United Nations

Statistical Commission

53rd Session

ECONOMY • ENVIRONMENT • POPULATION • SOCIETY • TRADE

Side Event at the
UN Statistical Commission

GEOSPATIAL INFORMATION FOR ENABLING SUSTAINABLE DEVELOPMENT

Friday, 11 February 2022

9:00 - 11:00 AM (Eastern) [Virtual]

unstats.un.org @UNStats #UN53SC

United Nations | Department of Economic and Social Affairs

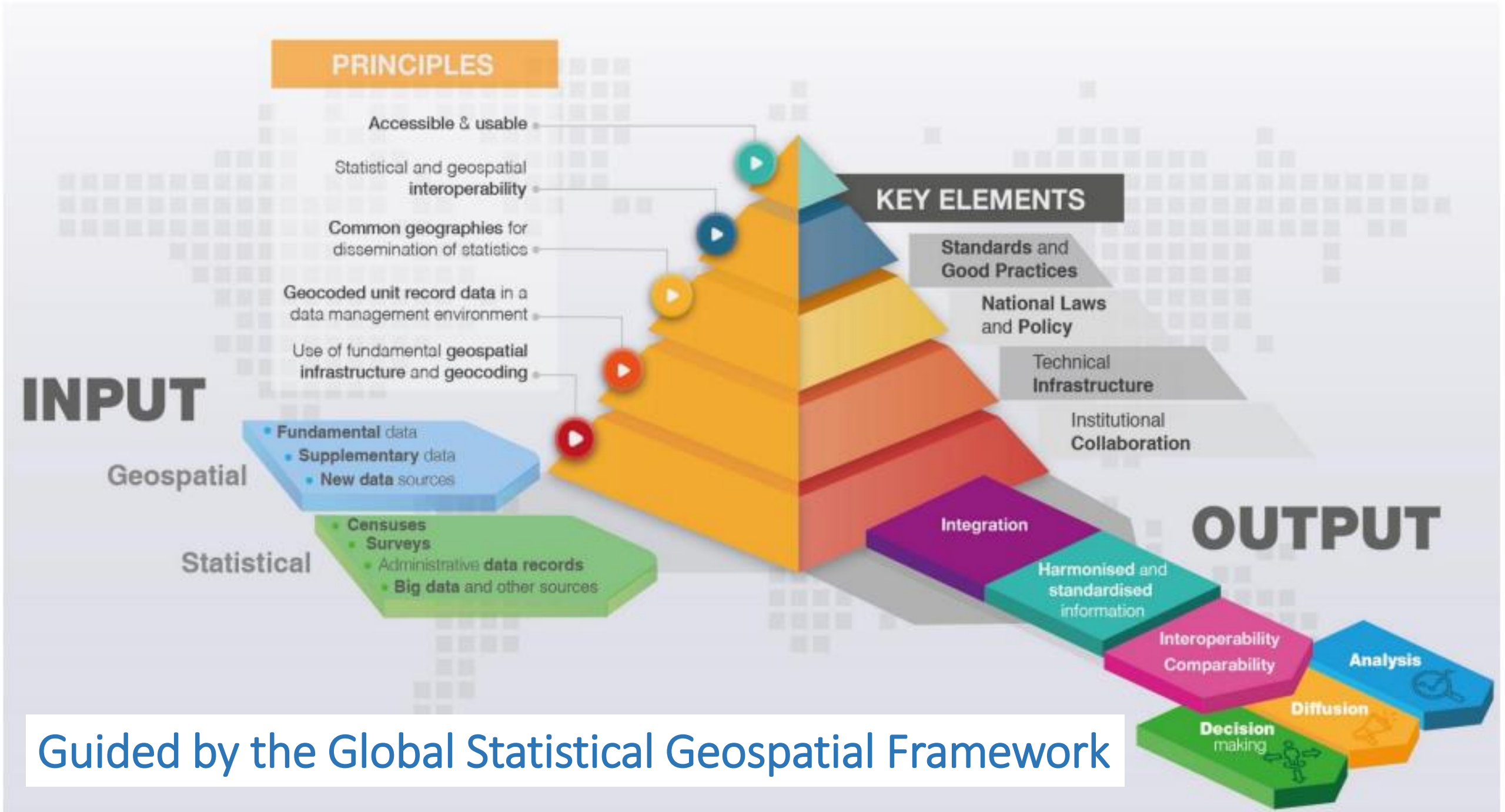
The Expert Group on the Integration of Statistical and Geospatial Information

co-Chair: Mr Alex Mudabeti, Namibia

- Composed of Experts in Statistical and Geospatial Integration from NSOs and NGIAs
- 29 Member States, 5 UN Regional Commissions, 3 UN Agencies and 4 International Organisations
- Reports to both the UN Statistical Commission and the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM)

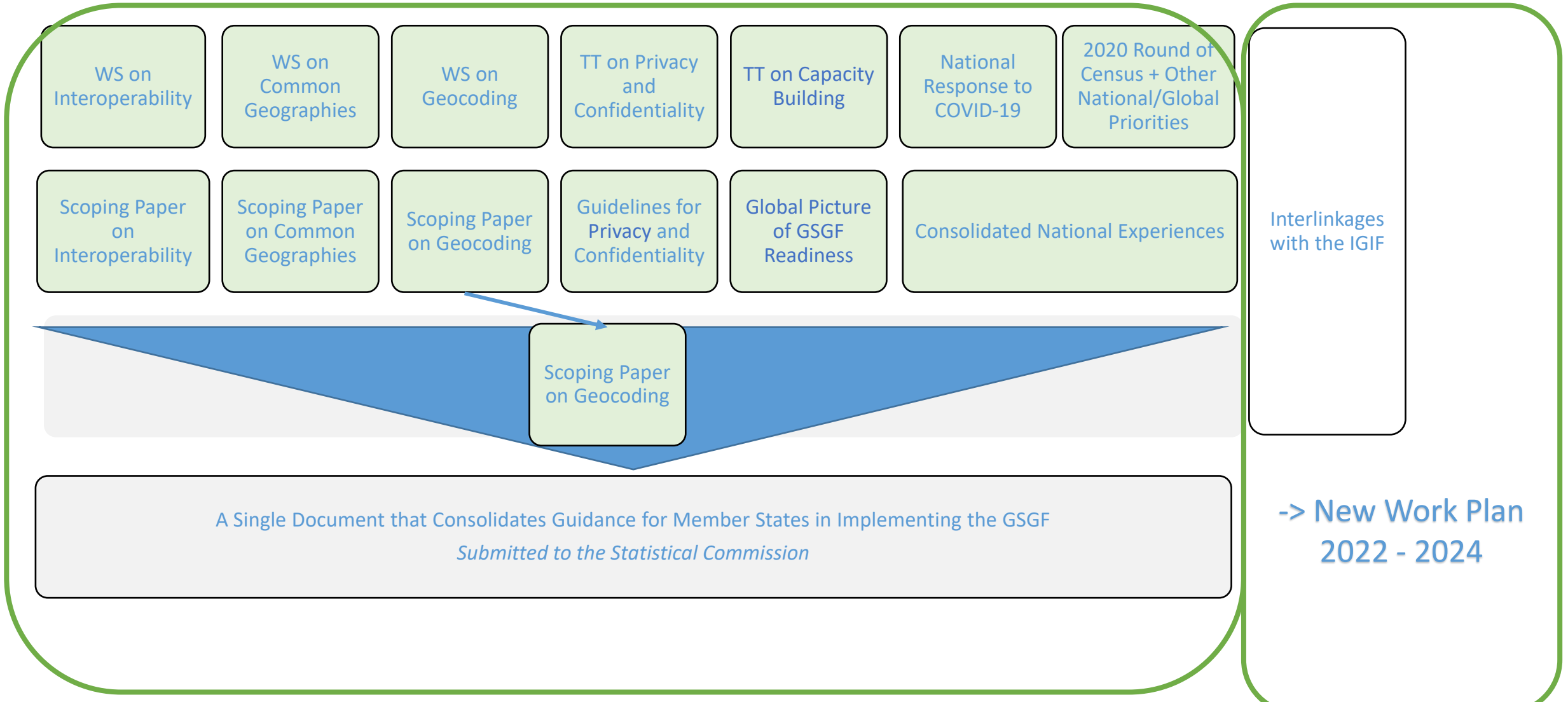
United Nations Statistical Commission
ECONOMY · ENVIRONMENT · POPULATION · SOCIETY · TRADE

UN-GGIM
UNITED NATIONS COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT



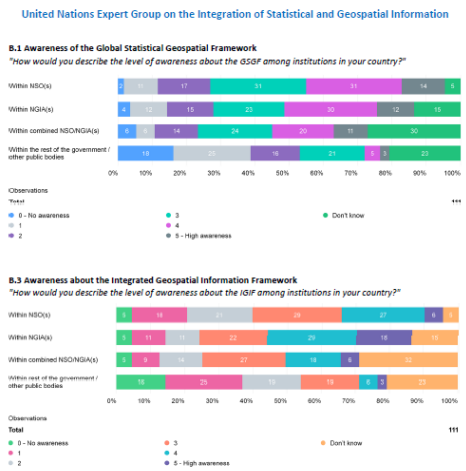
Guided by the Global Statistical Geospatial Framework

Reflecting on the EG-ISGI's Work Plan 2020 – 2022



Three Documents Before the Commission

Final results from the Global Survey on Readiness to Implement the Global Statistical Geospatial Framework



United Nations Expert Group on the Integration of Statistical and Geospatial Information

B.1 Awareness of the Global Statistical Geospatial Framework

"How would you describe the level of awareness about the GSGF among institutions in your country?"

Within NSO(s)
Within NGIA(s)
Within combined NSO/NGIA(s)
Within the rest of the government / other public bodies

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Observations
Total

0 - No awareness
1
2
3
4
5 - High awareness
Don't know

B.3 Awareness about the Integrated Geospatial Information Framework

"How would you describe the level of awareness about the IGIF among institutions in your country?"

Within NSO(s)
Within NGIA(s)
Within combined NSO/NGIA(s)
Within rest of the government / other public bodies

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

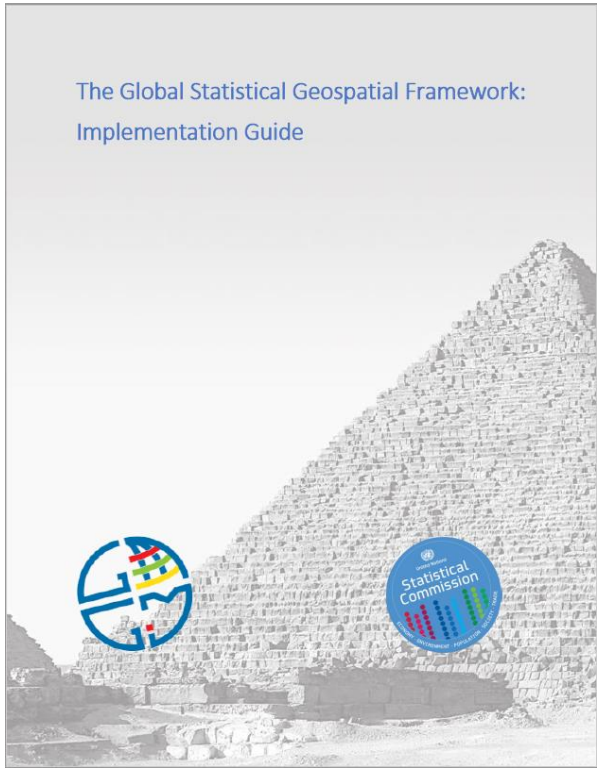
Observations
Total 111

0 - No awareness
1
2
3
4
5 - High awareness
Don't know

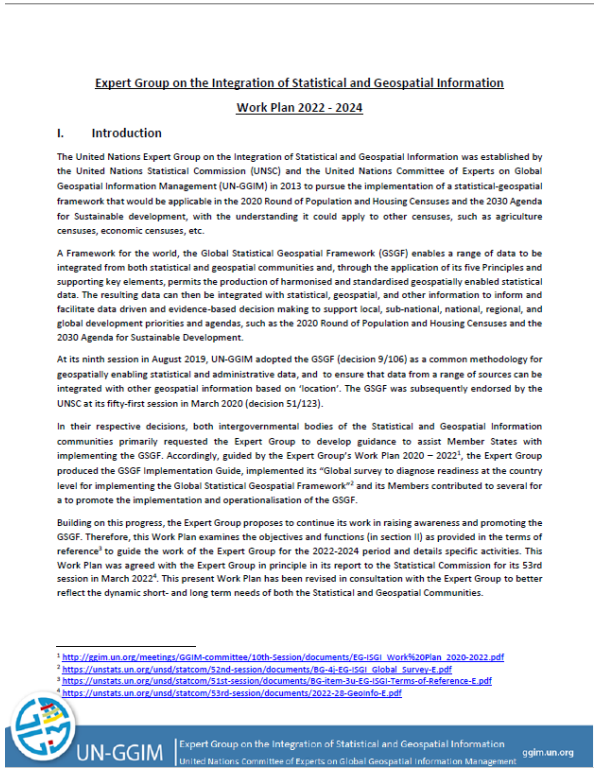
As expected, there is a quite broad group of respondents for both frameworks indicating that the awareness is neither low nor high (a neutral rating of 3). Interestingly, rather few respondents indicate "no" or "very low awareness", with the exception of the category *"The rest of government/other public bodies"*, for which the awareness of both frameworks is rated as "non" or in the lower range of the scale.

As a follow-up question on the awareness, respondents were also asked to rate the usefulness of the GSGF for facilitating statistical-geospatial integration in their country. The respondents were given a fixed set of options to choose from. The options were designed to reflect a combination of perceived usefulness and maturity in implementation and operationalisation.

The GSGF Implementation Guide



The Expert Group's Work Plan 2022 - 2024



Expert Group on the Integration of Statistical and Geospatial Information

Work Plan 2022 - 2024

I. Introduction

The United Nations Expert Group on the Integration of Statistical and Geospatial Information was established by the United Nations Statistical Commission (UNSC) and the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) in 2013 to pursue the implementation of a statistical-geospatial framework that would be applicable in the 2020 Round of Population and Housing Censuses and the 2030 Agenda for Sustainable development, with the understanding it could apply to other censuses, such as agriculture censuses, economic censuses, etc.

A Framework for the world, the Global Statistical Geospatial Framework (GSGF) enables a range of data to be integrated from both statistical and geospatial communities and, through the application of its five Principles and supporting key elements, permits the production of harmonised and standardised geospatially enabled statistical data. The resulting data can then be integrated with statistical, geospatial, and other information to inform and facilitate data driven and evidence-based decision making to support local, sub-national, national, regional, and global development priorities and agendas, such as the 2020 Round of Population and Housing Censuses and the 2030 Agenda for Sustainable Development.

At its ninth session in August 2019, UN-GGIM adopted the GSGF (decision 9/106) as a common methodology for geospatially enabling statistical and administrative data, and to ensure that data from a range of sources can be integrated with other geospatial information based on 'location'. The GSGF was subsequently endorsed by the UNSC at its fifty-first session in March 2020 (decision 51/123).

In their respective decisions, both intergovernmental bodies of the Statistical and Geospatial Information communities primarily requested the Expert Group to develop guidance to assist Member States with implementing the GSGF. Accordingly, guided by the Expert Group's Work Plan 2020 – 2022[1], the Expert Group produced the GSGF Implementation Guide, implemented its "Global survey to diagnose readiness at the country level for implementing the Global Statistical Geospatial Framework"[2] and its Members contributed to several for a to promote the implementation and operationalisation of the GSGF.

Building on this progress, the Expert Group proposes to continue its work in raising awareness and promoting the GSGF. Therefore, this Work Plan examines the objectives and functions (in section II) as provided in the terms of reference[3] to guide the work of the Expert Group for the 2022-2024 period and details specific activities. This Work Plan was agreed with the Expert Group in principle in its report to the Statistical Commission for its 53rd session in March 2022[4]. This present Work Plan has been revised in consultation with the Expert Group to better reflect the dynamic short- and long term needs of both the Statistical and Geospatial Communities.

[1] http://ggim.un.org/meetings/GGIM-committee/10th-Session/documents/EG-ISGI_Work%20Plan_2020-2022.pdf
[2] https://unstats.un.org/unsd/statcom/52nd-session/documents/BG-4i-EG-ISGI_Global_Survey-E.pdf
[3] https://unstats.un.org/unsd/statcom/51st-session/documents/BG-item-3u-EG-ISGI-Terms-of-Reference-E.pdf
[4] https://unstats.un.org/unsd/statcom/53rd-session/documents/2022-28-GeoInfo-E.pdf

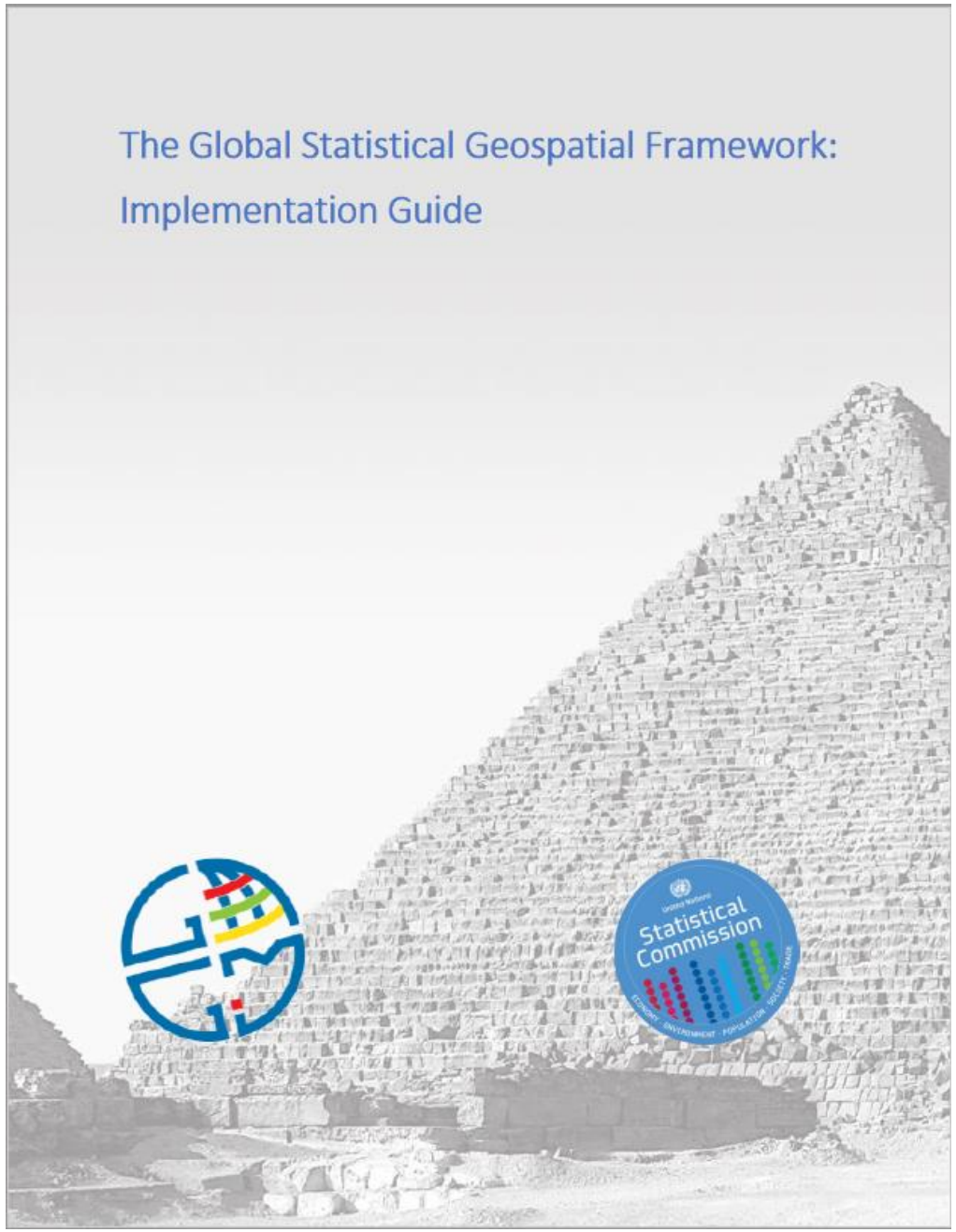
The GSGF Implementation Guide

UNSC Decision 51/123:

"…welcomed [the Expert Group's] continuing efforts to provide guidance to Member States to support the adoption and implementation of the GSGF"

UN-GGIM Decision 9/106:

[Encouraged the Expert Group] "…to continue its work to develop guidance on and support the promotion, awareness-raising and implementation of the Framework, and its work on statistical geospatial integration and coordination, in particular with regard to the Sustainable Development Goals and the 2020 round of population censuses, and encouraged Member States and other stakeholders to participate in, and contribute to, these important elements"



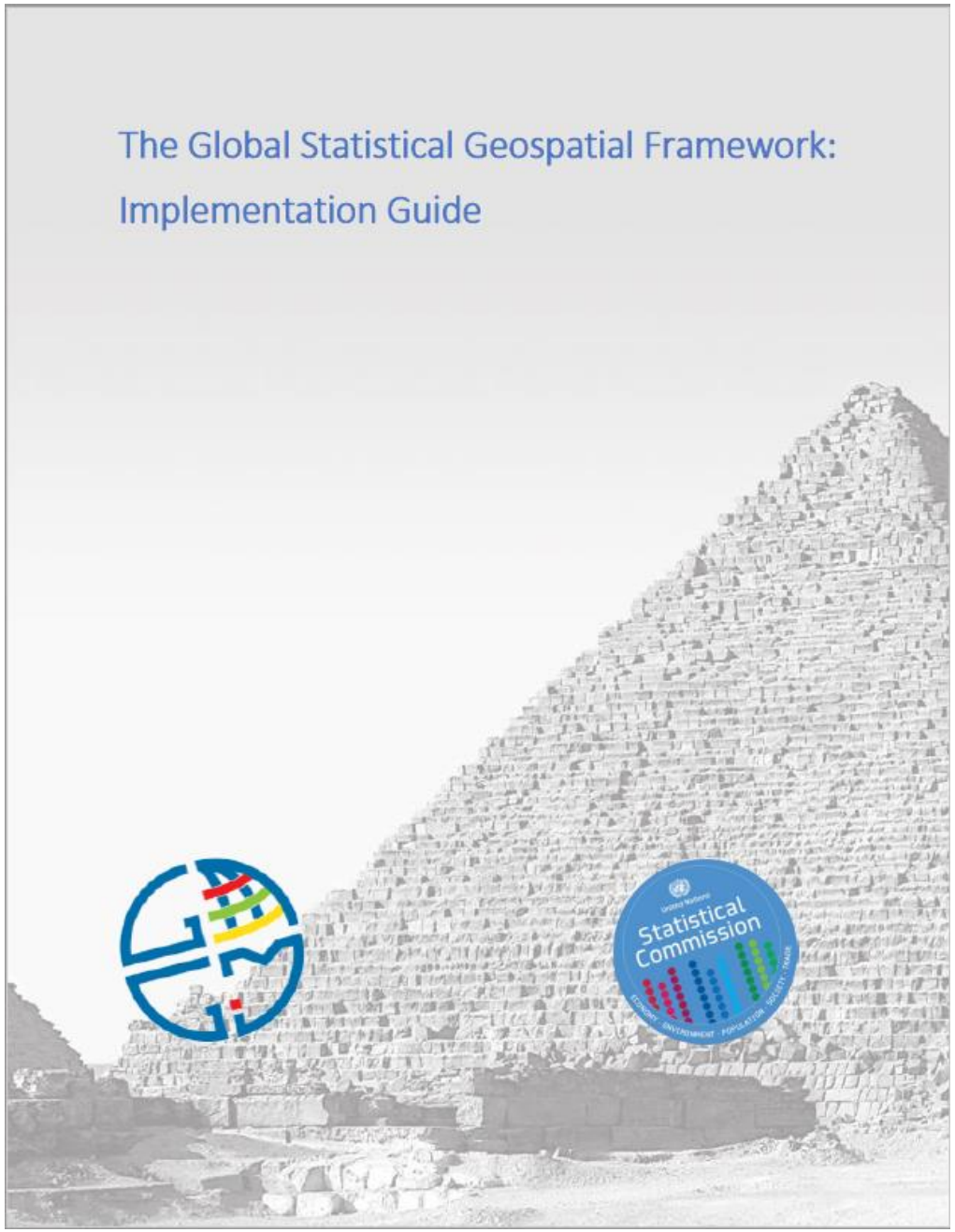
The GSGF Implementation Guide

Document Structure

Guidance
Implementing Geocoding
Implementing Common Geographies
Fostering Interoperability
Ensuring Privacy and Confidentiality

Terminology of the Integration of Statistical and Geospatial Information

Experiences of Implementation
30 National Experiences
5 Regional Experiences



Implementing Geocoding

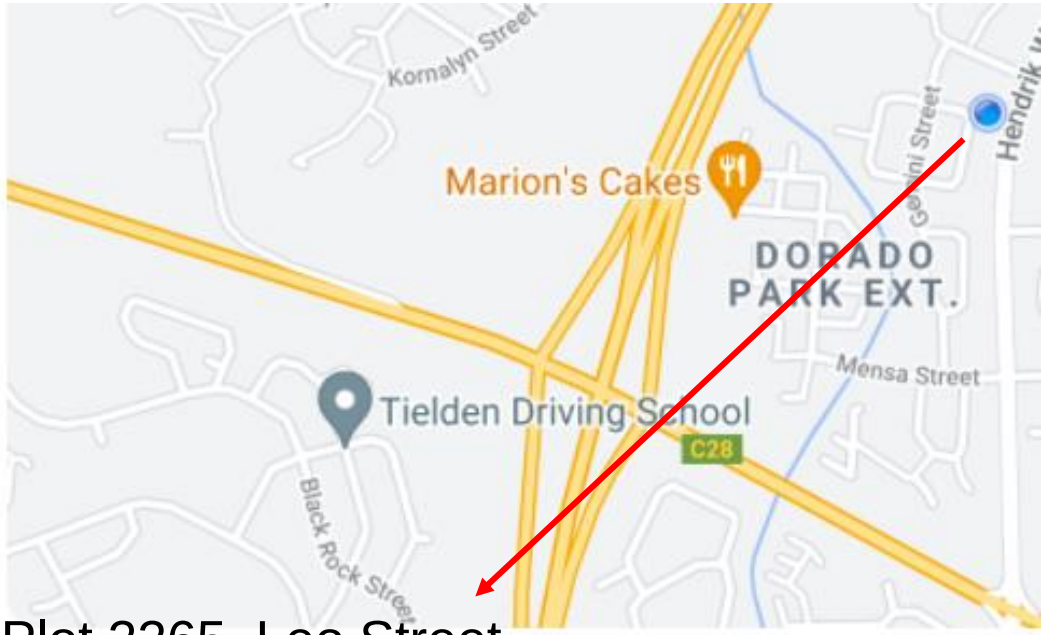
- Relevant Principles of the Global Statistical Geospatial Framework:

  Principle 1: Use of fundamental geospatial infrastructure and geocoding

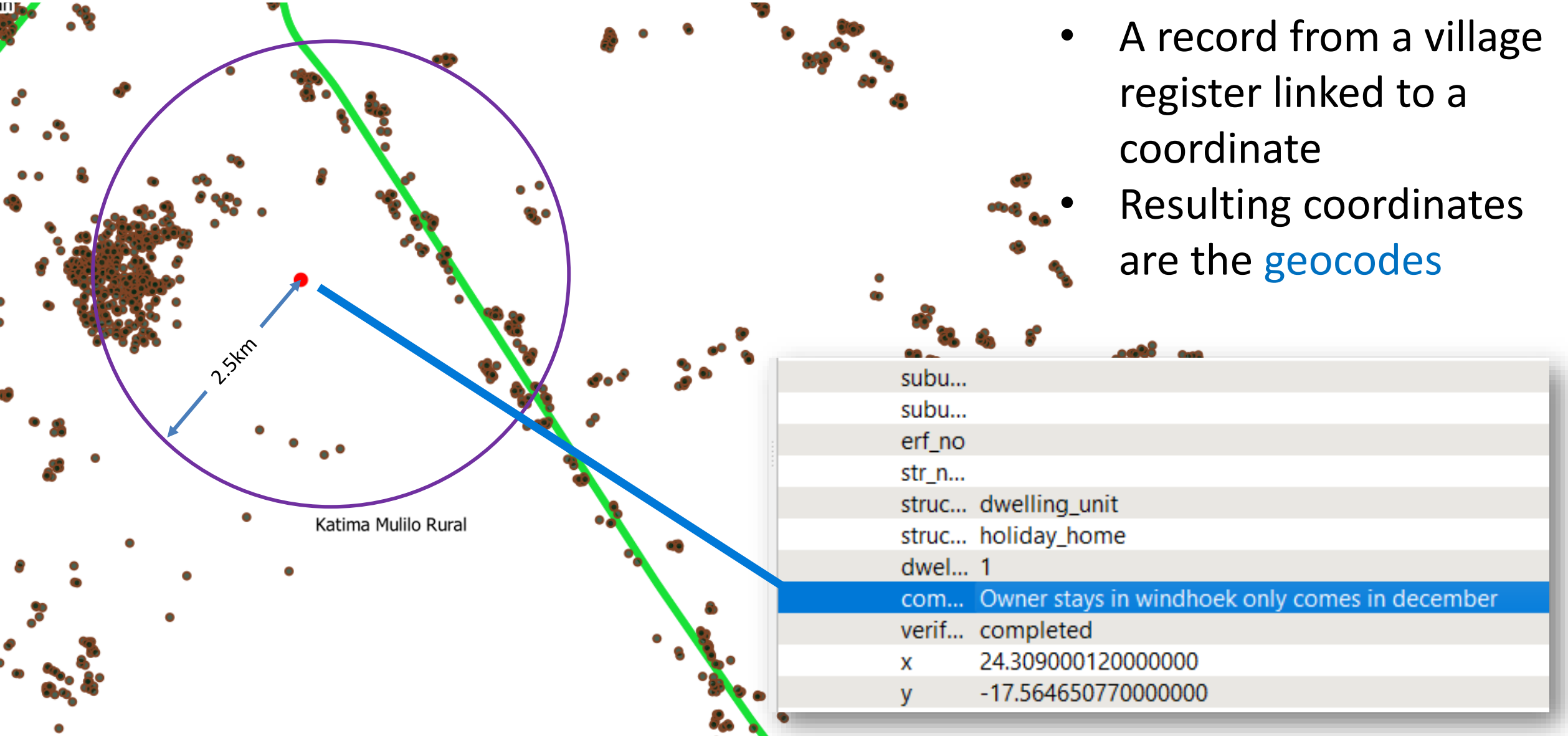
  Principle 2: Geocoding unit record data in a data management environment

- But what is Geocoding?
  - Many prefer to use descriptions of locations instead of coordinates to navigate their environment.
  - An address instead of a coordinate.
  - Modern geospatial technologies depend on absolute position data coordinates within a specific reference system

- Geocoding
  - A method of *linking a description of a location to the location's measurable position in space*.
  - Links unreferenced location information (e.g., an address, or other location description) associated with a statistical unit (e.g., housing unit or business) to a set of coordinates within a coordinate system.



Linking Statistics to Geography …Example Housing Unit in Rural Namibia



- A record from a village register linked to a coordinate
- Resulting coordinates are the geocodes

- Formally stated:
  - “geocoding is generally defined as the process of geospatially enabling statistical unit records or other nonspatial data (such as address lists or housing unit records) by creating x- and y- (and potentially z) coordinates and linking them to each record.”
- Once geocoding is performed on individual statistical unit records:
  - can be aggregated into larger geographic units (e.g., states, provinces, or municipalities) for statistical analysis.
- Records ready for further applications such as methodologies to ensure *confidentiality* and *avoid data disclosure*.

Why is Geocoding needed?

- To foster the greatest opportunity to reuse and aggregate statistical data.
  - Aggregation and disaggregation of associated statistical data by geospatial location becomes possible.
- GSGF states that:
  - *“all statistical unit records should include or be linked to a precise geographic reference (an x- and y- coordinate)*
  - *If not, the smallest geographic area possible”.*
- Recommendation for using an x- and y- coordinate for geocoding first issued by the Expert Group in 2018 and is reiterated again in 2021.

How can records be geocoded?

- Modern geocoding processes are largely automated
  - Matching captured data with a reference database with some in-built spatial intelligence to improve the matching process.

- Efficiency of geocoding relies on:
  1. A comprehensive reference database of addresses
  2. Locations in x and y coordinates

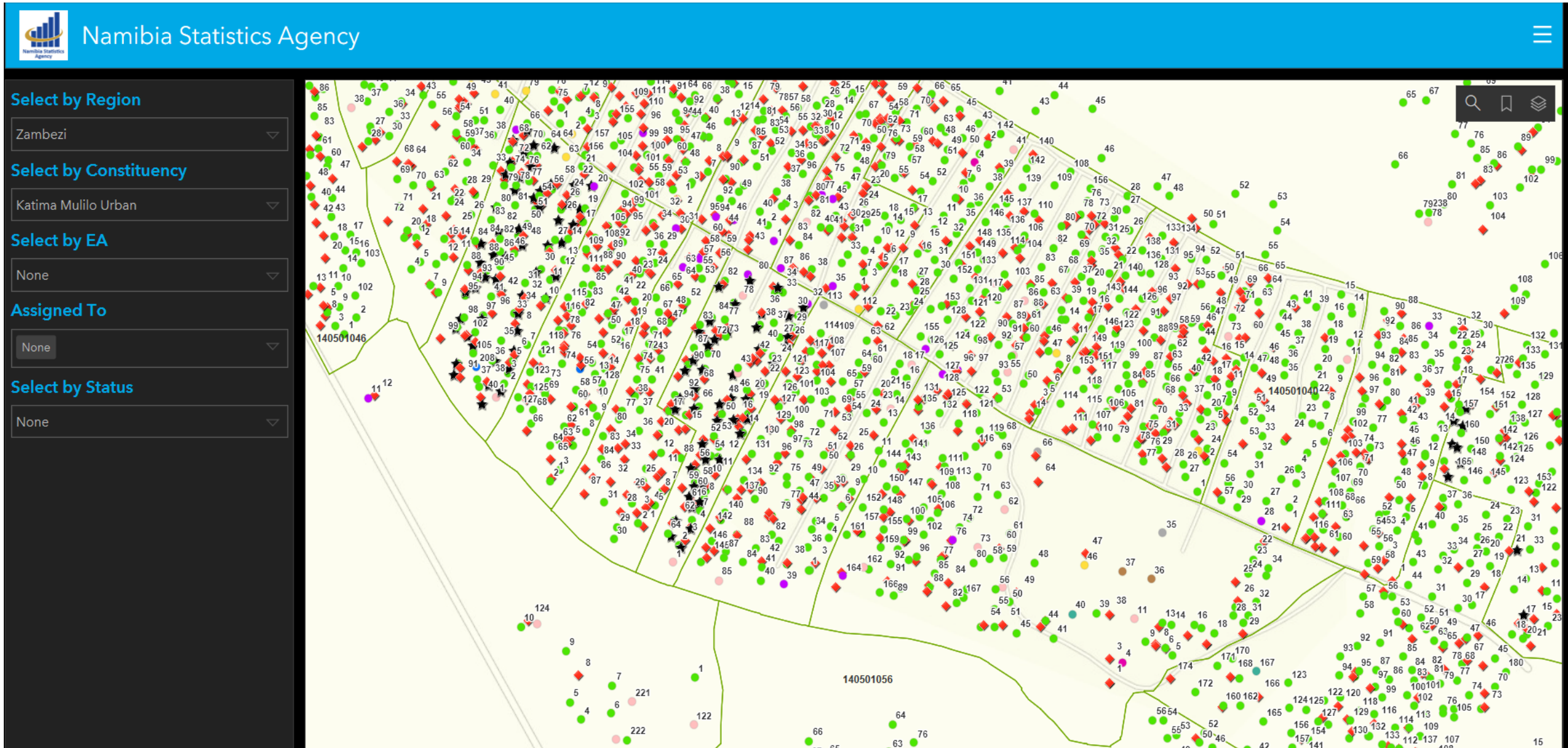
This is a component of a mature national spatial infrastructure

- Geocoding also helped by having a standardised, structured description of a location.
  - A street address contains a number of specific elements with formatting requirements that are used in geocoding.

1. Geocodes can be generated directly (i.e., coordinates accepted as being specific for the statistical unit record);
2. Or indirectly when they use an internal point of a geographic area.
3. Conceptually the most accurate geocodes are the x- and y- coordinates assigned to a statistical unit record at time of collection.
4. Equally specific are geocodes assigned using specific standardised structure IDs or even within structure IDs (e.g., one apartment within an apartment building).
5. The next most specific geocodes are for addresses or standardised parcel IDs.

- Also geocodes can be generated using an internal point (e.g., a centroid) for any functional area
- Note:
  - *Geocoding must be consistently documented for each statistical unit record in a dataset along with a corresponding record of a time and date for each record when each record was geocoded.*

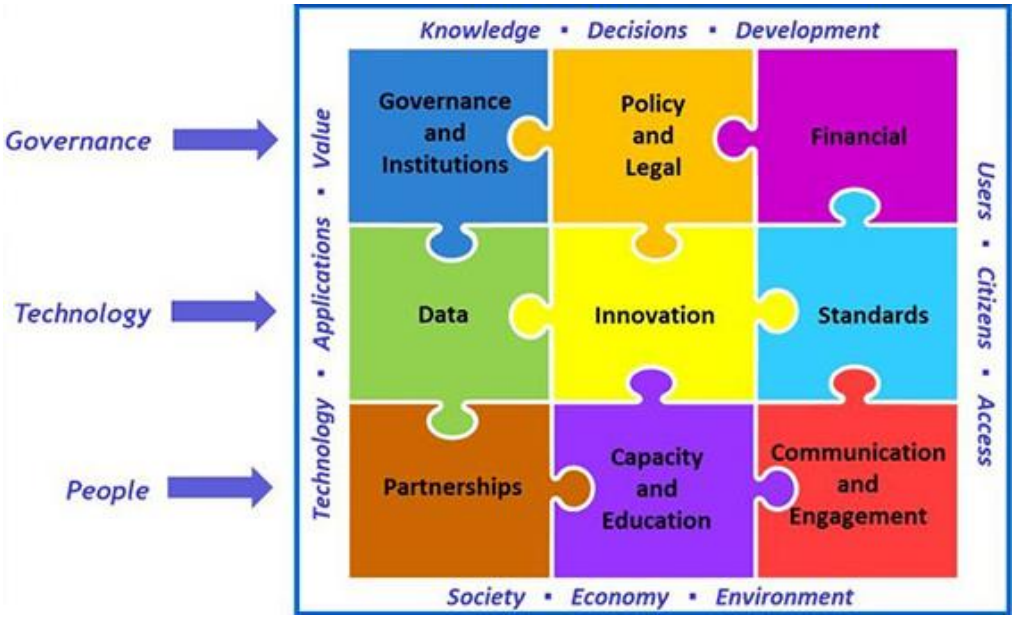
Example: Geocoded Household and Business Register inside Enumeration Areas (Direct Method)



Enabling Resources

- 14 Global Fundamental Geospatial Data Themes
- 14 Themes considered fundamental to strengthening a national geospatial infrastructure
- Specific to geocoding are:

Global Geodetic Reference Frame (x- and y- coordinates), Addresses, and Functional Areas are directly relevant to geocode statistical unit records.



The Integrated Geospatial Information Framework

- 9 Strategic Pathways
- Supported by implementation guides and other resources
- More at igif.un.org

Further Reading and Associated Resources

1. The Global Statistical Geospatial Framework E/CN.3/2020/25 http://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/The_GSGF.pdf
2. Integrated Geospatial Information Framework Strategic Pathway 4: Data https://igif.un.org/
3. Australian Bureau of Statistics: Geocoding Unit Record Data Using Address and Location: https://www.abs.gov.au/websitedbs/d3310114.nsf/home/Statistical+Spatial+Framework+Guida nce+Material/$File/Geocoding+Unit+Record+Data.pdf
4. Academic resources: (such as Texas A&M's geocoding resources https://geoservices.tamu.edu/Services/Geocode/
5. The Global Fundamental Geospatial Data Themes: http://ggim.un.org/documents/Fundamental%20Data%20Publication.pdf