Other issues raised in consultation

For consideration in future work program

- Develop methods to track changes over time for geometries (Germany).
- Define data assets in a "service oriented architecture“ construct (USA).
- Develop "channel management standards” (USA).
- Develop best practices for maintaining data over time (USA).
- Work towards establishing the Global Statistical Geospatial Framework into a formal standard (New Zealand).
- Agree to a system of unique identifiers for all geospatial features, including an appropriate time and version control mechanism (Eurostat).
- Promote favorable access and use conditions for geospatial data relevant for geocoding and use within the context of framework purposes (Eurostat).
- Work to harmonize the geographic and geospatial objects used by the statistical and geospatial communities as their geographic reference framework (Poland).

„The 10 Levels Model”

unique identifiers system

Geodetic System	Layers (suitable for geocoding)	Statistical System
✚	NUTS1 - Administrative level 1	✚
✚	NUTS2 - Administrative level 2	✚
✚	NUTS3 - Administrative level 3	✚
✚	LAU1 - Administrative level 4	✚
✚	LAU2 - Administrative level 5	✚
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
✚	POLYGON level 7	?
?	GRID level 8	✚
✚	LINE level 9	?
✚	POINT level 10	✚

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
✚	NUTS1 - Administrative level 1	✚
✚	NUTS2 - Administrative level 2	✚
✚	NUTS3 - Administrative level 3	✚
✚	LAU1 - Administrative level 4	✚
✚	LAU2 - Administrative level 5	✚
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
✚	POLYGON level 7	?
?	GRID level 8	✚
✚	LINE level 9	?
✚	POINT level 10	✚

Personal proposition of Janusz Dygaszewicz
CSO Poland

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

1. ADMINISTRATIVE LEVELS (level 1-5)

- The both systems (geodetic and statistical) function five reference layers relating to the administrative division of the country (in Europe NUTS 1, 2, 3 and LAU 1, 2).
- From the point of view of data synchronization those layers are treated equally by both systems.
- Data collected in geodesy and through statistical service are referenced to the same geometry that is already established usually by Mapping Agency (MA).
- It is possible to use this geometry for the process of geocoding statistics.
- Process takes place at the high level of aggregation which is more often not satisfactory for users of the statistics.

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
	NUTS1 - Administrative level 1	
	NUTS2 - Administrative level 2	
	NUTS3 - Administrative level 3	
	LAU1 - Administrative level 4	
	LAU2 - Administrative level 5	
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize) ?	Statistical regions Enumaration areas
	POLYGON level 7	
	GRID level 8	
	LINE level 9	
	POINT level 10	

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

2. INDIVIDUAL UNITS FOR INTERIOR PUPRPOSES (level 6)

- The cadastral units and cadastral parcels in geodesy, statistical regions and enumeration areas are in statistics.
- Harmonization causing some problems because statistics used statistical units so commonly and unfortunately geodesy don't like such division of space, prefer cadaster system.
- One of the solution could be recode of primary coded phenomena (eg. Statistical units or cadaster) to one of a good agreed harmonize layer of the proposed model. This is a challenge!
- The main problem arises in case of phenomena which relate to the other ranges than the one mentioned above

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
	NUTS1 - Administrative level 1	
	NUTS2 - Administrative level 2	
	NUTS3 - Administrative level 3	
	LAU1 - Administrative level 4	
	LAU2 - Administrative level 5	
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
	POLYGON level 7	?
?	GRID level 8	
	LINE level 9	?
	POINT level 10	

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

3. POLYGON (level 7)

- In geodesy the polygonal layer is commonly used.
- In case of environmental phenomena their polygonal ranges are quite problematic to identify due to difficulties in determining the location of its phenomena in space.
- To obtain the data collected with the required accuracy a new polygonal layer should be developed – dedicated for statistical purposes.
- Such badly standardized layer would be characterized by a huge variability and also diversity of surveyed polygons.
- Consequently for statistical purposes it would become confusing over time and useless for statistical analysis and comparisons.

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
	NUTS1 - Administrative level 1	
	NUTS2 - Administrative level 2	
	NUTS3 - Administrative level 3	
	LAU1 - Administrative level 4	
	LAU2 - Administrative level 5	
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
	POLYGON level 7	
	GRID level 8	
	LINE level 9	
	POINT level 10	

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

4. GRID (level 8)

- Kind of compromise that leads to a good solution is the idea to use grid as a special type of the polygon.
- Mapping the obtain results to grid of squares - both in research carried out by statistics and observations conducted by geodesy - gives chances to improve coherence of these two systems.
- Such standardization of a polygon ensures grid with appropriately selected mesh.
- The problem is that the GRID objects should be generally introduced into the existing geodetic system.
- This step guarantees the proper development of the correct geocoding environmental phenomena presented in statistics.

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

4. GRID (level 8)

- One kilometer grid is currently used in statistics mainly for the population data presentation and publication.
- Considering that geodesy is conducting surveys of phenomena with spatial ranges that are also difficult to define, use good fitted size of squares grid could, in the matter of fact, also solve this problem.

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
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	NUTS2 - Administrative level 2	
	NUTS3 - Administrative level 3	
	LAU1 - Administrative level 4	
	LAU2 - Administrative level 5	
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
	POLYGON level 7	?
?	GRID level 8	
	LINE level 9	?
	POINT level 10	

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

5. LINE (level 9)

- Geodetic data are presented using linear objects.
- In statistics there are no surveys that could be presented using this type objects.
- It is a trend that can gain recognition in the future with the dissemination of statistical data related to e.g. transport, waterways or linear investments.
- The possibility of creating linear statistics will appear in the near future and it will allow for simple connection between linear statistical data with geometry offered by geodesy (linear geocoding).

„The 10 Levels Model”

Geodetic System	Layers (suitable for geocoding)	Statistical System
+	NUTS1 - Administrative level 1	+
+	NUTS2 - Administrative level 2	+
+	NUTS3 - Administrative level 3	+
+	LAU1 - Administrative level 4	+
+	LAU2 - Administrative level 5	+
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
+	POLYGON level 7	?
?	GRID level 8	+
+	LINE level 9	?
+	POINT level 10	+

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

6. POINT (level 10)

- At the lowest level of geocoding, in both systems, points reflecting the spatial position are functioning, usually in the form of x, y coordinates.
- In this area the fastest progress in the field of cooperation between statistical and geodesy services is observed.
- The reason is that in the last census most countries successfully used geometry of the address points and science that time it become an important link between statistical and spatial data (precise point geocoding).
- Unfortunately, it is not useful to geocode the environmental phenomena.

„The 10 Level Model" for harmonization of statistical and geodesy reference framework.

Conclusion:

The question marks in the proposed model (lack of grid on the geodesy side and lack of linear 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 10 Levels Model”

unique identifiers system

Geodetic System	Layers (suitable for geocoding)	Statistical System
✚	NUTS1 - Administrative level 1	✚
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✚	LAU1 - Administrative level 4	✚
✚	LAU2 - Administrative level 5	✚
Cadastral units Cadastral parcels	INDIVIDUAL UNITS level 6 (not necessary for harmonize)	Statistical regions Enumaration areas
✚	POLYGON level 7	?
?	GRID level 8	✚
✚	LINE level 9	?
✚	POINT level 10	✚

The Framework

Five principles of the proposed Global Statistical Spatial Framework