

# 數碼共同體:

元宇宙於共創設計的應用

Digital Common(s):  
The Role of Metaverse in  
Cooperative Design

## 項目中期社區報告

Mid-project Community Report



香港擁有獨特並多元的文化和城市環境，在公共空間設計和規劃方面，如何能發揮集體潛能，通過共創方式重新定義何謂「康文」？

「數碼共同體」是一個跨代共融設計研究項目，將元宇宙科技——社區遊戲化和沈浸式數字孿生技術——作為交流工具帶進公共屋邨。透過一系列共創工作坊，此項目邀請居民、設計師和公共機構人員成為研究拍檔；數據、信息和科技是集體決策中的寶貴資源，項目旨在研究並促進數碼科技的協同管理效應。通過與當地社區中心合作，達成跨學科溝通和跨世代共融、加強社區實驗室的可持續發展。參與者背景的多樣性讓大家深切體會到融合不同年齡層和行為能力用家的空間需求所存在的挑戰，並突顯了協同科技的社會價值，以及結合專業知識和民間智慧、塑造共同語言的重要性。

通過這社區報告，我們希望將共創的成果和知識分享到不同的香港社區；同時，將本地研究推進環球舞台、參與國際討論，共同探討高密度城市課題、以及數字化、參與式設計和社群實踐的潛能。研究成果彌合了“融和”——物理和虛擬現實、自上而下和自下而上、設計師和用家的融和。通過增強科技兼容性和包容性，項目展示了市民並不只是被動的研究對象、更可以成為知識生產的積極貢獻者——公民設計科學。

With a uniquely diverse cultural and urban landscape, how to realise Hong Kong's collective potentials in the design and planning of public spaces, and redefine the re-creational through co-creation?

'Digital Common(s)' is an intergenerational design research project that brings a combination of metaverse technologies - community gamification and immersive digital twins - to public housing residents as design communication tools. Through a series of workshops that invite citizens, designers, and public actors to become co-researchers, the project aims to facilitate common stewardship of data, information, and technology, which are valuable resources in collective decision-making. It works with local community centres to be implemented on a continuing basis - interdisciplinarily between social workers and designers; intergenerationally amongst youth and older adults. The diversity of backgrounds highlights the added value of co-operative design technologies in transcending needs, knowledge, and the everyday wisdom for shaping a shared expression in a spatial language.

Through this community report, we hope to circulate the co-generated design knowledge back to local communities in Hong Kong, at the same time, engage in international discussions on the opportunities and challenges for high-density cities to co-design with digital, participatory, and situated practices. The outcome bridges the 'in-betweens' - physical and digital, top-down and bottom up, designers and users. By enhancing digital inclusivity, the project demonstrates how citizens may be served, not merely as passive data subjects, but active contributors in knowledge production - a form of citizen design science.





參與者將手工藝和數字工藝融為一體的共同創作成果。

A screenshot of participants' co-creation outcome that integrates handcraft and digital craft.

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2023 年 7 月

JULY 2023



歡迎聯繫 Connect & Collab!

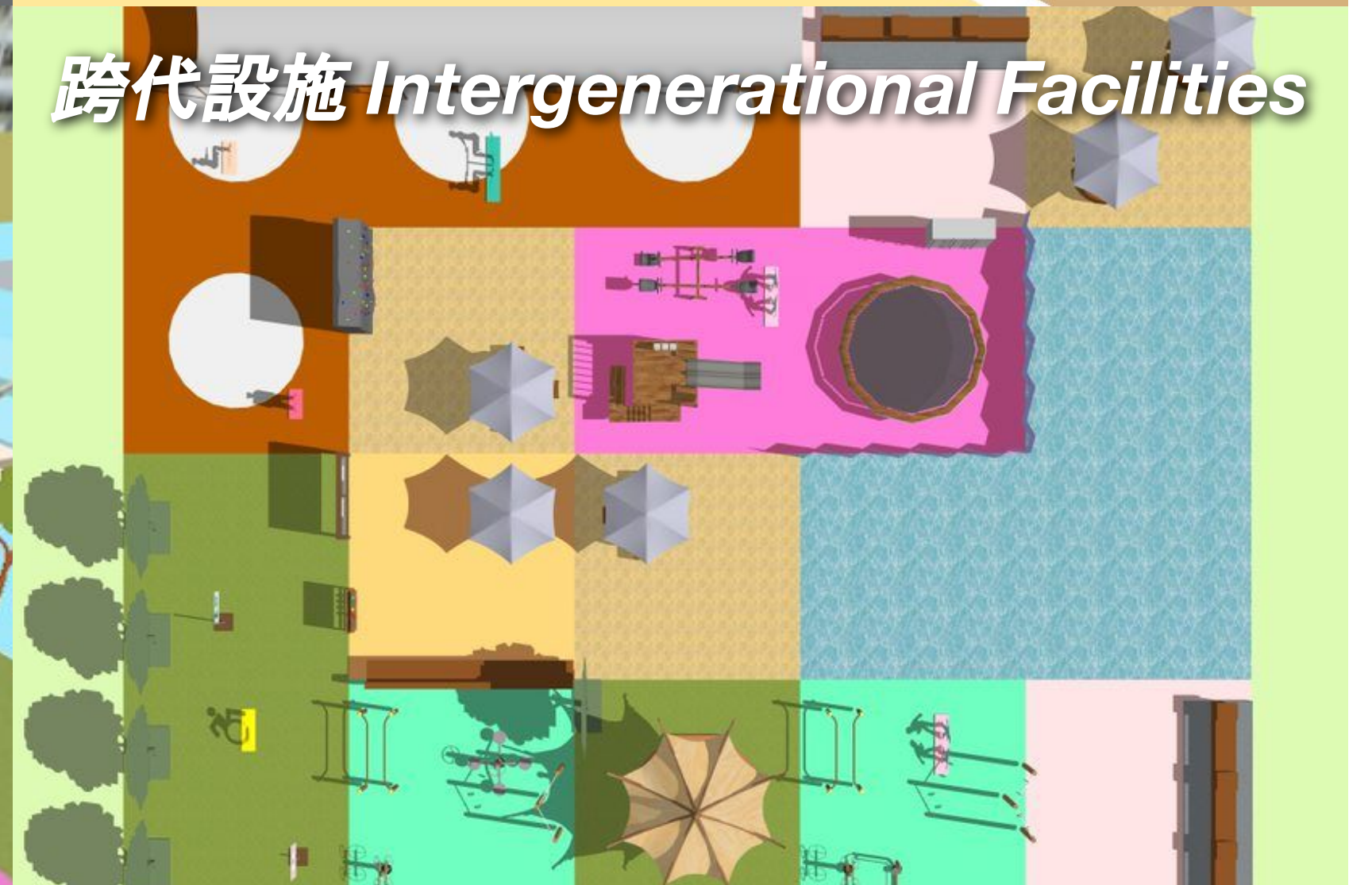
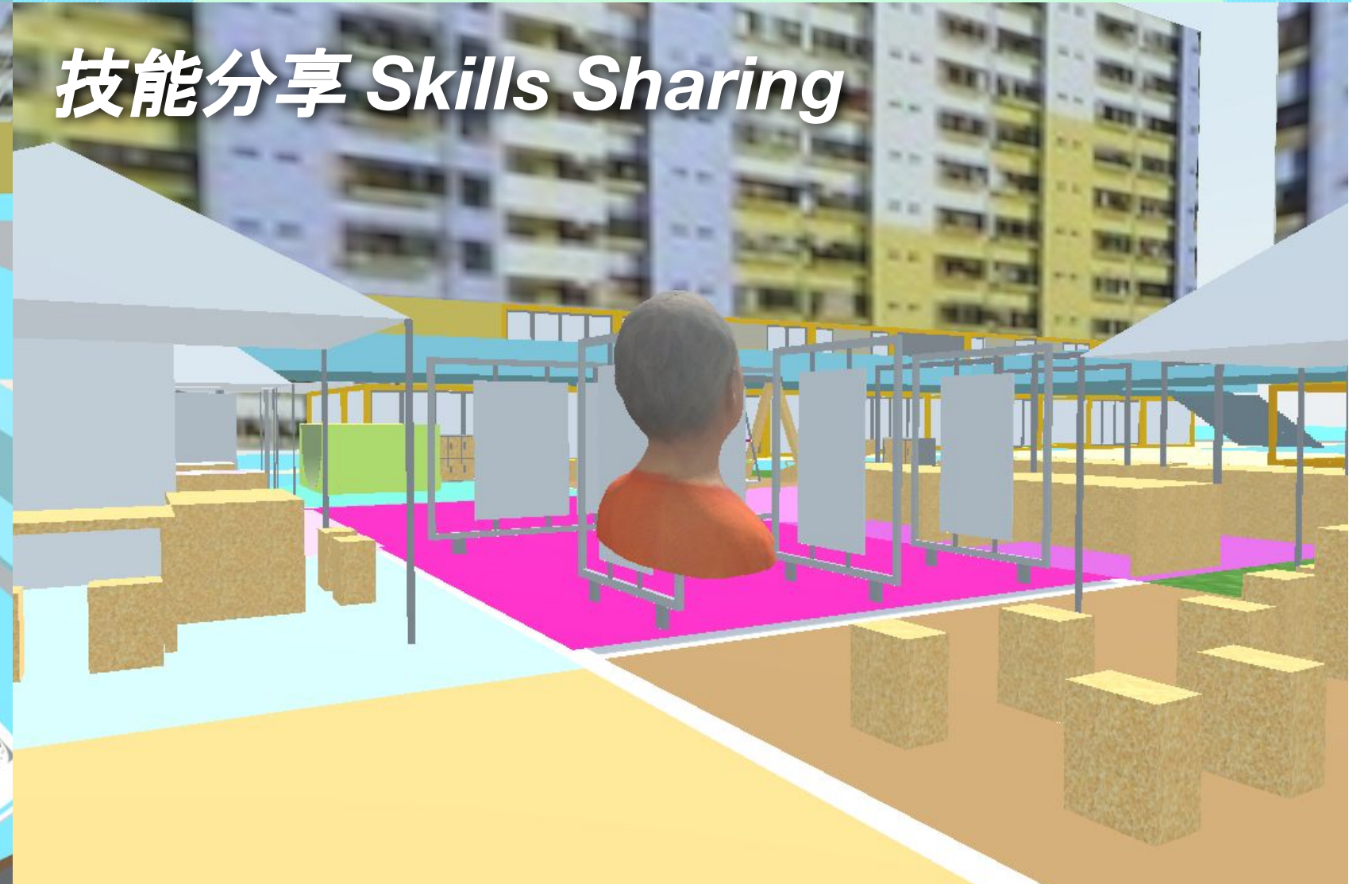
# 元 宇 宙

不少青少年喜歡玩電子遊戲，但其實電子遊戲的技術不但能用於娛樂，還能用於建築和城市設計？每個建築項目都從 3D 模型開始，當這些模型被放置在虛擬現實或網絡遊戲等沉浸式環境中時，它就成為元宇宙的一部分。喜歡玩電子遊戲的你，來看看你的嗜好如何能成為您的職業及城市的未來吧！

Many teenagers like to play video games. Do you know that video game technology can be used not only for entertainment, but also for architecture and urban design? Every construction project starts with a 3D model, when these models are being put in a networked immersive environment like virtual reality or online games, it becomes part of the Metaverse. If you love to play video games, come n' see how your hobby can be the future of your career and your city!

# Metaverse







# 社

# 區

# 共

# 創

週末悶悶地，來參與中文大學建築系同學仔共同研創的數碼社區遊戲啦！此活動日將VR技術帶到社區，以親子的形式共同想像未來生活的可能性。大人細路、青年及長者都適合！透過VR遊戲了解社區特色、3D數碼科技的趨向，在這一個夏天認識社區的朋友仔之餘，一嘗當城市設計師的滋味！

Come to participate in the digital community game jointly developed by students from CUHK School of Architecture! This “play-day” brings VR technology to the community to imagine the possibility of future habitat together. Suitable for adults, young people and the elderly! Learn about the characteristics of the community and the trend of 3D digital technology through VR games; in addition, meet friends from the community this summer and have a taste of what it is like to be an urban designer!

“「接觸理論」指出，最有效消除誤解的方法，就是透過「接觸」— 從跨代接觸，拉近兩代人的關係，消除隔閡。因此，我們相信跨代共融是積極迎接人口老化的方法。”

“According to the contact theory, direct contact is indeed the most effective way to reduce misunderstanding. Therefore, efforts to enhance intergenerational connection is in paramount of importance.”

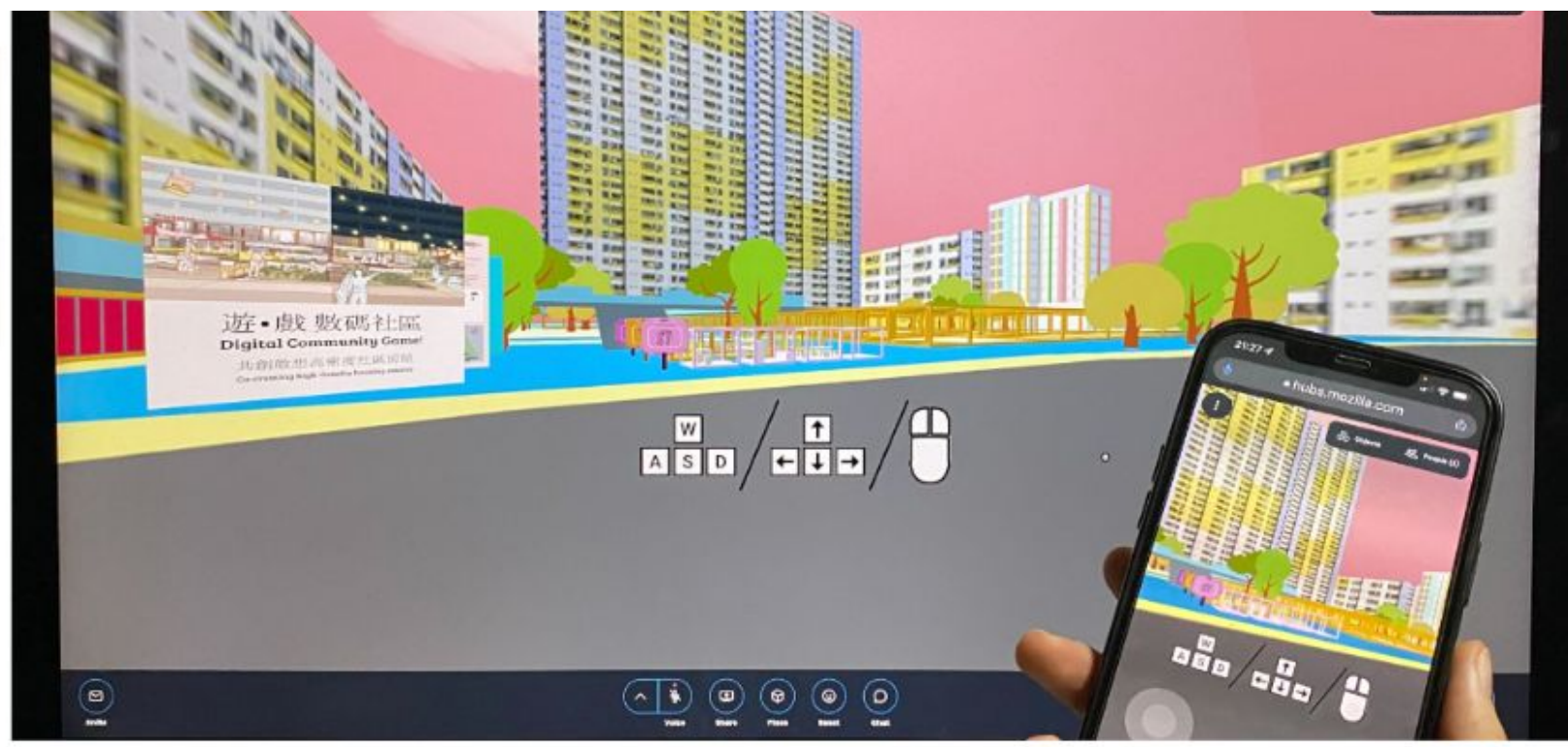
- 香港賽馬會 Hong Kong Jockey Club

# Co-design



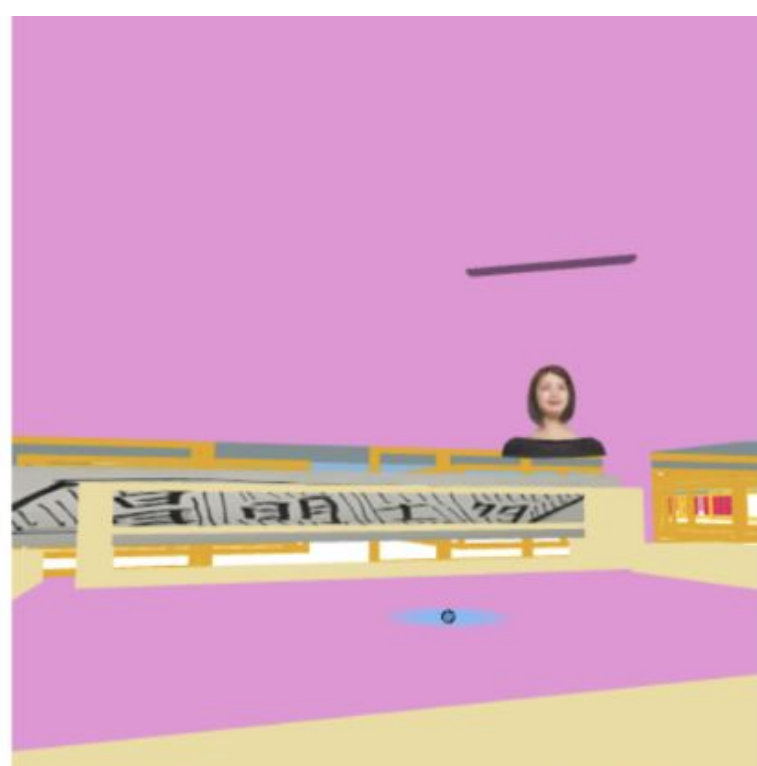
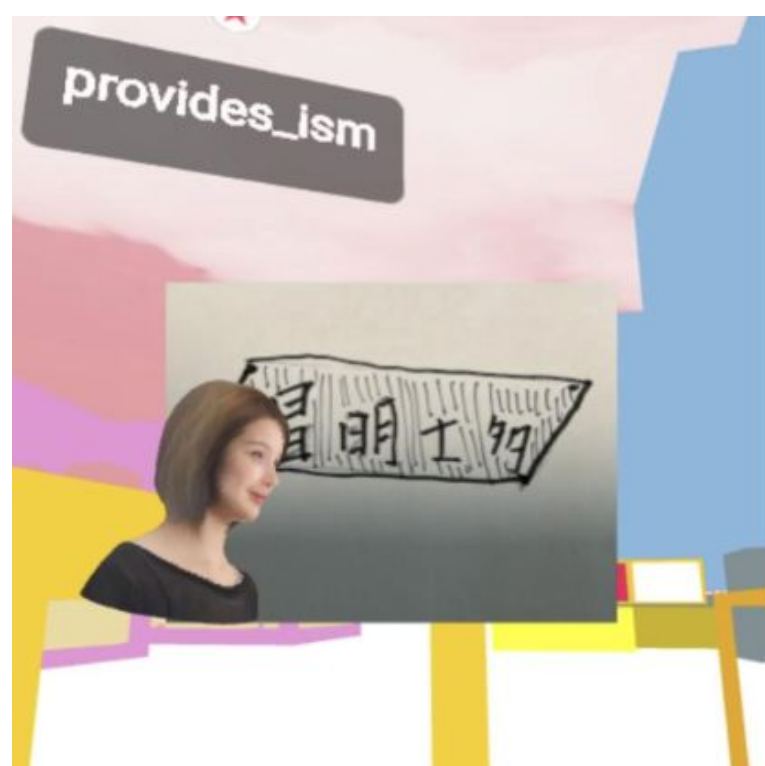






# 共創成果分析示例

Co-creation Outcome Analysis Samples





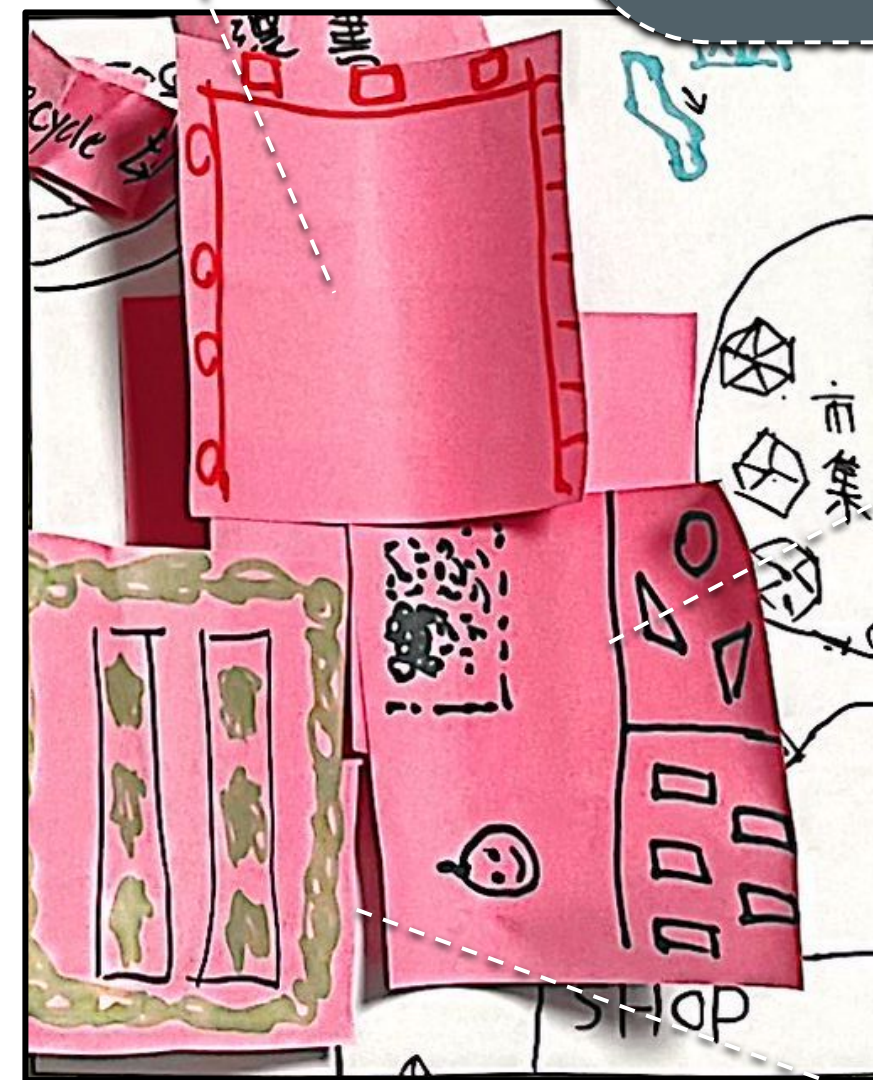
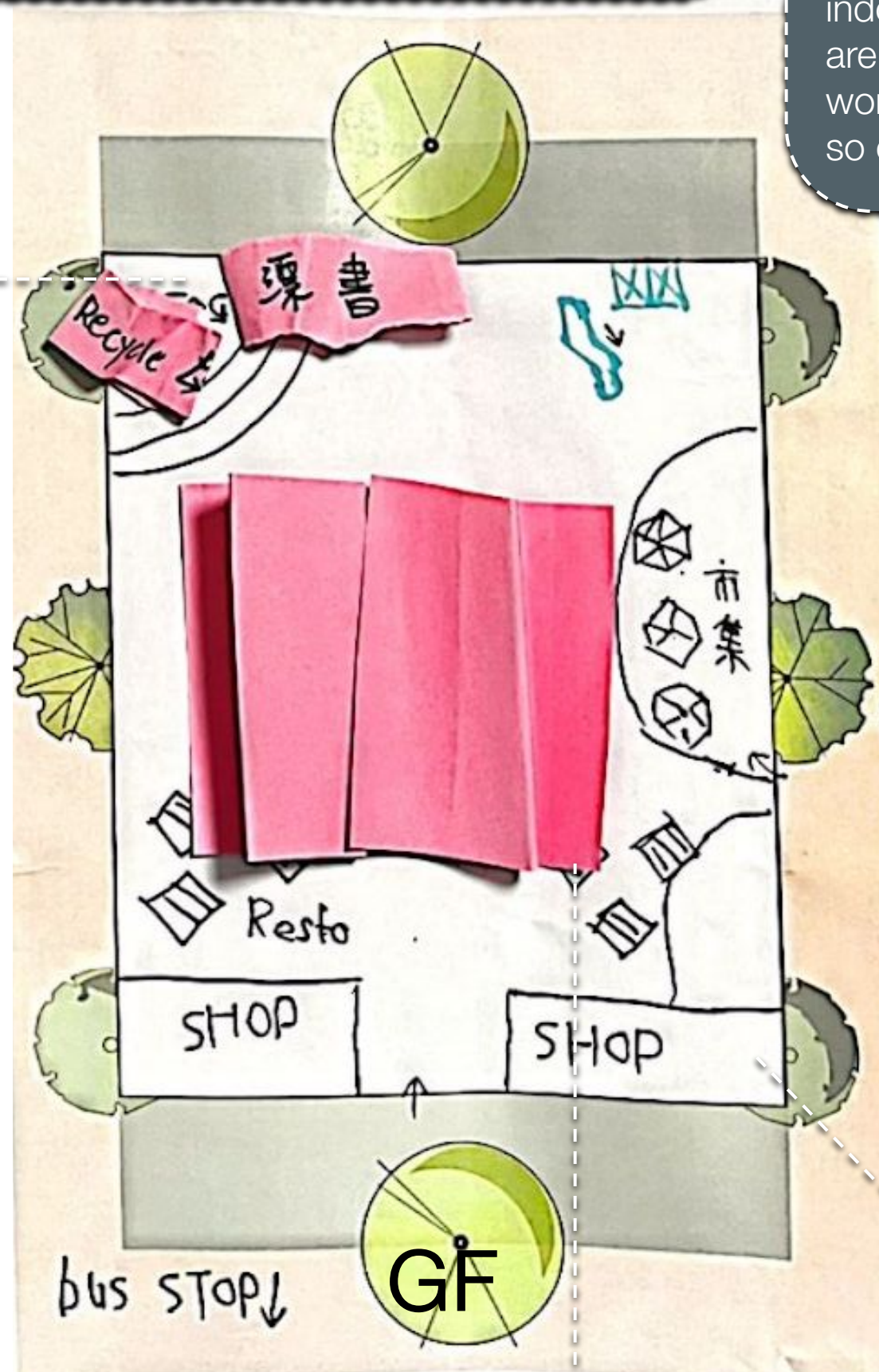
# 「社會可持續性」“Social Sustainability”

**立方——街坊立足之地 Neighbourhood Building** “我們的設計叫「立方」，不僅是立方體的意思，也是街坊的意思，是鄰里間的立足之地，所以我們又蓋了一層，形成下面社區聚會的地方。” “Our design is called ‘The Cube’, [the name in Chinese] is a polysemy, which means neighbourhood, a place for the neighbours to gain a foothold, so we have built one more floor, and below it is for the community to get together.”

**工作坊和社區活動 Workshops & Events** “在頂層，我們有一些室內空間[...], 還有教室、工作坊、活動等的房間。” “On the top floor, we have some room for indoor space [...], there are classrooms, for workshops, events, and so on”

**空間共享與時間共享 Space-sharing & Time-sharing** “我們的設計很靈活，一些小型體育活動可在這個屋頂上進行，大部分是在白天，還有一些社區耕種空間，或者一些植物、農業或任何與戶外相關的工作坊。” “We think it will be flexible, some small sports activities will take place on this roof, mostly during day time, some community farming for neighbours to farm, or some workshop on plants, agriculture, anything outdoor related.”

**夜間回收 Night Recycling** “重點是夜間回收，現在這些回收中心大多在打工仔下班回家前就關門了，如果週六週日也關門，那就不能真正做到成功的社區回收。假如晚上舞台有活動，吸引人來，沿途還有夜間回收，那麼人們來看演出的時候，也可以把塑料瓶、易拉罐帶到這裡來回收。” “We focus on night recycling, right now most of these recycling centres are closed when you get off work, and if on saturday and sunday they are also closed, then can't really do recycling successfully. At night there can be activities on stage, which attract people to come, and along it, night recycling, then when people come to see the show, they can also bring their plastic bottles and cans to be recycled here.”



**托兒服務 Child Care** “需要保姆[服務]，或者孩子們玩耍的空間，一些室內游樂場。” “Need babysitting [services], or space for children to play, some indoor playground.”

**綠化天台 Green Roof** “在屋頂上，有一個室外空間，一個綠色屋頂。” “On the rooftop, there will be an outdoor space, a green roof.”

**多功能 Multifunctional** “這是我們在香港經常聽到的，多功能活動區，會有一個舞台，椅子不是固定的，都是靈活的，沒有活動的時候，也想讓鄰居聚在一起，或聊天，或下棋，或做任何事，他們可以自由地來玩[...] 一些二手書分享，也希望是在晚上。” “this is something that we always hear in Hong Kong, multi functional activity area, there will be a stage, and the chairs are not fixed, all flexible, because when there are no activities, also want neighbours to get together, chatting, or if they want to play chess, or do whatever, they can come freely and play [...] Some second hand book-sharing, also wish for it to be at night.”

**商業化 Commercialisation** “為了平衡商業元素，所以有一個餐廳面向巴士站，方便人流，可以舉辦一些活動，吸引人坐公交來這裡，所以商業元素面向這邊” “It's used to balance elements that earn money, so there is a restaurant that faces the bus stop, more convenient for flow of people, and maybe to organise activities that will attract others to take the bus to come here, so the commercial elements faces this side”

僅用筆紙 *Pen and Paper Only*



# 「以用戶為中心的設計」“User-Centric Design”

**以家庭為中心 Family-centric design** “我們從家庭開始思考，設想的這四個角色是一家人。所以在設計中嘗試為屋邨創造一個更有活力的家庭生活。我們想做的是擁有更多不同的設施和不同的購物中心，有更多的空間適合家庭，一起交談的巨大涼亭。” “We start off thinking from the family perspective, the four characters we personified are one family. So we tried to create a more vibrant family life in this estate. to have more facilities and different malls, and have more space to suit the family. A giant pavilion for the family to talk together.”

**空間靈活性及多元化社區節目 Spatial Flexibility & Diverse Community Events** “這裡會有一些小市集，設計方便靈活，針對不同的活動可以有不同的攤位，如粵劇。市集面積是靈活的，根據活動需要，也可用於展覽。” “There will be some small markets, designed for convenience and flexibility, for different events there can be different markets, like cantonese opera, the market area is flexible, it can also be used for exhibitions, based on what the event needs.”

**親子空間 Parent-child Space** “大型兒童遊樂場設施，可供其他家庭一起玩耍，還可以攀岩。這樣就可以在看電影之類的同時照顧孩子。” “A big children's playground facility for families to play together, and also rock climbing. So you can do child care while watching some movies and so on.”

**社區活動 Community Activity** “有一個大電影投影儀屏幕，還有一些可以坐在那裡的豆袋，這樣他們就可以一起欣賞電影或足球比賽。” “There's a big movie projector screen, then some bean bags to sit over there, so they can enjoy some movie or football match together.”

**活動教學 Active Learning** “拐角處有一些書架，孩子們可以在那裡自主的學習。” “There are some bookshelves at the corner, so the kids can be motivated to study over there.”

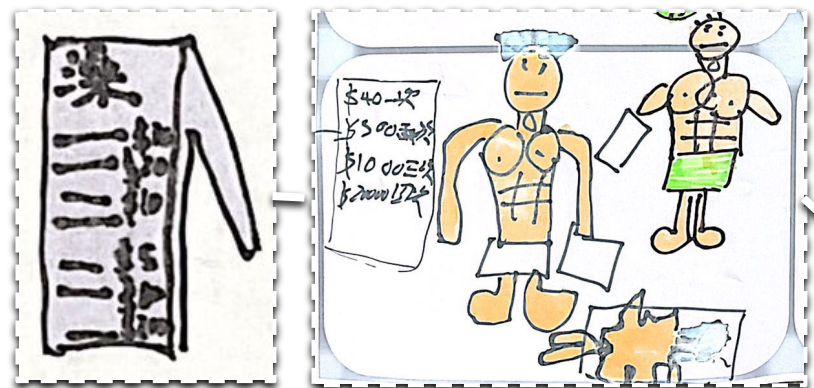
**多功能空 Multifunctional** “創造一些開放空間，如露天劇場或電影廣場，還有一些臨時商店。” “creating some open space, such as an open theatre or open movie plaza, and also some temporary stores.”

僅用元宇宙工具 *Metaverse Tools Only*

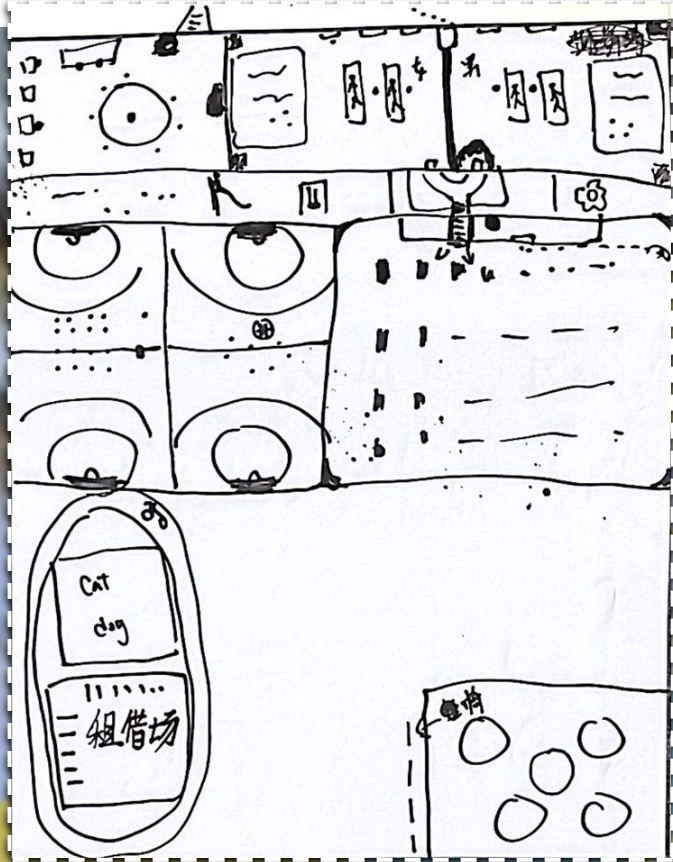


# 「社區建設」“Community Building”

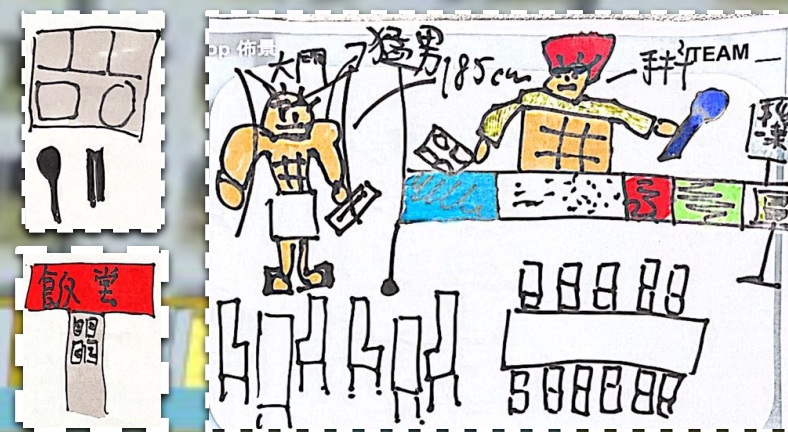
**提高空間效率 Spatial Efficiency** “我們設計這個是為了節省空間” “We designed this to save space”



**增進人際關係 Enhance Interpersonal Relationships** “這是澡堂，有一個人躺著，背對著我們，和幫他刷背的。當一個人幫另一個人刷背時，可以一起聊天、放鬆，感情也會增進。” “Here is the bathhouse, there is a person laying down, with their back facing us, and a person who rubs his back. When one helps another to rub the back, they can chat and relax together, and their relationship will enhance.”



First draft of plan



**社區支援和歸屬感 Community Support & Sense of Belonging** “這是社區食堂。這大隻佬是從隔壁澡堂來的，你會感受到非常的方便和充滿歸屬感。” “This is a community canteen. The big guy came from next door, which is the bathhouse, you can feel it's very convenient and a sense of belonging.”



**寵物友善空間 Pet-friendly space** “.....狗、貓和豬的空間，我們用自行車道包圍它，這樣人們就可以邊騎自行車和滑板、邊帶寵物。” “...the space for dogs, cats, and pigs, we surround it with a cycling track, so people can cycle and skateboard, and with pets.”

**水陸休閒活動 Amphibious Leisure Activities** “我們畫了一幅海灘圖，每個人都在水里。” “We drew a beach drawing, everyone is bathing in the water.”



**整合虛擬與現實工具 Integrates Virtual and Physical Tools**



# 經驗總結

## Lessons Learnt

### # 數碼共融 & 社區參與

### # Digital Inclusivity & Community Engagement

在一系列的共創活動中，公職人員、設計師和當地居民成為研究夥伴，慎思明辨當地的公共空間。透過數碼技術，參加者能夠更形象化地感受並相互理解，產生共同語言去表達社區中不同的空間需求。

During a series of co-design activities, public actors, designers, and local residents become co-researchers to critically reflect on public spaces. Participants are empowered with techniques of digital tools to generate shared expressions of spatial needs and develop a mutual understanding of community interests.

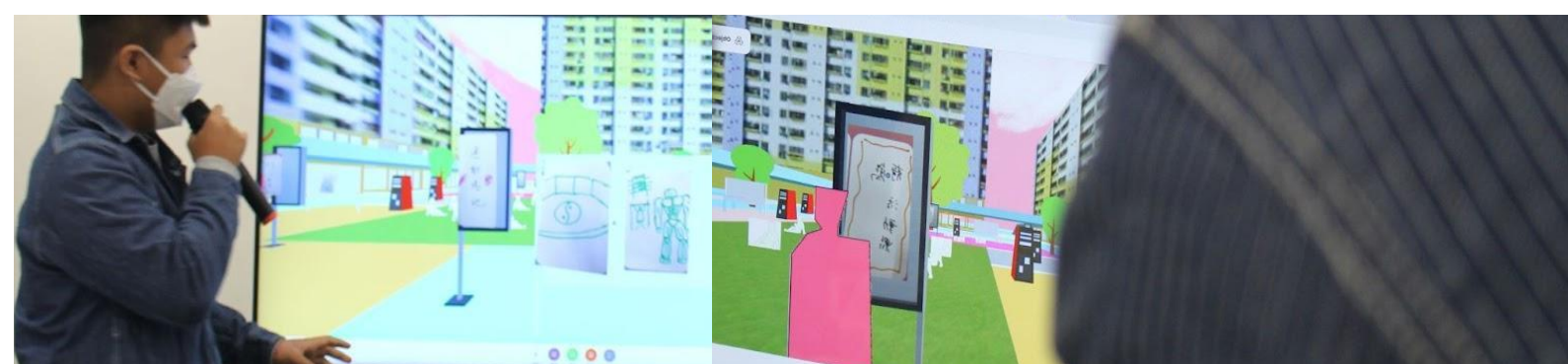


### # 跨代設計思維

### # Intergenerational Design Thinking

玩電子遊戲也能發展成設計專業？在享受樂趣的同時，青少年與老友記共同學習數碼科技的知識和技能、探索“社區建設”和“地方營造”的概念，以實現社會經濟的可持續發展。

While enjoying the fun of video-game, youth and older adults work together to acquire knowledge and skills of how gaming technologies may be developed as a design profession. Concepts of ‘community building’ and ‘placemaking’ are explored to design for socio-economic sustainability.

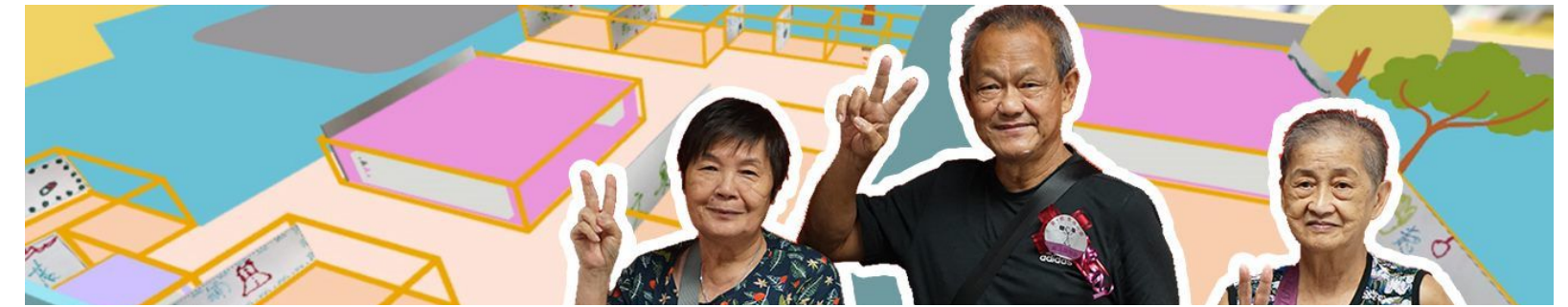


### # 共創成果和用戶體驗

### # Participatory Outcome & User Experience

通過詳細的紀錄和分析，本研究的成果展現了：1)如何利用3D互動、實時參與和社區視覺增強沉浸式數碼孿生技術在共創思維中的運用；2)城市設計師在促進社區參與和規劃協調中擔當着創新而強大的角色；3)民眾是知識生產的積極貢獻者，不該只是成為被動的研究對象，數碼共融能有效增強公民設計科學的建樹。

The findings and experiences documented in this study demonstrate how 1) 3D interactivity, real-time engagement, and bottom-up perspectives may enhance the potential use of immersive digital twins in cooperative design thinking; 2) a new powerful role of urban designers as facilitator-coordinator of collaborative planning processes; and 3) informants may be taken not merely as passive data subjects, but active contributors in knowledge production by enhancing digital inclusivity - a form of citizen design science.



### # 斜向溝通與協作

### # Diagonal Communication & Collaboration

斜向溝通是一種跨領域跨層級的溝通方法，能增進組織之間的協作效率和與社區的溝通質量。此項目與當地青年中心和社區辦事處合作，持續實施設計師與社會工作者的跨學科交流、以及青年與老友記的跨代互動，並獲得香港中文大學博群全人發展中心社會服務計劃支持。

Diagonal communication hybridises vertical and horizontal interactions, and promotes exchanges between actors of different ranks across collaborating organisations. The project works with local youth centres and community officers to be implemented on a continuing basis - interdisciplinarily between social workers and designers, intergenerationally amongst youth and older adults. This project is supported by the CUHK I-CARE Social Service Project Scheme.

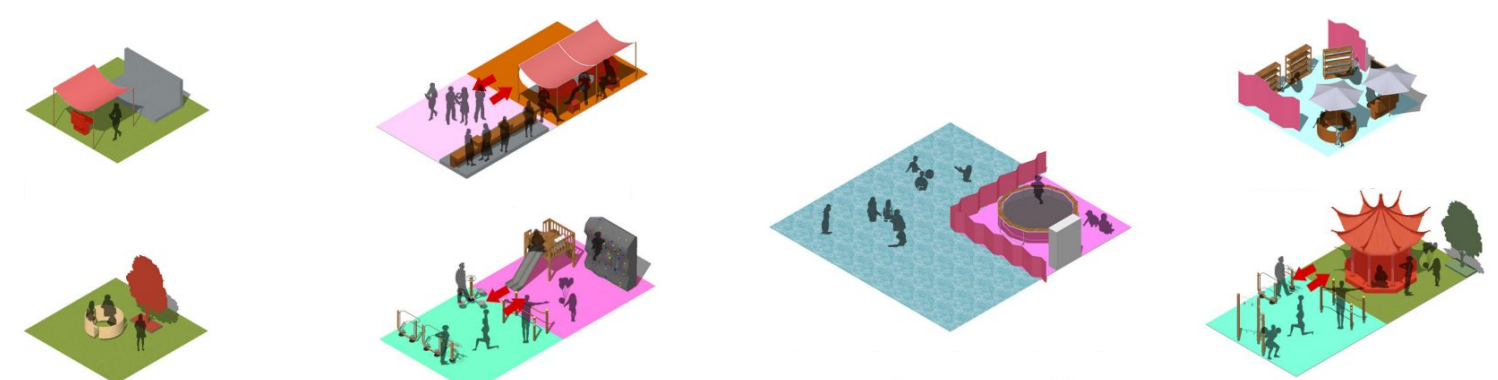


### # 遊戲化和虛擬現實 (VR)

### # Gamification & Virtual Reality (VR)

VR工具能有效幫助參加者立體地從用戶角度出發、並以更富同理心的方式去理解公共空間質量。通過遊戲化的互動環境、融入真人角色扮演劇本殺 (LARP)、同伴練習和沙盒遊戲，能幫助參加者更具趣味性地學習和運用創意表達自己。

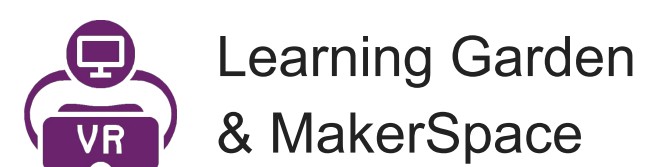
VR tools help participants to orient themselves from users' perspective 3-dimensionally and understand spatial quality more empathetically. Meanwhile, live action role-playing (LARP), peer exercise, and sandbox games help participants to learn and express themselves creatively through the welcoming and interactive environment of gamification.







## 特別鳴謝 Special thanks



All helpers,  
volunteers, and  
participants



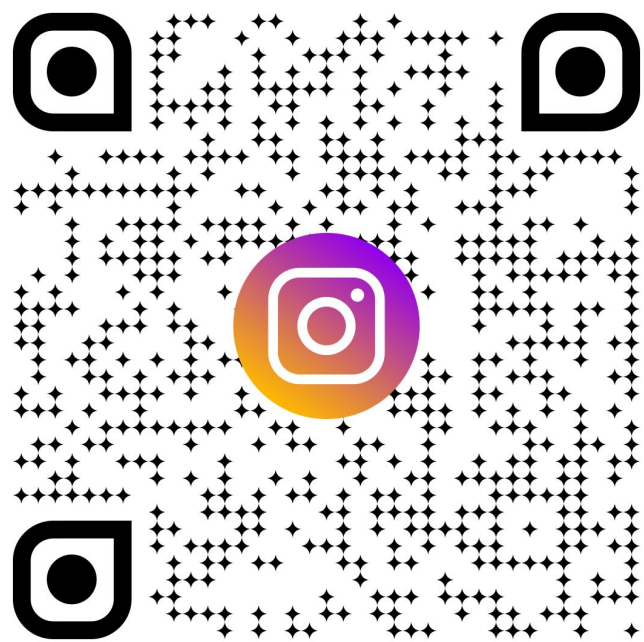
# 照片牆 PHOTO WALL











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