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

Key Building Blocks of IMDA’s vision of Smart Estates

Smart Environment  Smart Enterprises  Smart Living
WHY SMART ESTATES?

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.

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.
WHAT IT MEANS TO DIFFERENT STAKEHOLDERS

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

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

**LIVING**
- Enhanced unique experiences
- Seamless & personal

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

2. 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

Predictive analytics

Smart Environment

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

SHOP
Consumer enters shop and browse products.

PAY
Self-checkout.

ORDER
Consumer makes orders online.

DELIVER
Fulfilment made through unmanned droids within the day.

Smart Enterprises

How can the technologies be augmented for innovative applications?
Illustrations of Solutions to Test

Biometric ID

ACCESS
Destination-based access using biometric technology.

PAY
Payment using face or fingerprint.

AR Way Finding

Smart Living

How can the technologies be augmented for seamless experiences?

POINT
Consumer point camera at surrounding.

GO
Instant recommendations and directions.
**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

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**Core Maintenance Team**

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

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**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
**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

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**Amenities**

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

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**Core Maintenance Team**

- Property Executive: 1  
- Cleaners: 3  
- Security Guards: 0
Trial Sites

**Fusionopolis One**

**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

**Core Maintenance Team**

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

**Components of Funding support**

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<th>Description</th>
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<td>Manpower</td>
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<td>Hardware</td>
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<td>Facilities</td>
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<td>Prototyping Materials</td>
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<td>8</td>
<td>Others&lt;sup&gt;1&lt;/sup&gt;</td>
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**Design & develop solutions**

**Prototyping**

**Test-trials / User-acceptance tests**

**Pilot trials**

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#### Components

- **Design & develop solutions**
- **Prototyping**
- **Test-trials / User-acceptance tests**
- **Pilot trials**

**Consortiums / 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

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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

<table>
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<tr>
<th>Assessment Area</th>
<th>Considerations</th>
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| **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
16 Nov 2018
6 Dec 2018
Conduct industry briefings to interested technology partners

Open for application
1 Dec 2018
Proposal submission starts

Close application
31 Mar 2019
Close application by 23:59PM

Evaluation & Interviews
Apr-Jul 2019
1st round evaluation & interviews
Final panel interviews*

Award
Jul 2019
Issue Letter of Offer(s) to appointed companies
Commence projects

*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

- 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.

**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

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 JOBS
12,000 STUDENTS
35,000 RESIDENTS (Punggol North)
District-wide Sensor and IoT Network

• Allows JTC to centrally monitor entire PDD
Digital Technology

• Possible Deployments

**Smart Operations**
- District Ops Center
- Sensor Network
- Video Analytics

**Smart Utilities**
- DCS
- PWCS
- Rooftop Solar PV

**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
- Test Bedding
Intended Outcomes

- Operational Efficiency
- Resilient Infrastructure
- Improved User Experience
- Enabling Innovation
Sharing by Ascendas-Singbridge (ASB)
Key Trends in Real Estate

1. **Low Carbon Economy**
   - Movement towards long term science based carbon reduction targets

2. **Changing Demographics**
   - Asset flexibility – tenant mix, management & leasing strategies

3. **Digital Innovation**
   - Harnessing Data, analytics, and new technology in real estate

4. **Inventive Communications**
   - Using VR to communicate visuals, and social media to engage the community

5. **Health and Wellness**
   - Benchmark and improve the work environment to drive productivity

6. **Inventive Communications**
   - Using VR to communicate visuals, and social media to engage the community
Real Estate Value Chain

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

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

**Buy, Sell, Rent**
- Data Management Platform
  - Smart Asset Optimisation
  - Green Leases

**Manage**
- M&E Performance Analytics
  - Predictive Maintenance & Digital Inspection
  - ‘Technology driven’ outcome based contracts

**Retrofit**
- Adaptation for Lifespan Extension

**End of Life**
- End of Life & Zero Waste – Reduce demolition waste and reuse of material
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!