Third International Workshop on Operationalizing the Integrated Geospatial Information Framework
26 – 28 November 2019, Conference Room, Office of the National Statistical Committee
Minsk, Belarus

Global Statistical Geospatial Framework
integrating statistical, geospatial and other data

United Nations Secretariat for Global Geospatial Information Management
Statistics Division, Department of Economic and Social Affairs

UN-GGIM | United Nations Secretariat
Global Geospatial Information Management

Positioning geospatial information to address global challenges
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GSGF
The challenge set

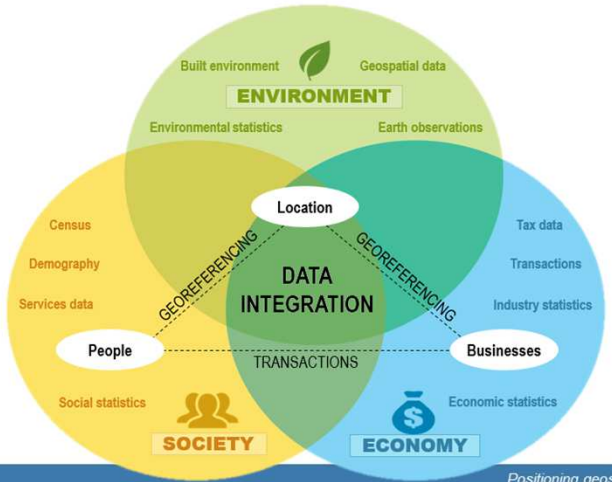
"There is an urgent need for a mechanism, such as a global statistical-spatial framework, to facilitate consistent production and integration approaches for geo-statistical information."

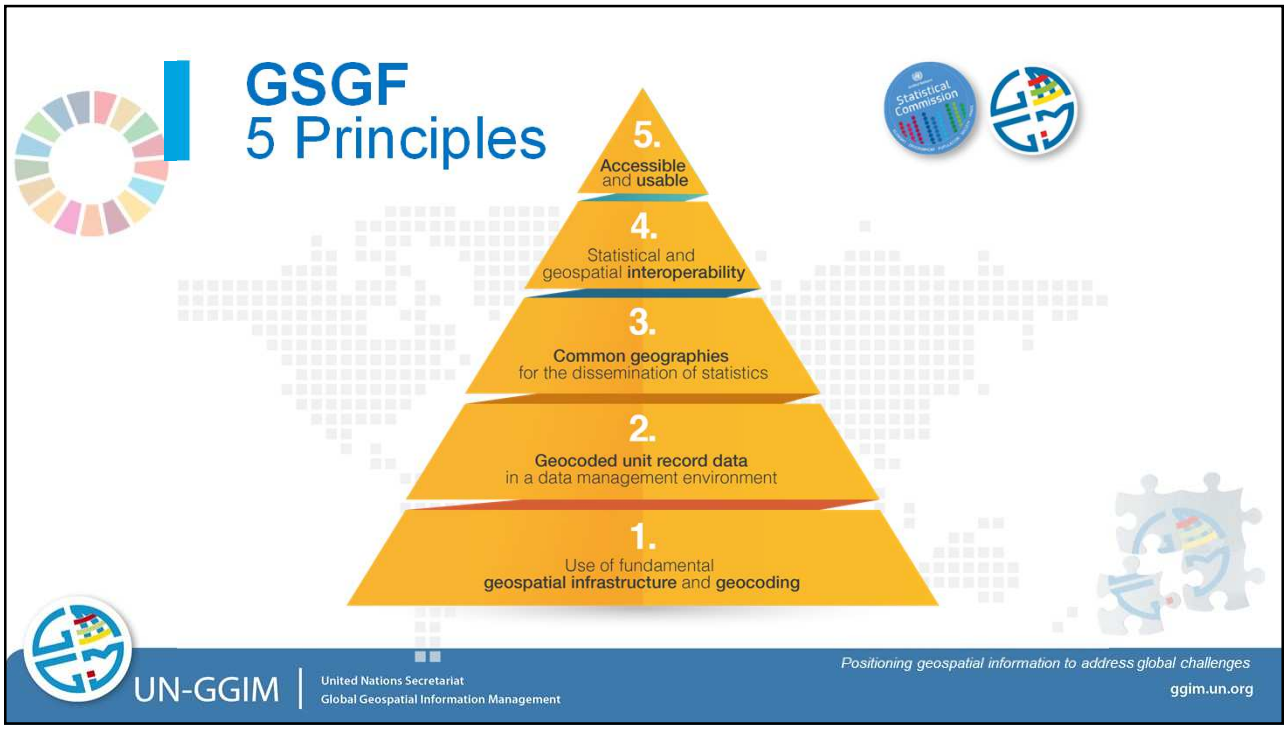
The Global Forum on the Integration of Statistical and Geospatial Information, **New York 2014**

"… develop the Global Statistical Geospatial Framework as a common method for geospatially enabling statistical and administrative data to ensure that data from a range of sources can be integrated based on location and can be integrated with other geospatial information."

UN-GGIM, Committee of Experts, **New York 2015**

GSGF
Integrating data




GSGF
5 Principles
5.
Accessible and usable
4.
Statistical and geospatial interoperability
3.
Common geographies for the dissemination of statistics
2.
Geocoded unit record data in a data management environment
1.
Use of fundamental geospatial infrastructure and geocoding
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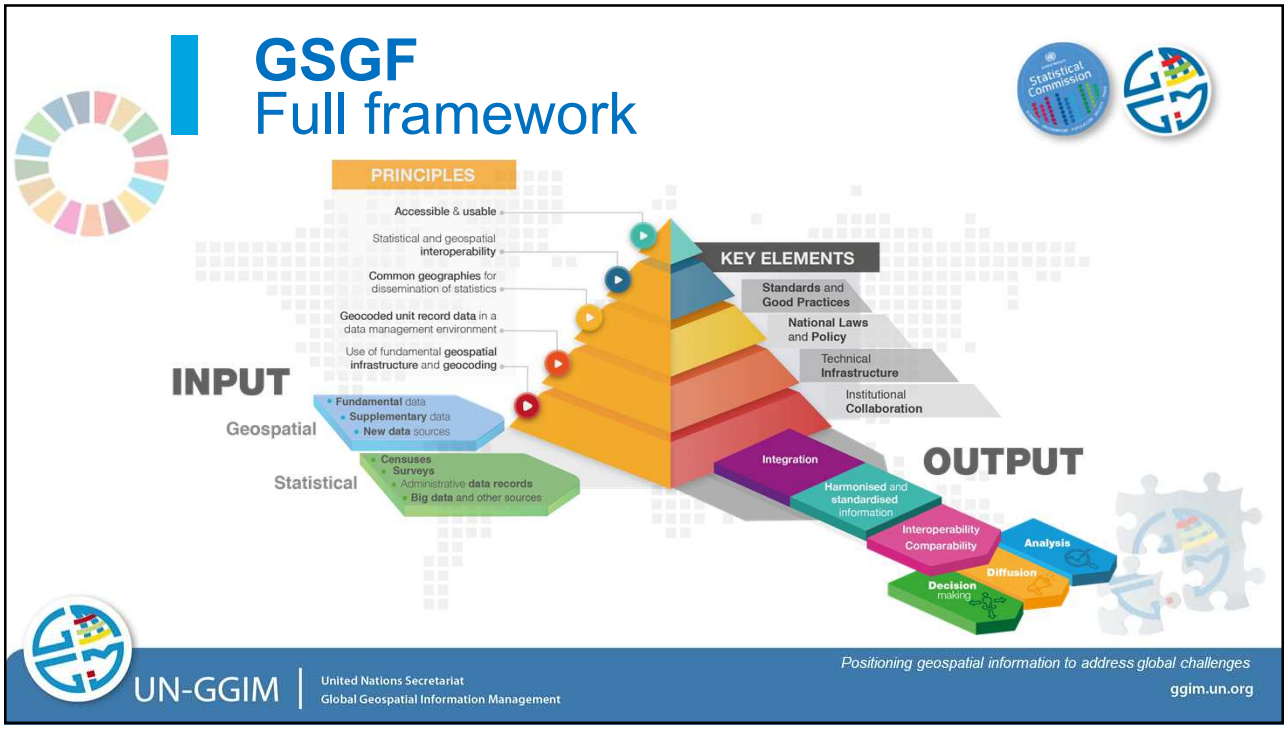
GSGF
Full framework
PRINCIPLES
Accessible & usable
Statistical and geospatial interoperability
Common geographies for dissemination of statistics
Geocoded unit record data in a data management environment
Use of fundamental geospatial infrastructure and geocoding
INPUT
Geospatial
Fundamental data
Supplementary data
New data sources
Statistical
Censuses
Surveys
Administrative data records
Big data and other sources
KEY ELEMENTS
Standards and Good Practices
National Laws and Policy
Technical Infrastructure
Institutional Collaboration
OUTPUT
Integration
Harmonised and standardised information
Interoperability Comparability
Analysis
Diffusion
Decision making
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Principle 1

Use of fundamental geospatial infrastructure and geocoding

Focuses on creation and use of infrastructure that enables the implementation and socialization of the GSGF. It specifies the adoption of a common and consistent approach to place each statistical unit of a dataset in time and space, using fundamental geospatial infrastructure.

Principle 2

Geocoded unit record data in a data management environment

Supports the process of linking or storing high-precision geographic references to each microdata/statistical unit record – often referred to as geospatially enabling data. This must occur within a secure, standards-based data management environment. This process applies the infrastructure and fundamental data from Principle 1.

Principle 3

Common geographies for dissemination of statistics

Applies geography as a tool for aggregating and integrating data. It uses a common and agreed set of geographies for the display, storage, reporting, and analysis of social, economic and environmental comparisons across datasets from different sources. Principle 3 balances existing geographies with other geographic referencing systems, such as grids, as a basis for analysis.

Principle 4

Statistical and geospatial interoperability

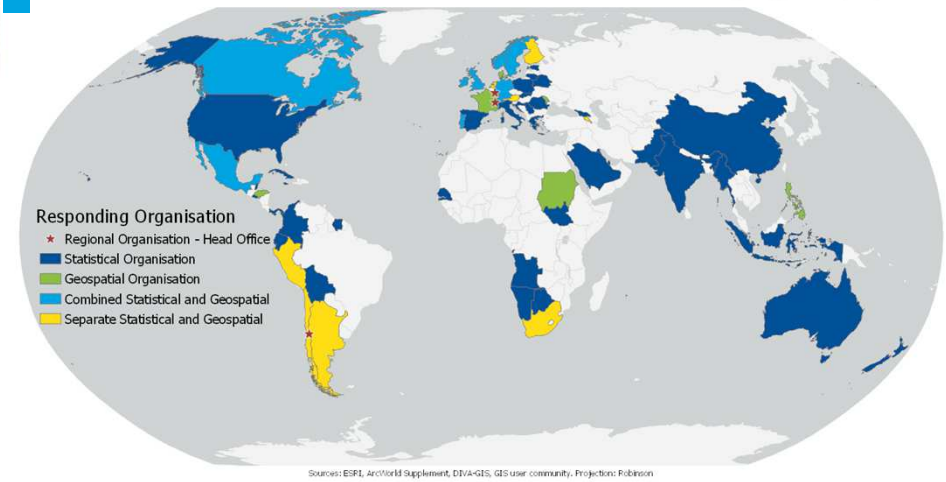
Enables greater standardisation and interoperability of data which will lead to improved efficiency and simplification in the creation, discovery, integration, and use of geospatially enabled statistics and geospatial data. Principle 4 defines the preconditions for statistical and geospatial data to work as a data ecosystem.

Principle 5

Statistical and geospatial interoperability

Supports data custodians to release data with confidence, improve the discovery and access of geospatially enabled statistics, and to support analysis and evaluation of data in decision making. It promotes the use of standard web services and linked data methods to provide dynamic, machine-readable access to these data, with the necessary assurances regarding the integrity and appropriate protection of data.

GSGF Global Consultation



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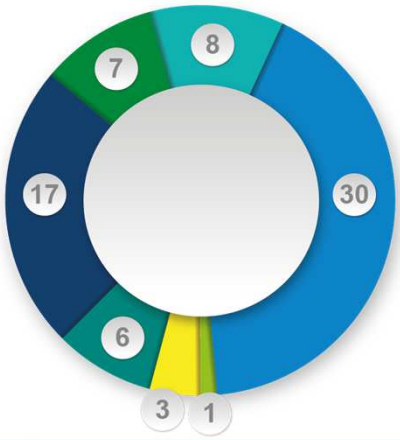
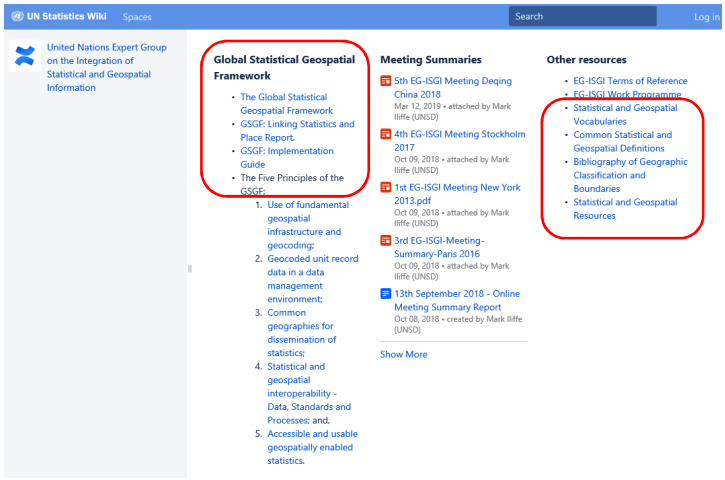
GSGF Consultation



- Developed Geospatial
- Developed Statistics
- Developed Statistics and Geospatial
- Developing Geospatial
- Developing Statistics
- Developing Statistics and Geospatial
- Regional Organisations

EG-ISGI Wiki



Link to wiki from http://ggim.un.org/UNGGIM-expert-group/

GGIM9
Adoption decision

- **Welcomed the EG report and noted the achievements**
- **Noted the effort from members on the GSGF**
- **Welcomed the broad GSGF consultation**
- ***Adopted the GSGF!***
- **Encouraged UN-GGIM regional committees to support national and regional implementation**
- **Noted the proposed directions of the Expert Group**
- **Encouraged Member States and other stakeholders to participate and contribute**

Paraphrased from UN-GGIM Decision 9/106, **New York 2019**

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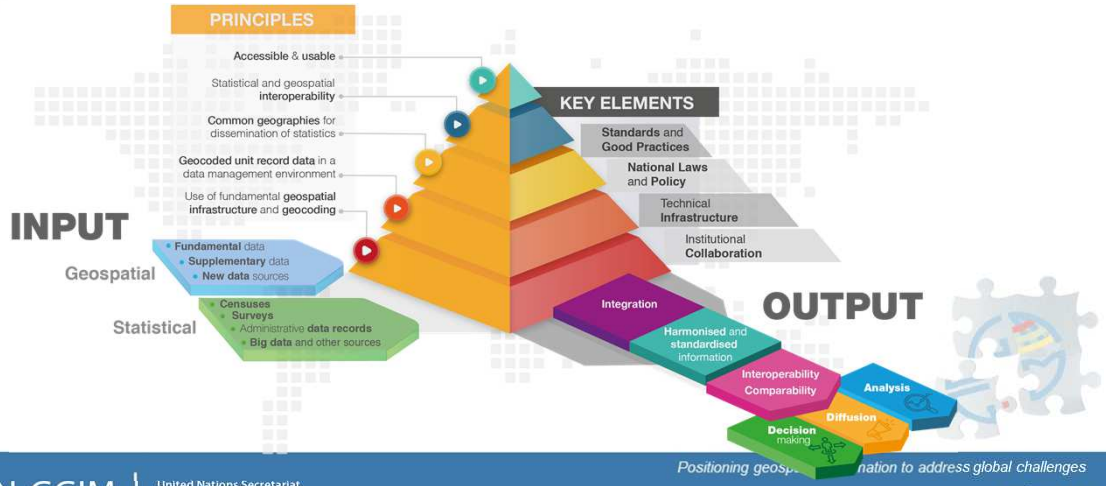
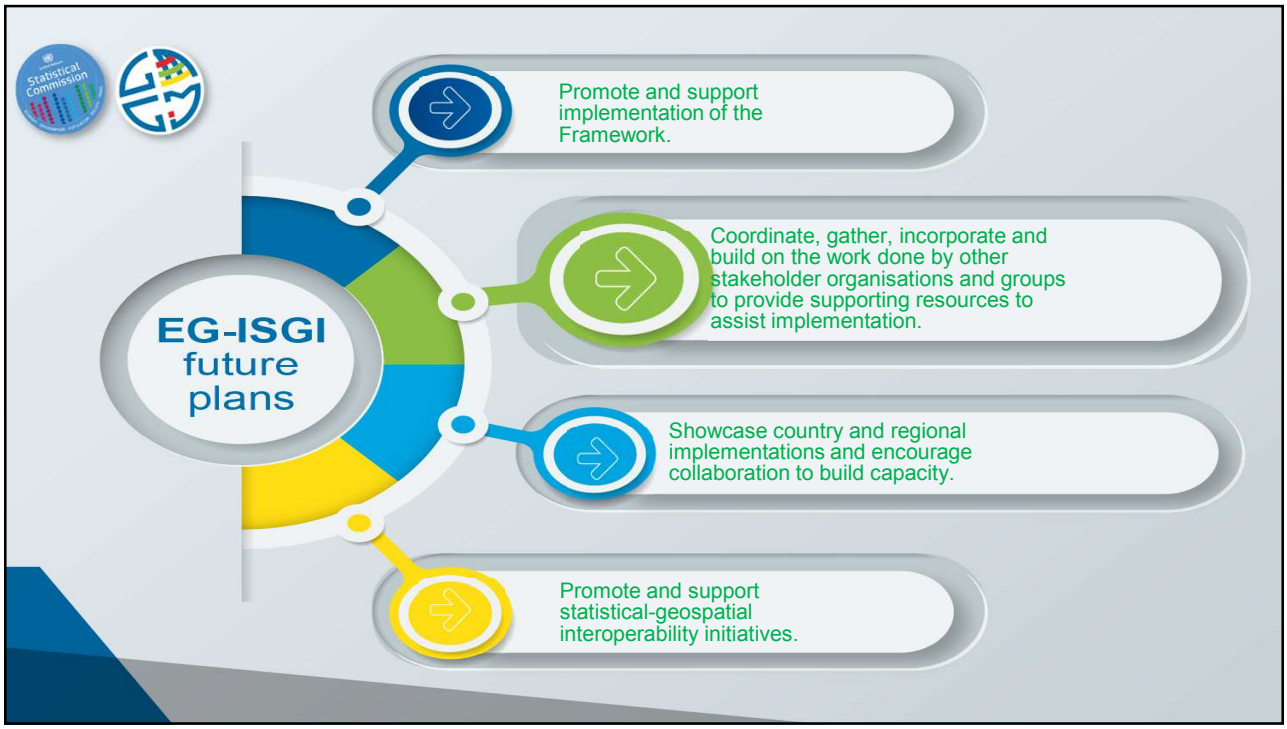
GSGF
More than just data



GSGF
Context for the future

- The Integrated Geospatial Information Framework
- Digital transformation and modernisation efforts in the statistical and geospatial communities
- 2020 round of population and housing censuses



Principle 1

Use of fundamental geospatial infrastructure and geocoding

- Optimal implementation of the infrastructure
- Implementation of standards
- Legal framework
- Definition and description of elements

Principle 2

Geocoded unit record data in a data management environment (cont.)

- Geocoding
- Data and metadata management
- Unit record privacy and confidentiality

Principle 2

Geocoded unit record data in a data management environment

- Addressing and/or location reporting standards and infrastructure
- Geocoding infrastructure tools, metadata standards and good practices, including batch and point of contact address validation and geocoding
- Privacy laws, policies, and/or agreed country-level and global privacy protocols

Principle 3

Common geographies for dissemination of statistics

- None recorded

Principle 4

Statistical and geospatial interoperability

- Recommended encodings of data and metadata
- Definition of common conceptual models
- Descriptions of standards and frameworks
- Training material and showcases for the interoperability layers
- Recommendations for governance on interoperability matters

Principle 4

Statistical and geospatial interoperability (cont.)

- Harmonised analysis tools to assess the as-is situation and performance, and progress towards achieving interoperability
- Templates for service level agreements and MoUs
- Quality management systems for geospatial information in statistics
- Common interoperability goals that are specific for statistics, with indicators to measure progress

Principle 5

Accessible and usable geospatially enabled statistics

- Standardized attribution on geographic areas and indexing codes used to link data
- The storage of various releases of data to identify which geography to reference (P3?)
- A standard of what constitutes change, and the definition of a threshold of change (P3?)
- A geocoding solution for identifying unique geographic units
- A standard and storage of equivalency to prevent redundancy in storage

Cross cutting

Key elements and integration

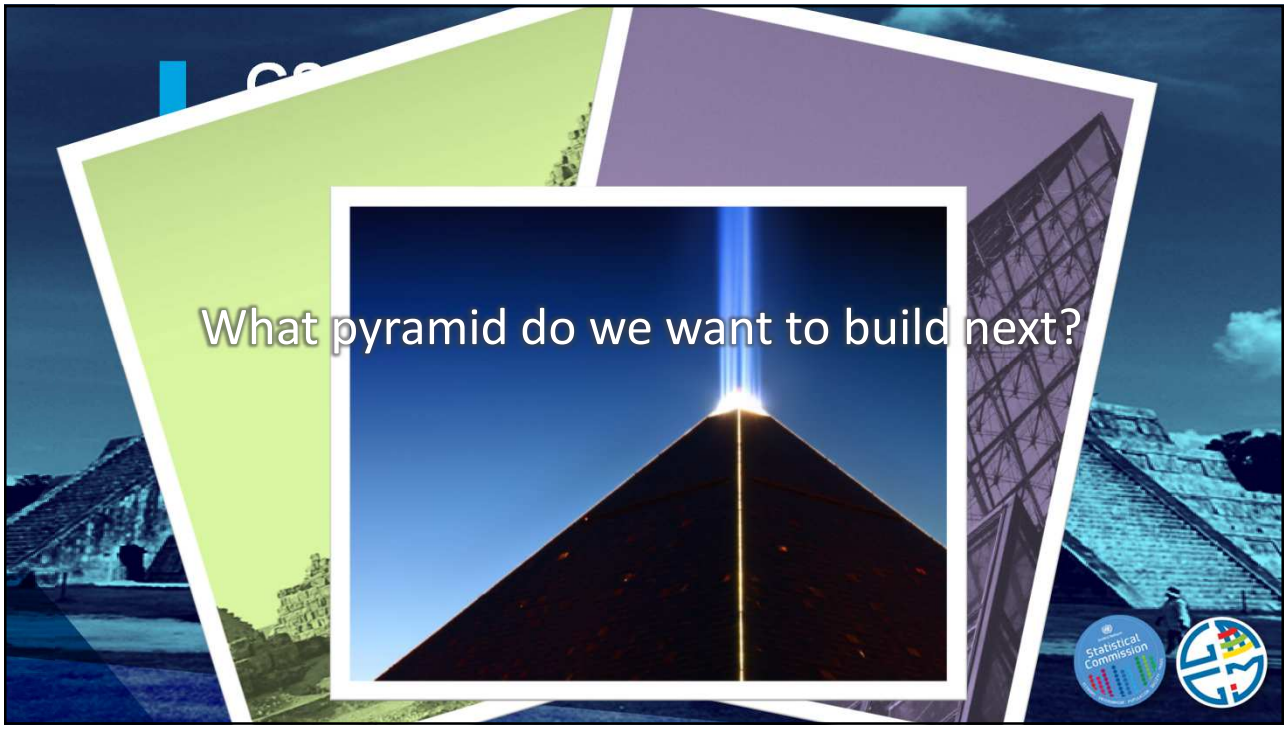
- Established and new inputs

- Standards and good practices
  - terminology
- National policy and law
- Technical infrastructure
- Institutional collaboration
- Integration methods
- Interoperability
- Analysis, diffusion and decision making

UN EG-ISGI
New co-Chairs required

Both current co-Chair terms expired in November 2019: Australia and Mexico have served 2 x 3-year terms.

Namibia and Germany volunteered to serve as Co-Chairs for the next period.

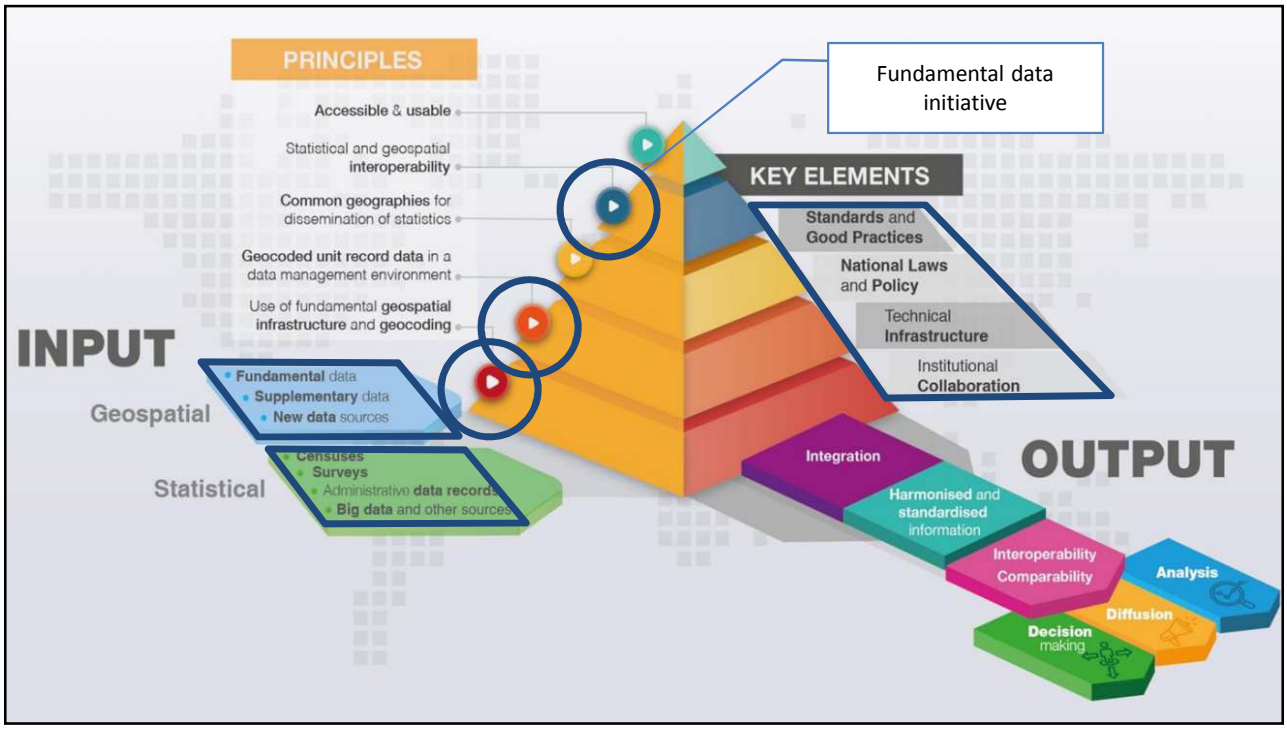


Implementing the GSGF at the country level

Mr Jerker Moström, Statistics Sweden

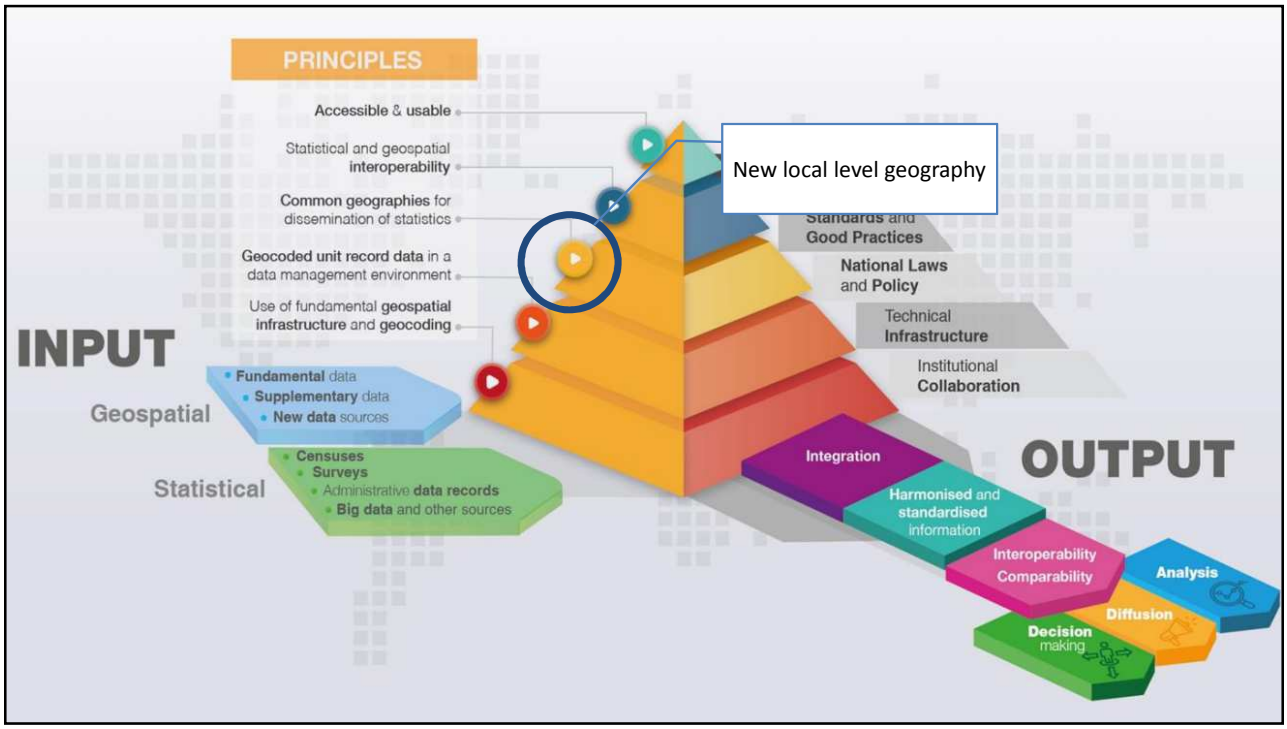
Top 5 actions

- Top 5 current items in terms of impact
- In line with, or in support of, GSGF
- Not neccesarily triggered by the GSGF
- All ongoing or work in progress



Fundamental data initiative

- ”Safe, effective and interoperable exchange of fundamental data in public sector”
- Agency for Digital Government, NMCA, Tax Authority, Swedish Companies Registration Office (admin data community)
- A national public data ecosystem
  - Increased interoperability
  - Increased data flow
  - Decreased redundancy in data collection and storage
- Define data domains (clear custodianship roles). Fundamental Data Objects: Individuals, companies, real property



New local level geography

- Sub level to local administrative units
- Approx. 6 000 areas
- Optimised for demographic and socio-economic analysis (min 650/max 2 900 individuals)
- New detailed level for official statistics
- Used to measure deprived areas and segregation

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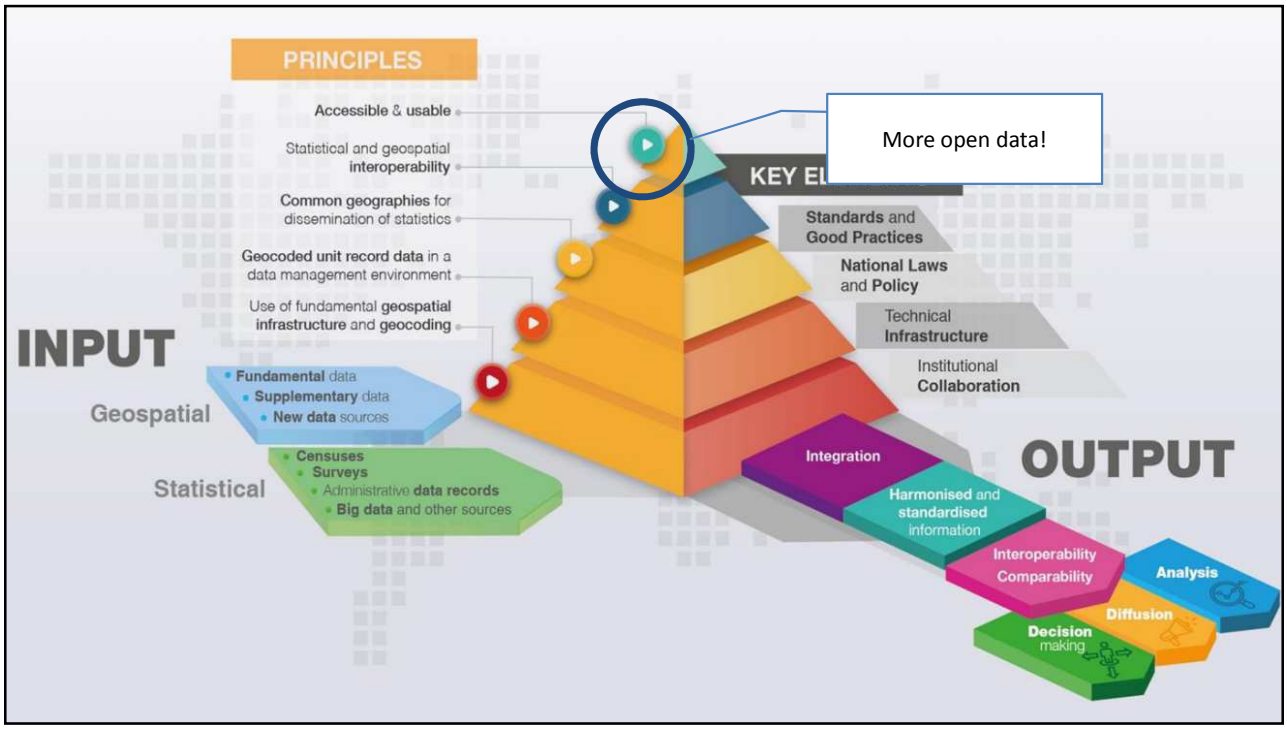
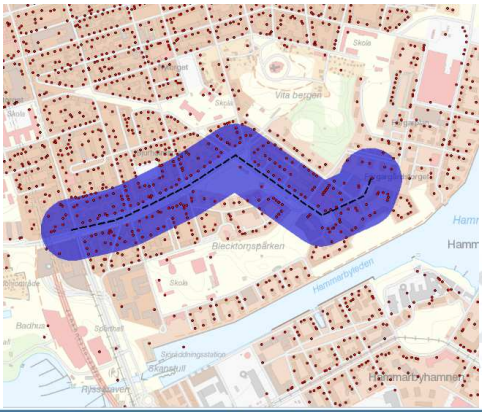


More open data

- Increased number of geospatial statistical themes as open data
- Map tool to facilitate access to open data (new interface)
- ”Geospatial statistics as a service” – tool to extract customised statistics for user defined areas
- ”Neighbourhood statistics”
- Challenge no 1 = diclosure and privacy!



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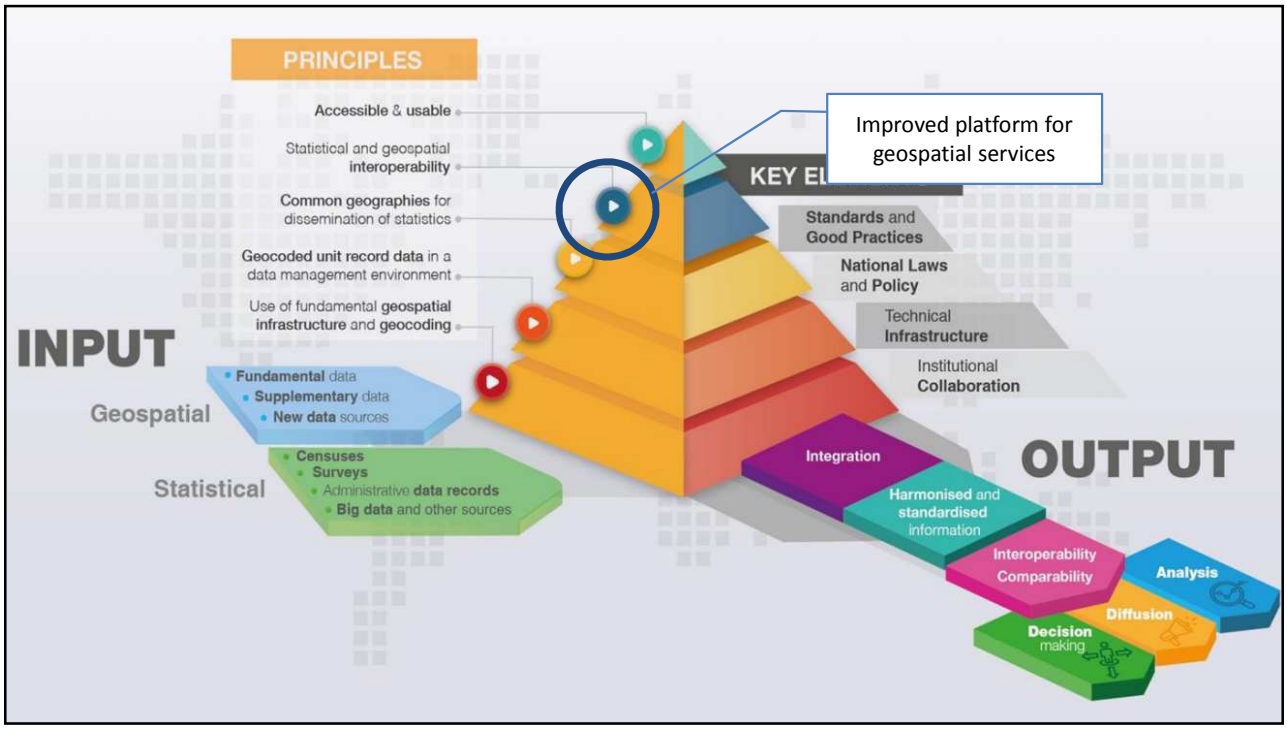
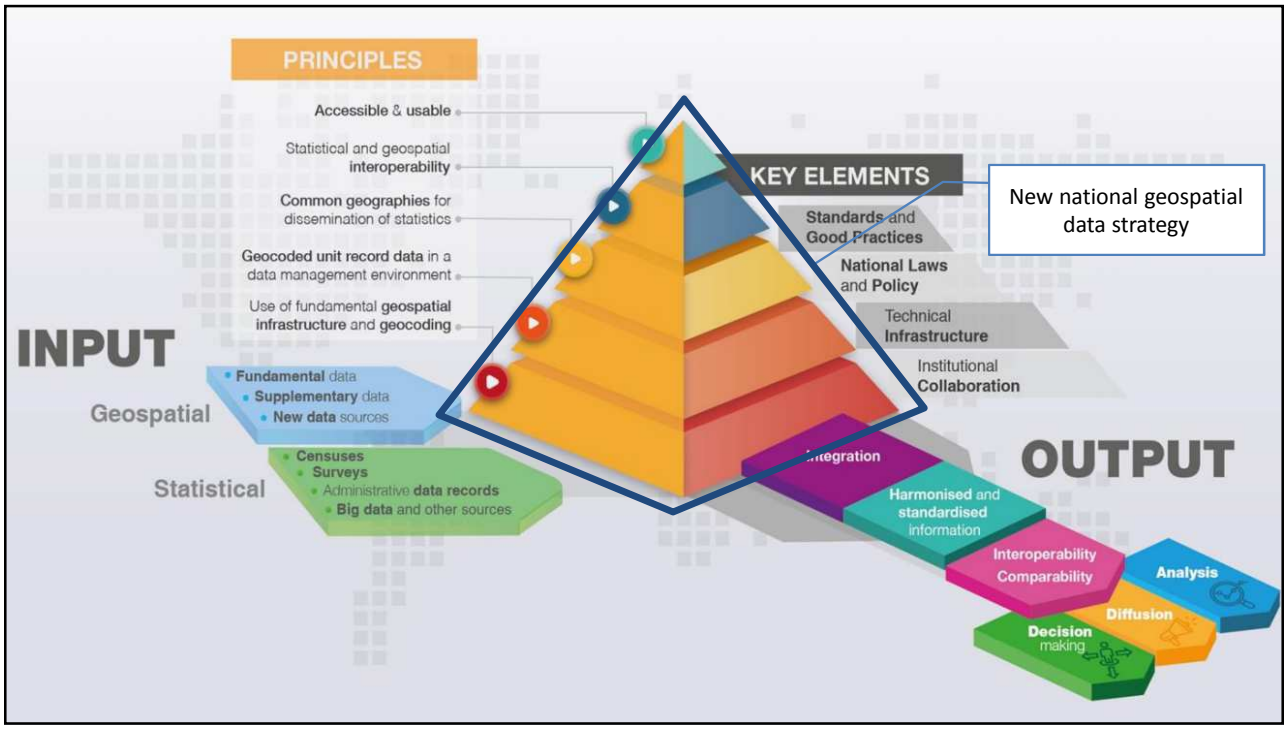


Platform for geospatial services

- Many geospatial data layers are openly avaliable trough our web
- Low service level (1 out of 5 stars in open data ranking)
- Modify current platform to provide machine-readable services (view and download)
- More effective back-end data management
- Vision: All geographies used for dissemination of official statistics avaliable as services (including historical, starting at 1952 and onwards)



New national geospatial data strategy

- Revision of current national geospatial data strategy 2016-2020
- Under the National Geospatial Data Council
- Opportunity to more clearly address the provisions of GSGF (along with the IGIF)
- Reflect movement from geospatial data to data with geo-location
- Put data integration higher on the agenda

- Insee released a 200-meter-grid database with data on dwellings, income and population by sex.
- Insee aims at disseminating other data as soon as possible.
- The data are available, for free, as files as well as on our NMA geo-portal.
- Insee has been very careful about data protection and privacy issues.
- Insee has fostered the use of geocoded statistical information with the dissemination of a Handbook of spatial analysis, supported by EFGS and Eurostat.

Principle 3: Common geographies

The same grid system for all databases.

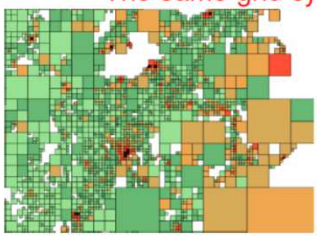


Figure: Splitting squares until meeting a given threshold (number of observations) that depends on the database. All the released information is the true one, but the squares are of various sizes.

Figure: Disseminating information on same-size cells (200 m or 1 km) but with imputed values when the number of observations is below the threshold.

Insee

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Principle 3: Common geographies

Figure: Using only the European reference system to avoid geo differencing while disseminating with two different systems (National or European)

Principle 4: Interoperability

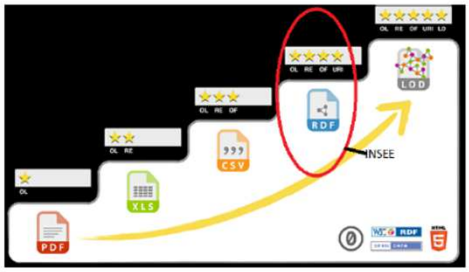

Figure: Insee is responsible for both official and statistical territorial classifications. Insee is about to disseminate according to the 4-star standard. The 5-standard is now reachable.