



YAMAHA RightWaters Trash Interceptor

Jonathan Draigh | Emily Haggard | Mohamad Kassem | Martin Senf | Andrew Walker

Team Introductions



Jonathan Draigh
Materials Engineer



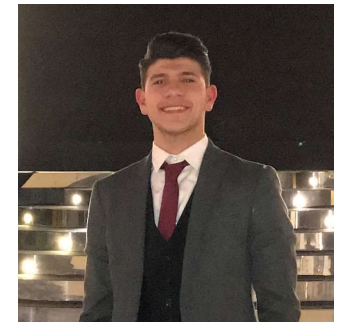
Martin Senf
Manufacturing Engineer



Emily Haggard
Fluids Engineer



Andrew Walker
Manufacturing Engineer



Mohamad Kassem
Controls Engineer

Jonathan Draigh



Sponsor and Advisor

John O'Keefe



YAMAHA

Engineering Mentor

John O'Keefe

Yamaha Motors

Shayne McConomy



Academic Advisor

Shayne McConomy, Ph.D.

Senior Design Professor

Jonathan Draigh



Objective

To implement an effective land-based trash interceptor, collecting debris – primarily plastic wastes – in storm drains before being released into bodies of water



Jonathan Draigh

Project Background

80% of trash comes within 1-2 hours of major thunderstorm

1

By 2050, it is estimated to be a 1:1 ratio

3

Yamaha wants to take care of their customers

5

In the ocean, 3 lbs. of fish to 1lb of plastic

2

70% of Yamaha customers are fishermen

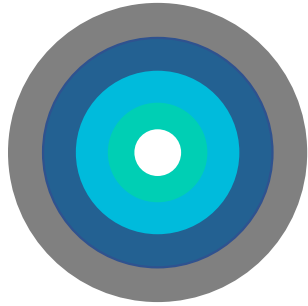
4

A land-based device that retrieves trash out of the storm drains

6

Jonathan Draigh

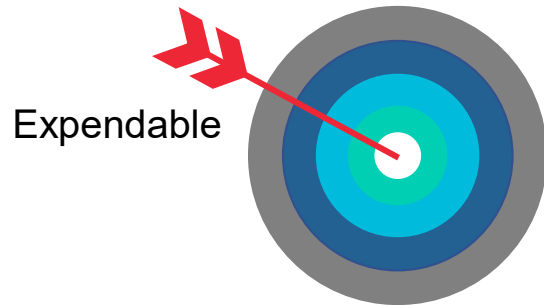
Key Goals



Jonathan Draigh



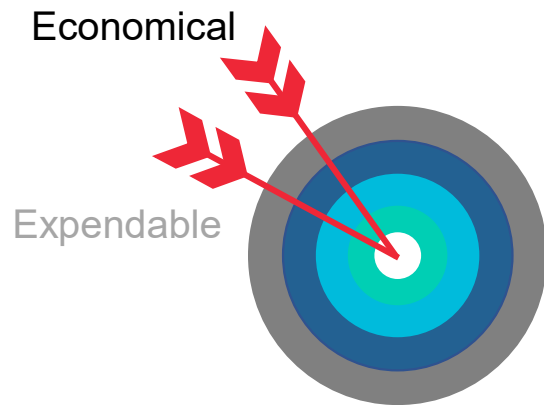
Key Goals



Expendable - Allows the device to be inexpensive and can be replaced if damaged

Jonathan Draigh

Key Goals

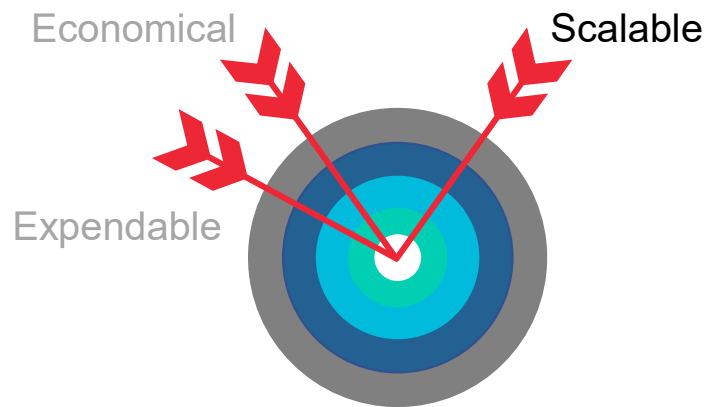


Expendable - Allows the device to be inexpensive and can be replaced if damaged

Economical - Inexpensive to ensure that it can be bought by a larger market

Jonathan Draigh

Key Goals



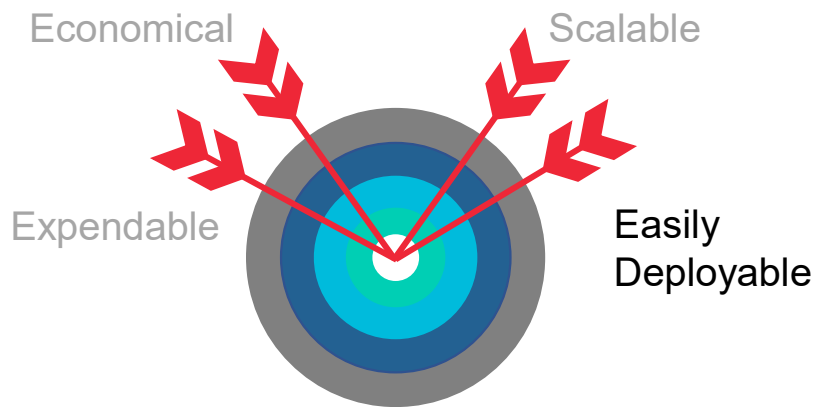
Expendable - Allows the device to be inexpensive and can be replaced if damaged

Economical - Inexpensive to ensure that it can be bought by a larger market

Scalable - Allows the device to fit in various sized storm drains

Jonathan Draigh

Key Goals



Expendable - Allows the device to be inexpensive and can be replaced if damaged

Economical - Inexpensive to ensure that it can be bought by a larger market

Scalable - Allows the device to fit in various sized storm drains

Easily Deployable - Will be deployed by three skilled contractors

Jonathan Draigh

Assumptions

Source of sustainable energy



Disposal of trash regularly



Stable embankment to place the device



Installed without major machinery



Jonathan Draigh

Stakeholders



Shayne
McConomy



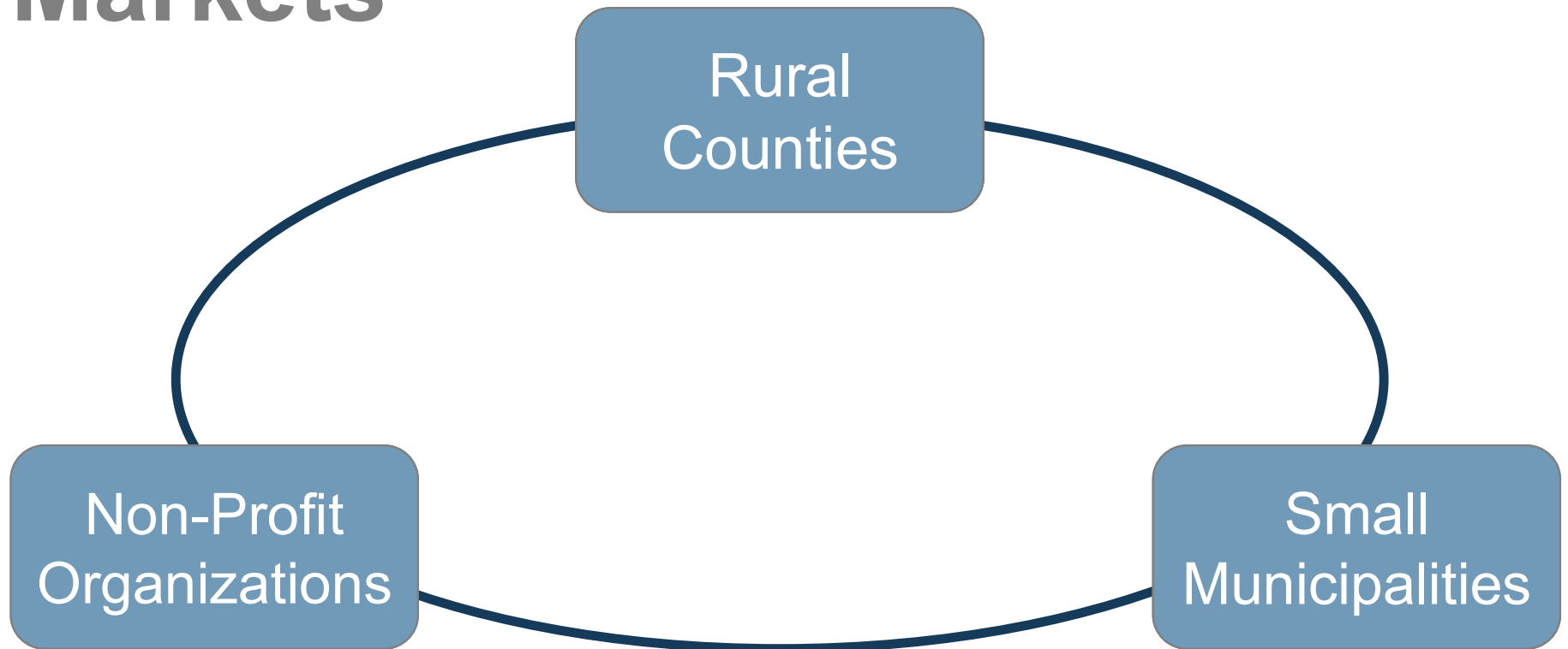
Yamaha
Motors



Small or Rural
Municipalities

Jonathan Draigh

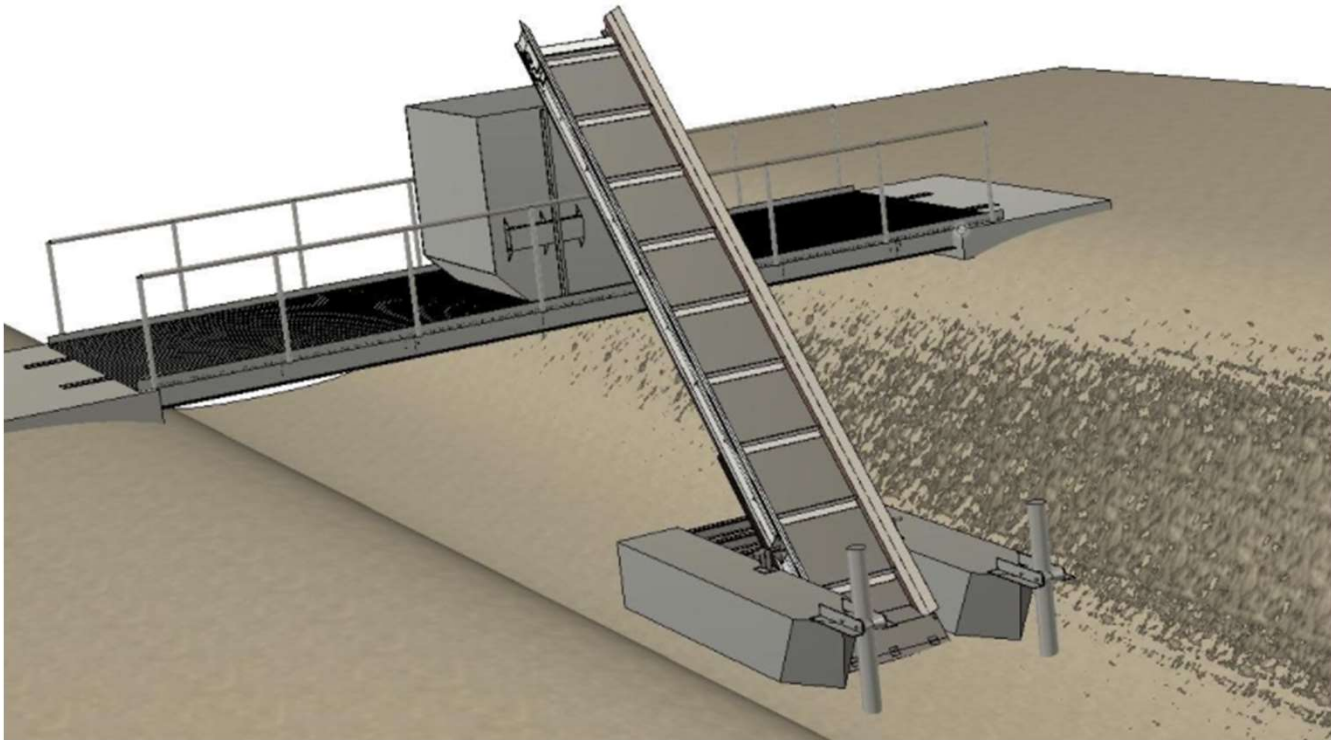
Markets



Jonathan Draigh



Trash Interceptor Gen. 1

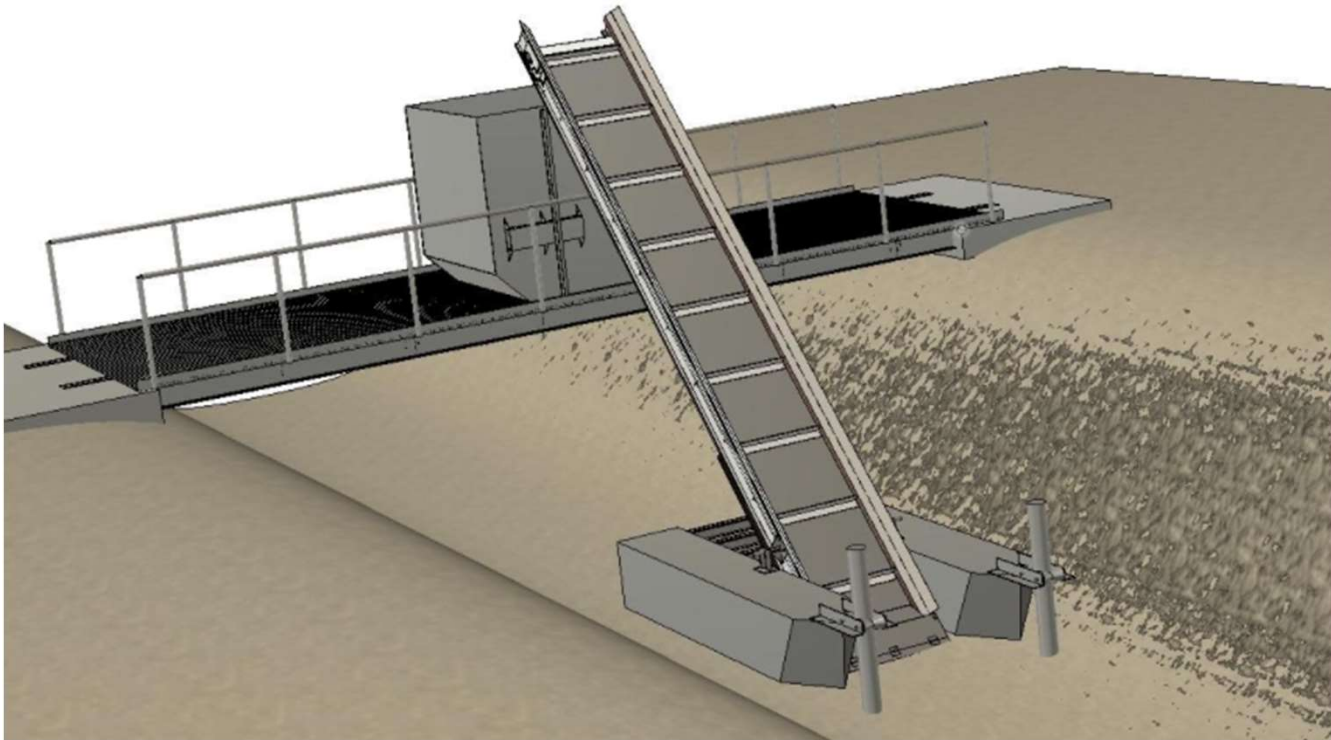


This design:

- Collected Trash
- Was assembled on site
- Runs on Solar Energy

Emily Haggard

Trash Interceptor Gen. 1

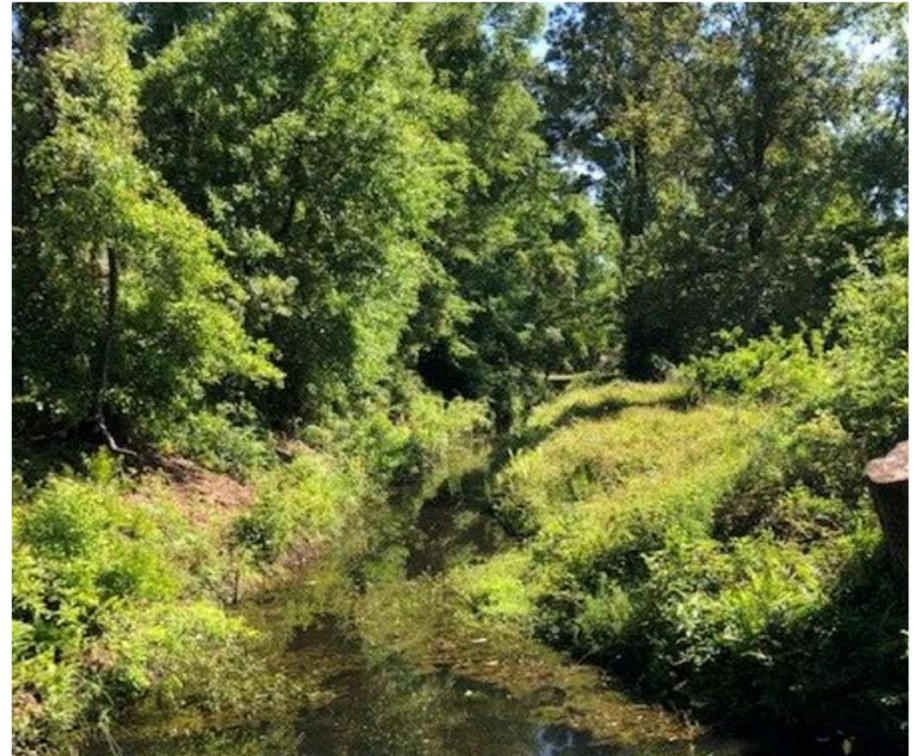


Our design needs to :

- Be less invasive
- Have a standard dumpster on land
- Be less expensive
- Be more scalable to various drains

Emily Haggard

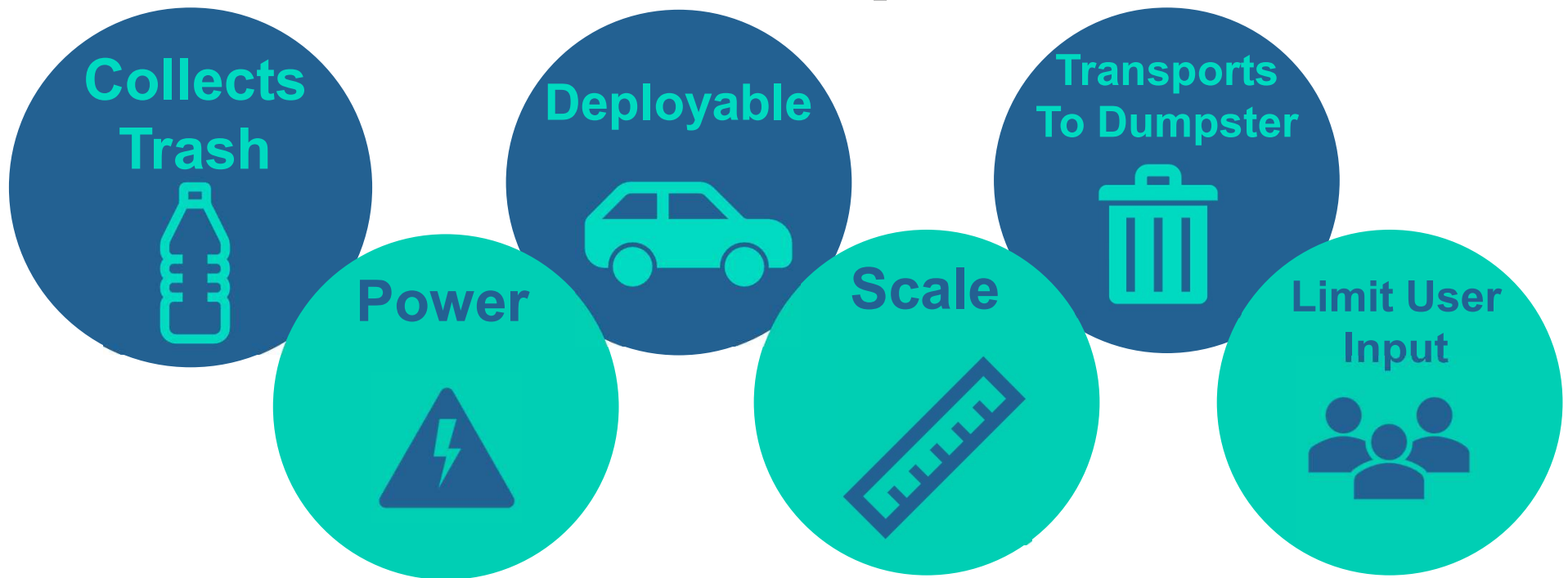
Location



Emily Haggard

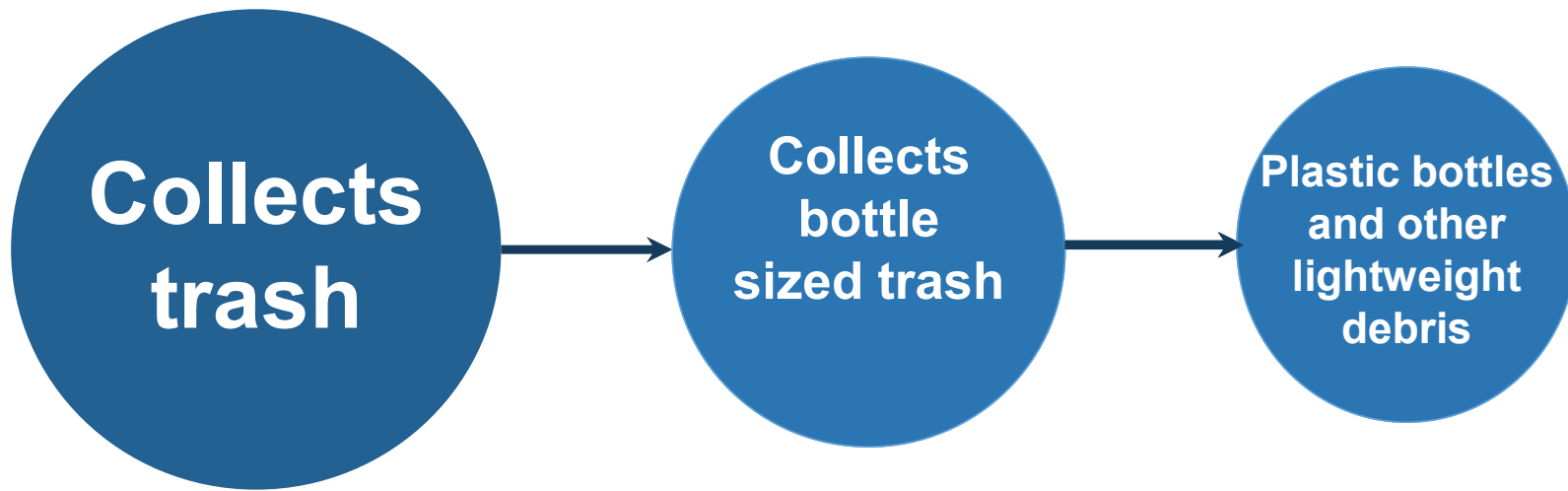


Functional Decomposition



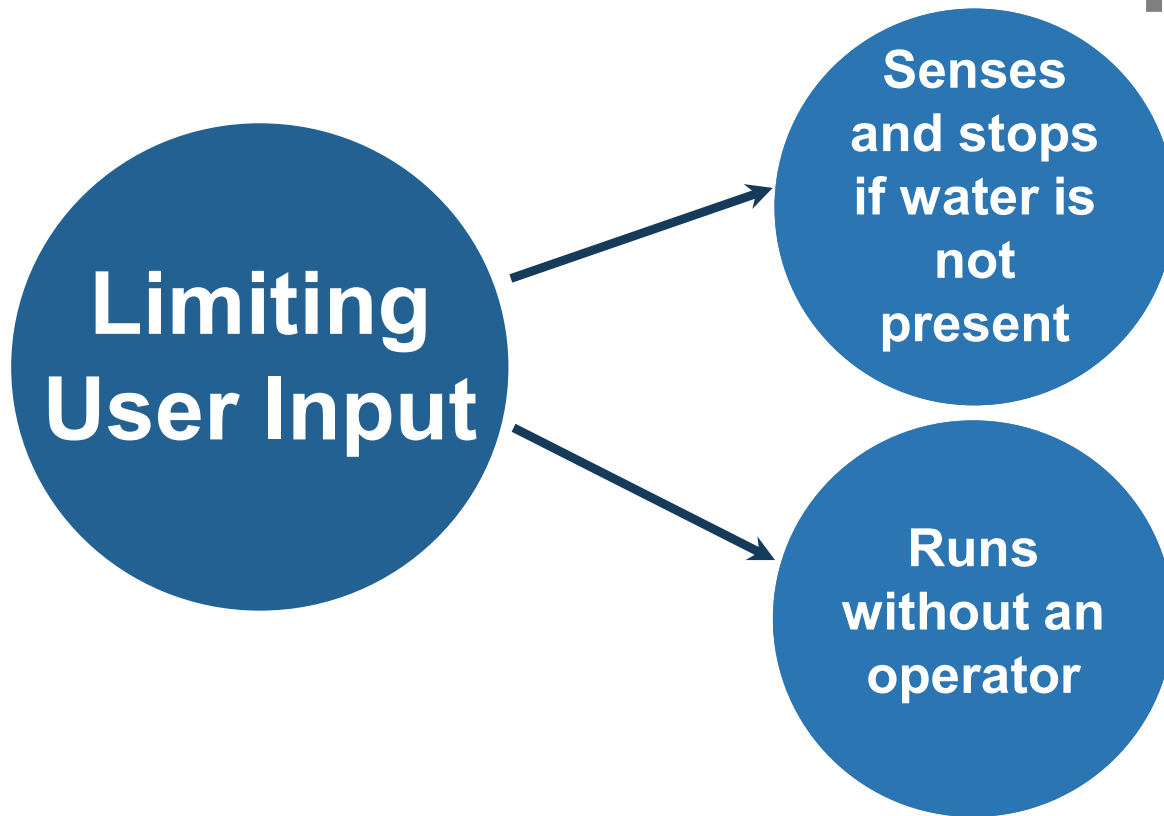
Emily Haggard

Functional Decomposition



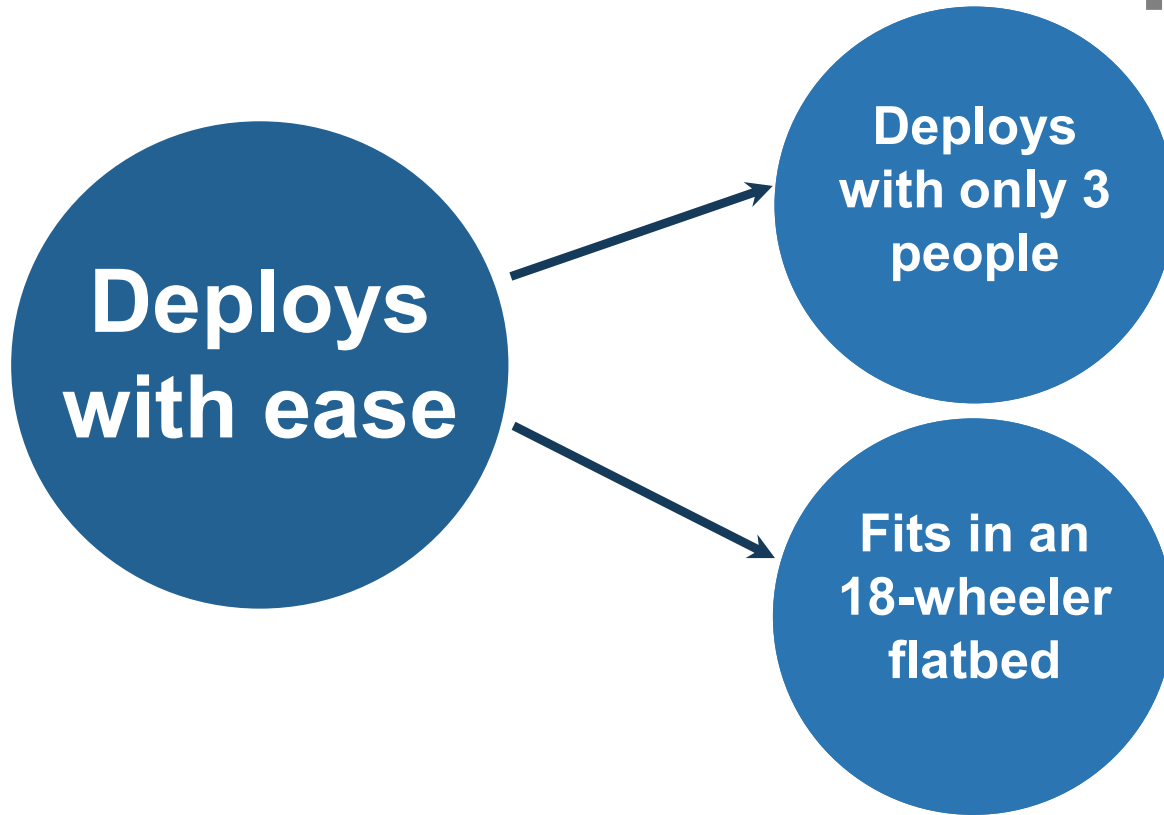
Emily Haggard

Functional Decomposition



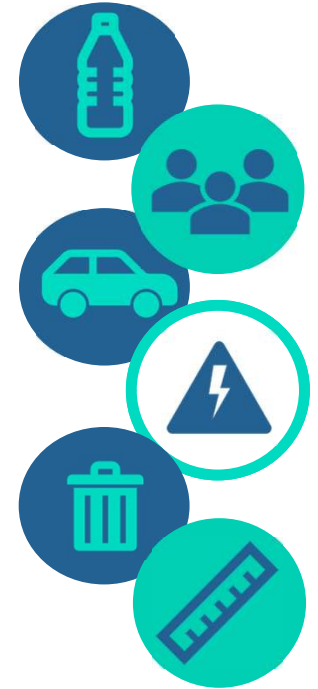
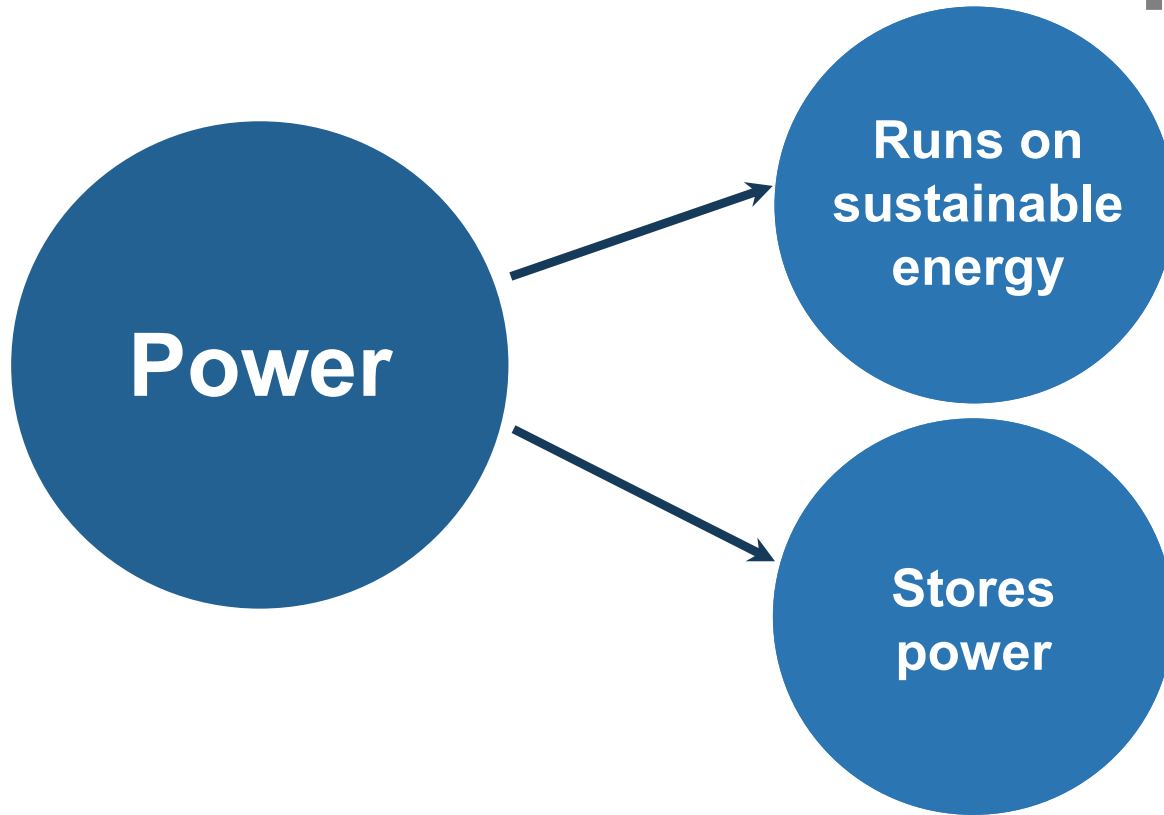
Emily Haggard

Functional Decomposition



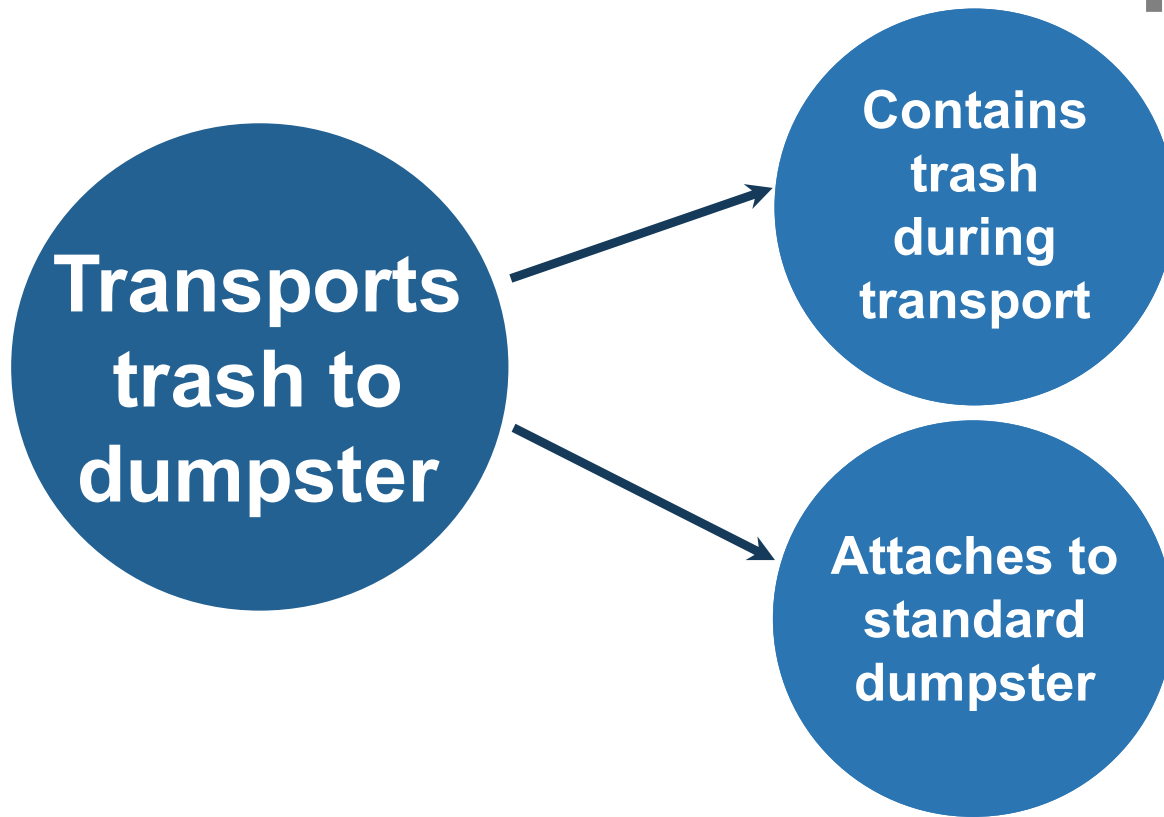
Emily Haggard

Functional Decomposition



Emily Haggard

Functional Decomposition



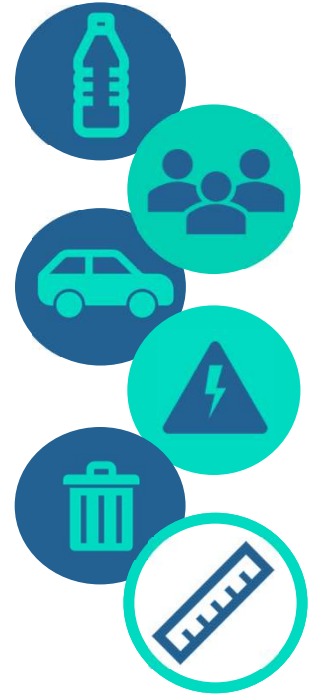
Emily Haggard

Functional Decomposition

Scales to
storm
drains

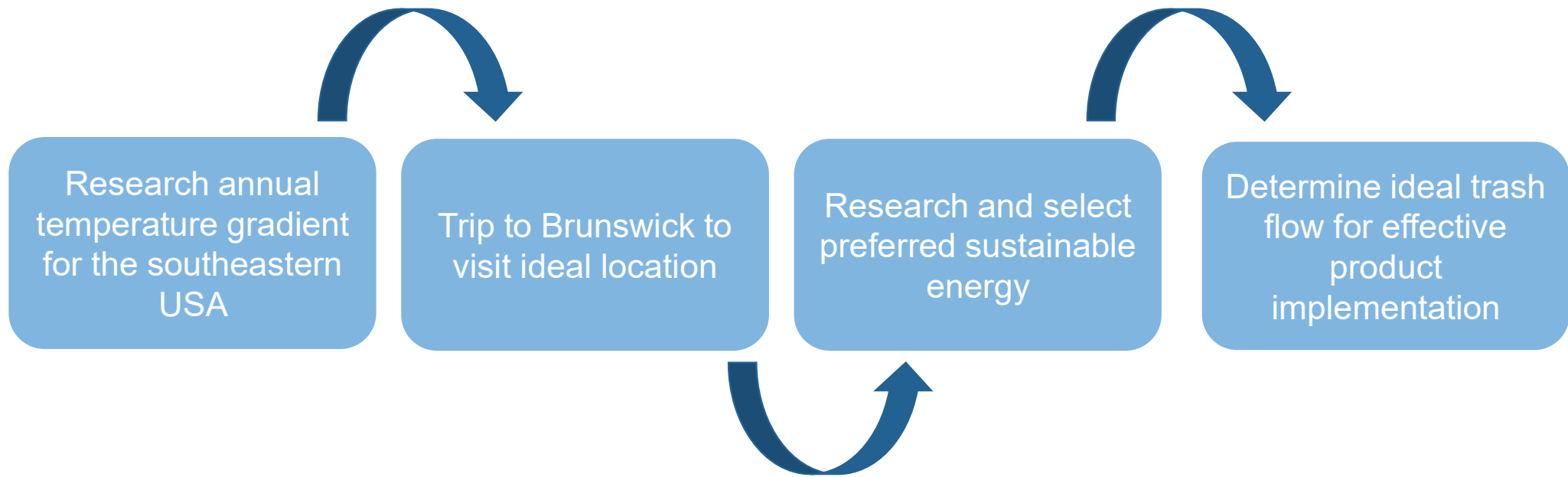


Versality &
adaptable



Emily Haggard

Future work...



Emily Haggard

Color Palette



2299 C
Color values:
RGB 164 210 51
HEX/HTML #A4D233
CMYK 41 0 84 0



2239 C
Color values:
RGB 0 207 180
HEX/HTML #00CFB4
CMYK 59 0 39 0



2199 C
Color values:
RGB 0 187 220
HEX/HTML #00BBDC
CMYK 77 0 16 0



1788 C
Color values:
RGB 238 39 55
HEX/HTML #EE2737
CMYK 0 88 82 0



647 C
Color values:
RGB 35 97 146
HEX/HTML #236192
CMYK 96 54 5 27



7535 C
Color values:
RGB 183 176 156
HEX/HTML #B7B09C
CMYK 10 11 23 19



75% Black
Color values:
RGB 64 64 64
HEX/HTML #404040
CMYK: 0 0 0 75



50% Black
Color values:
RGB 128 128 128
HEX/HTML #808080
CMYK: 0 0 0 50



25% Black
Color values:
RGB 191 191 191
HEX/HTML #bfbfbf
CMYK: 0 0 0 25