Mobile Big Data for Human Mobility and Official Statistics
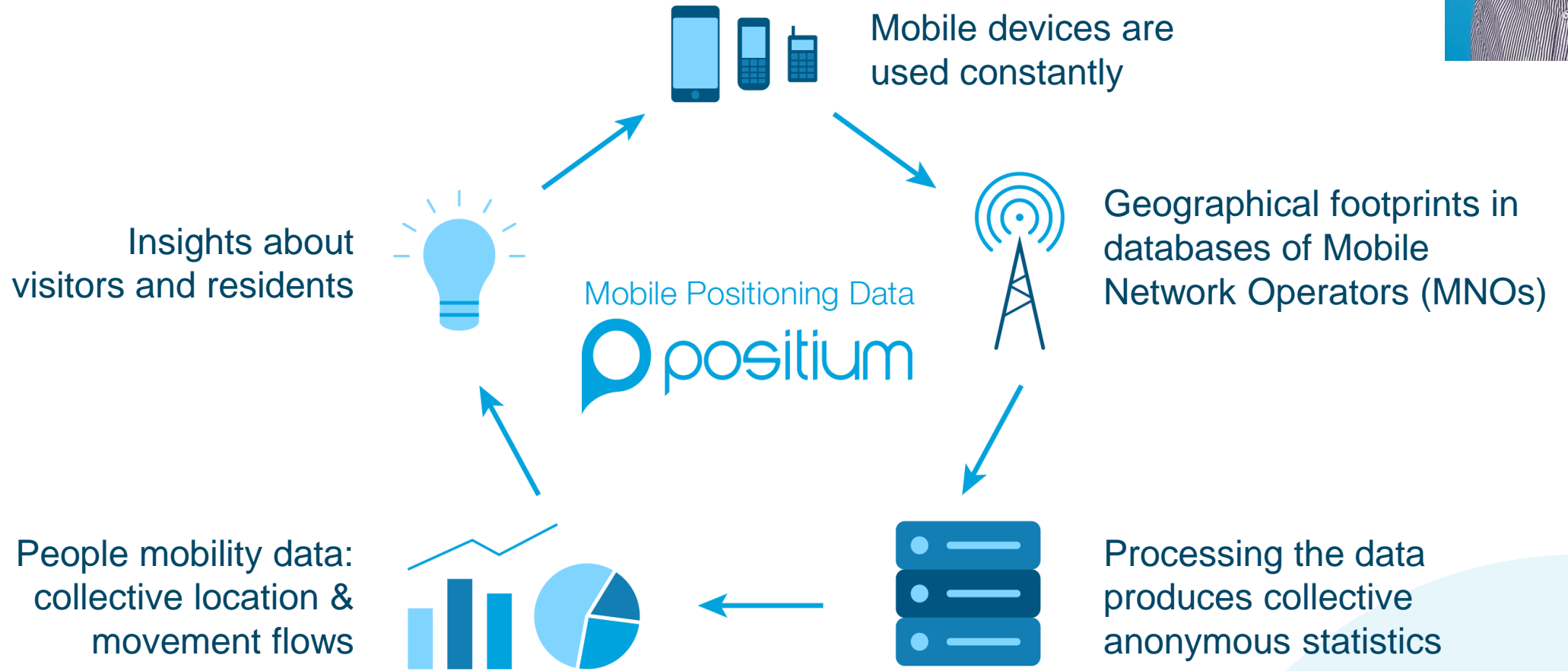
Siim Esko

Positium

Positium is a spin-off company of University of Tartu (Estonia)

that produces methodology and technology for processing mobile positioning data for human mobility monitoring

because there's got to be a better way to measure mobility…

2008

Mobile Positioning Data (MPD)

Mobile devices are used constantly

Geographical footprints in databases of Mobile Network Operators (MNOs)

Processing the data produces collective anonymous statistics

People mobility data: collective location & movement flows

Insights about visitors and residents
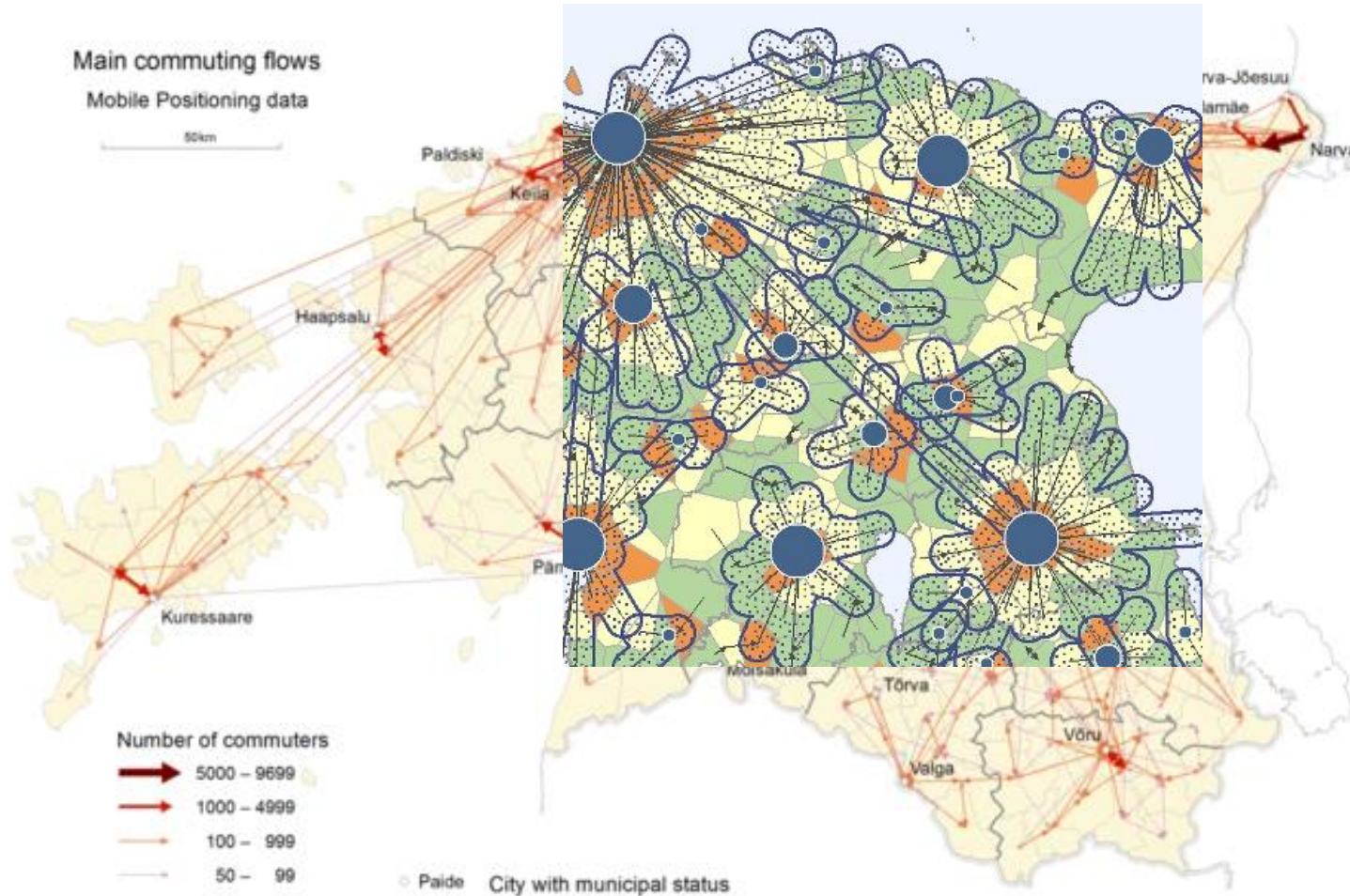
Mobile Positioning Data

positium

@Positium

National level mobility data

Correlation of commuting flows in census and MPD:

Pearson r = 0.89

Difference is in density of data – MPD shows more commuting activity in more detail and over a long time period

Main commuting flows

Mobile Positioning data

50km

Paldiski
Keila
Haapsalu
Kuressaare
Pä...
Paide   City with municipal status

Number of commuters
5000 – 9699
1000 – 4999
100 – 999
50 – 99

rva-Jõesuu
amäe
Narva
Tõrva
Võru
Valga

10 REDUCED INEQUALITIES

2017: Administrative reform prepared with MPD* – detecting functionally connected regions

2018: Reform from 200 --> 79 municipalities
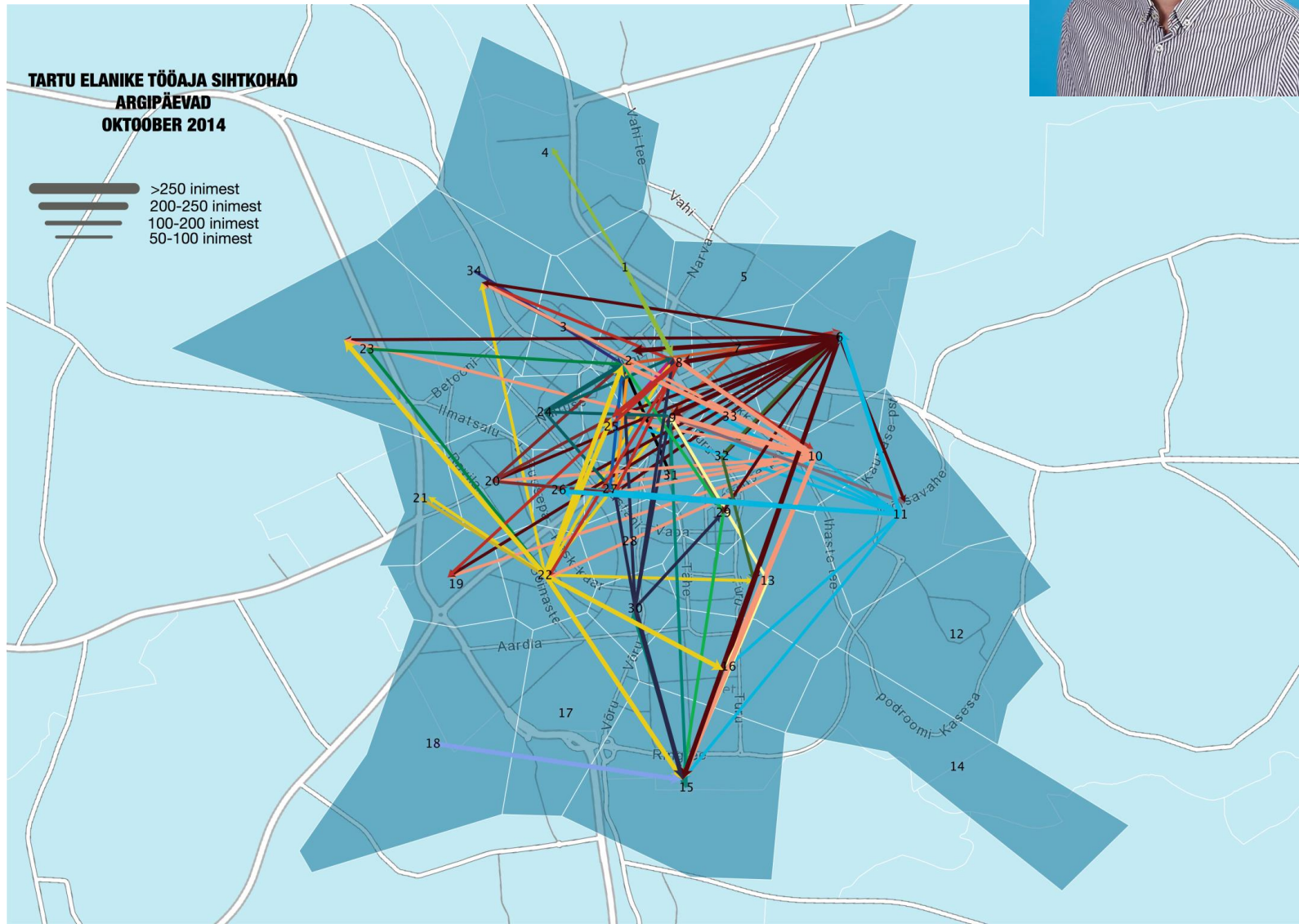
User: Estonian Ministry of Regional Development

Local Level Mobility Data

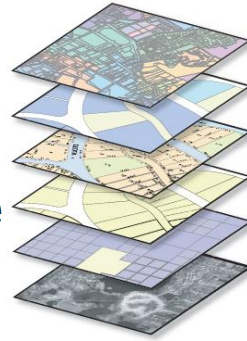Origin-Destination
Matrices

Tartu City
Population: 100 000
Combination of
movements: 6 000 000

TARTU ELANIKE TÖÖAJA SIHTKOHAD
ARGIPÄEVAD
OKTOOBER 2014

>250 inimest
200-250 inimest
100-200 inimest
50-100 inimest

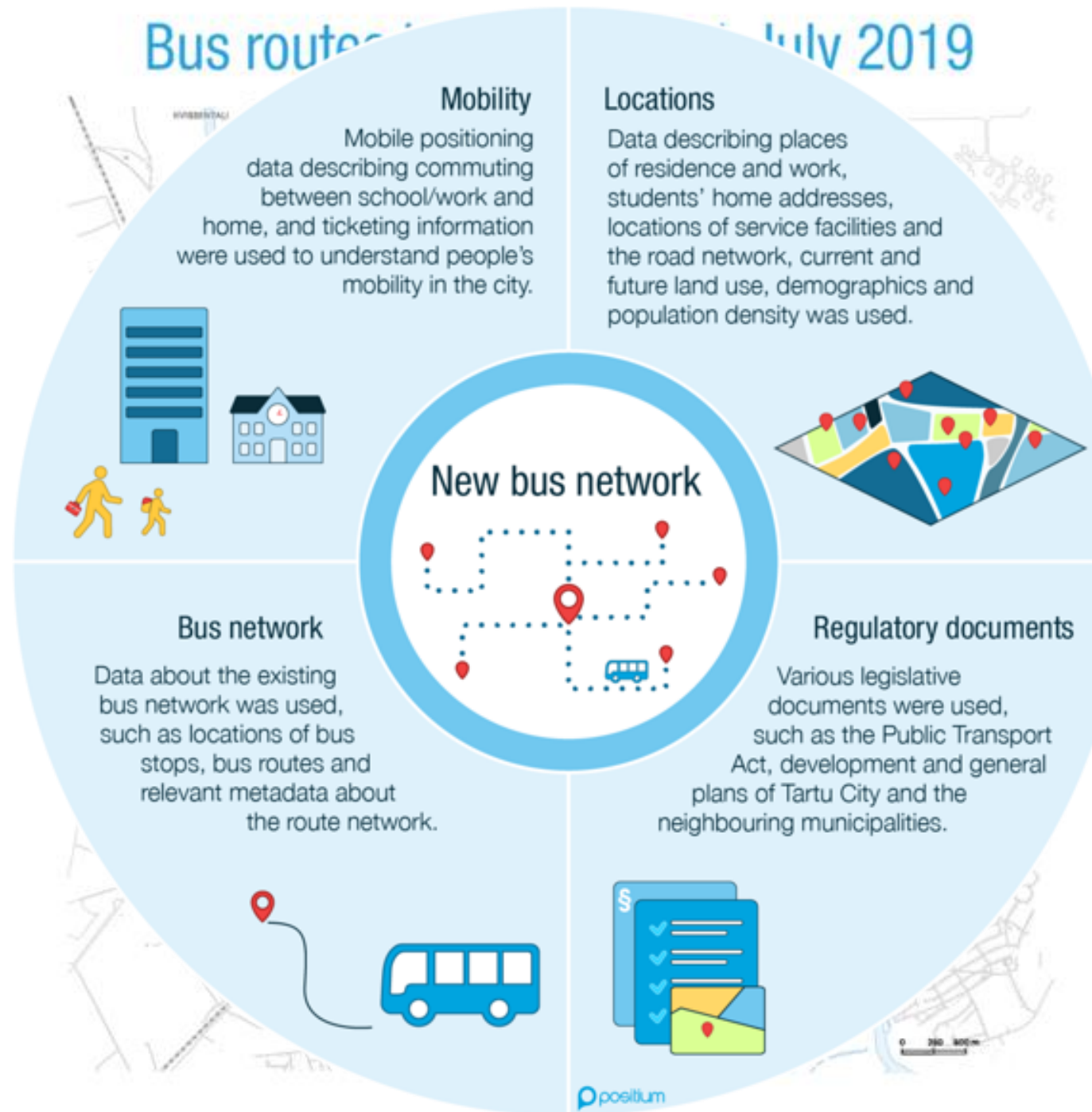# Use case: Public Transportation Planning

New Bus Network

- Data-driven
- Then consultative
- 1.5 years from data collection to starting the new bus line network

User: City of Tartu, Estonia

http://positium.com/blog/smart-city-data-driven-solutions-innovation-in-tartu

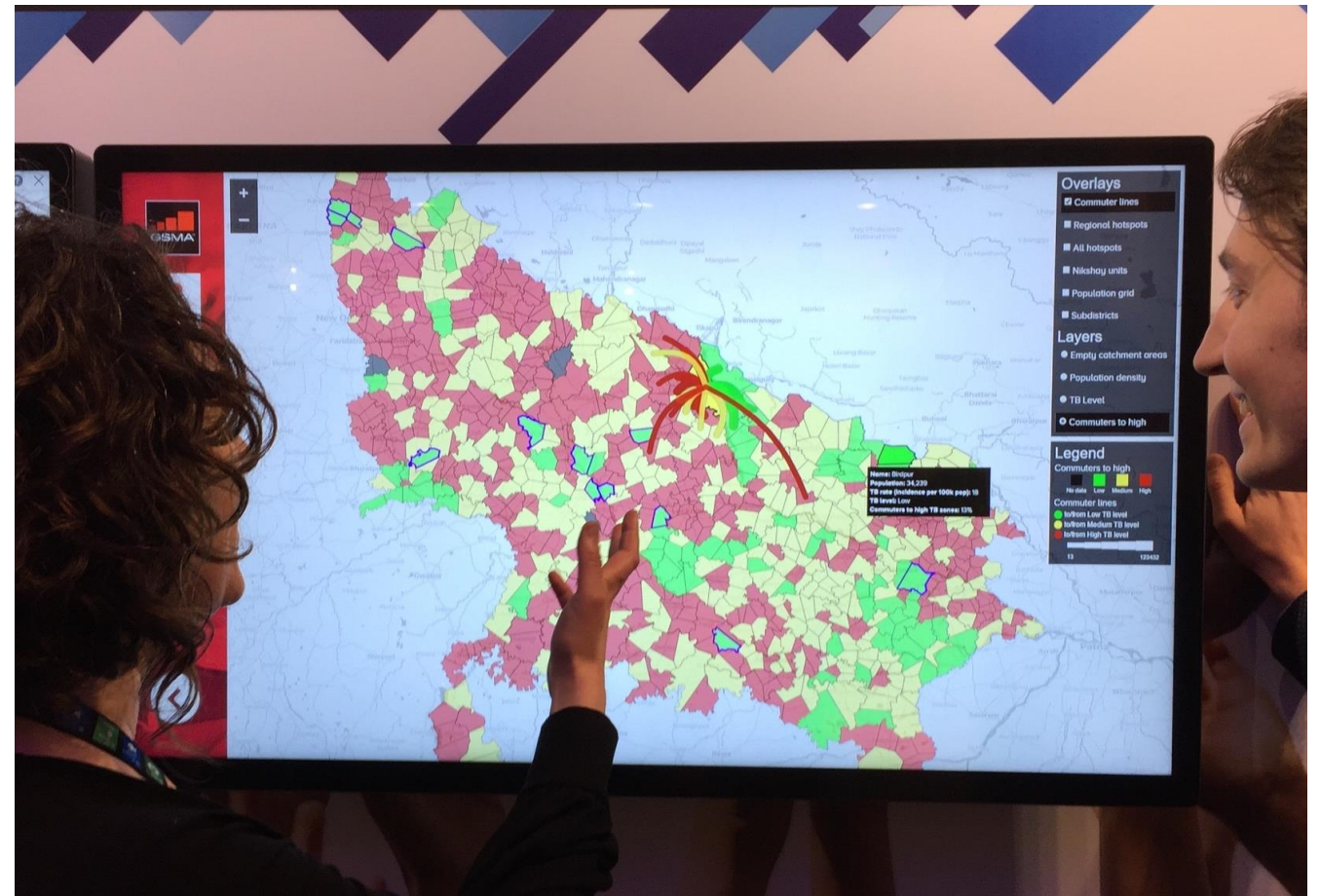# Use case: Vaccination Planning in India

Cooperation with Airtel in India:

- Comparing mobility data (from CDRs)
- With tuberculosis prevalence data
- Target locations at risk of exposure
- More efficient TB vaccination

User: Ministry of Health, Government of India

3 GOOD HEALTH AND WELL-BEING

https://bigdatatoolkit.gsma.com/resources/Big-Data-for-Social-Good_Airtel-INDIA_TB_Case_Study.pdf

Positium delivers software and services to analyse mobile positioning data for official statistics

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