Good cooperation as the basis of geospatial statistics in Poland

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Responsibility

- **Geodesy** – [geoportal.gov.pl](http://geoportal.gov.pl):
  - serving reference geometric layers describing space

  - dissemination of the statistics about social, demography, economy and environment phenomena spatially.

- **Both** (statistics and geodesy):
  - cooperation on efficient integration of the statistical data with reference geodetic data,
Geoportal as a national data access point
Standard cartography in large scales

Practical implementation of law in scope of interoperability and harmonisation of reference geodetic data
In Poland in 2010 Census Round a combination of data coming from administrative sources and register containing spatial data was used for the first time.

For that purpose, the reference geodetic data obtained from the State geodetic and cartographic resources, contained:

- Administrative division borders,
- Geographical Names,
- Topographic Data Base,
- Cadastral Data,
- Ortophotomap

were used.
Integration statistics and geodetic data

Reference geodetic maps + Statistical data + Information technologies = Computer visualisation of spatial databases
GIS in Polish official statistics
Reference materials

Primary:
- Ortophotomap,
- Cadastral Data,
- Administrative division borders,

Secondary:
- LPIS (Land Parcel Identification System),
- Road and street network (commercial),
- Geographical Names,
- Topographic Data Base.
Spatial address database

With the use of the reference materials obtained, both from geodetic and statistical resources, it was possible to conduct field surveys and develop sampling frames for surveys and censuses, comprising statistical address points and their spatial reference.
GIS in Surveys and Censuses

- Digital maps were an indispensable tool facilitating the work of census:
  - enumerators and interviewer for helping with field operations,
  - dispatchers for monitoring and managing field operations.
GEOCODING as a fundament of good cooperation between geodesy and statistics
Address point identification system

- XXXXXX X: ID of administration levels
- YYYYYY Y: ID of city, town, village
- RRRRRR O: ID of statistical area
- UUUUU: ID of street
- Building No.
- Dwelling No.
Spatial address point Identification system

- XXXXXX X: ID of administration levels
- YYYYYY Y: ID of city, town, village
- RRRRRR O: ID of statistical area
- UUUUU: ID of street
- Building No.
- Dwelling No.
- X, Y
X,Y coordinates and address points

- The introduction of x,y coordinates and address points in statistical data enabled changing of the previous system of spatial identification and shifting from area assignment (census districts) to point assignment.

- It had a fundamental significance for the applications of GIS in official statistics.

- The change of the assignment mode allowed for more flexible grouping of data collected in public statistics for even the smallest areas.

- It also facilitated the creation of a spatially-oriented micro database, enabling the conduction of geo-statistical analyses.
Classification of the analyses conducted by address points with x,y coordinates gives also the possibility to become independent from boundaries changes (in the administrative division of the country), usually resulting in changes of census districts and laborious recalculations.

This facilitates a comparative analysis of time series, regardless of the changes taking place in this division.

An additional advantage is the possibility of the data aggregation both in the structure of the NUTS administrative division and the GRID (1km$^2$) divisions prepared in the GEOSTAT projects or any chosen area.
GEO.STAT.GOV.PL

STARTED: JULY 2013
The main objectives of the Portal

- The spatial presentation of collected data, in particular:
  - Agricultural Census 2010
  - Population and Housing Census 2011
  - Local Data Bank – a huge database with statistical data
- The spatial presentation of the geostatistical analysis results
- Advanced spatial analyses on microdata
- Publishing INSPIRE services for two annex III themes:
  - statistical units,
  - population distribution (demography)
Choropleth map
One phenomenon – various presentation levels
Individual data - dynamic inquiries
the possibility of obtaining statistics from the indicated area
Diagram maps
INSPIRE in Poland organisational structure

Soon the Ministry of Digitisation will take over coordination of establishment, maintenance and development of infrastructure.

Every theme is assigned to leading body which coordinates works and assures realization of SII Act within a scope of these theme.

Surveyor General of Poland (15),
Minister of environment (5),
Chief Geologist of Poland (3),
Minister of construction (2),
Chief Nature Conservator (2),
President of the Central Statistical Office (2),
Minister of agriculture (1),
Minister of health (1),
Chief Inspector of Environmental Protection (1),
President of the National Board for Water Management (1)
Statistics Poland is a leading authority on two themes of spatial data in Annex III of the INSPIRE Directive:

**GEO.STAT.GOV.PL**

- **statistical units (SU)**
- **population distribution (demography) (PD)**
Demographic data in cadastral units
Publishing statistical data on grids
"The 10 Level Model"

<table>
<thead>
<tr>
<th>Geodetic System</th>
<th>Layers (suitable for geocoding)</th>
<th>Statistical System</th>
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</thead>
<tbody>
<tr>
<td>+</td>
<td>NUTS1 - Administrative level 1</td>
<td>+</td>
</tr>
<tr>
<td>+</td>
<td>NUTS2 - Administrative level 2</td>
<td>+</td>
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<td>+</td>
<td>LAU2 - Administrative level 5</td>
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**unique identifiers system**

<table>
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<tbody>
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<tr>
<td>+</td>
<td>POINT</td>
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Conclusion

- The question marks in the proposed model (lack of grid on the geodesy side and lack of linear and poligon objects on statistical side) should be the subject of intensive works for the Group of Experts in order to break down existing barriers and as a starting point to make practical progress in the methodology of combining spatial data with statistical data, with particular emphasis on the specifics of environmental phenomena.

- The question is how to develop coherent and effective integration of both systems through a common methodology of combining statistical data and geospatial data through an international framework, which enables comparisons within and between countries.
High-level, generic framework that consists of five principles that are considered essential for integrating geospatial and statistical information:

1. Use of fundamental geospatial infrastructure and geocoding
2. Geocoded unit record data in a data management environment
3. Common geographies for dissemination of statistics
4. Interoperable data and metadata standards
5. Accessible & Usable

Proposition of European application of Global Statistical Spatial Framework

Geoportal and Geostatistics portals

INSPIRE

Harmonization of statistical and geodesy reference framework according to „The 10 Level Model”

1. Accessible & Usable
2. Interoperable data and metadata standards
3. Common geographies for dissemination of statistics
4. Geocoded unit record data in a data management environment
5. Use of fundamental geospatial infrastructure and geocoding
Thank you!

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