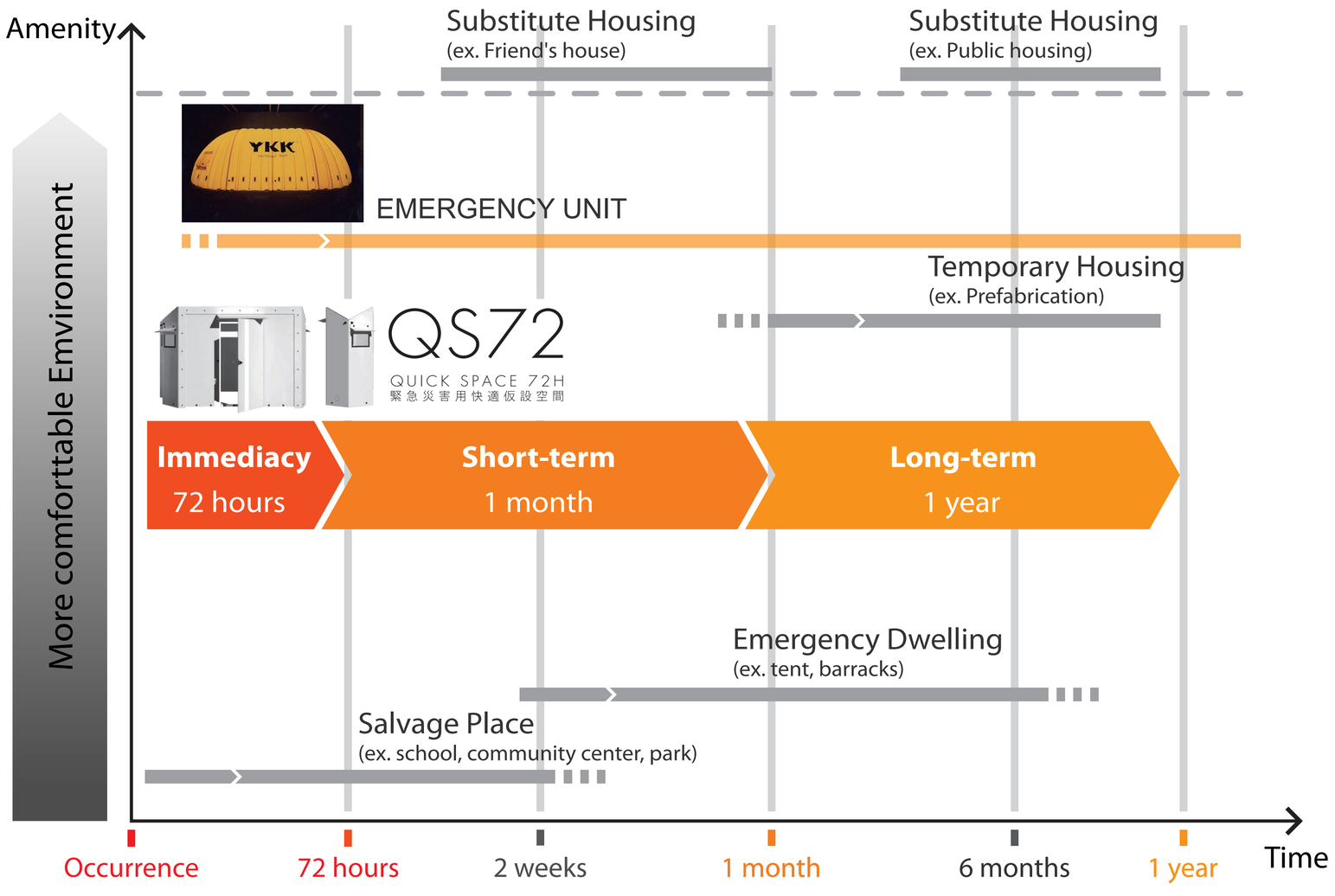
Proposal of Temporary Comfortable Space For Mental Care

1 concept

Proposal for temporary comfortable space serve immediately after disastars

"QS72" is a portable architecture served as comfortable space with a floor, wall and ceiling while constructing temporary housing after disaster occurrence, aiming for giving support to mental relief and safety of sufferers. Composing of polypropylene board is light weight, high durability and recyclability, it can be assembled quickly with no tools. It can supply from a single room to large-scale space such as meeting place and toilet with the growing system to connecting modules flexibly. Moreover, it can be used everywhere and for every situation in the daily life such as events and kiosk, exchanging the wall units.



QS72
QUICK SPACE 72H

Immediacy : 72 hours

Coping quickly with first 72 hours

Most important time after disaster occurrence

Short-term : 1 month

Coping with 1 month until moving into a temporary housing

Space of comfort and security for internal/external environment

Long-term : 1 year

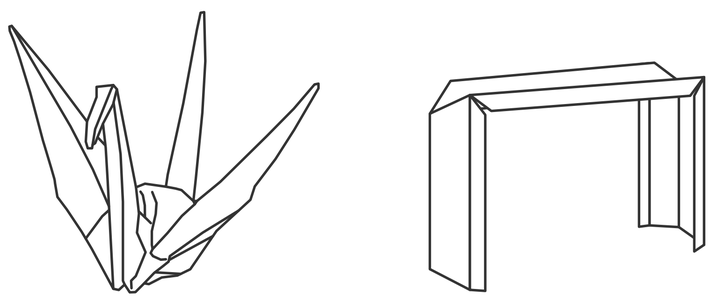
Coping flexibly with changes of living environment

Space of required various functions

Functional Property

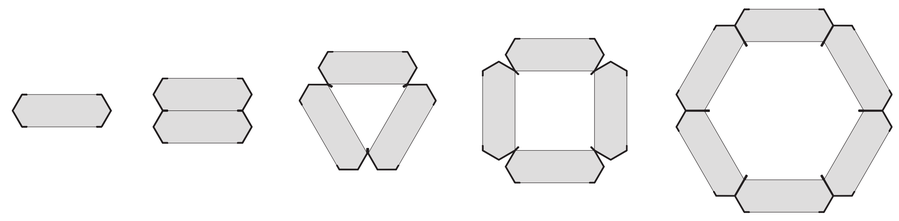
1 Folded Plate Structure

- Strong structure with folded plate like "ORIGAMI".



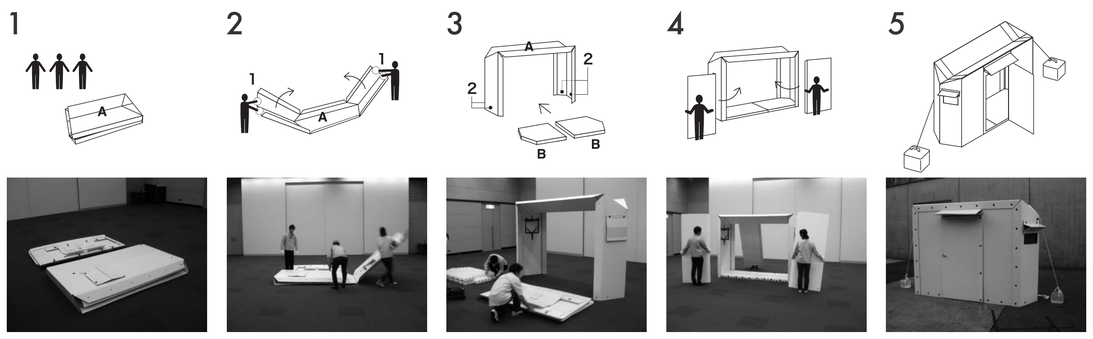
2 Multiplication, Metabolism, Flexibility

- Developement from a single unit to large-scale space.
- Assembling, storing and substituting with ease.
- Minimum storing and carrying , maximum expansion in use.



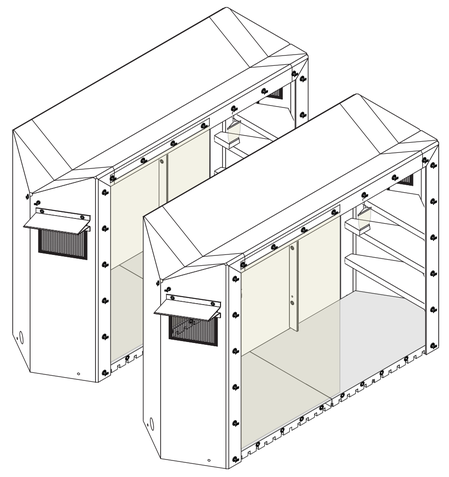
3 Simple Handling

- Toolless
- Easy assembling system
- Dividing into pieces when carrying
- Lightness



4 Extension of functions

- Easiness for partitioning and space expansion



QS72
QUICK SPACE 72H
緊急災害用快適仮設空間

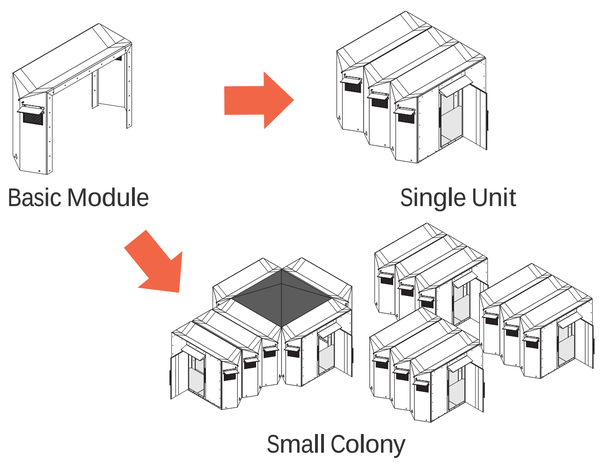
Comfortable Liveability and Linked Local System for the Prevention of Disasters

2 development

Realization of comfortable liveability and linked local system for the prevention of disasters

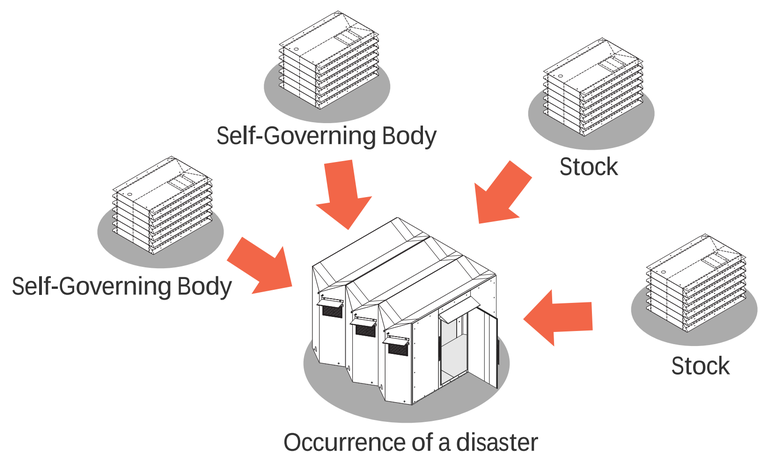
"In the extraordinary, design has to be required"
QS72 has been developed with practice of this principle. By the expansion system with minimum elements, it can be structured from the single unit to the small colony flexibly with maximum results. It has been planned as a social system to supply QS72 from the disaster prevention shelter base in each local area, realizing comfortable liveability with some properties such as safekeeping, lightweight and toolless assembly.

1. Developing system by minimum elements



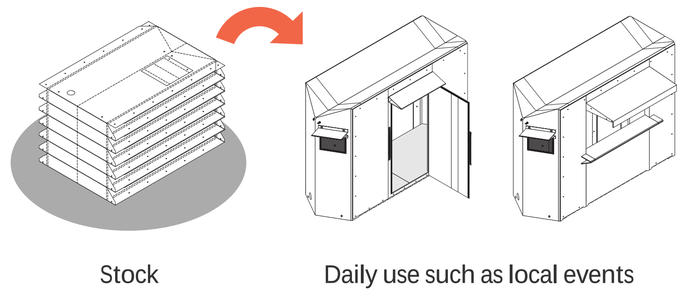
- Various possibility of expansion

2. Stock and supply system of the disaster prevention shelter base in each local area.



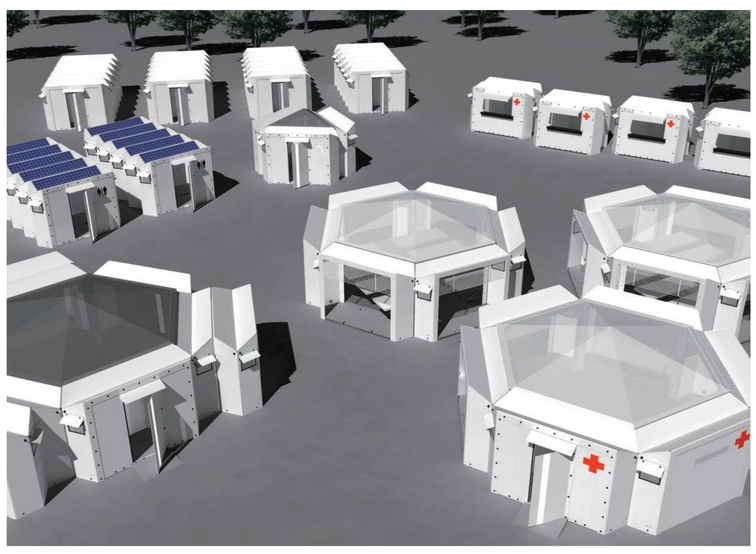
- System as social property
- Sharing stock cost

3. Changing the extraordinary into the usual

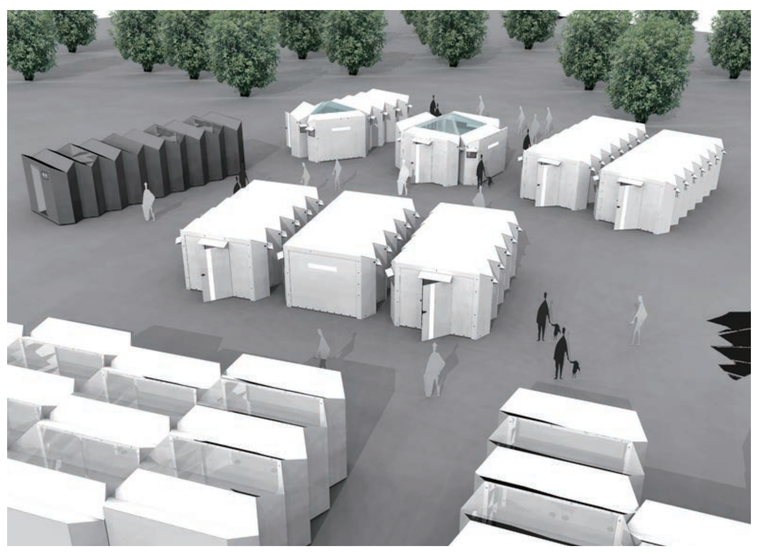


- Improving awareness and skill for disaster
- Multipurpose use

Quick correspondence and various development since disaster occurrence

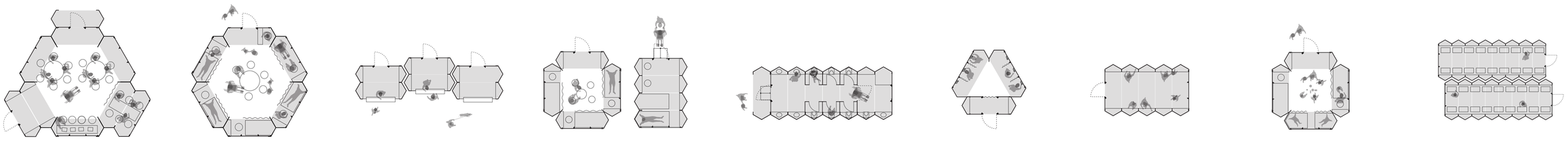


1. Medical base capable of quick development



2. Community formed by the temporary space

3. Guarding privacy of sufferers



Study of medical base by the Red Cross in Japan

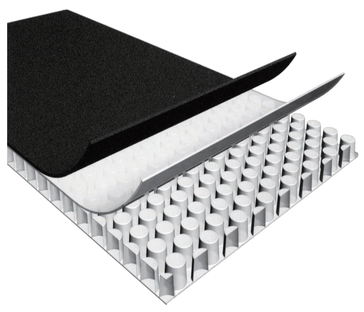
2010.6.18-20 55th JSTD (Exhibition at Red Cross hospital in Kumamoto)

2010.6.18-20 55th JSTD (Exhibition at Red Cross hospital in Kumamoto)

While temporary space, it serves maximum relief and safety

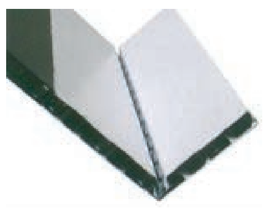
3
specification

Material performance



Polypropylene board *"Pla-parl"*®

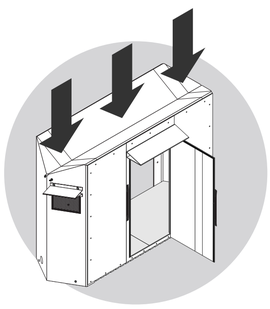
Shelter is composed of high recyclability material.



Bending by heated ruled line.
※Comfirming durability for 20,000 times bending.

Characteristics	Light and strong polypropylene board. It is composed of column formed board(called "cap") sandwiched between polypropylene seats.
Material	Polypropylene
Lightness	The weight is about a quarter of a veneer board with equal thickness
High rigidity	Good at bending stiffness and elasticity
Shock absorption	Good shock absorption by hollow structure
Adiathermancy	Adiathermancy is twice as good as a venner board with equal thickness
Waterresisting	Good water resistance and waterproof
Chemical Resistance	Strong in deterioration by chemicals
Fire prevention	Applying for authorization of fire-proof to JFRA (Japan Fire Retardant Association)
Recyclability	Not generating any poisonous gases like dioxin and hydrogen chloride. High recyclability and low environmental impact.

Performance by various verification



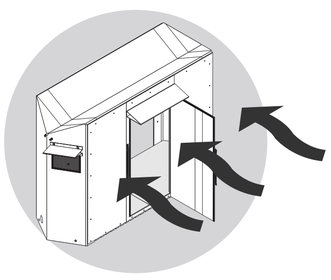
Verification of strength

Observating the behavior and the exsistence of break while loading sand bags is compared to snow. Load is considered as 300N/ per 10cm snow.

Performance to snow load

Comfirming the safety by 50cm snow load.

It has been verified that 50cm snow load (about 500kg) has not caused any destruction for QS72. Moreover, it has been safe for extra loading (240kg).



Verification of wind

Using wind blower with 2.5m square nozzle, wind endurabity test has been held on the front and the side.

Performance to wind

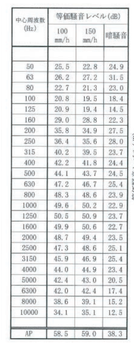
Front: Fixed wind velocity 17m/s,
Average wind velocity 12m/s

Side: Fixed wind velocity 20m/s,
Average wind velocity 18m/s

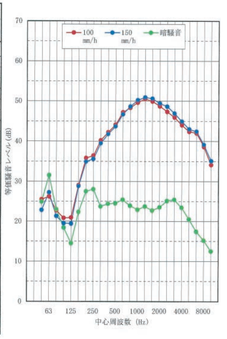
※ There are 60kg weights inside and the both side are tied with ropes.

Verification of water and noise

Installing QS72 in the artificial rainfall room, the water resistance and the noise by hitting on the roof has been measured.
• Rain strength is ranged 20〜150mm/h, closing all windows and door.
• Noise has been measured by the microphone on the center.



中心周波数 (Hz)	等価騒音レベル(dB)		
	100 mm/h	150 mm/h	暗騒音
50	25.5	22.8	24.9
63	26.2	27.2	31.6
80	22.7	21.3	23.0
100	20.8	19.5	18.4
125	20.9	19.4	14.5
160	29.0	28.8	22.3
200	35.5	34.9	27.5
250	36.4	35.6	28.0
315	40.2	39.5	23.7
400	42.2	41.8	24.4
500	44.1	43.7	24.5
630	47.2	46.7	23.4
800	48.3	48.6	23.9
1000	49.6	50.2	22.9
1250	50.5	50.9	23.7
1600	49.9	50.6	22.7
2000	48.7	49.4	23.5
2500	47.3	48.6	25.1
3150	45.9	46.9	25.4
4000	44.0	44.9	23.4
5000	42.4	43.0	20.5
6300	42.0	42.4	17.4
8000	38.6	39.1	15.2
10000	34.1	35.1	12.3
AP	58.5	59.0	38.3

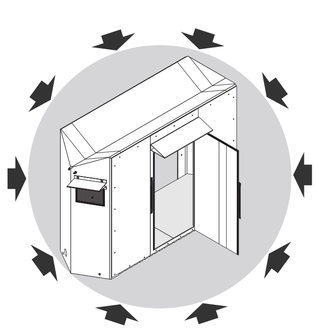


Performance to water

Good water resistance and waterproof

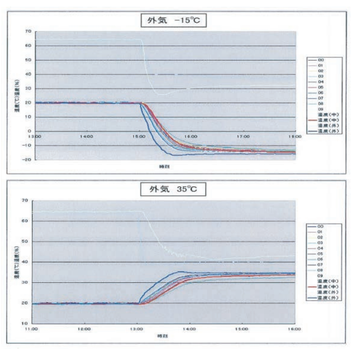
Performance for the noise at 150mm/h

Maximum 50.9dB 1250 Hz	60dB	Restaurant, Large shop, Conversation
	50dB	Noises in playhouse and movie theater
Minimum 19.4dB 125Hz	40dB	General residence(average)
	20dB	Sound of leaves passing



Verification of retaining warmth

Leaving QS72 in the low and high temperature environment and the changes of room temperature has been measured.
High temperature: 35 °
Low temperature:-15 °



Performance to retaining warmth

2 hours after, the difference of temperature between inside and outside is about 1 ° on both environment.
Adiathermancy is twice as good as a venner board with equal thickness.

QS72
QUICK SPACE 72H
緊急災害用快適仮設空間