

GENESIS THE NEXT GENERATION OF INHABITATION



  
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TO DATE, WE HAVE EXPLORED LESS THAN FIVE PERCENT OF THE WORLD'S OCEAN FLOOR. WE KNOW MORE ABOUT THE MOON AND MARS THAN ABOUT OUR OWN PLANET. WE STILL LOOK FOR A LIFE IN THE UNIVERSE, WHILE UP TO TWO-THIRDS OF SPECIES LIVING IN THE OCEANS HAVE STILL NOT BEEN DISCOVERED, DESCRIBED OR CATALOGUED.

## OCEAN vs. SPACE EXPLORATION

Explored surface of the seabed



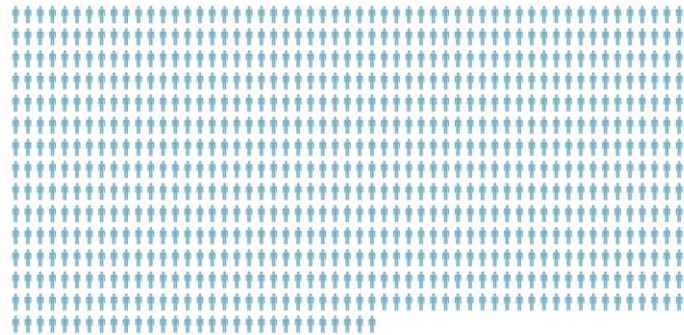
Annual budget of NOAA  
\$23.7 million



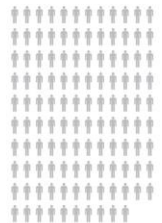
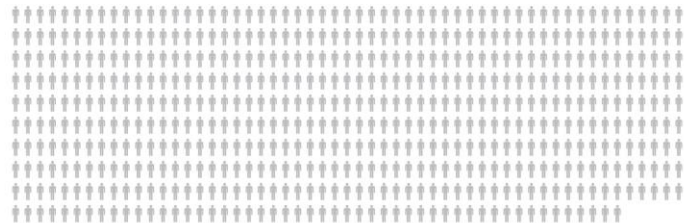
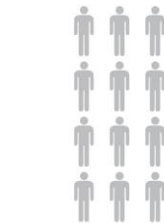
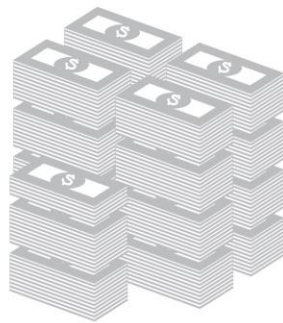
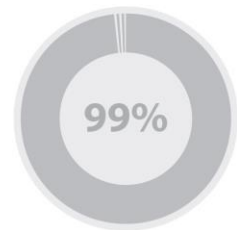
People who have reached Mariana Trench



Total number of aquanauts



Fatalities



Explored surface of the Moon

\$3.8 billion  
Annual budget of NASA

People who have walked on the Moon

Total number of astronauts

Fatalities

OCEANS ARE ALSO THE MAIN OXYGEN GENERATOR AS WELL AS A CLIMATE REGULATOR. ON THE OTHER HAND, UNDERWATER EXPLORATION IS MUCH CHEAPER AND SAFER THAN SPACE EXPEDITIONS.

THE QUESTION IS - WHY DO WE STILL IGNORE THIS, THE MOST IMPORTANT ELEMENT IN OUR EXISTENCE?

## MAIN PROFITS OF UNDERWATER EXPLORATION



scientific  
research  
development



electricity  
resources  
procuring



climat  
control



space  
condition  
simulation



tourism  
development



GENESIS WAS THE FIRST EXPERIMENT THAT AIMED TO ALLOW PEOPLE LIVE UNDERWATER. STARTED IN THE 1950'S BY DR. G. F. BOND AND SUPPORTED BY US NAVY, GENESIS PAVED THE WAY FOR UNDERWATER HABITAT DEVELOPMENT.

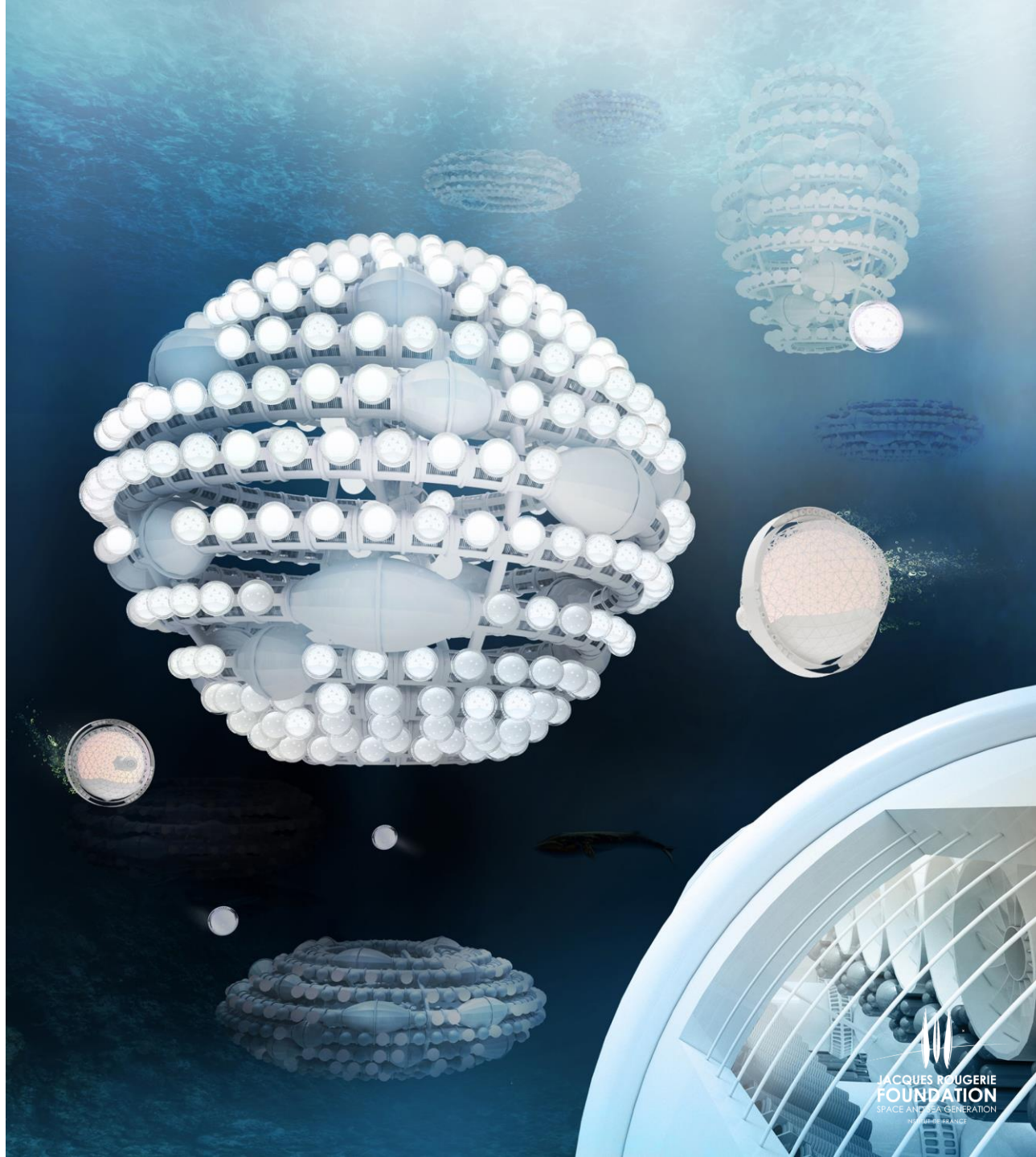
THE NEXT GENERATION OF GENESIS IS A COMPLETE BRIDGE BETWEEN THE HUMAN AND THE UNDERWATER WORLD. THE MAIN INSPIRATION FOR THE PROJECT WAS TROPISM, INCLUDING THIGMOTROPISM.



THIGMOTROPISM IS DEFINED AS THE DIRECTIONAL MOVEMENT OF PLANTS IN RESPONSE TO THE STIMULUS OF TOUCH. THIS BASICALLY MEANS THAT A PLANT ALTERS ITS NORMAL PATTERN OR DIRECTION OF GROWTH OR MOVEMENT AS THE RESULT OF AN EXTERNAL STIMULUS.

### THE MAIN ASSUMPTIONS FOR THE PROJECT:

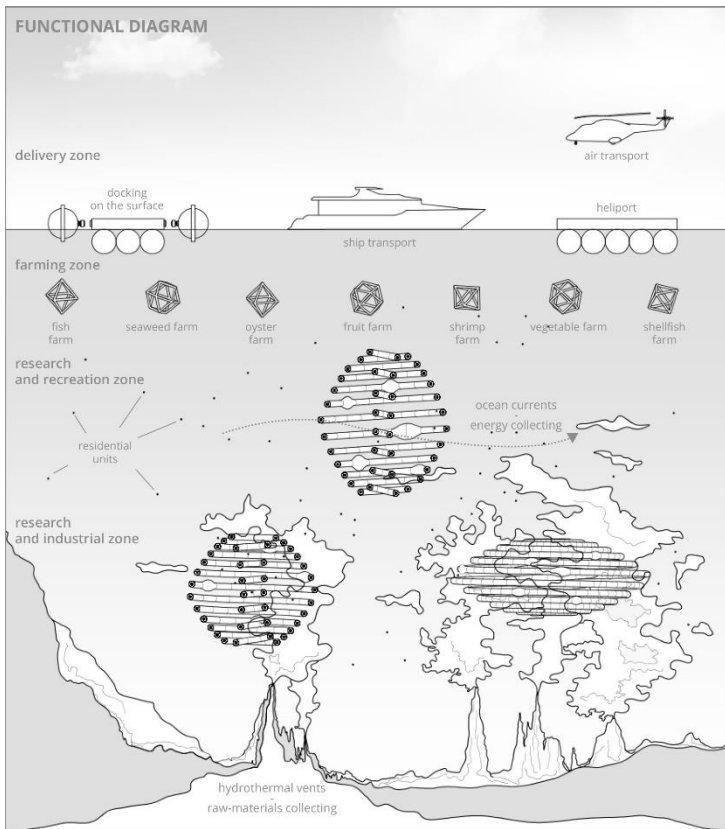
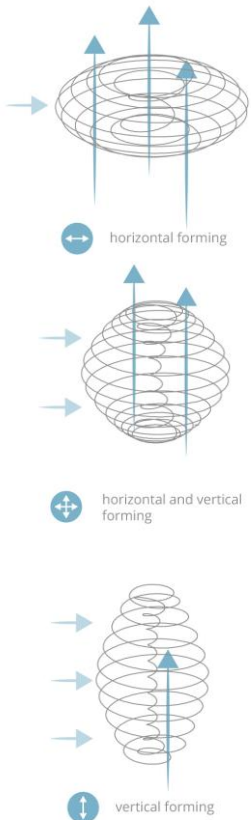
- RESEARCH AT ALL LEVELS OF THE OCEAN
- ADAPTATION TO HUMAN REQUIREMENTS
  - ENVIRONMENTAL SUSTAINABILITY
  - ENERGY AND FOOD INDEPENDENCE
    - UNLIMITED EXPLORATION



GENESIS CONSISTS OF TWO KINDS OF OBJECTS - MAIN BASES AND RESIDENTIAL UNITS. MAIN BASES SERVE AS MEGASTRUCTURES SUPPLYING RESIDENTIAL UNITS WITH ENERGY AND FOOD. AS THEIR LOCATION IS LIMITED ONLY TO THE ENERGY AND RAW-MATERIAL SOURCES, RESIDENTIAL UNITS CAN EXPLORE THE REST OF THE OCEANS.

SHAPE CHANGING DEPENDING ON AVAILABLE SOURCES

● energy sources ● raw-material sources



TO OPTIMIZE THE ABSORPTION OF ENERGY AND RAW MATERIALS, IT WAS DESIGNED AS A MOVEABLE DOUBLE SPIRAL WHICH CAN CHANGE ITS SHAPE OR LOCATION DEPENDING ON THE LOCATION AND CONCENTRATION OF RESOURCES FROM OCEAN CURRENTS, HYDROTHERMAL VENTS AND VOLCANOES.

THE ENLARGED BASE'S MODULES SERVE AS PUBLIC SPACES. THIS MINI-CITY PROVIDES OPPORTUNITIES FOR A WIDE RANGE OF UNDERWATER ACTIVITIES. THE BASE INFRASTRUCTURE HAS BEEN EQUIPPED WITH ADDITIONAL DELIVERY AND FARMING UNITS.

FUNCTIONAL SCHEME

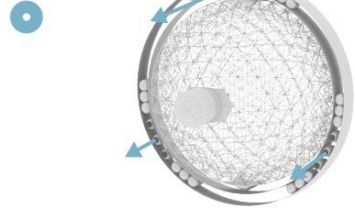
The location of the Genesis bases close to ocean currents and heat sources allows for the easy and inexpensive harvesting of energy from the surrounding environment. It is also possible to absorb energy resulting from dangerous phenomena such as tsunamis, hurricanes or tornado while eliminating their effects which are often fatal for those living on land. From the industrial point of view, hydrothermal vents are rich sources of many minerals and can emit them without incurring any added cost. Thanks to the extraction capabilities of the Genesis station, it is possible to acquire raw materials without any mining.

Constructing the base at a height of several hundred meters off the ocean floor allows for free and easy exploration of several layers of the seabed. After spending a few hours observing the coral reef, you will be able to return below to soak up the charm of bioluminescence. This also shortens the time spent on every-day travel to the bottom for researchers and allows them to avoid spending many days living in darkness.

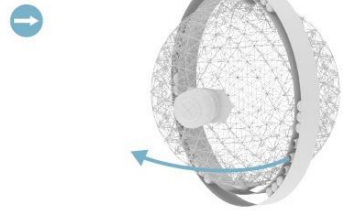


BOTH BASES AND RESIDENTIAL UNITS ARE PROVIDED WITH MHD DRIVE. DRIVE AND BATTERIES ARE PLACED ON THE RING SURROUNDING THE SPHERE.

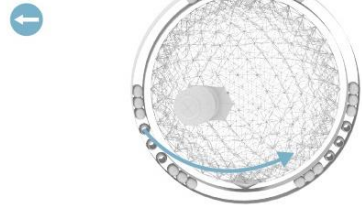
FORWARD



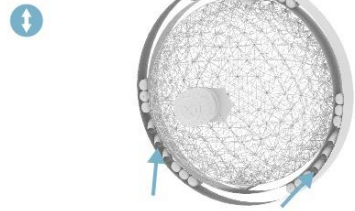
TURNING RIGHT



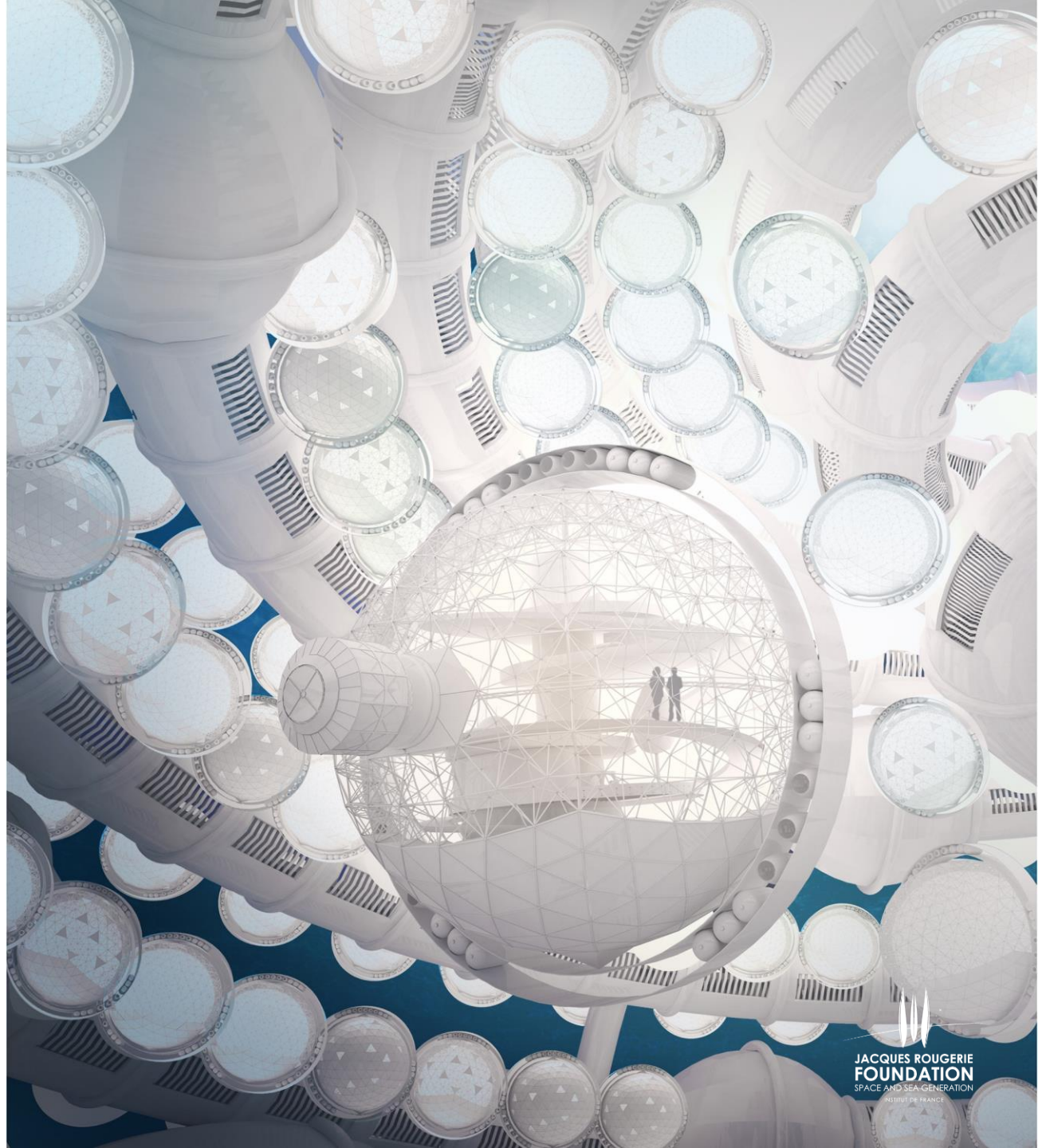
TURNING LEFT



UP AND DOWN



CHANGING THE DIRECTION OF MOVEMENT IS BY ROTATING THE RING AROUND THE AXIS OF ATTACHMENT TO THE BALL OR BY TURNING THE ENGINES THEMSELVES;



## DETAILS OF THE GENESIS BASE

### DETAIL I BASIC UNIT

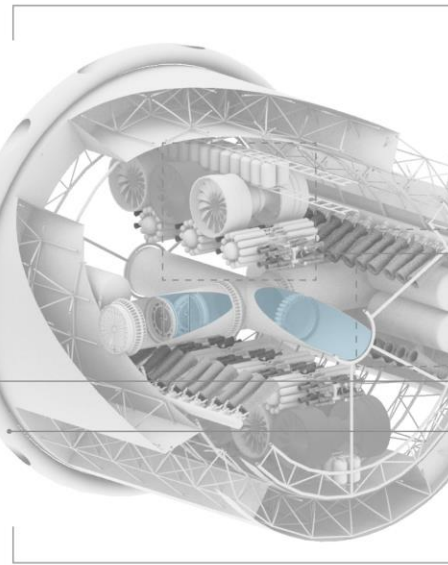
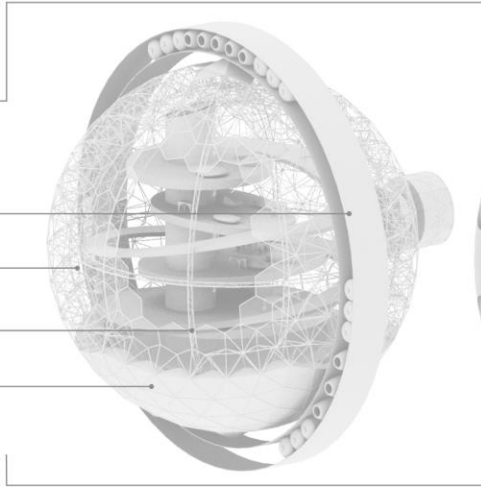
RESIDENTIAL UNIT

RESIDENTIAL UNIT'S DRIVING RING

GEODESIC DOME

TRUSSES - FLOORS' SUPPORT

BALLAST CHAMBER



INDUSTRIAL UNIT

ENERGY COLLECTION

RAW MATERIAL  
COLLECTION

MAGNETOHYDRODYNAMIC  
DRIVE

JOINT

### DETAIL II RESIDENTIAL UNIT

RESIDENTIAL UNIT'S DRIVING RING

BATTERY

MAGNETOHYDRODYNAMIC  
DRIVE

STEERING ENGINE

GEODESIC DOME

INNER HATCH

ENTRANCE HATCH

INNER COATING

OUTER COATING

AIR BUFFER

BALLAST CHAMBER

CONSTRUCTION FRAMING

TRUSSES - FLOORS' SUPPORT



### DETAIL III INDUSTRIAL UNIT

RETICULAR STRUCTURE

BATTERY ARRAY

MARINE CURRENT TURBINE

GAS COLLECTING CYLINDERS

PUMP REALISING  
OXYGEN FROM WATER

PUMP COLLECTING RAW MATERIALS  
FROM HYDROTHERMAL VENTS

RAW MATERIAL COLLECTORS

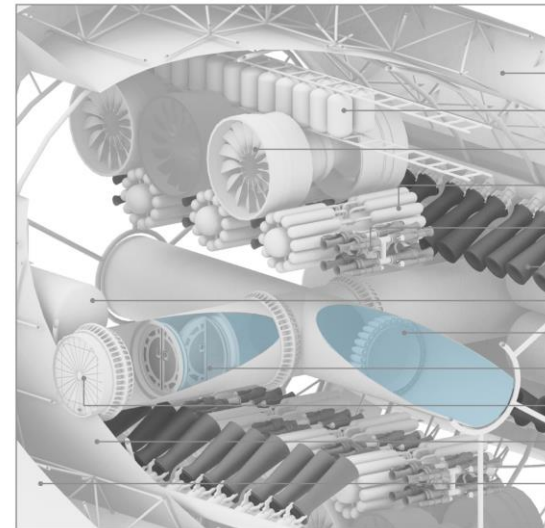
WATER TUNNEL

FLOODGATE

DOCKING PORT

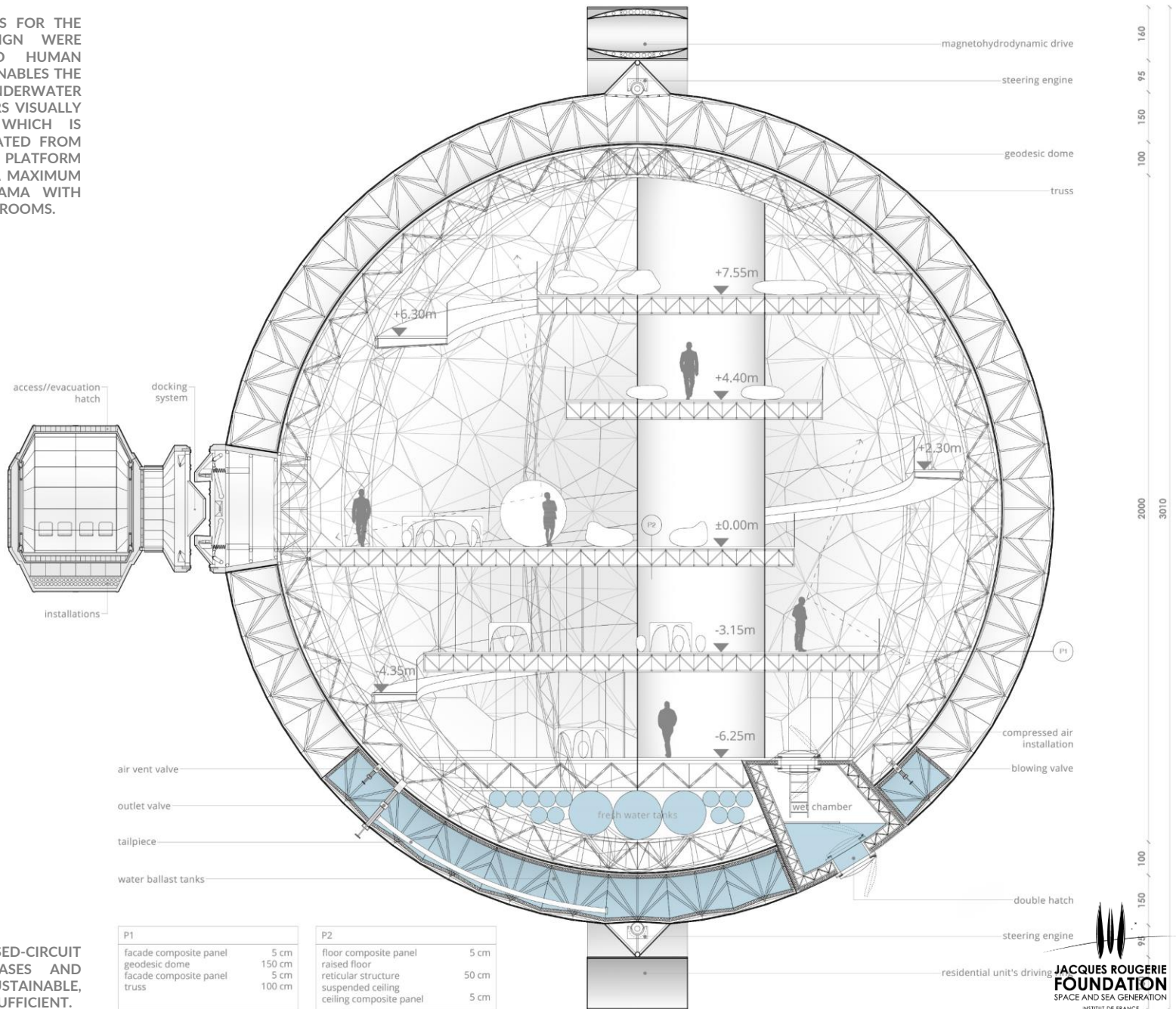
INNER COATING

OUTER COATING



THE BASE IS BUILT MAINLY OF ENERGY AND RAW MATERIAL INTAKE MODULES TO WHICH INDIVIDUAL RESIDENTIAL UNITS DOCK. ENERGY IS GENERATED BY TURBINES DRIVEN BY SEA CURRENTS. RAW MATERIALS ARE TAKEN AND FILTERED FROM WATER. IT IS ALSO POSSIBLE TO PRODUCE OXYGEN FROM WATER BY ELECTROLYSIS.

THE MAIN DETERMINANTS FOR THE RESIDENTIAL UNIT DESIGN WERE WATER PRESSURE AND HUMAN PSYCHOLOGY. A SPHERE ENABLES THE BEST DISTRIBUTION OF UNDERWATER PRESSURE. OPEN INTERIORS VISUALLY ENLARGE THE SPACE, WHICH IS SIGNIFICANT WHEN ISOLATED FROM THE SURFACE. THE PLATFORM ARRANGEMENT ALLOWS A MAXIMUM OF THE OCEAN PANORAMA WITH LIMITED VIEW TO PRIVATE ROOMS.

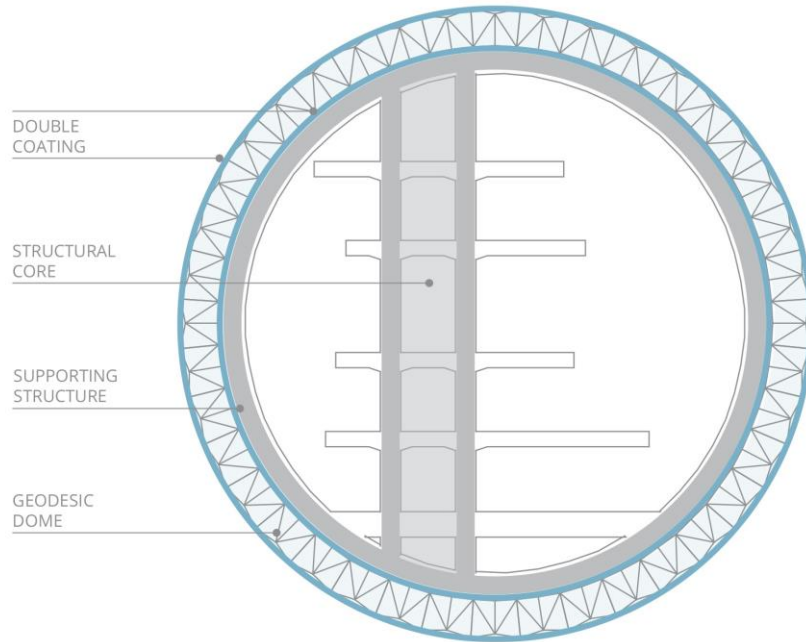


DUE TO THE USE OF CLOSED-CIRCUIT TECHNOLOGY, BOTH BASES AND RESIDENTIAL UNITS ARE SUSTAINABLE, ECO-FRIENDLY AND SELF-SUFFICIENT.

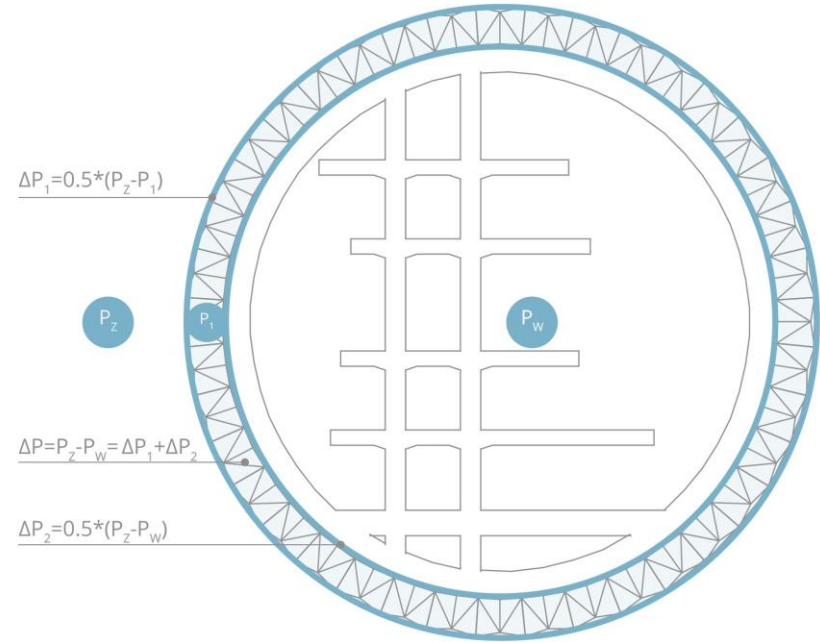
P1	
facade composite panel	5 cm
geodesic dome	150 cm
facade composite panel	5 cm
truss	100 cm

P2	
floor composite panel	5 cm
reticular structure	50 cm
suspended ceiling	
ceiling composite panel	5 cm

## CONSTRUCTION SCHEME



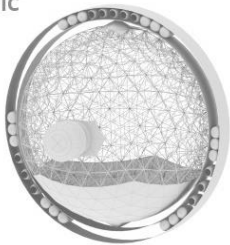
## PRESSURE REDUCTION SCHEME



## COATING TYPES

DEPENDENT ON THE DEPTH OF DIVING

### MESOPHELAGIC



### BATHYPELAGIC



### ABYSSOPELAGIC



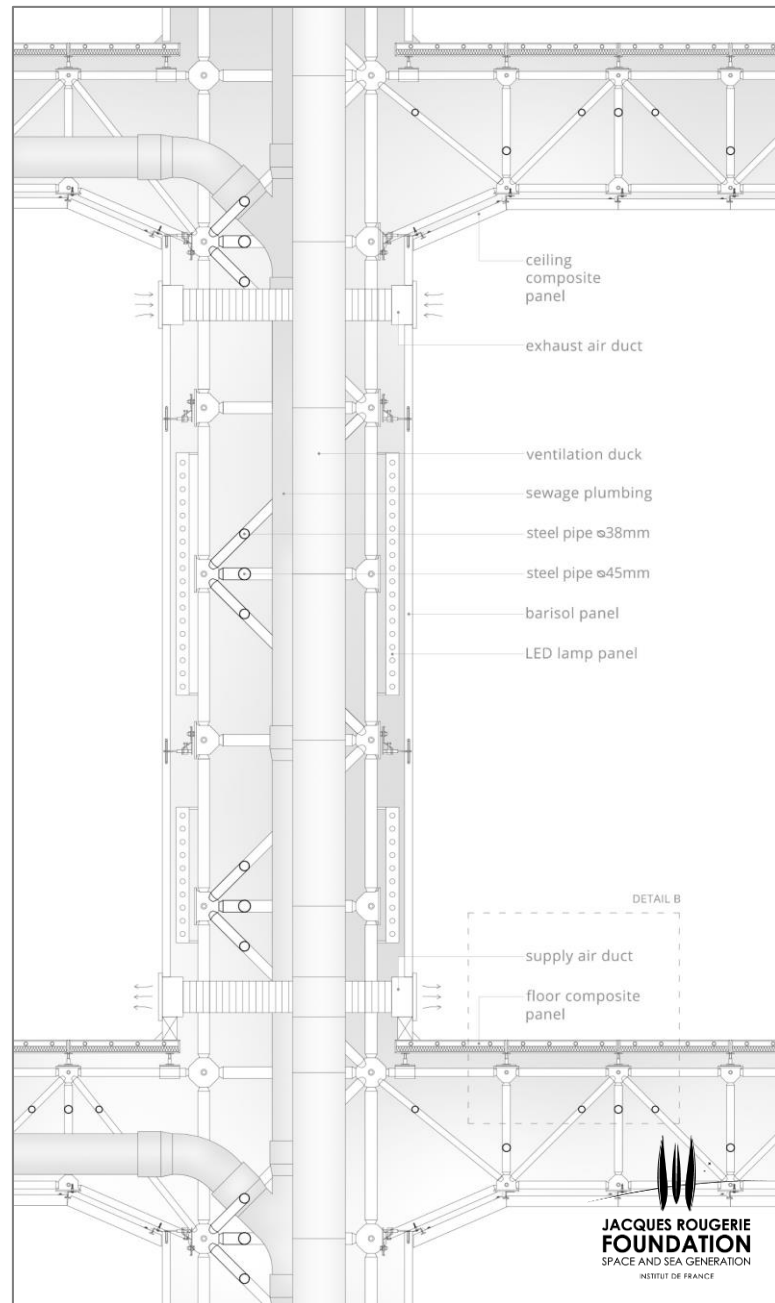
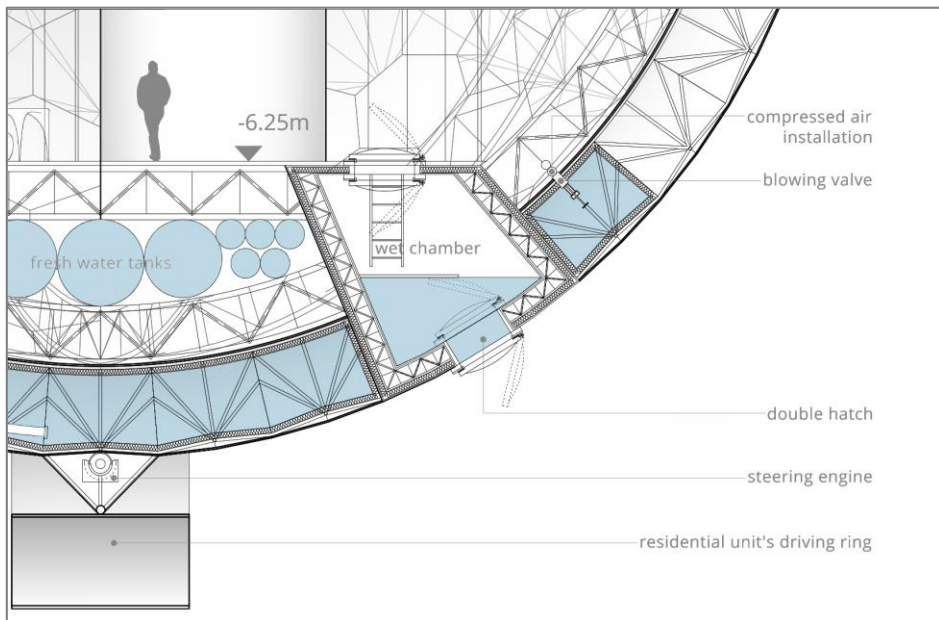
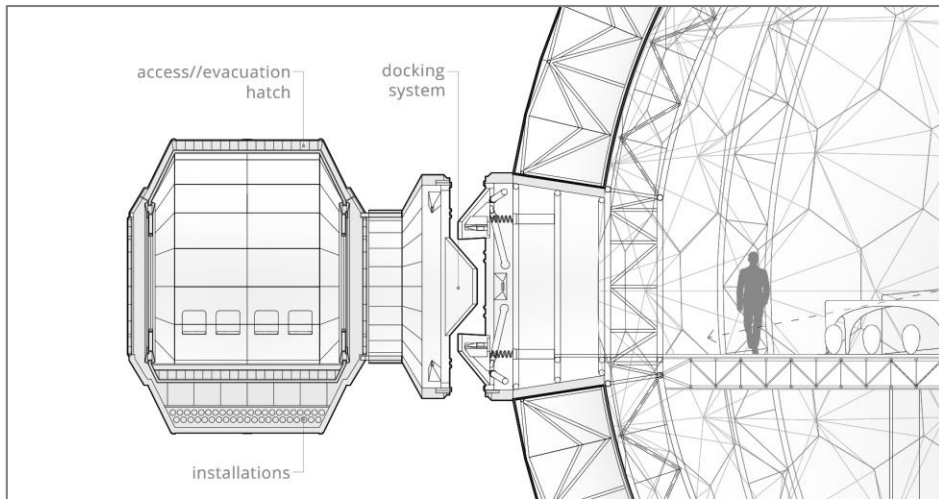
### HADOPELAGIC



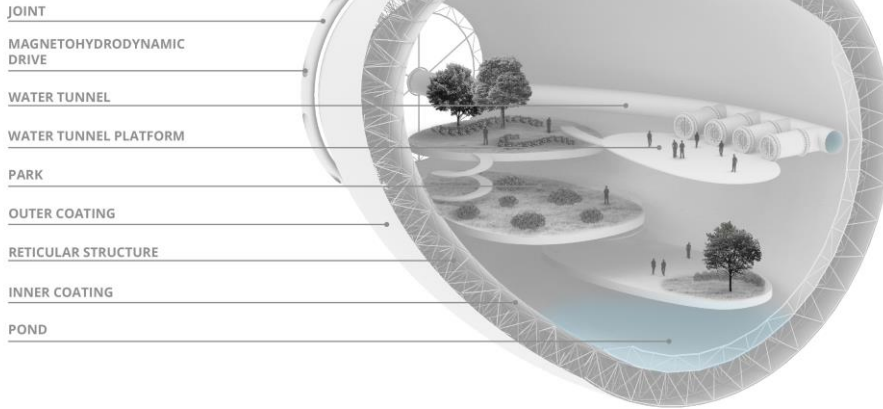
DUE TO THE SPHERE THERE IS AN ATMOSPHERIC PRESSURE INSIDE THE RESIDENTIAL UNITE. THE DOUBLE COATING OF THE SPHERE ALLOWS PRESSURE REDUCTION BY INJECTING HIGH PRESSURE AIR INTO IT. THANKS TO THE POSSIBILITY OF AIR HEATING, IT ALSO PROVIDES THERMAL INSULATION OF THE OBJECT. BOTH BASES AND RESIDENTIAL UNITS ARE MADE OF COMPOSITE PANELS. THERE IS A POSSIBILITY TO REDUCE AMOUNT OF TRANSPARENT PANELS TO STRENGTHEN THE STRUCTURE WHEN DIVING DEEPER.



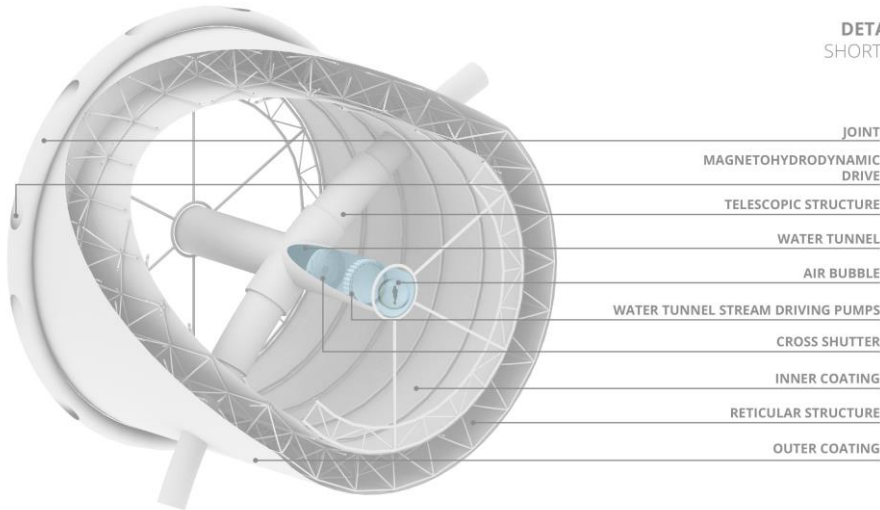
THERE ARE TWO ENTRIES TO THE HABITAT - DRY AND WET ONE. DRY HATCH CAN SERVE AS EVACUATION UNIT AND DETACH DURING A BREAKDOWN. RESIDENTIAL UNIT IS DESIGNED AS A SPACE FRAME, WHICH INCREASES THE STABILITY AND ALLOWS FOR HIDING INSTALLATIONS INSIDE



**DETAIL IV**  
PUBLIC SPACE UNIT - PARK



PUBLIC MODULES CAN BE ENLARGED IN ORDER TO OBTAIN A LARGER SURFACE AREA FOR PEOPLE'S ACTIVITIES. THE FUNCTIONALITY OF THE BASE MEETS THE NEEDS OF LIVING, WORKING, REPOSE AND ENTERTAINMENT. DEPENDING ON THE SIZE OF THE BASE, THE FUNCTIONALITY MAY BE MORE OR LESS DIVERSE.



TRANSPORTATION OF PEOPLE WITHIN THE MAIN BASE IS POSSIBLE DUE TO AIR BUBBLES FLOWING THROUGH AN INTERNAL AQUEOUS CORRIDOR. BECAUSE IT IS FILLED WITH WATER, THE CORRIDOR ALSO SERVES AS THE INTERNAL BALLAST FOR THE STATION. VERTICAL CORRIDORS, LOCATED OUTSIDE THE MODULES, HAVE BEEN INTRODUCED AS SHORTCUTS. DUE TO A TELESCOPIC CONSTRUCTION, THEY CAN LENGTHEN OR SHORTEN IN RESPONSE TO A CHANGE IN THE SHAPE OF THE BASE. THE INTERSECTION OF TWO TUNNELS WORKS LIKE A STREET INTERSECTION - TRAFFIC IS SEQUENTIALLY INTERRUPTED BY CLOSING THE FLOW OF "BUBBLES".

