
Digital Common(s)
數碼共同體
Nature-based
Transport-Oriented
Development
Problem Definition & Analysis → Project Features (Layers) → Overview → Visualisation →
Evaluation → Future Speculation & Reflection
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Transit-Oriented Development

Figure 1: A photo captured on the path between GO Park & Tseng Tau Tsuen, showing unsafe transition between urban & rural areas.

- Transit-Oriented Development ('TOD' for short) is an urban development strategy that integrates land use and transportation planning to concentrate housing, jobs, services, and recreational spaces near public transit stations, such as bus, rail, or metro stops.
- The goal is to reduce reliance on private vehicles, promote walking and cycling, and create vibrant, connected neighborhoods.

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Problem Analysis

Figure 1: A photo captured on the path between GO Park & Tseng Tau Tsuen, showing unsafe transition between urban & rural areas.

- **Hong Kong has poor urban–rural integration**
- Characterised by various observations in our Saisha Field Trip
  - Unsafe transition: Iron fence outside of Tseng Tau Chuen to prevent wild boars & no concrete on path
  - Insufficient infrastructure: Roads cannot meet the demand for large vehicles, no convenience store nearby, etc.

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Problem Analysis

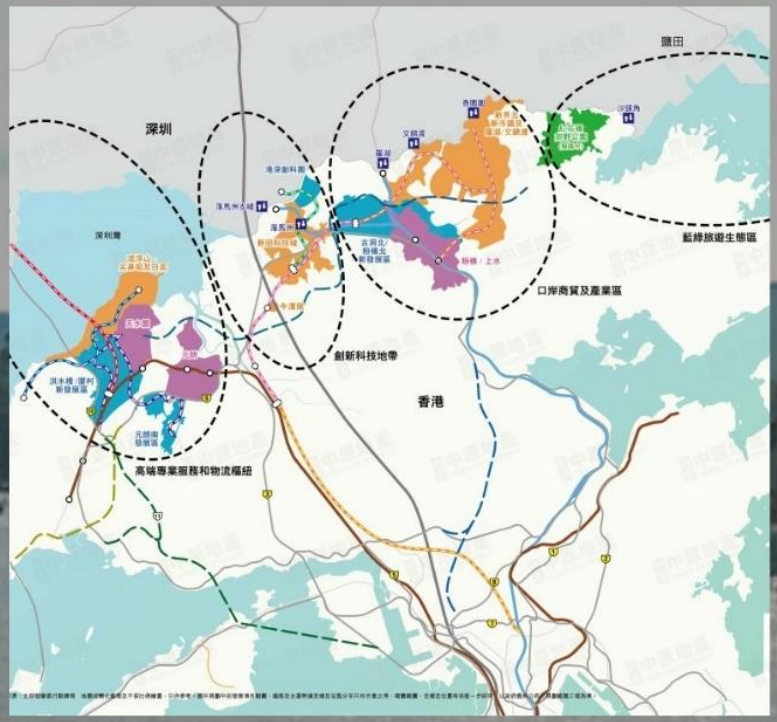

Figure 2: A photo of North Metropolis region

- **Current Hong Kong TOD is not environmentally-friendly for optimal URI**
- Characterised by various flaws in the “Northern Metropolis” Plan initiated by the Hong Kong government

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Problem Analysis: Consequences

Figure 1: A photo captured on the path between GO Park & Tseng Tau Tsuen, showing unsafe transition between urban & rural areas.

- Unsafe transition: Not only is aesthetically unpleasing, but poses significant threat to villager's daily commutes (e.g. mud & stone path → tripping over)
- Insufficient infrastructure: Causes great inconvenience for commuters within the village & No incentive for corporations to develop the area


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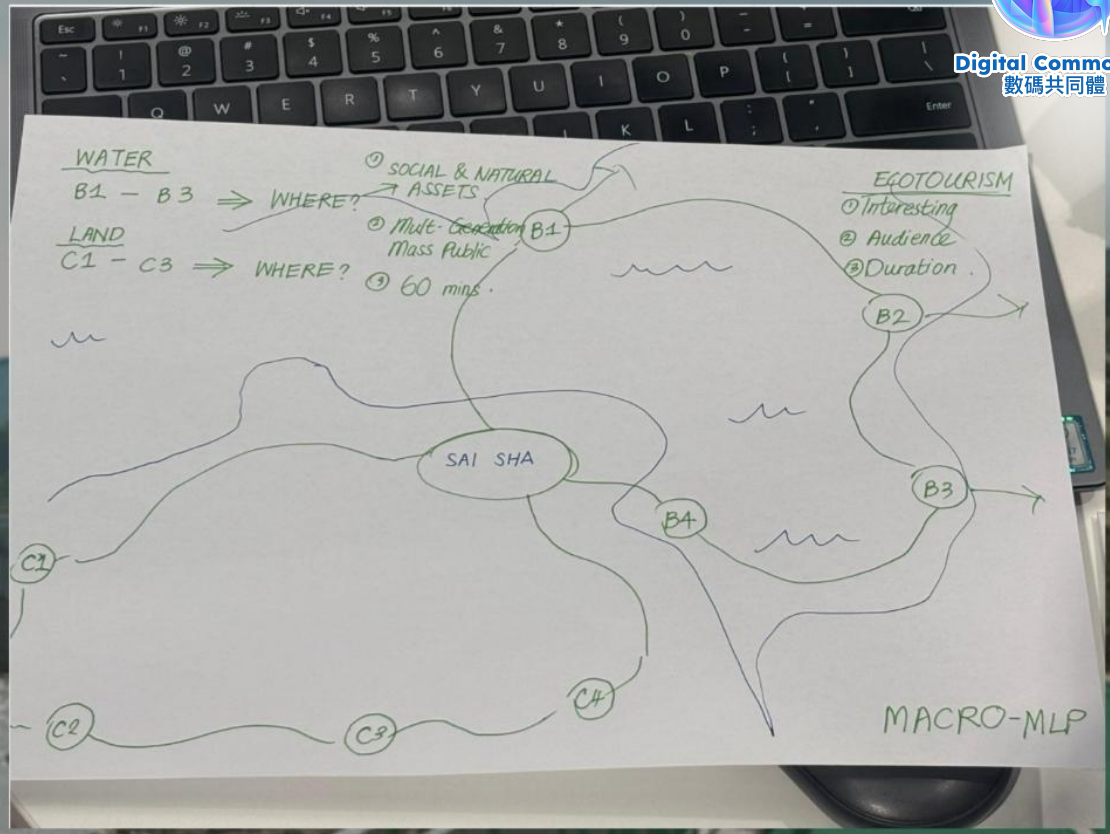
Layers/Phases
→ Macro (Mapping)
→ Meso (Planning)
→ Micro (Design)

Macro Features

Integration of Land & Water Transit

Considering that a rail-based transit isn't sufficient & cost-effective, cycling & ferry routes would better suit the needs of ecotourism & the villagers



- Economic (7/10) – Supports tourism, local businesses, need fewer initial capital investment than building MTR
- Social (8/10) – Enhances access, recreation, hiking & cultural/heritage sites for residents and visitors, aslo promotes family activities & community connectivity
- Environmental (8.5/10) – Low-emission transport supports eco-tourism,m improves air quality & encourages sustainable mobility

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Meso

Features

Nature-themed URI

A cycling and pedestrian road network developed based on dichotomous branching system inspired by leaf venetion with hierarchy, allowing easy penetration from main road to smaller village roads

- Economic (7/10) – Enhances tourism appeal, supports local businesses in villages & property values, but requires substantial investment in hierarchical infrastructure
- Social (9/10) – Excellent connectivity from main roads to villages, promotes active mobility, health, recreation & community access
- Environmental (9.5/10) – Highly sustainable design inspired by nature, encourages zero-emission travel, low ecological footprint & biodiversity-friendly integration

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Micro Features

Nature-themed URI

A "root-inspired" floating structure that mimics the interlocking stability of mangrove to create a permeable Interface betwen land and water to becoming a docking point for marine life and small boat.

- Economic (6.5/10) – Innovative eco-tourism potential and niche marine infrastructure appeal, but high R&D, construction & maintenance costs
- Social (8/10) – Enhances recreational access, eco-education & community connection to nature, while providing unique visitor experiences
- Environmental (9.5/10) – Excellent mangrove-mimicking design supports marine biodiversity, creates habitat, low-impact floating solution with strong ecological integration

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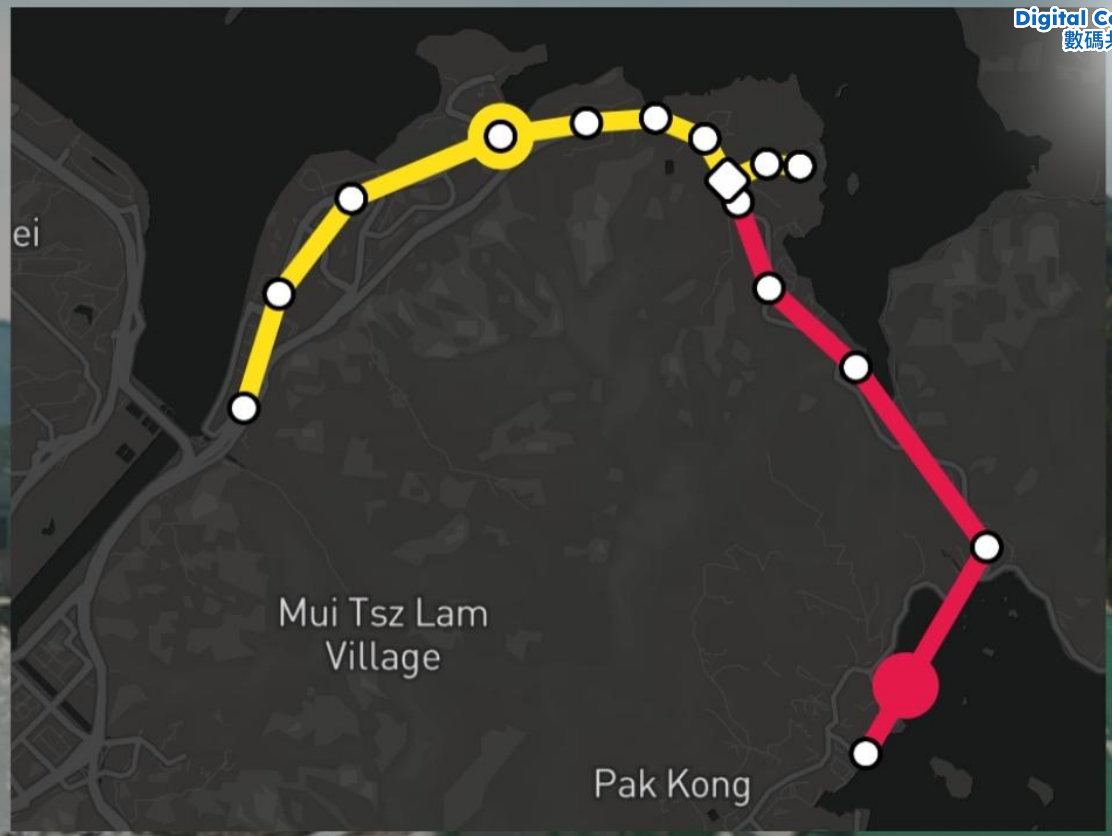
Design Iteration

Transport-Oriented Development

A rail-based transit system was proposed to counter the problem of URI in Sai Sha. Though later we discover its consequences



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Design Iteration

North-west Railway

- Economic (7/10) – Connectivity drives growth but need large initial capital investment
- Social (8/10) – Mobility, jobs, inclusion for NW NT residents
- Environmental (7/10) – Low-carbon emissions, pollution will be caused during construction and permanently damage the local ecology

Cycling+Ferry

- Economic (7/10) – Boosts tourism, local businesses & lower construction/maintenance costs but limited commuting ROI
- Social (8/10) – Promotes health, family activities & community connectivity
- Environmental (9/10) – Zero-emission transport, improves air quality & encourages sustainable mobility

- Economic (6/10) – Supports tourism, local businesses in remote areas & Geopark visitation but limited scale, low frequency
- Social (8/10) – Enhances access to remote communities, recreation, hiking & cultural/heritage sites for residents and visitors
- Environmental (8.5/10) – Low-emission water transport alternative, supports eco-tourism with minimal daily footprint

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Overview

Black : Leaf Venation inspired road network system

Blue : Present buildings

Red : Designed future buildings

Tseng Tau Pier

Mangrove Tse ier

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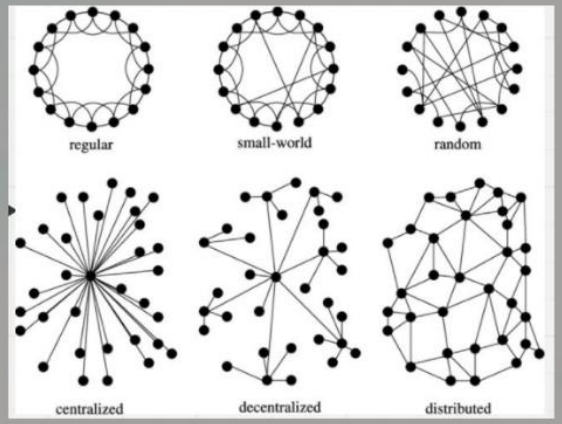
Mangrove inspired docking structure

Greater Go Park Aqua

Go Park Aqua

Leaf Venation inspired road network system



Network Topologies: Centralised VS Distributed

- Centralised: Causes congestion
- Distributed: Pays attention to other sights → Promoting ecotourism

Integration of Land & Water Transit

Possible ferry network connecting Harbours, also ports may suit our mangrove “root-like” docking structure, which can adapt to land and sea.

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Plantation of Vegetation

- Helps to purify air around the tracks
- Comfortable to the eyes of visitors

HUNG HEI CHIT G9D-10

Root-inspired Design

- Protects and creates marine ecosystems
- Flood-resilient design: Wide branches & slow water flow

HUNG HEI CHIT G9D-10

Artist's Conception

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Ferry routes going around ecotourist destinations

- Ecotourism: create new job opportunities
- Let more people be aware of the significance of Sai Sha's ecosystem

HUNG HEI CHIT G9D-10

Artist's Conception

Prototyping and 3D Modelling

nature-based solution

root-inspired design

env. of diverse HK marine ecosystem

prioritise environmental needs

platform of trees 1-3 natural asset

e-mobility

road system for cycle

water transport

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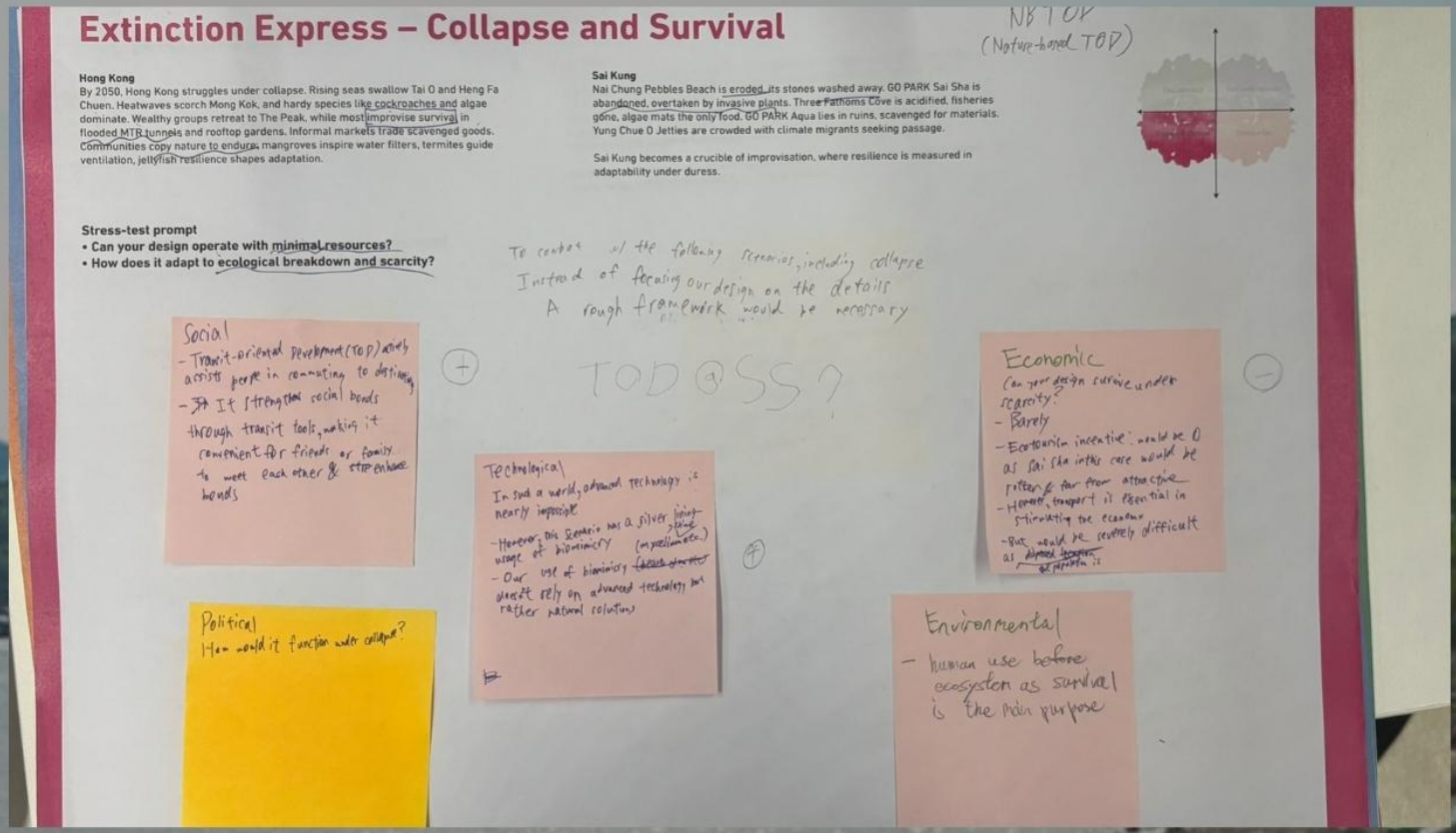

Social:

Strengthen social bonds through transit under cruel conditions

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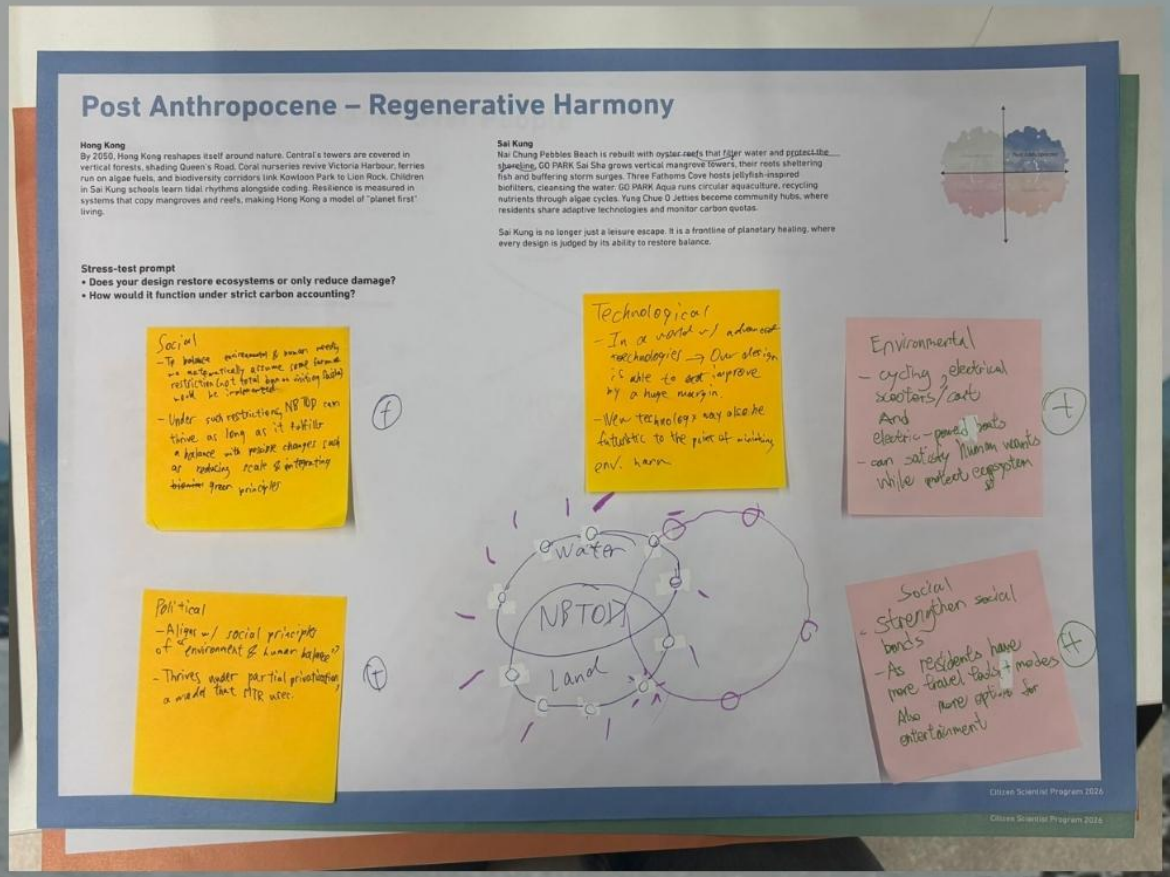
Environmental:

- Human use is prioritised before environmental needs
- Our design can still work under such a principle

Evaluation (Worst)



Social :
Balance environmental &human needs

Environmental:

- Cycling & electric-powed boats
- Can satisfy human necessities and protect ecosystem

Evaluation (Best)

Future Speculation

Deeper Urban-Rural Integration Occurs

Figure 15 : detailed diagrams to illustrate a potential network

1.Improve Connectivity and Mobility:

- Enhanced public transport and expanded cycling/pedestrian /shipping network.
- Blurs urban-rural divide(e.g., eco-tours, traditional elements preserved in pockets).

2.Economic and Social Blending:

- mixed-use: tech/light creative industries, agritech, tourism (rural experiences + modern sports/entertainment
- Local villagers might benefit from new opportunities (e.g., supplying fresh produce to restaurants).
- Equitable public services: facilities serving both new urbanites and existing residents.

3.Environmental and Sustainability Focus:

- green buildings, biodiversity corridors, flood-resilient design (building on existing drainage upgrades), and carbon-neutral goals.
- Sai Sha could model how dense living coexists with park preservation.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「有物混成，先天地生。」
~《道德經》
"There is a thing, formless yet complete, born before heaven and earth."
— Tao Te Ching

第三屆 青年建築師計劃

Design Scientist 2026 Incubation Program | The 3rd Annual Program of The Citizen Architect Initiative

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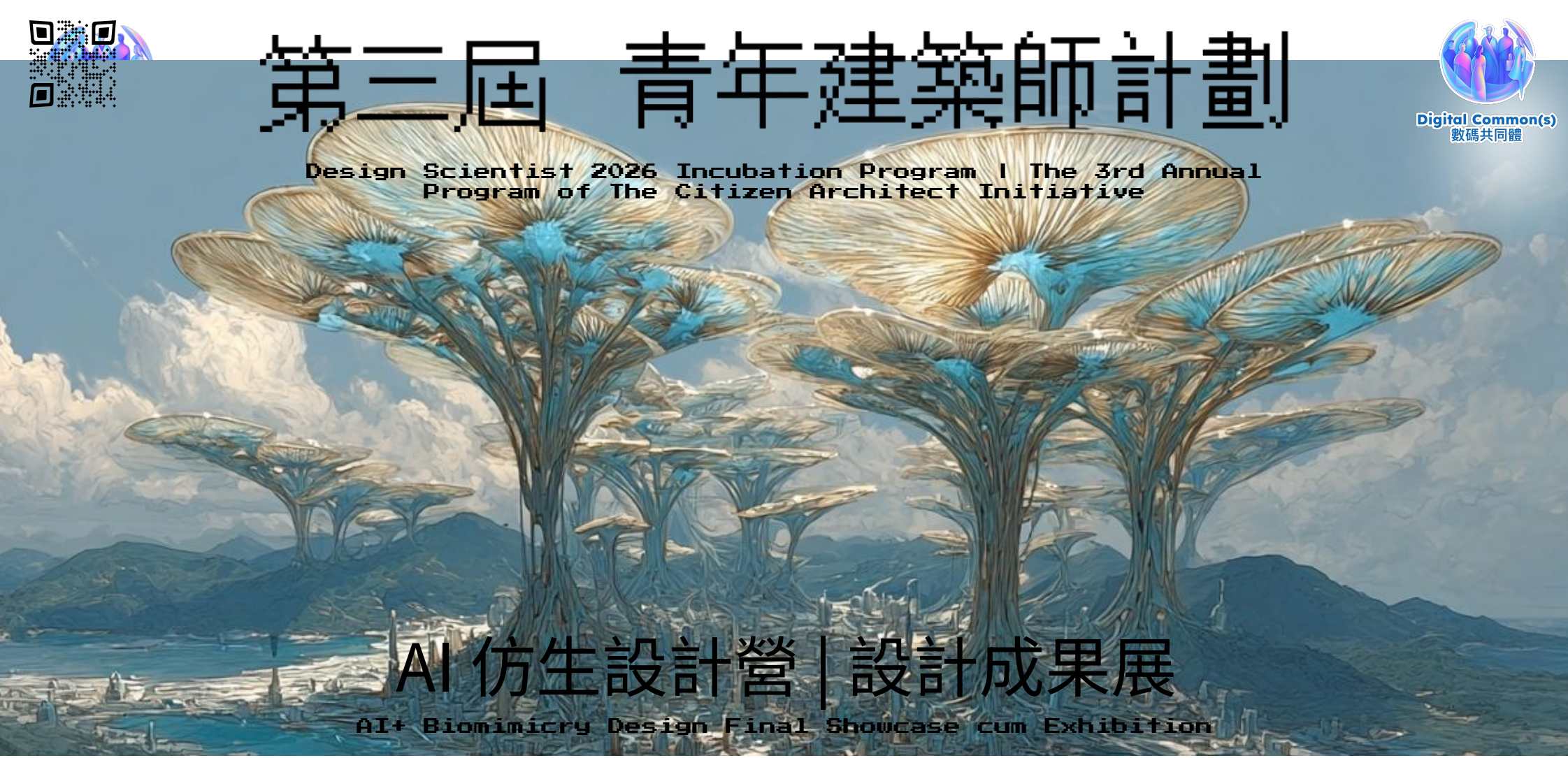

AI 仿生設計營 | 設計成果展

AI+ Biomimicry Design Final Showcase cum Exhibition

這項活動由 **Future Ecopreneur Programme** 隸屬下的 **Eco-pilot Project** 資助，該計畫由 **香港科技園公司** 和 **和富社會企業組織**，並由 **恆生銀行** 提供支援。