



Winners Announced for “Tiny House 2023 Architecture Competition”

Archetype team - 09/04/2024

International design competition

International design competition platform Volume zero has announced the results of the **Tiny House 2023 Architecture Competition**. The Tiny House competition looked to celebrate individuality and sustainability through innovative designs redefining resourceful living. Through this platform, we explored the various avenues of mobile living spaces and the unbridled freedom they would offer.

In this architecture design competition, participants were tasked with designing a comfortable off-the-grid living accommodation for two people under 300 sq. ft. that not only caters to their present-day needs but also anticipates and fulfills needs from the unseen future. Participants from over 48 countries came up with their creative and sustainable design solutions to cater to this spatially challenging Architectural problem.

Volume Zero Competition thanks all the competitors for participating in this competition and for contributing to this competition's research.

The esteemed jury for judging this competition consisted of **Nicolás Viteri** (El Sindicato), **Paul Kariouk** (Kariouk Architects), **Arjun Malik** (Malik Architecture), **Marek Obtulovic** (ODDO Architects), **Sevince Bayrak** (SO? Architecture and Ideas), **Hoang Thuc Hao** (1+1>2 Architects), **Kraipol Jayanetra** (Alchemist Architects), **Jorge Arvizu** (Estudio MMX), **Luciano Kruk** (Luciano Kruk Arquitectos), **James Shen** (People's Architecture Office), **Stefan Antoni** (SAOTA), **Ngô Việt Khánh Duy** (23o5studio), **Md. Rafiq Azam** (Shatotto Architecture).

The top three winners and Best Student were awarded total prize money of \$4,500 while ten entries received Honorable Mentions. Here are the winning entries. The full result for the competition the **Tiny House 2023 Architecture Competition** can be found [here](#).

FIRST PLACE


Morph Bubble


Ruisi Sun and Jinyu Lu

China


Morph Bubble

A Tiny House with Autonomous Environmental Adaptation

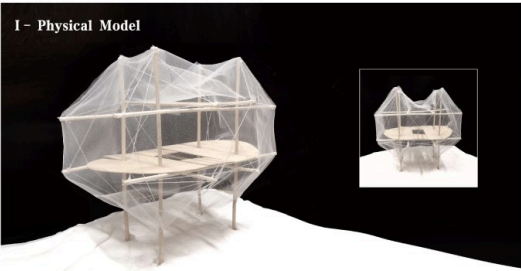




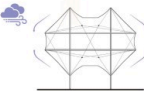
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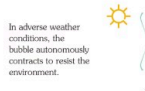
I - Physical Model



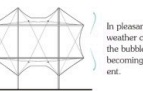
II - Structural Analysis




I The Morph Bubble's framework can shrink into a set of supporting rods.




II The rods can be supported by contracting with the help of cables.



III The cables are tightened, stabilizing the entire tensile structure.

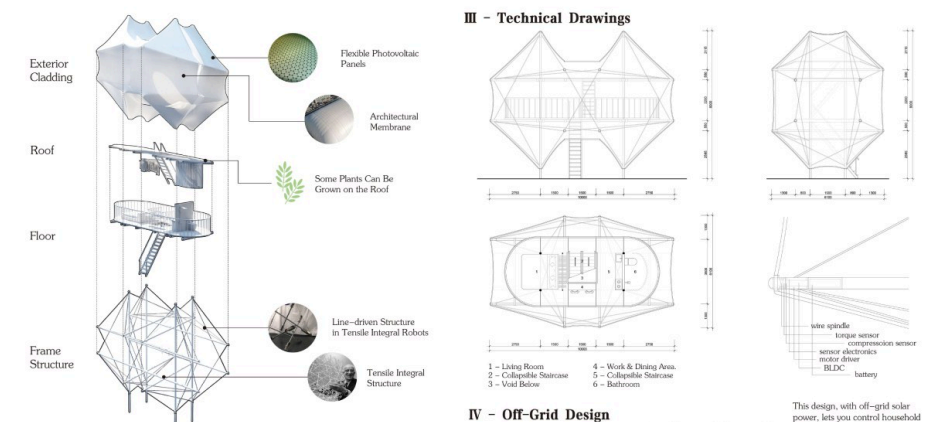


IV Lay precast floor panels on top of the tensile structure.



V Drape the membrane exterior cladding over the building to complete the construction.

III - Technical Drawings



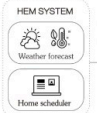
1 - Living Room
2 - Collapsible Staircase
3 - Void Below
4 - Work & Dining Area
5 - Collapsible Staircase
6 - Bathroom

Flexible Photovoltaic Panels
Architectural Membrane
Some Plants Can Be Grown on the Roof
Line-driven Structure in Tensile Integral Robots
Tensile Integral Structure

site specific
torque sensor
environmental sensor
sensor electronics
motor driver
BLDC
battery

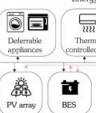
IV - Off-Grid Design

HEM SYSTEM




Weather forecast
Home scheduler

Energy Flow



Deferrable appliances
PV array
BES
PEV

Information Flow



Thermally controlled appliances
Non-deferrable appliances

This design, with off-grid solar power, lets you control household appliances using the Home Energy Management (HEM) system. Some appliances, like washing machines, can be timed for flexible usage, while thermostatic devices maintain indoor comfort. Non-postponable appliances are manually operated by occupants, setting them apart from those managed by the HEM system.

Morph Bubble: A Tiny House with Autonomous Environmental Adaption

The design of the Morph Bubble is based on a tensile overall structure, drawing inspiration from solutions in the field of tensile structure robotics and utilizing a linear actuation for control. It can collapse into an extremely space-saving set of components and ropes during transportation, adapting to various environments. In everyday use, the Morph Bubble contracts during adverse weather conditions and expands on sunny days.

The membrane structure incorporates flexible photovoltaic panels for overall energy supply in the built environment.

This design, with off-grid solar power, lets you control household appliances using the Home Energy Management (HEM) system. Some appliances, like washing machines, can be timed for flexible usage, while thermostatic devices maintain indoor comfort. Non-postponable appliances are manually operated by occupants, setting them apart from those managed by the HEM system.

SECOND PLACE

Contemplation Spaces

Fernando Frank

Spain



A single flexible space dedicated to the contemplation of nature, which its “U” shape, envelops the user and allows them to focus on observing nature.

Renewable energies are harnessed in various ways within this sustainable dwelling. A solar chimney facilitates both winter and summer climate control. In winter, as warm air gathers, it descends through lateral tubes, further heating behind a mass stove before entering the cabin. Conversely, in summer, the chimney and facade gates open, allowing hot air to escape via convection.

A boiler positioned above the mass stove receives winter warmth from rising air. The mass stove itself, situated centrally, maintains a temperature of 900 degrees, providing consistent heat to the shower,

bathroom, and central living space thanks to its high thermal inertia bricks. A Canadian wall operates throughout the year, utilizing the stable ground temperature to introduce humidified and tempered air into the interior, facilitated by moisture-absorbing plants.

THIRD PLACE

Cellule Of Urban

Duong Pham Ngoc Hoai, Uyen Nguyen Nha and Canh Nguyen Duc

Vietnam



Cellule of Urban: Informal Spaces of Vernacular Urban

Informal spaces, are those not planned or regulated by governing authorities, where people engage in various activities for different purposes. Predominantly manifesting in narrow Vietnam urban alleys, these spaces surreptitiously navigate and engender a network typified. While acknowledging the ecological significance of informal spaces, promoting biodiversity, mitigating air quality concerns, and fostering social dynamics, our emphasis pivots towards the detrimental facet. These spaces often serve as refuge for socioeconomically disadvantaged individuals and the homeless.

Moreover, the current juncture marks the concluding phase of the life cycle for dwellings constructed during the construction boom of the early 2000s. A significant portion of residences nestled within these alleys necessitates refurbishment and new construction in the future.

STUDENT AWARD - FLOATING LENS HOUSE

Jeonguk Jang and Taeho Kim

Korea South



Floating Lense House - Harmonizing modern housing with nature

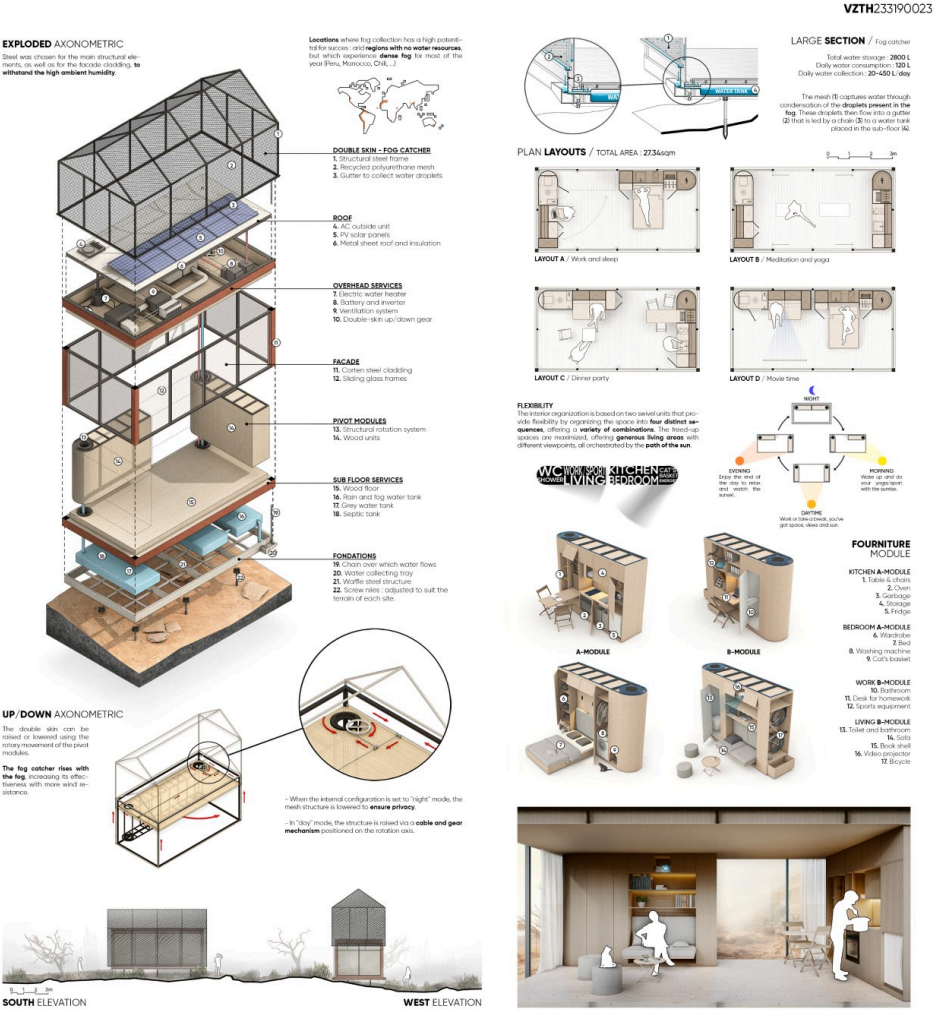
Rapid urbanization and the expansion of residential areas have had serious environmental consequences, including deforestation, loss of biodiversity, and increased carbon emissions. In response, we set out to design a home that would minimize its impact on the environment and integrate with nature.

First, we used only two pillars to float the building, allowing it to adapt to nature’s varied terrain while minimizing its land footprint, which in turn reduces its impact on nature. The building is divided into two spaces where the user’s main life takes place, with glass connecting them.

In front of the bedroom windows, eye-level perforated blinds are installed to allow the user to control the view outside. In the central space, transparent walls, floors, and ceilings create an environment surrounded by nature, and a birdhouse on the elevation façade supports the local birds by providing habitat for them. Users can move between the spaces to enjoy the large and small views of nature, while a rainwater collection system and solar energy ensure a certain level of self-sufficiency.

Honourable Mentions:

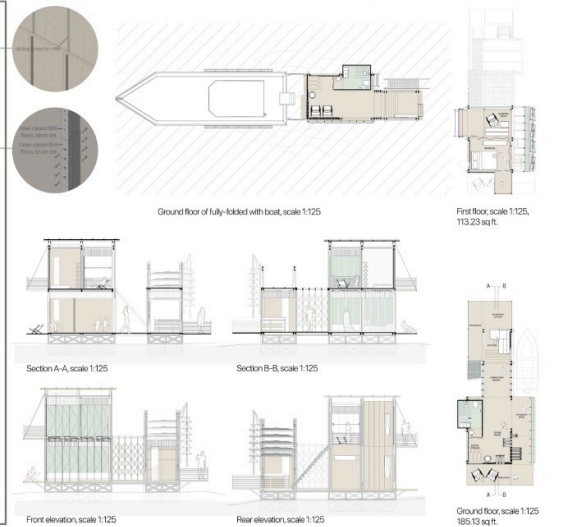
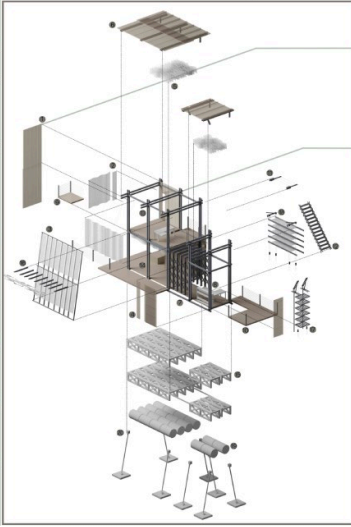
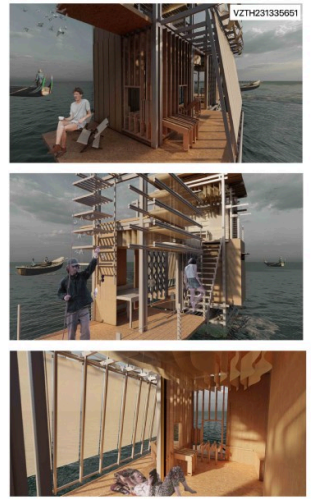
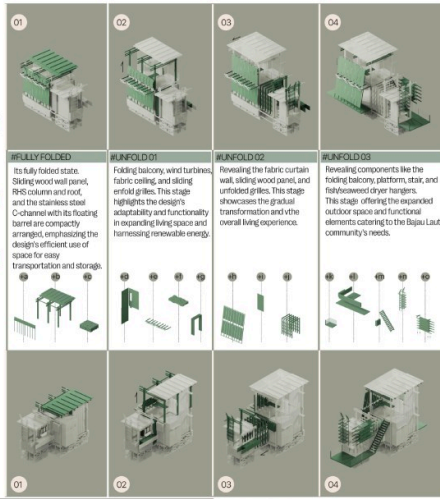
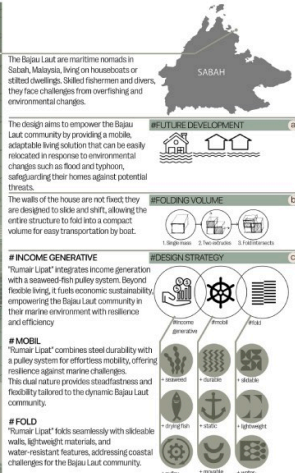
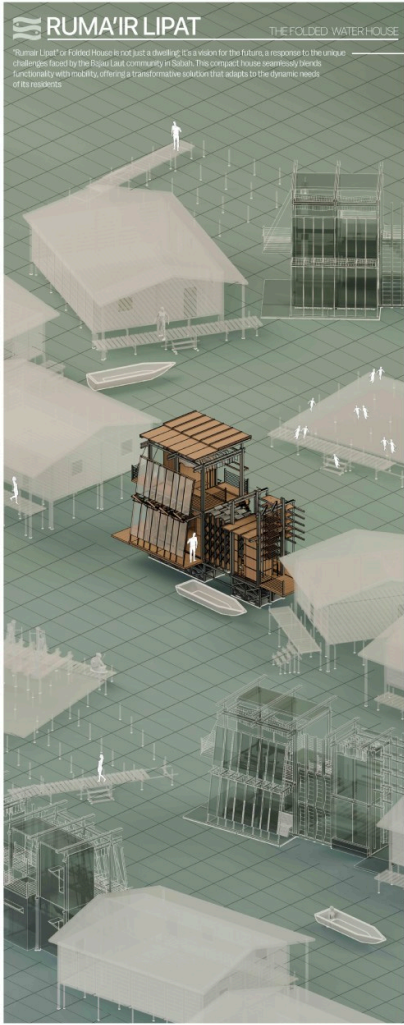
Honourable Mention 1 - on cloud nine



Honourable Mention 2 - RUMA'IR LIPAT

Shahrulqmal Shahrulzamri, Muhamad Lukman Bin Isma'il and Mohd Hazriq Aiman Bin Hazahar

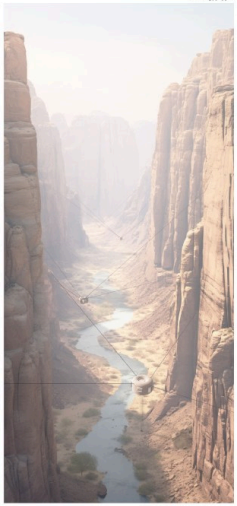
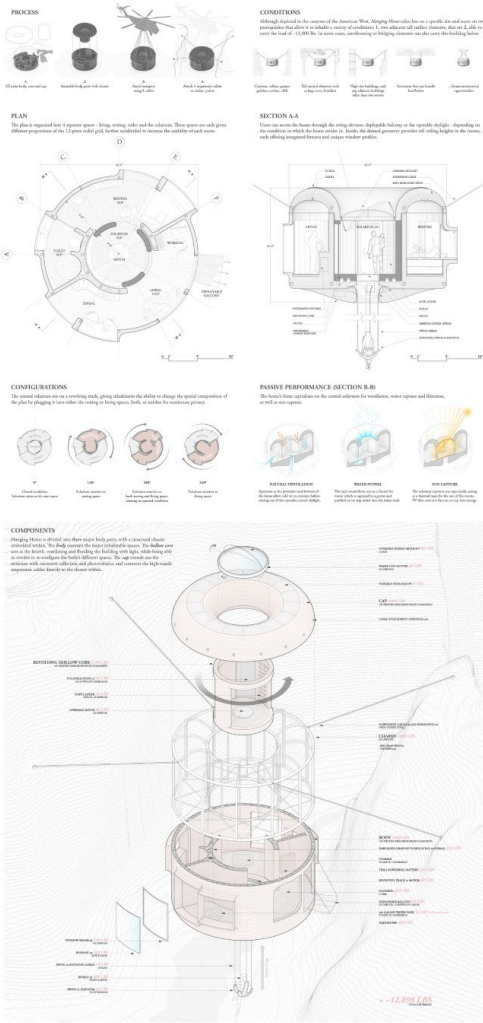
Malaysia



Honourable Mention 3 - HANGING HOME

Gary Polk

United States



Honourable Mention 4 - CASOCA

Henrique Trapaga Goncalves, Leonardo Fernandes Lourenco and Carolina Rodrigues Serafim

Brazil

CASOCA

Inspired by the local culture of the Amazon Forest, we have designed a floating house to meet the unique needs of indigenous who play a crucial role in delivering vaccines and medicines to remote regions. The proposal seeks an innovative solution to overcome challenges of accessibility and infrastructure faced by these professionals, ensuring that healthcare reaches isolated communities.

The modular and versatile design of the house allows for placement in different aquatic environments, providing flexibility to address similar challenges in other regions. The interior has been optimized with flexible

and multifunctional spaces for work and leisure, secure vaccine storage, and comfortable accommodations.

For autonomy in remote areas, we have incorporated renewable energy solutions, such as solar panels and rainwater harvesting. Transportation will be carried out by a motorized canoe, ensuring the necessary mobility for indigenous to move the residence and serve as the means of transportation to hard-to-reach areas.

Using sustainable materials and eco-efficient construction techniques, we aim to minimize environmental impact and preserve the integrity of the local ecosystem. Our project reflects a commitment to innovation and sustainability. By providing a practical solution for healthcare delivery in remote communities, we aspire to enhance the health of the most distant populations.



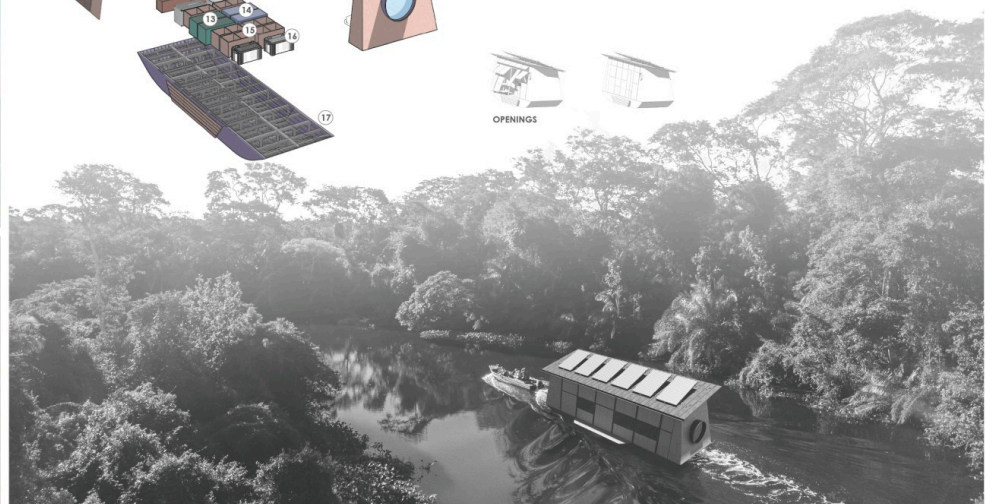
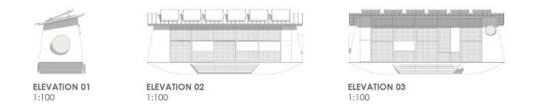
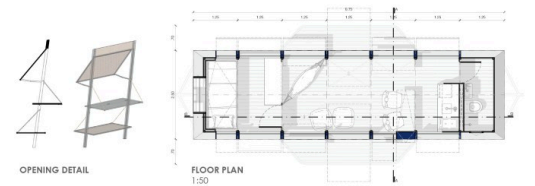
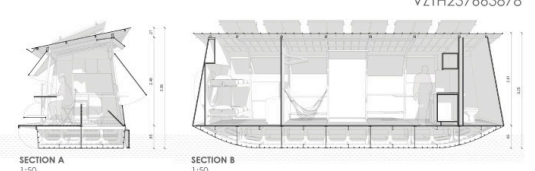
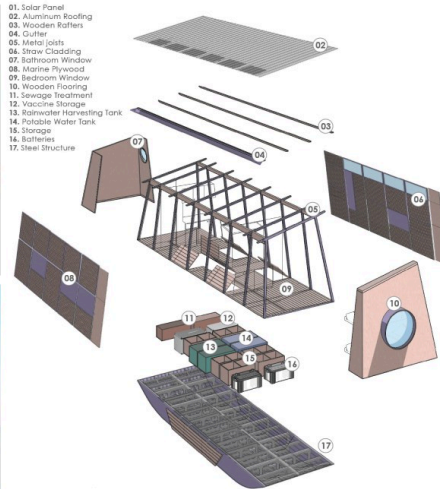
ON ROAD



ON THE RIVER

The modularity has been planned to allow transportation by a trailer on conventional roads.

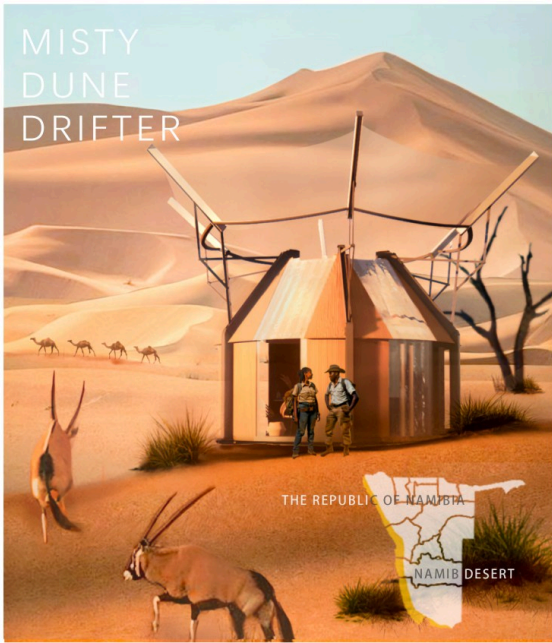
EXPLODED AXONOMETRIC



Honourable Mention 5 - MISTY DUNE DRIFTER

Jingyi Gao, Xinyuan Kong and Junjie Lu

China

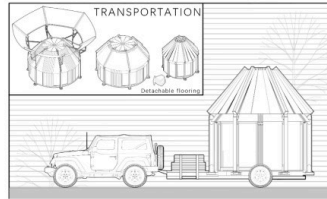


MISTY DUNE DRIFTER

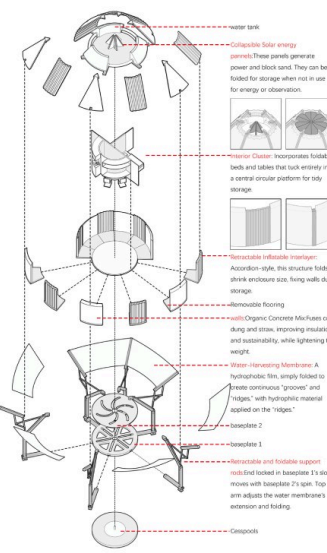
How to have a portable, self-sustaining small home in the desert, maybe this design can provide a possible solution. It is well known that deserts are characterized by long-term drought and little rainfall, with harsh climate. Rangers in the Reserves located in the Namib Desert, for example, are working under such challenging condition. Their duties include patrolling, monitoring wildlife, preventing poaching, and monitoring fire risks.

Living in the desert for a long period makes water resources a primary concern. Unlike other deserts, the Namib Desert is influenced by the Benguela Cold Current, leading to thick and stable morning fog. Taking inspiration from the water-collecting structure on the abdomen of the local Namib beetle and its dynamic fog-collecting behavior in the morning, this design proposes a unique mist-catching system. It caters to the frequent need for base transitions in the patrol officers' work, providing them with a sturdy, reliable, and comfortable home in the cruel Namib Desert environment.

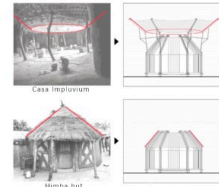
This concept aims to address the increasingly severe water scarcity problem in the future.



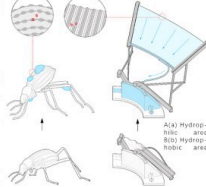
EXPLODED VIEW



FORM TRANSLATION



BIONIC DESIGN

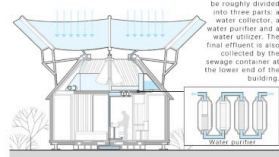


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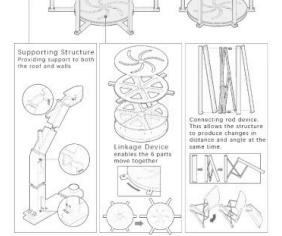
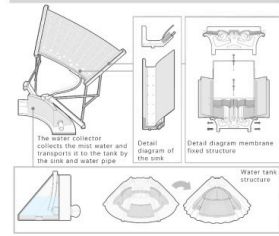
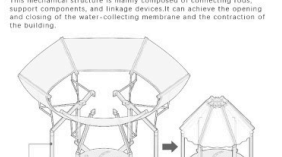
The building's water collecting system emulates the dynamic water-harvesting behavior and functional microstructures of the Namib Desert Beetle's carapace. The beetle's shell features hydrophilic bumps and hydrophobic troughs that work in tandem to capture and channel moisture from the fog.

The dwelling merges two African styles: the Casa Impervium and the Himba hut. The Himba hut's circular plan and conical roof offer stability against wind and sand for the main structure. The upper fog-harvesting part follows the Casa Impervium concept, using a funnel-shaped surface to efficiently collect water.

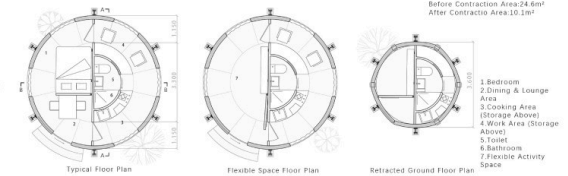
WATER SYSTEM



MECHANICAL STRUCTURE



FLOOR PLAN



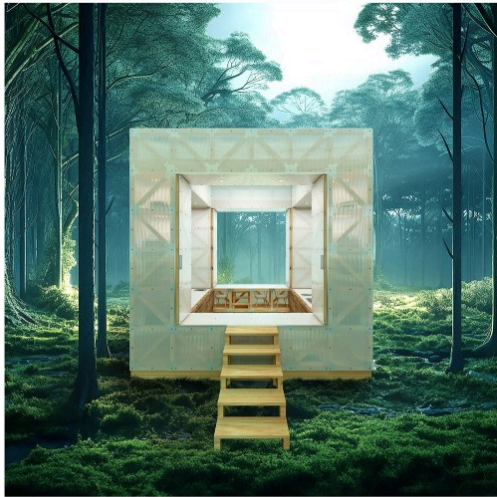
SECTION AND ELEVATION



Honourable Mention 6: FRAME HOUSE

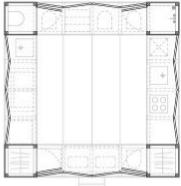
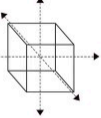
Hung Nguyen and Nguyen Thi To Uyen

Vietnam

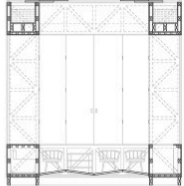


FRAME HOUSE

Nestled in the forest, FRAME HOUSE is a vision of simplicity and sustainability. The cube frame concept is a minimal intervention but can fully interact with the surrounding nature on all 6 directions. The design is basically made of wooden beams and columns, the most basic structural elements of architecture, coated with semi-transparent polycarbonate facade. The beams, columns are hollow and thicker than normal to contain furniture, bathroom, kitchen, chairs, tables, sofa-bed, pethouse, etc. It marks a shift from "XL beams, column" to "XS rooms", redefining the conventional use of structural components. The big void in the middle of the house offers dynamic flexibility that allows all functional transformation. It can be fully enclosed or open thanks to large folding doors, folding floor and sliding solar roof. FRAME HOUSE fosters an intimate connection with nature, utilizing sliding solar panels, rainwater collectors for an eco-conscious living space.

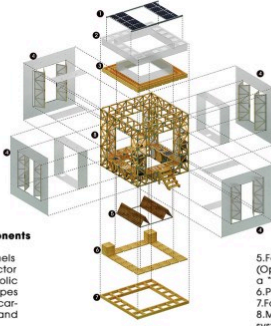


Floor Plan



Section

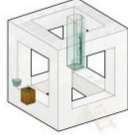
0 0.8 2.4 4.8m



Structural components

- 1.Sliding solar panels
- 2.Rainwater collector
- 3.Trays for Hydraulic and Electric pipes
- 4.Exterior polycarbonate facade and folding door
- 5.Folding wood floor (Open to transform into a "grass floor" below)
- 6.Perimeter wood floor
- 7.Foundation
- 8.Main wood frame system

Furniture distribution



Toilet, bathroom in two back columns, and lavabo



Wardrobes in two front columns



Chair, tables, sofa, folding sofa-bed, kitchen, mini stair, pet house and storages



A space for yoga or meditation in the full embrace of nature (6 sides open)



An inner courtyard for gathering (6 sides open)



Living room dining room transformation (Roof panels and folding floor are closed)



Bedroom transformation (6 sides closed)

Honourable Mention 7 - FOLD : SCAPe SHELTERS

Mariana Arias De Fex and Tomas Zuluaga Arango

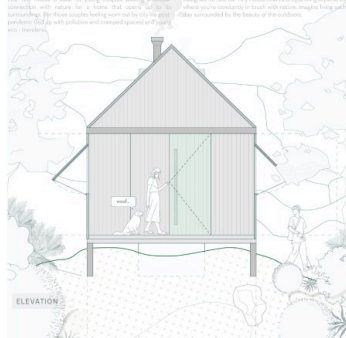
Canada

WHAT DOES THE FUTURE HOLD?

Sustainable cities, mobility reduced to vehicles, and concepts of the future are the main focus of the project. The project was designed as a solution to the future of the city, where the future is not just a vision but a reality. The project was designed as a solution to the future of the city, where the future is not just a vision but a reality. The project was designed as a solution to the future of the city, where the future is not just a vision but a reality.

CLIENT

The client is a group of people who are interested in the future of the city. They are interested in the future of the city, where the future is not just a vision but a reality. They are interested in the future of the city, where the future is not just a vision but a reality. They are interested in the future of the city, where the future is not just a vision but a reality.



TRANSPORTATION



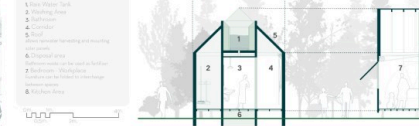
ASSEMBLY



OPEN FLOOR PLAN



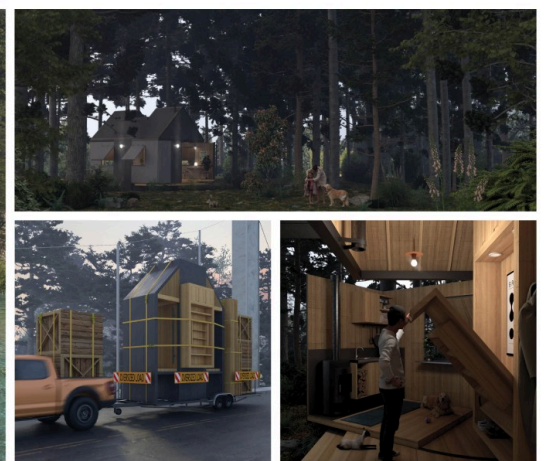
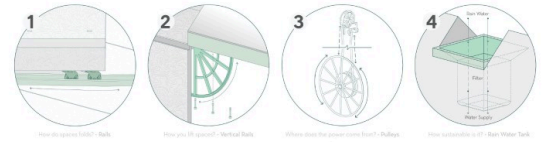
SECTIONS



FOLD - SCAPE SHELTERS

"A house is a machine for living in"

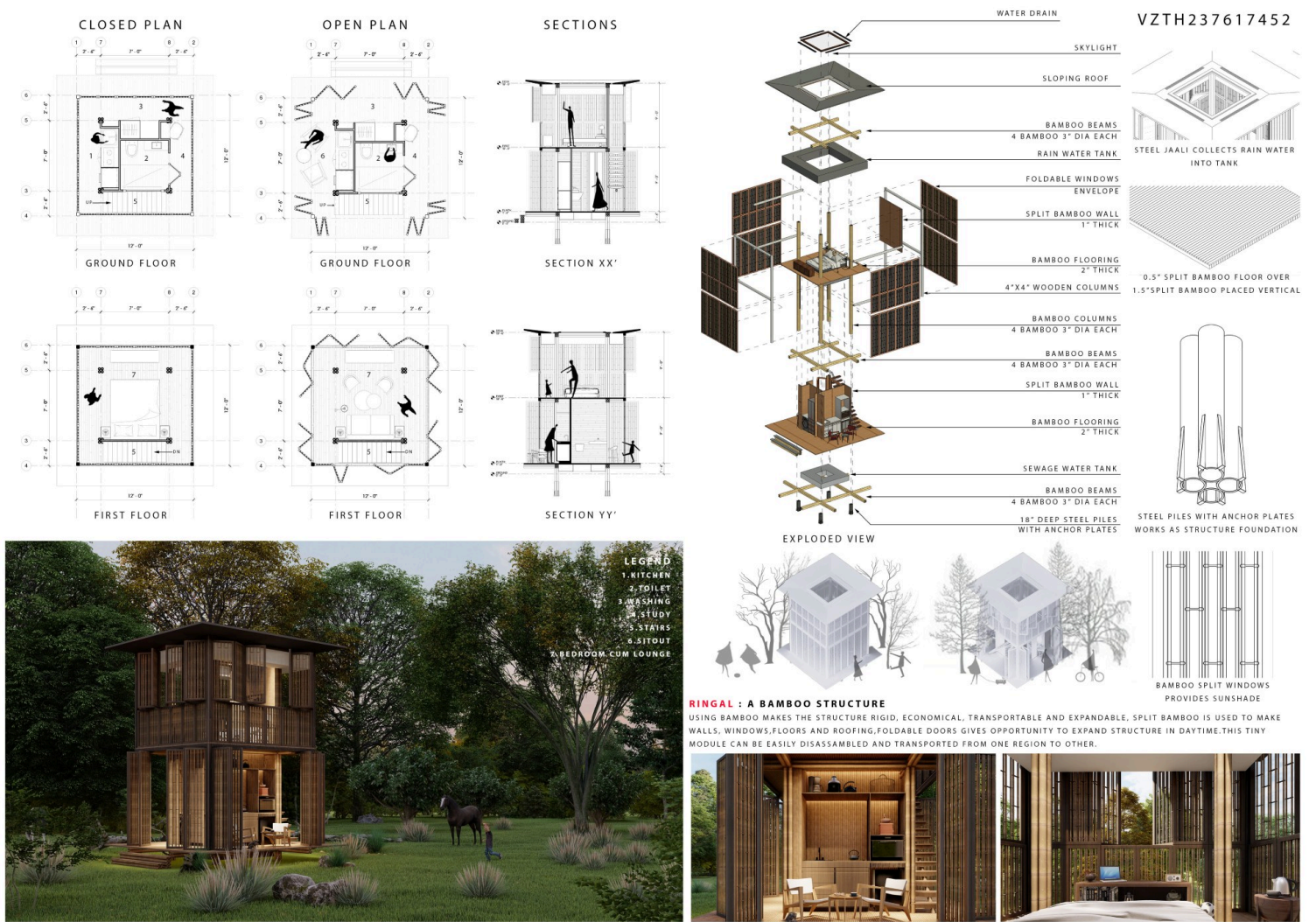
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Honourable Mention 8 - RINGAL : A BAMBOO STRUCTURE

Aditya Gupta

India



Honourable Mention 9 - Rhytidome Lodge

Kevin Hong and John Chan

Canada

Rhytidome Lodge

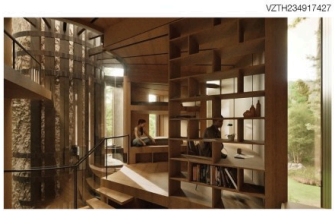
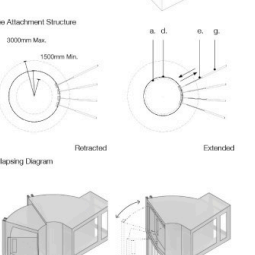
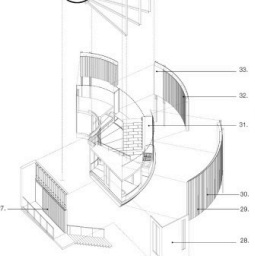
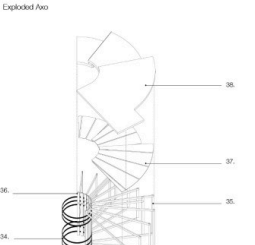
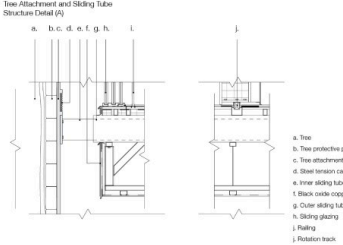
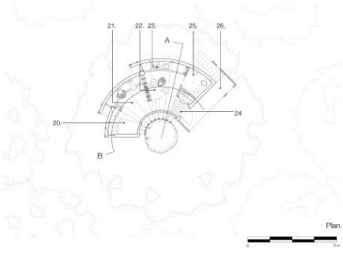
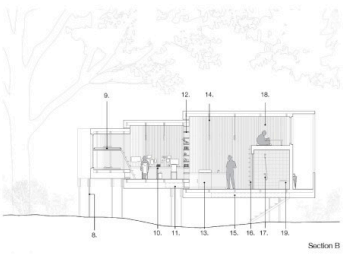
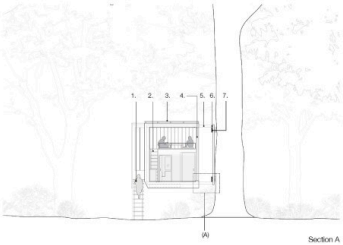
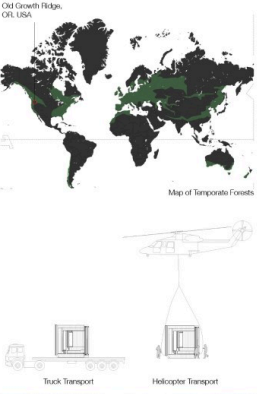
Portable Forest Outpost

Nestled harmoniously within a temperate old-growth forest, this outpost explores the synergy between structure and nature. The design utilizes trees as primary structural elements, creating a symbiotic relationship between architecture and ecosystem. Intended as a home for ecological researchers or nature explorers on long-term expeditions, the Rhytidome Lodge (as its name implies) brings its occupants into an intimate connection with their host tree.

The structure's key feature is its collapsible design. Attached to the tree with non-invasive structures, the building unfolds in three nested segments, facilitating portability without compromising its inhabitable space. The outpost immerses the researchers in nature by strategically directing attention to the surrounding flora. However, it also serves as a refuge in the wilderness, isolating occupants from the broader context to forge a more intimate connection with a single tree.

The design explores how a portable structure can become a transformative space where research, contemplation, and communion with nature. In this act of reciprocity, the researcher is envisioned as a guardian, committed to protecting the trees, and in return, the forest provides shelter, fostering a bond that adds a deeper appreciation to an ecological expedition.

Floor Area: 207 sqft



Honourable Mention 10 - The Perks

Kelven Tian Zi Hao

Malaysia

THE PERKS

Issue Encountered

In Asia, the older generation will care for the next generation in their own way, especially future plans or life plans for the next generation. This traditional approach is characterized by a belief in life unfolding in distinct stages, with each age carrying specific responsibilities, such as the societal expectation to engage in matrimony before reaching the age of 30. However, this well-intentioned guidance often results in the next generation experiencing a stress-laden environment, as they find themselves living under the predetermined plans of their elders. Consequently, the reality emerges that many Asians may not fully embrace the authentic and unpredictable nature of life, remaining confined to the scripted paths laid out by others.

TINY HOUSE MODE



01 Normal Mode
The Normal Mode of 'The Perks' is on landed on ground. A tiny house of capsules and a small coffee kiosk serving the community.



02 WATER MODE
The PVC Capsules underneath being used to float 'The Perks' and ropes to battle down.



03 FLOAT MODE
The Sphere PVC Capsules provide the floating ability to 'The Perks'.

Operation Mode



Gathering Mode
All the PVC Capsules underneath could be used as a seating bench, flexible and easy to modify.



Business Mode
The transparent design fosters a connection with the surroundings, creating an inviting and open atmosphere for customers to engage with the bakery.



Private Mode
Escape from the hectic life, enjoy the moment in the own space without any restrictions.

Why?

Why Asian has to be live their own life under a planned lifestyle? Any possible to live without caring the stereotype of 'each age carrying specific responsibilities'? We live once, cherish the moment.

Design Concept / Vision

The concept for 'The Perks' draws inspiration from the desire of a couple to break away from the conventional Asian living lifestyle. The overarching idea revolves around creating a lightweight and transparent structure that defies traditional boundaries and stereotypes. The house is envisioned as a versatile space that transcends geographical limits, allowing it to exist in the sky, on land, or even float on the sea yet it escapes from restrictions.

At its core, 'The Perks' is not just a home but also a Coffee & Bakery Shop, seamlessly blending the couple's diverse passions and lifestyles. The users, a couple with a dynamic spirit, seek to explore the world while avoiding the stereotypical Asian expectations of settling down and conforming to societal norms.

PLAN LAYOUT SCALE 1:100



Private Mode - Ground Floor Layout / 12.50 sqm

Open Mode/Business Mode - Ground Floor Layout / 12.50 sqm



Private Mode - First Floor Layout / 8.00 sqm

Open Mode/Business Mode - First Floor Layout / 8.00 sqm



Section X-X (Private Mode) Section Y-Y (Section Mode)



EXPLODED AXONOMETRIC

Hydroponic Roof Sheet
1 - Rainwater Collection Sheet
2 - Rainwater Collection Paip
3 - Fresh Water Small Tank

Sustainable Energy
1 - Solar Sticker Kits
2 - Power Supply Unit (Spare)

Construction System
1 - High Strength Ropes Nylon
2 - Transparent PVC Sheet
3 - Sphere PVC Capsule with Air Filling
4 - Timber Ceiling with Transparent Insulation Sheet
5 - Operable PVC Capsule (Outdoor Seating)
6 - Translucent Corrugated Polycarbonate Sheet
7 - 50mm Thick Timber Flooring
8 - Timber Finish Interior Panel
9 - Air Filling PVC Capsule (Seating/Float)

Greywater Recycling System
1 - Easy Clean Toilet
2 - Solar Shower Set
3 - Underneath Water Storage

Transparent PVC Sheet
Sphere PVC Capsule
Ceiling Level
First Floor Level
Outdoor Capsule
Ground Floor Level

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