Seal Team 6

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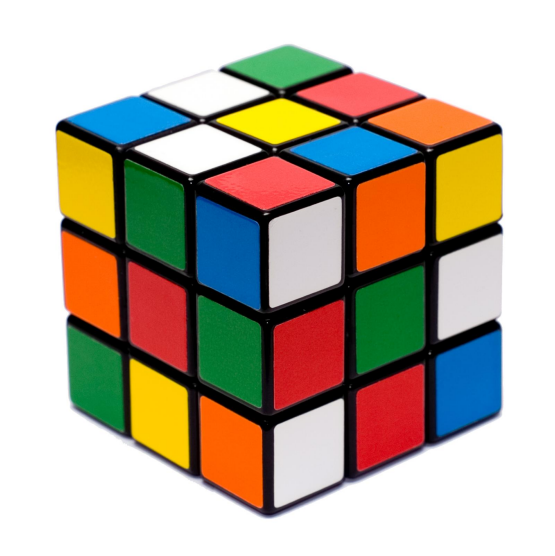
Using the design process we decided on a combination of Precision Agriculture and Aeroponics.



The opportunity arose to create a for-profit agricultural exhibit in the SAIN interactive touring circuit.

Design constraints were analyzed to define the problem space.

STEM

After reviewing general specifications, exhibit concepts were brainstormed.

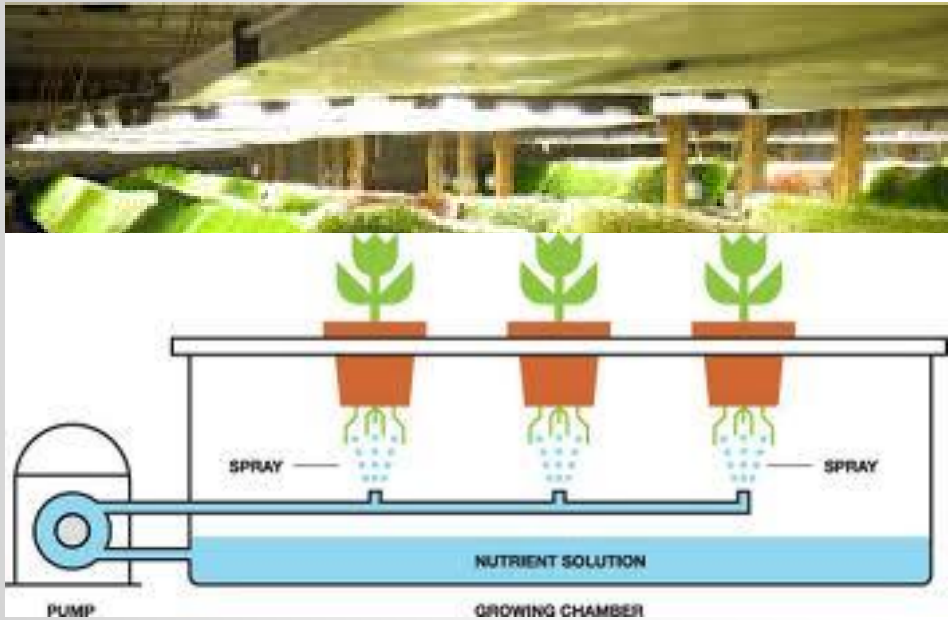
Brainstorm Analysis

Spaces	Vertical Farming	**Aeroponics**	**Test chemical effect on plants**	**Precision Agriculture**	Genetic Modification	Waterfall & Pond
Explores STEM	0	1	1	1	1	0
Interactive/entertaining	0	0	1	1	0	0
Local business'	1	1	-1	0	0	1
Regulatory	0	0	1	0	1	0
Upgradeability	0	1	0	0	-1	0
Durable	0	1	-1	0	0	-1
Fully automated	0	1	1	1	-1	1
Positive	1	5	4	3	2	2
Neutral	6	2	1	4	3	4
Negative	0	0	2	0	2	1
Sum	1	5	2	3	0	1

Weighted Brainstorm Analysis

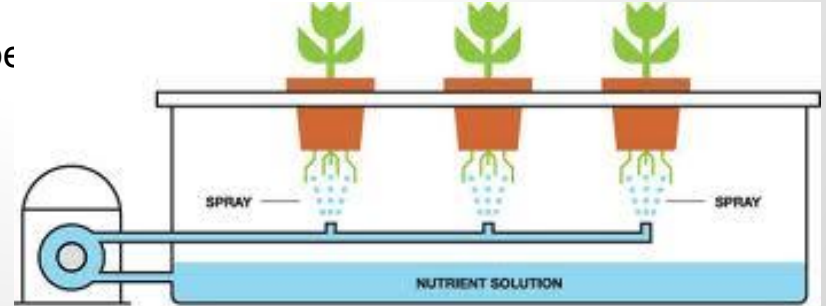
Specs	Weight	**Aeroponics**	Weighted score	Test Chemical Effects on Plants	Weighted score	**Precision Agriculture**	Weighted score
Explores STEM	0.2	4	0.8	2	0.4	5	1
interactive/entertaining	0.07	2	0.14	5	0.35	4	0.28
local business'	0.2	4	0.8	0	0	0	0
Regulatory	0.13	2	0.26	4	0.52	4	0.52
Upgradeability	0.2	4	0.8	3	0.6	4	0.8
durable	0.07	5	0.35	0	0	3	0.21
fully automated	0.13	3	0.39	3	0.39	4	0.52
	1		3.54		2.26		3.33
		Yes		No		Yes	

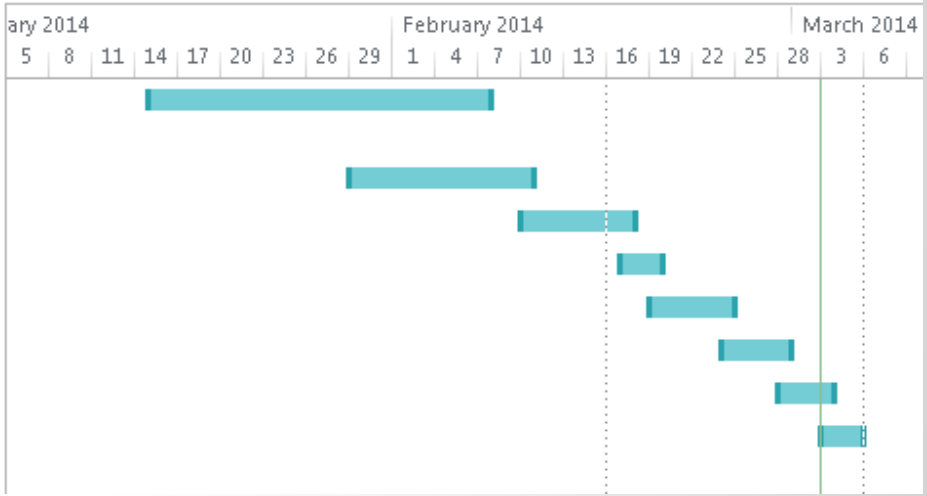
After narrowing ideas with a project evaluation matrix, a proposal for an exhibit was developed.



Agriculture Specs

1. Must educate and engage visitors
2. Must show gradual transition of growing phases and generations
3. Water must be pressurized by 80 psi diaphragm pump
4. Must use 20-50 micrometer nozzle
5. System will be powered by CFL grow lights
6. Placed in the basement of the house, needs to be at least a 50’ x 30’ space (~5,000 plants)
7. 75% harvestable crops, when harvested given to a farmers market some given out for free
8. 25% flowers and other, when harvested will be decorate



Gantt chart

Task Name	Duration	Start	Finish	Predecessors
Recognize Opportunity	18 days	Wed 1/15/14	Fri 2/7/14	
Customer Needs	9 days	Wed 1/29/14	Mon 2/10/14	
General Specs	6 days	Mon 2/10/14	Mon 2/17/14	
Brainstorm	3 days	Mon 2/17/14	Wed 2/19/14	
Analyze/Pick Ideas	4 days	Wed 2/19/14	Mon 2/24/14	
Prototype Specs	5 days	Mon 2/24/14	Fri 2/28/14	
Create Prototype	2 days	Fri 2/28/14	Mon 3/3/14	
Prepare Presentation	3 days	Mon 3/3/14	Wed 3/5/14