



# The "Double Smart" approach to transforming public space to extend Hong Kong Housing Society's Ageing-in-Place initiative outdoors

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Karen Lee

Project Manager II (Spatial)

Jockey Club Design Institute for Social Innovation, PolyU



# Agenda

1. JCDISI's Double Smart Framework
2. Intergenerational Play (IG) Space: A Pilot
3. Hardware + Software – Service Design to encourage IG play and health management
4. Food for Thought



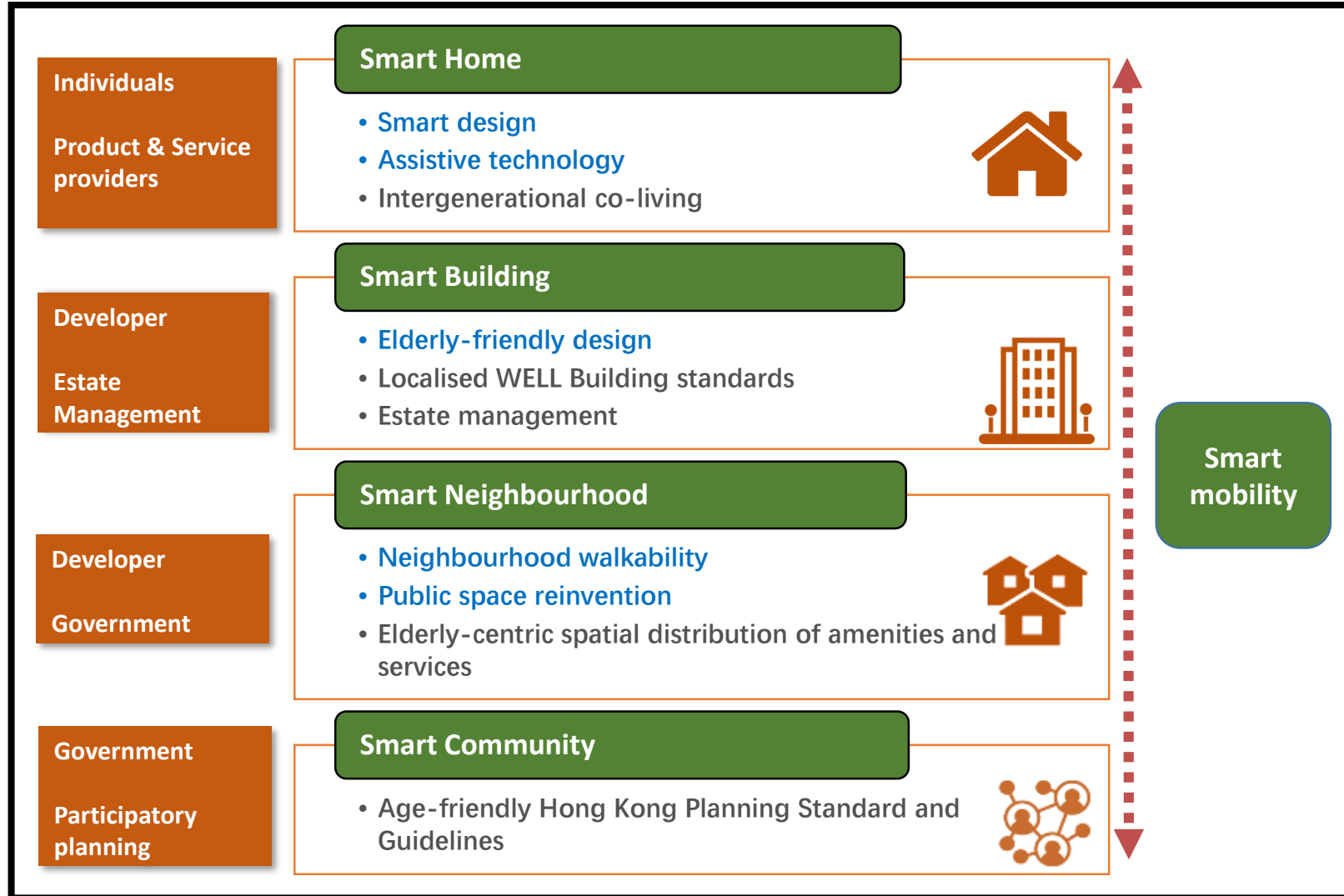
# JCDISI: “Double Ageing” (雙老化) as strategic focus



Population Ageing + Building Ageing

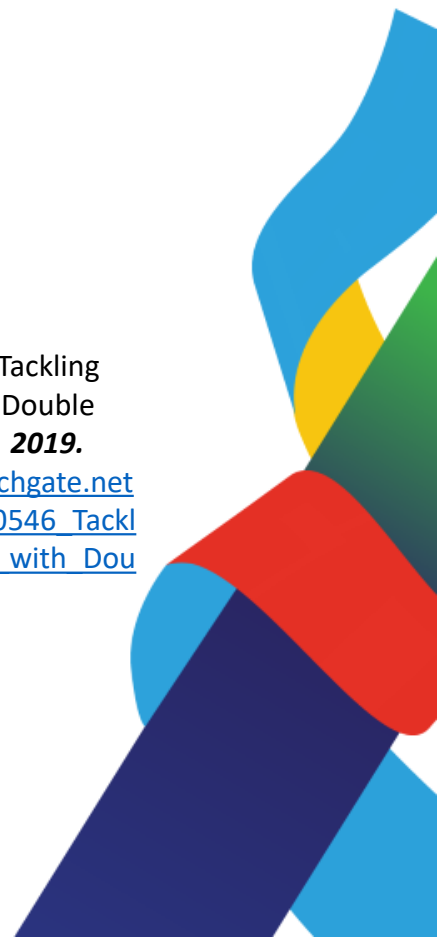


# JCDISI's Double Smart Framework



Key:  
 Hardware  
 Software

Ling, KK and Lee, K. Tackling Double Ageing with Double Smart. *HKIP Journal*, 2019.  
[https://www.researchgate.net/publication/341270546\\_Tackling\\_Double\\_Ageing\\_with\\_Double\\_Smart](https://www.researchgate.net/publication/341270546_Tackling_Double_Ageing_with_Double_Smart)





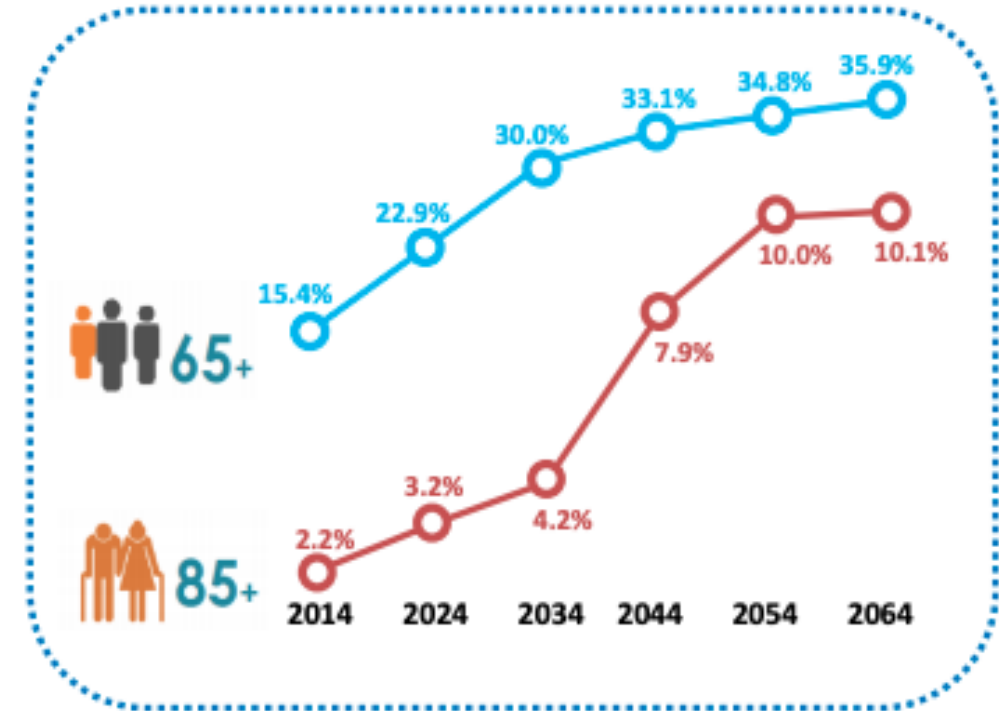
# HK: An Aged Society

1. 2016 – 13.1% “elderly singleton” & 25.2% “elderly doubleton”
2. 2026 – projected shortage of
  - 14,000 beds for Long Term Care Service
  - 18,000 Elderly Care Service
3. 2064 – 1/3 population > 65+, 1/5 population > 85+

➔ Empower independent living

➔ Tackle elderly loneliness

➔ Promote wellness + self-management to reduce premature institutionalisation



Source: HK2030+: Towards a Planning Vision and Strategy  
Transcending 2030

# Season 4 Intergenerational Play Space Vision & Objective

1. User-centric design that enables users of all ages to play and interact
2. Increase public's utilisation and enjoyment of public space
3. Promote physical, psychological and mental wellbeing of the ageing population
4. Explore using outdoor space as a means of mitigating the effect of “double ageing”
5. Explore “smart-ageing” and “smart-city” concepts - e.g. IoT integration in health tracking, dementia-friendly environment



Human-centric  
Design

IG play park design  
concept

Participatory  
Co-design

Multi-disciplinary

Smart Ageing &  
Smart City

Knowledge  
Transfer

# Intergenerational Play Space: A Pilot

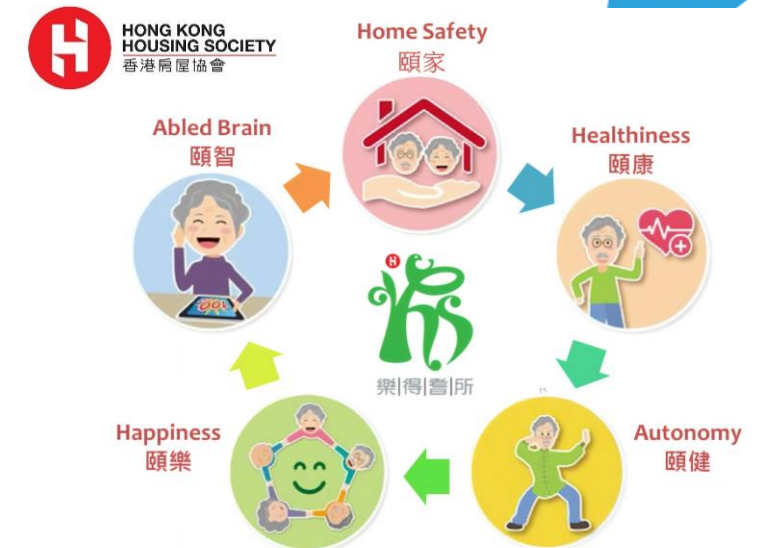
## Hong Kong Housing Society (HKHS)

- The housing laboratory of Hong Kong
- A strong advocate of quality housing

## Aspirations of Action Project Co-organisers



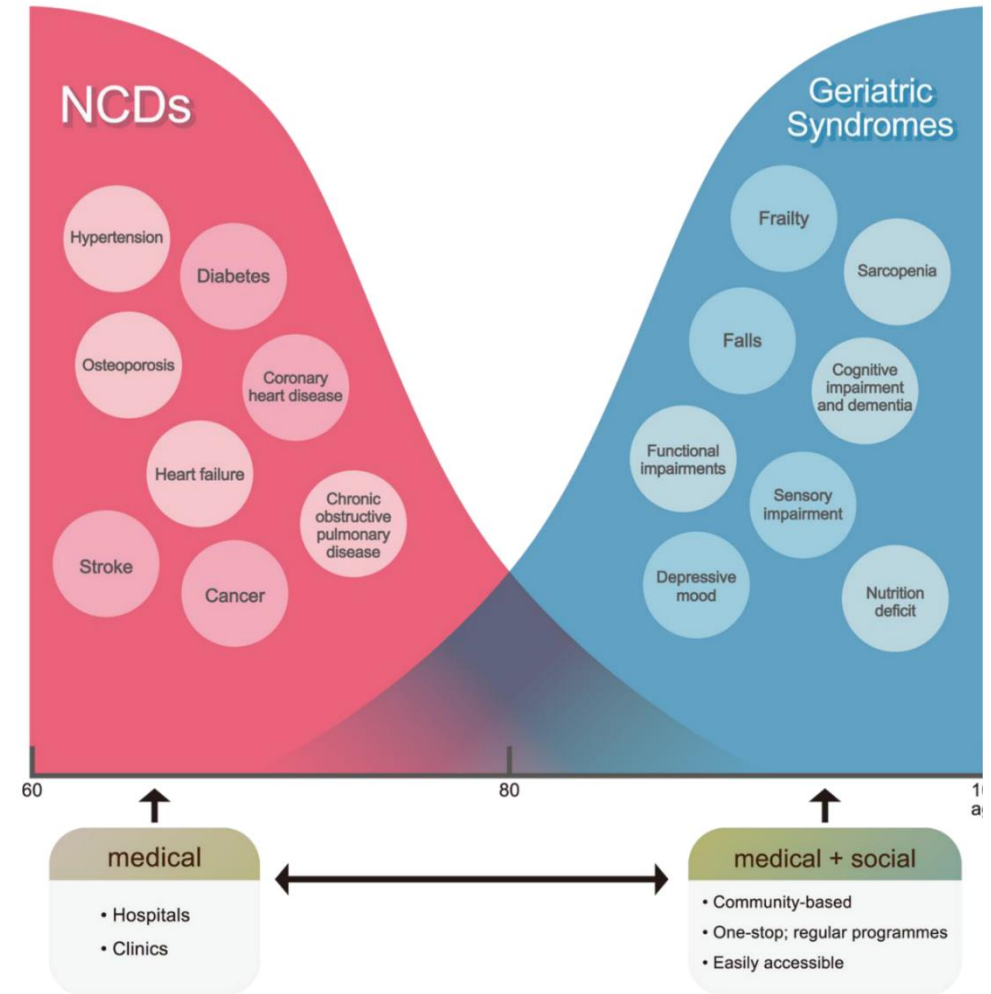
- Improve the health and wellbeing of ageing residents and support ageing in place
- Reap benefits of intergenerational interactions and promote social harmony
- Provide the hardware to allow HKHS to extend their “Ageing-in-Place” initiative (「樂得耆所」居家安老計劃) outdoors.
- Participatory co-design
- Produce new play space design concepts for reference and adoption
- Build capacity and inspire the next generation of talents



HKHS Ageing in Place initiative components  
 Source: <https://www.hkhselderly.com/aip/about/>

# Importance of Hardware + Software Design

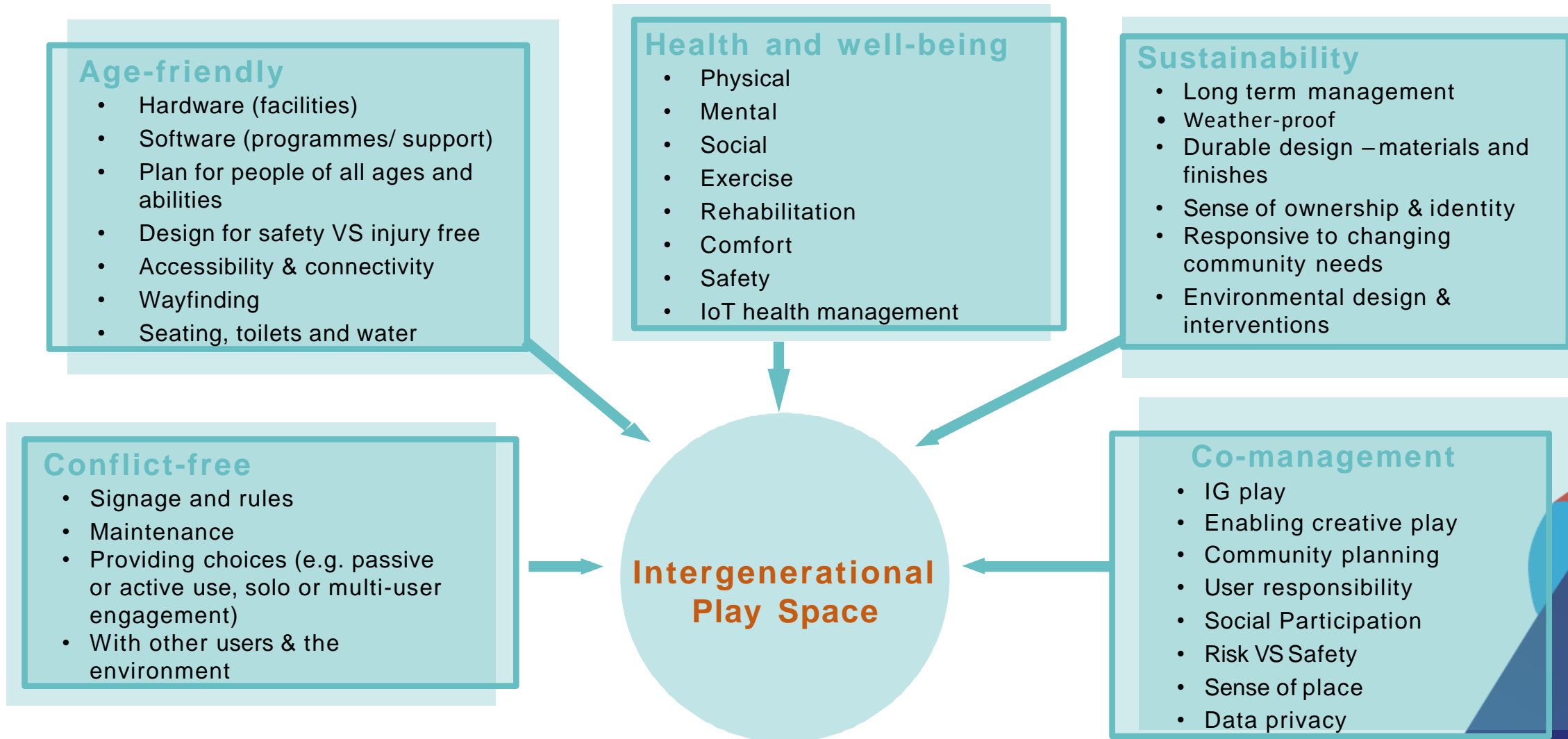
1. Design to include, not exclude interactions
  
2. Healthy ageing & active ageing
  - Preventive medicine model
  - Self care and health management
  - Autonomy and sense of control
  
3. Future-proofing housing estates
  - Elderly-friendly design
  - Infrastructure upgrades, including smart ageing and smart city concepts
  - Meeting the needs and aspirations of the **present old + future olds**
  
3. Space in 4D – 3D + time element – to promote shared use of limited resources and encourage synergies



Woo, J. Designing Fit for Purpose Health and Social Services for Ageing Populations. *Int. J. Environ. Res. Public Health* **2017**, *14*, 457. <https://doi.org/10.3390/ijerph14050457>



# Benchmarking Through Research and Stakeholder Interview



# IG Play Space Co-creation workshops May 2019

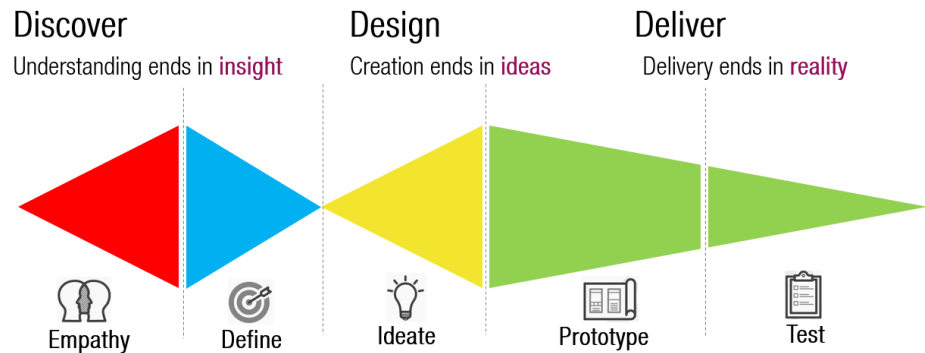
“Meet the users section to facilitate empathy building



Site visit and analysis



## Design Thinking Model



Source: Thinkdesignconvert



# IG Play Space Co-creation workshops May 2019



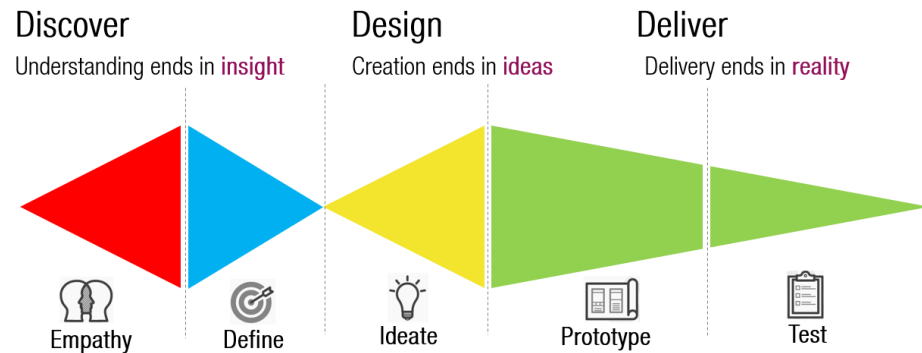
## Problem Definition



## Ideation



## Design Thinking Model



Source: Thinkdesignconvert



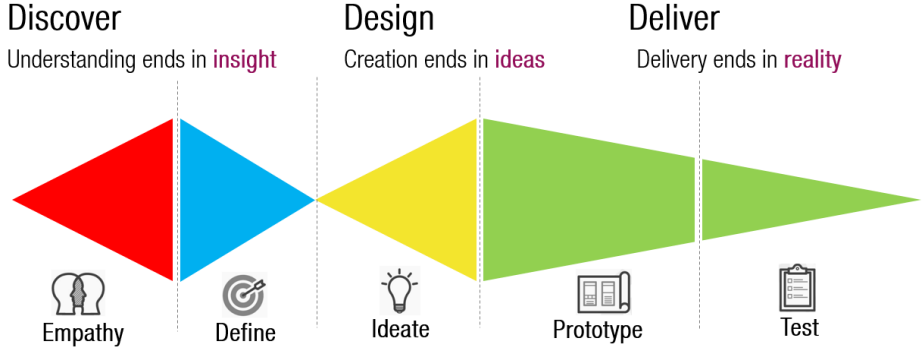
# IG Play Space Co-creation workshops May 2019



Expert surgery session



## Design Thinking Model



Source: Thinkdesignconvert

Prototyping and idea expression





# What Was Said?

I hold on to the rails to stretch.

- 76 year-old, male

There is nothing suitable for my toddler to play & stimulate his development

- Physiotherapist, female

It's too hot in the open area

- 53 year-old, male

The children are playing without regard to others!

- 68 year-old, female

I want to play with water

- 5 year-old, male

I want hooks or a space to put my things

- 64 year-old, female

I like it here, it's green

- 55 year-old, female

There is no openly-accessible, clean loo nearby

- 26 year-old, female

I want to dance

- 48 year-old, female

I just want to sit here and watch

- 51 year-old, female

I like watching kids play

- 70 year-old, male

I look at my mobile while I watch my kids/ the elderly

- Carer, female

I want to relax

- 35 year-old, female

I want something fun!!

- 13 year-old, male

I want to IG where I went

- 20 year-old, female

I am bored

- 18 year-old, male



# Guiding Principles for IG Play Space

## **6** Design Considerations for “Intergenerational Play Space”

### **1** SPATIAL INTEGRATION

Integrate play equipment designed for users of different ages in the area. Replace hard boundaries with soft boundaries, such as replacing fences with colours.

### **2** “AGE-NEUTRAL” DESIGN

The use of multi-purpose, age-neutral design will increase the facility provision and promote intergenerational interaction and more efficient use of space.

### **3** INTERGENERATIONAL PLAY EQUIPMENT

Encourage intergenerational interaction with equipment combining elderly fitness and children play.

### **4** MAKE USE OF UNIQUE SPATIAL CHARACTERISTICS

Interactive features such as chalkboards can be integrated into vertical walls; nets and climbing rocks can be placed between winding trails to offer more opportunities for interaction.

### **5** MAKE USE OF AVAILABLE TECHNOLOGY

Users of all ages can benefit from technology such as digital and interactive games, health tracking or augmented reality (AR).

### **6** USER-CENTRIC MANAGEMENT

Understand the community’s needs to enable more considerate public space management and design.

#### Find out more:

1. Co-creation process and findings [https://www.polyu.edu.hk/disi/images/pdf/S4\\_Exhibition.pdf](https://www.polyu.edu.hk/disi/images/pdf/S4_Exhibition.pdf)
2. Design thinking process and summary [https://www.polyu.edu.hk/disi/images/pdf/S4\\_ProgrammeBook.pdf](https://www.polyu.edu.hk/disi/images/pdf/S4_ProgrammeBook.pdf)

# Co-creation Workshops and Symposium (2019)



Co-creation Workshop  
May 2019

Symposium July 2019

Action Project  
Design Competition



Find out more:

1. Intergenerational Play Space Co-creation Interview <https://www.youtube.com/watch?v=mmYNPF16OXI&feature=youtu.be>
2. Symposium Summary & Keynote Speakers Presentations <https://www.polyu.edu.hk/disi/en/projects/operation-soinno/s4/>

# Action Project 9: Intergenerational Play Space Design Competition

主辦機構



捐助機構



香港賽馬會慈善信託基金  
The Hong Kong Jockey Club Charities Trust  
同心 同步 同進 RIDING HIGH TOGETHER

行動項目協辦機構



HONG KONG  
HOUSING SOCIETY  
香港房屋協會



Co-creation Workshops  
May 2019

Symposium  
July 2019

Action Project



# Capacity Building & Knowledge Transfer

Create an inviting environment for elderly users and promote intergenerational play and interaction.

1. Six Design Considerations application x multi-disciplinary knowledge
1. Deliverable:
  - A playscape design scheme
  - Select or design creative, safe and easy to maintain intergenerational play equipment
  - Internet of Things (IoT) or technology application
1. Consideration of hardware + software and venue management, e.g.
  - Physiotherapist and nurses training the elderly to use the multi-functional play equipment to stretch to reduce pain from arthritis
  - Sensory play
  - Horticultural therapy
  - Minimising complaints



# Leveraging the Knowledge of PolyU Experts

## Department of Building and Real Estate



**Prof Esther YUNG**  
Associate Professor  
*Planning and development,  
Ageing and urban environment  
and public space interventions*



**Dr SUN Yi**  
Assistant Professor  
*Planning and development,  
Ageing and well-being*

## Department of Biomedical Engineering



**Dr Hin Chung LAU**  
Teaching Fellow  
*Mobile Medical Apps,  
Shear Force & Wearable Sensors,  
Force & Motion Analysis*

## Department of Land Surveying and Geoinformatics



**Dr. LIU Xintao**  
Assistant Professor  
*Geographic Information Systems,  
Geomatics Algorithms and Geodatabase,  
Infrastructure and Utility Management.*

## School of Nursing

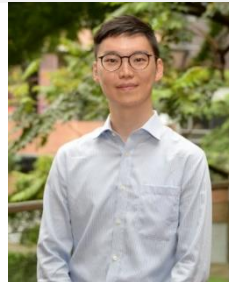


**Prof Justina LIU**  
Associate Professor  
*Fatigue and frailty management  
Exercise intervention, Psychosocial  
intervention, Age-friendly society*

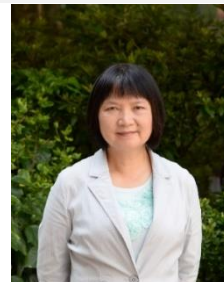
## Department of Rehabilitation Science



**Prof Kenneth FONG**  
Associate Professor  
*Mechanism of human performance,  
esp integration of cognitive &  
motor performances, environmental  
issues & assistive technology for  
people with disabilities*



**Mr Johnny LAM**  
Clinical Associate  
*Sensory processing,  
Executive functioning and  
fine motor development in  
children*



**Ms Stella CHENG**  
Professor of Practice &  
Chairperson of the  
**Hong Kong Occupational Therapy Association**  
*Elderly, community and work rehabilitation  
and Primary Health Care*

## School of Design



**Dr Brian LEE**  
Assistant Professor  
*Ageing and healthcare product  
design, concept prototyping,  
social design, interaction design  
and public space interventions*



**Dr Tulio MAXIMO**  
Assistant Professor  
*People-centred design,  
Intergenerational & inclusive  
design, co-designing healthcare  
& assistive technology services*



# HKHS resident rep's response to IoT integrated play

你認為樓下公共休憩花園及平台應在哪一方面作出改善？(可複選)

- a) 增加設施種類
- b) 增加健身設施
- c) 增加/更新兒童遊樂設施
- d) 增加/更新長者遊樂設施
- a) 增加跨代共融遊樂遊樂設施/ 空間
- b) 增加緩步徑或跑步徑
- c) 增加休憩座位/ 空間
- d) 增加遮蔭位置
- e) 增加室外多用途運動場地/空間
- f) 增加特色裝置吸睛, 可作打喺拍攝
- g) 增加飲水機/自助售賣機等設施
- h) 改善空間規劃
- i) 增加晚上照明燈光
- j) 增加無障礙通道及設施
- k) 沒有
- l) 其他

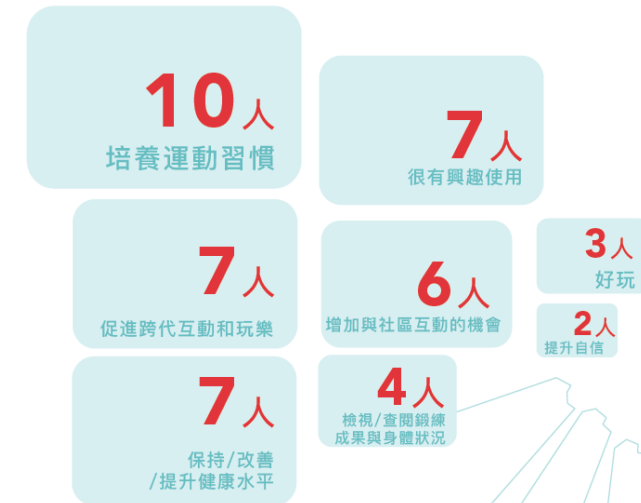


What should be improved at PG public space?

- Increase elderly play facilities – 8 votes
- Increase IG play facilities/ space – 7 votes
- Increase fitness equipment provision – 6 votes

你對增設科技健康合一的遊樂設施和配套有什麼期望？(可複選)

- a) 很有興趣使用
- b) 保持/改善/提升健康水平
- c) 好玩
- d) 提升自信
- e) 檢視/查閱鍛練成果與身體狀況
- f) 培養運動習慣
- g) 促進跨代互動和玩樂
- h) 增加與家人朋友一起玩樂的意欲
- i) 增加與社區互動的機會
- j) 害怕不熟悉使用/操作電子器材
- k) 認為沒有需求使用
- l) 不希望增設科技健康合一的遊樂設施和配套
- m) 其他



What are your expectations for IoT integrated play facilities?

- Increase confidence in exercising – 10 votes
- Enhance IG interactions and play – 7 votes
- Maintain/ improve/ enhance health – 7 votes

# Creating Anticipation & Collective Ownership

## PG Design Competition Stage 1

- 18 professional teams
- 57 university teams



## Community Engagement

- PG property management
- Owners Association
- Participating teams



## Stage 2 Assessment

- Prestigious jurors to select the winning design based on their area of expertise





# Key Values summarised

1. Ageing in Place
2. Providing **space to encourage social interactions**
3. Providing **facilities to support IG play**
4. Interactive facilities e.g. public art, IoT integration - health management and social interactions
5. Sense of belonging & placemaking
6. Social harmony and venue management
7. Privately-Owned Public Space – balance of use
8. End-user experience – residents vs non-residents
9. Incremental changes
10. Long term vision for ageing housing estates

Uses & Activities  
(增加使用率和活動)

Sociability  
(增加交際和合群性)



Access & Linkages  
(可達性和連接性)

Comfort & Image  
(舒適度和形象)

**Hardware considerations fleshed out.**

**How about the software?**



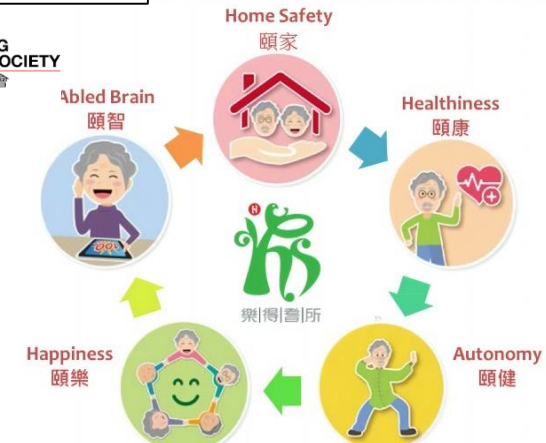
# Completing the AIP Loop



IoT intergrated play space and equipment



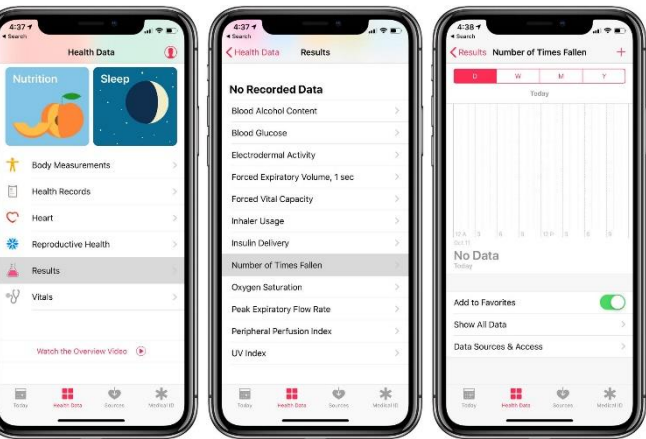
- Cloud data storage
- Half-yearly healthcheck for progress monitoring



- AIP
- Elderly Servic Centre service upgrade for self help and health monitoring advisory?
- Public awareness



- District Health Centre for advice, community rehabilitation, disease management and referrals

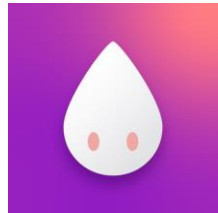


Fall detection app + daily activities log

Shining example of why the elderly should stay active: 93-year-old runner Cheung Suet-ling  
Source: <https://www.scmp.com/comment/insight-opinion/article/2082163/shining-example-why-elderly-should-stay-active>



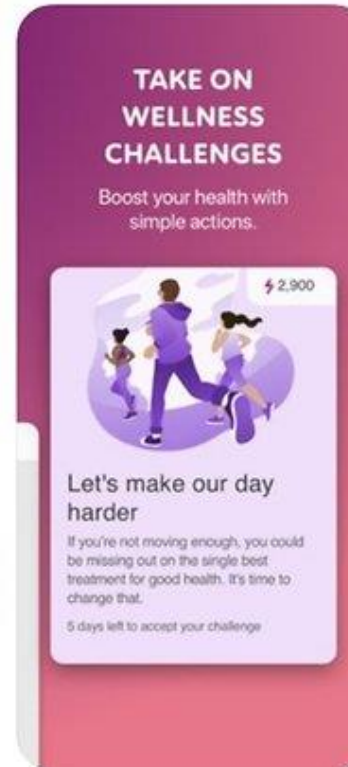
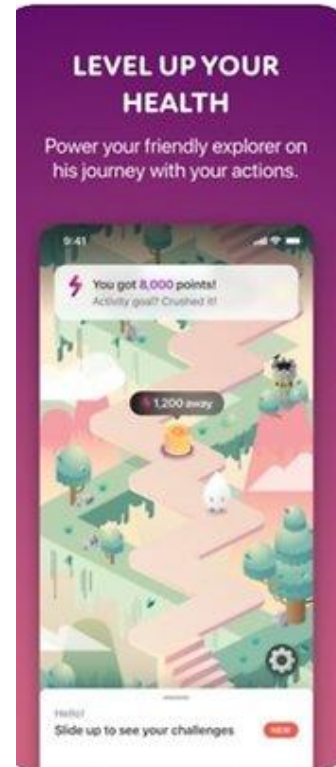
# Health and IoT



**Lumihealth**

Singapore Health Promotion Board x Apple

- Announced Sept 2020, formal rollout in Oct.
- Nation-wide health management initiative, part of Singapore's Smart Nation initiative to help reduce preventable deaths and disabilities (voluntary)
- Health management + incentives for active lifestyle





# Food for thought

“Intergenerational is a must”

– Dr Lam Ching Choi BBS, JP  
Elderly Commission, Chair  
ExCO member

1. Spatial design can disrupt – or promote – social interactions.
2. Smart = cleverer ways of seeing things, managing changes and empowering people
3. Plan for the present demographics, and also predict and provide for future community groups



Source: HK01,  
[長者友善的社區不能只靠房協比賽推動](#)

# Thank you!

Karen Lee

Project Manager II (Spatial)

[Karen.n.lee@polyu.edu.hk](mailto:Karen.n.lee@polyu.edu.hk)



**JCDISI Website**

