

combination 01



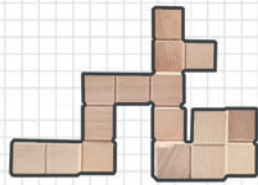
combination 02



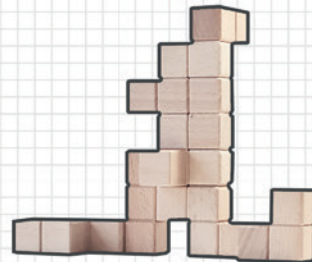
combination 03



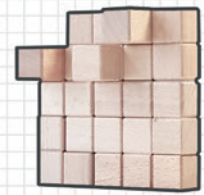
combination 04



combination 05



combination 06



combination 07



combination 08



combination 09



combination 10



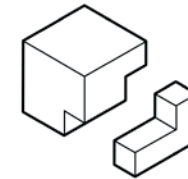
combination 11



combination 12

THE INFINITY CUBE

Designing for Mental health in High Density Sprawl



*2023 UIA-HYP Cup International Student Competition in
Architectural Design: Living your best life
Site: Gu Cun Huge Community, Shanghai, China
Building Area: 1,552 m2
Team: Yanting Shen, Yiwen Xu, Hanzhang Shen
Role in Team: Preliminary Research, Digital Modeling,
Technical Drawings and Architectural Representation*

As rapid urbanization fuels high-density construction, high-density speculative urban sprawl has outpaced proper planning, leaving completed areas with significant issues. With high-rise developments multiplying, how can we address the challenges of these poorly planned urban environments?

A review of the past decade's research on "high-density cities" and "health" highlights key concerns: mental health, physical activity, built environment, green space, and community. High-density living often leads to issues like segregated communities, unusable green spaces, lack of multifunctional zones, and traffic insecurity, contributing to mental health problems such as depression, isolation, and insecurity. The Gu Cun Community in Shanghai serves as a representative case, characterized by high population density and reported poor mental health among its residents. This community exemplifies the need for a change to mitigate the psychological impact of high-density living.

To address these concerns, strategies involving "nature," "socialization," and "sports" are being explored. Inspired by the traditional Ruban Cube, this design uses seven versatile modules to enhance community diversity. Each module can be oriented in multiple directions, allowing limitless configurations for various uses. Furniture and instruments are designed for multi-angle use or easy retraction, ensuring space efficiency. Magnetic frames enable flexible combinations to create tailored public spaces. By day, the modules encourage social interaction through fluid movement; at night, they compact into a cube for charging and storage, fostering a dynamic and adaptable community.

The design uses a limited number of modules to create an infinity of diverse social spaces, conserving land and enhancing safety. It fosters social interaction and community identity while mitigating the psychological impacts of urban sprawl.



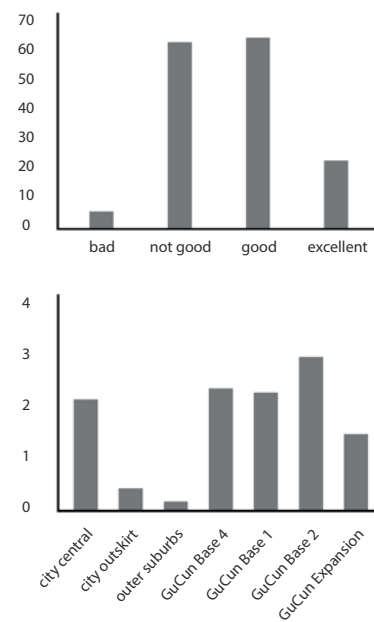
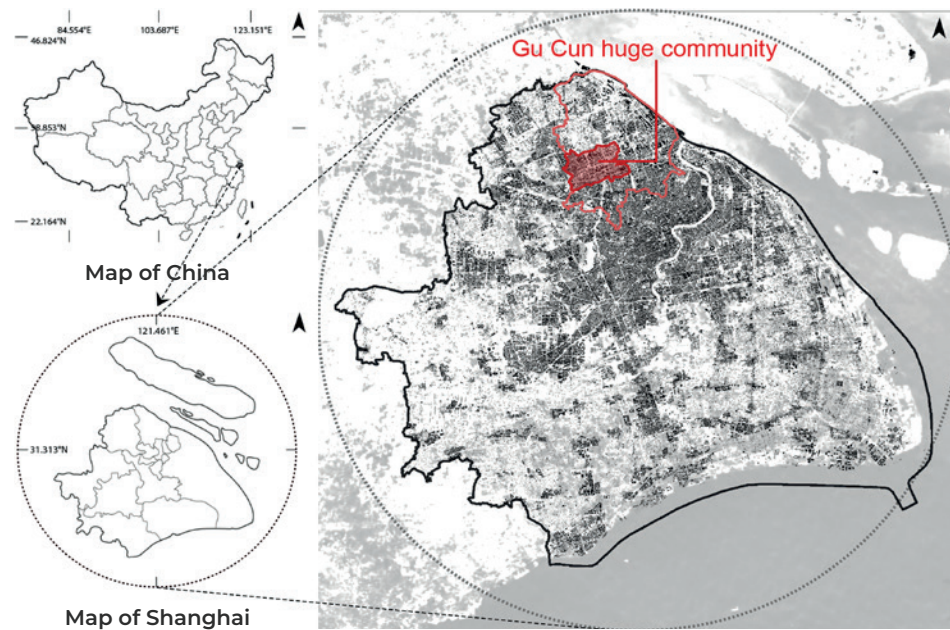
high-density residence



mental health



architecture solution?



(SHEN Yanting, YANG Xiaomeng)

RAPID GROWTH RESULTING IN HIGH-DENSITY HOUSING

GuCun, in Shanghai's Baoshan District, has a growing population with high density, surpassing both the suburbs and city center. Despite abundant commercial and cultural facilities, 78% of surveyed residents rated the community poorly, with 45% wanting to leave. High vacancy rates and inadequate communal spaces highlight the need for better-designed areas to foster community interaction. Socializing occurs mainly in traditional spaces, indicating a disconnect between new developments and residents' needs.



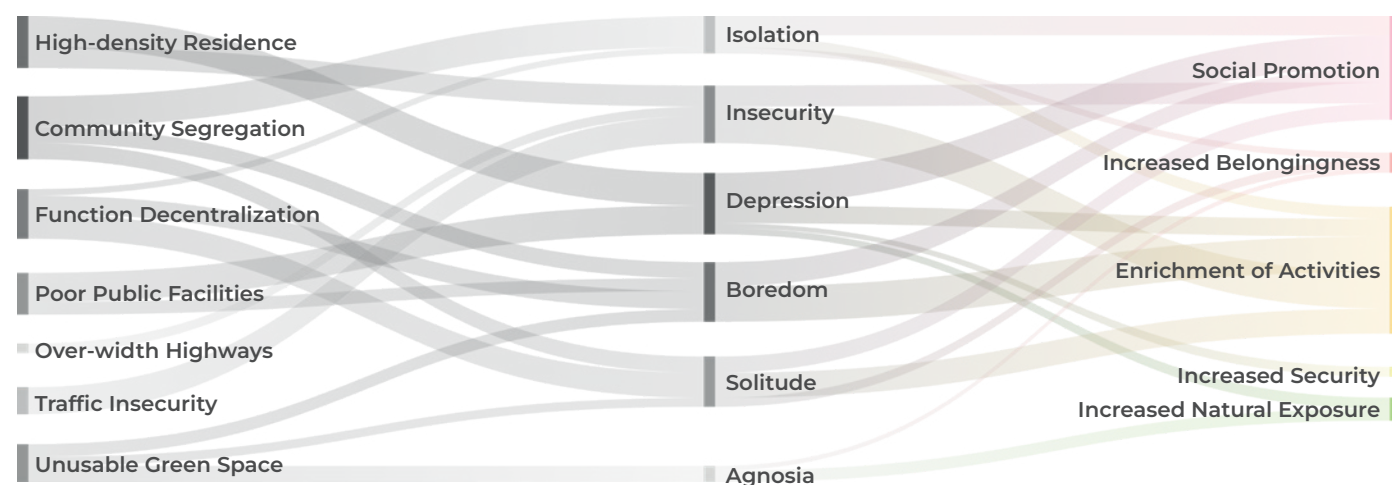
CITY PROBLEMS



MENTAL PROBLEMS



STRATEGIES



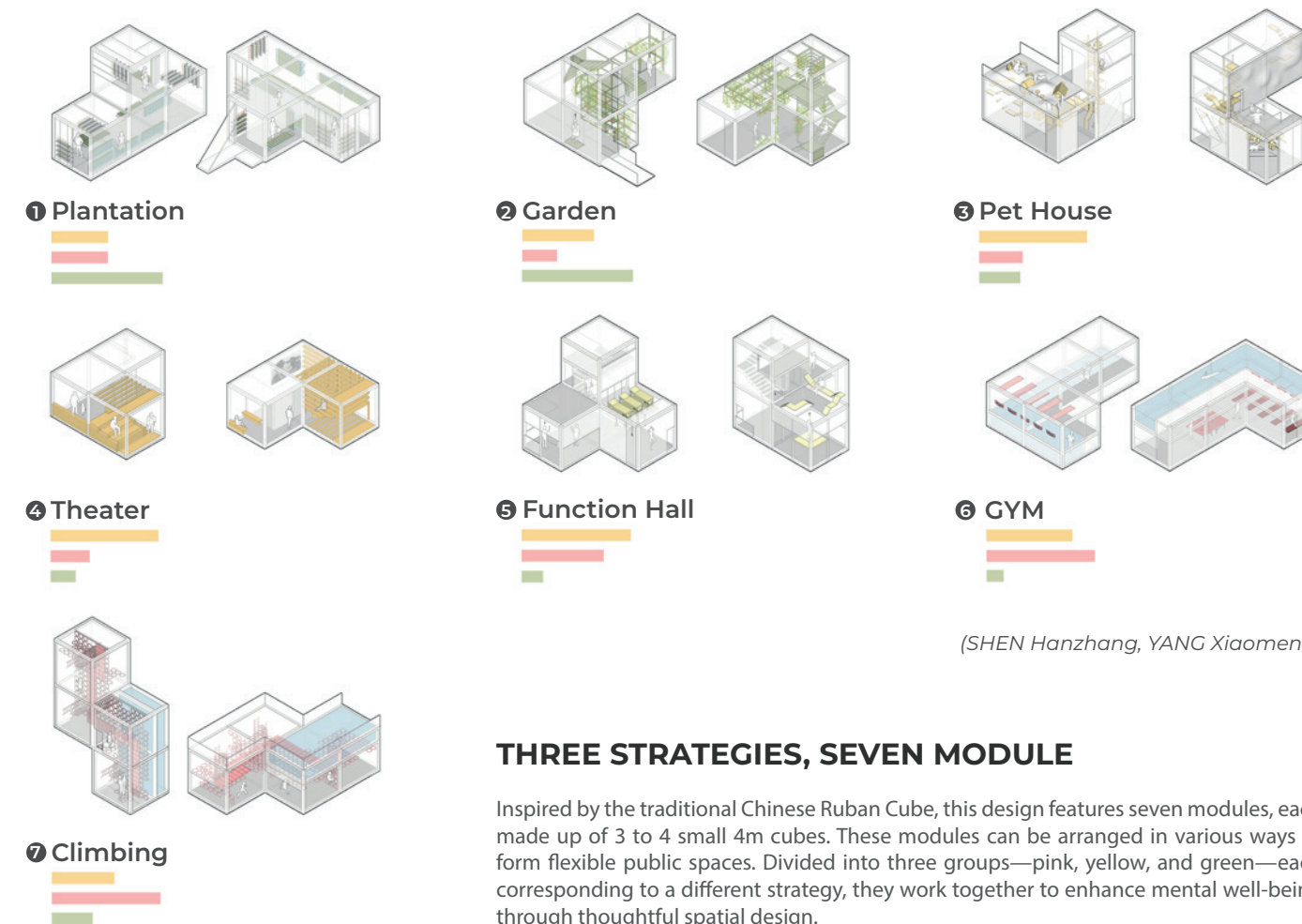
HOW THE PHYSICAL ENVIRONMENT AFFECT MENTAL HEALTH?

Research shows that urban environments, particularly high-density areas like GuCun, can negatively impact mental health, with cramped conditions contributing to depression. Isolated residential areas reduce social interaction, increasing loneliness. The figure above highlights urban spatial problems in GuCun, identified through fieldwork and interviews, along with related mental health issues. By categorizing these problems and considering urban mental health theories, three countermeasures are proposed to address these concerns.



THREE APPROACHES: SOCIALIZATION, SPORTS, NATURE

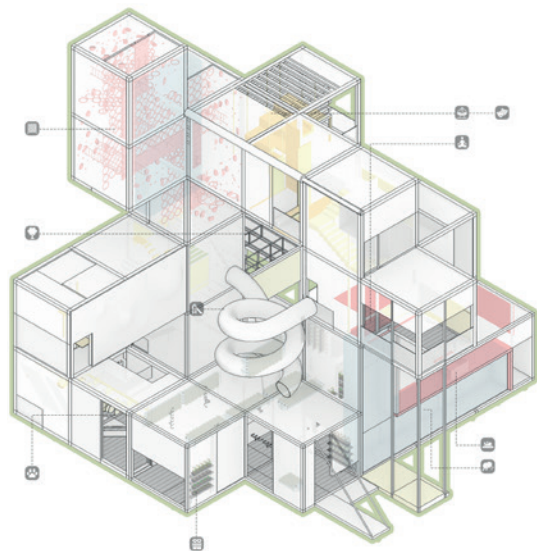
The colors yellow, pink, and green symbolize three targeted strategies for addressing mental health issues within high-density communities. This color coding is utilized throughout the design. The yellow group aims to enrich community functions, the pink group focuses on enhancing socialization among residents, and the green group is designed to increase contact with nature.



(SHEN Hanzhang, YANG Xiaomeng)

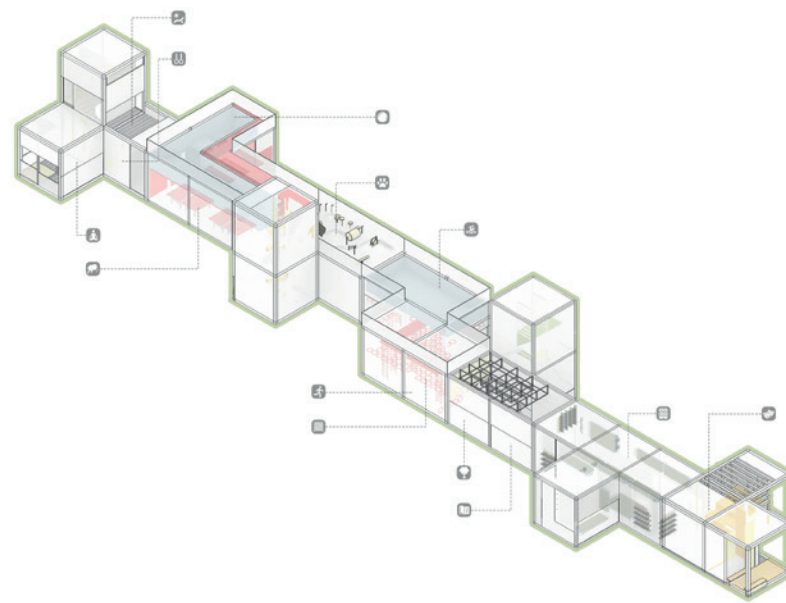
THREE STRATEGIES, SEVEN MODULE

Inspired by the traditional Chinese Ruban Cube, this design features seven modules, each made up of 3 to 4 small 4m cubes. These modules can be arranged in various ways to form flexible public spaces. Divided into three groups—pink, yellow, and green—each corresponding to a different strategy, they work together to enhance mental well-being through thoughtful spatial design.



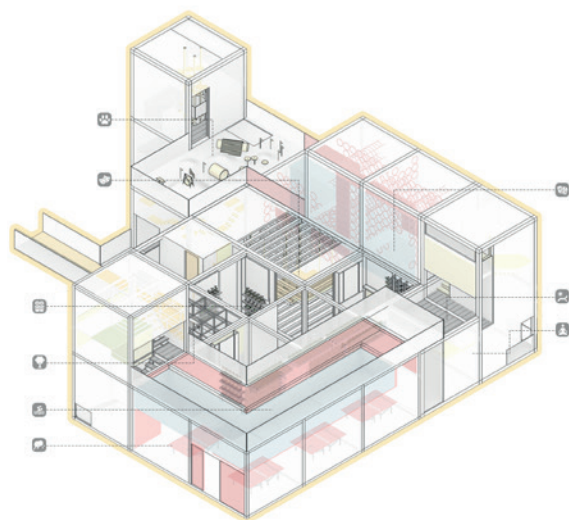
CHILDREN'S PLAYGROUND

Situated on unused green space, the open first floor invites entry from all sides, with diverse transport options for accessibility. The Theater module, rotating on a fixed axis, offers an interactive ride for children.



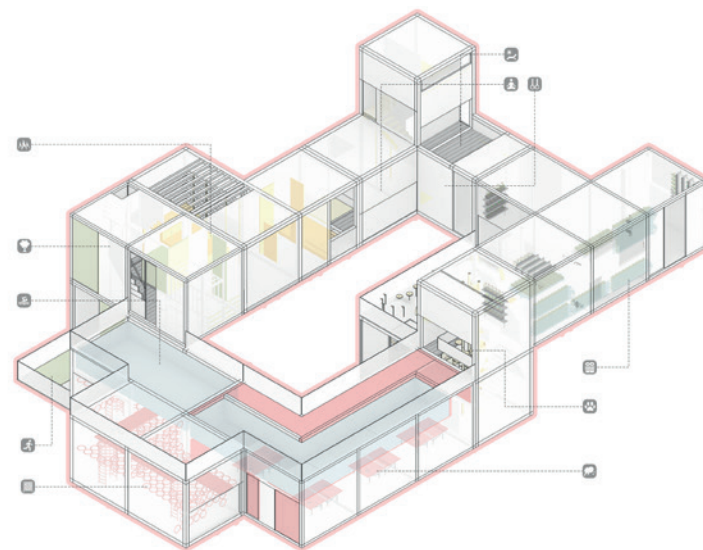
SHUTTLE FOR KIDS

This snake-like transportation corridor features moving modules, with the tail module shifting to the head. The elevated, enclosed space ensures safety while providing an engaging, functional environment.



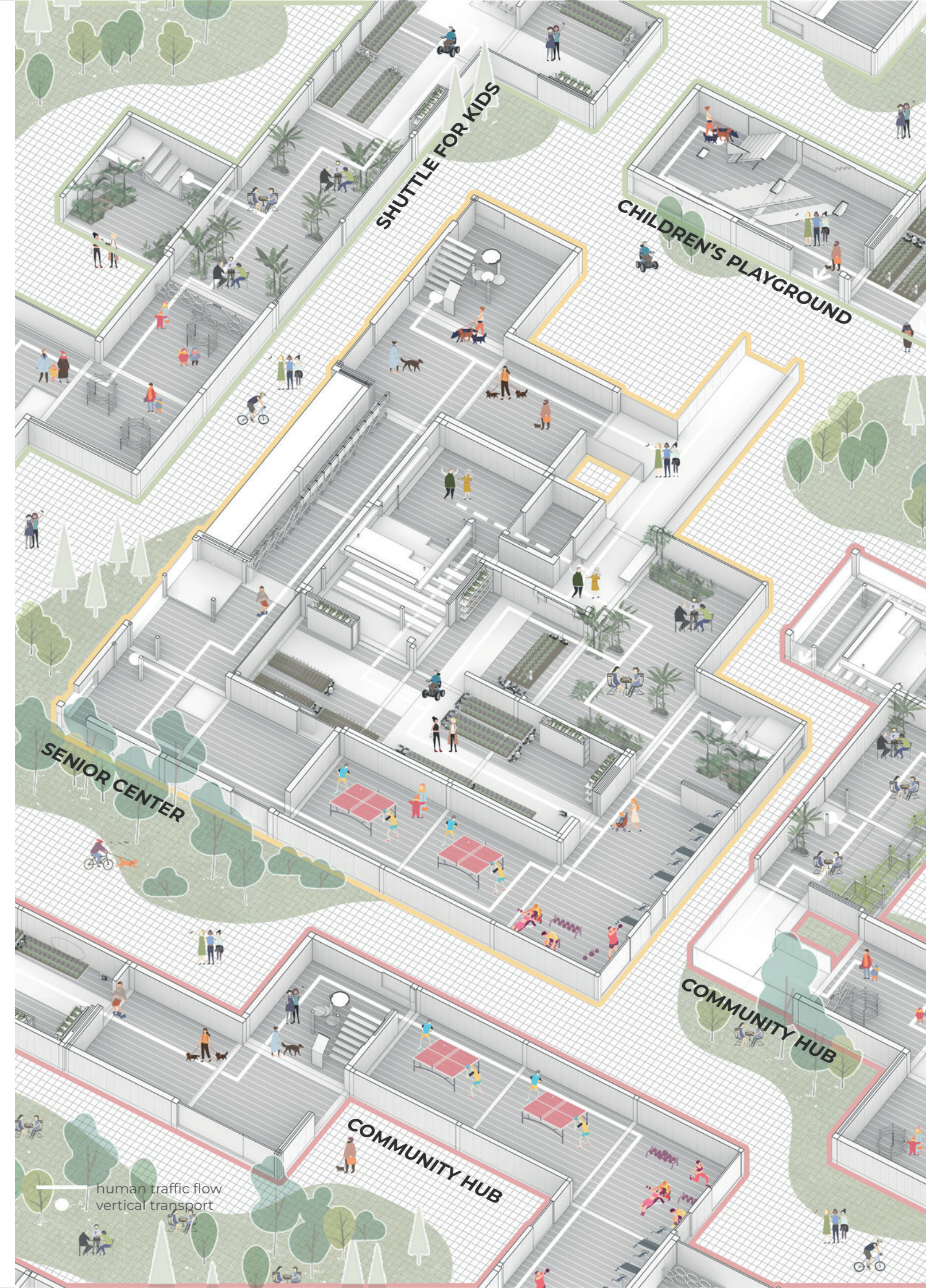
SENIOR CENTER

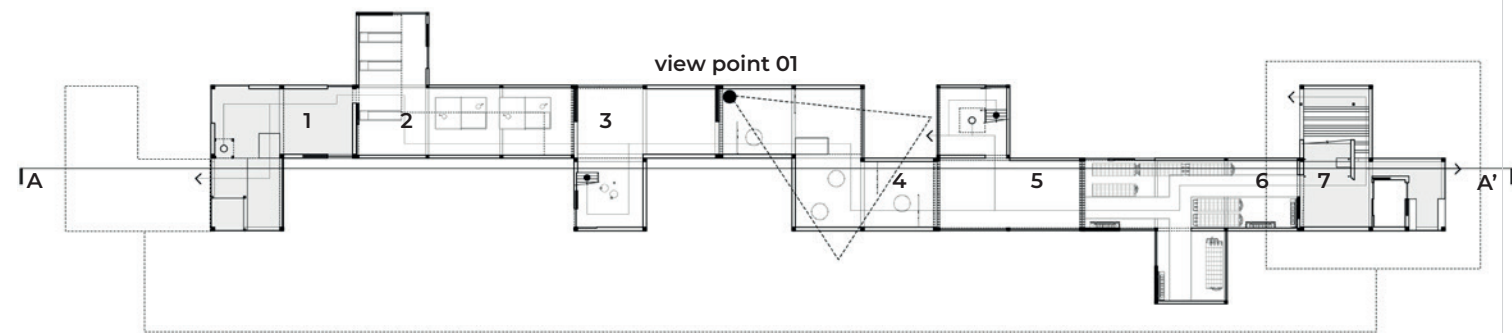
Inspired by the traditional Chinese courtyard, the Theater and Plantation modules at the center form an outdoor courtyard, surrounded by other modules for indoor activities.



COMMUNITY HUB

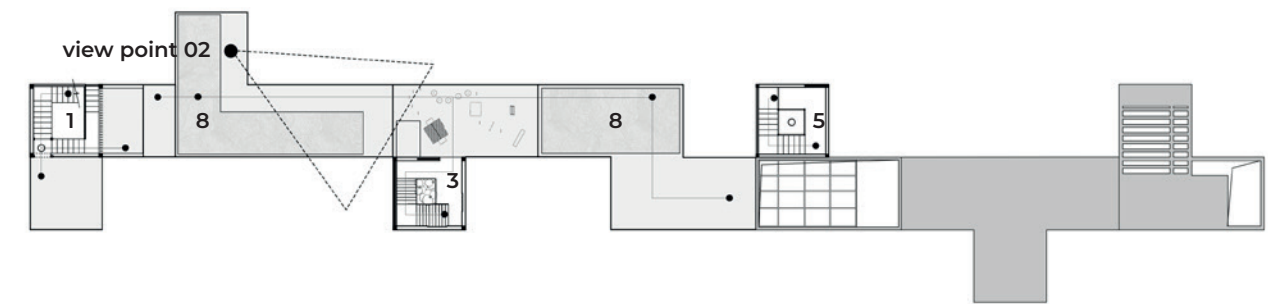
This runway-shaped public space features adaptable modules for all ages. The arrangement allows maximum second-floor connections, creating larger spaces for group activities.



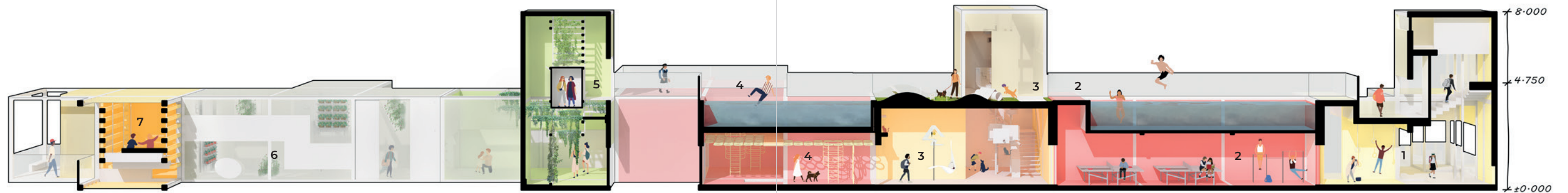


Firstfloor Plan

1. Function Hall 2. GYM 3. Pet House 4. Climbing 5. Garden 6. Plantation 7. Theater 8. Swimming Pool



Secondfloor Plan



A-A' Section Perspective

LINEAR PUBLIC SPACE: SHUTTLE FOR KIDS

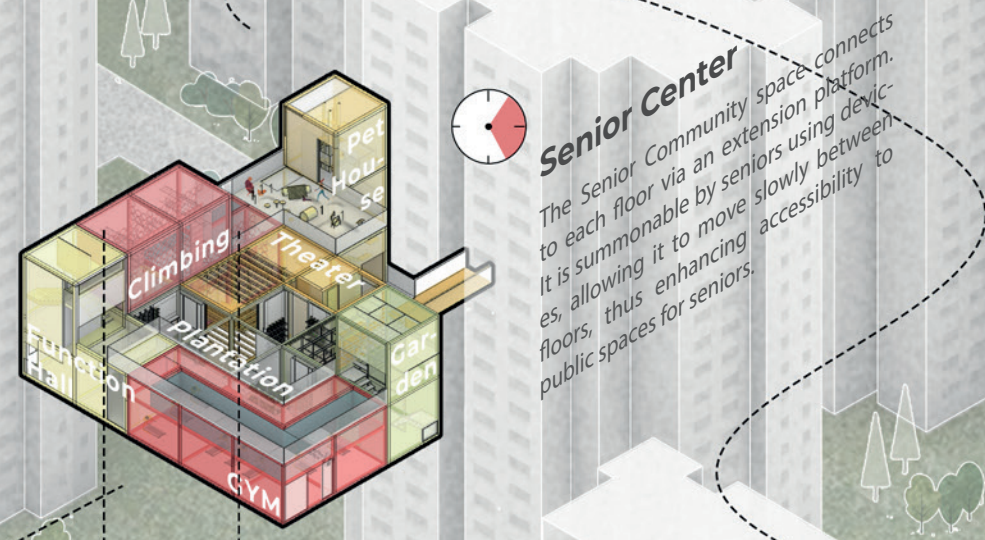
This snake-like transportation corridor is designed to address safety concerns in high-density urban areas. Its dynamic, elevated, and enclosed structure ensures a secure, engaging path for children traveling to and from school. By reducing the risk of accidents and offering clear, protected routes, it helps alleviate safety worries for both children and parents, enhancing overall urban security.



Perspective View from View Point 01



Perspective View from View Point 02



Senior Center

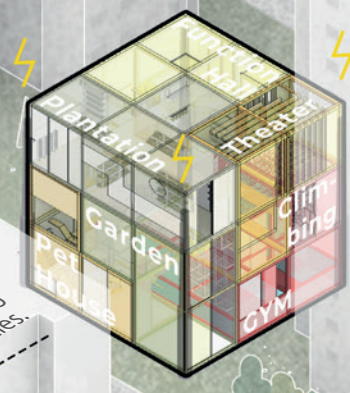
The Senior Community space connects to each floor via an extension platform. It is summonable by seniors using devices, allowing it to move slowly between floors, thus enhancing accessibility to public spaces for seniors.

Labels: Climbing, Theater, Plantation, Garden, Pet House, Function Hall, GYM.

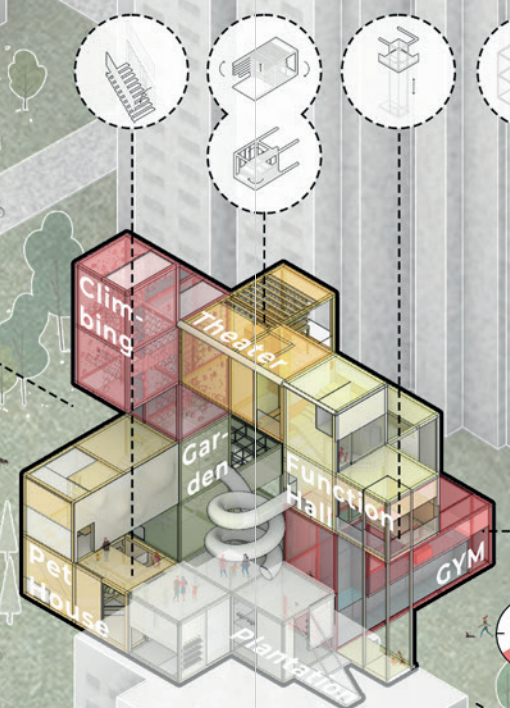


Compact charging

At night, the seven modules compactly assemble at a designated community spot to rest and recharge, ensuring they're ready for the next day's activities.



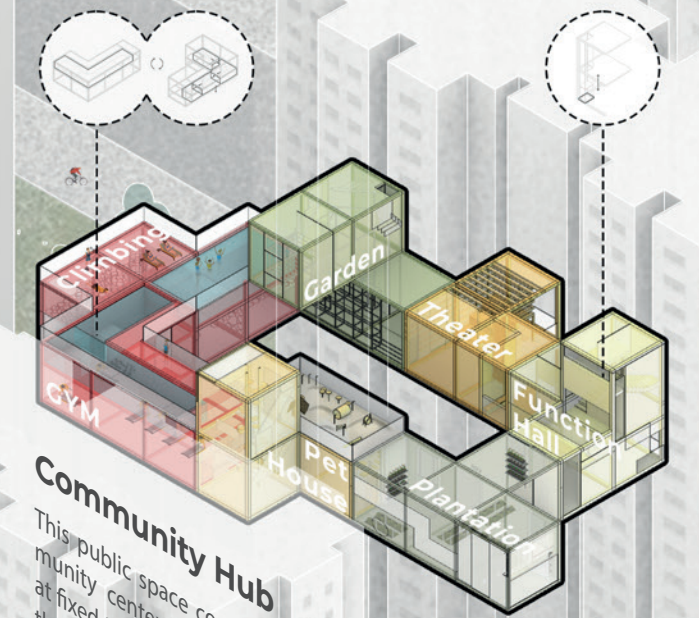
Labels: Climbing, Theater, Plantation, Garden, Pet House, Function Hall, GYM.



Children's Playground

The combined space for children, located in an underutilized green space, operates during designated times, maximizing accessibility and safety to minimize the risk of accidents.

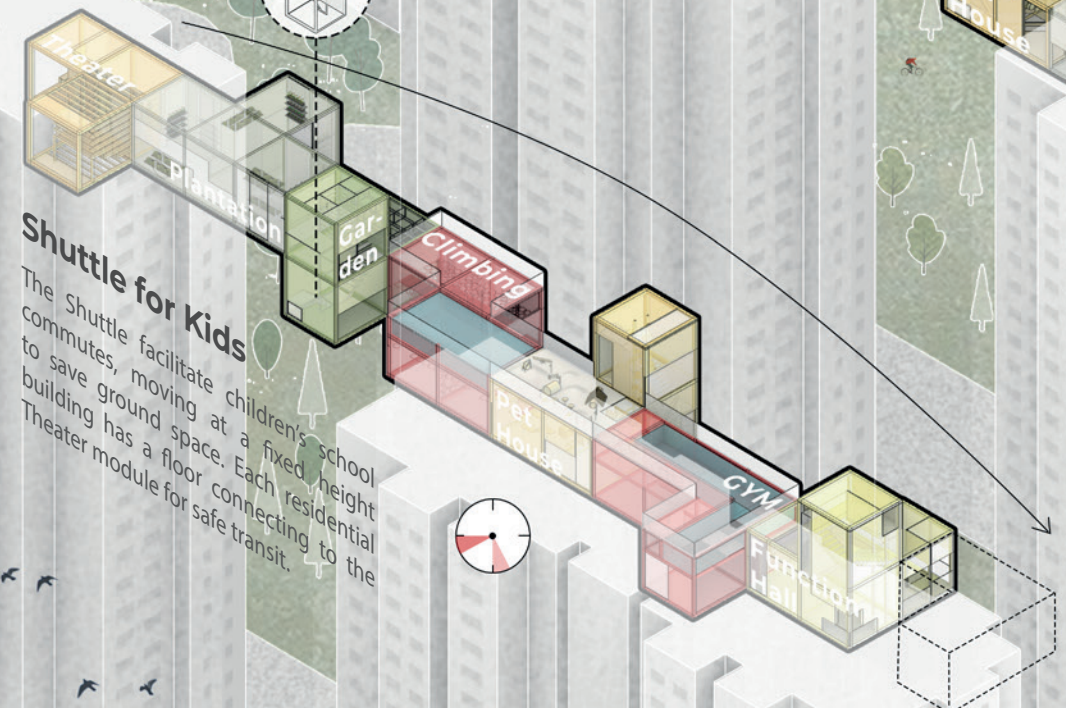
Labels: Climbing, Theater, Garden, Function Hall, Pet House, GYM.



Community Hub

This public space connects to the community center via the Theater module at fixed times, serving as an extension of the community's existing public areas.

Labels: Climbing, Garden, Theater, Function Hall, Pet House, Plantation, GYM.



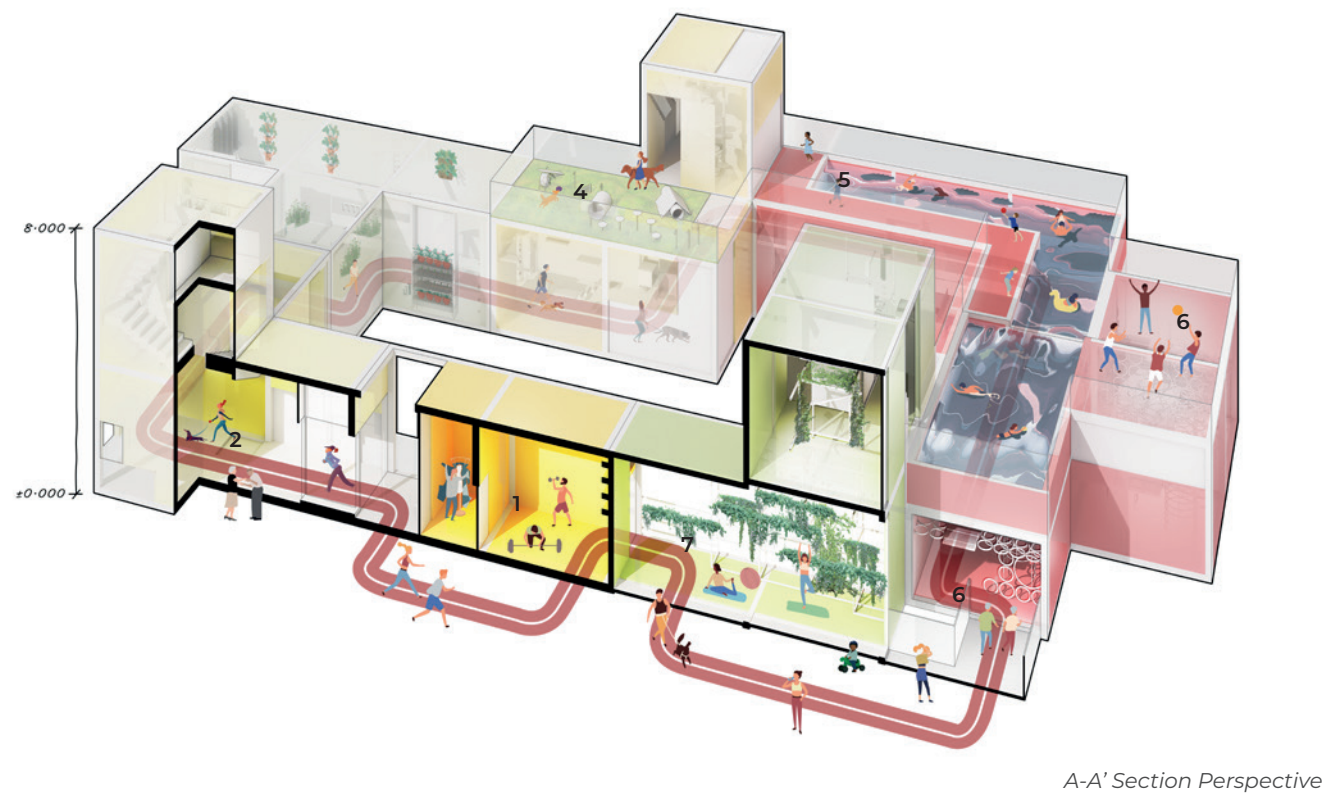
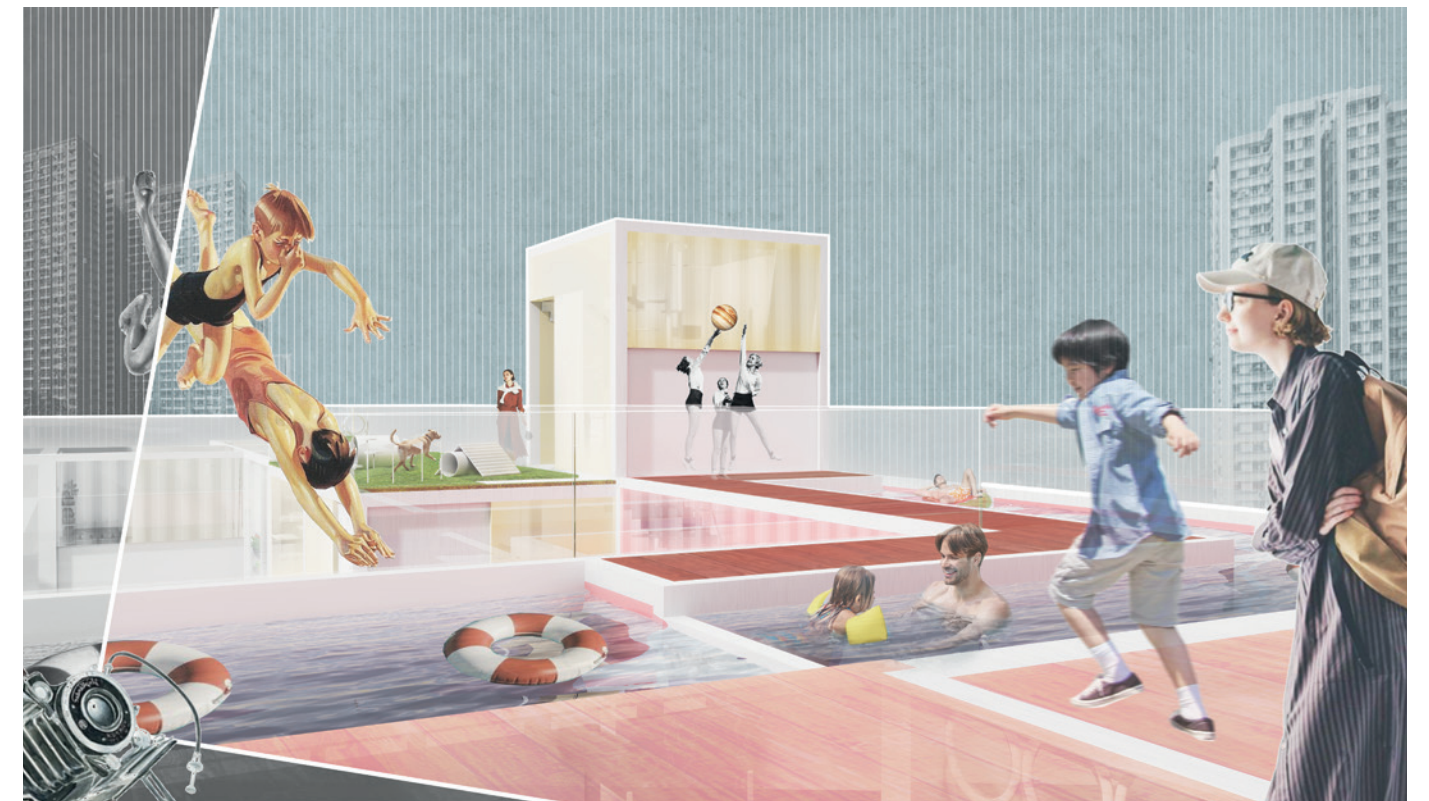
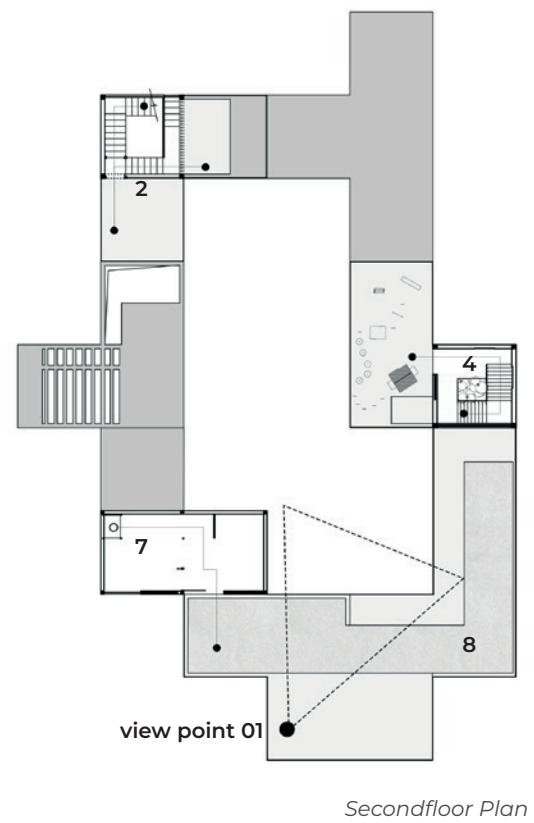
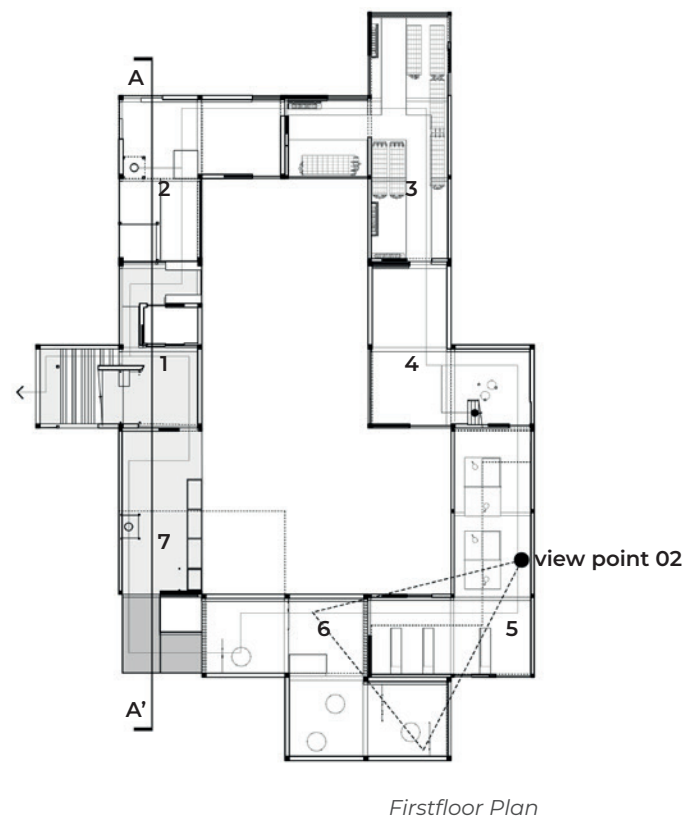
Shuttle for Kids

The Shuttle facilitate children's school commutes, moving at a fixed height to save ground space. Each residential building has a floor connecting to the Theater module for safe transit.

Labels: Theater, Plantation, Garden, Climbing, Pet House, GYM, Function Hall.

ADAPTING TO SERVE AND ENRICH COMMUNITIES

The seven basic modules are designed to create flexible public spaces based on the community's daily needs. A schedule developed by residents will direct their movement and configuration. For instance, a shuttle will transport children between residential buildings and the school. In the mornings and afternoons, a space for the elderly will circulate, offering exercise and social areas. After school, a children's playground will be set up in vacant lots for safe play. Later, an exercise area for all family members will connect to the Community Commons. At night, the modules will compact into a resting configuration, ready for the next day's activities.

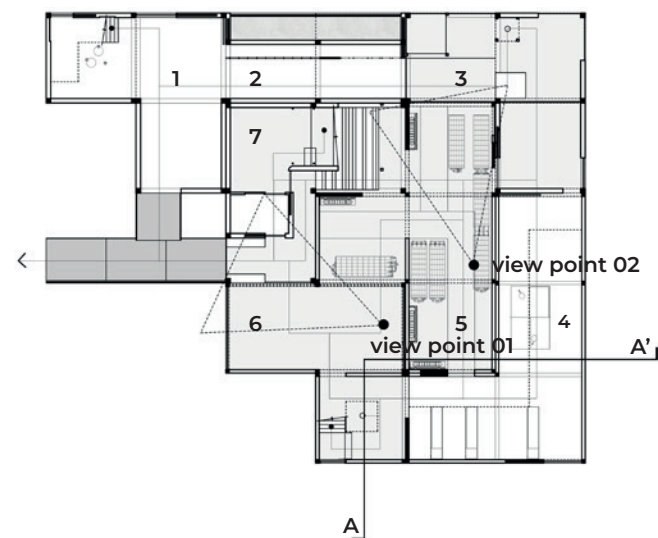


RING-SHAPED PUBLIC SPACE: COMMUNITY HUB

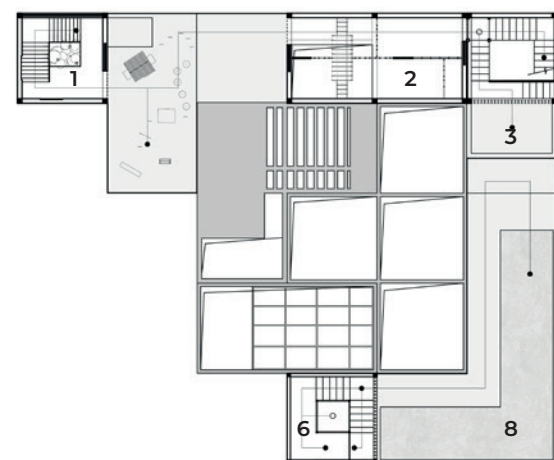
Inspired by a circular design, this public space includes a runway, pool for water activities, and a pet terrace, promoting fitness, well-being, and community bonding for pets and owners.



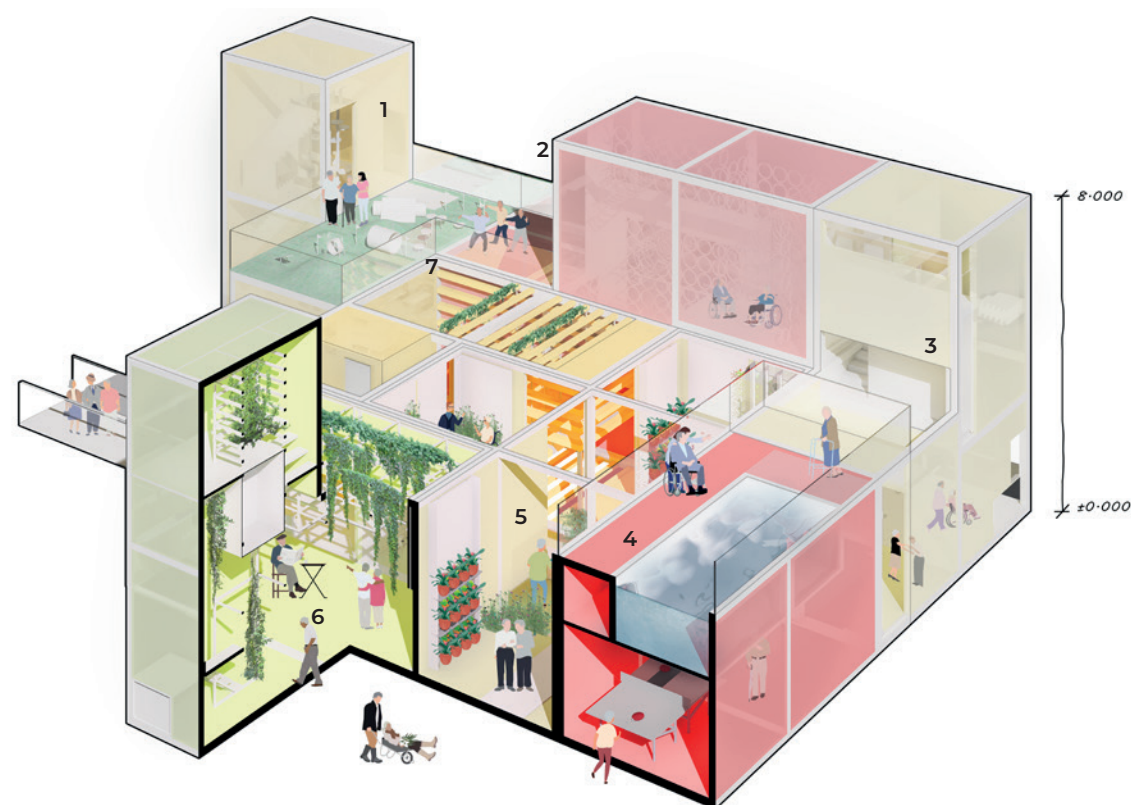
(above) Perspective View from View Point 01
(below) Perspective View from View Point 02



Firstfloor Plan



Secondfloor Plan



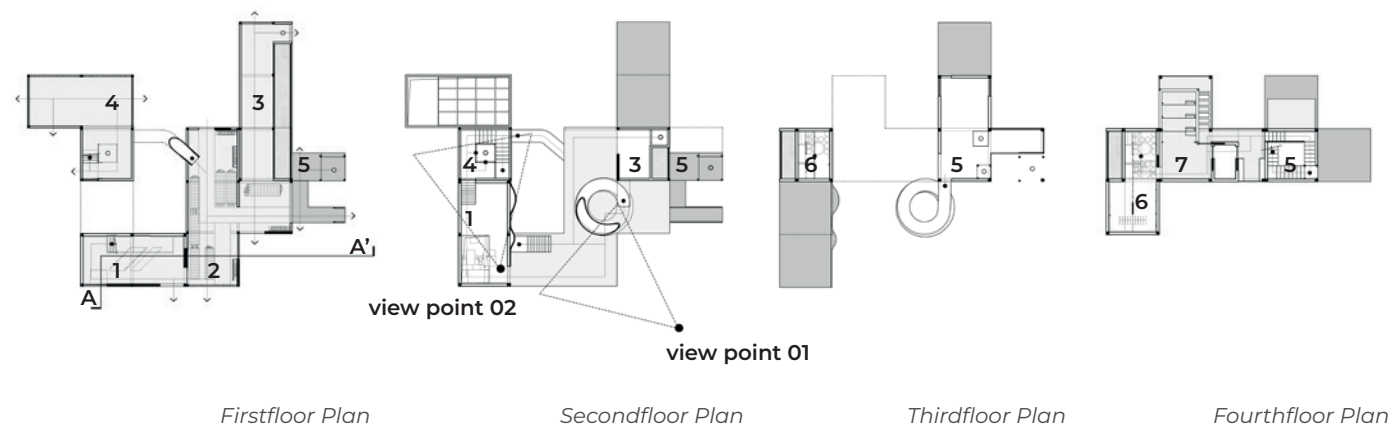
A-A' Section Perspective

PLANE MODELED SPACE: SENIOR CENTER

Inspired by a traditional Chinese courtyard, this space features a central park with Garden, Theater, and Plantation modules, while surrounding modules provide secure indoor spaces for elderly socialization and exercise.



(above) Perspective View from View Point 01 (XU Yiwen)
(below) Perspective View from View Point 02 (XU Yiwen)



A-A' Section Perspective

BODY-MODELED SPACE: CHILDREN'S PLAYGROUND

This three-dimensional space revitalizes an unused lot, offering open entry, diverse transport options, and a rotating Theater module, creating a safe, engaging environment that boosts children's physical and mental well-being.



(above) Perspective View from View Point 01 (SHEN Yanting)
(below) Perspective View from View Point 02 (SHEN Yanting)