Thesis Proposal

chris piuggi

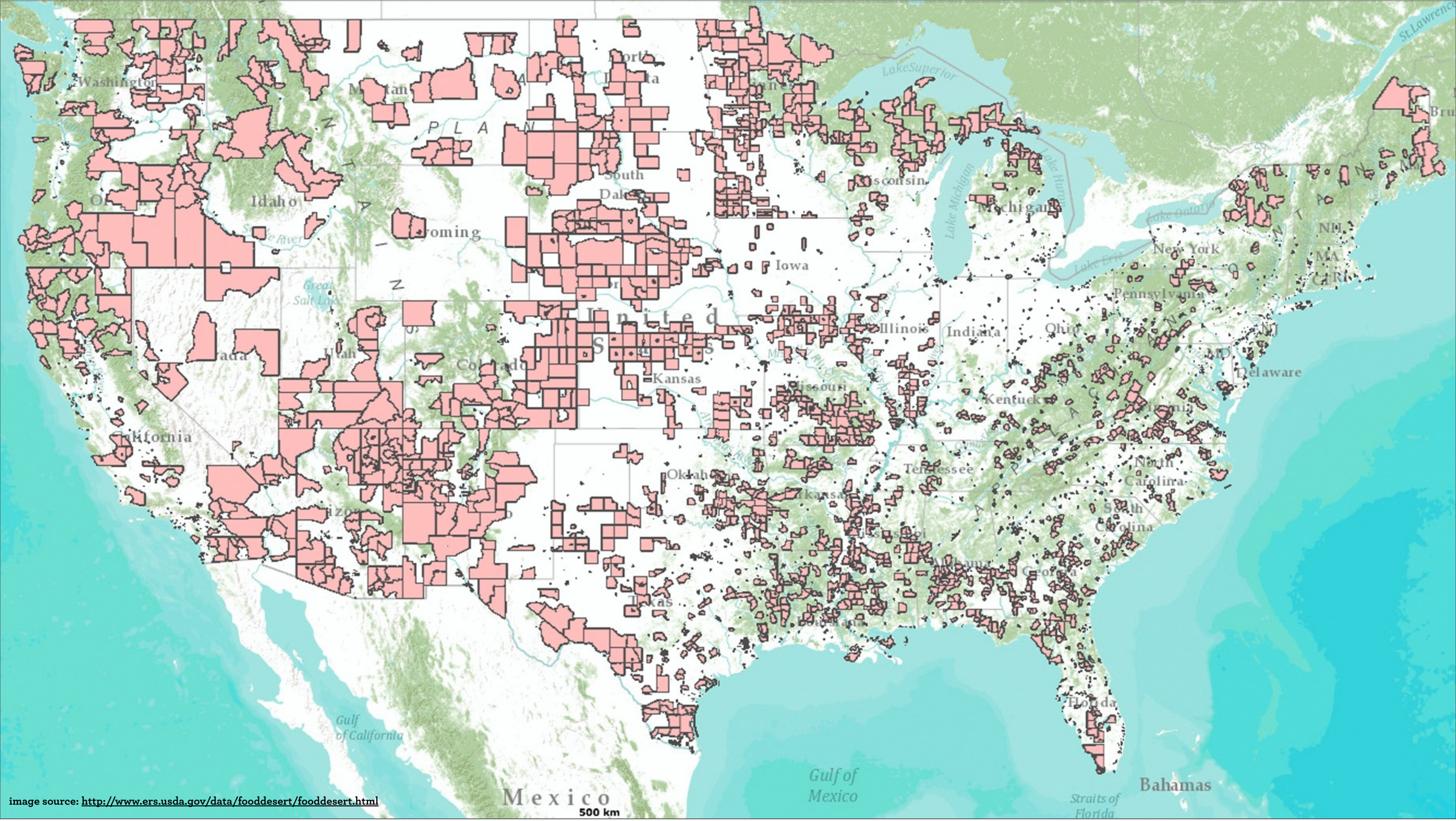

image source: http://www.ers.usda.gov/data/fooddesert/fooddesert.html

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What systems, methods and technologies are needed to empower individuals and communities to become participants in local, healthy and sustainable food production?

Engaging in processes that regenerate rather than deplete, we become more alive.

Five Principles of Ecological Design - Sim Van der Ryn and Stuart Cowen

Edwards, Andres R. 2006. *The Sustainability Revolution: Portrait of a Paradigm Shift*. Philadelphia, Pa: New Society. 103

BACTERIA

x4

image source: gettyimages.com & chris piuggi

Johanson. 'Aquaponics and Hydroponics on a Budget'

1gal water = 1lbs fish & 1lbs produce

F1 Recirculating System. Family Fish Farms.

2.5gal water = 1lbs fish & 1lbs produce

http://www.backyardaquaponics.com/

The technology associated with aquaponics is complex.

Diver, *Aquaponics - Integration of Hydroponics with Aquaculture*, 2

How can we make this technology more tangible?

Edible Estates - Fritz Haeg

image source: http://www.fritzhaeg.com/garden/initiatives/edibleestates/istanbul.html

Window Farms - Britta Riley

image source: http://www.windowfarms.org

Farm Fountain - Ken Rinaldo & Amy Youngs

image source: http://farmfountain.com/gallery/pages/urban_garden2.html
http://farmfountain.com/gallery/pages/urban_garden16.html

User Identified Needs

10/31/11

Excerpt of Email From Steve Kreuser

(Hack Manhattan Member)

To be honest, I am more interested in more 'traditional' forms of gardening. If given the keys to the roof and told to go wild, **I would work towards building an aesthetically pleasing, semi private place** for members to escape to from time to time. Unfortunately, with all the talk of geodesic domes and whatnot, that might not be what other folks have in mind.

However, I realize that growing a garden on the roof presents some very unique challenges, and as a result I am very interested in experimenting with hydroponics as well as living walls. (aquaponics is also something I have been researching recently, but I am not sure how feasible that is to do on a roof)

11/09/11
Interview with Michelle Jackson
(Harlem Center for Healthy Living, Community Garden Member)

"Collectively our members are interested in food access and social justice, through their own sources of food. They want to learn about new ways to create their own food sources and break their dependence on stores that don't provide adequately for the community."

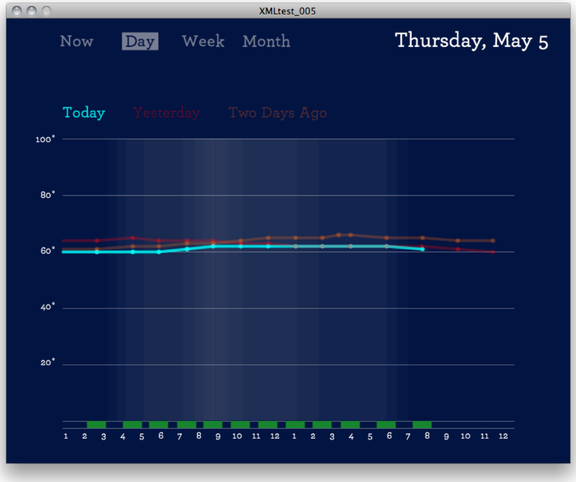
11/11/11

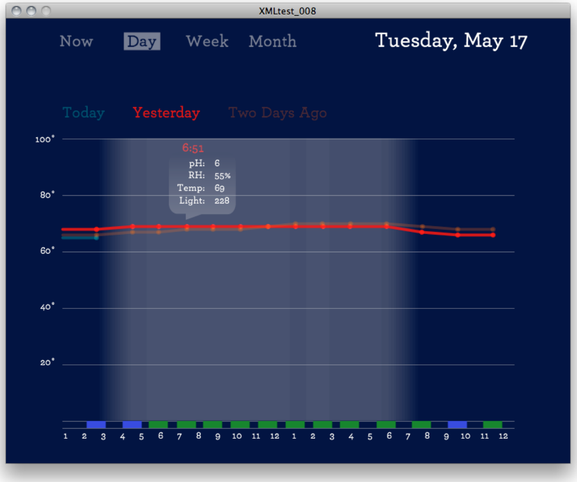
Excerpt From Jacob Cohen to Chris Piuggi

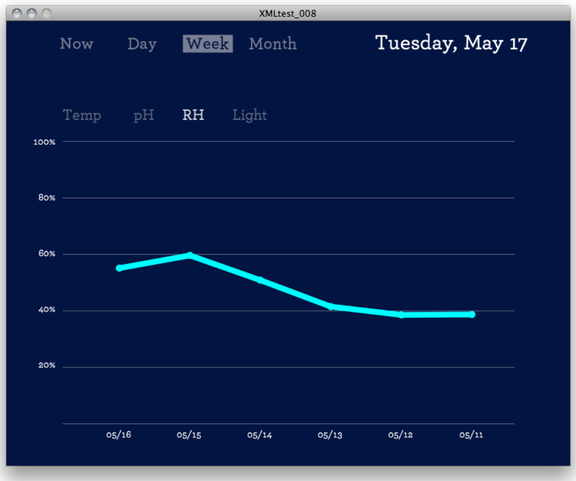
(Urban Dweller, Agricultural Enthusiast)

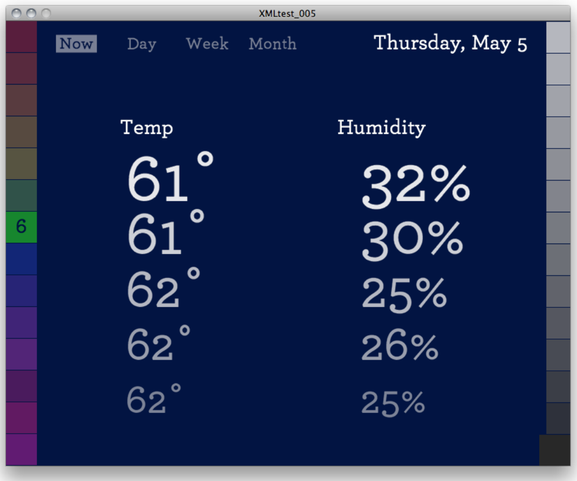
Basic info: We're got a 2nd fl apartment. The ground floor retail space extends back to the lot line and that gives us an extra 15-20' of outdoor space. It doesn't get a lot of light as the surrounding buildings are all very close and the building next to us about 8 or 9 floors.

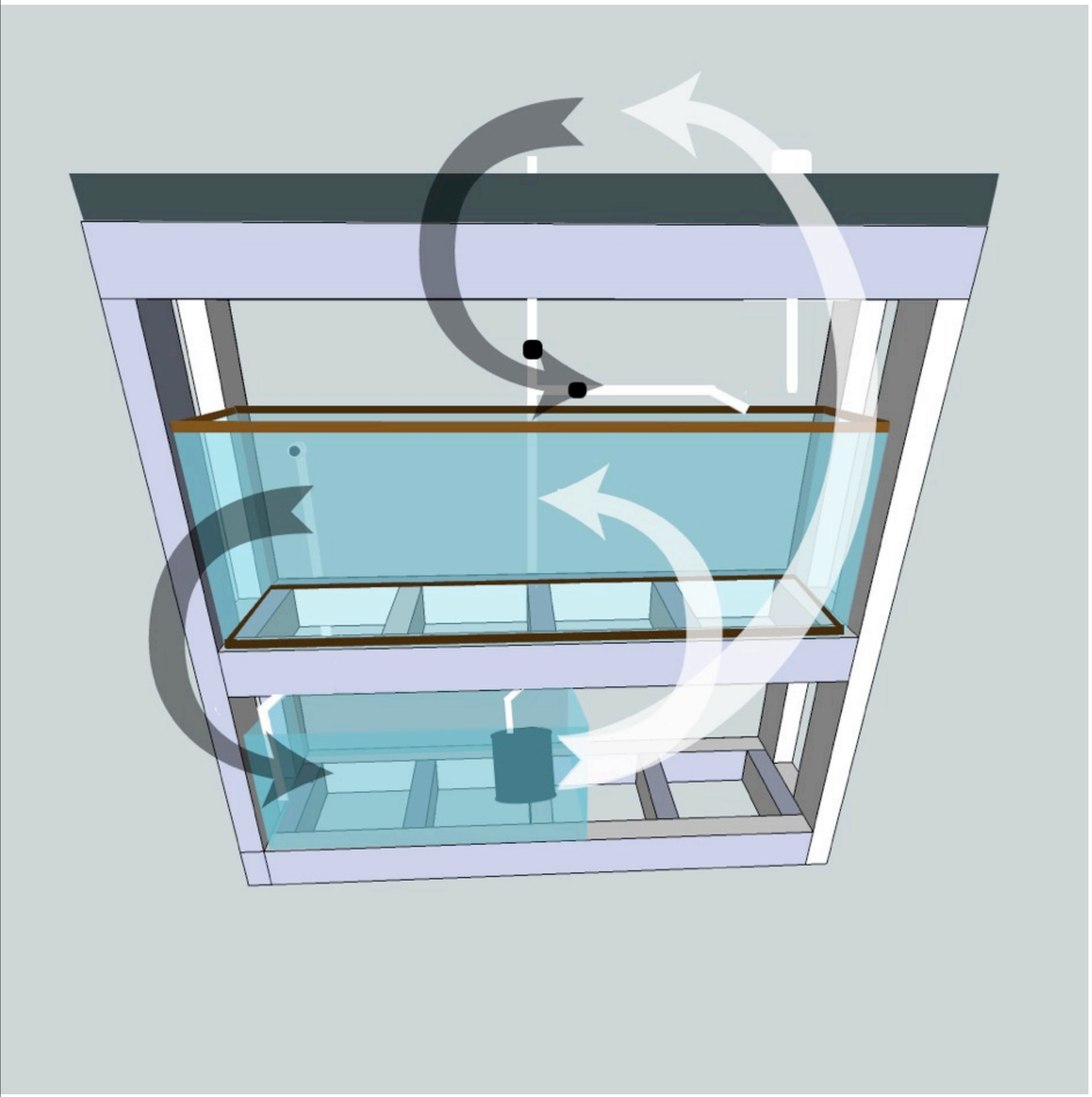
I'm currently looking to solve a couple issues:
1. How to keep the plants alive during the winter (the greenhouse structure isn't well insulated)
2. How to collect and broadcast data from the plants
3. How to grow food in the space even during the winter

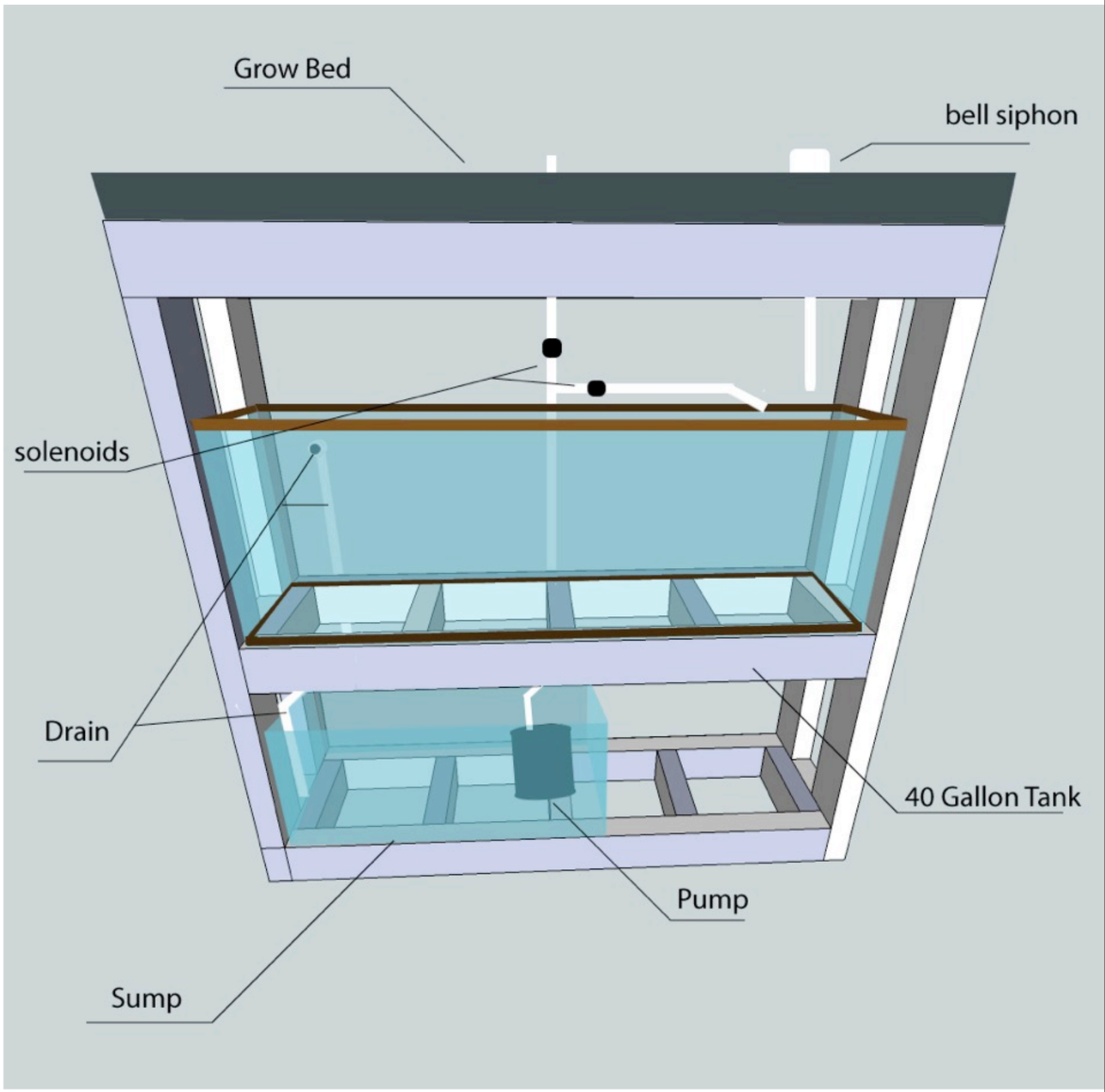

XMLtest_005
Now
Day
Week
Month
Thursday, May 5
Today
Yesterday
Two Days Ago
100°
80°
60°
40°
20°
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

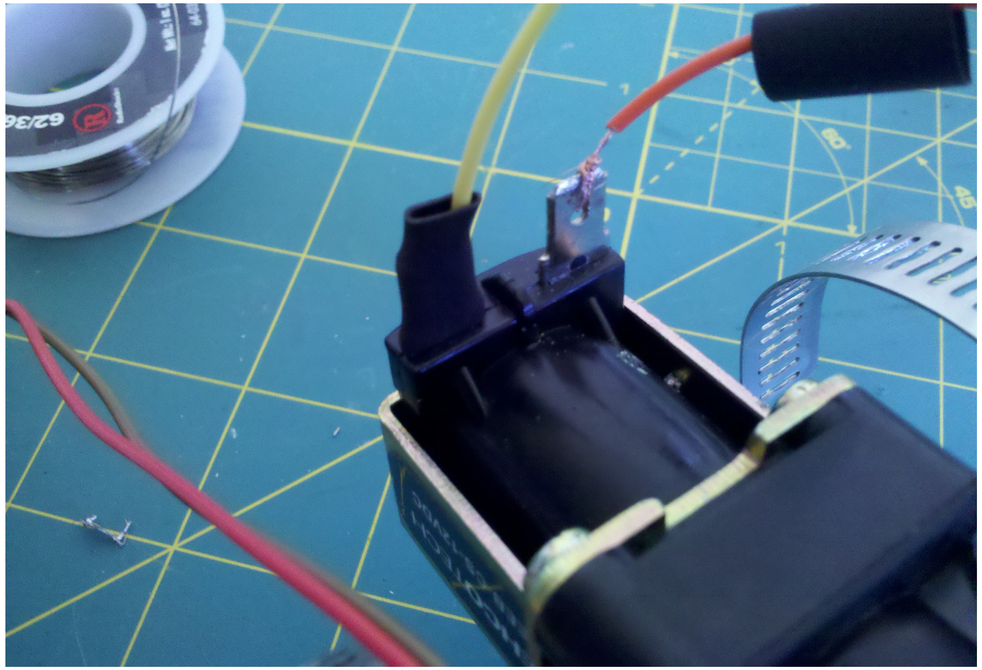

XMLtest_008
Now
Day
Week
Month
Tuesday, May 17
Today
Yesterday
Two Days Ago
6:51
pH: 6
RH: 55%
Temp: 69
Light: 228
100°
80°
60°
40°
20°
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

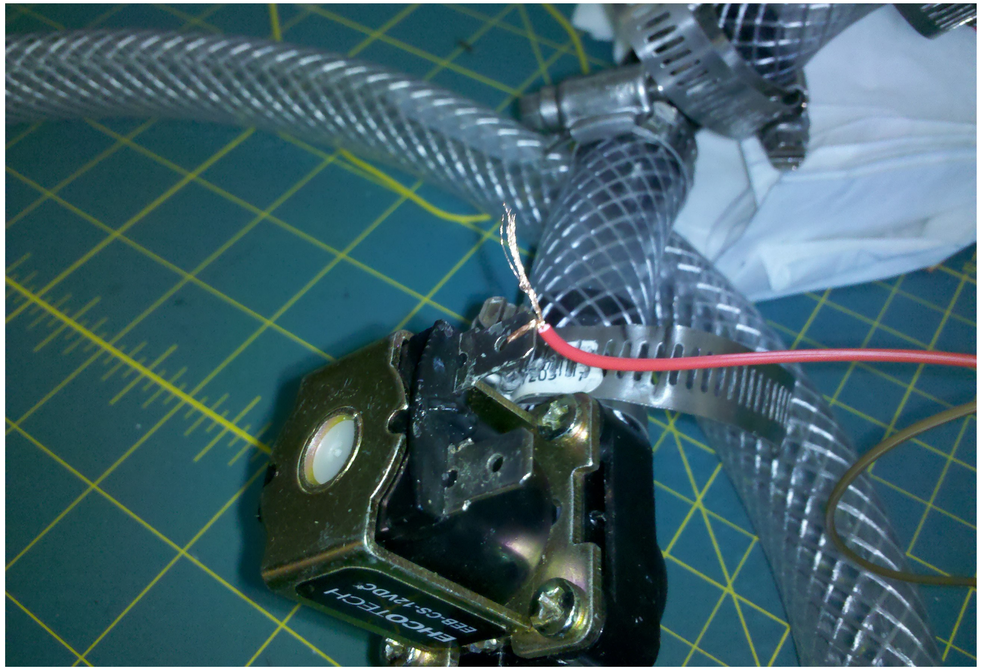

XMLtest_008
Now
Day
Week
Month
Tuesday, May 17
Temp
pH
RH
Light
100%
80%
60%
40%
20%
05/16
05/15
05/14
05/13
05/12
05/11

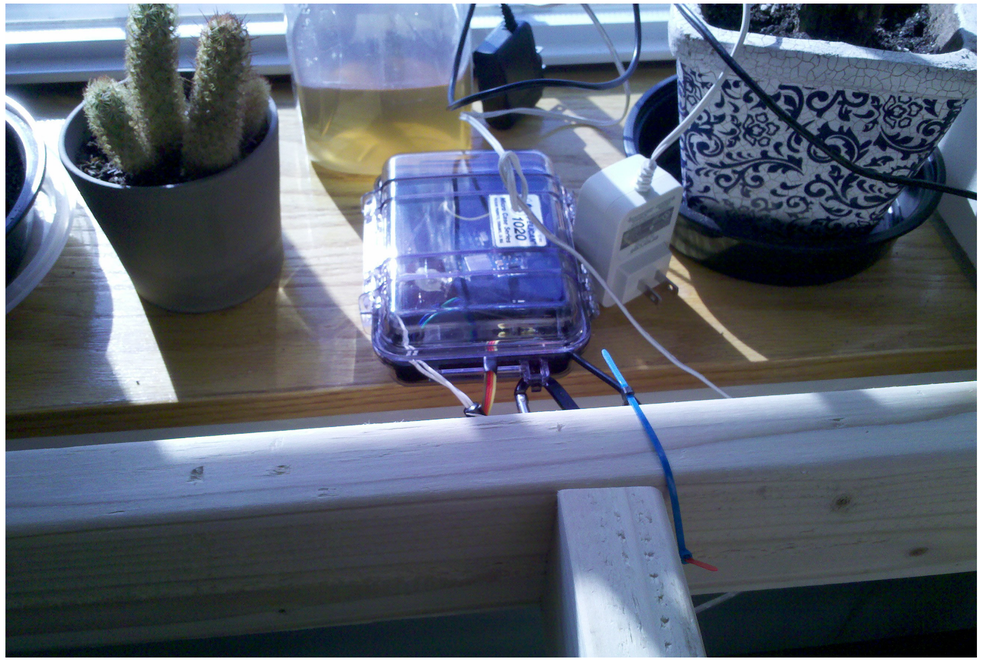

XMLtest_005
Now
Day
Week
Month
Thursday, May 5
Temp
Humidity
61°
61°
62°
62°
62°
32%
30%
25%
26%
25%
6

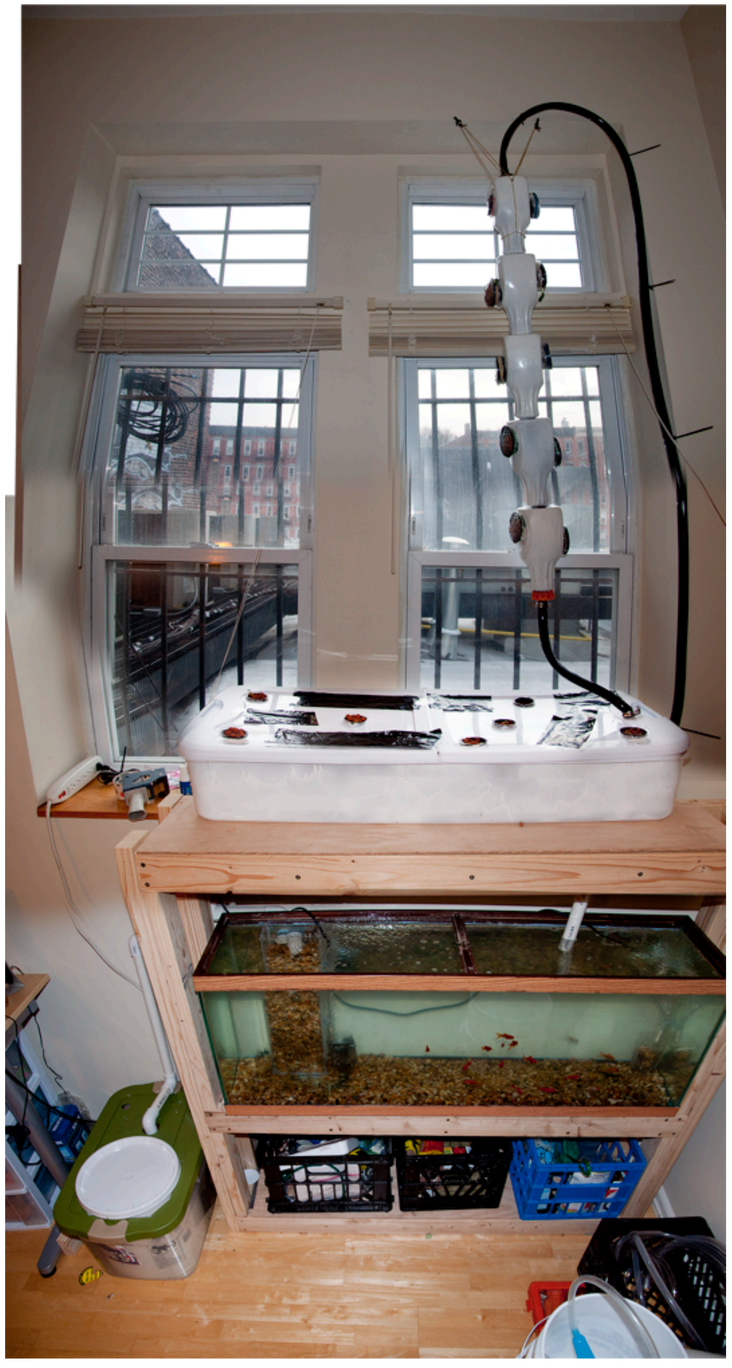



Grow Bed
bell siphon
solenoids
Drain
40 Gallon Tank
Pump
Sump




EHCOTECH





Proposal

Design methods for individual and community research, exploration and engagement within recirculating, sustainable eco-systems as a foundation to empower neighborhoods to cultivate healthy, self sufficient local economies.

Provide users with the ability to create and manage productive eco-systems via an interface to support users through data feedback.

Grow Bed

Tank

Clarifyer

Filter

Sump

Vertical Filter

Lighting

Air

Vents

Arduino

Surge Protector

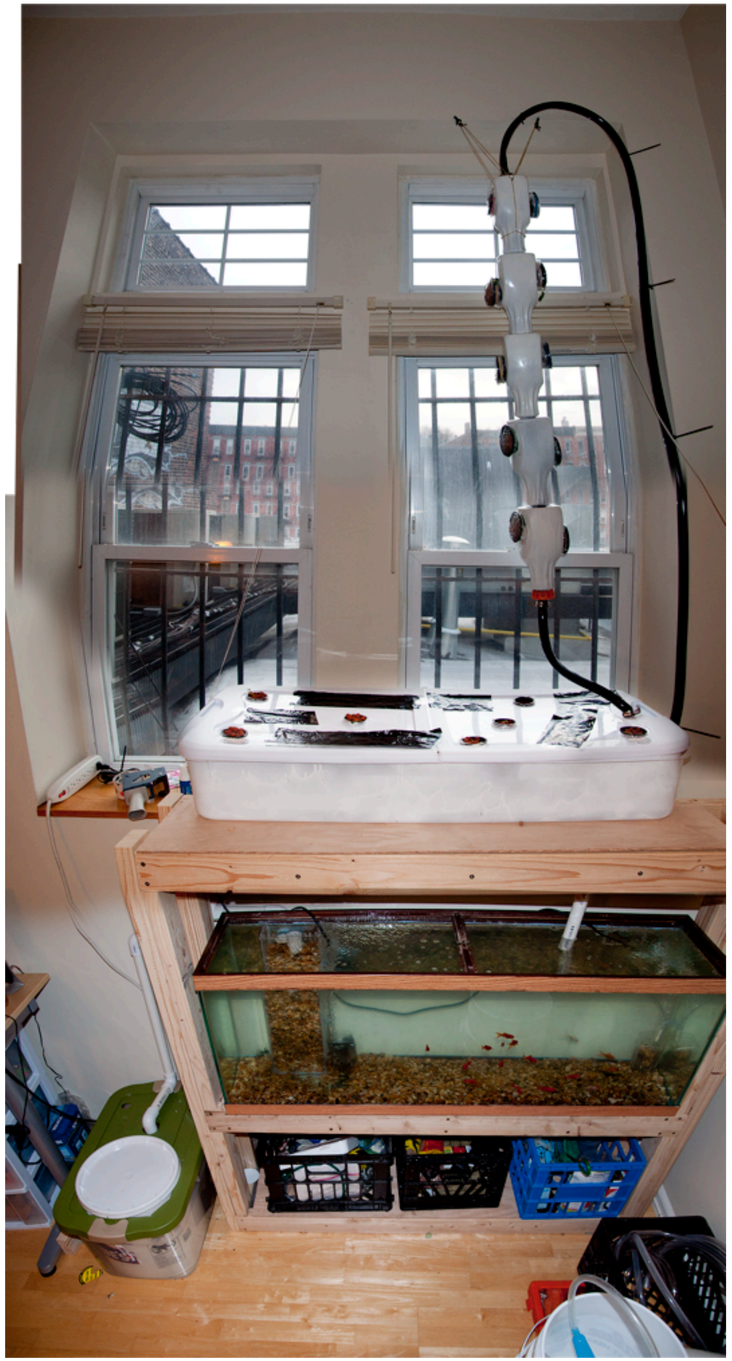
LCD

DATABASE

Maintenance » Text
Harvest » Email
Data » Visualization
Emergency » Call

Light
Temperature
Humidity
pH
Moisture
Time
Energy
Data
Maintenance
Reset
Water flow

Develop aesthetic solutions to integrate eco-systems everyday spaces, as a means for promotion, awareness and adoption.



Facilitate user implementation at scales which can be supported by resources available to participants.

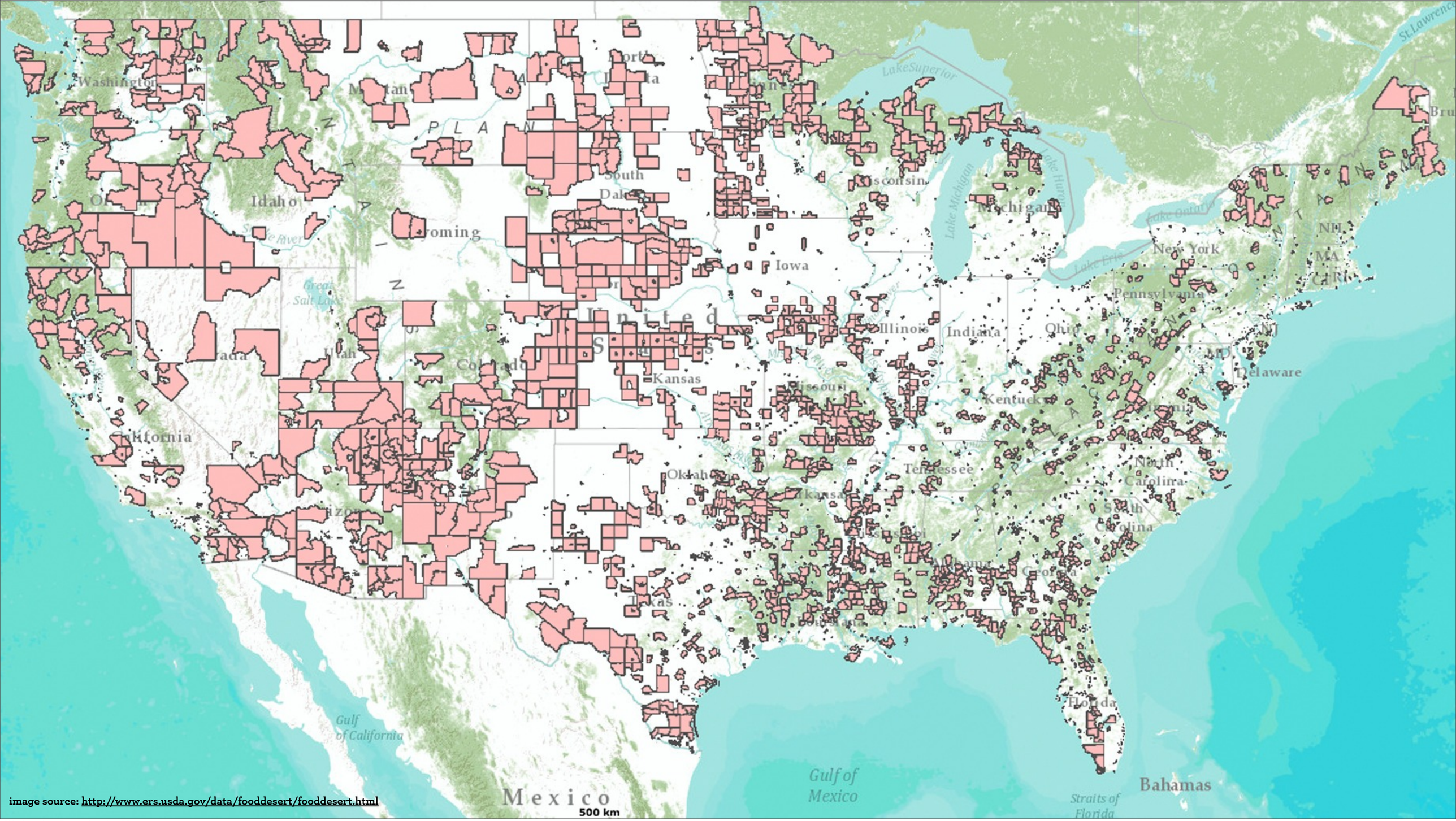


image source: http://www.ers.usda.gov/data/fooddesert/fooddesert.html

Next Steps

Create System in Public Space

Update Prototype Leaks

Implement Sensor Network

Creating documentation and support to facilitate user implementations

Thank You.

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