



# HLanData

HARMONIZATION OF EUROPEAN  
LAND USE AND LAND COVER DATABASES  
FOR THE CREATION OF VALUE ADDED SERVICES

## National Land Information System

Pilot 2.1 - Easy Exploration of Complex Data

*Tomas Soukup, WP3 leader, GISAT*



- ✓ Land - why it is so important
- ✓ From mapping to monitoring
- ✓ From scarceness to congestion
- ✓ LI System requirements identified
- ✓ Key features implemented
- ✓ User feedback
- ✓ Conclusions

## Land - why it is so important

- ✓ Land Cover - reflects potential for land to provide services
- ✓ Land Use - reflects how this potential is actually used
- ✓ Changes in Land Cover and Land Use reflect related natural and socio-economic processes behind these changes
- ✓ Land Cover / Land Use as key datasets to help integrate other data - integrated assessment

- ✓ An understanding of the causes and the implications of **land cover and land use patterns, their changes and trends** is a fundamental part of spatial planning for sustainable development.
- ✓ Together, **land cover and land use** provide for particular territory complementary **information both on landscape potential and on realizing this potential** - the information which is essential for future decisions.

*Landscape Mosaic, painting by Jerry Points © Jerry Points*

- ✓ Strong need for spatial data on Land Cover / Land Use
- ✓ Strong need for long-term consistent monitoring
- ✓ Reflection on European level (CORINE LC, GMES Land services: Urban Atlas, GIO High Resolution Layers)
- ✓ Reflection on national level, regional and local level (SIOSE, LISA.... see more soon in your district)
- ✓ **more temporality to come - a clue for understanding**

- ✓ In the past: data shortage - **recently: flooded by data**
- ✓ More to come in LC / LU: **Sentinels era to come**

✓ Data availability **INSPIRE**

✓ Data accessibility

✓ Data harmonisation

**HLANDATA**

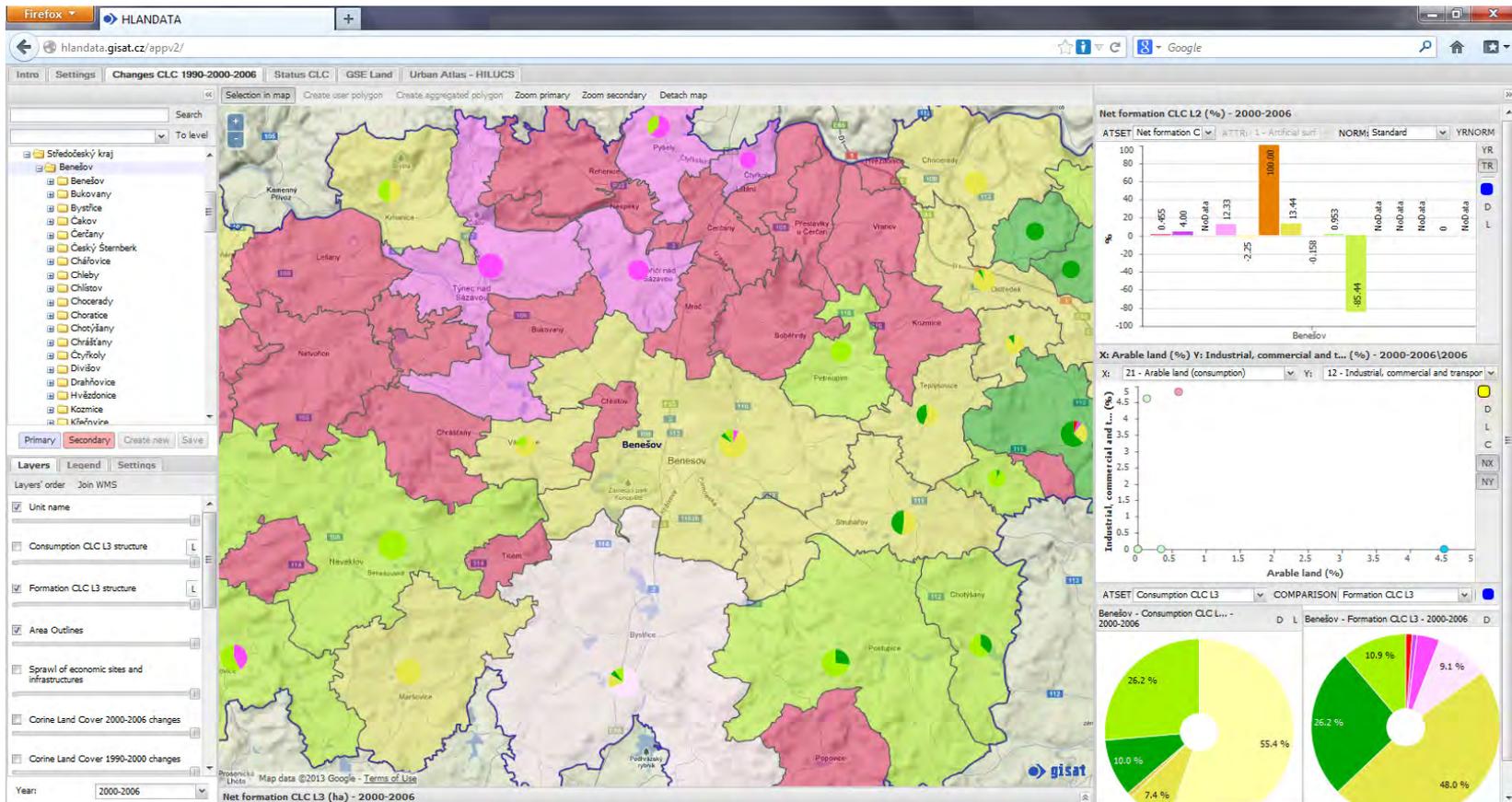
✓ Data integration

✓ Data presentation, exploration and analysis **2.1 Focus**

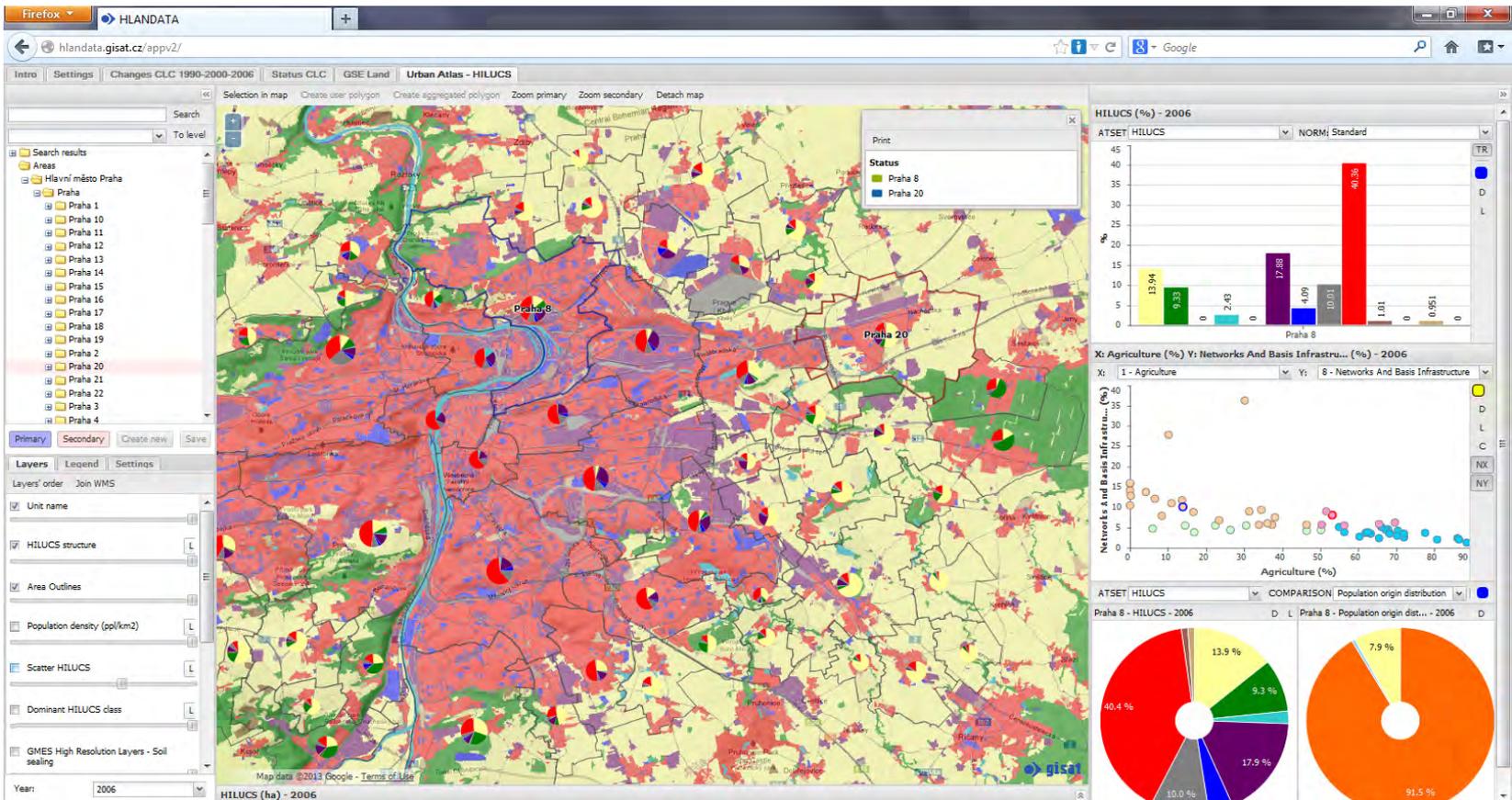
## LI System requirements identified

- ✓ provide integrated view (multiple spatial / non-spatial data sources, multi-temporality)
- ✓ provide user-friendly interface
- ✓ provide instant response
- ✓ support (non-technical) policy discussion
- ✓ support hardcopy reporting as well as live collaboration
- ✓ flexible for customisation - **develop flexible framework**

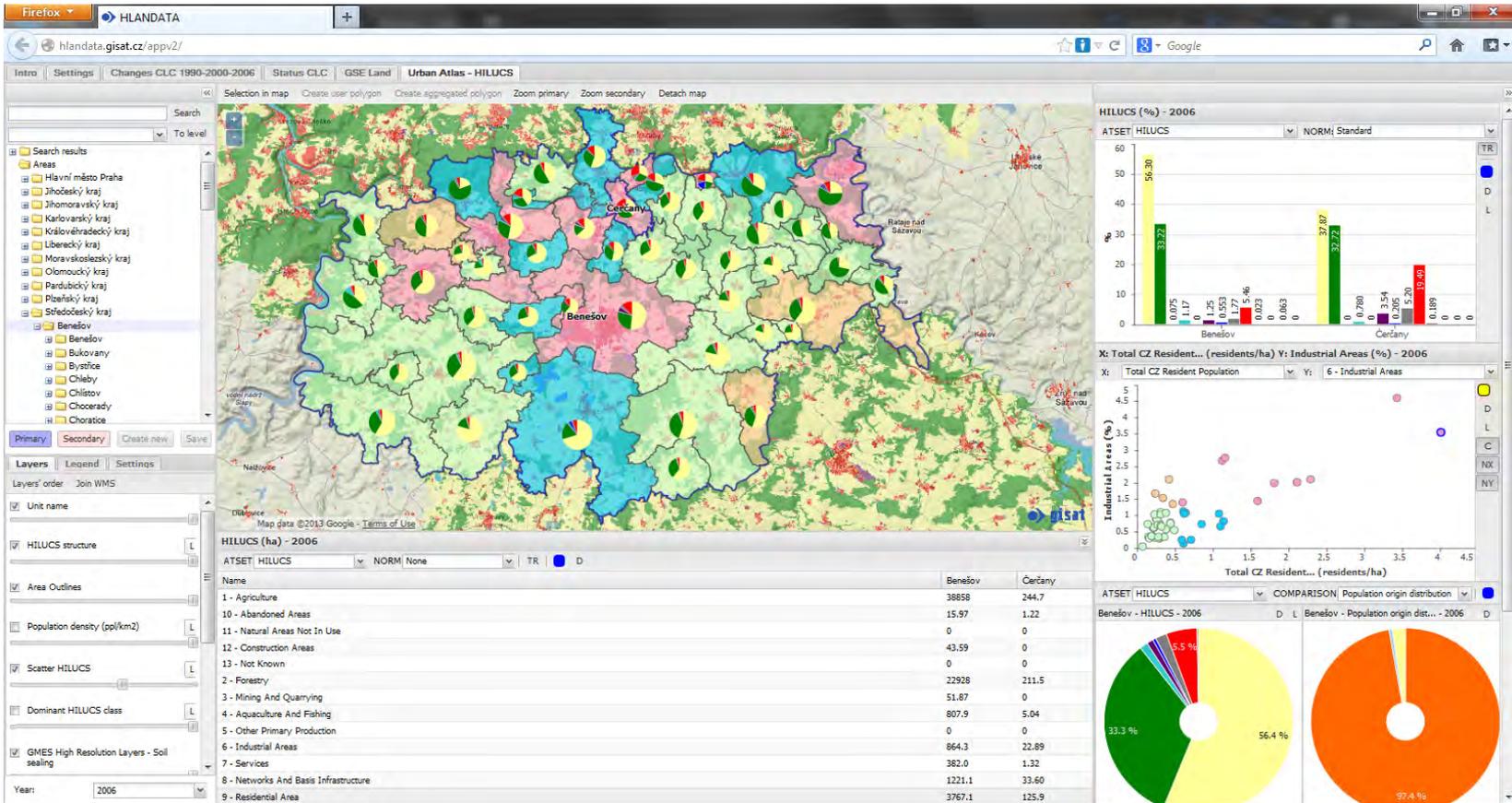
## ✓ seamless analysis scale – flexible analytical units



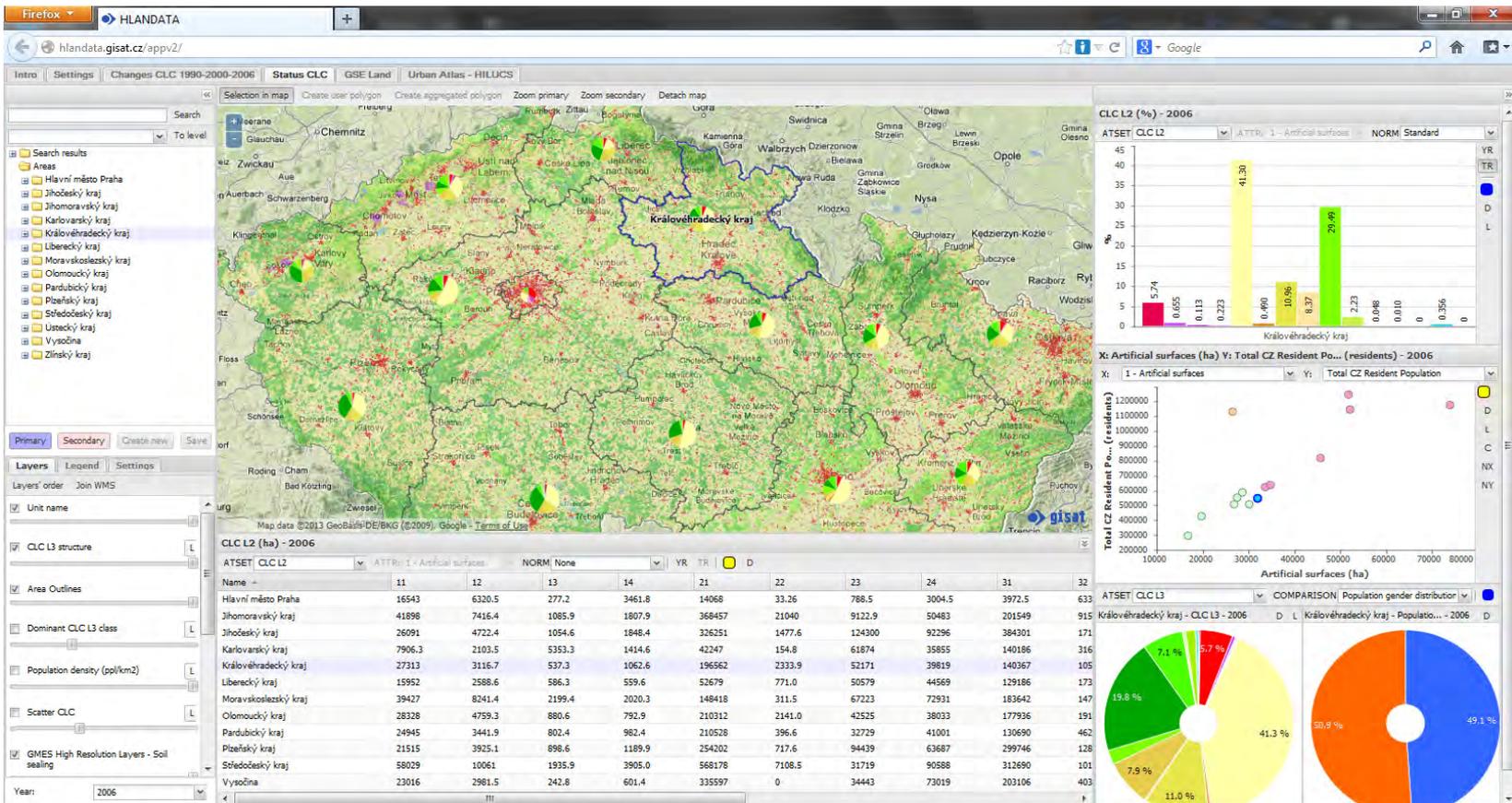
✓ flexible analysis scope – spatial / temporal / thematic



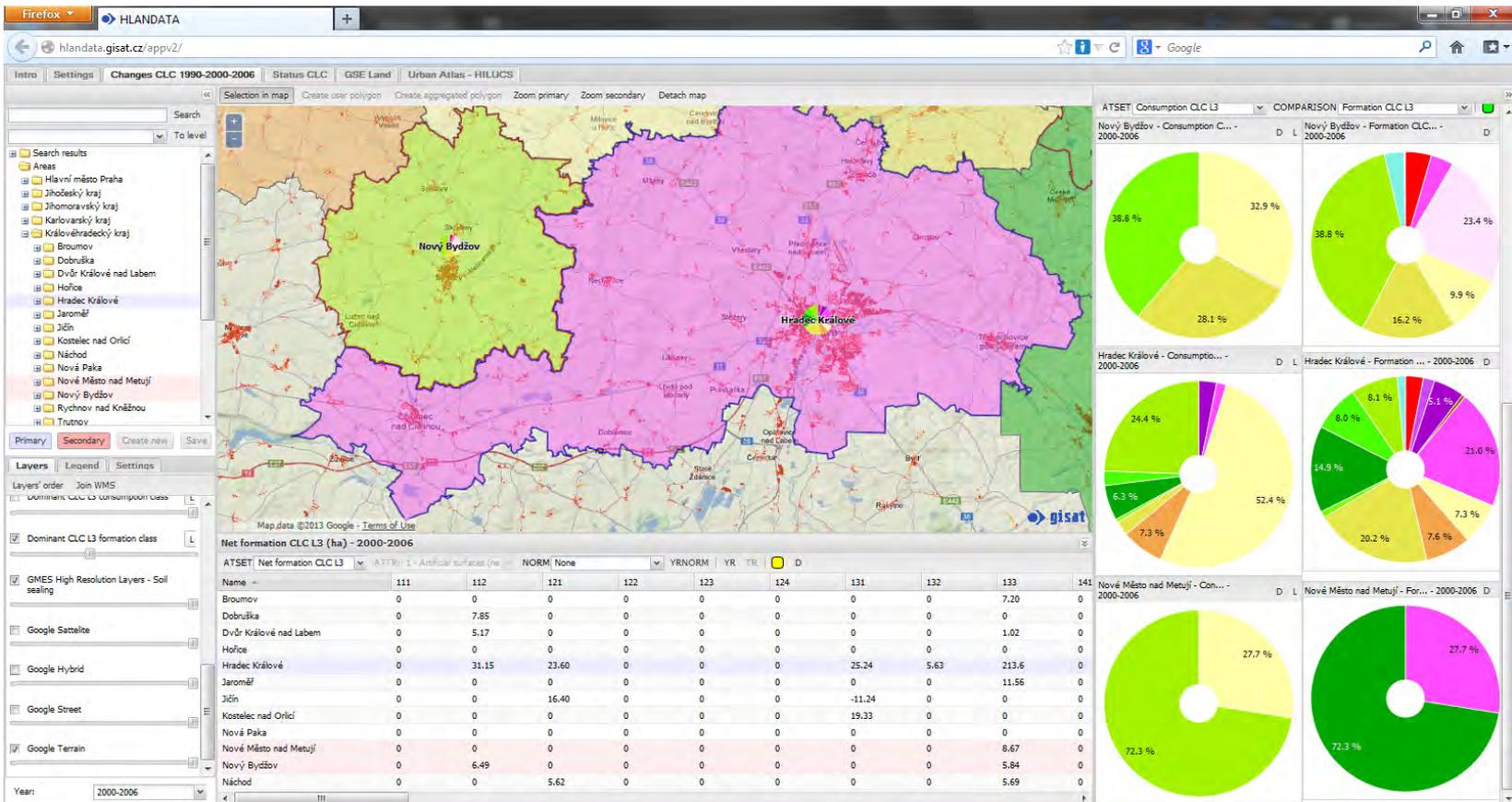
## ✓ various data integration – spatial / non-spatial



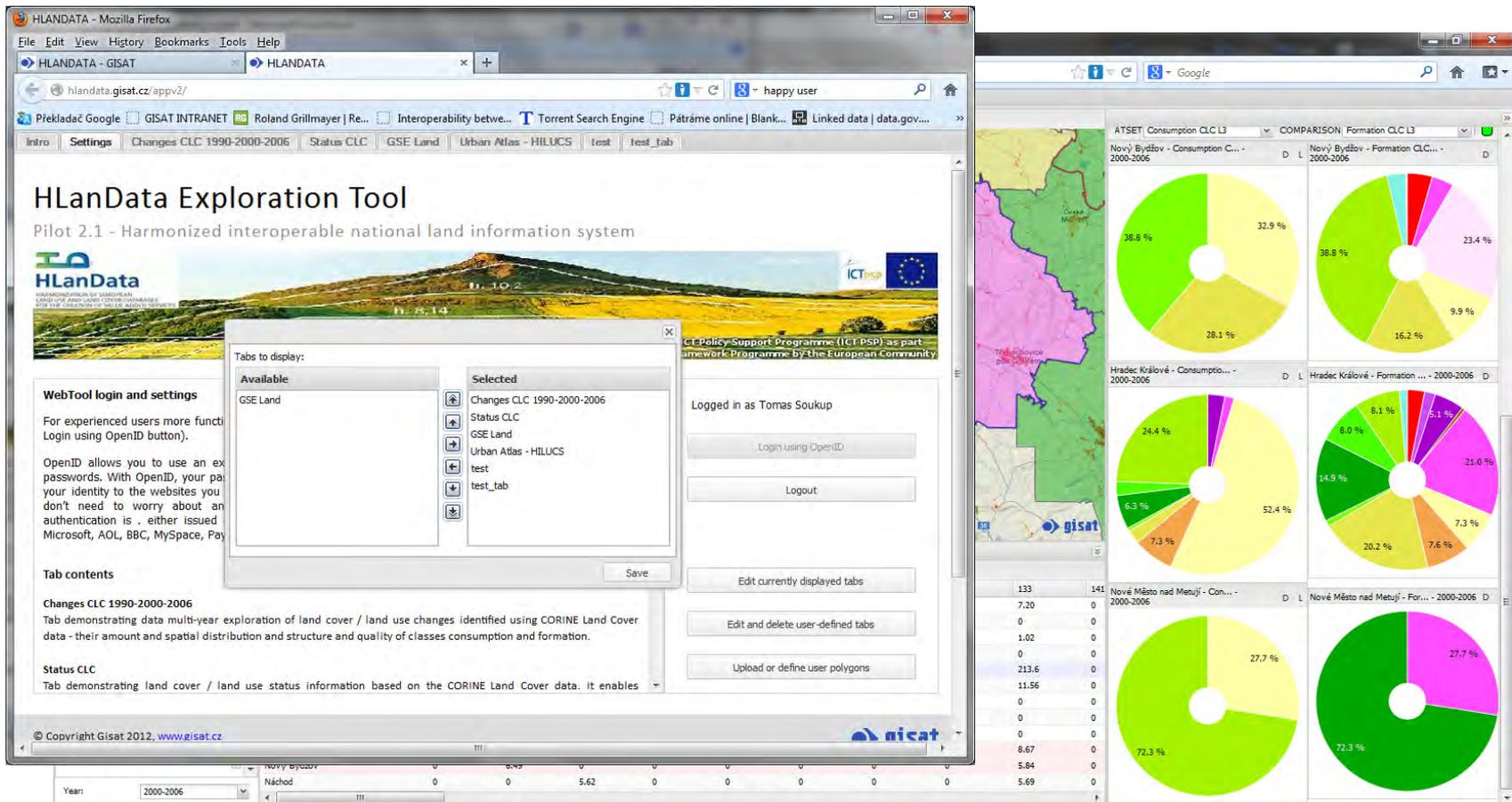
## ✓ various presentation modes – active and interlinked



✓ fast / instant response



## ✓ user preferences – user authentication

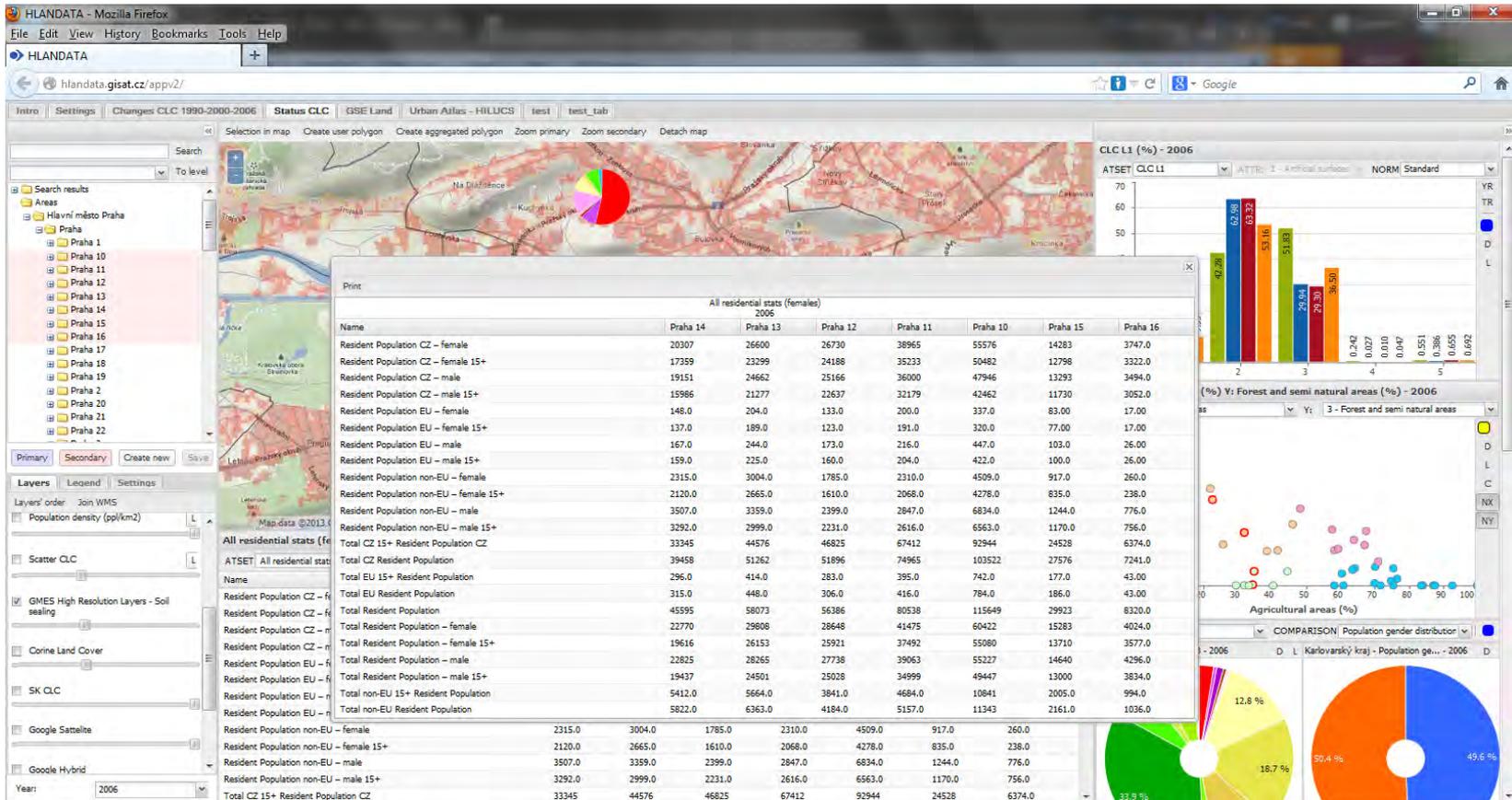


The screenshot displays the HlanData Exploration Tool interface in a Mozilla Firefox browser window. The main page title is "HLanData Exploration Tool" with the subtitle "Pilot 2.1 - Harmonized interoperable national land information system". A "WebTool login and settings" dialog box is open, showing a list of "Available" tabs (GSE Land) and "Selected" tabs (Changes CLC 1990-2000-2006, Status CLC, GSE Land, Urban Atlas - HILUCS, test, test\_tab). The user is logged in as "Tomas Soukup".

On the right side, a map of the region is shown alongside several pie charts representing land cover data for different locations and years. The charts are titled "ATSET Consumption CLC L3", "COMPARISON Formation CLC L3", "Nový Bydžov - Consumption C...", "Nový Bydžov - Formation CLC...", "Hradec Králové - Consumption...", "Hradec Králové - Formation...", "Nové Město nad Metují - Con...", and "Nové Město nad Metují - For...". The pie charts show various percentages, such as 38.8%, 32.9%, 28.1%, 16.2%, 9.9%, 23.4%, 24.4%, 52.4%, 6.3%, 7.3%, 8.1%, 8.0%, 5.1%, 21.0%, 7.3%, 7.6%, 27.7%, and 72.3%.

At the bottom of the interface, there is a table with columns for "Year" and "Náhod" (random) values. The table shows data for the year 2000-2006, with values ranging from 0 to 141. The "Náhod" column shows values like 7.20, 0, 1.02, 0, 213.6, 11.56, 0, 0, 0, 0, 8.67, 5.84, and 5.69.

## ✓ collaboration - elements export

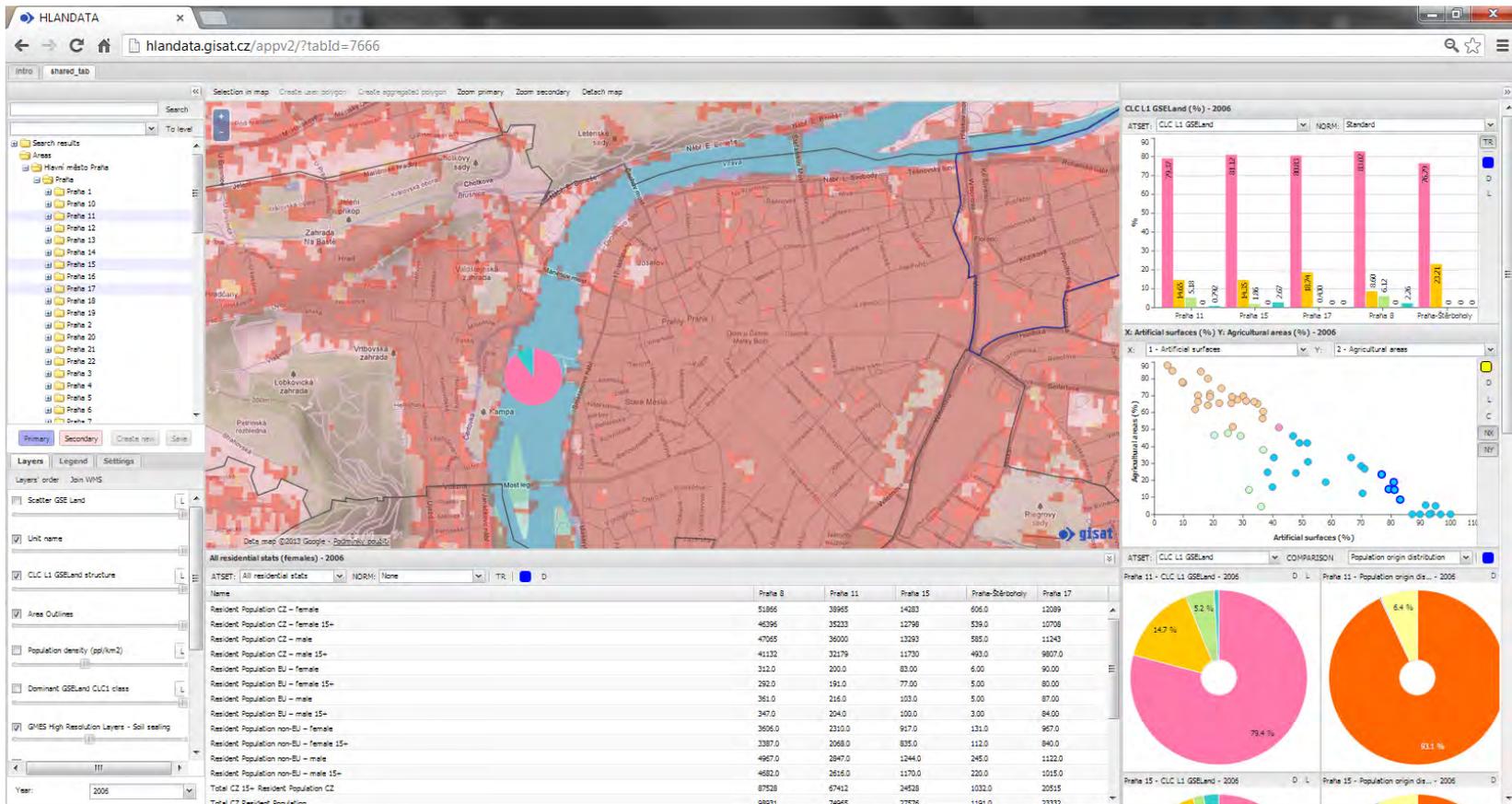


The screenshot displays the HlanData web application interface. The main window shows a map of Prague with a selected area. A data table titled "All residential stats (females) 2006" is open, showing population statistics for various districts (Praha 14, Praha 13, Praha 12, Praha 11, Praha 10, Praha 15, Praha 16) across different categories like Resident Population CZ, EU, and non-EU, and by gender and age group.

Name	Praha 14	Praha 13	Praha 12	Praha 11	Praha 10	Praha 15	Praha 16
Resident Population CZ - female	20307	26600	26730	38965	55576	14283	3747.0
Resident Population CZ - female 15+	17359	23299	24188	35233	50482	12798	3322.0
Resident Population CZ - male	19151	24662	25166	36000	47946	13293	3494.0
Resident Population CZ - male 15+	15986	21277	22637	32179	42462	11730	3052.0
Resident Population EU - female	148.0	204.0	133.0	200.0	337.0	83.00	17.00
Resident Population EU - female 15+	137.0	189.0	123.0	191.0	320.0	77.00	17.00
Resident Population EU - male	167.0	244.0	173.0	216.0	447.0	103.0	26.00
Resident Population EU - male 15+	159.0	225.0	160.0	204.0	422.0	100.0	26.00
Resident Population non-EU - female	2315.0	3004.0	1785.0	2310.0	4509.0	917.0	260.0
Resident Population non-EU - female 15+	2120.0	2665.0	1610.0	2068.0	4278.0	835.0	238.0
Resident Population non-EU - male	3507.0	3359.0	2399.0	2847.0	6834.0	1244.0	776.0
Resident Population non-EU - male 15+	3292.0	2999.0	2231.0	2616.0	6563.0	1170.0	756.0
Total CZ 15+ Resident Population CZ	33345	44576	46825	67412	92944	24528	6374.0
Total CZ Resident Population	39458	51262	51896	74965	103522	27576	7241.0
Total EU 15+ Resident Population	296.0	414.0	283.0	395.0	742.0	177.0	43.00
Total EU Resident Population	315.0	448.0	306.0	416.0	784.0	186.0	43.00
Total Resident Population	45595	58073	56386	80538	115649	29923	8320.0
Total Resident Population - female	22770	29808	28648	41475	60422	15283	4024.0
Total Resident Population - female 15+	19616	26153	25921	37492	55080	13710	3577.0
Total Resident Population - male	22825	28265	27738	39063	55227	14640	4296.0
Total Resident Population - male 15+	19437	24501	25028	34999	49447	13000	3834.0
Total non-EU 15+ Resident Population	5412.0	5664.0	3841.0	4684.0	10841	2005.0	994.0
Total non-EU Resident Population	5822.0	6363.0	4184.0	5157.0	11343	2161.0	1036.0
Resident Population non-EU - female	2315.0	3004.0	1785.0	2310.0	4509.0	917.0	260.0
Resident Population non-EU - female 15+	2120.0	2665.0	1610.0	2068.0	4278.0	835.0	238.0
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Total CZ 15+ Resident Population CZ	33345	44576	46825	67412	92944	24528	6374.0

Other features visible in the interface include a search bar, a sidebar with a tree view of areas, a legend, and several charts: a bar chart for "CLC L1 (%) - 2006", a scatter plot for "Forest and semi natural areas (%) - 2006", and two pie charts for "Agricultural areas (%)" and "COMPARISON Population gender distribution".

## ✓ collaboration - views sharing



The screenshot displays the HLANData web application interface. The main map shows a residential area with a pink pie chart overlaid on a specific location. The interface includes a search bar, a search results list on the left, and several data visualization panels on the right.

**Search results:**

- Areas
  - hlant-milato Praha
  - Praha
    - Praha 1
    - Praha 10
    - Praha 11
    - Praha 12
    - Praha 13
    - Praha 14
    - Praha 15
    - Praha 16
    - Praha 17
    - Praha 18
    - Praha 19
    - Praha 2
    - Praha 20
    - Praha 21
    - Praha 22
    - Praha 3
    - Praha 4
    - Praha 5
    - Praha 6
    - Praha 7

**CLC L1 GSELand (%) - 2006:**

ATSET: CLC L1 GSELand	Praha 11	Praha 15	Praha 17	Praha 8	Praha-Sibřoholky
Artificial surfaces (%)	79.2	81.3	80.0	80.0	80.2
Agricultural areas (%)	0.0	0.0	0.0	0.0	0.0

**X: Artificial surfaces (%) Y: Agricultural areas (%) - 2006:**

Scatter plot showing the relationship between Artificial surfaces (%) on the X-axis and Agricultural areas (%) on the Y-axis for various Prague districts.

**All residential stats (females) - 2006:**

Name	Praha 8	Praha 11	Praha 15	Praha-Sibřoholky	Praha 17
Resident Population CZ - female	51866	38965	14283	6060	12089
Resident Population CZ - female 15+	46396	35233	12798	5390	10708
Resident Population CZ - male	47065	36000	13293	5850	11243
Resident Population CZ - male 15+	41132	32179	11730	4930	9807.0
Resident Population EU - female	312.0	200.0	83.00	6.00	90.00
Resident Population EU - female 15+	292.0	191.0	77.00	5.00	80.00
Resident Population EU - male	361.0	216.0	103.0	5.00	87.00
Resident Population EU - male 15+	347.0	204.0	100.0	3.00	84.00
Resident Population non-EU - female	3606.0	2310.0	917.0	131.0	967.0
Resident Population non-EU - female 15+	3387.0	2068.0	835.0	112.0	840.0
Resident Population non-EU - male	4967.0	2847.0	1244.0	245.0	1122.0
Resident Population non-EU - male 15+	4682.0	2616.0	1170.0	220.0	1015.0
Total CZ 15+ Resident Population CZ	87528	67412	24628	1032.0	20515
Total CZ Resident Population	98921	74965	27576	1191.0	23332

**Praha 11 - CLC L1 GSELand - 2006:**

Artificial surfaces (%)	14.7%	5.2%	79.4%
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**Praha 11 - Population origin dis... - 2006:**

Artificial surfaces (%)	6.4%	93.1%
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- ✓ very positive feedback on concept
- ✓ very positive feedback on performance
- ✓ very positive feedback on integrated data exploration
- ✓ Suggestions for more interface friendliness / clarity
- ✓ Suggestions for more thematically focused clones
- ✓ Suggestions for more documentation
- ✓ Suggestions for additional features

- ✓ **UrbanAtlas Exploration Tool** - GMES Masters 2012

<http://urbanatlas.gisat.cz>

- ✓ **SATCHMO AFRICA** - geoland2

<http://satchmo-africa.gisat.cz>

- ✓ **EOEUROPA** - European Investment Bank / ESA

<http://eoeuropa.gisat.cz>

- ✓ **PUMA** - World Bank



The screenshot displays the HlanData web application interface, which is divided into several main sections:

- Top Panel:** Navigation and settings for the current map, including "Land cover change", "Land cover flows", "Current raster development", "Settlements and road network", and "Non-artificial changes".
- Left Panel:** A search and layer management interface. It includes a search bar, a list of search results, and a "Layers" section with options for "Legend", "Settings", and "Help".
- Main Map Area:** A large map showing land cover data for a specific region. The map is overlaid with various data layers, including land cover changes and settlements.
- Right Panel:** A series of data visualizations and tables.
  - Bar Charts:** Several bar charts showing the development of settlements and the extension of rural and urban fabric. For example, one chart shows "Development of settlements (%) - 2007-2011" with bars for "Development of settlements" and "Settlements".
  - Scatter Plot:** A scatter plot showing the relationship between "Rural fabric extension (ha)" and "Urban fabric extension (ha)".
  - Table:** A table titled "Development of settlements (ha/yr) - 2007-2011" with columns for "Name", "LCP21", and "LCP22". The table lists various settlement types and their corresponding values.
  - Donut Charts:** Two donut charts showing the composition of land cover changes, with percentages such as 15.9%, 7.3%, and 18.4%.

- ✓ Far more data to come - far more soon
- ✓ Availability of harmonised data is a way forward, but not the end
- ✓ It matters to deliver data in the form accessible by non-technicians
- ✓ It matters to provide interactive exploration tool
- ✓ It helps transform complex data into relevant information to decision makers

Recent achievements in web presentation capabilities, data visualisation, data-driven documents or infographics facilitate development of new data delivery options

Thank you

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