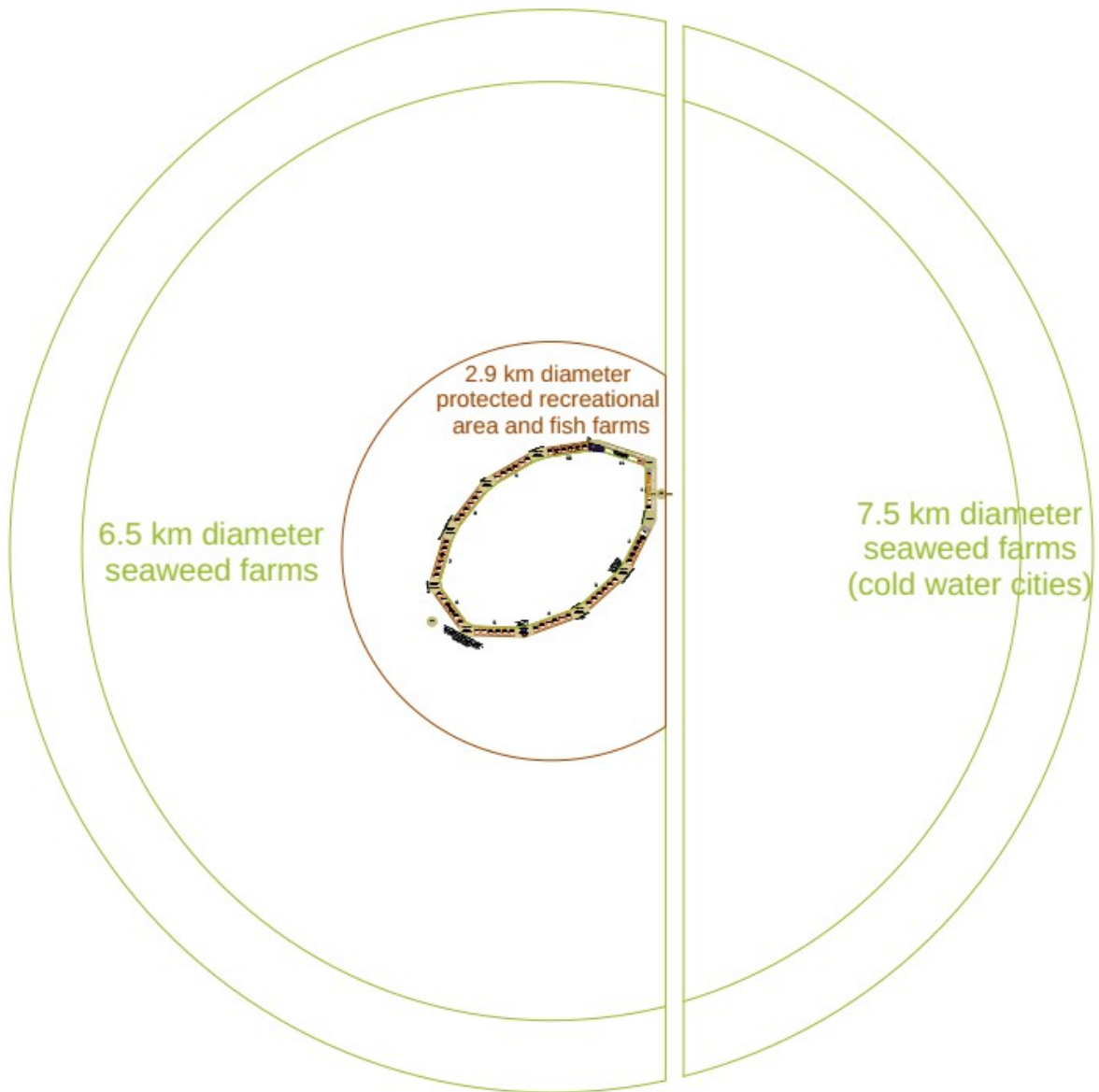


# The mass produced city of Alcyone



## FOREWORD

This is a outline of a project to provide a home nation for the peoples of the world that either do not have a nation or are dissatisfied with the one that fate gave them , AND to do this without displacing any other persons from their homes .

Some groups that come to mind are the Uyghurs , Kurd's , people that even though they were born in China are not Chinese citizens , Americans arbitrary put on "Terrorist lists" or guilty of being a male , former citizens of island nations now underwater due to climate change and the millions of individuals that don't belong to any group other than the brotherhood of the stateless .

The project proposed is a "underwater city" or rather a "partially underwater city" . First a "Technology Demonstrator" to test the designs and technologies will be built . Then once necessary adjustments are made , the city will be constructed in a Modular fashion , paid for by a 200% house tax , a variable sales tax , donations, some tourism , and mostly by exports.

The first underwater habitats were built in the 1950's and were quite comfortable <https://youtu.be/u5GhJKBB5P8> . Today the world has three times the population , and technologies have advanced quite a bit . I am of the opinion that the time for "Cities under the sea" has arrived.

"I think the future will become more and more cutthroat , and from the people that are cut out of the game of musical chairs will come the citizens of Alcyone." - Robert Lackey

" There are people who don't like patriotic anthems because they believe they inspire young people to go to war. I think this is a valid argument, so I chose a city song that inspires people to sit down, order a martini and think about the situation." - Robert Lackey

" *The Middle Third* is a concept of governance where when a societal phenomenon starts to have a negative impact on society , and forces are put into play (with a minimum of bureaucracy) to reduce the most extreme affects and "bring the pendulum back into the middle third" this is meant to stop problems like the opiate addiction problem , the collapse of dating , and other problems that were allowed to go too far before they were even addressed. These forces can be put in place by a cop on the street , a honor judge , a teacher , a Jedi , a wallfacer , Etc.. This is basically *Societal Parenting* " - Robert Lackey

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# 1.

## INTRODUCTION

Alcyone is the name of a proposed mass producible city that is anchored to the seabed in international waters . The city has three levels , starting at the top level are things that that require sunlight or direct access to the sky such as green houses , fruit tree groves , freight docks with over head cranes , telescopic observatories , Tritium lighting shops (in case of a leak the tritium will escape through roof vents), and airports .

The second level is for things that would be hazardous in a pressurized environment or that require levels of ventilation or large open spaces that cannot be accommodated in the underwater level , such as large electric generating plants , methane generators , garbage separation and recycling facilities , chemical plants , welding shops , ammunition factories , companies that work with resins , coatings , or adhesives , electronic assembly and plating shops , parks , sports arenas , gymnasiums , open flame restaurants , roller skate paths Etc.

Between the second level and the underwater level is a scaffolding like structure designed to reduce the effect of waves on the city.

Lastly there is the underwater level , the bottom of this level is at 25 feet (7.62 meters) to allow people to freely swim to the surface at any time without having to worry about decompression. The underwater level of the city is assembled from specially designed shipping containers. These containers exceed the requirements of normal shipping containers and can be shipped just like a normal 40' high cube but the actual construction is completely different. The containers are anchored to the bottom with over 10,000 titanium anchors driven into the seabed.

The city is made up of 11 sections each section is 24 containers long or 960 feet (292.6 meters) and 5 rows of containers + 4 containers set at 90° , for a total width of 200 feet (60.96 meters). The eleven 960'x 200' sections are joined with 11 corner pieces into a 11 sided ellipse .

In addition to the ellipse there is also a Airport/Seaport control tower out side of the ellipse with a crane for unloading container ships , separate quarantine hospitals inside the ellipse , and a large anti predator net made entirely from recycled plastics , that surrounds the entire city except for the control tower. Additionally there are 4500 to 6000 acres of seaweed/shellfish farms outside the net and inside the net is a fish farm .

## 2.

The city is designed to be anchored in water no deeper than about 150 feet (45.72 meters) , Ideally about 60 feet (18.288 meters) deep . This will limit the number of suitable locations , but the worlds oceans are large . Cities can be anchored in deeper waters once the shallow water locations are exhausted with the addition of a bottom anti-predator net.

Each city will have a normal capacity of approximately 10,000 residents + 400 visitors. I propose building 25,000 cities all anchored in international waters.

The city is designed for "mass production" If you want to settle 100,000 Uyghurs , you can just build 10 cities, the problem is solved , this is a much better solution than the decision taken with the Jews , just put Palestine in "camps" and create Israel ... and endless conflict.

According to the [Institute for Economics & Peace](#) (IEP) report titled *Ecological threat register 2020* based on UN supplied data , there will be 1 billion displaced people by 2050 , examining history I am lead to the conclusion that only 1 in 4 of these people will have the mental ability to adapt to such a radical change , it is for these 250 million adaptable people that these cities are designed .

It always seems impossible, until it's done - Nelson Mandela

There is a mentality that complains about a problem , and complains about anyone that tries to solve the problem - Robert Lackey

" *The paradox of too much choice* is a real modern psychological problem that is making people less satisfied with their lives. In the federation a conscious effort is made to address this problem enough to reduce it to the "middle third". New immigrants are given 4 choices of where to live , you have 3 choices in the style of your uniform if you work for the government , the honor code office dating site presents participants with no more than 20 options per year total , why 20 ? Because there are 20 opening moves in a game of chess and humanity seems to have decided that chess is as complex a game as we collectively want to try to master" - Robert Lackey

### 3.

#### THINGS THAT ARE DONE DIFFERENTLY FROM THE BEGINNING

A very important consideration is that changes to the way things are done be implemented **from the beginning** . Here is a list , in no particular order , of major changes that will be made “from the beginning”

1. A 33.75 volt direct current electrical system with fire proof wires and plugs with “prongs” in the form of + & - . Reason : Safety , I worked 19 years as a electrician and 10 as a commercial diver and during my time as an electrician I found the hot and neutral reversed approximately 50% of the time ! Making the prongs different is clearly not sufficient . Making the prongs in the form of a + and - is meant to further clarify things and reduce wiring mistakes . The switch to 33.75 volt DC will virtually eliminate fatalities from electrocution , eliminate the need for inverters , and the need for ground wires and the possibility of ground loops ( ground loops are a situation where stray current in the ground system can cause highly accelerated corrosion of metal objects (possibly critical structural components) a reverse plating process.
2. Use of only turbine type prime movers ( except for high pressure gas compressors and toys). Reason : Eliminate having two infrastructures piston and turbine , lower total life cycle costs , and virtually eliminate carbon monoxide emissions.
3. Cell phones that will not track you or spy on you and will use infrared instead of radio waves for communication. Reason : Safety and privacy.
4. Cell phones will have a special feature that records every phone that comes near it , by making a IR flash every 2 seconds when it is in motion and “replying to flashes when it is not . They will record flashes it sees and every phone from a specific address flashes in a unique color mix. This feature is turned on by the senior doctor at the first hint of a possible epidemic as a precaution (there will be a tiny indicator light). Reason: To help track and stop contagions .
5. The city will incorporate a cryogenic energy storage system for storing intermittent energy , refrigeration and air conditioning , air filtering & replacement , and powerline cooling. Reason : Better city “system” energy efficiency , integration of alternative energy , the ability to "seal" the city in case of a Chernobyl type accident , and the elimination of thousands of individual refrigeration systems.
6. The internet will run on the CAN standard instead of Ethernet using 4 conductor (2 data + 2 power 33.75VDC)2.5mm stereo “headphone” connectors in Nickel natural color . Reason : Better data transmission for a very small or nonexistent speed penalty ie. “quality over quantity” and

reliable “broadcasting” making it a much better choice for broadcasting alerts , tiny

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“jack” can be fished through conduit without disassembly , and color coding will prevent confusion with audio jacks. Additionally a "improved" jack will allow 60 watts of electrical power to be transmitted as well.

7. Physical money will be retained and will have an average metal value of no less than 20% of coin value and have a “Shot Code” on the back. Reason : Money can never be completely devalued and counterfeiting is less attractive than other currencies.
8. Waste power plant energy will be used for a 350-400C hot oil utility. Especially trained city workers will build and maintain this potentially dangerous system and only for commercial customers like bakeries and pulltruders. Reason : Better city “system” energy efficiency and the return line provide free hot water for houses , however if a industrial customer cools the oil significantly water temperature may drop , but it is free.
9. Vacuum will be a utility , columns that support the top level are hollow cylinders that are linked together by pipes and serve double duty as a interconnected vacuum reservoir. Reason : Eliminating the need for thousands of individual vacuum cleaners , dust collectors , and rough vacuum pumps , better city “system” energy efficiency , and it will do double duty as a back up air circulation system .
10. A city laundry will provide free laundry service. Reason : eliminating thousands home laundry machines and freeing up the space they occupied.
11. The legal system will be printed on a deck of cards and people will be tried and sentenced in 16 hours or they “walk”. Reason : Simplification , streamlining , better city efficiency , and the current system stinks .
12. The potable water system will run at 400PSI (2.76 N/mm<sup>2</sup>) and does double duty as a high pressure fire suppression system and as a make shift pressure washer feed. Reason : Eliminate having dual systems and reduce the need for home pressure washers.
13. The utility pipes will also carry a second (possibly slower but still serviceable) internet similar to “internet over powerline” as a free back up system. Reason : Redundancy and saving money when times are tough (This will eliminate the "digital divide").
14. 1000-1500PSI air is also a utility. Reason : Eliminating the need for thousands of individual air compressors and as a back up breathing air supply.
15. There are “alarm boxes” all over the city that monitor smoke , fire , Carbon Monoxide , Radiation , Oxygen level , Carbon dioxide , flammable gas , flooding , and also serve as a phone , fire hose , burglar alarm (indoor boxes), noise and vibration sensor ( only on "outdoor" boxes for alerting the police when a party or factory is keeping the neighbors from sleeping) , and “Shot Code” reader. Reason : Public safety



16. Use “Shot Code” <https://en.wikipedia.org/wiki/ShotCode> instead of bar code and incorporate it on coins as well. Reason : Just looks better

5.

17. There is a really extraordinary emphasis placed on fire and smoke prevention. Reason : Several horrific cruise ship fires coupled with a partial pressure of oxygen that is twice the level at the surface demands all possible precautions be taken.

18. There is a comprehensive system for detecting and stopping the spread of contagions including separate quarantine hospital(s) with **5 times** the number of isolation rooms as there are beds in the normal hospital. Reason : The pandemic demonstrated how dangerous cruise ships can be , the city is in some ways similar to a cruise ship , so the problem deserves to be taken very seriously.

19. Children are brought up to be very international they are taught to speak 4 languages and go on scout camping trips to other country's frequently. Reason : The city is very dependent on foreign trade , so the population must be very “internationalized”. Russian , Japanese , English and Italian represent trade partners that have technologies , equipment , and materials that the city needs (there are others but 4 languages is the most we can ask people to learn)

20. The city is designed to be “roller skate friendly”. Reason : The United States Army did a study about putting the pentagon on roller skates and found that efficiency improved 30%.

21. Immigration is based on city capacity , needed skills or investments , keeping out contagions , agent provocateurs , and wanted criminals , and not on , making money off immigrants. Reason : It's the right thing to do.

22. A gigantic X-ray machine first checks all incoming containers for stowaways then when there are found to be none it sterilizes the entire container and It's contents. Reason: It will reduce the spread of contagions , pests , and infestations.

23. Agriculture is greenhouse based and hydroponic using recyclable insulated and heated "bato" buckets that have a vacuum system that sticks them to the floor in a storm. Reason : Higher per acre crop yields.

24. The anti predator nets (PET) , the net floats (micro cellular PP) , the “wood” on the park benches and tables (fire resistant UHMW ) , and many other parts of the infrastructure are designed to be made from recycled plastics from inception , Additionally all aviation fuel is made from a refined version of “poly fuel” made from plastic bags. Reason : Cost and the environment .

25. The city is primarily constructed of Basalt fiber and phenolic or fire retardant epoxy resins over foam glass or PPSU foam cores Reason : One



universal type of construction allows economies of scale , it's fire proof and low smoke , and it's painted in a number of relaxing earth tone colors .

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26. The city has no military only police and civilian militias , all guns will eventually be smart guns (when they are fired they up load a picture of the target , shooter , the shooters fingerprint , temperature , air pressure , date and time , and the shooters body temperature ) all guns have a minimum barrel length of 240mm and the firing mechanism is strictly mechanical (no electronic monkey business in the firing mechanism) . Also the only two cartridges allowed are 7.92×33mm Kurz and 14.5 x 114mm. Reason : Eliminating the military frees up resources , Smart guns help shooters improve their skills and help police convict the guilty and free the innocent , and a limited number of different cartridges helps simplify logistics and the 7.92×33mm Kurz can be used for a assault rifle , a “scout rifle” , and a “auto mag” like hand gun .
27. The City will have a series of automated “Zamboni's” that resurface the ice rinks , deliver the mail , collect the trash and recyclables , serve as automated book mobiles , clean the floors , deliver take out food , serve as a fire truck with firemen on board , serve as a ambulance , serve as a cargo transporter/runway vacuum/bird “schooer” , serve as a mobile platform for harvesting hallway gardens , move heavy objects (several can be ganged together) , provide deliveries to self quarantineres using a airlock “mail slot”. Reason : It will bring the efficiency gains of self driving vehicles to the federation and lower postage rates to make the federation more competitive .
28. Houses are designed from the beginning with mounting points for , optional accessories for elderly , disabled , blind , or deaf. Reason : Designing these accessories into the houses from the beginning will increase quality and reduce the costs for these later modifications.
29. The city is designed to be maintained and repaired , in fact Planned obsolescence is illegal , when you sell something you also have to sell the parts needed to fix it at a cost that does not exceed the total cost of the device (and provide excellent free online repair manuals), so even if you only have one part , you can buy the rest and build a new one for less than the new cost. Reason : We are turning the natural riches of the world into landfill with planned obsolescence and it is wrong and should have been made illegal decades ago. Of course we use common sense , hypodermics are still disposable.
30. Also all threaded fasteners use metric Torx (internal and external) and Robertson heads and generic Spiralok female threads in all machine threads also all countersinks are 130° in order to work better with composites. Reason : To reduce the weight in tools technicians have to carry.

31. All Toilets are Toilet/Bidet combinations or have Bidet seats. Reason : It's more sanitary , it uses less toilet paper , and the french are used to them and are world leaders in underwater technology and we want to make them
- 7.

feel at home here (French along with Hindi , and German) will be taught in the schools as optional languages.

32. All shower basins , door/drawer/cabinet handles , faucets , public phone keypads , food preparation surfaces , operating tables , Etc. are copper.  
Reason : Copper is a natural antimicrobial.
33. All automated city systems use circuit python written programs on compatible micro controllers until it is decided to change all micro controllers to something else. Reason: It is relatively easy to understand , it will be taught to all students in the schools , and having one language and not changing it unnecessarily , will help prevent a lot of premature gray hair.
34. All computers will run Linux until it is decided to change all computers to something else. Reason : Having a single operating system will make the city more efficient , Linux is free and open source so there is a cost saving , Linux is more reliable than the main alternatives , lastly Linux requires more know how so it provides good mental exercise. (adult courses will be offered)
35. The federation will use a new ergonomic keyboard design Reason :The current standard QWERTY keyboard was designed to slow down typists so the original mechanical typewriters would not jam from "overspeed", this is no longer necessary. A new standard is long over due .
36. The federation uses the Japanese model of bowing as a greeting.  
Reason : As the pandemic taught us all , shaking hands helps to spread pathogens. Also bowing is very respectful without the risk of being mistaken as weak or silly .
37. The federation has a 36+8 school hours , work week. Work for 4 days a week for 9 hours and school 1 day for 8 (overtime is frowned upon) , you can be assigned classes by the bank , Jedi , Hospital , the commissar , the police , or the honor code office . And if no one assignee you a class , then you get to choose . Classes cost between 1K-4K per hour (actual hours) the rate is set by the bank and goes to the teachers . The classes tend to be short 2-5 weeks but with on line "refresher" tests weekly then monthly then twice annually (the actual final test is preformed by the police) with lots of follow on "advanced" classes . When you finish a class there is always a week break before you start the next class. Maximum class size is 21. All classes are recorded and put on F-tube so the teacher makes additional pay from "K-pay". Reason : To maintain a competitive edge "business is war".
38. The federation actively recruits and brings in teachers from all over the world , the policy in this regard is "Can Do" the recruitment is flexible and aggressive and the recruiters receive a commission based on the teachers

“performance” in addition to their normal pay , also the teachers do not require any diplomas or certificates , only talent and ability. Reason : The

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federation looks at the education budget like a defense budget in times of war , “business is war”.

39. The federation will write It’s own 3-D CAD/CAE/CAM program named “Long bow” for Federation manufacturing companies that : 1. runs on Linux 2. out puts directly to steppers (later servos) 3. takes input directly from encoders 4. Available free for all federation citizens 5. Designed to work with a 20 programmable button mouse like a repurposed Logitech G600 6. available in four languages 7. taught in the schools 8. super well documented 9. pure vector graphics no “CGI effects” this is for work , not play , it makes “blueprints not CGI movies” 10. just works , day in , day out , getting the job done Reason: “Business is war” and this is our “English long bow”, and it’s not even that hard to do when you take out the “CGI” stuff .
40. The federation court system generally does not get involved in marriages and divorces , the only exceptions are paternity fraud which is a hard labor offense , and lying about your status ie. single , committed , or married which is a soft labor , honor code offense. Reason: In the Star trek episode “A Private Little War” the Enterprise gets involved in the internal affairs of a planet , and despite good intentions , things get progressively worse , until Kirk finally decides to just “walk away” from the situation. This is the same kind of situation and the federation is “walking away”.
41. All houses in the federation have triangular cutouts in the walls and floors that are used for bookcases , storage , septic tanks , Etc.. These cutouts generate a triangular waste panel the triangle cutouts are used by citizens to make geodesic dome embassies on the mainland , and because embassies are built 100 % from donated labor and materials the embassies belong to the people of the federation , all federation citizens can stay at any federation embassy free of charge (just a few chores) and save on hotel expenses ie. "staying at the Embassy suites". Reason : It will save every traveling citizen money and make them feel like part of a big family.

9.

## STRUCTURAL CONSIDERATIONS

First of all I feel that I need to dispel some myths , Water pressure is not an issue , the pressure is the same inside as outside , the city does not have to be made of cylinders , and there is no evidence that living underwater leads to psychological problems.

So what are the real issues ? Here is a list of issues that I have had to address in the design , in order of importance :

1. **Fire and smoke**
2. **Waves and storms**
3. **Corrosion & Biofouling**
4. **Static testing**
5. and a 101 smaller issues.

Let us address these four main issues now and leave the 101 smaller issues for another report.

1. **Fire and smoke** :There was a horrific cruise ship fire that was made much worse by a plastic wall paper put on steel walls , the wall paper produced a blinding toxic smoke , so even though steel does not burn the decorative coating did or at least produced a deadly smoke , and lot of people died . I really lose sleep over things like this .
  - Basic construction material : Basalt fiber (totally fireproof) and phenolic or fire retardant epoxy resin (very fireproof and low smoke) , over glass or PPSU foam cores (very fireproof and low smoke) , painted with a intumescent marine paint in calming earth tone colors.
  - Fabrics : Nomex or fire proof treated ( the treatments really work I have tried to light treated fabrics with a torch to no avail .... But what about at twice the partial pressure of Oxygen ? What about after a year of washing ??) here we need testing.
  - Electrical wire : insulated with a fire resistant silicone rubber and a color coded over all Nomex braid. Pretty sure this will work. if It's not slippery enough so it can be pulled through conduit easily then perhaps a soapstone powder coating will solve that.
  - Plugs ceramic , stainless steel Torx screws , nickel plated prongs , effective strain reliefs and all connections soldered

- Receptacles ceramic , stainless steel Torx screws , nickel plated contacts , 718 springs , effective strain reliefs and all connections soldered.
- Floors Nomex carpet , or some kind of stone or recycled glass tiles.

10.

- Delignit of Germany makes a FRCW (fire resistant compact wood) plywood from 10mm to 45mm thick this could be used with intumescent varnishes for attractive furniture.
- Many company's make intumescent ( they puff up and char but not burn) paints and varnishes (will require testing and shopping around). Also wood can be treated to be fireproof, but again this needs testing.
- A lot of things like , planters , storage boxes , Etc. can be structural foam molded from a food safe , UV resistant , LSZH (Low Smoke Halogen Free Flame Retardant) Polypropylene and later recycled into marine floats.
- Fiberglass/phenolic pipe is off the shelf and very fire proof.
- Copper pipe does not burn , but could be weakened in a fire , this calls for some thought about when and where to use it . Water might be ok but what about a high pressure air line , could it make a fire worse ? In any case a procedure for isolating the affected tube and shutting it down will be needed .
- There is a short list of plastics that do well in a fire : Phenolic , Nomex , Kevlar , Polyphenylsulfone (PPSU), Low Smoke Halogen Free Flame Retardant (LSZH) Polypropylene , polyimide glass , glass-silicon laminates , glass reinforced Melamine , and a large selection of phenolic "Micartas" . In any case it is doubtful that any of these has been tested under conditions of elevated oxygen partial pressure. This video shows some supposedly fireproof Kapton from China burning very well <https://youtu.be/A7epRt26WHg> . The technology demonstrator will involve plenty of realistic testing .
- The list goes on.....

2. **Waves and storms** : This is really two issues : 1. Getting the top two floors high enough to be above most wave action , and what to do about the waves that you cannot get above ? 2. Waves and storms repeatedly stress structures , repeated stresses lead to fatigue failures and usually at the worst possible time . How do we reduce the stress , design in redundancies , and make fatigue resistant structures that “ fail safe”? These are some of the most important questions that I hope the technology demonstrator will answer .

3. **Corrosion and Biofouling** : Perhaps a better way to say this would be “what to use when copper nickle alloys are not strong enough” copper nickle alloys have very good seawater corrosion resistance , very good resistance to Biofouling ,

Excellent welding characteristics , and have very reasonable life cycle costs compared to all other options.

## 11.

To put some numbers to the problem normal steels used in marine construction tend to have yield (the stress at which the metal is permanently stretched) strengths between 32,000 PSI (pounds per square inch) and 50,000 PSI (220.63-344.73 N/mm) , while the strongest Copper nickle alloy has a yield strength of 18,000PSI -20,000PSI (124.1- 137.89 N/mm). However I have read some references that refer to a process called “Annealed to Meet Nominal Average Grain Size” or OS temper , copper nickle alloys can not normally be strengthened by heat treatment BUT the grain can be “refined” and this will result in a moderate strength increase up to about 30,000PSI (206.84 N/mm) or a little more. I feel that this grain refining process is a very important technology for the city and one that the Technology demonstrator will test.

What to do when even grain refined copper nickel is not strong enough ? Well the next step would be Alloy 400 this could be called a nickle copper alloy it is basically 30% copper and 70% nickle , the reverse of the highest strength copper nickle alloy it will give 28,000PSI (193.05 N/mm) and 40,000PSI (275.79 N/mm) yield with grain refining. And there is even a heat treatable version called K500 that can be heat treated to 105,000 PSI (723.94 N/mm). But like everything else there are downsides the biofouling is greater and the biofouling if not removed will lead to accelerated corrosion.

What about sea bottom anchors that are driven into the sea bottom by divers with underwater jackhammers ? The ones that I have seen were galvanized cast iron and only suitable for freshwater , and very short lived even there. Titanium is used for well liners for geothermal wells and seems to work there. I think K500 might corrode like it was biofouled but that is supposed to slow over time , K500 would need testing . High strength Titanium's are all very notch sensitive , so are not suitable for a seabed anchor that will get scratched during installation , so that leaves the “Commercially pure” titanium's the strongest is called “grade 4”, yield is 70,000PSI (482.63 N/mm). Can grade 4 commercial Titanium be further strengthened by Grain refining ? Again this is a question that I hope the technology demonstrator will answer. (In 2010 Russia announced the Titanium Valley, which is a planned special economic zone in Sverdlovsk Oblast to focus on creating titanium products.)

12.

Lastly what about biofouling of non metal surfaces , the composite sandwich that most of the city will be made of ? Here the solution will be relatively easy , in fact it could turn out to be a do it your self project for most families . You simply wallpaper your entire house with a heavy copper nickel foil . I think that a Polysulfide rubber would work as a good (wall paper adhesive) I plan to test Life-Calk® Two-Part Polysulfide Sealant Compound on the technology demonstrator , and I am very optimistic of it working in a satisfactory manner .

One thing that does concern me is Biofouling of the anti predator nets and floats. Left unchecked it could eventually sink the nets letting in a pack of hungry sharks into the fish farms . Now there is something to lose sleep over ! Again this is a question that I hope the technology demonstrator will inspire a answer for. One possibility is mixing Ivermectin or copper dust or both with the plastic used to make the nets.

4. **Static structural testing** : Basically this falls into two categories the requirements of the ISO and the additional requirements to serve as a part of Alcyone . The first part is simple you just pay the ISO 118 Swiss francs they send you the PDF and you design the container to pass their tests. The second part is going to require some educated guessing followed by a lot of testing . Again these are questions that I hope the technology demonstrator will answer.



13.

## ENERGY

The largest source of the cities energy are 4,500 to 6000 acres of sea weed farms . The seaweed is harvested using special battery/sail powered boats that first centrifuge the sea weed to drive off the salt water before it dries , then bring it to the city where it is ground up and pumped into fifty four , 47 meter diameter x 2.9 meter high methane generators , city sewage , is also ground up and added to the generators. The methane from the generators runs a **31,120 Kw** Kawasaki L30-A gas turbine that turns a custom made superconducting generator 24/7. Additionally there is about **16,136 KW** in glass/glass solar photovoltaic panels and **17,758 KW** capacity in peaking /reserve turbines .

For reference the projected daytime design load for the underwater level and the Air liquification plant is **39,475 Kw** and the projected night time design load is **29,412 Kw** . The maximum electrical load if every circuit was “Smokin” is **50,945 Kw** . The expected loads from the upper levels , not including the air liquification plant , are **2,000kw-15,000Kw**. Some of the reasons for the very low power consumption in the heavy manufacturing , is essentially replacing steel rolling mills with hot oil heated high efficiency Pulltruders and infusion molds using imported fiber and resins , and machines like the PET fiber production replace hydraulics with ball or roller screws , and electric heat with hot oil (the hot oil comes from recuperated turbine waste heat). Or to put it simply , this is a very efficient city.

Additionally some of the seaweed is used to feed a ethanol plant and to produce food , food additives , pharmaceuticals , cosmetics , and industrial chemicals. The ethanol is used as a cooking fuel on boats and as a cleaning solvent.

The city will import plastic waste , the PET , PP , & UHMW will be recycled , the PVC removed , pelletized , and exported, and the rest is converted to enough Poly Fuel to make the city independent for aviation fuel and maintain a sizable reserve for the city turbines.

**Additional minor energy sources include**

1. A wells turbine (wave power) will be built into the base of the Airport/Seaport control tower , I expect that all of it's power will be used by the tower itself with no net surplus .
2. Deep Cold water is pumped up from the ocean bottom to increase the thermal efficiency of various condensers and heat exchangers and to provide nutrient rich water for the farms. (This of course is site dependent)
3. The federation surface craft all have para sails to reduce fuel consumption.
4. A plasma gasifier is used to dispose of dangerous materials like medical waste , electronic waste , Etc. The gas from the gasifier is ran into a peaking turbine.
5. Geothermal potential will be investigated.

15.

## CRYOGENIC ENERGY STORAGE

Approximately 9,000 KW is used continuously to run a air liquification plant that sits on the second level and extends up through the first level (air liquification plants are tall) this produces liquefied Oxygen and Nitrogen (it also produces Argon , Neon , Krypton , and Xenon that is used for industrial processes , and exported ). The liquefied Oxygen and Nitrogen is stored in one hundred and ten 40' (12.192 meters) long super insulated tanks made of copper nickel alloy that are attached 15 to a section under 40' x 100' (12.19 meters x 30.48 meters) ice skating rinks . The liquid air ( $N_2+O_2$ ) is used to freeze the carbon dioxide , VOC's (Volatile Organic Compounds) , and water vapor out of the air , then the still super cold liquid air is used to freeze the Ice skating rink , then it is expanded through 33 domestically produced Tesla turbines that will each turn a domestically produced 205Kw superconducting 34.5 VDC generator , then the still super cold air is used to cool the electrical grid and provide air conditioning , refrigeration , and freezer cold.

Looked at purely as a electricity storage system it does not look that impressive 100% goes in 25% comes out (this number will rise slowly over time as the technology improves) it is the “fringe benefits” that make it really shine :

1. Eliminate tens of thousands of refrigeration devices.
2. “Freeze cleaning” the air means no scrubbing chemicals to replace.
3. A really long term back up system. In case of a Chernobyl like disaster the city can remain sealed (>48hr) while the high pressure fire suppression/decontamination systems wash off the contamination .
4. Powerline cooling , the switch to 33.75VDC just about necessitates powerline cooling.
5. Air to breath !
6. A ice skating rink in every city section.
7. Plenty of refrigeration to support a robust fish farming industry.
8. Very cheap household air conditioning and refrigeration.

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## UTILITY'S OVERVIEW

Each city is divided into 11 sections , the 11 sections are divided into 24 blocks , and each block is divided into 16 containers .The utility “branch” that follows is at the block level .

1. **33.75 VDC & Refrigeration (paid)** The conductors are two 2” type K copper water pipes induction soldered together inside two 2½” fiberglass phenolic fire proof conduits. Between the inner and outer tubes there is a spiral separator and a vacuum , inside the inner pipe is -60° C 400PSI air. They have a Maximum capacity of 262 Kw. (Note the generators produce 34.5VDC the .75volt difference is the anticipated line losses)
2. **1000-1500 PSI air (paid) + the negative line for “Internet over utilities”**. The air line is a ¾” 317L stainless steel tube with SSP ultra flare fittings. In addition to normal household/industrial uses it can be used for a quick 10 minutes of air scuba fills in a small 50 CF scuba tank or used to run a intensifier for a complete fill . Air powered equipment is designed to use the full 1000 PSI.
3. **400PSI Ambient temperature potable water (paid) + positive line for “Internet over utilities” + fire sprinklers & hose connections.** The water line is a single 1½” type K copper water pipe soldered together.
4. **CAN internet (paid) + IR cell repeaters (calls within the federation free)** The conduit is 1¼” 317L heavy wall , Schedule 40 electrical conduit . Conduit starts as 1¼”, then drops to 1” and lastly ¾”, size drops are done when indicated by testing .
5. **Vacuum (paid)** . Duct is 5” heavy wall fiberglass phenolic fireproof conduit wrapped with a single static dissipating nickel plated copper braid spiraling down it’s length.
6. **350-400° C hot oil (optional & paid)** The two oil lines are ¾” 317 stainless steel tube with 316 stainless steel SSP ultra flare fitting . Inside two 1¼” fiberglass phenolic fire proof conduits. ( serviceable but imperfect oil

lines can be used for air). Between the inner and outer tubes there is a stainless steel spiral separator and a vacuum. There are thermostatically controlled heat exchangers on the return line that provide free hot water for houses , however if a industrial customer cools the oil significantly water temperature may drop , but it is free.

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7. **Sewage (free)** The sewage line uses the same 5" heavy wall fiberglass phenolic fire proof conduit as the vacuum duct but runs outside in the water. The 5" line is fed by 2 1/2" lines from the individual houses. All kitchens have heavy duty garbage disposals and septic tank blenders , the sewage is pumped with specially developed 1000 psi air powered , double diaphragm pumps with intake strainers.
8. **Breathing air (free)** This is a 8" (220mm) heavy wall fiberglass phenolic fire proof conduit. It blows cool dry clean air for breathing. The duct is oversize to reduce air velocity and resultant noise to a very low level.
9. **Laundry (free)** The Zamboni's pick up and deliver laundry.
10. **Bread and pies (paid)** Every month the city food processing facility posts next months bread and pie schedule on It's website . Every day they will bake a different type of bread or pie and to reserve a loaf of bread or pie you just click on that day as many times as loafs or pies you want and on that day that many loaves or pies will be delivered to your food delivery airlock. This will save a tremendous amount of wasted bread and pies due to making more than is sold. Additionally it will save a tremendous amount of energy because the city's ovens are heated by waste heat from the industrial section instead of electricity like a home oven.

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## SOCIOLOGICAL CONSIDERATIONS

1. Alcyone is not 100% predetermined , yet it is very much a mass produced city and benefits from the economies of mass production , For example a city where the residents for some reason want to paint the city to look like a old style western town is of course free to do so . There are many parts that can be changed or improved upon . But most "features" are unchangeable , for example a group that wants a city with 14 year old prostitutes is not going to get what they want or a city that wants to leave off mounting points for special equipment for the elderly or blind to save costs cannot do so even if the founding fathers of the city are all healthy and in their 20's.
2. Alcyone will have a government run dating "site" run by the honor code office that will use it's power to stop egregiously bad behavior . This will greatly help reduce the anger and loneliness in the city. A little chaperoning is really needed in this area.
3. Alcyone will not allow ignorance , so It's citizens will always have a number of jobs that they can do , and the bank will connect the employees with the employers , so the city will have a very low real unemployment rate. This alone will solve most societal problems.
4. The government actually has a department for doing good , the Jedi .
5. The city is under mandate to invest heavily in it's children , a great deal of money , care and effort is spent on producing good young adults .
6. The bank is part of the government and is transparent and under mandate to employ "better than best practices" , the bank has a large research branch with "field agents" that travel the world on missions to strengthen the cities economy. They are the "James Bonds" of the federation. And they look ahead and safe guard the financial future of the city so that the average citizen can feel secure that some "China" won't catch everyone napping and start steam rolling whole industries.
7. There is a large tax free food market where every one can go and buy and sell the food that they have grown and do some socializing , since everyone

has growing beds for oxygen , every one has something to offer , even if all you are able to grow is radishes , here you can sell them and buy other food for some variety. The research department of the bank will post the values for the different crops every month.

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8. The library and the honor code office run a advertising campaign promoting good behavior like helping the elderly , not littering , and being honest . This add campaign will consist of watercolor posters and short watercolor anime movies (the government promotes watercolor art whenever possible , as it is a nonflammable and zero volatile organic compounds (SOC) art form that is a good fit for the federation).
9. There is a open hobby area on the second level where people can go to put together plastic models , play role playing games and socialize , it has lockers , spray booths and stationary tools like scroll saws and sanders .
10. And many other thoughtful and innovative ideas will be incorporated to make the city a nice place to live.
11. On the issue of government controls , the federation approach will be to "Keep things in the middle third". For example , dating websites collect data with robotic efficiency and that data shows that woman are rejecting 99.4% of introductions from men while men are rejecting 6% of introductions from woman. As a result men are just walking away from dating entirely and the family unit is on the decline. This is a case where the pendulum has clearly been pushed to one extreme. While getting our "pendulums" into the center is a worthy goal , so is minimizing government , so the approach will be for the government to do a little "chaperoning" to stop the most egregious behavior until the pendulum is in the middle third and then turn it's attention to the next problem on the "list".



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## GENERAL LAYOUT

### Top level

**The Top level of the first city section contains:**

#### Runway

1. The 960' x 90' runway is made from heavy duty replaceable foam/basalt fiber sandwich panels with a high traction mastic applied with rollers on top. The runway is bolted to a pulltruded structural frame work.
2. The runway on the first section angles off 72° to a second runway on the 11th section of the city.
3. The runways are designed to handle a maximum aircraft landing weight of 28,000 pounds (12,700 Kg.).
4. The heliports are designed to handle fully loaded Chinook CH-47 helicopters 50,000 pounds (22,680Kg)

#### Hangers

1. There are 5 hangers :
  - A 118 meter x 55 meter trapezoidal flying boat hanger with a crane for lifting special mail carrying flying boats out of the sea. The flying boats are not certified (at least in the beginning) and only fly from city to city within the federation and to boat docks on the mainland when local permission is given.
  - A 33 meter x 248 meter general aviation hanger. (This hanger is also used for a variety of industrial needs and has a full length overhead crane and is fully temperature and humidity controlled). The Pacific Aerospace P-750's housed here are certified and primarily fly to nearby airports.
  - And 3 Chinook helicopter hangers for the police.

#### Airport

1. The airport , shooting range , and Radiologic office are contained in a single 680' x 110' x 15' three sided building. The building walls are made of 90 day Timbor treated , kiln dried , and intumescent varnished 1/4 logs bonded to

the inside of sandwich panels to give the airport a friendly welcoming atmosphere .

2. The main airport area is 380' x 100' x 22' and has :

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- a sleep capsule hotel [HTTP://YouTube/ZsK8W7Rz1Pw](http://YouTube/ZsK8W7Rz1Pw) with thick sound absorbing ceiling and walls. The hotel contains 400 relatively roomy sleep capsules and a observation platform on the roof , a single night costs 3 DK.
- A branch of the bank , the bank is open to all people , citizens or foreigners . The bank also handles ticket sales and rents safety deposit boxes.
- Storage lockers made of 317L stainless steel due to the marine atmosphere .
- A grocery store with normal “dome” prices.
- A telescope rental on the roof of the hotel run by the school that rents student built telescopes. A student attendant instructs people on the use of the telescopes.
- Pay bathrooms with showers , and baby changing stations. A city employee takes the money and keeps the bathrooms clean .
- A free to the public federation kitchen complete with a federation standard recycling bin , a shredder , sink with garbage disposal , counter , and federation small appliances for free public use . A student attendant will instruct people on use of the appliances and federation recycling procedures He/She is a part time city employee.
- A library with educational video booths attended by a librarian to educate people about the federation and for general research and relaxation.
- Customs office that checks for contraban and charges duties that are paid at the bank. They also work with the Radiologic office to examine incoming containers.
- Locally owned restaurants serving Federation food (sea food , corn/rye bread , pie , orange juice , etc.).
- A store that sells federation made goods at zero profit so a visitor will pay the same price as a local buying direct . Tax is charged and the attendant is a city employee.
- A BYOB bar with a stage and dressing room , dancers and musicians tour the federation on the mail planes extra weight allowances and sleep in the sleep capsule hotels (this provides a way for entertainers to get started). The bar is the only place where you don't pay the alcohol tax , If you fly in with your own bottle , however if you take the bottle into the city you will be taxed . The bar tender takes your bottle when you enter and labels it as yours , then you can get drinks any time you wish , you only pay for setups ( glasses ,

ice , OJ , Etc.). The bartender is a hospital employee and is expected to know when to cut people off . Profits go to the Hospital account . The bar also serves as a airport emergency first aid station.

- Immigration office , this is run by the Jedi who will explain federation immigration policy , and look for new recruits .

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- A electronic/electrical booth that works as a intermediary between immigrants that want to bring in electronics/electrical equipment and business in the dome that can modify or repair the equipment to be in compliance with federation regulations or just to function . The attendant is a city employee , and can preform services like OS swaps , and memory upgrades in the store. The store has a safe to protect the clients devices.
- The fireproof store , where you can find fire proof clothing , knapsacks , bedding , pillows , luggage , Etc.
- The police give a free daily guided tour of the city with lunch at the **Food processing facility** and restaurant and a question and answer session. The number of people is limited to 21 (standard federation class size ,VIP's are occasionally given individual tours) , advanced reservations can be made on line , people are limited to one free tour a year (paid tours are unlimited).

### Shooting range

- The 680' x 24' x 22' shooting range is surrounded with replaceable ballistic/acoustic panels that contain noise and bullets and prevent ricochets.
- The shooting range has 2 police attendants and serves as a police substation for the airport . Shooting range profits go into the police account.
- Up to 24 people can practice at the same time.
- ~70% of the population are shooters , they shoot 15-45 minutes per week , the range is open 24 hours per day.
- Militia members receive free range time and free ammunition , but are expected to use the time and ammunition wisely.
- The public gun lockers are very strong and can only be opened by the gun owner or a talented locksmith with a lot of time , the police do not have a "master key".

### Traffic control/ flack/rail gun tower

- Polymer & conventional concrete construction (5 Meters thick) with a wells turbine system surrounding the base that also serves as a "torpedo blister".

- Has a small studio for ham radio broadcasting
- The tower rises about 80 meters above the water and there is 60 meters clearance under the crane.
- It has 7 rail guns that rotate with the crane on air bearings and >30 14.5mm (>1200 RPM) CQB guns

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- It has a "winter garden" of different radars on top that are all instantly retractable .
- There is a dumb waiter to bring ammunition up from below the sea bed .
- Serves as a bomb shelter.
- Also has a under seabed seed repository , flywheel panopticon (short term electrical energy storage) , and digital library archive (M disks).

### **The Radiologic Office**

- The Radiologic office sits at the top of the 40' long elevator. The central police station sits at the bottom.
- The Radiologic Office is 200' x 100' x 21'
- The Radiologic office can disable or if necessary flood the elevator in case of a radiologic "event". There is only one elevator in the city it is used primarily for cargo and shift change workers but can be used at any time for emergencies , babies , and elderly .
- The Radiologic office uses the tough Finnish standards of radiation safety.
- The Radiologic office has 10 main jobs :
  1. Research and production of radiologic lighting and portable heater/generators.
  2. Monitoring world events to provide early warning of "radiologic events".
  3. Monitoring radiation detectors on bouys at the edge of the federation waters.
  4. The office has a 5 person rapid response team that can travel anywhere with flying boat access on a moments notice.
  5. X-ray sterilizing incoming containers and checking them for radiologic hazards .
  6. Working with customs to check for contraband by X-raying luggage and checking for chlorinated plastics , and other contraband.
  7. Working with the police to crack cases using science.
  8. Checking mail for contraband materials.
  9. Building and maintaining the city wash down system.
  10. Provide X-Ray services for the city.
- When a ship arrives with containers the radiologic lighting production and mail sorting equipment is collapsed and rolled aside .
- The containers are unloaded by the flack tower.

- During surface craft unloading one runway is closed and used as a staging area for arriving and departing containers . The second runway is aligned with the prevailing winds and is always open .
- The runway has space for 44 arriving and 44 departing containers , Federation ships can carry up to 36 containers.

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- After unloading the containers they are moved one at a time to the Radiologic office and put through the rotary X-Ray sterilizer .
- After sterilizing the container is moved to the center unloading area where customs examines the contents for contraband and assigns any duties owed.
- After the duties are paid the contents of the container is either put on the elevator down to the business deck , the “dome”, or into a storage container.
- The empty containers are stacked 2 high along the opposite end of the Radiologic office . There is room for 44 empty containers in two double high rows of 22 containers .

### **First level farms**

- The deck has long rows of Bato buckets filled with a light weight aggregate .
- The Bato buckets have a under floor vacuum channel and a silicone rubber "O" ring that allows them to suck themselves down to the floor , they come in two sizes for different sizes of plants , they are mass produced from a food safe , UV resistant , LSZH (Low Smoke Halogen Free Flame Retardant) Ocher Maroon + wight (color #d6925b) Polypropylene structural foam molding.
- The drain lines would be 2" fiberglass phenolic pipe.
- The nutrient lines would be PP pipes and can recirculate warm nutrient to prevent the plants from freezing.
- Irrigation is by a drip method.
- The farm is inside a green house constructed from basalt Phenolic pulltrusions and covered with spaced rows of glass-glass solar photovoltaic panels with filon between. The proportion of solar panels to filon depends on the local sunlight levels.
- The roof has a 1 in 16 (4%) slope (5' to 17.5'over 200 feet).
- The walls are quadruple filon glazed , and a motorized insulated blanket insulates the roof at night.
- The farms also have a system of copper alloy cables above the plants where the laundry mats send wet clothing on Zamboni's for the farms to hang on cables on a pulley system for drying and sunlight sterilization. The same

cables carry baskets or pull trolleys during harvest and provide electrical power for harvesting machines.

- The greenhouses have a dividing wall in the center and are serviced through airlocks from the groves at each end this prevents a pest from infesting a entire green house.

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- The section 2 farm is a experimental farm that grows Black berrys , navy beans , rye , Corn , & pumpkins and has a CO<sup>2</sup> pellet blasting booth for cleaning molds that uses CO<sup>2</sup> frozen out of the air in the dome..
- The section 10 farm is designed for tropical and warm climate plants and is completely different , it has a quadruple filon roof as well as the normal quadruple walls and supplemental high efficiency agricultural LED lighting.
- Farm 10 will have 2 classrooms in the center for kindergarten age children (3-5 years old) in each half of the green house. For a total capacity of 84 children , every child will spend at least 2 hours a school day in farm 10 (more if the current 3-5 year old population allows it).

### **Groves between the farms**

- Embedded in the decks of the groves are translucent heavy duty filon panels to give light below
- The groves use the 2X size of bato buckets this limits the groves to small or dwarf trees and bushes.
- The following plants are suitable or have suitable varieties : Acerola cherries , dwarf bananas , dwarf plums , apple , currant , figs , gooseberry , peaches , apricots , nectarines , pears , lemon , kumquat , pink flowering almond , dwarf Siberian pine (pine nuts) , dwarf starfruit , orange , lime , nectarines , Hascap berries , Raspberry , Sea berry/Seabuckthorn (find a thorn less variety) , Rosa Rugosa (edible roses) , Saskatoon berry , (not all plants are suitable for all climates).
- Harvests are transported to the second level by a freight elevator and put on a Zamboni.

### **First level supports**

- The on sight filament wound methane generators are the main support on sections 2 to 10 and 4 to 11 .
- On sections 1 & 11 and the corners , filament wound columns support the first level the hollow columns are linked together and serve as a vacuum reservoir to prevent the vacuum pumps from cycling excessively .

## Second level

Has Vertical pulltruded square pipes bolted to the outside from level 2 up to level 3 With 4 foot high bullet proof panels bolted to the outside with bullet proof gun ports designed for the PTRD-41 and the 98k , a high voltage anti climb barrier sticking out horizontally (the panels sit on the anti climb barrier horizontal supports) there is also a reverse sloping drain grate in the gap between the platform and the armor panels and a top rail with holes for mounting binoculars.

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supports) there is also a reverse sloping drain grate in the gap between the platform and the armor panels and a top rail with holes for mounting binoculars.

## Level two industrial section

### 1. Storage facility :

- This facility is divided into two parts that flank the munitions plant.
- This facility is the only place in the city where flammable materials may be stored .
- This facility has a 100mm thick fireproof SkamoWall liner .
- This facility has a powerful multi mode fire suppression system capable of extinguishing a fire with it's own oxidizer supply.
- The facility has it's own mechanical non sparking , climate control system and is accessed through a airlock located in the middle of the cross hall.
- The facility is attended 24/7 by two trained observers that carry the key to the door. (only one trained observer is allowed to leave his post to open the door while the other covers his/her sector.
- The facility has no electrical system (other than battery powered smoke , CO , flammable gas , and fire alarms), lighting is provided by fire proof borosilicate glass blocks in the ceiling and the attendants flashlights.
- The fire department conducts daily inspections .

### 2. Munitions plant :

- Produces 8 x 33 , 14.5 x 114 , rifle grenades (all kinds) , Claymores , rail gun rounds , flairs , chaff rockets , fireworks , Etc. No large ordinance !
- The facility is flanked by two storage facilities to minimize the effect of a accident .The ceiling and walls are covered with ballistic composite panels screwed to joiner strips that are in turn attached to cable spring mounts to give a resilient surface and contain blasts.
- The adjacent walk ways are protected with a 7' high blast resistant barrier.
- Will produce up to 7,000,000 lead free (running 24/7), flash free , chlorine free 7.92x33mm Kurz rounds per month (The rounds are designed for



reverse extraction aka. Boberg style) and 1,000,000 14.5 x114 rounds per month (running 24/7)

3. Press mill : Samarium Cobalt magnets , powder metallurgy, coin mint , metal stamping & assembling vacuum insulated appliance sub assemblies and aluminum forge :

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- A **Mazak UD-400/5X high accuracy , high speed machining center** is installed in a climate controlled , clean room for machining molds and dies from 420 die steel for the entire city.
  - A small **1290C AMPT radiant tube Oxy/fuel furnace/cryotreatment unit** is used for sintering Samarium Cobalt magnet preforms (1250C) , preheating 317L for forging (1205C) , sintering 317L powder (1250C) , sintering ASP APZ10 Powder metallurgy Stainless steel (1290?) , ASTM: AISI A11 Powder metallurgy powder metal tool steel(?) , preheating 5083/5086 forging (450C) , and Sintering magnesium powder (550C)
  - A customized **Ozkoc (Turkish) deep drawing press** produces vacuum insulated 317L small appliance sub assemblies and 540mm wide x 540mm deep and 480mm tall refrigerators and freezers , silicone bronze shower basins , sinks , and toilets.
  - The same press is used to produce 5083/5086 forgings for marine equipment and 317L forgings for pipe fittings and valves (critical forgings are sent to the Radiographic office for X-Ray inspection).
  - A enclosed **powder metallurgy press** , work with powders is done in a nitrogen or argon atmosphere. The press will need at least 2 stage dies top and bottom. Part size will be 20 square inches in ferrous alloys and 30 square inches in magnesium alloys. The press will need to be at least 1200 tons and more would be better.
1. Roller skate trucks and plates are made using **magnesium powder metallurgy** using magnesium and strontium extracted from brine from the seawater distilling plant (Powder metallurgy magnesium alloys currently have the highest strength to weight ratios of any metals).
  2. The facility produces **Samarium Cobalt magnets** from powder.
  3. **317L** parts are made from powder for the appliance industry.
  4. A line of **ASP®APZ10 Powder metallurgy Stainless steel** knife blades and replaceable gun breach liners.
  5. A line of **ASTM: AISI A11 (more) & EN100027-1 HS 4-3-8 (less) Powder metallurgy tool steel** inserts for machining (possibly mixed with diamond dust).

6. The inserts and knife blades are sent to be sharpened and coated at a cutting tool sharpener
7. Powder metallurgy **Haynes 230 for furnace parts**
  - **A Sack & Kiesselbach TMP-250 coin press** is very quiet and will stamp up to 50mm , uses 17Kw maximum (562 thousand pounds of press force)  
Coin production is done under the supervision of a bank Representative and the police .

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#### 4. Silicone rubber plant :

- Will have a in house laboratory for formulating and testing new rubber formulations.
- Will produce the electrical cables and wire used by the federation.
- Will develop a "fog free" rubber formulation for diving masks.
- Will develop a silver or copper containing rubber with antibacterial properties.
- Will produce silicone foams , Nomex fabric covered foams , rubberized Nomex fabric , silicone rubber moldings including diving equipment.
- Will produce wetsuits (possibly a syntactic version for deep diving) , inflatable boats , fire proof athletic mats , and shoe soles .
- Make a variety of gasket and tarp materials.
- Will produce for the domestic market and for export .
- Will develop a "hard" Rubber for Pulltrusion "tractors" , shoe soles , and similar applications.
- Will make rubber flooring from recycled rubber .
- Will produce boron fiber .
- The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

#### 5. Plating , Electroforming , chemical milling & electropolishing shop :

- Nickel (plating and Electroforming), Nickel-zinc , copper , Silver + Anti tarnish , and HASL plating is preformed here.
- Ocher Maroon + wight anodizing (these tanks can handle the aluminum solar photovoltaic cargo covers 12 m x 9 m , welded aluminum whale/life boats , and the garbage recycling machinery).
- Electropolishing
- Chemical machining is used on most metals except for Titanium.
- The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

6. Intumescent Paint & varnish , adhesives , cabinetry and model building :
- Assembles cabinets and wooden tooling plugs from fire proof plywood and solid wood using West system adhesives and intumescent paint or varnish.
  - Makes project models
  - Has several Resin 3D printers
  - The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

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7. Electronic assembly shop :
- Design work is done in the dome
  - There are no minimum orders ever
  - The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.
8. Fire department/first aid station :
- This is the main fire department for the entire city.
9. Tilt pour resistance foundry and auxiliary power plant :
- Uses shell and plaster foam backed plaster molds.
  - Capable of casting large Kirksite injection and structural foam molding molds using plaster backed with foamed plaster molds.
  - CNC machined lead free C94700 plaster castings are used for shell molding (coated sand produced in India ?) Zamboni frames and other heavy duty equipment. (critical castings are sent to the Radiographic office for X-Ray inspection).
  - Other alloys cast are 70/30 CuNi , Copper , and Silicon bronze .
  - The tilt pour furnaces have electrically heated melting crucibles with pour spouts and a digital weighing feature. also the molds them selves can be preheated
  - This facility has a Mazak FJZ 5 face 60/80 milling machine . The Mill extends up into the GA hanger.
  - Has a large 1000C AMP radiant tube Oxy/fuel furnace for heat treating C94700 castings (775C-800C), vitreous enameling 6082 aluminum (550C), producing "Federation formula" extra tough machinable ceramic (Yttrium strengthened borosilicate glass + Mica "strands") 800C-900C .
  - Uses resistance tilt pour furnaces where the pour cup is the furnace eliminating the need to transfer the metal. The furnace operates at federation voltage 24-35 VDC.

- A 300C Hot oil oven is used for preheating/drying the charge metal and stress relieving C94700 castings (260C).
- Has a small ultra high temperature furnace for making bullet proof Aluminum oxynitride view ports for ballistic panels.
- Has a A multifuel 1,864 Kw Kawasaki M7A-03 gas turbine power plant mostly running on poly fuel to run the furnaces and a hot oil energy recuperator. The turbine breathes through a filter room in the GA hanger. The hot oil is used to preheat the charge metal and molds then it is sent into the hot oil grid. Extra electricity is sent into the electrical grid.

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- The facility has a modular climate controlled mold storage room in the corner that can be enlarged as needed . It has a Zamboni based automated pallet storage and retrieval system. The automated pallet storage and retrieval system starts as a ground level system , and a elevator and two additional levels are added as needed.
- The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

#### 10. 590 person capacity cafeteria and kitchen :

- This is a by reservation cafeteria on Christmas day , New years day , Etc..

#### 11. Plastic injection molding and plastic supply :

- The plant has injection molding machines for molding high production parts from Polyphenylsulfone (Radel ) **transparent straw** and Low Smoke Halogen Free Flame Retardant Polypropylene in Ocher **Maroon + wight** (color #d6925b).
- The plant has airlock doors and very low internal humidity in general areas and has storage areas for Plastic pellets that are super low in humidity.
- The plant has a large number of 3D printers that use pellets or filament for public use in a "3D printer cafe" that also serves as a smoothie shop.
- The plant imports lubricating , Fire resistant (black) iglidur® T500, 482° F , and (**light blue**) Food and drug compliant iglide® A350 , 356° F , bearings. (also available in plate and bar but use is controlled by the police to minimize potential hazards)
- The plant stocks a large selection of **dark brick red** phenolics "Micartas" canvas, linen , and paper reinforced 250° F
- **Wight** G-7 glass-silicon laminate 430° F
- **Dark brown** G-30 polyimide glass laminate 500° F
- a good selection of fireproof polyimide PCB materials .
- The plant stocks **translucent straw** PPSU Pellets and filament 356° F

- Low Smoke Halogen Free Flame Retardant (LSZH) Polypropylene in Ocher Maroon + wight (color #d6925b) in stock shapes , pellets , and filament 180 F
- The first thing produced will be rings with samples same as with metals.
- Facility blows preforms for rugged space saving fire resistant see through square blow molded PPSU food and drug containers with shot coded lids (when a lid is reused the data associated with the lid is changed to reflect the new product). The lids have a silicone rubber seal/gasket that tamper proofs the container and provides a gasket , when the container is reused

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the silicone seal is replaced and the old seal is ground up and used to make ice skating rink flooring. The plastics used are virgin and the containers are sterile. The 5x5 size containers are intended for drugs and have captive lids .

- The lid molds have a shot coder that has dozens of solenoid controlled keystones arranged in concentric rings , there are two sizes of shot coders .
- There are 4 sizes of containers 1.3 L 17x10x10 , .5 L 8.5 x10x10 , .35 L 17x5x5 , and .15 L 8.5x5x5 (dimensions are in liters and centimeters) .
- There are two sizes of lids.
- "O" ring sealed/retained Shaker inserts of varying numbers and sizes of holes , to make salt shakers , Parmesan shakers , after shave bottles , etc. are available.

## 12. City laundry :

- Automated Zamboni's bring laundry from all over the city , take the laundry to be sun dried in the green houses (day shift only) , and return the laundry for folding , then the automated Zamboni's return the laundry , all at no cost , this is a city provided service.
- Water heating is provided by industrial waste heat.
- There are also gas dryers for use by the night shift .
- The gas dryers are used to burn off excess biogas .
- 13 pounds of laundry a week per person x 10,400 people x 2.75 sq feet per pound per hour = 2213 sq feet x 1.05 for maintenance = 2324 square feet = 216 square meters

## 13. Paper and chipboard plant :

- Recycled paper pulp is imported and turned into heavy duty , fire proof , water resistant , basalt fiber reinforced Kraft paper , water activated shipping

tape and shipping bags for use with or without mycelium foam boxes . A second line produces fire proof toilet paper. A third line produces fire proof heavy duty paper towels , & watercolor paper, and a fourth line produces a selection of water proof and fire proof "chipboard cardboard's" and " Air cushion playing card stock " that are produced flat (this is a 24 inch wide "mini mill" that starts with one line and later adds 3 more).

- Linen and other fabrics are recycled into high quality fire proof watercolor paper.

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- The basalt fiber reinforced Kraft paper and the Air cushion playing card stock are both made from two layers with a black glue (the glue is black to preserve confidentiality) between (the Kraft paper has glue and a open woven basalt triaxial flat braid). This lamination line is the 5th line in the facility.
- This facility also acts as the city's print shop

#### 14. Garbage recycling plant produces raw materials and some end products :

- **Ocher Maroon + wight** (color #d6925b)PP is shredded and sent to the plastic shop , it is also shredded and added to virgin material and extruded into recycled 3D printing filament (the mica content may be increased to suppress warping).
- HDPE chips are color sorted and put in different sized bags with a measured amount of fire retardant (Huntite ?) and sold to HDPE molders , it is also extruded into fire retardant HDPE lumber.
- PET is mixed with titanium dioxide and Ivermectin can be added to prevent biofouling and turned into fiber that is used to make the anti predator nets (or exported to other cities) (the nets are assembled in the GA hanger) the fiber is never used in the city due to it's flammability it is sent directly to the GA hanger.
- **PPSU Polyphenylsulfone** is shredded and sent to the plastic shop , it is also shredded and added to virgin material and extruded into 3D printing filament and a comprehensive selection of sheet and tubing in .1mm increments for model builders.
- Chlorine containing plastics are removed dried , pelletized , and exported.
- All other plastics are turned into Polyfuel that is used as aviation fuel . The polyfuel is stored under a inert gas blanket in underwater tanks .
- Glass and "plasma rock" is turned into a concrete aggregate.
- Applicable Bio waste is sent to a biogas generator.



- Metals are separated , cleaned , and reduced to crucible fitting sizes but not melted , they are then sent to the foundry.
- Cotton and other fabrics are washed , shredded and sent to the paper plant to be recycled into high quality fire proof watercolor paper.
- Medical waste and other difficult to handle materials are put into a plasma arc recycling furnace and the process gas is added to the city biogas stream for the **Kawasaki M7A-03 gas turbine** . Waste heat is used to dry garbage or put into the city hot oil system.
- Recycling machinery uses low speed maranzized optically commutated , hollow conductor cold air cooled 24-35VDC motors without gearboxes.

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- Recycling machinery is welded from 5083/5086 plate and forgings and Ocher **Maroon + wight** anodized.
- Noisy equipment is double walled with a layer of mineral fiber between and possibly replaceable inner wear panels.

#### 15. Laboratory analysis , Specialty Chemical manufacturing , and Brine separation :

- Work with flammable powders is done in a argon or nitrogen atmosphere.
- Will extract , salt , calcium , strontium , magnesium , and other elements from the brine from the distillation plant.
- One of the main products will be concentrated  $H_2O_2$  (50%) to be used instead of bleach.
- The facility will also help the police to use chemistry to solve mysteries.
- The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

#### 16. Public bathrooms :

- These have baby changing stations.

#### 17. Watercraft , welding , and sewing facility :

- Assembles seaweed harvesters , patrol boats , solar hatch covers , and life boats using pre cut metal.
- Production sail loft mezzanine for assembling kite sails and general sewing.
- Water craft storage and maintenance.
- 2 boat lifts one for the weed harvesters and one for patrol boats.
- Comprehensive economical maintenance services for a limited number of craft types.
- The facility is designed to house 30 seaweed harvesters and 5 patrol boats .

- The floor of this facility is sunk in 3.8 meters (12.5") giving a ceiling of 6.7 meters (22 feet).
- Has a effective welding smoke extraction system + very good ventilation

## 18. Industrial level staging area for main city elevator

## 19. Composites plant :

- There will be several pulltrusion machines .  
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- This facility will have huge heated aluminum plates for laying up sandwich panels.
- This facility will send construction teams around the city.
- This facility will mold the transparent fiberglass (filon resin) sanctions for the the federation light container ship .
- The plant has roof vents and very good general ventilation while at the same time it is kept free of salt air.

## 20. Metals facility :

- Space efficient , temperature and humidity controlled , 24/7 city metal supply facility.
- Unrolling , flattening , and a high precision water contained laser cutting.
- Precision cutoff band saw for bar and extrusions.
- No minimum orders , no additional charges , metals and processing at cost !
- The facility will handle alloys 718 , 718SPF , 70/30 , Nickel 270 (pure Nickel) , Molybdenum , Copper , Silicon bronze , 317L , 420 , 2507 HD, Chrome Core 12-FM , Haynes 230 , E95 heavy alloy , and 5083-5086 , 6082 aluminum for vitreous enameling , as well as ingots of 70/30 , lead free C94700 , 5083 , HASL alloy , Copper , silicon bronze , and Kirksite mold alloy.
- The facility will also carry welding consumables for the above alloys.
- Powder metals in 317L , ASTM: AISI A11 Powder metallurgy tool steel (and sky blue powder coat), EN100027-1 HS 4-3-8 Powder metallurgy tool steel Stainless steel ASP®APZ10 POWDER METALLURGY HSS (Knife blades and specialty inserts) , 2-17 Samarium Cobalt for the powder metallurgy and magnet industry.
- 718 spring wire and fastener rod , Copper rod for drawing electrical wire.
- A286 Stainless Steel fastener Rod.
- The first thing produced will be rings with samples of all the metals sold. Cast alloy samples will be cast and powder metallurgy pressed and sintered.



Samples sold at cost to adult citizens and given to school children. All school children are given a sample ring , recycling will be taught from kindergarten on up ) The school will also provide training courses for employees .

**21.** Main power plant , Air liquification plant , NH<sub>3</sub> plant , HP air , and fresh water plant :

- The main power plant is a Kawasaki L30-A gas turbine run off city waste & seaweed derived methane, driving a domestically produced superconducting generator. The turbine exhaust is run through a heat exchanger to provide 350°-400° C oil for industrial processes . Then the still hot exhaust is used to run a distillation plant . Lastly the cool exhaust can be used to provide supplemental CO<sub>2</sub> and moisture for the greenhouses .
- A experimental hermetically sealed dissociative gas Brayton cycle generator will be developed to recover waste heat with higher efficiency than any current systems.
- The air liquification plant is a 9,000 Kw plant that produces liquid Nitrogen , Oxygen , Argon , Helium , Neon , Krypton , and Xenon , it also produces CO<sub>2</sub> that is sent to the farms and used for dry ice blasting and low pressure air that is sent to the compressors.
- A 3 ton per day NH<sub>3</sub> plant (these will be modular and space will be available for additional units if necessary )
- 35 hp 24.8 cfm Corken WFD551 water cooled compressors supply the city with 1000 PSI oil free filtered air the compressors are added as the city grows and are turned on and off as demand fluctuates. They are powered by optically commutated , super conducting 24-35VDC motors. 5 will be installed at the beginning on a single raft riding on cable mounts ( by feeding low pressure air from the air liquification plant into these compressors the pressure could be safely raised to 1425 PSI , increasing the air stored in a 95CF scuba tank from 40CF to 51CF)
- Waste heat from all sources is used to produce distilled water and brine. (Modified shipboard distillation plants may be used).

**22.** Food processing facility :

- Has a open layout that can be rearranged to suite the job at hand.
- Pumpkin seed and rye are milled for flour under nitrogen .
- Peanut butter , juice , etc. are produced from farm produce .
- Produces pet food and dried food
- ALL work with powders is done under a nitrogen atmosphere.
- Harvests are transported by Zamboni on the second level.
- Produces D-limonene and other chemicals from food waste.

**23.** 1715 person capacity cafeteria :

- This is a by reservation cafeteria on Christmas day , New years day , Etc.

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### **Methane digesters**

- Seaweed (6000 acres) and municipal solid wastes are macerated and pumped into one of 54 47 m diameter x 2.9m high digesters will produce 5000 m<sup>2</sup> per day x 54 = 270,000 m<sup>2</sup> x 7.5 ÷ 24 = 84,375 KW x .39 (combined efficiency) = 32,906 KW = 30,120 Kw(main) + 2650Kw (induction foundry)=32,770Kw 24/7
- In the event of a typhoon the tanks can be quickly drained to lower the center of gravity of the city.
- Methane is never stored it is burned as it is produced ! (any extra is used to run clothes dryers and distill water)
- **Studies have shown that natural gas is a dirty as coal due to all the leaks . Making a leak free system will be a top priority . This means NO pipe threads , every joint must be either soldered copper , silver soldered stainless (317L) or Ultra flare fittings and all joints must be tested to be Helium tight when assembled , and after any event (typhoon , tidal wave , airstrike , etc.) that could potentially cause a leak.**

### **2-3 corner sea weed dock and RC & drone aircraft carrier.**

- Sea weed is processed and pumped into the digesters.
- Scale air craft carrier for RC aircraft and drones with catapult and arresting cables.

### **4-5 corner commercial fish dock and recreational fishing area.**

- Fish are processed and sold here. Recreational fishing only with “unbreakable” lines and no trot lines , to protect swimmers and divers from hooks and fish from unnecessary cruelty.

**5-6 Seaweed Products including Ethanol, Carrageenans, agar, alginates (used for fireproofing fabrics) , sugar , fertilizer , and 1,2 butadine, production facility. Also dock and auxiliary power plant.**

- Sugar seaweed to ethanol plant to provides ethanol for cooking on sail boats , cleaning solvent and other niche uses. Production is about 34 liters per ton of seaweed , 10-30 tons per acre every 5 months . The ethanol is stored in nitrogen filled tanks underwater.
- Carrageenans , agar , alginates , sugar , etc. are extracted from the seaweed to make jam , jello , milk shakes , Etc.

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- Some of the ethanol is converted to 1,2 Butadine that is stored in nitrogen filled tanks underwater.
- Has a 7.956 Mw Kawasaki M7A-03 gas turbine auxiliary power plant and a hot oil and water distilling energy recuperation system (brine is sent to the main distilling plant for further processing).

**6-7 corner Consumer mall**

- This is what would be called a "factory outlet mall" in America. Companies that produce products that are needed in the city are invited to set up a factory outlet.
- A very comprehensive contract is signed to protect the citizens from planned obsolescence , price gouging , pests , fire hazards , etc.
- The companies are given space rent free and company representatives are given all the rights of a citizen except for the right to vote.
- Also the banks agents bring in meats from the mainland , Staples like wheat flour , coconut meat , mangoes , cherry's & cherry wood for furniture making , charcoal , Etc.
- The mall has a model and small project assembly area with private lockers , tables , tools , a spray booth with intumescent varnish , Etc. . The government encourages companies to produce models molded from PPSU Polyphenylsulfone by waving taxes on them and encourages citizens to choose them.
- The mall has a blast shielded hand loading and pyrotechnics area for people that like to load their own ammunition or make their own pyrotechnics with Private lockers , armored "glove boxes" , fire suppression systems , Etc. .
- A gaming area.
- Open flame cooking in restaurants and public barbecue grills.

**7-8 corner Park and model train diorama.**

- Fish are processed and sold here
- Recreational fishing only with “unbreakable” lines and no trot lines to protect swimmers and divers from hooks.

### 8-9 corner library.

- The library has a manufacturing and import/export emphasis.
- All Glass front and back.
- Everything is backed up on to "M" disks and stored in an archive under the flack tower.

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### 9-10 corner Industrial mall

- This is like the consumer mall but with a industrial focus.
- Has a 7.956 MW Kawasaki M7A-03 gas turbine auxiliary power plant and a hot oil and water distilling energy recuperation system (brine is sent to the main distilling plant for further processing).

### The Dome (underwater level)

#### Government (172 containers in section 2)

- **1** The commissars office
- **1** Honor code office
- **4** Post office
- **12** Jedi containers
- **5** City services containers (2 are public restrooms) (in every section).
- police, hospital and school are adjacent to each other
- **16** Police, 8 are office space , 2 jail cells , 3 student testing rooms , 3 elevator cars (only one elevator with 3 cars for the entire city)
- **18** For 84 bed hospital (8 beds per 1000 residents)12 for beds , 2 surgery , 4 miscellaneous two separate quarantine hospitals have (40 beds per 1000 residents)
- **91** School , 86 are classes , 4 restrooms ,1 office
- **10** Bank/reserve
- **13** Ice skating rink 40' x 100' (a Zamboni moves from rink to rink all day and night resurfacing the ice as needed) the walls are painted with winter scenes (in every section)
- **1** There is a Mazak hallway adjacent to the Ice skating rink that houses 3 Tesla turbines , a Zamboni ambulance , and other equipment (in every section).

## Hallways (137 per section)

- **48** (24 x 2) outer hallways with windows on one side
- **89** (24 x 3) inner hallways +21 Mazak hall ways with sky lights.
- A hallway/transition assembled from 63 meter long sandwich panels.
- The entire city is roller skate friendly , (Only the police are allowed Bicycles and they must be as narrow as practical ie. no side panniers and have non marking tires)

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## Private (338 containers per section except section 2 which has less)

- **91** – single family homes
- **51** – Duplexes
- **25** – night farms
- **52** – light industrial (1/2 light industrial-1/2 home)
- **48** – Medium industrial
- **9** - Child care (each has a capacity of 9)
- **11** – Japanese Gardens
- **21**- retail/consignments
- **12** - walkthroughs
- **18** (6 x 3) mushroom/mycelium farms for food and packaging foam each farm consists of 3 containers laid out like a child care unit but with 2 farm units , a sterile processing area , and a 1/2 duplex with rear access (the bathroom acts like a airlock)

## Corners

- Corners are private storage containers there are two kinds of containers **sealed** and **unsealed** .
- The **sealed** containers are sealed by the police and filled with dry nitrogen and can contain some select flammable items , like papers , art work , furniture , Etc. these containers allow someone to immigrate to the federation now and sort out their junk later. To be opened the container must be brought into the radio-graphic office and sorted through there (scheduling and payment is done at any bank branch) . A police officer is present during the sorting process for security and to take any items you decide to sell to the second level storage facility for sale on F-bay, (there is no charge for the officers presence). These containers are slightly pressurized and have a pressure loss alarm tied to the police station.

- The **unsealed** containers have been certified non flammable and are accessible by the owners they have 1 CFM of dry air and a 10A breaker with motion sensor lights at each end.
- The containers have doors at either end. And can be divided into two smaller units as needed (the division is either in the middle or at the 30% line) .

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### **Cold water cities**

- Solar panels are separated further apart allowing more sun to reach the plants in the greenhouses reducing the solar panel coverage from 44% to 36%. This will reduce the already reduced solar energy a further 18%.
- Seaweed farms are increased from 6000 acres to 8700 acres (city diameter is increased from 6.5 Km to 7.5km ) extra summer production is stored as ethanol.
- Night farms and hallways are switched to 70% power mode if necessary.
- The foundry is switched to pattern making and maintenance during winter.
- Geothermal energy and polyfuel production is prioritized.
- Food drying and preserving are prioritized .
- Federation light freighters are given ice breaking capability.
- Runways are heated to prevent ice buildup.
- Radioisotope diver heaters are Prioritized . They are owned by the city and kept in constant use.

### **City spacing**

Where space permits more than one city , cities are arranged in a grid pattern with 7.5 kilometers of free ocean between each city to avoid a feeling of a "crowded ocean" while still permitting efficient use of the limited shallow water areas.

## PSYCHOLOGICAL CONSIDERATIONS

People are amazingly resilient and generally want to do the right thing. However there are some things that will **always** lead to problems and the city needs to address these issues.

**1. NOISE :** If people cannot sleep or think because of excessive noise , your going to have problems. The city must control noise (and vibration to a lesser extent) and this buck stops squarely on the police's desk.

**2. HUNGER AND MALNUTRITION :** The city must be able to feed it's people and that buck stops squarely on the Commissars & Jedi's desks .

**3. POOR LOW QUALITY LIGHTING :** One of the most obvious differences between American and Japanese factories used to be that the Japanese factories had much higher quality lighting. People cannot do good work if they cannot see their work and poor lighting will lead to headaches and irritability. This buck stops squarely on the city services & the art instructors at the school's desk's.

**4. UGLY SURROUNDINGS :** A ugly place to live leads to depression , the city will incorporate relaxing earth tone colors and good design. This buck stops squarely on the city services & the art instructors at the school's desk's.

**5. PEOPLE HAVE TO FEEL SAFE MOST OF THE TIME:** Continuous fear will make people crack up , The city must be a safe place to live. This is everyone's responsibility, whether it's moping up a spill , or tracking down a contagion , every one must work towards the goal of a safer city.

**6. PEOPLE FEELING LEFT OUT OR EXCLUDED :** In the worst case this can lead to suicide. This is on everyone's desk .

## THE TECHNOLOGY DEMONSTRATOR , CHARM , AND GRACE

The technology demonstrator will house 4 couples and there will be accommodation for one child .

There are no age limits (experience is very valuable) but the candidates should be in good physical condition.

By the time the technology demonstrator is built and anchored , solutions to most of the engineering problems will be found (some work will continue even after the demonstrator is anchored) the main purpose at that point will be testing and finding solutions to the problems that crop up . A very important test will be finding out how it handles violent storms . For the first violent storm the technology demonstrator will be evacuated and video recorders left to record what happens , the technology demonstrator will not be evacuated for the second violent storm (assuming it survived the first one) that will be the “final test” , after that the lessons learned will be incorporated into the city design and construction can proceed .

What will the technology demonstrator and service/life boats costs cost ? My estimate is between 3-4 million US and 3-4 years , but that is only a guess ( a great deal will depend on finding company's willing to donate their expertise , materials , and equipment to the project .

I should also mention something about the two rescue/service/kelp harvesting boats “**Charm & Grace**”

- Either boat can evacuate 12 people in a emergency.
- The boats will fit in a 40' high cube shipping container
- The sail plan is a "skysail" stored in a box in the cockpit and deployed with the cargo crane mounted in the front end of the cargo hold .
- The boats have a bank of light weight carbon fiber CNG tanks and a head in the bow.
- The boats can carry two 750 Gallon fresh water or biomass tanks in the central cargo hold. (Den Hartog 750 gallon crop care tank Part no. CM0750-48)
- The boats have water and biomass pumps on board.
- The boats have a large bank of NiZn batteries (9x56 cells-100Kw) under the cargo hold floor .
- The small cabin has 2 births with privacy curtains , under each is a water tight stealth locked mail locker , there is a disappearing table for charts and meals, a alcohol stove , small cooler and food storage cabinets.



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- A center line mounted rotating ducted azimuth propulsor , uses a 36VDC motor , provides good maneuverability and is designed to charge the battery when under sail.
- The boats have twin bilge keels/rudders and can sit on a flat surface with no additional supports .
- All the ropes are Kevlar with a Nomex over braid .
- The Skysails are made from Nomex
- The hull is welded from thick (8mm-12mm) 5083-5086 plate it uses developed (not compound) curves.
- The boats are designed for rapid mass production and minimal maintenance requirements.
- Recycled (swirl colored) UHMW polyethylene with a fire retardant added is used for rub rails and replaceable wear areas.
- The boats are polished and stored out of the water instead of being painted.

### **The requirements for the "Pioneers" are :**

1. **Composition :** There will be 4 couples a Italian , English , Russian , and Japanese speaking couple and no more than one child between 7 and 14 years old . Age is not specified but everyone must be in good physical condition .
2. **Skills needed by all volunteers :** 1. Everyone must speak some Italian as that will be the "Working" language. 2. Everyone must have some self defense skills. 3. Everyone must be willing to defend the "Homestead" with a gun and deadly force if necessary. 4. Everyone must be willing and able to build , repair , and maintain , all sorts of machinery and structures , handymen , mechanics , repairmen , etc. are needed. 5. Every one must be a good swimmer 6. And everyone must know how to be thrifty and shop for bargains .
3. **Skills needed by at least one volunteer :** 1. know how to shoot a rifle well 2. know how to program a micro controller in circuit python and work with CAN 3. Know their way around a machine shop 4. Have experience working with composite materials 5. Know how to under sea dive and spear fish 6. Possess good accounting and math skills 7. Possess emergency medical skills (two people must have medical skills in case one is the person in need of medical attention) 8. Know how to sail and navigate out of sight of land.

## Some of the technologies and ideas that will be tested

(this list is in no way complete or final)

1. Cold (-60 C) 400psi air , power line cooling.
2. Solar panel cleaning tools.
3. Under running the LED lighting to save electricity.
4. Running a profitable "offshore" business.
5. Refrigerator/ air purifier combination using liquid air to freeze out CO<sub>2</sub> ,VOC's , and water vapor.
6. Alloy selection for easy recycling.
7. Eliminating all chlorinated plastics and bleach.
8. Copper-Nickel sea water intake strainers to bring up colder deep water.
9. External Copper-Nickel liquid air tanks.
10. Tritium night lighting (underwater).
11. Methane (biogas) household waste and seaweed converter with Methane used to distill water and run the clothes dryer.
12. 24VDC - 35VDC Resistance soldering (in a marine environment)
13. Fireproof composite sandwich under water container house structure.
14. Intumescent paint on walls and Intumescent varnish on furniture
15. The "deck" legal system.
16. Fire proof marble cement floor tiles and their adhesive in a marine environment.
17. Phenolic basalt pulltrusions with braided outer winding scaffolding.
18. Hand wrapped Kevlar/fire retardant epoxy tape scaffolding joints.
19. Tip tig welding using the Tesla/Delco turbo alternator.
20. Satellite internet to Can (CAN FD?) to power line to Ethernet internet.
21. Using CAN instead of Ethernet.
22. Alarm boxes ( **hector the detector** ) W/ E-paper displays.
23. Structural foam Ocher **Maroon + wight** Low Smoke Halogen Free Flame Retardant (LSZH) Polypropylene molded Grow beds with aluminum bar vertical supports and PPSU wedges for securing the bars to the grow beds (like metro shelves).
24. Multiple category Recycling bin.
25. DIY NiZn batteries.
26. Ropes and nets made from recycled pet fiber with Ivermectin as a antifoulant.
27. Phenolic fiberglass vacuum insulating pipe.
28. Using plants to purify the air (data will be collected).
29. Nomex Skysail rig.
30. X-rayed C94700 nickel tin bronze corner blocks and other detail components.
31. Nomex and linen wrapped Nomex fire proof fabrics , padding , and carpets.
32. Home re-compression chamber ( Super Duplex stainless steel S32750 (2507))

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33. Dive medicine first aid kit.
34. New! Plugs , cords , wire , and receptacles.
35. Redundant Circuit Python micro controller house controls.
36. Oval skylight W/safety hatch and "tritium vent" (borosilicate with Yttrium added for added toughness).
37. 1000psi-1500psi air Jack hammer driven titanium sea bottom anchors.
38. The scuba tow's doing double duty as house back up power.
39. 2½" (64mm) air powered double diaphragm pump running on 1000PSI-1500PSI air, the pump will have only flat easy to scrape clean surfaces .
40. Conversion of a speed queen commercial washer & drier to 24VDC-35VDC and biogas.
41. Ceiling air filter design incorporating 50% H<sup>2</sup>O<sup>2</sup> to generate Hydroxyl (OH•) and superoxide (O<sub>2</sub><sup>-</sup>) radicals for air sterilizing , Bondex 16oz aramid Hydrolox filter material , and activated coconut charcoal.
42. Electroless and conventional Nickle plated electrical contacts.
43. Corrosion proofed 98K's , in 8x33 , in a marine environment.
44. EN plated door locks using Superalloy Stealth Key's in a marine environment.
45. Federation packaging.
46. Silicon bronze : CDA-65500 sinks , toilets , shower basins , Etc.
47. Shoes made from Mycillum leather and specially formulated Silicone Rubber.
48. Federation uniforms in three styles "Safari" , "Contemporary kilt " , and "Western (cowboy & Indian)".

## AFTER THE TECHNOLOGY DEMONSTRATOR

After the Technology Demonstrator has proven it self , a General purpose workshop will be attached to it , this will add some metal and wood working capability and allow access to the next containers which will be several hallways , and that will allow access to the next container a light industrial that will be used mostly for sewing Nomex fabrics for clothing and bedding , and that will allow one of the couples to finally have a place of their own . The next container will be on the other side of the technology demonstrator and will be a “Medium industrial” used for making 718 (a high strength corrosion resistant alloy) springs , the sewing shop and the spring shop will collaborate to produce high quality fire proof , rust free mattresses, that can be flattened (using a vacuum bag) and rolled up and put in a fabric bag for shipping. The mattresses will be used for the city and export to boat owners and owners of water front property (especially the ones that like to smoke in bed ) they will be made to any size or thickness to fit unusual spaces in boats and cabins.

After that additional small business and immigrants will move in , and the production and export of 24-35VDC , 317L stainless steel , electric kettles , woks , toaster ovens , rice cookers , Etc. will start. These small appliances will be used domestically and exported to people that live “off the grid” and use 24-35VDC.

At some point we will start looking for a business man to start a Pacific Aerospace P-750 business (The Pacific Aerospace P-750 is the plane that Alcyone's runways were designed for) to provide regular fast transport to nearby airports.

I could go on , but I’m sure you can see how things will proceed , filling domestic needs while building an export portfolio and bringing in new citizens as we find places to employ them and have the infrastructure to feed and house them .

## POLITICAL - LEGAL CONSIDERATIONS

I'm going to keep this short because there is a VERY long tradition of "Might makes right" when it comes to law on the high seas , and anyone that tells you otherwise hasn't read enough history. Here are the important points :

1. The city should be situated beyond the 24 mile "contiguous zone".
2. If the city is situated beyond the 24 mile contiguous zone but within the 200 mile "exclusive economic zone" the exclusive economic zone is generally redrawn to divide the zone . **This is the number one legal issue** a neighbor nation is going to lose some exclusive economic zone area from some one inside their exclusive economic zone.
3. If the city is beyond the 200 mile exclusive economic zone but not 200 miles beyond it.
4. If the city is situated more than 200 miles beyond the exclusive economic zone then there really is no issues and this is the "best case situation"

How to best handle the situation described in point number 2 ?

1. Before you have declared that you are a member of the federation , the neighbor nation could claim that you are violating their exclusive economic zone if you go fishing and sell the fish , drill a oil or gas well , salvage a sunken ship , or discharge pollution , **So don't** .
2. Declare that you are a Federation city as soon as you qualify and are approved to do so , **time is not on your side** .
3. Make sure that you are strong enough to defend your city (and willing to die to do so) from the very inception , **no nation on earth has survived without people willing to die for it**. I am half Finnish and I recommend that anyone contemplating this , read a little about the winter war between Finland and Russia.
4. Once you are established as a Federation city , deal with your land bound neighbors from a stand point of strength and make it a fair , honest , and mutually beneficial relationship , **anything else is only going to lead to problems , make sure all citizens understand this** .
5. A mutually beneficial relationship with the neighbor nation will not only benefit your city but make it easier for all future cities , **don't keep it a secret** .

How to best handle the situation described in point number 3 and 4 ?

48.

1. Any problems you may have with you land neighbors in these situations could be described as "piracy on the high seas" and must be dealt with accordingly.

## FAQ's

1. **Why is the city shaped the way it is ?** Cities like anything else are a compromise , in this case there are four competing desires 1. Every one wants a ocean view ( you can see this in the design of apartment buildings along the seashore , they are designed for the maximum number of apartments with an ocean view). 2. A city needs to be of a certain minimum size or they become very inefficient and not very independent (you can see this when you look at electrical power plant efficiencies , below a certain size , power plants are not very efficient). 3. Structural , the city must resist repeated violent storms, a city shaped like a single long thin strand could be broken in pieces by a strong storm. 4. Airport design , a pilot would like two 100 foot wide runways set at 90° to each other so he will never have to land in a cross wind . And some extra length to give him or her a little extra safety margin . So how well did we do ? Well the population will support a 31 megawatt , 40.1% efficient Kawasaki L30A based power plant so the efficiency is very good , the airport has two 90 foot wide runways , set at 72° and with a extra 160 feet in length (based on the landing requirements of the Pacific Aerospace P-750 aircraft). everyone is no more than a very short walk to a exterior window , And the city is 200 feet wide and joined at the ends and so it is very strong structurally . and should handle storms well . Meeting all these conflicting requirements has led to the city being shaped the way it is , it is a case of "Form follows function".
2. **What are the biggest differences between living in this city and a city on land ?** There are four main differences 1. A much higher level of city planning . A normal city can accommodate a certain level of unplanned growth , but in this city where every breath you breathe must be pumped down or filtered and recycled , haphazard growth is just not possible. 2. A very strong emphasis on efficiency in every aspect of city operation , things like spending months getting a building permit , years in court trying a case , or decades arguing about weather pesticides are dangerous are completely unacceptable. Instead the permit will be issued within hours , the case tried within 16 hours , and pesticides declared illegal by the head doctor after a

few days consideration 3. A really insane level of concern is given to fire prevention , this is a enclosed , pressurized environment so the partial pressure of oxygen is twice normal levels , fires are much more intense and LETHAL as this video demonstrates [HTTP://youtu.be/X8QoEzc40rg](http://youtu.be/X8QoEzc40rg) . 4. This city is very dependent on foreign trade , the leadership must understand this and act accordingly , and the population must be very “internationalized” every citizen is also a ambassador , a citizen that goes abroad , or has dealings with someone abroad , and behaves weak or rude or stupid , hurts every citizen.

3. **Where did the name Alcyone come from ?** The origin of the city's name , Alcyone , is from a Greek myth , A woman named Alcyone was so upset when her husband died at sea that she threw her self into the sea , she wanted to die as well. However her father was the ruler of the wind and rather than dying she turned into a bird that can fly over the sea and make a nest at sea on floating wood and plants . Alcyone (with some liberties taken ) is “a nest on the sea”. The city's are mass produced and are named Alcyone followed by the latitude and longitude Alcyone 90° E 30° S for example. So a mailing address would read as :

Dr. *Merkwürdigliebe*  
Block 4 house 9  
Unit 6  
Alcyone 90° E 30° S

4. **Why use 1000 -1500PSI air ? Why not 3000PSI and just fill scuba tanks completely without an intensifier , or why not not use 800C hot oil and use it for vitreous enameling ? , or 100VDC , or 1000PSI water ?** There are large , reliable , low life cycle cost , oil free air compressors for 1000-1500 psi. Beyond that the cost , reliability , etc. all reach a point of diminishing returns . Beyond 400C heat exchange fluids get a lot more complex to deal with , beyond 30-45 VDC electricity is lethal and must be handled differently in a marine underwater environment , that is just not worth it . Beyond 400PSI water requires more complex and expensive piping systems . In all cases there is a point of diminishing returns and/or unacceptably increased risks and that has led to the choices made .
5. **Why Do some containers on the drawings have the text upside down ?** Containers are often seen with the text upside down this just means they have been turned around (often to put the entrance closer to the outside windows) This is not seen with Duplexes or Offices with front and back entrances.

6. **How can you replace all piston engines with turbines ?** They won't be , a lot of them will convert to electric. But the city will run off turbines and solar as well as a little wave power. Also all aircraft will run off turbines or electric and the city will have the facilities to repair and maintain these turbines (a considerable investment).
7. **How does the automated delivery system work ?** Every house and some bushiness have 5 airlocks next to their front door, the airlocks contain boxes 10" high x 12" wide x 18" deep (254mm x 305mm x 457mm) they are set at 5 different heights from 13" to 68" (330 mm to 1727mm). One box is for mail , one is for laundry , one is for food deliveries (this can also be used to send lunch to your husband at work for example) , and two are for trash and recyclables the Delivery Zamboni's have 50 airlock boxes , 25 on each side , there are about 345 mail boxes in each section so 7 trips of a Zamboni will be required to deliver the mail to a section , if everyone had mail. The airlock boxes on the Zamboni's have E-paper labels on them that rewrite themselves as needed The Zamboni's will line up behind the hospital where volunteers , new immigrants , low risk prisoners , and scouts will load the Zamboni's with mail , they will automatically go off and deliver the mail and then ride the elevator up to the Radio graphic office where they will be unloaded for air shipment , and return for the next load and a battery charge, similar systems are used for laundry , garbage , recyclables , and food deliveries. Also by using sterilizing UV lamps inside the airlocks , self quarantineres can receive mail and meals (just not send mail).
8. **What is the difference between a Commissar and a Mayor or Governor ?** A Commissar is a one man "think tank" his job is to look at the world , look at trends , look at emerging technologies , and of course look at the city , and develop a plan for the city , for next 7- 7<sup>2</sup>/<sub>3</sub> years. Then his plan is scrutinized by the Bank , the police , the Jedi , the hospital , the school , and business , debates are held , and a election is held , to either approve or disapprove the plan. If the plan is disapproved a new plan is developed , and a new vote is taken. When/if the plan is approved the Commissar is given great power to see the plan through , he is very much like Vladimir Putin when it comes to the plan . But he is very constrained in "hijacking" the plan or allotted resources for some other end , in this respect he is more like a "administrator" or "project manager". Because he has so much power he has no need to politic , compromise , or make deals when it comes to the plan . But in other areas like the tax rates , reserves , and city finances , this is run by the bank. The health of the city is overseen by the Hospital and Radiologic Office , the police and the Militias handle Defense and maintain order, the Knights handle intelligence , hostage rescue , and



countermeasures, the Jedi Handle Immigration , food production and help with education , Etc. The Commissar only has “soft power” in these areas. The Commissars are modeled after Liu Cixin's "Wallfacers" and inside the federation the titles are used interchangeably .

9. **What does rent cost in the Federation ?** The official goal will be to have rent at 50 DK (about \$165 US dollars) per ½ container ie. one side of a duplex. This moderate rent level should allow the lower class to have enough disposable income to move from lower class to middle class and home ownership reasonably quickly ie. years not decades. This will mean that most rentals will be owned by business to provide housing for their own employees and just break even on costs.
10. **How does the average person get his voice heard in the federation ?** Every City's Commissar (wallfacer) has a soap press in his office , when a average person living in the city has collected a large jar of soap leftovers he can take it down to the Commissar's office and use the soap press to press them into new soap bars . While he is pressing his soap he can talk to the Commissar about whatever is on his mind . This system relies on the honor of the person and the commissar to not abuse it , but assuming that no one abuses it , this will give the average person direct access to the highest people in government without bringing the government to a standstill with "too much access".
11. **What do I think are the biggest challenges ?** Well first of all while I think money is a challenge , 9 adults collaborating (with some donations) on a 3-4 year, 3-4 million dollar project is not that extreme. I think the biggest challenge will be finding the right people and also the right company donors. The second biggest challenge will be the almost totally composite infrastructure , right now society is cautiously putting one foot into the composite infrastructure pool with a few composite bridges and waterworks structures, here and there. This on the other hand is a entire city of 10,000 people that is over 90% composites.
12. **What is federation pay like ?** Pay scale resembles Slovakia but with 35 paid vacation days a year, this is the highest long term sustainable level possible in this case , and is only possible if federation quality/technology is maintained at a very high level . The advantage is that we will be able to have zero national dept (zero debt and a 100 day reserve is a legal mandate) and apply money normally wasted on interest payments to beneficial things.

## NEW TERMS

Note some terms used in this document may be confusing here is a helpful explanation.

1. **"Polite"** is a level of mastery of a language it is defined as a 150 word vocabulary (written and spoken) one must be "Polite" in Italian , Russian , Japanese , and English , to qualify for citizenship.
2. **"Semi Fluent"** is a higher level of mastery of a language it is defined as a 700 word vocabulary (written and spoken) one must be "Semi Fluent" in the language(s) of your chosen field to be qualified to be a "professional" as long as you are only "Polite" you are considered a apprentice and only receive 1 DK per hour pay (there may be additional requirements depending on the field).
3. **"Dome"** refers to the underwater level in a city or the pressurized living area in a space habitat.
4. **"Jedi"** these are "non religious priests " or to put it another way the Jedi do the good things that the church does , preform wedding ceremonies , funerals , visit the lonely , depressed , and afraid , comfort the old , sick , and in prison , Get new citizens up to speed (manage work crews and teach languages) and reject unsuitable people during the 10 month probationary period , and a hundred other good things . They are also responsible for providing meals for the elderly and maintaining their food reserves , developing a federation martial art tailored to being outnumbered and facing armed opponents , advancing the science of learning , and providing biofeedback and fitness training . They pay no taxes and in return they are expected to act like Maria Montessori , George Washington Carver , and Jackie Chan , all in one. Their pay is equal to a nurse or a police man.
5. **"Graveyard tax exemption"** 24 hour business or a person that works the midnight to 8 AM shift qualifies for a "Graveyard tax exemption" that amounts to a 25% reduction in taxes. In return you are expected to stay alert and sound the alarm if the city is attacked , there is a gas or radiation leak , you spot pirates or saboteurs entering the city or any other emergency occurs in the night .
6. **"Mazak hallway"** I was working on the engineering of the floors and I needed to design for the largest possible stress that could be placed on the floors so I decided on the stress of having two of the biggest Mazak lathes (that would fit) bolted to the floor while the container went through a hurricane. So a Mazak hallway is a container with two skylights that is being used as a hallway, But can be quickly converted to factory space by just installing a power line. When manufacturing must be ramped up quickly in response to

an emergency (like we need 100,000 N95 masks next week) manufacturing space can be increased about 13% literally overnight .

7. **“Family unit ”** a container with a children’s room with a capacity for 3 children and a total capacity of 5 people (one peculiarity of Family units is that they can only be entered from the side).
8. **“Night Farm”** the farms in the “Dome” use so much electricity for artificial lighting that they need to run at night to balance the electrical grid. Night farms have a capacity of two adults and a single child.
9. **“Walk through”** this is a 24 hour restaurant that also serves as a walk through from one circumferential hall way to another , they receive a Graveyard tax exemption , and in return are expected to allow friendly use of their restaurant as a radial hallway 24/7 (Walk Throughs are usually paired up with Mazak Hallways to provide a second path)
10. **“Japanese Garden”** the Japanese Garden is ½ of a duplex and the other half is a Japanese garden forming a court yard , two Family units are connected to both sides and the entire assembly has a capacity of 12 people. This is suitable for a large family or possibly just friends pooling their resources. (see Child care)
11. **“Child care ”** this is very similar to the “Japanese Garden” except the garden is replaced with a daycare facility and the owners of the facility live in the ½ duplex. The facility has a maximum capacity of 9 children.
12. **“Light industrial”** This is a “High Efficiency” tiny factory where ½ the container is a living quarters (½ Duplex) and the other half is for manufacturing. The advantage is that the overhead costs are very low.
13. **“Medium Industrial ”** in most cases the manufacturing process requires more space than a light industrial can provide so a medium industrial is the most common type of factory , having twice the shop space.
14. **“Retail or consignment store”** The retail part is self explanatory , the consignment part works like this: “People that find items while traveling abroad that are needed in the city can buy small quantities (9 or less) and sell them here on consignment. However while import duties are overlooked on the 5 sets of Corelle dishes that you brought in , in your luggage , contraband and counterfeiting regulations defiantly are NOT overlooked . So make sure they are genuine Corelle , and don’t be surprised when the customs agent , asks you to please remove the flammable packaging , this is just a practical partial answer to the problems of high cost of travel and the stores in small countries having very little variety . The Library will maintain a website called “Retail or Consignment” that will allow store owners to post what they are selling and will allow shoppers to search on line.
15. **"pressing the soap"** This refers to when a citizen is using the soap press in the commissar's office and at the same time discussing what's on his mind.

## APPENDIX A "The Deck"

Federation of independent cities  
"We're Different and we're consistent"

It's a "Common Sense , Decentralized Communitarianist , (campaign promises are legally binding) , Franchise"

What this means is 1. "**Common Sense**" means the opposite of "Ideological" or to put it another way " If the rules don't apply in this case , they don't apply in this case" 2. "**decentralized Communitarianist**" means there is a minimum of centralized control and the society highly values community (like "mayberry" with a Japanese flavor) 3. "**campaign promises are legally binding**" You are required by law to keep your campaign promises (within 10%) 3. "**Franchise**" means , like Denny's , but for cities instead of restaurants (there is a lot of "economics of scale" in city construction and things like the school , police , bank , library , etc. are federation wide) and more or less non profit/non debt.

Procedural (spades)

♠A. There are 41 federal laws (the two jokers are the death penalty offenses) up to 13 city laws (they apply to a city "type" like "Alcyone" and cannot in any way contradict or invalidate the 41 federal laws , this is where smart city planning starts) , they are printed on the fronts of playing cards in your choice of the 5 languages. A guilty verdict requires physical evidence and the guilt must be beyond a reasonable doubt. The back of the cards have the 9 color federation flag. All laws apply (with common sense to the letter and/or the spirit) to everyone . The "Deck" comes up for review every 50 years any changes must have 2.5% of the relevant ( local laws , local vote) population on a petitioned and approved by a 9/10 vote of the entire population for each and every single change , then it is "locked down" for a other 50 years and the entire federation has a big party . Everyone citizens and visitors must own a Deck . Misdemeanor law is at the discretion of the police and judged by the honor court , it covers things like urinating in public , littering , Etc. "The best way to stop all crime , is to stop small crime." Robert Lackey

♠2. There is no military , the police and the civilian militias provide for defense of the realm , are armed and trained accordingly (but they still are police they arrest people , not bomb cities or engage in collective punishment) and are given a third vote at elections in respect to their willingness to die for the federation. In addition a attack against one city is a attack against all cities. All arms manufacturing is government scrutinized and the government sets a price that results in a "living wage". A individual or group of individuals that wishes to design or manufacture a weapon must notify the government and report any significant developments , the development can be modified , terminated or assisted at the discretion of the

Commissar. Developing technology-methodology to accelerate learning is the Federation's "Manhattan project". The Police and knights Christmas bonuses are based on a yearly report on **The state of crime and defense**, the report is prepared by the office of the Commissar. The police also have a business of running a "F-bay", you simply take the item to the police, they put it on line and sell it, take 7% for the police account, and deposit the rest in your account.

♠3. All guns have a finger print scanner, camera, additional sensors, internal memory and internet connection, every shot fired is recorded and uploaded (during times of war or police undercover operations the gun can be modified to only record, not upload) Disabling the "gun camera" by action or inaction is punished by hard labor. The minimum barrel length is 240mm, and the firing mechanism remains mechanical. You must be 25 years old to have a gun outside of a gun storage/shooting range (except in times of national emergency and are allowed to retain the gun after the emergency has passed), guns are carried open and storage is free by law for everyone including immigrants and tourists, you do not need a gun to have a storage locker only be 14 years old. Only lead free, smokeless, chlorine free ammunition is allowed, and all shooting ranges must have VERY good noise suppression.

♠4. Ages: In the federation a citizen is considered a "Adult" at the age of 14 and has 95% of the rights of a "Mature Adult", at the age of 25 the citizen is considered a "Mature Adult" and gains the additional rights to: 1. drink alcohol. 2. carry a fire arm outside of a shooting range. 3. engage in the profession of prostitution. 4. receive a death sentence for a crime. People under 14 are given limited extra protections at the discretion of the local government. Children are not over protected. There are boy/girl scouts for children 9-14 that introduces children to different jobs in the city, the residents of the city are expected to make time to offer tours and lectures of their jobs and places of work. The scouts also go on camping trips to familiarize the children of what land is like. Every scout will camp in the desert, mountains, jungle, forest, snow, and swamps. They also learn self defense, lock picking, shooting, first aid, CPR, chess, poker, cooking, food safety, sailing, and other useful skills.

♠5. There is a death penalty but it cannot be imposed solely on the basis of "electronic" evidence. Death penalty cases require a jury in addition to the Commissar, both must agree unanimously and even then any Commissar or president of a reciprocal nation can grant a sentence reduction to 15 years hard labor in their city or nation (or just 15 years). In cases where a guilty verdict is a forgone conclusion and a Commissar or president of a reciprocal nation is offering

a sentence reduction in their city or country , the accused can plead guilty and ask for the trial to be avoided and accept the sentence reduction . The sentence reduction can be withdrawn at any time as the details of the case become public knowledge .

♠6. Citizens traveling abroad must demonstrate competence in unarmed combat in order to receive a passport. Passports are free and last a life time but you must add a current photo every 10 years at the Honor code office and the book must be rebound when it becomes necessary , this is done at private stores. Political representation is handled by the relevant Commissars , ie. local representation is handled by a local commissar and global representation is handled by the commissar that is the most competent in the field in question ie. agricultural trade is handled by the commissar that understands it the best. Determining who understands a subject best is determined by testing preformed by the police. Playing dumb on a test to avoid having to serve as a representative is a honor code violation. Trade Commissars are legally prohibited from obeying international trade restrictions (this is a survival issue).

♠7. Each city has a Commissar , they serve for 7 1/3 - 8 years , there are no term limits or political parties , all elections are by secret , paper ballot vote , all citizens 14 or older get 2 votes , a for , and a against vote . The Commissar serves 1/3 year and presents a 7 year , very detailed plan , the plan is fairly and without bias evaluated by the Bank , Jedi , police , knights , city services , hospital , school , and anyone else that wants to . A vote is taken on the plan , if the plan is passed the Commissar serves the remaining 7 years of his term and implements the plan , if the plan is rejected 3 times a election is held for a new Commissar. The Commissar cannot vary from the plan more than 10% without a vote of all affected parties. The minimum age for a Commissar is 40 they must be rated "competent" by the Jedi in unarmed combat , "645" in the "mainland" and the 5 main languages , rated as "acceptable" by the Honor code office and a citizen . To be on the ballot you only need 2 1/2% of the population in signatures on a city wide petition . The commissar also serves as the Deck court judge & local Trade Commissar and is legally prohibited from obeying international trade restrictions (this is a survival issue).The senior Jedi acts as a substitute Commissar.

♠8. Decisions that affect all cities are voted on by all citizens 14 or older and the Commissars are bound by these decisions , what is to be voted on is anything that gets 2 1/2% of the population in signatures on a petition . There is no "central" federal government beyond this , examples of this would be a "reciprocal" agreement with a other nation state and declaring war (takes 9/10 vote) on a other nation state , and additions to the contraband list. Additionally a Commissars phone and meetings logs are public knowledge. What is said during these calls and meetings is private.

♠9. A city can join the federation when it provides a Commissar's office , police , a Jedi for every language , school , hospital , quarantine hospital (quarantines are for up to 40 days and the rooms are accordingly secure and comfortable), post office , honor code office , radiologic office , all utilities including alarm boxes , and can feed , house , and protect it's citizens . The facilities may be of a provisional nature. Admission to the federation is by inspection and vote of current Commissars. Similarly every city is subject to yearly inspection by a current Commissar and a city that does not pass inspection either by the letter or the spirit of the deck can be put on probation and if it does not rectify the situation it will be removed from the federation . For example a city that has prostitutes under the age of 25 will be put on probation. It is the responsibility of the other cities to help a city get into compliance , for example a city that has been unable to find a Japanese native speaking Jedi despite all reasonable efforts can expect help from other cities .

♠10. Everyone must pass a check for elevated body temperature before boarding a elevator , also every time you clock in at work , borrow a book , or purchase something you are automatically checked for elevated body temperature, if the computer senses a bad trend it will inform you that you must visit the hospital (this contagion screening and stopping process will be subject to continuous improvement) Time and temperature is recorded , however Your location is not reported. Additionally the senior doctor can order a quarantine or stop travel , or just about anything he decides is necessary to protect the health and lives of the people of the city. Lastly all medications are tax free and there are no prescriptions required ever. The federations economic "temperature" is maintained at 3.5% economic growth by a "Economic Growth reservoir" if the economy goes over 3.8% a additional sales tax is imposed (total cannot exceed 36%) and the money collected is put into a account at 4% interest (new loan rates also rise to 5.5%) when it drops below 3.5% the money is returned with collected interest and new loan rates return to 5%. "the hookers & blow tax"

♠J. Immigration numbers are controlled by City Services and citizenship is controlled by the Jedi you must be "645" (know the standard 645 words in the standard 5 languages) to apply and it can be revoked at any time for a period of 10 months (you can try again in 3 months , and you are also subject to extradition during the first 10 months but not after) during which time you work as a Jedi assistant for 5 different language speaking Jedi and learn to be "645+" (plus is



your job specific words) and to sing the city song in one of the languages (you are paid 25 DK a week) . During the first 10 months you must not leave the city except to visit other federation cities and only on days off , any violation of Deck law or untrustworthiness , will result in automatic rejection .There is a before and after interview with 2 Jedi , a man and a woman , the before is done on your 4th day and the after is done after 10 months , the interviews are to asses your skills , weakness and any plans you may have. After the second interview you will be told where to go and what to do , to be in compliance with the deck and fill any gaps in your skills . In order to immigrate you must find a place to live. **The most important characteristic of a new citizen is total trustworthiness**

♠Q. The minimum age to work in the sex trade is 25 years , and you must submit to weekly health screening (even for pornography) , a yearly psychological evaluation , and go to school 6 hr a week minimum . Any failure health , psychological , or educational , results in permanent banning from further work in the sex trade. Only the school applies to “provocative dancers” that keep their clothes on. All sex workers work on 4 month exclusive 24/7 contracts that can be renewed indefinitely as long as both parties agree (they can only have sex with each other or face a maximum hard labor sentence). The Porn industry is no longer a private industry , it is part of the government , sex actors are screened for STD's and live under guard in the quarantine hospital for the duration of the shoot. No dangerous or damaging sex acts and no "drug symbolism" like tattoos or body piercings (tasteful earrings are ok) are allowed. Sex actors must be shown visiting a health facility for STD testing before engaging in sex and having monogamous relationships. The sex actors must be in good physical condition and shown living a productive and socially responsible lifestyle.

♠K. It is the right and responsibility of a citizen of the federation , that is found guilty of a crime and serves a sentence of hard or soft labor , to return to work and studies when his debt to society is paid (you are expected to become a productive member of society again and with alacrity) you are given one week , or the government will “place you” in a job and school. You will be given as many choices as possible under the circumstances. If a police is found guilty the punishment is automatically doubled , if a militia member is found guilty the punishment is increased by half.

Criminal (clubs)

♣A. Negligence such as Lack of disaster preparedness is a crime (Not having enough lifeboats on a ship for example). The punishment is soft labor and financial responsibility (a life is worth 100,000 DK , triple if there is even a hint of



a cover up) for the consequences of the Negligence. Additionally all births must be approved by city services , the penalty for a unapproved birth is 100,000 DK , triple if there is even a hint of a cover up . A exception is made In the case of a family living in a Farm Unit with a capacity of one child for example , and the couple has approval to have a child but has twins instead , unless the “Block Child Capacity” (18) is exceeded , and in that case the house must be moved to a block with available capacity. A divorce is considered to waste one seventh of a persons life so a married person that asks for a divorce must pay the other partner 14,285 DK in compensation. There is no alimony , child support , etc.

♣2. Willful ignorance is a crime , punished by soft labor , "everyone learns". What this means in practical terms is the commissar "wallfacer" or a high ranking individual in the police , hospital , Jedi , bank , or honor code office can , if they feel it is advisable , assign a course or class to you , and you must take the class and pass it (you are allowed to complete your current class first) . This is neither common or rare . This also means AI is illegal "you have to think for your self". If you feel like you are letting a computer think for you , you are probably breaking this law , "calculating machines" are legal.

♣3. Pollution (air , noise , water , ionizing radiation , excess vibration , garbage , Etc.) is regulated with common sense , Certain substances are banned like chlorinated plastics , estrogenic chemicals , mercury, Etc.. The punishment for pollution is soft labor or hard labor depending on the crime. Equipment sold in the federation must be fully repairable , all necessary technical data must be available and all parts must be available at a cost that when added together does not exceed the retail cost of the equipment , any attempt at circumvention of this can result in ALL products from that manufacture being banned for sale for 1 year , however they must still supply parts during that year. The federation does not tolerate planned obsolescence but with common sense , hypodermic needles are still disposable. Fossil Carbon emissions in the federation are capped at 1 ton per capita per year at 1970 population and goes down in proportion to world population increase.

♣4. Everyone , citizens and visitors , have a right to privacy , only absolutely necessary data shall be collected, the type of data collected will be public record , and under no circumstances shall it be sold. (this includes fiscal privacy the only data points collected by the bank are 1.What is the average place you place the tax/Jedi slider , this is reported to the honor code office 2.Upon your death ½ your wealth is held until released by the knights Templar) , violating someones right to privacy is punished by soft labor , furthermore it is the governments job to protect the citizens privacy with tenacity. The ONE exception is child and animal care facilities they must facilitate remote monitoring by parents or guardians. Random drug testing by the police , schools , or employers is not considered a privacy violation and is allowed .

♣5. The press is free as long as it is honest and reports on all sides of an issue nicely and fairly , punishment can be hard or soft depending on the severity of the lie , hurtfulness , or bias ( hurtfulness includes male bashing and emasculating which has lead to increases in suicide rates ). Since the truth is often in Question the press should rely on direct quotes and “ according to” statements to stay out of trouble.”just the facts”. The bar for what is prosecuted , is high the “offense” must be “blatant”. The internet is censored for:

1. Dangerous sex acts : Sex without testing for STD's , promiscuity , anal sex , strangulation, etc.
  2. Recreational drug use in a positive light , Drug symbolism (including Visible tattoos) , Recreational drug sales including tobacco.
  3. Anything that promotes agent provocateurs , rent a mobs , and other criminal activity.
- Nothing else is censored.

♣6. Intentional Destruction or defacing of public or private property (words are considered private property and interrupting or shouting down a speaker at a public forum is considered defacing) is punished by repayment and hard labor. (unintentional by soft labor). Arson and digging up bottom anchors receives a maximum hard labor followed by maximum soft labor sentence.

♣7. Stealing is punished by hard labor and stealing a mans tools , his livelihood , automatically gets the maximum sentence , this can be a plumbers wrench , a accountants calculator , a inventors ideas , a writers words , a programmers code , a manufactures designs , or a dancers shoes. It does not make any difference if the victim of the theft is a federation citizen or a foreign company (looking at a design and making a measurable improvement is not stealing the design). Also smuggling and tax evasion is considered a form of stealing.

♣8. All forms of smoking is illegal everywhere and punished by hard labor. The government will provide assistance in quitting free of charge. Additionally recreational drugs including marijuana are illegal as are marijuana and other drug culture symbolism and any visible tattoos ( immigrants with visible tattoos must have them removed during the 10 month probationary period).

♣9. The police enforce Food , air , water , medicine , and electrical safety (34VDC nominal) distribution grid , higher voltages are only allowed internal to a machine or as a attached extension to a device and only with a automatic safety shut off , appropriate warning labels , and the combination must be tested and granted a one time exception). Endangering the public by compromising their safety is a crime punished by hard labor.

♣10. Inciting a conflict , riot , or war and spreading damaging Rumors , lies , or propaganda (including spooky music and imagery) is illegal and is punished by hard labor , if you are just telling the truth and not "spinning it" that's fine , "just the facts" is always legal. Non federation search engines ie. Google Search are illegal , instead every government branch contributes a equal number of programmers to build and maintain a unbiased federation search engine named "Sea View".

♣J. Abusing people , or animals physically , or financially is a crime punished by hard labor. ( kidnapping , sex with a minor , Etc. are considered abuse even if the person is uninjured). However reasonable self defense , or defense of others is always legal and expected . Additionally all food animals like fish must be killed quickly and with minimum pain. Fishing purely for sport is illegal.

♣Q. Disobeying or lying to the government is a crime punished by hard labor. Also the government lying to the people or disobeying a vote by the people is punished by hard labor (the same applies to employers lying to employees). For example if the citizens vote to go to war a Commissar cannot "opt out". Additionally "flooding a country's public square with raw sewage" *figuratively speaking* is also a hard labor offense , and all babies and children in the federation are checked to determine if the alleged parents are the actual parents , as "paternity fraud" is considered not only abusing people it is also considered lying to the government . Planting evidence or framing a person or organization has as an additional penalty , the punishment for the crime that the person or organization was being framed for.

♣K. Prejudice , discrimination , and favoritism in all forms (religious , race , sex , former nationality , Etc.) is illegal and punished by maximum hard labor + Maximum soft labor. (This is given a very high priority by the police because a race riot in the "dome" could kill every one , so every one must be polite and fair to each other, particularly where more than one person is doing essentially the same job they must get essentially the same pay , study of the Capuchin monkey fairness experiment is a requirement for all government workers and private employers). The federation court system generally does not get involved in marriages and divorces , the only exceptions are paternity fraud which is a hard labor offense , and lying about your status ie. single , committed , or married which is a soft labor , honor code offense.

Joker (Jokers)

Joker. Distributing a illegal drug (this includes marijuana) to a non user , carries a death penalty. (this applies indirectly as well , a drug "lord" or "chemist" is as guilty as the pusher on the street , (Attempting but failing to distribute or

distributing to an addict carries a maximum hard labor followed by maximum soft labor sentence , no trading allowed). Possession is punished by maximum hard labor.

Joker. Murder (including abortion) and piracy is punished by the death penalty (treason and spying may be treated as murder if loss of the information or the treason involved , could reasonably result in a death , if only financial damage then a maximum hard labor sentence is given , if the only result is a public benefit , then the case is dismissed ). Killing some one trying to kill you or a third party is self defense if it is judged justified or accidental .

### Beneficiary (diamonds)

◆A. One Bank/Utility/Monetary-Alloy metals reserve serves the entire federation , is open to all , and follows "better than best , and simple practices" , profits go to the government. Nothing can touch your funds while you are alive and only the knights after . Interest rates are 3.5% and lending rates are 5% both compounded monthly. Transactions and calculations are transparent and on line. Currency unit is the DK (decikilowatt) "ten kilowatt-hours guaranteed to the bearer of this coin" is on the Shot Coded Niobium DK (Carl Sagan) , there is also a Nickel ¼ K (Patrick Lancaster) , Yttrium "K" (Dr. John Campbell) , Hafnium 10DK (Alcyone in watercolor), Rhenium 100DK (George Washington Carver) , and a Platinum 2000DK (Benazir Bhutto) , metal value is =>20% face value , foreign investment is only in coin metal and 110% of metal value. Electric bills are simple "used 57 kilowatt hours , your bill is 5.7 DK". The bank sets the individual cities tax rates , supply all business with a monthly business metrics report , handles city purchasing , recommends production , acts as the employment agency does prepurchase research , financial research and produces the yearly , **The state of city financial and business competitiveness report.**

◆2. Internet is universally available and there is also a second independent internet that piggybacks on the utility trunk that's free . Ventilation , sewage , water heating , and laundry service are also free. The government screens for spyware and blocks spy transmissions . All cities are roller skate and blind friendly , have autonomous "Zamboni" carts , public announcement screens , and clean public restrooms with baby changing stations , air , alarm Boxes in all homes , apartments , bushiness , & public spaces. Paid Utilities include 30VDC , Chilled 400 PSI air (also serves to cool the electrical grid ) , hot oil (commercial/industrial use only) , compressed air 1000-1500 psi , 400psi water , internet , vacuum, and bread and pies (ALL paid city services have a 7% profit margin). Christmas bonuses for city workers are based on a yearly report on **The state of the city**, the report is prepared by the office of the Commissar .

◆3. There is one federation library it is on line , in the 5 languages , and free. The library has a “F-Tube” and buys content that it decides enhances the library. Additionally there is a “K pay” system where you click on a video that you like and it automatically pays them a one “K” donation which shows up on your honor report as a donation to the arts , science , engineering , or advertising . Lastly there is a “advertising channel” for advertising , shopping , and public service announcements . The library also has physical locations for reading and browsing and automated “Zamboni” bookmobiles . The library in conjunction with the honor code office runs a water color art campaign to promote good behavior , honor , politeness , tolerance , hard work , honesty , modesty , Etc. the latest artwork becomes the "screen saver" on all government and public monitors. Every year there is a **Honor and good citizenship report** and the honor code office and library’s Christmas bonuses are based on it .

◆4. There are 5 official primary languages : Italian (the default) , Russian , English , Chinese , and Japanese. English and Chinese are only taught as spoken not written languages. There are two official language competence levels "645+" and "fluent". 645+ is a 645 word vocabulary plus additional words specific to your profession in it's language(s) (the ability to count is required in all 5 languages). To work in a field you must be "645+" in that fields language(s) the languages are as follows: Art-Italian , civil engineering and construction- Russian , Police & Militia-Italian , Science-Russian and French , Agriculture - English , Manufacturing-Italian , Medical-Japanese (Psychotoxicology - French , Italian , and Japanese) , Banks-Italian , Commercial Marine & Aviation-Italian and English , flack tower - Italian and English ,the Library has different personnel fluent in all official primary languages , Knights-Must be fluent in all 5 languages Etc.. People rated as 645 but not 645+ may work as a apprentice at 1DK per hour until they earn the "+" rating.

◆5. Jedi study the science of learning , and develop a federation Martial art , preform ceremonies ( weddings, funerals , Etc.) , and comfort the young , sick , dying , in prison , and anyone that needs comfort (anything told to a Jedi is confidential and protected , they cannot divulge what they are told in confidence and can choose to champion a confessor of the same gender in rare cases) , as well as looking after the elderly , integrating Immigrants into society , provide self defense training , work with the schools to implement the science of learning and incorporate martial arts into the curriculum's , and other good things. They are given a tax free status , Jedi employ immigrant and soft labor prisoners as city labor crews to sort mail , pick vegetables , Etc. All other "religions" are taxed , religion is banned from government and schools.(Jedi is religion for the non religious) every city must have at least one Jedi for each spoken language ie. a minimum of 4 Jedi per city. The Jedi also provide meals for the elderly and

maintain their food reserves . The head Jedi is a elected position from the lower Jedi , the vote is city wide and taken in the middle of the Commissars term .

◆6. Taxation is by a minimum 10% import duty , the percentage is always higher than the local average labor cost percentage in that family of products , (there is no duties on personal items , medical , raw materials , components , tools , or tooling ). There is a 16%-36% variable sales tax (10 DK Per Liter on potable alcohol & 1 DK for sweetened beverages) that is controlled by the bank to maintain zero debt , a minimum fifty day currency reserve + 50 day alloying metals reserve (in the case of a city emergency other federation cities will offer a price of 10% over current market value for reserve metals as a curtsy). The choice of metal depends on need and what “deals” can be found) , Full time grave yard shift workers pay  $\frac{3}{4}$  normal sales tax , and food from night farms is tax free. When you pay for something you are shown a flag and by touching a color you send 10% of your tax to that branch of government , you can do this up to 3 times (3.33% to 3 branches), where you tend to move it becomes part of your “Honor Report”, leaving it at default is always acceptable. Money is always checked in and out by scanning the shot code on the back to check for counterfeits.

◆7. Research and implementation of science , art , medical , engineering , and exploration , are supported by the government (The ‘K pay” numbers and need "sell" the funding ) Every cities 7 year plan must include at least 1.5% of tax revenue for scientific study 3% for engineering study , 2% for medical research , 1% for space and  $\frac{1}{4}$ % each for art , exploration , and saving sealife. Arms sales should not exceed 20% of the economy as that will result in long term problems (citizens will start seeing war as profitable) , and any licensing agreement payments based on tax payer funded R&D will go directly to the tax payers in proportion to the taxes they paid . The schools preform a portion of the research and also provide space and equipment for private individuals to do their own research . All school testing is done by the police NOT the schools .The office of the commissar produces a yearly **The state of art and education** Report and school Christmas bonuses are awarded based upon that report .

◆8. The government is responsible for protecting it's citizens (in special cases , hijackings , kidnappings , Etc.) abroad , there are special federal team(s) called knights Templar just to help citizens abroad , If your life is saved or greatly improved by such a team then half your wealth is given to the special teams account on your death ( this includes “boat people” that just show up seeking asylum). Every cities 7 year plan must include at least 1% of all tax revenue for the knights Templar. The knights Templar differ from other hostage rescue teams in that they use nonlethal methods and think outside the box their rescues involve spy craft and slight of hand , they don't “shoot the hard working guards to save your worthless ass”. The knights also serve as the federation intelligence agency ,

oversee counter measures development , communications & internet security and provide the opposition force in order to test city defenses .

◆9. Health care is provided by the government , it is for profit , the profits go into the government account . Expenses are minimized without hurting the quality of the care , health care workers are paid the medium pay in the federation . management is payed the same as nurses but less than doctors , the profit margin is 7%. and preventive care and contagion stopping is mandatory and free , not complying is punishable by soft labor. health care worker's Christmas bonuses are based on a yearly report on **The state of the health of the city** , the report is prepared by the office of the Commissar.

◆10. There is zero long term unemployment "everyone works" (if you cannot find something productive to do , in seven months, the government will find something for you to do , you will be given as many choices as possible under the circumstances). Additionally men and woman do NOT compete for the same government jobs , every job must specify weather it is a woman's or a man's job (The Knights recruit for super exceptional abilities no one "applies" for a job with the Knights). The decision is based on innate ability and when it is impossible to make a determination based on innate ability then then labor availability is considered , and when even that is impossible , the job defaults to being a man's job. Once a determination is made it applies federation wide and cannot be changed " With our combined strength , we can end this destructive conflict , and bring order to the federation ".

◆J. Visitation between cities of the federation and any country that passes a reciprocal agreement by national election(s) only requires a health , police , contraband check , they must have Deck , and the city services has to approve population increases. The schools , banks , police & militia , hospitals , city services , honor code office , etc. all coordinate with their peers in other cities to provide a uniform and universal experience . You can visit as long as you wish , with all rights and responsibilities of a citizen except non local residents cannot vote in local elections . Visitation from non reciprocal nations is not allowed beyond the airport , except by special invitation by either the Commissar or senior Jedi or by special guided tours arranged by the Police.

◆Q. If accused of a crime you have the right to appear in front of your accuser and the local Commissar who acts as judge for all non misdemeanor charges within 16 hours , (there are no lawyers) , for trial and judgment or you "walk". The accused is presented with all charges and evidence in clear and simple writing within one hour of arrest and is given adequate time to study it and prepare a defense. Sentences are soft labor (3 1/2 year maximum), hard labor (1 1/2 year maximum) , and death. (soft labor can be traded for 1/3rd as much hard labor if available). If you are later proven to be innocent you will be paid for your labor at a rate of 2 DK



per hour for hard labor and 1 DK per hour for soft labor. It is dishonorable to use prison labor to gain an advantage in business , using prisoners to lower postal rates is acceptable though (one is unfair , the other is survival) A database of decisions is maintained to promote a “consistency of sentencing”. No interest is charged on loans to pay fines , it feels like “beating someone when they are down”. Under no circumstances can the police seize your money or property , "Civil Asset Forfeiture" is illegal , period , "the thief must voluntarily return what he has stolen".

◆K. Honor is mandated , everyone's personal , approved , code of honor and honor record (including your relationship status) will be on line and public (all businesses will also have a honor record where both dodgy and exemplary behavior is noted). If you choose not to write a personal code then a number of prewritten codes will be offered to you , you must choose one . Your code can be changed with permission of the current Honor judge(s) and the chief of police , it takes 3 months and you cannot change your code for the “wrong” reasons. The honor code office also runs a federation wide free dating site and writes profiles and takes pictures. Honor code and misdemeanor criminal violations go through a special honor court. Punishment is limited to one month of soft labor . There are always 2 Judges a male and female they are citizens that have a 4 year degree in "honor studies" , are fluent in all federation languages , and have demonstrated better than average personal honor. Any judgment must have consensus of the two judges and be proven beyond a reasonable doubt . (sections of the honor studies program are required by all city employees).

Local (Hearts)

♥A The export of mediocre products is prohibited . Also due to the critical roll that post plays in a remote cities economy It is the city policy to maintain postal rates at a competitive level even if that requires subsidizing postal fuel costs . Also scouts , trusted prisoners , Immigrants , volunteers , and automated delivery robots are also employed to control costs . Federation "Technical" (must contain significant new technical information) patents are free at any library and pay a flat 1% of retail to the patent holder up to 50,000 DK (abusing the patent system is a honor code offense). Additionally the city leaders ie. the Commissar , Library director , business men , Bank president , Etc. have a bimonthly secret war room meeting to discuss city business strategy , “business is war”.

Lastly the commissar has "war powers" he can at his discretion stop a activity he deems hurts the war effort , either cold or hot . For example the school might decide to offer a class called "Lowering costs by replacing metal with plastic" and the commissar could decide this sends the wrong message.



♥2 It is the city policy to use only turbine type prime movers to avoid having two infrastructures a piston and a turbine infrastructure. Engines for small models are exempt from this policy (although "jet powered" models are encouraged) as are high pressure gas compressors. Also It is the policy of the city to only use jet drives and shrouded propellers to safe guard swimmers and sea life. Large shipping is exempt from this restriction for practical reasons and Trot lines and "sport" fishing using easily broken fishing lines , is also illegal for the same reason. Oxides of Nitrogen is not a regulated pollutant . However VOC's and due to the connected nature of the city , structure born vibration is regulated. Also it is the city policy to only use metric generic Torx (internal and external) , Robertson , and generic Spiralok female threads in all machine threads (also all countersinks are 130° in order to work better with composites), to reduce the weight in tools technicians have to carry

♥3 Free and easy access to the surface must be maintained . It is not allowed to install obstructions that will not allow a person without sight to reach the surface easily , this is decided by the police on a case by case basis. The punishment is blind folding the offender and requiring them to find their way through the maze of their own creation , on one breath. Also City services has the right to move containers in order to balance the utility grid . Major users of utilities are advised to consult with City services concerning future plans to avoid surprises . You must Consult the Police and City Services before building.

♥4 It is the policy of the city not to have public surveillance cameras (door bell cameras and cameras for watching your babies or children is allowed). Also it is the city policy to exceed normally accepted safety standards while at the same time not overprotecting it's citizens. ie. you could be shot by a armed citizen but you won't get staph while you are in the hospital or food poisoning at a local restaurant after you're released. And if the police see two relatively evenly matched individuals having fight and neither is asking for help then the police should just let them "fight it out" the police are expected to use common sense and not treat citizens like "snowflakes". The schools , Police , Jedi , militia , and ordinary citizens enforce a rule of "pick on someone your own size".

♥5 Using the "common sense clause" the city will allow non smart guns until smart guns become available (you can retain them after but only by turning them in for a free conversion to a smart gun) but only in 7.92 x 33 Kurz , 14.5 x 114 , and 57x348 . (Explosive cartridges are not allowed due to the problems with long term storage of explosives in the tropics where most of these cities are likely to be located) and these cartridges will continue to be available indefinitely. The minimum barrel length is still 240mm. You must be not wanted by the police , fingerprinted , photographed , DNA recorded , and have the Gun fired for slugs and sound recordings . The city will produce a smart , rust free ,

long life version of the StG 44 , a “karabiner”, and a “auto mag” like smart gun with a Boberg style reverse extraction system (cartridge from the Magazine extraction) and a 200+ meter effective range . Additionally while anything that is imported must meet federation safety standards , federation recycling standards can be given limited exceptions but the parts that do not meet federation standards must be colored black for easy identification (the color black is reserved for things that do not meet federation recycling standards).

♥6 Alcyone has a 200% house tax this applies to domestically made and imported houses. House construction profits are fixed at 10%. a domestic house builder spends 8,000DK to build a single family home for example , he then sells the home for 8,800DK and the federation charges a 17,600DK housing tax. This tax is then used to provide the infrastructure needed to support that house. If a outside builder builds the same house he must pay for a federation inspector to inspect each house and the manufacturing process used and approve the individual houses and then the city will charge the same 17,600DK tax irregardless of what the imported house costs. If a house builder is caught cheating , the manufacture is banned for life and all house sales from that country are stopped and all processes are reexamined (at the manufactures expense) Before production is allowed to resume. This law is not to discourage extra federation house builders but to maintain quality and somewhat level the playing field by making sure everyone is producing to the same quality standard.

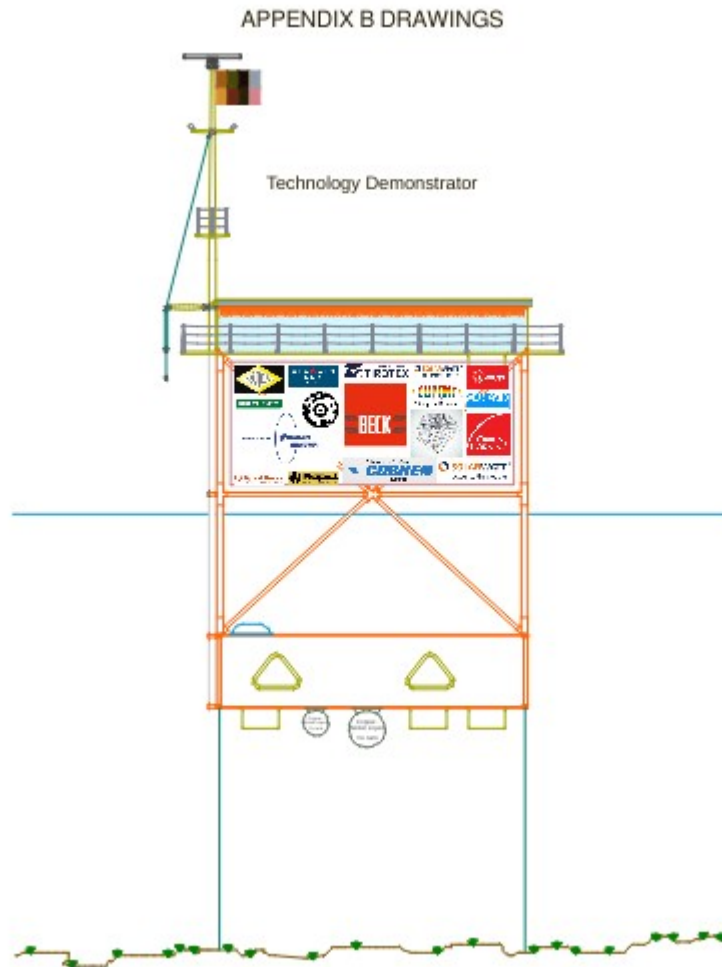
♥7 It is the city policy to color the city in calming earth tone colors that form a integrated and pleasing to the eye , whole. In addition the ice rink walls are painted with winter scenes to a high level of artistry in order to provide a calming effect on those who enter. Also special effort is taken to reduce noise and vibration levels , and lighting is made to be pleasant . The city song is “plastic love” referring to the plastic construction of the city. In all areas the city is designed and colored to be calming , relaxing , and a pleasant place to live , even traditionally “stark” places like Hospital rooms and jail cells are reexamined and made more pleasant . Walk through restaurants must allow free **friendly** passage for transitters and must be open 24 hours. In return they can claim a grave yard tax exemption and pay only  $\frac{3}{4}$  taxes. And Due to the inability of many immigrants to walk through a house before they rent it , all rental contracts have a clause where the renter can change his mind on the 5<sup>th</sup> day of the first month and receive back the one month deposit minus any legitimate damages and 75% of their first months rent.

♥8 It is the city policy to strongly discourage the use of any unnecessary “jargon” . Referring to a elevated body temperature as being “febrile” or “pyretic” only serves to make medical subjects confusing to the average person whose life may depend on a clear understanding of his or her personal medical condition . Just as meteorologic jargon makes it more difficult for a pilot to understand the storms he

has to fly through ! Furthermore all aircraft and marine traffic related communications in the federation is conducted in plain Italian and the use of abbreviations and acronyms is forbidden. This is considered dishonorable and unacceptable behavior , and can result in a honor code violation if the person persists.

♥9 To prevent racial , economic , or age enclaves all new immigrants are assigned house locations based on a open source computer randomizing program operated by and protected from human meddling by the police , the computer program gives everyone 4 choices and you have 16 minutes to make a decision. It is a Honor code violation to try to circumvent the spirit of this system , “everyone needs to make every effort to get along with their neighbors”.

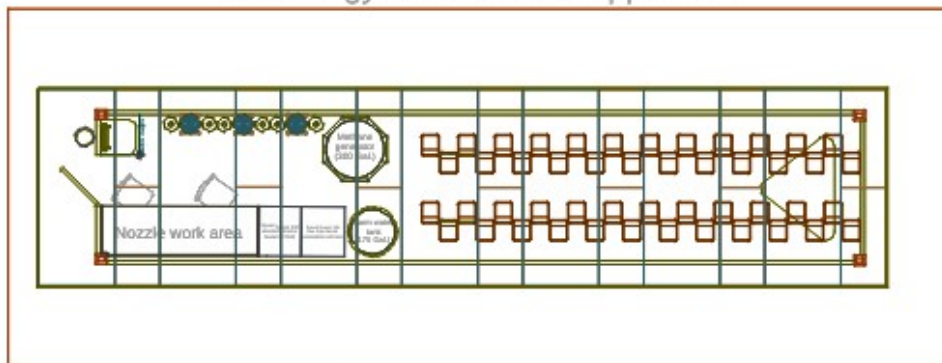
**The remaining cards are available for future needs.**



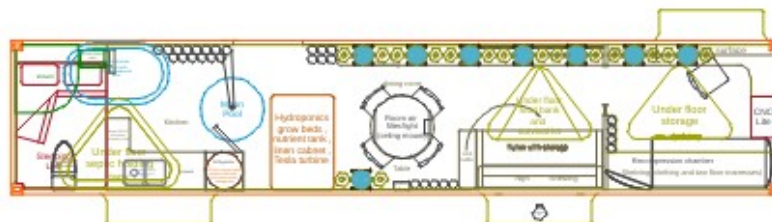
# 9 color federation flag



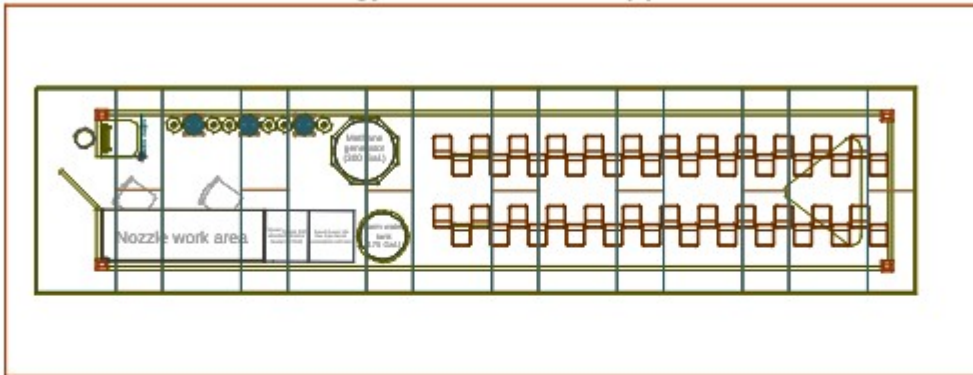
Technology Demonstrator upper level



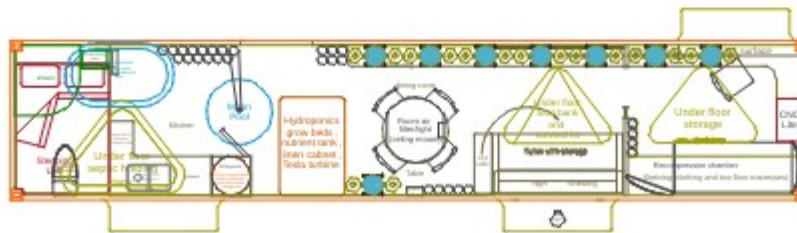
Technology demonstrator lower level



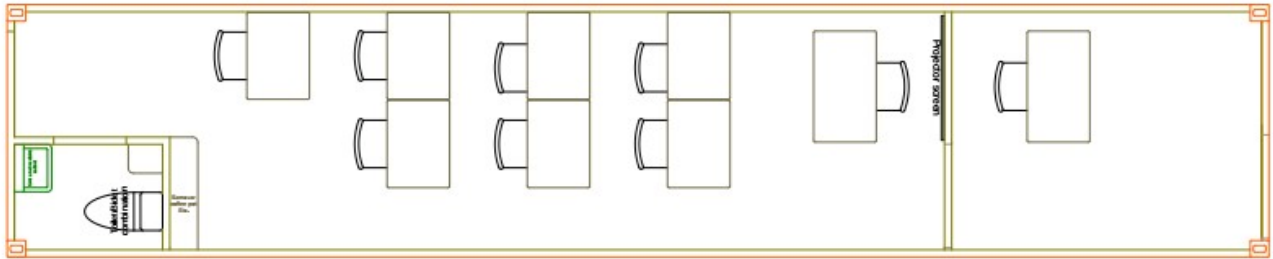
### Technology Demonstrator upper level



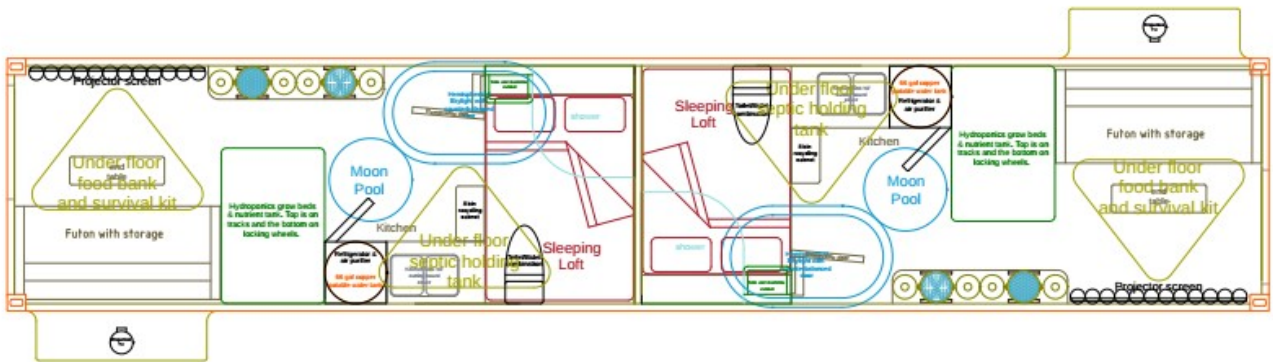
### Technology demonstrator lower level



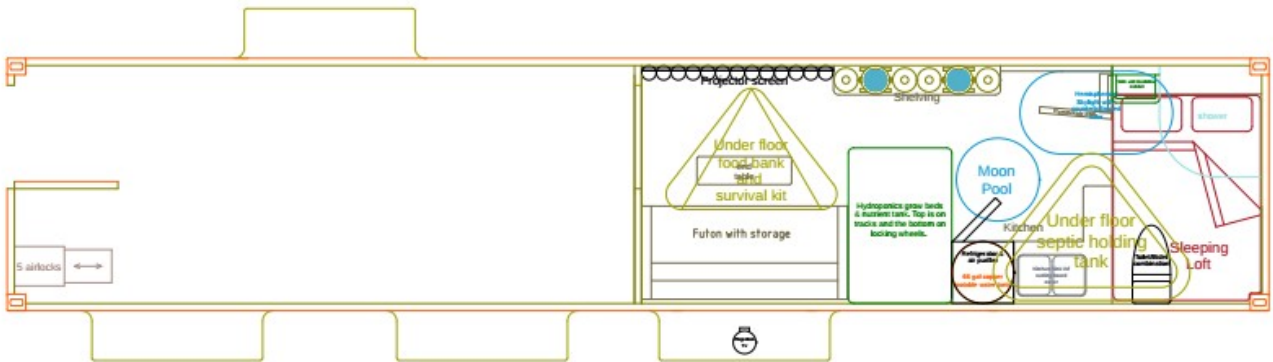
# Commisars office



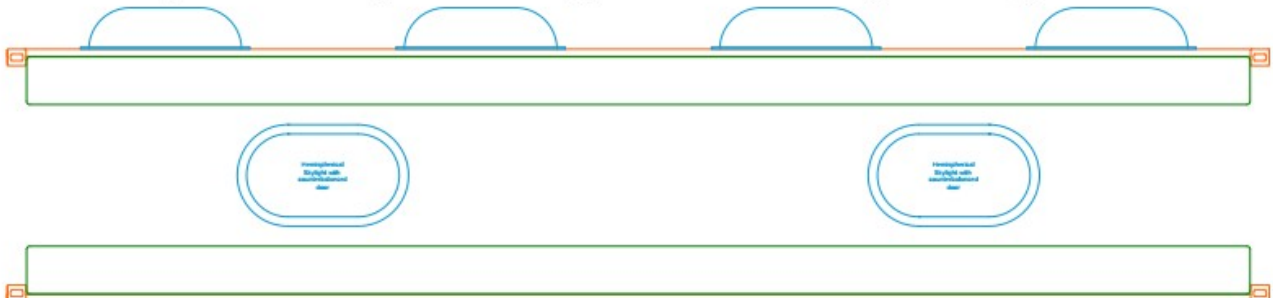
# Duplex



# Light Commercial-Light Industrial



# Edge hallway with high mounted growing beds.

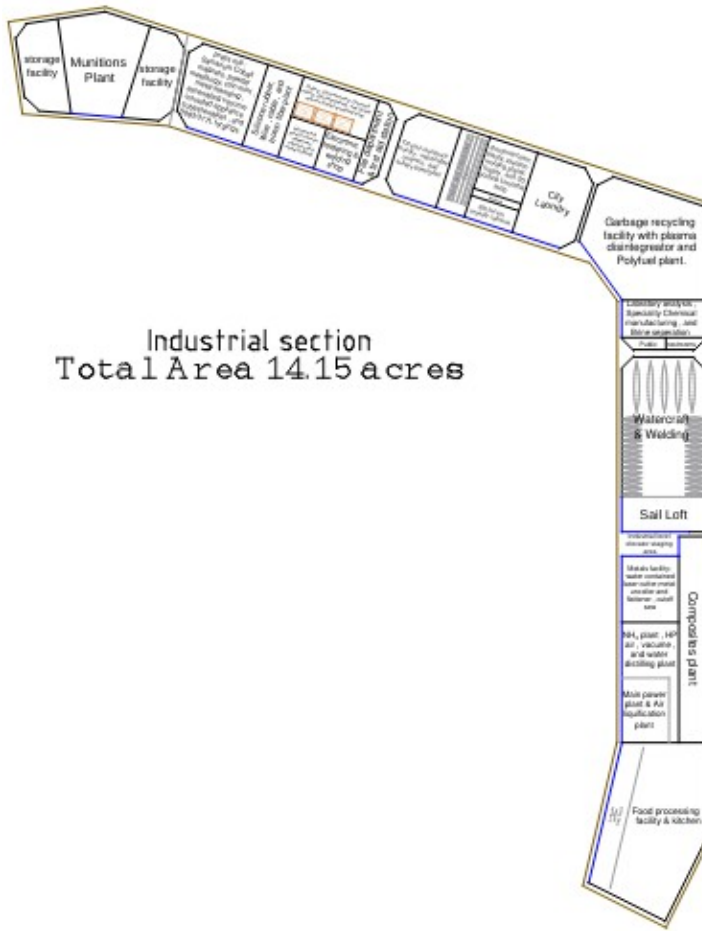


# UNIT



## Block

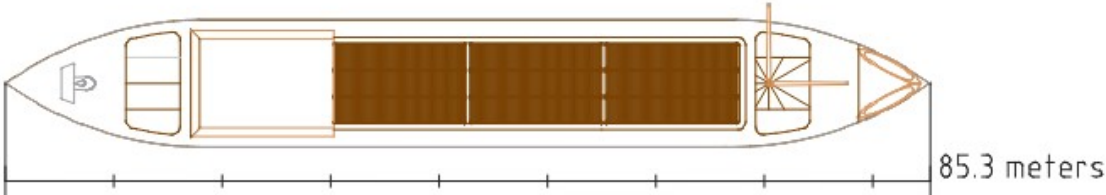
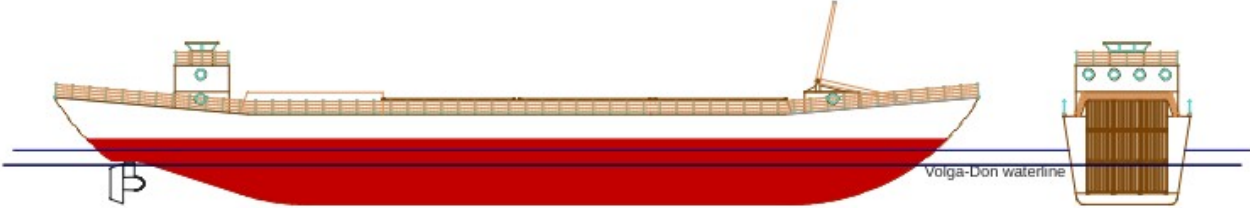




Industrial section  
Total Area 14.15 acres



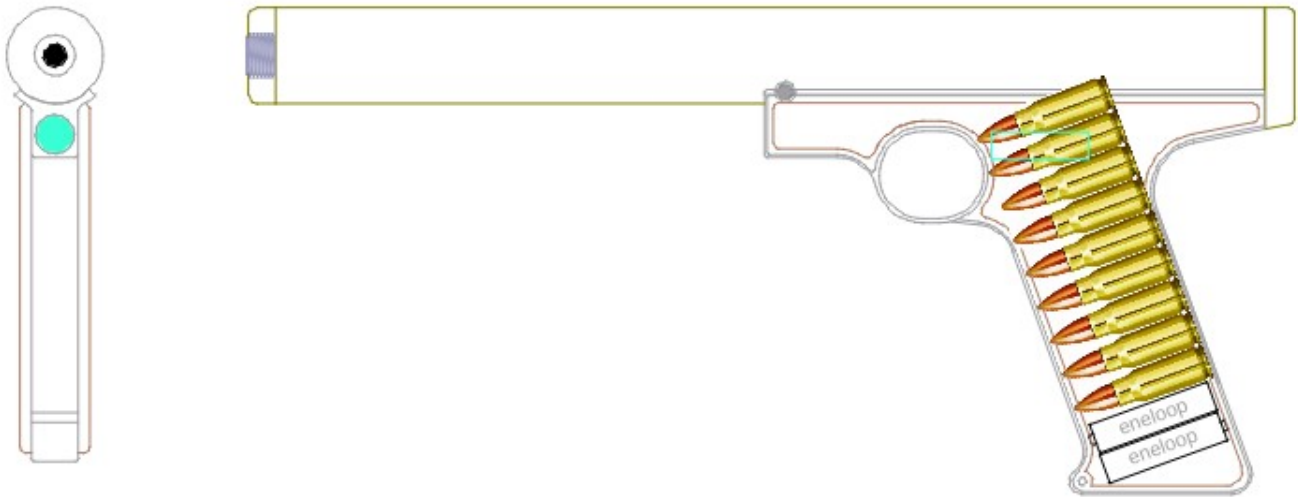
Federation Light Freighter



# Federation Keyboard



## Federation "Auto-Mag"



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