

MISSION HERCULES

>HUMANITY EXPANSION RESEARCH CENTER UNIT

LEVITATING ON EUROPA'S SURFACE<

Humanity. Expansion. Research. Cellular. Units. Levitating. Europa's. Surface. Taken from the name of the son of Jupiter in classical mythology, Hercules is a daring mission of discovering the possibility of other lifeforms outside of earth. Mission Hercules is the bridge between earth and outer space. Scientists will investigate Europa's environment by utilizing a modular Y-spacecraft that hosts scientific instruments as well as 3d-printing elements which generate a colony of semi-detached units that hover over Europe. These modules operate by sending three-limbed multifunctional units that levitate the moon's surface exploring its far ends. The mission focuses on three main agendas:

- 1- Developing interplanetary mobility technologies.
- 2- Exploring Europa and monitoring surrounding celestial bodies
- 3- Serving as a resource stock for further missions in the solar system and as a Physical and Digital archive of Earth's Precious processed resources.

The project re-conceptualizes the typology of research architecture and answers questions that responds to the nomadic lifecycle and migratory habits of space research by developing a scattered strategy that aims to introduce a new way of thinking of interplanetary research colonization and sustainability.



01 MOBILITY

Developing interplanetary mobility technologies



02 EXPLORATION

Exploring Europa and monitoring surrounding celestial bodies



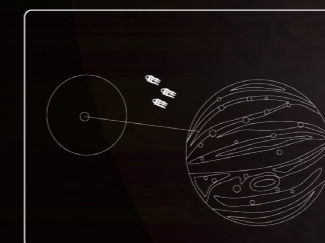
03 RESOURCES

Physical and Digital archive of Earth's Precious processed resources.



01 Launch

Mission HERCULES probes launched from Earth



02 Orbiting Jupiter

The probes enter Jupiter's Orbit



03 EUROPA

After locking on Jupiter's Orbit the probes land on EUROPA



04 Labs Organization

The Labs constellation forms and deforms according to missions



05 Life?

Drilling starts once all the labs are well positioned



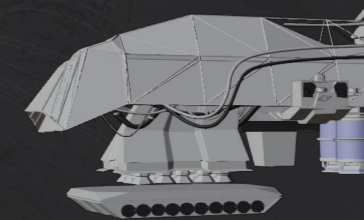
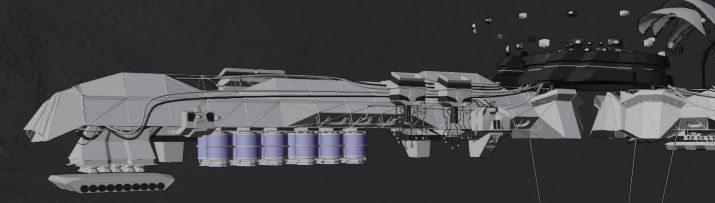
06 PayBack

EUROPA becomes the beacom spatial for research sharing its gathered resources

01 AGGERATION

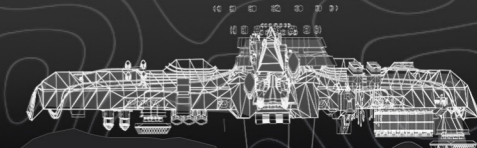
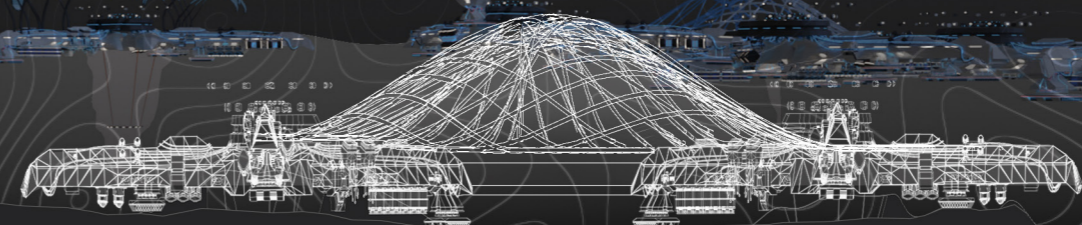
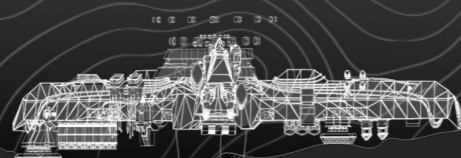
MISSION HERCULES

The premise of mission HERCULES is that these Y modules are built from an emic modular architecture perspective, by which the design is an interlocking tool of investigation that hovers the surface of the Europa, expanding and retracting in a disciplinary manner. The result is an aggerative design that behaves like a mobile researcher that constantly scans this surface and collects data



The Y module Levitates on the surface using Quantum Levitation. This technique reduces the power needed to move the structure. The leg is composed two elements positioned in the following order:

- Rail
- Leg structure
- Neodymium super magnets (space)
- Superconductor platform
- Wheels



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Award's category : Architecture and Innovation for Space - A Research Station on the satellite of Jupiter Europe

Project's Name

Mission Hercules

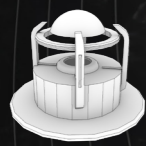
Description

Research center on Jupiter's Moon Europa

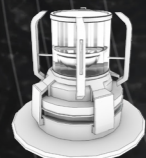
FONDATION
JACQUES ROUGERIE
GÉNÉRATION ESPACE MER
INSTITUT DE FRANCE

02 PLAN MACHINERY

'Europa' is no longer a complimentary planet to our Earth when it is incisively nearing similar existing textiles of life upon it. With the implementation of Y modules holding advanced technological machinery referred by the NASA clipper mission. Exploration of Europa moon diverse icy surface could be easily deployed. Modular Architecture is a predetermined privilege to design a Urban device that efficiently scans for new biological spices, new materials and study the chemical composition of this planet. As a result, the Y modules interwoven with all elements of this planet to create an overlapping layer of research centers.



CORNER
Concentrates light to melt ice



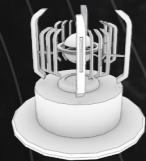
PIMS
Plasma Instruments for Magnetic Sounding



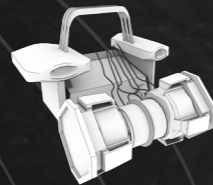
HYDROGEN BATTERY
Stores Hydrogen generated power



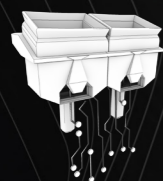
OXYGEN HYDROLYSIS
Device designed to extract H2 and O2 from water.



ICE 3D PRINTING NOZZLE
Nozzle melts in layers to create self-supporting structure.



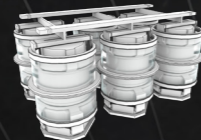
MISE
Mapping imaging spectrometer for Europa.



SENSORS
A multitude of sensors in a box



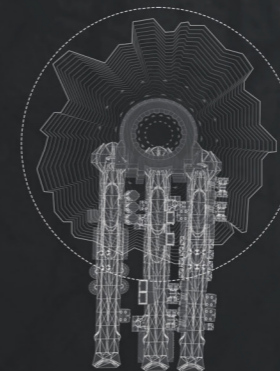
MASPEX
Mass spectrometer for planetary exploration.



SUDA
Surface dust mass analyzers reservoirs



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SCALE 1/1500



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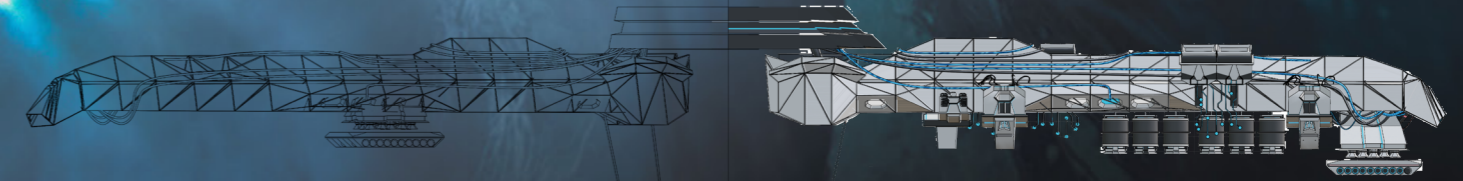


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03 THE CRACK

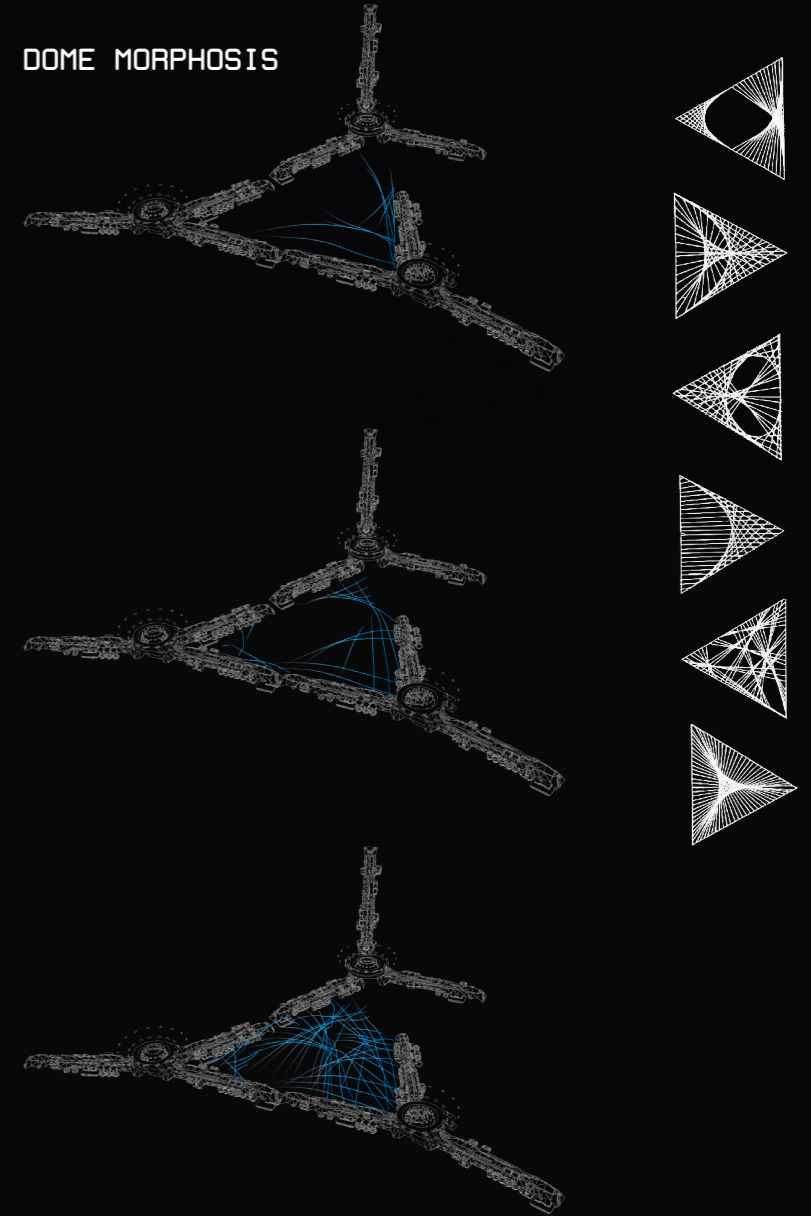
Certain spots on Europa moon's crust are thinner due to the geological activity creating cracks. In these spots researchers will hang platforms alongside a set of SONARs and other instruments to find empty cavities that contains water that could sustain life.



04 DOME

The ICY DOME is a is created by the shooting of multiple fibers and water that interwoven to create a triangular space the helps protect the land beneath from altering UV radiation. Sheltering a space secured from external agents to maintain accurate researchers' studies of certain spots of Europa moon.

DOME MORPHOSIS



DIFFERENT CONFIGURATION OF THE PATTERNS



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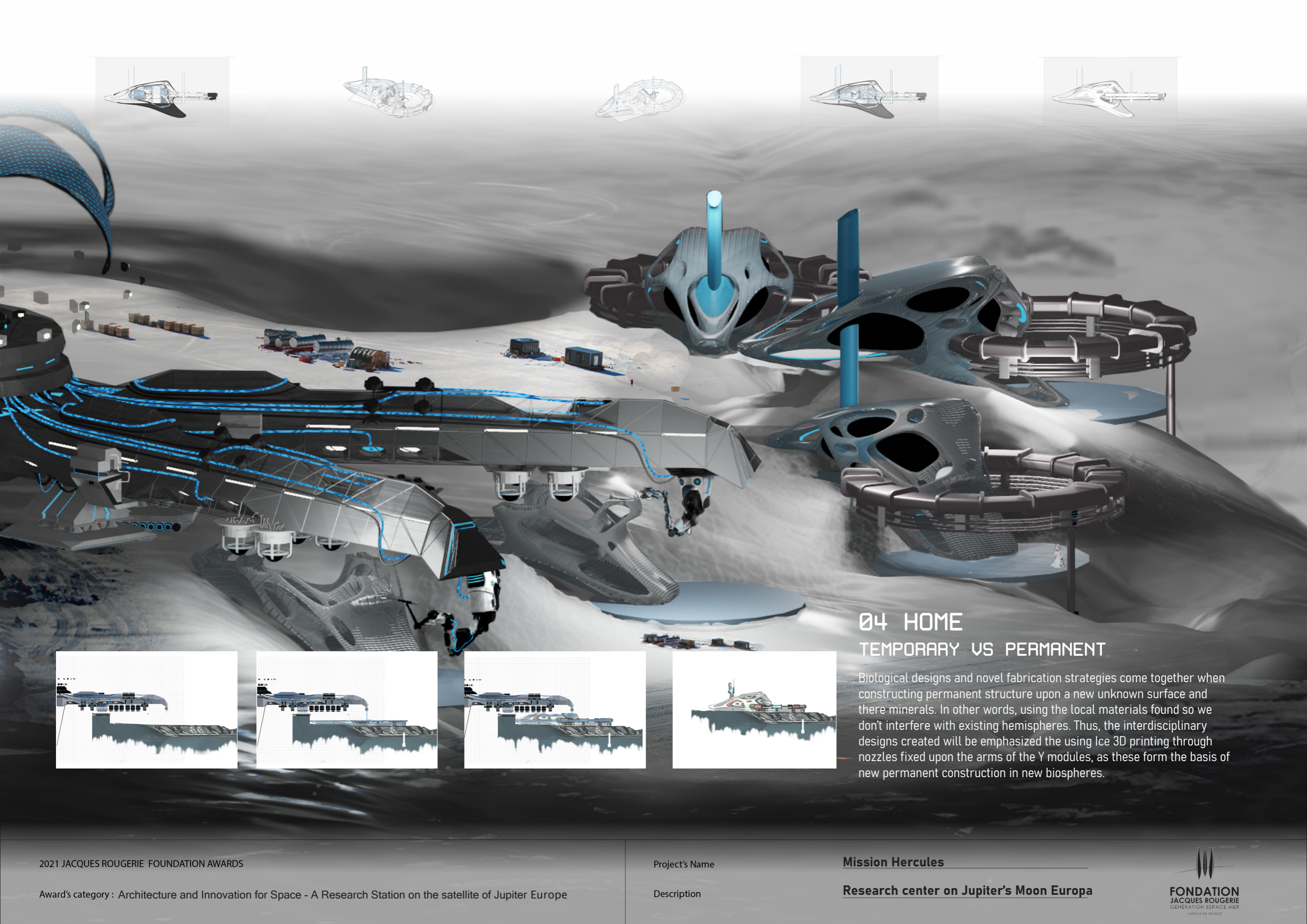
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04 HOME TEMPORARY VS PERMANENT

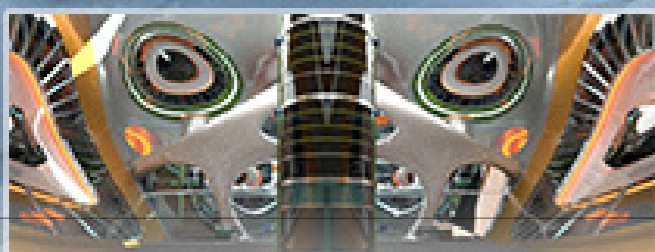
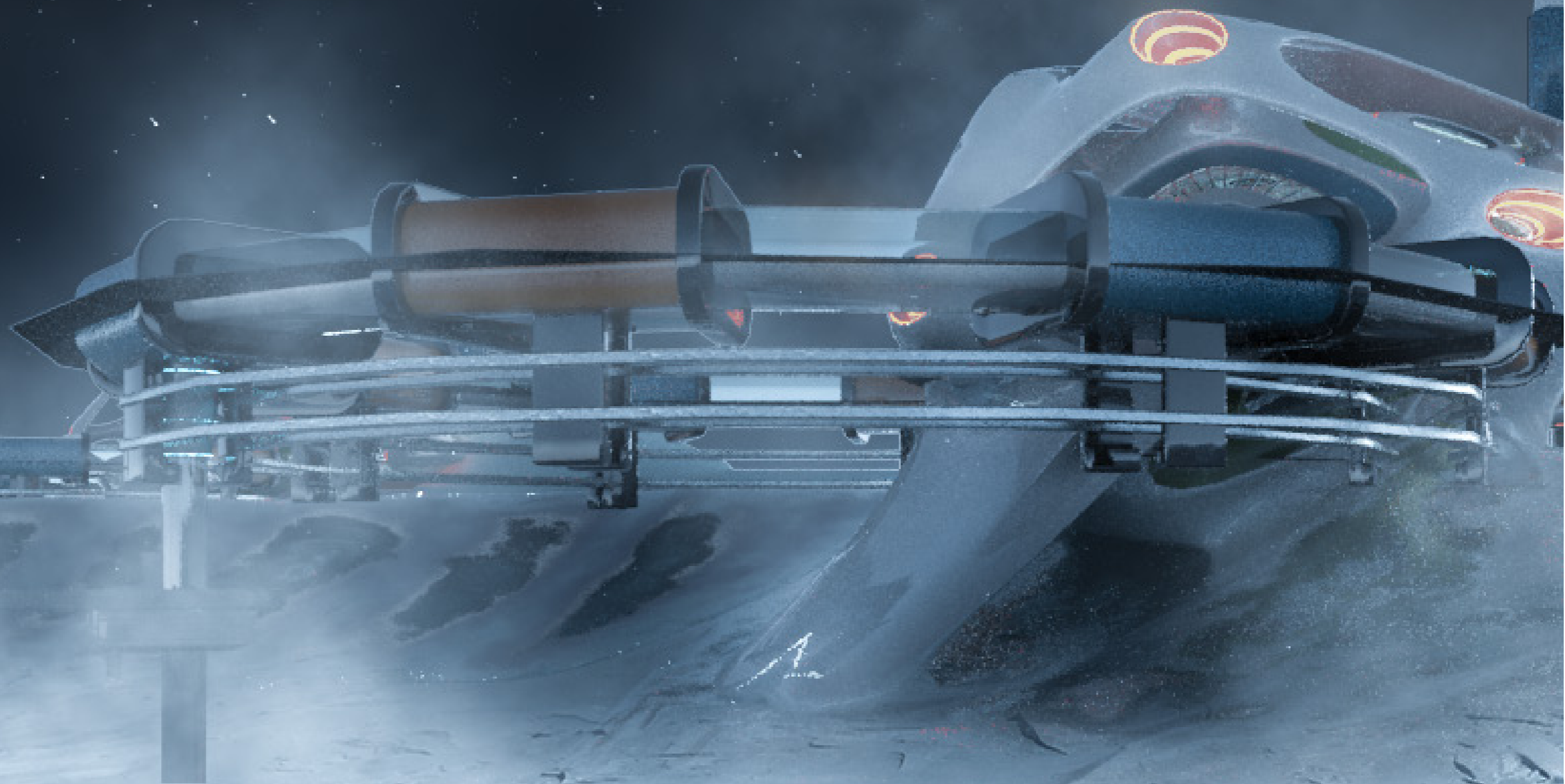
Biological designs and novel fabrication strategies come together when constructing permanent structure upon a new unknown surface and there minerals. In other words, using the local materials found so we don't interfere with existing hemispheres. Thus, the interdisciplinary designs created will be emphasized the using Ice 3D printing through nozzles fixed upon the arms of the Y modules, as these form the basis of new permanent construction in new biospheres.

The Astrobiology research center are specifically related to the study of life and its existence on Europa.

When talking about life, we mainly mean the marine life we believe exists, but it also function as a space for experimenting the life of greenery in such conditions.

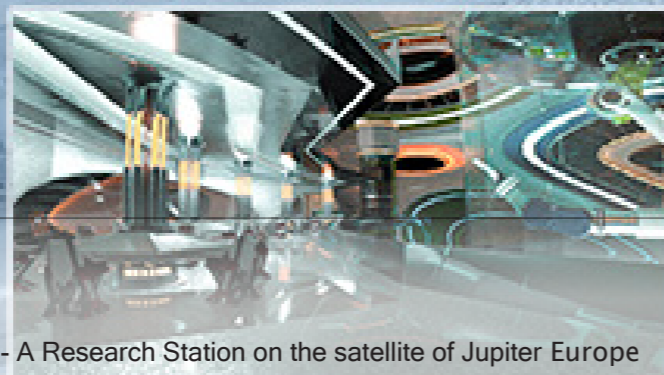
Part of it will be storing capsules of different kinds, such as microbotic capsules.

A large tube of 4 meter diameter, movable on a circular rail will be connecting the labs to the under-ice ocean of Europa.



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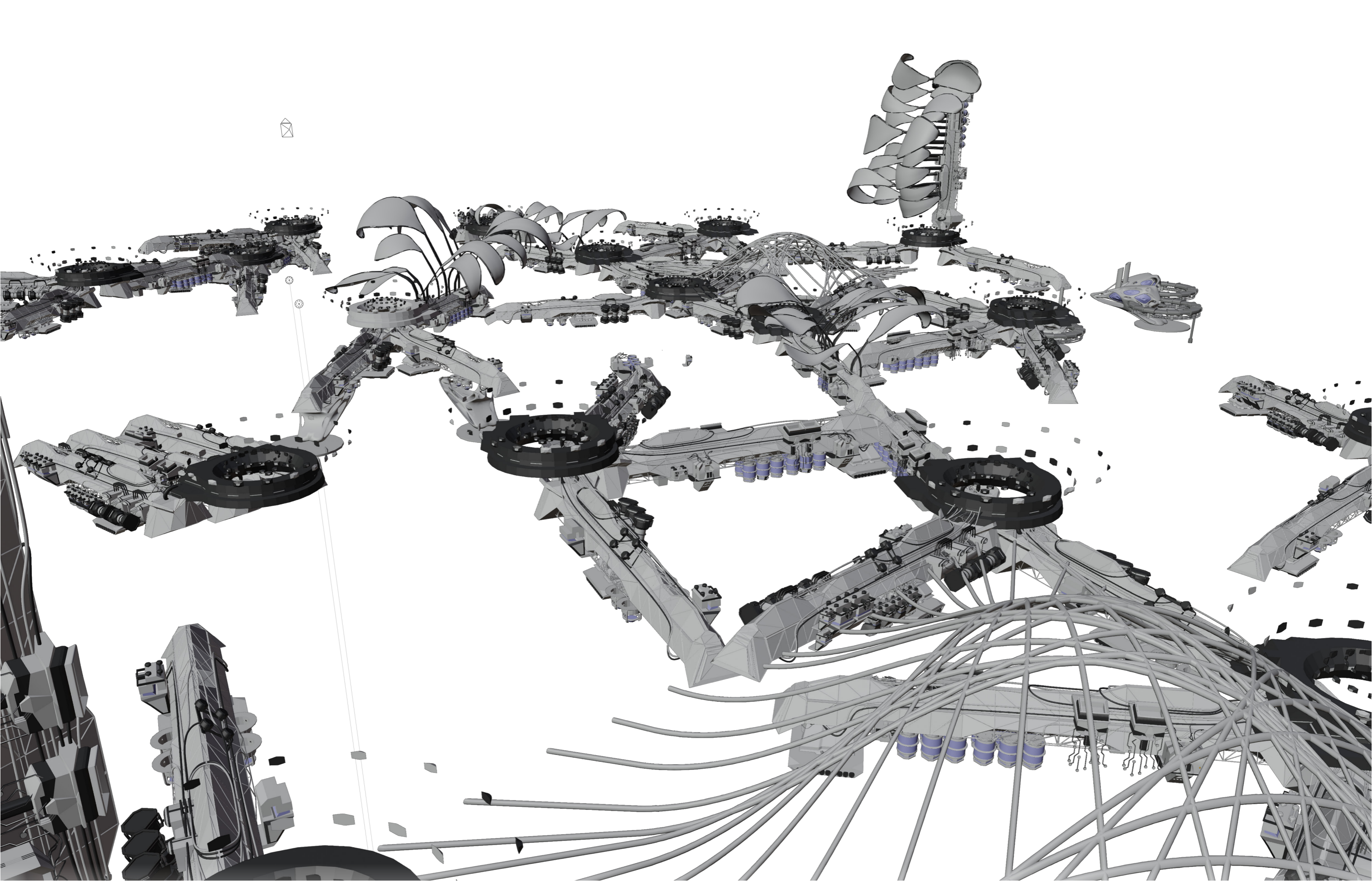


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