

# Team 515 Music Machine

4-Oct-2018

Jasmine Gay

Anjani Good

Isaac Guettler

Christian Morales

Taylor Shelby



# Team Introductions



**Jasmine Gay**  
Mechanical Systems  
Coordinator



**Anjani Good**  
Electrical Systems  
Coordinator



**Christian Morales**  
Power Systems  
Engineer



**Isaac Guettler**  
Systems Engineer



**Taylor Shelby**  
Audio Specialist

Anjani Good



# Sponsors



**Dean Murray Gibson**



**Mrs. Faye Gibson**

Anjani Good





# Project Overview

**Anjani Good**

# Objective

The objective of this project is to create a portable device which utilizes musical and visual elements to engage an audience for the purpose of representing the FAMU-FSU College of Engineering to the public.

Anjani Good



# Orchestrion

A machine that plays music and is designed to sound like an orchestra or band



Anjani Good



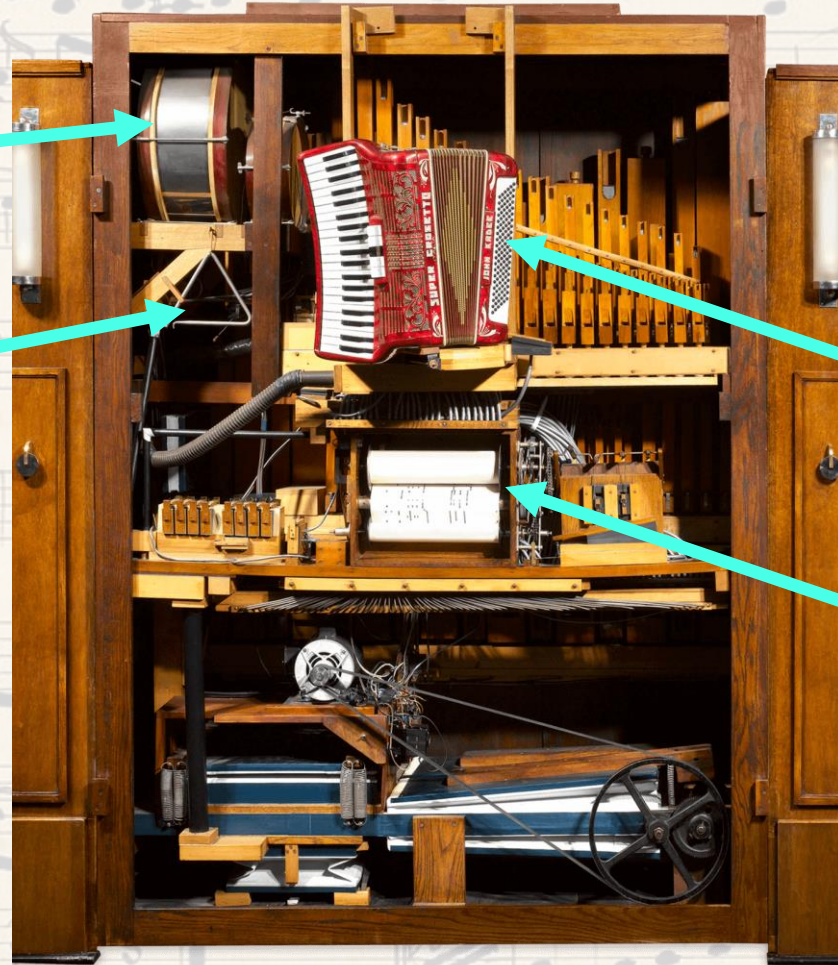
# Orchestrion

Drum

Triangle

Accordion

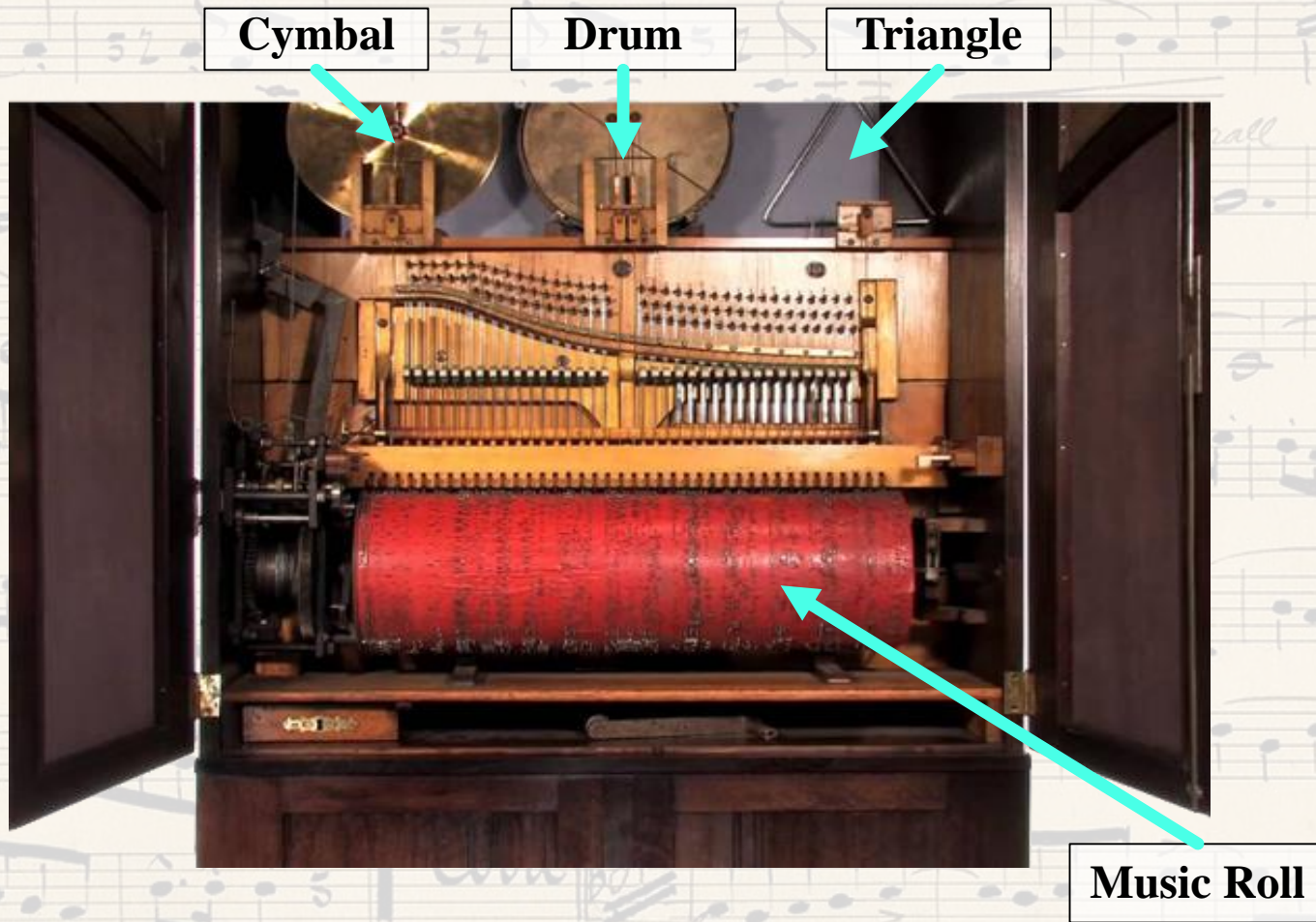
Music Roll



Anjani Good



# Orchestrion



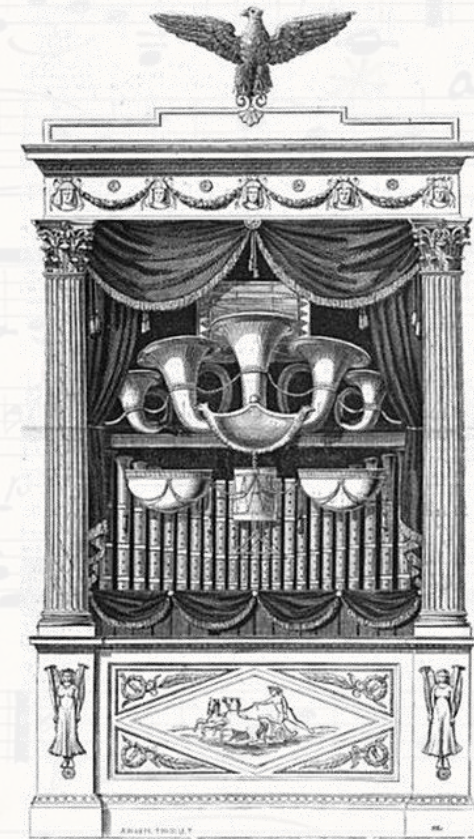
Anjani Good





# History

- First ever Orchestrion was invented in 1805 by Johann Nepomuk Mälzel
- Generally created using a large pinned cylinder or by a music roll
- Beethoven's "Wellington's Victory"



Panharmonicon

# Inspiring Devices



Music box



Wintergatan's Marble Machine



Calliope

Anjani Good



# Customer Needs

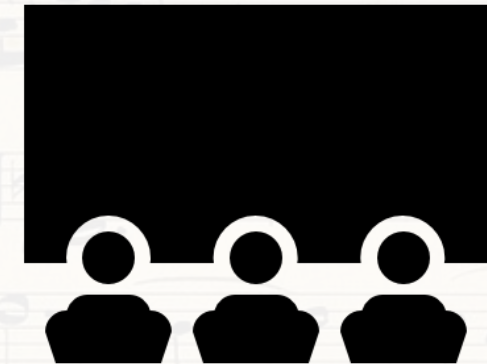
The  
Customer  
*is*  
Always  
Right



- Attention grabbing
- Serves as a public relations tool



- Play a recognizable song
- Incorporate mechanical and electrical components



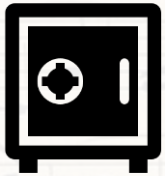
Anjani Good



# Customer Needs

The  
Customer  
*is*  
Always  
Right

- Portable



- Durable



- Self-explanatory to users with no music experience



- Device quality must meet university standards

Anjani Good

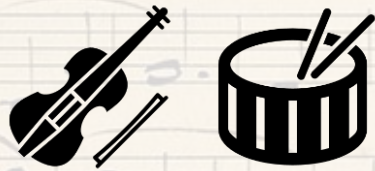




# Project Scope

## Taylor Shelby

# Key Goals



Plays a recognizable tune



Intrigues an audience



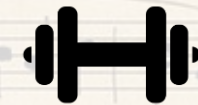
Portable



Serves as a public relations tool



Aesthetically pleasing



Durable

Taylor Shelby



# Primary Market

- Dr. Murray & Faye Gibson
- Students at the FAMU-FSU College of Engineering
- Alumnae/Alumni



Taylor Shelby



# Secondary Market

- Legislative officials
- K-12 Students
- Smithsonian Museum (ACCelerate)



Taylor Shelby





# Assumptions



The rights to the target song are attainable



Not required to play more than one song



The size is no larger than an interior door

Taylor Shelby



# Stakeholders

- Dean Murray Gibson and Faye Gibson
- Shayne McConomy
- Patrick Hollis
- Tisha Crews Keller
- FAMU President Larry Robinson
- FSU President John Thrasher



Taylor Shelby

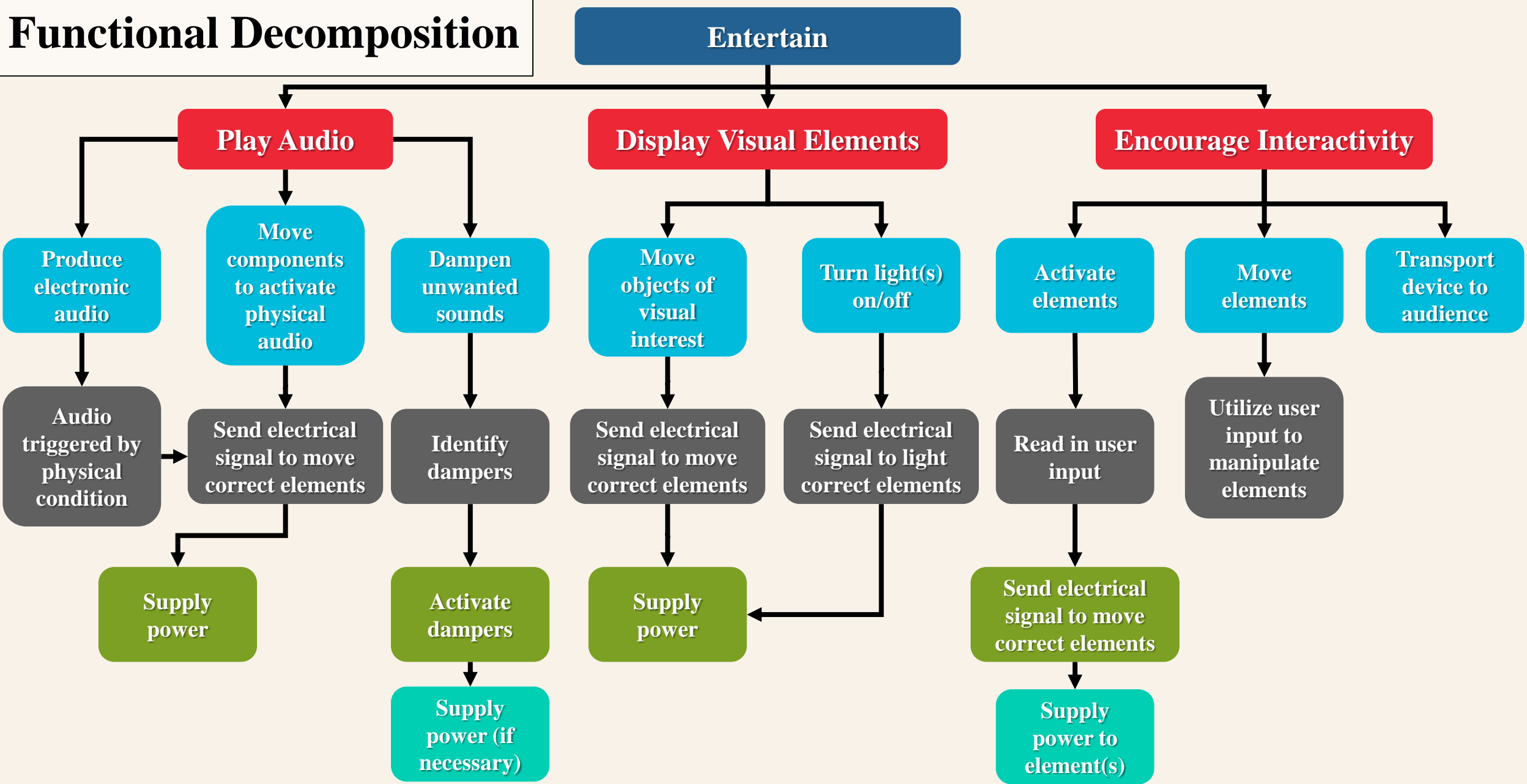




# **Functional Decomposition**

## **Taylor Shelby**

# Functional Decomposition



Taylor Shelby



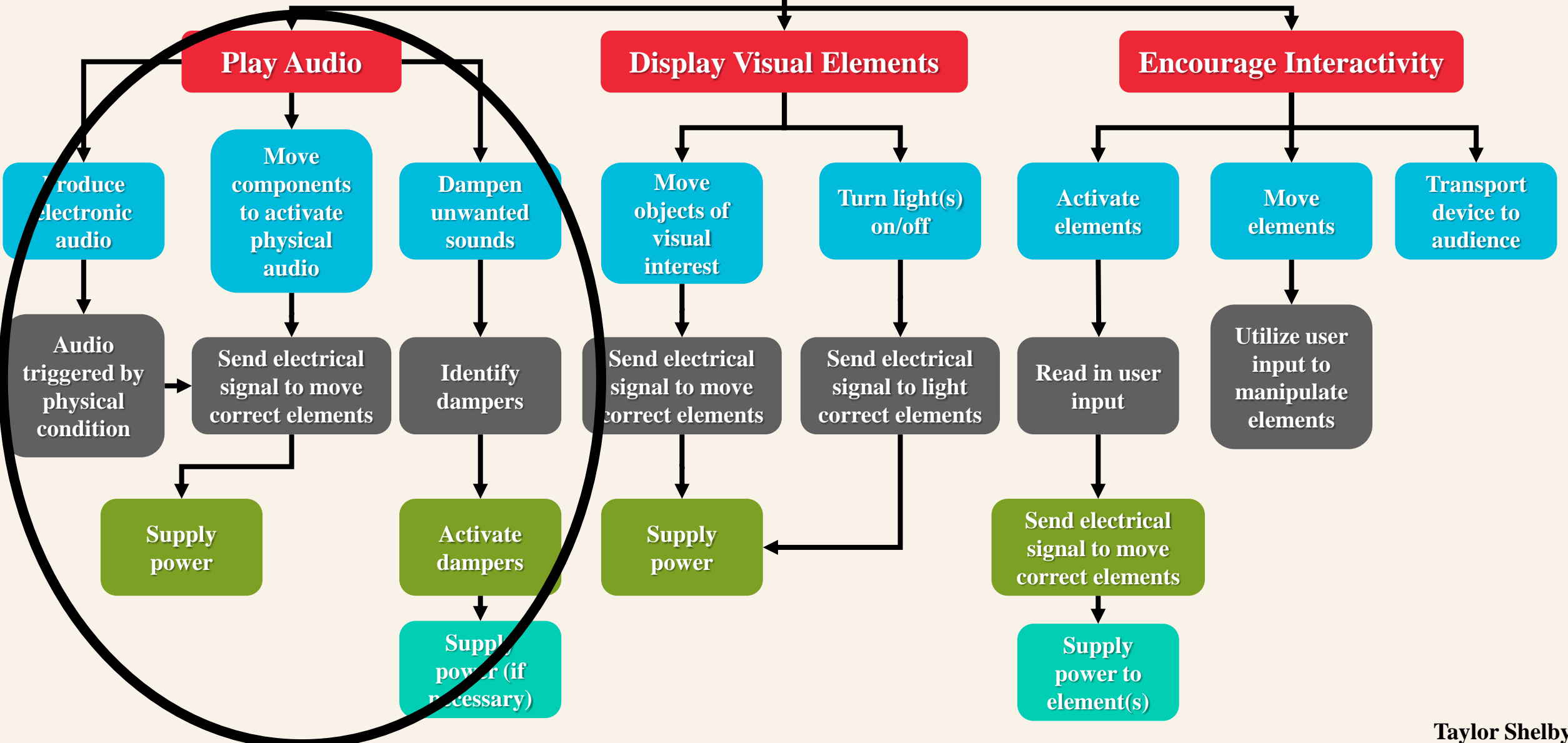
# Functional Decomposition

Entertain

Play Audio

Display Visual Elements

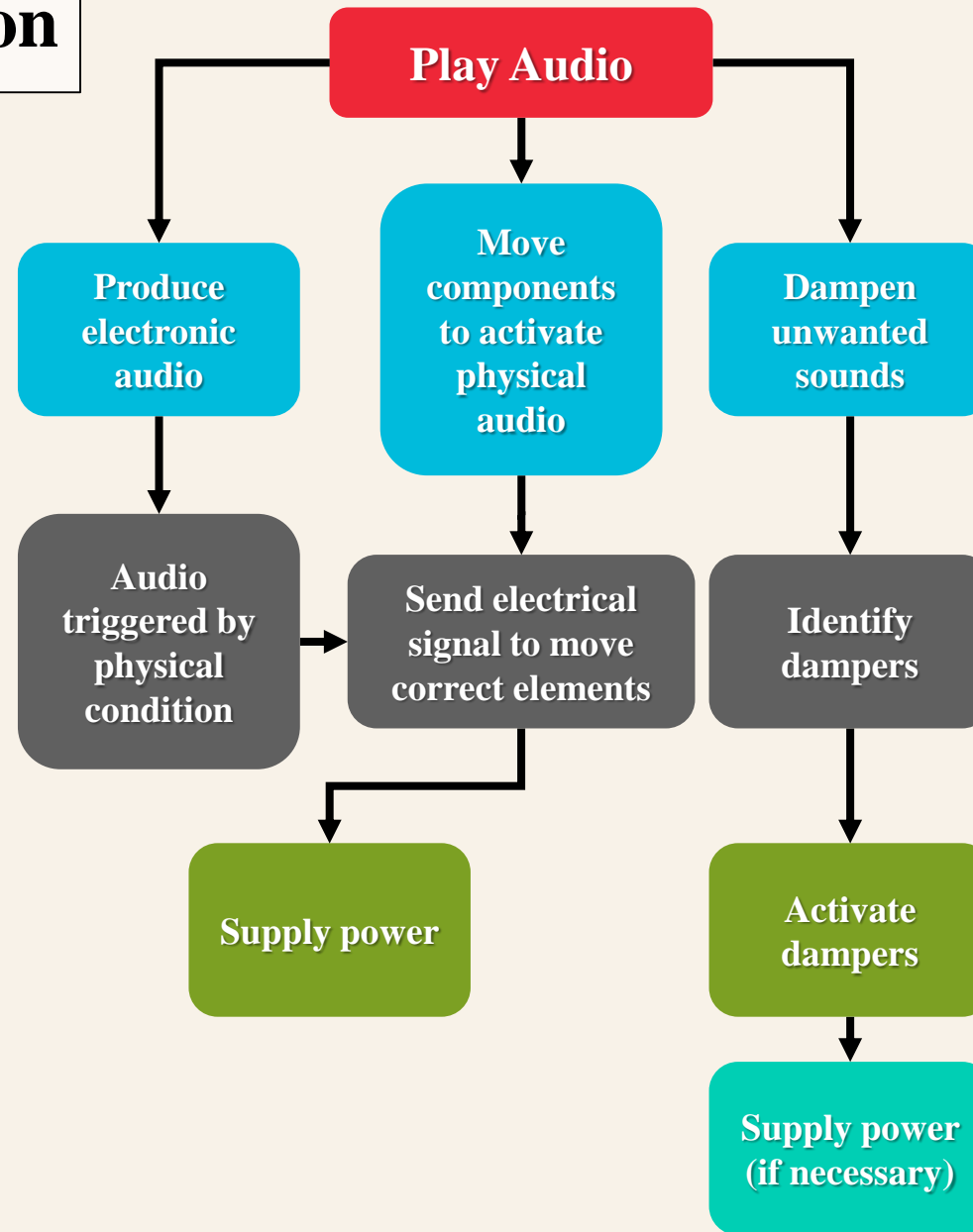
Encourage Interactivity



Taylor Shelby



# Functional Decomposition



Taylor Shelby



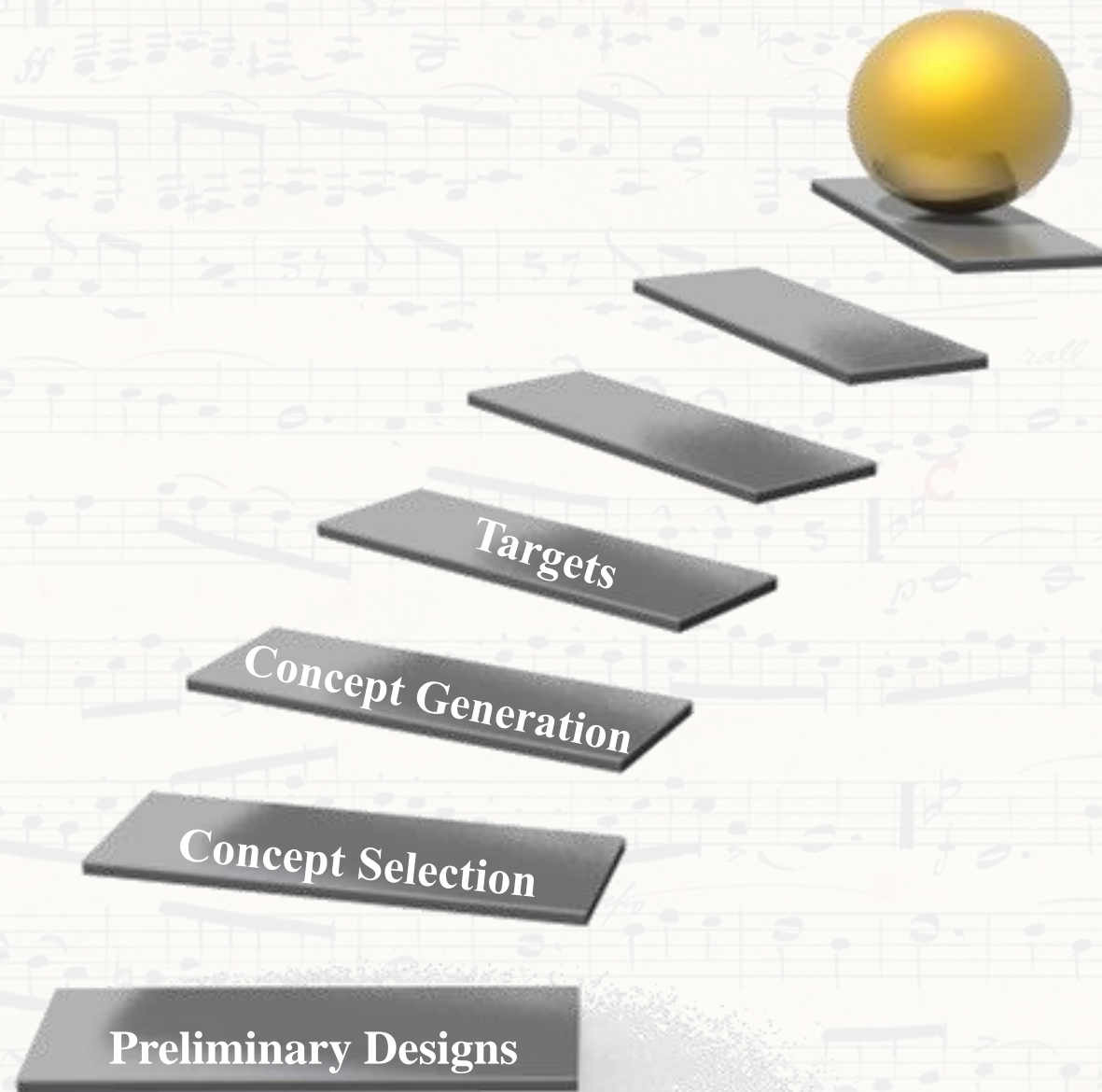
# Key Points

1. Create a portable music playing device that grabs the attention of an audience through the use of audio and visual elements
2. Play at least one recognizable song
3. Durable and portable
4. Appeal to all audiences, even those without prior music experience
5. Marketed towards legislative officials, students at both Engineering universities, and K-12 students

Taylor Shelby



# Next Steps



Taylor Shelby





# References

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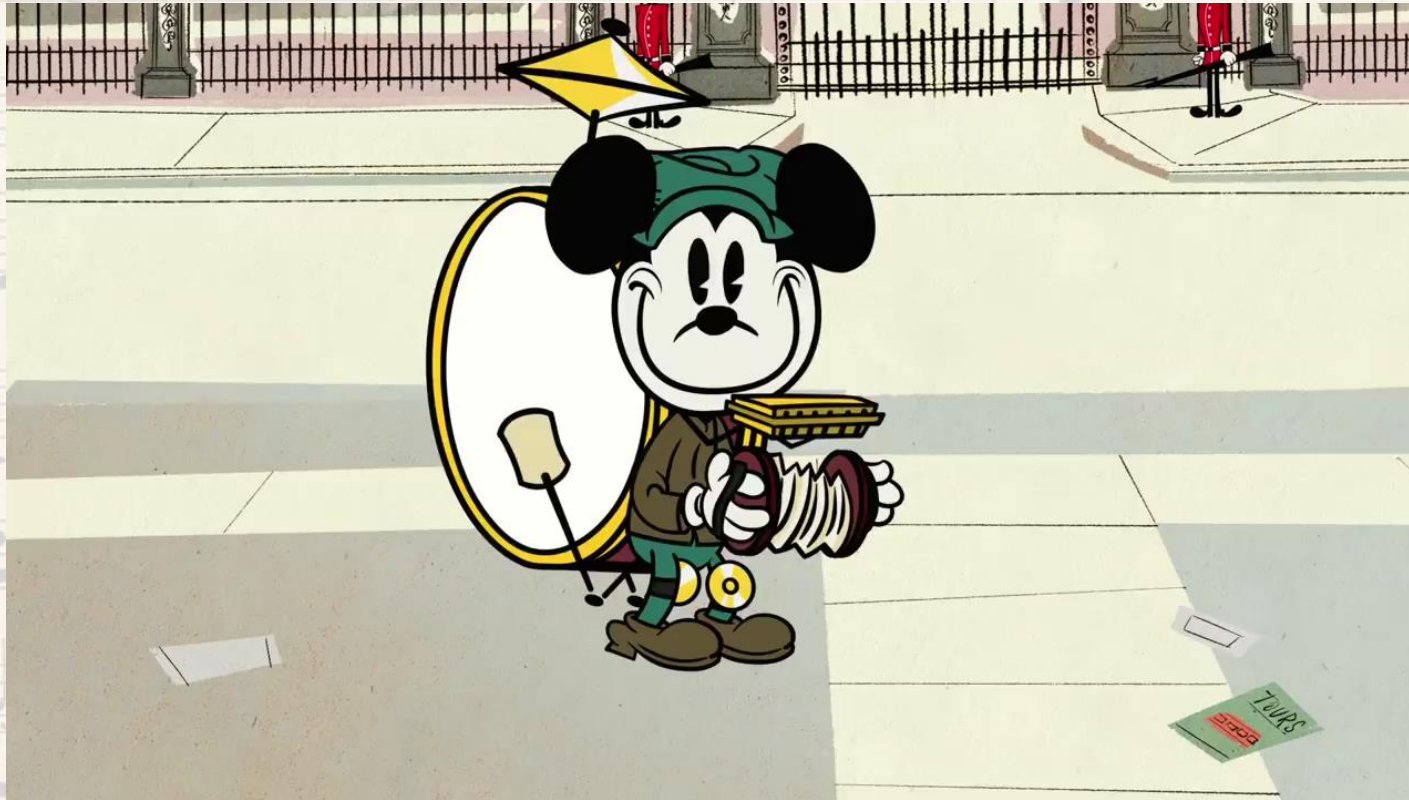
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# Thank You



# Thank You



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Audio Specialist



# Backup Slides

Supporting Slides to the content above.



# Customer Needs

- Attention grabbing
- Incorporate mechanical components
- Incorporate electrical components
- Portable
- Maneuverable by just one person
- Must fit through interior doors
- Durable
- Indoor use
- Power through battery or cord
- Self-explanatory to users with no music experience
- Device quality must meet university standards



# Customer Needs

| <u>Question</u>   | <u>Customer Answer</u>  | <u>Interpreted Need</u>  |
|---|---|--|
| What is our budget for this project?  | About \$1700  | Keep the cost of the build as low as possible  |
| Would you like the music to be a specific song, a variety of songs, a combinable variety of songs (loops, etc.), or notes that can be played by the user?                     | Notes that can be played by the user:<br>good for interactivity<br>Specific song: recognition factor (Alma mater, theme and variation)<br>Changeable (stretch goal) | Should play both alma maters (FAMU and FSU)  |
| Would you like the music box to be interactive? To what degree?   | Ideally some human involvement, degree can vary   | Must be attention grabbing   |
| Would you like the audio to come from traditional instruments, electronic sounds, non-traditional instruments (such as found object percussion), or some combination thereof? | Combination, physical component triggers electronic phrase, such as demonstrated by the modulin.<br>Whimsy and fun  | The audio may come from any source which generates user interest<br>Must involve both mechanical and electrical components |



# Customer Needs

| <u>Question</u>   | <u>Customer Answer</u>                       | <u>Interpreted Need</u>            |
|---|--|------------------------------------|
| What is the maximum and minimum size that you would like this device to be? | Fit through interior door (~30in)            | Needs to be portable (30inx80in)   |
| Are there any weight restrictions for this project?                         | Carry for demonstration                      | Must be maneuverable by one person |
| Is the device intended to be used long term (>1 year)                       | Yes  | The device needs to be durable     |
| Where will the device be used (indoor, outdoor, on concrete, etc.)?         | Primarily indoors, so carpet, tile, or wood. | Does not need to be weatherproof   |



# Customer Needs

| <u>Question</u>   | <u>Customer Answer</u>                                      | <u>Interpreted Need</u>   |
|---|---|---|
| What is the intended source of power for this device?                               | Ideally cordless, back-up with corded power                 | Can be powered either through battery or corded   |
| Particularly if interactivity is an intended component, who is the target audience? | Usable by non-experts                                       | Should be self-explanatory to those with no music experience                              |
| What would you like to get out of this at the end of this project?                  | PR suitable, a usable entertaining device                   | Device must be of a quality the FAMU-FSU College of Engineering would be proud to display |
| Do you want the device designed to be portable or stationary?                       | Portable (not necessarily backpack size, but transportable) | Mobile and portable, easy to display/set-up   |



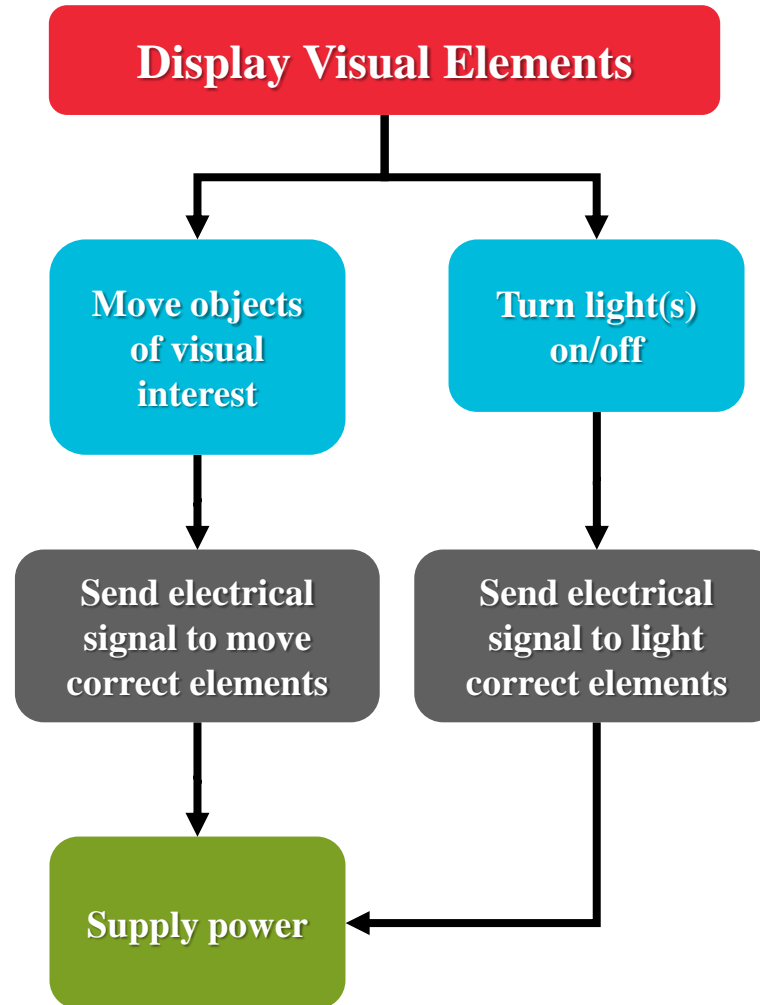


# Customer Needs

| <u>Question</u>  | <u>Customer Answer</u>   | <u>Interpreted Need</u>   |
|--|--|---|
| <b>How would you like this device to be displayed? (Free standing, mounted, on ground, on table, etc.)</b> | As long as the display is portable, display can be done in any way | The device should be simple enough that one person can set it up.                           |
| <b>Should the appearance be stylized in a particular fashion?</b>  | Attractive and appealing to various audiences                      | Should be professional since it represents the universities, but no specific style required |



# Functional Decomposition



# Functional Decomposition

