Mobility and Transportation Planning

(SEC) SINGAPORE-ETH CENTRE 新加坡－ETH 研究中心
(FCL) FUTURE CITIES LABORATORY 未来城市实验室
Mobility and Transportation Planning
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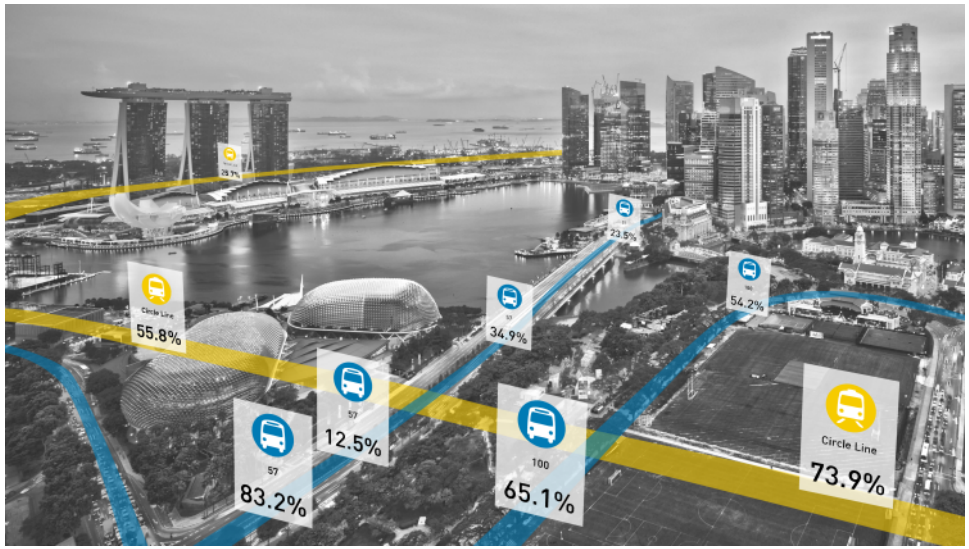
Turning Big Data into Smart Data

The potential of data driven transport planning:

- Intelligent transport systems generate big amounts of public transport data every day.
- Currently, this data is primarily used for ridership analysis and real times information, but not operational planning.

Agent – based transport simulation:

- MATSim simulates urban transport on the level on individuals for entire cities.
- MATSim captures dynamic phenomena such as congestion, bus bunching and overcrowding.



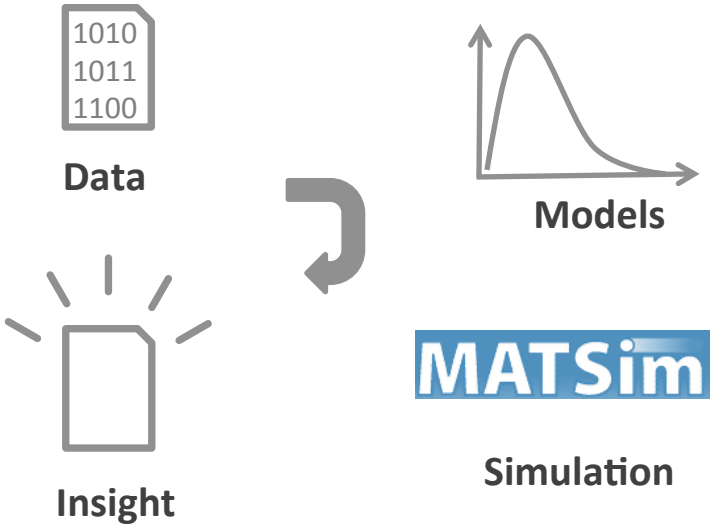
Predictive modelling

Understanding the dynamics of bus operations:

- How much time for boarding and alighting?
- What determines the variability of travel time between stops?

Setting up a MATSim model purely based on Smart Card Data:

- Derive **operational schedules**
- Include **randomness** in simulation
- Analyse from a both the **operator's and commuter's perspective**



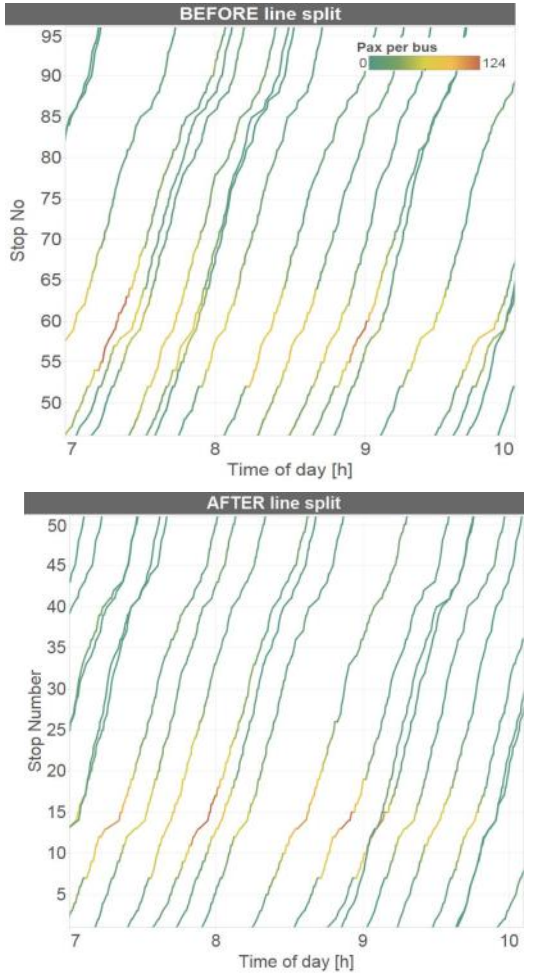
Simulation-based scenario planning

Evaluation of new services and routes:

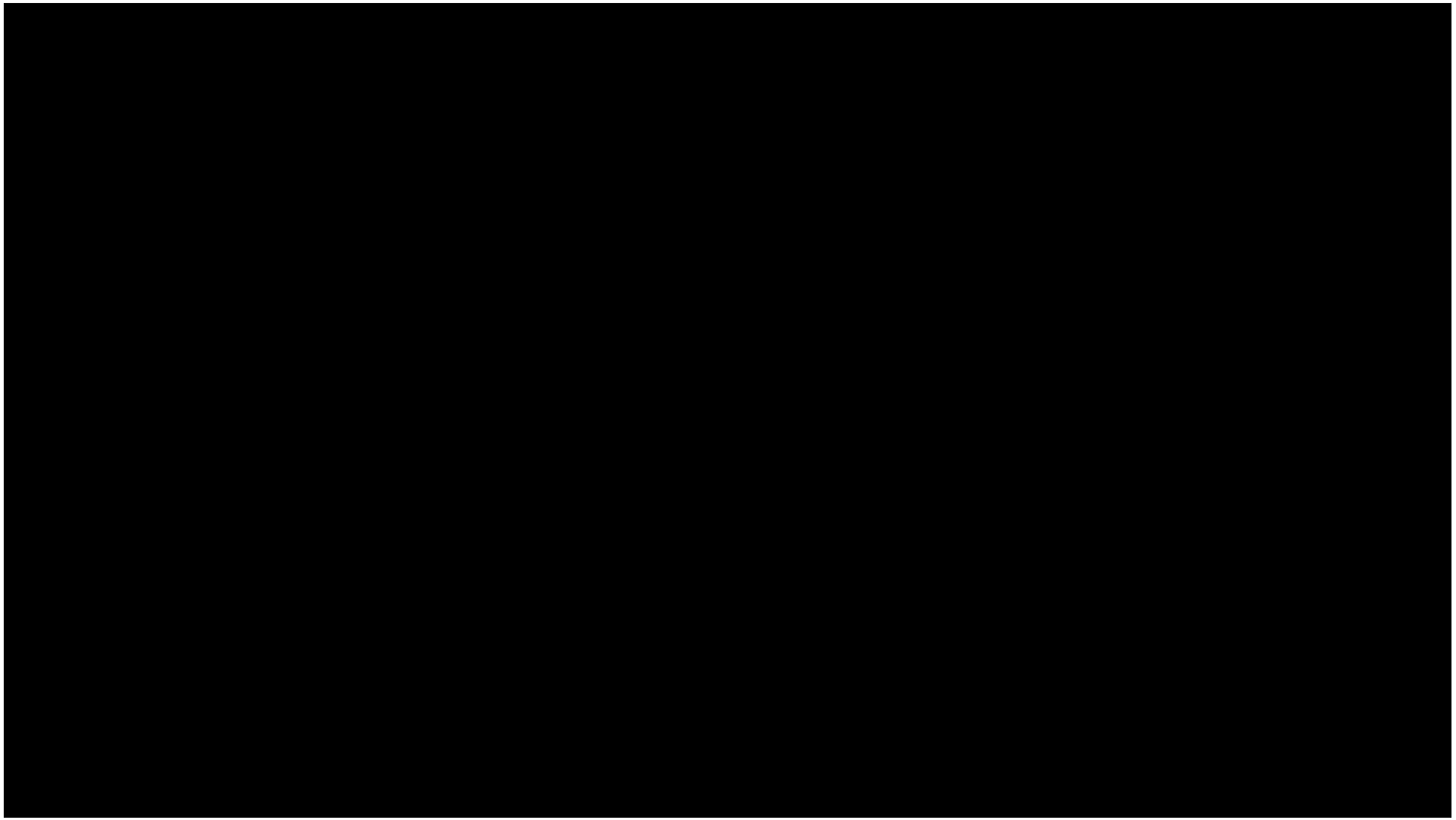
- How many passengers will be attracted by a new service?
- How can new network designs improve reliability and tackle overcrowding?

Simulation and analysis:

- A full day simulated in just about 3h.
- Leverage on off-the-shelf business analytic software for interactive analysis.



Putting everything together



Creating Walkable Places

Why is walking relevant?

- Indispensable mode of transport in cities, but data and academic studies are scarce.
- The most liveable cities are also the most walkable.

Walkability as a strategy

- Singapore's Land Transport Plan 2013 identifies improving walkability as a key goal.
- FCL has been commissioned by URA to research walking behavior and develop evidence-based planning tools.

Four conditions of walkability

Useful

- What amenities can be reached on foot?

Safe

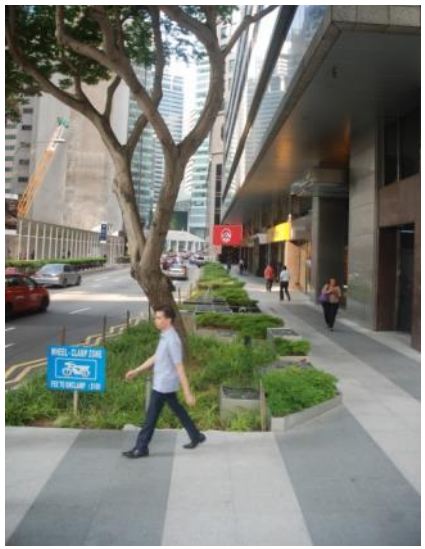
- Do pedestrians feel safe from traffic?

Comfortable

- Does the built environment invite for a stroll?

Interesting:

- Can the city still be re-discovered every day?



How to measure walkability?

Existing approaches:

- Transport engineers conventionally are only interested in pedestrian density.
- Walkscore accounts for distances to various amenities, but does not consider walking quality.
- Space Syntax restricts mainly to an analysis of network topology.

Our aim :

- Measure and integrate the quality of the built environment.
- Observe and model behaviour.

Research project with URA

EMBRACING WALKABILITY

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5 minutes
10 minutes

Questions?

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