**Meeting Minutes #4**

**Date: March 9, 2018**

**Agenda:**

* Select the materials to be used in the product
* Decide on methods to replicate the product as closely as possible using the materials available for the product

**Discussion:**

1. **Material Selection**

* The materials used on the product should be non-ferrous
  + - The tesseract has a magnet inside so it would stick to magnetic materials
    - This can disturb the process
      * If the cube sticks to a part of the robot the cube might not be able to be retrieved and placed under the pyramid correctly
    - Aluminum, carbon fibre, Lexand, acrylic and wood are some non-ferrous options
      * Aluminium components can be used for portions of the robot that are under a lot of loading and need to be relatively strong and non-brittle

Much lighter than steel and non ferrous

* + - * Acrylic is a good material to use for parts of the robot that are not under much loading

Acrylic can be laser cut easily so manufacturing different parts from it is very simple.

Light weight

Acrylic is brittle so it cannot be bent into different shapes

Glue with small connectors (also cut from acrylic) could be used to make 3 dimensional designs from the laser cut piece

**Concerns –** since acrylic is brittle the parts made from it would be easily damaged if they fall or are loaded in a non-favorable angle.Gluing the pieces will also result in mechanisms with low structural integrity as glue might not hold the pieces together securely enough

* + - * Lexand components would be stronger that those made out of acrylic and they can be bent to make the 3-dimensional mechanisms on the product.

Although they cannot be laser cut, they can be machined using plastic specific tools and machines.

Lexand is a good alternative for the cube and pyramid retrieval mechanisms.

1. **Prototype Design**

* The 4 inch VEX wheels available in the lab will be used on prototype instead of the 5” elastic wheels selected for the product.
  + These wheels are harder that the wheels selected for the product so they may have some traction problems when going over the conduits
    - Extra grip might need to be added to make the drive base more closely replicate the product
* ----- VEX motors are used instead of the TYPE OF MOTOR selected for the drive base.
  + These motors are not as strong as the motors selected for the product so they will have to be geared differently
* Use laser cut acrylic pieces for the cube pick up and the pyramid intake
  + Must note that this will be less durable than the actual mechanisms since acrylic is more brittle than Lexand and aluminium.

**To be completed:**

1. Complete the CAD for the intake and cube pick up parts that need to be laser cut for the prototype
2. Complete the prototype
3. Finalize the Product materials and designs.