

Sensing Space with Big Data

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<http://lirneasia.net/projects/bd4d/>

IGF Sri Lanka 2017

Colombo, Sri Lanka

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Big Data for Development @ LIRNEasia

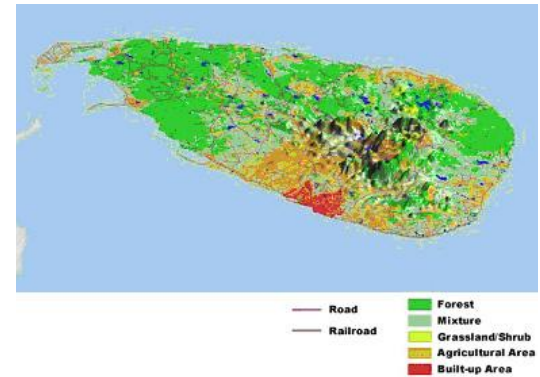
- Conduct analytics for development purposes using a combination of:
 - Big data (mobile network big data, electricity consumption data, CCTV, satellite imagery)
 - Administrative data + official statistics
- Study the impacts of big data on society
 - Privacy, marginalization, and competition
- Facilitate evidence to policy using new data sources
 - Capacitate and mainstream the use of big data in various policy domains

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Land cover & Land use

- Land cover

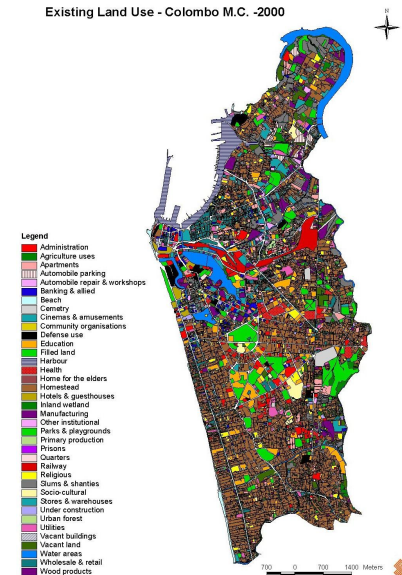
- What?
- Barren land, forest, agriculture, wetland, water, built-up area, etc.



- Land use

- How?
- Commercial, residential, recreational, administrative, etc.

Existing Land Use - Colombo M.C. -2000



Why do we need to know land use patterns?

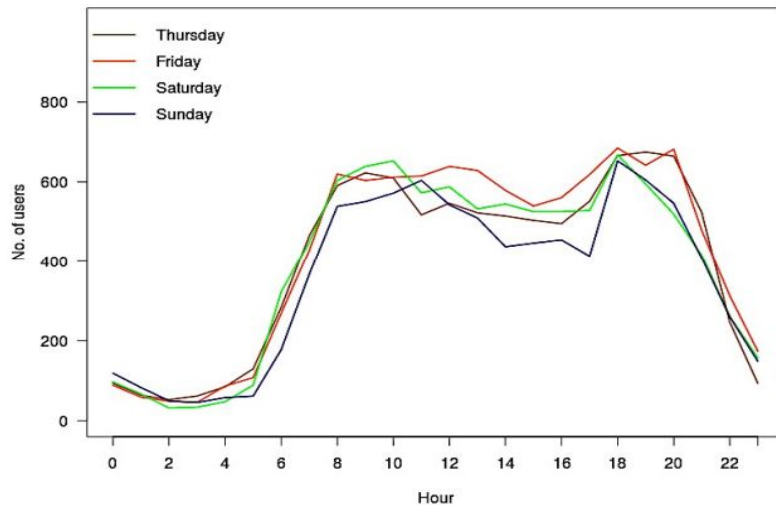
- Urban planning
- Transportation planning
- Socio-economic mapping

Why do we need better estimates?

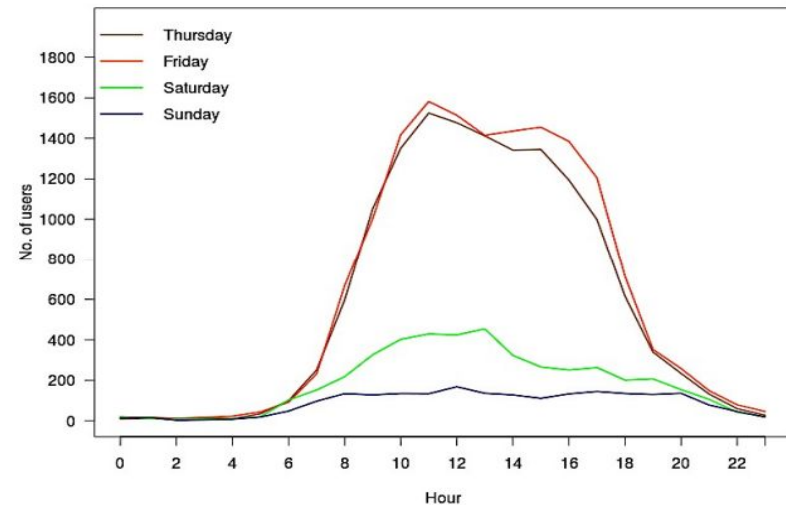
- Traditional land use mapping is a slow, costly, and infrequent exercise
- Land use dynamics change rapidly with development
- Need up-to-date and more frequent estimates of land use to align planning with reality

Leveraging mobile network big data (MNDB)

- Historical pseudonymized Call Detail Records (CDRs) for nearly 10 million SIMs from multiple operators in Sri Lanka
- Statistical and machine learning analyses

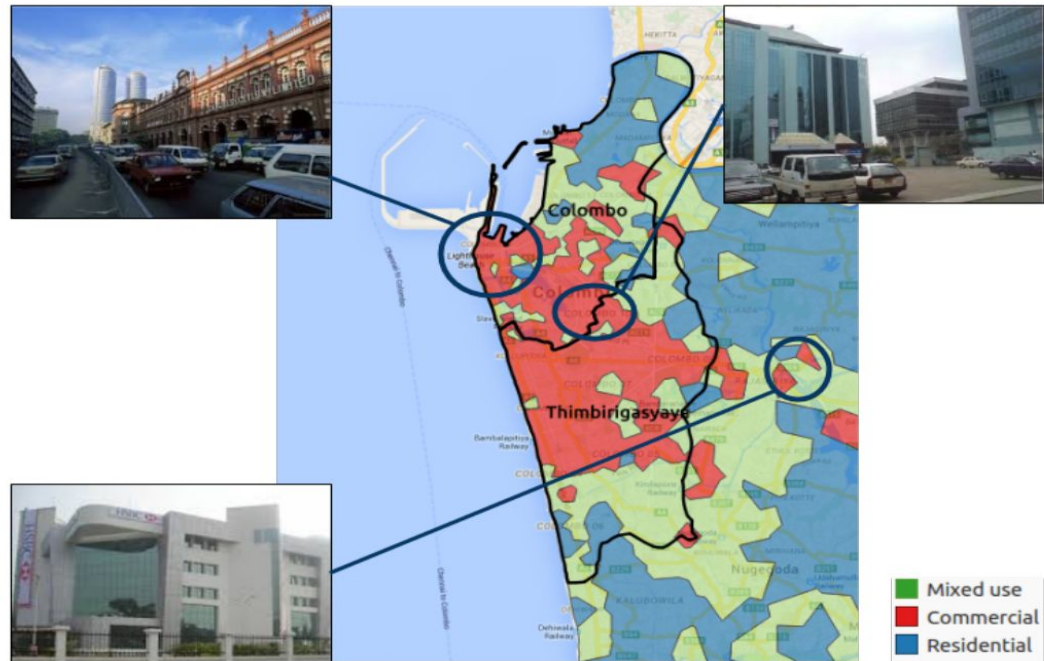
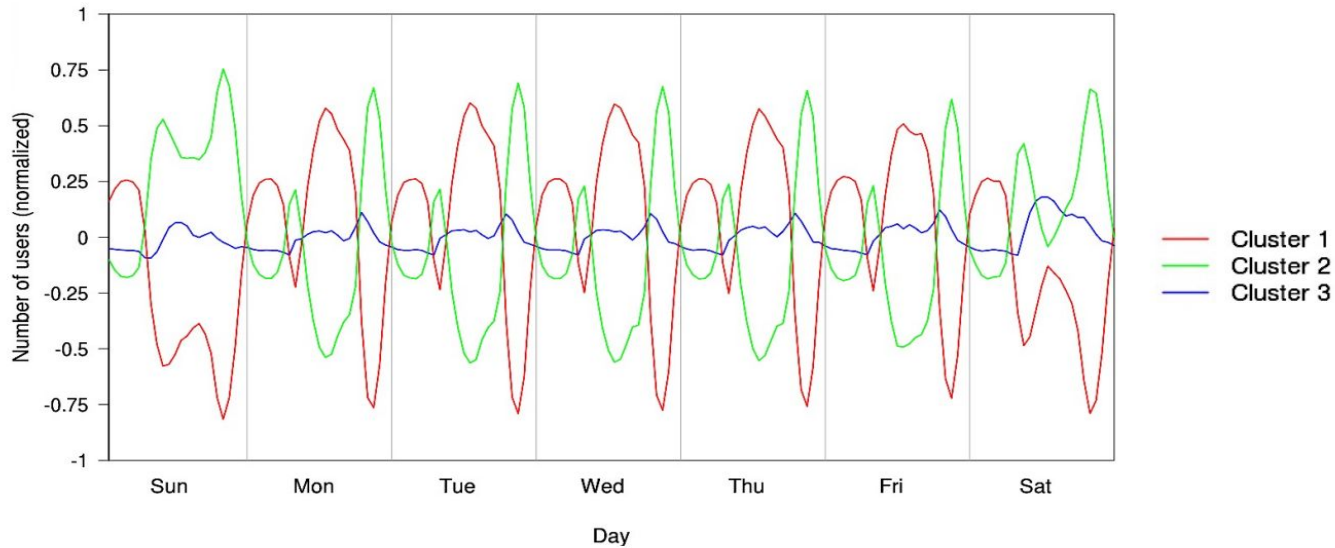


(a) BTS 1



(b) BTS 2

Leveraging mobile network big data (MNDB)



Remote Sensing Data + Social Media

- Land cover ← Google Satellite Imagery,
SAT-4/SAT-6
- Land use ← Foursquare, Facebook Places,
Twitter, Instagram geotags
- Computer vision, machine learning

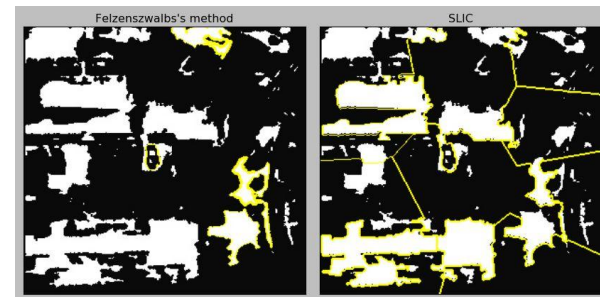
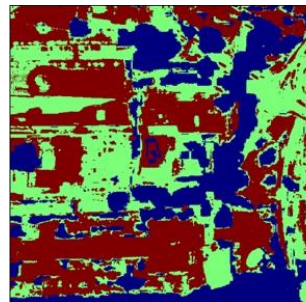


Remote Sensing Data + Social Media



Land cover

Katunayake Export Processing Zone



Land use

Presidential Secretariat Office, Galle Face

Benefits and Challenges of Big Data for Land Use Estimation

Benefits

- Up-to-date, can be real time or near real time
- Multiple sources
- High availability

Challenges

- Unstructured or semi-structured
- Large volumes of data
- Cleaning and preprocessing required
- Requires specific skills, tools and technologies

Questions?

Thank you!