THE EVACUATION CASCADE

A DYNAMIC EVACUATION NETWORK TO UWAJIMA CASTLE

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01 SITE ANALYSIS

1 SITE ANALYSIS

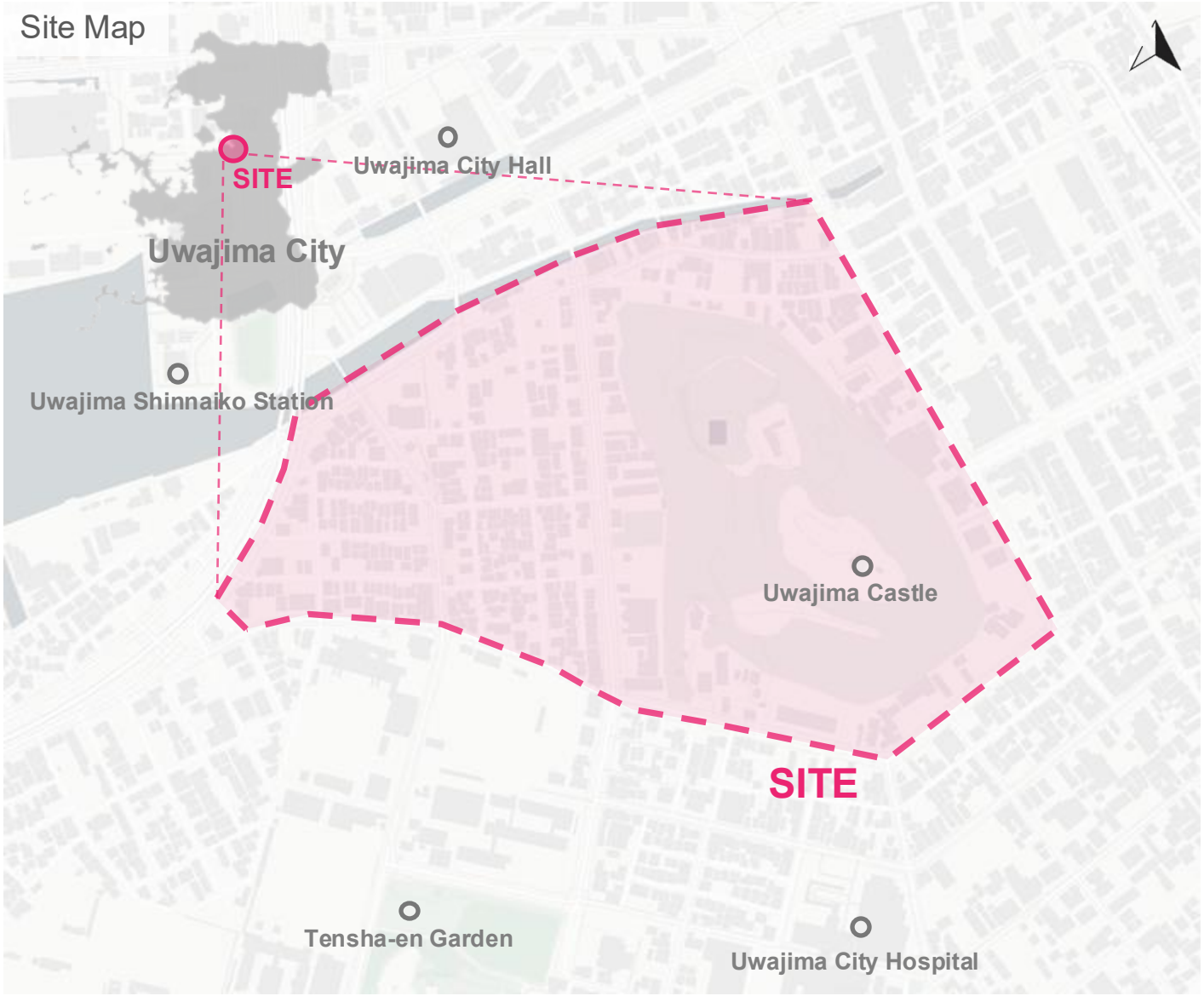
1.1 Site Overview

Location: Central Area of Uwajima City
Site Area: 0.29km2
Population: 1514 (in 2020)
Land Use: Residential, Commercial & Forest

The site is located in the central area of Uwajima City, with rich historical assets and strong potential of disaster planning.

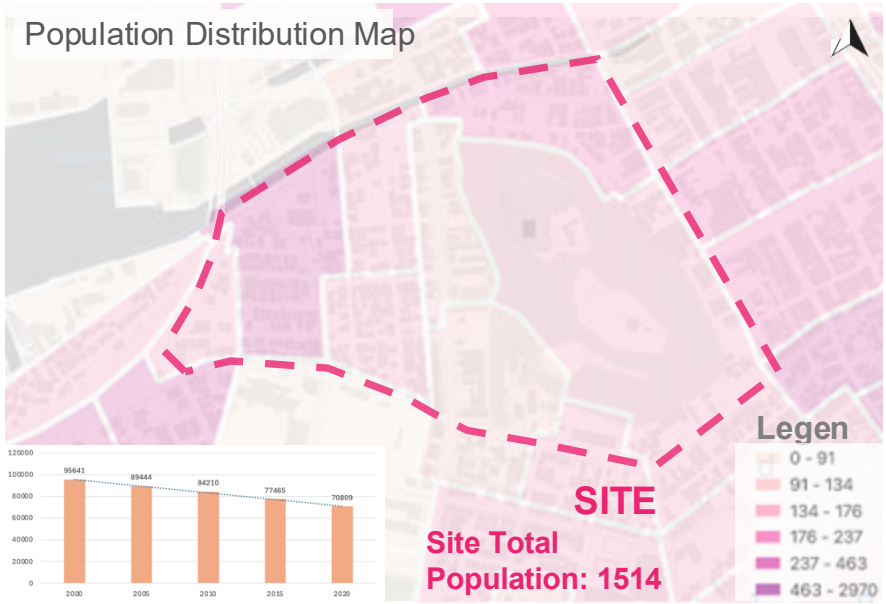
Uwajima is a port city located on the southwestern coast of Japan's Shikoku region, facing the Uwa Sea. Characterized by a mix of coastal lowlands and mountainous terrain, the city is vulnerable to various natural hazards, including typhoons, heavy rainfall, landslides, earthquakes, and tsunamis.

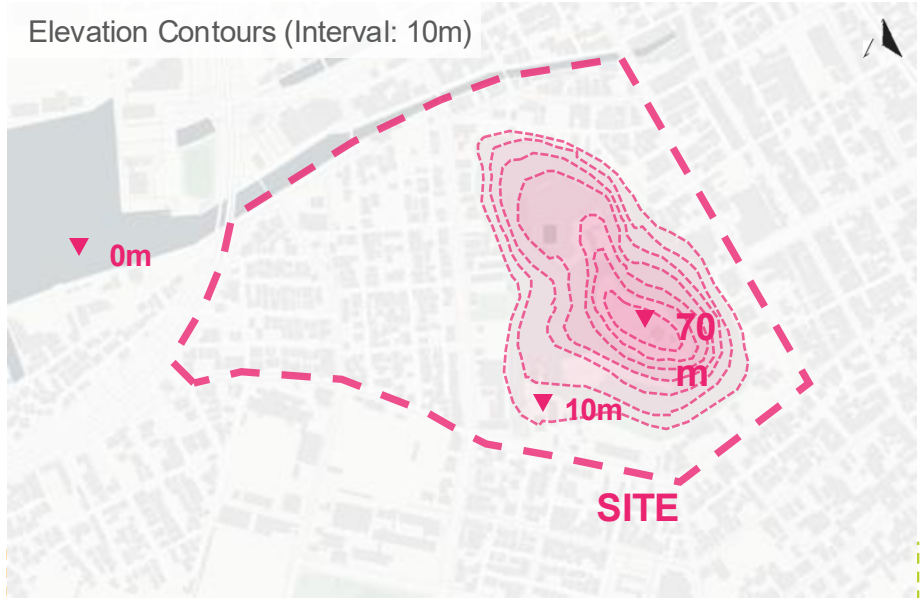
The 0.29 km² site in central Uwajima houses around 1,514 residents (2020) and includes residential, commercial, and forested areas. Adjacent to the historic Uwajima Castle and well-connected to key public facilities, it holds strong potential for heritage-based development and disaster-resilient urban planning.

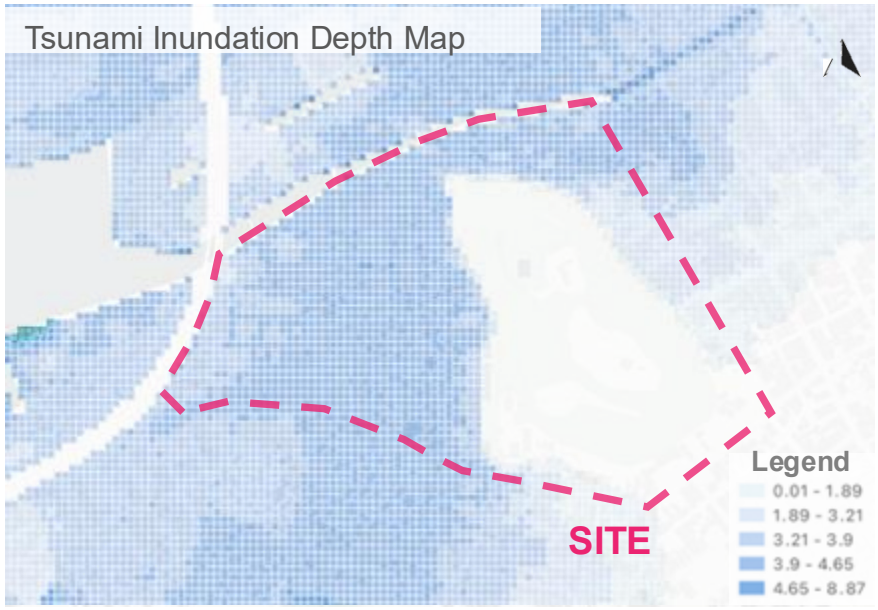


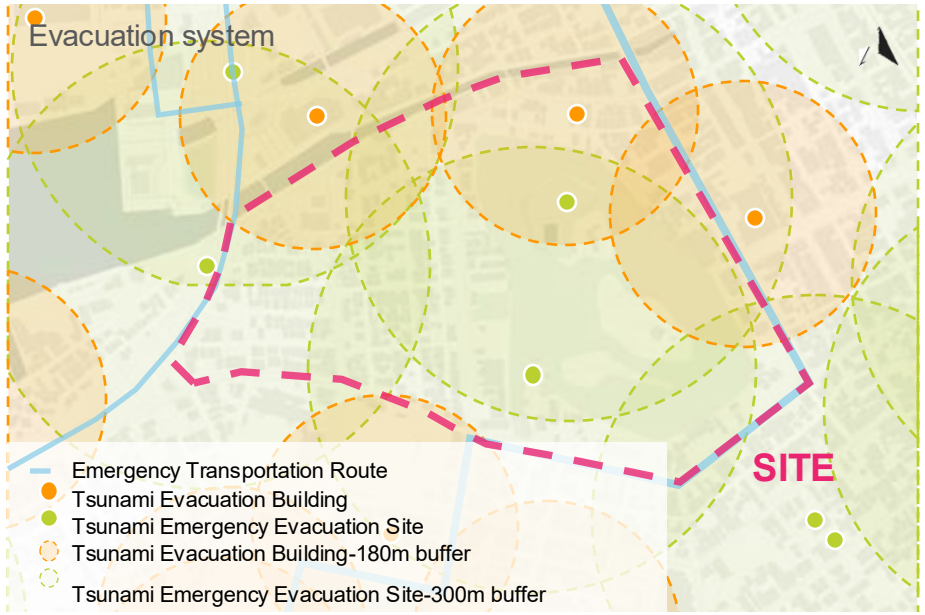
1 SITE ANALYSIS

1.2 Site Analysis









1 SITE ANALYSIS

1.3 SWOT Analysis

STRENGTHS

Prime location: Situated in central Uwajima, close to major medical, commercial, and transport facilities.

Rich cultural heritage: Next to Uwajima Castle, offering strong potential for tourism and heritage use.

Natural high ground: Eastern area rises up to 70 meters, ideal for vertical evacuation.

Good accessibility: Near emergency routes, allowing fast evacuation in disasters.

WEAKNESSES

High tsunami risk in the west: Low-lying area with inundation depths of 3.8–4.5m; open evacuation sites are limited.

Insufficient shelter coverage: Existing shelters do not cover the full site; major gaps in the southeast and west.

Aging population limits evacuation: 40% of residents are over 65, making evacuation slower and more difficult.

OPPORTUNITIES

Urban renewal potential: Opportunity to combine heritage preservation with disaster resilience in a historic core area.

Opportunity for evacuation system upgrade: Potential to add tsunami shelters, enhance signage, and optimize escape routes.

THREATS

High compound disaster risk: Prone to typhoons, heavy rain, landslides, earthquakes, and tsunamis with sudden and severe impacts.

Ongoing depopulation and aging: Declining and aging population may weaken urban vitality and investment appeal.

Evacuation gaps and time limits: Some areas exceed the 5-minute evacuation range, creating safety blind spots during disasters.

02 CONCEPT PLAN

CONCEPT PLAN

Concept plan structure

VISION

The Evacuation Cascade
——A Multi-Tiered Evacuation System Blending Safety, Culture, and Daily Life

OBJECTIVES

Efficient Multi-tiered Evacuation Network
Enable swift, safe movement to elevated areas.

Multi-use Evacuation Spaces
Create community-based shelters with cultural and social roles.

Heritage-integrated Design
Integrate heritage into disaster planning to strengthen identity.

STRATEGIES

Establish a point-line-area evacuation system

Use natural high grounds and existing facilities as emergency assembly points.

Design dynamic guidance systems visible at night or during power outages.

Combine shelters with community activity spaces

Use rooftops or upper levels as viewing decks and cultural event spaces

Set up a “Culture + Evacuation” exhibition center near Uwajima Castle to promote memory and disaster education.

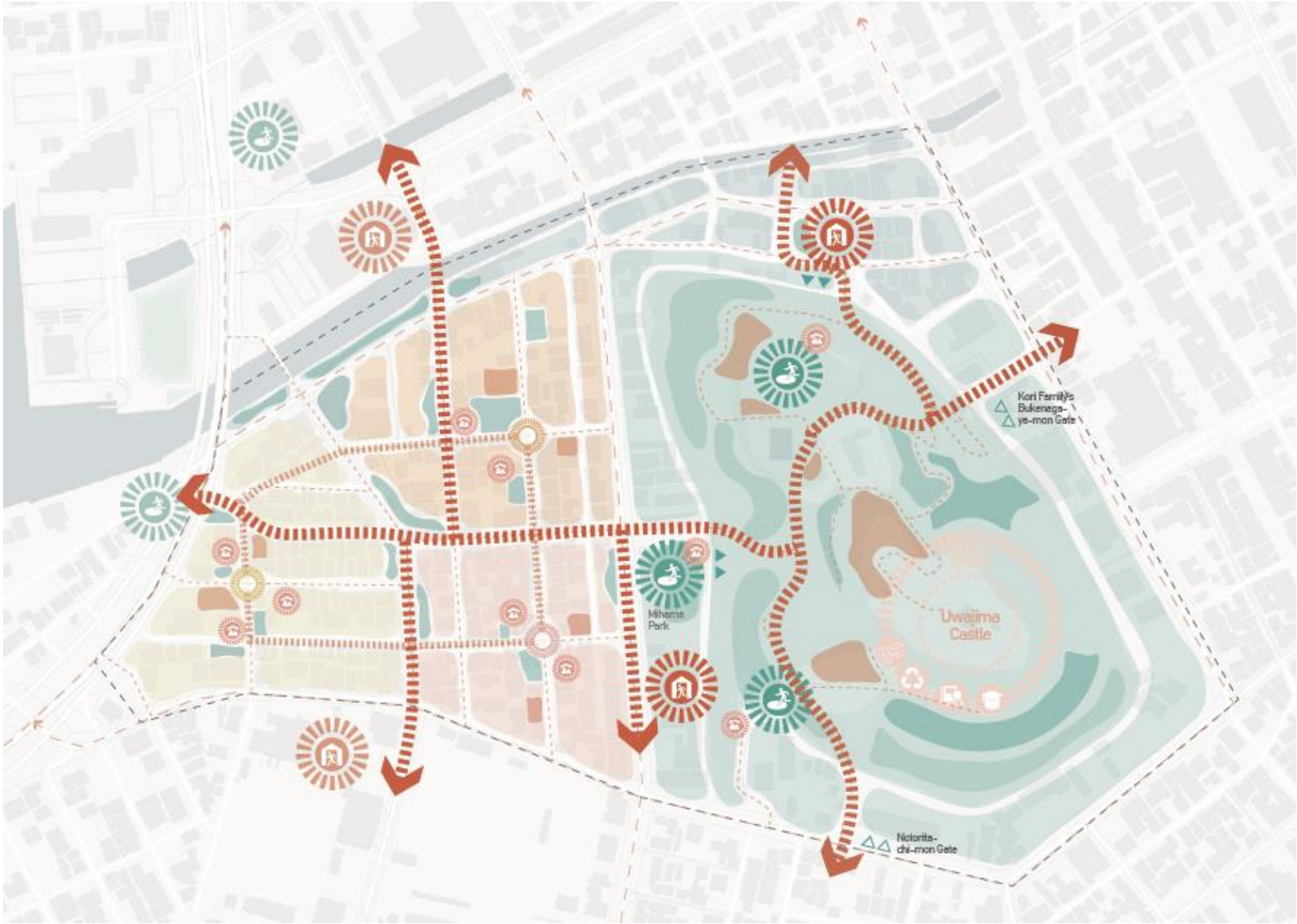
Use the heritage landscape as a space for psychological relief and post-disaster gathering.

CONCEPT PLAN

Concept plan structure

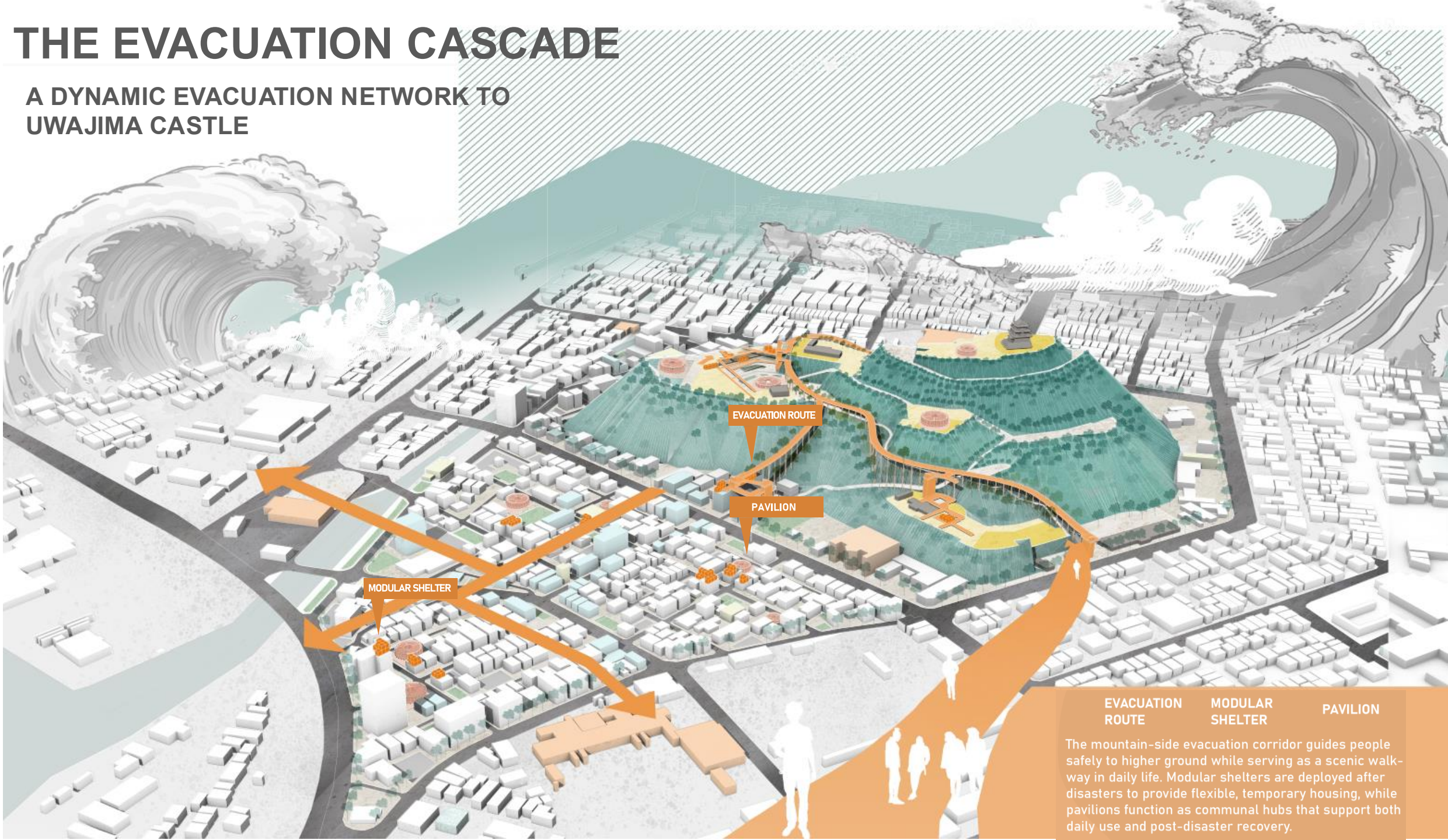
The Evacuation Cascade — Layered Safety, Seamlessly Integrated.

- Waterfront Leisure Zone
- Historical-Cultural Core
- Urban Vitality Hub
- Health & Wellness Support Zone
- Community Living Service Area
- Community Parks
- Pavilions
- Primary Road
- Secondary Road
- Evacuation Building
- Emergency Evacuation Site
- Modular Shelter
- Health & Wellness Core
- Urban Vitality Core
- Community Living Service Core
- Evacuation Belt
- Neighbourhood Sharing Belt



THE EVACUATION CASCADE

A DYNAMIC EVACUATION NETWORK TO UWAJIMA CASTLE



EVACUATION ROUTE **MODULAR SHELTER** **PAVILION**

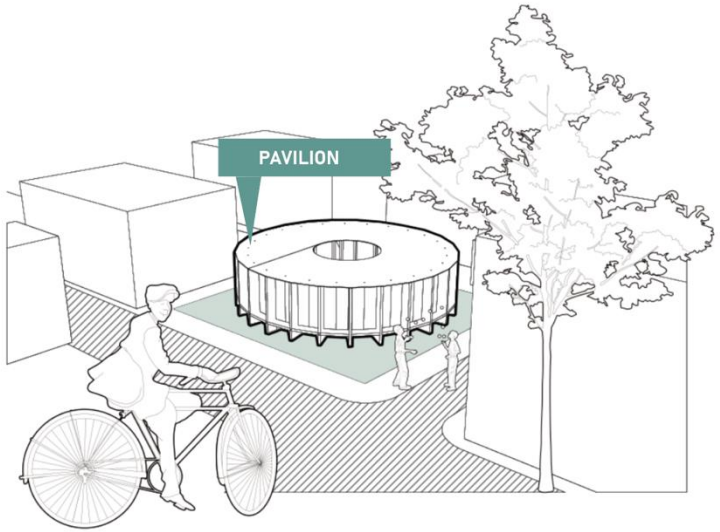
The mountain-side evacuation corridor guides people safely to higher ground while serving as a scenic walk-way in daily life. Modular shelters are deployed after disasters to provide flexible, temporary housing, while pavilions function as communal hubs that support both daily use and post-disaster recovery.

MASTER PLAN

Workflow

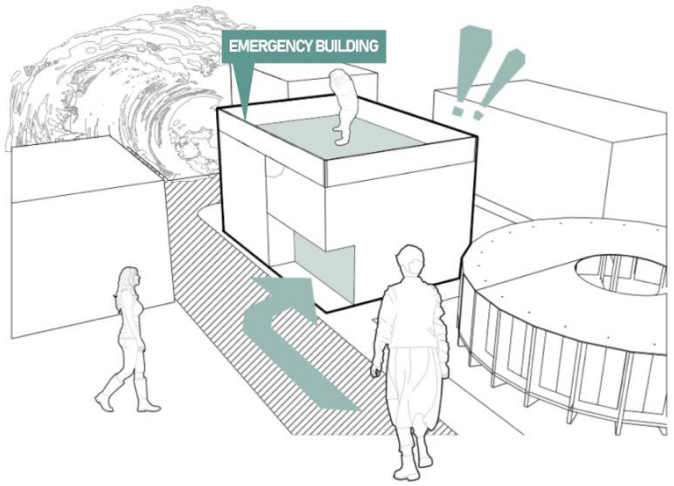
Phase 1: Daily Period

Evacuation routes double as tourist paths, enriched with planting and scenic nodes. Pavilions serve as landscape features and educational tools for disaster awareness. hazards, including typhoons, heavy rainfall, landslides, earthquakes, and tsunamis.



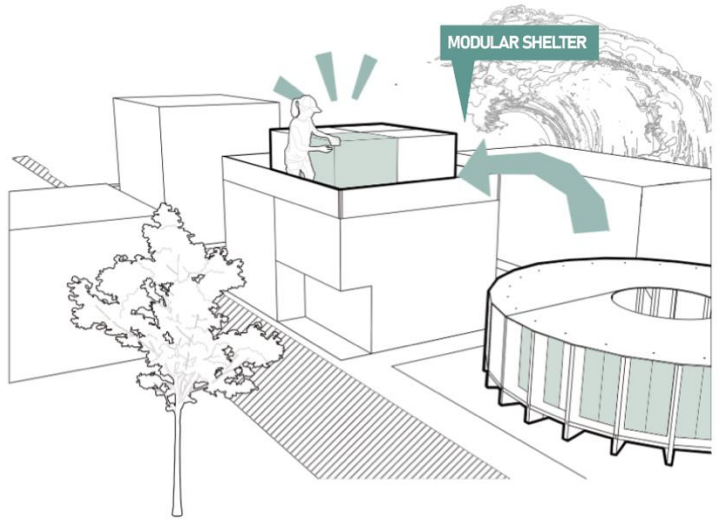
PHASE 2: During Tsunami During Tsunami

Visitors and residents follow clear evacuation signage to reach rooftop spaces of designated emergency buildings. Pavilions support wayfinding and crowd flow along the route.



PHASE 3: Post Tsunami

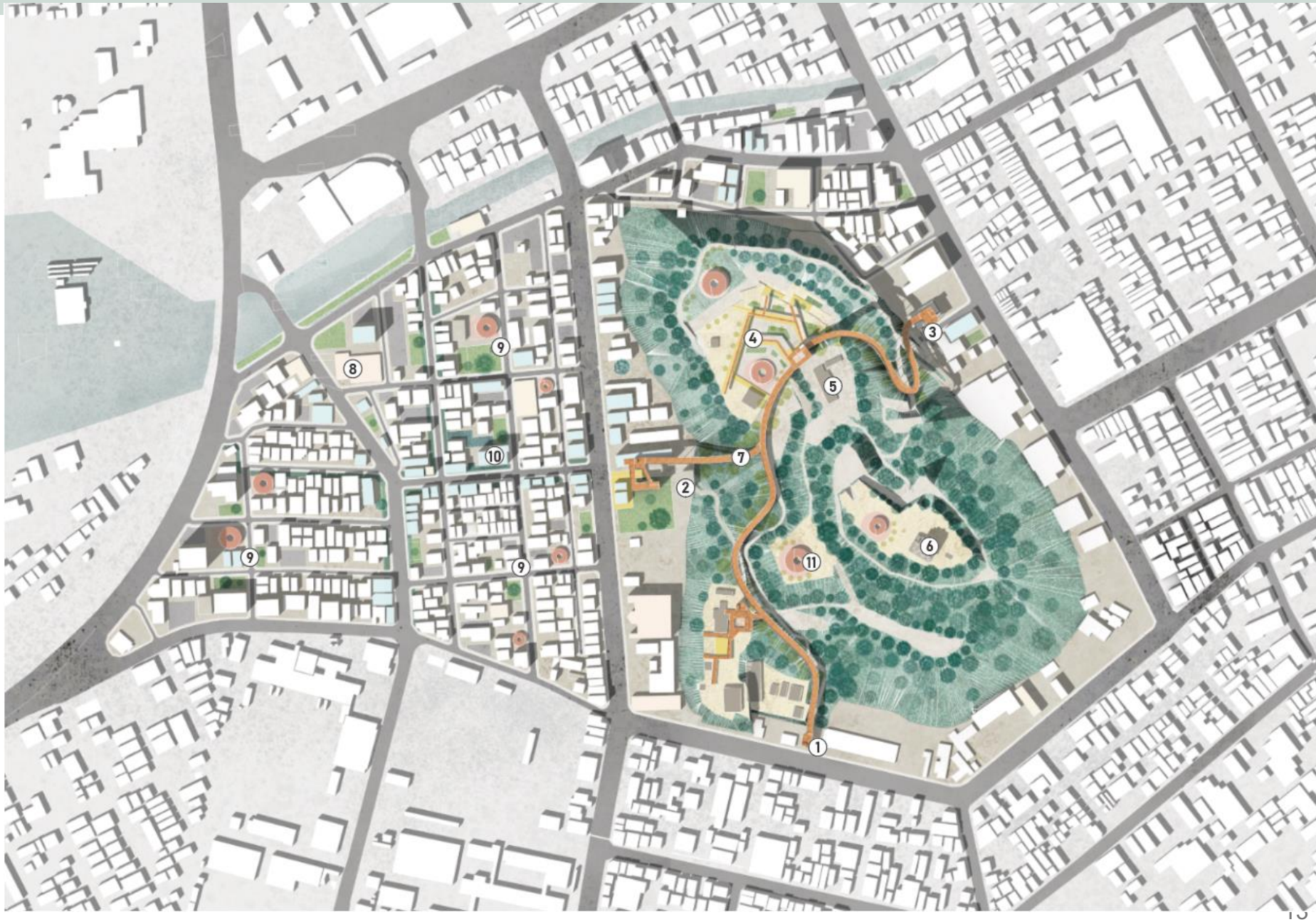
Modular shelters can be built temporarily at the designated area while pavilions serving as rescue materials storage. The mountain area is the safest area and final destination for the holistic evacuation plan.



MASTER PLAN

PHASE 1:
Daily Period

Commercial spaces are integrated at the base of buildings along the central axis to enhance street life. A community belter connects three neighborhoods, with a pavilion placed at the center as a community hub. The evacuation corridor on the hillside functions as a scenic walkway in daily life.

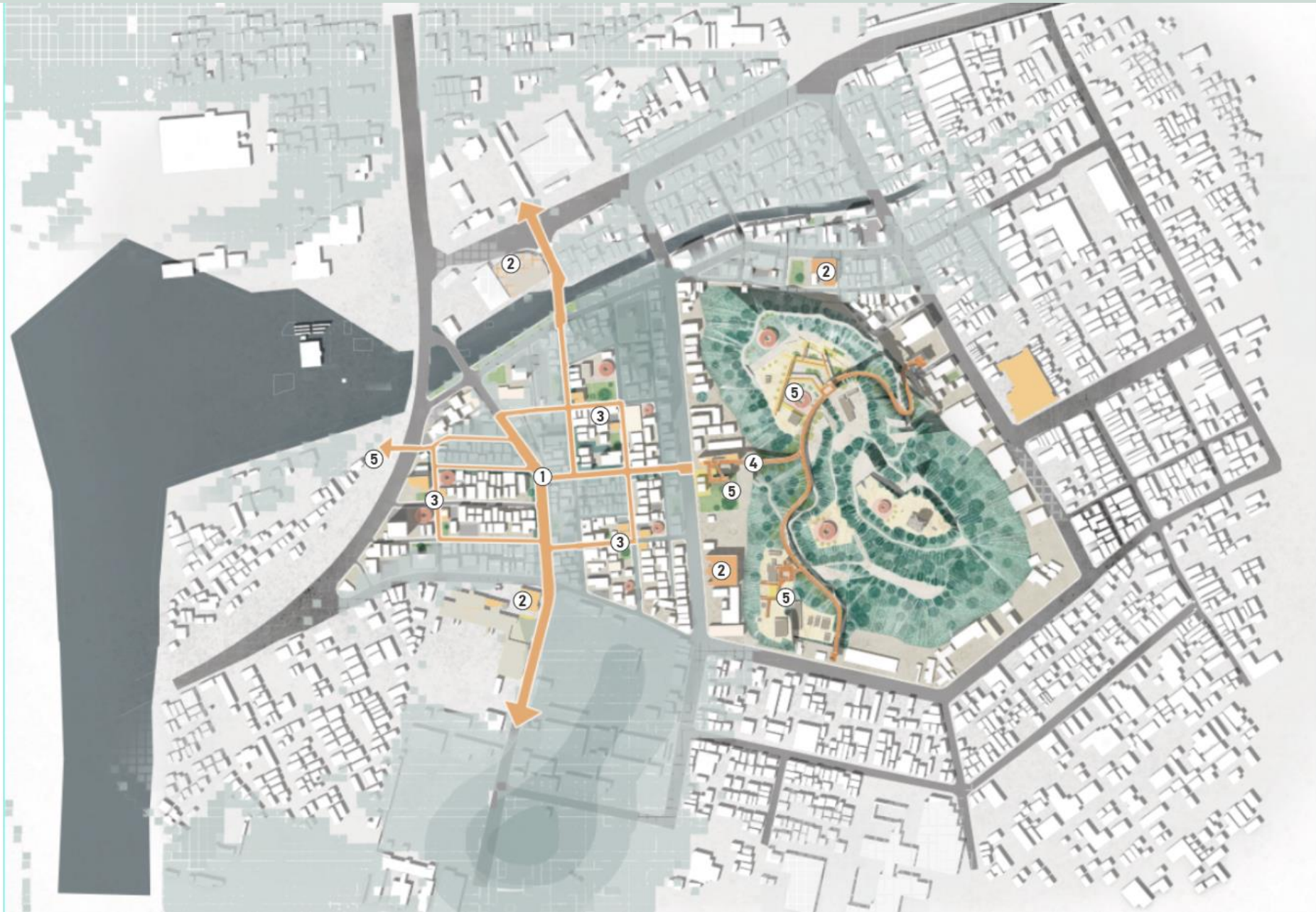


① Notoritachi-mon Gate
② Newly-added gate1
③ Kori Family's Bukenaga-ya-mon Gate
④ Healing Space
⑤ Cultural Museum
⑥ Uwajima Castle
⑦ Sky Corridor
⑧ Public building
⑨ Community Core
⑩ Multiple-commerical
⑪ Pavilion

MASTER PLAN

PHASE 2:
During Tsunami
During Tsunami

Elevated segments of the main roads serve as evacuation routes during the tsunami. Emergency refuge points are located on rooftops near the pavilion, which acts as a visual and directional guide. People are directed to designated rooftops or reinforced evacuation buildings for temporary safety.



① Evacuation route
② Evacuation building
③ Emergenccy building
④ Evacuation corridor
⑤ Emergency Evacuation Site

MASTER PLAN

PHASE 3:
Post Tsunami

With most ground-level roads submerged, selected elevated routes are preserved for the transport of supplies. Modular shelters are set up on rooftop refuges, while designated buildings function as formal shelter zones. The pavilion serves as a distribution center for relief goods. A safe path is maintained toward the hillside, which remains the most secure long-term evacuation destination.

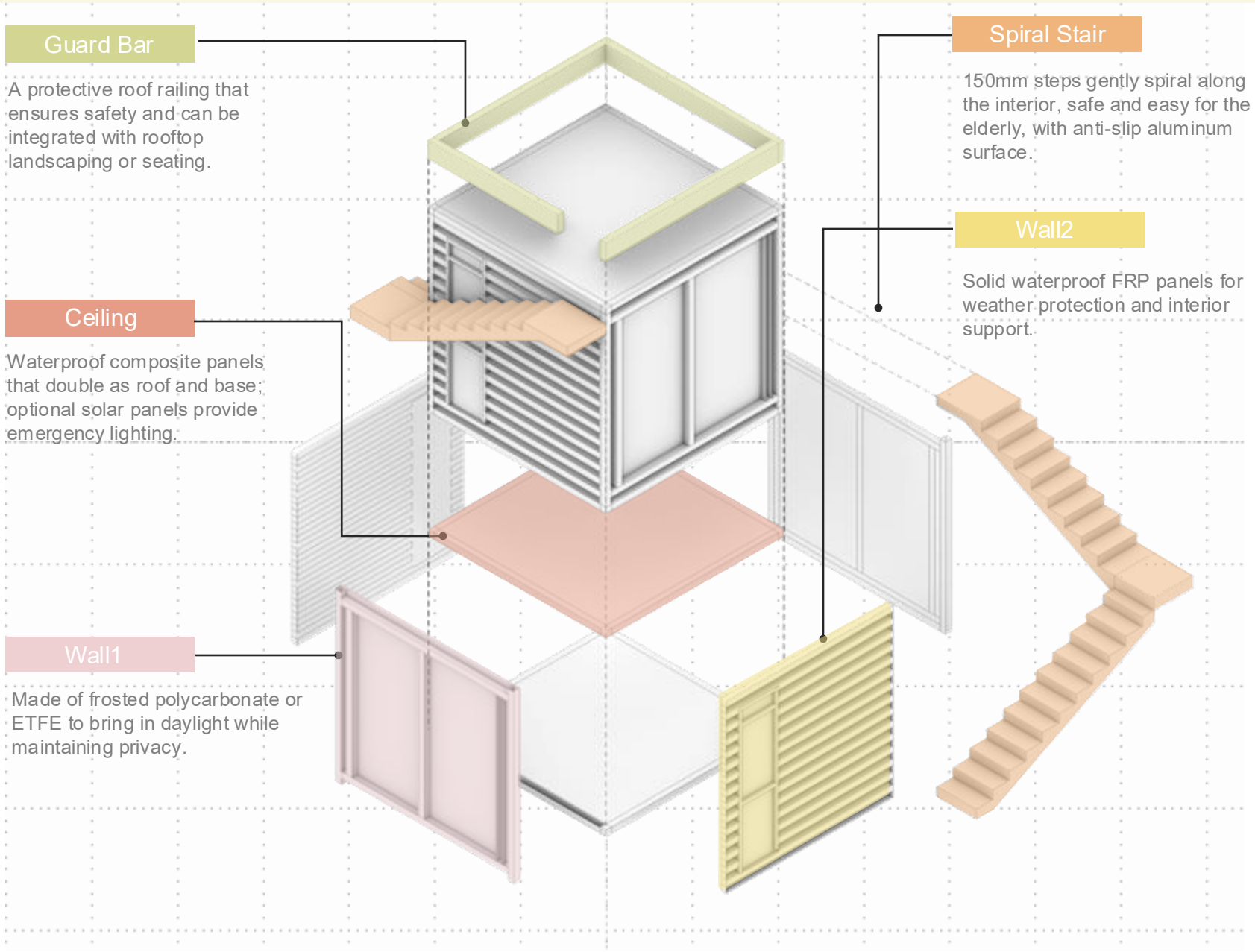
04 MODULAR SHELTER

MODULAR SHELTER

Shelter Explosive View

A flexible, easy-to-build shelter that adapts to both emergencies and daily life.

This modular shelter is designed as a 3×3m cube system that's easy to assemble, relocate, and customize. Each component—lightweight ceiling panels, translucent and opaque walls, a gentle spiral stair, and a rooftop guard bar—serves a clear purpose while ensuring safety, comfort, and adaptability. Its modular nature allows multiple units to be connected or reconfigured, making it suitable for different terrains, user needs, and even peacetime uses like community seating or shade structures in parks.



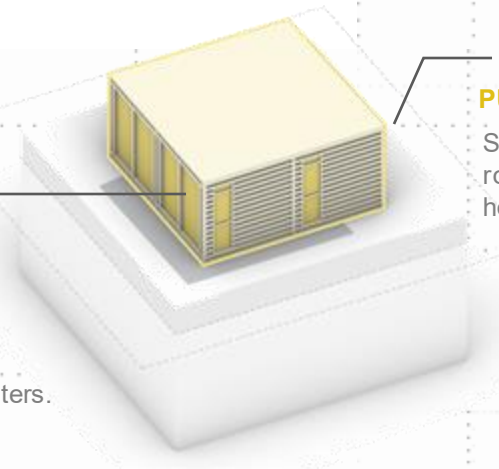
MODULAR SHELTER

Shelter Category

3 layered shelter system tailored to terrain and urgency.

SHELTER1

Placed on school or flat building rooftops for immediate elevation.



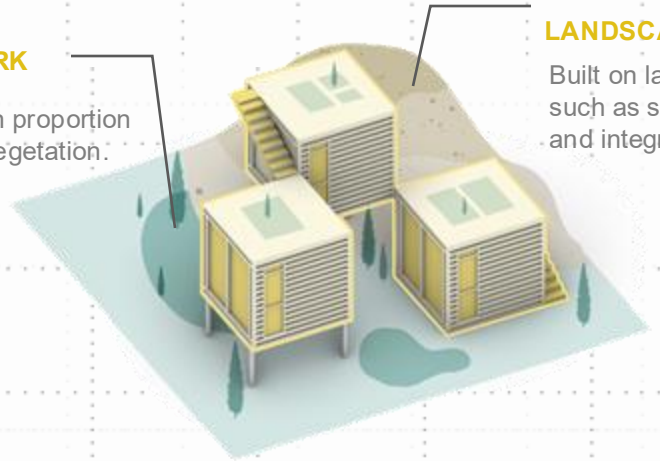
PUBLIC BUILDING

Set on the building roof to attain high height.

SHETER

Always set as temporary shelters.

Easy-to-reach modular units in open public spaces for quick, short-term refuge.



PARK

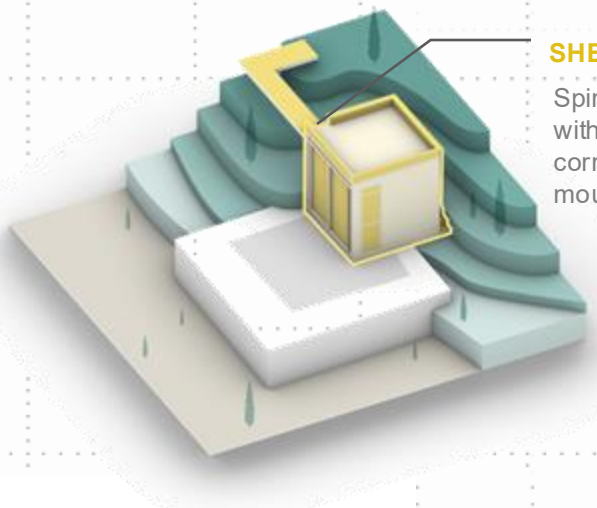
High proportion of vegetation.

LANDSCAPE

Built on landscape such as sand dune and integrated with it.

SHELTER2

Located on low-rise rooftops near slopes, bridging vertical gaps with stair-equipped modules..

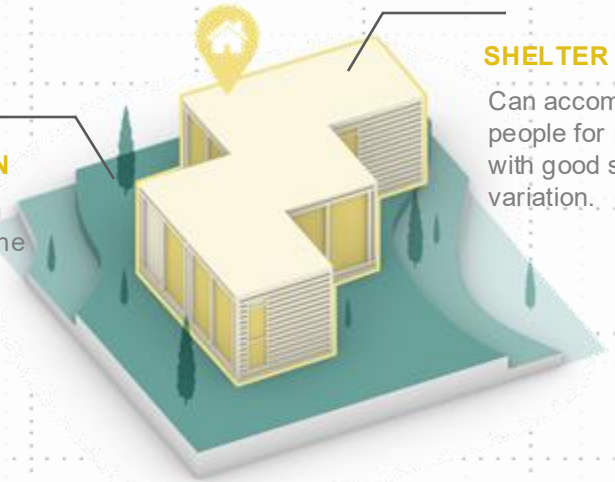


SHELT ROOF

Spiral stair aligned with terrace and sky corridor to the mountain.

SHELTER3

Safest zone on the mountaintop with access to water, power, and long-term living support.



MOUNTAIN

Located on the top of the mountain with high elevation.

SHELTER

Can accommodate people for long time with good space variation.

MODULAR SHELTER

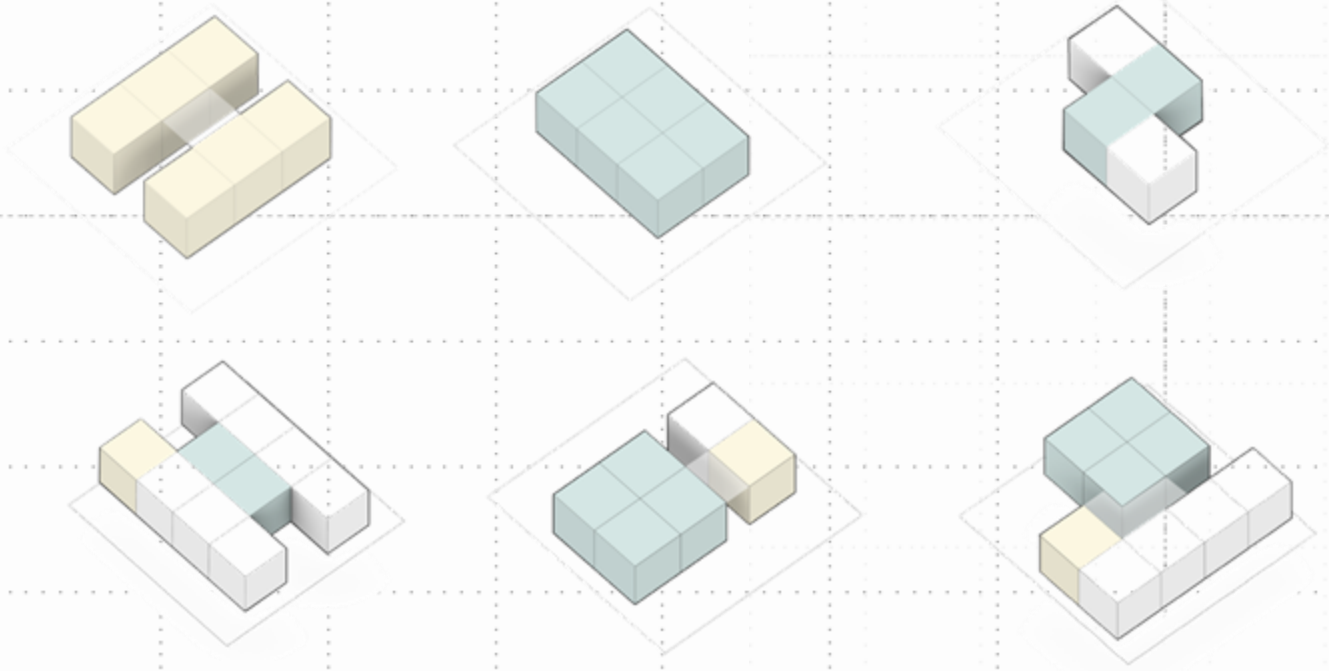
Space variation & Shelter Tower

From flexible ground layouts to vertical shelter towers, modular units unlock diverse spatial and emergency possibilities.

By combining modular shelters in varied arrangements, we create rich spatial experiences—yellow modules represent private areas like bedrooms, while blue ones form shared spaces like dining or activity zones. Beyond horizontal layouts, we explore the concept of a vertical evacuation tower entirely made of modular units, addressing both daily use and disaster resilience.

Private

Public



ROOF GARDEN

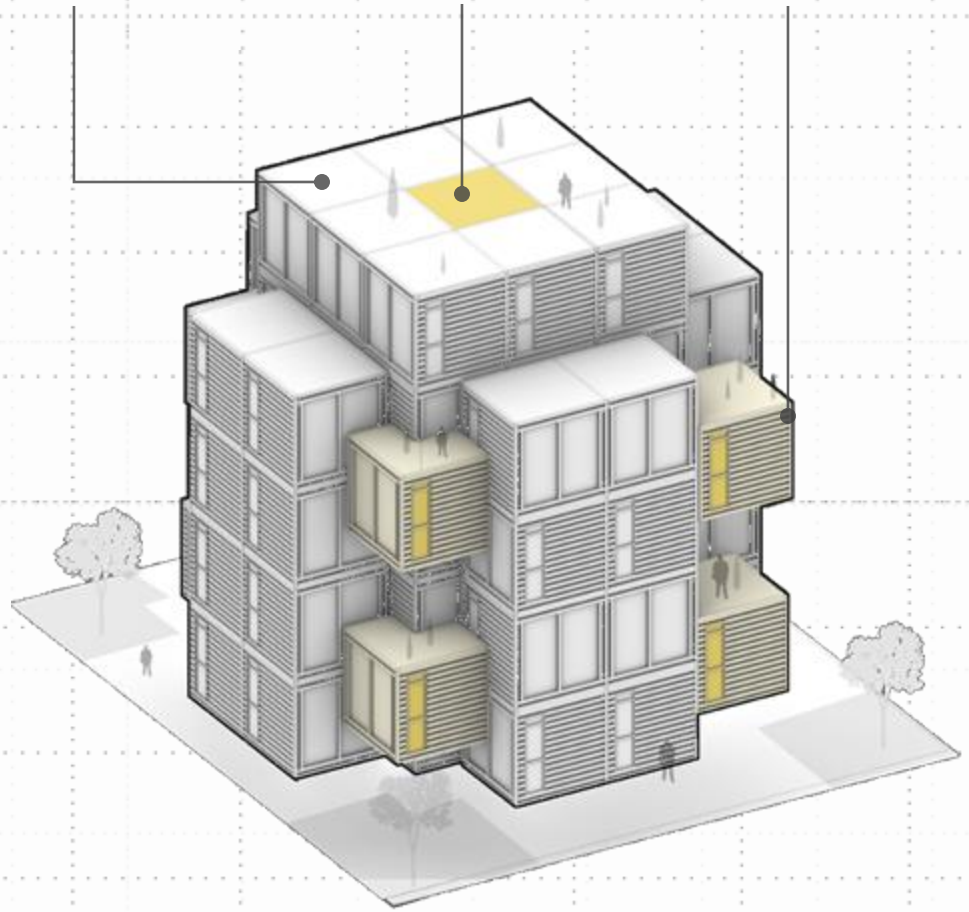
A safe evacuation zone with greenery for rest and gathering.

CORE SHAFT

Houses an elevator usable even during tsunamis, ensuring vertical accessibility.

SURROUNDING COORIDOR

External walkway allows quick escape and connects units efficiently.



05 ARCHITECTURE INTERVENTION PROPOSAL

ARCHITECTURE INTERVENTION

3.1 DESIGN STATEMENT

Resilient Circles on Uwajima

The mountain of **Uwajima Castle** has historically served as a natural bastion, **elevated, visible, and deeply symbolic.**

Yet in the face of increasing climate threats such as tsunamis, typhoons, and rising seas, it remains **underutilized for public resilience**.

This proposal transforms the mountain into a disaster preparedness and education hub, leveraging its elevation as an evacuation anchor and its cultural landmark Uwajima Castle as a symbol of survival and continuity.

ARCHITECTURE INTERVENTION

3.1 DESIGN STATEMENT

Proposal

A temporary modular exhibition of stilted pavilions

Each pavilion explores a theme: Research, Education, Recycling, Fabrication

Forms a circular journey of awareness and empowerment

Scalable Framework

Uwajima serves as a prototype for mobile disaster education

Pavilions are relocatable to other vulnerable regions

Adapts to local risks and cultural contexts

ARCHITECTURE INTERVENTION

3.2 CIRCLE OF RENEWAL

Sustainability as a system

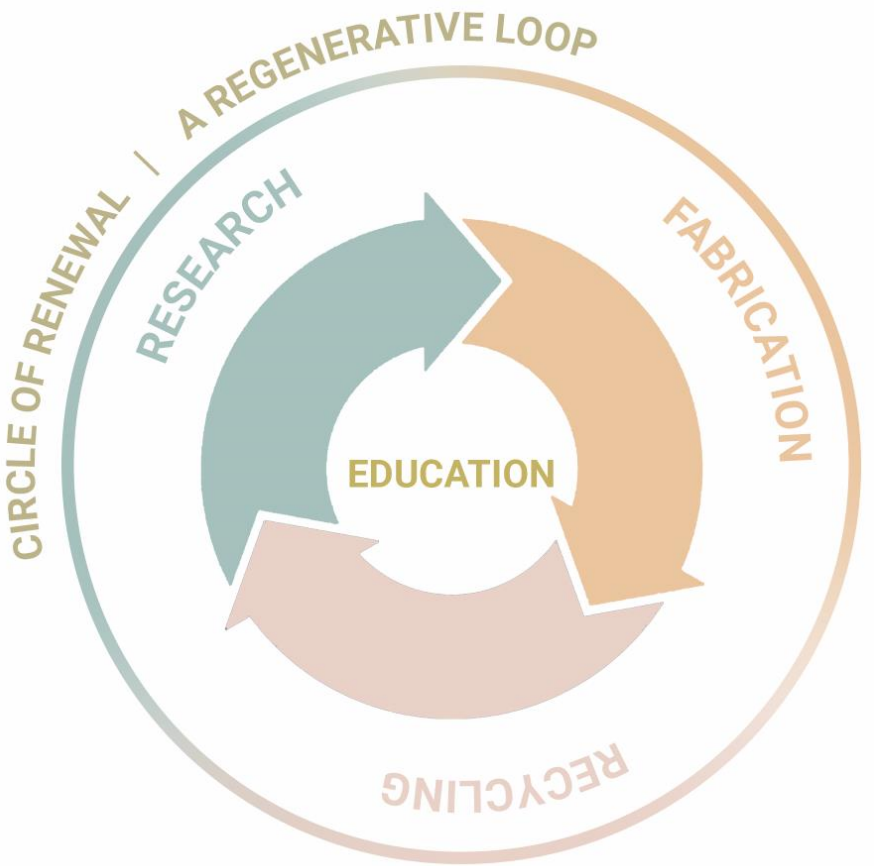
The circle reflects **continuous, closed-loop thinking**, where outputs from one phase feed the next.

There's no waste, only transformation: **research → fabrication → recycling → back to research**, all grounded in education.

Models Disaster Resilience through Adaptation

In Disaster Prone areas like Uwajima, renewal is not a one-time event, unfortunately.

Each Disaster event becomes an opportunity for learning (Education), response (Fabrication), and reflection (Research/Recycling)



3. PROPOSAL

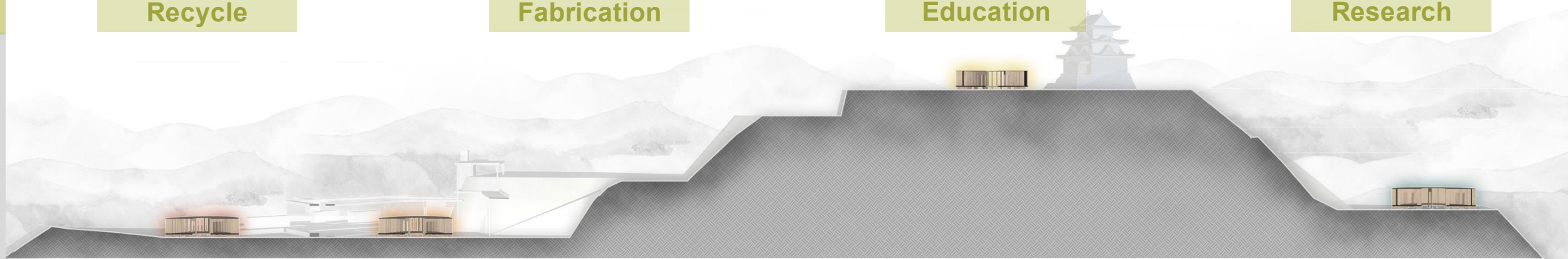
3.1 DESIGN STATEMENT

Recycle

Fabrication

Education

Research



3. PROPOSAL

3.1 DESIGN STATEMENT

Temporary + Modular Exhibition

Reimagining Resilience: A Modular Journey from Mountain to Community

Transforming Uwajima Castle's historic mountain into a prototype for mobile, climate-adaptive disaster education where elevated heritage becomes a living classroom, and circular pavilions guide communities from awareness to action.

Rotational Activation of Pavilions

Resilience unfolds in phases, not all at once

Living Archive Wall

Evolving memory surface

Shared Raised Platform System

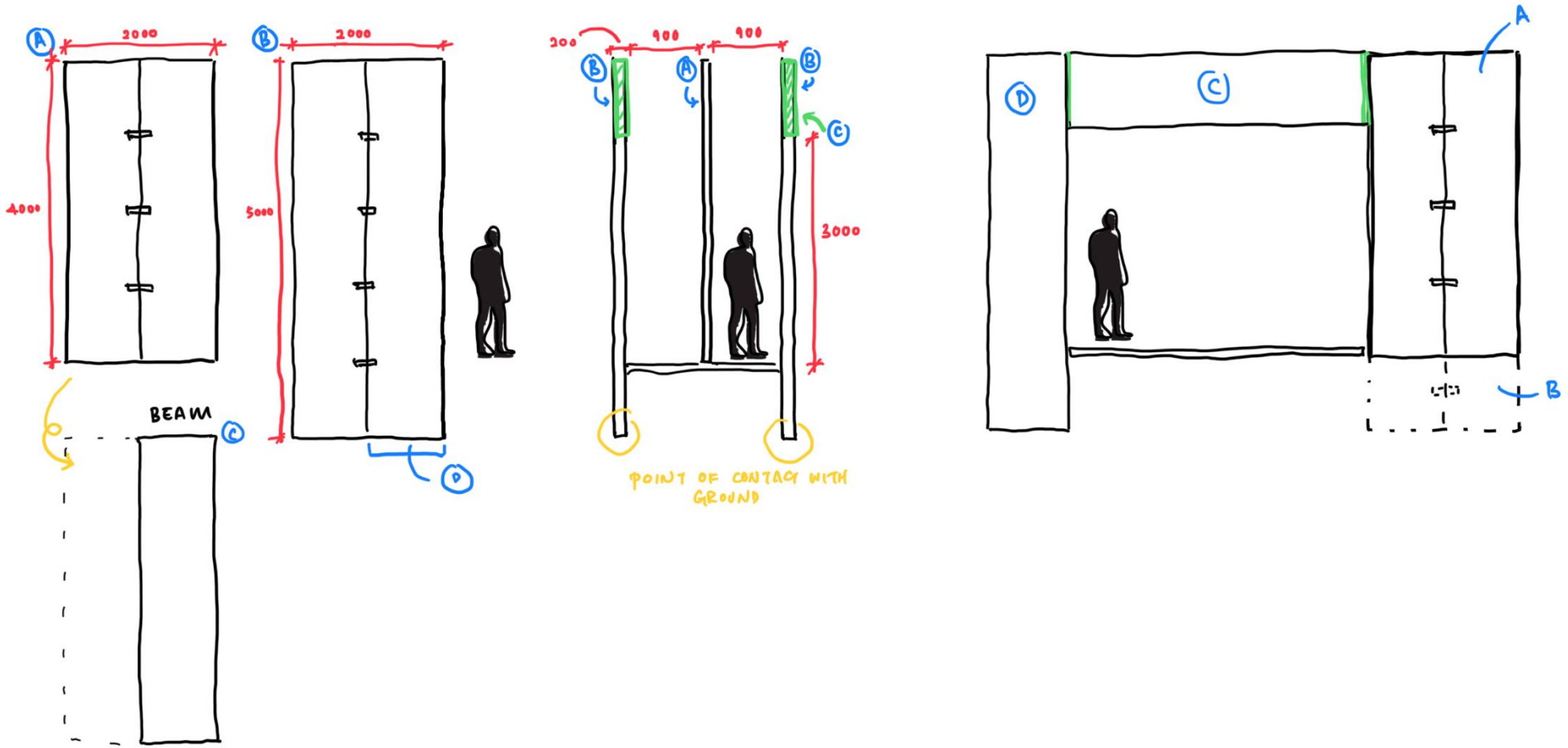
"Touching the mountain lightly" through reversible ground strategy

Modular Interiors

Architecture as a flexible toolkit, not a fixed container

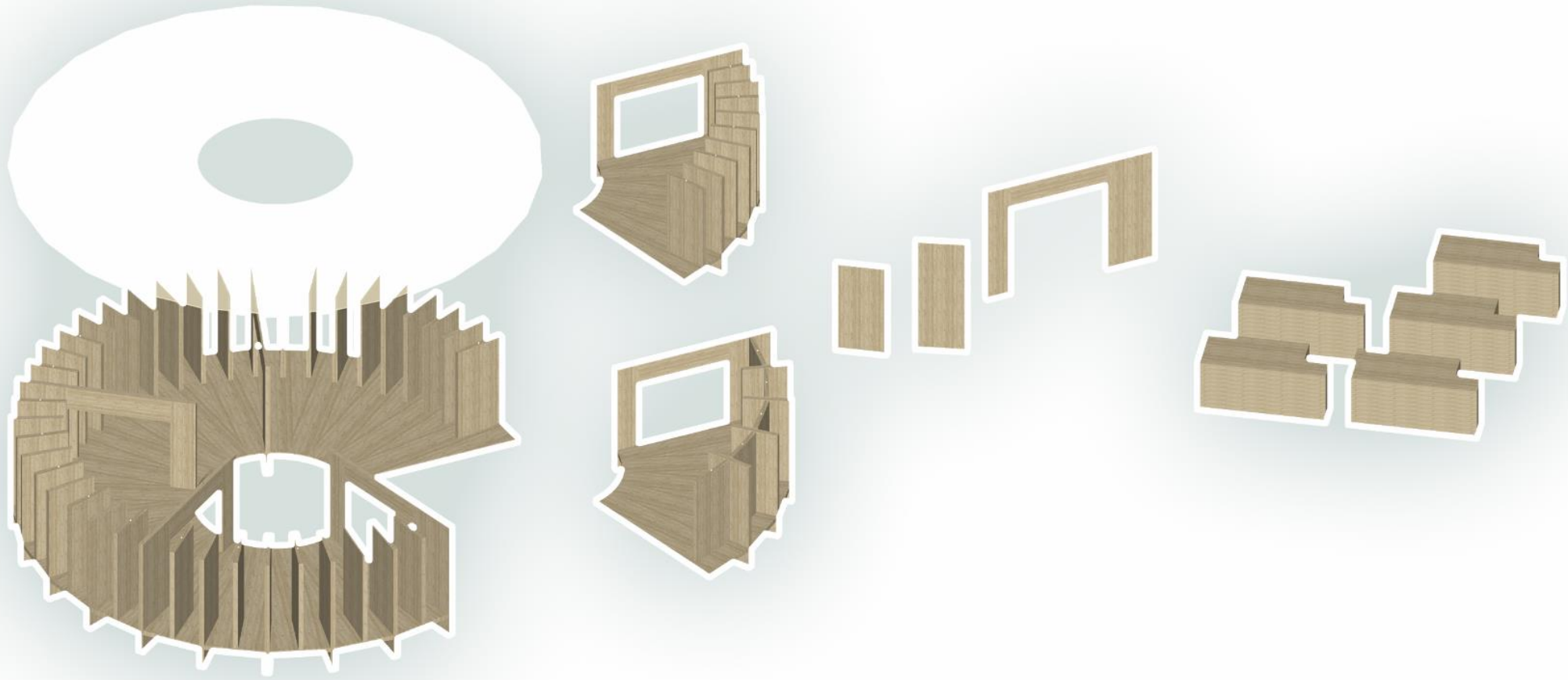
3.3 TECHNICAL DETAIL

3.3.1 PAVILION ASSEMBLY



3.2 SYSTEM DESIGN & FUNCTIONS

3.2.2 SMART CONSTRUCTION

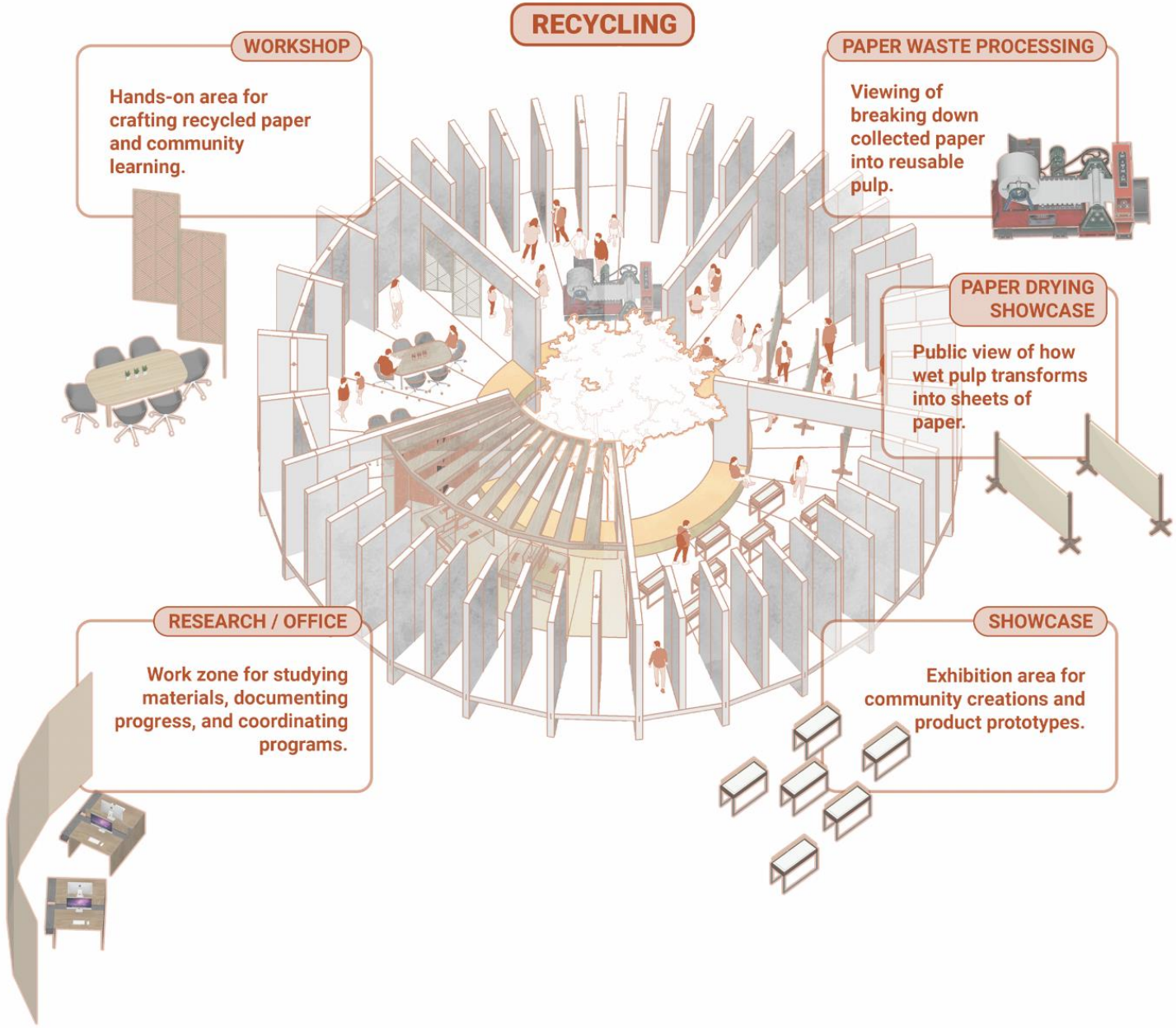


3.2 SYSTEM DESIGN & FUNCTIONS

3.2.2 SMART CONSTRUCTION

RECYCLING PAVILION

This pavilion serves as a hub for collecting, sorting, and showcasing recycled materials from local waste streams, especially organic and timber discards. It demonstrates how everyday waste can be upcycled into construction materials or emergency supplies. Visitors learn how crisis can be met with creativity through sustainable reuse.

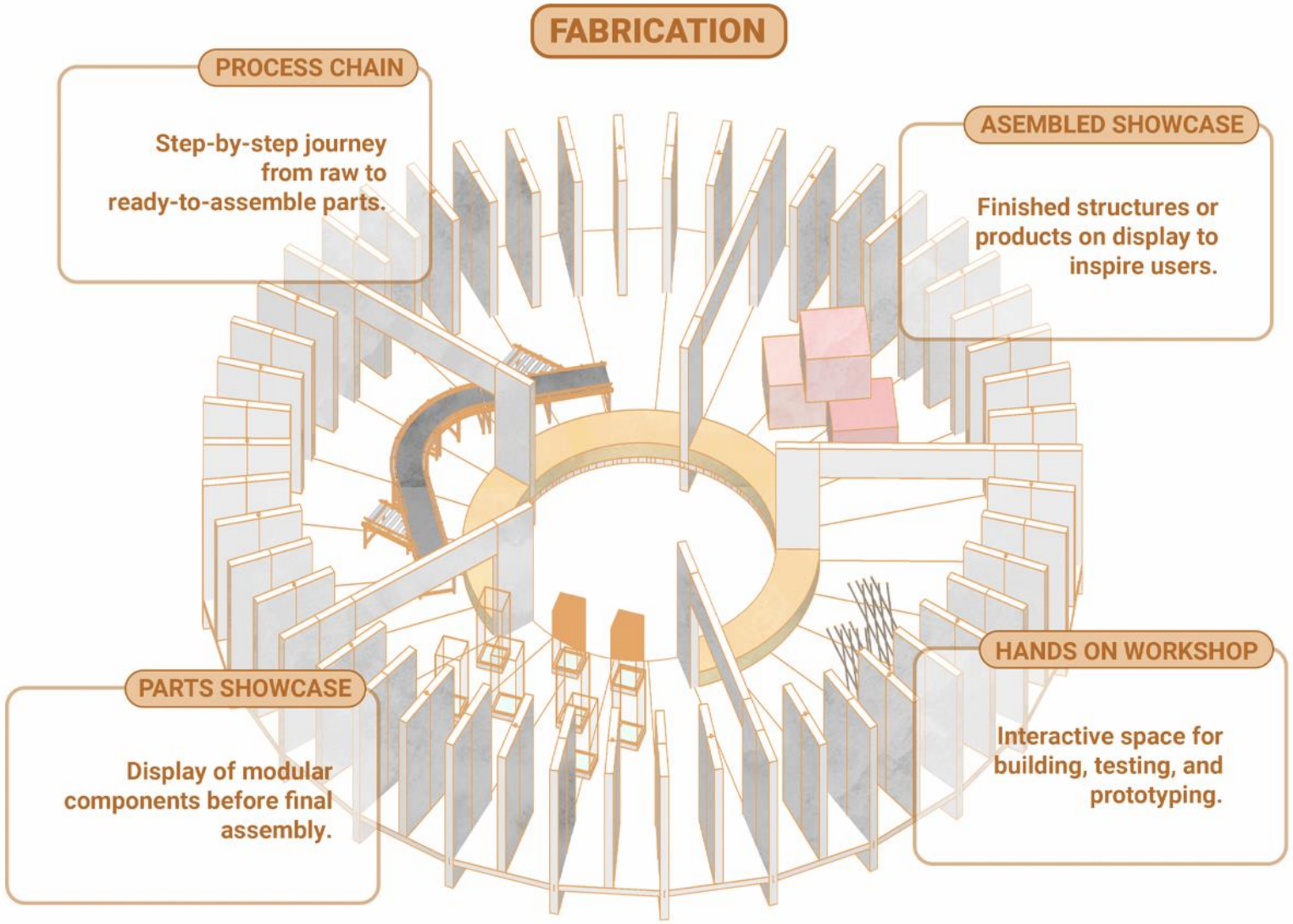


3.2 SYSTEM DESIGN & FUNCTIONS

3.2.2 SMART CONSTRUCTION

FABRICATION PAVILION

A hands-on workshop space equipped with lightweight tools and modular systems, this pavilion supports rapid-response construction and prototyping. From shelter panels to joinery components, the fabrication process becomes a visible act of community empowerment — building the future from repurposed resources.

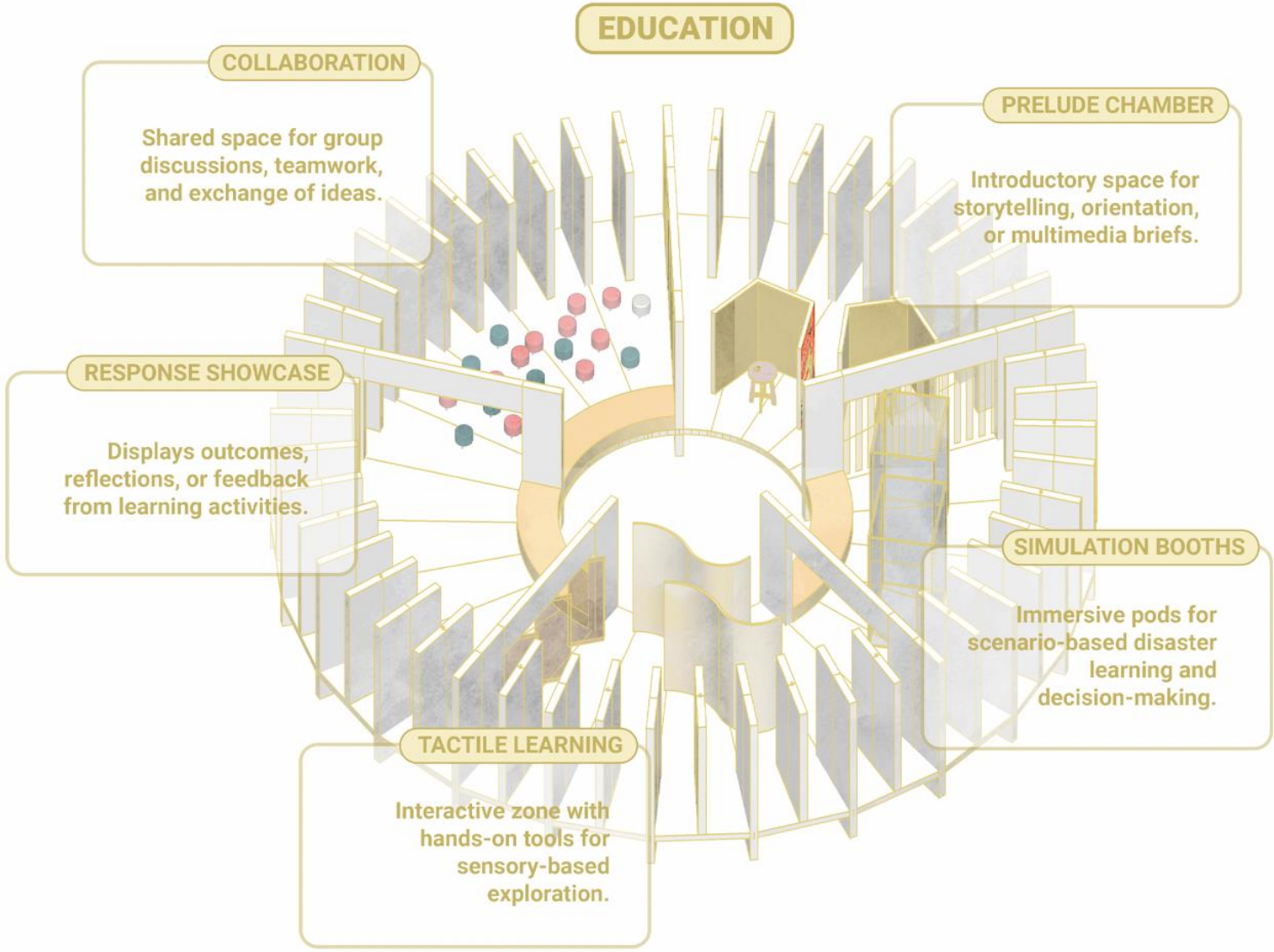


3.2 SYSTEM DESIGN & FUNCTIONS

3.2.2 SMART CONSTRUCTION

EDUCATION PAVILION

Acting as the public's entry point to the cycle, the education pavilion is illuminated both literally and metaphorically. It features interactive displays, storytelling zones, and simulations of disaster scenarios to cultivate a culture of readiness. It bridges technical knowledge with local wisdom in accessible, immersive formats.

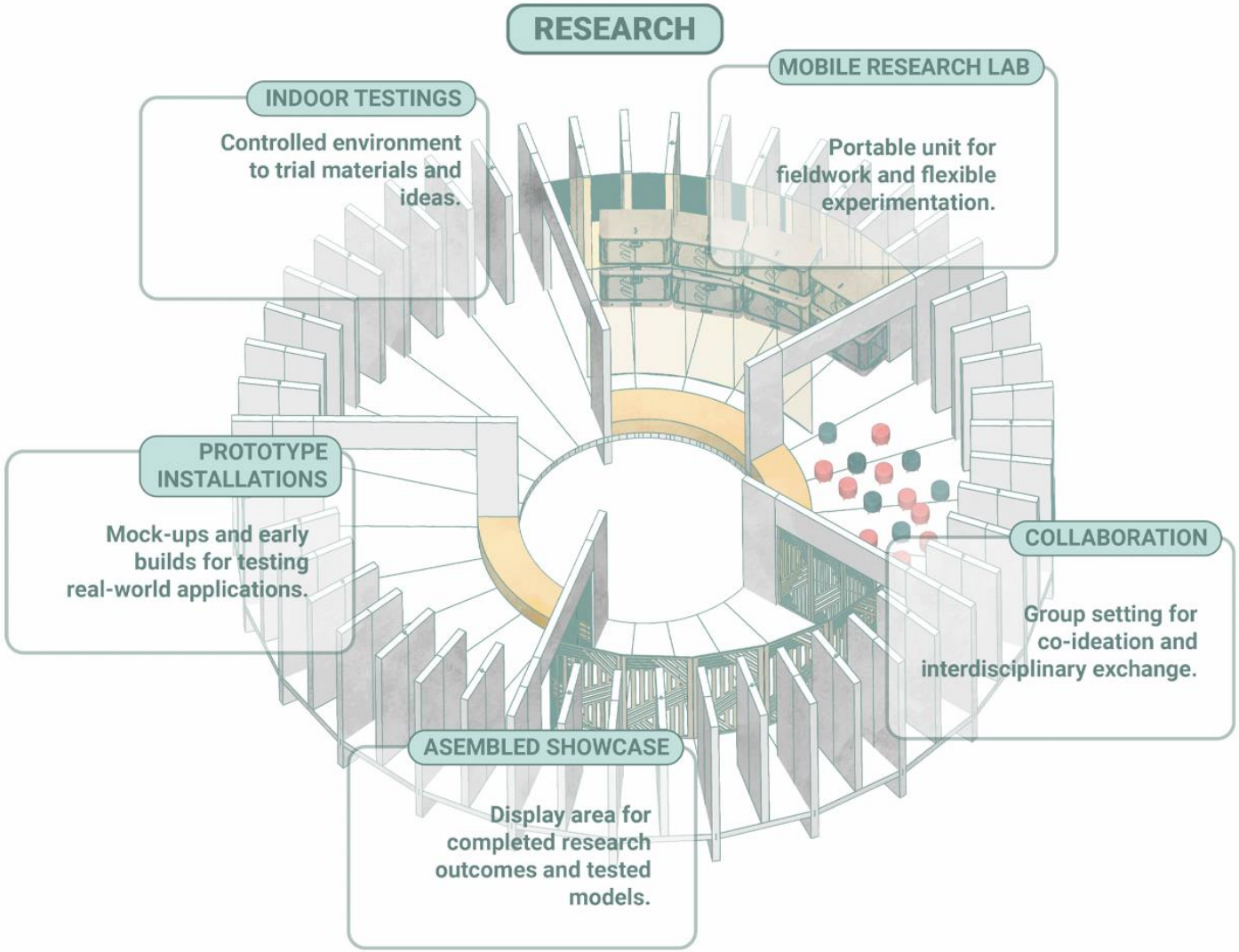


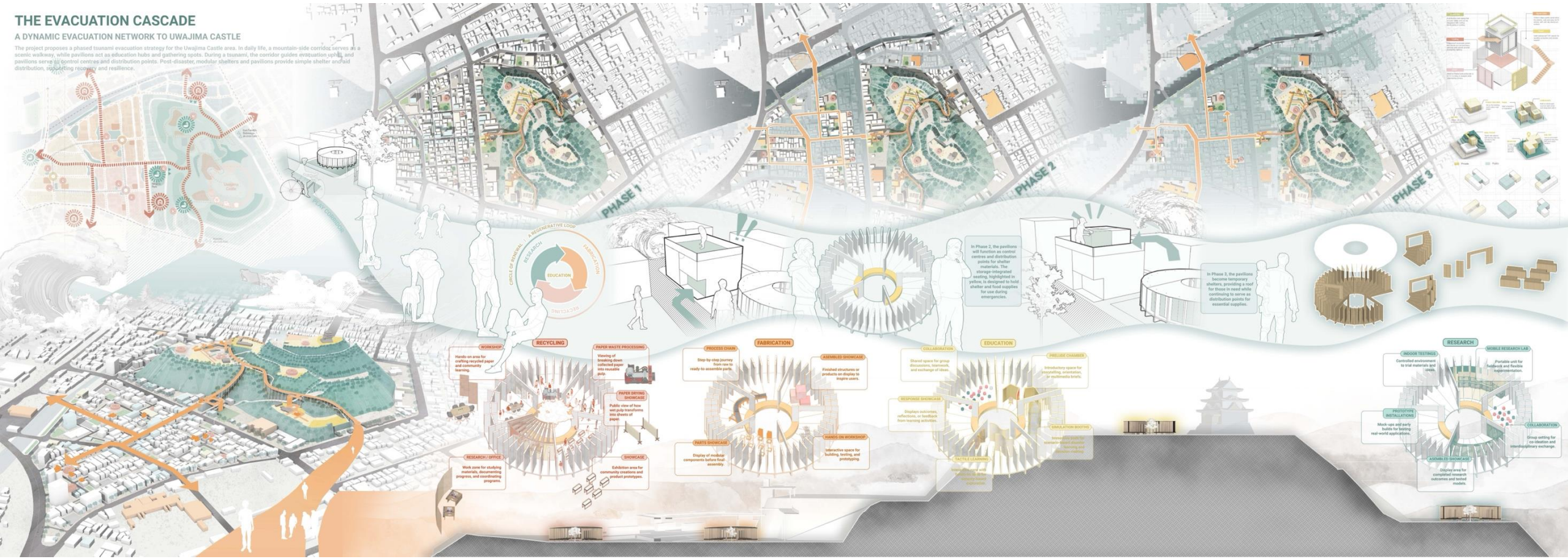
3.2 SYSTEM DESIGN & FUNCTIONS

3.2.2 SMART CONSTRUCTION

RESEARCH PAVILION

Quietly nestled into the landscape, this pavilion houses adaptable research pods for climate studies, structural testing, and risk analysis. It also doubles as a field lab, encouraging interdisciplinary collaboration between scientists, designers, and the public. Insights here seed innovations that cycle back into education, fabrication, and recycling.




THE EVACUATION CASCADE
A DYNAMIC EVACUATION NETWORK TO UWAJIMA CASTLE
The project proposes a phased tsunami evacuation strategy for the Uwajima Castle area. In daily life, a mountain-side corridor serves as a scenic walkway, while pavilions act as education hubs and gathering spots. During a tsunami, the corridor guides evacuation uphill, and pavilions serve as control centres and distribution points. Post-disaster, modular shelters and pavilions provide simple shelter and aid distribution, supporting recovery and resilience.
PHASE 1
PHASE 2
PHASE 3
CIRCLE OF RENEWAL - A REGENERATIVE LOOP
RESEARCH
FABRICATION
EDUCATION
RECYCLING
In Phase 2, the pavilions will function as control centres and distribution points for shelter materials. The storage-integrated seating, highlighted in yellow, is designed to hold shelter and food supplies for use during emergencies.
In Phase 3, the pavilions become temporary shelters, providing a roof for those in need while continuing to serve as distribution points for essential supplies.
RECYCLING
WORKSHOP
Hands-on area for crafting recycled paper and community learning.
PAPER WASTE PROCESSING
Viewing of breaking down collected paper into reusable pulp.
PAPER DRYING SHOWCASE
Public view of how wet pulp transforms into sheets of paper.
RESEARCH / OFFICE
Work zone for studying materials, documenting progress, and coordinating programs.
SHOWCASE
Exhibition area for community creations and product prototypes.
FABRICATION
PROCESS CHAIN
Step-by-step journey from raw to ready-to-assemble parts.
ASSEMBLED SHOWCASE
Finished structures or products on display to inspire users.
PARTS SHOWCASE
Display of modular components before final assembly.
HANDS ON WORKSHOP
Interactive space for building, testing, and prototyping.
EDUCATION
COLLABORATION
Shared space for group discussions, teamwork, and exchange of ideas.
PRELUDE CHAMBER
Introductory space for storytelling, orientation, or multimedia briefs.
RESPONSE SHOWCASE
Displays outcomes, reflections, or feedback from learning activities.
SIMULATION BOOTHS
TACTILE LEARNING
RESEARCH
INDOOR TESTINGS
Controlled environment to trial materials and ideas.
MOBILE RESEARCH LAB
Portable unit for fieldwork and flexible experimentation.
PROTOTYPE INSTALLATIONS
Mock-ups and early builds for testing real-world applications.
COLLABORATION
Group setting for co-ideation and interdisciplinary exchange.
ASSEMBLED SHOWCASE
Display area for completed research outcomes and tested models.

THANK YOU