

THE LIVING RIBBON

THE ZERO-CARBON BELT THAT WILL HEAL CITIES



"A Tether between Humanity and Nature."

Core Idea

2047, A year where Kochi has evolved into a hyper-urban coast. The once glorious home to thousands of bird species--- Mangalavanam (an existing bird sanctuary), is consumed by the expanding concrete giants.

Amid this, **The Living Ribbon** rises as an aerial ecological artery — above the **Marine Drive** stretch that merges **architecture, ecology, AI, and community**.

It's not just a path — it's a living organism that breathes, adapts, and regenerates — forming a **bio-digital bridge** linking the city, Mangalavanam's biodiversity, and the Arabian Sea.

Layers

1. The Airpath
2. Eco-Glass Pods
3. The Sky sanctuary

THE BASE--HYBRID COLUMNS

The layers stand on columns built from mycelium based composites infused with bioluminescence and bio-engineered bamboo carbon frames, grown, not manufactured.

Implying:
Self healing + natural biological binder

LIVING ALGAE INFUSED FACADE SKIN

- absorbing pollution and releasing oxygen
- micro fluidic channels containing algae cultures
- fungal biofilms embedded in nutrient gels

This shifts the structure from static shelter toward a climate repair engine that actively restores environmental balance.



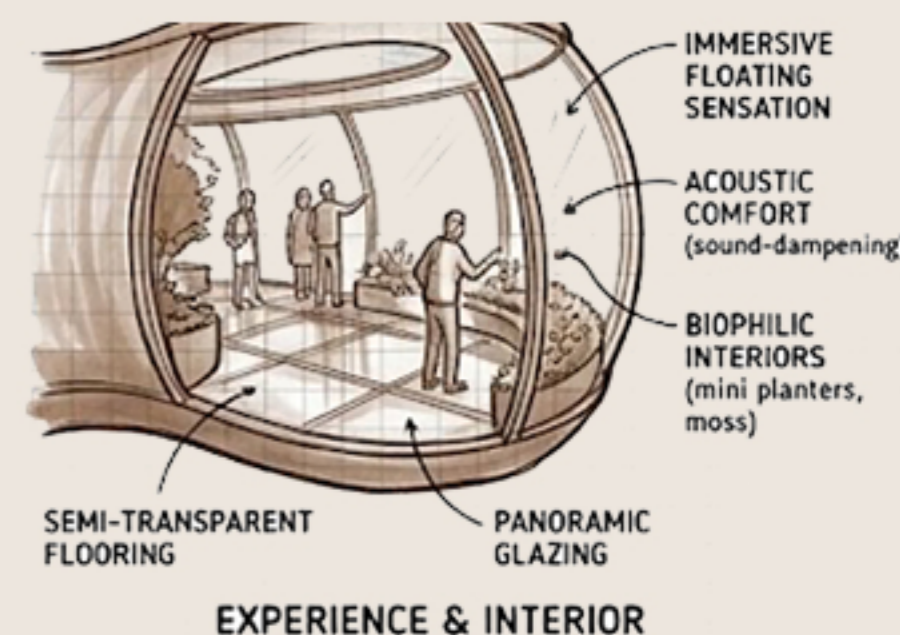
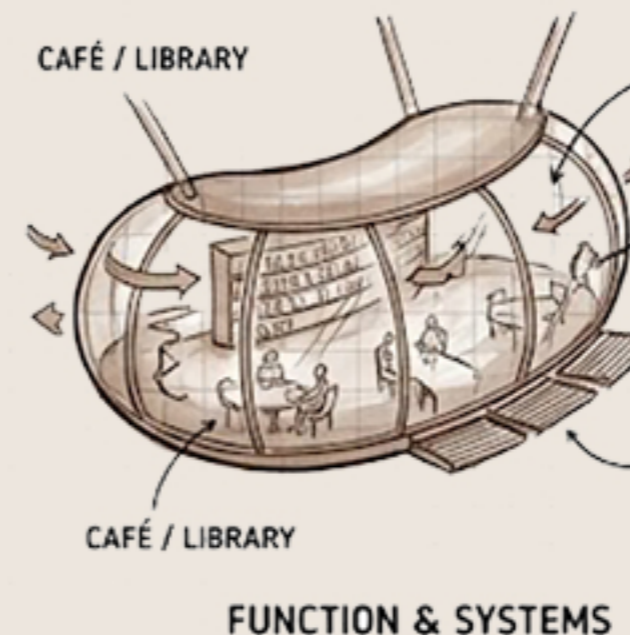
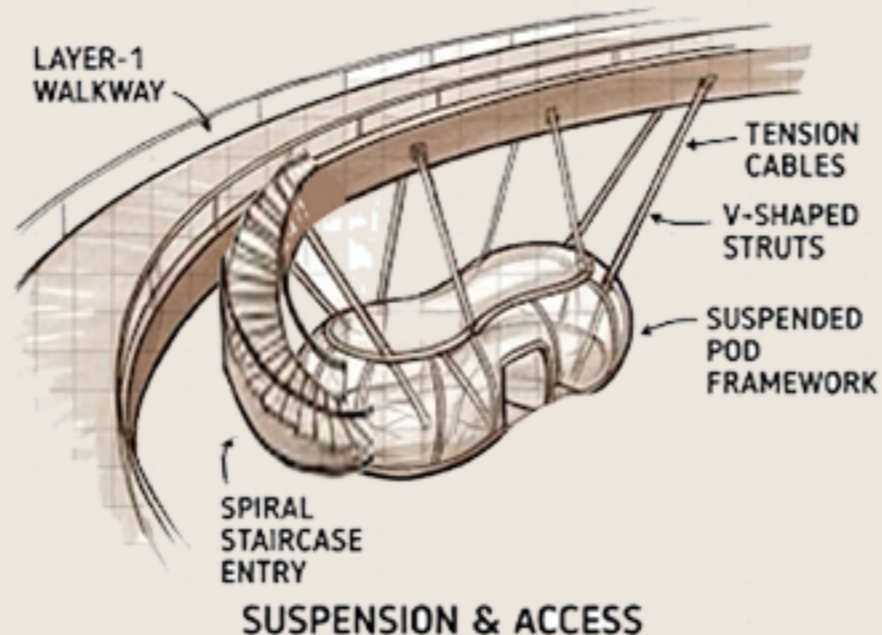
LAYER 2 — SUSPENDED GLASS ECO-PODS (CAFÉ / LIBRARY / RELAXATION SPACES/ OBSERVATION DECKS)

- Structural & Suspension System
Suspended Pod Framework:

- Each pod is a lightweight composite or steel-glass shell, hung from the level-1 walkway using tension cables, V-shaped struts, or ring-beam anchors.

- 2. Stability + Safety:
Anti-sway dampers, tuned mass stabilizers, and wind-bracing rods ensure pods remain steady even in wind or footfall vibrations from the walkway.

LAYER 2 — SUSPENDED GLASS ECO-PODS



Self Healing Structure: Mycelium networks regrow into micro cracks and naturally seals and gives the structure a long lifespan.



The bio-engineered bamboo is integrated with fungal biosensors that change electrical signals when stressed—providing living structural health monitoring.



BIO-ENGINEERED COLUMN
MYCELIUM-BASED COMPOSITE
BIO-ENGINEERED BAMBOO CARBON FRAME
BIOLUMINESCENT FUNGI
FUNGAL BIOSENSORS

LAYER 1 — ENERGY-HARVESTING GLASS WALKWAY (+6-10m)

- Elevated, semi-transparent glass walkway acting as the primary circulation spine.
- Light-to-Energy Conversion: Semi-transparent photovoltaic (PV) glazing or luminescent solar concentrators (LSCs) are integrated into the glass, capturing sunlight (direct or edge-guided) and converting it into electricity while maintaining translucency.

Why the Ribbon Must Exist

Kochi is a city built on water, but today it lives **under concrete**.
The coast is hard.
The air is warm.
Space is scarce.
And nature survives like a guest in its own home.

By 2047, this conflict becomes sharper.
So the **Living Ribbon** rises not as a structure —
but as an **apology, an act of returning space to the world that holds us**.
It is a **green lung** lifted into the sky,
so the **birds don't lose their path**,
so the breeze isn't swallowed by heat,
so the people of the city can breathe again.

What the Ribbon Truly Is

It begins quietly inside Mangalavanam,
then unfurls across Marine Drive, Queensway, and MG Road —
a **soft, glowing line of life** above a hardening city.

It is made from **materials that grow**, not ones that wound:
mycelium columns that **heal themselves**,
bamboo-carbon frames lighter than steel,
and a **living skin of algae** that drinks pollution and exhales oxygen.

It is infrastructure — yes —
but it is also organism, ecosystem, companion.

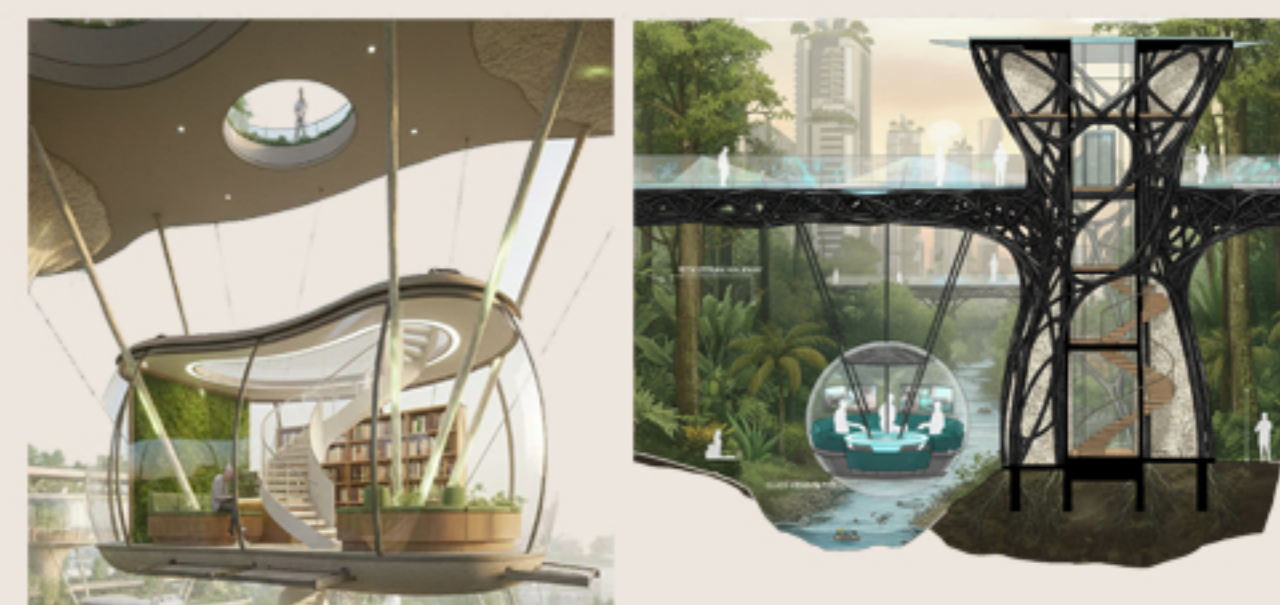
This is the first architecture that doesn't just shelter life.
It shelters the future.

LAYER 3 — THE SKY SANCTUARY

- A self-evolving, self-sustaining, AI-managed floating forest designed for birds, butterflies, and micro-ecosystems — untouched by humans.

LIVING CANOPY (Self-Growing Architecture)

- Bioengineered mangrove species adapted to aerial root anchoring grow directly into the structure.
- Mycelium-reinforced planter modules fuse with roots over time, strengthening the canopy organically.
- Genetically selected air-purifying leaf structures that actively filter urban particulate matter.



NATURE'S WALKWAY

-Root-inspired structural base emerges mimicking mangrove still systems.

-Integration of pedestrian flow, green corridors, and canopy layers.

-Ribbon expands to accommodate mobility, recreation, and habitat zones.

Final evolution — an eco-bridge that regenerates the urban edge.

The ribbon rejuvenates the marine drive edge and contributes to society-- reduces traffic, encourages pedestrian movement without obstructing vehicles, adds vibrancy and breathes life into the dying bird sanctuary.



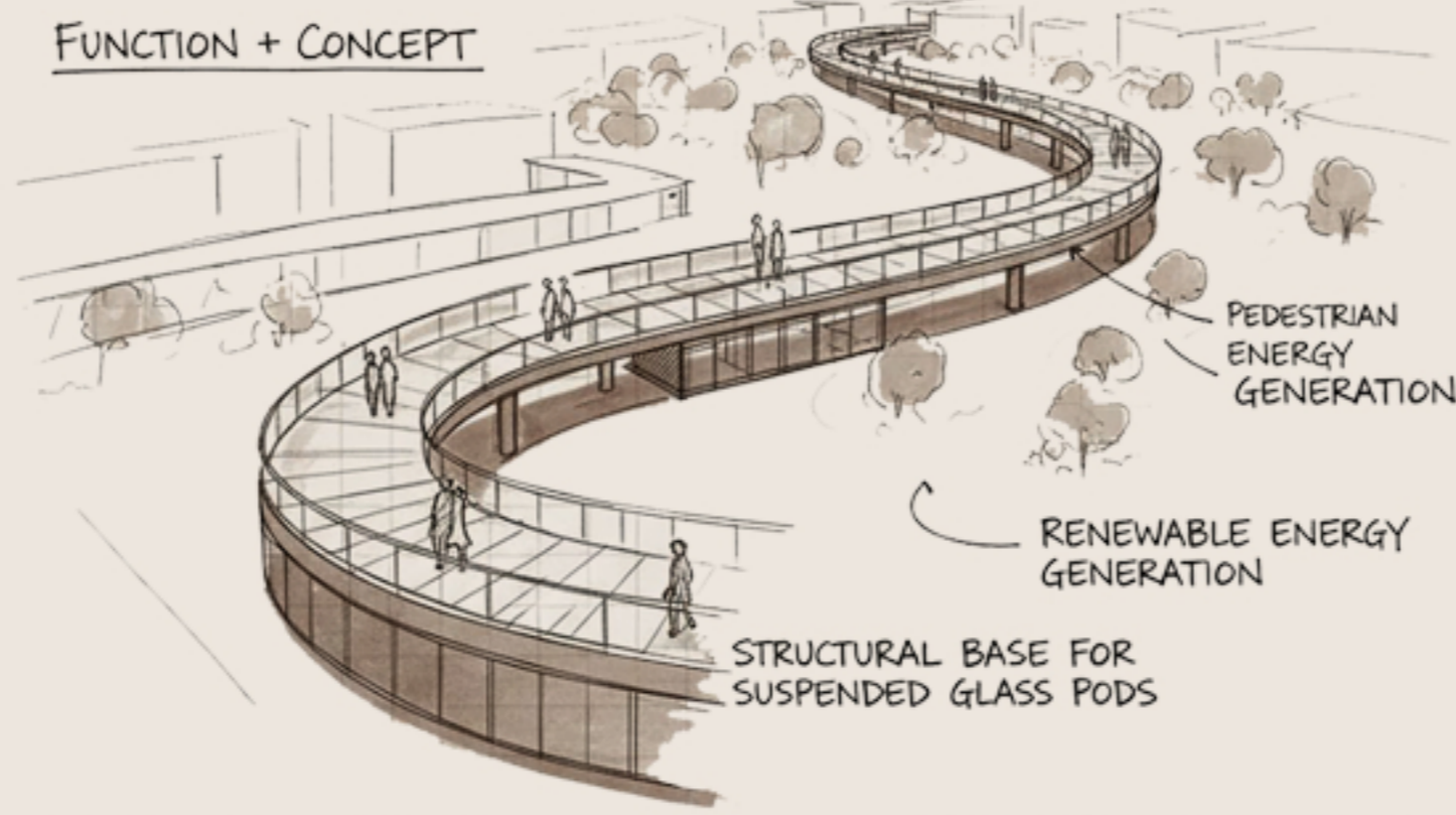
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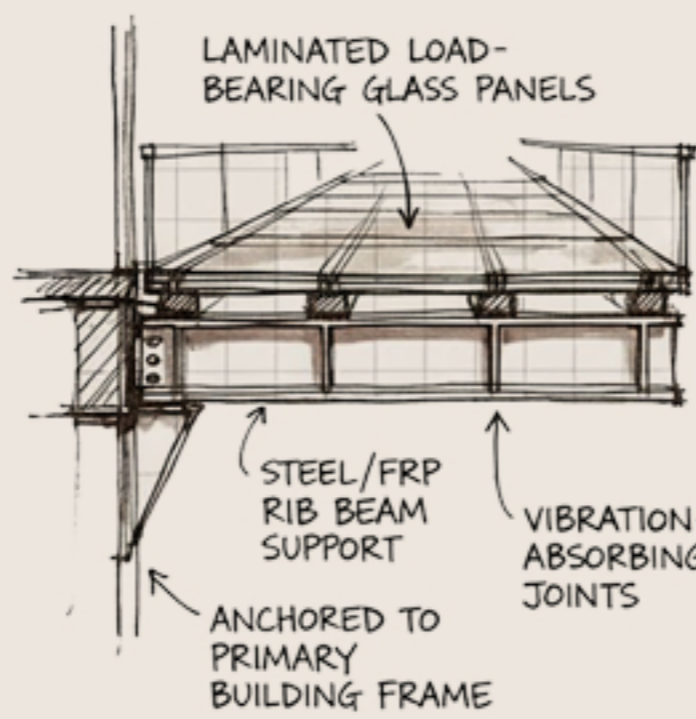


LAYER 1 — ENERGY-HARVESTING GLASS WALKWAY (+6-10m)

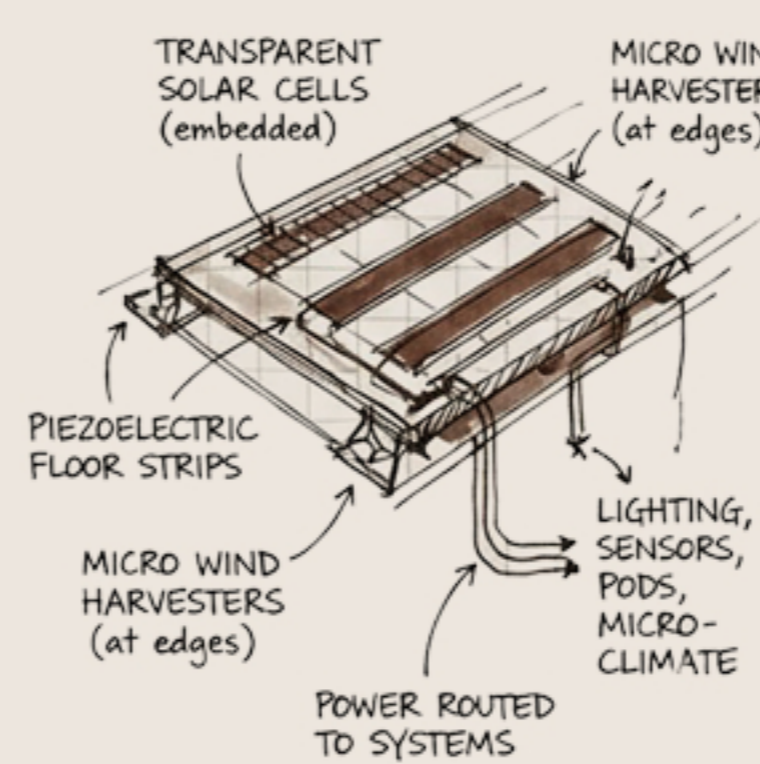
FUNCTION + CONCEPT



STRUCTURAL SYSTEM



ENERGY-HARVESTING TECHNOLOGIES



THE STRUCTURAL AMUSEMENT

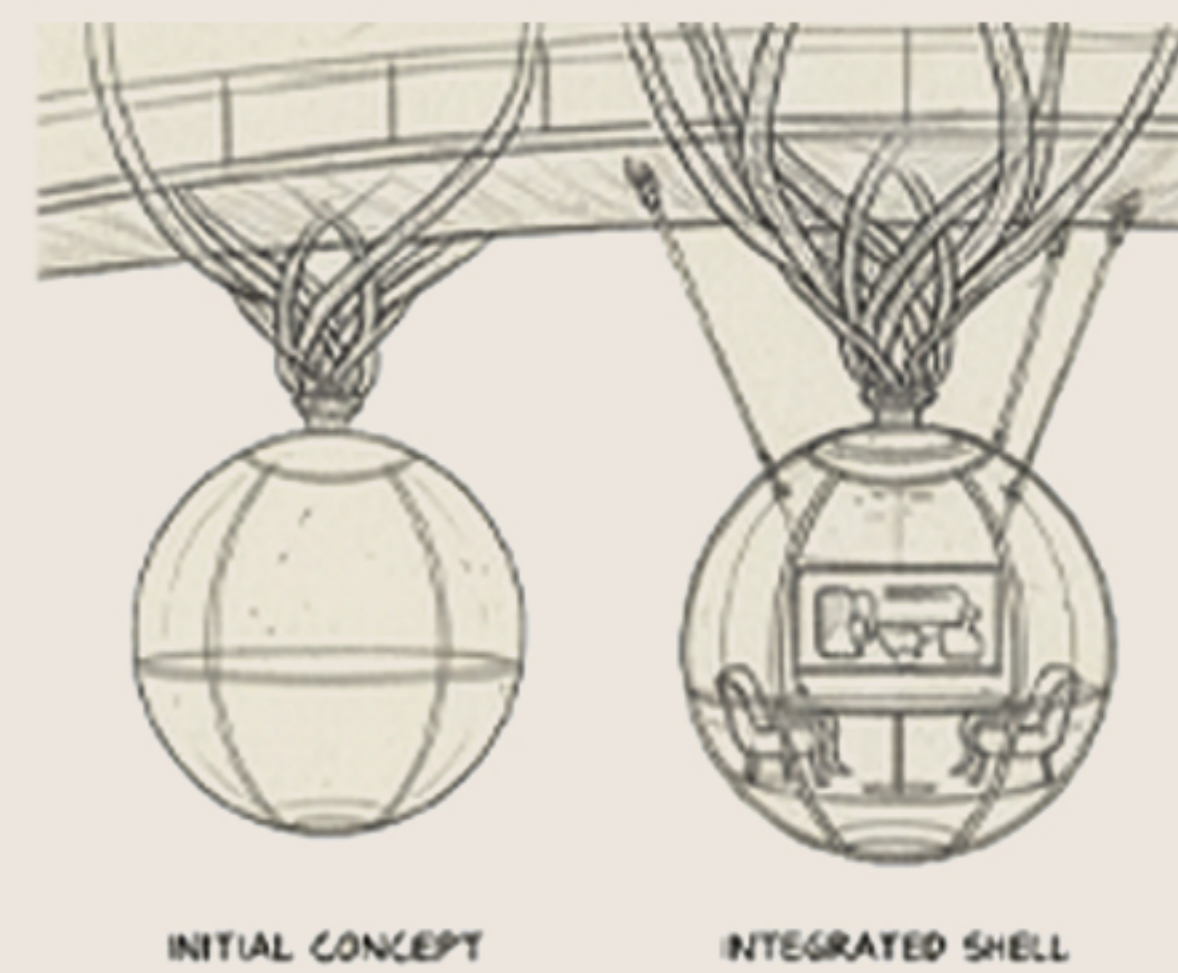
Pods extend outward from the Air Path through lightweight cantilever arms or tension-cable suspension systems.

Structural ribs connect to the main spine, distributing loads evenly without interrupting pedestrian flow.

Semi-transparent structural glass with carbon-bamboo composite frames maintains visual lightness.

Double-layer bio-glass envelopes regulate temperature and filter UV radiation.

Integrated algae panels within glass layers provide shading and contribute to carbon capture.



INITIAL CONCEPT

INTEGRATED SHELL

AR overlays are accessed through lightweight smart lenses, handheld devices, or integrated pathway projection systems.

Real-time environmental data is collected from sensors embedded across the Ribbon and surrounding coastal ecosystem.

Data is translated into visual ecological layers floating within the user's field of view.

The system turns invisible ecological processes into spatial learning experiences rather than static information panels.

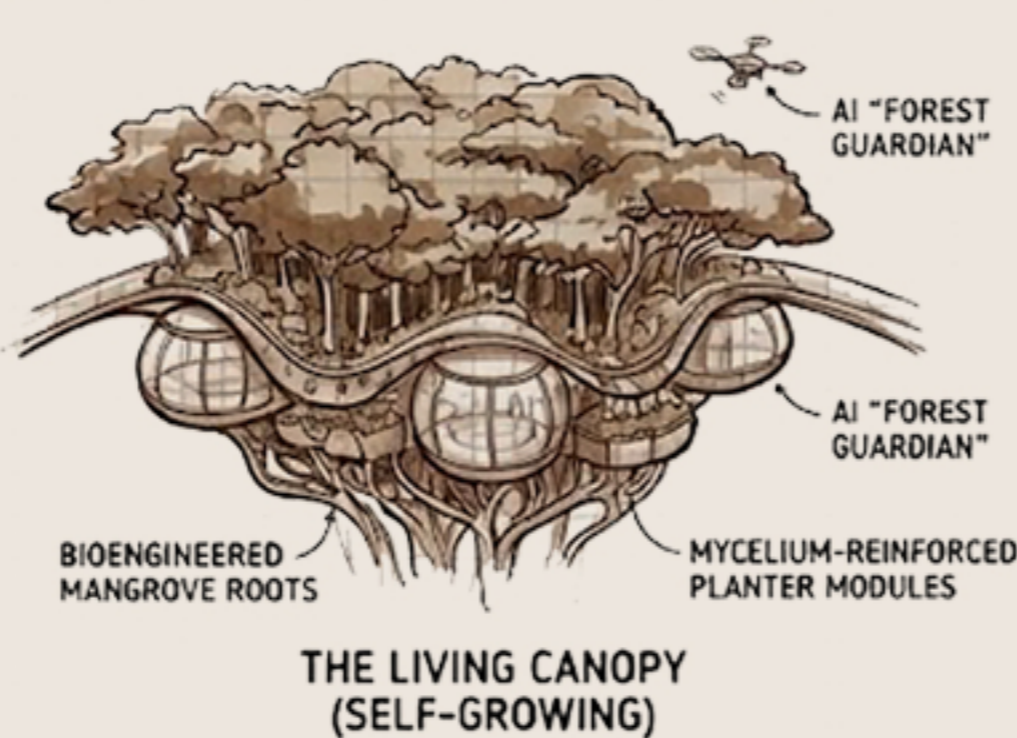
Drone tracking and bio-tagging systems collect data on bird flight paths and pollinator movement.

AR displays translucent migration trails across the sky above the Ribbon.

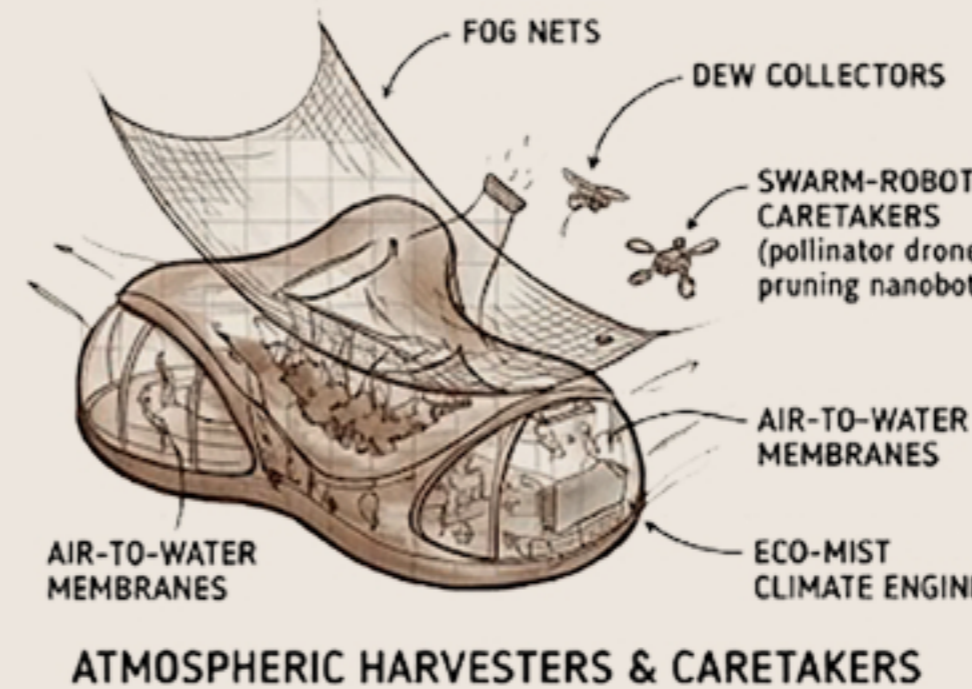
Real-time alerts show when migratory species are passing overhead.

Nesting areas or restricted ecological zones appear as softly glowing boundaries to guide human behavior.

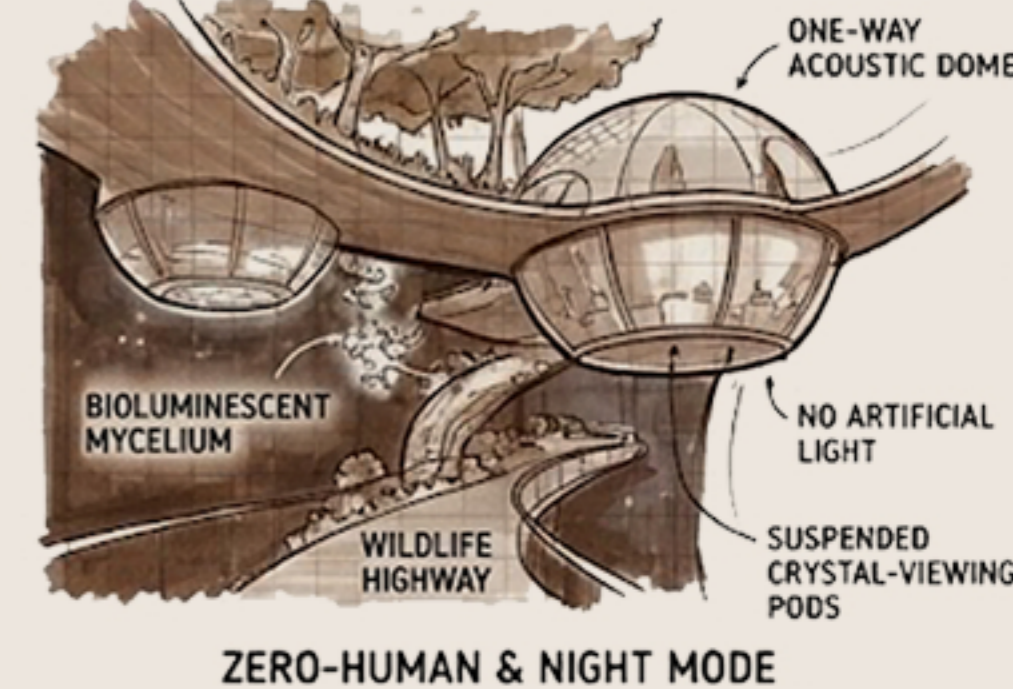
LAYER 3 — THE SKY SANCTUARY



THE LIVING CANOPY (SELF-GROWING)



ATMOSPHERIC HARVESTERS & CARETAKERS



ZERO-HUMAN & NIGHT MODE

AI-REGULATED ECOLOGICAL SUPERSTRUCTURE

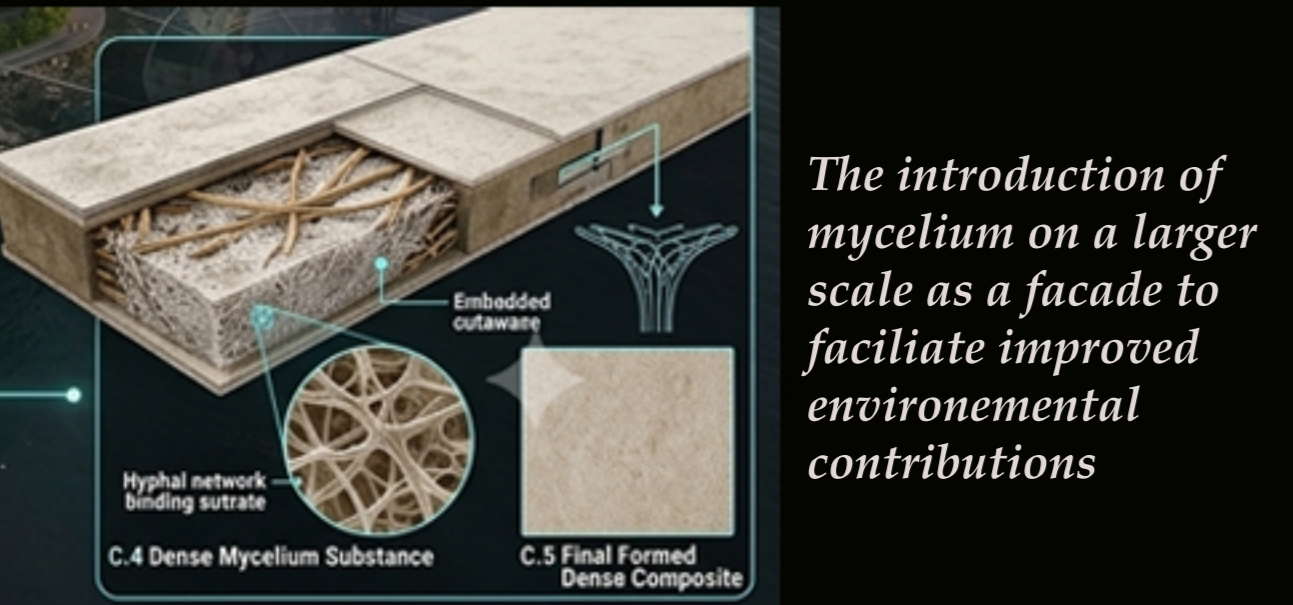
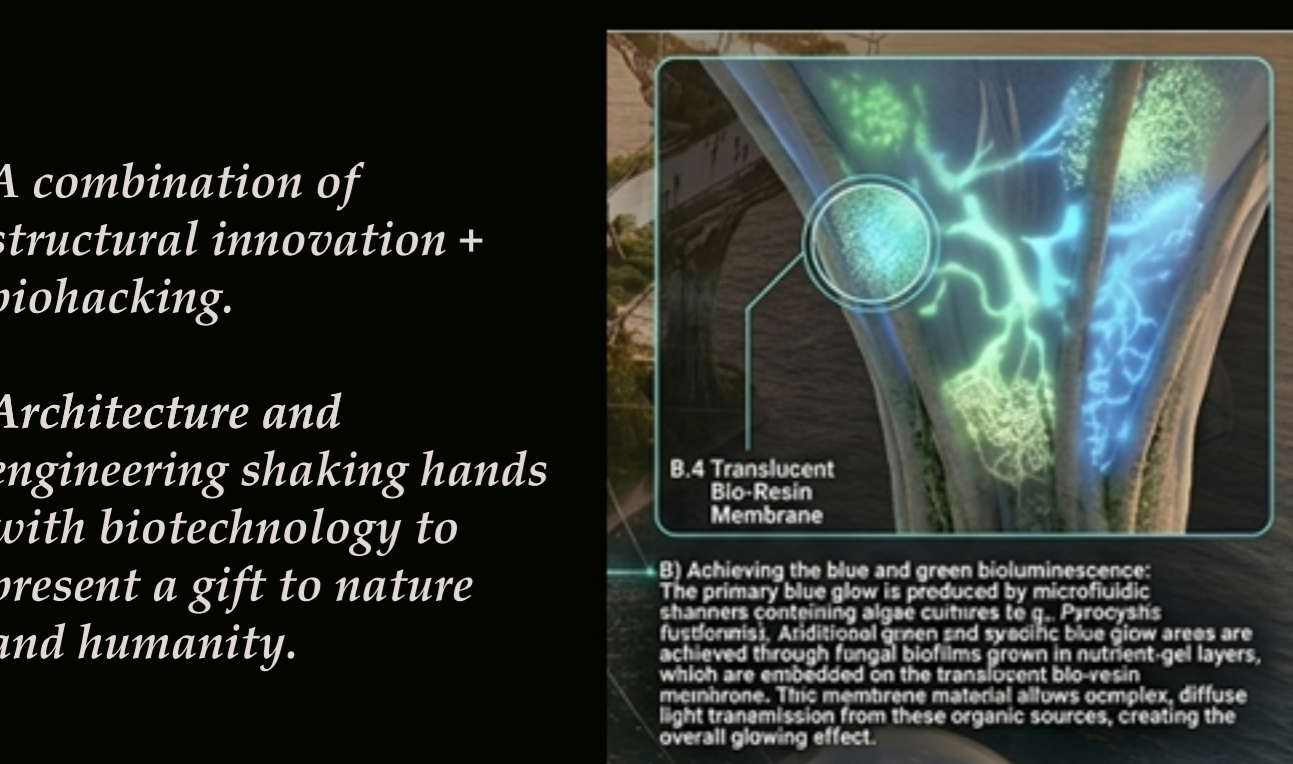
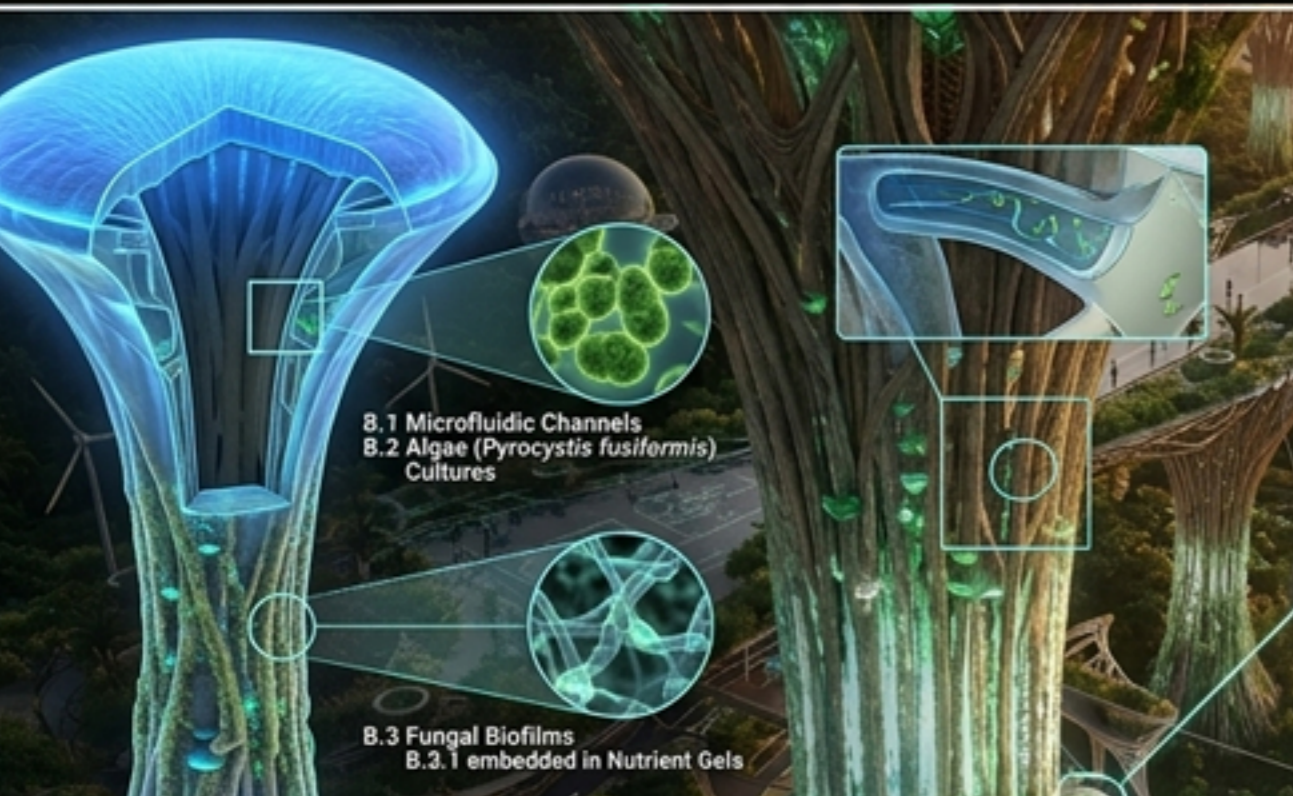
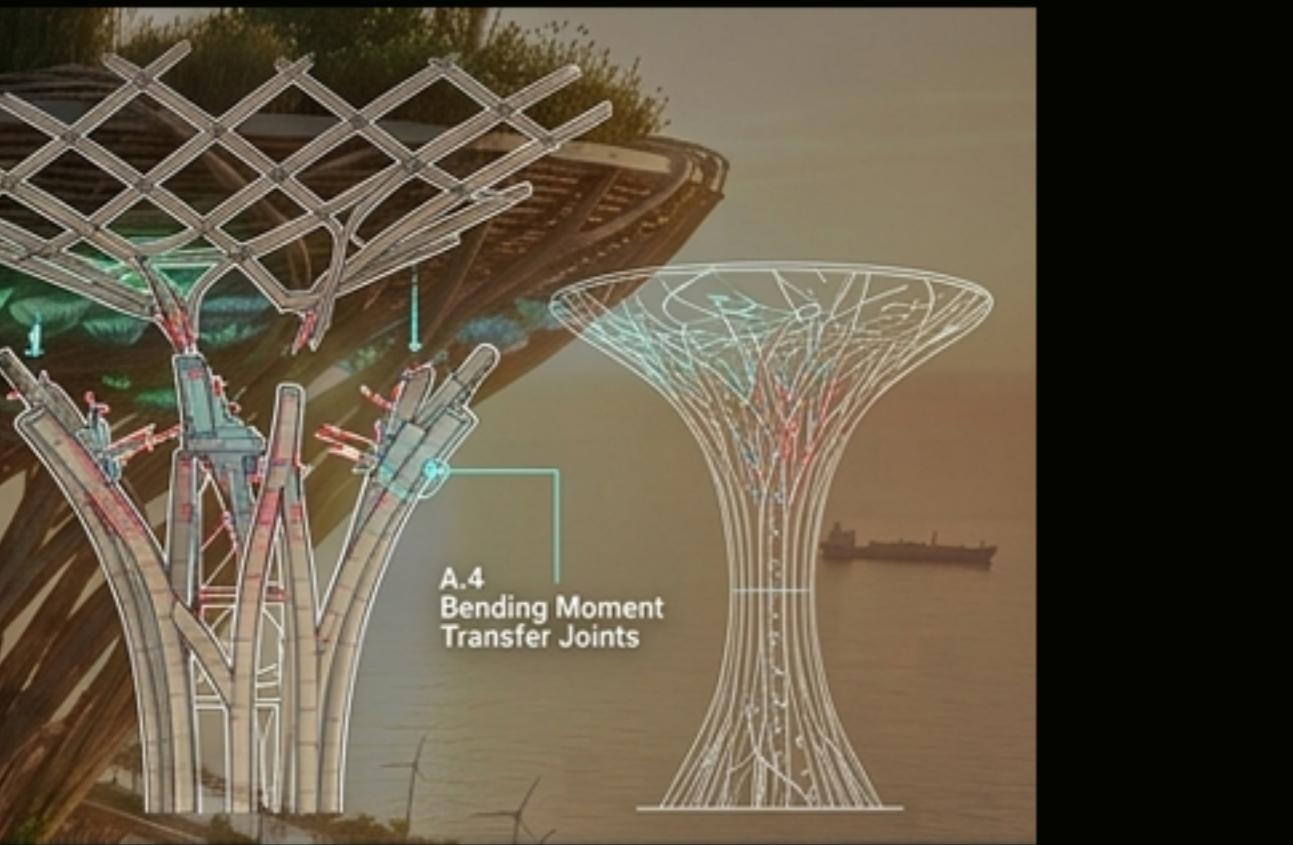
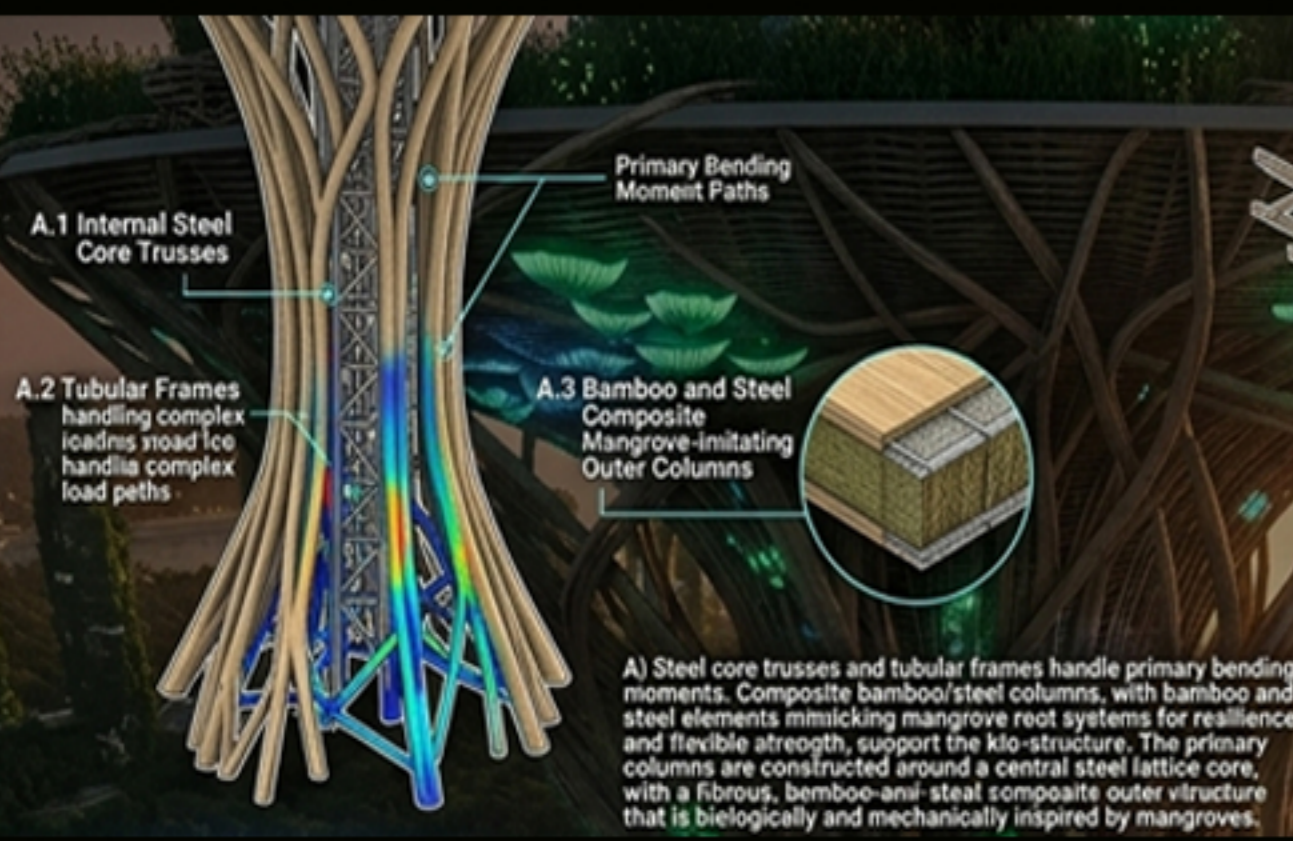
A. Ecological Control Intelligence

AI continuously analyzes environmental data from distributed sensors across the Ribbon. The system predicts microclimatic changes rather than reacting passively. Automated responses maintain plant health, biodiversity balance, and thermal comfort for users.

Air quality sensors monitor particulate matter, CO₂ levels, and pollutants. Humidity sensors regulate irrigation and misting systems. Temperature sensors detect urban heat pockets and activate cooling strategies. Biodiversity sensors track species presence through sound, motion, and thermal imaging. Human activity sensors track crowd density and noise to protect sensitive ecological zones.

C. Dynamic Environmental Responses

Mist emitters activate during high heat to cool both vegetation and users. Shade membranes expand or retract according to solar intensity. Artificial pollination drones deploy during periods of low insect activity. Lighting systems dim or shift spectrum to minimize disturbance to nocturnal species.



The introduction of mycelium on a larger scale as a facade to facilitate improved environmental contributions

