Pneumatic Tube Exhibit for Discovery Space, Phase II

Overview
The goal of this project is to design and construct a working pneumatic tube exhibit, which will act to spark curiosity in young children as well as to help collect donations. Visitors to Discovery Space of Central Pennsylvania will be able to place dollar bills into the tubing and watch as their money flows through the tube to a donation box. The phase II design team was able to use the phase I team’s prototype as a reference to use for building the final exhibit.

Objectives
The team’s objective was to design and construct an exhibit that will meet all of the customer’s needs, most importantly to stimulate curiosity and spark imagination in children. The exhibit must be kid safe and kid friendly, while remaining interactive.

Approach
- Visited museum, interviewed staff, observed children’s interaction with current exhibits
- Reviewed Phase I design teams deliverables and final report
- Researched patents and similar exhibits at other museums
- Determined customer needs, turned needs into specifications through QFD
- Generated and selected design concepts
- Researched part costs, finalized prototype mechanical and electrical design
- Determined construction schedule
- Completed construction, facing real-time obstacles as construction progressed
- Tested exhibit to ensure full functionality and safety
- Presented exhibit to museum staff for feedback and final refinement
- Completed final reports and deliverables

Outcomes
- Exhibit consists of two tubing tracks and fans. One track is for balls, scarves, and other objects and the other track is used to collect donations
- Fans supply air as power source
- The electronics allow users to choose which track to use by pushing one of two buttons
- LEDs light up the tubing tracks and sound is played when donations are made