



LATRA

BUILD THE WORLD BETTER

LATRA INNOVATION LAB



Field Research



Field Research

The LATRA INNOVATION LAB used Unmanned Airborne Vehicles to scan the entire KARA TEPE Hospitality Centre for Refugees and Migrants in the Municipality of Lesvos with the purpose of creating a High Definition 3D Navigation Model of the entire site. The model will be used to identify a series of conditions on the field that affect shelter and sanitation such as:

- The non-approved structures put up by residents of the hospitality centre that require replacing by regulated structures and approved materials
- Damage in WASH or other facilities
- Unregulated activities (ie trespassing) in the protected zones of the site

3D Modelling



3D scan of KARA TEPE Transit Camp

3D model of KARA TEPE Transit Camp

Field Research



Detail aerial of KARA TEPE Transit Camp

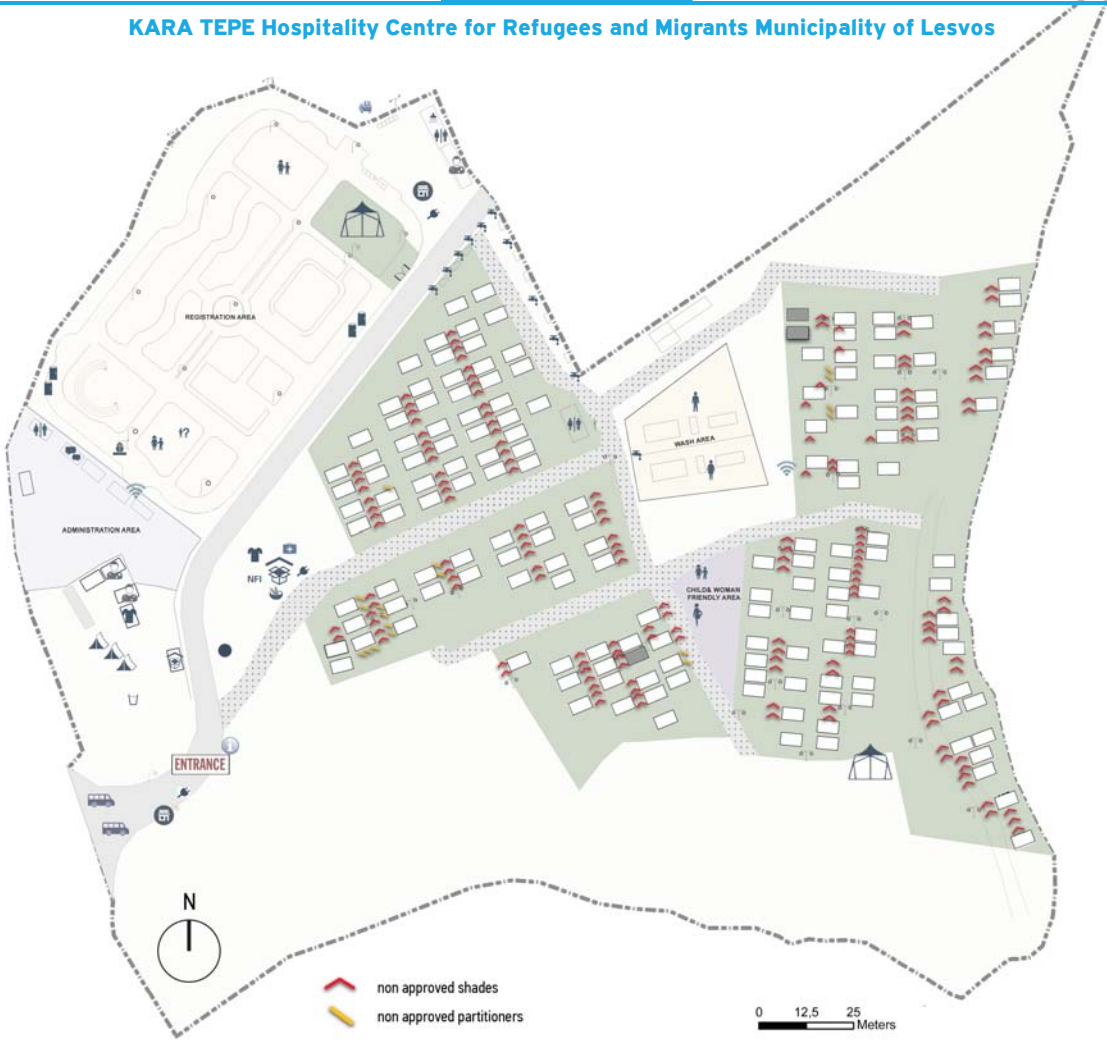
Problem Identification



Existing conditions in KARA TEPE Transit Camp

Field Research

KARA TEPE Hospitality Centre for Refugees and Migrants Municipality of Lesvos



Problem Statement

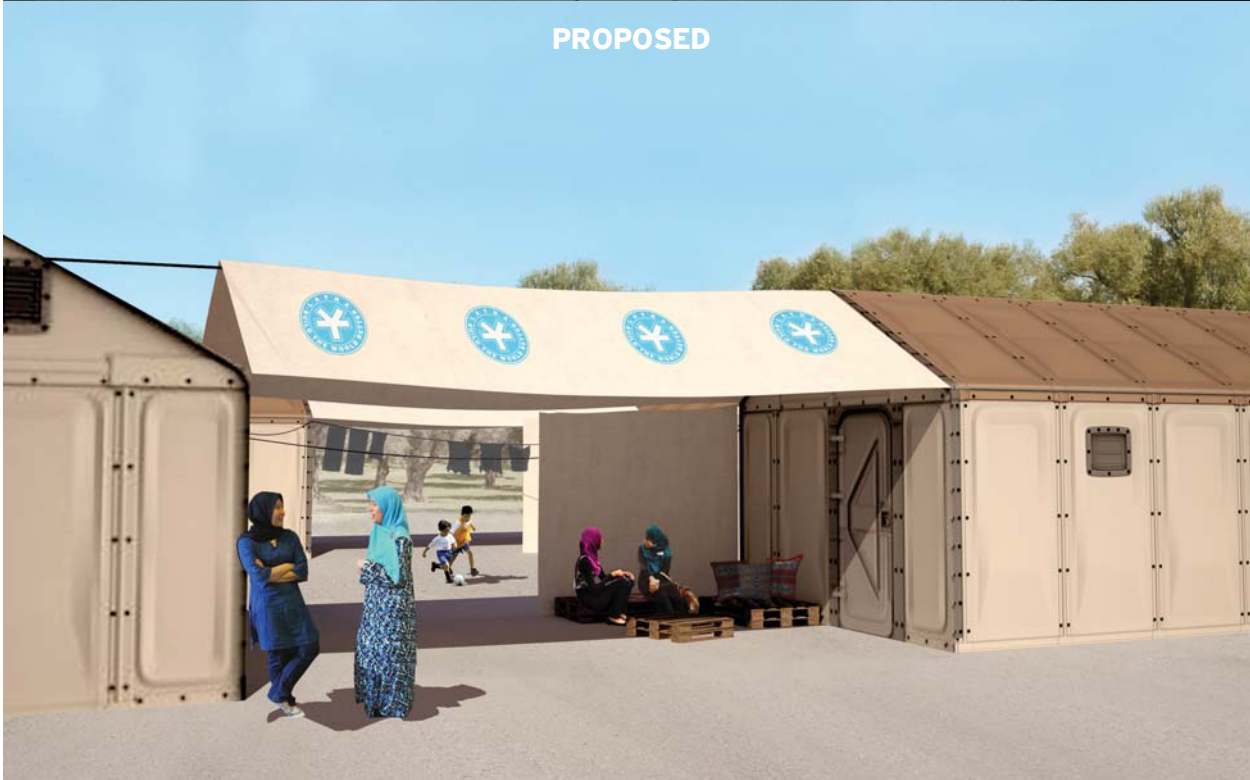


The LATRA INNOVATION LAB took extensive field research in the KARA TEPE Hospitality Centre for Refugees and Migrants in the Municipality of Lesvos, and has identified more than 200 structures put up by the residents of the Hospitality Centre to protect themselves from the sun and the heat. The nets and sometimes blankets used are not adequate for the winterization of the hospitality centre and are not materials and structures that adhere to regulations and Sphere standards. LATRA INNOVATION LAB proposes the replacement of the existing nets by plastic tarpaulins that offers simultaneous protection from both the rain and the sun and the material used is UNHCR approved and on the list of CRIs/NFIs. In addition to offering winterization and protection from the sun and heat the new structures will not hold rain water and as a result the structural integrity of the RHUs is not jeopardized as is presently the case due to the withholding of rain water by the nets used.

Proposed Solution



EXISTING



PROPOSED

Graphic Reference

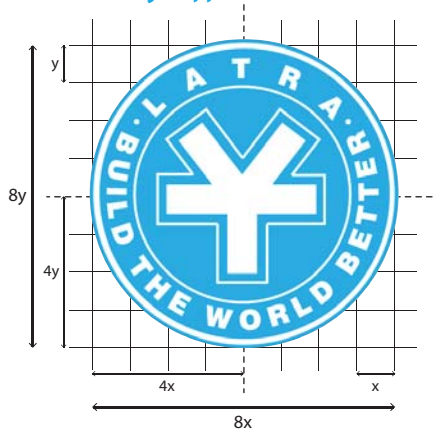


Product Specification

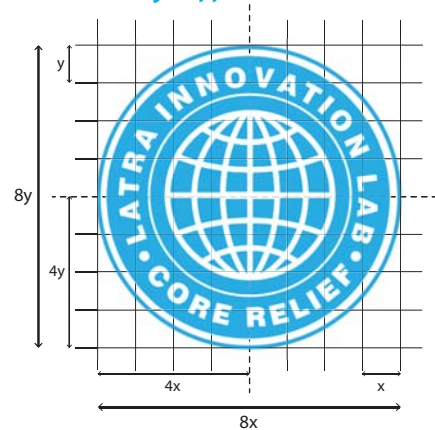
MATERIAL	Woven HDPE black fibers fabric laminated on both sides with LDPE coating with 6 reinforced bands
UV RESISTANCE	Max 5% loss on mechanical strength after 1500 UV exposure
TEMPERATURE RESISTANCE	-20 to 80 Degrees Celsius
TENSILE STRENGTH	Minimum 50 DaN and 15% to 25% elongation in warp and weft Minimum 70 DaN inside the reinforcement bands
TEARING STRENGTH	Minimum 10 DaN
WIDTH X LENGTH	4 x 60 m
WEIGHT	195 g/m ² + 20g, plus 10% for the reinforcement bands
COLOR	White with dark colour reinforcement bands

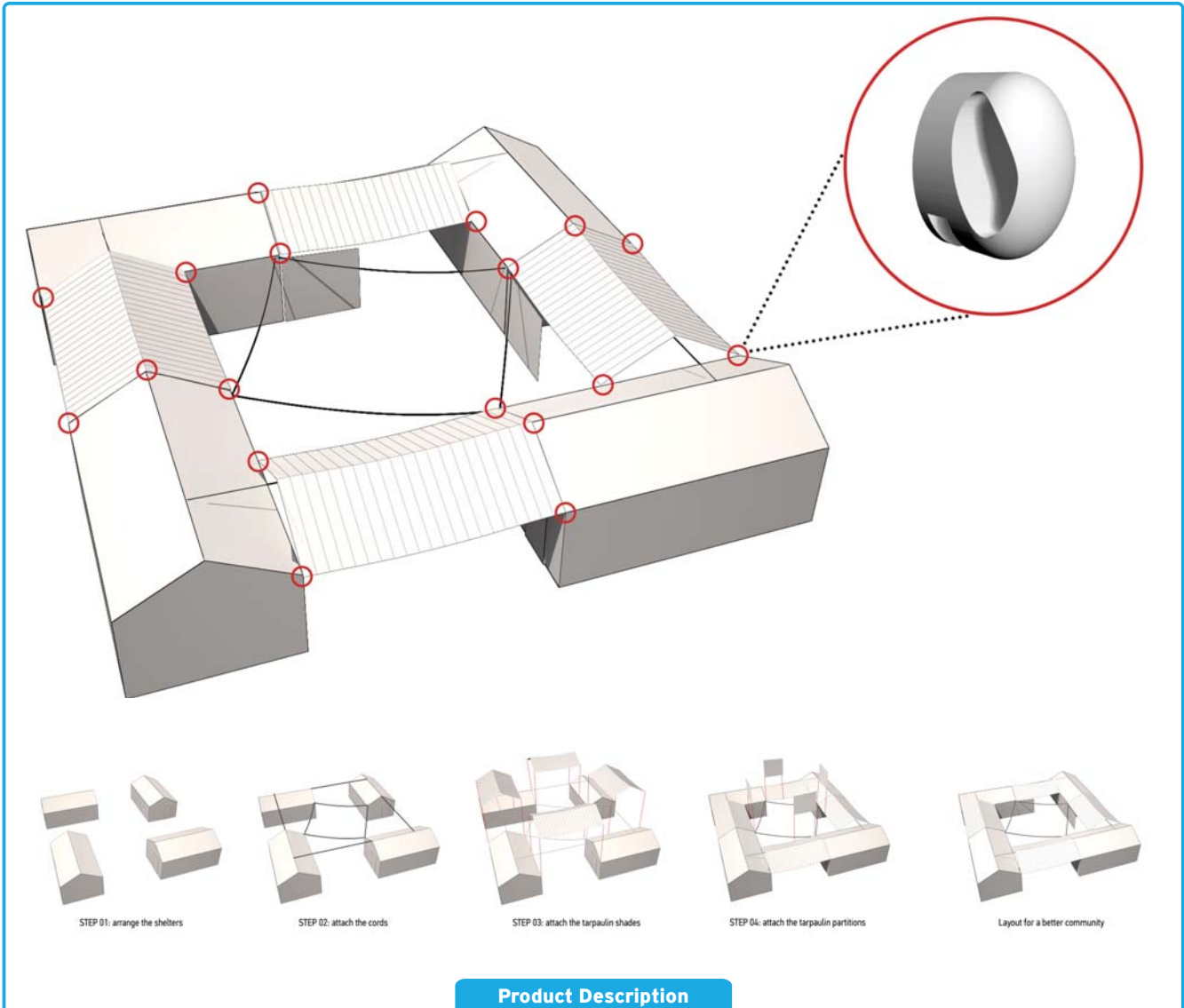
Logo Application

LATRA Logo Application Reference



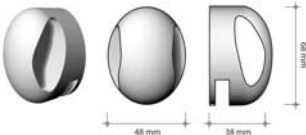
LATRA Logo Application Reference






Product Description

Better Community Hook
material: thermoplastic rubber



assembling hook to shelter



1. Better Community Hook
2. Better Shelter screw
3. Better Shelter washer
4. Better Shelter nut

Based on the field-research performed by the LATRA INNOVATION LAB in the KARA TEPE Hospitality Centre for Refugees and Migrants in the Municipality of Lesvos, LATRA observed the customization and demarcation of public space by the POCs with the use of CRIs fitted and supported using the assembly components (bolts and crews) of the RHUs. These structures jeopardize the integrity of the RHUs but also use fire hazardous materials (ie blankets) as screeds and protection barriers. The LATRA INNOVATION LAB developed and add-on connector piece that allows for the UNHCR approved tarpaulins to be used for shading and demarcation on the existing housing structures. It works in combination with the connecting screws provided by BETTER SHELTER thus safeguarding the integrity of the RHUs.





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BETTER COMMUNITY

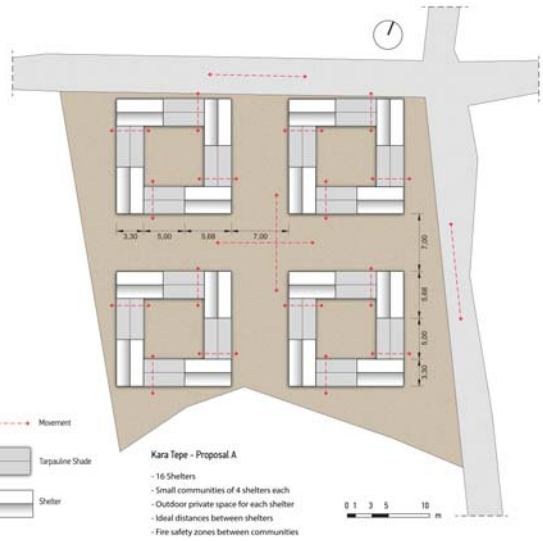
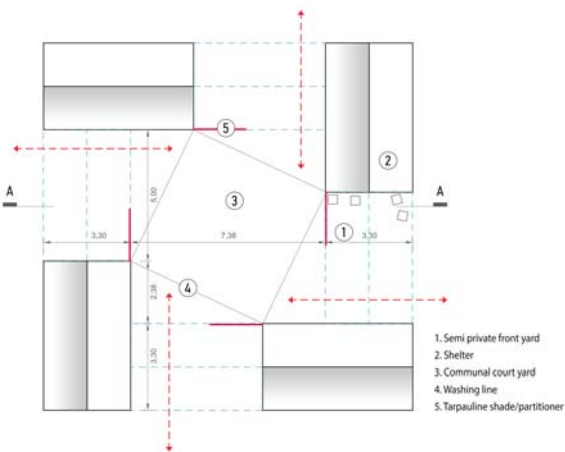
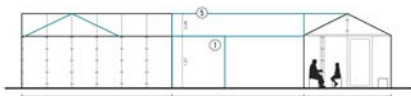
problem identification

Field Research



Over 200 structures have been put up by PoCs in KARA TEPE using CRIs

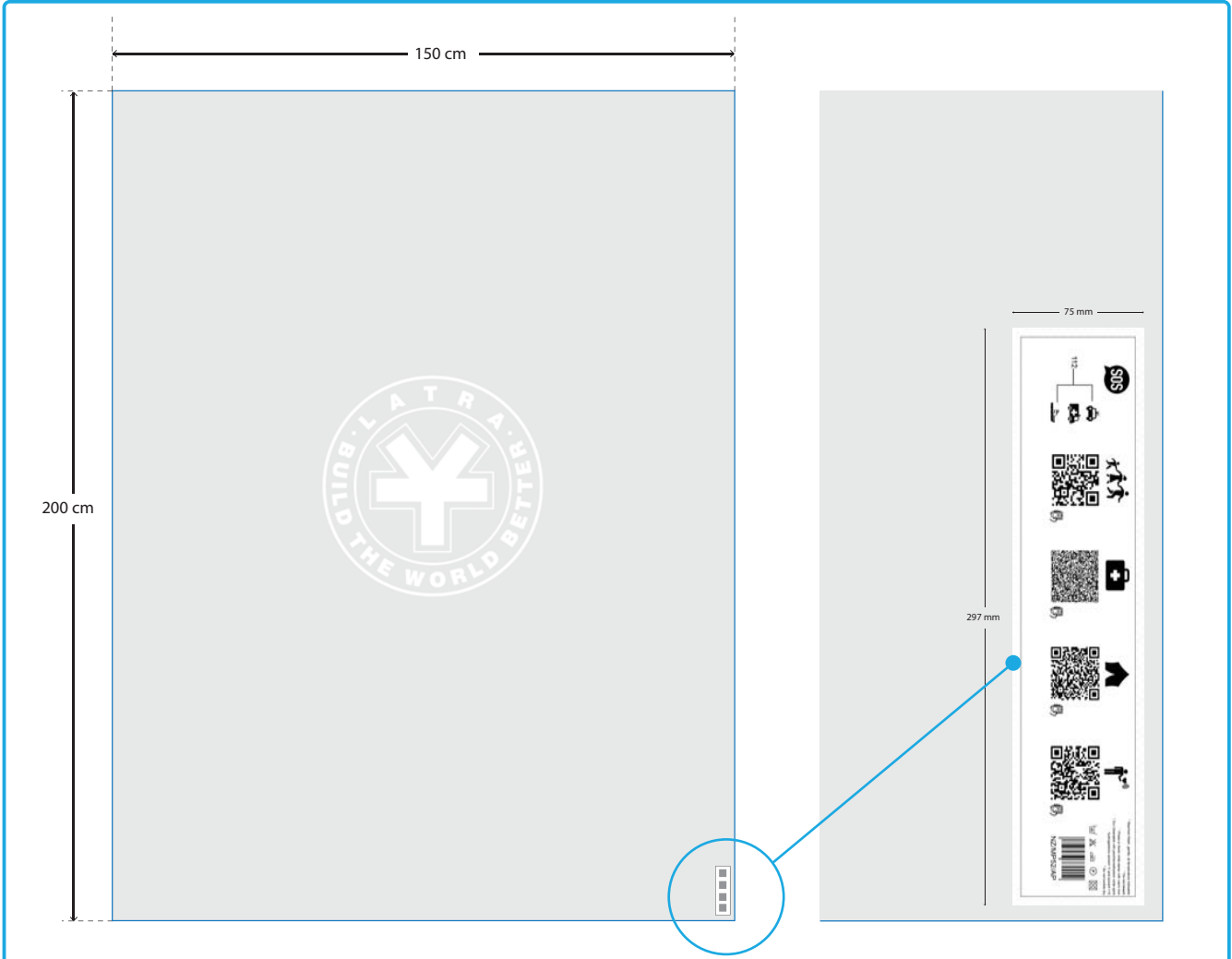
Product Specifications



Assembling Hook to Shelter Instructions



SMART LABELLING CRIs

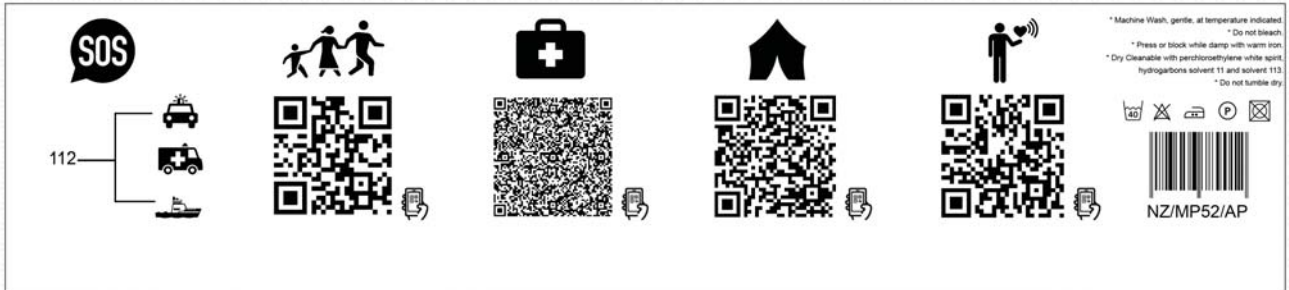


Product Description

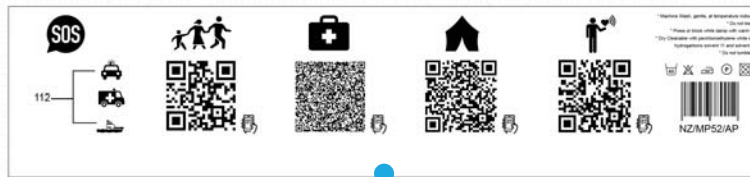


What if care labels placed in CRIs could be used to disseminate critical information to POCs? The care label found in the CRI Blanket was set as a case study and was redesigned to include QR codes that link to critical information for the POCs. A symbol is paired with each code, to communicate the code's function. The information context is subject to change according to the different needs that are found in different environments. There is zero additional cost to production according to CRI manufacturer and distributor 'ALPINTER' who was a consultant to the project.

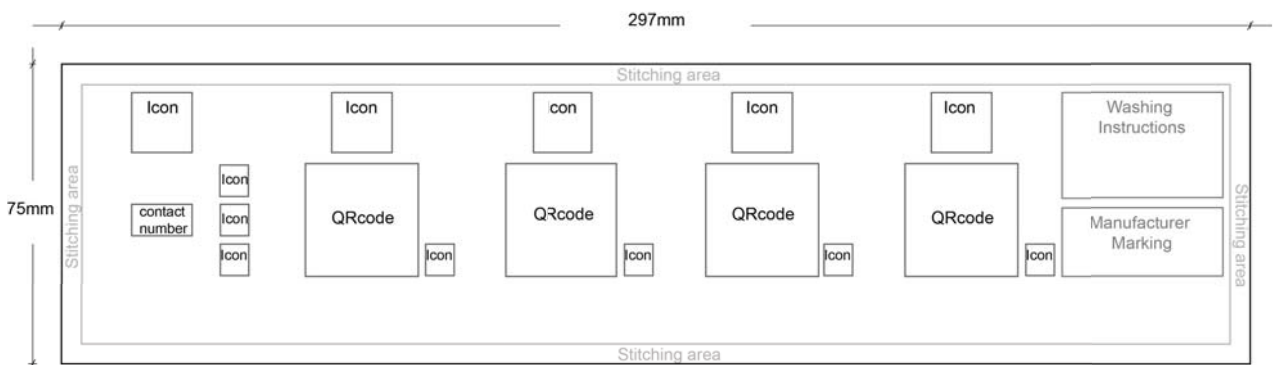
Graphic Reference



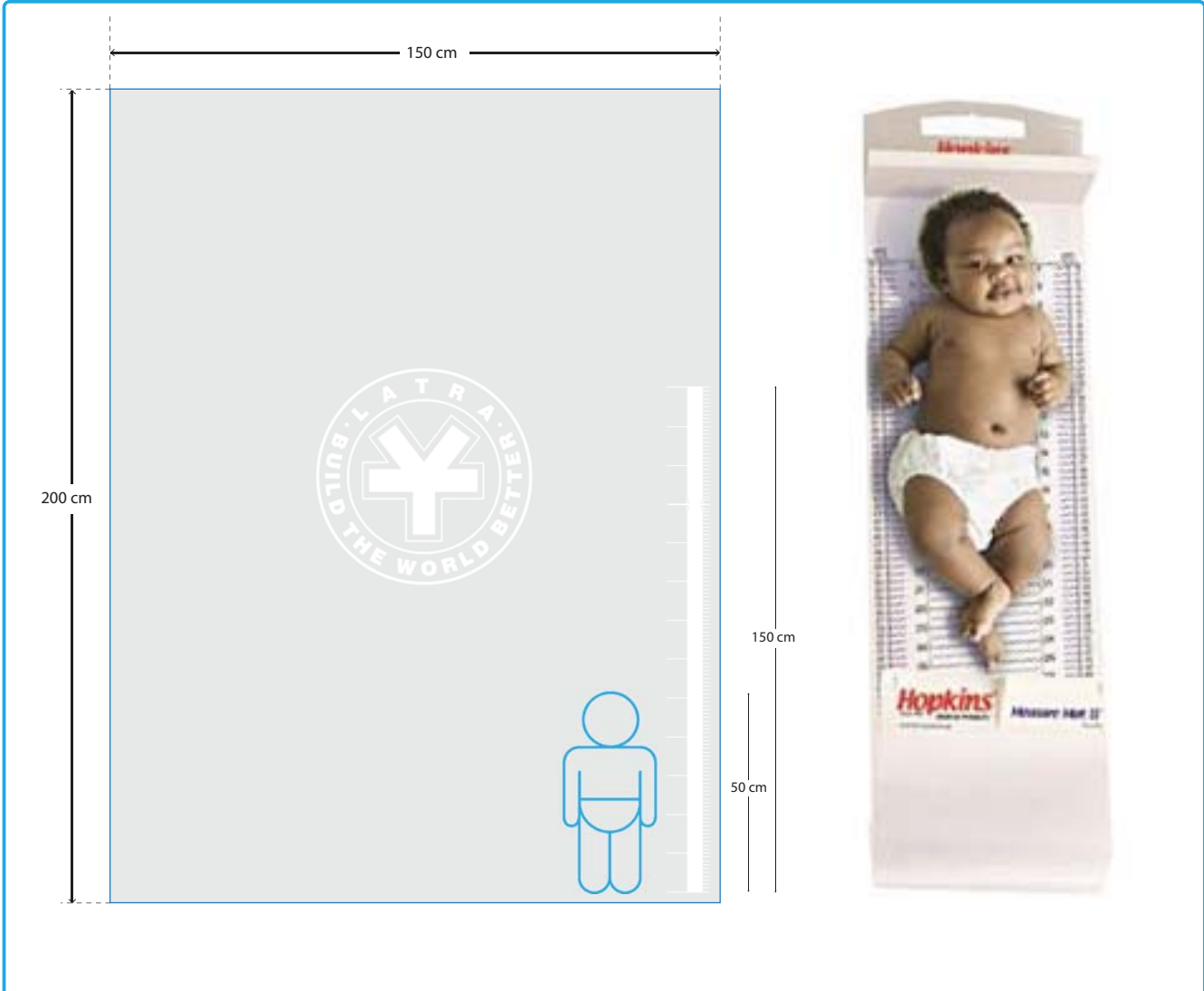
Universal Solution



Product Specifications



BLANKET BABY SCALE

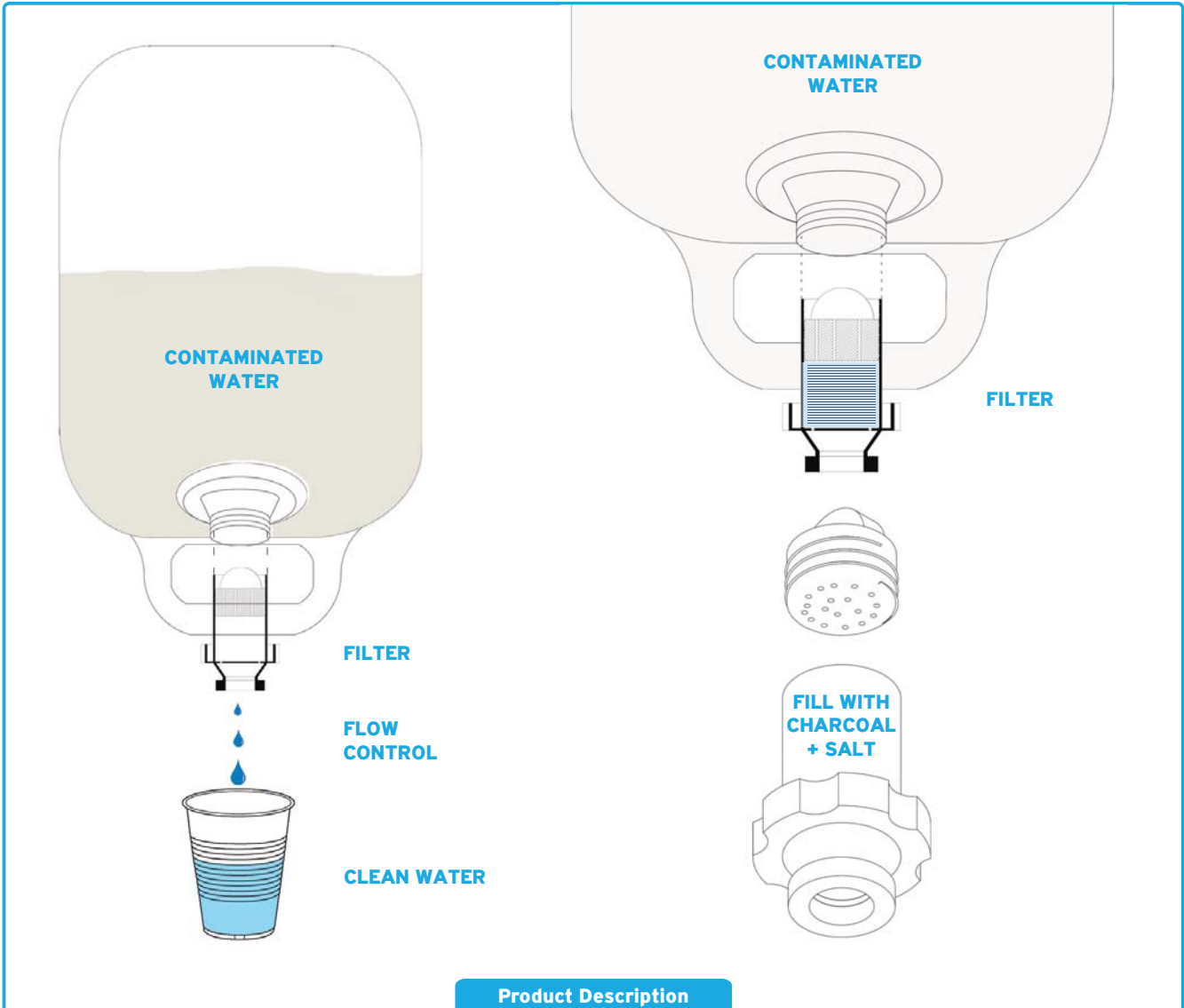


Product Description



Rethinking the multi-functionality of CRIs, the LATRA INNOVATION LAB undertook extensive research on the services that can be offered to POCs by adding printed information on the CRIs. One of the greatest issues faced by POCs is the lack of a consistent medical record that can be presented to doctors and aid workers in order for them to track the progress of vital information such as baby growth development. By adding a simple scale to the side of a blanket each family can keep and present a record of their infant's development. Printing on the blanket would be made using the same production process as is currently used and would add minor-to-zero production cost to the product.

JERRY CAN FILTER



Product Description



The LATRA INNOVATION LAB undertook extensive field research to determine use and functionality of the Collapsible Jerry Can. Polluted and contaminated water alongside lack of flow control are the overriding issues faced by POCs. The flexible shape that assists in logistics presents issues to the POCs as they are unable to adequately control the flow of water when not issued with the fitted tap version of the jerry can. The LATRA INNOVATION LAB developed designed and 3D printed an elemental water filter that works by the addition of simple ingredients such as charcoal and salt. The add-on produced not only sanitizes water but also controls the flow of water making the jerry can more user friendly.



Innovation for All



3D printed sign designed by PoCs reading 'WELCOME' in Arabic.

LATRA has set up the LATRA INNOVATION LAB inside the premises of KARA TEPE Hospitality Centre for Refugees and Migrants in the Municipality of Lesvos-Greece with the purpose of creating an all-accessible environment intended for education and learning through tangible and hands-on applications of innovative technology directly on the field. LATRA INNOVATION LAB houses on the humanitarian field of Lesvos two 3D printers, one UAV (drone) and an array of CRIs and RHUs that are intended for use by an all-inclusive community of designers, makers, researchers, producers, enthusiasts, programmers and aid workers with the purpose of developing innovative content directly on the field.

SMART PANEL



Product Description



Research of possible improvement of the Better Shelter panels, in order to achieve better temperature control of the interior. Analysis of various combinations of different layers which are added on the existing construction. Proposal: Add-on of thermoformed plastic to the shelter's initial module, to insulate and diffuse heat. The added piece contains a window and a second ventilation hole at the bottom.

Panel Samples

Smart panel progression



Better Shelter
- polyolefin (8mm)
- UV protection film



Step 1
- polyolefin (8 mm)
- UV protection film
- tarpaulin



Step 2
- polyolefin (8 mm)
- UV protection film
- tarpaulin
- PET sheet



Step 3
- polyolefin (8 mm)
- UV protection film
- tarpaulin
- air gap (40 mm)
- PET enclosure



Step 4
- polyolefin (8 mm)
- UV protection film
- tarpaulin
- air gap (40 mm)
- black net
- PET enclosure

Insulation progression



Better Shelter
- polyolefin (8mm)
- UV protection film



Add. Insulation #1
- polyolefin (8 mm)
- UV protection film
- Rockwool insulation
- Altro Xpresslay (2 mm)



Add. Insulation #2
- polyolefin (8 mm)
- UV protection film
- expanded polystyrene (20 mm)
- Altro Xpresslay (2 mm)

Ideal insulation with smart panel



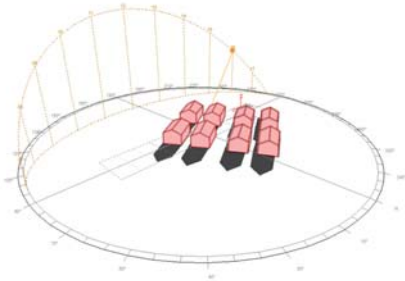
Step 5
- Altro Xpresslay (2 mm)
- rockwool insulation (5 mm)
- polyolefin (8 mm)
- UV protection film
- tarpaulin
- air gap (40 mm)
- black net
- PET enclosure



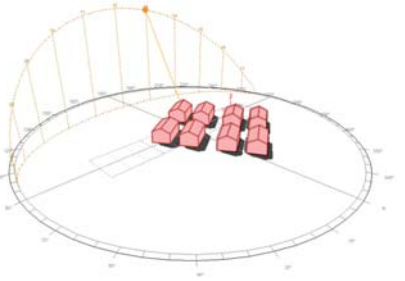
Daylight Diagrams

Proposed period October to April

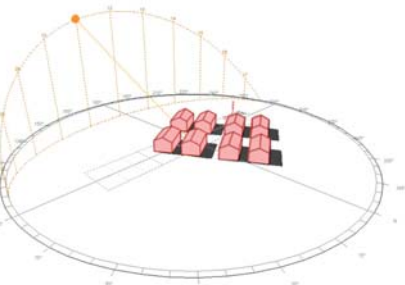
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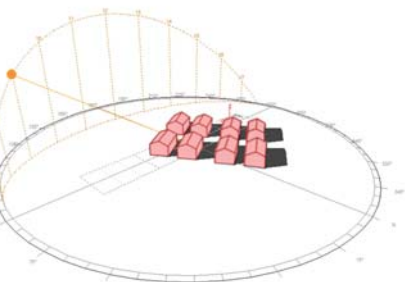
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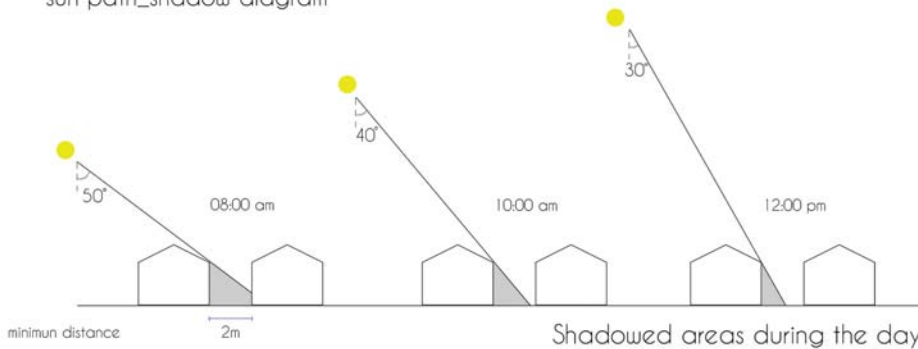
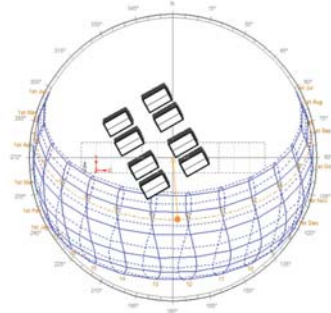
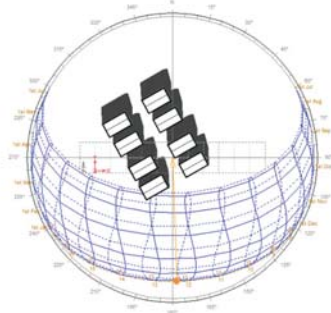
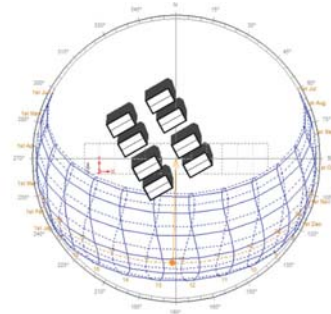
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09:00 am_



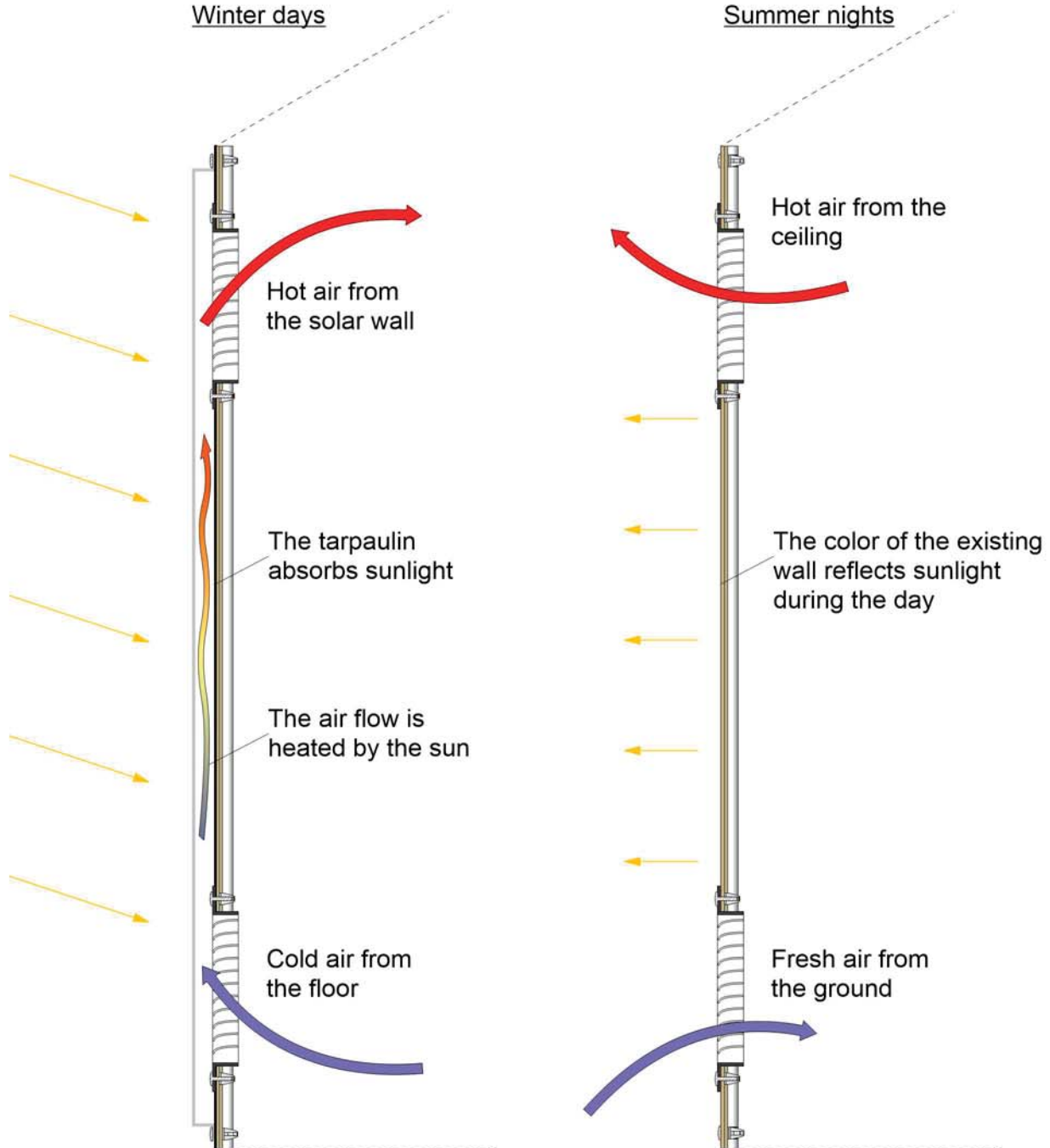
sun path_shadow diagram



Cross Sections

Winter days

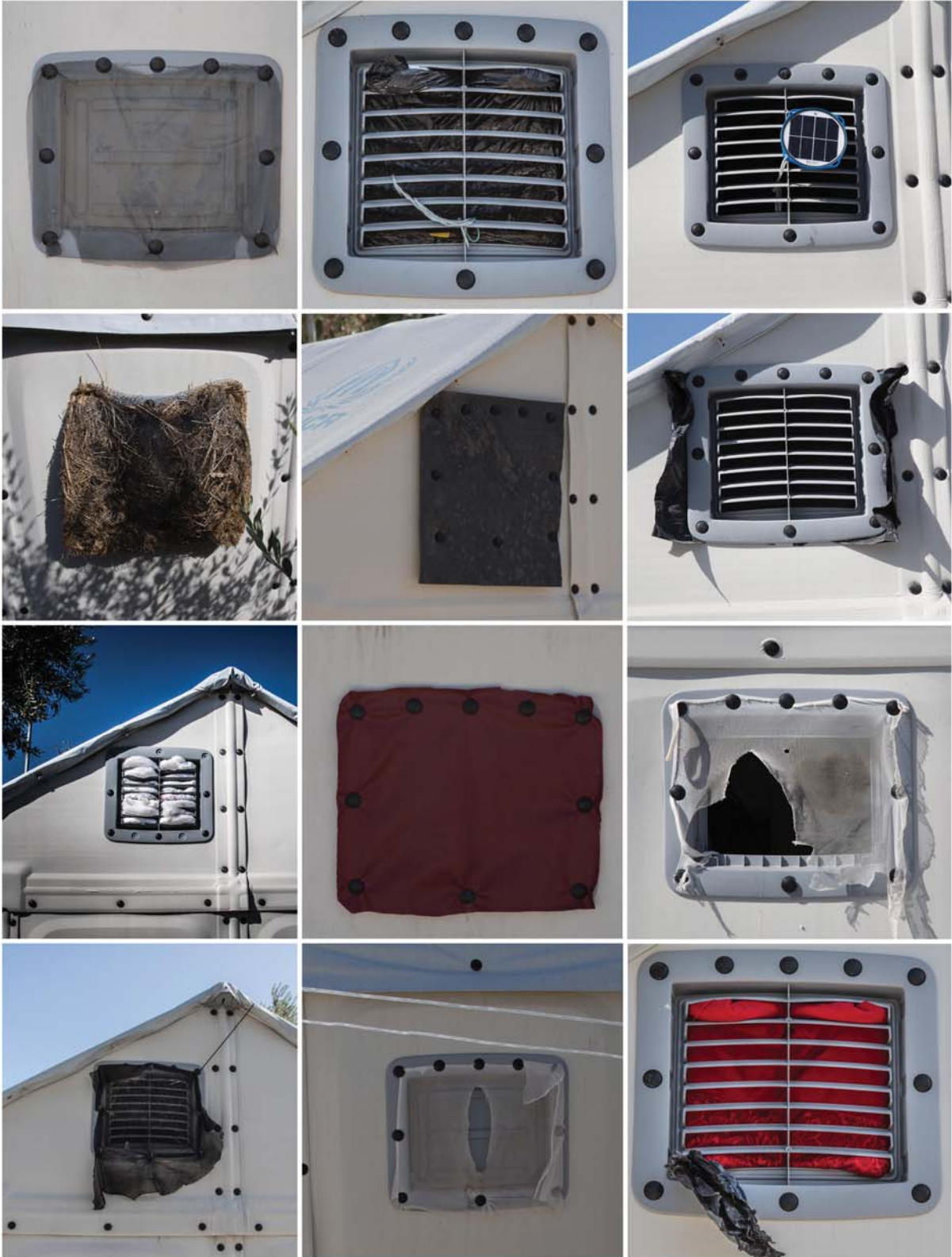
Summer nights



exterior	
- PET sheet	~6mm
- Air gap	~40mm
- Black tarpauline	~1mm
- Existing wall	~7mm
interior	

exterior	
- Existing wall	~7mm
interior	

RHU Windows





Product Description



Field research showed that in the same way that POCs customize canopies for protection against heat and rain they also use material stemming from discarded CRIs and RHUs to create flooring solutions for their public and private space. LATRA INNOVATION LAB collected discarded material from CRIs and RHUs in very much the same way as it happens on the field, and alongside POCs created an insulating carpet with traditional weaving techniques.