



**CALL FOR  
INNOVATIVE  
SOLUTIONS  
(CFIS) FOR  
SMART ESTATES**

**INDUSTRY BRIEFING**

# WHAT IS A SMART ESTATE?

- ❑ A hyper-connected smart estate of the future will enrich the lives of the community through greater accessibility to technology
- ❑ Connectivity will enable innovative digital services



Smart  
Environment

Smart  
Enterprises

Smart  
Living

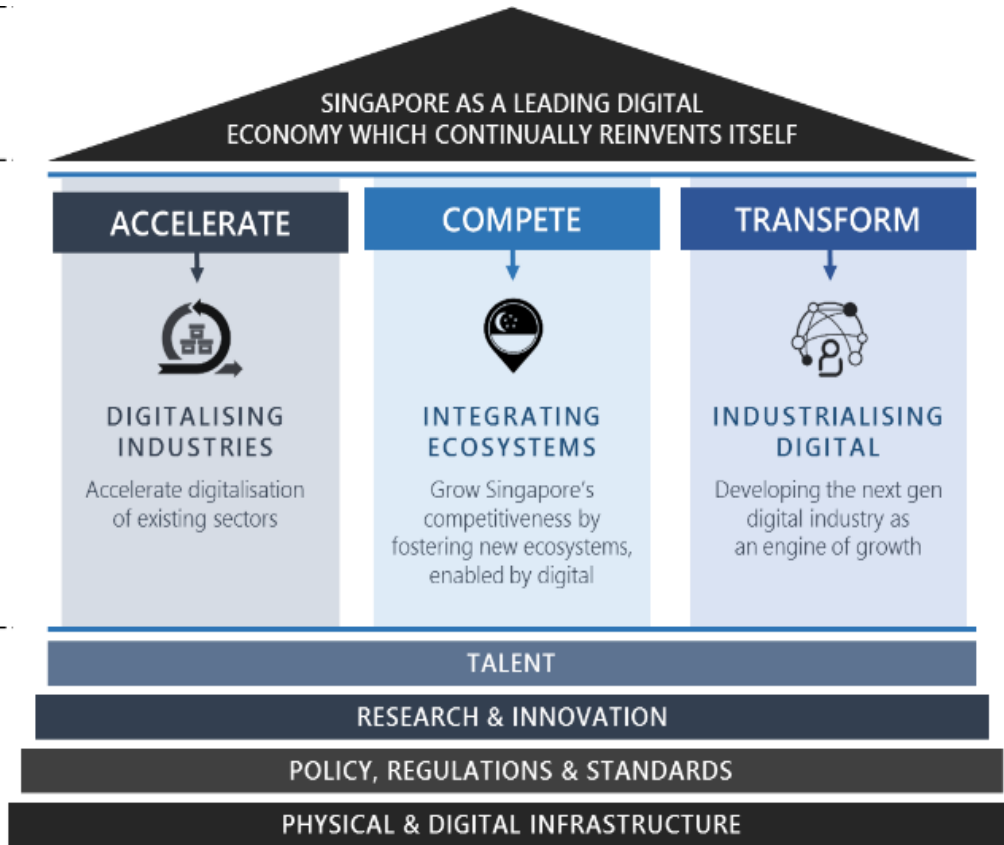
**Key Building Blocks of IMDA's vision of Smart Estates**

# WHY SMART ESTATES?

GOAL

STRATEGIC PRIORITIES

ENABLERS



1

Singapore to be among the top digital economies in the world. One where our sectors will embrace innovation and digital disruption, identify new growth areas and technologies that are continuously reviewed and stay ahead



2

## Increasing Opportunities in Region & New Growth Area for SG

- ❑ Increase interests from developers in Asia for our Built Environment Companies & Tech/Solution Providers to collaborate, design & build Smart Estates.
- ❑ Opportunities for our companies to build capabilities, implement innovative solutions, enhance efficiencies of estates, and deliver unique & varied customers' experiences

# WHAT IT MEANS TO DIFFERENT STAKEHOLDERS



## ESTATE OWNERS



DEVELOPERS



FACILITY OWNERS

- Operational efficiencies and lower costs
- Integrated data and enhanced estate connectivity
- Anticipatory and proactive in estate management



## ENTERPRISES



RETAIL



F&B

- New formats & concepts
- Resource-lite & sustainable
- Differentiated through technology



## LIVING



ENTREPRENEURS/  
IT EMPLOYEES



FAMILIES



STUDENTS

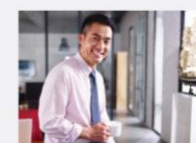


ELDERS

- Enhanced unique experiences
- Seamless & personal



## TECH COMPANIES



IT BUSINESS



Built Env

- Develop deep tech & smart estates related capabilities
- Cross-pollination & co-innovation through consortiums or partnerships
- Scalable business models for internationalisation

# OVERALL DESIRED OUTCOMES OF IMDA'S EFFORTS



Clear capability development & growth for developers, BE & technology/solution providers in the BE space



Productivity enhancements, cost reduction or enhancement in user experience for the developers, building owners, facilities management companies or tenants



Adoption of the innovative technologies and internationalisation of the solutions



# PARTNERING YOU ON THIS JOURNEY

## Built Environment Companies



## Tech/Solution Providers



IMDA will facilitate & support partnerships to co-create innovative & integrated services that will value add to developments locally and regionally

## Developers & Asset Owners



Test-bedding & Deployment of smart urban solutions

# What does it mean for individuals, enterprises & estate owners

## 1 Estate Owners: Smart Environment

### Efficient & proactive

#### Energy efficiency

- On demand lighting, cooling, cleaning

#### Integrated FM

- Central command, control & surveillance
- Digital Twin for modelling and simulation

#### Anticipatory

- Predictive maintenance

## 2 Businesses: Smart Enterprises

### Innovative and scalable

#### Resource-Lite

- On demand stocking through real-time tracking and footfall analytics

#### Labour-Lite

- Network of UAVs/AGVS for food/goods delivery
- Unmanned stores

#### Differentiated business

- Innovative retail/F&B concept by leveraging on technology, e.g. AR/VR



## 3 People: Smart Living

### Seamless & Personalised

#### Your Face, Your ID

- Biometric payment, access, reservations

#### On demand service

- Autonomous transport
- Last mile delivery

#### Personalisation

- Seamless personal experience

Open API & data exchange to be connected to Estate Level Digital Platform

# Illustrations of Solutions to Test

## Unmanned security & surveillance



For anomaly detection



Integrated Facility Management - Central command and control

## Smart Environment



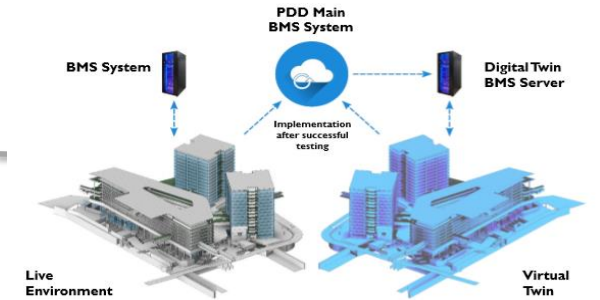
## Predictive analytics



For proactive maintenance

How can the technologies be augmented for hyper-connectivity?

## Digital Twin



For modelling and simulation

## Smart Parking



For resource allocation & use convenience

# Illustrations of Solutions to Test

## Unmanned Store



## Unmanned drone/ ground vehicle fleet for delivery



## Smart Enterprises



### SHOP

Consumer enters shop and browse products.

### PAY

Self-checkout.

How can the technologies be augmented for innovative applications?

### ORDER

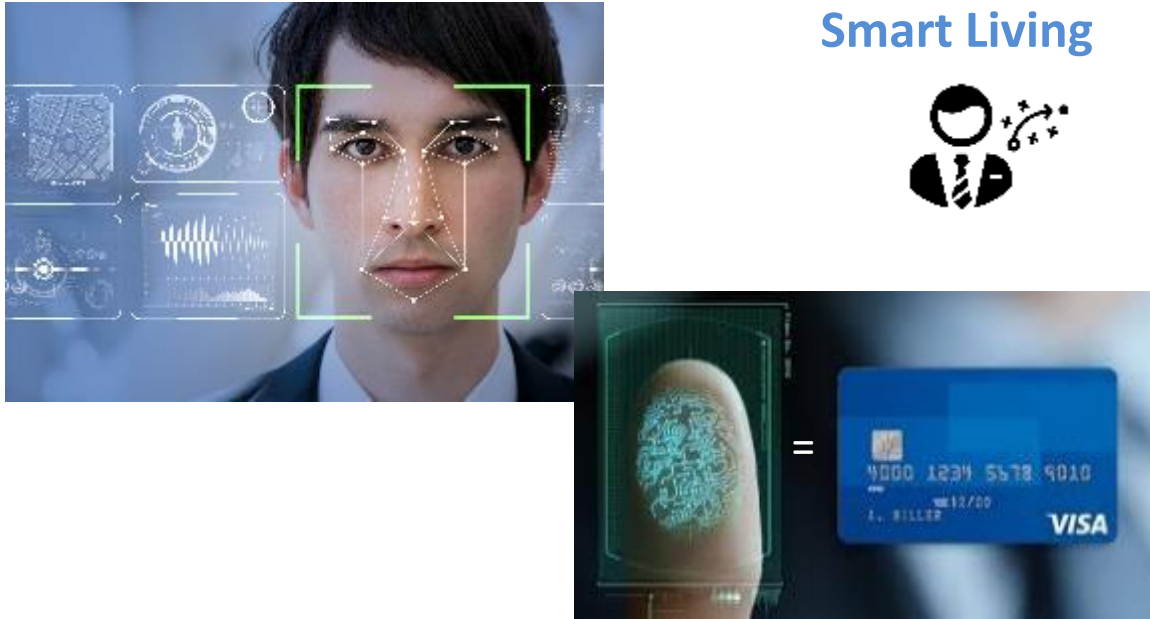
Consumer makes orders online.

### DELIVER

Fulfilment made through unmanned droids within the day.

# Illustrations of Solutions to Test

## Biometric ID



## AR Way Finding



### ACCESS

Destination-based access using biometric technology.

### PAY

Payment using face or fingerprint.

How can the technologies be augmented for seamless experiences?

### POINT

Consumer point camera at surrounding.

### GO

Instant recommendations and directions.

# Trial Sites

## LaunchPad @ one-north



### Key Development Details

**Address:** 67, 71, 73, 77, 79 & 81 Ayer Rajah Crescent  
**Industry:** Start –up  
**Estimated Land Area:** 4.0 ha  
**Estimated Footfall:** 50,000/mth  
**Tenant units:** 260

### Amenities

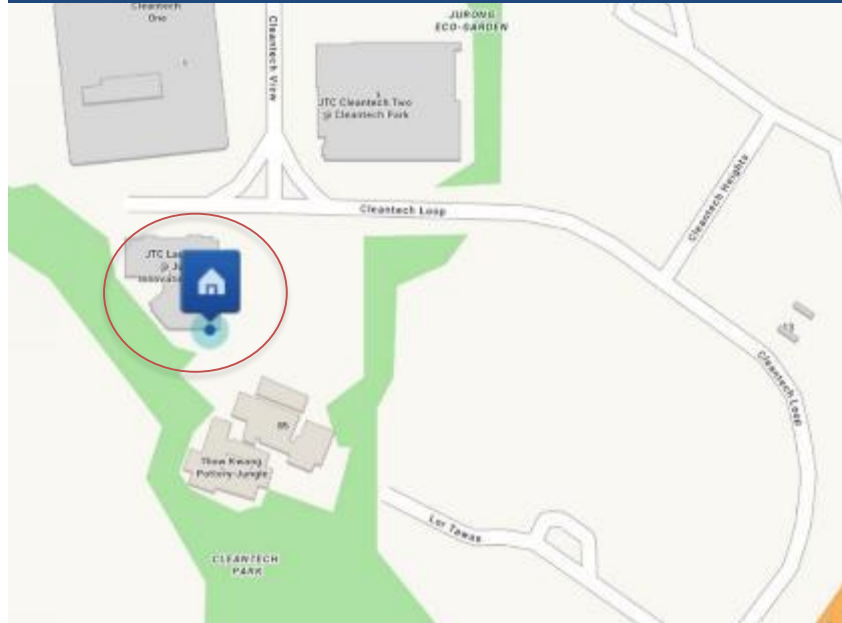
**Food & Beverages:** Timber+, Vending Machines (Drinks), Quickpick mini mart (weekday)  
**Shared Meeting Room:** 3 Rms (Manual booking at FMC office)  
**Shared Event Hall:** 1 hall (Manual booking at FMC office)  
**Shared Sports Court:** Outdoor Futsal Court, Outdoor Basketball Court (Manual booking at FMC office)  
**Carpark Lots:** 180 lots

### Core Maintenance Team

**Property Executive:** 3  
**Cleaners:** 15  
**Security Guards:** 0

# Trial Sites

## LaunchPad @ JID



## Core Maintenance Team

**Property Executive: 1**  
**Cleaners: 3**  
**Security Guards: 0**

## Key Development Details

**Address:** 2 Cleantech Loop, Singapore 637144  
**Industry:** Start –up  
**Estimated Land Area:** 0.33 ha  
**Estimated Footfall for LP:** 800/mth  
**Estimated Footfall including CTP and JEG:** 4,200/mth  
**Tenant units:** 27

## Amenities

**Food & Beverages:** Café (Not opened yet)  
**Shared Meeting Room/ Event:** CleanTech Park

# Trial Sites

## Fusionopolis One



## Core Maintenance Team

**Property Executive: 5**  
**Cleaners: 17**  
**Security Guards: 10**

## Key Development Details

**Address:** 1 & 3 Fusionopolis Way, Singapore 138632  
**Industry:** Infocomm & Media  
**Estimated Land Area:** 1.2 ha  
**Estimated Footfall :** 10,000/mth

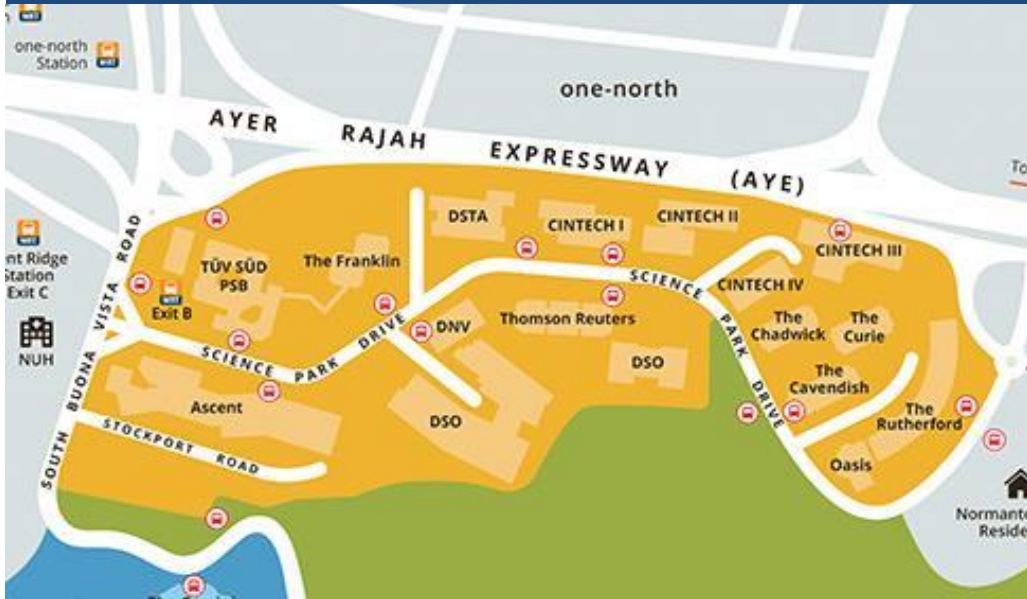
## Amenities

**Food & Beverages:** Retail podium comprising of a food court, F&B outlets and supermarket  
**Shared Meeting Room/ Event:** L5 Symbiosis Meeting and Seminar Rooms, one-north Gallery, Genexis Theatre



# Trial Sites

## Science Park 1



## Key Development Details

**Address:** 1 Science Park Drive, Singapore 118221

**Industry:** varied

**Estimated Land Area:** 30 ha

**No. of buildings:** 17

**Average Park Population:** 7,500 / mth

**Tenant units:** 40 (office), 33 (retail)



## Amenities

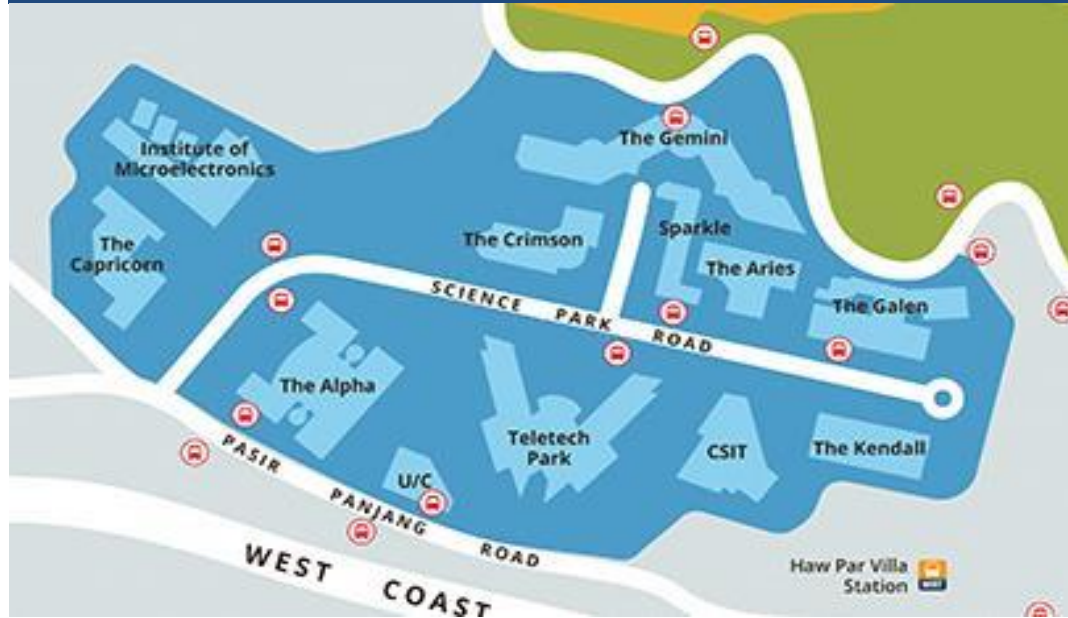
**Food & Beverages:** 6

**Shared Meeting Room/Event:** thebridge

**Parking lots:** 2,500

# Trial Sites

## Science Park 2



## Key Development Details

**Address:** Science Park Road, Singapore 117674

**Industry:** varied

**Estimated Land Area:** 25 ha

**No. of buildings:** 12

**Average Park Population:** 5,000 / mth

## Amenities

**Food & Beverages:** 4

**Shared Meeting Room/ Event:** -

**Parking lots:** 1,800

# Trial Sites

## Galaxis



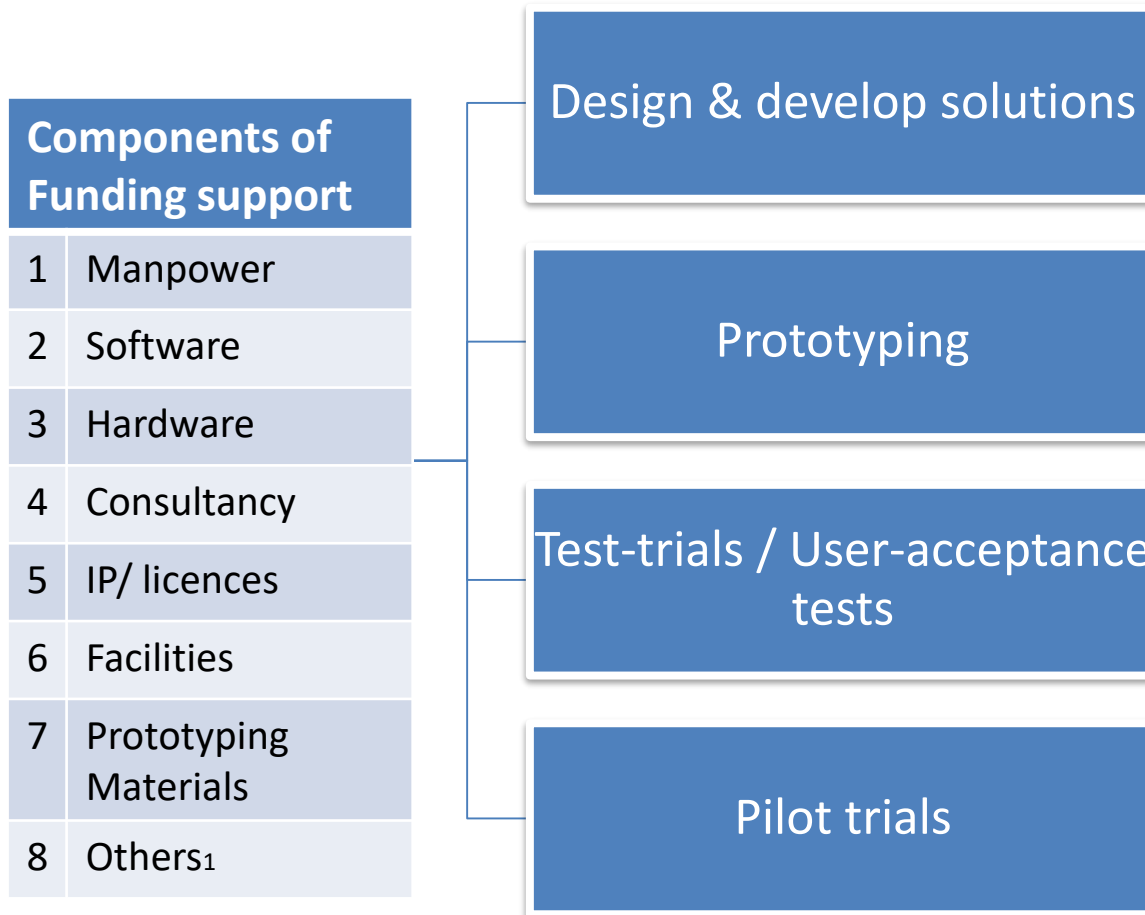
## Key Development Details

**Address:** 1 Fusionopolis Place, Singapore 138522  
**Industry:** ICT, Media, Physical Science, Engineering  
**Gross Floor Area:** 69,000 sqm  
**Net Lettable Area:** 56,000 sqm  
**Estimated Footfall:** 5,000 / mth

## Amenities

**Food & Beverages:** 20  
**Shared Meeting Room/Event:** -  
**Parking lots:** 300

# Scope of Funding Support & Eligibility



50% project cost support, capped at \$300K grant support per project<sup>2</sup>

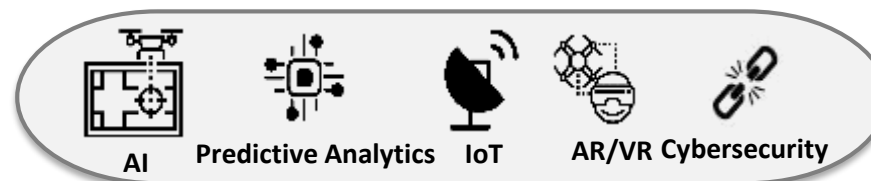
## ■ Consortia / Strategic Partnerships (led by a local company<sup>3</sup>)

- Consortium of technology companies, facility management companies, telco etc., or
- Strategic partnership of technology companies with complimentary capabilities

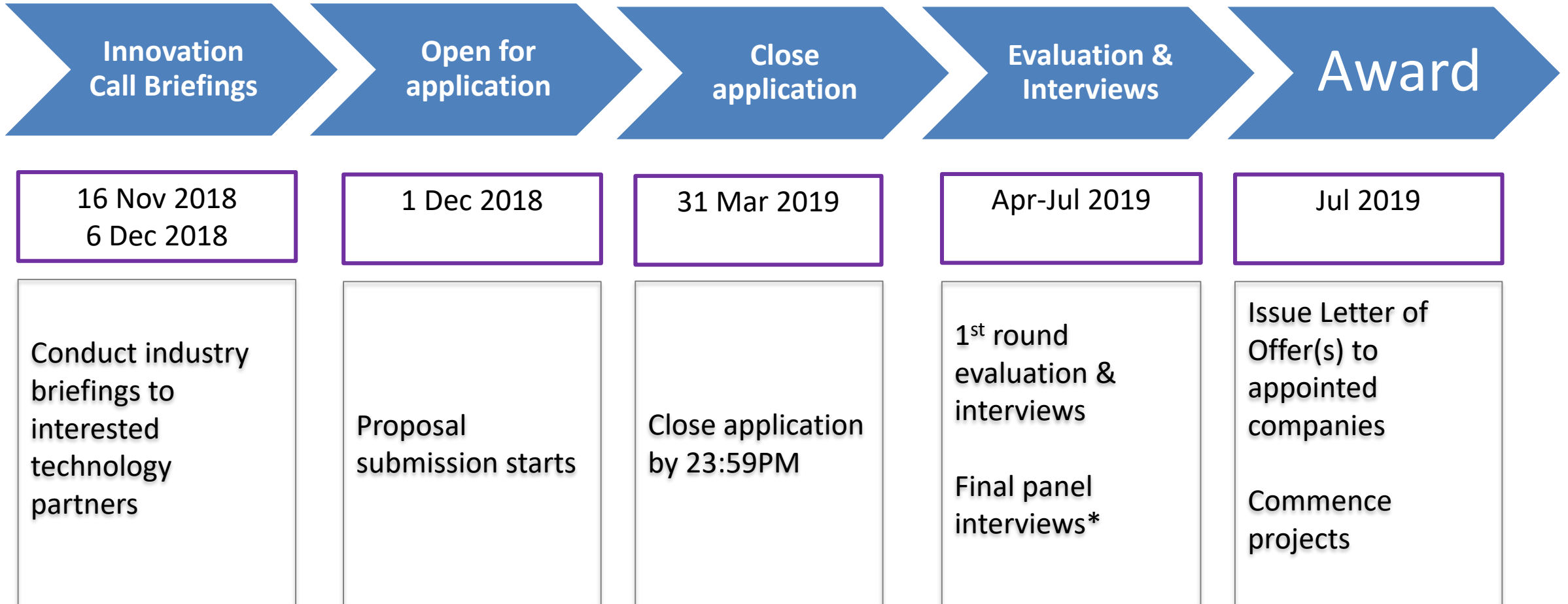
1. Cost components must contribute directly to the product development.  
 2. Projects should not exceed 18 months.  
 3. Local companies are defined as **companies with 30% local shareholdings and core activities in Singapore**

# Evaluation Parameters

	Assessment Area	Considerations
1	<b>Business Viability</b>	<ul style="list-style-type: none"> <li>• Sustainable &amp; scalable business model</li> <li>• Adoption viability</li> </ul>
2	<b>Technical Feasibility &amp; Innovation</b>	<ul style="list-style-type: none"> <li>• Novelty and innovativeness</li> <li>• Sound technical specifications, concise plan in solution development and prototyping</li> <li>• Interoperability</li> <li>• Data collection and data security integrity</li> <li>• Modular design for ease of scaling</li> <li>• Comply to industry standards</li> </ul>
3	<b>User Acceptance</b>	<ul style="list-style-type: none"> <li>• Direct positive outcome to users' business or experience: quantifiable or qualifiable outcomes in productivity, enhanced user experience or cost savings</li> <li>• Ease of adoption for users</li> </ul>
4	<b>Competency of Project team / Consortium</b>	<ul style="list-style-type: none"> <li>• Technical expertise and capabilities</li> <li>• Sound financial standings (or investments)</li> <li>• Complimentary capabilities and sustainable collaboration model (for consortium)</li> </ul>



## Key Milestones & Timeline



\*Panel consisted of IMDA, developers (JTC/ASB) and academic or industry experts.

# Smart Estates of the Future



# JTC's Future Smart Estates



- Mixed Use Developments (Work, Live, Play, Learn)
- Promote Industry-Academia Collaboration
- Smart, Sustainable, and Livable Estates

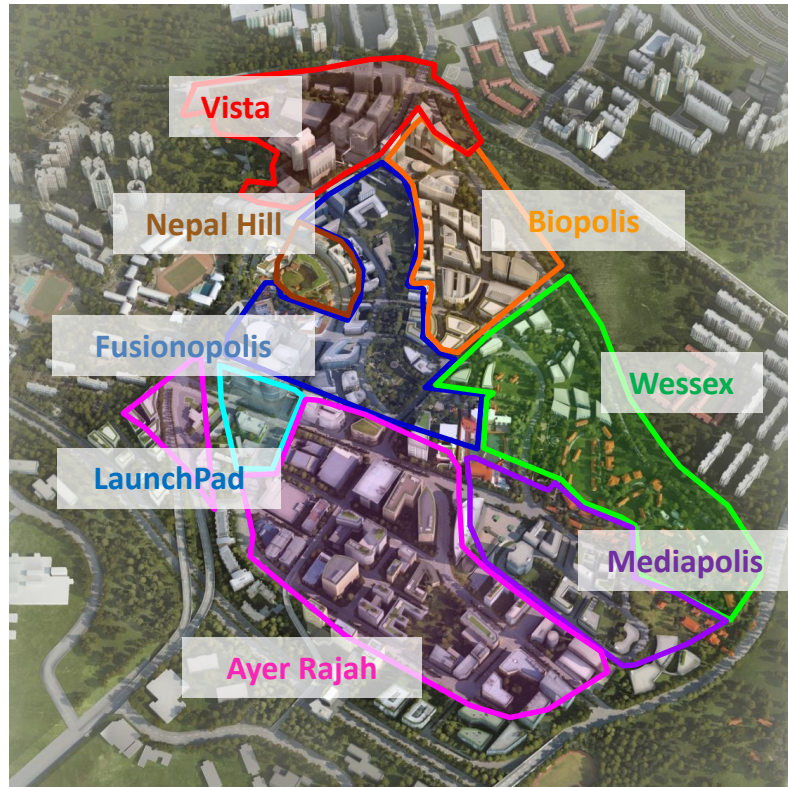


**Jurong Innovation  
District**  
Ready from 2022



**Punggol Digital  
District**  
Ready from 2023

# one-north



## one-north

- 200-hectare mixed-use estate that hosts research facilities and business park space
- Supports the industries of Biomedical Sciences, Infocomm Technology (ICT), Media, Start-ups, Physical Sciences and Engineering
- Work-live-play-learn environment



# A Living Lab for Innovations



## Autonomous & Electric Vehicles

one-north is the first estate in Singapore where autonomous vehicles are tested on public roads; electric car-sharing services are also test-bedded here



*Autonomous Vehicles*



*Electric Vehicles*

## Drone Testing

Singapore's first drone estate where companies and research institutions can test-bed innovative unmanned aircraft systems (UAS) in an urban environment



Top of the News  
Buzz over S'pore's  
first drone estate  
A4



# One-north to be designated as S'pore's first drone estate

# A Living Lab for Innovations



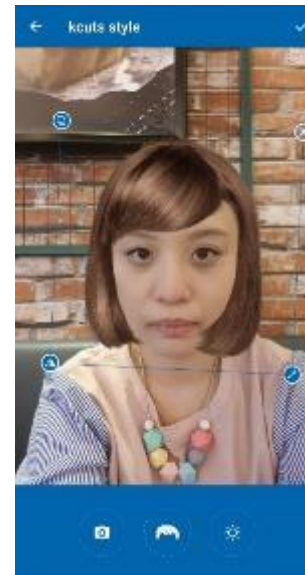
## Fully Self-Checkout Supermarket

Testing a new retail concept with a dining area, ready-to-eat meals and meeting rooms within a supermarket. Utilising technology like self-checkout, camera weighing scale with recognition capabilities.



## Augmented Reality at Hair Salons

Hair salon, KCut has a photo booth that lets customers try out and pick different hairstyles before going through with a cut.



# JTC Trial Sites

Fusionopolis One  
@ one-north



LaunchPad  
@ one-north



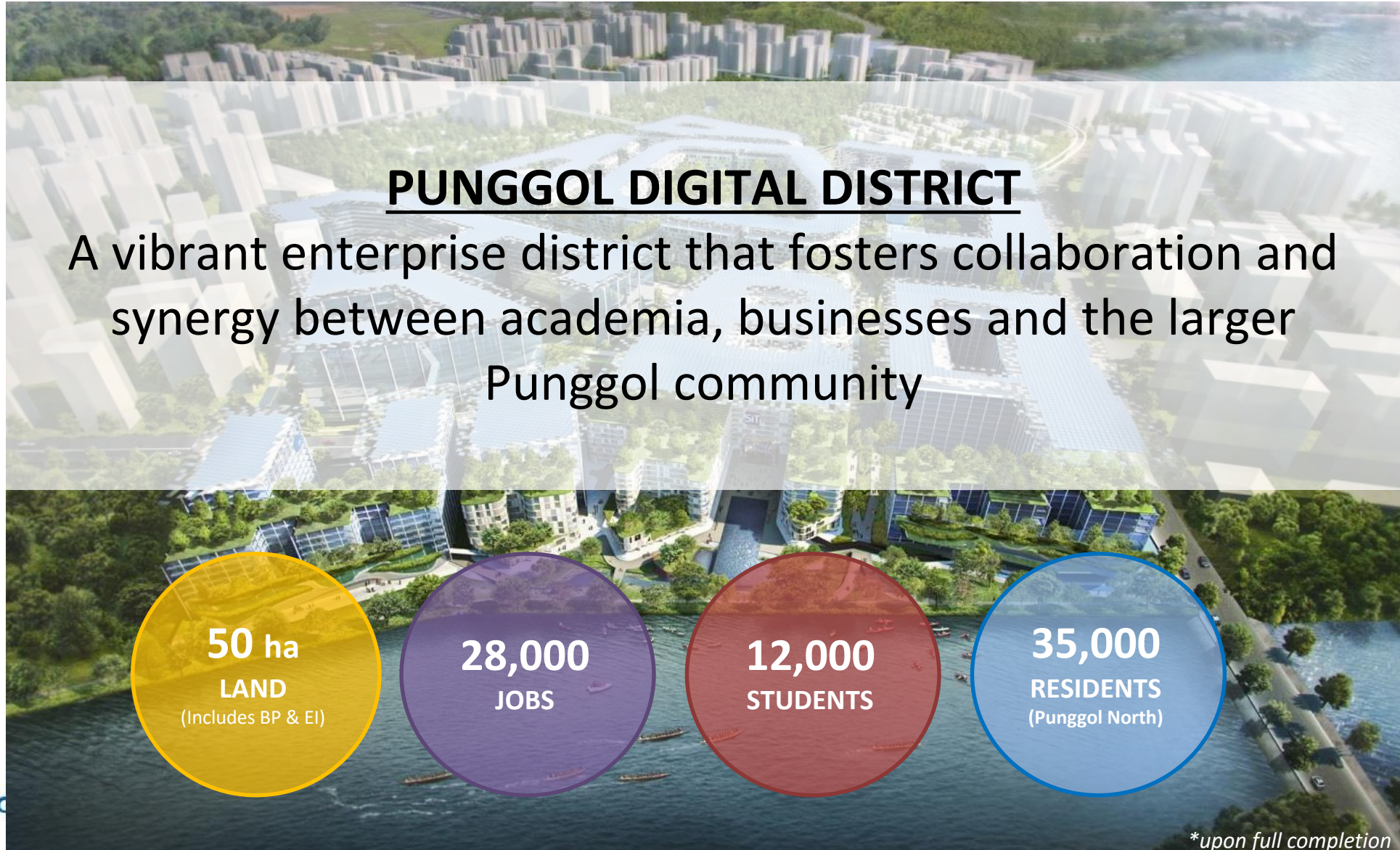
LaunchPad  
@ Jurong Innovation  
District



# The Vision



- Punggol Digital District



## PUNGGOL DIGITAL DISTRICT

A vibrant enterprise district that fosters collaboration and synergy between academia, businesses and the larger Punggol community

**50 ha**  
**LAND**  
(Includes BP & EI)

**28,000**  
**JOB**

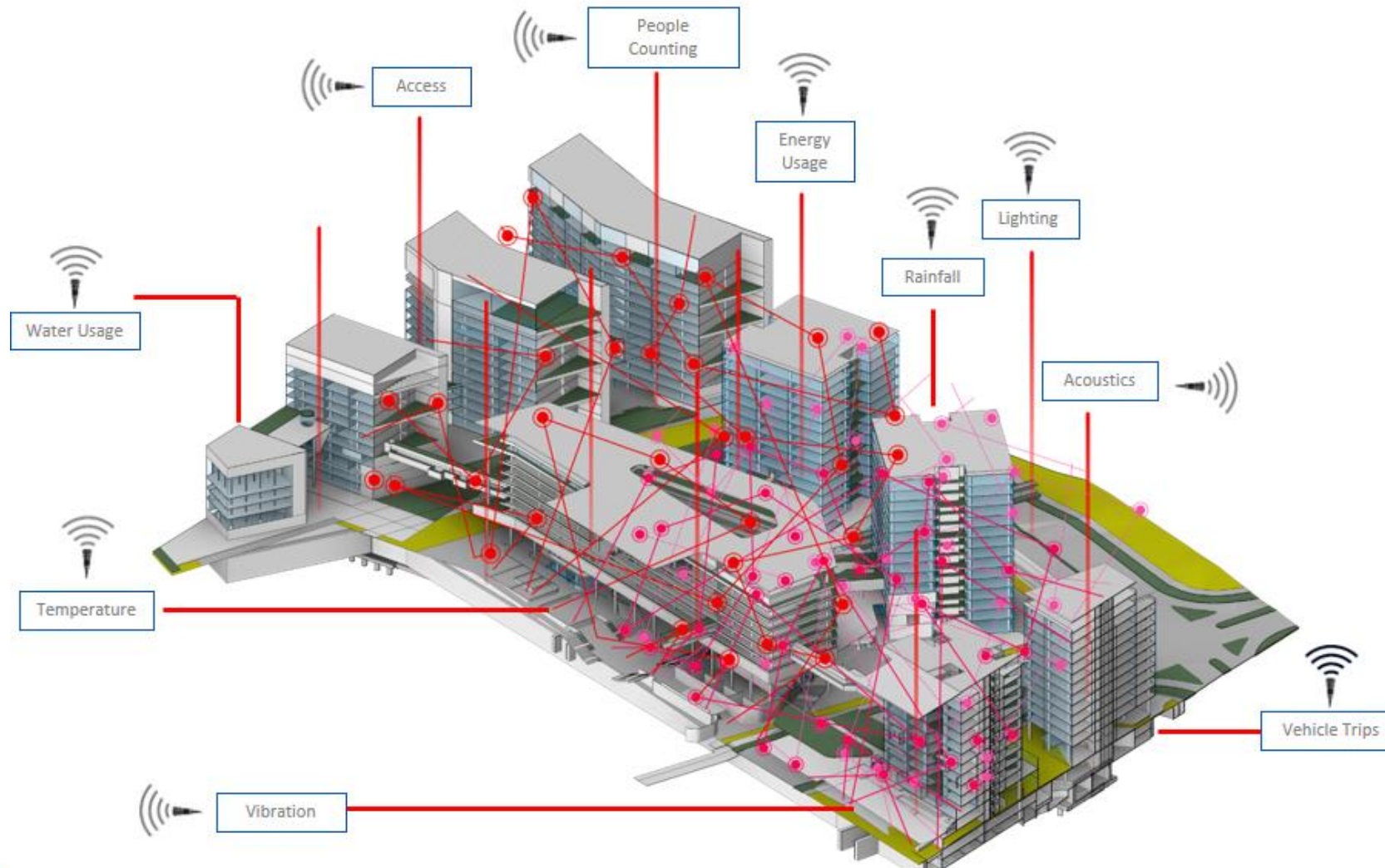
**12,000**  
**STUDENTS**

**35,000**  
**RESIDENTS**  
(Punggol North)

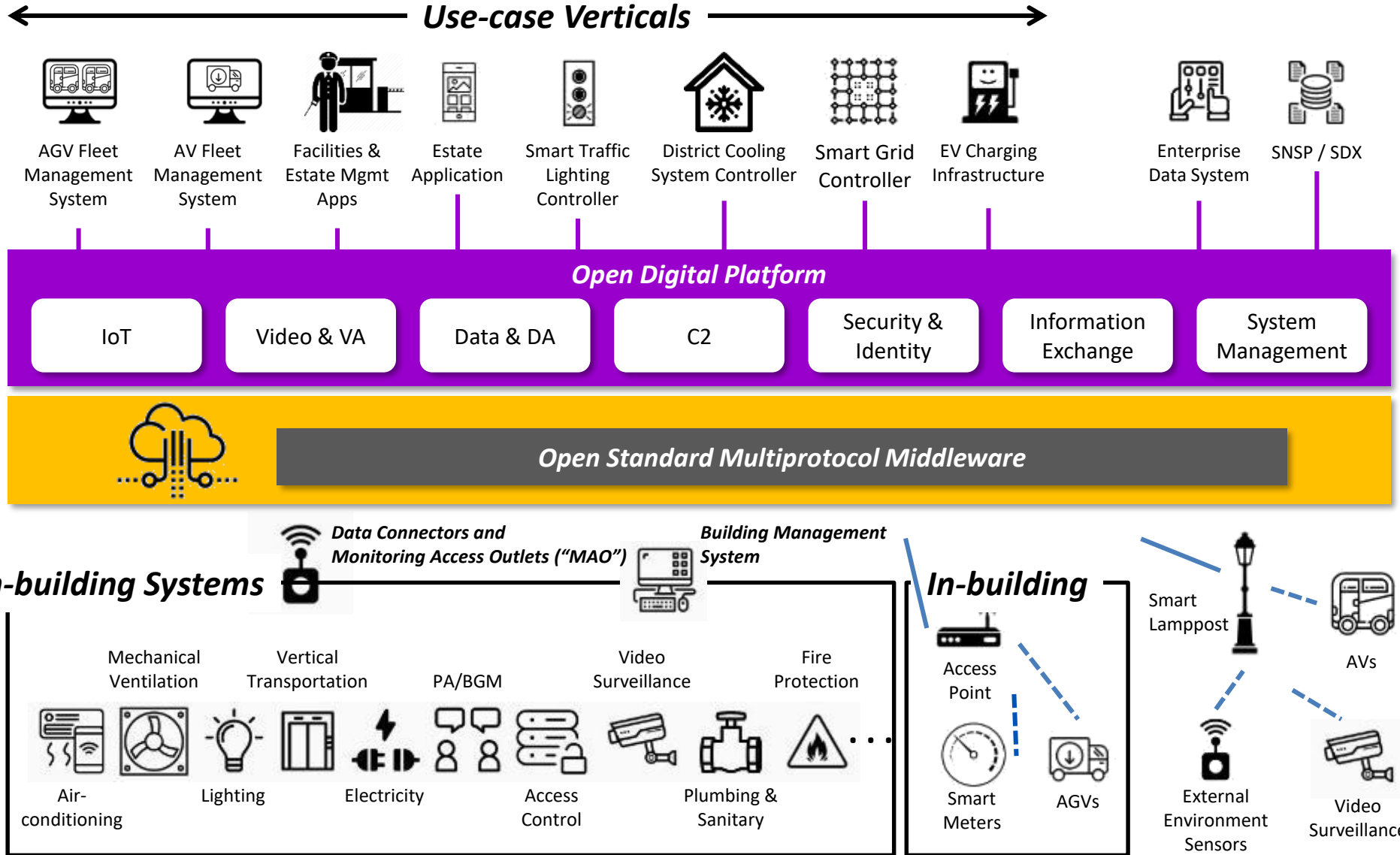
# District-wide Sensor and IoT Network



- Allows JTC to centrally monitor entire PDD



# Open Digital Platform



# Digital Technology

- Possible Deployments



## Smart Operations



District Ops Center



Sensor Network



Video Analytics

## Smart Utilities



DCS



PWCS



Rooftop Solar PV



Smart Grid

## Smart Mobility



AV Transport



PMD Sharing



Smart Parking



Drones & Robots

## Smart Experience



Smart Wayfinding



Building App



Personalised Climate Control



Smart Lighting

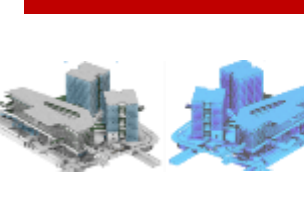
## Smart Industry



Makerspaces



Urban Logistics & AGVs



Digital Twin Test Bedding

## Intended Outcomes



Operational  
Efficiency

Resilient  
Infrastructure

Improved  
User  
Experience

Enabling  
Innovation

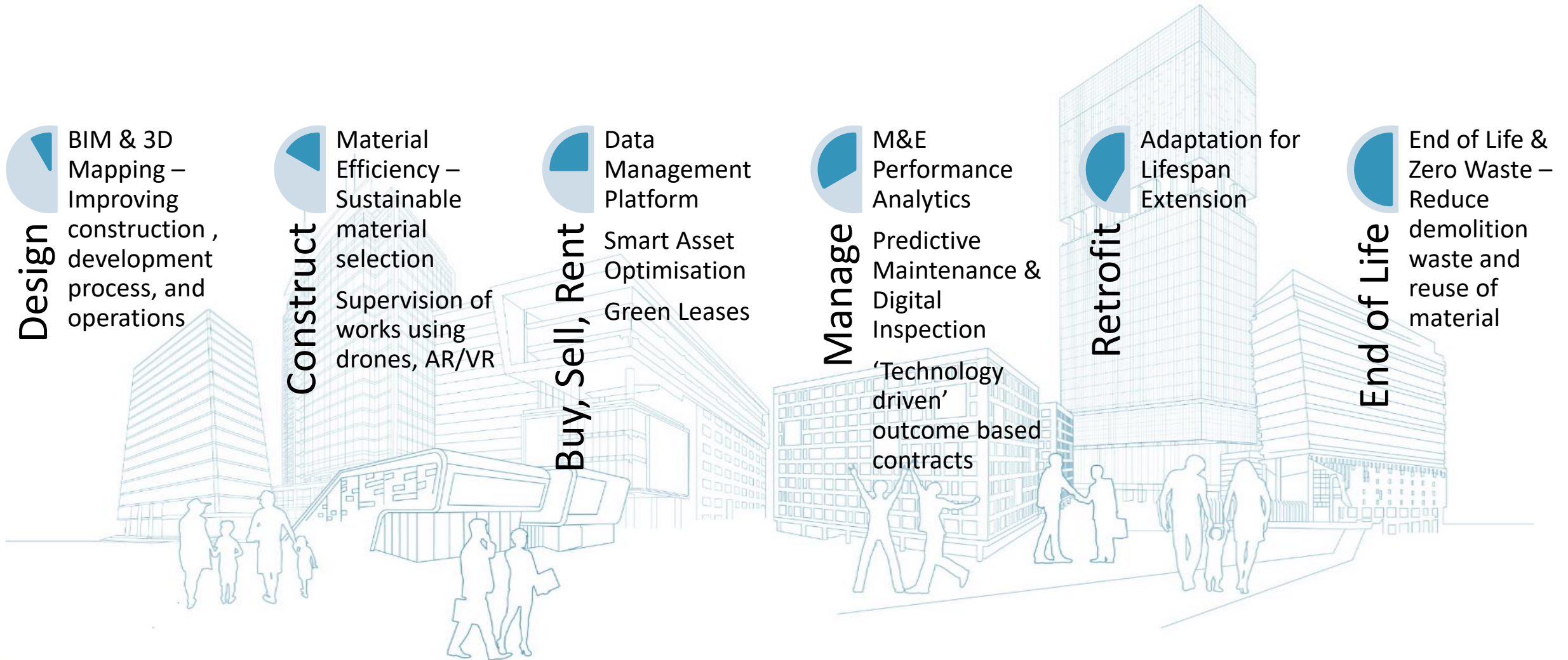
***Sharing by Ascendas-Singbridge (ASB)***



# Key Trends in Real Estate



# Real Estate Value Chain



# Our Initiatives



**Smart Building**



**Green & Sustainability**



**Operational Excellence**



**Connected Experience**



**Occupant Wellness**



**ASB Operations Centre**



**Solar Energy Initiative**



**Mobile Inspection**



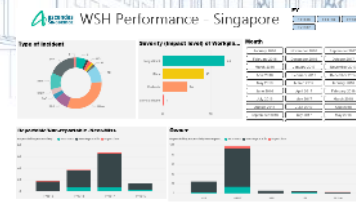
**Mobile Application**



**Integrated IAQ Solution**



**Car Park Predictive Analytic**



**Adoption Of Power BI**



**Digital Signage**

# Our Innovation Focus



## Smart Building

*Exploit Technologies to enhance building management*



## Green & Sustainability

*Environmentally responsible design, construction & operations*



## Operational Excellence

*Professional & operationally excellent on all customer fronts*



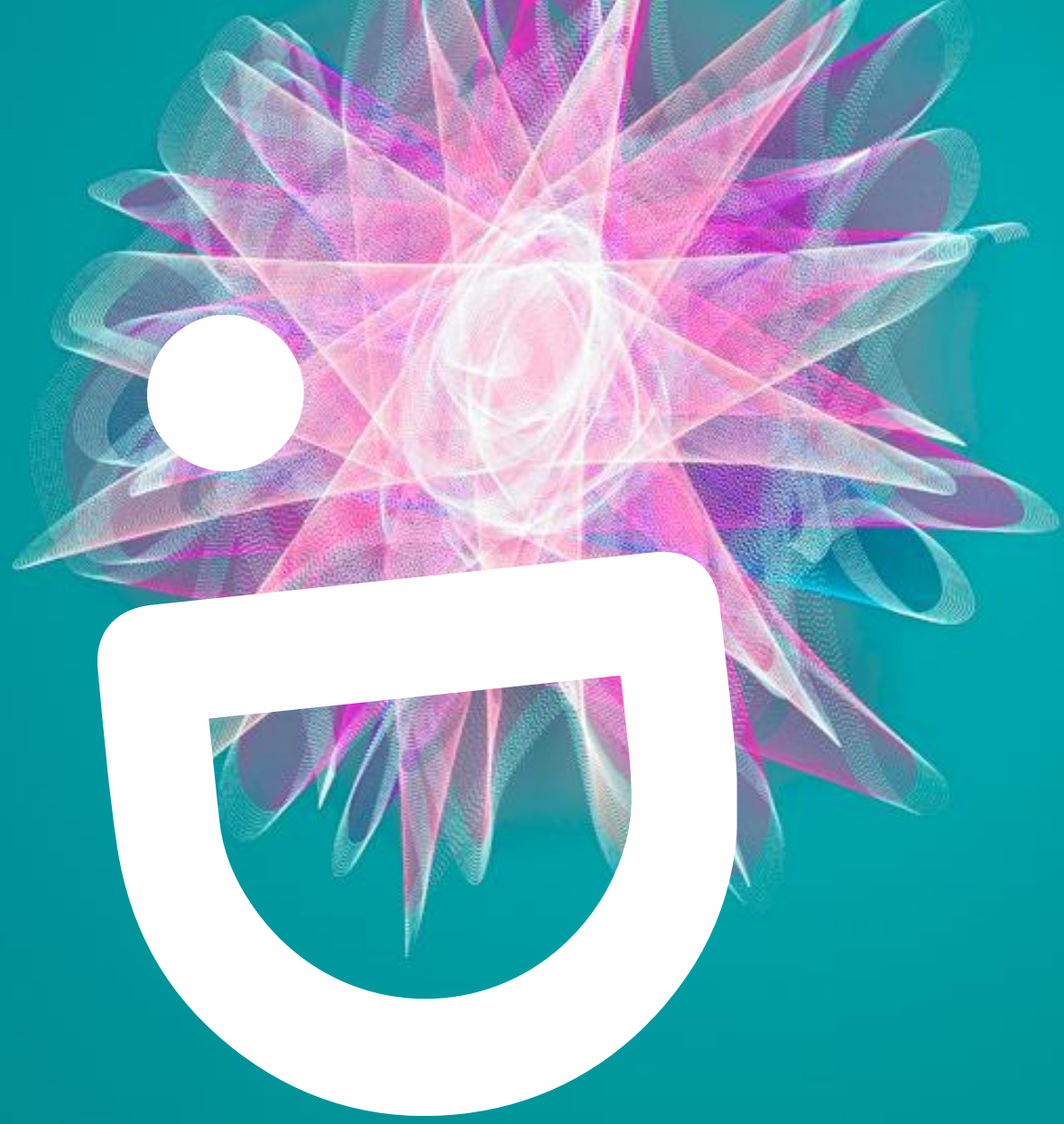
## Connected Experience

*Create experiences that connect people-to-building & people-to-people in our park/buildings*



## Occupant Wellness

*Occupants feel good and live well in our space*



**Thank You!**