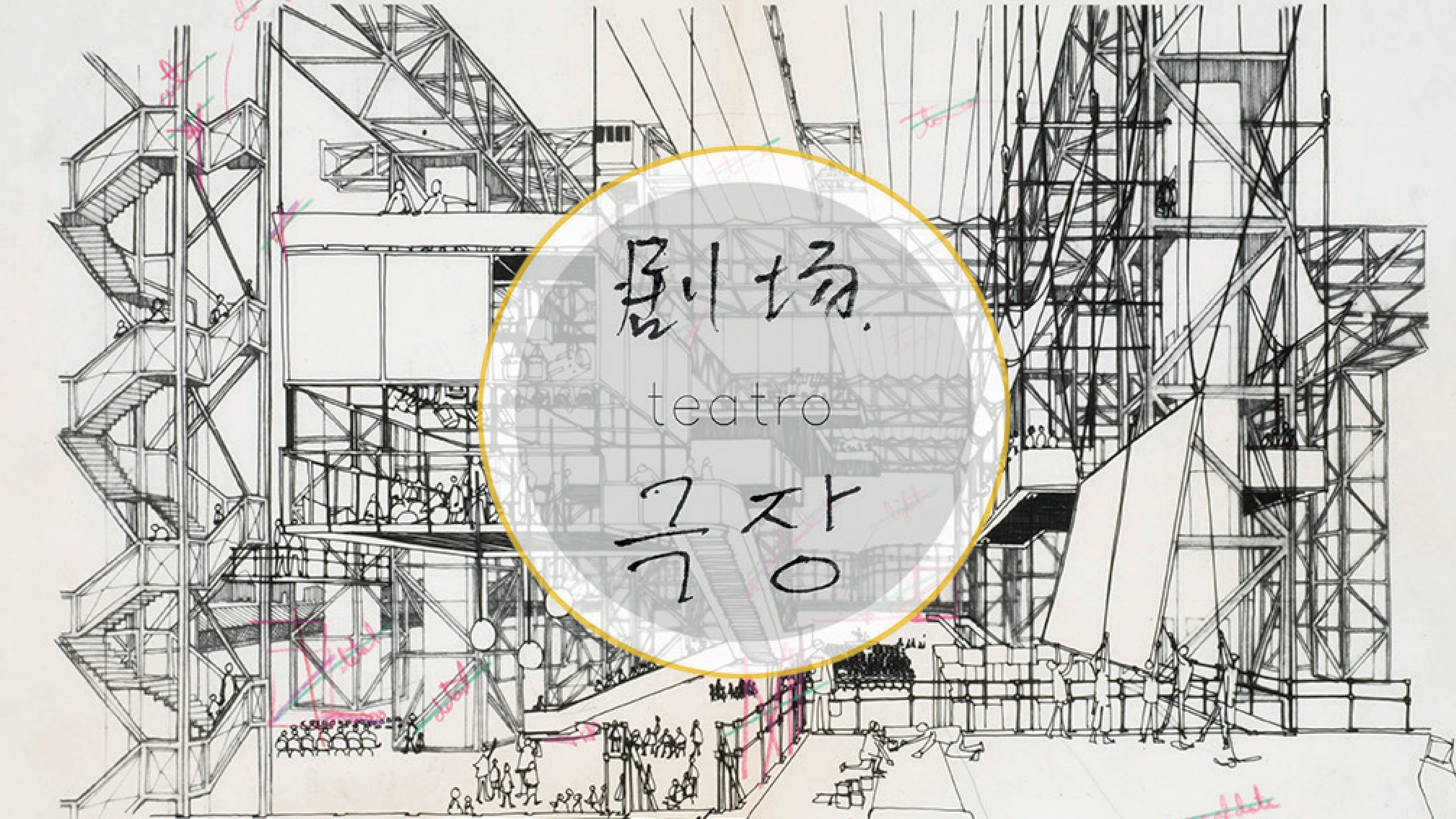


An architectural sketch of a theater building, featuring a complex, multi-level structure with a prominent staircase on the left and a large, open space on the right. The sketch is rendered in black lines on a light background, with some areas highlighted in pink and green. A large, semi-transparent yellow circle is overlaid in the center, containing the text '劇場' (Theater) in Japanese, 'teatro' in Italian, and '7 자 0' in Korean. The background shows a detailed view of the building's interior, including a large hall with a stage and a large, open space with a high ceiling. The sketch is signed 'J. J. J.' in the top right corner.

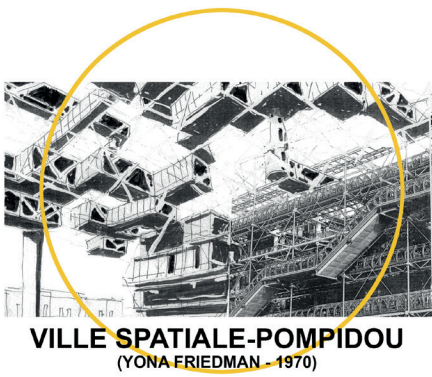
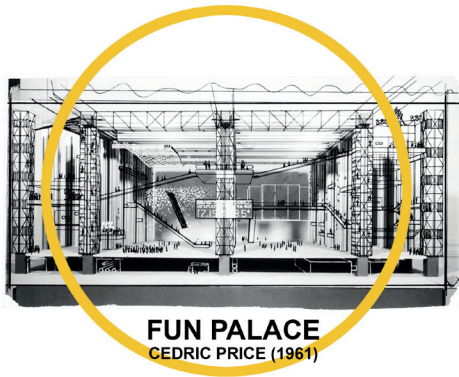
劇場.

teatro

7 자 0

Our design takes the notion of theatre, via Joan Littlewood & Cedric Price’s Fun Palace, as a way to provide flexible & accommodating net-zero energy housing. The theatre offers a space that welcomes others that is both adaptive and resilient.

ZEMCH
WORKSHOP-2018
GROUP - D



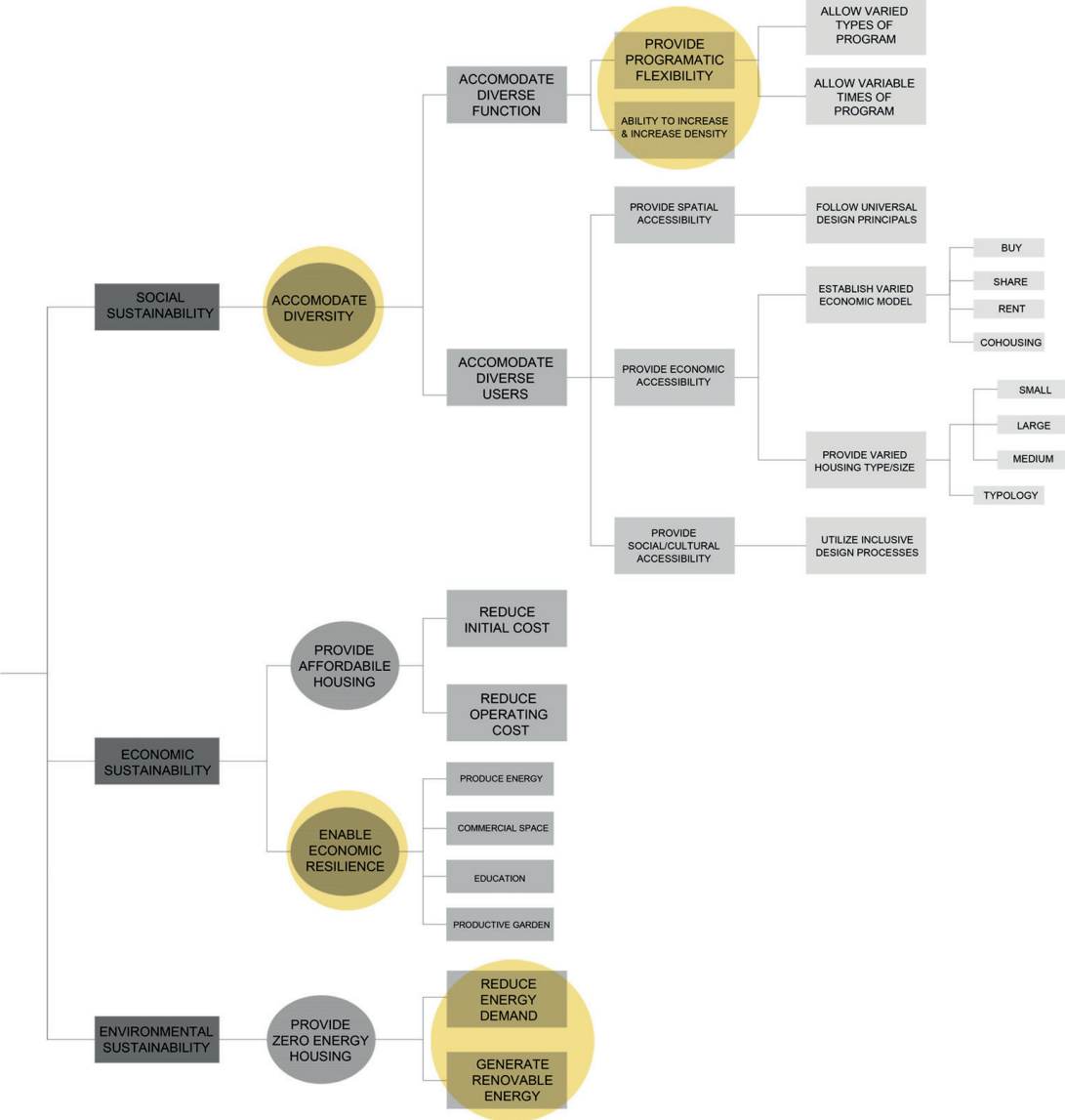
THEATRE
BACKSTAGE
+
STAGE
+
ACTORS
+
NARRATIVE



INSPIRATION
ZEMCH WORKSHOP 2018
GROUP D

Our theatre stage can provide a space for a large number and variety of actors/inhabitants across different times. Some people stay for a while and then leave, others come and go over months, weeks or even days. We welcome them all.

Functional Analysis System Technique



FAST ANALYSIS
ZEMCH WORKSHOP 2018
GROUP D

Using FAST we identified the scope of our design as well as key points to focus on.

Through our analysis of the brief we identified 4 key components in our design:

	A	B	C	D	E	F	G	H	I	J	K	L	M	TOT	%
VARIED TYPES OF PROGRAM	A													10	7,2
VARIED TIMES OF PROGRAM	B	B ₁												10	7,2
INCREASE DENSITY	C	C ₂	B ₂											8	5,8
UNIVERSAL DESIGN	D	D ₂	D ₂	D ₁										8	5,8
VARIED ECONOMIC MODELS	E	A ₂	B ₃	C ₁	D ₁									6	4,3
INCLUSIVE DESIGN	F	F ₂	B ₂	C ₂	F ₂	E ₃								8	5,8
VARIED HOUSING TYPES	G	A ₃	G ₂	G ₂	D ₁	E ₂	G ₂							15	10,7
VARIED HOUSING SIZE	H	A ₃	H ₁	C ₂	D ₁	E ₁	F ₂	G ₃						3	2,1
REDUCE INITIAL COST	I	I ₃	I ₁	C ₁	I ₁	I ₂	I ₁	G ₂	I ₁					10	7,2
REDUCE OPERATION COST	J	J ₃	J ₁	J ₁	J ₂	J ₂	J ₁	J ₂	J ₂	J ₃				19	13,8
ECONOMIC RESILIENCE	K	K ₃	K ₁	K ₃	K ₂	K ₃	K ₂	G ₂	K ₁	I ₂	J ₁			16	11,6
REDUCE ENERGY DEMAIND	L	A ₂	B ₂	L ₂	L ₁	L ₃	F ₂	G ₂	H ₂	L ₂	L ₁	K ₁		9	6,5
GENERATE RENEWABLE ENERGY	M	M ₂	M ₁	M ₂	M ₁	M ₁	M ₁	G ₁	M ₂	M ₁	J ₁	M ₁	M ₃	16	11,6
														138	
SLIGHTLY IMPORTANT	X ₁														
IMPORTANT	X ₂														
VERY IMPORTANT	X ₃														

10.8%

PROVIDE VARIED HOUSING TYPES FOR A WERY WIDE TARGET OF USERS

13.7%

PROVIDE A LOW COST HOUSING COMPLEX CHARACTERIZED BY A LOW OPERATIONAL COST OF EACH UNIT

11.6%

DESIGN A MULTIFUNCTIONAL COMPLEX CHARACTERIZED BY ECONOMIC AND ENERGETIC RESILIENCE

11.6%

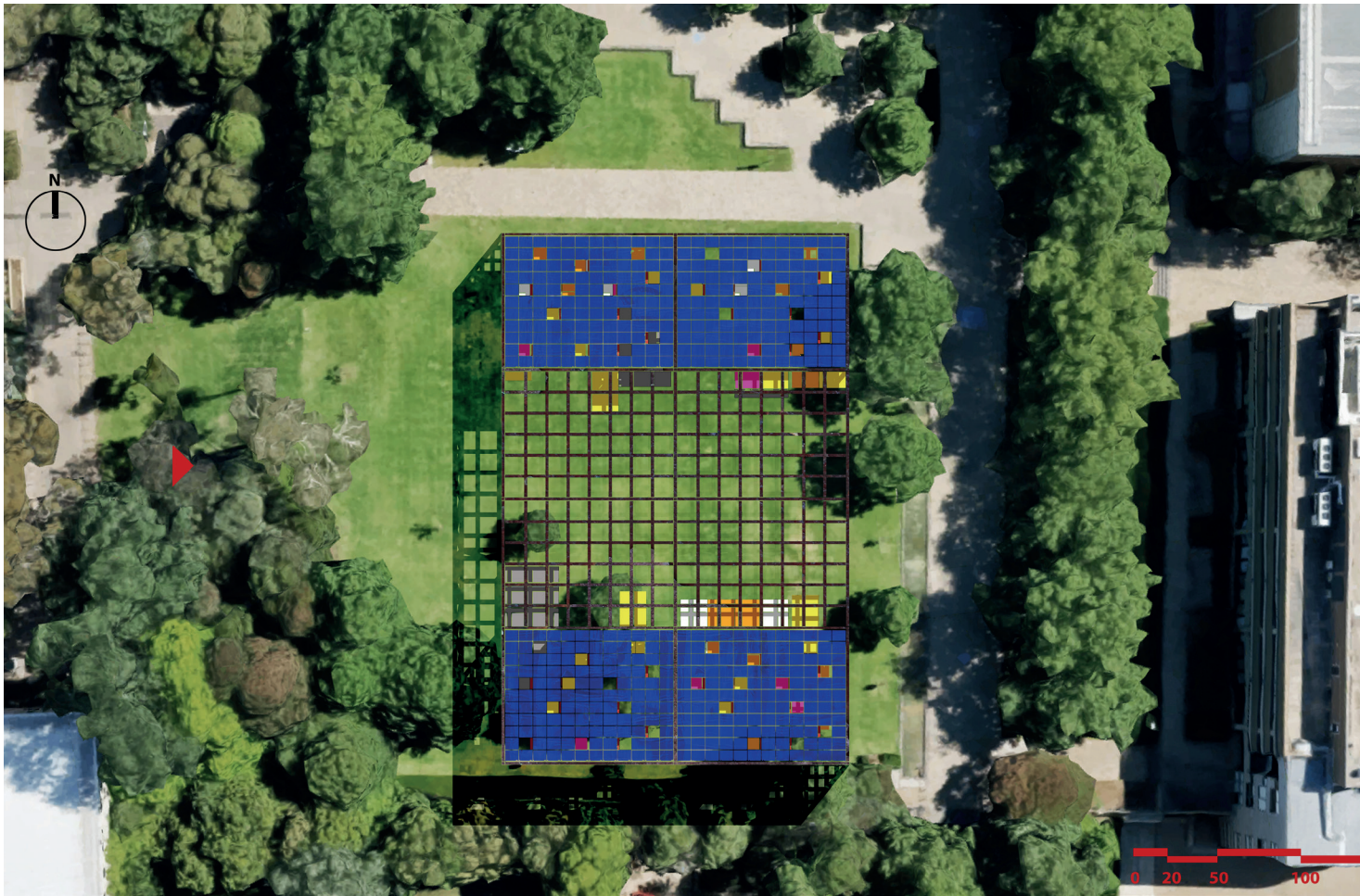
GENERATE RENEWABLE ENERGY

DESIGN CODE

ZEMCH WORKSHOP 2018
GROUP D

The weighted analysis results formed the basis for our design code, enabling us to focus on what is important to the design, and how to achieve it.

The Site contains existing trees, some water and good northern solar access



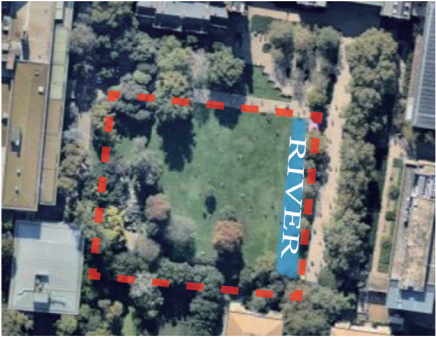
Solar track



Planting



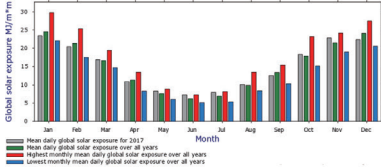
River



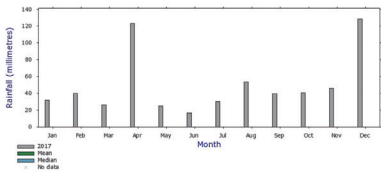
Circulation



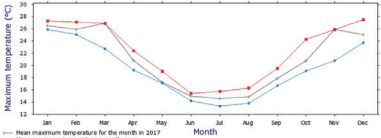
Melbourne 2017
Solar exposure



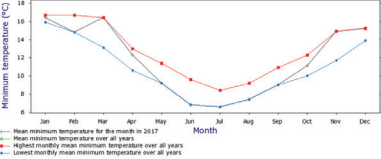
Melbourne 2017
Rain fall (millimetres)



Melbourne 2017
Maximum temperature



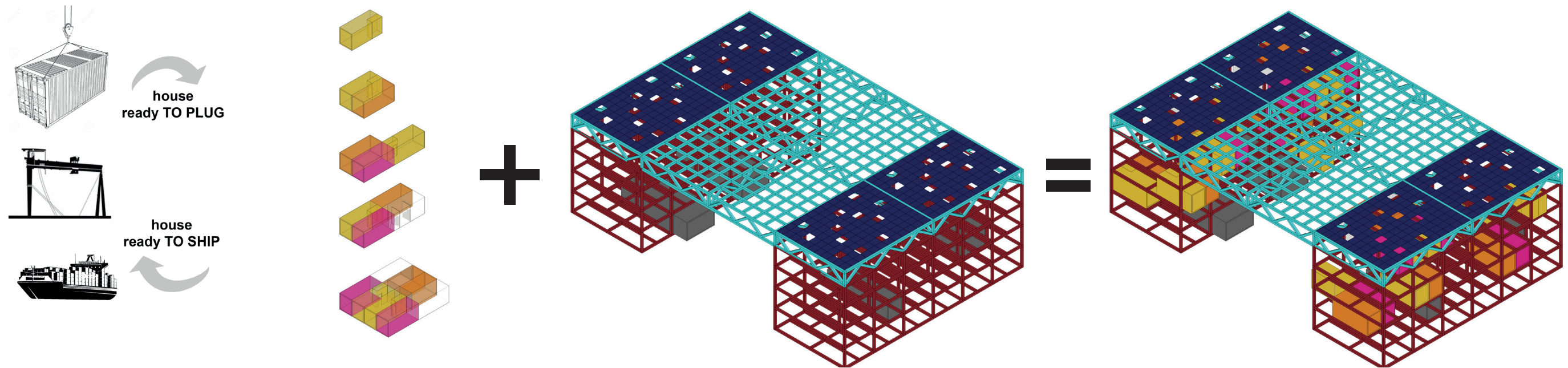
Melbourne 2017
Minimum temperature



SITE
ZEMCH WORKSHOP 2018
GROUP D

Our analysis of the site included local climate data and led us to focus on both solar shading and passive techniques as well as good insulation for colder times.

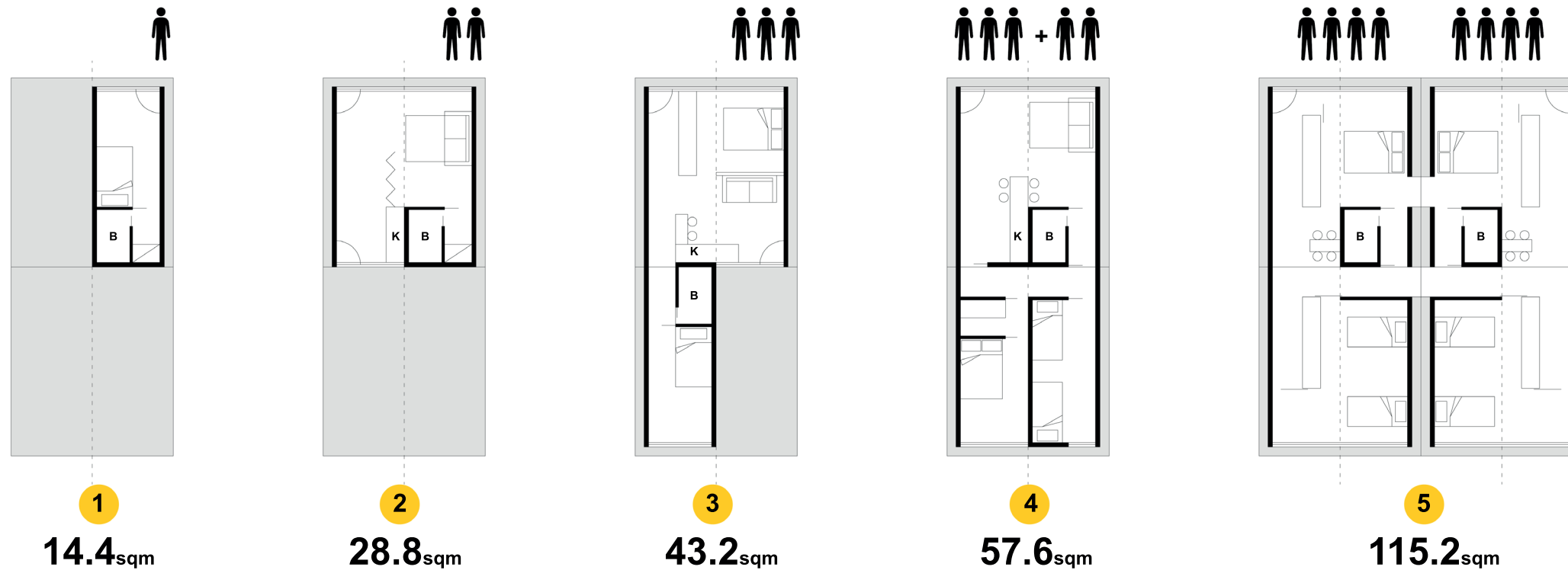
The Stage is a frame or super-structure that can accommodate various combinations of shipping-container sized housing.



STAGE
ZEMCH WORKSHOP 2018
GROUP D

The frame can re-configures the social spaces around each house. The housing modules have the capacity for physical change (change the scenery), while the occupants can come and go over different times (change the actors).

The modular nature of the houses and their relationship to the frame allows for both a universal standard of modules and components as well as a variety of options of size and form, including single, couples, families or dorms.



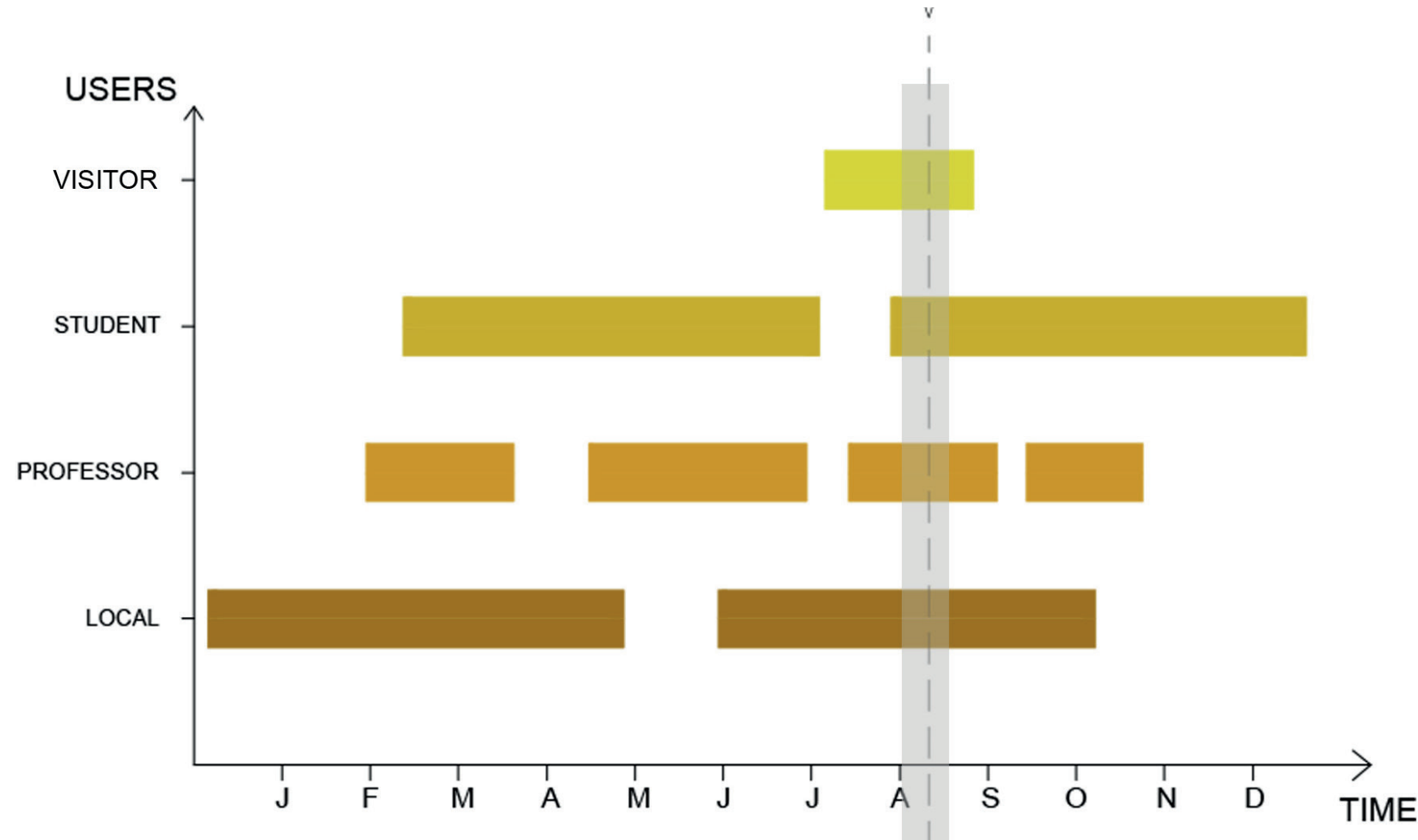
With the change of the time and the flexibility of the combination of container, the layout of the plan is diversity and the construction of the users in the building is also diversity.



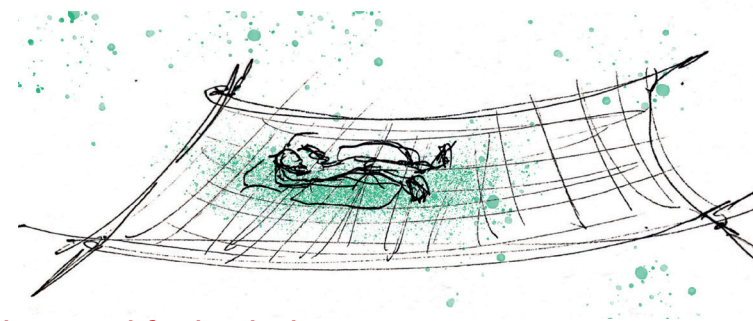
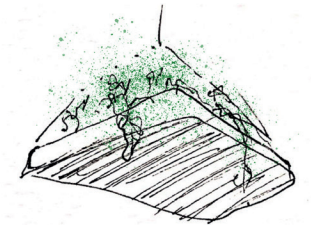
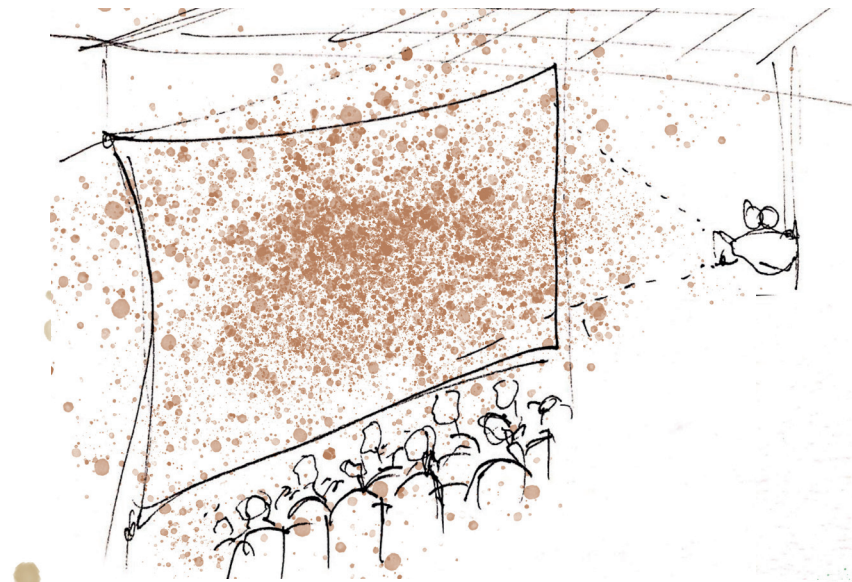
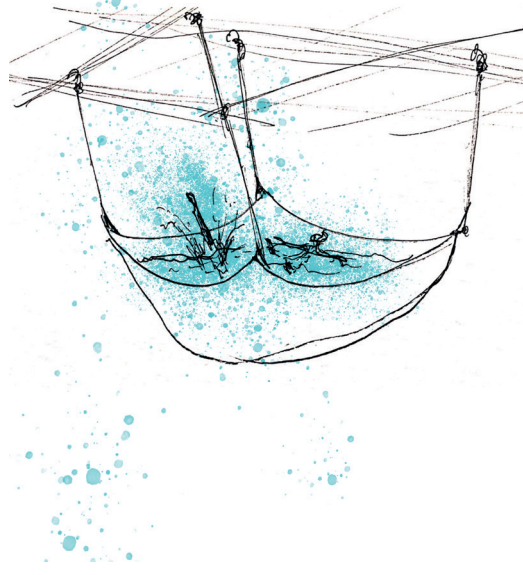
COMBINATIONS
ZEMCH WORKSHOP 2018
GROUP D

The configurations allow for both open and green space adjacent to each module, so as to create shared spaces between neighbours and allow for light penetration into the design.

The range of users over time is flexible, some people may stay for 1 week, 1 month or years. In addition, different users may require different housing types. The plug-in modules allow for these combinations in both time and space.



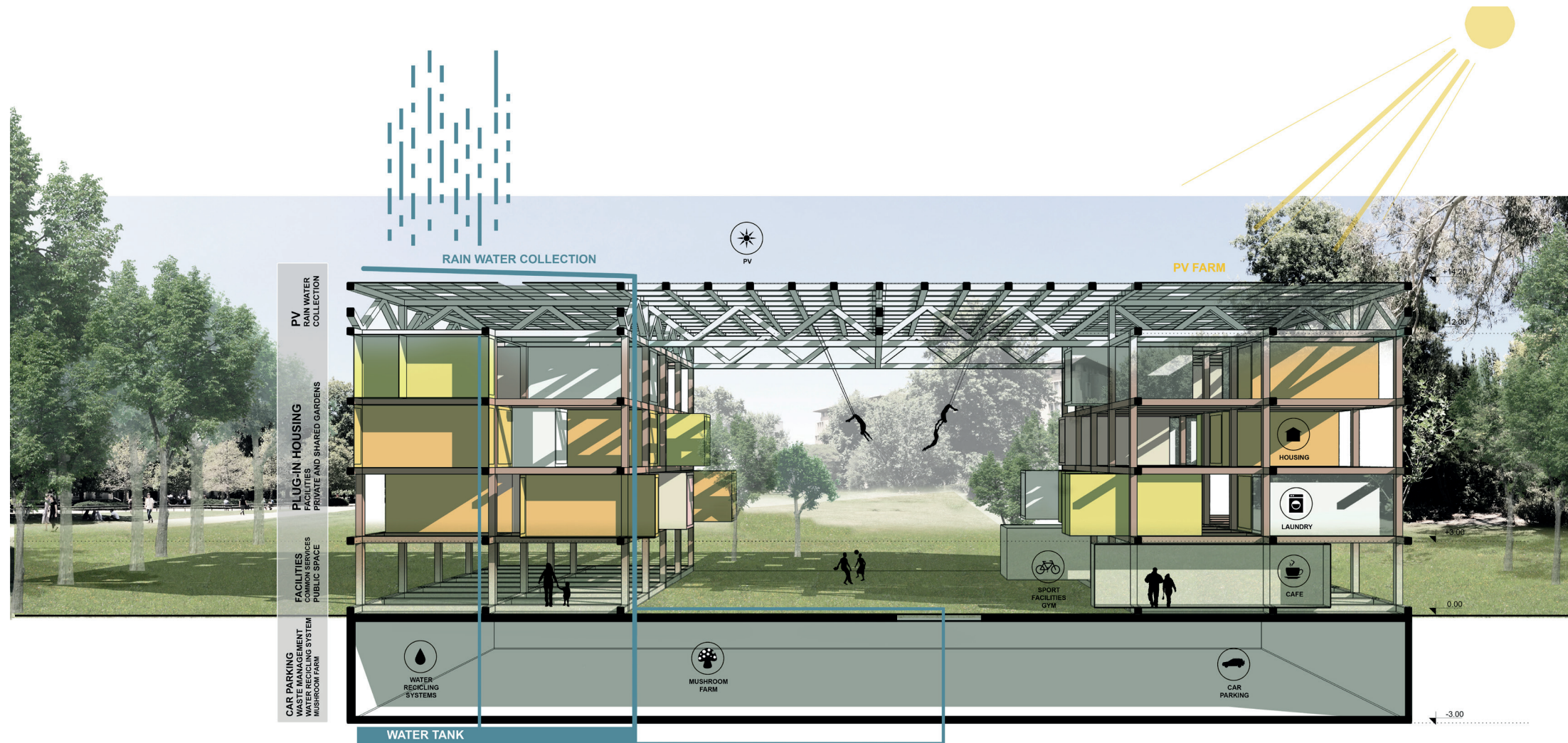
The spaces in between are perhaps the most programmatically flexible; the strage-rig above can hang gardens, flying trapeze or swings, cinema screens, hammocks or swimming pools.



FLEXIBLE PROGRAM
ZEMCH WORKSHOP 2018
GROUP D

The flexibility of program of the stage is a cultural drawcard for both the residents and the area. Fun Palace events are now run internationally in October since 2013 as social exchanges around people, art and science.

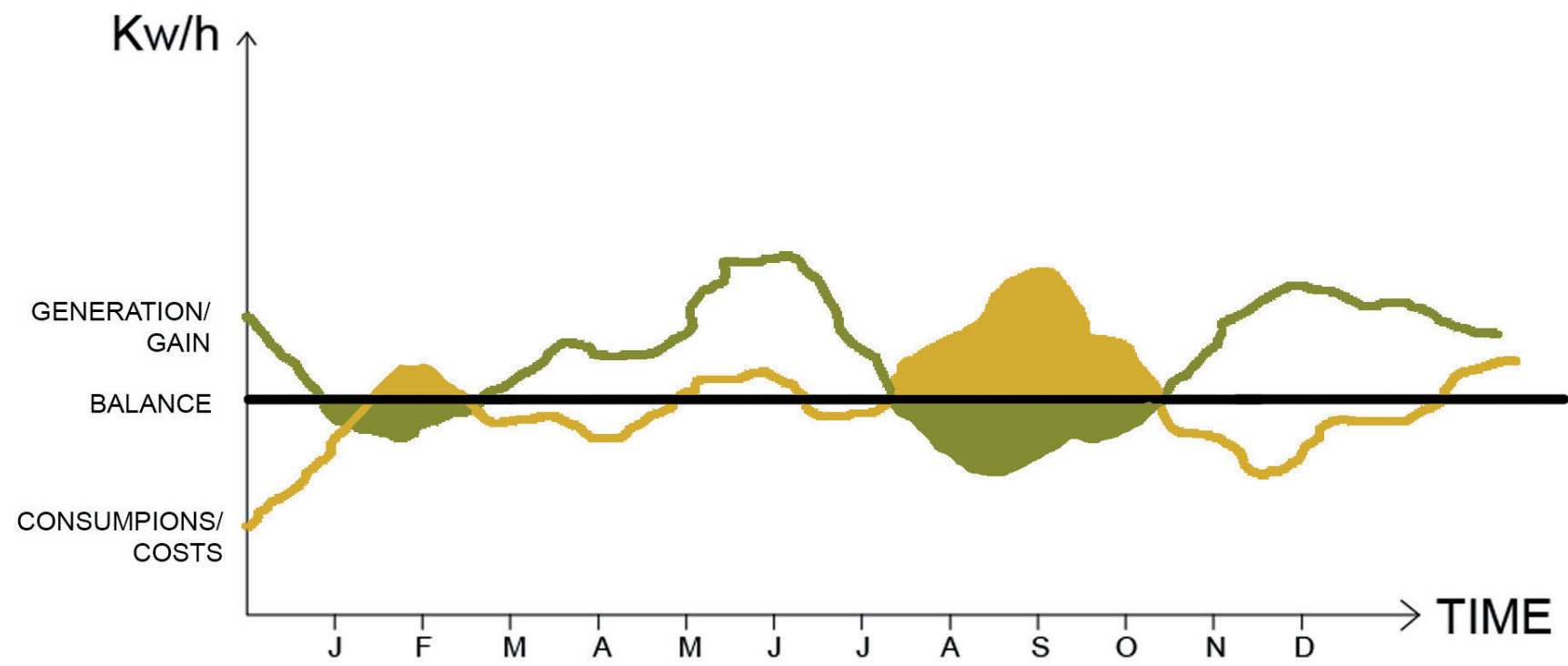
The shared and common facilities are a permanent part of the design on the ground floor. These include communal kitchen, laundry, studios and workshops and community halls.



SHARED SPACE
ZEMCH WORKSHOP 2018
GROUP D

Included in the permanent spaces are facilities for water treatment, underground mushroom farms and deep composting biomass generators, geothermal heat exchange and other shared plant machinery.

Economic resilience is about our systems ability to accommodate change without loss of quality. In this case change is the number of residents and length of their residence, and quality is the ability to provide a sufficient baseload of renewable energy to meet demand.

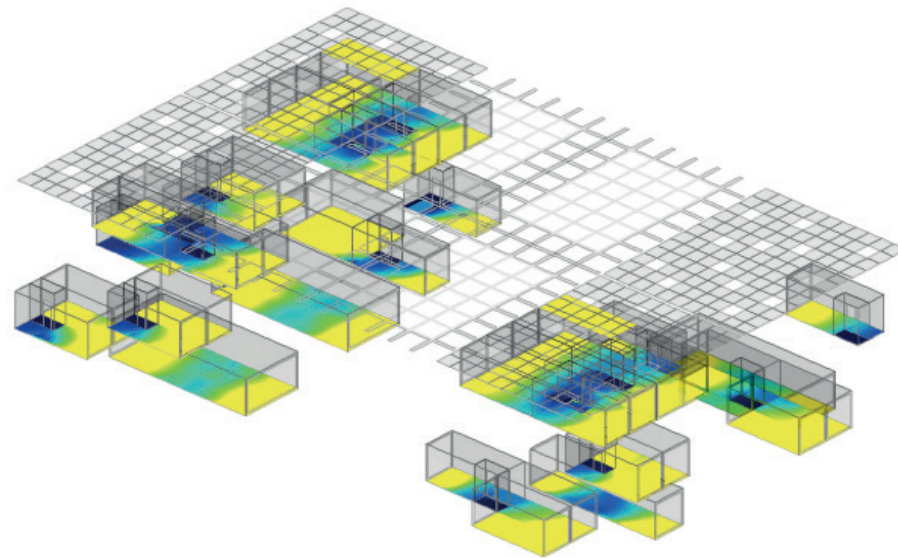


ENERGETIC AND ECONOMIC RESILIENCE ● + ● = 0

RESILIENCE
ZEMCH WORKSHOP 2018
GROUP D

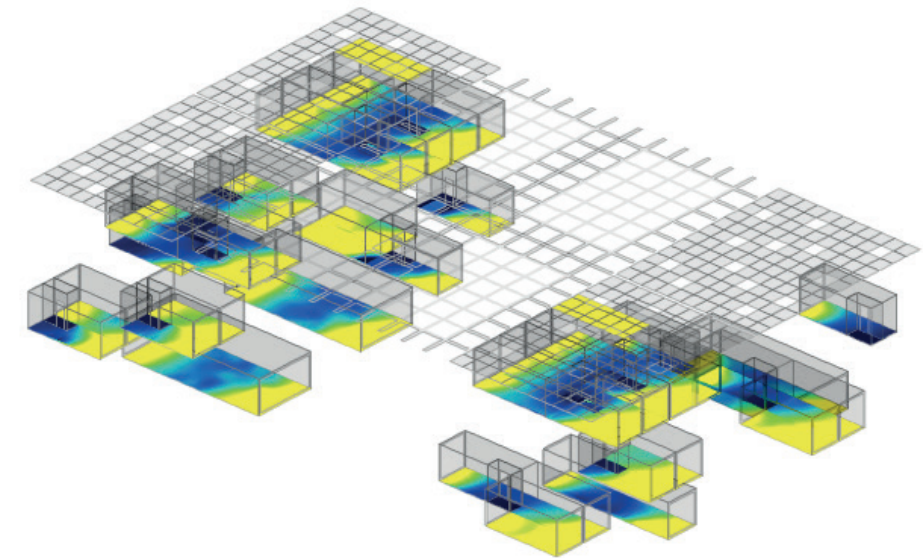
This economic and energy resilience is achieved through a combination of passive and active systems that balance the energy consumption and energy demands of the Theatre over the course of a year

The Daylighting situation analysis in two different seasons, summer (Jan 25th), winter (August 15th).



Percentage of occupied hours where illuminance is at least 28 footcandles, measured at 0.85 meters above the floor plate.

0% 25% 50% 75% 100%



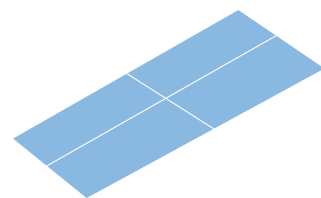
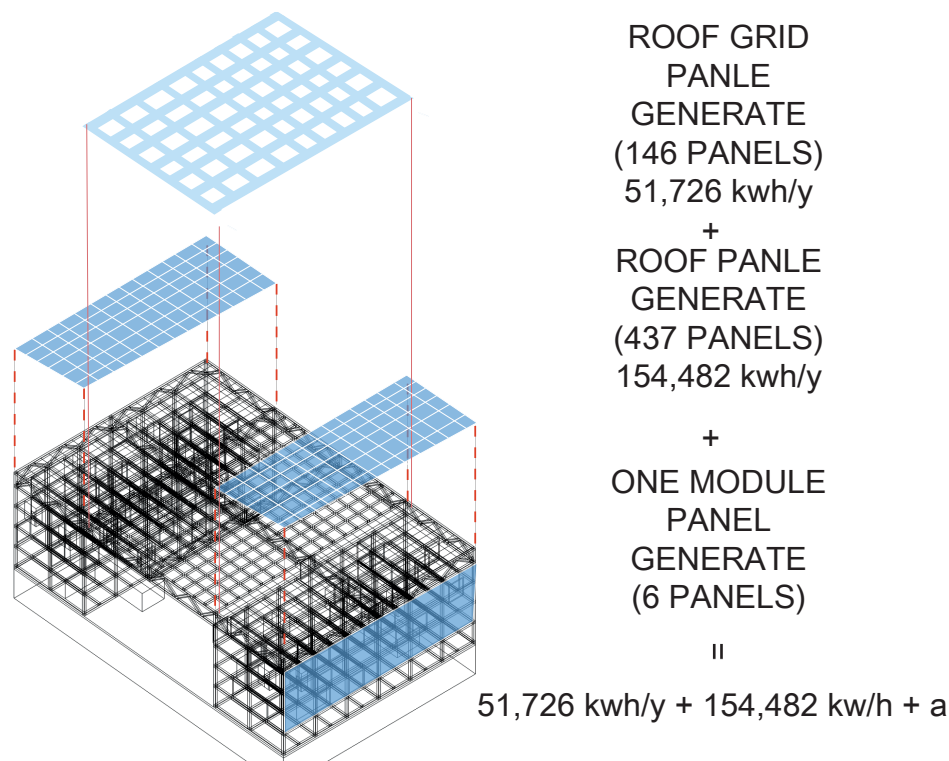
Footcandle levels on August 15 at 3PM measured at 0.85 meters above the floor plate. Time does not take into account daylight savings time.

0 19 37 56 74+

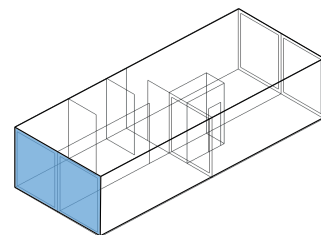
DAYLIGHT
ZEMCH WORKSHOP 2018
GROUP D

While the stage can be filled to 100%, for example during emergency relief, the load capacities are kept between 50% and 75% so as to keep outdoor green and open space between neighbours.

active: PV farm on roof that provides significant baseload. Additional small scale BIPV in modules (on solar shades, western sides).
In addition there are options of micro-hydro, biomass, micro-wind available on site as well



ONE PANEL GENERATE
- 1.6 sqm
- 28 DEGREE
= 354 kwh/y



ONE MODULE PANEL (NORTH) GENERATE
- 1.6 sqm
- 90 DEGREE
=232 kwh/y

