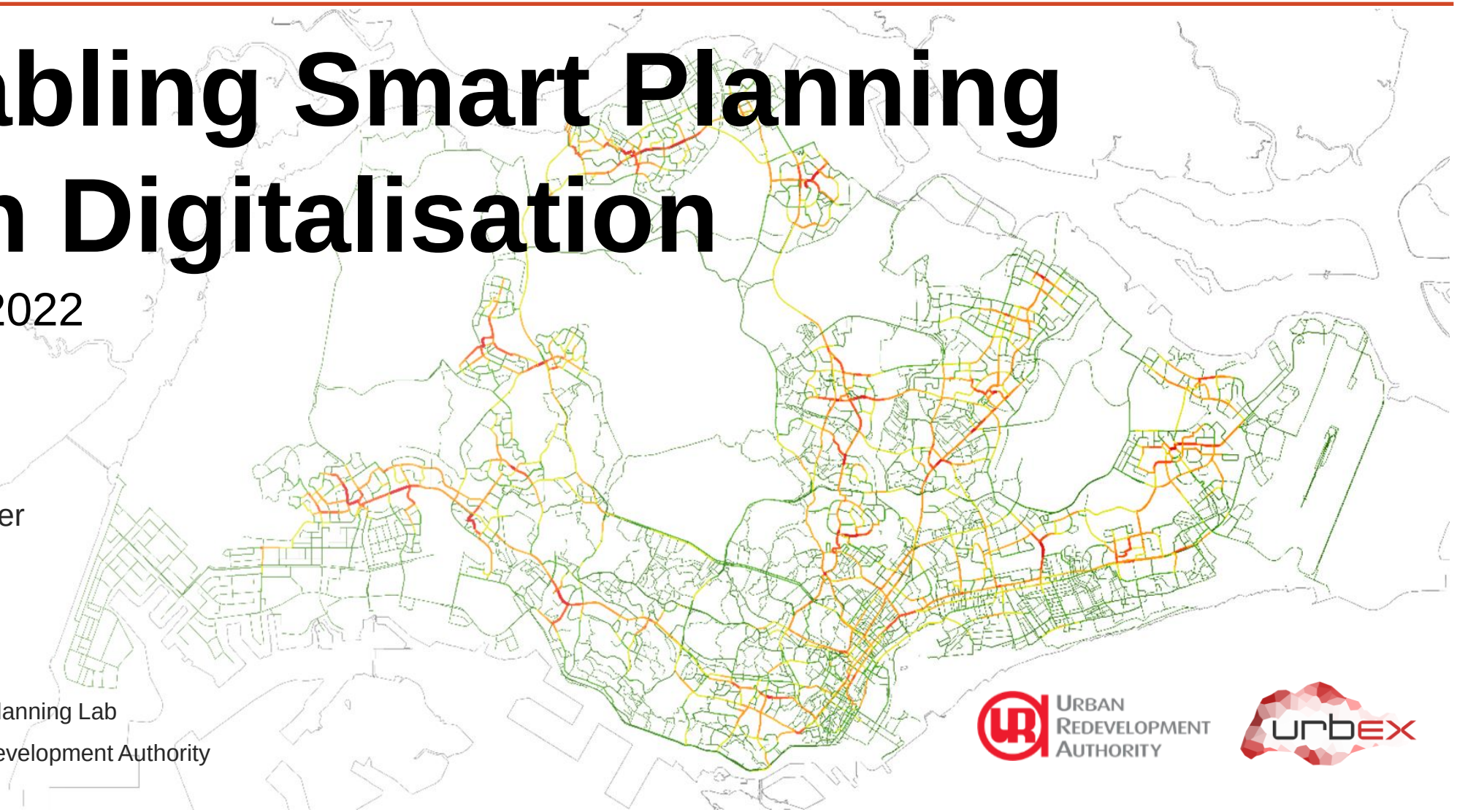
Enabling Smart Planning with Digitalisation

25 Mar 2022



Kitty Cho

Senior Planner

Design & Planning Lab

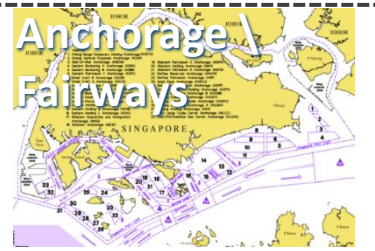
Urban Redevelopment Authority

BALANCING NEEDS

	Singapore	Estonia
Land Area	733 km^2	45,339 km^2
Population	5.5 million	1.3 million
Density	7,804 persons/km^2	31 persons/km^2

LAND NEEDS

SEA NEEDS



URBAN REDEVELOPMENT AUTHORITY

urbex

SUSTAINABILITY, FLEXIBILITY & RESILIENCE

ECONOMIC

Sustain a robust and vibrant economy

SOCIAL

Provide a good quality of living and a sense of well-being for all

ENVIRONMENT

Develop in an environmentally responsible manner

LAND & SEA

Optimise our limited land and sea space

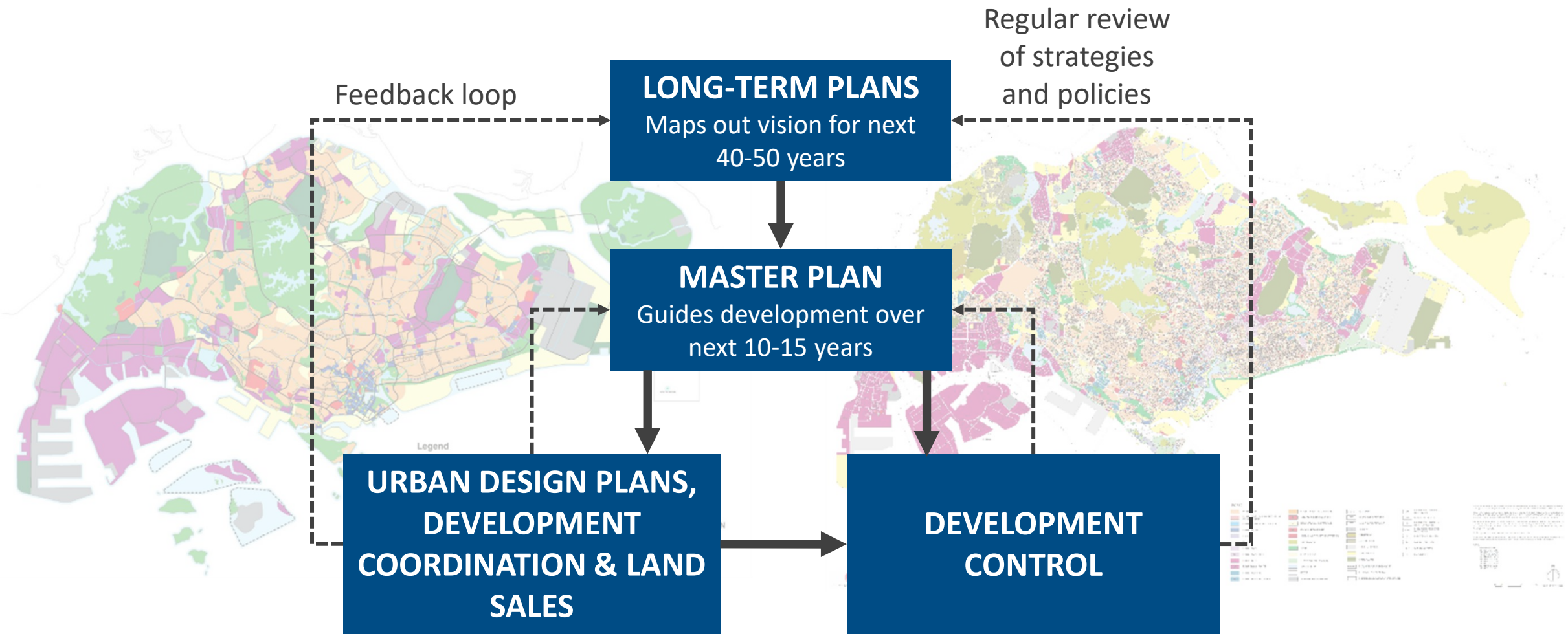
\+ **FLEXIBILITY**
RESILIENCE

Need to also plan for greater flexibility and resilience given the rise of disruptive technology, unanticipated uncertainties, and the effects of climate change

URBAN REDEVELOPMENT AUTHORITY

urbex

OUR PLANNING FRAMEWORK



URA's DIGITALISATION JOURNEY

Electronic submissions and use of GIS system (1990s -)

Created new Geospatial Department (2012)

Developed digital planning tools (2013 -)

Formed Digital Planning Lab (2014)

3 year Digitalisation Plan (2015 - 2018)

DPL designated as URBEX, Centre of Excellence for Urban Planning and Design Technologies (2022)

Expanded to Design & Planning Lab (2021)

Digitalisation 2.0 Roadmap (2018 -)

URA's KEY THRUSTS FOR DIGITALISATION

1. URA to be more data-informed & productive

- Access and analyse data, and build internal analytics capabilities

2. Whole-of-Government planning

- Collaborate and level up capabilities of agency partners

3. Support industry productivity gain & value creation

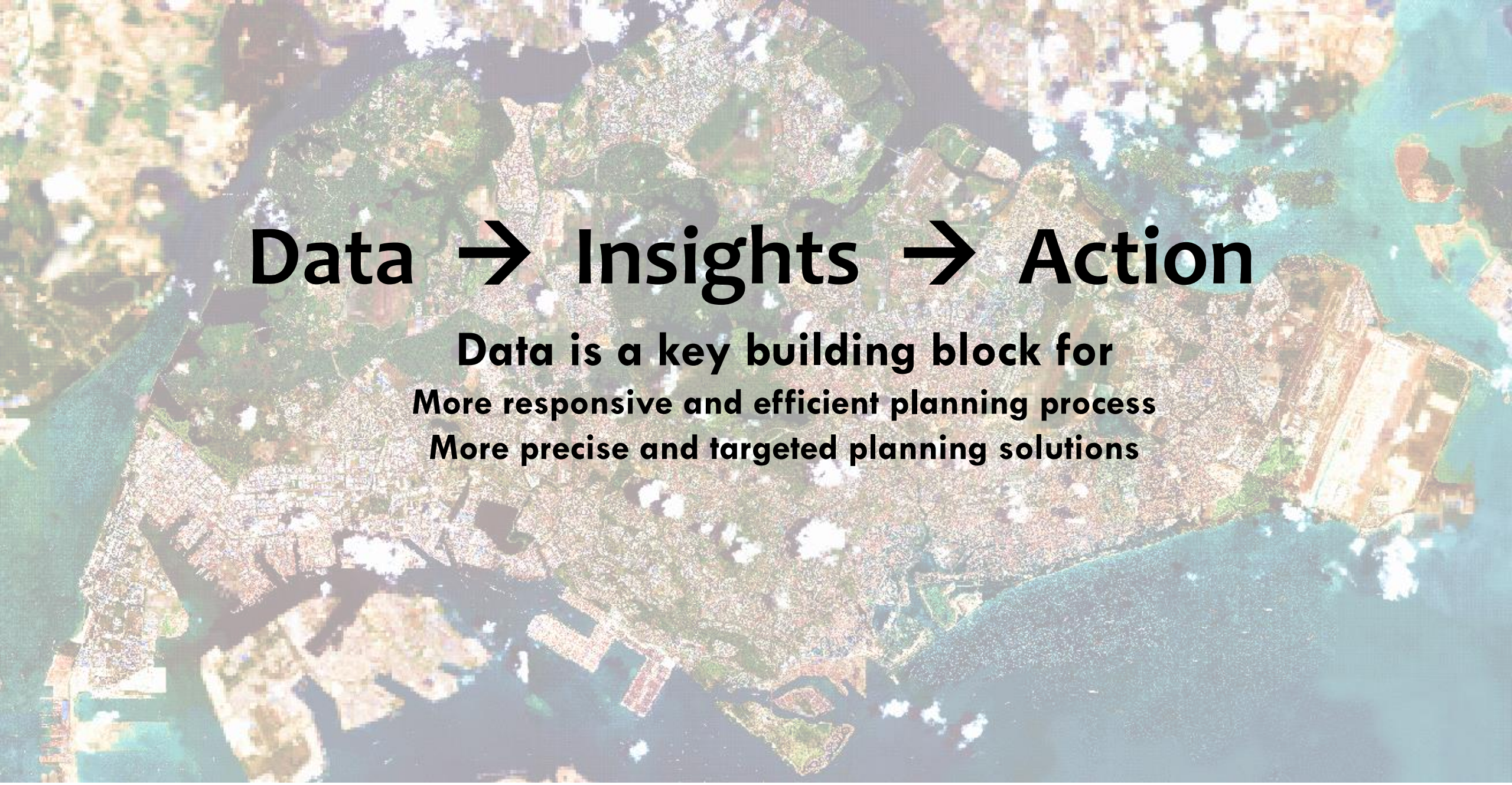
- Provide industry with better services and shared insights

Enabled by Digital Technologies

Think Big, Start Small, Act Fast

URBAN REDEVELOPMENT AUTHORITY

urbex



Data → Insights → Action

Data is a key building block for

More responsive and efficient planning process

More precise and targeted planning solutions

URBAN REDEVELOPMENT AUTHORITY

urbex

OUR GOVERNMENT DATA ARCHITECTURE

Integrated Data Management Framework

Organisation Structures

Single Source of Truth (SSOT)

Acquire, clean and verify core data (data frequently used by multiple agencies)

Set out the canonical definition of core data

LTA | HDB | URA | ...

Trusted Centres (TCs)

Fuse multiple core datasets from SSOTs to support the desired Whole of Government use case in a secure and efficient way

- Business TC: DOS
- Geospatial TC: SLA
- Individual TC: DOS
- Sensor TC: SNDGG

Sectoral Data Hubs (SDHs)

Fuse core and non-core datasets to meet the needs of sectoral use cases
Identify new core data through use cases

- Planning SDH: URA
- Manpower SDH: MOM
- ...

Data Users

Discover and analyse data through central data platforms

URA | JTC | ...

URBAN REDEVELOPMENT AUTHORITY

urbex

URA's DATA STRATEGY

URBAN REDEVELOPMENT AUTHORITY

urbex

COLLECT & FUSE GOOD QUALITY DATA

Systematic data collection, integration and inter-operability allows us to generate richer analysis and measure the Pulse of our City. It also puts Singapore in a competitive position to attract companies to test-bed new solutions in our living labs.

Sensing information
E.g. sensor data, feedback data

+

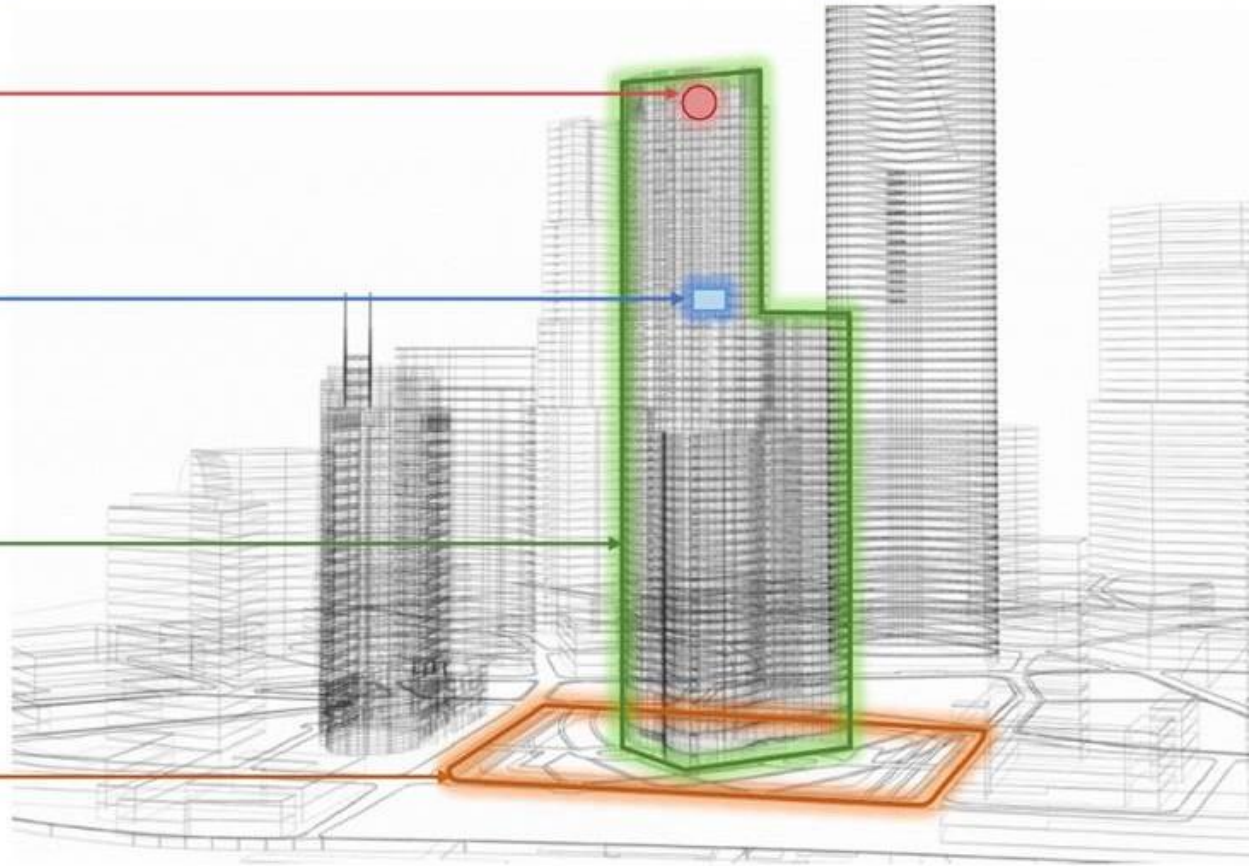
Unit information
E.g. energy and water consumption data

+

Building information
E.g. digital 3D model, Building Information Modelling

+

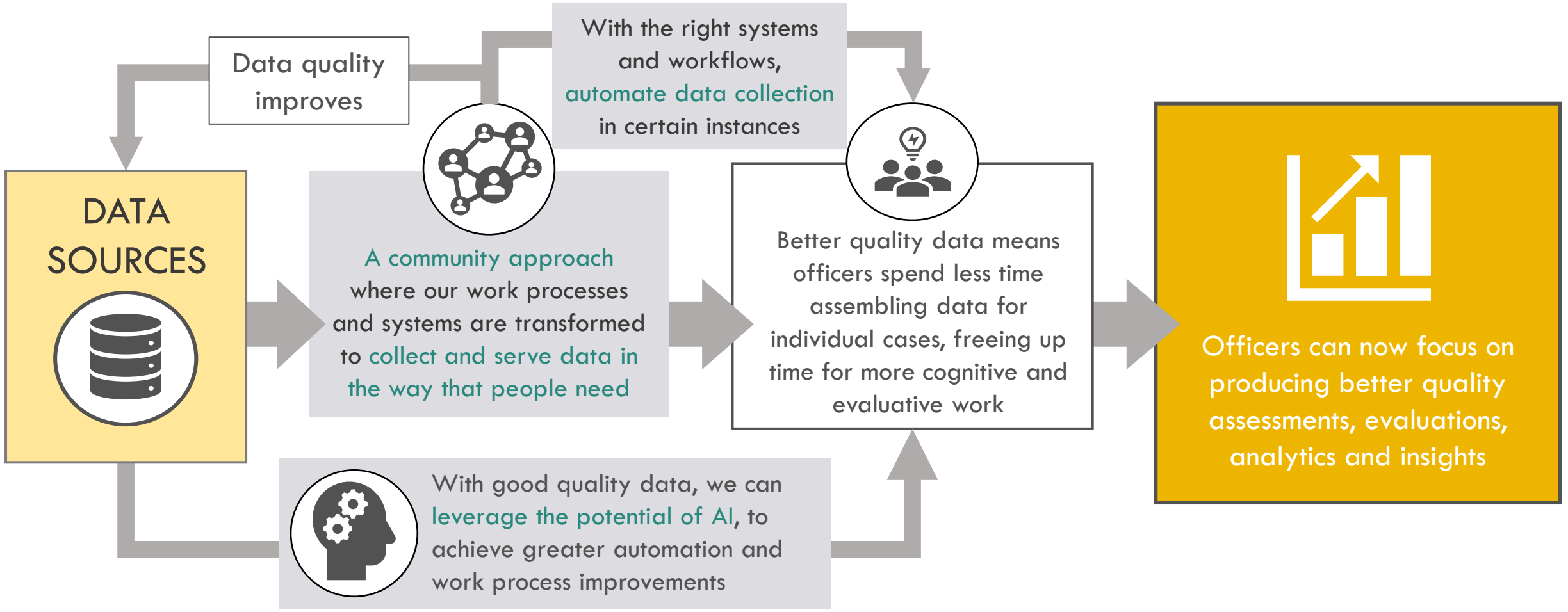
Land use and planning information
E.g. Land use plans and inventory



URBAN REDEVELOPMENT AUTHORITY

urbex

BETTER DATA-WORKFLOW INTEGRATION



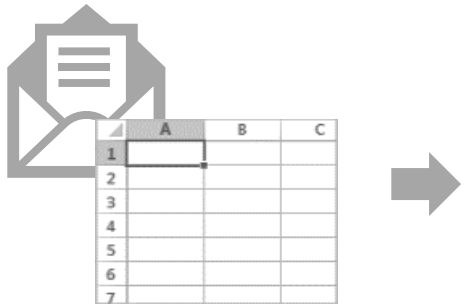
URBAN REDEVELOPMENT AUTHORITY

urbex

STREAMLINE WORKFLOWS WITH DIGITAL TOOLS

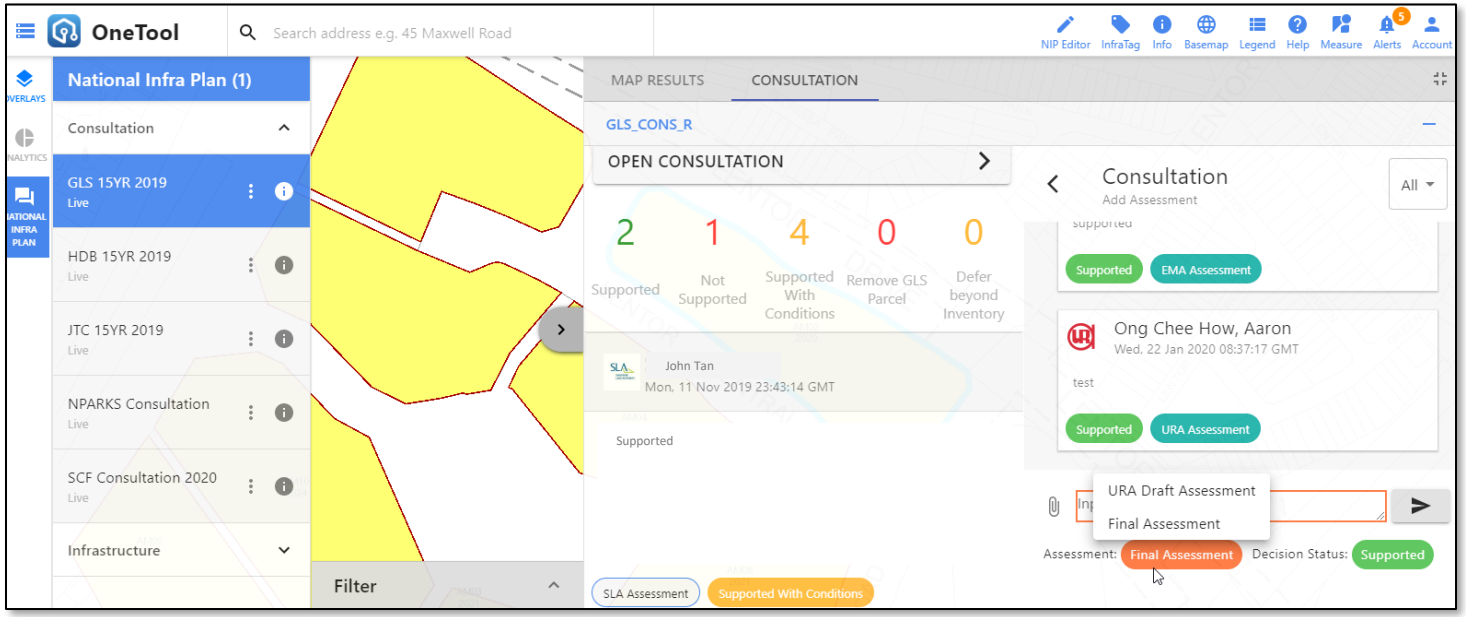
OneTool

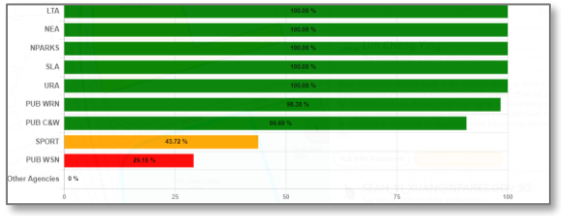
Scenario and inventory planning platform to support inter-agency coordination



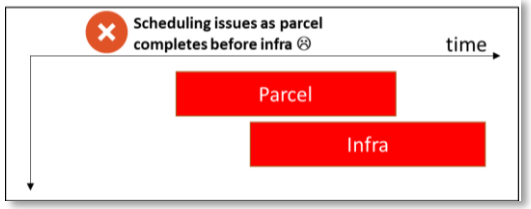
Multi-agency consultations for development inventory planning done via emails and Excel sheets, which are difficult to track

Agencies can **review plans holistically**, as multiple development inventories and other agencies' comments are on same platform





Dashboard to **track consultation progress**



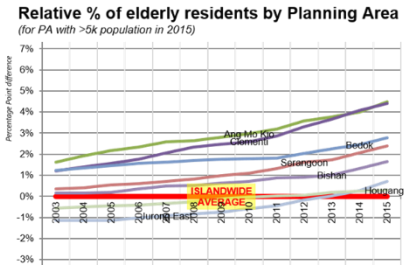
Tag interdependencies of supporting infrastructure to better detect scheduling conflicts

ENABLE DATA-INFORMED PLANNING & DESIGN

Apply data analytics for more evidence-based planning

POPULATION

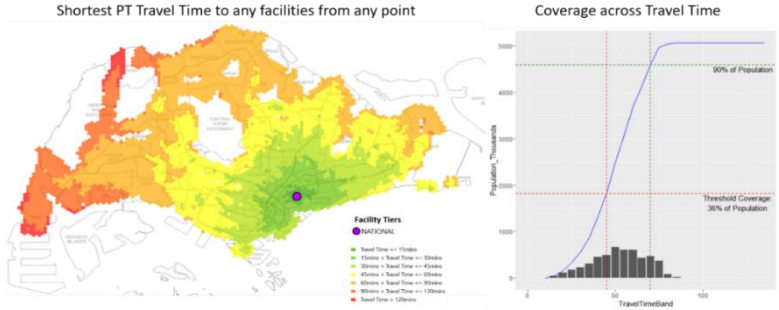
Town demographic analysis enabled more targeted rejuvenation strategies and plans for social facilities



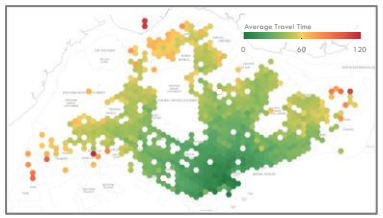
Category 1	Category 2	Category 3	Category 4
Youngster Haven	**Grey Tide**	**Silver Tsunami**	**Youthful Remix**
Less elderly than national average	More elderly than national average, but relatively stable	More elderly than national average, and becoming even more old	More elderly than national average, but getting younger
Outlying areas	Mainly Central Region	Fringe of Central Region	--

AMENITIES

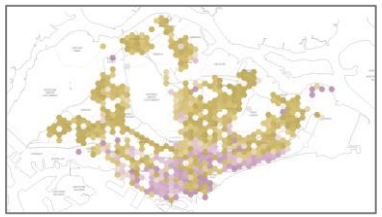
Measured spatial coverage of amenities within target accessibility distance to optimize distribution



MOBILITY



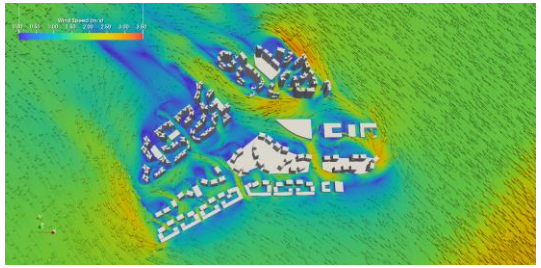
Average travel time taken to CBD

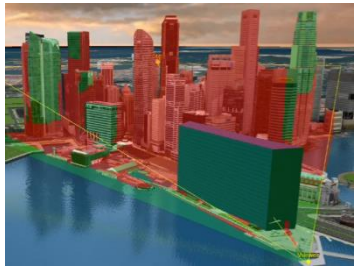


PT Mode Share: Bus vs Train & Mixed

Analysis of mobility and activity patterns informs strategies to promote walk, cycle and ride

URBAN DESIGN





Using simulation and modelling to predict potential design outcomes

URBAN REDEVELOPMENT AUTHORITY

urbex

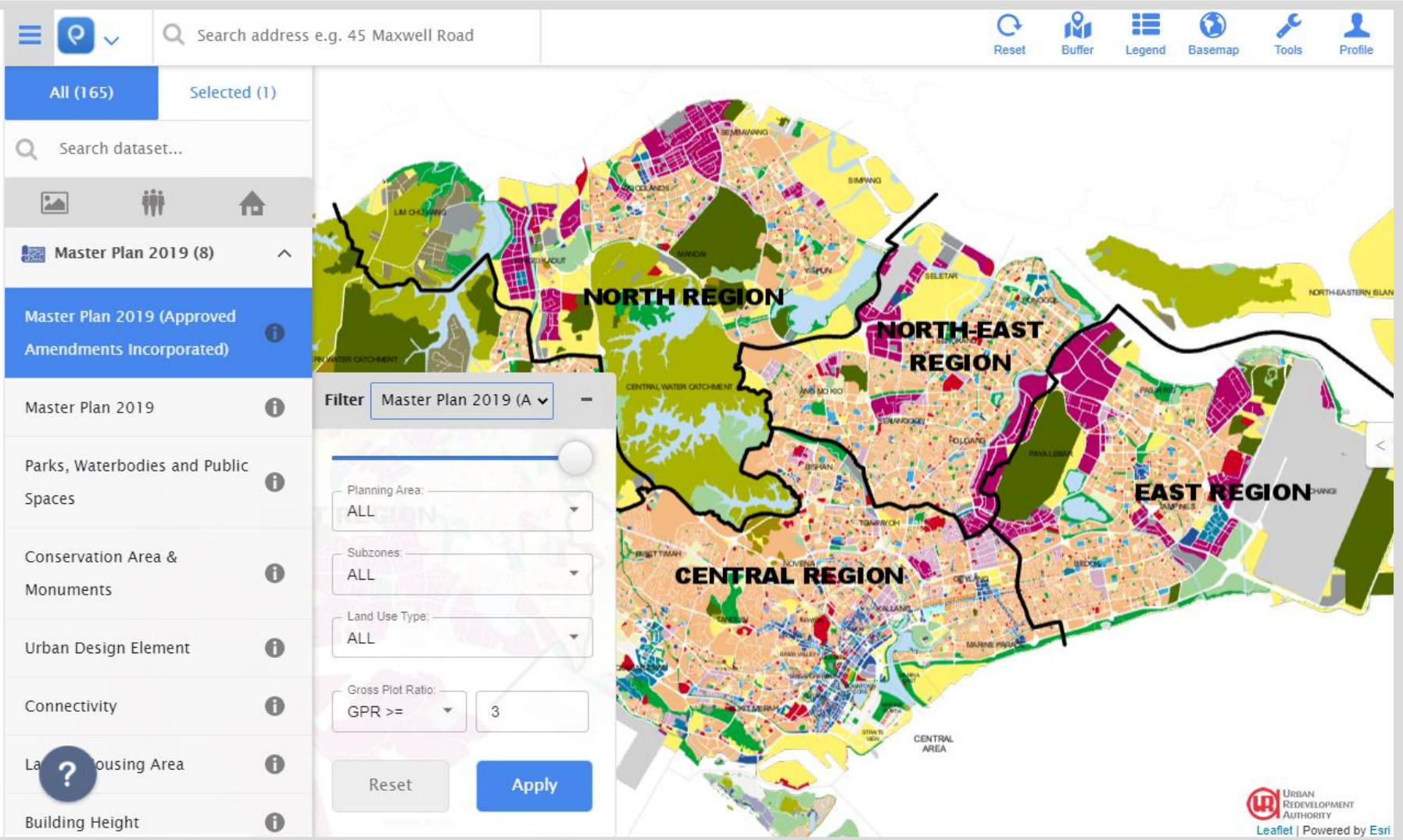
DEMOCRATISE DATA ANALYTICS WITH DIGITAL TOOLS

ePlanner

Quick visualisation and analysis of planning data

Easy, multi-scale insights for each area and various key domains e.g.

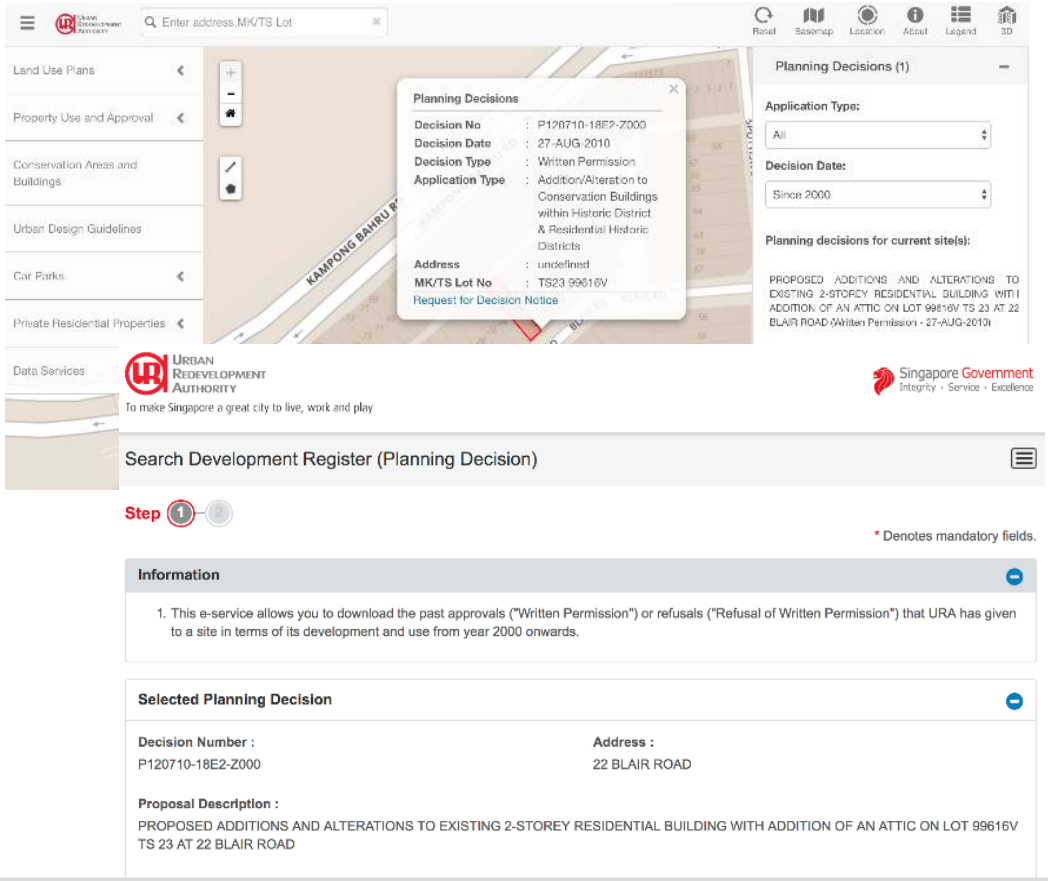
- Population
- Social facilities
- Public feedback
- Planning approvals
- Land use
- Mobility
- Parking



ENABLE BETTER SERVICE DELIVERY TO INDUSTRY AND PUBLIC

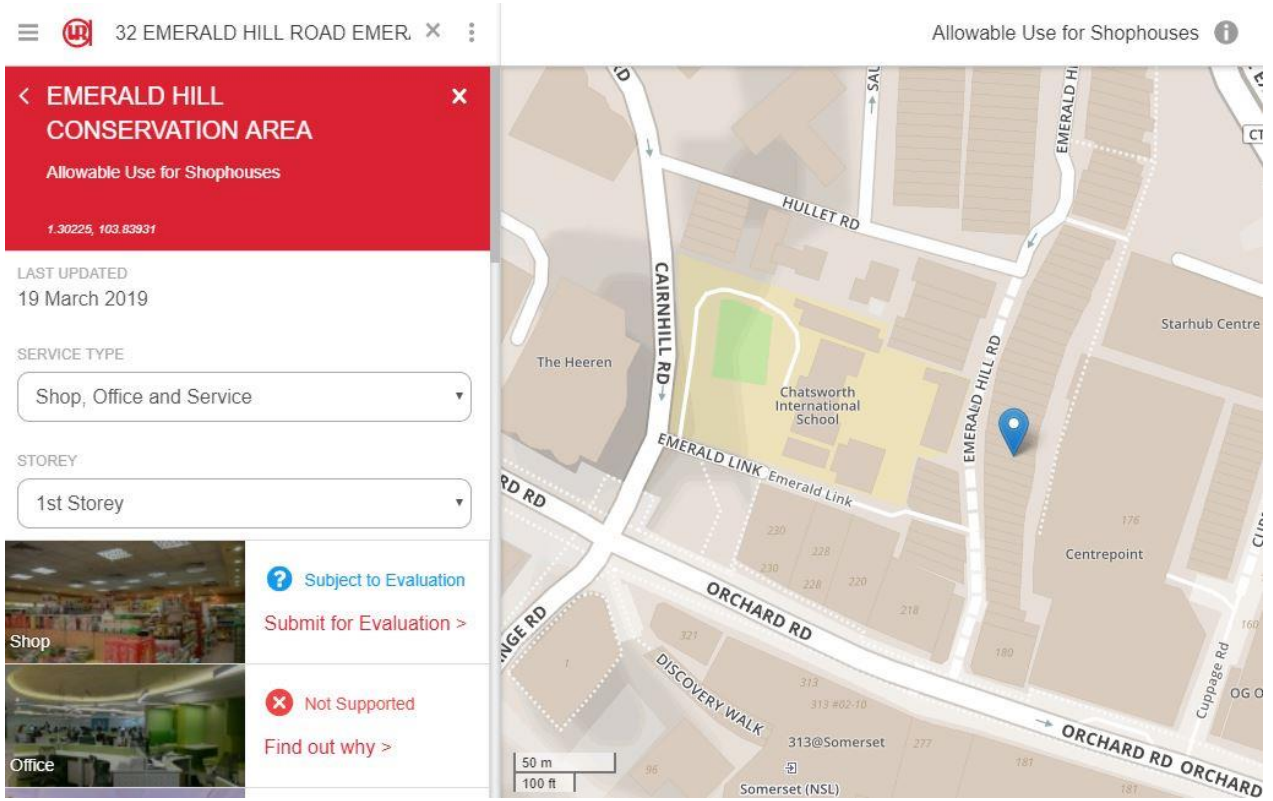
Development eRegister

allows the public to access past approvals instantly at no cost



Change of Use e-Advisor

provides shophouse owners with information on the permissible uses for their properties

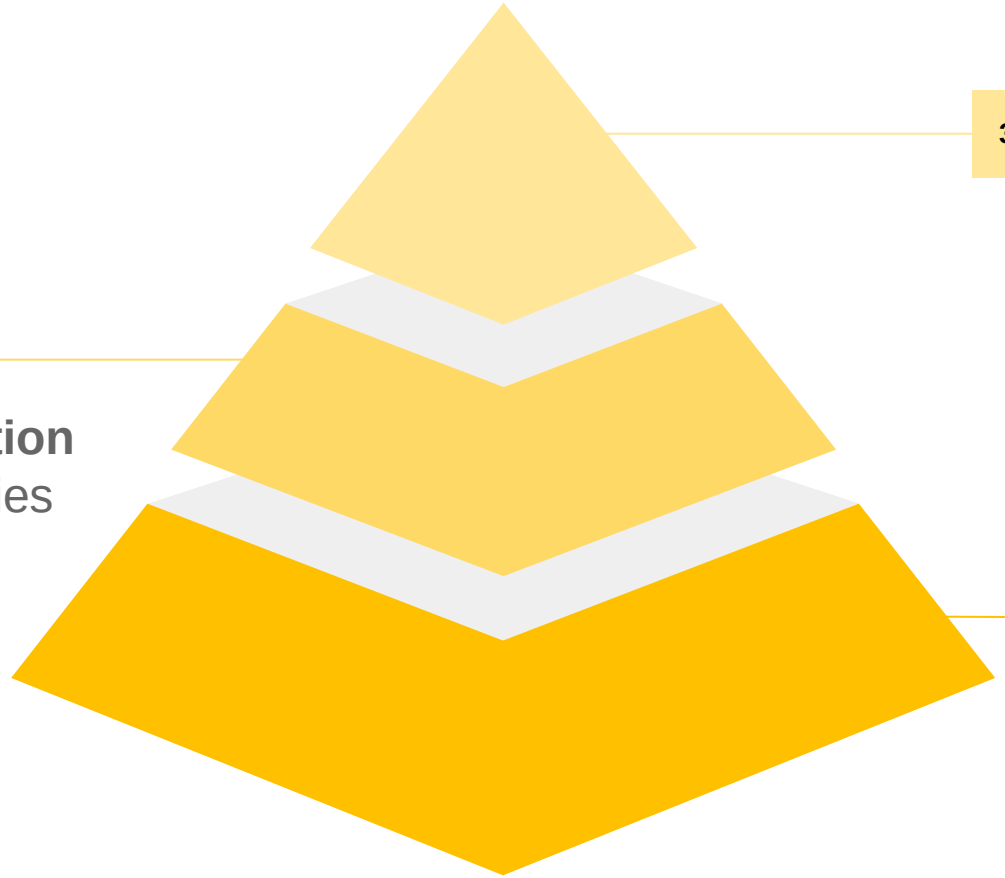


URBAN REDEVELOPMENT AUTHORITY

urbex

DESIGN & PLANNING LAB

A CATALYST TO:



3

INSPIRE

Innovations
through public- and private-sector partnerships

ACCELERATE

2

Insights, Transformation
through analytical studies and digital tools

1

INCUBATE

Skills, Ideas
through capability building and knowledge sharing

Data is a Team Sport

Ensure good data **quality** in a **sustainable** way is possible

by adopting a **COMMUNITY APPROACH** to

transform our **systems** & **work processes**

for collecting, managing and using data

URBAN REDEVELOPMENT AUTHORITY

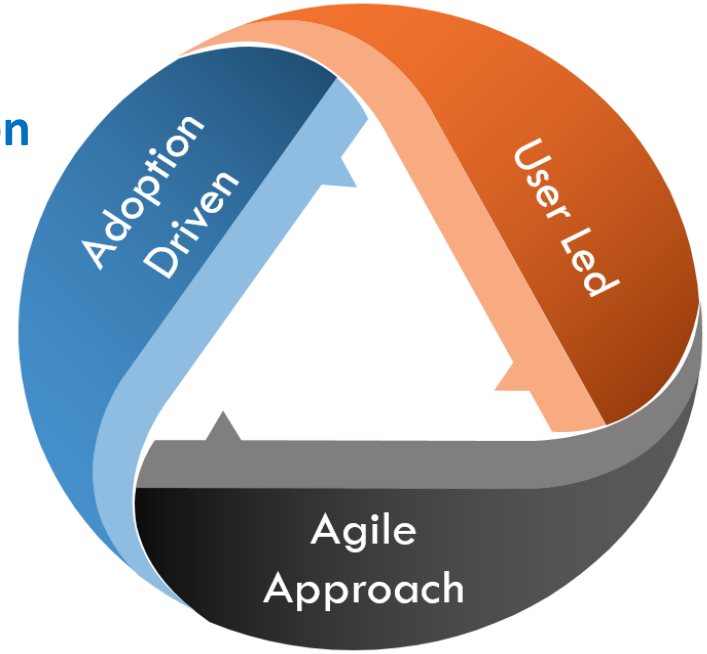
urbex

GROW OPS x TECH CAPABILITIES

Build up strong ops-tech teams to drive digitalization and use data analytics in planning

Empower officers to drive digitalisation & adoption of analytics for planning

- Incorporate in key planning exercises
- Integrate apps to streamline user experience
- Conduct regular training
- Engage partner agencies



Build up more officers with cross-domain knowledge

- Identify insights /outcomes needed
- Re-design planning / work process

Accelerate transformation of work process re-design

- Core in-house team consist of Planners & System Analysts
- Collaborate with external domain experts

URBAN REDEVELOPMENT AUTHORITY urbex

BUILD UP CAPABILITIES OF OUR PEOPLE

KNOWLEDGE EXCHANGE

Communities of Practices (CoP)

DPXΔ (DP Exchange)

TRAINING

ANALYTICS IMMERSION PROGRAMME #AIM

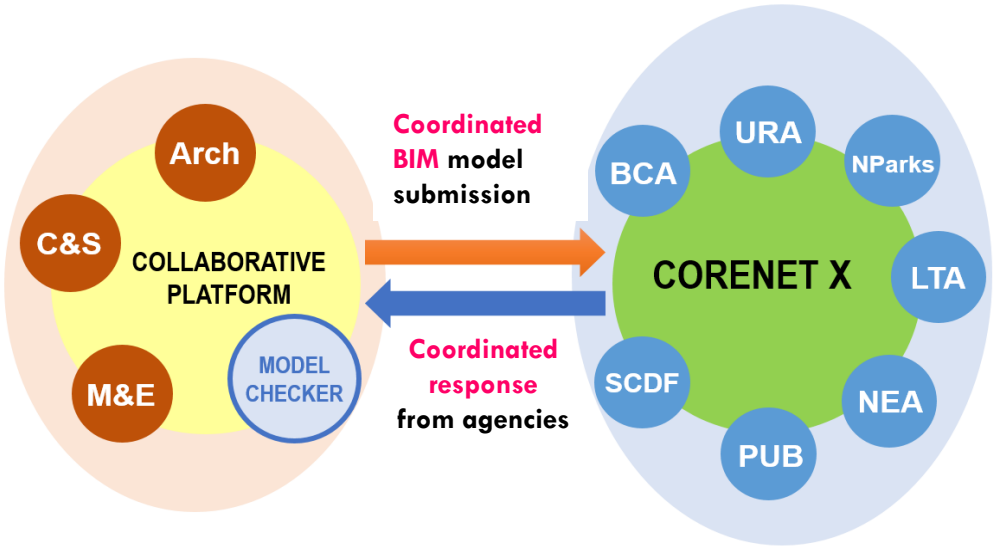
EXECUTIVE ANALYTICS PROGRAMME

Data Management Course

NEXT STEPS FOR URA's DIGITALISATION JOURNEY

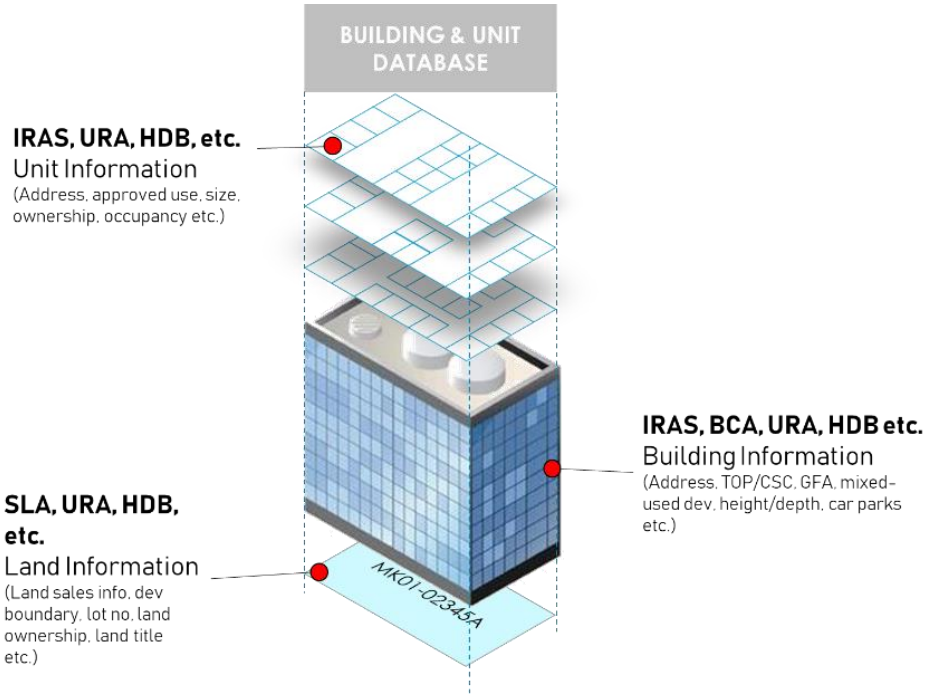
CORENET-X

One-stop portal for consultants to submit a coordinated BIM model to multiple agencies, and for agencies to deconflict any regulatory requirements. Model checker built in to auto-detect adherence to urban design rules



MyUnit Info

Central repository for building and unit data collected across multiple agencies



CHARTING THE FUTURE: PLAN AI

Harness AI to transform Singapore's urban planning system and processes for better outcomes

Planning Cycle + Artificial Intelligence = Outcomes

Data Strategy

System Design

People Upskill

Do Less

Cut down time spent on routine tasks
Targeted stakeholder communications

Do Better

Generate options to support decision making
Enable pattern detection of big data

URBAN REDEVELOPMENT AUTHORITY

urbex

URBAN REDEVELOPMENT AUTHORITY

urbex