National Geostatistical Framework, as an example of success in Mexico for the linking of Statistical and Geographical information

Workshop on Integrating Geospatial and Statistical Standards
UNECE

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I. Organizational Context  
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- INEGI as generator of statistical and geographical information  

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- Cartography Geostatistical  

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- The National Directory of Economic Units (DENUE For its acronym in Spanish)  

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- Alignment of Mexico and the MGN to the GSGF Principles  

V. Conclusions
I. Organizational Context
A set of State Units organized through the Subsystems, Coordinated by INEGI and articulated through the National Information Network, with the purpose of producing and disseminating Information of National Interest.

Providing society and the State Units with quality, pertinent, truthful and timely information, in order to contribute to national development.
To organize the National System four National Subsystems of Information are established.

Objective

- Producing, integrating and disseminating information according to the theme that corresponds to them.
Roles

- Coordinate and Regulate the System
- Produce Statistical and Geographical Information

Keep your operation efficient

- Regulating statistical and geographical activities that carry out the State Units.
- Establish the rules of operation of the Collegiate Bodies.
- Develop guidelines for the development of the System's regulations.
- Integrate a National Catalog of Indicators, among other functions.
The Institute generates **basic statistics**, which obtains from three types of sources: censuses, surveys and administrative records, as well as **derived statistics**, through which it produces demographic, social and economic indicators, as well as national accounting.

### In homes:
- National regulars
- National specials

### Surveys:
- ENIGH
- ENECE
- ENDUTIH
- ENADID
- ENAMIN
- ENESTyC

### In establishments:
- Monthly regulars
- Annual regulars
- Special
The Institute generates information on different topics to know the characteristics of the territory and the environment, which offers through printed cartography and digital cartography.

**Data Groups**

- Geodetic reference framework
- Coastal, international, state and municipal boundaries
- Continental, insular and submarine relief data
- Cadastral, topographic, natural resource and climate data
- Geographical names

**Environmental Indicators**

- Atmosphere
- Water
- Soil
- Flora
- Fauna
- Hazardous and solid waste
II. National Geostatistical Framework - MGN

For its acronym in Spanish
System designed by INEGI to correctly reference the statistical information of the censuses, surveys and administrative registers with the corresponding geographical places.
32 State Geostatistical Areas (1)

2 458 Municipal Geostatistical Areas (1)

4 562 Urban Geostatistical Locations (1)

50 821 Rural Geostatistical Locations (1)

2 323 131 Geostatistical blocks (1)

187 326 Control Areas (2)

2 398 627 Roads (1)

30 299 681 External numbers (3)

(1) Encuesta Interensal 2015
(2) Encuesta Agropecuaria 2014
(3) Georreferenciación de Domicilios 2012
It is part of the basic information infrastructure of the Statistical Information Subsystems of the SNIEG

It is the mechanism that allows the linking of statistical and environmental information with geographical information
MGN - Applicability in Censuses and Surveys

- Georeferencing censuses information, surveys and administrative records.
- Implement the National Geostatistical Grid.
- Define in the geographical scope, the study areas.
- The codification of each geostatistical area provides unique and specific identity of the geographic space that occupies in the country.
It is a tool for the stages of planning, surveying, treatment, presentation and dissemination of the information collected in field.
It facilitates the interoperability between the registers of the different State Units and the integration of statistics from administrative and geographic registers, which support the management.
The graphic representation of the National Geostatistical Framework and the territorial integration of the country

- Maps
- Plans
- Catalogs

Different geographic levels of representation

Supports the activities of planning, execution, processing and dissemination of results of the censuses and surveys developed by INEGI

Permanent updating of the cartographic information through different operations carried out by INEGI, as well as by various public and private institutions, which is analyzed and prepared in a cabinet for its updating in the field.
III. Examples of the process of linking statistical and geographical information
Application based on the Digital Map of Mexico that allows conducting the operational process of a census event through four modules:

**Module 1: Operational Planning**
- Planning Application
- Operational Planning

**Module 2: Cartographic**
- Cartographic Module
- Georeferencing System
- Cartographic Updates

**Module 3: Monitoring, progress and geographic coverage**
- Tracking, Advance and Coverage Application
- Reports
- National Integration

**Module 4: Closing**
- Deb and desktop Applications to take advantage of Event Information
- (operation) Results

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Geomatic Solution for the Census Operating Process

Operational Planning Module

- Graphical allocation of control and management sections of operative figures
- Distribution of workloads
- Systematic and visual control of the control sections
Geomatic Solution for the Census Operating Process

Cartographic Module

- Allows georeference the event's objective phenomenon.
- Perform cartographic updates detected in the operating.
- Reflect updates on the Single Cartographic Base (BCU for its acronym in Spanish).

National Geostatistical Framework, as an example of success in Mexico for the linking of Statistical and Geographical information.
Module for monitoring, progress and geographic coverage

- Cluster at the municipal level that shows the total of Economic Units raised
- Cluster at the block level that shows the total of Economic Units raised
- Advancement at block level and Economic Units raised
Geomatic Solution for the Census Operating Process

Closing Module

- Digital Map of Mexico
- National Housing Inventory 2015
- 2019 Economic Census
Description

It is an updated directory of all the Economic Units of the country, which materializes the effort to create a national economic registry, generated by the information collected by the Economic Census providing their identification and location.

DENUE allows the identification of Economic Units by type of legal organization (physical or legal person), economic activity and/or size (stratum or number of employees); As well as locating them in Mexican territory by regions, localities, blocks and streets.

Universe:

5 390 911 Economic Units
The National Directory of Economic Units (DENUE)

In relation to the National Geostatistical Framework

The Economic Units that the DENUE includes are located in:

- 32 States
- 2 thousand 458 Municipalities
- 4 thousand 545 Urban Localities
- 13 thousand 295 Rural Localities
- 919 thousand 989 Blocks

The georeference of the businesses in the cartography

Geographic location or geographic address information is complemented by the Geostatistical key to block level; geographic coordinates (latitude and longitude) are also provided.

The Directory is continuously updated by authorized informants, who can update or supplement their business data and incorporate commercial information online using the application found in the technical data sheet of each Economic Unit.
IV. Global Statistical Geospatial Framework (GSGF)
Alignment of Mexico and the MGN

- The TS is available for access and publication of Open Data of Statistical Information and Geographical Information of National Interest.
- Through WMS, WMTS and other, INEGI disseminates Statistical and Geographical Information.
- INEGI uses ISO-based metadata standards for the development of Technical Normativity (TS) to generate statistical and Geographical metadata.
- The TS of the National Geodetic System published in 2010 guarantees the correspondence between geographies.
- All statistical information is linked to the MGN.
- INEGI uses agreements for the collection, processing, use and publication of information.
- The MGN has been adopted at different levels of government and is composed of different levels of disaggregation for the geocoding of statistical data.
- The Federal Law of Transparency and Access to Governmental Public Information guarantees confidential and personal data.
- By law INEGI is the authoritative source of geospatial data and coordinator of Mexico’s SDI.
- It has the TS on Geographical Domiciles that guarantee the interoperability using addresses and location data in administrative processes.
V. Conclusions
Conclusions

Integration of Statistical and Geographical Information

**Sources of Information**

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<th>Censuses</th>
<th>Surveys</th>
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<td>External State Units</td>
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**Georeferencing Information**

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<th>National Geostatistical Framework</th>
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**Consultation and Use of Information**

- Georeferencing Information
- Geospatial Information Layers
- Spatial and Geostatistical Analysis

Technical Normativity on Geographical Domiciles

Mapa Digital de México

Technical Normativity on Geographical Domiciles

Internal INEGI

External State Units

Administrative Registers

Censuses

Surveys
Conclusions

1. It recognizes the importance of having a Global Statistical Geospatial Framework (GSGF) as a reference for various jobs involving the integration and linkage of statistical information with geospatial.

2. The Geostatistical Framework of Mexico has been applied in our country in the last 36 years, being part of the information infrastructure of the National Information Subsystems and that complies with the five guiding principles for the construction of the GSGF.

3. The use of integrated Geographical and statistical data allows better design and evaluation of public policies as well as faster and more accurate decision making during disaster management situations. This has been highlighted in the discussions on the UN' Sustainable Development Agenda in 2030 and is becoming a model to be followed throughout the world in the design of indicators for the Sustainable Development Goals.
By your attention
Thank you!

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