# I.o.Toys

## Bridging the Physical and Digital World through Toys

Amihan Amargo, George Agcopra, Maria Aparicio, Ian Pareja

Advisor: Terry Wang

SAMUELI SCHOOL OF ENGINEERING
UNIVERSITY of CALIFORNIA · IRVINE

## Background

**Internet of Things** is the environment where objects in real life can be used to send or receive data, eliminating direct human-to-computer interaction.

Our proof of concept must address the following:

- Bridge the physical and digital world through toys
- Bring the Internet of Things (IoT) to the future of toys
- Make existing toys more engaging by adding a digital element

## Goal & Objectives

**Goal: Create a proof of concepts that connects the physical and digital worlds of toys.**

- Objective 1: Prototype Concept using Arduino Uno
- Objective 2: Second prototype of concept to compact design
- Objective 3: CAD a controller and that is wireless

## Requirement

*Function:* The proof of concepts must wirelessly connect a handheld physical toy/object to a screen

*User:* The proof of concepts should be intuitive to the specified audience (7-11 year olds)

*Maintenance:* The proof of concepts should have an internal power supply so it can be used unplugged.

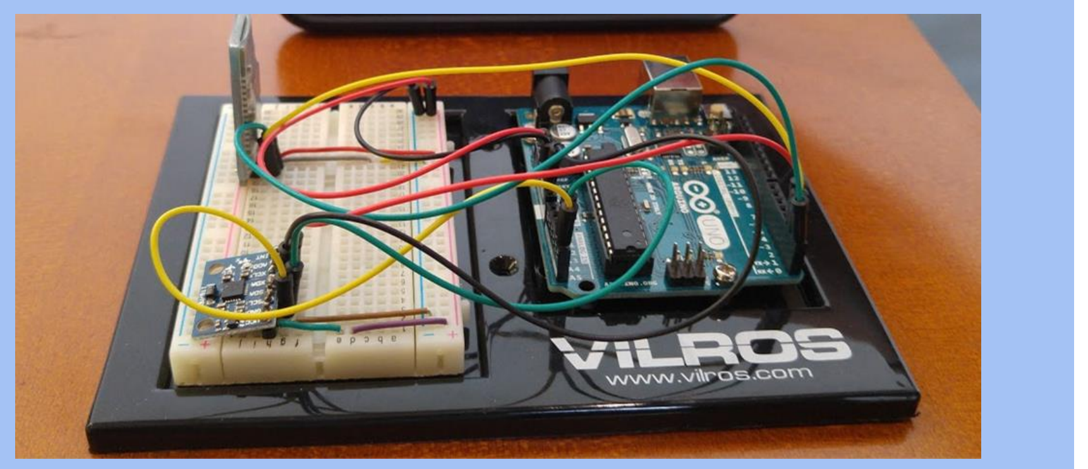
## Current Status

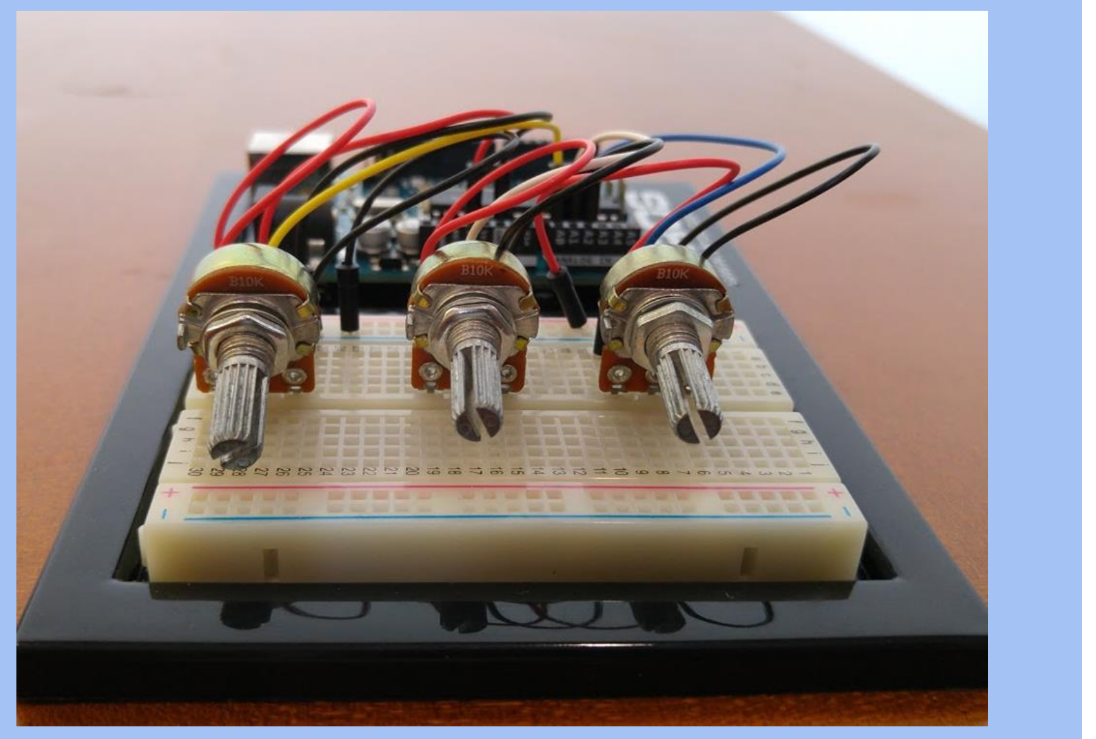
### Proof of Concept: Shapeformer

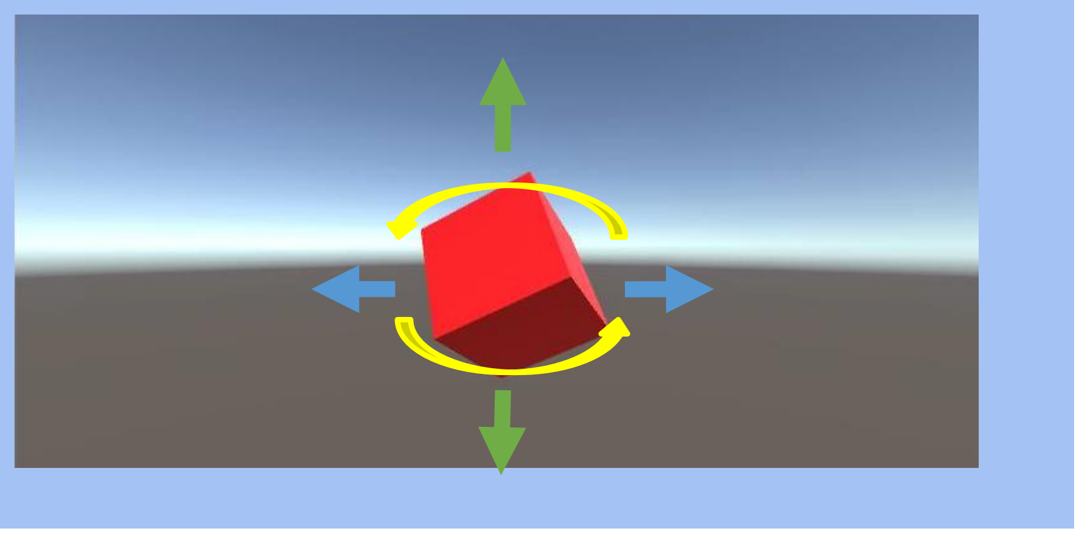
Our proof of concept is to create an intuitive, hand-held controller that is wireless and appropriately shaped for our audience (7-11 year old). Each component within the controller will change an aspect of a shape produced on Unity, a game development platform. 3 potentiometers will be added to change the following:

- Length
- Width/Radius
- Color

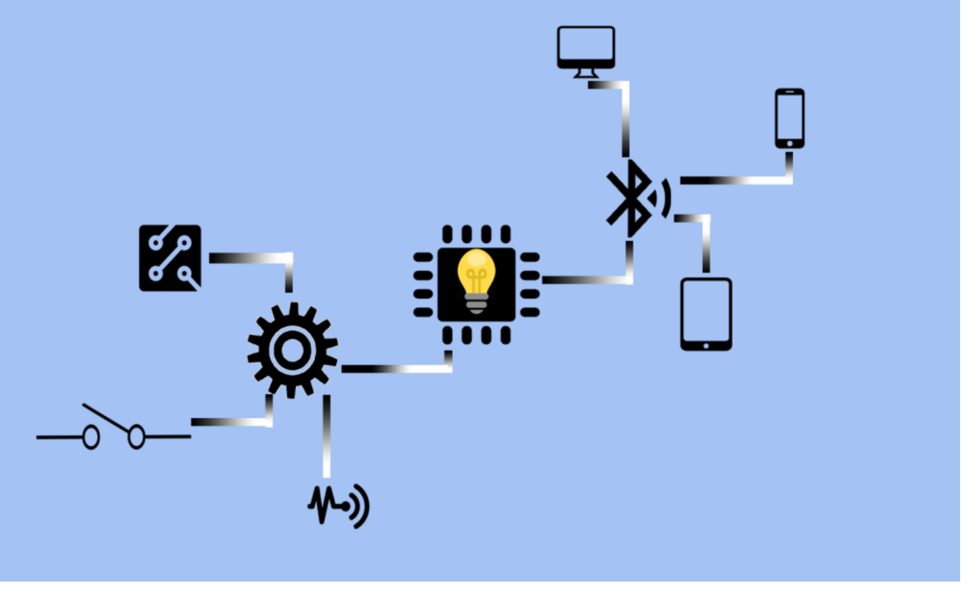
Also, inside the controller is an accelerometer that will change the orientation of the shape and a Bluetooth chip that will allow it to wirelessly connect.



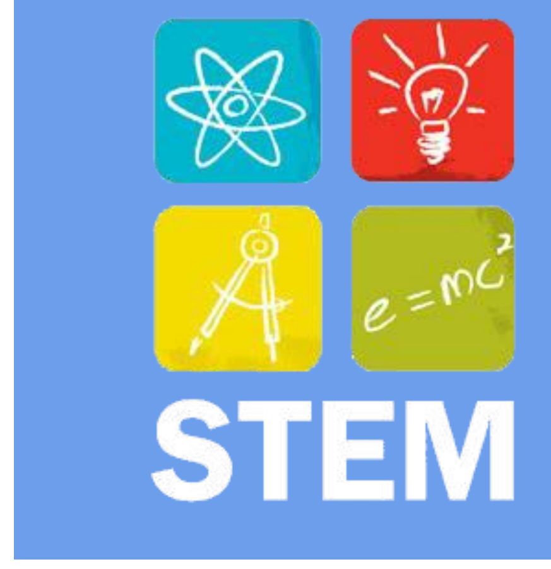




## Innovation



## Bigger Picture

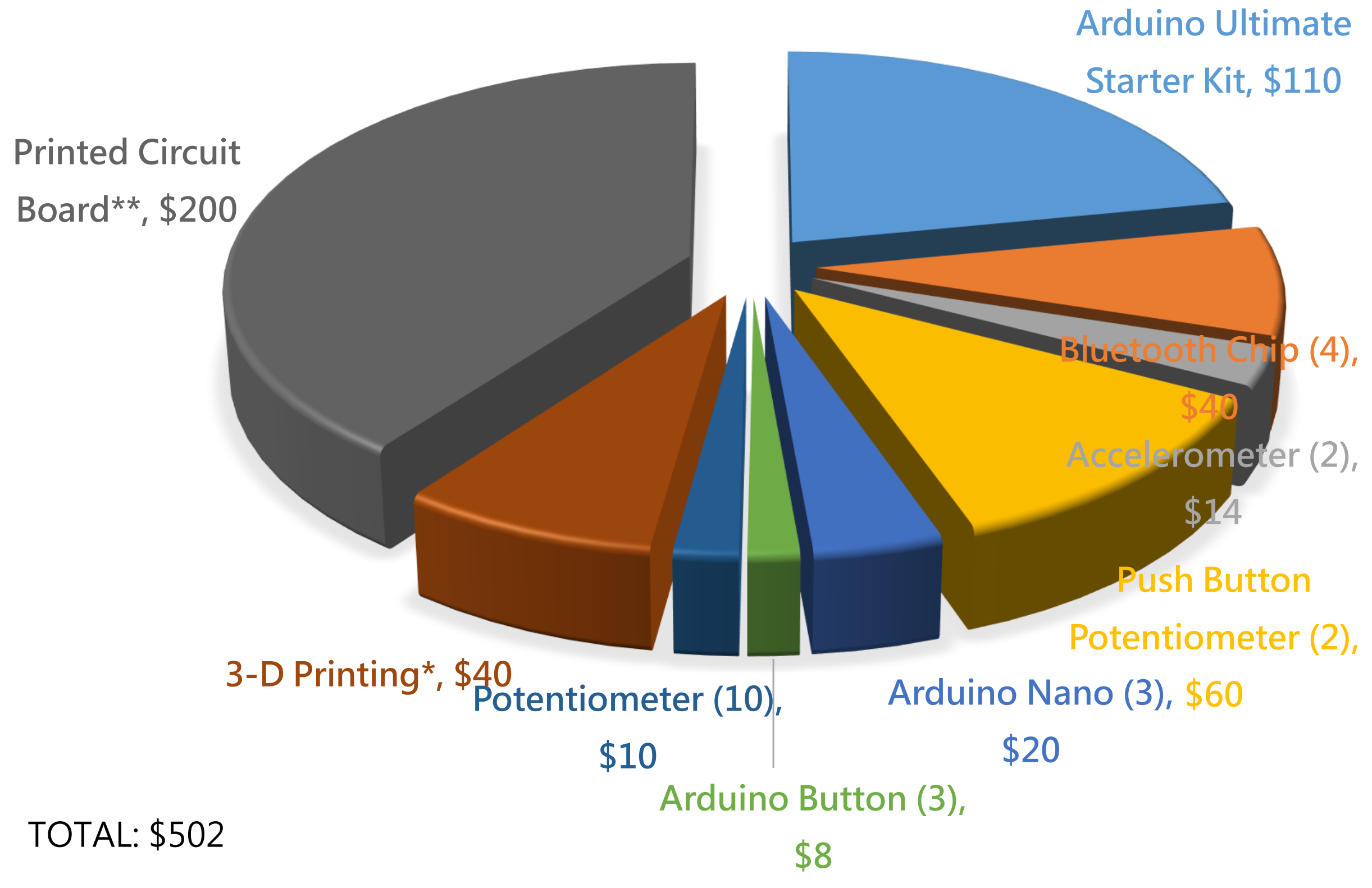


We look to promote Computer-Aided Design to children at an early age. With 3D printing increasing in popularity, children can look forward to using their imagination to potentially design their own toys while learning the basics of CAD. Science, technology, engineering, and math (S.T.E.M.) done in a fun way!

## Next Steps

- Consolidate components
- Simplify design
- Marketability

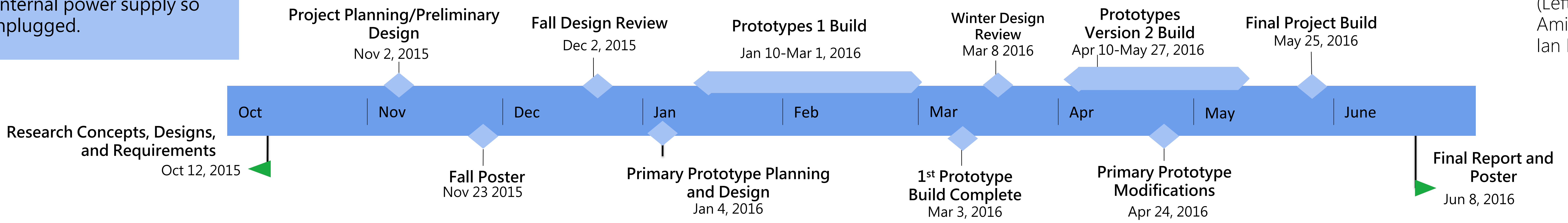
## Budget



TOTAL: $502

*Estimated cots

(Left to Right)
Amihan Amargo, Maria Aparicio, Ian Pareja, Brennan Agcopra



Research Concepts, Designs, and Requirements
Oct 12, 2015

Project Planning/Preliminary Design
Nov 2, 2015

Fall Poster
Nov 23 2015

Fall Design Review
Dec 2, 2015

Primary Prototype Planning and Design
Jan 4, 2016

Prototypes 1 Build
Jan 10-Mar 1, 2016

1st Prototype Build Complete
Mar 3, 2016

Winter Design Review
Mar 8 2016

Prototypes Version 2 Build
Apr 10-May 27, 2016

Primary Prototype Modifications
Apr 24, 2016

Final Project Build
May 25, 2016

Final Report and Poster
Jun 8, 2016

Sponsored by Mattel

Contact: Amihan Amargo
aamargo@uci.edu