

Extreme
Habitat
Challenge

PACIFIC

Can the next generation of **habitats** be built **underwater**?

<https://competitions.uni.xyz>

Introduction

Extreme Habitat Challenge 2020 is pleased to invite architects, designers, engineers, the student fraternity, and visualizers from around the globe to take part in its third edition of **Extreme Habitat Challenge: Pacific**. The Extreme Habitat Challenge (EHC) is one of the world's most coveted competitions for habitat design. It recognizes exceptional ideas that redefine habitat design through the implementation of innovative ideas, techniques, construction, visual, programmatic and futuristic organizations through architecture as a tool.

EHC embarks itself on technological and engineering innovations which are about to go big, and sets architecture free to innovate more in these uncharted directions. It is a one of its kind platform that promotes the relationship between the **habitat**, available **technology** and the **planet**. It aims to create environments that defies adverse conditions through design and makes them habitable. In its outlook, EHC endorses teams that are multidisciplinary by thought but are aligned to the fact that humans have to grow more, yet responsibly towards the planet.



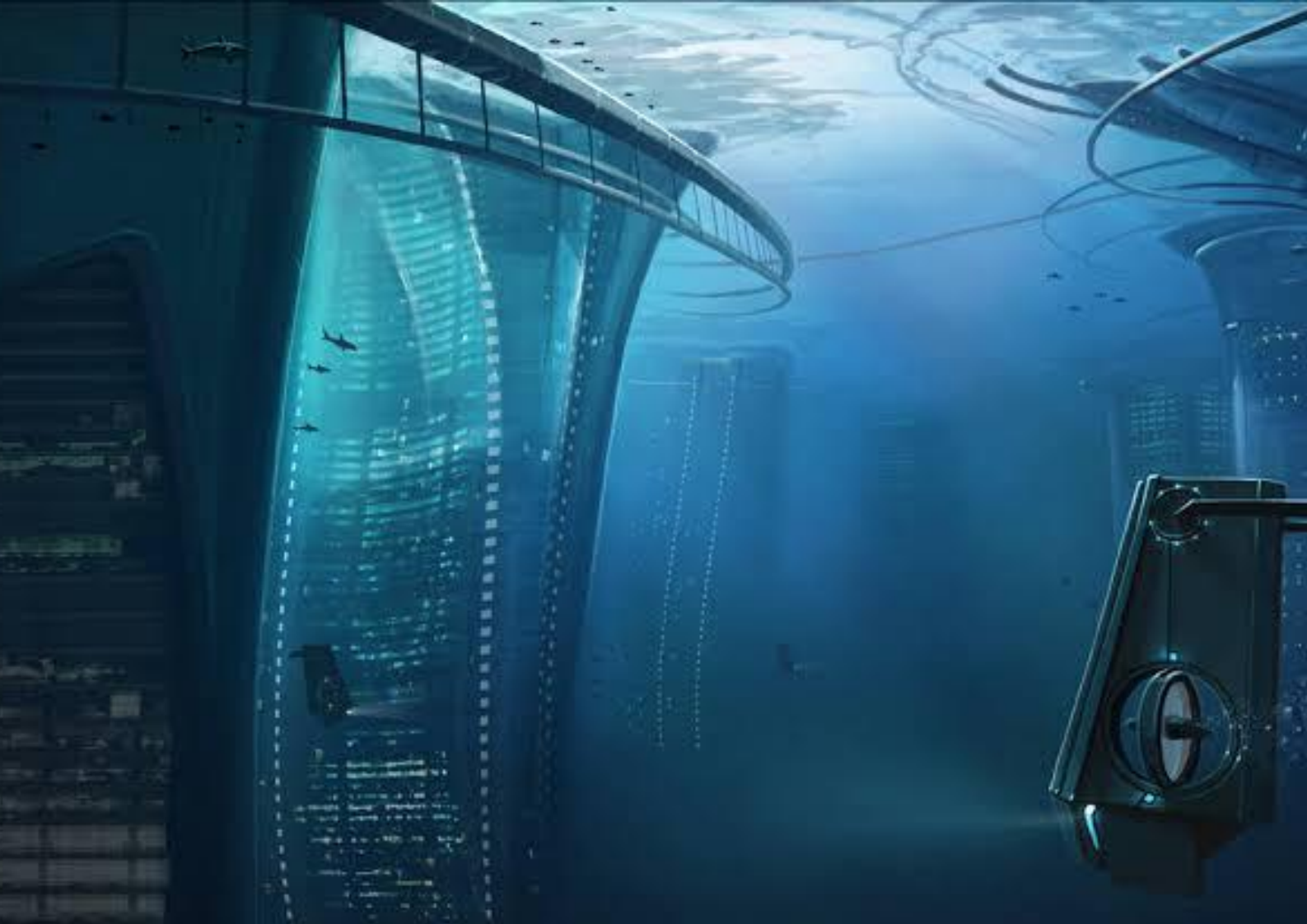
Img 2: An art-science illustrative concept about the future of our cities and oceans. [Source](#)

Premise

As our cities grow, there are severe impacts visible to the quality of life due to overpopulation. Apart from that, the climate of the world is conclusively becoming harsher. Weather changes are becoming more rampant. We need resilient buildings. A limitless growth of population ultimately contradicts the motive of moving to the city, where people, instead of experiencing a better quality of life face the contrary throughout. All of these circumstances and vulnerabilities are only bound to grow in the future.

Cities cannot be overhauled overnight. But the past, especially the industrial revolution, has proven that our cities can, and they have in fact, changed. Technology being the fastest agent of change today, has almost displaced the need of living in a city - including repercussions like social isolation between people today.

A new era of evolution has begun, which brings in technology to resolve even man made disasters. Faster transportation techniques, connectivity & collaboration has made it possible to look beyond boundaries of cities. We take this opportunity to build a more responsible and innovative class of habitats which may be small but can definitely inspire change for the cities of tomorrow.



Img 3: A representative image of a city visualised underwater. [Source](#)

Underwater Habitats

The ocean and habitation in its depths has been endlessly fascinating in the past for marine biologists, divers, Aquanauts, and even underwater archaeologists studying shipwrecked and abandoned underwater structures, and continues to be so. Apart from these, the tourism and leisure industry seem to be the newest to venture into creating habitable spaces on the ocean floor. There is also a growing interest in deep sea mining for minerals and metals, especially around island nations. Furthermore, for underwater research purposes, experts prefer a more permanent habitation on the ocean floor, rather than for researchers to dive using their scuba equipment and refill every hour or so. With that made possible, the viability of relocating entire colonies in submarine like habitats for prolonged periods in the case of a calamity (not ocean related) has also been studied and deliberated upon.



Img 5: Image of an aquanot emerging from the wet porch of an underwater research station. [Source](#)

Issue

The oceans cover more than roughly 70% of the surface of the planet, and the depths of these waters still remain relatively unexplored, compared to their surface counterparts. Additionally, any discussion about future occupation and settling of the planet's surplus population entails going higher up: be it through skyscrapers or a colony on space altogether. However, several [researchers](#), marine biologists and aquanauts have indicated that it might after all be easier and much cheaper to settle on the ocean floor, albeit under the right conditions, since habitation at that depth and pressure of water has its own set of challenges, which this EHC wishes to leverage to draw futuristic designs under the surface of the ocean, fit for human habitation.



[Imag 6](#): An illustrative visualisation by imagineer Tim Delaney for the Living Seas Pavilion . [Source](#)

Brief

Design a **concept habitat for 6 people within a maximum area of 1000 sq. ft. underwater** in the **Pacific Continental Shelf**, which can be replicated to form an entire **colony of at least 100 such units**.

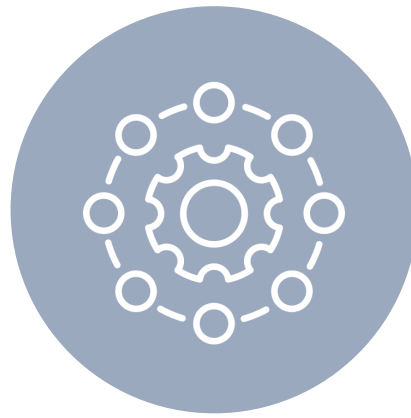
The challenge invites ideas that push the boundaries of design using innovative habitat working models, materials, technology, close to zero land costs, and a nomadic yet rooted lifestyle. When humans enter an extreme habitat, they not only respect nature or its forces, but they do so responsibly. This design exercise can be considered similar to colonizing a new earth with the technology of today taking into account the extremities of an underwater habitat and conditions required for a feasible living. The prototype habitat will house all the three elements essential for human life in it: Live, Work and Play. The given site with zero human population is the test bench for designing a new habitat that will inspire how life should be in similar environments, while balancing itself harmoniously between the other forces of nature.





Form/Structure

Exploring forms and structure based design strategies to combat extreme conditions underwater.



Operation/Sustenance

Conceptually designing how the habitat will function and use of sustainable technologies.



Material Suitability

Finding innovative material configurations that can combat the extreme conditions defined.



Scalability/Incrementality

Conceiving the future development of the habitat in coming decades by multiplying to clusters/colonies.



Conditioning

Recreating a semblance of life as it was above the surface for residents, like a circadian rhythm.



Minimal Impact

While acknowledging that such an intervention cannot be zero impact, the design must look to minimising it.

Design Objectives

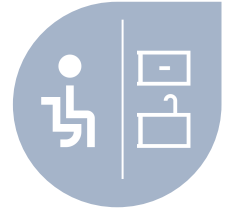
Habitation/Resting Quarters

Designed for **6 people**. The intended residents can be families and/or researchers.



Service Areas

Includes toilets and kitchens with requisite connections.



Working Stations/Kiosks

Designed for residents to indulge in professional vocations and/or research.



Recreational Areas

Designed for residents to engage in vocations apart from work and to keep their calm while being under sea for extended periods of time. May be individual/community level.



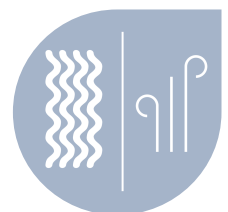
Storage

To be designed for food, clothes, personal belongings, bearing in mind that contact with the surface may not be that frequent.



Decompression/Interface

For the deep sea habitat to function, there must be a dedicated space to decompress and recuperate everytime residents enter or exit.



Programmatic Outline

The above functional requirements outline the minimum provisions that would make the unit not only functional, but also sustainable for an extended period of time in the ocean. Participants may use these as check marks to conceive the design in finality.

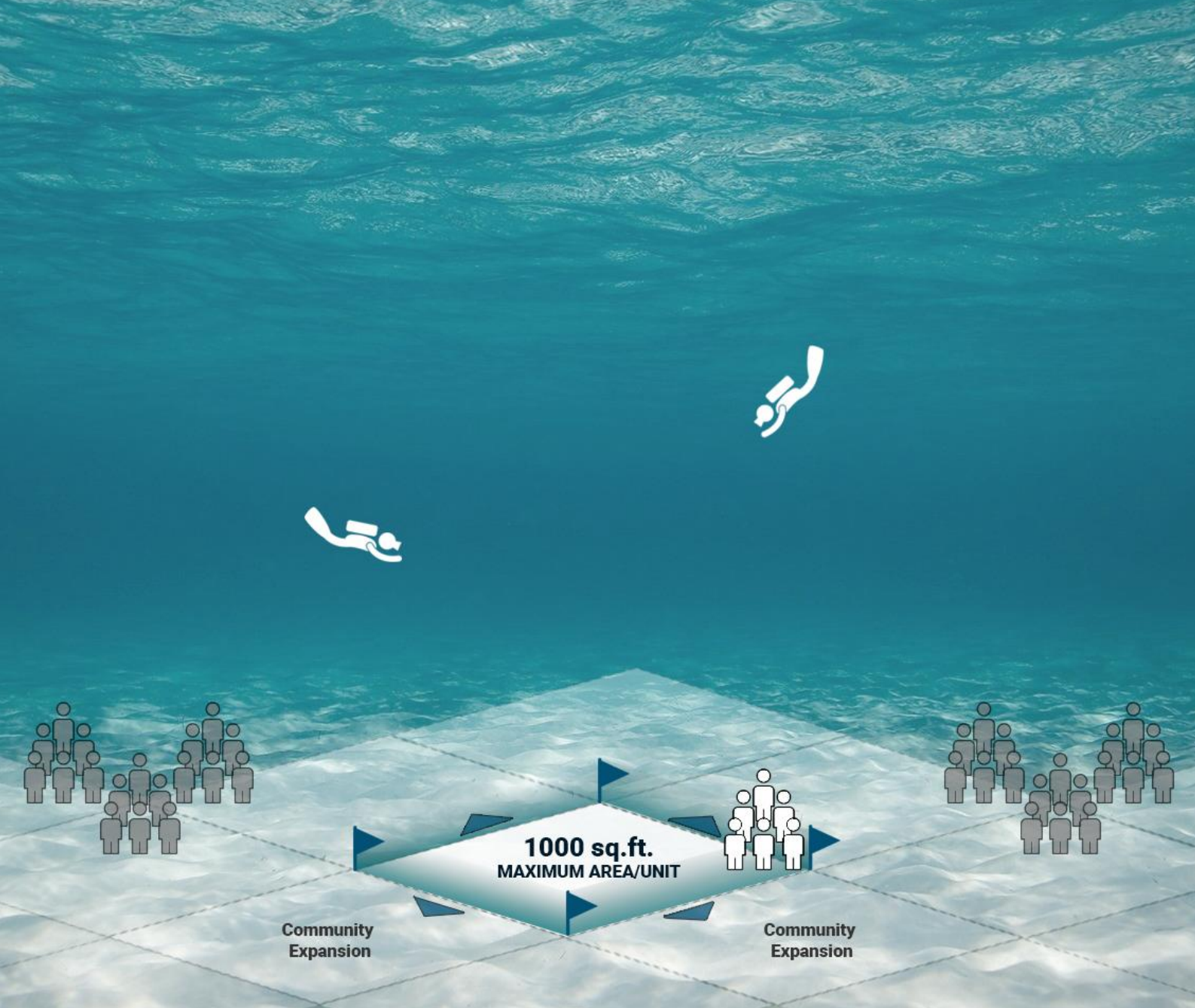




THE PACIFIC CONTINENTAL SHELF

The largest and the deepest of the planet's oceanic divisions, the vast expanse of the Pacific ocean is bounded by the continents of Asia, Americas, and Australia. It covers about 46% of the area of the planet's hydrosphere, and a third of the planet's surface area. The intervention for the **Extreme Habitat Challenge** in the **Pacific** is to lie in its **Continental Shelf**.

The term "continental shelf" is used by geologists to mean that part of the continental margin where there is no noticeable slope, between the shoreline and the point where the depth of the superjacent water is approximately between 100 and 200 metres*. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof. However, the region may roughly be defined within a distance of 200 nautical miles till the outer edge of a continent's/nation's legal continental shelf, as explained in the above diagrams. Participants may assume their habitat to be designed for these conditions, and within these physical boundaries, owing to technological as well as national constraints.



Img 8: Proposed site area for Prototype habitat.

Site Plan

The modular underwater unit must be designed within a **maximum area of 1000 sq. ft.** fit for the habitation of **6 individuals** in keeping with the design and programmatic guidelines. Participants are free to choose whether they want individual units to be **interconnected or isolated**. Plans for the entire colony may not be presented in the submission, but there should be a semblance of an idea of a larger community reflected in the design of the unit. There are no height/shape/form restrictions whatsoever, except that the structure should in some way be tethered to the ocean floor anywhere within the continental shelf of the Pacific. The extent of contact/reliance from the ocean surface to be maintained with the unit is also up to the participants.

For more information on the viability of underwater habitats, registered participants may refer Additional Resources.



Guidelines

You have to deliver an architectural outcome on the following site, based on the given outlines.

- Recommended number of sheets/presentation images/boards:

5 (Five) of size [**2362px x 3544px**] or [**400mm x 600mm in 150 dpi**] in portrait digital format (**JPEG only**).

Minimum 3 (Three) & No maximum sheet limit. Each image should be less than **15MB**. (Do not submit PNG format)

Minimum requisite submission are sheets/boards + Cover image containing:

- Site plan (Compulsory)
- Key conceptual sections x 1 (Minimum)
- 3D views x 4
- Cover image / Thumbnail of size 2000px x 1000px or larger in aspect ratio 2:1.
- Answering 6 FAQs #
- This is the link for new file sizes, [here](#).

#The FAQ's have to be answered as instructed in the FAQ document in the 'additional resources folder'.

Deadlines

Discover the competition schedule and deadlines on the competitions page or on this link - [Schedule](#).

Resources

This competition contains additional resources that contains a set of files useful to complete the competition submission. This folder is made available on your profile dashboard automatically as soon as you register.

This additional resources folder of this competition contains: Submission Format files in PSD | AI | InDD, FAQs and Literature on the viability of underwater habitats.

Rules

- + The competitions is open for **students and professionals** from all the disciplines of design.
- + The team limit for this competition is **4 members maximum per team**.
- + You can register more than one team but they have to be registered separately.
- + Ensure that the final sheets submitted **do not include your name or any other mark of identification**. Your submission is linked to your user account which stands as your identification.
- + This is a design **ideas challenge only**. There is no built commission/realization associated with the problem.
- + In case of publication in yearbook we will reach out separately for selected entries.

Pro-Tips

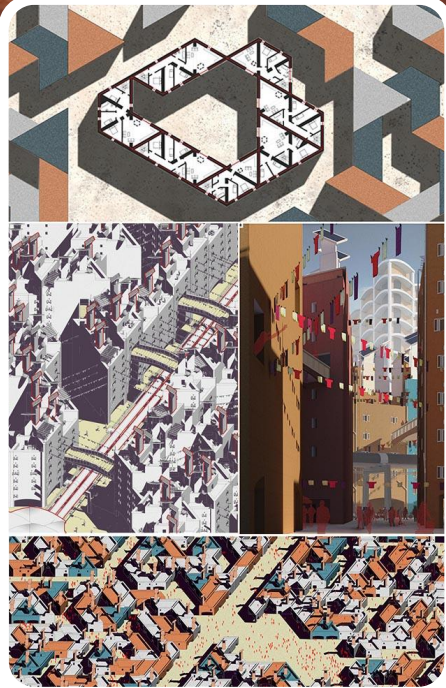
- + Use exploded views to discuss multi levelled conceptual models better.
- + Mention sheet number on corner of every sheet.
- + Plagiarism of any idea / form / design / image will be disqualified with a notice.
- + All the sheets or images will be viewed on a digital device. **e.g.** Laptop screen or projector. Uploaded sheets or images will not be physically printed for evaluation. The submission hence should be prepared for digital viewing only.
- + Submit JPEG images only. (PNG will not function)
- + Learn





Awards

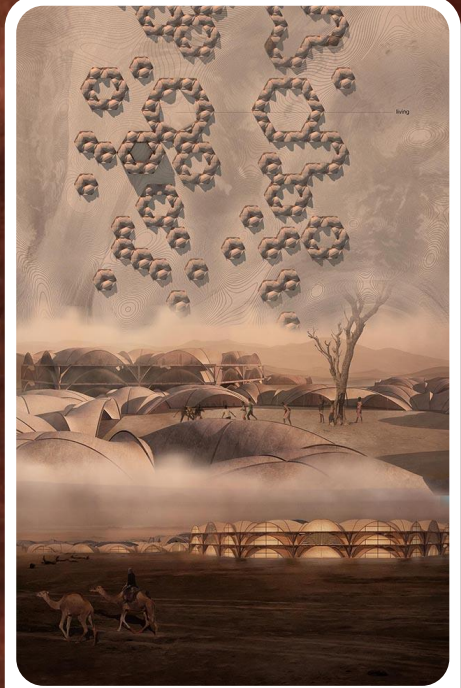
Grants of up to a total of **20,000\$** can be won on this challenge. Learn more about the full conditions on the competition page [here](https://competitions.uni.xyz).



Honorable Mention
Sandcrete City
[Terry Thackrey](#)



Winner
Weaving Water
[Shuchuan Yang](#), [Jiani Li](#), & [Jiayan Shao](#)



Honorable Mention
The Nomadic Nest of Sahara
[Jiang Peiwei](#)



SAHARA

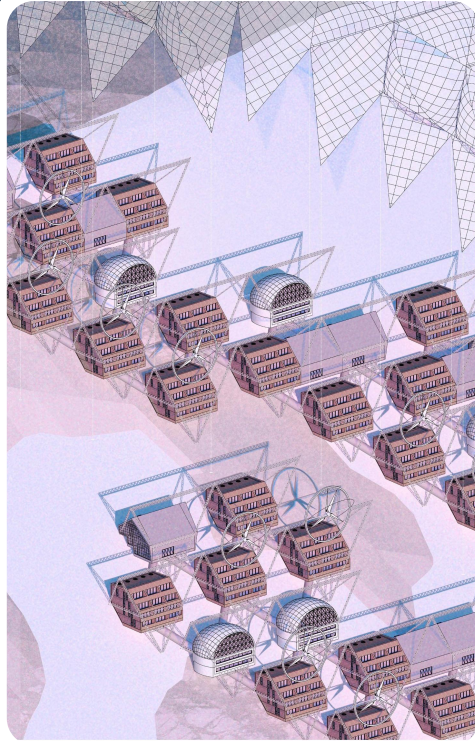
Winning entries of Sahara Edition

These are the best of the previous edition of **Extreme Habitat Challenge - Sahara**. These entries are some of the most outstanding submissions that brought exceptional merit in terms of their idea, visualization and architectural strategies. Discover the last edition's brief [here](#) and the winning entries.

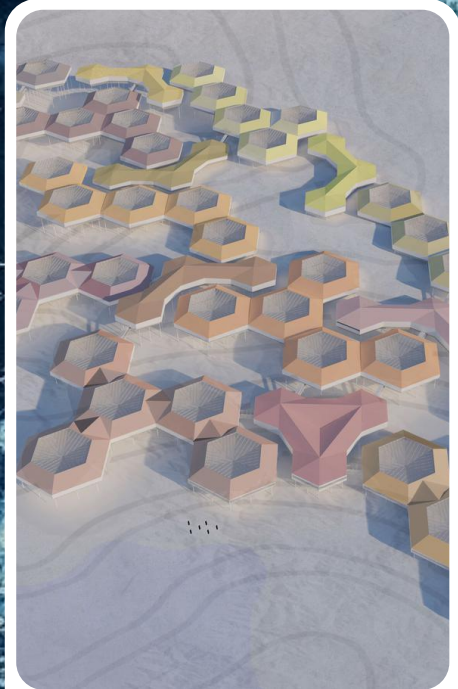




Runner Up
LIFE LINE
[Филипп Трофимчук](#)



Winner
Over The Edge
[Arseniy Bychkov](#)



People's Choice
HabitatNow
[Wioletta Debicka](#), [Kamila Susze](#), [Robert Czaika](#) & [Alicia Kowalewska](#)

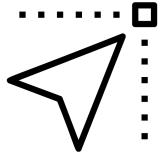
Extreme
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ARCTIC

Winning entries of Arctic Edition

These are the best of the previous edition of **Extreme Habitat Challenge - Arctic**. These entries are some of the most outstanding submissions that brought exceptional merit in terms of their idea, visualization and architectural strategies. Discover the last edition's brief here and the winning entries.

The entries will be judged by an international jury of the competition on the following criterions:



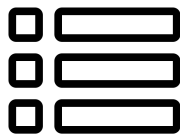
Presentation

The fundamental to a good entry is a good presentation.



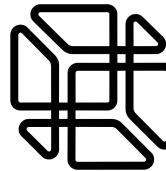
Concept/Idea

Quality of thought and intent in pre-design phase.



Spaces/Programme

How the spaces are calculated and ordered.



Design Outcome

The final architectural outcome of the solution.

Judging Criteria

The judging panel can also add other criterions based on their internal discussions - which will be in line with the problem statement. Participants are advised to fulfil above given criterions first in their design.



About



Extreme Habitat Challenge (EHC) serves as a unit block for **UNI** in the field of **resilient habitat design**. It intends to break the fusion of traditional design barriers and methodologies by making it a platform for experimentation. **EHC** aims at creating ecosystems that are benchmarks how cities could be or should be in future. With a faster transit and a more connected world the need to stay rooted at one location will go away and futures will be more mobile. However this power should not be exploited at the cost of the planet.

EHC finds it's place in its vision of a more sustainable and responsible future. It is a research initiative dedicated to provide opportunities for designers from all domains to explore ideas that go beyond the boundaries of architectural discipline and enrich our built environment; thereby opening up possibilities for promotion of architectural thought in extreme conditions.

Queries: support@uni.xyz

Discover other competitions: <http://competitions.uni.xyz>

Facebook: <https://www.facebook.com/unidesigntogether/>

Instagram: <https://www.instagram.com/uni.xyz/>

Discover **FAQ's** about this competition on our help forum here: <http://help.uni.xyz/>





PACIFIC

Towards a new breed of
underwater habitats.

Available on:
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