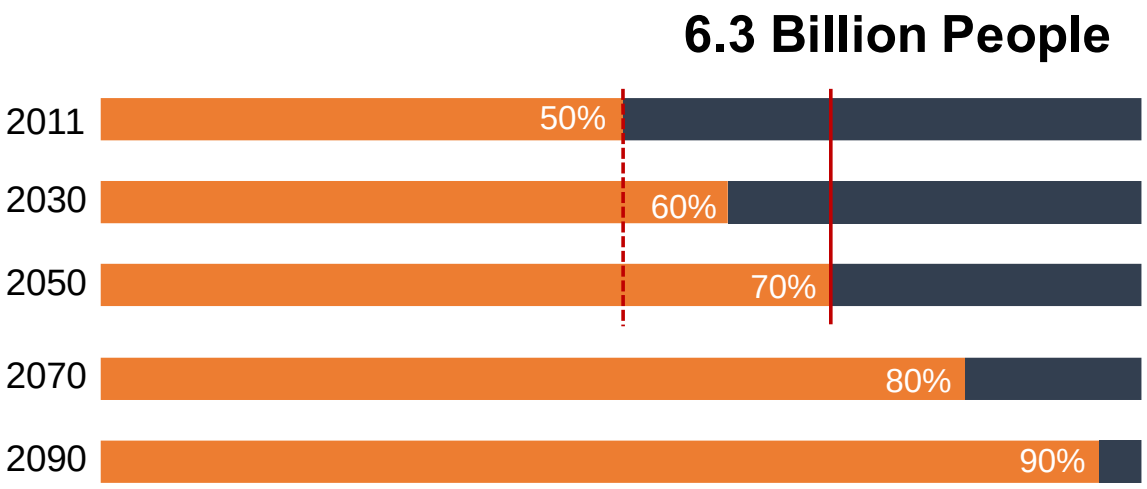
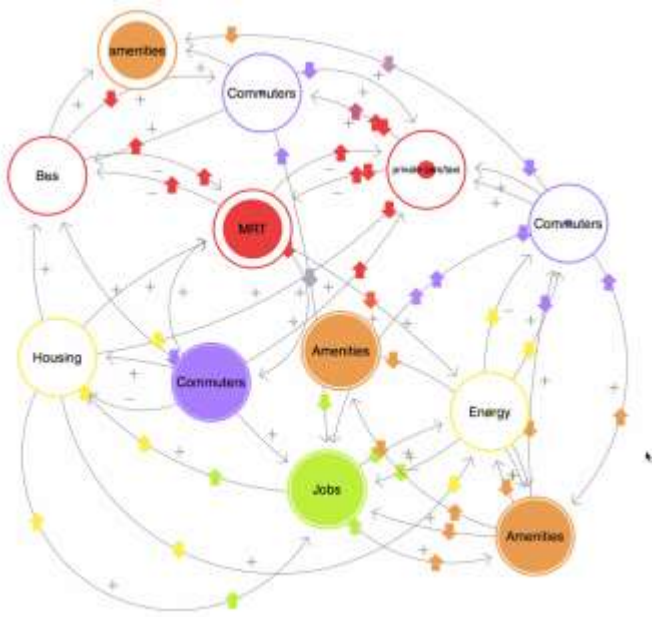
We need to understand the science of cities and human mobility.





By **2050**, **70%** of the world's population (**~6.3 B**) will be in cities.

Cities are Complex Systems!

HIGHLY INTERACTING. NONLINEAR. PRESENCE OF EMERGENCE.

Urban Systems Initiative

PROGRAMMES

In collaboration with relevant government agencies and major industry players, the Urban Systems Initiative (USI) seeks to address real-life urban challenges by leveraging on our infocomm and engineering capabilities for big data, complexity and intelligence. The Initiative comprises of five integrated R&D programmes.

Understand the Science of Cities

A*DAX
A*STAR Data Analytics Exchange Platform

A*DAX

Multitudes of Data for insightful analytics

Complex Systems

COMPLEX SYSTEMS

Modelling the intricacies of the urbanizing world

Integrated City Planning

INTEGRATED CITY PLANNING

Enhancing the dynamics of an intelligent city

Sense & Sense-abilities

SENSE & SENSE-ABILITIES

Making sense of our living environment

Urban Logistics

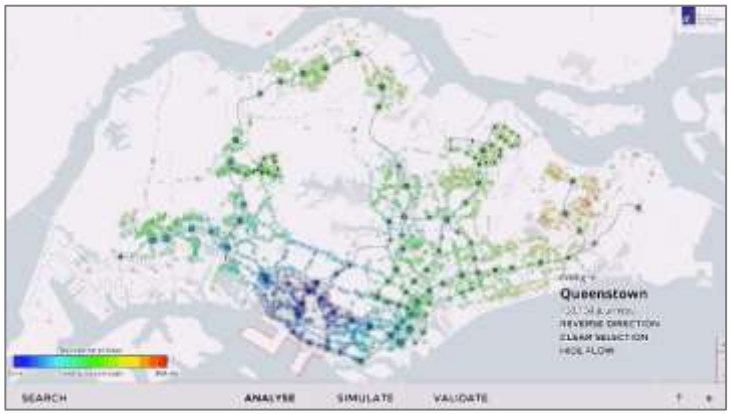
URBAN LOGISTICS

Ensuring urban business continuity in an uncertain world

"Our grand vision is to enable a City Dashboard with which government agencies, businesses and people are able to make informed decisions and respond to the dynamic conditions based on real-time sensing and data a[illegible] the re

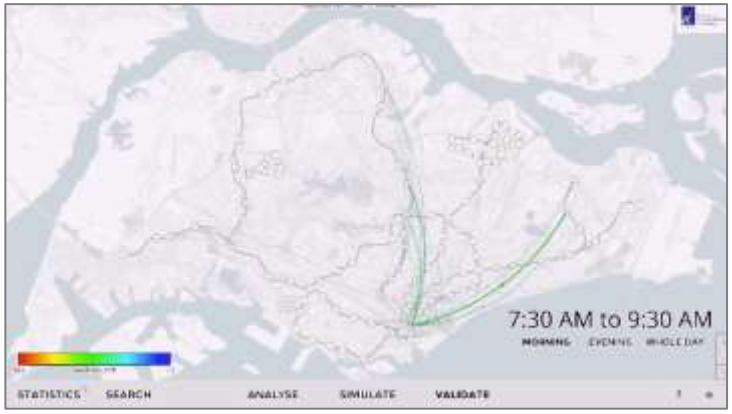
Programme Director

1 Good science allows accurate “what-if ” scenario explorations.

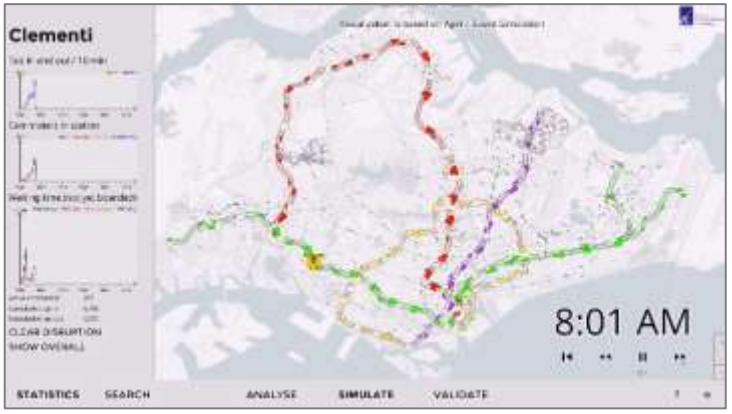


1. **Analyse** commuter travel patterns

2. **Simulate** traffic coupled with commuters



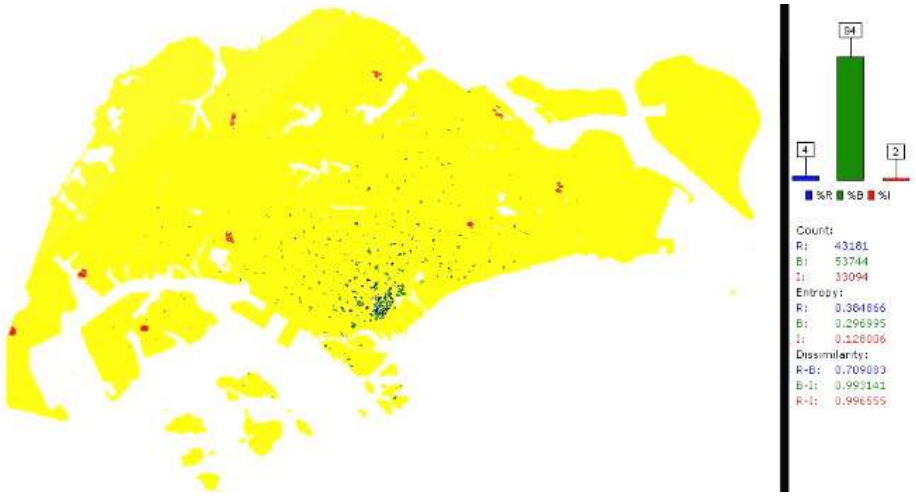
3. **Validate** model



4. **Evaluate** scenarios

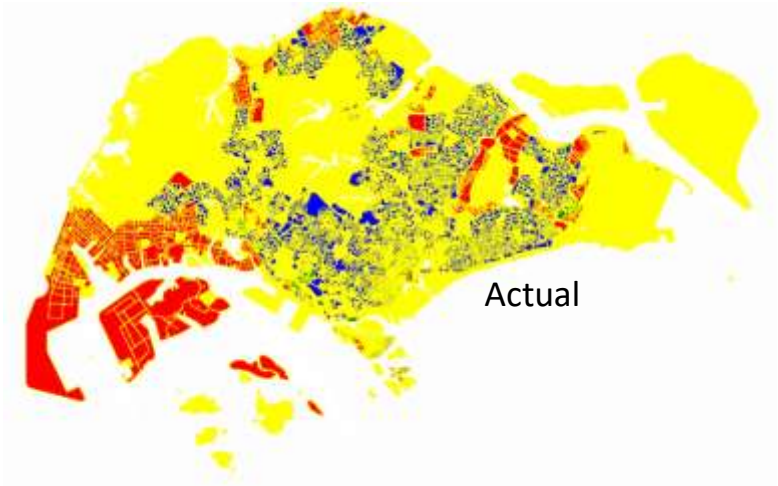
- ✓ Real time RTS/Bus full-day simulation with more than 2 million commuters.
- ✓ Developed multi-touch visualization for the simulation.
- ✓ Multi-awarded models + high impact publications + utilization by stakeholders.

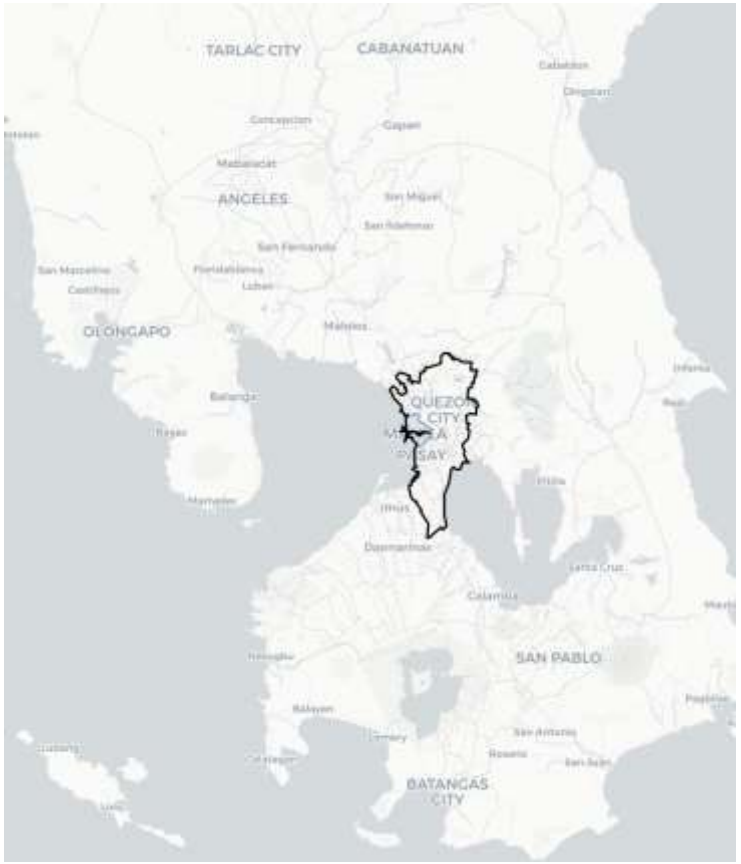
2 Natural tendencies of people and cities can be modeled.



Emergence of Cities

Monterola *et al* 2014-2018



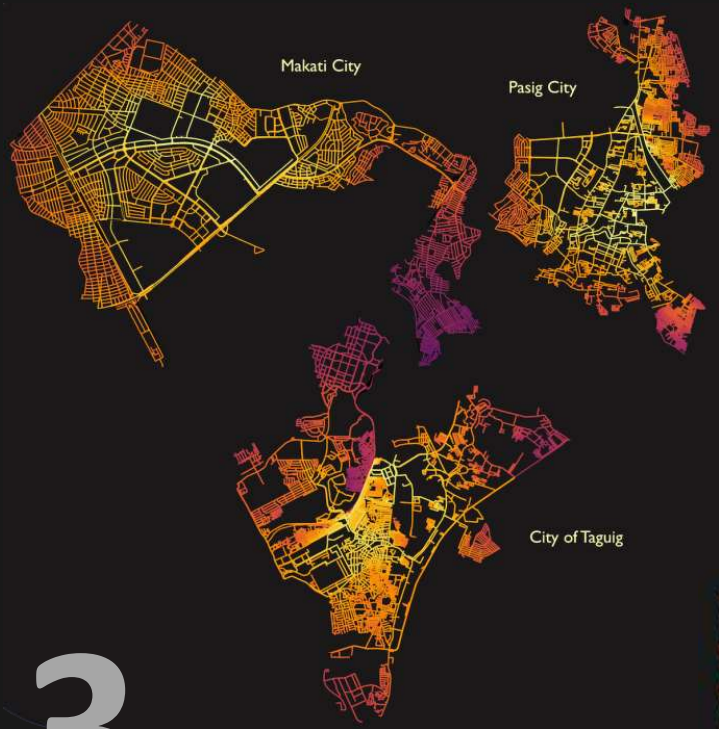


Urban and wealth Mobility

Alis, Legara, Paguirigan, Monterola 2019

3

The whole is not only greater than, but very different from the sum of its individual parts.



3

The whole is not only greater than, but very different from the sum of its individual parts.

When studied as a whole, the “central parts” shift.