



Digital Common(s)
數碼共同體

BIOPOD

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TSL: Mak Wing Yan Maisy

Mentor: Weihao Yin

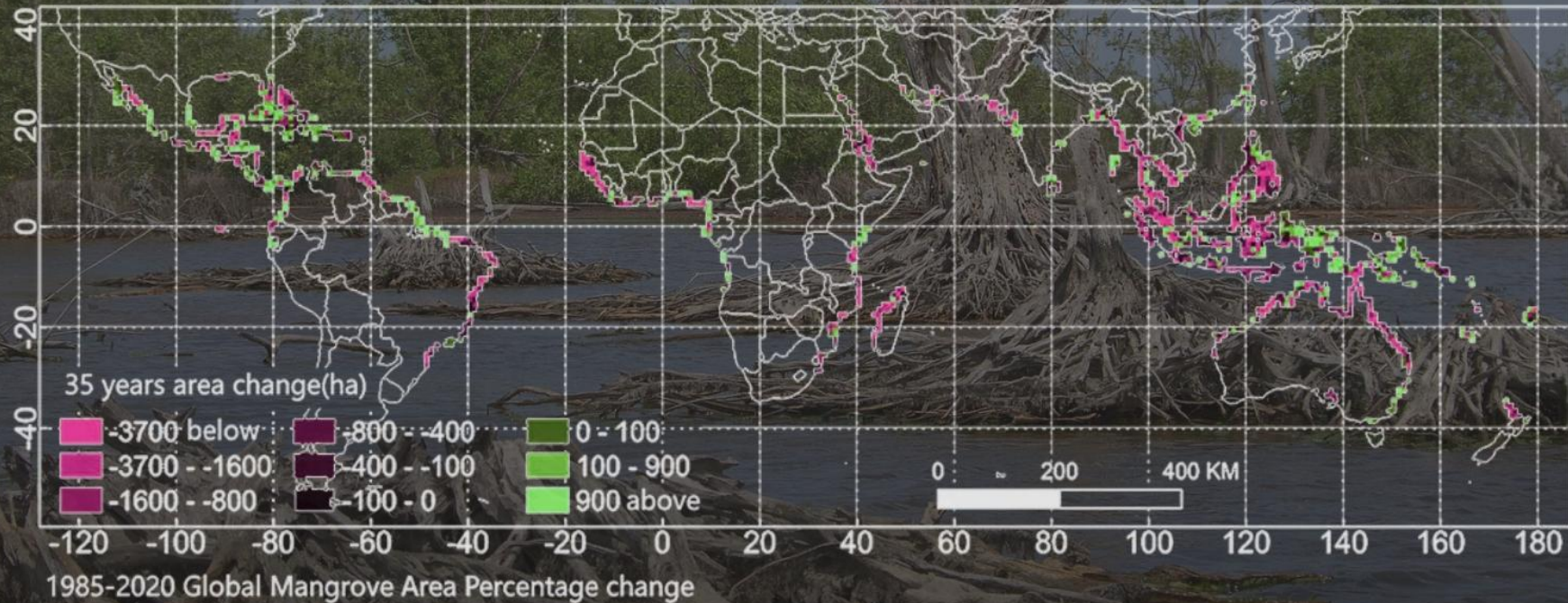


According to research by Nanjing University,

In just **35 years**,
the world has lost over **one-fifth** of its mangrove forests.



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Stronger coastal erosion, more frequent coastal flooding, accelerating global warming, loss of aquatic wildlife...

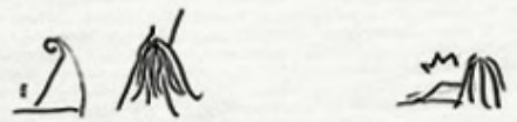
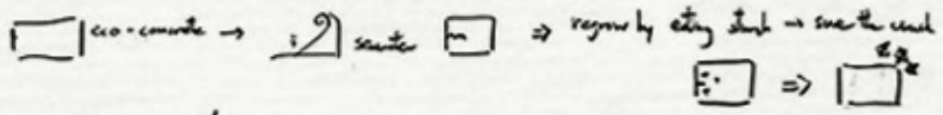
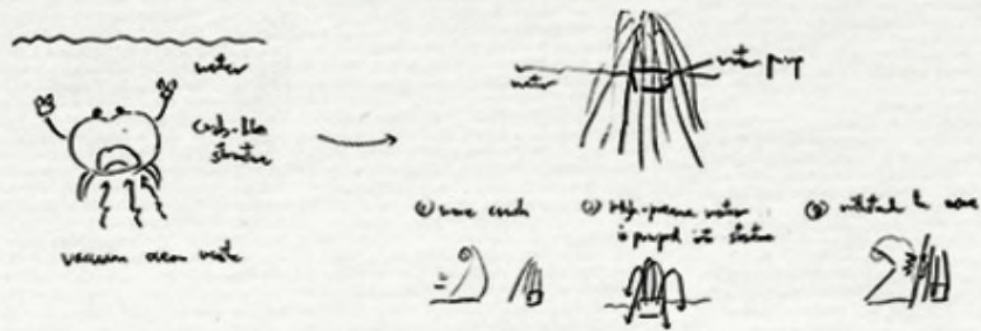
||| Design Inspiration



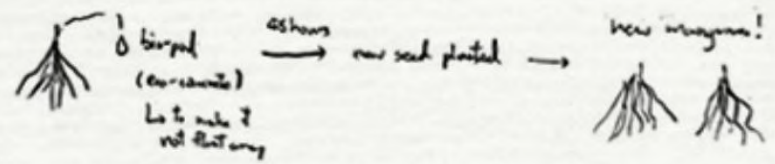
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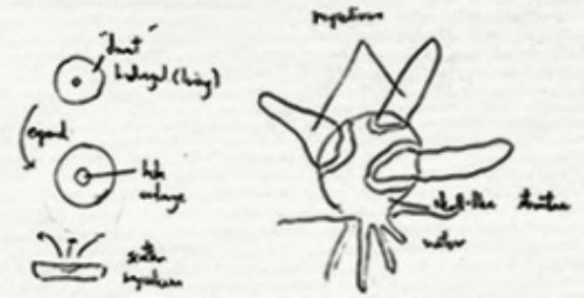
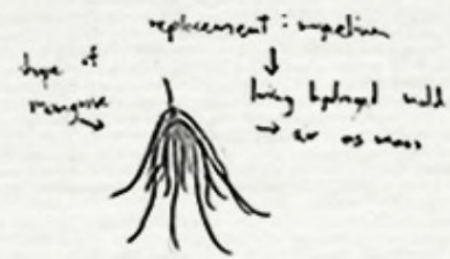
Preliminary Designs



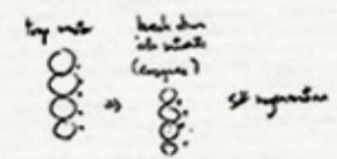
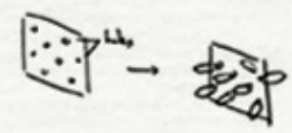
wave catch into structure
 → how wave to catch with wave
 ⇒ cancel out kinetic energy
 ∴ fluid dynamics



development of supporting structure & biopod



cellular strategy



investigation of eco-material in the design



Design Inspiration



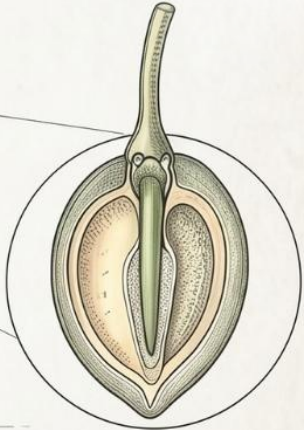
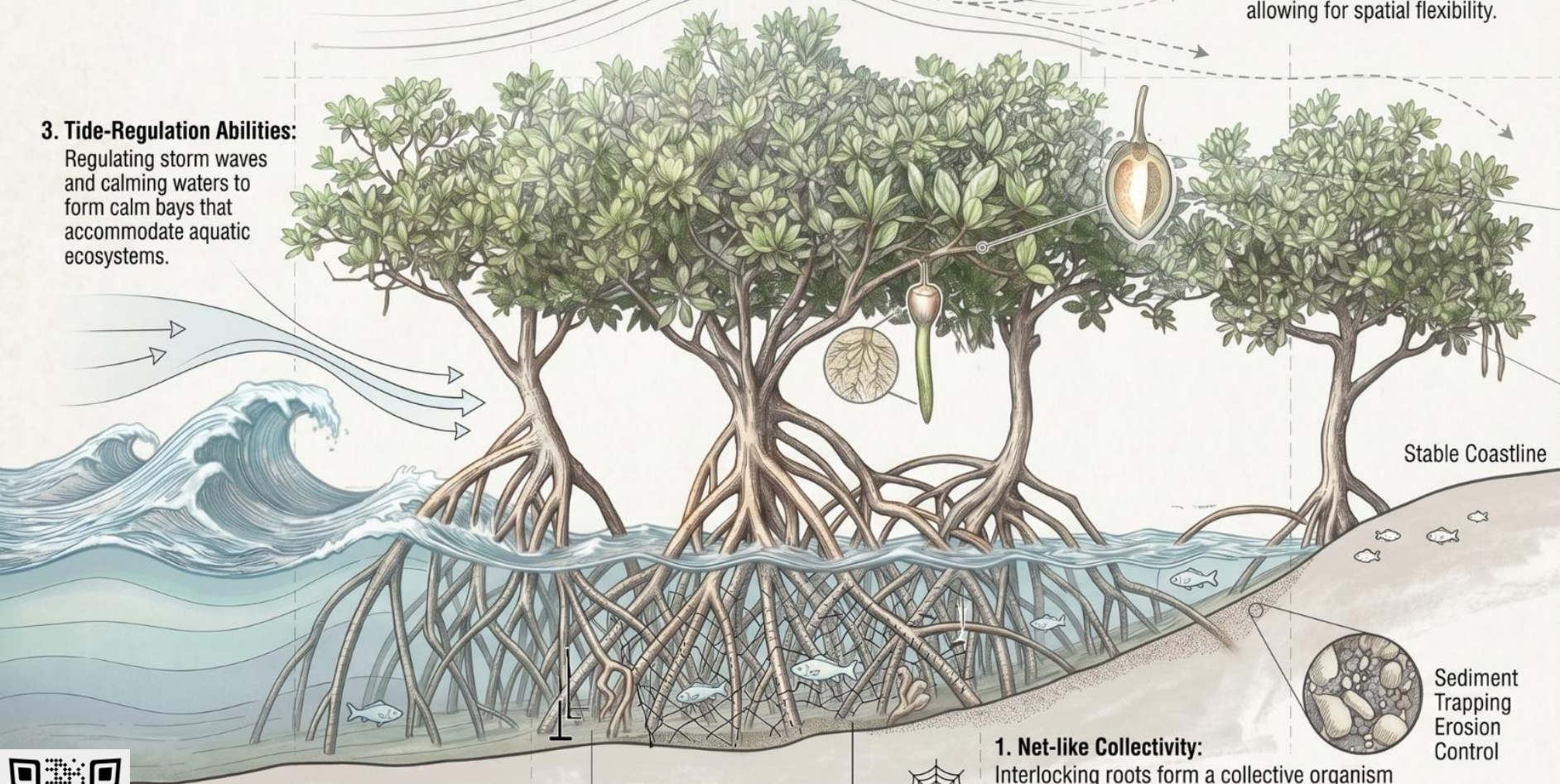
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2. Adaptability and Modularity:

Forest can regenerate and die according to changing landscapes and environments, allowing for spatial flexibility.

3. Tide-Regulation Abilities:

Regulating storm waves and calming waters to form calm bays that accommodate aquatic ecosystems.



4. Viviparous Germination:

Phenomenon where seeds germinate while still attached to the mother plant, allowing seedlings to grow directly in a suitable environment without a dormant phase, like a needle, strong structurally.

1. Net-like Collectivity:

Interlocking roots form a collective organism as an entire forest that structurally support each other while creating narrow gaps as aquatic habitat for other organisms.

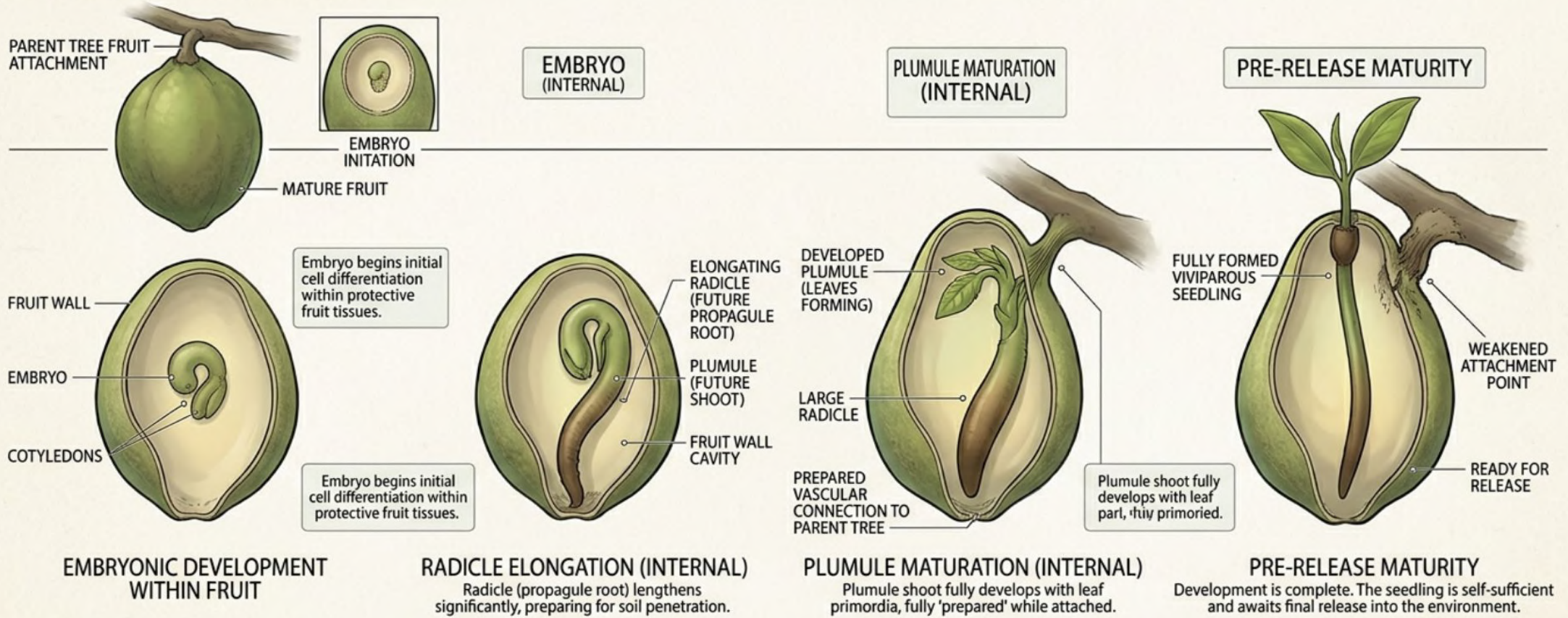


Sediment Trapping
Erosion Control

Narrow gaps as habitat



INTERNAL MANGROVE SEED DEVELOPMENT: VIVIPAROUS PREPARATION



SUMMARY: MANGROVES EXHIBIT VIVIPARY, WHERE THE SEED RETAINS A VASCULAR CONNECTION AND UNDERGOES SIGNIFICANT INTERNAL GROWTH (RADICLE ELONGATION AND MATURATION) WITHIN THE PROTECTIVE PARENT FRUIT BEFORE RELEASE. THIS PREPARES THE SEEDLING FOR INSTANT INDEPENDENCE AND SURVIVAL IN COMPLEX COASTAL ENVIRONMENTS.



Nature's Architects by Provides Ng, Esther Chan, Patrick So

Biopod | Angel, Aidan, Gordon, Aluin

Citizen Scientist Program 2026

||| Design Statement

A biomimetic, distributed bio-infrastructure system that replaces extinct mangrove ecosystems through a self-organizing network of root-like structures and mobile biopods.

Acting as both ecological agent and hydrological regulator, the system enables adaptive sediment control, biodiversity regeneration, and flood resilience in extreme coastal environments.





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||| Design Prototype

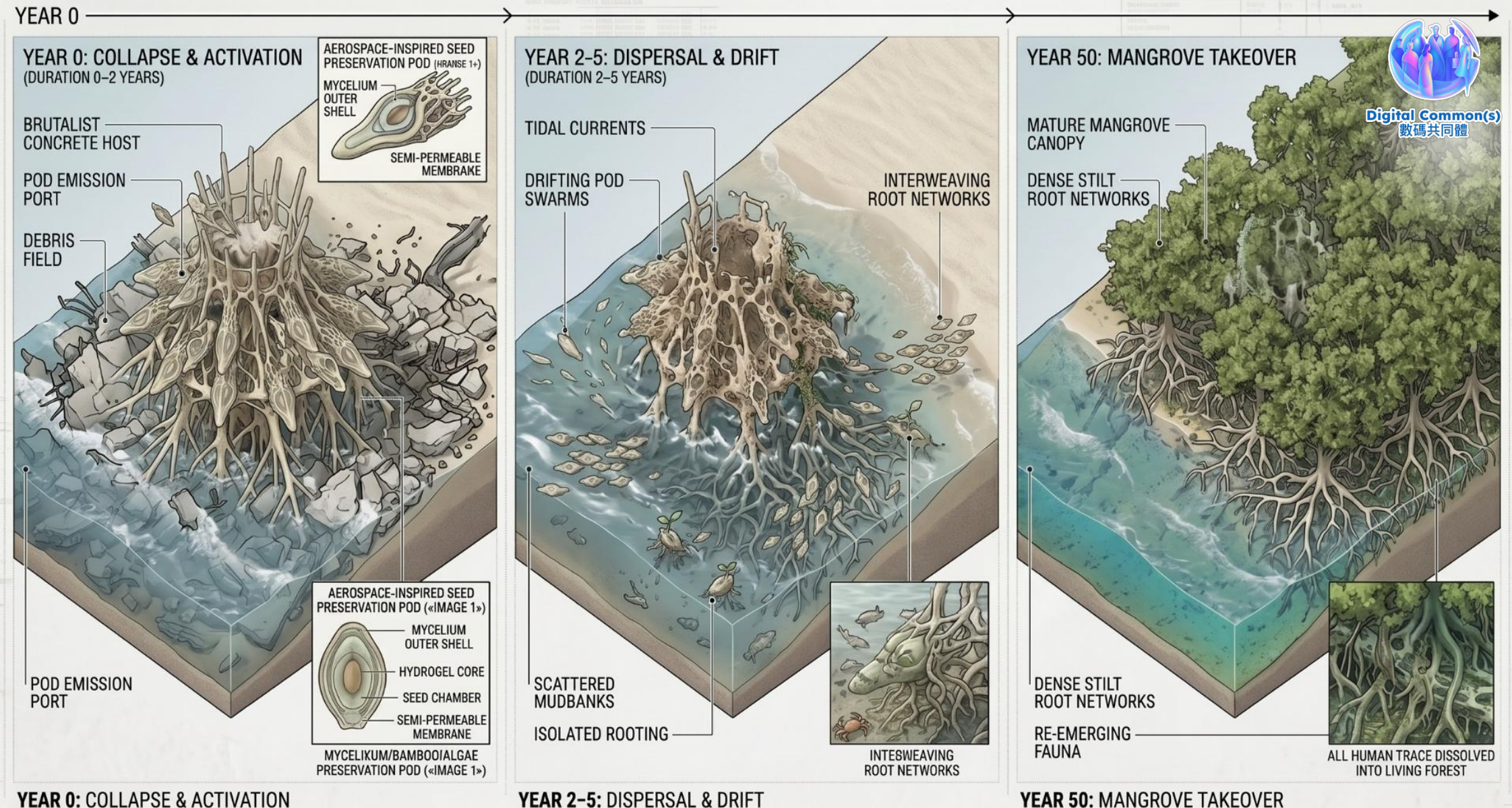


supporting structure



biopod





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Extinct Mangroves



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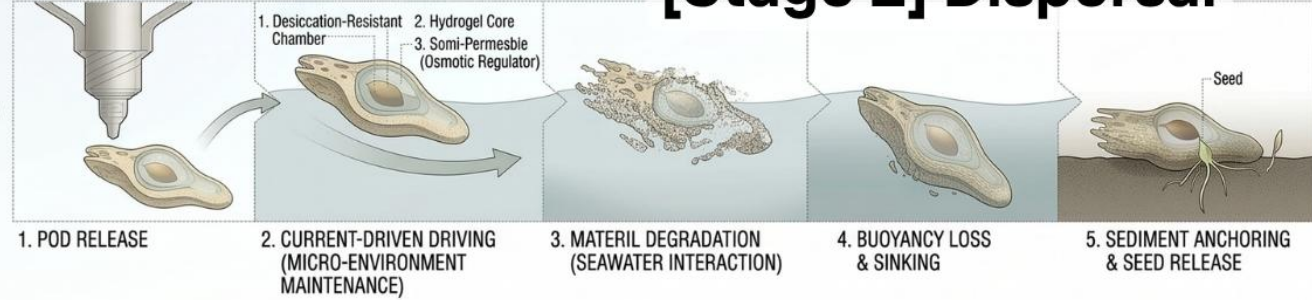
Year 1

[Stage 1] Construction

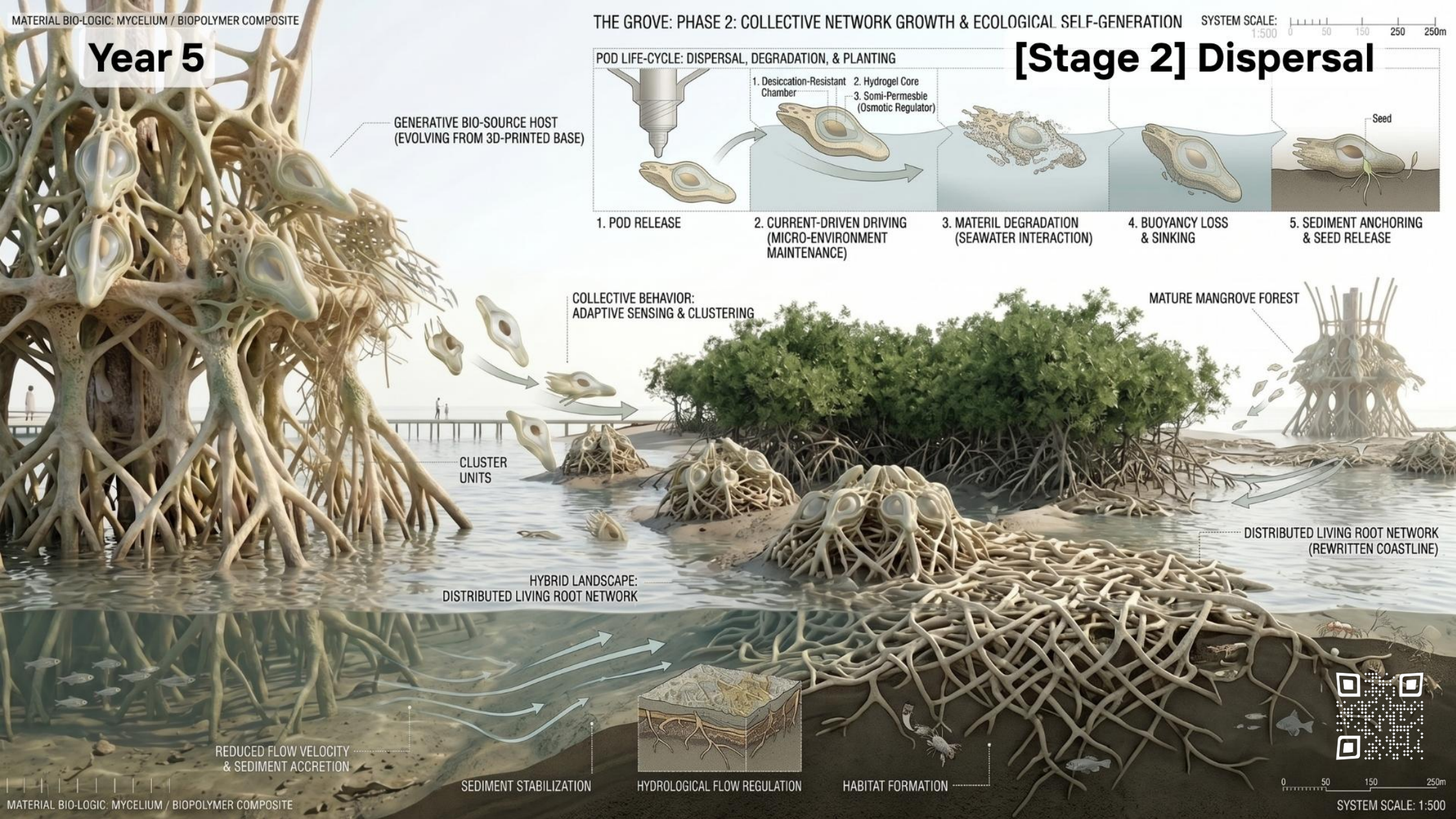


Year 5

POD LIFE-CYCLE: DISPERSAL, DEGRADATION, & PLANTING



[Stage 2] Dispersal





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SAI SHA BAY, HK

[Stage 2] Dispersal

PROJECT MANGROVE DISPERSAL

..... CURRENT-DRIVEN ARCING FORMATIONS

..... CURRENT-DRIVEN ARCING FORMATIONS

..... FLOATING BIOPODS DENSITY MAP

..... GROUNDED BIOPODS
(DEGRADATION HALO VISIBLE)





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[Stage 2] Dispersal



Year 50

[Stage 3] Takeover





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[Stage 3] Takeover





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If the seed doesn't die,
it remains a seed.



BIOPOD





第三屆 青年建築師計劃



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

AI 仿生設計營 | 設計成果展

AI+ Biomimicry Design Final Showcase cum Exhibition



TheMisto.ai

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。