

WHAT IS A SMART ESTATE?

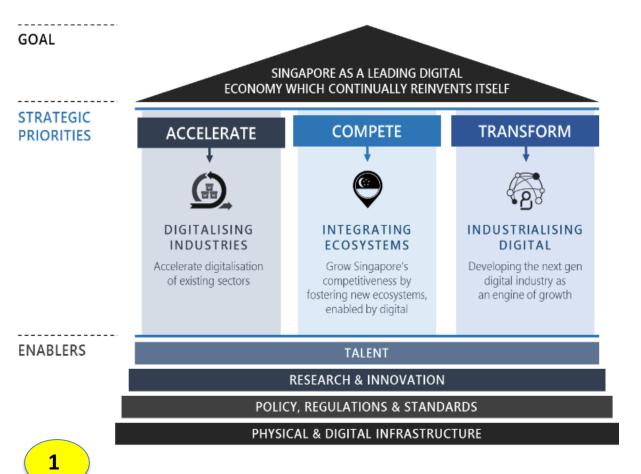
- ☐ A hyper-connected smart estate of the future will enrich the lives of the community through greater accessibility to technology
- ☐ Connectivity will enable innovative digital services



Smart Environment Smart Enterprises Smart Living

Key Building Blocks of IMDA's vision of Smart Estates

WHY SMART ESTATES?



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







ENTERPRISES



- Operational efficiencies and lower costs
- Integrated data and enhanced estate connectivity
- Anticipatory and proactive in estate management
- New formats & concepts
- Resource-lite & sustainable
- Differentiated through technology









- Enhanced unique experiences
- Seamless & personal



TECH COMPANIES





- Develop deep tech & smart estates related capabilities
- Cross-pollination & coinnovation 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









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

Tech/Solution Providers







Developers & Asset Owners









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



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



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

Illustrations of Solutions to Test

Unmanned security & surveillance



For anomaly detection

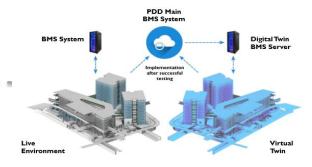
Integrated Facility Management - Central command and control

Smart Environment



How can the technologies be augmented for https://www.nyer.connectivity?

Digital Twin



For modelling and simulation

Predictive analytics



For proactive maintenance

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

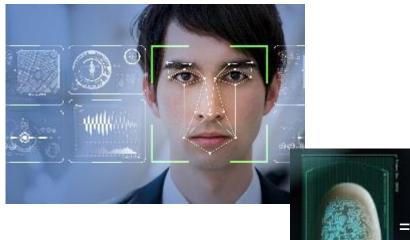
Consumer makes orders online.

DELIVER

Fulfilment made through unmanned droids within the day.

Illustrations of Solutions to Test

Biometric ID



Smart Living





AR Way Finding



ACCESS

Destination-based access using biometric technology.

PAY

Payment using face or fingerprint.

How can the technologies be augmented for <u>seamless</u> <u>experiences</u>?

POINT

Consumer point camera at surrounding.

GO

Instant recommendations and directions.

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

Meeting

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

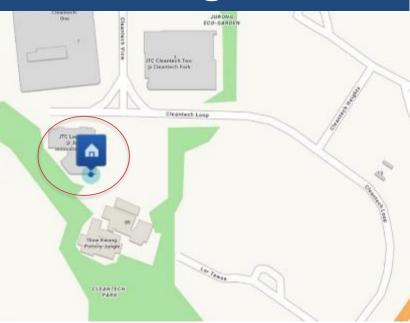
Property Executive: 3

Cleaners: 15

Security Guards: 0



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

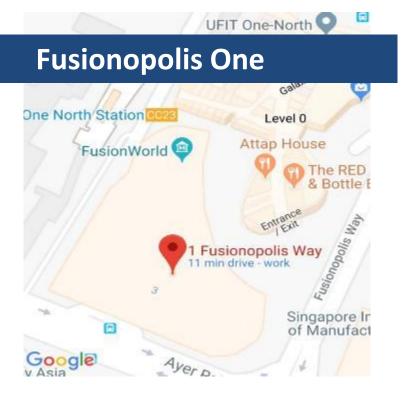
Amenities

Food & Beverages: Café (Not opened yet)

Shared Meeting Room/ Event: CleanTech Park









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

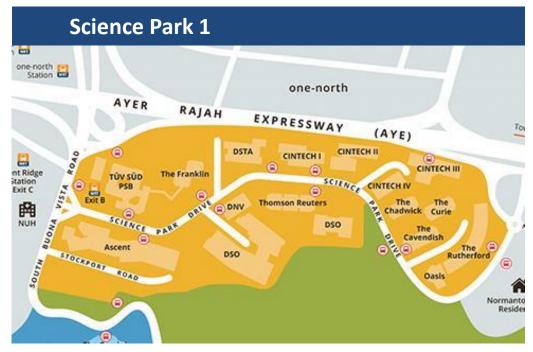
outlets and supermarket

Shared Meeting Room/ Event: L5 Symbiosis Meeting and Seminar

Rooms, one-north Gallery, Genexis Theatre















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

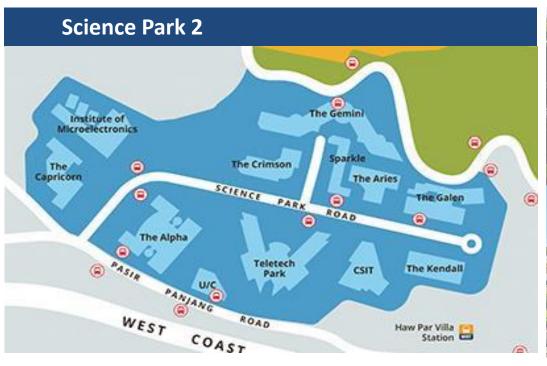
Food & Beverages: 6

Shared Meeting Room/Event: thebridge

Parking lots: 2,500











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











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

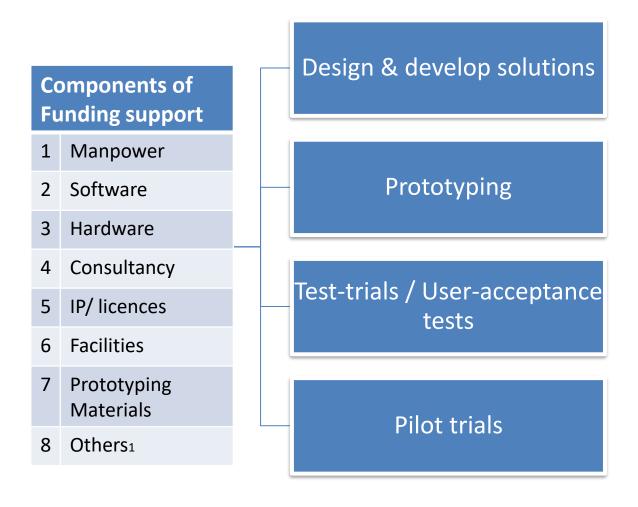
Shared Meeting Room/Event: -

Parking lots: 300





Scope of Funding Support & Eligibility



50% project cost support, capped at \$300K grant support per project₂

per projecta

- Consortiums / Strategic Partnerships (led by a local company₃)
 - Consortium of technology companies, facility management companies, telco etc., or
 - Strategic partnership of technology companies with complimentary capabilities

- Cost components must contribute directly to the product development.
- 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	Business Viability	 Sustainable & scalable business model Adoption viability
2	Technical Feasibility & Innovation	 Novelty and innovativeness Sound technical specifications, concise plan in solution development and prototyping Interoperability Data collection and data security integrity Modular design for ease of scaling Comply to industry standards
3	User Acceptance	 Direct positive outcome to users' business or experience: quantifiable or qualifiable outcomes in productivity, enhanced user experience or cost savings Ease of adoption for users
4	Competency of Project team / Consortium	 Technical expertise and capabilities Sound financial standings (or investments) Complimentary capabilities and sustainable collaboration model (for consortium)







Key Milestones & Timeline

Innovation Call Briefings

Open for application

Close application

Evaluation & Interviews

Award

16 Nov 2018 6 Dec 2018

1 Dec 2018

31 Mar 2019

Apr-Jul 2019

Jul 2019

Conduct industry briefings to interested technology partners

Proposal submission starts

Close application by 23:59PM

1st round evaluation & interviews

Final panel interviews*

Issue Letter of Offer(s) to appointed companies

Commence projects

SG:D



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

Smart Estates of the Future

JTC's Future Smart Estates

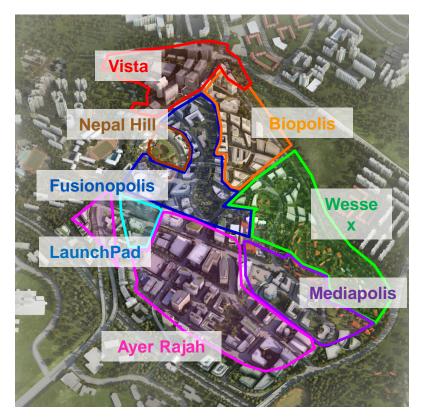


- Mixed Use Developments (Work, Live, Play, Learn)
- Promote Industry-Academia Collaboration
- Smart, Sustainable, and Livable Estates



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 carsharing 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



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 for this Call







The Vision

jtc

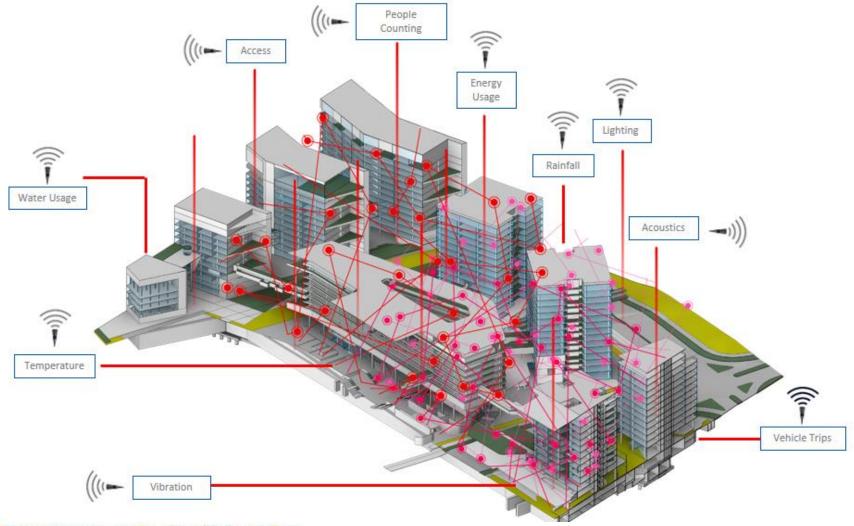
Punggol Digital District



District-wide Sensor and IoT Network

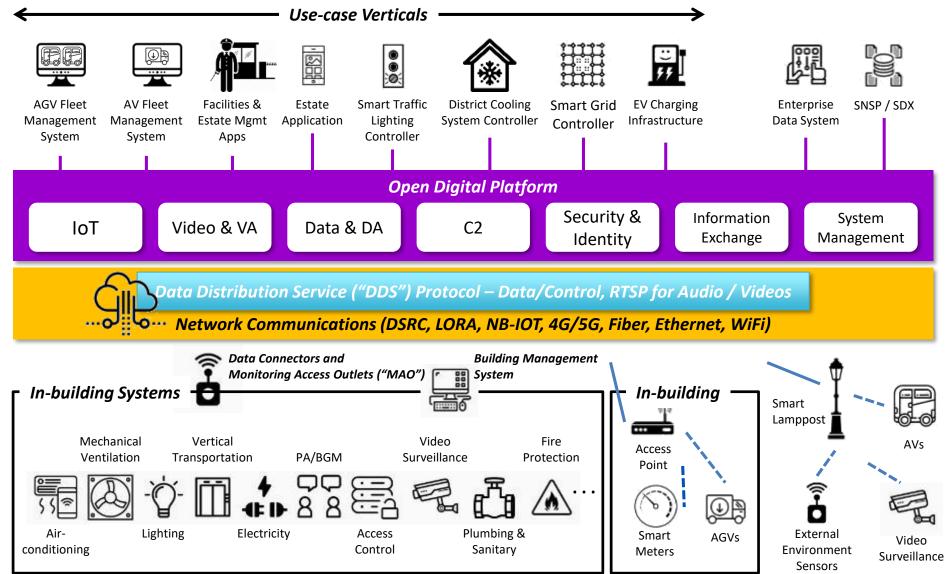


Allows JTC to centrally monitor entire PDD



Open Digital Platform





Digital Technology

Possible Deployments

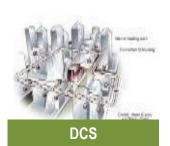
Smart Operations







Smart Utilities









Smart Mobility









Smart Experience









Smart Industry

jtc





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





 Harnessing Data, analytics, and new technology in real estate

Low Carbon Economy

 Movement towards long term science based carbon reduction targets



Changing Demographics

 Asset flexibility – tenant mix, management & leasing strateg

Inventive Communications

 Using VR to communicate visuals, and social media to engage the community

Health and Wellness

 Benchmark and improve the work environment to drive productivity







Real Estate Value Chain



BIM & 3D
Mapping –
Improving
construction,
development
process, and
operations

Material
Efficiency –
Sustainable
material
selection
Supervision of
works using
drones, AR/VR

of

Data Management Platform

Smart Asset
Optimisation

Green Leases

M&E Performance Analytics

Predictive
Maintenance &
Digital
Inspection

'Technology driven' outcome based contracts Adaptation for Lifespan Extension

Extension

End of Life & Zero Waste – Reduce demolition waste and

reuse of material

pu

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





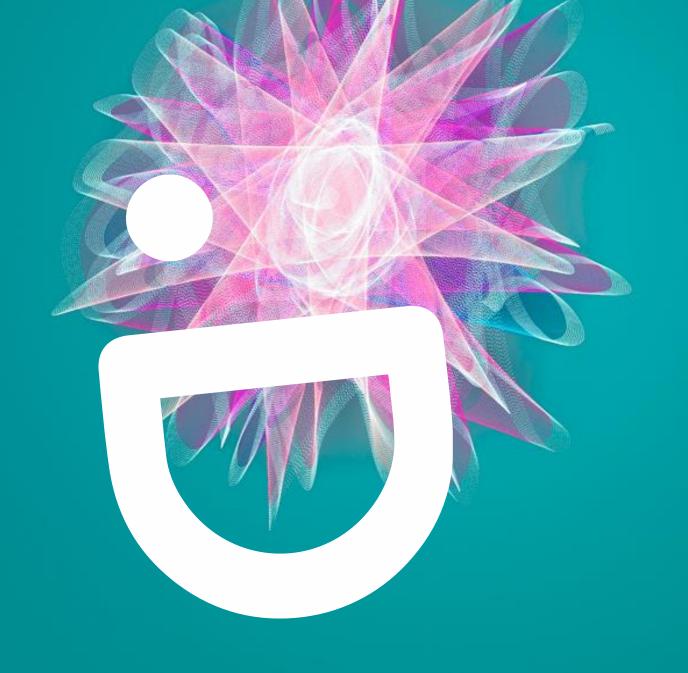
Connected Experience

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!



