Senior Project Paper

Taylor Magon

LAES 462

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**Introduction**

Interactive – a word describing the influence that someone or something has on one another. All over the world, theme parks, festivals, and exhibits have become increasingly interactive, as audience members are able to make an impact on what they see on the screen, hear in the room, or feel in the experience. We see examples of this is with the Disneyland Main Street Electrical Parade where thousands of LED lights are synchronized to a soundtrack, the Deep Blue performance troupe in Australia where orchestra is matched with circus stunts, and the Ars Electronica festivals in Germany that blend art with science, technology, and society to address central questions of the future. Additionally, universities all over the United States are fabricating their own version of an interactive show experience, and Cal Poly will have the next great one. Our university lacks a principal exhibition that shows off the capabilities of the Liberal Arts and Engineering Studies Program. We want a spectacle at Cal Poly that leaves people feeling in awe, and we want a concept that sticks with them throughout their time at Cal Poly, whether that be a campus tour or an entire college experience. This show for Cal Poly is *Lumira* formerly called *Sustainability Safari*. As the LAES program moves into the new William and Linda Frost Center for Research and Innovation, our goal is to showcase the capabilities of its new Expressive Technologies (ET) Studio’s space in hopes to collaborate, innovate, and spark ideas for the future of the program.

**Application / Product**

The user experience of this show has evolved from a jungle safari into an interactive experience with the elements. Previous storyboards are as follows:
**Sustainability Safari**

**Title:** Sustainability Safari

**Scene No.** 1 | **Shot No.** 1
---|---
Users handed element cards as they walk in.

**Scene No.** 1 | **Shot No.** 2
---|---
Enter space in a lush, vibrant jungle.
- Animal sounds / jungle noises playing.
- River water rushing, birds chirping.
- Bright (blue, green, yellow) lighting.

**Scene No.** 1 | **Shot No.** 3
---|---
Lighting in room and elements on screen separate into 4 corners of the room.
- Audience follows this pattern according to their element card.
- Use subwoofers.

**Scene No.** 1 | **Shot No.** 4
---|---
Audience creates camp and “settles in”.
- Blue = water, red = fire, green = earth, white = air.

**Scene No.** 2 | **Shot No.** 1
---|---
Flash fire symbol on screen, turn off all lights, and turn on red light in center of room.
- Users with fire element move to center accordingly.

**Scene No.** 2 | **Shot No.** 2
---|---
Fire card sensor goes off and a camp fire is created.
- Crackling fire sounds.

**Scene No.** 2 | **Shot No.** 3
---|---
Fire gets out of control, lots of jungle burns.
- Trees burn, smoke in air, bright flames.
- Fire cracking sounds.
- Red, orange, yellow light.
- Use smoke machine / heaters.

**Scene No.** 3 | **Shot No.** 1
---|---
Fire dies down and room gets dark.
- Elements on screen separated into 4 corners of room again (fire users go back to corner).

**Scene No.** 3 | **Shot No.** 2
---|---
Flash air symbol on screen, turn off white light in corner of room, and turn on white light in center of room.
- Users with air element move to center accordingly.

**Scene No.** 3 | **Shot No.** 3
---|---
Air card sensor goes off and remaining heat from fire creates a wind system, a windstorm.
- Blowing wind sounds.

**Scene No.** 3 | **Shot No.** 4
---|---
Dust/sand blow into air, debris flying around.
- Swaying trees / wind howling sounds.
- Blue, white, green, brown light.
- Fans, humidifier, ozone zapper.

**Scene No.** 3 | **Shot No.** 4
---|---
Wind dies down and room gets dark.
- Elements on screen separated into 4 corners of room again (air users go back to corner).
### Sustainability Safari

<table>
<thead>
<tr>
<th>Scene No.</th>
<th>Shot No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>Flash water symbol on screen, turn off blue light in corner of room, and turn on blue light in center of room. - users with water element move to center accordingly</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Water card sensor goes off and remaining moisture from storm is pulled into air, condensing, causing a rainstorm. - rain sounds</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Rain falls, lightning strikes, thunder claps. - rain / thunder sounds - white, grey, variations of blue light - ozone zapper, subwoofers, misters?</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Rain dies down and room gets dark. - elements on screen separated into 4 corners of room again (water users go back to corner) - users with earth element move to center accordingly</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Flash earth symbol on screen, turn off green light in corner of room, and turn on green light in center of room. - users with water element move to center accordingly</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>Earth card sensor goes off and loose soil from rain causes massive erosion and mudslides. - falling rock sounds</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Earth shakes, land falls. - falling rock sounds - white, brown, orange, red, green light - subwoofers</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Shaking earth dies down and room gets dark. - elements on screen separated into 4 corners of room again (earth users go back to corner)</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>A sad, barren landscape is shown on screen. Audience needs to rebuild jungle. - dark brown, tan lighting</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>Flash earth and fire symbol together on left side of screen. Flash water and air symbol together on right side of screen. Earth - fire burn off remaining vegetation and plant trees. Water - air blows away smog and waters planted trees - users move to center accordingly</td>
</tr>
</tbody>
</table>
New stories and storyboards for the Lumira show look like this:

**Title: Sustainability Safari**

**Scene No. 6**

Fire + air start controlled forest fire to burn remaining overgrown vegetation
Earth + water open space in land for a river to start running again

**Scene No. 7**

Flash all elements next to each other in middle of the screen
- users move accordingly
- all sensors go off

**Scene No. 6**

Flash fire and water symbol together on left side of screen
Flash earth and air together on right side of screen
- users move to center accordingly

**Scene No. 7**

Lights flash, many colors on screen assemble, feels like a whirlwind of color and senses
- elements are now intermixed

**Scene No. 7**

Fire + water put out remaining fires started from burning vegetation
Earth + air restore enough oxygen in the air for the animals to start coming back
- animal noises start playing

**Scene No. 7**

All element colors turn to purple and all sensors go off to showcase the spirit element
- everyone has worked together
- the quest to sustainability has been achieved

**Scene No. 7**

Short video on screen plays describing human spirit, its impact, and sustainability
- “When everyone works together as one only then can the world flourish”

**Scene No. 7**

Jungle is finally back to normal. Everything is sustainable, everything is vibrant again
- audience free to enjoy the space
This is the most current storyline (to accompany the picture above):

“Guests will walk through the room’s entrance. As they walk across the dark room, a light will follow underneath them wherever they step. This is done through a type of interactive floor/floor projection. Once everyone is in the room, they remain standing wherever they want. After a couple of minutes, their individual lights will move towards the projector wall to collectively form a new Sprite.

This kid Sprite (Dawn) causes all the environmental mishaps, and an Old Sprite comes along to teach the kid sprite how to fix the environment. The kid Sprite learns to create fire from the Old Sprite and accidentally ignites the forest. The Old Sprite gets the audience to help them extinguish the fire. The forest gets rebuilt with the magic of the Old Sprite. Then the old Sprite decides to show Dawn the Earth element scene. They try to teach Dawn how to grow things in the garden but instead, Dawn plays around in the garden and gets chased by the Old Sprite. Dawn basically ruins the garden after playing in it. The Old Sprite scolds Dawn and tries to fix the garden with the help of the audience members. Dawn then tries again to grow things in the garden and succeeds. Next, the Old Sprite decides to show Dawn the city and what it looks like. Unfortunately, the environment is already bad because of the air and noise pollution. Dawn starts coughing and feels sick. The Old Sprite gets worried that it'll be unsafe for Dawn, but Dawn decides that they should fix it. Dawn then tries to clean it up with the help of the audience. After cleaning it up, the city looks better, and Dawn feels better. Dawn then decides to wander off but then gets trapped by a trash bag blowing in the wind and gets blown away. The Old Sprite gets worried and starts chasing after the trash bag. The trash bag is now underwater, but we don't know which one has Dawn. The Old Sprite desperately tries to get the audience to help them to clear away the trash in the water and make it clearer so that they can find Dawn. The audience finally finds Dawn. Dawn is super happy that they were found. The Old Sprite decides
to take Dawn back to our first scene. They congratulate Dawn and give Dawn a little graduation cap. Dawn wears the cap and plays around. Finally, Dawn splits itself back into little lights and they all collectively form stars that then turn into the Lumira logo.”

From Sustainability Safari to Lumira, all assets and resources for the stories came to be chronologically to help evolve the experience into what it is. There is still much work to be done before the Frost Center opens, but our main goal is to leave a lasting impact on Cal Poly and its surrounding community.

**Background**

Sustainability Safari and Lumira have mainly drawn inspiration from Disney Imagineering. Imagineering is the ideal organization that joins STEM principles with art creating STEAM – Science, Technology, Engineering, Arts, and Math. Walt Disney Imagineering “embodies a world-class design firm, premiere development company, extraordinary storytelling studio, and a cutting-edge innovation lab – all rolled into one” (Disney). This parallels our LAES program which aims to do the same only on a slightly smaller scale. With Sustainability Safari, we are able to design a show around elements and sustainability, develop methods for delivering the show, utilize the high-tech equipment in our ET Studios space, and tell a story of the future.

In March 2021, we were tasked with creating an idea for an interactive show to put on in the new Frost Center ET Studios space once it becomes completed. We were only given these instructions, a few pictures of the floor plan, and complete creative freedom. We had to start from scratch. So, previous iterations of the show included considering many different overall themes such as space or ocean exploration. Our first full idea was a show called “STEAM
Bound,” a quest through space where users try to escape evil extraterrestrial aliens and explore the vast Planet STEAM to gain access to a wormhole leading to freedom. For this iteration of the show, we grasped the adventure aspect, but had no overall theme that would stick with the audience as they left the experience. We wanted to focus more on the concept of “STEAM” itself by designating certain parts of the planet to each letter (and subject) of the acronym, and the audience would explore these locations looking for clues to gain access to the wormhole.

In September 2021, a new group was tasked with creating the same type of show with the same guidelines. As the “STEAM Bound” idea did not really solidify, we had to start from scratch… again. However, this chance to start over gave the new group room to improve upon the old idea and really make it something special. While the space theme ultimately got cut, a jungle safari theme was born. Exploring the jungle provided the perfect opportunity to include this over encompassing theme that we have been searching for, and that theme is sustainability.
A central idea of sustainability is timeless. A show with this theme can educate its audience about the importance of working together to achieve a common goal. We accomplish the aspects of a great show with this idea: interaction by introducing elements and simulations of natural phenomena, an intended objective of working together and human spirit, and a relevant theme that possesses longevity and leaves the audience thinking about the experience even after it has concluded.

In March 2022, the Sustainability Safari Project was reintroduced to a group of LAES 301/302 students. I served as the project manager to this group, fostering and supporting ideas for how the future of the show can change and become better. This fresh group focused on how to tie the story into the community of San Luis Obispo, the interactive aspect of it, and formulating a title and logo that really sticks with an audience. This new Lumira show still contains demonstrations of element phenomena like rainstorms, earthquakes, fires, and more, but
this story is tied together through a host of light, a sprite character, (hence the name Lumira) that guides its audience through their immersive journey.

Design

Sustainability Safari and Lumira came to be with numerous key factors that helped guide creation of the experience. We will explore these factors chronologically – starting with the very first resources we used/came up with and ending with the current concept.

Studio Equipment

The new ET Studios space comes with high-tech equipment that will allow us to put on a quality show. This includes a Dolby Atmos surround sound system. This system adds height and depth to an otherwise flat sound stage. It uses object-based audio, so elements of the show’s soundtrack can exist as its own item in audio, rather than a channel mix. It also utilizes 3D sound in which noise can be heard to mimic natural life. An example of this would be hearing a helicopter fly overhead, then as the helicopter moves to the right, the sound in the speakers would follow. Another asset we have is the overhead theatrical lighting rig. This piece of equipment is complete with D40 Studio HD LED lights that include warm pastels for skin tones,
deep blues and magentas, and pearl colors (variable white). The X4S lights can also add color presets, patterned effects, and fast-moving pans and tilts. Additionally, we have the wide screen and projector. The projector, formerly belonging to Disney’s CEO, has 4K resolution at 60 fps, a screen capacity of 75 ft wide, and can project 4K 3D content. Some other equipment we will have access to are CUE robots – small programmable robots that use JavaScript to create certain patterns, say things back to you, or move throughout the room. We will also be able to use a motion capture suit and drones potentially.

Floorplan

The floorplan for the new ET Studios space shown below consists of the main project space with two doors on the side of the screen – one opening to the central indoor walkway of the Frost Center and the other opening to the outside. On the other side of the project space, there is one walkway leading to the storage room and another walkway that brings members to
the audio control room. There is access to the elevated projector room here. Behind the storage room and the audio control room is a small hallway that leads to two editing bays and an exit to the central Frost Center indoor walkway.

Script

The scripts for Sustainability Safari and Lumira were not done traditionally on script writing software or written in courier font. We otherwise crafted a more experimental script only highlighting bullet points of specific action that we want to take place. There is no dialogue in the show. Again, we want users to really feel like they are in the jungle and experiencing the raw elements, and this is most accurately done by excluding dialogue.
Jungle Safari Script Ideas

Scene 1: Vibrant jungle (all elements)
- People walk in and can explore the surroundings for a short while
- Vibrant jungle on screen, lush, wildlife, jungle sounds
- Signal elements to separate to all 4 corners of the room (on screen)
  - White light separates to 4 different lights in each corner of room corresponding
to elements
  - Blue for water, red for fire, green for earth, and white for air
  - Subwoofers when elements are spreading

Scene 2: Camp fire (fire)
- Signal fire element to come to center of room
  - Turn off red light in corner and turn on red light in center of room and flash fire
  symbol in middle of screen to signal people with fire element card to come to
center of room
- This element creates a campfire in the jungle, but they lose control of the fire and burn
  a big portion of the forest down
  - Simulate fire, show trees burning, smoke in air, bright flames, animals start
    fleeing
  - Fire crackling sounds
  - Red, orange, yellow light
  - Smoke machine and heaters?
- Fire eventually dies down

Scene 3: Windstorm (air)
- Signal air element to come to center of room
- Heat from fire creates its own wind system, starting a windstorm
  - Simulate windstorm, dust and dirt blowing into air, debris from fire flying around
  - Find shelter and take cover?
  - Windy trees blowing sound, wind sounds
  - Blue, white, green, brown light
  - Fans, ozone zapper, humidifier
- Windstorm eventually dies down

Scene 4: Rainstorm (water)
- Signal water element to come to center of room
- Remaining moisture from the storm is pulled up into the air, condensing and causing a
  rainstorm
  - Simulate rainstorm and/or flash flood, thunder and lighting

Lumira Script Ideas

Title Scene
- Name
- logo

Fire Scene
- Forest fire
- Campfire scene

Water Scene
- Underwater pollution
  - Trash
  - Dead coral
- Underwater oasis
  - Fish
  - Plants
  - coral

Earth Scene
- Barren field
  - Cracked earth
  - Dead plants
  - Flower field

Air Scene
- Rooftop cityscape pollution
- Green city rooftop scape

Final Environment Scene
- Bonfire beach scene
  - City in the back
  - Plants everywhere
Element Cards

Users will be handed element cards (NFC – near field communication) as they walk into the space. These cards are designed to give each person an “identity” in the show – one that corresponds with an element. There are four elements: fire, air, water, and earth, and each element has its own symbol as well. For the Sustainability Safari show, the cards would be used along with the symbols to signify when audience members need to move throughout the room. For instance, when the fire symbol flashes on the screen and an orange light shines in the center of the room, the users holding a “fire” element card are signaled to move to the center of the room. For the Lumira show, we have added the scratch and sniff element to the cards that add to the immersive experience. This extra sensory addition really makes audience members feel as if they are in the elements. Earth has a pine scent, air is citrus, fire is smoke, and water is salt.

For Lumira, the developed idea is that an NFC card reader will be placed somewhere in the room disguised as something in nature like a tree. At specific points throughout the show,
when audience members are instructed to do so, they will approach the card reader with their NFC card, which will then signal the next video to play or something to appear on the screen or even in the room. Music and visuals would have to account for the amount of time it takes for audience members to complete this task. Additionally, we would need to make sure that the NFC cards we purchase would be compatible with the systems we have in the ET Studios space.

Audio

The audio for Sustainability Safari consisted mostly of Max Richter’s Vivaldi, The Four Seasons Remake with sound effects from Epidemic Sound integrated into the element demonstrations. This includes rain, ambient earthquake sound, fire crackles, wind blowing, and much more. For the new Lumira show, we have developed sound demos that showcase the main aspects of each element. For instance, the water demo utilizes handpan drum/kanpai to characterize water droplets. The air demo uses the pan flute to characterize air flow, the earth demo highlights percussion and cello to convey a rumbling peace, and the fire demo has quick, high-pitched beats to constitute flames. Each demo has a unique representation of sound that is characterized by the progress of the activity; different renditions of the sound will be played when the interactive activity is unsolved and then solved.
Screen, Lighting, and Decor

As mentioned in the studio equipment section, the high-quality projector, screen, and lighting systems are what will give the show that extra added feeling of immersion. Another step in the process of making this show was coming up with 2D renderings of what the space will look like with the equipment and jungle decor inside it, images on the screen, and lights flashing as shown below.

Storyboard, Human Spirit, and Sustainability

The Sustainability Safari and Lumira storyboards are shown in the “Application / Product” section of the report, but one of the main focus’s that needs to be expanded upon is the element of human spirit – the fifth element essentially. The idea is that each person who attends this experience gets to see, hear, and feel the elements in action. When the elements work individually, the world becomes a barren, scary place. But, when the elements start working
together, their consolidated abilities can heal the jungle and the world of its destruction. The power of cooperating and collaborating is the element of human spirit. This human spirit is what makes the world flourish; it is what makes the world sustainable. In the case of Lumira, this “human spirit” is in the form of its own character, the light sprite, who guides the audience along a journey of environmental knowledge and refurbishment. We aim to teach the audience members that working together is the ultimate key to sustainability.

Unity Environment

Unity is a video game software that permits users to create worlds for film, animation, and production projects. Our unity environment, much like our 2D rendering, is a 3D version of the ET Studios space. Unity allows us to use VR (virtual reality) to tour and interact with the space and run screen and lighting sequences that match our vision for the show.
Website

The website was used for the Sustainability Safari iteration of the project. We wanted to create a website so users can continue the experience after the show is over. The website provides a “behind the scenes” look into the making of the show much like this project paper does. There are tabs that go into detail about different aspects of the show. The “Home” tab gives an overview of the experience and information regarding location and hours. There is also a contact option that will send messages to a designated Sustainability Safari email address (sustainabilitysafari@gmail.com). The “Team” tab showcases the Cal Poly students behind the show and links users to the Frost Center website at the bottom. The “Gallery” tab is a page full of pictures of how the show came to be. The “Elements” tab describes each of the five elements in detail. Finally, the “Testimonials” tab is for user feedback on the show, but as of now it is only user feedback on show concepts, not the overall experience (as it has not been implemented in the building yet). This website was created on Wix, and a domain name is to be purchased to
reach the site at sustainabilitysafari.com. We also have a QR code that links directly to the website. This is still an active, working website. A Lumira website has yet to be created.

Items to purchase

To keep track of expenses, our team made a list of items that need to be purchased to make the experience as immersive as possible. This mostly includes décor and equipment for the natural phenomena simulations. A tentative list is provided below.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Price</th>
<th>Quantity</th>
<th>Total</th>
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<tbody>
<tr>
<td>Box Fan</td>
<td>20</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>Humidifier</td>
<td>23.5</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Fog Machine (Theater quality)</td>
<td>749</td>
<td>2</td>
<td>1498</td>
</tr>
<tr>
<td>Heater</td>
<td>20</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Ozone Zapper</td>
<td>65</td>
<td>4</td>
<td>260</td>
</tr>
<tr>
<td>Element Cards (NFC Cards)</td>
<td>40 1 pack (100)</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Fake plants</td>
<td>73</td>
<td>4</td>
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<tr>
<td>Website Domain Name</td>
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<td>20</td>
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</table>

**Total Cost:** 2058
Asset/Resource Collection and Video Screening

The show requires a physical video to be played on the screen for viewers to see and understand what is going on. The video is derived directly from the Sustainability Safari storyboard in a scene-by-scene format. Each image, video, and piece of sound put into the screening is part of the asset and resource collection. We have curated a list of high-quality Shutterstock videos that offer aerial views of the jungle, fire burning, trees blowing in the wind, lighting and thunderstorms, landslides, jungle destruction, animals, and sustainability that correlate with each scene. Our sound effect list consists of effects from Epidemic Sound such as rain falling and fire crackling to coincide with the proper video footage. The musical soundtrack is Recomposed by Max Richter: Vivaldi, The Four Seasons. All these videos and sound bites were put together on iMovie to design what the audience will see and hear once they are in the space. This screening was the primary backlog item used to create and base the Lumira show on.

Video screening YouTube link: https://youtu.be/KMaCmf5pioQ
Implementation

The main implementation for the project was done throughout Spring quarter of 2022. Since I had already created the main show idea, the goal for Spring 2022 was to develop and refine the show. I was given a team of determined students in LAES 301/302 to help me with this task. Again, I served as the project manager this quarter, implementing my industrial engineering skills to delegate tasks to my new group members. We ended up splitting the group into a visual group and an audio group for the show. The visual group completed items such as creating a new name for the show (Lumira), designing a logo, refining storyboards and scripts, building 3D models, and finding décor and equipment for the space. The audio group researched the NFC cards, focused on interactivity, and most importantly, created original sound that corresponds to each element: fire, air, water, and earth.

As seen in the flowchart below, what is known today as Lumira went through many iterations before becoming as detailed as it is. STEAM Bound began in Spring 2021 which transitioned to Sustainability Safari, running from Fall 2021 to Winter 2022. Finally, Lumira was created in Spring 2022 and will likely be integrated into the Frost Center once it opens. There is still much work to be done; however, we have made an immense amount of progress.

![Flowchart showing the iterations of STEAM Bound, Sustainability Safari, and Lumira]

Lumira logo progression
Analysis / Verification

Throughout this project, we have conducted numerous user testing surveys to ensure the quality of our work. We have taken user feedback on every aspect of the show (mostly Sustainability Safari because we have spent the most time on that iteration). As a more general explanation, we divided our surveys into two main parts: quantitative data and testimonials. For instance, quantitative questions we would typically ask are:

- 1-5: how much did you enjoy this show? (1 = bad/not so much, 5 = great/definitely)
- 1-5: how likely are you to see it again?
- 1-5: how likely are you to recommend to a friend?
- 1-5: how would you rate the interactive aspect?
- 1-5: how well does this show tie into Cal Poly?
- 1-5: how likely are you to be more sustainable after this show?

These questions are geared toward the overall show, but we have more specified versions to fit different tasks we have been working on such as sound feedback, storyboard feedback, unity/3D environment feedback, website feedback, and much more. In addition to the qualitative questions, it is important to know what the users have to say about the experience. Here are the qualitative questions we would ask as means to acquire testimonials:

- Is there anything you’d like to add/take away?
- What did you like?
- What would you change?
- Any additional feedback?

David Gillette also played a big role in feedback because of his extensive entertainment background and connections. We would regularly meet with him in person or over Zoom to
discuss the current state of the project/experience, and he would give his expertise on the topics from the meeting. At the very beginning of the project (STEAM Bound), our user feedback was mostly negative, but as we began to really develop an interactive story (Sustainability Safari through Lumira), feedback became much more helpful, advantageous, and positive.

![Pie chart showing the preferences of 12 respondents.]

**Which story idea did you like the most?**

- Space Quest: 41.7%
- Jungle Safari: 25%
- Underwater Adventure: 33.3%

**What is the reason for your choice?**

12 responses

- I love Star Wars and Star Trek.
- Very aesthetically pleasing and looks most fun to be in this environment
- I really like the adventure aspect
- Loves the colors, turtles, and mermaids. Its more my aesthetic
- I love astronomy!
- I think exploring the ocean would be really cool.
- The ocean depths are not fully explored.
- A lot more to do with it
- Infinite possibilities
**Interdisciplinary Connections**

My concentrations are interactive communication with a cinematic focus and industrial manufacturing engineering. Sustainability Safari and Lumira is the ideal combination of the two disciplines as I am able to fuse my creative skills – designing the story, and technical skills – fabricating a productive studio space.

The technical problems the show aims to solve are as follows. We want to use the studio space effectively by choosing themes and storylines that really show off the capabilities of the space. We want to make sure the show runs efficiently by completing routine equipment checks and 5S analyses to make sure everything is working and efficient. Ensuring everyone gets in and out of the space safely is also a priority. Another goal is to optimize costs with the equipment and décor – inexpensive but quality fans, heaters, and plants. For video models and screenings, an accurate depiction of what is going to happen is optimal especially when choreographed with lighting sequences that signal audience members to move throughout the room.

The humanities-based problems the experience is solving are follows. Again, we want an interactive show that leaves the audience wanting to know and learn more by experiencing the elements including human spirit and the overall theme of sustainability. The themes should carry from the show into the real world and inspire users to take action. This then fosters connections with outside organizations like Disney and creates an environment for inspiration and collaboration. Additionally, the ability to evolve with time is a key factor in this show because we plan for it to run for a very long time. Sustainability is the future and is extremely relevant in society. Finally, the human spirit element emphasizes connection and how people working together can help achieve sought after sustainability.
Related Work

Work that has been done like this includes other interactive shows that bring users into the world of art and technology; however, this is the first time a show like this has been done at Cal Poly. As mentioned briefly earlier in this report, the Disneyland Main Street Electrical Parade is a prime example. The interactive aspect is that all the lights on the parade floats are synchronized to a special soundtrack. Sustainability Safari/Lumira differ from this because it is on a smaller scale and is confined to one room rather than a mile long parade route. The Deep Blue performance troupe in Australia is an orchestra that includes dancing, circus acts, robots, engaging lighting, and other spectacles. Our show is more of a simulation experience with one central theme of sustainability compared to a show where many different things are happening at the same time. The Ars Electronica festivals in Germany is like a Coachella for art, technology, and society. The festival contains a plethora of exhibits while Sustainability Safari/Lumira is one main “exhibit”. The Brisbane Robotronica festival is another interactive experience that focuses on technology but incorporates music and art. Like Ars Electronica, Robotronica differs from our show because of its multiple exhibits and day long hours. Sustainability Safari/Lumira is a smaller version of all these experiences, but it still integrates technology with the use of the lighting rig and projector, and art with the immersive aspect and overall story.
Future Work

The main thing we were not able to resolve during the timeline of this project was putting it into the Frost Center space, as the building has not been completed as of June 2022. While this is a drawback in some ways, it gives the project creators more time to fully develop the show before it starts running in the space. This ensures a smooth transition when the experience begins to play out in the building. Before this happens, we are able to order and test equipment to be used in the space (mostly for the natural phenomena demonstrations), and we can create models of the theater to test run and block the show out before everything is completed. I am excited to finally see the show run in person soon, but much must still be done. There is still time to fully fabricate the interactive activities as a play-by-play demonstration of what audience members must do to interact with the space. As LAES begins to move into the new center in the 2022-2023 school year, I hope to stay in contact with Michael and David and the LAES program as a whole to guarantee an exciting and riveting experience for Cal Poly in this show. I believe the future of the program will thrive and the implementation of Lumira in the new space will kickstart this jump. It will be memorable for generations to come, and it will tell a story and send a message of sustainability – a theme that does not expire.
Conclusion

Sustainability Safari/Lumira is the next big thing for Cal Poly. I created something from nothing that will live on and be regarded as a spectacle for the campus community and our colleagues. Working on this project has allowed me to utilize my concentrations by creating and designing an interactive show from scratch into a full-fledged idea and story that will be shown and told for years to come. It has also allowed me to master my project management skills and to be efficient, productive, resilient, and happy at the same time. While every aspect of the initial ideas did not make it to the most current iteration, the overall story of togetherness and sustainability stands. I feel my work has solved this deficiency for something that stands out on campus, something that leaves a lasting impact on an individual, no matter the age, whether they are here for a campus tour or full four-year college experience. As the LAES major grows in size, showcasing the capabilities of the new ET Studios space is incredibly important for the future of the program. Lumira will allow our program, our campus, and our community to connect to other campus, communities, businesses, and people so we can foster relationships to further the prestige, credibility, and excitement for Cal Poly as a university.
Works Cited


