



Data Analytics for Urban Planning

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[Click to view video recording,](#)
[or visit GovTech home page > Resources Folder > locate "11. Tableau Public Sector Day \(Post Event Resources\)"](#)





Singapore's Land Use Planning & Conservation Authority

Mission: To make Singapore a Great City to Live, Work & Play



small island
**BIG
NEEDS**

Housing



Commerce



Industry



Airport



Defence



Port



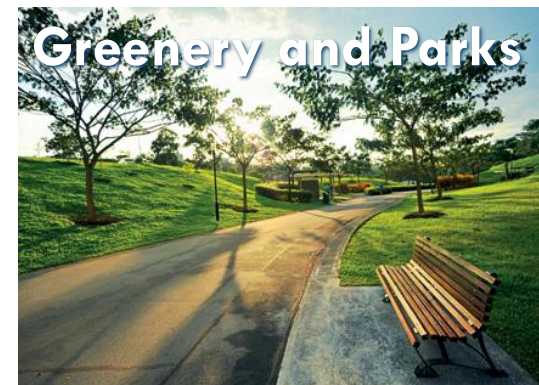
Water Catchment



Culture & Heritage



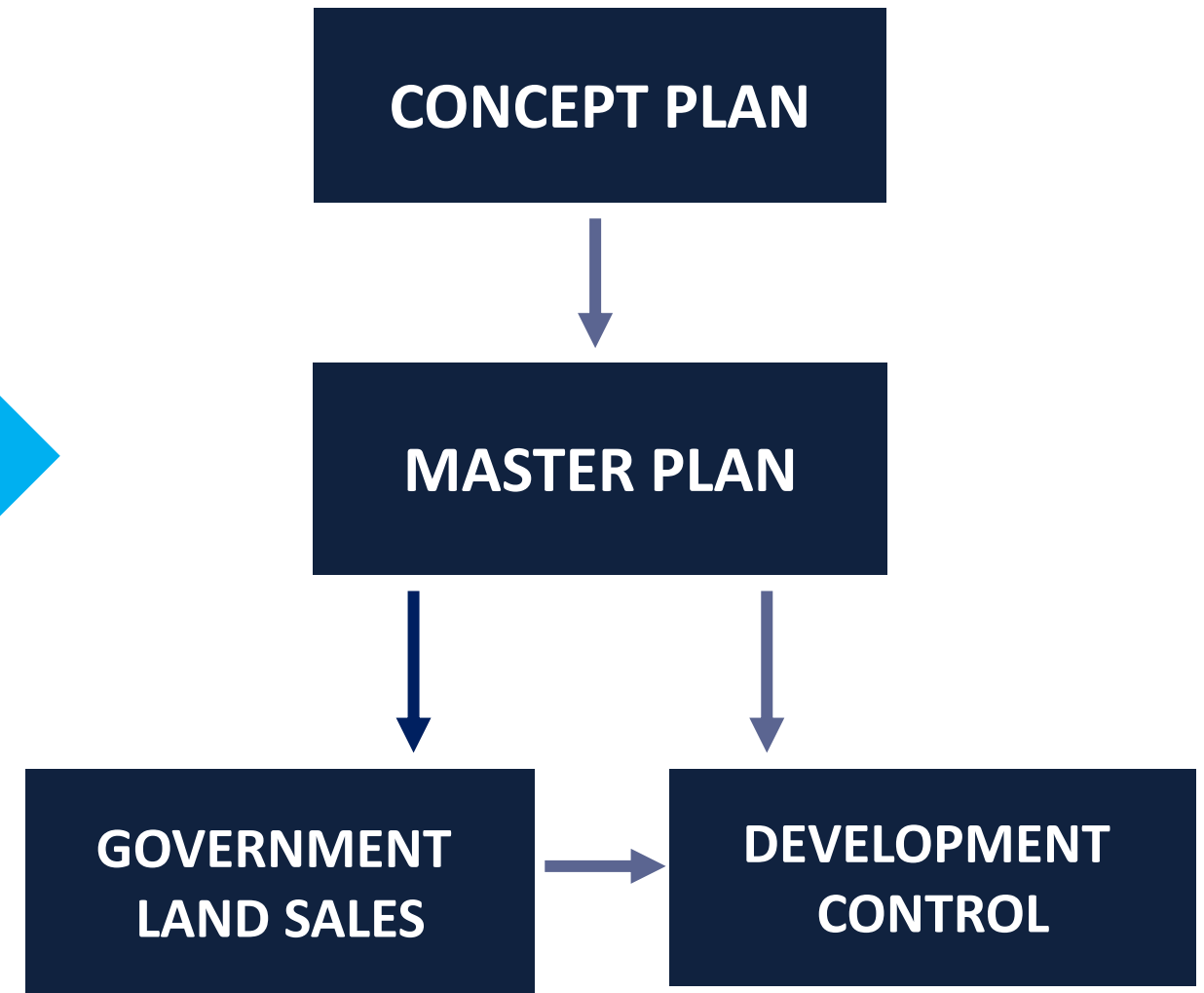
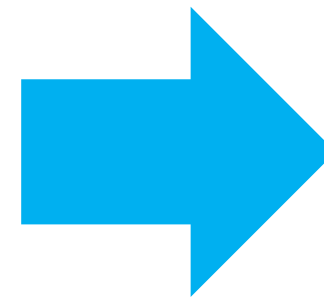
Greenery and Parks



Planning for *Sustainability*



Sustainability Objectives



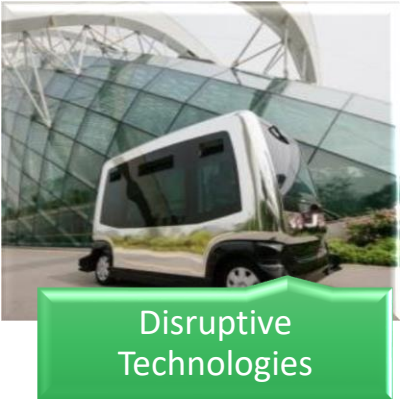
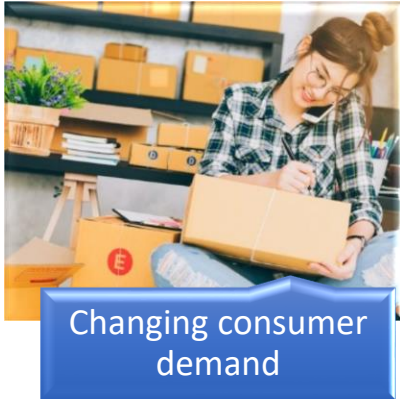
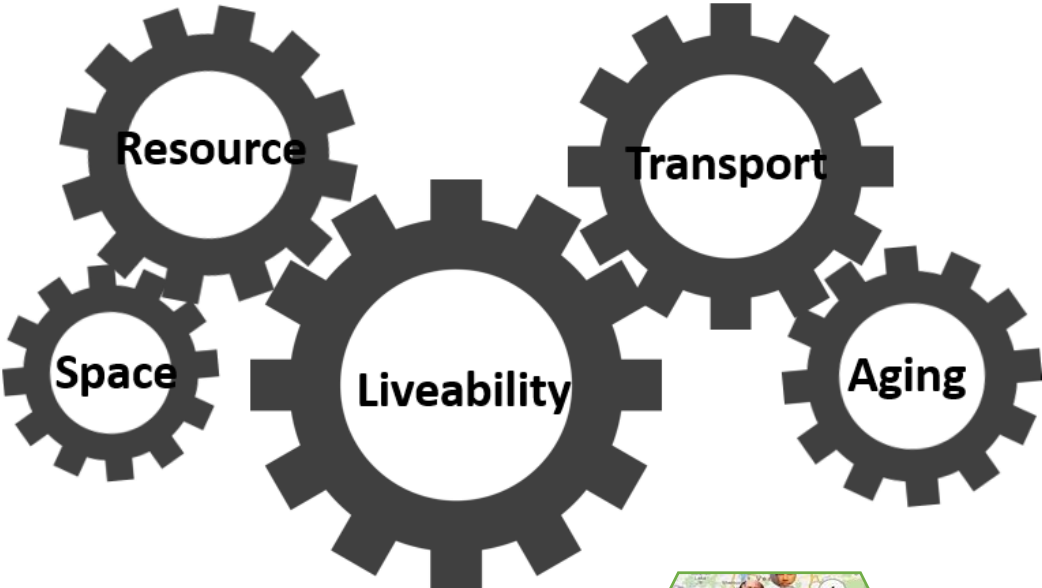
Singapore's Planning System

Key Functions

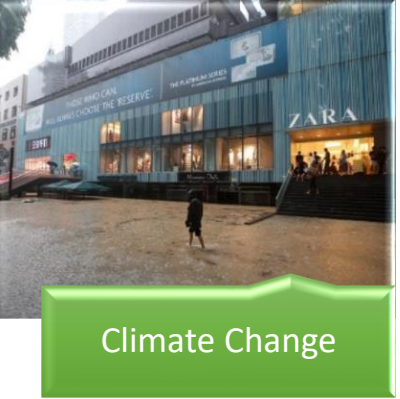


Complexity of Urban Challenges

Inter-dependencies of Issues



Managing Uncertainties & Unknowns



Understanding City Pulse



Growing Sustainably



3-YEAR DIGITALISATION PLAN

To transform the way we plan

Established good Data Architecture

Built foundation for planning analytics & insights



Planning & Development



Social / Demographic



Feedback / Ground Sensing



People & vehicle movement



3 key thrusts to deliver better planning outcomes



1. URA more data-informed & productive
access data & build up internal capabilities



2. WOG plan in a more integrated way
build up capabilities with agency partners



3. Support industry productivity gain & value creation
provide industry with better services & shared insights



Enabled by Digital Technologies



Think Big, Start Small, and Act Fast

URA's Approach to Data Analytics Life Cycle

Generate actionable insights · Drive analytics adoption



- ① Identify insights required
- ② Assemble data needed
- ③ Clean & Prepare data
+
Explore & Analyze data
- ④ Review & Convey findings
- ⑤ Translate insights into actions
- ⑥ Re-design processes with
Digital Planning Tools

Diagram from Bix Solution

① Business Operations



Diagram from Bix Solution

Identify insights required

based on real world issues



Improve residents' ease from where they live, work & play



Desired Outcome

What is the outcome we seek to achieve?

Lines of Inquiry

What are the key questions we seek answers for?

Hypothesis

What are the plausible hypothesis we want to test?

② Data Collection

Assemble data needed

digitize data where required



Diagram from Bix Solution



Planning & Development



Social / Demographic



Feedback / Ground Sensing



People & vehicle movement

Information

What data attributes do we need, in what format?

Sourcing

Who has such information? Who are the gatekeepers?

Access

How do we get the data?

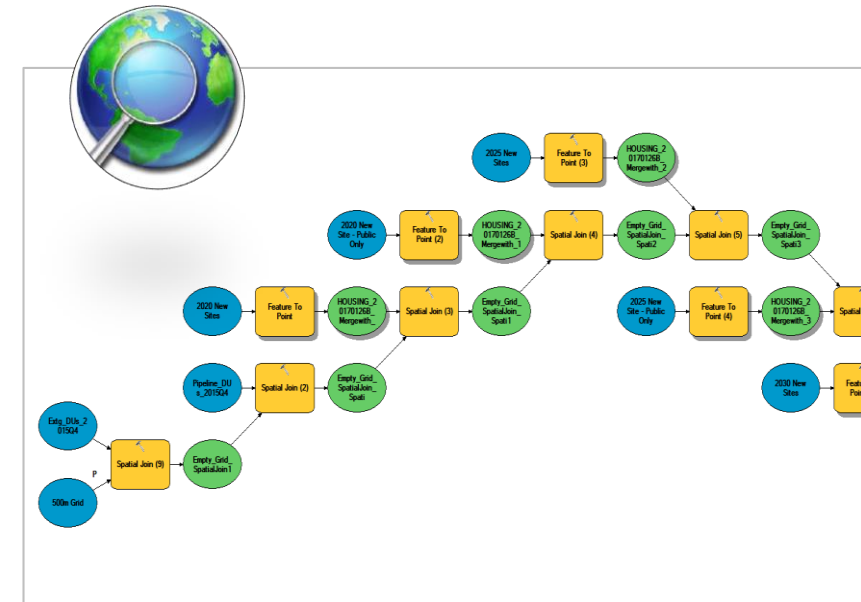
3 Analytics

Clean & Prepare data

with good understanding of the data, into easy to use formats



Diagram from Bix Solution



Errors

Correct errors in data records (e.g. postal code)

Geo-reference

Location coordinates, postal codes

Simplicity & Efficiency

Identify right tool and method for the job

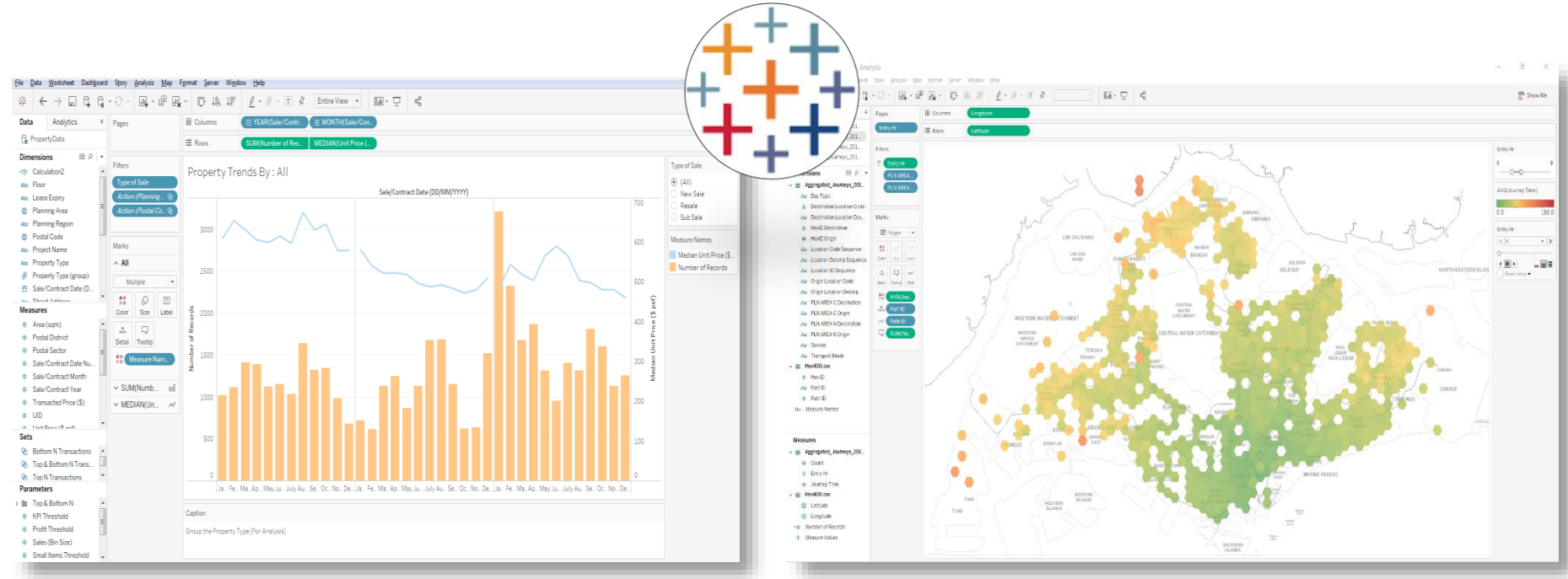
3 Analytics

Explore & Analyze data

think big picture but pay attention to details



Diagram from Bix Solution



Logic

Are there any anomalies? What is the extent?

Classification

What parameters to use? What are included / excluded?

Inference

Are inferences drawn reasonable? What are the limitations?

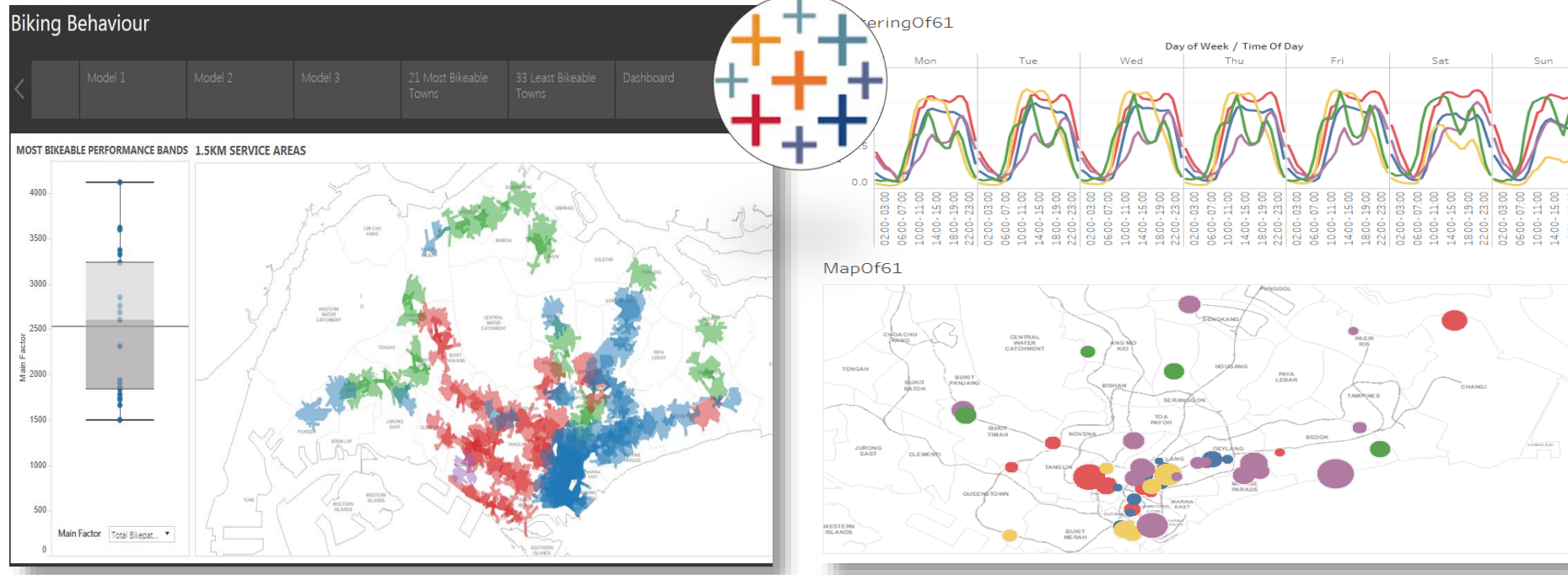
④ Insights

Review & Convey findings

and also identify implications



Diagram from Bix Solution



Simplicity

Keep things simple

Visualisation

Be deliberate in the choice of meaningful colours and charts

Message

Have a clear message

⑤ Actions



Diagram from Bix Solution

Translate insights into actions
through plans, policies and strategies

⑥ Value

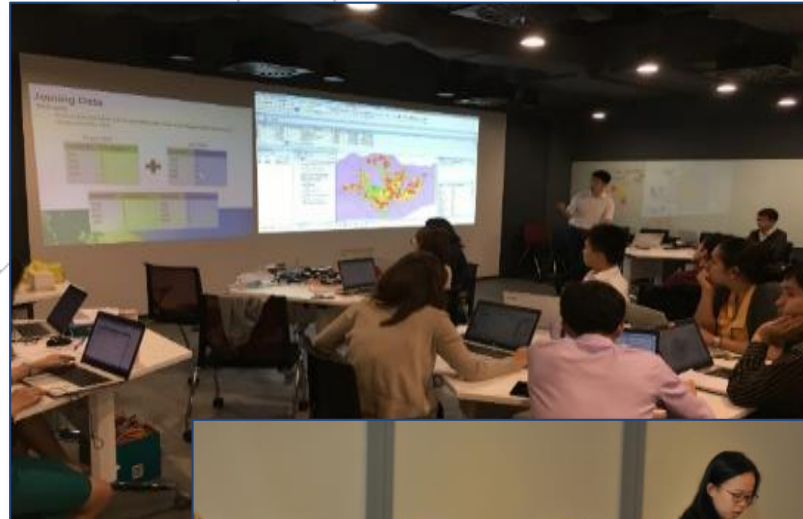


Diagram from Bix Solution

Re-design processes with Digital Planning Tools

Scale up internal capabilities on geospatial & data analytics skills for Urban Planning and Policy

ANALYTICS
IMMERSION PROGRAMME **#AIM**



- **Geospatial Data Analytics & Visualisation**
- **Machine Learning, Statistics**

EXECUTIVE
ANALYTICS PROGRAMME

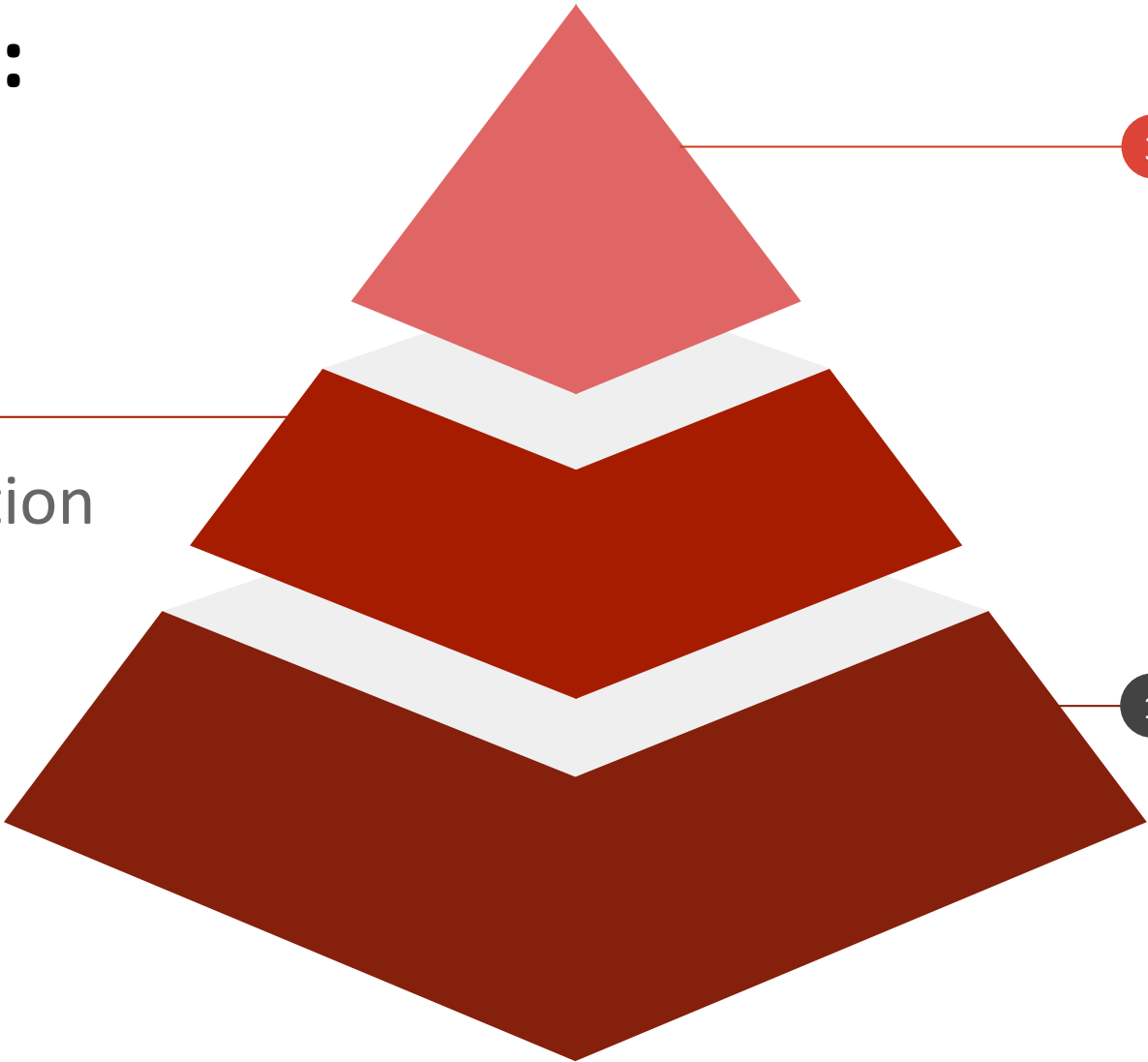
Digital Planning Lab

A CATALYST TO:



ACCELERATE 2

Insights, Transformation



3

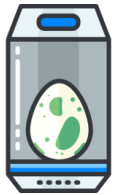
INSPIRE



Innovation, Partnerships

1

INCUBATE



Skills, Ideas

Bring People Together, Create Collaborative Partnerships



KNOWLEDGE EXCHANGE



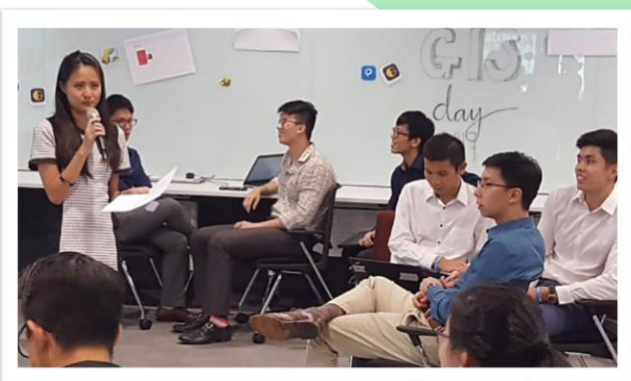
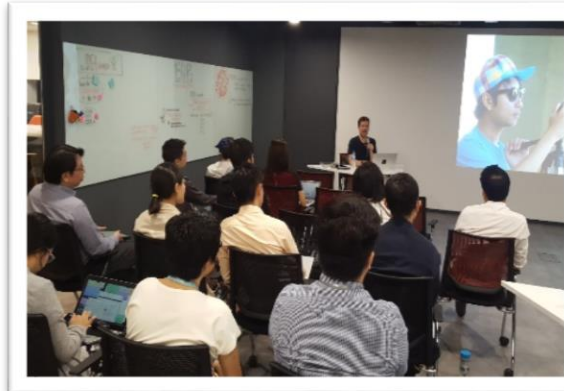
Titbits



Communities of Practices (CoP)



DPXΔ (DPXchange)



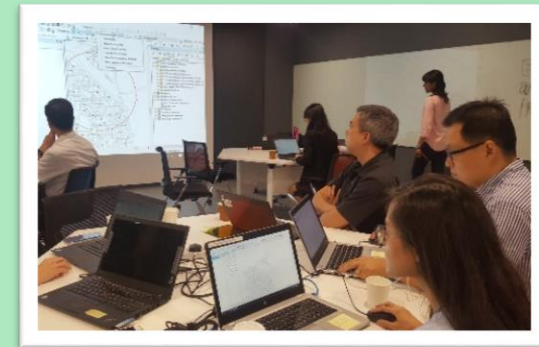
TRAINING



ANALYTICS IMMERSION PROGRAMME #AIM



EXECUTIVE ANALYTICS PROGRAMME



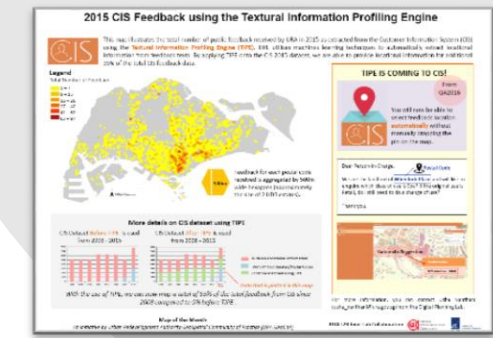
Experimental projects with interns (e.g. chatbot, Hololens)



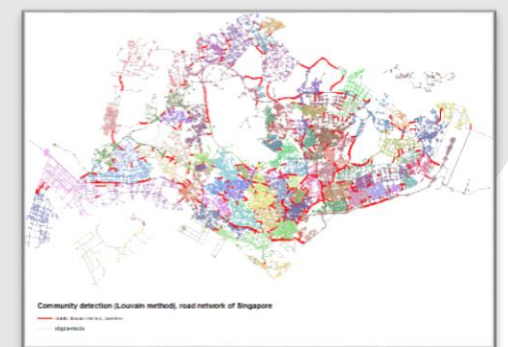
RESEARCH AND STUDIES



Machine Learning with Textual Information Profiling Engine (TIPE)



Evaluating Transport Network Resilience with ETH researchers at Breakout





THANK YOU