Effective Land Administration
Digitally-Enabled Urban Planning in Singapore

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URBAN REDEVELOPMENT AUTHORITY

urbex

BALANCING NEEDS SPATIALLY, OVER TIME

URA's mission:
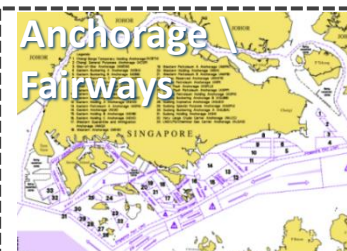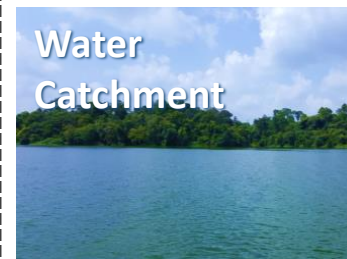**To make Singapore a Great City to Live, Work & Play**

small island
CITY-STATE

Land Area: 728 km^2
Population: 5.69 million
Density: 7,810 persons/km^2

LAND NEEDS

- Housing
- Commerce
- Industry
- Port
- Defence
- Airport
- Water Catchment
- Culture & Heritage
- Greenery and Parks

SEA NEEDS

- Anchorage Fairways
- Aquaculture
- Landfill

OUR PLANNING FRAMEWORK

Feedback loop

Regular review of strategies and policies

LONG-TERM PLANS
Maps out vision for next 40-50 years

MASTER PLAN
Guides development over next 10-15 years

URBAN DESIGN PLANS, DEVELOPMENT COORDINATION & LAND SALES

DEVELOPMENT CONTROL
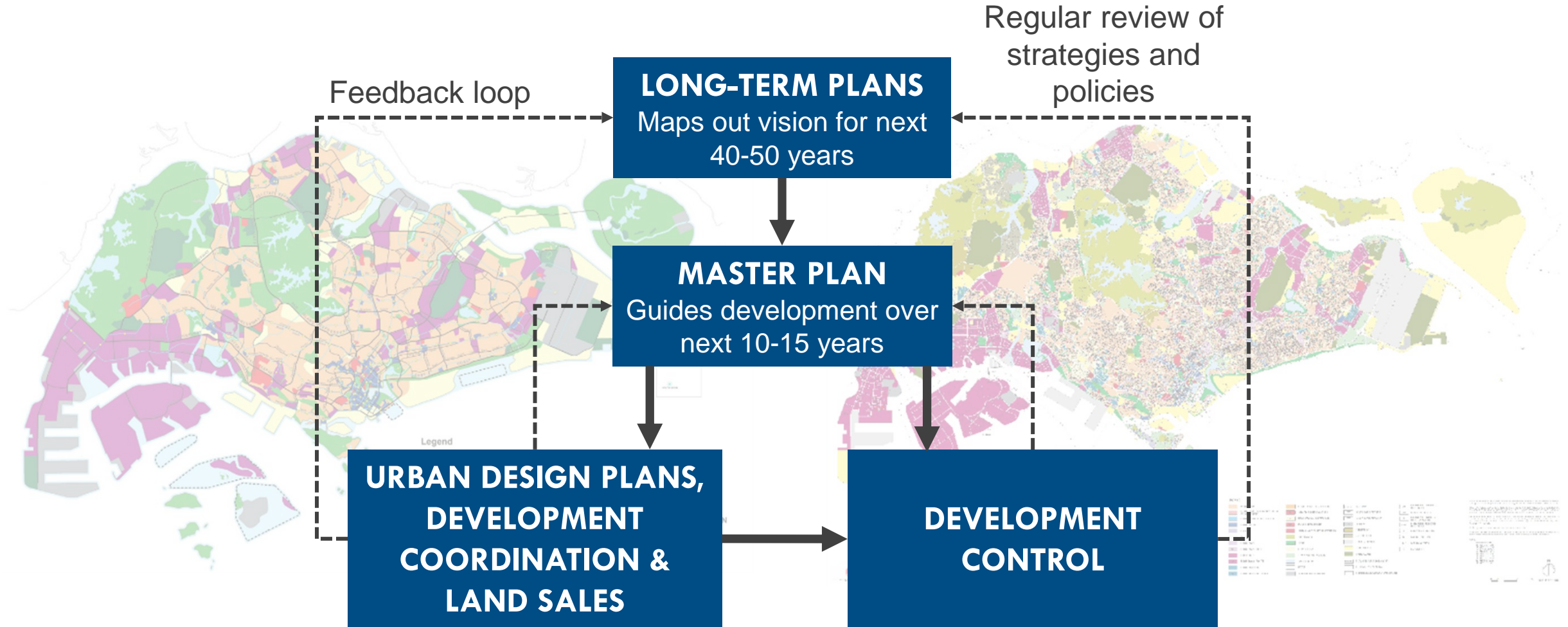
SUSTAINABILITY, FLEXIBILITY, RESILENCE

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

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

DIGITALLY-ENABLED URBAN PLANNING & DESIGN

CONTINUOUS EFFORTS TO MEET COMPLEX & FAST-CHANGING DEMANDS

1. **Data-informed, evidence-based planning**
   - Access and analyse data, draw insights; feedback loops

2. **Integrated Whole-of-Government approach**
   - Collaboration between govt agencies - data, tools, methodologies

3. **Eco-system value creation**
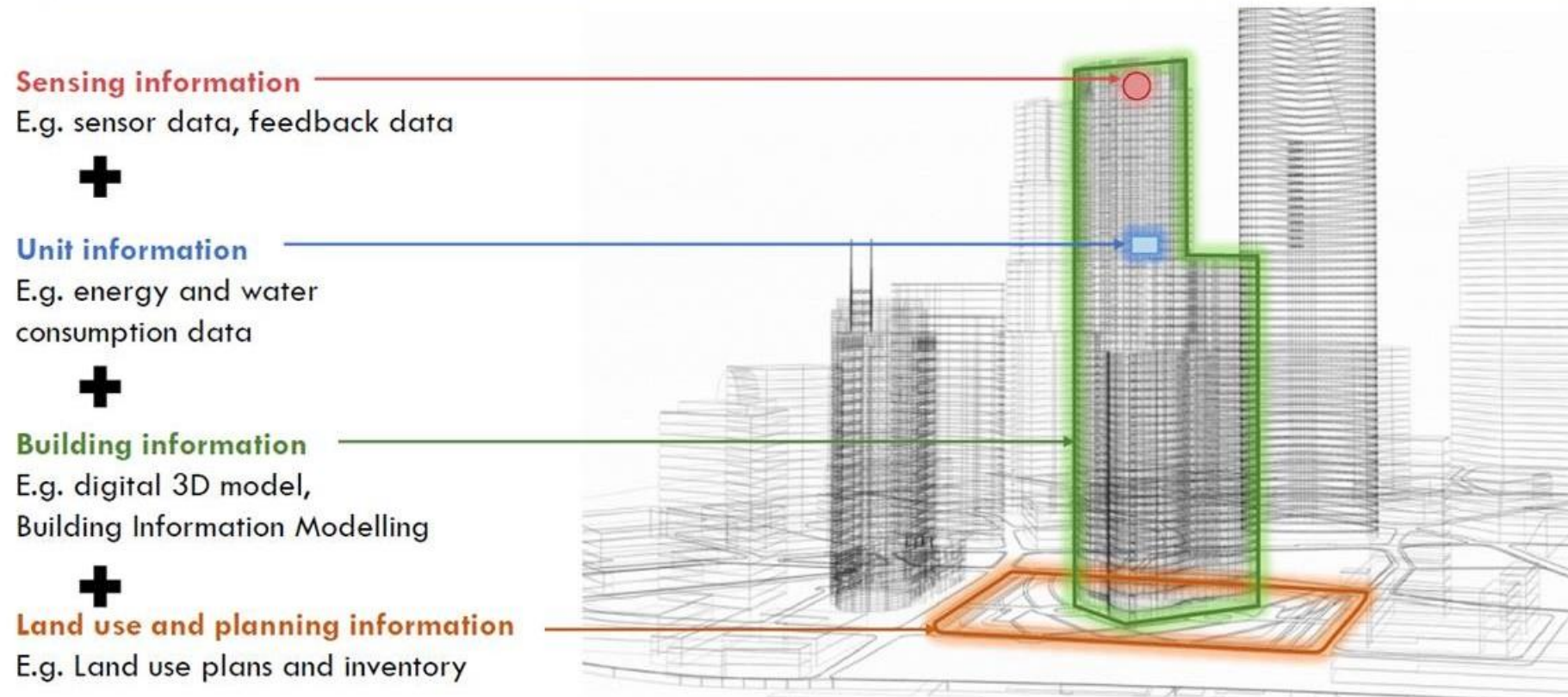   - Work with Institutes of Higher Learning (IHLs), researchers, industry & community, providing data & sharing insights

Enabled by Digital Technologies

Think Big, Start Small, Act Fast

COLLECT, FUSE & MAKE GOOD QUALITY DATA ACCESSIBLE

Systematic data collection, integration, and facilitating data access allows richer analyses and insights, sensing the 'pulse' of our city and supporting planning processes. It also allows the research community and industry to test-bed new solutions in Singapore's living labs.
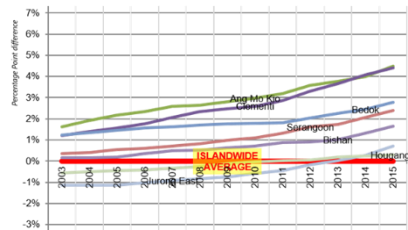

Sensing information
E.g. sensor data, feedback data

+

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

ENABLE DATA-INFORMED PLANNING & DESIGN

POPULATION

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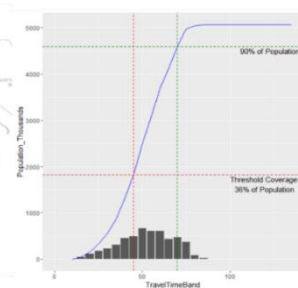

AMENITIES

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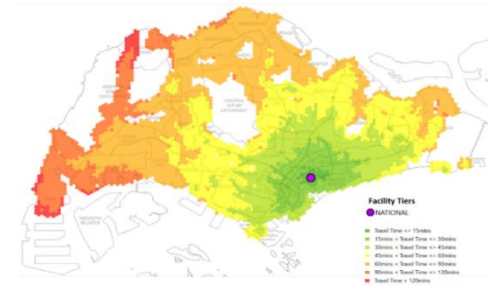
MOBILITY

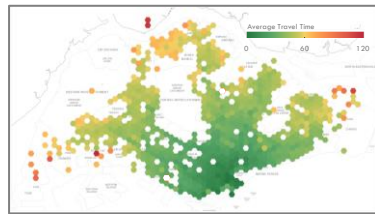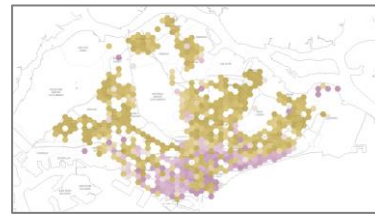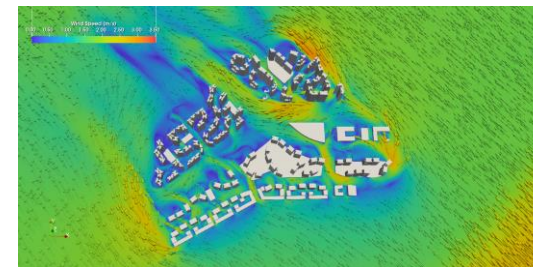**Average travel time taken to CBD** **PT Mode Share: Bus vs Train & Mixed**

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

ENABLE BETTER SERVICE DELIVERY & INFORMED DECISIONS

- We support the general public, businesses and industry in **making better-informed decisions** by:
  - Providing more comprehensive, site-specific and detailed planning and property market-related data
  - Enhancing geospatial visualisation and other data tools (e.g. querying methods, API)
- Today, URA's e-services comprise a **broad suite of information services** ranging from planning (e.g. URA SPACE, DC Handbook) to property market related information (e.g. REALIS, PMI Online, PMI mobile app)
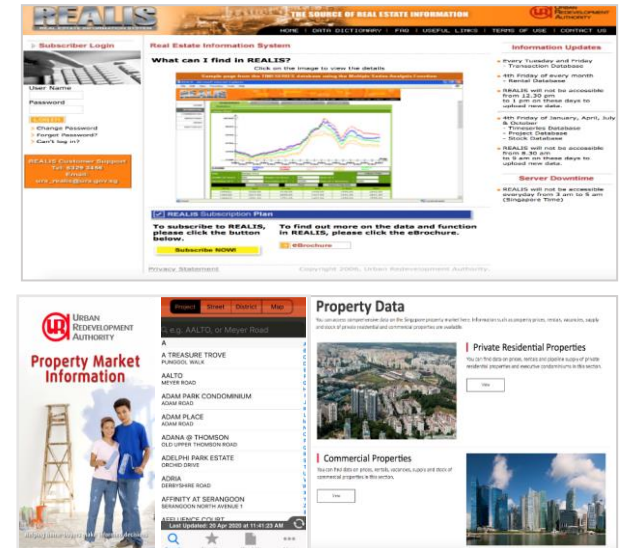
URA SPACE
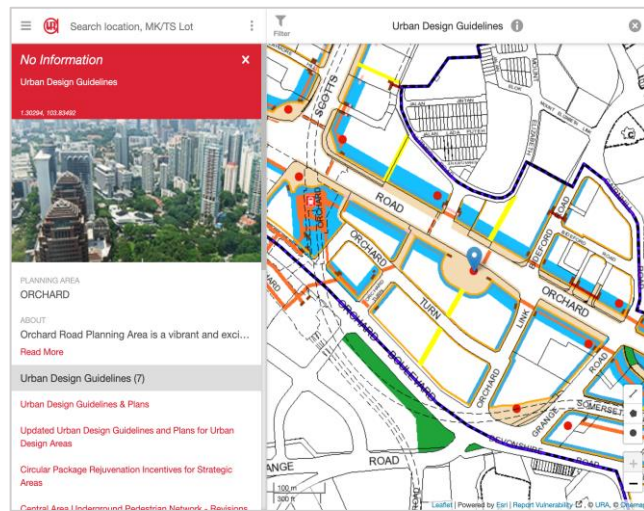
DC Handbook
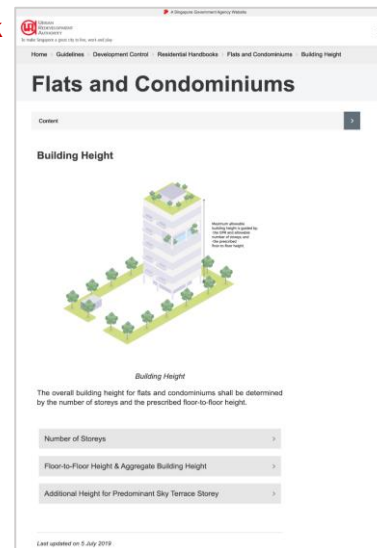
REALIS, PMI Online (Web) and PMI Mobile Application

URA SPACE

- URA SPACE first launched in Jun 2016, designed for tablets and desktop use

- Continuous technical refresh & enhancements to incorporate latest trends and technologies, e.g.:

  - Facilitating access through mobile devices, new UI/UX, new datasets (e.g. Road Buffer, Demographics, Land Tenure), new functionalities (e.g. Change-of-Use e-Advisor, SiteDNA)

VERSION 1.0 (2016)

VERSION 2.0 (2017)
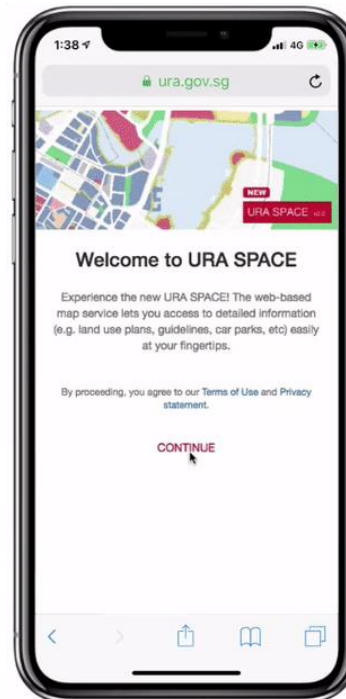
VERSION 3.0 (NEW)

FRESH "LOOK & FEEL"
- Quick access to popular services
- Overlay multiple layers for the site
- Shares the same information by generating a unique link

NEW DATASETS
- Approved Building Height
- Approved GFA
- Land Ownership
- Allowable building setback
- Allowable building height
- Pre-2000 Planning Decisions

SITE DNA
- Existing development info
- Allowable redevelopment parameters
- Change of use

URA SPACE: ACCESS TO COMPREHENSIVE SITE INFORMATION

- Master Plan & Special Detailed Control Plans

- Land & Development Information

- Past Planning Decisions

- Guidelines for Redeveloping Site

- Changes of use & e-Advisor

- Government Land Sales

- Private Residential Property Transactions

MASTER PLAN & SPECIAL DETAILED CONTROL PLANS

- Master Plan

  - Statutory land use plan that guides Singapore's development in the medium term

- Special Detailed Control Plans

  - Parks, Waterbodies & Public Spaces

  - Conservation Area and Monument

  - Urban Design Element

  - Connectivity

  - Landed Housing Area

  - Building Height

  - Underground

PAST PLANNING DECISIONS

- Currently, members of public can view and download post- year 2000 Planning Decisions

- Work-in-progress to release year 1990-99 Planning Decisions (~72k new decisions)

- Progressive release of pre-1990 Planning Decisions in the future

GUIDELINES FOR REDEVELOPING SITE

- Planning Parameters and other Development Control (DC) requirements
  - Land Use and Gross Plot Ratio (GPR)
  - Building Height Control
  - Setbacks
  - Link to DC Handbooks
- Special Controls (links to other sources)
  - Conservation Guidelines
  - Urban Design Guidelines
  - Street Block Plans
- Development Charge Rates
- URA DC OIC Contact

CHANGE OF USE & E-ADVISOR
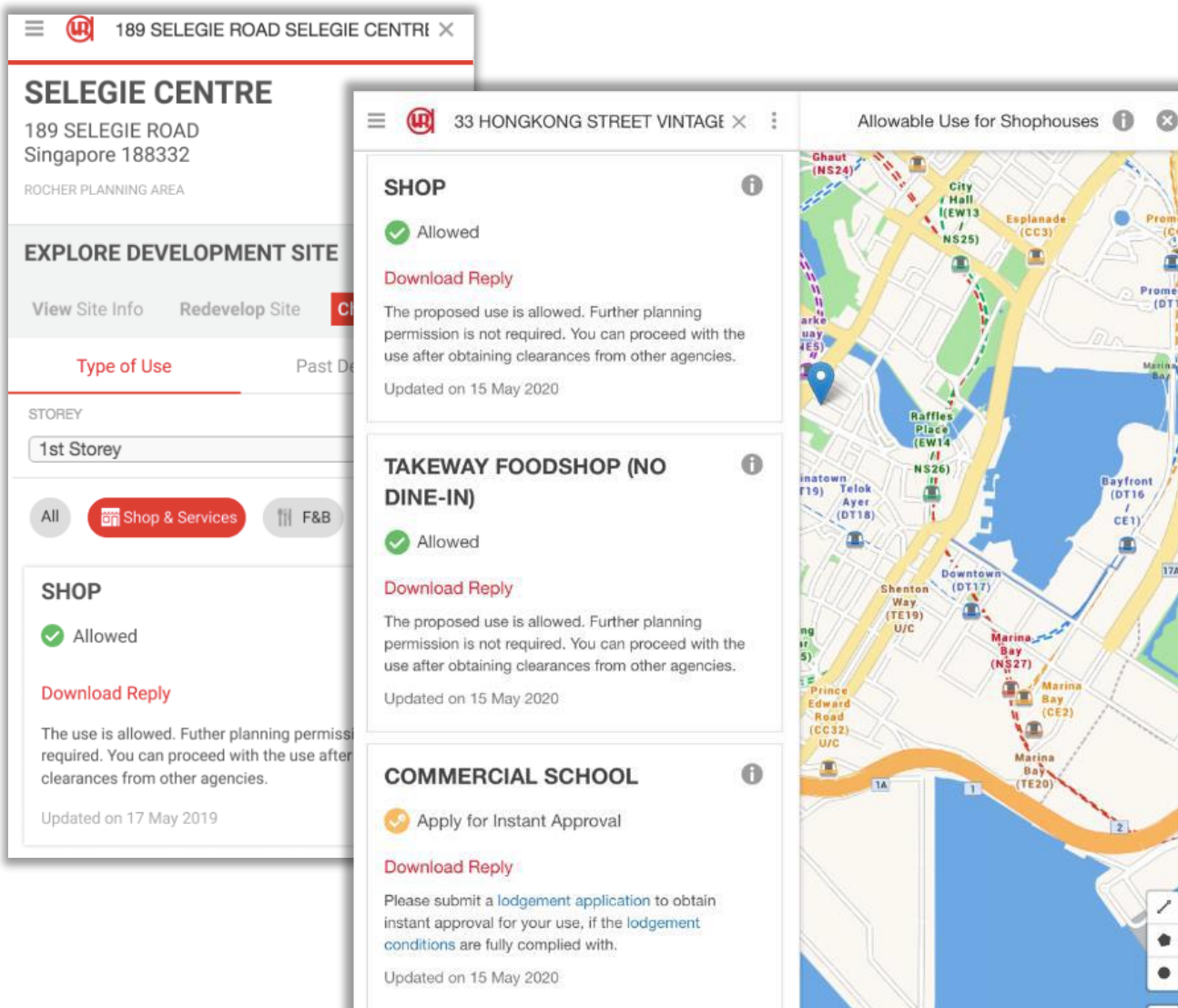
- Change of Use (CU) e-Advisor
  - Indicates if proposed use in shophouses is allowable / not allowable
  - Displays past approved and disapproved uses
- Available Functions
  - Instant download of replies
  - Link to apply for lodgment, if eligible
- Future Phases
  - To expand to other commercial buildings

PRIVATE RESIDENTIAL PROPERTY TRANSACTIONS
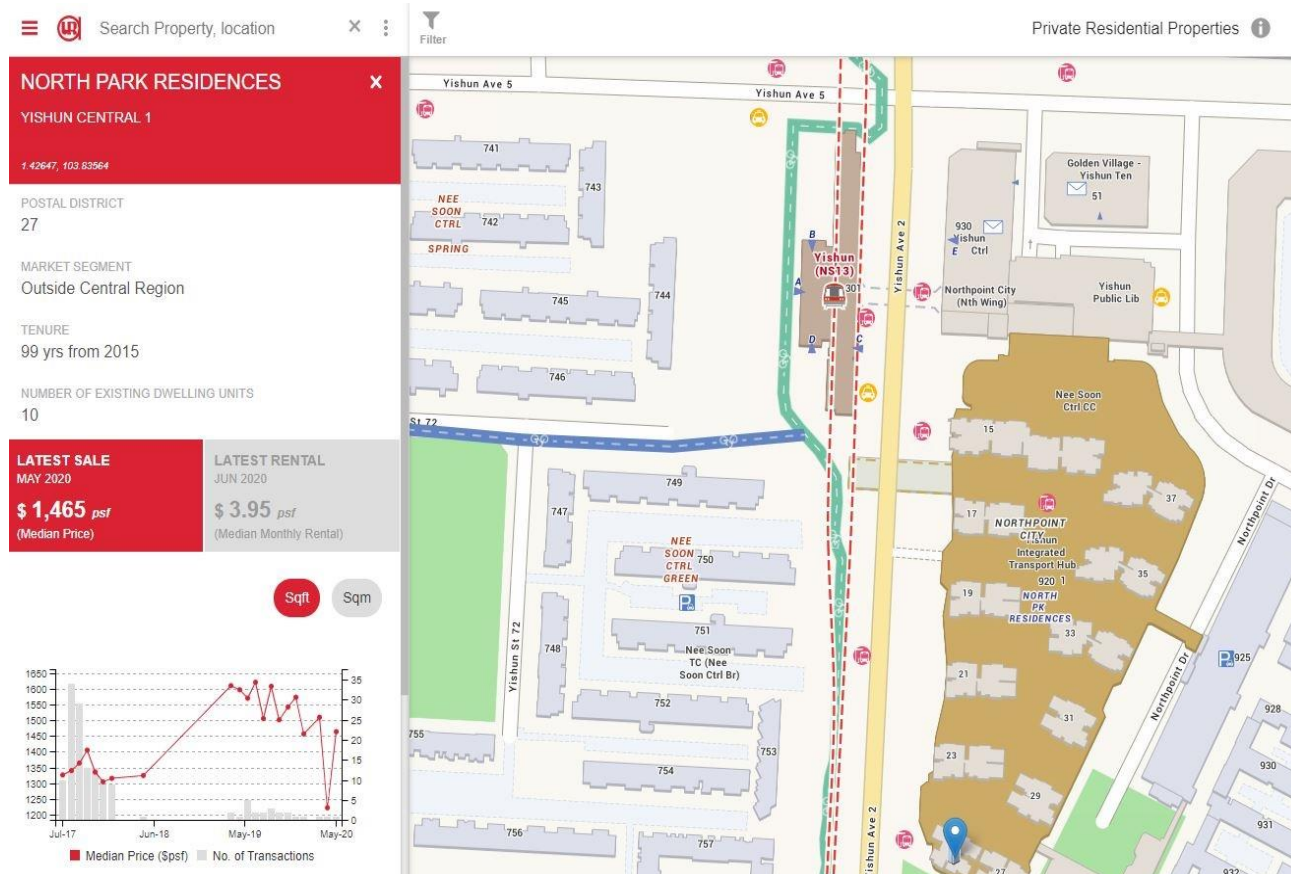
- Property Transaction Data

- Rental Data

- Work-in-progress to release island-wide private residential stock data – completed private residential projects dwelling units

CORENET-X

One-stop portal for consultants to submit a coordinated BIM model to multiple agencies, and for agencies to provide a coordinated response. Model checker built in to auto-detect adherence to urban design rules
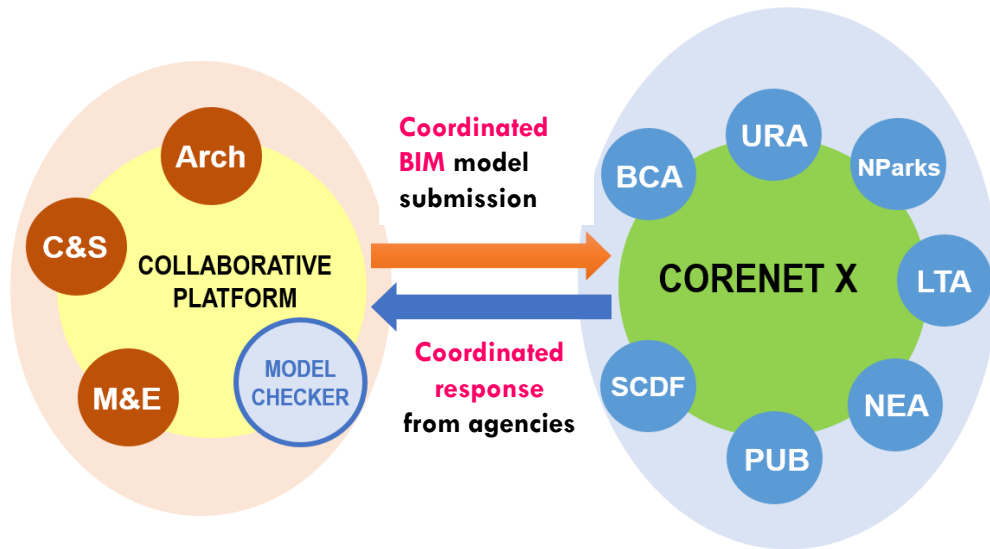
MyUnit Info

Central repository for building and unit data collected across multiple agencies
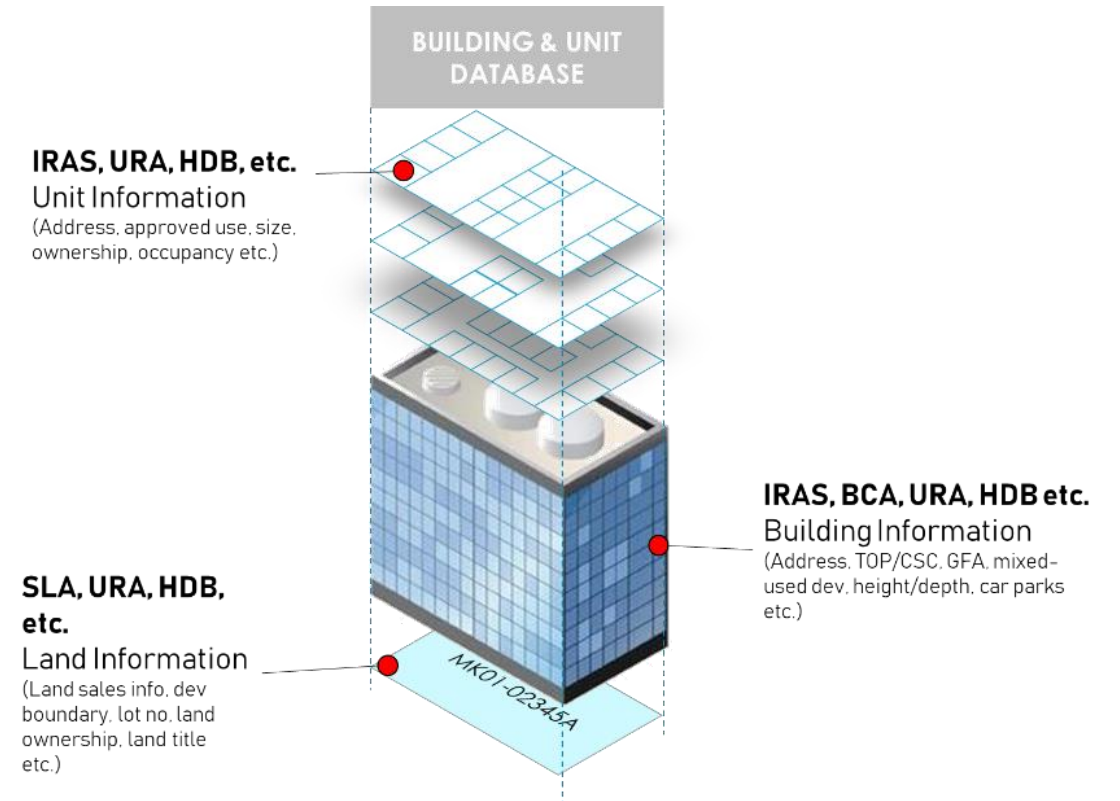
MYUNIT INFO:
OPPORTUNITY TO INTEGRATE BUILDING DATA ACROSS LIFE CYCLE

- Different types of building and unit-level data are being generated by government agencies as part of various administrative and regulatory processes

- Different data is captured at different stages of the development's life cycle

- Collectively forms a rich set of data that can enhance a variety of urban planning and operational functions

- *Opportunity to integrate data across multiple source agencies, timescales and formats*

Approval of **allowable use(s)** and **floor plan(s)** as part of a development as part of the planning process

Approval of **house and unit numbers** to provide identification of properties

Administration of **land and property ownership**, as well as **cadastre and mapping data**

Various agencies issue **premise-level licensing, regulatory, detailed use and tenancy approvals**

Customer Journey for Building- and Unit-level applications/submissions

Planning & Design
Development Application
Street/Building Name Application
House/Unit Number Application
Update of Land Information Database

Construction & Sales
Strata-subdivision application
Strata title application
Lodgement of Caveats

Post-completion
Issuance of TOP/CSC
Review of Annual Value
Licensing and regulatory approvals
Detailed use and tenancy approvals

VISION

- To integrate agencies' unit-level data into a **consolidated database** that serves as a single reference point

- Supported by a **3D collaborative platform** that visualises unit-level data and facilitates service delivery, improves regulatory processes and catalyses innovation

- Leverage **inter-agency collaborative processes** to update and maintain the database

Planning & Design → Sales & Construction → Post-completion

Streamline regulatory processes

Digitalise front and back-end processes

Integrate Different unit-level data sources

MyUnit Info

Unit data from multiple agencies consolidated into an integrated ecosystem to be the **single reference point** for all parties

Spatialisation and **user-friendly visualisation** of data

Interactive **3D unit database** and **collaborative platform**

Public (e.g. businesses and premise owners) able to view data and **submit premise-level applications** to different agencies

Government agencies retrieve and return approved unit-level data as part of **administrative/regulatory processes through e-services**

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WHO BENEFITS AND HOW?

Data sharing and integration helps to **streamline regulatory approval processes**

Reduce number of touchpoints and man-hours required in service delivery
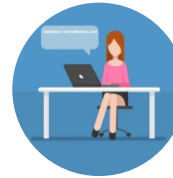
Improved consistency and reliability of unit-level data

Facilitate transactions and applications with timely, accurate responses on unit-level information

Catalyst for research and innovation in both public and private sector

Government agencies

Property purchasers

Qualified Professionals (QPs) & Developers

Property owners & tenants

Improve efficiency through **automation** and **encouraging self-help**

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HOW ARE WE DEVELOPING IT?

I. Laying the Data Foundation

- Identify use cases and data requirements
- Streamline work processes and e-services
- Assemble foundational unit-level data
- Develop 3D collaborative platform

3D unitised database and data records
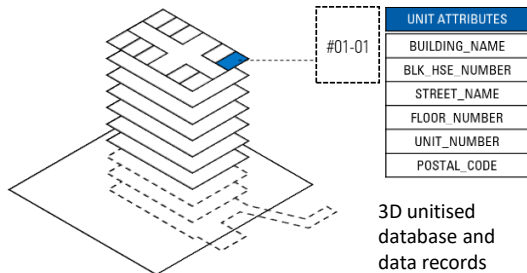
II. Digitalise work processes

- Sync different internal and external systems and e-services
- Automate and streamline work processes

Development applications

Street and building name applications

Change of Use applications

Unit-level enquiries
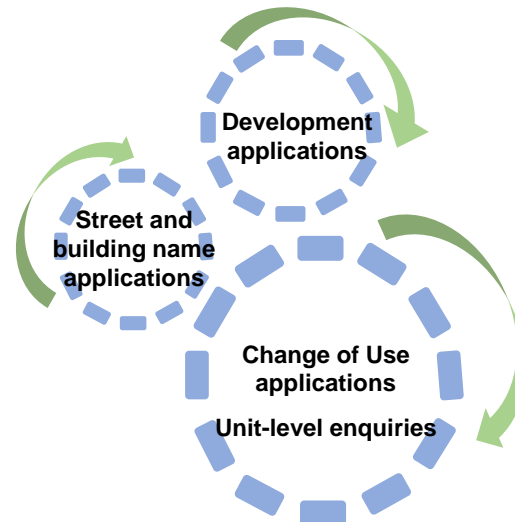
III. Bridge data and systems

- Enrich unit database by merging with other relevant datasets

MYUI
BLK_HSE_NUMBER
STREET_NAME
FLOOR_NUMBER
UNIT_NUMBER
POSTAL_CODE
EXISTING_USE
EXISTING_SUBUSE
APPROVED_GFA

+

LICENSE_DATA
OCCUPANCY
SALE_&_RENTAL TAXATION
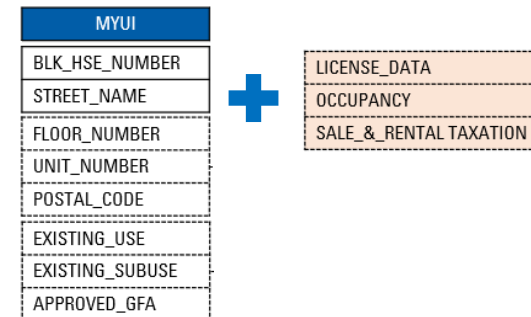
IV. Catalyse innovation

- Promote sharing and exchange with agencies and industry partners, thereby catalysing innovation.

Public sector — Private sector
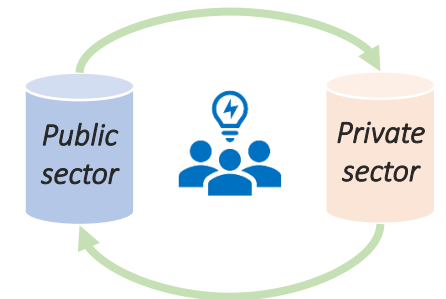
CONCLUSION

Today's data-rich environment involves a range of cadastre to building and unit-level information. Systematic data collection, integration, and facilitating data access is an important enabler to data-informed planning, and empowering the general public, businesses and industry in making better-informed decisions. These in turn help us to achieve our planning vision to make Singapore a great city to live, work and play.
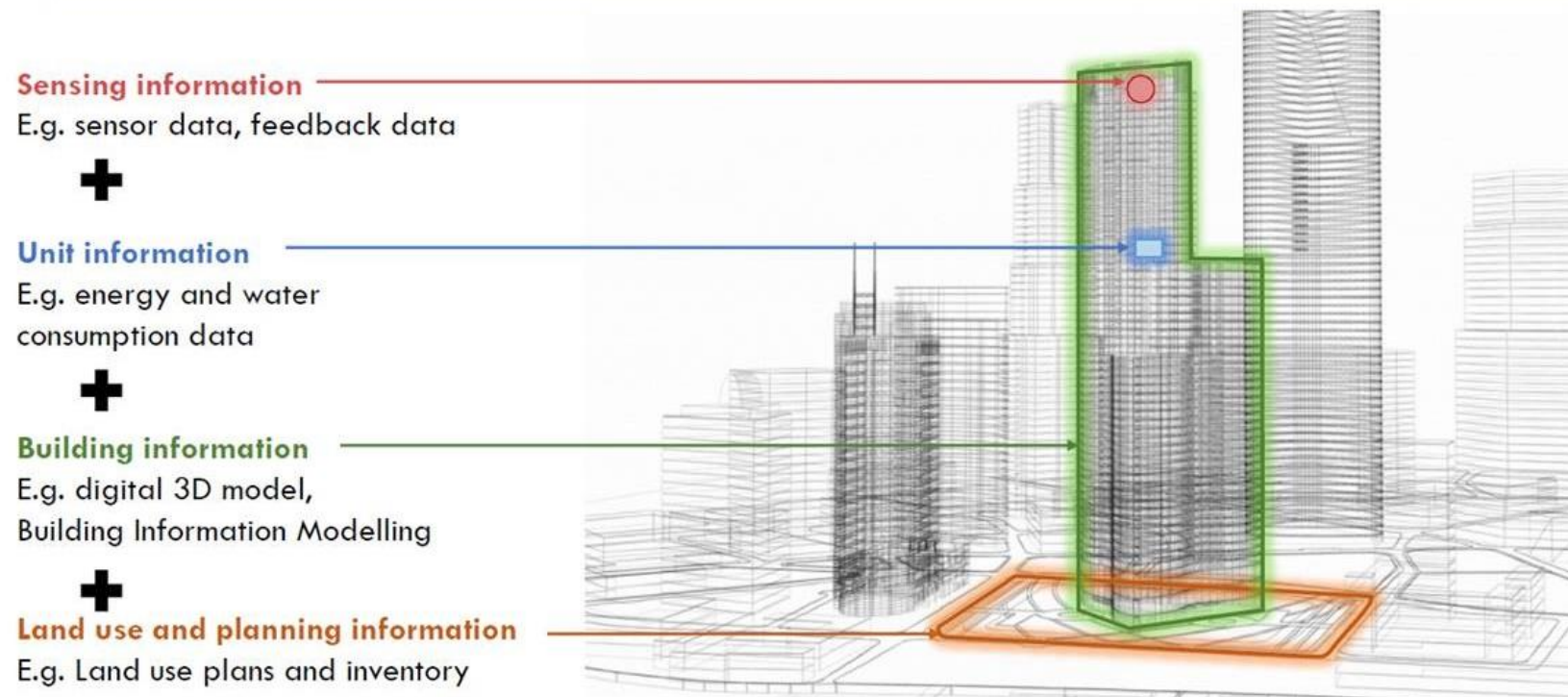
Thank You

About Urban Redevelopment Authority of Singapore (URA)

The Urban Redevelopment Authority (URA) is Singapore's land use planning and conservation agency. Our mission is "to make Singapore a great city to live, work and play". We strive to create an endearing home and a vibrant city through long-term planning and innovation, in partnership with the community.

We have transformed Singapore into one of the most liveable cities in Asia through judicious land use planning and good urban design. Adopting a long-term and comprehensive planning approach, we formulate strategic plans such as the Concept Plan and the Master Plan to guide the physical development of Singapore in a sustainable manner. Developed to support economic growth, our plans and policies are focused on achieving a quality living environment for Singapore.

We take on a multi-faceted role to turn plans and visions into reality. As the main government land sales agent, we attract and channel private capital investments to develop sites that support planning, economic and social objectives. Through our regulatory function, we ensure that development works are aligned with our plans. As the conservation authority, we have an internationally recognised conservation programme, and have successfully conserved not just single buildings, but entire districts. We also partner the community to enliven our public spaces to create a car-lite, people-friendly and liveable city for all to enjoy.

In shaping a distinctive city, we promote architecture and urban design excellence, and innovate to build a resilient city of opportunity that fulfils the aspirations of our people.

Visit www.ura.gov.sg for more information.

About URBEX

URBEX is URA's Urban Planning & Design Technology Centre of Excellence. We aim to build up strategic and critical Science, Tech and Engineering capabilities in an efficient and sustainable manner. We also aim to drive innovation, encourage experimentation and sharing of lessons learnt and further strengthen synergies across Whole-of-Government, and streamline processes.

About Design & Planning Lab (DPLab)

Design & Planning Lab (DPLab) is a group within URA driving URA's Urban Planning & Design Technology Centre of Excellence (URBEX) efforts. We strive to adopt a data-driven approach towards urban planning by integrating traditional planning methods and spatial analytics. We liaise with various government agencies, commercial sources and public domains to obtain valuable data to complement and strengthen the data from our existing internal enterprise systems.