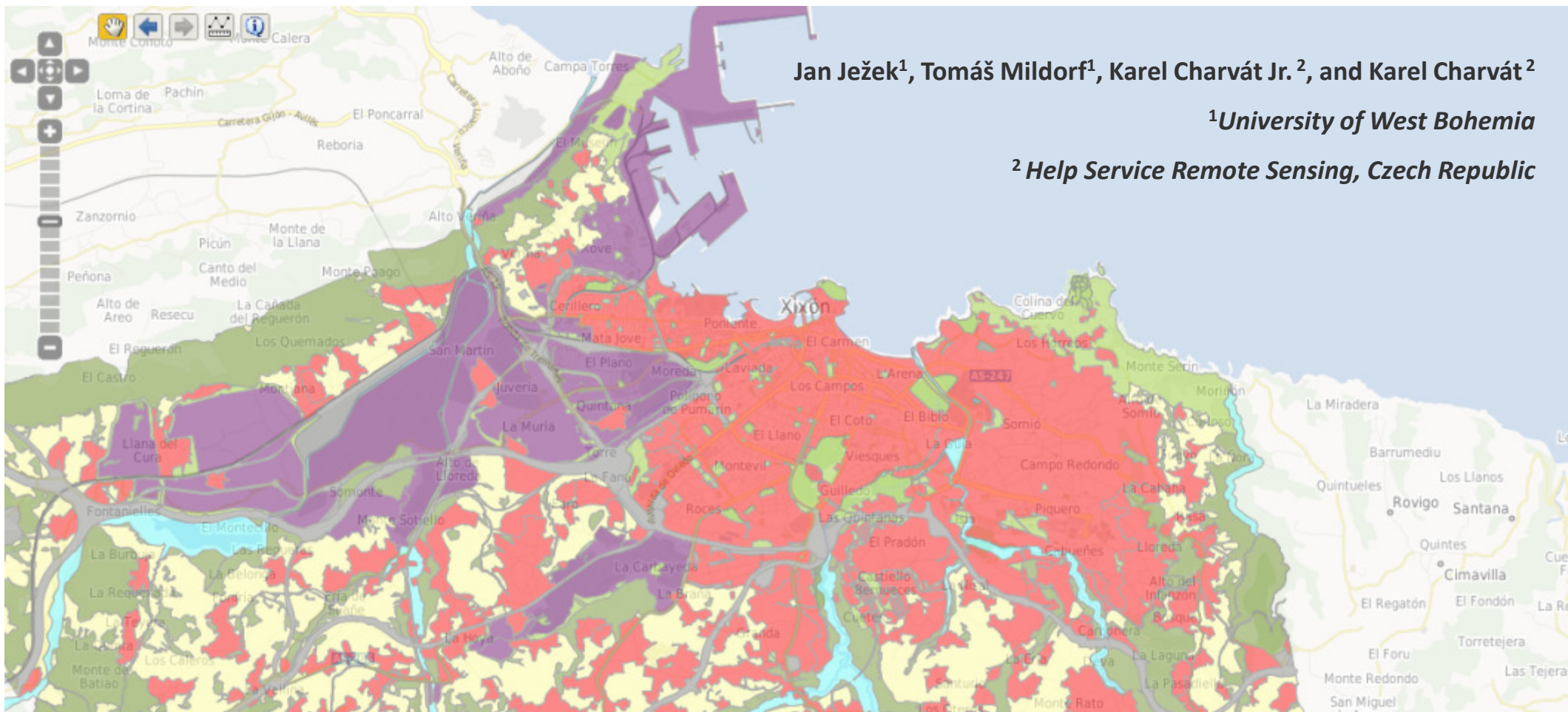


The Plan4business Approach to Transfer Open Data Into Real Estate Businesses

ISESS 2013 Neusiedl am See, Austria



Objectives

Today, urban and regional planning datasets are **not aggregated and not easy to use for business issues**: planning data users are confronted to fragmented data sets, unable to create comparative analysis, monitoring and analysing urban statistics, or developing urban inquiries and projects.

Objectives

The plan4business project is developing a **web platform**, addressing **urban and regional planning data users, investors and real estate business actors**, providing them a **full catalogue of up-to-date spatial- and non-spatial data and services on a pan-European level**. This platform is based on existing available open as well as commercial data and crowd sourcing methods.

Objectives

To be competitive on the business market, this platform will of course have, first, **to offer the data itself in integrated, harmonised and thus ready-to-use form**, but it also has to **offer rich analysis and visualisation services** via an adapted Application Programming Interface (API) and an interactive web frontend. **Functions offered have to range from simple statistical analysis to complex trend detection.**

R&D challenge

Specific: The tools developed are specific to the planning and land use data and the forms it comes in. This means they are not applicable to all data integration problems, but provide a high effectiveness for the specific issues. An example is the extraction of planning zones from presentation-oriented raster or vector formats;

R&D challenge

Process-Oriented: The integration and harmonisation process is separated into clear steps, each of which can be conducted individually. In this way, different curators can specialize on different steps in the process;

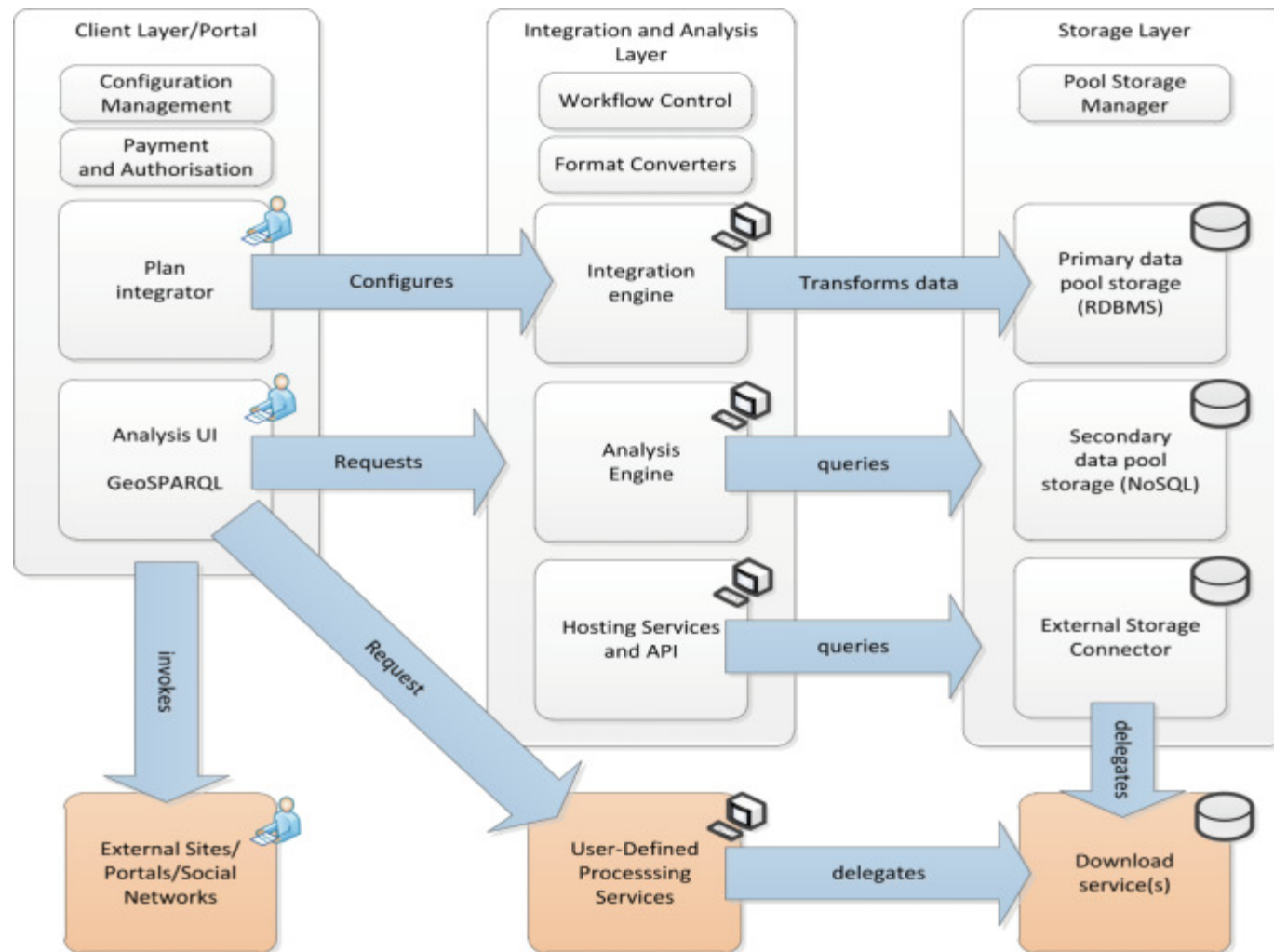
R&D challenge

Declarative: Any Schema Mapping (logical or conceptual) is performed in an atomic, declarative way. Thus, schema mapping parts can be re-used, e.g. for automatic determination of required additional mappings when several variants of a schema are mapped;

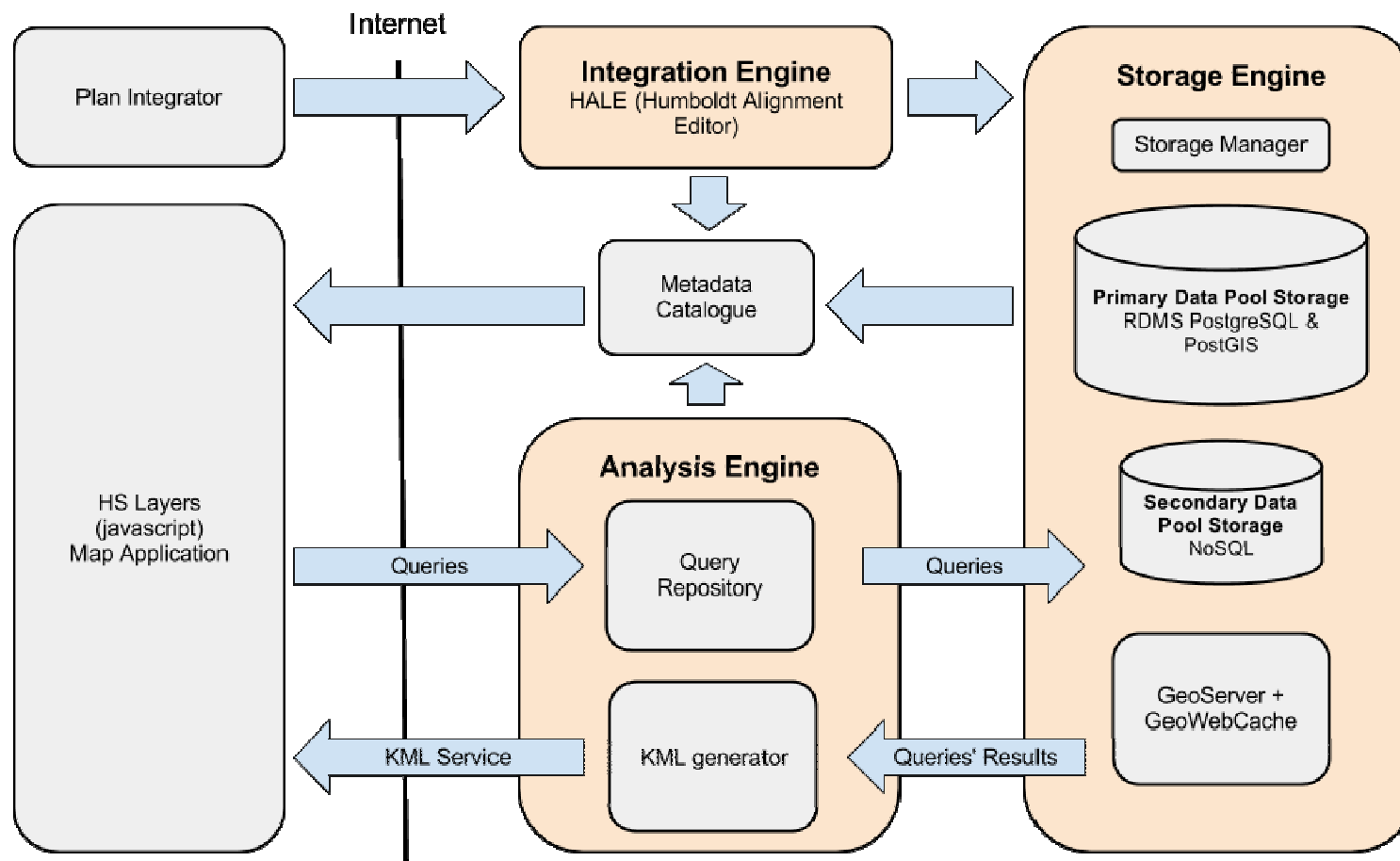
R&D challenge

Collaborative: A social network/web 2.0 approach has been applied to many issues, but not to data harmonisation and integration. We believe that on the basis of the right incentives as well as the process-oriented and declarative/atomic integration approach, social networking paradigms can be used on the planning data integration issue;

Architecture



Main components



Harmonise (Collaborative Schema Integrator)

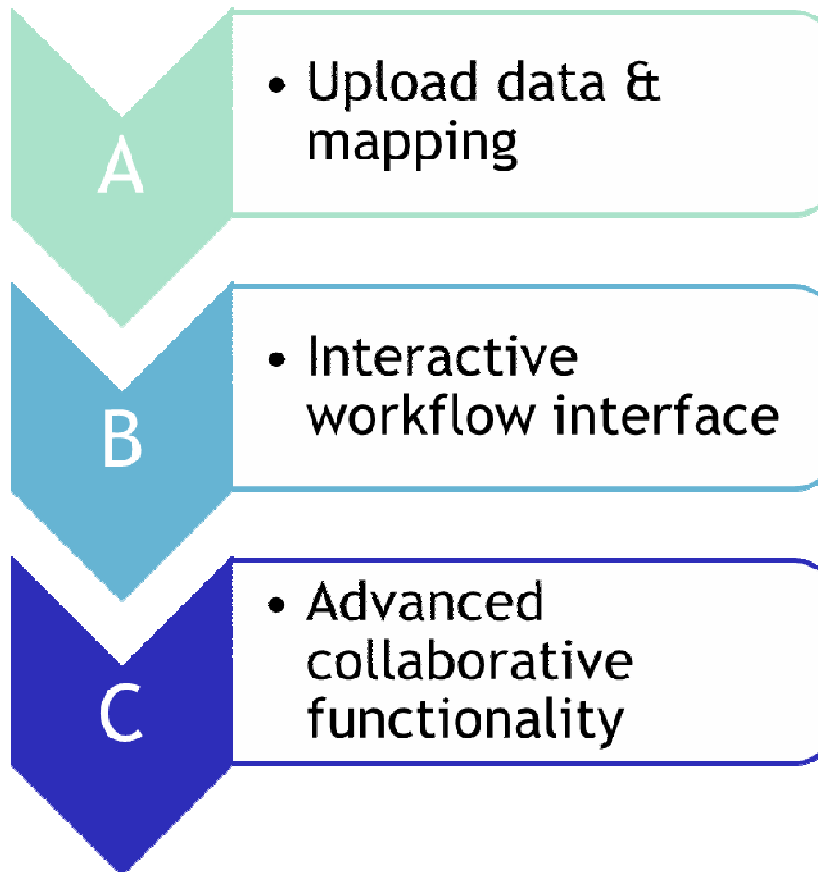
Data source upload for all datasets that will be stored in the primary data pool.

Configuration of the “Integration Engine” component (= Schema Mapping Component + Plan Matcher Component) to do the actual data integration:

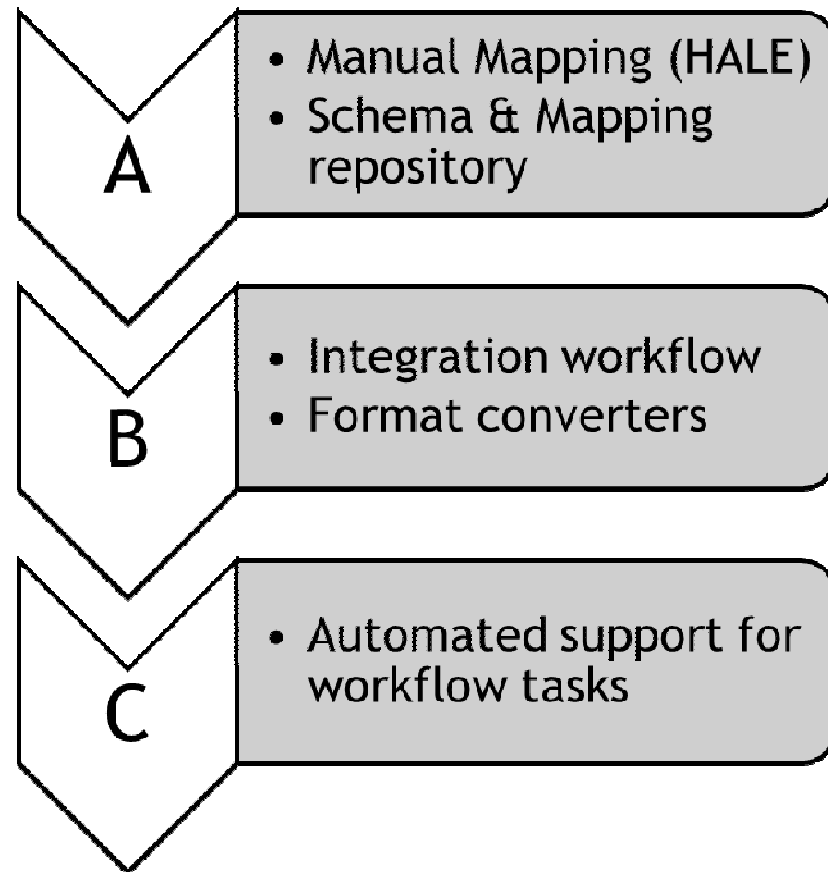
- for vector data: the **Schema Mapping Component** supports data transformation for Existing and Planned Land Use (into a simplified INSPIRE Data model) in HALE;
 - for raster data: the **Plan Matcher Component**.
-

Harmonise (Collaborative Schema Integrator)

Plan integrator



Integration Engine

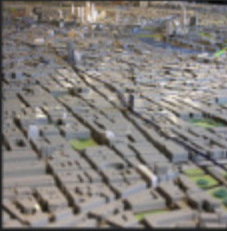



Harmonise (Collaborative Schema Integrator)

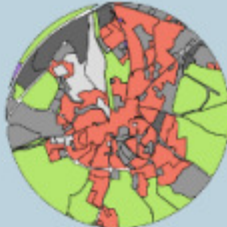
Welcome to the plan4business integrator

Get more out of your planning data in just three steps...

- 1** Upload or register your planned and existing land use data to the *plan4business* platform.


- 2** Create a schema mapping to harmonize your data with INSPIRE - or get the assistance of our professionals to do the integration.


- 3** Use your data in extensive analyses, provide it as a WMS and for download as INSPIRE compliant GML.



Data upload wizard

PLAN4BUSINESS Integrator

A service platform for aggregation, processing and analysis of urban and regional planning data

Plan upload

1. Basic information | 2. Upload files

Please upload files associated to the spatial plan or existing land use data set. To improve upload speed or easily upload multiple files, you can also upload a *ZIP archive* containing your data.

The files should include the vector data specifying the different zonings and their classifications, but you can upload associated documents or other relevant data as well. If possible, please upload only the data for a single land use data set and for additional files create their own data sets.

Currently only Shapefiles are supported as data sources.

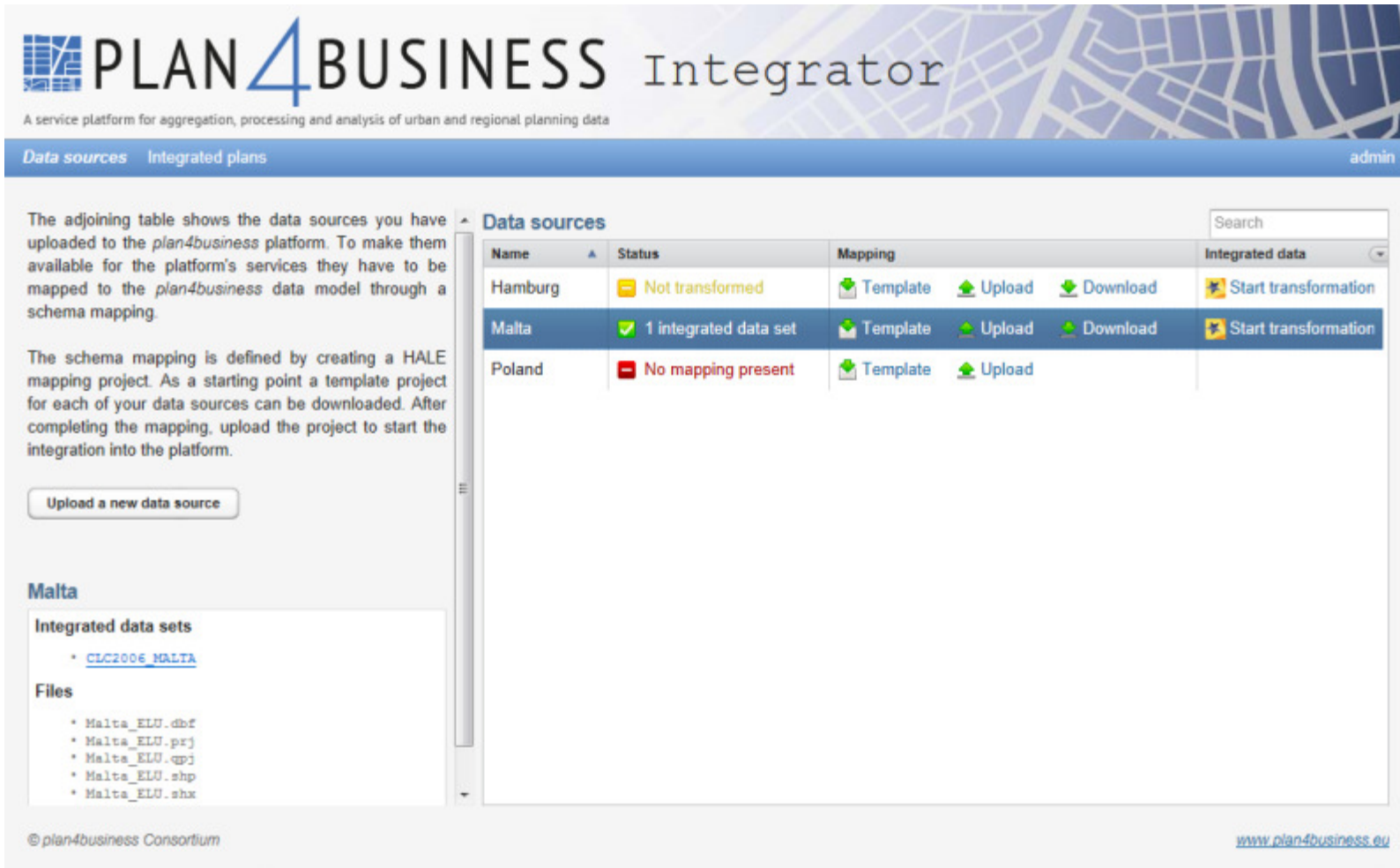
Uploaded files

Name	Type	Size
Malta_ELU.dbf		225,5 kB
Malta_ELU.prj		389 B
Malta_ELU.qpj		598 B
Malta_ELU.shp		186,1 kB
Malta_ELU.shx		1,3 kB

Select another file: Uploading file "Data_Malta_ELU.zip" succeeded

© plan4business Consortium www.plan4business.eu

User data source overview with status



The screenshot displays the PLAN4BUSINESS Integrator interface. The main header includes the logo and the text "Integrator". Below the header, there are navigation tabs for "Data sources" and "Integrated plans", and a user name "admin".

The "Data sources" section contains a table with the following data:

Name	Status	Mapping	Integrated data
Hamburg	Not transformed	Template, Upload, Download	Start transformation
Malta	1 integrated data set	Template, Upload, Download	Start transformation
Poland	No mapping present	Template, Upload	

On the left side of the interface, there is a sidebar with the following content:

- A paragraph explaining that the table shows data sources uploaded to the platform and that they need to be mapped to the platform's data model through a schema mapping.
- A paragraph explaining that the schema mapping is defined by creating a HALE mapping project, and that a template project can be downloaded for each data source. After completing the mapping, the project can be uploaded to start integration.
- A button labeled "Upload a new data source".
- A section titled "Malta" containing:
 - A sub-section "Integrated data sets" with a link to "CLC2006_MALTA".
 - A sub-section "Files" with a list of files: Malta_ELU.dbf, Malta_ELU.prj, Malta_ELU.gpj, Malta_ELU.shp, and Malta_ELU.shx.

At the bottom of the page, there is a copyright notice "© plan4business Consortium" and a website link "www.plan4business.eu".

Integrated plans with map preview

The screenshot shows the PLAN4BUSINESS Integrator web application. The page title is "PLAN4BUSINESS Integrator" and the subtitle is "A service platform for aggregation, processing and analysis of urban and regional planning data". The user is logged in as "Simon Templer" and can click "(Sign out)".

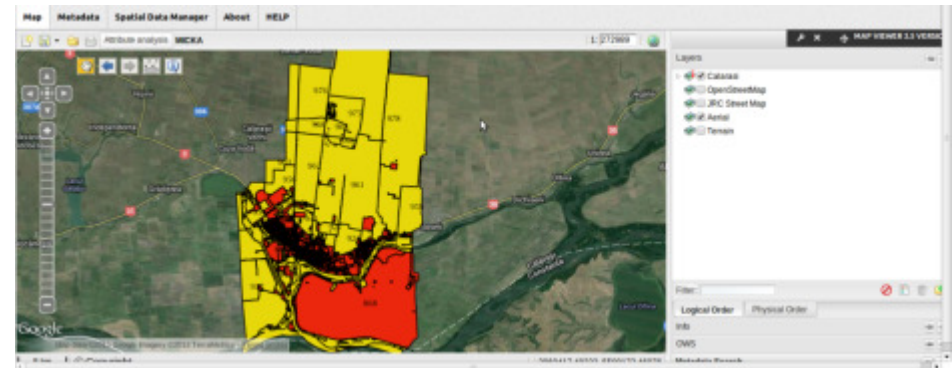
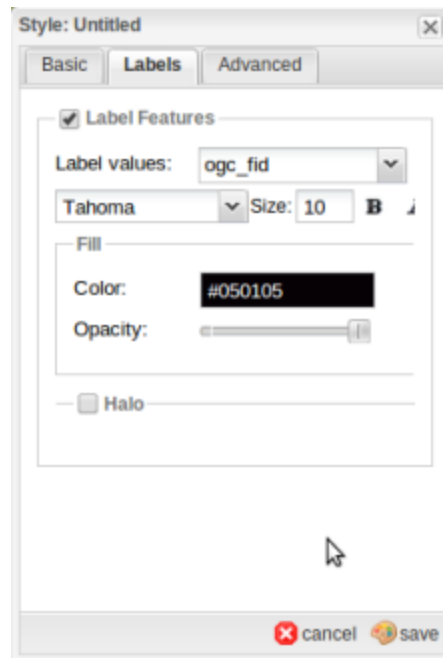
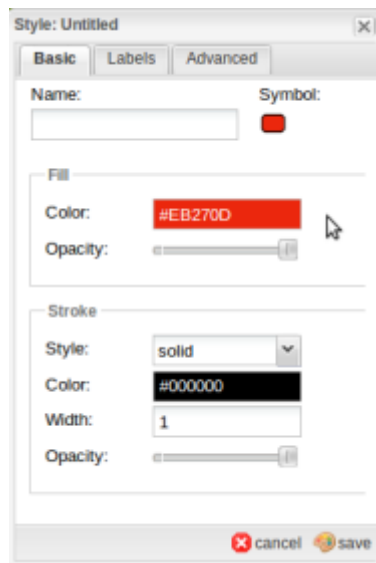
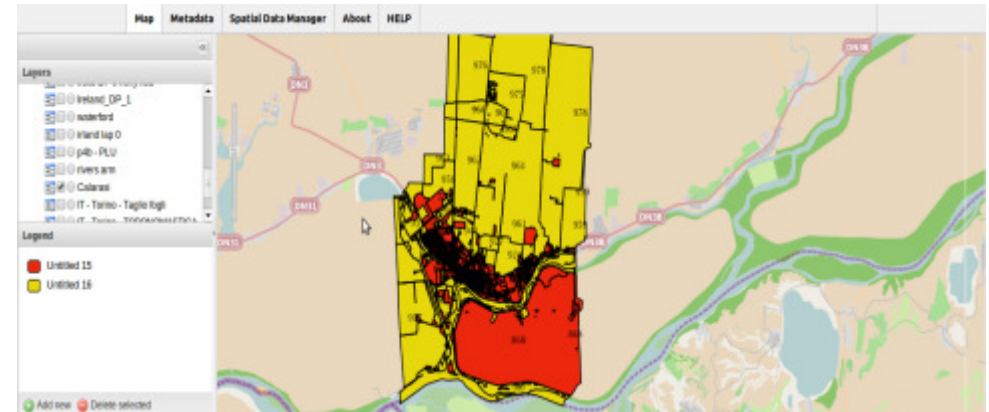
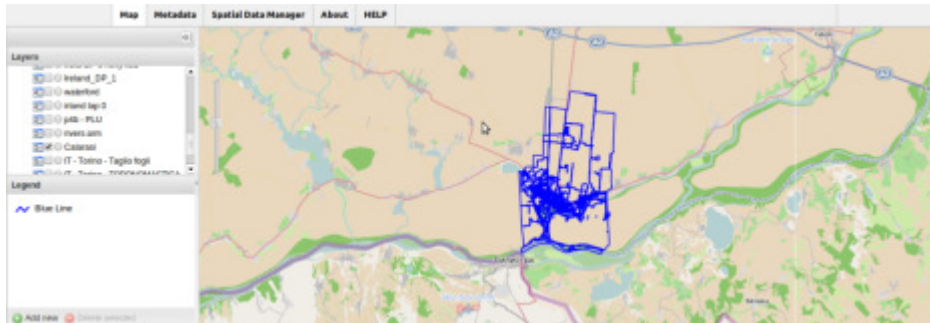
The main content area is titled "Integrated plans" and contains a table of data sources. The table has columns for Name, Type, Preview, and Data source. The first row is highlighted in blue.

Name	Type	Preview	Data source
1911r2e1	Spatial Plan	Map	Arendal Detailed
arendal_EL	Existing Land Use	Map Metadata	Arendal Municipa
Arendal Kommuneplan	Spatial Plan	Map Metadata	Arendal Municipa
Arklow Town and Environs 2011-2017	Spatial Plan	Map	Ireland plans
Arva	Spatial Plan	Map	Ireland plans
Athlone Environs Plan 2008-2014	Spatial Plan	Map	Ireland plans
Athlone Town Plan 2008-2014	Spatial Plan	Map	Ireland plans
Athy Town Development Plan	Spatial Plan	Map	Ireland plans
Aughrim Town Plan part of Wicklow CDP 2010-2016	Spatial Plan	Map	Ireland plans
Bailieborough 2008-2014	Spatial Plan	Map	Ireland plans
Ballina and Environs Development Plan 2009 - 2015	Spatial Plan	Map	Ireland plans
Ballinagh	Spatial Plan	Map	Ireland plans
Ballinasloe Development Plan	Spatial Plan	Map	Ireland plans

On the left side of the page, there is a "Map" section with a map preview of the Arendal area. The map shows various land use zones in different colors (green, yellow, red, blue) and includes navigation controls like a compass and zoom in/out buttons. Below the map, there is a small text attribution: "Map imagery and map information provided by MapQuest, Open Street Map and contributors, CC-BY-SA".

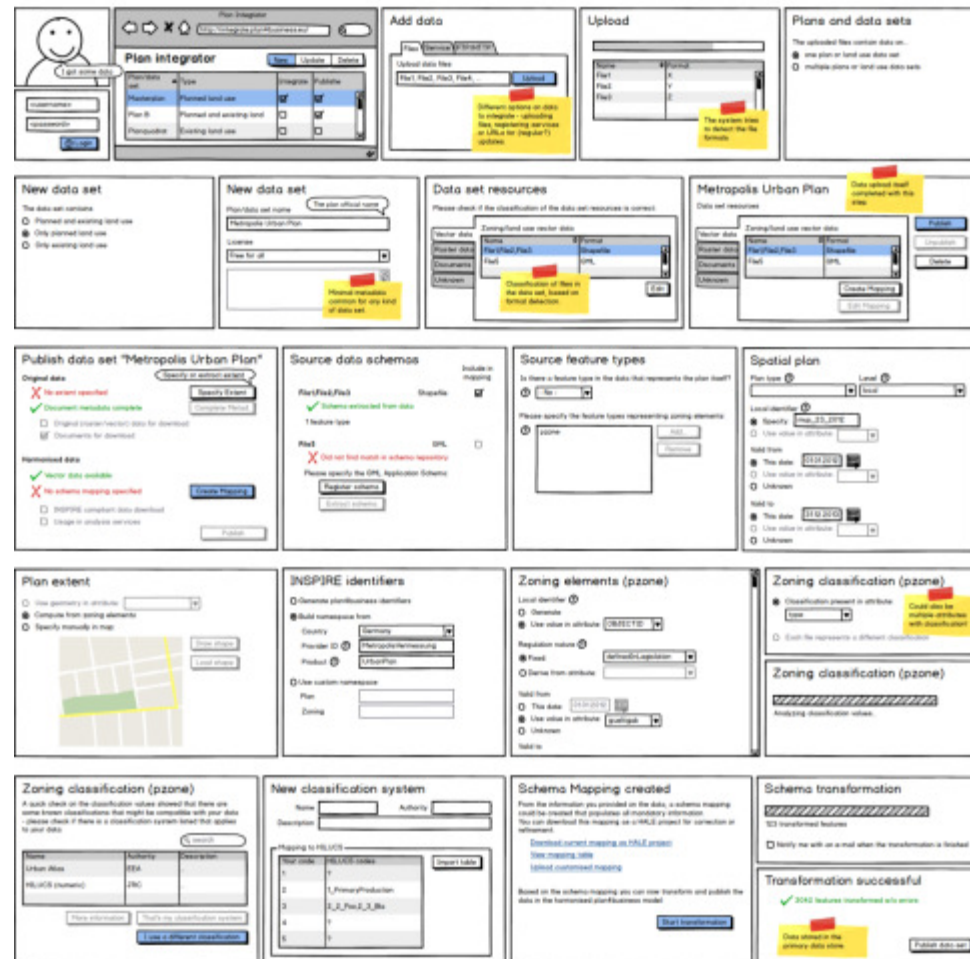
At the bottom of the page, there is a copyright notice: "© plan4business Consortium" and the website URL: "www.plan4business.eu".

Styler



Interactive example workflow for integration of Land Use data

How integrating data into the p4b platform might work - a simple example



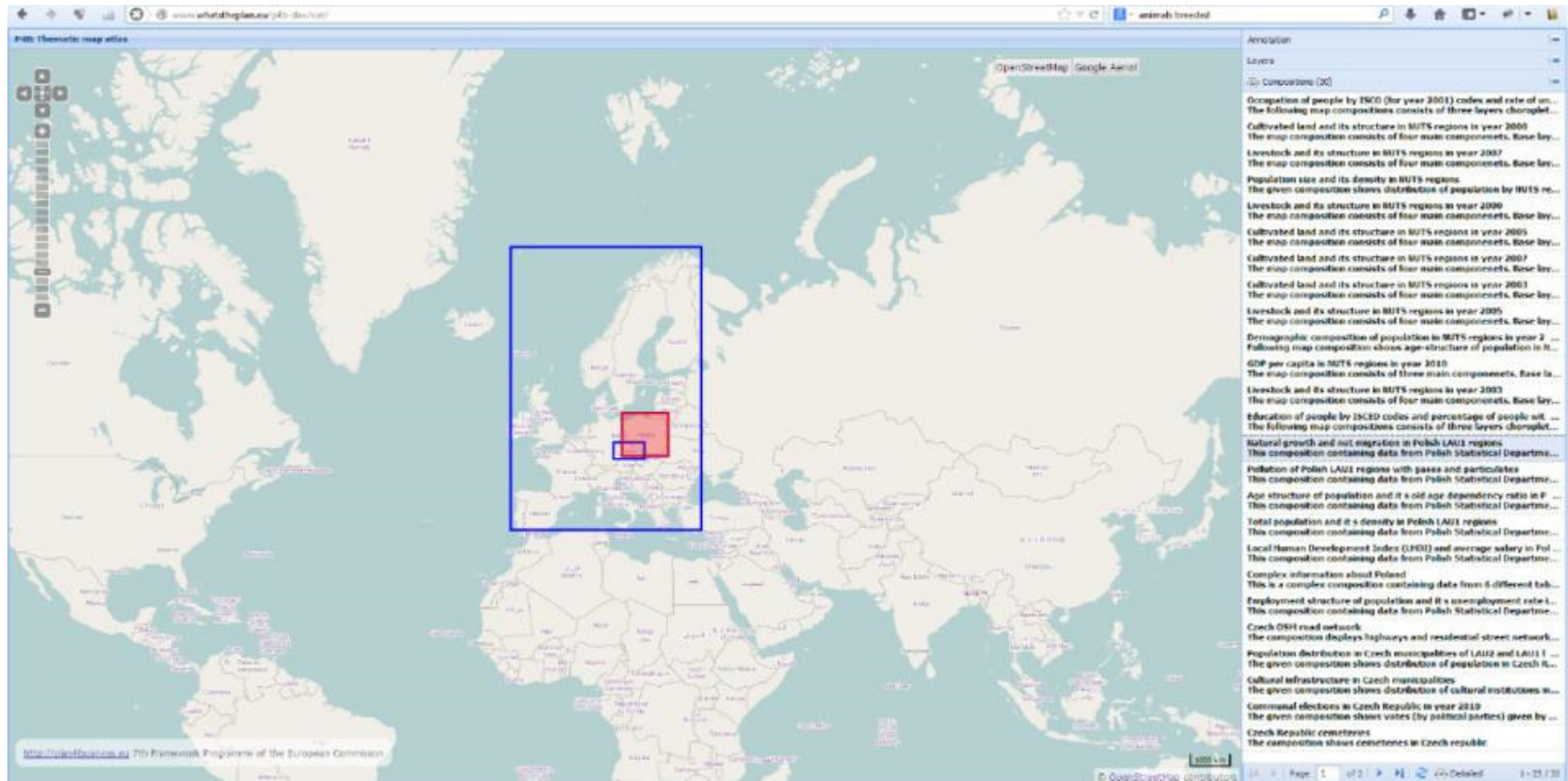
The workflow is a series of 22 panels, each representing a step in the process of integrating land use data into the p4b platform. The steps are:

- Plan integrator**: Shows a user profile and a table of plans with columns for Name, Type, Program, and Publish.
- Add data**: A form to add new data files, with a note: "Different systems can data to integrate - updating files, requiring you view an LRU in the Inspector!"
- Upload**: A form to upload data files, with a note: "The system that is shown that the system."
- Plans and data sets**: A summary of uploaded data sets, with a note: "Data upload itself completed with the file."
- New data set**: A form to create a new data set, with a note: "Manual metadata completion for this kind of data set."
- New data set**: A form to create a new data set, with a note: "Manual metadata completion for this kind of data set."
- Data set resources**: A form to check if the classification of the data set resources is correct.
- Metropolis Urban Plan**: A form to check if the classification of the data set resources is correct.
- Publish data set "Metropolis Urban Plan"**: A form to publish the data set, with a note: "Original metadata complete".
- Source data schemas**: A form to specify the source data schemas, with a note: "Did not find match in schema repository".
- Source feature types**: A form to specify the source feature types, with a note: "Please specify the feature types representing zoning elements".
- Spatial plan**: A form to specify the spatial plan, with a note: "Classification present in attribute".
- Plan extent**: A form to specify the plan extent, with a note: "Specify manually in map".
- INSPIRE identifiers**: A form to specify the INSPIRE identifiers, with a note: "Country: Germany".
- Zoning elements (pzone)**: A form to specify the zoning elements, with a note: "Local identifier: OBJECTE".
- Zoning classification (pzone)**: A form to specify the zoning classification, with a note: "Classification present in attribute".
- Zoning classification (pzone)**: A form to specify the zoning classification, with a note: "Classification present in attribute".
- Zoning classification (pzone)**: A form to specify the zoning classification, with a note: "Schema Mapping created".
- New classification system**: A form to specify the new classification system, with a note: "Mapping to HELIX".
- Schema Mapping created**: A form to specify the schema mapping, with a note: "From the information you provided on the data, a schema mapping could be created that provides all mandatory information".
- Schema transformation**: A form to specify the schema transformation, with a note: "Transformation successful".

Thematic Map Viewer

One of the major plan4business outcomes is the Thematic Map Viewer. The main objective of this application is to visualise data stored in our database in a user friendly way. Due to the fact that the database contains many data-layers, a grouping of these layers took place - into thematic compositions.

Thematic Map Viewer

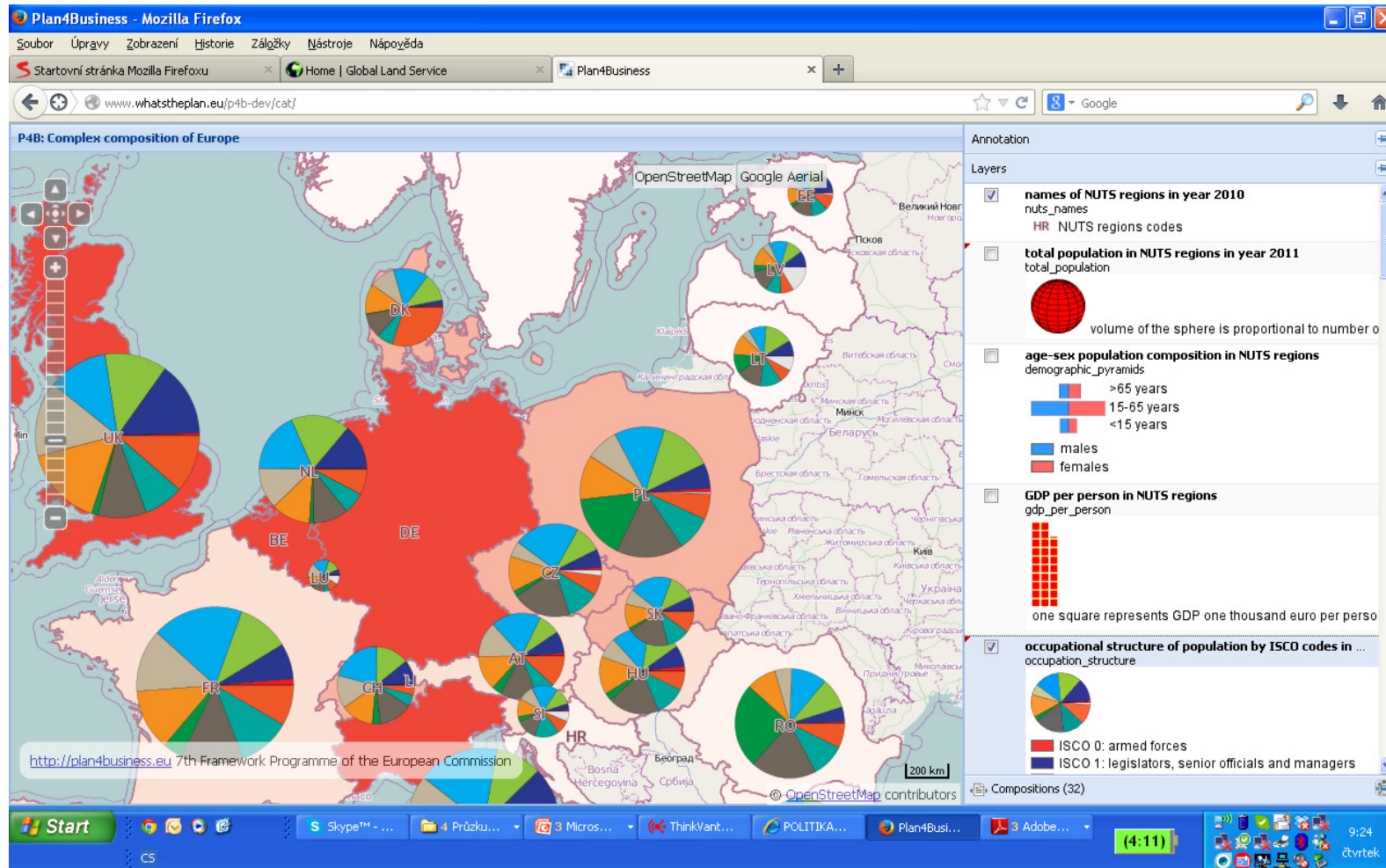


The screenshot displays the 'Thematic map atlas' interface. The main map area shows a world map with a blue rectangular box highlighting Europe. Within Europe, a red rectangular box highlights a specific region in Central Europe. The right-hand side of the interface features a 'Layers' panel with a list of 20 thematic map compositions. The first few layers include:

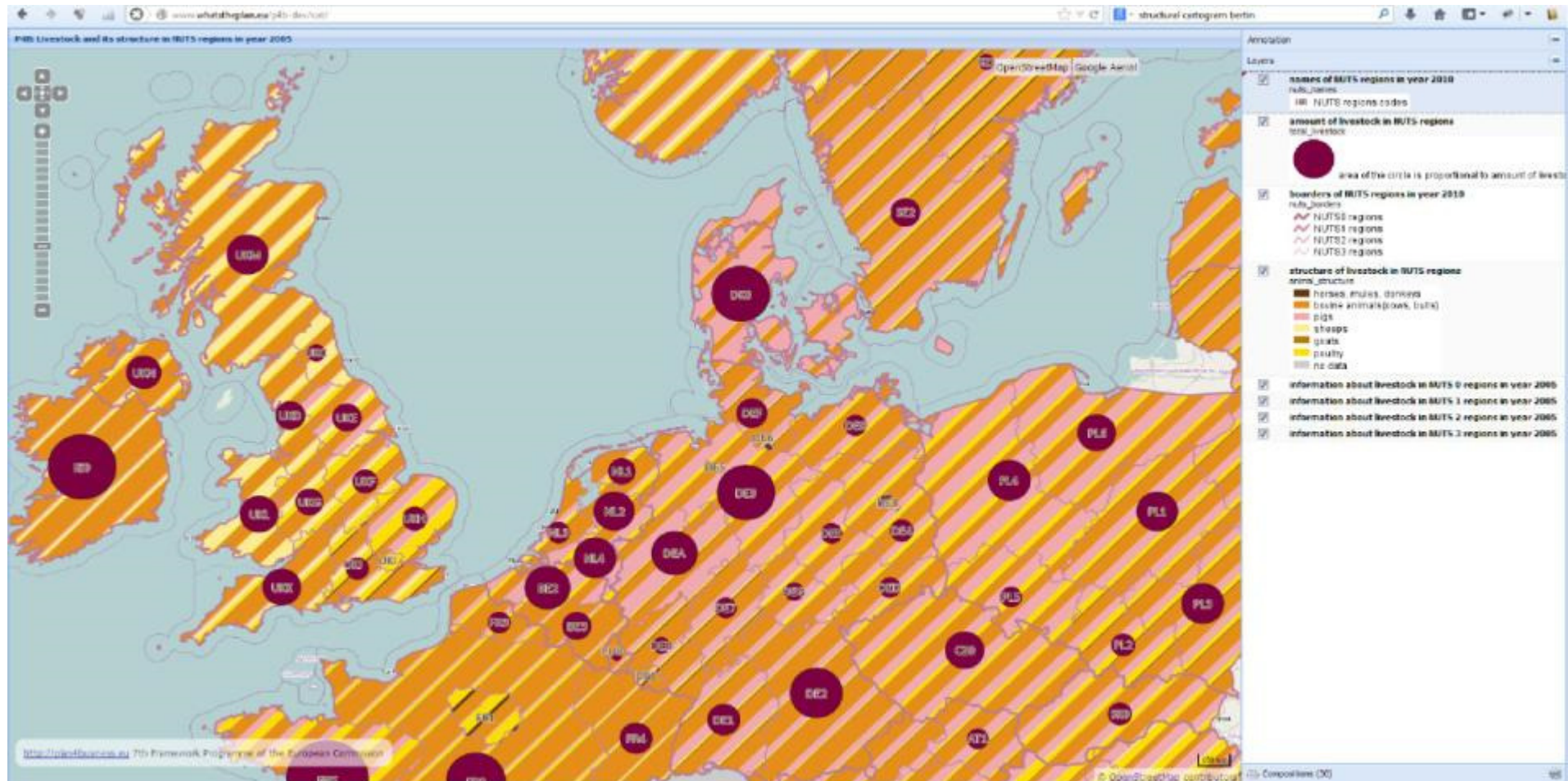
- Occupation of people by ISCO (for year 2001) codes and rate of un...
- Cultivated land and its structure in NUTS regions in year 2000
- Livestock and its structure in NUTS regions in year 2007
- Population size and its density in NUTS regions
- Livestock and its structure in NUTS regions in year 2000
- Cultivated land and its structure in NUTS regions in year 2005
- Cultivated land and its structure in NUTS regions in year 2007
- Cultivated land and its structure in NUTS regions in year 2001
- Livestock and its structure in NUTS regions in year 2005
- Demographic composition of population in NUTS regions in year 2...
- GDP per capita in NUTS regions in year 2010
- Livestock and its structure in NUTS regions in year 2003
- Education of people by ISCED codes and percentage of people wit...
- Natural growth and net migration in Polish LAU1 regions
- Pollution of Polish LAU1 regions with gases and particulates
- Age structure of population and it's old age dependency ratio in P...
- Total population and it's density in Polish LAU1 regions
- Local Human Development Index (LHDI) and average salary in Pol...
- Complex information about Poland
- Employment structure of population and it's unemployment rate L...
- Czech OSR road network
- Population distribution in Czech municipalities of LAU2 and LAU1 l...
- Cultural infrastructure in Czech municipalities
- Communal elections in Czech Republic in year 2010
- Czech Republic cemeteries

The interface also includes a navigation toolbar on the left, a search bar at the top right, and a footer with the URL <http://www.plan4business.eu> and the text '7th Framework Programme of the European Commission'.

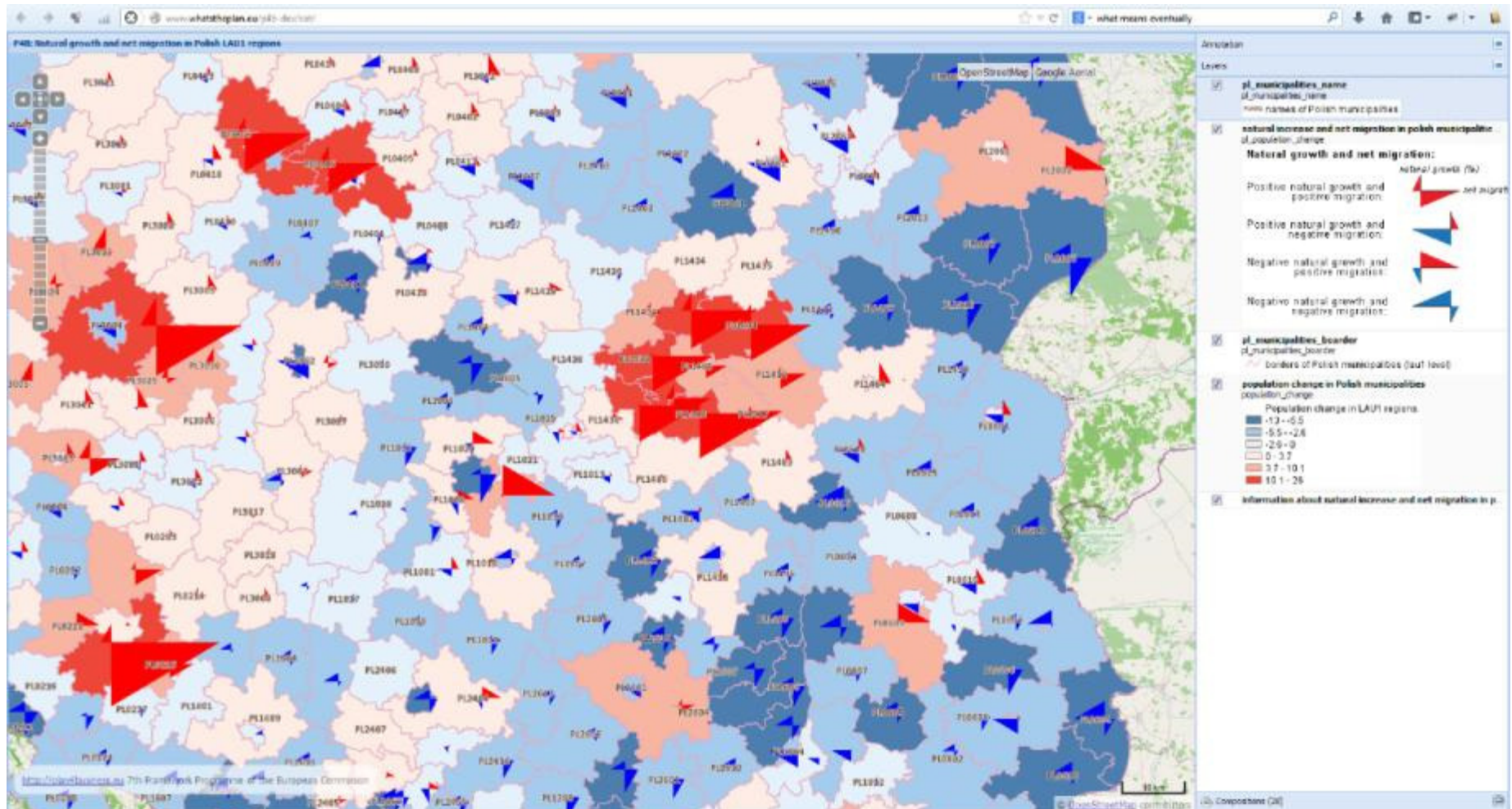
Thematic Map Viewer



Thematic Map Viewer



Thematic Map Viewer

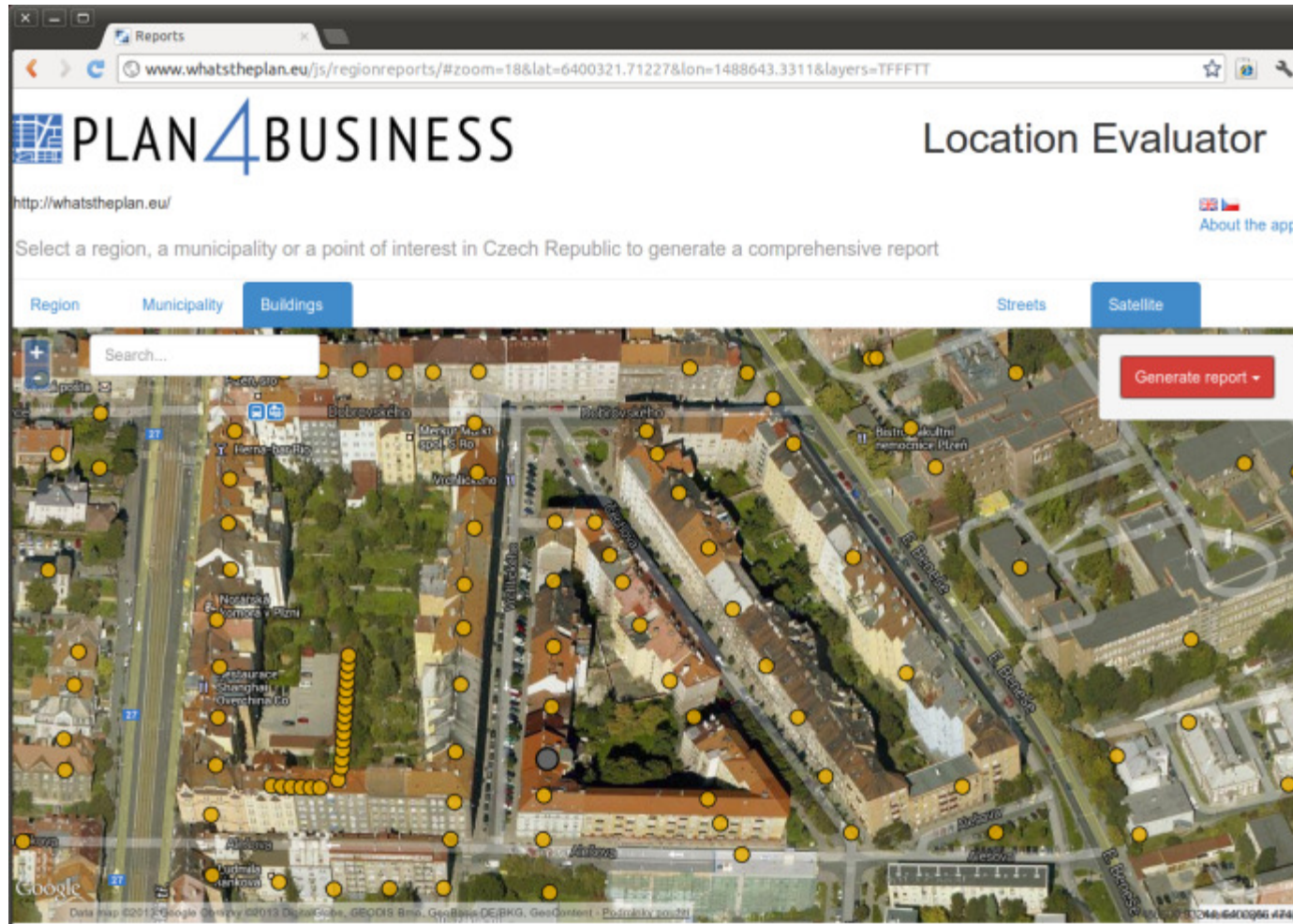


Location Evaluator

Location Evaluator is an application that aims to provide easy access to data available in the plan4business data pool. These data are visualised in a human readable and understandable way in the form of *reports* generated in the PDF or HTML formats.

Currently, Location evaluator is available for the Czech Republic (regions, cities, buildings) and Germany (cities)

Location Evaluator



Location Evaluator

The screenshot displays the Jaspersoft iReport Designer 5.1.0 interface. The main workspace shows a report design for a building evaluation. The report title is "Report for building: " + \$F{id}. The design is organized into several sections, each highlighted in yellow:

- Located in:** Includes fields for City name, City id (CZSO), and Land id.
- Infrastructure:** Includes fields for Sewer system, Water instalation, Heating, and Elevator.
- Basic properties:** Includes fields for Construction type, Built-up area, Floor area, and Walled up space.
- Usage:** Includes a field for Used as.
- Completion:** Includes a field for Date of completion.

The report design is displayed in the Designer view, with a ruler at the top and a Properties panel on the right. The iReport output console at the bottom shows the compilation process, including the file path, compilation running time (765), and the locale (Čeština (Česká republika)).

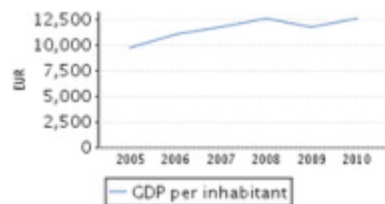
Location Evaluator

Basic data

Total area: 7530 km²
 Population: 571256
 Population density: 75.86 inh. per km²
 GDP: 7226.0 mio. EUR

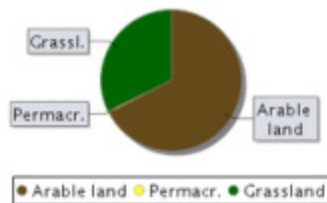
Economical factors

GDP per inhabitant: 12600.0 EUR
 Unemployment: 3.6 %



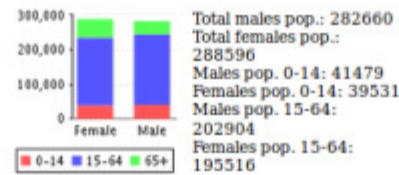
Structure of agricultural land

Area: 319440.0 ha
 Arable land: 67.39 %
 Grassland: 32.26 %
 Permacrops: 0.35 %



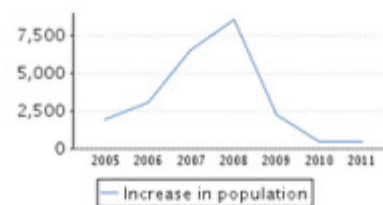
Demography

Total population: 571256
 Population aged 0-14: 81010
 Population aged 15-64: 398420
 Population older than 65: 91826

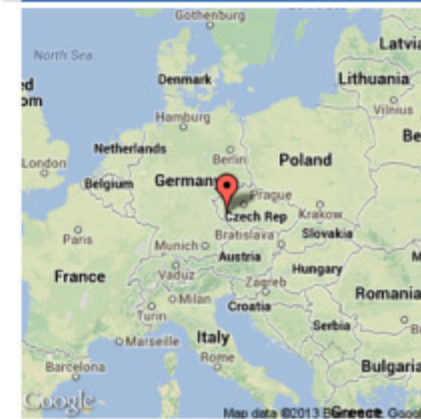


Increase in population: 453.0
 Crude increase rate: 0.8 ‰
 Natural increase in population: -322.0
 Crude natural increase rate: -0.6 ‰

Crude birth rate: 10.0 ‰
 Crude death rate: 10.0 ‰
 Live births: 5566.0



Location



Location Evaluator

Municipality Report: Plzeň (554791)

Administrative divisions

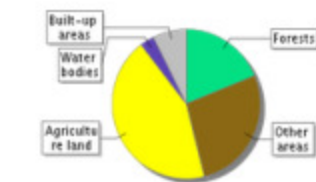
Region (NUTS2): Jihozápad (CZ037)
 Region (NUTS3): Plzeňský kraj (CZ032)
 District (NUTS4, LAU1): Plzeň-město (CZ0323)
 Municipality of 3rd level: Plzeň (3209)
 Municipality of 2nd level: Plzeň (32091)
 Status: S - Statutory town

Linked data

Municipality budget (source: www.rozpoctobce.cz)
 Municipality information (source: www.rtsv.cz)
 Municipality information (source: www.obce-mesta.info)

Land use

Total area: 13706.641 ha
 Arable land: 4319.4044 ha
 Hop gardens: 0.0 ha
 Vineyards: 0.0 ha
 Gardens: 973.1397 ha
 Orchards: 47.6782 ha
 Permanent grass vegetation: 649.3122 ha
 Forest land: 2589.5613 ha
 Bodies of water: 436.4627 ha
 Built-up areas: 995.1124 ha
 Other areas: 3762.7561 ha
 Agriculture land: 5989.7345000000000 ha



Forests ● Other areas ● Agriculture land
 Water bodies ● Built-up areas

Business

Number of lodging units: 4n
 Number of spa facilities: 0
 Number of beds in spa facilities: 0

See the original data source to find out metadata and more information.

Economical factors

Economically active population: 87516
 Unemployment rate: 7
 Number of job applicants: 6379
 Number of job applicants (graduates): 217
 Number of job applicants (registered longer than 12 months): 1099
 Job vacancies: 1229
 Micro enterprise: 19700
 Small enterprise: 652
 Medium enterprise: 226
 Large enterprise: 36

Housing

Number of completed new flats (in the calendar year): 315
 Number of completed new flats in family houses (in the calendar year): 100

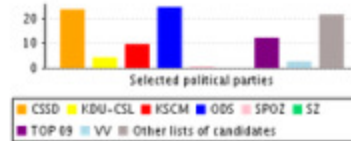
Facilities

Cinema: 6
 Multicinema: 1
 Theatre: 10
 Museum: 6
 Gallery: 25
 Other cultural enterprise: 6
 Swimming pool: 17
 Maintained playground: 25
 Gym: 40
 Stadium: 5
 Ice arena: 2
 Other sport enterprise: 7

See the original data source to find out metadata and more

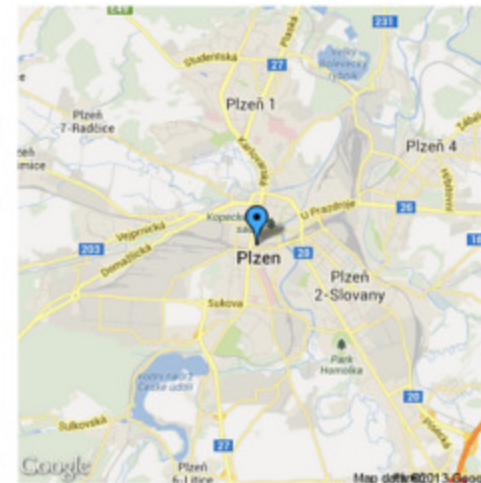
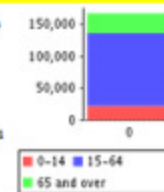
Local elections 2010

KDU-CSL - Christian and Democratic Union - Czechoslovak People's Party: 4.32%
 ODS - Civic Democratic Party: 24.78%
 KSČM - Communist Party of Bohemia and Moravia: 9.7%
 ČSSD - Czech Social Democratic Party: 23.61%
 SZ - Green Party: 6%
 SPOZ - Party of Civic Rights - Zemanovci: 0.63%
 VV - Public Affairs: 2.66%
 TOP 09 - Tradition Responsibility Prosperity 09: 12.31%
 Other lists of candidates: 21.78999999999992 %



Demography

Population: 167302
 Increase in population: -103
 Migration balance: -245
 Live births: 1670.0
 Deaths: 1773
 Immigrants: 3112
 Emigrants: 3355
 Average age: 42.53226293744247
 Population aged 0-14: 22134
 Productive age: 114039.0
 Population 65 years and over: 31129



The report contains the newest information published by following providers.

Source: CZSO; Klasifikace, číselníky; Struktura území České republiky; CZSO; Statistics; ČSÚ a územně analytické podklady; Datové vrstvy pro GIS

Location Evaluator

Located in

City name: Praha
City id (CZSO): 554782
Land id: 2384834101

Basic properties

Construction type: Not known
Built-up area: Not known
Floor area: Not known
Walled up space: Not known m
Number of floors: Not known
Number of apartments: 6

Flood risk

Located in zone of largest flood: Yes
Located in zone of 100-year flood: Yes
Located in zone of 20-year flood: No
Located in zone of 5-year flood: No

Linked data and reports

Report for city: Praha

Infrastructure

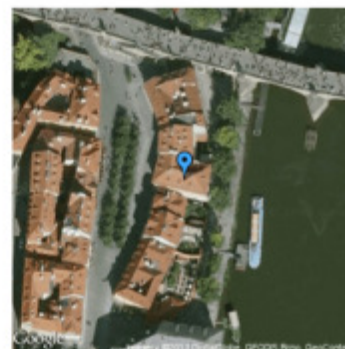
Sewer system: Connection to sewer system
Water instalation: With water pipe
Heating: Other (including without heating)
Elevator: Without elevator

Usage

Used as: Apartment building

Completion

Date of completion: Not known



Report contains information published by following providers.
CZECH OFFICE FOR SURVEYING, MAPPING AND CADASTRE (COSMC); RUIAN;
T. G. Masaryk Water Research Institute, public research institution; DIBAVOD

Report generated at 2013-09-17 13:49:44.0

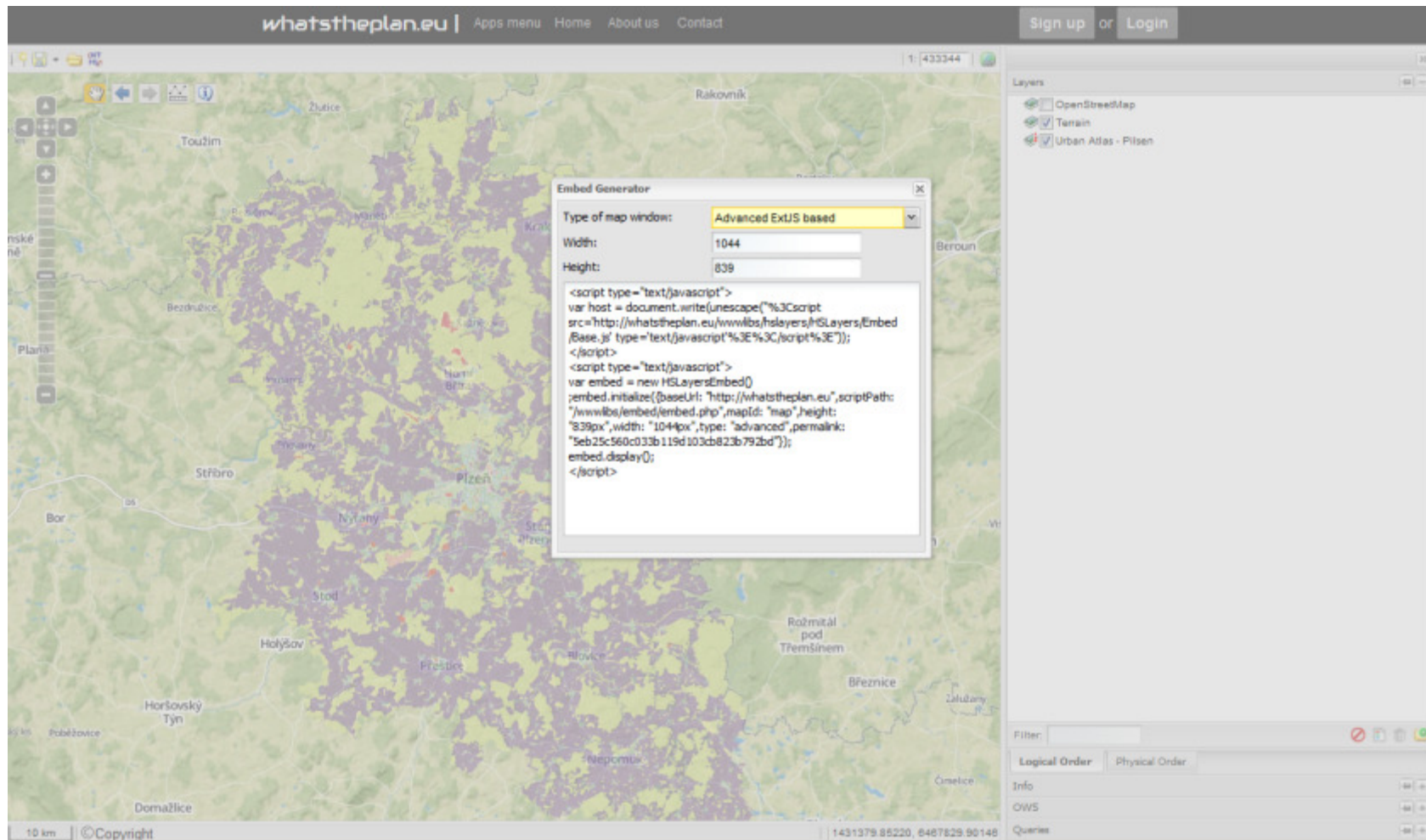
<http://www.plan4business.eu/>

<http://whatstheplan.eu/>

Embed-Map

This pilot application enables user to create a map in the Thematic Map Viewer and insert it as an embedded object into any HTML pages. Users can define parameters which affect how the map will look like in the target HTML page (currently the width and height of the embedded map).

Embed-Map



The screenshot shows the website whatstheplan.eu with a map of Pilsen, Czech Republic. The map displays various urban planning data layers. An 'Embed Generator' dialog box is open, allowing users to generate code to embed the map on their website. The dialog box has the following settings:

- Type of map window: **Advanced ExtJS based**
- Width: **1044**
- Height: **839**

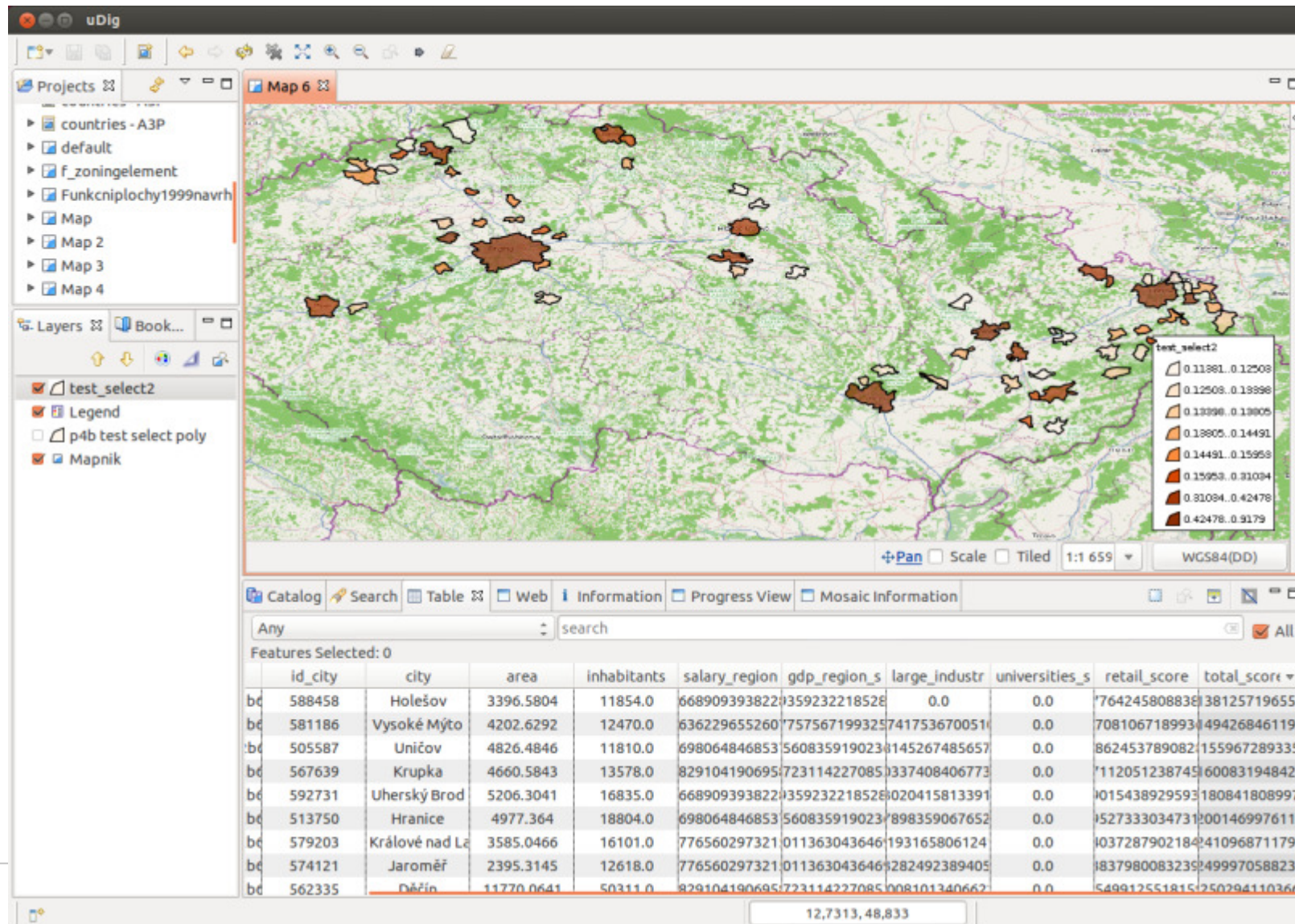
```
<script type="text/javascript">
var host = document.write(unescape("%3Cscript
src='http://whatstheplan.eu/www/lbs/hslayers/HSLayers/Embed
/Base.js' type='text/javascript'%3E%3C/script%3E"));
</script>
<script type="text/javascript">
var embed = new HSLayersEmbed()
;embed.initialize({baseUrl: 'http://whatstheplan.eu',scriptPath:
'/www/lbs/embed/embed.php',mapId: 'map',height:
'839px',width: '1044px',type: 'advanced',permalink:
'Seb25c560c033b119d103cb823b792bd'});
embed.display();
</script>
```

The map interface includes a navigation toolbar on the left, a 'Layers' panel on the right with options for 'OpenStreetMap', 'Terrain', and 'Urban Atlas - Pilsen', and a 'Filter' section at the bottom right. The bottom status bar shows a scale of 10 km and coordinates 1431379, 85220, 6487829, 90148.

Data Analysis

The screenshot displays the PLAN4BUSINESS web application interface. The browser address bar shows `dev.bnhelp.cz/p4b-dev/cat/`. The main map area features an aerial view with several blue lines overlaid, representing spatial plans or analysis results. A semi-transparent logo for PLAN4BUSINESS is visible in the top-left corner of the map. The right-hand side of the interface contains a 'Layers' panel with 'Analysis (2)' active, listing 'test_title test_abstract' and 'Select municipality simple test selecting municipality simpl as kml'. A dialog box titled 'test select municipality simpl' is open, containing the text 'test select municipality simpl test selecting municipality simpl as kml' and a field for 'kn:'. The dialog has 'Analyze' and 'Cancel' buttons. The bottom of the map shows a scale bar for 200 meters and a 'Compositions (3)' indicator.

Expert Analysis



Using KML

Displaying content from p4b.ccss.cz. The content displayed below and overlaid onto this map is provided by a third party, and Google is not responsible for it. Information you enter below may become available to the third party.

[p4b:test_select2](#)

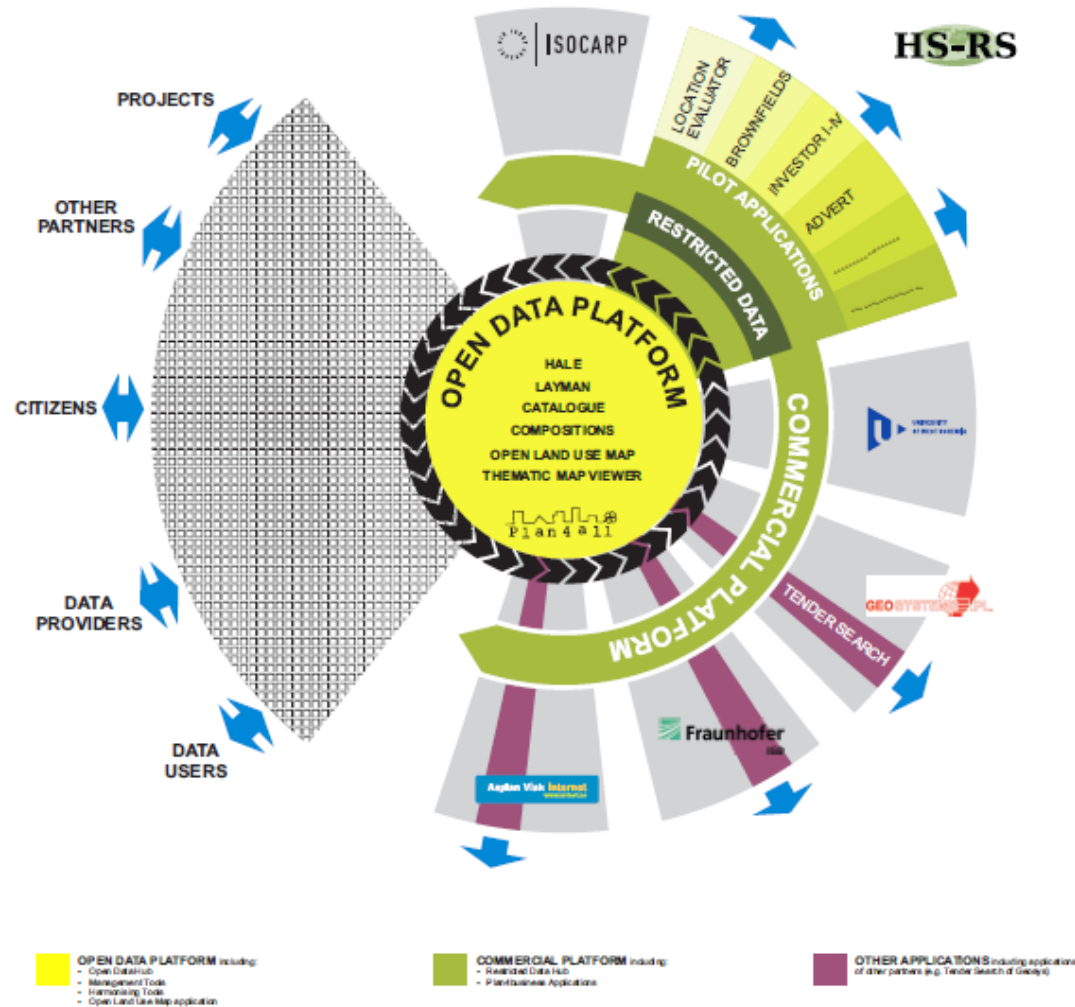
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e78](#)
test_select2 id_city: 554782 city: Praha area: 49613.0162 inhabitants: 1241664.0
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e77](#)
test_select2 id_city: 555088 city: Havlířov area: 3207.6103 inhabitant
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e76](#)
test_select2 id_city: 532053 city: Kladno area: 3696.5951 inhabitants:
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e75](#)
test_select2 id_city: 500496 city: Olomouc area: 10333.4543 inhabitant
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e74](#)
test_select2 id_city: 582786 city: Brno area: 23018.4761 inhabitants:
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e73](#)
test_select2 id_city: 554821 city: Ostrava area: 21421.7605 inhabitant
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e72](#)
test_select2 id_city: 511382 city: Pířerov area: 5844.2226 inhabitants
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e71](#)
test_select2 id_city: 555134 city: Pardubice area: 8265.5092 inhabitant
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e70](#)
test_select2 id_city: 554804 city: Ústí nad Labem area: 9396.9509 in
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e6f](#)
test_select2 id_city: 505927 city: Opava area: 9060.8054 inhabitants:
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e6e](#)
test_select2 id_city: 554791 city: Plzeň area: 13766.641 inhabitants:
- [test_select2.fid-45ef3ba8_13e0dbe7af8_-e6d](#)
test_select2 id_city: 569810 city: Hradec Králové area: 10568.8248 in

test_select2.fid-45ef3ba8_13e0dbe7af8_-e78
test_select2
id_city: 554782
city: Praha
area: 49613.0162
inhabitants: 1241664.0
salary_region_score: 1.0
gdp_region_score: 1.0
large_industries_score: 1.0
universities_score: 0.8631647454645177
retail_score: 1.0
total_score: 0.9178968472787106

[Directions](#) [Search nearby](#) [Save to map](#) [more](#)



Plan4business Plan



Thank you for your attention

more information at

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