

Mobile Positioning Data Examples of Statistics Projects from Around the World

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Positium

UN Committee of Experts on Big Data and Data Science for Official Statistics

MPD Task Team

Why Positium

Over 300 projects with mobile data completed

Experience with mobile data

Analysed mobile data from 10+ countries globally

Cooperation with mobile network operators since 2003

Cooperation with operators

GSMA Official Analytics Partner

MPD consultant for UN, OECD, ITU, European Commission

Trust of international org.

Proud to be an Affiliate Member of the United Nations World Tourism Organization (UNWTO)

Science research spin-off company of the University of Tartu, Estonia

Scientific basis

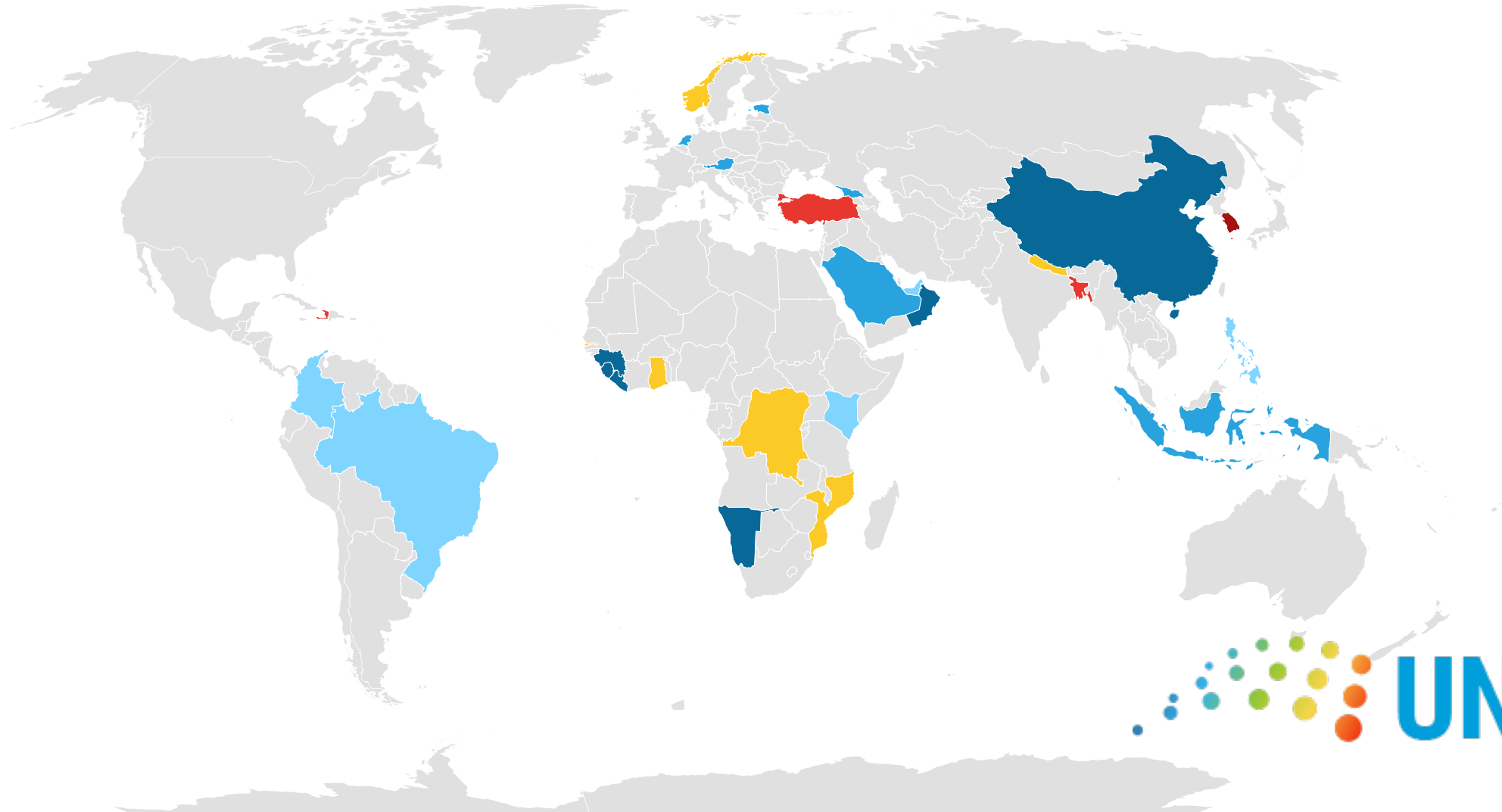
The only company in the world that produces official statistics based on MPD

Questions you might have when starting out exploring MPD

- 1**
Where is the potential to use MPD for statistics?
- 2**
Where has an MPD project implemented that I can benchmark?
- 3**
Where can you turn to for knowledge?

MPD Projects Analyzed in the UN Methodological Guides around the world

- Tourism
- Population
- ICT use
- Migration
- Disaster
- Transport & Commuting



MPD projects in
MPD
Methodological
Guides cover

29%

of land area

of the world

MPD projects in
MPD
Methodological
Guides cover

50%
of population
of the world

Biggest

China

Biggest in the World

9,596,960 km²
1,397,715,000 pop

Indonesia

Biggest in the
Southern Hemisphere

1,904,569 km²
270,203,917 pop

Smallest

Curacao

444 km²
155,000 pop

15

years

longest-running MPD-based statistics time series in the World*
(and counting)

*In Estonia, by the central bank of Estonia
in collaboration with Positium

40
projects
started in 2020 alone

*in relation with tracking mobility during
the COVID-19 pandemic

2

degrees of separation

maximum from your country to the nearest country that has MPD experience

*if your neighbour has not had experience with MPD for statistics, their neighbour has probably had

Benefits of MPD for Official Statistics



CENTRAL BANK OF ESTONIA – MPD since 2008

4x
faster

200x
sample size

12x
countries
breakdown

2.5x
more cost-
efficient

100%
less burden
on tourists

Compared to surveys

What are the strengths and challenges of MPD?

Strengths to Benefit from

- **High coverage** of the population

One mobile network covers 30-50% of population

- **High quality** data

Can produce accurate, statistically reliable results

- **High granularity**

Can be analysed down to grid and 15-minute levels

- **Already generated** by mobile networks

Available now and for historic periods, investments needed in processing only

Challenges to Manage

- **Precision** limited by cell tower density
- **Representativeness** of mobile phone subscriptions
- **One subscription may not represent one individual**, and vice versa
- **Access** requires agreement with MNOs
- **Large** datasets requiring suitable data infrastructure

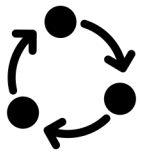


Components and Skills Required for the Implementation of MPD as a Data Source

Components of implementation of MPD

— AKA potential bottlenecks

Development of methodology



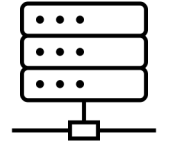
- Mapping needs
- Understanding limitations
- Concepts and definitions
- Theoretical scenarios (ideal data use cases)
- Real data (sample)
- QA framework

Scripts



1. Ideal scenarios (synthetic data)
2. Real data
3. Regular data updates (one-time run vs regular updates)

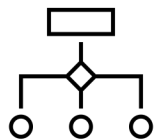
Infrastructure



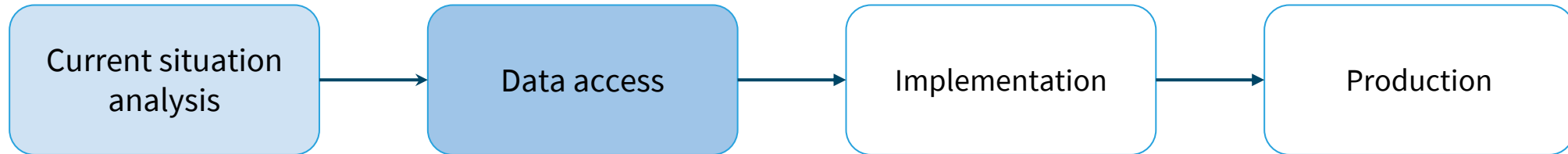
1. MNO (Raw data collection)
2. Processing (Secure sandbox)
3. Dissemination (Aggregate databases)

Administrative framework / Business Process

- Data governance
- Legislation (ownership of the data)
- Project Management



Roadmap to Reach Project Stage



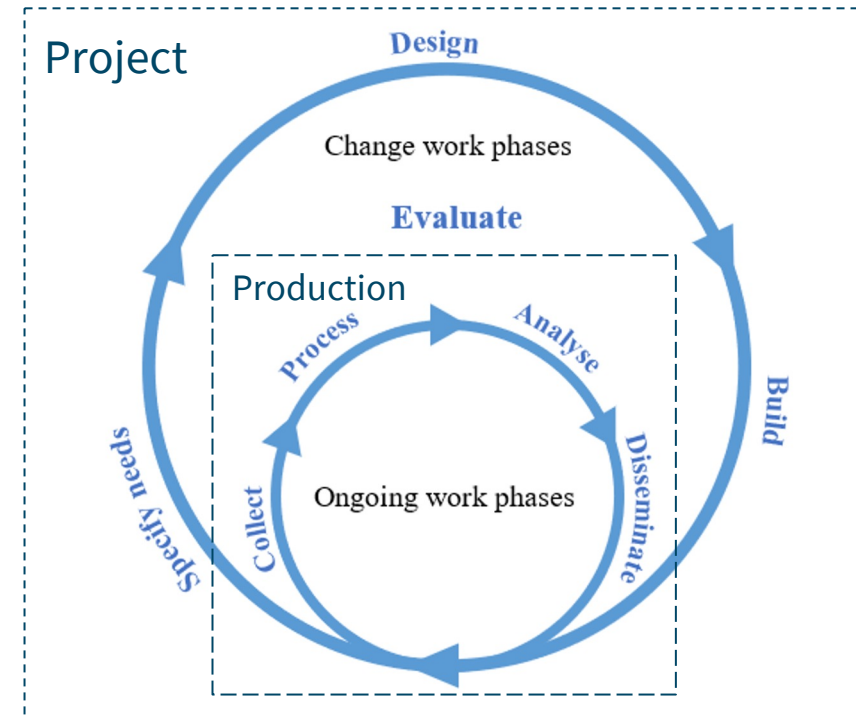
Pre-project activities

- Specifying needs
- Current methods overview and benefits of MPD
- Introduce previous work as proof of concept
- Establish funding

Preparations for Pilot Project

- Legal situation assessment
- Technical situation assessment
- Stakeholders and business model
- Discussion with MNOs
- Preliminary data validation (QA)
- Setting up the sandbox

Possibility to conduct an extensive Feasibility Study



Cost-Effectiveness

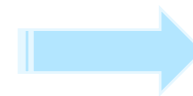


BADAN PUSAT STATISTIK



BPS STATISTICS INDONESIA – MPD since 2017

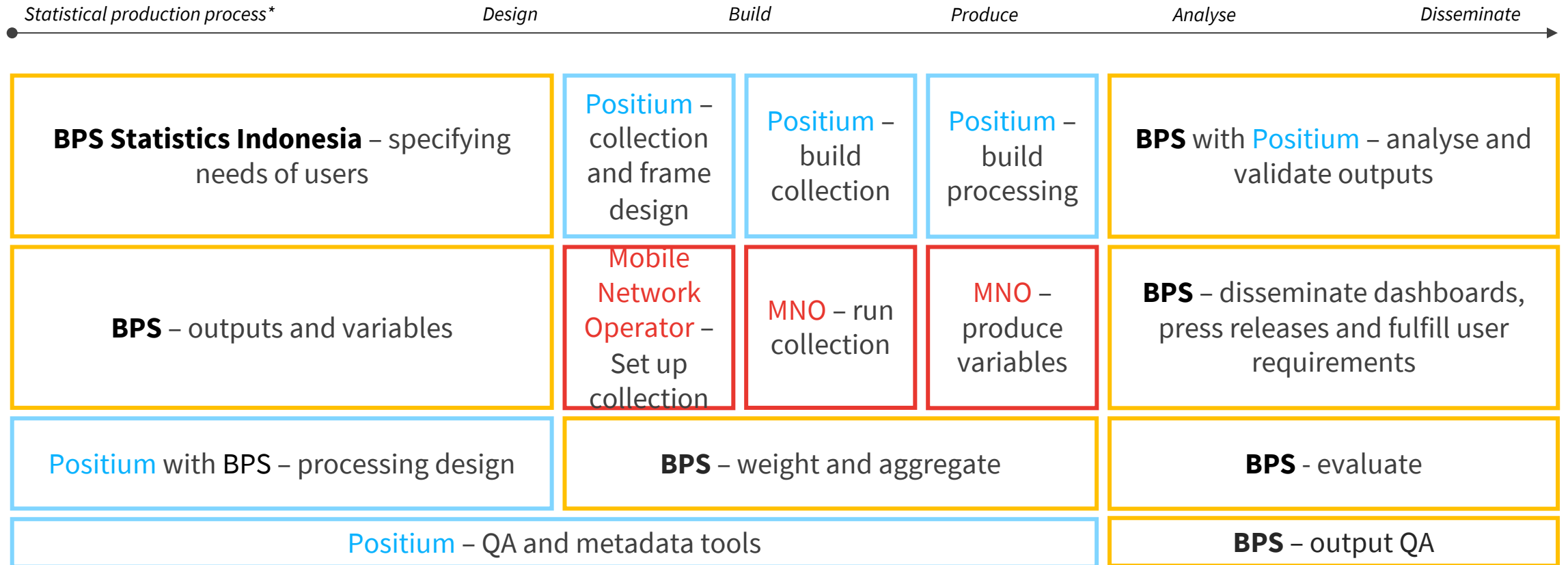
8000
enumerators
for **domestic
tourism survey**



4
data scientists /
engineers
working on MPD



Pilot Project until Implementation



* GSBPM (General Statistical Business Process Model)

Monthly Production

Statistical production process*

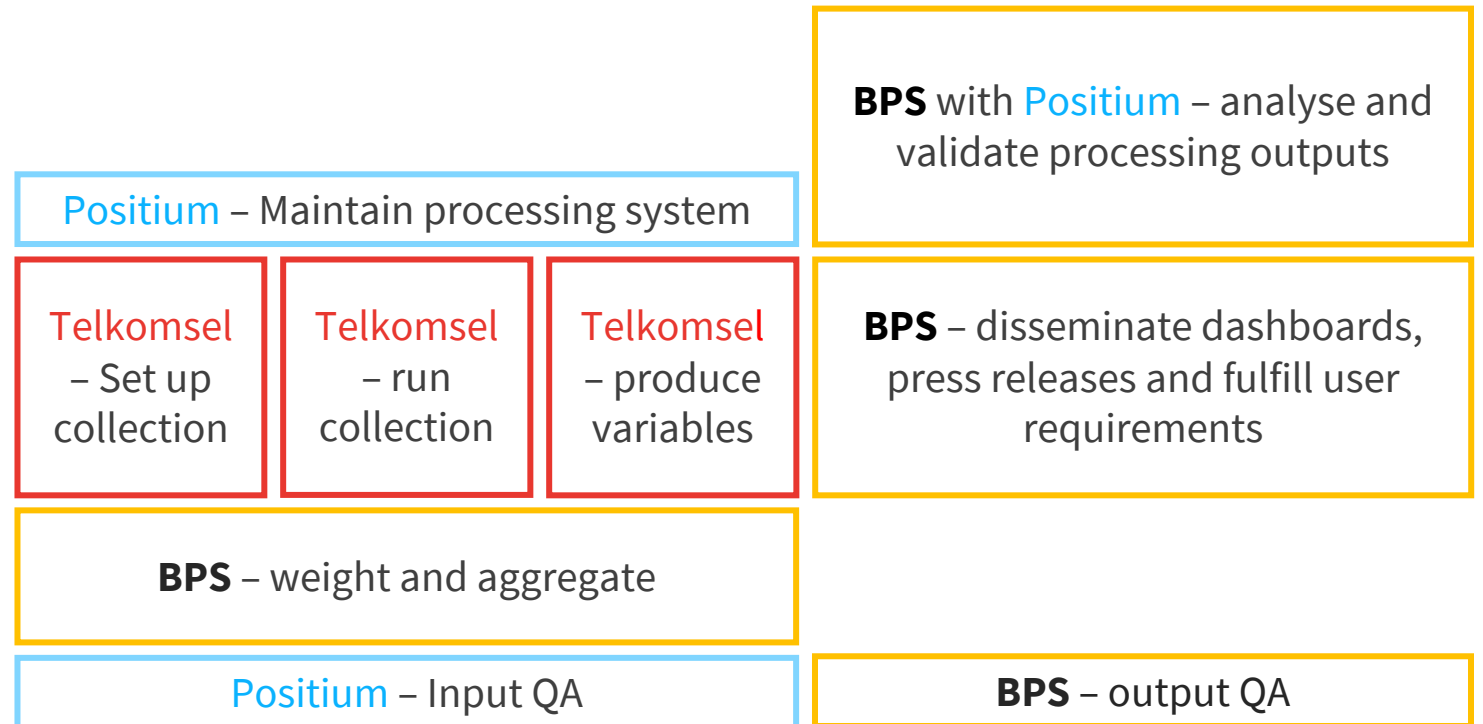
Design

Build

Produce

Analyse

Disseminate



* GSBPM (General Statistical Business Process Model)

Summary

- 1**
International community supports MPD adoption in population, tourism, transportation, migration, ICT and disaster statistics
- 2**
There are MPD projects in every part of the world and in every topic
- 3**
Reach out to the international community for experience sharing

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