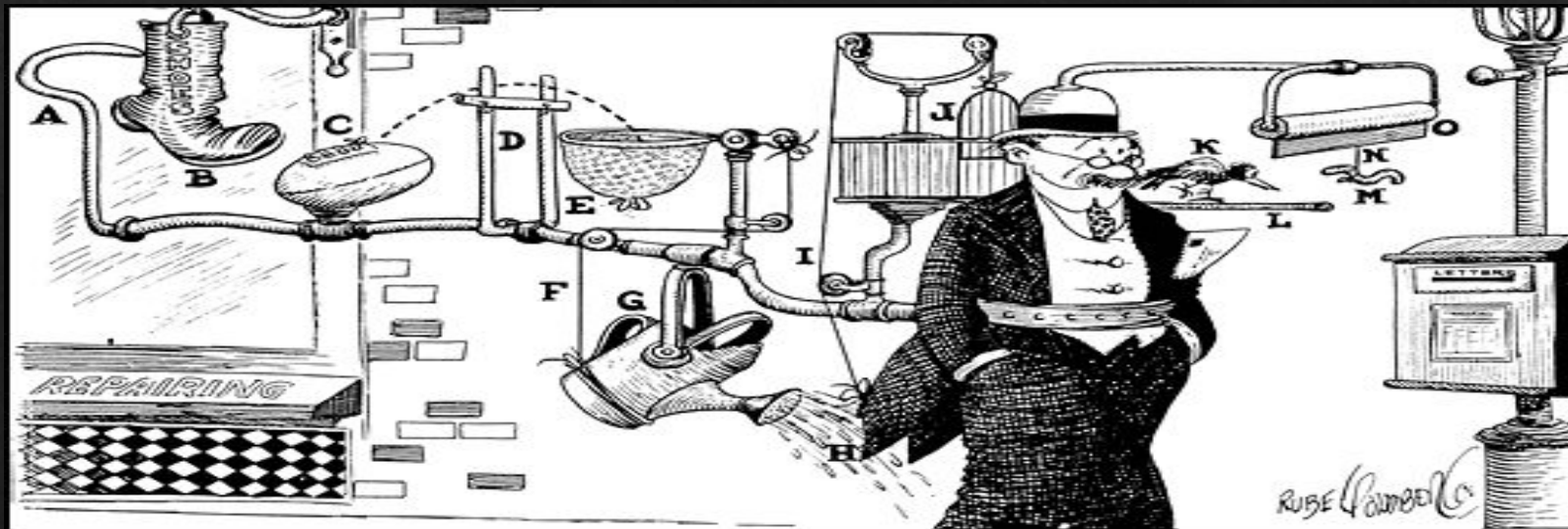


Rube Goldberg Machine

Northern Arizona University

August 7th, 2018

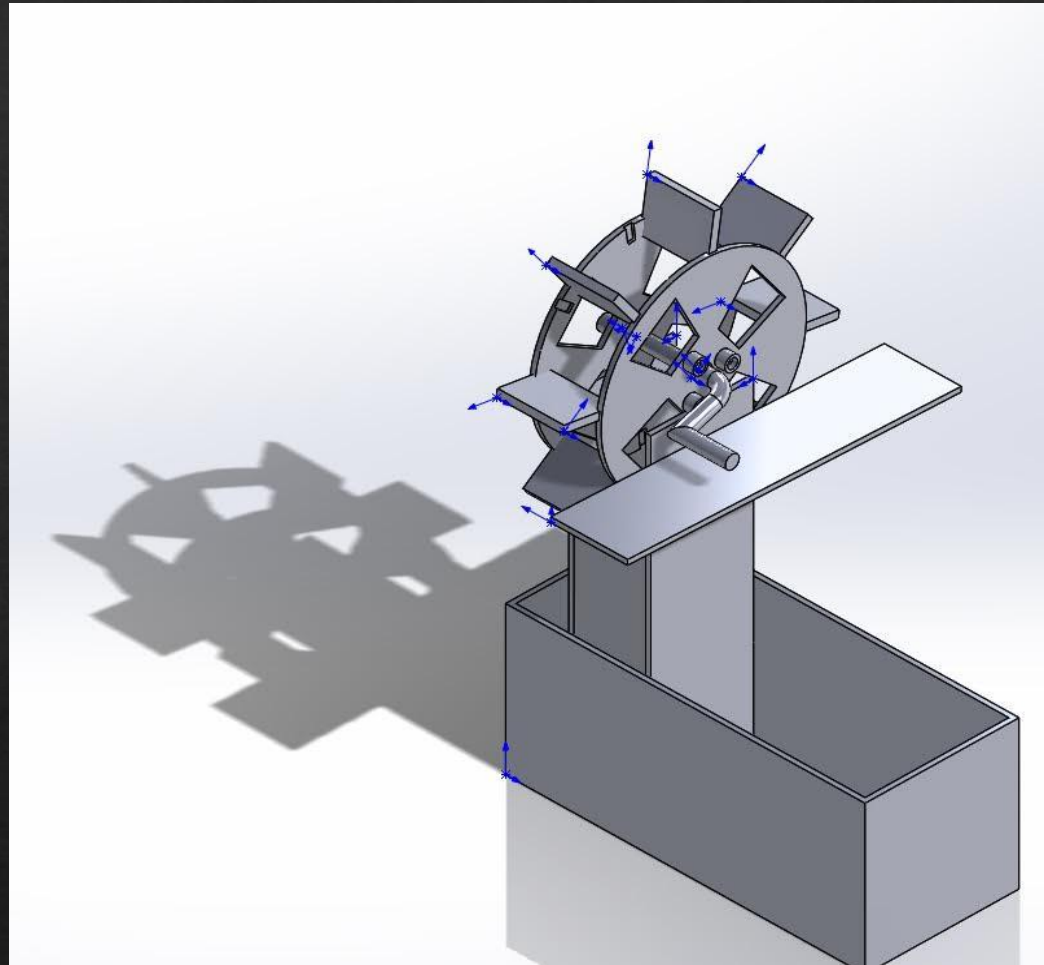
Abdulla Almutairi, Fehaid Al-marri, Hamad Al-marri, Naser Ahmad, Mohammed Abu karbal, Yousef Ahmad



Topic 1: Project Description

- ▶ The objective is to create a series of Rube Goldberg steps that are efficient, reliable, and resettable.
- ▶ The last step is unidentified until next semester.
- ▶ To accomplish the goal, the steps should involve engineering aspects.
 - ▶ Focused ideas: Spring, Fluid, Magnets, Gears, Aerodynamics, Sensors
- ▶ There is need to make a prototype for the considered steps by the end of the semester.
 - ▶ Client: Dr. Trevas & Stakeholders: NAU Facility

Topic 2: Design Description



Yousef Ahmad

August 6, 2018

Topic 2: Design Description

- First the motor switch must be turned on.
- After the switch has been turned on, the diaphragm pump will pump the water from the container to hit the water wheel.
- The water hits the waterwheel and will make it rotate.
- A human toy is attached to the shaft of the water wheel.
- Human start rotating in the direction of rotating wheel.

Topic 2: Design Description

<https://youtu.be/DJJ7u4C8hQQ>

Topic 3: Design Requirements

Customer Requirements	Weight %
Reliability	5
Durability	5
Resetable	5
Cost effective	3
Entertaining	3
Safety	5
Sound	3
Timing	5

Engineering Requiements	Target Values
Number of Steps	20 - 75
Process Duration	Less than 2 minutes
Size	10 ft x 10 ft
Speed & Sound	
Reset Time	0

Topic 4: Schedule

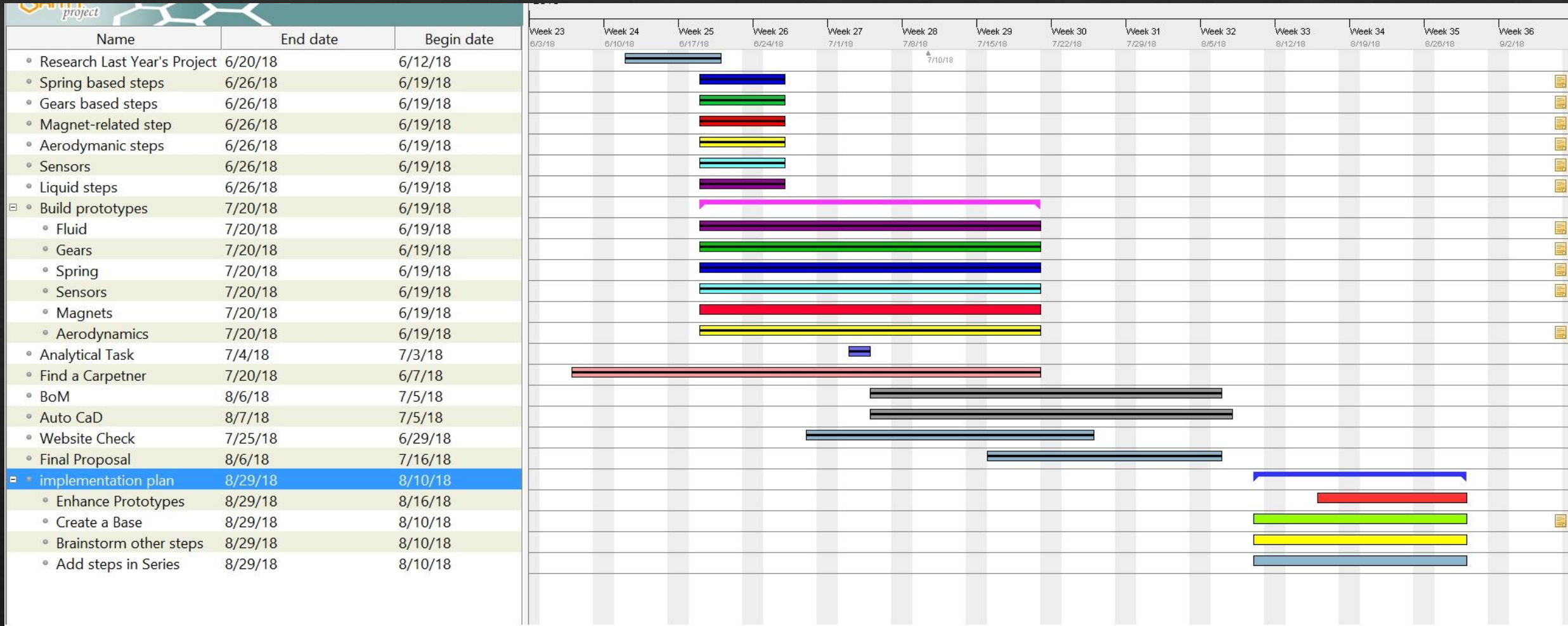


Figure.15

Budget

Part	Part Name	Qty	Description	Dimensions	Cost
1	EUDAX 6 set	1	A set of gears, wires and DC motors	7.1 x 4.5 x 1.5 inches	\$9.99
2	Wood Board	1	Attach items on top of board	6 x 4 inches	\$3.99
3	Gorilla 7500101 Super Glue	1	To glue items	0.9 x 3.4 x 6.6 inches	\$3.79
4	ELEGOO KIT	1	A set of items we need to design the electric cericle	13.7 x 8.4 x 1.9 inches	\$59.99
6	Balloon car	1	The car has ballon that help it to move	7*3.5*1.5	\$8.50
7	Cardboard	1	It is the base of the prototype	18x14x12-Inch	\$2.77
8	Golf ball	1	It is used to hit he target	1.68 inches in diameter	\$9.80
9	Tape	1	To attach the part with each other	2.5 inches	\$2.18
10	Hair dryer	1	The source of the air that helps moving the car	3.6 x 9.1 x 10.6 inches	\$9.94
12	Magnet Pack	1	6 of them are small which are on CD	(6) 0.51 x 1.93 inches	\$8.99
13	CD	1	It is on top of DC motor, using to rotate it	4.72 inches	\$0.99
15	Wood slats	2	Base for the spring launcher and Diaphragm Pump	7.25 x 2.8 x 0.25	\$4.88
16	Wood sticks	1	Path for the ball and bases		\$2.47
17	Kabub sticks	1	Path for the ball and bases		\$3.97
18	Water and Air Diaphragm Pu	1	Water pump	95mm(L)x47mm(W)x36mm(H)	\$7.68
19	Vinyl tube	1	Tube for the Water pump	20inch Length	\$4.93
20	Chrome Steel Bearing Balls	1	Ball	15.9mm	\$12.95
21	PVC cap pipe	1	Base for the launcher	1/2 in. x 10 ft	\$2.20
22	Fidget spinner	2	Fidget spinner	DIAMETER: 2.95 inches. Thickness	\$2.00

Mohammad Abu Karbal

- **Available budget \$500**
- **Anticipated expenses \$178.56**

August 6, 2018

Budget

23	Springs	1	Small pack of different types of springs	Steel	Different types	\$4.37
24	Injector Syringe Needle	1	Spring launcher	Steel	Stainless steel Size: 22cm x 7cm (L x W)	\$7.59
25	Rayovac Lantern Battery 6V	1	Battery for the Diaphragm Pump	Steel	6V	\$4.59
Total Cost Estimate:						\$178.56

Mohammad Abu Karbal

- **Available budget \$500**
- **Anticipated expenses \$178.56**

August 6, 2018

Any

Questions