Cybernated Farm Systems, LLC

Technical Solutions for Social Concern

Highlights:

- CEO is a former Aerospace Systems Engineer with the NASA Space Shuttle Program
- Existing relationships with key vendors, consultants and technical subject matter experts
- Global unrestricted market potential (Governments, NGO's, Humanitarian Organizations, Direct Sale)
- Short turn around from R&D to market
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Executive Summary

In the 21st century, it is unconscionable that anyone should go hungry, that we should waste as much food as we do, or that we should be using so much fresh water for old fashioned agricultural practices, especially given our advanced agricultural knowledge and technical capabilities. One of the largest food problems is the centralized nature of production and the costly expense, financial and environmental, of distribution. Access is everything, and by giving an option to have food grown locally in an efficient and sustainable manner, we can be a part of ushering in a new agricultural paradigm.

Cybernated Farm Systems, LLC, (CFS), is a socially conscious company dedicated to the standards of CSR (Corporate Social Responsibility). Our mission is to provide a sustainable agricultural production system, using Systems Engineering and Integration practices (as used by NASA and other technologically sound entities) to develop highly automated aquaponic farm facilities that are clean energy powered, such that the facility is highly self sufficient, grid independent, and requires minimal technical support or human intervention. CFS will use technology and science to accomplish the goal of creating decentralized (local) high yield, small footprint aquaponic farm buildings that are ecologically sound, environmentally conscious and robust in performance and sustainability.

Additionally, the manner in which a CFS facility will operate provides additional benefits, such as the reduction of food waste, the creation of compost from leftover biomass, reduction in soil erosion, reduction in water use, the potential for cleaning nearby water systems via our partner (Lake Savers, LLC), providing usable electricity to those being served when the building is in passive mode, and more. Sustainability isn't enough. CFS is SUS+, Sustainable Plus, being more than just sustainable.

It is time for a revolutionary approach to agriculture, especially in areas with arid land, inadequate infrastructure, or inadequate climate for traditional farming practices. But we don't stop there, because CFS facilities can be used in neighborhoods, by restaurants, by resorts, or anywhere where a company or industry wants to reduce their food costs, drop their carbon footprint and localize their food source.

In conjunction with global partners such as governments and humanitarian organizations, and with residential and commercial partnerships, our mission is nothing less than revolutionizing our agricultural paradigm. CFS offers a piece of the puzzle, a component of this revolution.

Given the methods on which CFS is built, the investment requirement to develop a prototype system is $1,000,000. Investor return strategies are built upon a 25% return on annual net income weighted by amount invested, over a 5 year period. Charts in the Finances section of this report detail the ROI schedules and repayment structure.

Business Dynamics

A. Description

CFS is a company dedicated to solving world hunger by using science, engineering and technology for the betterment of mankind, specifically with respect to producing highly automated aquaponic farm facilities that are self sustaining, energy grid independent and require (by design) minimal technical support or human intervention.

CFS will adopt several business models to ensure its stability and success:

1. Direct Sale of CFS Facilities: The primary source of business for CFS.
2. Freemium Model: The free open source availability of CFS blueprints and plans for the public to use. From this we offer custom tailored paid consulting and assistance packages to help people implement our designs.
3. Affiliate Model: Promoting and driving business to our suppliers. From this we generate sales percentages from every sale that CFS drives to our suppliers.

CFS Key Concept Definitions

Aquaponics: A sustainable food production system that combines aquaculture (raising aquatic animals such as fish, crayfish or prawns in tanks) with hydroponics (cultivating plants in water) in a symbiotic environment.

Automation: The use of robotics and computer systems as the main operators of the facility. This includes operations like climate control, water collection, seeding and cleaning.

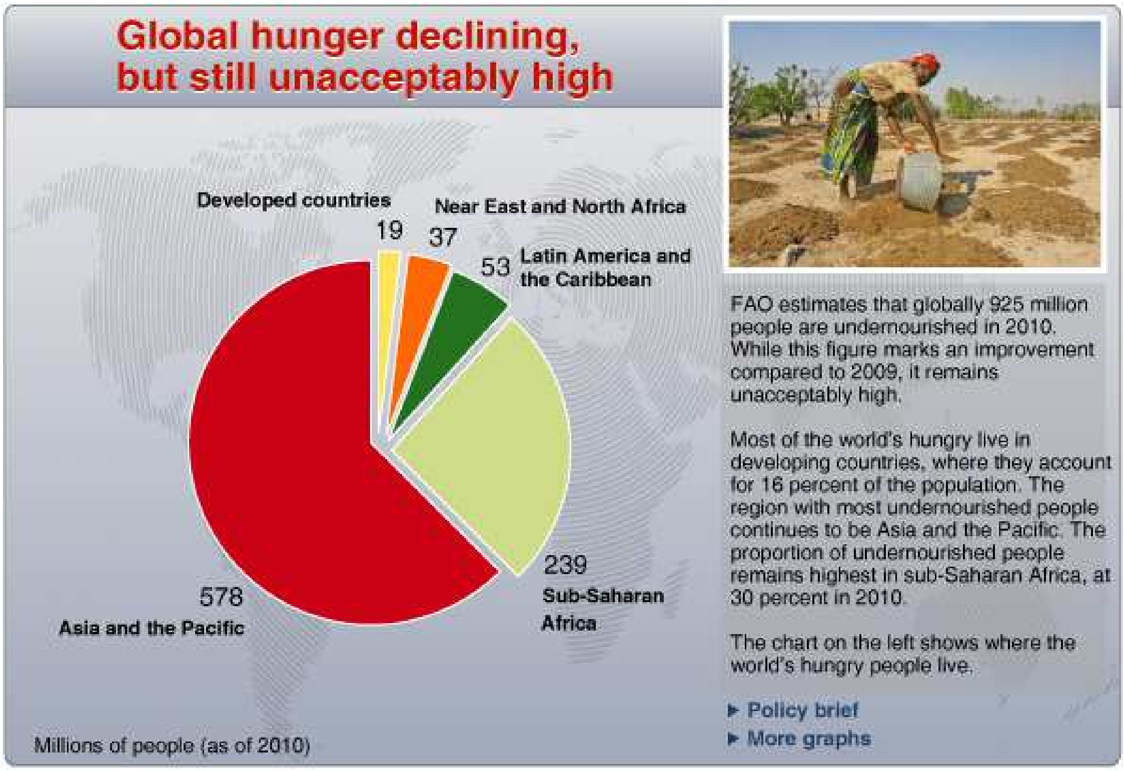
Clean Energy: Hybrid systems of wind, solar and batteries for the energy demand for the facility. Tapping geothermal, wave and tidal energy options will be considered, depending on location and availability. The facility will be completely self sufficient, giving it the ability to be placed anywhere in the world, regardless of the existing infrastructure.

Self Sustaining: The combination of Automation Systems, Clean Energy Systems, Climate Control Systems and additional technologies will make a CFS facility highly self sustaining, meaning it’s minimally reliant on any external requirements.

Technical Support: Initially this will be provided by on-site CFS technicians in partnership with humanitarian organizations, such as the Peace Corp. For the long term, an included Training Program will train the local area people who wish to become technicians/supervisors for their facility. This will eventually relieve the need for CFS to provide outside technical support, and increase the independence of the people served by the CFS facility. They will become their own technicians, having a real vested interest in the success of their facility.

B. Market Analysis

As of a 2010 analysis by the FAO (Food and Agriculture Organization of the United Nations), approximately 925 million people are undernourished in the world (see chart below).



Albeit an improvement statistically, all it takes is one natural disaster to completely alter the picture. Also, what must be factored into the equation now is the ever volatile cost of food that virtually parallels gas price fluctuations. This will have a negative impact on this positive trend, and it behooves mankind to act quickly to help rectify this situation before the increase of suffering occurs.

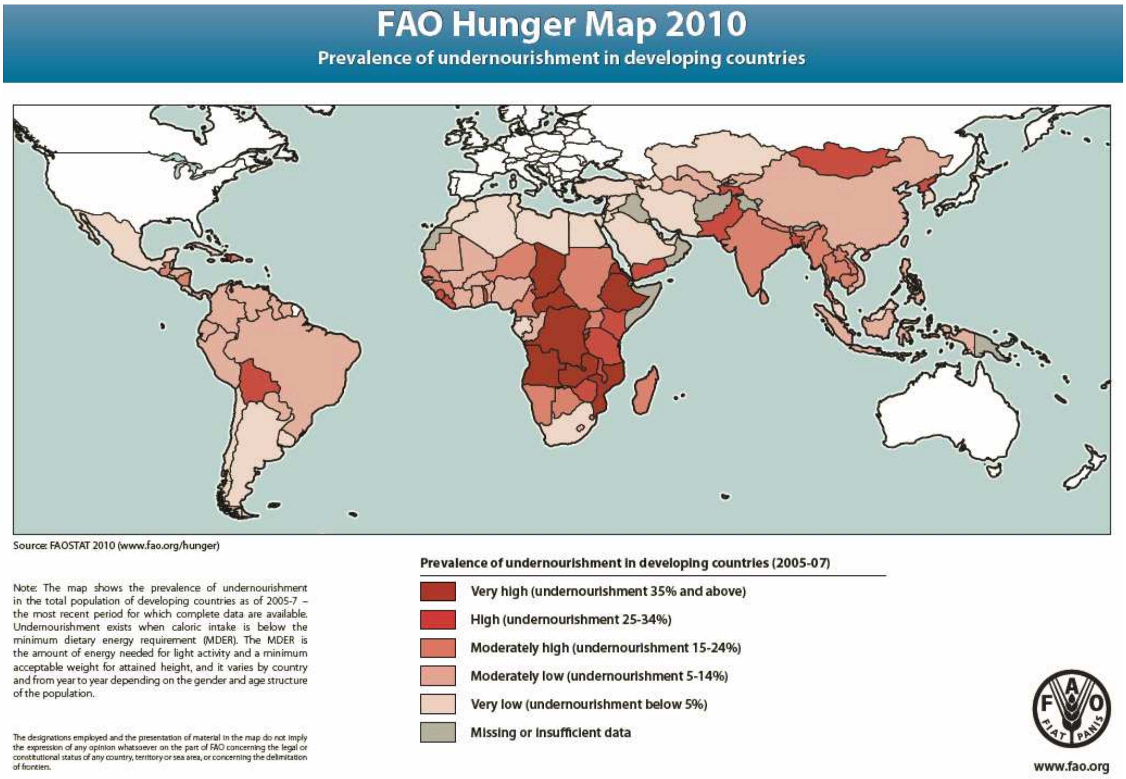
As of August 2012: **The FAO Food Price Index** averaged 213 points in August 2012, unchanged from the previous month. Although still high, the Index value is 25 points below the peak (238 points) reached in February 2011 and 18 points less than in August last year.

The following links provide additional information:

http://www.fao.org/hunger/en/

http://www.fao.org/worldfoodsituation/wfs-home/en/

The purpose of CFS is to serve as a local area provider for one of the most essential necessities for life: Food. To that end, our market is global and diverse (see map below). No matter what race, creed, nationality, gender or religious affiliation, the biological necessities of life are common among all people.



Our CFS facilities not only bring relief to those starving and in desperate need around the world, but can also help those in developed nations as well. The high productivity of our facilities will help reduce the cost burden of food, helping to relieve that component of economic stress.

There are limits to our market when it comes to CFS facilities. Our CFS facilities are not designed for individual use, but for larger scale groups. Our customers will be in the form of collectives or cooperatives, real estate ventures (apartment complexes and neighborhoods with our facilities built into the project), and governments and humanitarian organizations who wish to use our systems in areas of need. Additional future options extend to commercial space exploration companies who would need such systems for long duration space exploration activities. However, there are no such limits with respect to our consulting packages or our revenue from supplier sale partnerships.

C. Competition

To date, our concept has yet to be implemented in the manner in which we are proposing. Hydroponics and aquaponics exists in small scale, and is still heavily dependent on human intervention to maintain and operate those facilities. The concept of using robotics and computers to aid in farming is not new, nor is the concept of creating highly autonomous facilities, with a robust systems integration approach. The space industry, and visionaries like Buckminster Fuller, have developed this concept in theory. What is new is turning the theory into a practical working system with tangible real world benefits, which until recent advancements in computer and robotic technologies was difficult to accomplish.

The closest representation of competition to CFS would be the recently proposed self-sustaining aquaponic facility in Vermont, provided by The Root Center, a small non-profit dedicated to a similar idea, but on a much smaller scale.

http://www.therootcenter.org/

Additional similar companies do exist in the UK and India, but are also grid dependent, designing themselves to operate within an existing infrastructure, like a city. This does nothing to help the impoverished and under developed regions of the world that are in such desperate need.

These systems do not take their concept to the next level, using advanced technologies to ensure the facility can be rapidly prototyped and globally distributed quickly to any location in the world for immediate implementation, which would also be advantageous during Natural Disaster Emergencies, nor do they factor in long term energy costs which would be a consideration for any neighborhoods, resorts or independent customers.

At CFS, we are planning for a lead time of less than 60 days between sale and the completion of construction of a facility. It is the intent of CFS to make our solution options global and rapid.

D. Product/Service Description

The following is an analysis of what each CFS facility will incorporate.

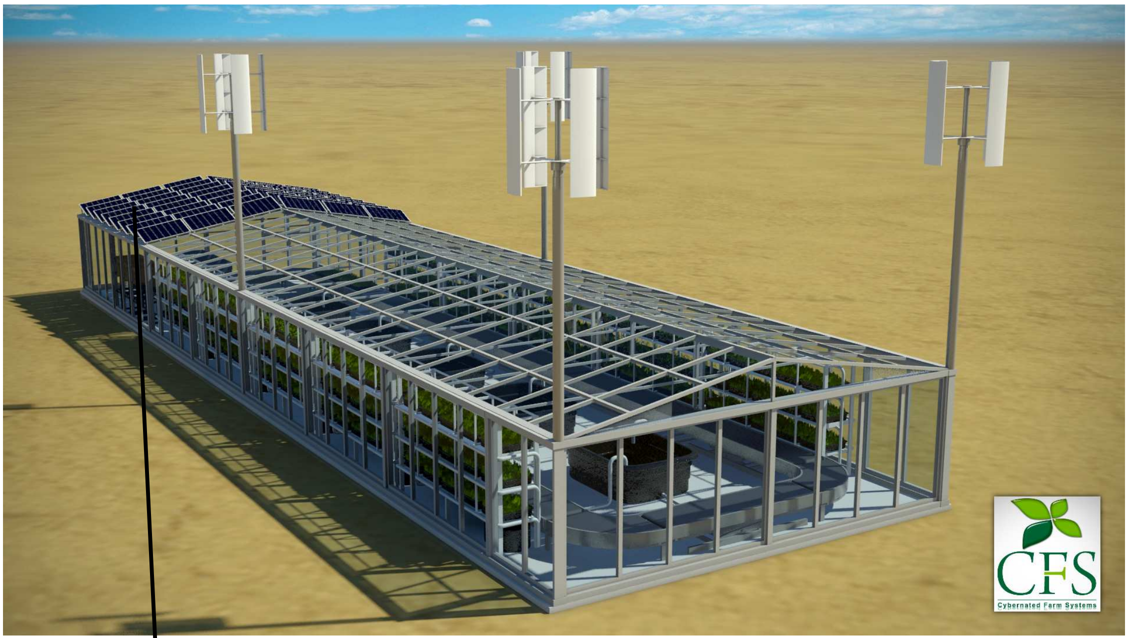
Facility Components:

- Greenhouse Structure
- Advanced Climate Control System. This includes temperature, humidity, and air content controls (CO_2 and O_2 levels)
- Plant Grow Beds and Supplies
- Fish Farm Equipment including pumps.
- MFS (Material Flow System). Conveyor system used to transfer fully grown crops to the adjacent Access Center located at the front of the building, where people can access the food.
- Automated Wash and Seeding Systems
- VAWT (Vertical Axis Wind Turbine) Power System
- Solar Power System
- Industrial Battery Bank System for power storage and peak load utility

As mentioned before, hydroponics and aquaponics are not new solution options for producing food, but what is new are the advances in technology that enable this method of food production to be far more productive than traditional farming methods. Combine this with our knowledge of robotics and automation and we have the capability to produce vast amounts of food with very little human labor requirement, and all this can be done locally, decentralizing food production and drastically reducing shipping needs and the carbon footprint associated with shipping.

What foods will be grown will be greatly dependent on the geographical nutrient requirements of the people being served. Dietary norms differ around the world, so CFS will work with regional experts to try and grow foods that would be as nutritionally diverse as possible. High protein foods like peas and beans, leafy greens like spinach and lettuce, and fruits like tomatoes and strawberries are examples of the kinds of foods CFS can provide.

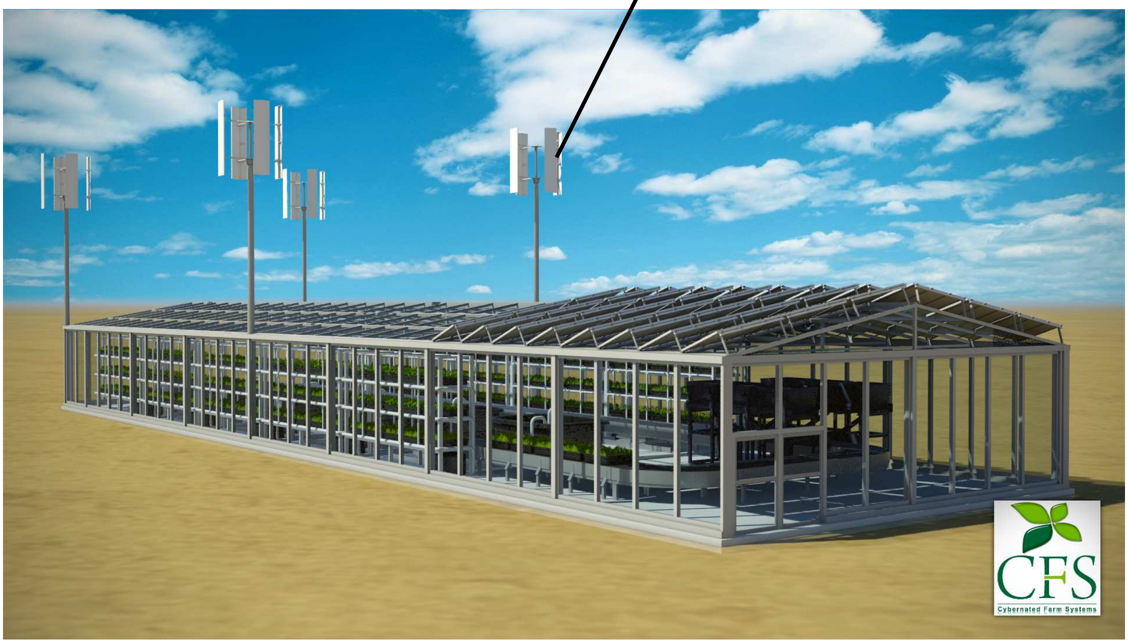
The images on the following pages reflect what a CFS facility might look like. The Systems Integration, Research and Development (SIR&D) Phase will help CFS determine exactly what the final product will entail.



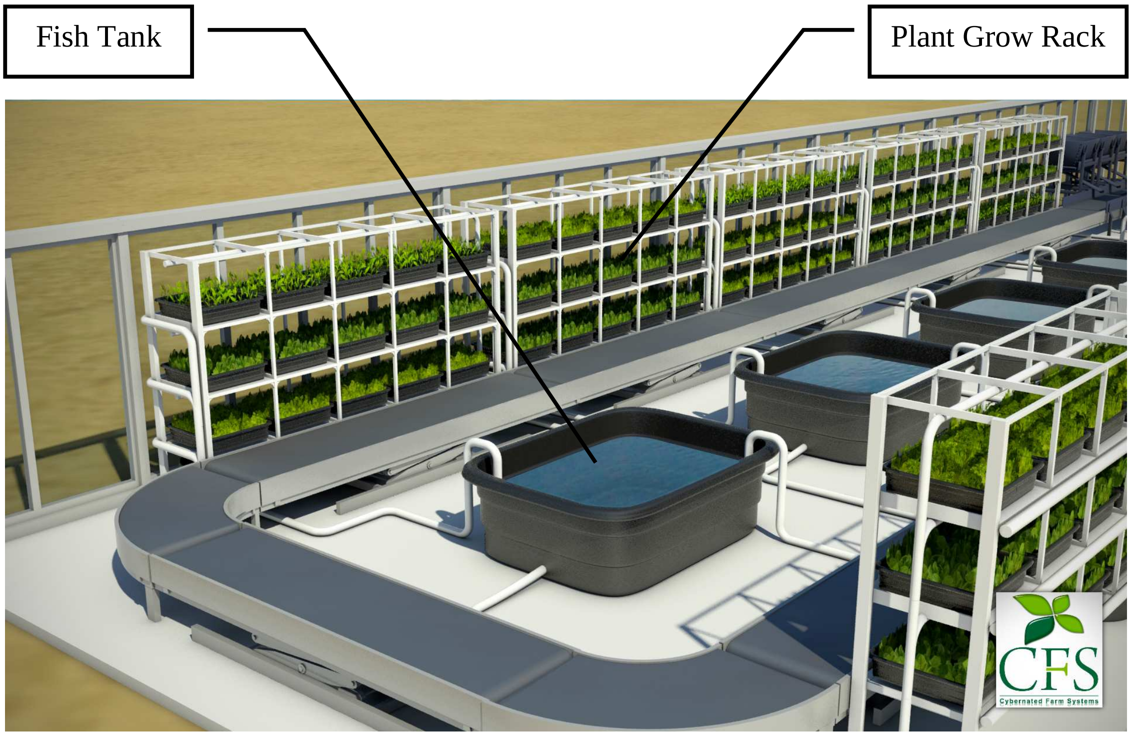
Exterior "Front" View

Solar Panels

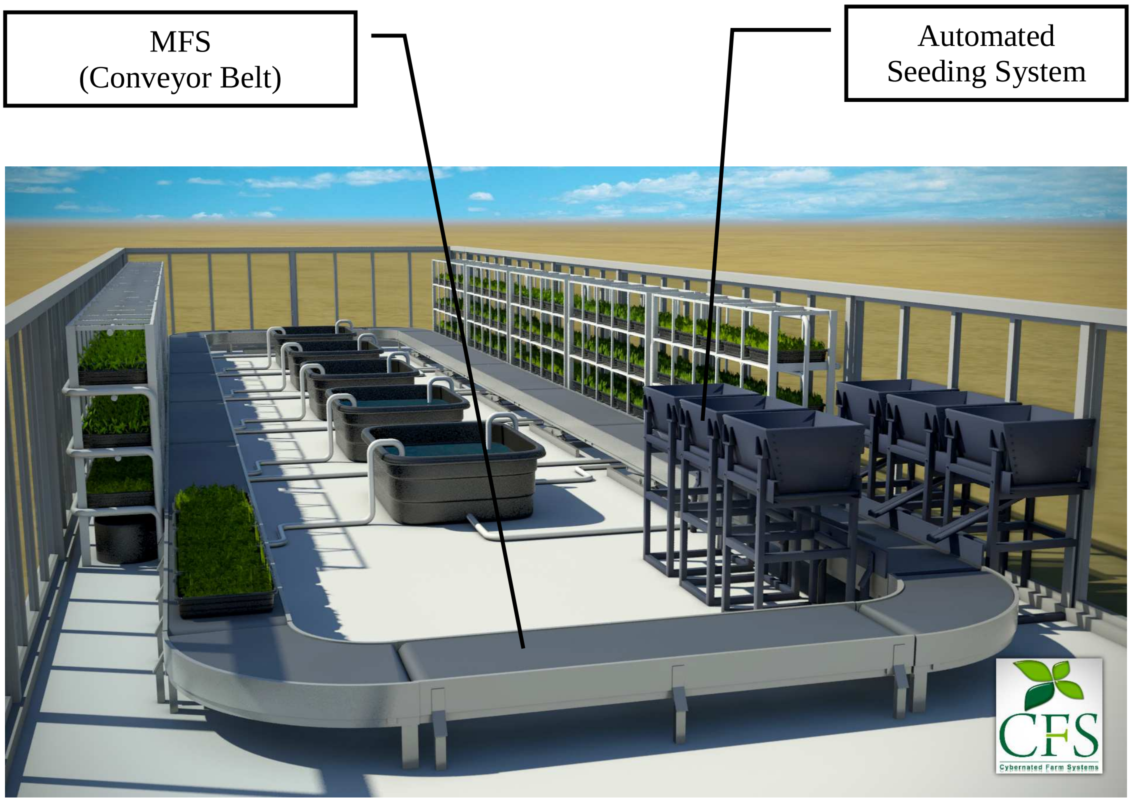
Vertical Axis Wind Turbine (VAWT)



Exterior "Back" View



Interior View A



Interior View B

Automation

Automation allows the facility to run with minimal human labor requirement, aside from the initial construction of the facility. The aquaculture system provides sustenance for the plants and is regulated by automated pumps and passive filter systems. The movement of mature crops that are ready to be picked is governed by the computer systems and the MFS, and the washing and reseeding of the grow beds is also automated. The only human labor requirement is the actual pulling of the plants from the grow beds and the oversight of the facility, which can be accomplished with a staff of just two to three people.

Almost the entire process is computer controlled for high precision, up to the point that people will know when the building will harvest and supply the next rotation of crops. A monitor attached to the building will show the people the upcoming crop cycles for the next few months, similar to the arrival and departure system used by airports.

Powering the Facility

The power requirements for the facility can be fulfilled such that the building is completely self sufficient and off the grid. This allows the facility to be placed anywhere in the world, to feed any people, any time. In short, the building will be a hybrid solar, wind and battery powered facility, which can be seen in the above pictures. Overall, the building will be a very low power passive facility, where many of the automated systems lie dormant in sleep mode when not in use. The only constant power sinks would be the aquaculture pumps and climate control systems. Initial calculations for power requirements have been completed, but the details of the power requirements will be determined during prototype development. This will be completed by a team of engineers during this initial Systems Integration Research and Development (SIR&D) Phase.

Scalability and Yield Potential

The following reflects the yield potential of a CFS facility:

- 10 Grow Racks
- 15 Grow Beds per Rack
- 25 plants per Grow Bed
- Total Grow Bed plant production: 3,750
- Tomatoes or similar tall plants can be grown on the far wall since they aren't suited to be grown in the same manner as the rest of the plants in the building

Acre Comparison (spinach example):

An acre is 43,560 square feet, or 6,272,640 square inches. The population of spinach per acre can be calculated by taking the number of square inches in an acre and dividing by the number of inches between the rows (36), then dividing again by the number of inches within the row (9).

6,272,640 ÷ 36 = 174,240 and 174,240 ÷ 9 = 19,360 plants per acre.

Therefore, one acre can produce 19,360 spinach plants. A CFS facility is just 5,000 square feet, or 8.7 times smaller than an acre. 19,360 ÷ 8.7 is about 2,225 plants in a 5,000 square foot zone, but a CFS facility can grow 3,750 plants. This means that a CFS facility can grow 1,525 more plants in the same relative space as traditional farming. In other words, CFS is 1.7 times more productive, using no soil, less water, and where the produce is protected from any external environmental negatives.

Using a 7 specie systems, a building could feed about 625 people seven species of food each. The yield is based on a plant per person for the six Grow Bed plant species and enough tomato vines to yield enough fruit to accommodate the needs for 625 people.

An example customer cost break down is as follows:

- Facility Cost: $1 million (a one time cost that includes lifetime maintenance support and the Training Program)
- People Served: 625
- One Time Cost Per Person Served: $1600.00
- Facility Minimal Operational Lifespan: 30 years
- Individual Cost: $53.33 annually, or $4.44 a month

Cost Comparison:

As per a 2011 United States Department of Agriculture report, "We also found that, in 2008, an adult on a 2,000-calorie diet could satisfy recommendations for vegetable and fruit consumption in the 2010 Dietary Guidelines for Americans (amounts and variety) at an average price of $2 to $2.50 per day, or approximately 50 cents per edible cup equivalent."

"How Much Do Fruits and Vegetables Cost?"
http://www.ers.usda.gov/Publications/EIB71/EIB71.pdf

Using the lower estimate, that equates to $730 annually, over 13 times more expensive than what CFS can provide. This example assumes a facility costs $1 million. Even if the actual final cost were to be $500,000 more, it would still be nine times cheaper than what's currently available.

Scaling Limits:

Energy demand is the largest limiting agent to the scale of a CFS building. There comes a point when a building is too big to manage in a self-sustaining manner, which is why CFS is being specific with the size limits of its facilities. If there is a need to have more food, then the solution is to simply have more facilities to suit that need. CFS facilities are not large, being just over 5,000 square feet in size, so having several buildings to serve a region adequately will not require large plots of land.

However, not only will these details be developed during the Systems Integration R&D (SIR&D) Phase of operations, ascertaining various load limits at various scales, this is also a case by case analysis that will require individualized scrutiny based on customer input and desires.

Future designs of CFS systems will work to advance and maximize our ability to grow more in less space, without jeopardizing the quality of the food or the safety and efficiency of the technical systems involved.

E. Organization and Management

Operational Development:

Phase 1 – Systems Integration Research & Development (SIR&D)

This phase determines the various operational characteristics of a CFS facility on a prototype scale, ensuring all components operate as an integrated unit. This includes ascertaining maximum scaling as restricted by sustainable power generation capabilities, software refinement and/or development, hardware verification, determining layout efficiency, developing operational procedure manuals, technical specification documentation and developing the Technician training course materials.

Phase 1 Structure:

The SIR&D phase does not require a robust Business Operations department, as this phase is about product development, not sales. Therefore, the structure of CFS during this phase is more technical, as it revolves mainly around researching and developing the Technical Operations that will facilitate the Business Operations. Aside from the CEO and Vice President, the staff of CFS will mainly consist of scientists and engineers to fill the departmental roles of the following Technical Operations Departments:

Systems Engineering
Mechanical/Civil Engineering
Electrical Engineering/Power Systems
Computer Engineering (Hardware & Software Development)
Robotics/Automation
Hydroponic and Aquaponic Systems
CFS Technical Training Program

Phase 1 – Prototype Development:

The prototype facility serves as the test bed to ensure that CFS systems will operate at peak efficiency and sustainability. Here we will implement and test the climate control systems, grow racks, fish farms, automated systems, power systems and more. The purpose is to refine the operational characteristics and document controls of the prototype facility, which will then serve as the scalable template for all future facilities.

This phase requires the R&D team. The staff will be comprised of subject matter experts for each Technical Operation Department (previously listed) as needed. In some cases, personnel will serve multiple roles. For example, the CFS Technical Training Program department will be developed by the group as a whole, creating the documentation for that department as R&D unfolds, therefore this department does not require a dedicated staff member.

Phase 2 – System Sales and Ongoing Operations

After prototype development, sales operations can immediately begin, using networking, contacts, public speaking and liaising with governments and humanitarian organizations. Thereafter is an ongoing process to improve capabilities and work with universities and other organizations to grow additional food items, increasing the CFS staff as needed.

Overall Organizational Structure:

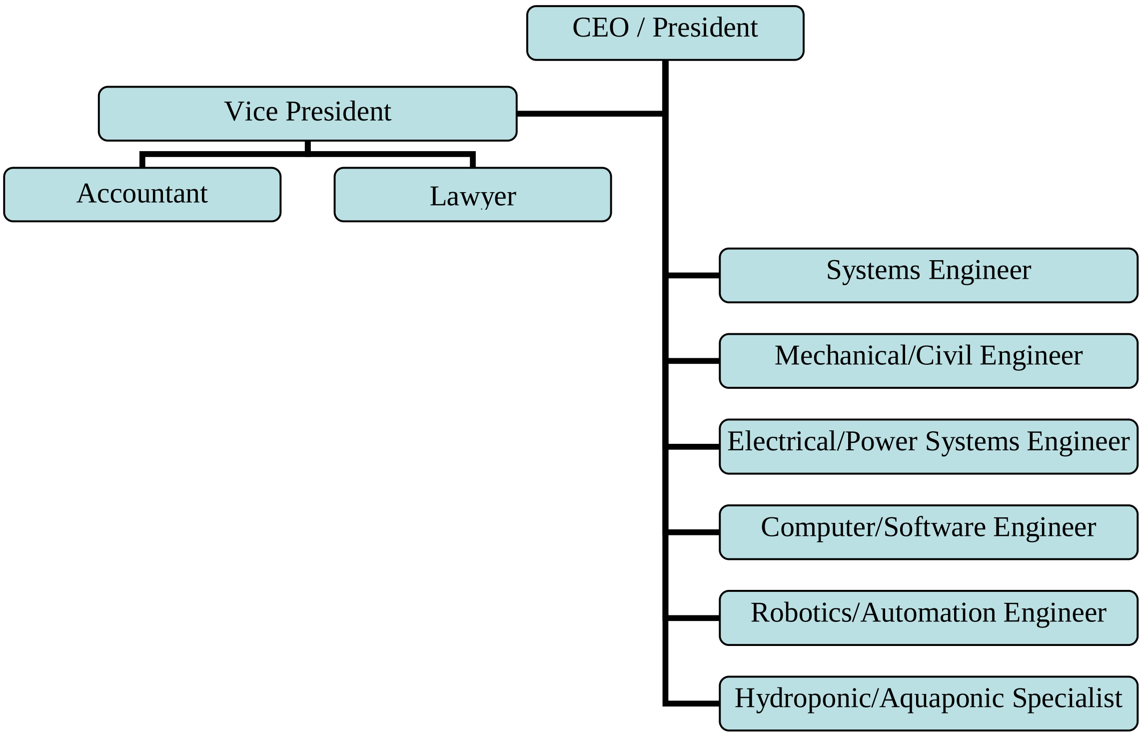
CFS will be departmentalized by Management and Technical disciplines, with a strong emphasis on internal communications:

Business Operations: Including departments such as Human Resources, Public Relations, Marketing, Sales and Finance.

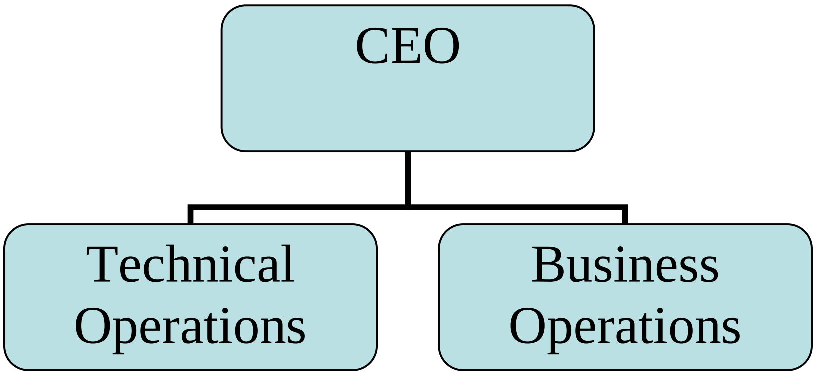
Technical Operations: Including departments such as Systems Engineering, Mechanical Engineering, Robotics & Automation, Computer Engineering (including IT and software development), Electrical Engineering (including power system management), Aquaponic Management, and Training.

Management:

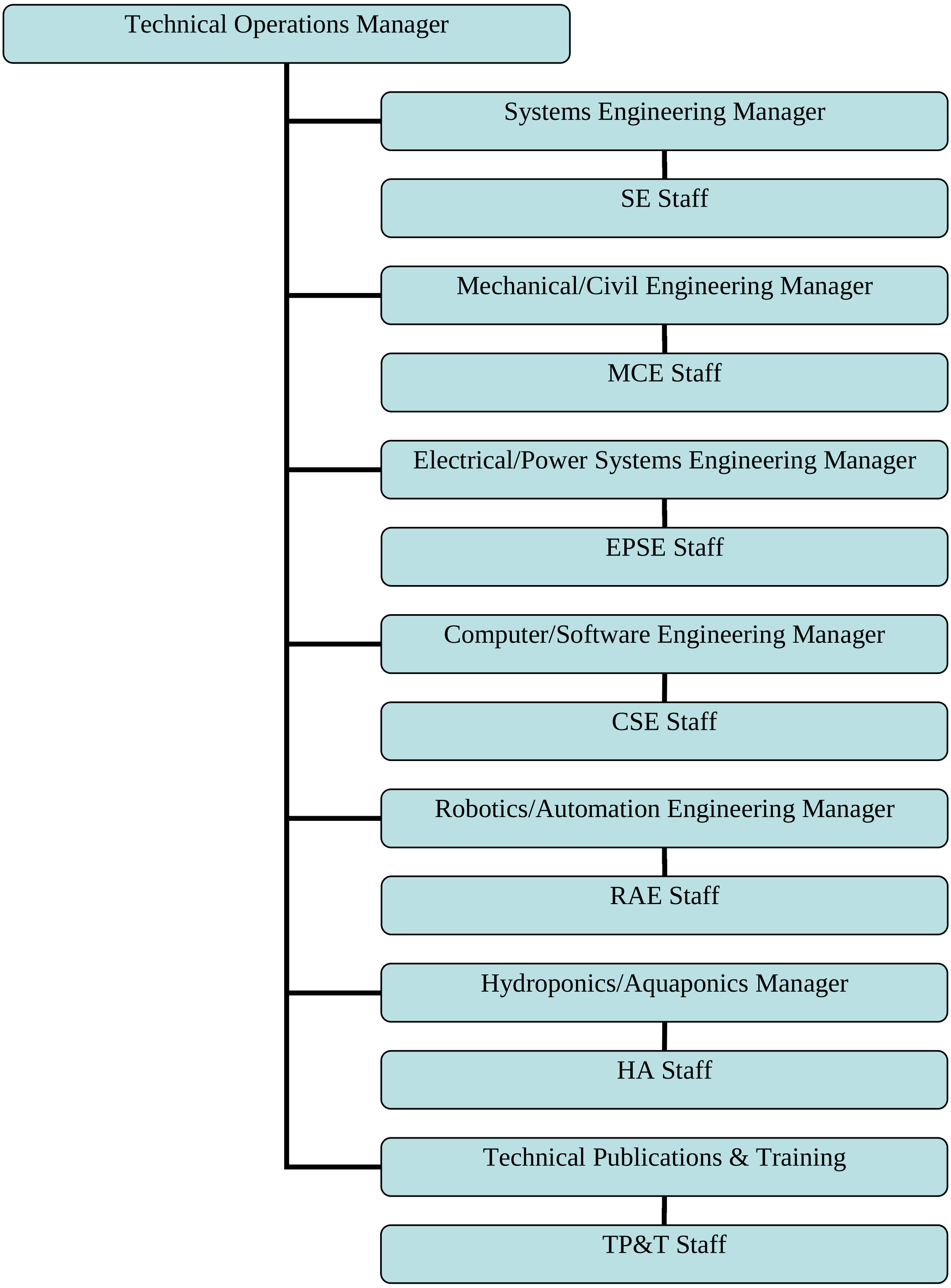
Phase 1 requires a staff to support SIR&D of the prototype facility:

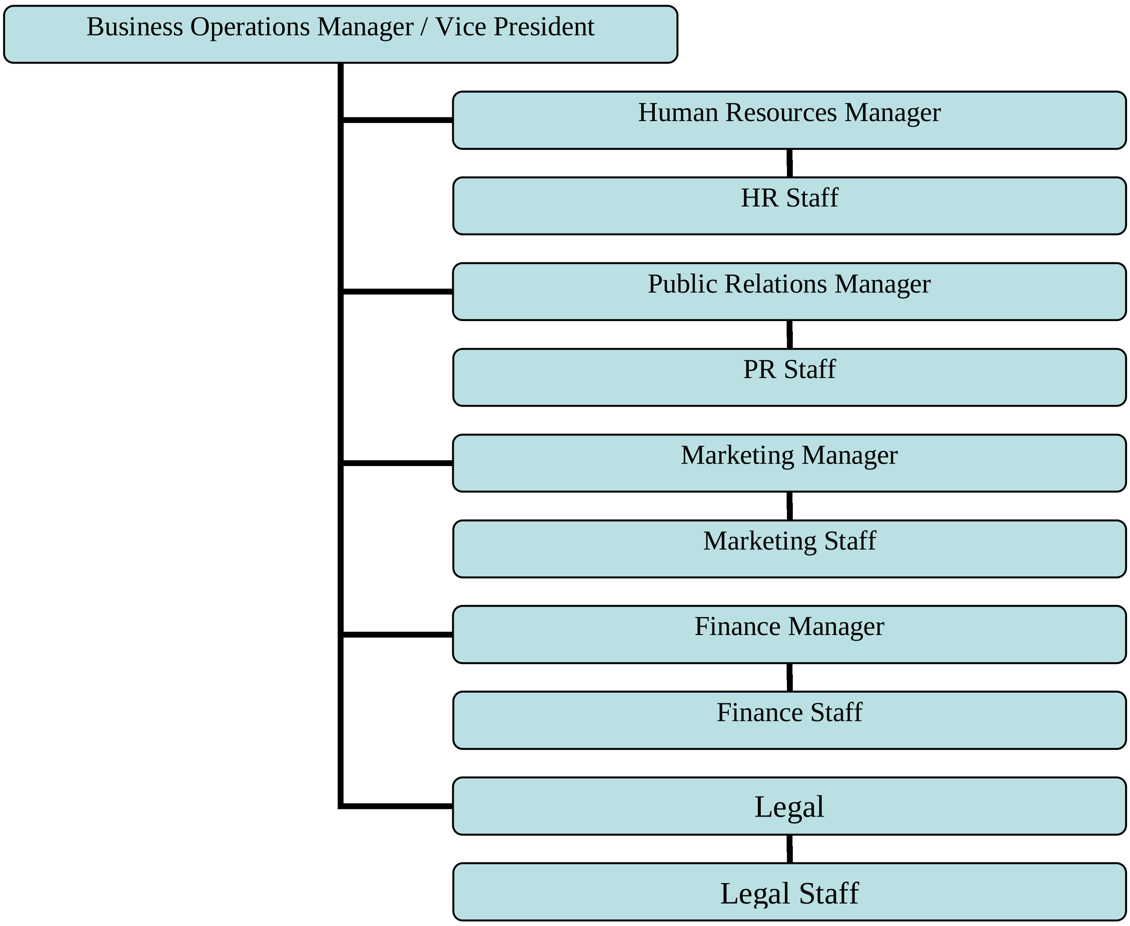


Phase 2 requires CFS to increase staff as needed to the appropriate level for facility sales, construction, training, etc. as the company grows. The company will be divided into two operational divisions, Technical Operations and Business Operations, each with its own manager. During this phase, departments within the divisions will increase in size as needed, with division managers reporting to the CEO directly.



The following two pages detail the operational divisions that report to the CEO.


Technical Operations Manager
Systems Engineering Manager
SE Staff
Mechanical/Civil Engineering Manager
MCE Staff
Electrical/Power Systems Engineering Manager
EPSE Staff
Computer/Software Engineering Manager
CSE Staff
Robotics/Automation Engineering Manager
RAE Staff
Hydroponics/Aquaponics Manager
HA Staff
Technical Publications & Training
TP&T Staff



Technical operation decisions are made in collaboration between all departments to ensure scientific and analytical methods are upheld to the highest standards. Business and Technical Operation decisions flow through the CEO of CFS.

CEO Profile: Douglas Mallette

I am a former Aerospace Systems Engineer with the United States Space Shuttle Program (2008 to 2011), giving me experience in a technical environment where multiple disciplines worked together to facilitate the accomplishment of a very complex and intricate mission. Prior to this, I have been involved with Project Management and Systems Development & Integration.

In college, as the Project Manager of SEDS (Students for the Exploration and Development of Space) I was the direct lead to a sub-orbital sounding rocket project called Daedalus and coordinated the progress for future projects such as the Martian Automated Aerial Reconnaissance Vehicle (MAARV) and the Mars In-situ Resource Project (MIRP). This role and previous work roles strengthened my experience with personnel & budget management, supply procurement, inventory control, prototype development including manufacturing & assembly, testing and documentation.

I served in the U.S. Navy from 1994 to 1998 in Aviation Maintenance Administration. My military background in Naval Aviation developed my experience in a technical, fast paced and high stress environment, which also served to develop my dedication to discipline, hard work, focus and mission accomplishment.

I am also an accomplished international public speaker. In August 2010, I spoke at the Caux, Switzerland Initiatives of Change International Conference – Leading Change for a Sustainable World – where I discussed science, engineering and technology applications derived from space exploration that can help mankind live in a sustainable world with a humanitarian focus. In October 2010, I spoke at the University of Illinois ACM Reflections|Projections Conference regarding space exploration and development, and how such technologies benefit mankind. In January of 2012 I completed a 17 day Scandinavian lecture tour where I delivered 8 lectures that spanned 6 cities, from Stockholm, Sweden to Oslo, Norway to Copenhagen, Denmark. Most recently in July, 2013, I was invited to return and speak about CFS at the Caux, Switzerland Initiatives of Change Conference, this time revolving around Trust and Integrity in a Global Economy (TIGE).

These endeavors have afforded me the ability to build a global network of contacts I can call upon to advance the mission of CFS. My personal, professional and educational background and experience has culminated into this venture with CFS, whereby I plan to marry my passion for science, engineering, technology and humanitarian concern. I have a mission, I know what needs to be done, I have laid the groundwork, and I will succeed.

EDUCATION AND TRAINING

● Bachelor of Science in Engineering Technology (Space Systems)
December 2007, University of Central Florida, Orlando, FL.

Additional Aerospace Engineering Courses not affiliated with BSET: Aerospace Materials; Calculus I, II, III; Differential Eqns.; Flight Dynamics; Thermodynamics; Ground Systems Design; Measurements; Stat. & Dynam.; Principles of EE; Solid Mechanics

● U.S. Naval Academy Preparatory School
● U.S. Navy Basic Training & Aviation Maintenance Training
● Microsoft Project Management – Level 1: Completed May, 2011

PROFESSIONAL RESPONSIBILITIES

• GB Tech / GeoControl Systems – Systems Engineer: Configuration Management (CM) for Boeing Space Shuttle Program, processing Engineering Orders, Mods, etc. in MRCS Database System as OV-105 (Endeavour) Manifest Engineer. Participated in shuttle mission flow meetings. CM website manager.

• Space Advocacy Author – Published 9-26-09: Turning Point: How Space Exploration and Development Will Determine the Rise or Fall of Humanity.

• Key public speaking and media appearances:

- 7/13/13: Guest Speaker at Caux IofC Conference
- Jan 2012: 17 day Scandinavian Global Sustainability Lecture Tour
  8 lectures in 6 cities: Stockholm & Linkoping, Sweden; Oslo, Bergen & Trondheim, Norway; Copenhagen, Denmark
- 6/25/11: Guest Speaker at Liverpool Hope Univ., Liverpool, UK.
- 05/20/11: China Radio Intl Panelist: Space Shuttle Ending & Commercial Space (Hr 1)
- 10/16/10: Speaker at the University of Illinois Reflections | Projections Conference
- 08/06/10: Guest Speaker at Caux IofC Conference
- 05/26/10: The Sean Ongley Show
- 01/17/10: The Jim Bohannon Show (@ 40 min mark)
- 01/08/10: China Radio International Conversation: Space Tourism (Hour 1)
- 01/06/10: Art in Action with Robin Ann Peters
- 12/30/09: Soma Time with Dr. Mark Filippi (Year End Special)
- 12/17/09: SpaceVidCast Appearance
- 12/2/09: Soma Time with Dr. Mark Filippi
- 11/13/09: Guest Speaker at SpaceVision 2009
- 11/10/09: The Space Show with Dr. David Livingston
- 11/5/09: Fox News with Harris Faulkner

• U.S. Navy – Developed, implemented and controlled an Aviation Ground Service Equipment Maintenance Program at VX-1 Squadron. Qualified SH-60, S-3 & P-3 Plane Captain. Performed Technical Publications oversight and updates.

• News America Marketing – Performed Customer and Client Service actions for contract responsibilities and quality assurance. Personnel, budget and inventory management.

• Instructor Experience – Developed Ground System Design course for a UCF professor, including lectures and exams.

TECHNICAL PROJECT MANAGEMENT

• Project Manager: SEDS (Students for the Exploration and Development of Space) at the University of Central Florida; multiple project implementation and oversight including Project Daedalus, the Martian Automated Aerial Reconnaissance Vehicle (MAARV) and the Mars In-situ Resource Project (MIRP).

• Project Lead: Daedalus Sub-Orbital Hybrid Sounding Rocket Program with SEDS; personnel & budget management, supply procurement, inventory control, prototype development including manufacturing & assembly, testing and documentation.

Finances

A. Funding Sources

Initial funding for CFS will be via private investors. In the future CFS plans to work with additional funding sources, like Grants for R&D, to help grow and expand our capabilities.

B. Investor Return Schedule

For 5 years, investors will receive annual profit sharing returns based on their investment percentage relative to the total investment required for CFS to get started. 25% of the net income for every year during those 5 years will be set aside for investor returns. The formula is as follows:

(Amount Invested/Total Investment)*(0.25)*(Annual Net Income) = Investor Annual Return

Example: CFS needs a Total Investment of $1 million to begin operations. Investor A invests $5,000 into CFS. Investor B invests $100,000 into CFS. CFS makes $1,500,000 in net income for the first year of operations.

Investor A: (5,000/1,000,000)*(0.25)*(1,500,000) = $1,875

Investor B: (100,000/1,000,000)*(0.25)*(1,500,000) = $37,500

Investor A will receive a check for $1,875 for that year and Investor B will receive a check for $37,500 for that year, and so on for every investor. The process repeats every year for the 5 year duration.

B. Funding Request

Funding Requirements:

Phase 1A – Previously Invested Amount for initial startup: $105,000

Phase 1B – Required amount for Prototype Development: $895,000

Line Item	Cost
Payroll (2 yr)	$370,000
Warehouse (2 yr)	$40,000
Prototype Facility Initial, Backup and Supplemental Materials	$320,000
Contingency Funds	$165,000
Total Cost	$895,000

Total Investment: $1,000,000

The following 5 Year Financial Forecast starts after the Prototype Development Phase and assumes starting sales of five CFS Facilities, with a minimal annual increase of five sales per year, and Consulting Income starting with two in year one and increasing by two annually. The Supplier Referral Fee revenue stream cannot be forecast as it is highly variable and dependent on partnerships yet to be determined, therefore it is not included. Payroll, R&D Budget and Operational Costs modestly increase annually.

5 Year Financial Forecast (Post Prototype Development Phase)					
	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue:					
CFS Facilities Sold	5	10	15	25	35
Revenue Per Facility	$ 1,100,000	$ 1,100,000	$ 1,100,000	$ 1,100,000	$ 1,100,000
Facility Revenue Total	$ 5,500,000	$ 11,000,000	$ 16,500,000	$ 27,500,000	$ 38,500,000
Consulting Jobs	2	5	10	10	10
Revenue Per Job	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Consulting Revenue Total	$ 200,000	$ 500,000	$ 1,000,000	$ 1,000,000	$ 1,000,000
Revenue Grand Total	$ 5,700,000	$ 11,500,000	$ 17,500,000	$ 28,500,000	$ 39,500,000
Expenses:					
Salaries					
Number of Employees	10	15	18	21	25
Average Salary	$ (50,000)	$ (50,000)	$ (50,000)	$ (50,000)	$ (50,000)
Salary Total	$ (500,000)	$ (750,000)	$ (900,000)	$ (1,050,000)	$ (1,250,000)
COGS					
Facilities Sold	5	10	15	25	35
Facility Cost Per Unit	$ (793,000)	$ (793,000)	$ (793,000)	$ (793,000)	$ (793,000)
Total Facility Cost	$ (3,965,000)	$ (7,930,000)	$ (11,895,000)	$ (19,825,000)	$ (27,755,000)
Warehouse Rent	$ (20,000)	$ (20,000)	$ (25,000)	$ (25,000)	$ (25,000)
R&D Budget	$ (50,000)	$ (100,000)	$ (150,000)	$ (150,000)	$ (150,000)
Operational Costs	$ (60,000)	$ (60,000)	$ (60,000)	$ (60,000)	$ (60,000)
Office Materials	$ (12,000)	$ (12,000)	$ (12,000)	$ (12,000)	$ (12,000)
Advertising and Promotion	$ (12,000)	$ (15,000)	$ (15,000)	$ (15,000)	$ (15,000)
Accounting and Legal	$ (12,000)	$ (15,000)	$ (20,000)	$ (20,000)	$ (20,000)
Travel	$ (15,000)	$ (20,000)	$ (25,000)	$ (30,000)	$ (50,000)
Total Expense	$ (4,646,000)	$ (8,922,000)	$ (13,102,000)	$ (21,187,000)	$ (29,337,000)
Net Income Before Taxes	$ 1,054,000	$ 2,578,000	$ 4,398,000	$ 7,313,000	$ 10,163,000
Investor Return Derived from Net Income Before Taxes	$ (263,500)	$ (644,500)	$ (1,099,500)	$ (1,828,250)	$ (2,540,750)
Net Profit Before Taxes (After Investor Return)	$ 790,500	$ 1,933,500	$ 3,298,500	$ 5,484,750	$ 7,622,250

Total Invested	$ 1,000,000
Total Investor Return	$ 6,376,500
5 Year ROI %	638%

Appendix A

Prototype Facility Cost Estimate

Components	Units in Facility	Unit Cost	Total Cost
The Building			
2400 Sq Ft Building	1500	$ 50	$ 75,000
Climate Control Systems			
ClimateControl	1	$ 10,000	$ 10,000
A/C Units	1	$ 2,895	$ 2,895
Garden System			
Grow Tray	15	$ 100	$ 1,500
Tray Racks	1	$ 1,000	$ 1,000
Rack Motor	12	$ 500	$ 6,000
Reflective Material	2	$ 50	$ 100
Fish Farm System			
Fish Tank	1	$ 3,100	$ 3,100
Level 1 Pump	1	$ 23	$ 23
Level 2 Pump	1	$ 31	$ 31
Level 3 Pump	1	$ 138	$ 138
Automation & Robotics			
Tray Wash	1	$ 5,000	$ 5,000
Seeding System	1	$ 5,000	$ 5,000
Delivery System			
Material Flow - 30'	1	$ 3,935	$ 3,935
Material Flow - 10'	1	$ 2,292	$ 2,292
Conveyor Lift System	1	$ 8,100	$ 8,100
Wind Power Sources			
VAWT	1	$ 18,000	$ 18,000
Solar Power Sources			
Panels	4	$ 549	$ 2,196
Battery Power Sources			
Industrial Batteries	10	$ 1,087	$ 10,870
TOTALS			$ 155,180
Contingency Funds			$ 4,820
Total			$ 160,000
Backup & Supplemental Materials			$ 160,000
Grand Total			$ 320,000