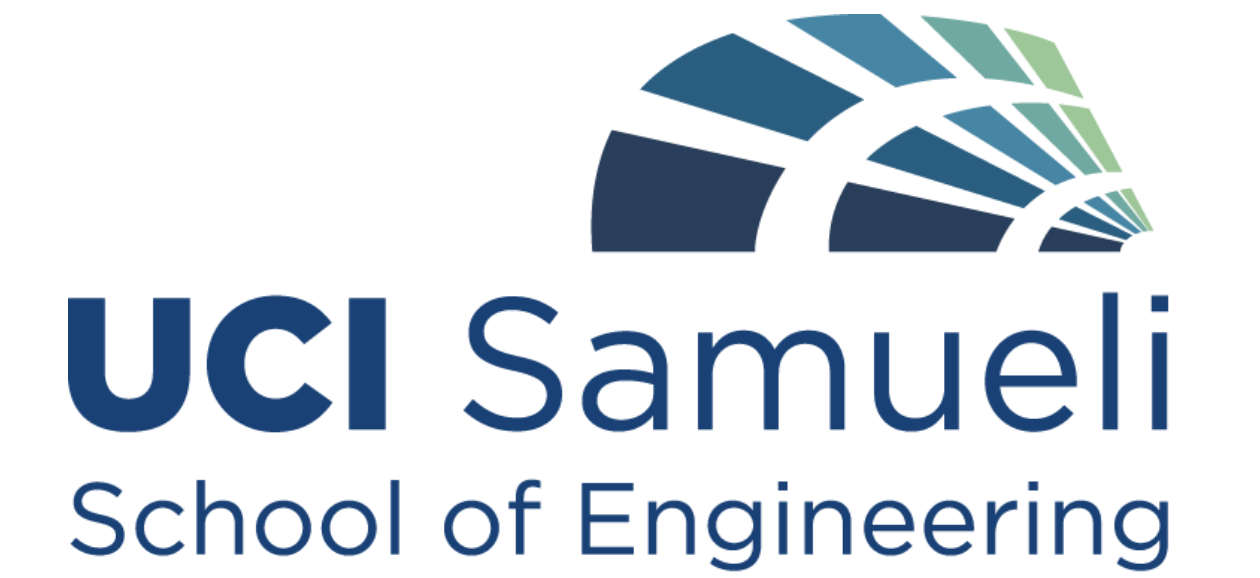


UCI AUTONOMOUS BOAT

Project Advisor: Professor Reinkensmeyer



BACKGROUND

The MicroTransat challenge was set up to encourage teams from around the world to cross the Atlantic ocean autonomously. As of today no one has done it successfully.



Above: Gortobot and Epson College team. Contact with both boats was lost about a week into the race

OBJECTIVE

To design and construct an autonomous boat with a power source that is capable of crossing the Atlantic ocean and competing in the MicroTransat challenge. To also be the first team in the world to complete the challenge successfully.

THE BIGGER PICTURE

As autonomous machines play a more integral part of our lives from robots in factories to automobiles, it is important to apply this technology to the next frontier: the seas.

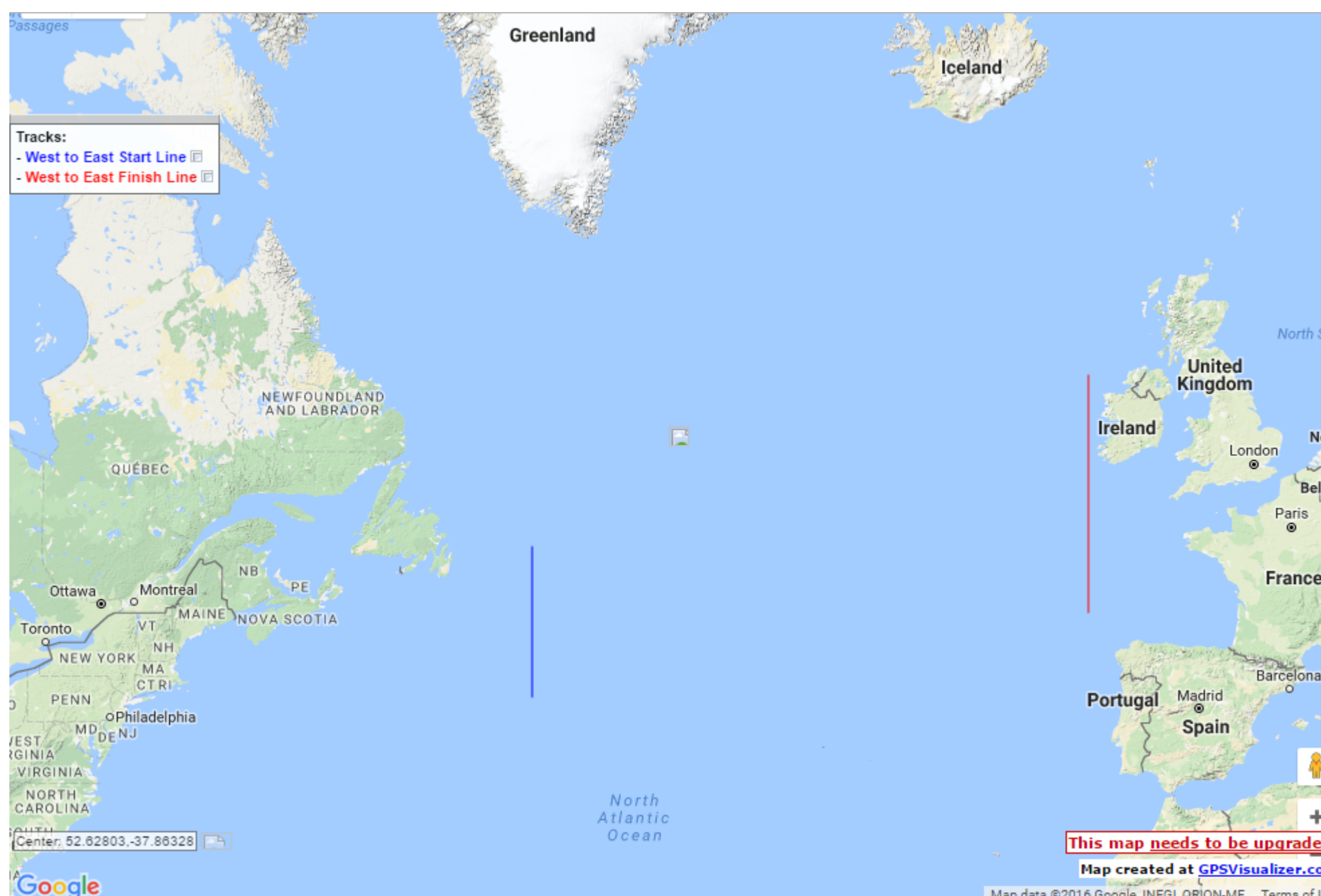
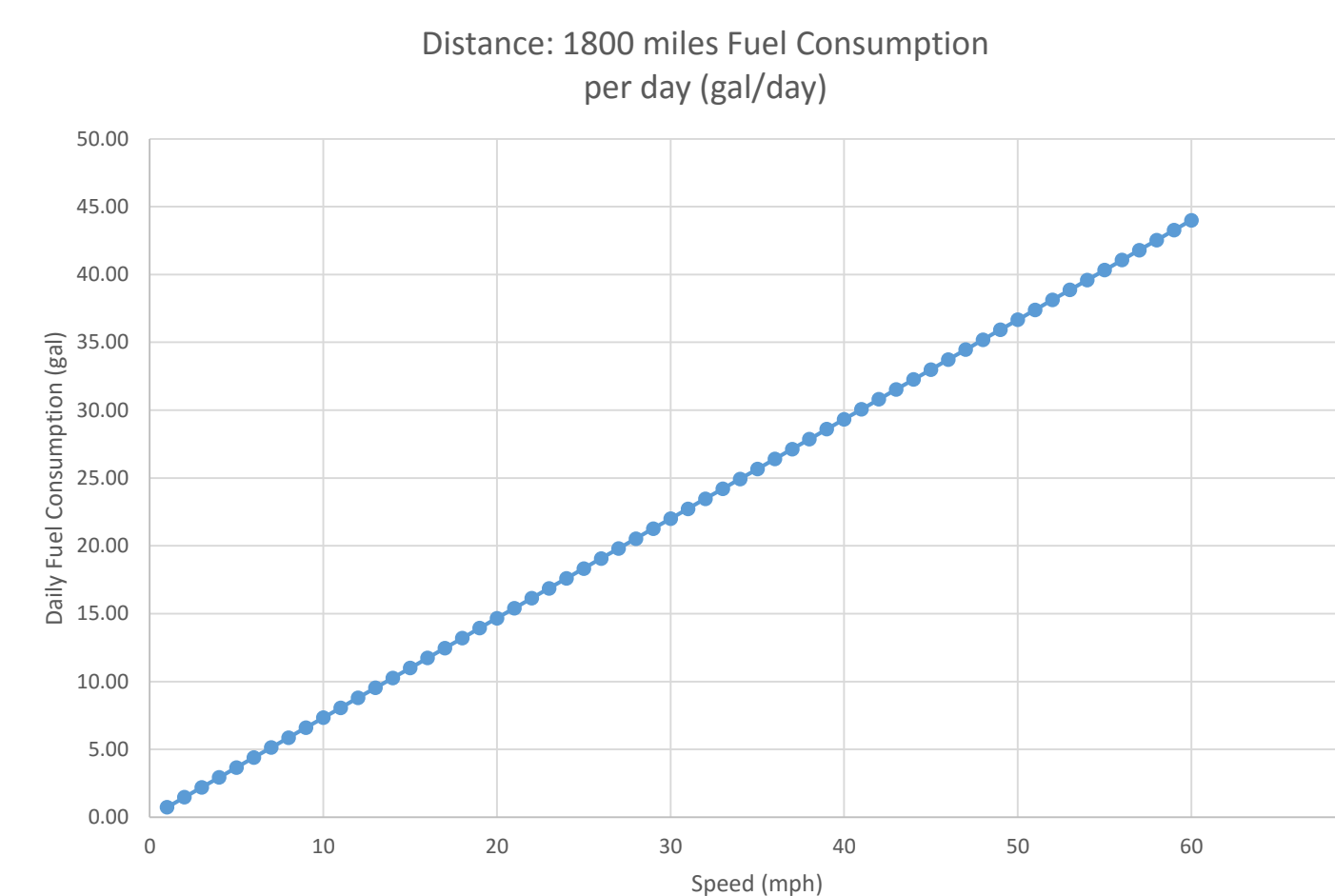
INNOVATION & DESIGN

Design will have to meet following criteria:

- (1) Autonomously steer itself
- (2) Able to supply enough power to whatever driving force and onboard computers
- (3) Engineering advanced enough for the boat to withstand the forces exerted on it by the ocean currents
- (4) Completely watertight so the sea water doesn't damage any onboard equipment



Above: The Scout Boat, which made it 1000 miles offshore and 3 months out on the sea before contact was lost with it about 2,000 miles before its final destination



Above: Map shows start and finish lines

TIMELINE

ID	Task Name	Duration	Start	Finish
FALL QUARTER				
1	Purchase Boat Hull	7 days	week 2	week 4
2	Make necessary engineering refinements	7 days	week 2	week 6
3	Have hull in Reinkensmeyers lab	21 days	week 4	week 6
4	decide on engine system	21 days	week 2	week 7
5	purchase engine system	7 days	week 6	week 8
6	mount eninge and prop in the hull of boat	28 days	week 6	week 10
WINTER QUARTER				
7	mount rudder and steering systems on hull	35 days	week 1	week 5
8	mount electrical and onboard computer	70 days	week 1	week 10
9	purchase gps sat connection	28 days	week 1	week 4
10	attach a keel	42 days	week 4	week 10
11	mount backup systems	21 days	week 7	week 10
SPRING QUARTER				
12	program onboard systems	35 days	week 1	week 5
13	necessary modifications	21 days	week 5	week 7
147	testing in open ocean	21 days	week 7	week 10

BUDGET

Item	Quantity	Cost	Source(s)	Total \$
Hull of Boat	1	150	Craigslis	150
Diesel Engine	1	2200		2200
250Watt Solar Panel	2	560		1120
Iridium Go	1	970		970
				per
Iridium Data Plan	5	270	month	1350
Raspberry Pi	2	70		140
Arduino	2	80		160
GPS	1	40		40
Deep Cylce Battery	1	210		210
WaterProof Electrical Box	1	150		150
Bracket Mounts	5	120		600
				McMaster
Shaft	1	50	Carr	50
Propeller	1	75		75
WaterProof Shaft Housing	1	120		120
Rudder Assembly	1	420		420
Electric Propeller Backups	2	200	SeaDoo	400
Total Cost:				8155

