Working and Living on and in Seas and Oceans
A world for future – your future

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16th of March 2015
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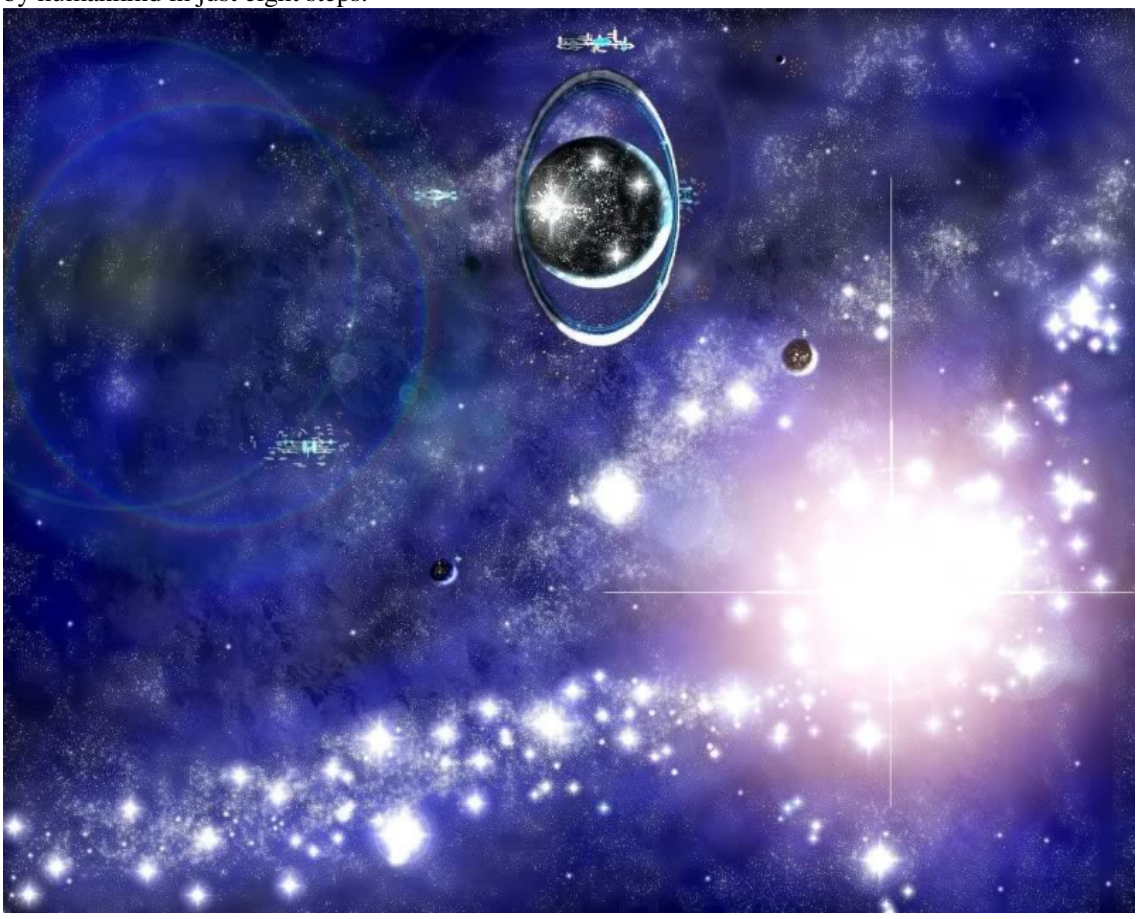
1. Introduction

The future belongs to you, the children in this school and the other children in the world.
The future will be your time, your world, however it is shaped starting from today by you together with your parents and relatives, your teachers and people living today.

It is no time when people haven't thought about future. The most well know people talking about how future will be are most probably Jules Verne (a French) and H.G. Wells (a British). They told us quite with impressive correctitude how the 20th Century looks however they vision stops somewhere 100 years after the moment of their life.
Other people took the job from this point and went further.
Some of them were very ambitious and they designed a much larger plan for Colonizing the Galaxy!

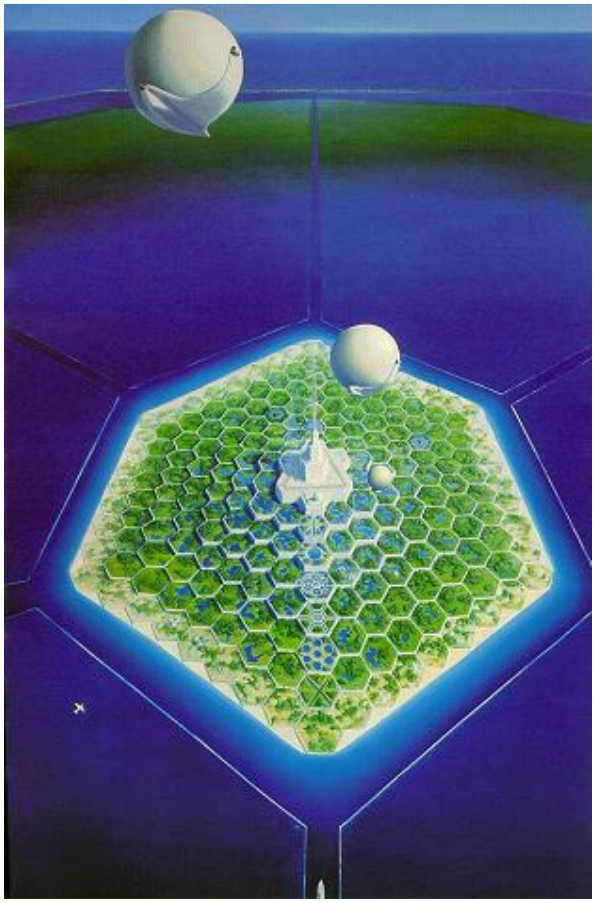
2. The Millennial Project

This plan is well known as "The Millennial Project" and discusses how the Galaxy could be colonized by humankind in just eight steps.

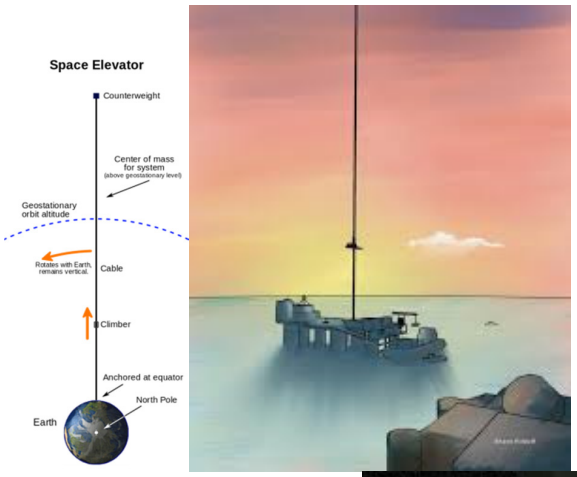


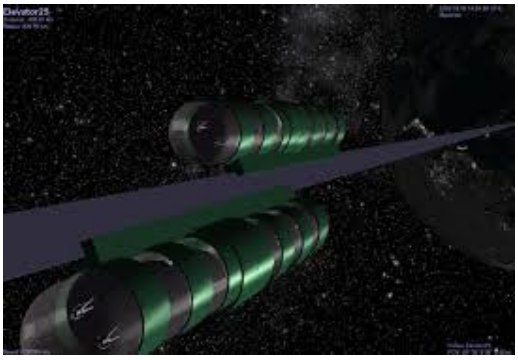
The most steps important steps are:

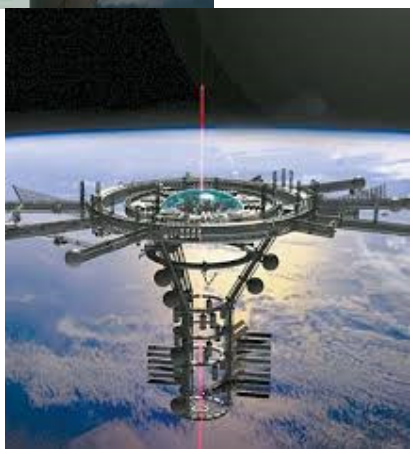
1. Aquarius – Arcologies built in the tropical oceans as a first step to learning how to build ("grow"[1]) colonies in space using a method not unlike that used by living corals[2] developed by Prof. Wolf Hartmut Hilbertz and applying his concept of Cybertecture.[3] They also would generate income to fund later steps.



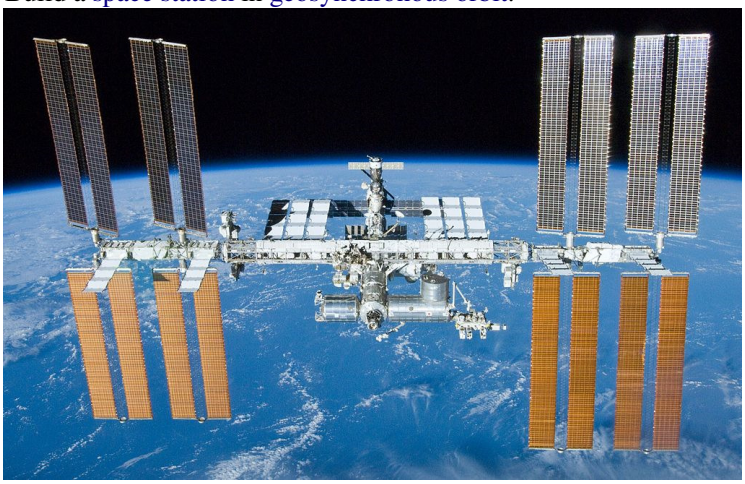
2. Bifrost – First step in actually getting off the Earth using ground based free-electron-laser-powered laser-propelled Waverider. Leik Myrabo, an aerospace engineering professor at Rensselaer Polytechnic Institute, demonstrated the feasibility of using ground-based lasers to propel objects into orbit in 1988.

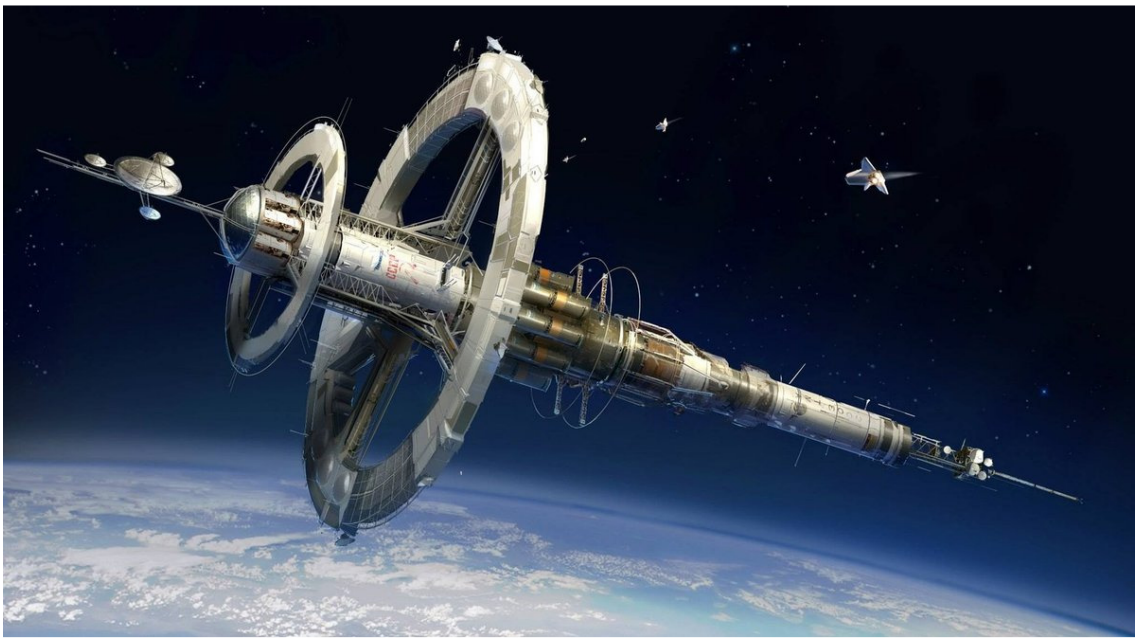




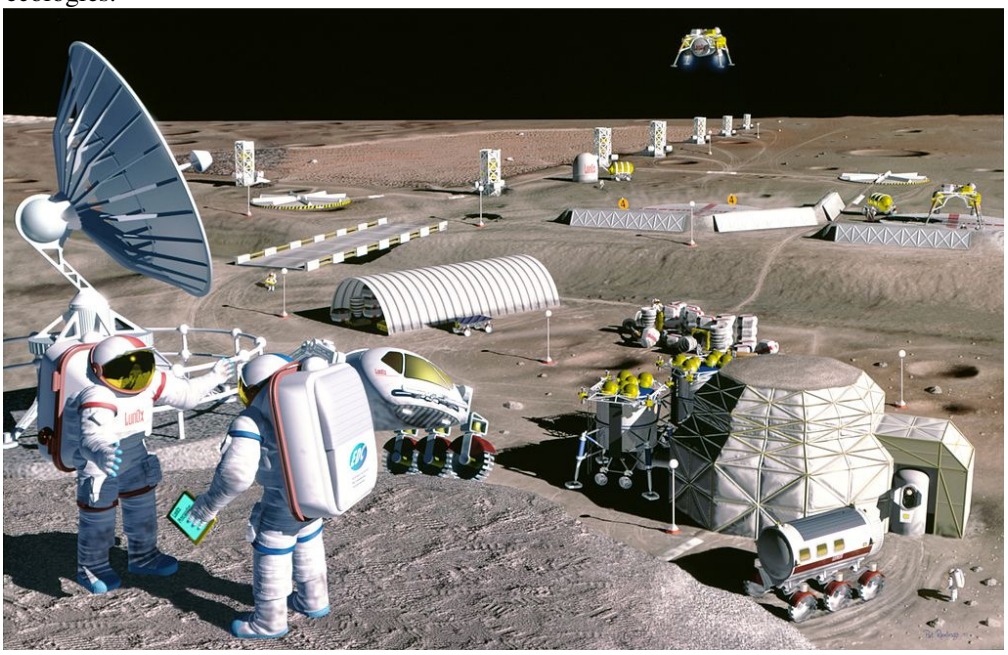


3. Asgard – Build a space station in geosynchronous orbit.

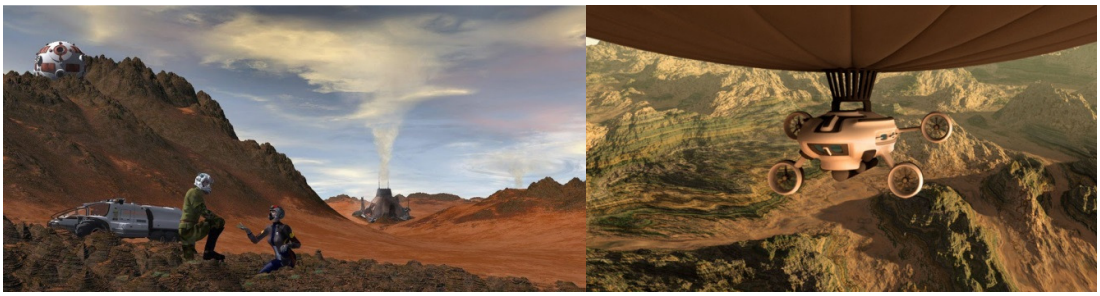


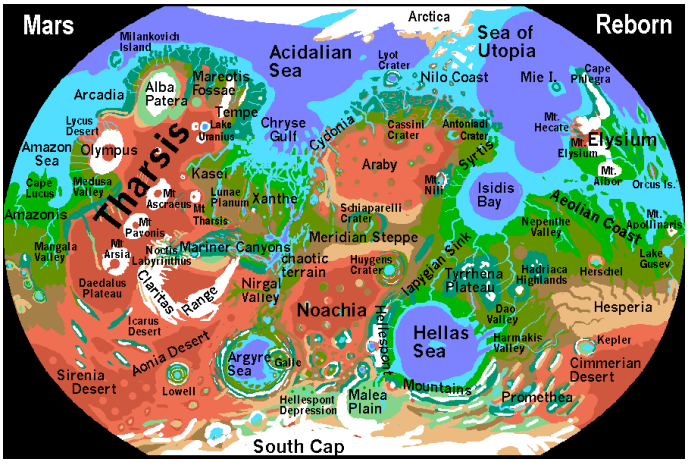


4. Avalon – Build colonies on the Moon by doming over the craters and creating miniature ecologies.



5. Elysium – Start terraforming Mars to "create a living planet to sustain us" connected with Earth through Buzz Aldrin's proposed Mars Transit System,[4] an example ofEarth-Mars cycler.





6. Solaria – Mine asteroids to create asteroid colonies and Asgard-like stations throughout the Solar System to create a Dyson cloud.

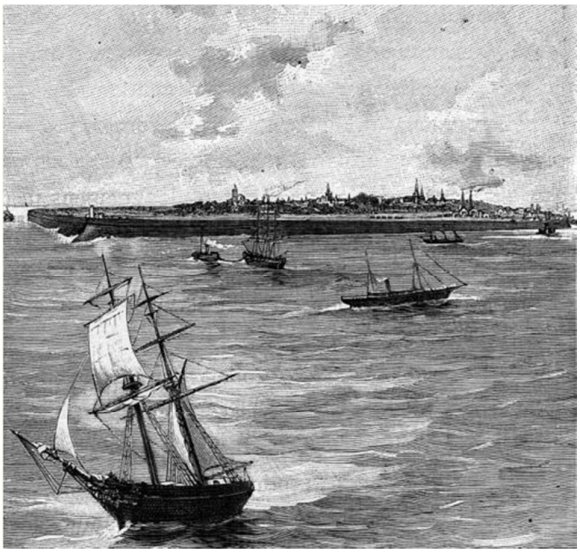
7. Galactia – Colonize beyond the Solar System, expand throughout the galaxy heading to a level 3 on the Kardashev scale, a method of measuring a civilization's level of energy production and consumption

My opinion is that these plans are great but the details of their design and construction of majority of them belongs to your children and to the children of your children.

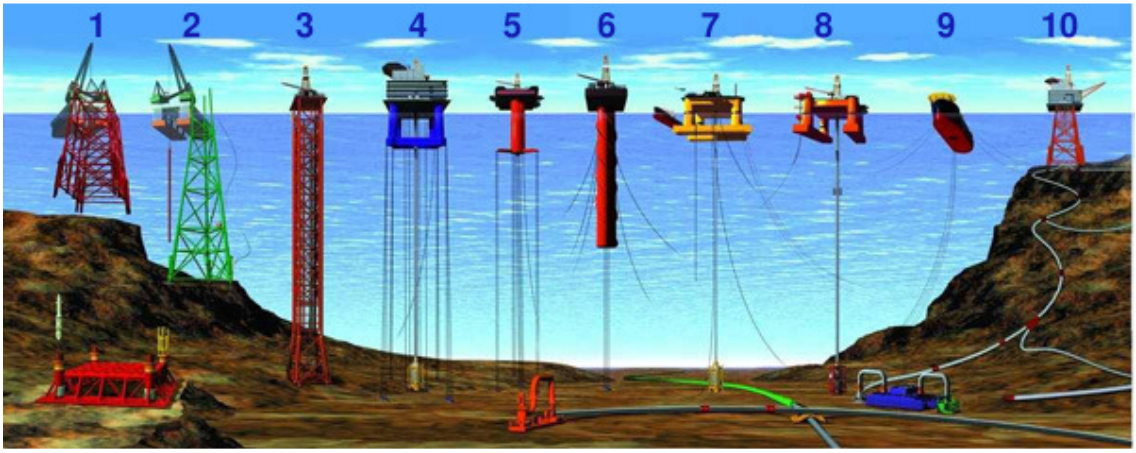
I have no doubts that the project what belongs to be design and build by you is Aquarius!
I am here to discuss with you about Aquarius, to introduce this project to you and to give just a sneak view of how it will be your work and life on Aquarius.

Living and working on sea and oceans is not exactly a new idea. There are people doing this for many years – for example Polynesians – because they live in small islands in the enormous Pacific ocean. For them the ocean is our crops fields, fishes are our cattle and sailing thousands of miles among lands is like for us traveling on highways between cities. Their skills for living and working on seas are extraordinary but their technology is stopped in a moment few centuries ago.

In the second half of 19th century Jules Verne has imagined an entire floating city but this is one of his forecasts not yet implemented.



Today, as you know from your parents, people work on sea on ships, fixed or movable rigs and FPSO (**F**loating units for **P**roduction and **S**torage of **O**il).

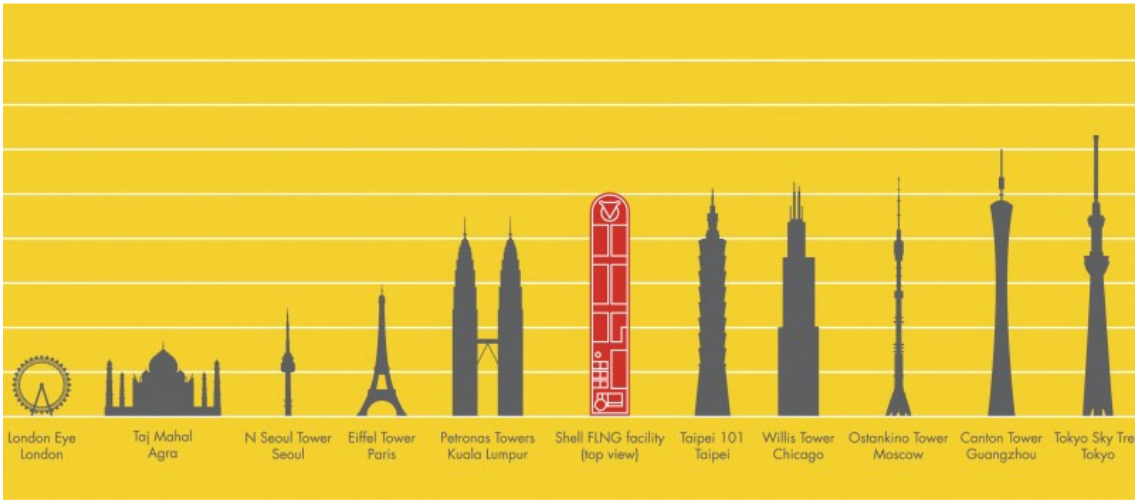


Types of **Offshore Oil and Gas Structures** **1**) & **2**) Conventional fixed platforms (deepest: Shell's Bullwinkle in 1991 at 412 m/1,353 ft GOM) **3**) Compliant tower (deepest: ChevronTexaco's Petronius in 1998 at 534 m /1,754 ft GOM) **4**) & **5**) Vertically moored tension leg and mini-tension leg platform (deepest: ConocoPhillips' Magnolia in 2004 1,425 m/4,674 ft GOM) **6**) Spar (deepest: Dominion's Devils Tower in 2004, 1,710 m/5,610 ft GOM) **7**) & **8**) Semi-submersibles (deepest: Shell's NaKika in 2003, 1920 m/6,300 ft GOM) **9**) Floating production, storage, and offloading facility (deepest: 2005, 1,345 m/4,429 ft Brazil) **10**) Sub-sea completion and tie-back to host facility (deepest: Shell's Coulomb tie to NaKika 2004, 2,307 m/ 7,570 ft) (Numbered from left to right; all records from 2005 data)

In last years some very large assets like above were build.

One is the Shell's Prelude – most probable the largest floating structure of our days.

If you like understanding the dimensions of this boat you need to see followings comparison with the tallest buildings in the word or the amassing phantasy picture of the Prelude moored on Thames quay side in front of British Parliament in London.

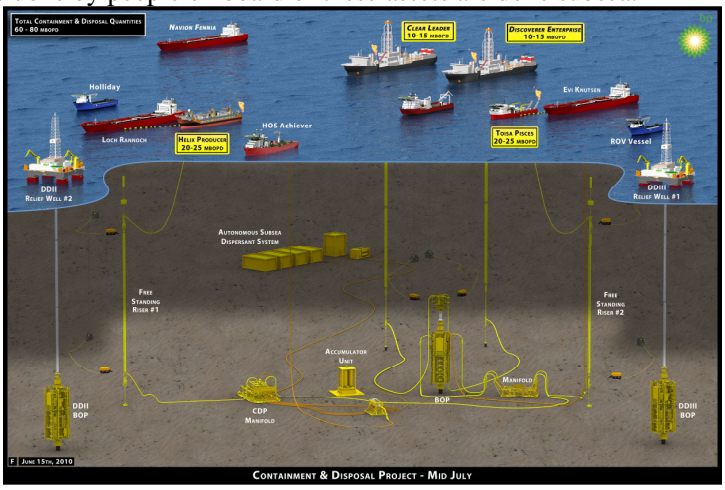


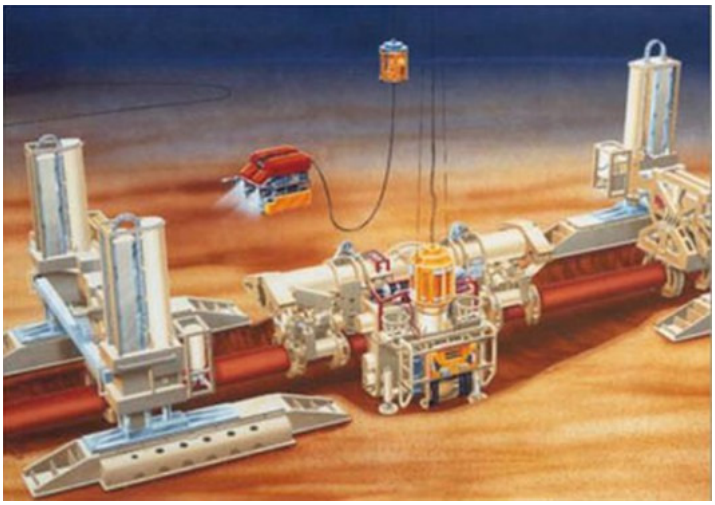
Other amassing vessel brand new, just released from same Korean shipyards as Prelude is the heavy lift/decommissioning vessel Pieter Schelte.

If you like understanding how large this vessel is you have to search in the picture below how many football games could be easily played simultaneously on the deck.

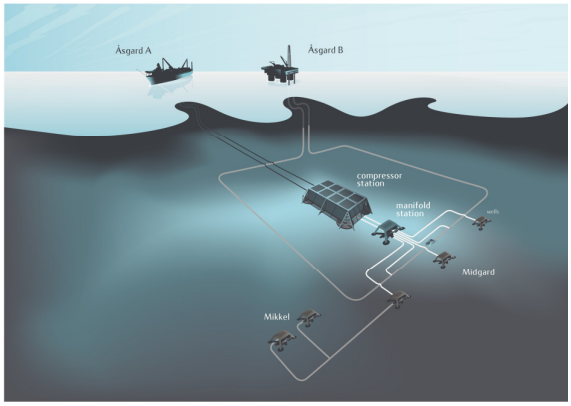
For working on these assets people flight with helicopters or are travel on boats until nearby the asset and go across the way between boat and asset on some very interesting telescopic gangways.

Many of the works done by people on board of these assets are done subsea.

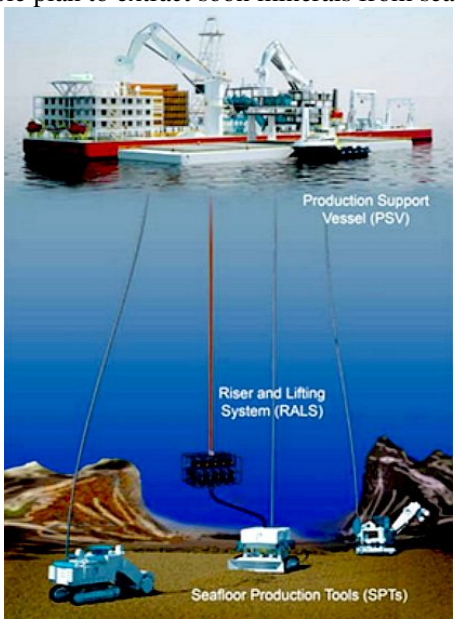


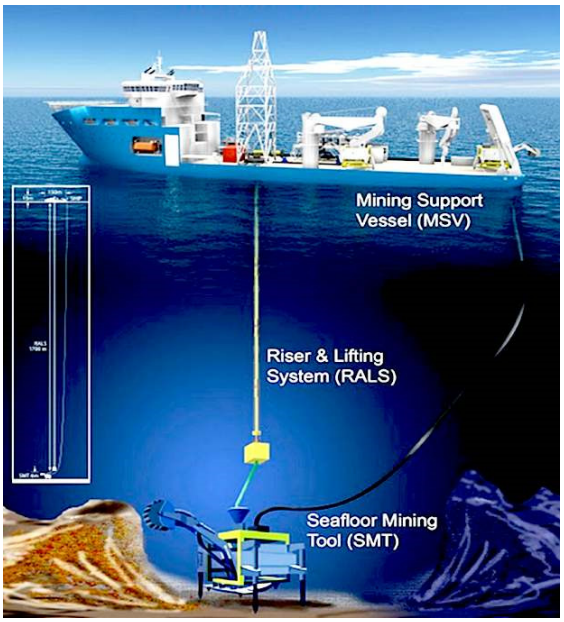


Statoil subsea compression station is one of the largest (if not the largest) subsea constructions and for understanding how large it is please have a look again to a football stadium… with the station laying in middle.

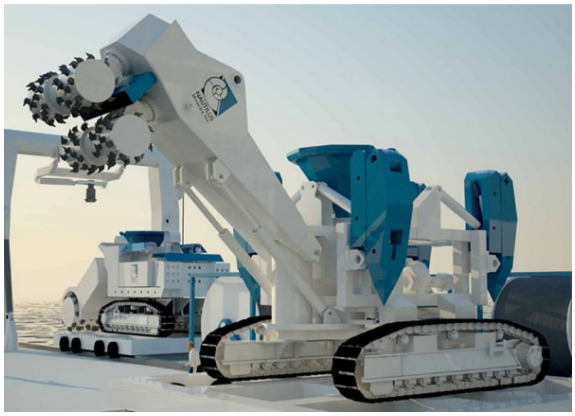


People plan to extract soon minerals from sea bed.



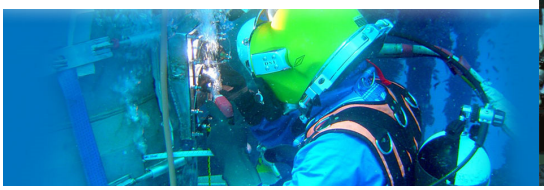


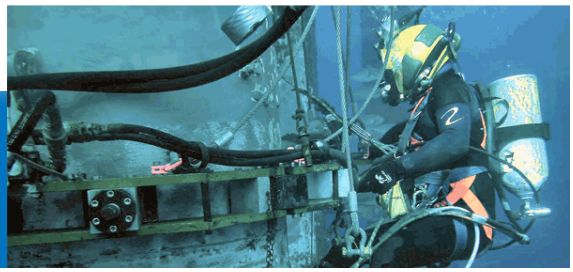
The subsea mining will be done with ships and robotic tools like the ones in pictures below.



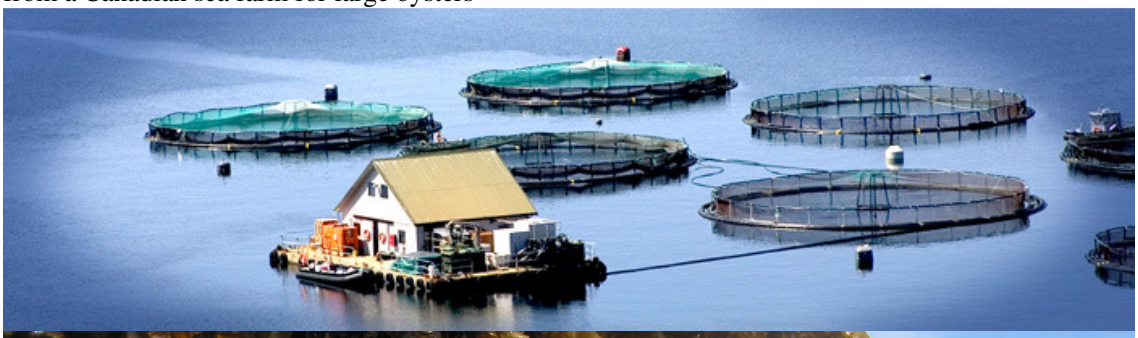
Diamonds are already mined from the sea bed of south half of Africa. In picture the vessel Peace in Africa specialized in subsea diamond mining.

An important part of the subsea jobs are done by divers assisted by Remote Operated Vehicles.

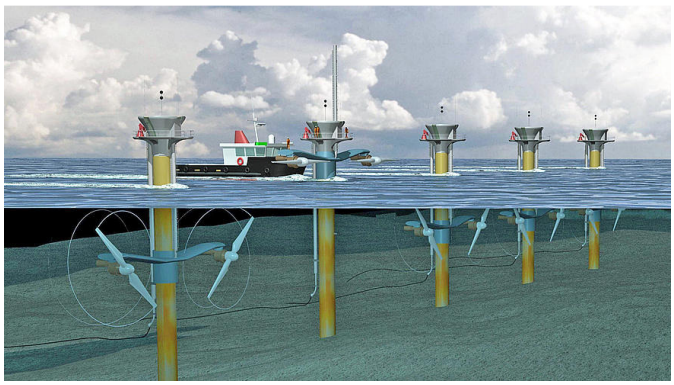




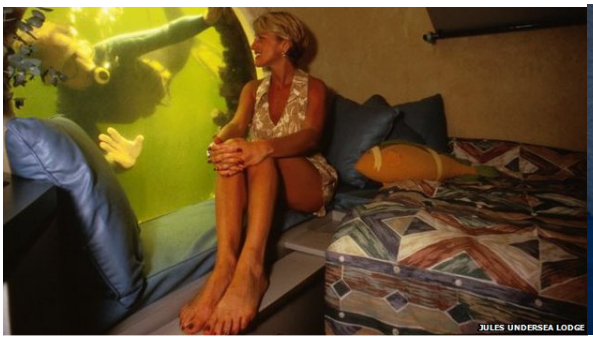
People are also growing food on sea. In the first two pictures are both from Scotland (a leading country in food growth on sea), first a salmon farm and second a seaweed farmer. The third picture is from a Canadian sea farm for large oysters

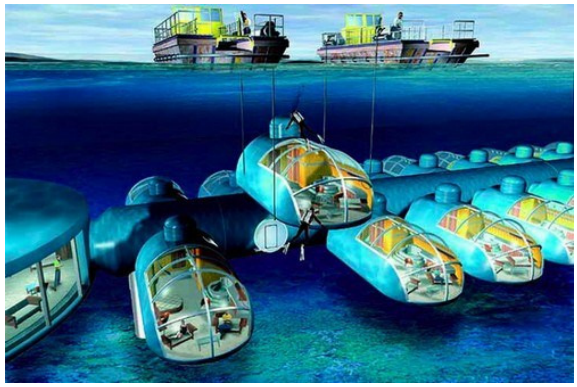


Electric energy is produced by the wind mills already installed all over the seas and oceans and plans are that tidal turbines to be installed too.

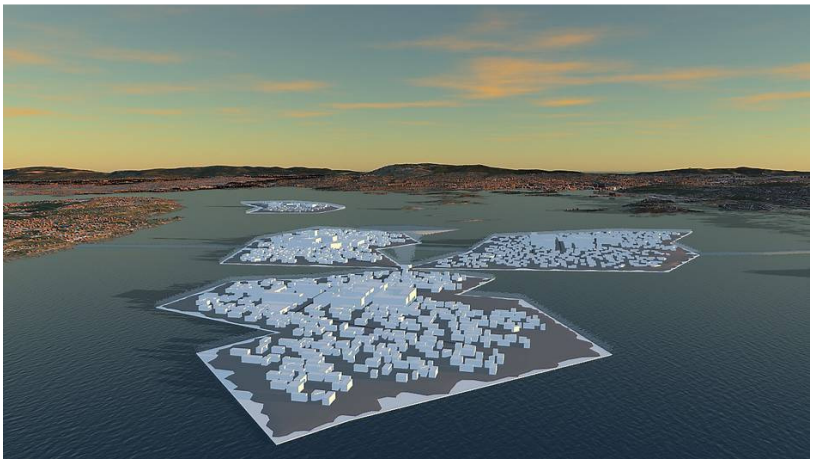


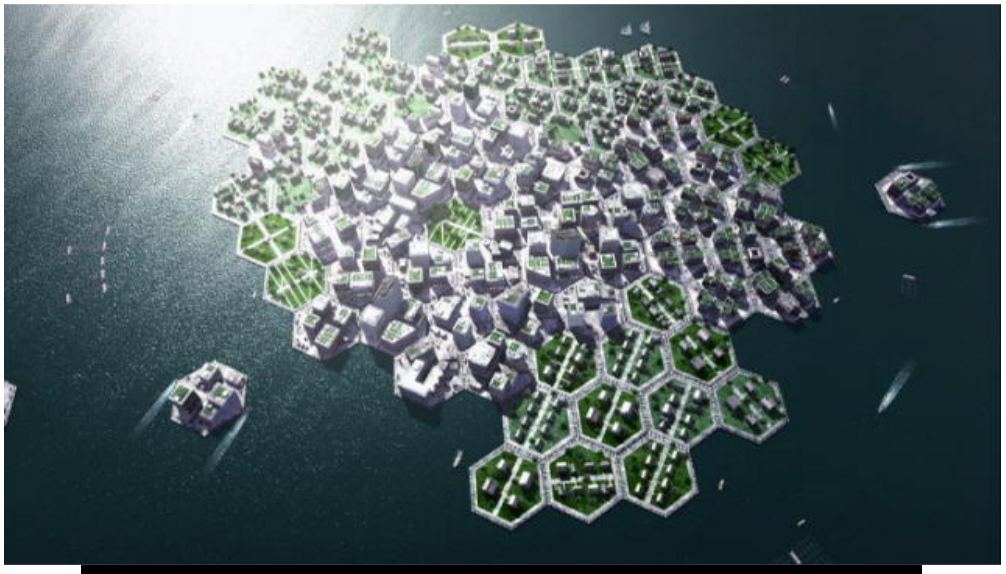
Today there are around few underwater hotels (pizza can be delivered here too!) and quite a number of projects for more ambitious such developments.

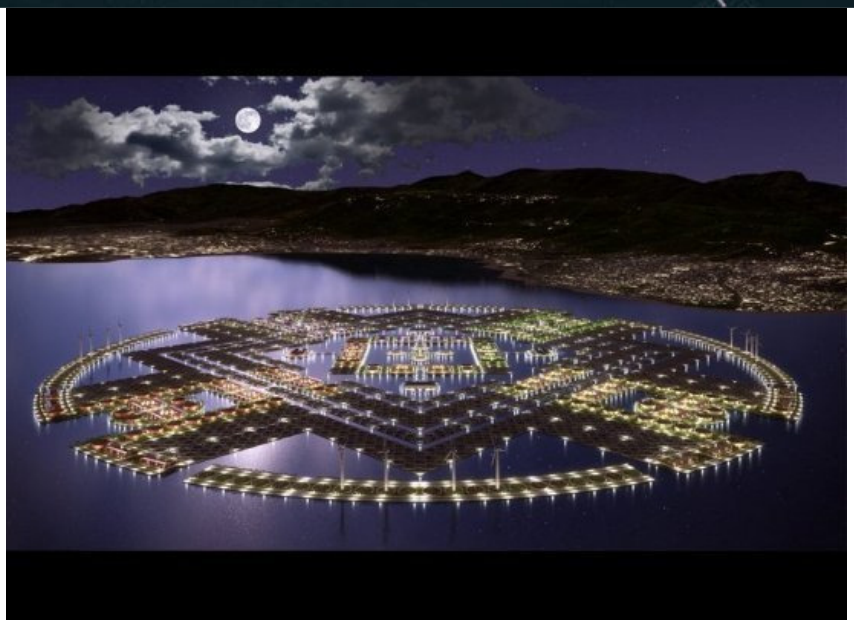




Your parents, my generation, work on or in sea but now we come back home on land, sometime we can take a holiday in one of the few underwater hotels but many people think that in future it won't be so seldom that people will leave permanently at sea.
Soon Jules Verne' floating island or the Aquarius projects might become reality.
Most probably you are the engineers what will design and build these floating cities therefore I shall show you some of the present ideas about how should look these cities… but you will tell us in the next twenty thirty years from now on if our dreams today are right and doable.

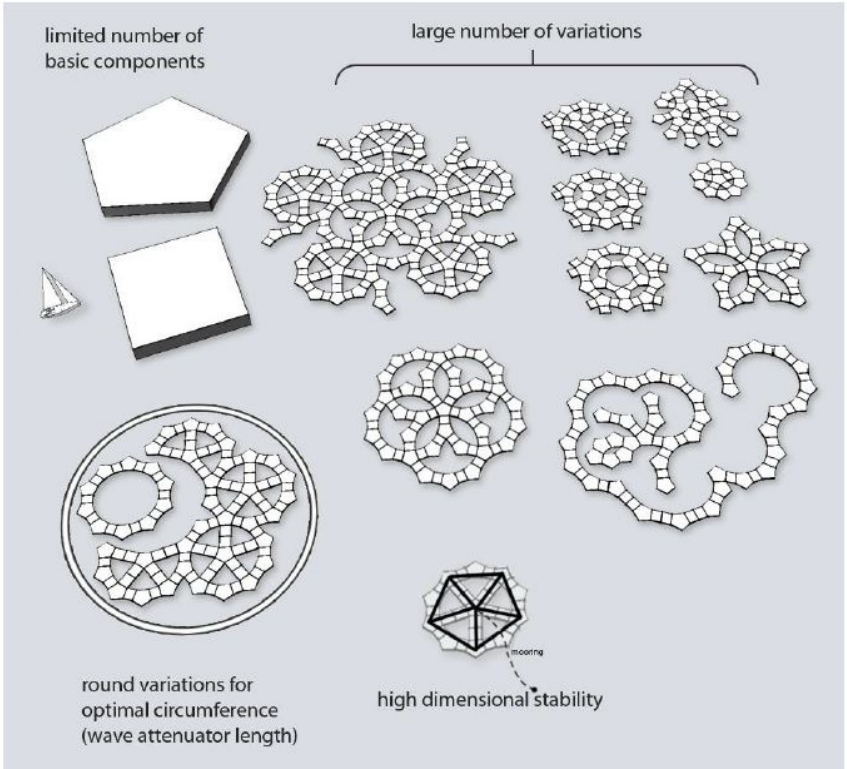


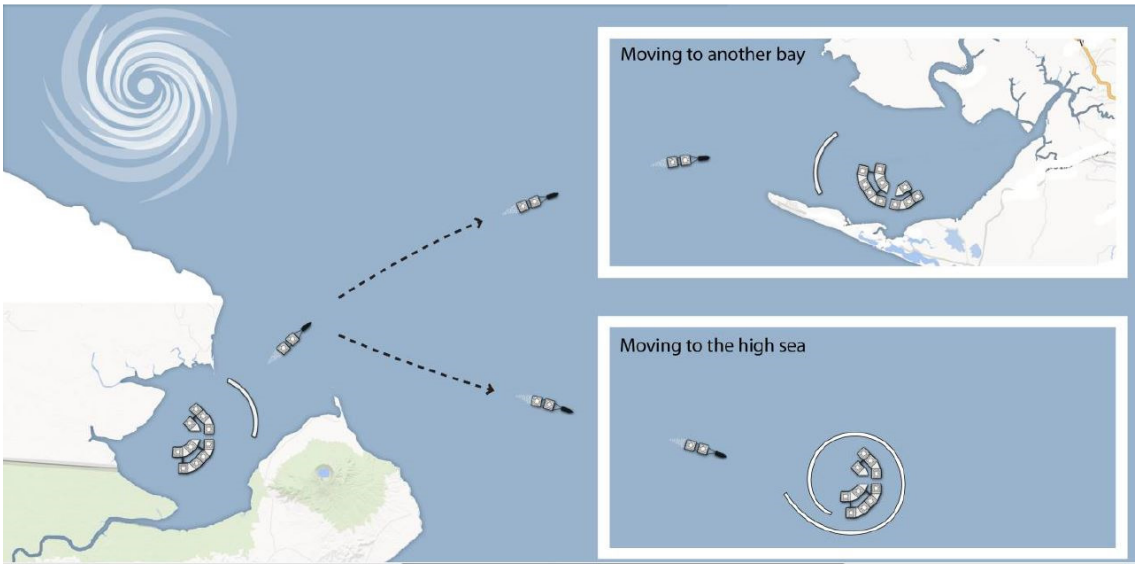


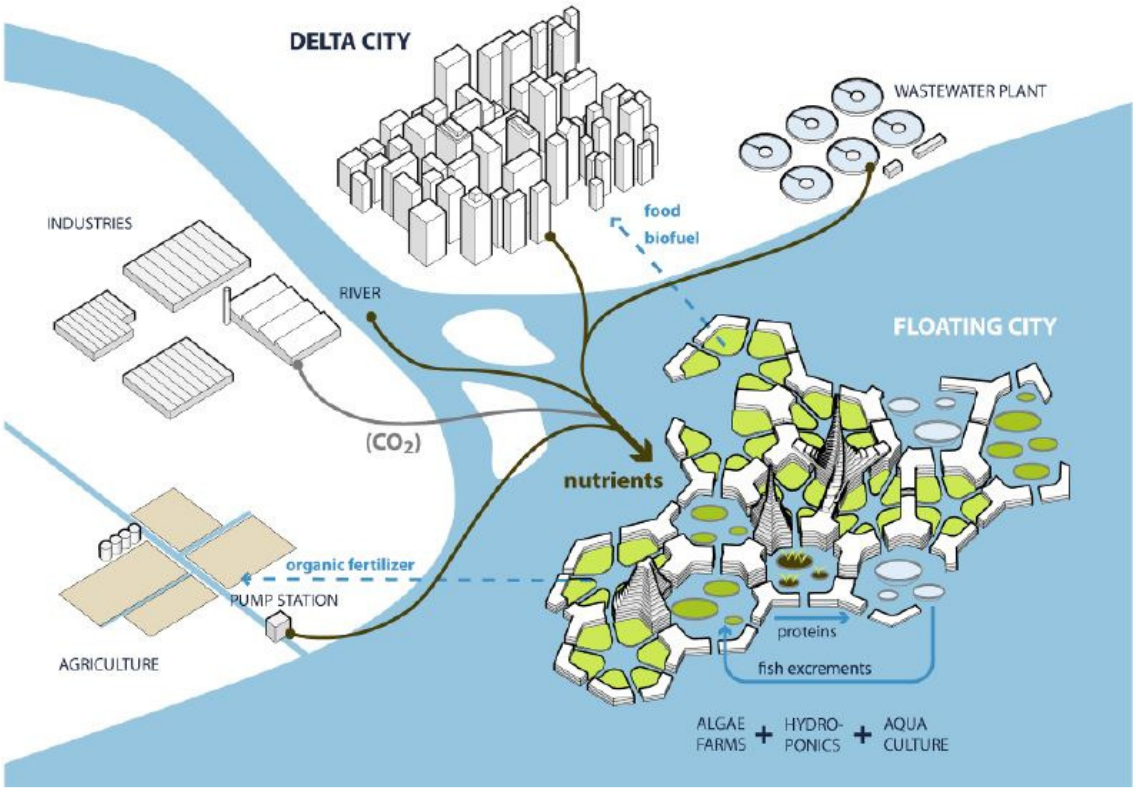


Today the most advanced projects seem to belong to the SeaSteading Institute and Shimizu Corporation.

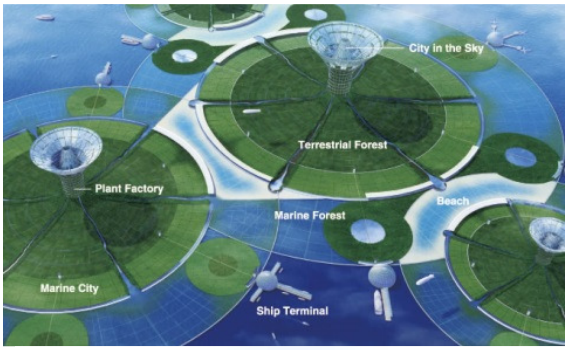
The SeaSteading Institute project is presented briefly in the pictures below.

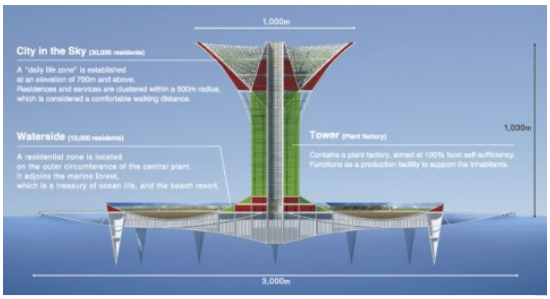


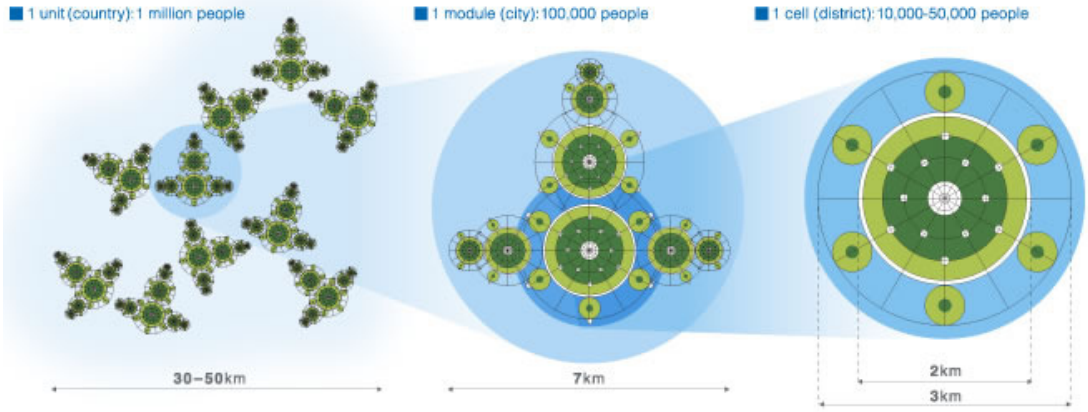

Moving to another bay
Moving to the high sea


DELTA CITY
WASTEWATER PLANT
food
biofuel
INDUSTRIES
RIVER
FLOATING CITY
(CO2)
nutrients
organic fertilizer
PUMP STATION
AGRICULTURE
proteins
fish excrements
ALGAE FARMS + HYDRO-PONICS + AQUA CULTURE

The Shimizu Corporation concept is slightly different but the main ideas are still there.







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