

UN Regional Hub for Big Data in Africa - Webinar series: Mobile Phone Data Task Team

08 February 2024

Webinar 2

Opportunities and challenges of using MPD for official statistics:
National stakeholders, roles, and data access

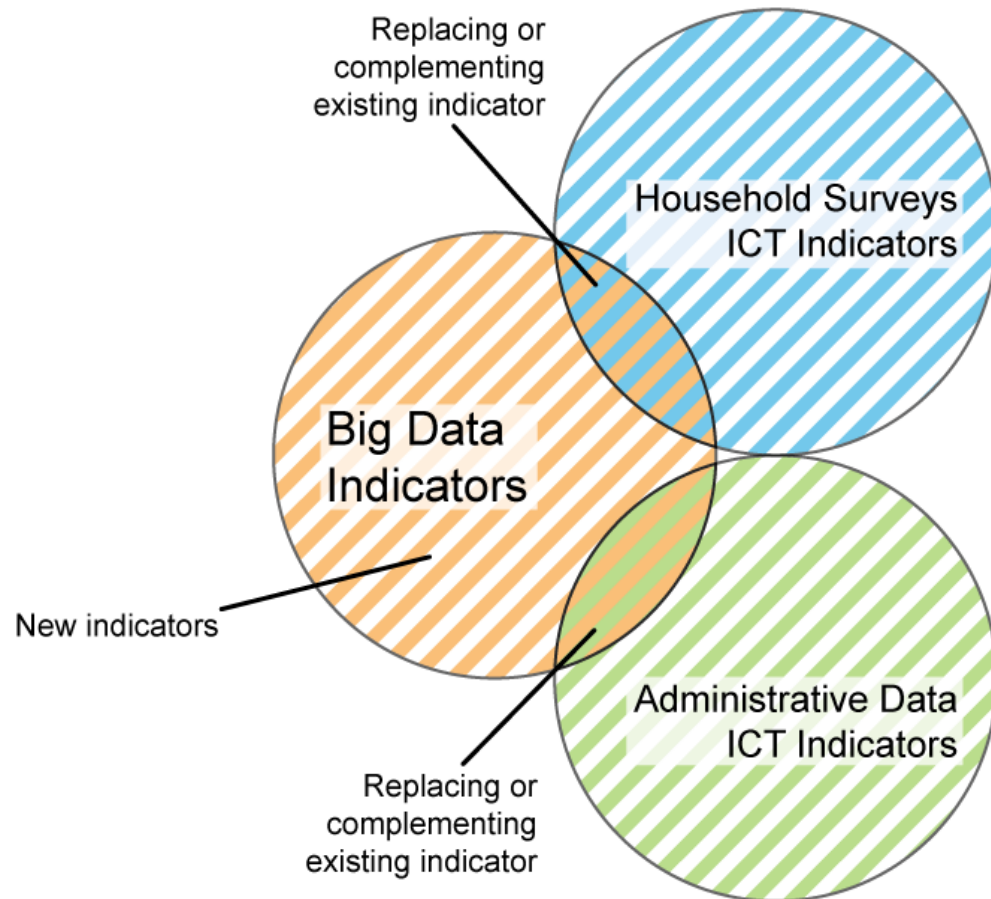
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ITU Statistics Work



1st pilot: 2016-2018

- ✓ 6 countries (Colombia, Georgia, Kenya, Philippines, Sweden, UAE)
- ✓ 16 ICT indicators (administrative data)

2nd pilot: 2020-2021

- ✓ Brazil, Indonesia
- ✓ 2 SDG ICT indicators
 - ✓ 9.c.1 - Percentage of population covered by mobile network: 2G, 3G and 4G and above (administrative data)
 - ✓ 17.8.1 - Percentage of population using the Internet (household survey data)

<https://www.itu.int/en/ITU-D/Statistics/Pages/bigdata/default.aspx>



What are the benefits and challenges in using MPD?

Benefits:

- High penetration globally
- High quality data
- Near-real-time
- High granularity
- Already generated by MNOs

Challenges:

- Precision limited by cell tower density
- Representativeness of mobile phone subscriptions
- One subscription may not represent one individual, or multiple subscriptions per individual
- Data access requires agreement with MNOs
- Large datasets requiring suitable data infrastructure
- Skills that are needed to process and analyse the data



Requirements for MPD project

Objective
Statement

Access to MPD

Project
Sponsor

Data Scientists

Software Tools

Hardware
(Servers)



National stakeholder coordination and data access methods

Stakeholders:

- Ministries or other official agencies
- Telecommunication Regulator
- National Statistics Office
- Mobile Phone Operators and service providers
- Data Protection Authority
- Consultants (optional)

➤ **Three processing methods**

1. Operator-led
2. Agency-led
3. Public-private partnership

➤ **Big data infrastructure and skills needed**

➤ **Ministry of ICT or other line ministry**

Role: main client of the analysis with mandate to provide official services to the population. Tasks include to set criteria, rational and define the use case.

Benefit: new insights to strengthen policy making and/or improved services.

➤ **Telecommunication Regulator**

Role: mandate to regulate the telecommunication market and ensure protection of user rights and citizen privacy. Positioned to negotiate and mediate access with operators.

Benefit: new insights to inform policy making



➤ **National Statistics Office**

Role: mandate to produce official statistics. Supported by Statistical Act and have skills to collect, process and analyse data.

Benefit: new methods for producing official statistics, skills development

➤ **Mobile Network Operators and service providers**

Role: custodian of mobile phone data. Invested in technical/human resources to store, process and analyse mobile phone data.

Benefit: depends on business model and legal requirements, but can include skills development, financial resources or market insights

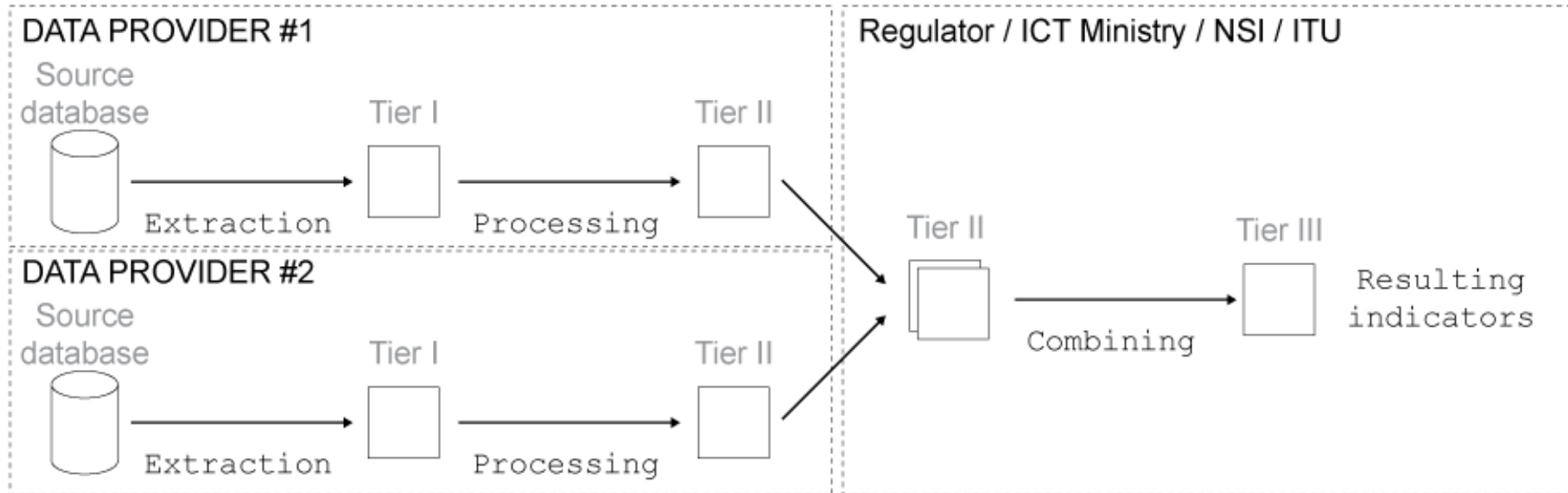
- **Data Protection Authority**

Role: provides guidance and oversight for lawful data processing. Ensures safeguards are in place to ensure privacy (pseudonymisation or anonymisation)

- **Consultants or other authorized data processors (optional)**

Role: support the work if skills and/or technical resources are not available.

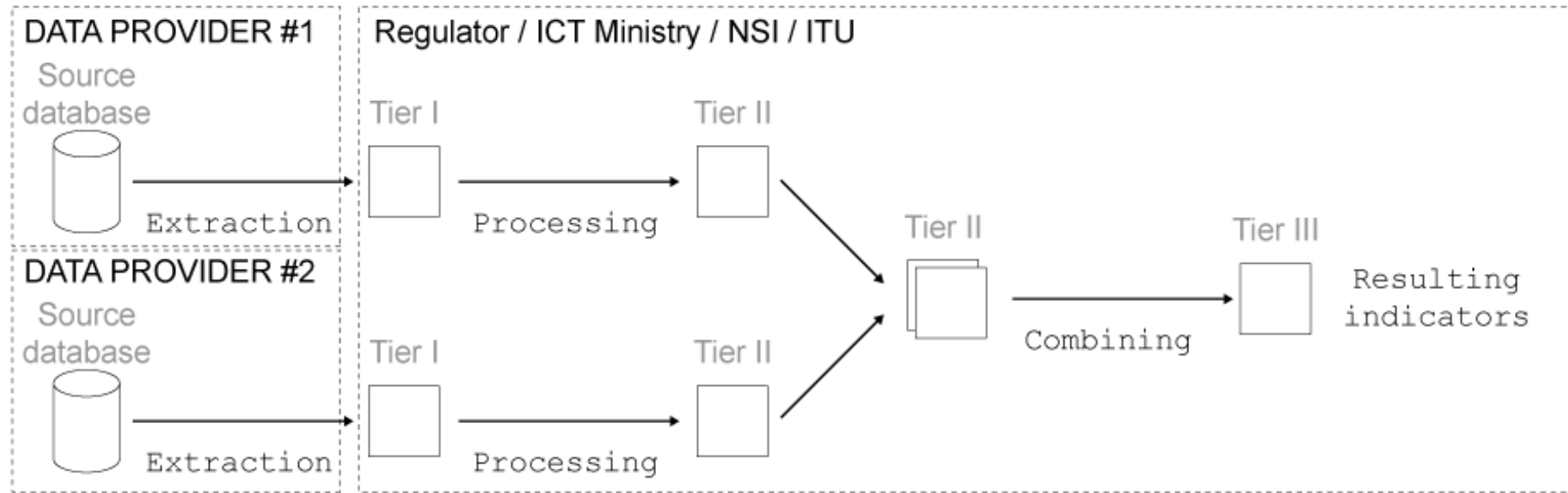
Data access 1: Operator-led processing



Tier I: Raw or anonymized data
Tier II: aggregated data
Tier III: final indicators

- Higher workload for **operators** - need clear commitment and resources
- **Less control and granularity** - training required for operators

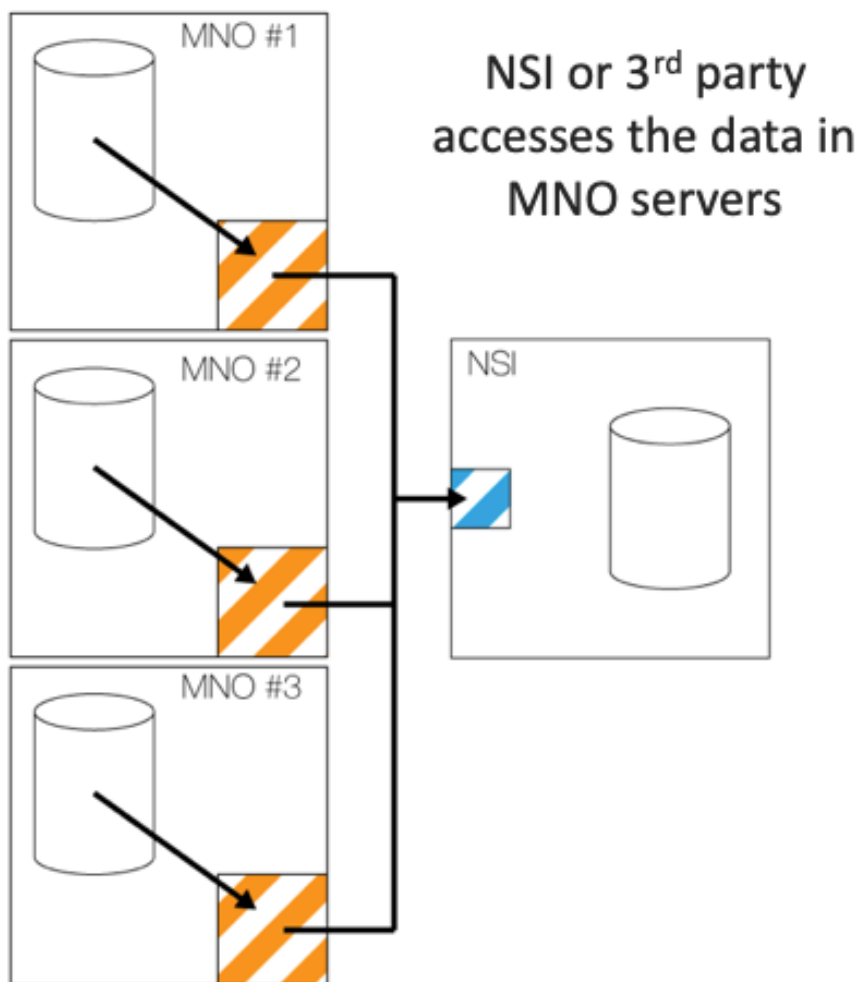
Data access 2: Agency-led processing



Tier I: Raw or anonymized data
Tier II: aggregated data
Tier III: final indicators

- Higher workload for **regulator / government agency**
- **More control and granularity**, but need own human/technical resources
- **Sensitive data transfer** - more emphasis on privacy protection methods

Data access 3: Public-Private Partnership



- High workload for both operator and agency
- Higher control for both operator and agency
- Greater data security / Lower risk of (accidental) disclosure
- More complex environment and higher cost - suitable for long-term engagement

Guidelines on MPD for measuring the Information society

1. Introduction
2. Background
3. Access and preparations
4. Data sources (description of mobile operator data, quality assurance of raw data)
5. Reference data (local admin units, world population, cell data, digital elevation, household survey data)
6. Data processing (models, data protection guidelines)
7. Calculating the indicators (rationale, definition, indicators calculation, quality assurance)
8. Quality assurance
9. Conclusions

- with experiences and examples from country pilots

<https://unstats.un.org/bigdata/task-teams/mobile-phone/index.cshtml>

<https://www.itu.int/en/ITU-D/Statistics/Pages/bigdata/default.aspx>



Recommendations

- Think of MPD as any new data in a statistical business process
- Assess the current situation - data is governed by privacy, telecommunication legislation, and operator internal rules
- Contact / invite all stakeholders to meetings to avoid surprises
- Discuss and agree on all elements, also publication, prior to starting the project.
- Set realistic timeline - consider time-consuming processes such as on data access
- “Start small” - sample data helps to design the solution and establish feasibility for statistics

Way forward

- ITU data processing pipeline of mobile phone data (+ calculating ICT indicators) in Python
- ITU-WB collaboration on using MPD to work for policy
- MPD Task Team Synthetic mobile phone dataset
- Trainings (workshops/webinars):
 - Opportunities and Challenges of using MPD for Official Statistics - (Feb 8)
 - Dynamic population mapping (Mar 21)
 - Transport and commuting (Apr 11)
 - Information society (May 16)

Additional resources

- [UN Big data task team on mobile phone data](#)
- [ITU Big Data pilots](#)
- [Online training course on mobile phone data](#)

Or contact us at:

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Thank you!

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