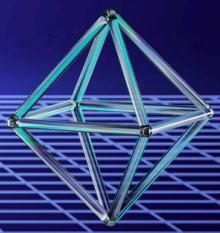


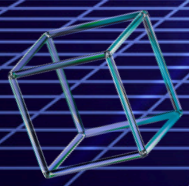
LASERCUBE

USER RESEARCH

NMIX 4410

FALL 2025





Sam Levy | Michelle Ung | Stella Yoon | Nathan Cheong | Evelyn Flores

Research Objectives

Part 1

- Further understand our client's wants and needs

Part 2

- Understand what is compelling for an audience member

Part 3

- Dive deeper into LaserCube uses and shortcomings

Part 4

- Decide what is feasible based on our skills and engagement with the LaserCube

Research Methods

Part 1

- Interview Chris, go over expectations

Part 2

- Conduct a short survey on our target audiences to get an idea of the preferences of people that engage with the NMI

Part 3

- Look at existing LaserCube use cases on online mediums
- Look at existing LaserCube tutorials

Part 4

- Dogfooding: By experimenting with the LaserCube as a user (in place of Chris) we can provide valuable feedback and decide what is feasible to move forward with

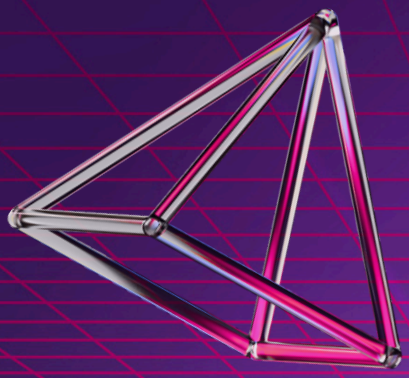
Target Audiences

Chris Gerlach

Chris is an important part of our research since he will be the one operating the LaserCube using our findings. Keeping him and his wants, needs, and skillsets in mind during our asset development will ensure we stay on target.

Audience Members

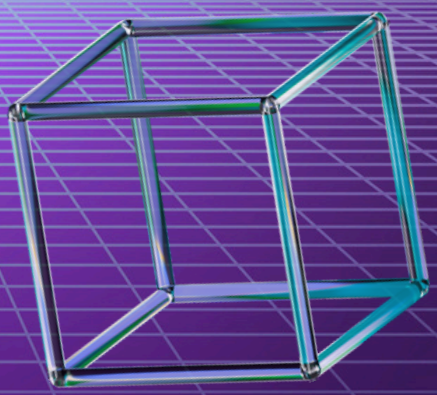
People who have and will attend NMI and TedxUGA events are also our target audience. Ultimately, they determine whether the implementation of the LaserCube in these events is effective or not. We need to understand what is engaging to them in order to inform our designs.





PART 1





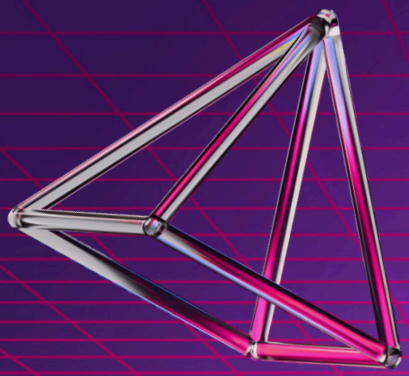
What Are Chris's Expectations?

We have been tasked to explore and develop a unique, compelling application of the LaserCube that goes beyond its current use cases. We have to creatively reimagine how this technology can be leveraged to serve new functions, particularly in the context of NMI events like NMIXpo and TEDxUGA.

Since we've started this project, we've hit multiple roadblocks, one being our group's general unfamiliarity with Python and the API. We decided to streamline our efforts into getting comfortable with the LaserCube itself, and create an asset libary and some different use cases for our client.

We also did some digging and talked to Isa Martinez, the events coordinator for the NMI, to get a better idea of the structure of TedxUGA and NMIXpo. The theme for this year's TedX event is Dark Mode. All of this information will also guide our creations.

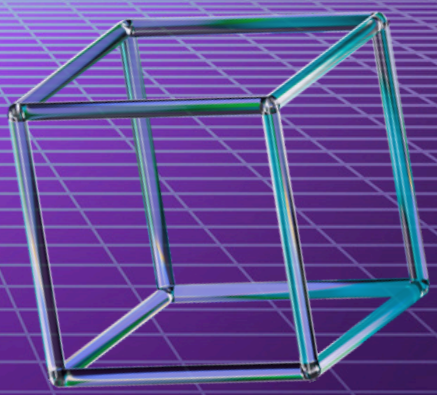
Finally, we discussed with Chris some main goals of his that may have developed as we've worked on this project. The main two are design versatility and simplicity. We will keep these in mind as we move forward.





PART 2





Survey Design

Survey was sent to the #4410 and #nmi-club channels. Was open 9/19 - 9/22.

What best describes you

- UGA Student
- UGA Parent
- UGA Faculty/Staff
- Athens local
- Other

Have you ever interacted with a laser or projection-based installation before (e.g. a Laser show)?

- Yes
- No
- Not sure

What types of visuals typically catch your attention at events?

- Bright colors
- Motion/animation
- Visuals synchronized to audio
- Interactive elements
- Light projections
- Other

How important is visual design in making an event feel exciting or memorable to you?

- Not important
- Somewhat important
- Very important
- Essential

Survey Design

How likely are you to share visuals from an event on social media if they're unique or interactive?

- Very unlikely
- Unlikely
- Neutral
- Likely
- Very likely

Would you find this compelling at an NMI or TEDxUGA event? *(We had 3 of these with photo examples)*

- Very unlikely
- Unlikely
- Neutral
- Likely
- Very likely

Have you ever attended an NMI or TEDxUGA event?

- Yes (NMIXpo)
- Yes (TedxUGA)
- Yes (Other)
- No
- Not sure

Do you plan to attend an NMI or TEDxUGA event this year?

- Yes (NMIXpo)
- Yes (TedxUGA)
- Yes (Other)
- No
- Not sure

Link to response Spreadsheet

Survey Findings

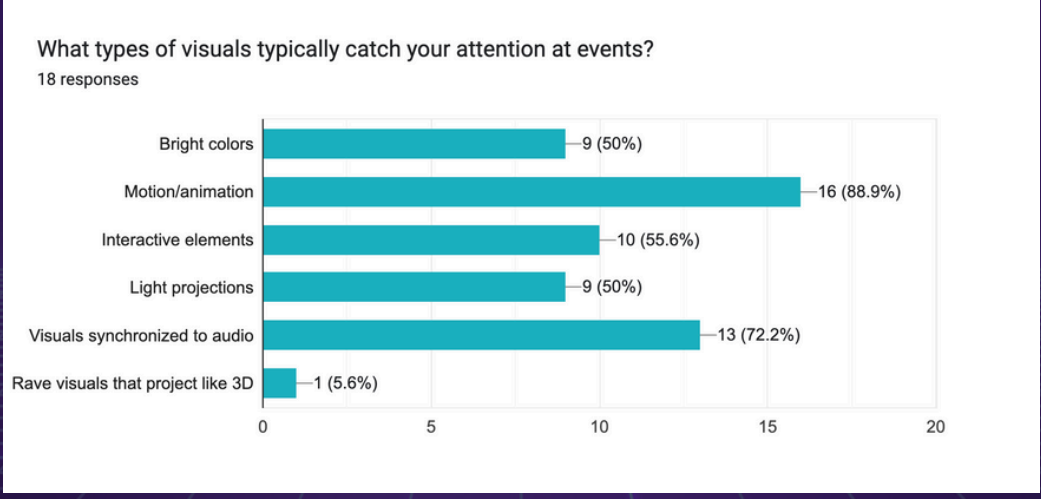
Generally, out of the people we surveyed, visual design is important in making an event exciting and memorable. They also are engaged when viewing motion/animation, as well as visuals synced to audio.

76.5%

Of respondents answered that visual design was "Essential" or "Very Important" in making an event feel exciting or memorable

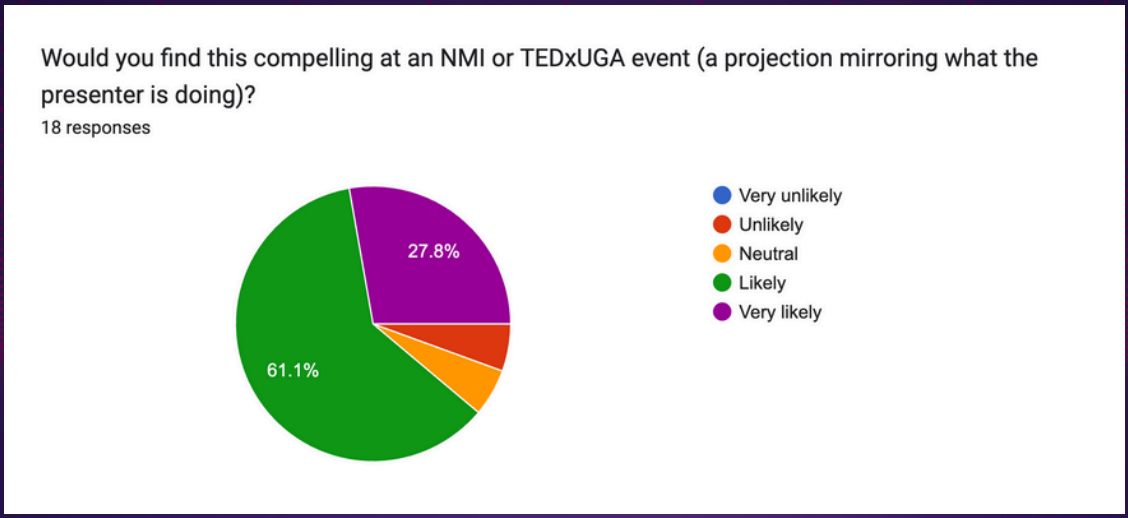
88.9%

Of respondents answered that motion and animation caught their attention at events.



This confirms the reasoning of why we're even engaging with the LaserCube. It also further elaborates our interest in motion and animation. These responses will help inform our creations moving forward. We also were considering exploring the use of music, so this survey indicates that we should move forward with that.

Survey Findings

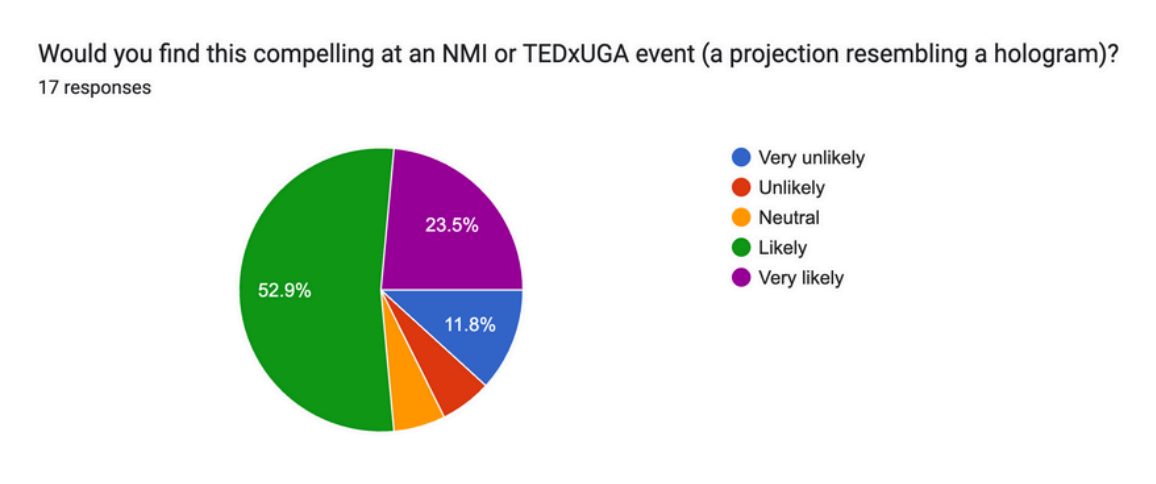


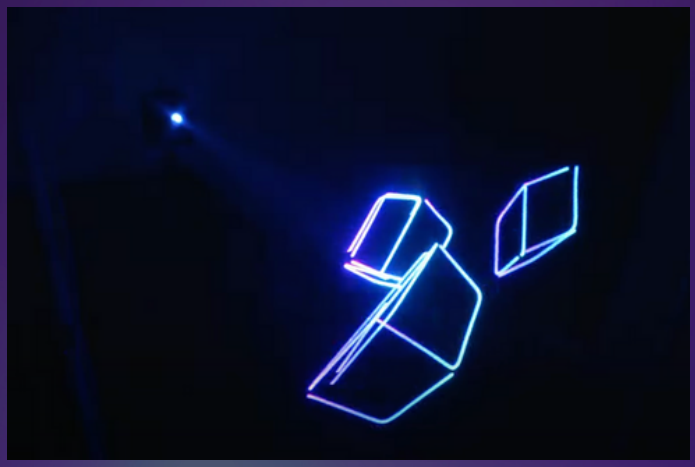


Link to video
(Click on image)

We displayed a screenshot of a video that projects an animation of a movement behind a subject while they perform that movement. 88.9% of respondents indicated that they would “likely” or “very likely” find this use of the LaserCube compelling. This indicates the need to potentially do more research on the matter and implement this into our asset library.

Survey Findings

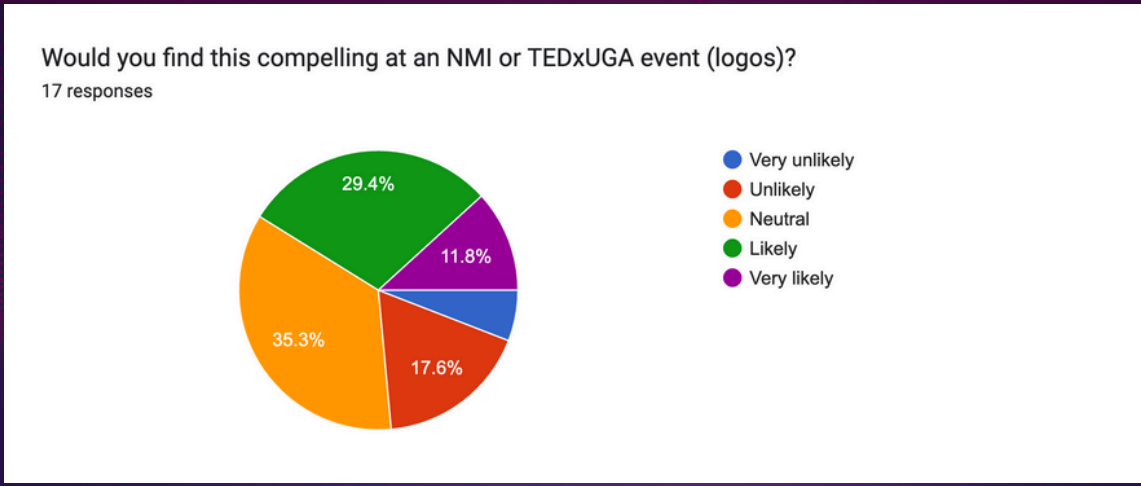


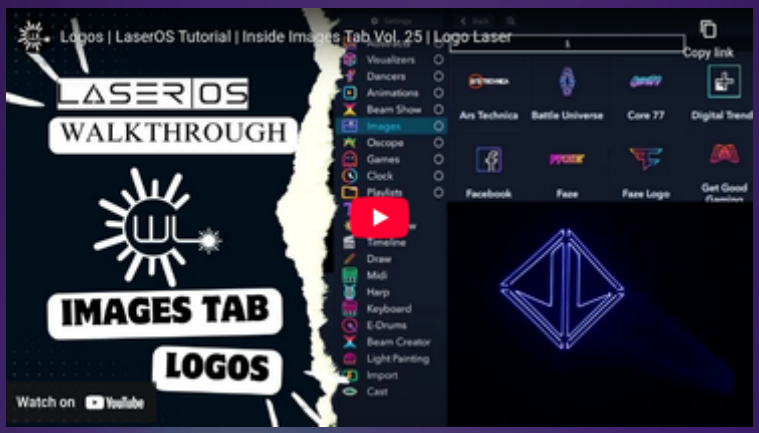


Link to video (Click on image)

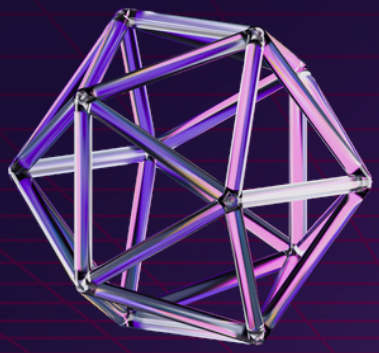
We displayed a screenshot of a video showing a 3D animation that is projected on a translucent fabric, making it seem even more layered. 76.4% of respondents indicated that they would “likely” or “very likely” find this use of the LaserCube compelling. This indicates the need to experiment with different types of mediums to project the LaserCube through.

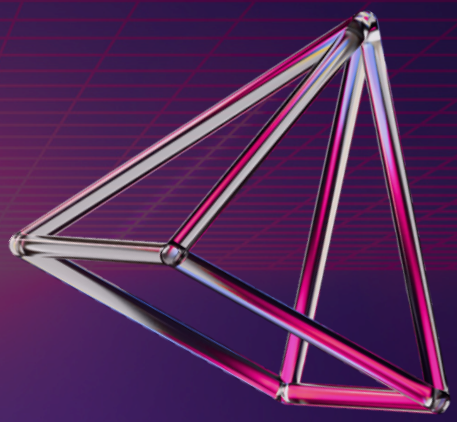
Survey Findings



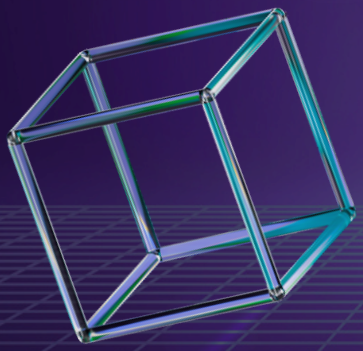


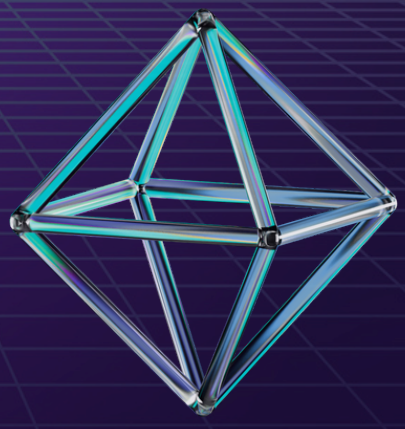
We displayed a screenshot of a video showing a logo being projected. Only 41.2% of respondents indicated that they would “likely” or “very likely” find this use of the LaserCube compelling. While this number is low, this may be attributed to the image we chose to display in the survey. Our group has deemed that branding is important at NMI events, but we will take this feedback in mind and design NMI/TedxUGA assets that also have movement and dimension.





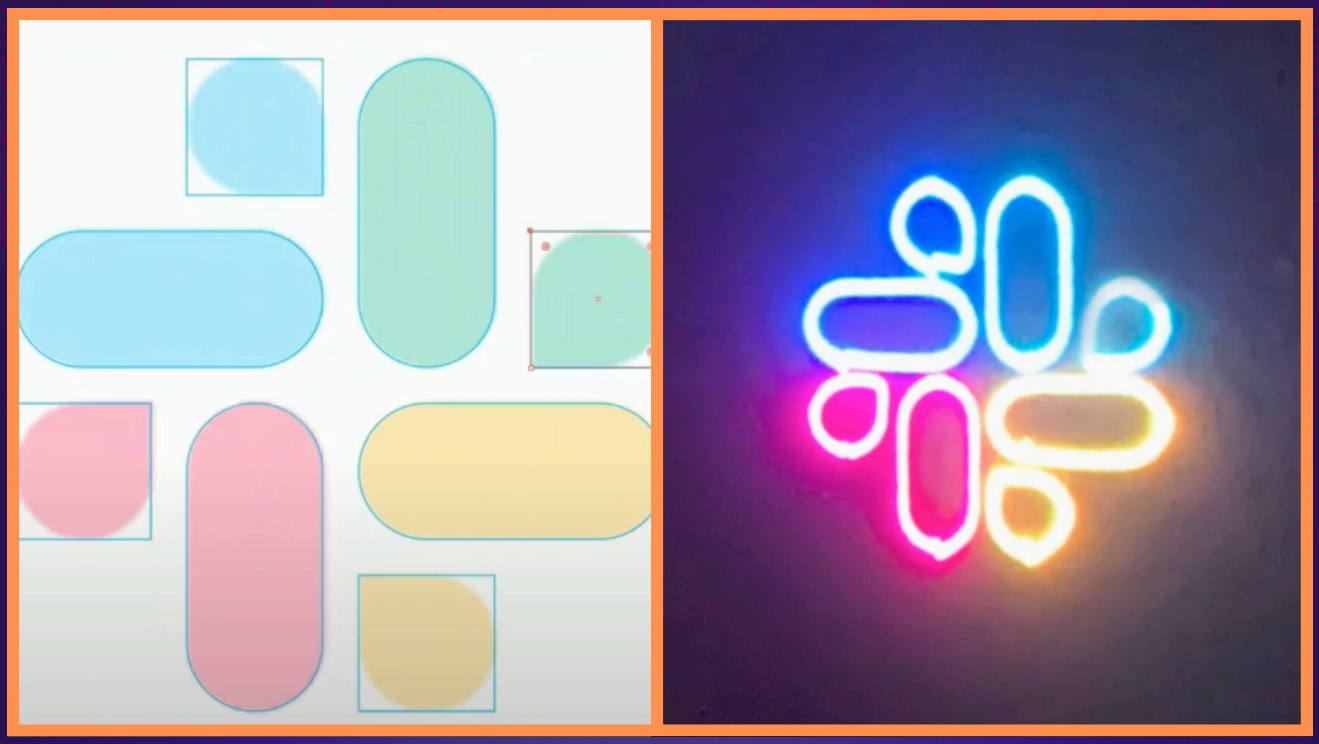
PART 3





Online Research

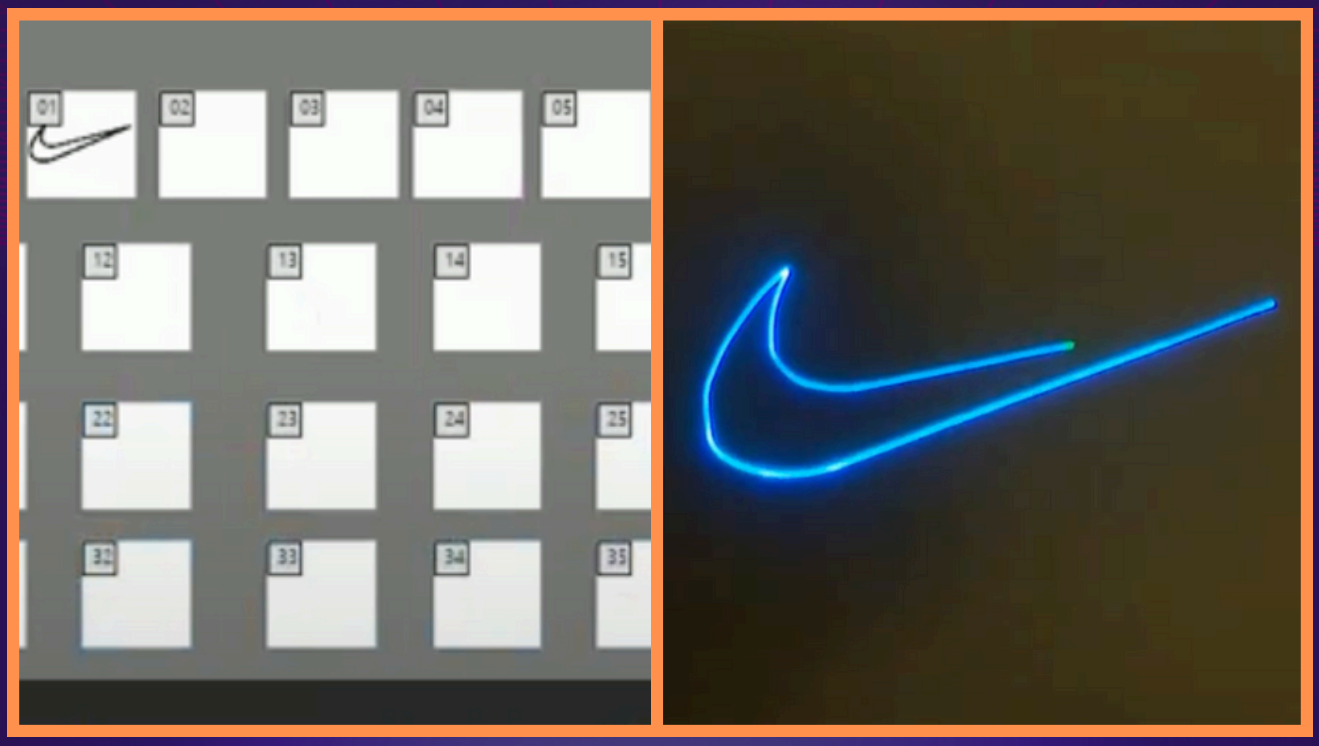
Illustrator Outline Graphics



This video shows that the LaserCube can be used to display an outlined logo. Graphics can be created in Illustrator and exported as SVGs. Under “More Options,” select “Presentation Attributes” under “CSS Properties” so that LaserOS can read the colors and gradients applied to the graphic. In LaserOS, users can experiment with the settings to add more effects to the graphic, such as the trace option.

Online Research

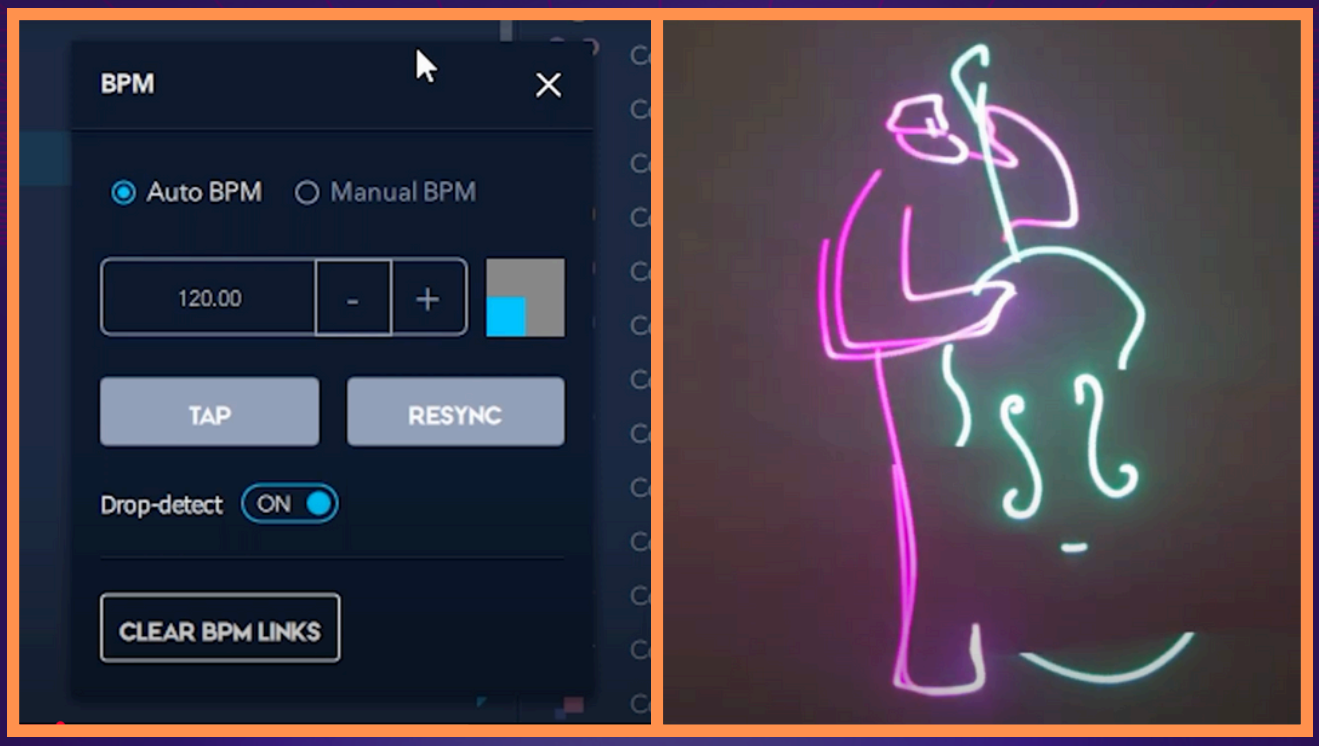
Illustrator Animation



Logos can be further advanced by animating them in Illustrator. The video shows duplicating the previous layer and drawing a longer line on each following layer, then each of those layers are placed on an artboard so that each artboard can be exported as a frame. The video shows exporting with “Export as Screens,” but “Export as” can also be used. Choose SVG and Artboards for both options. In LaserOS, when importing, the FPS and BPM can be set. In this video, they were set to 18 and 160, respectively.

Online Research

LaserOS BPM



The BPM feature in LaserOS allows the user to synchronize a graphic to the tempo of their chosen music. The audio can be set to the computer's speaker, then by clicking on "BPM," the tempo can be set to auto or manual. If there is a drop in the music, the option can be toggled on so that the software detects it. Under the display, an effect can be applied to the graphic. Each slider name under the display can be clicked on and its settings can be changed based on the beat of the music.

Online Research

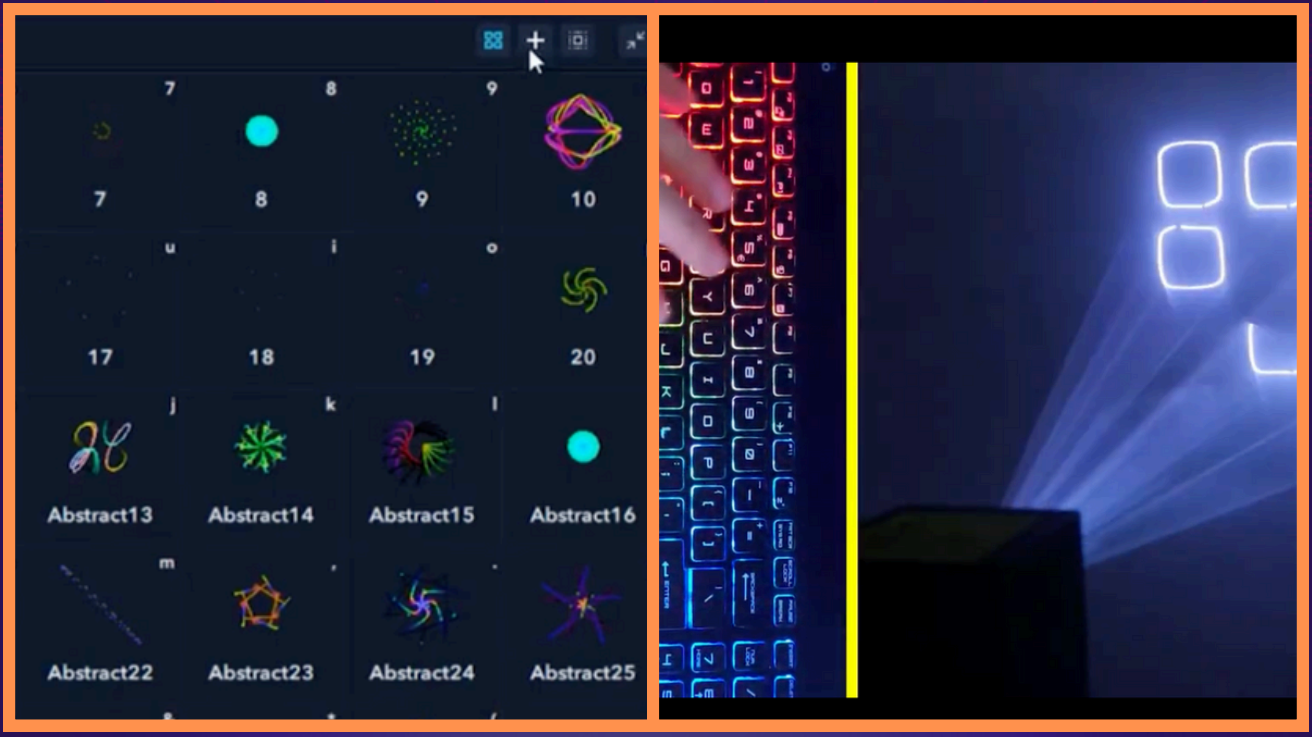
LaserOS Timeline + Music



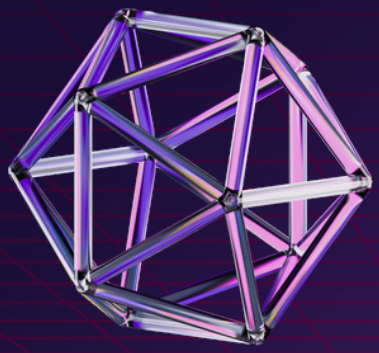
Toggle on the Timeline on the bottom left corner and load an MP3 file. Drag, drop, and resize animations in the timeline at the bottom. This allows users to display different graphics in different parts of the chosen song. Effects can be added to the timeline from the right column as well. Save the timeline as a playlist and access it from the “Playlists” tab.

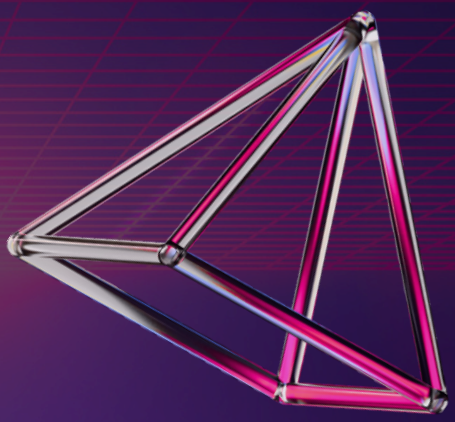
Online Research

Keyboard Auto Mapping

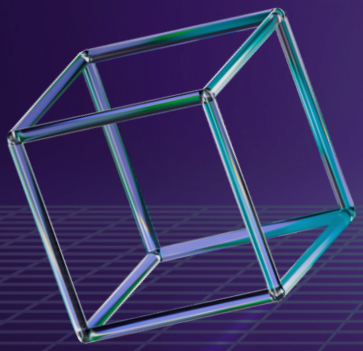


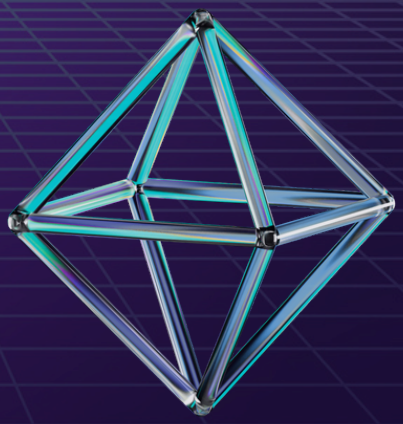
Similar to the previous tutorial, the user can assign graphics to a specific keyboard shortcut to ensure a quick transition. On the right middle column, there is a button on the top with four squares. The keyboard shortcuts will appear on each graphic. The plus button next to it allows the user to add the graphic to a custom playlist. The custom keyboard mapping can be accessed through the “Playlists” tab.





PART 4





Dogfooding

Chris, our client, is also our primary user since he will be utilizing the LaserCube to display graphics during NMI-related events.

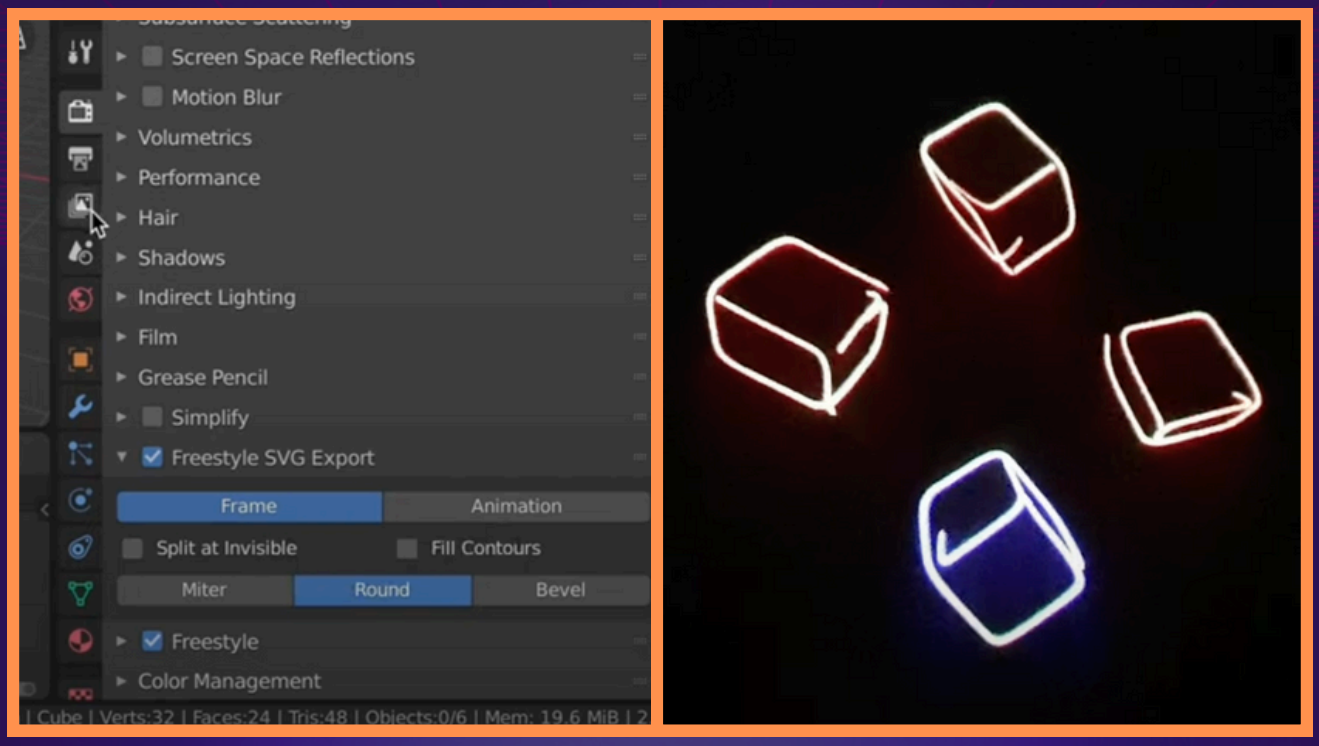
We aim to put ourselves in his shoes while we experiment with the LaserCube to help work out the kinks. This is also known as dogfooding, or the practice of using one's own products.

Ultimately, we hope that we can provide working knowledge of the LaserCube to Chris and report back all of our findings and tricks so that he can use the technology himself. We also want to provide an asset library that incorporates our own skills with the unique applications of the LaserCube.

During our Beta, we were able to test our findings, and push our animations even further. We played around with programs to see which ones would work best and look the best rendered on the LaserCube. We are testing the LaserCube to later on pass the information to Chris so he can continue creating the best graphics to display at events.

Blender Basics

Export from Blender



Install the Freestyle plugin to export animations as SVG outlines. Go to Edit > Preferences > Get Extensions, search for “SVG,” and install “Freestyle SVG Exporter.” In the “Render” and “View Layer” tabs, enable all “Freestyle” plugins and turn on “Culling.” In the “Output” tab, set the ratio and frame rate. Higher frame rates mean less detail. Set output naming to “//seq-.” Now, render the animation and import it into LaserOS. The video shows 30 FPS and 120 BMP.
*Note: When animating words, they render the best as individual letters.

LaserCube Takeaways

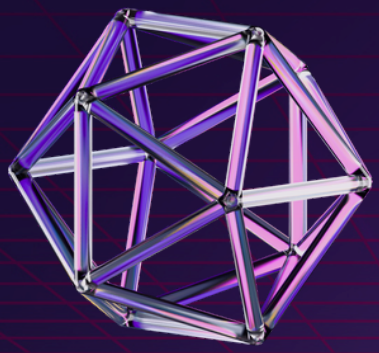
How to Set Up the LaserCube Ultra 7.5 W

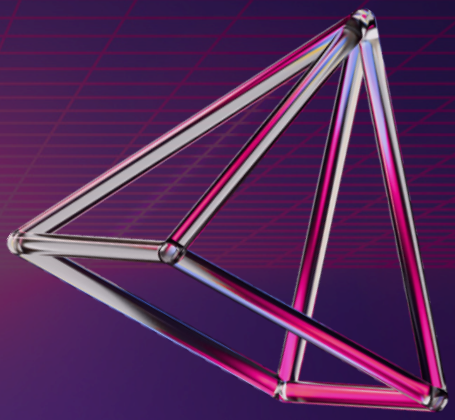
In depth YouTube video below:



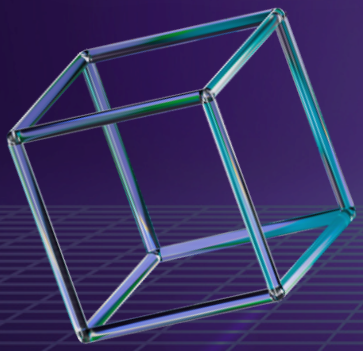
The best setup is on a computer, plugged into a power source, and physically connected to the LaserCube. It appears to render best this way as opposed to connecting via the LaserCube wifi network.

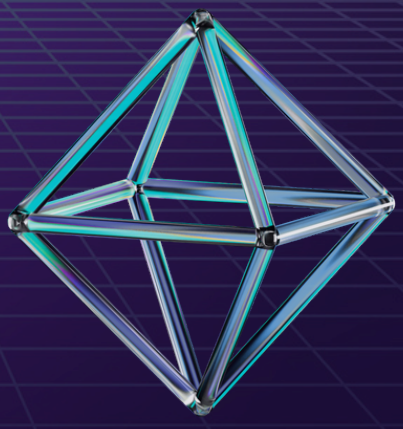
To export SVG files, they must be named in a sequence where the prefix is the same and the suffix is the frame number. For example, “Sequence_01,” “Sequence_02,” “Sequence_03,” or “NMI-01,” “NMI-02,” “NMI-03.” For the best render quality for SVG animations, toggle on “ILD” when importing into LaserOS.





CONCLUSION





Future Plans

We hope to use this information we collected to inform how we move forward when designing NMI assets. As we move forward we aim to look into:

- The BPM feature of LaserOS to sync with music
- How to map out the motion of a speaker
- Experimenting different mediums to project through (currently we're using tulle!)
- Best practices for animating logos and other assets

Furthermore, we also plan to document any pain points or tips and tricks we find associated with the LaserCube and its software.

Ultimately, we want to create a set of best practices for Chris, as well as a library of assets based off of the preferences of our viewers found through our survey. Balancing these two goals with the time frame and skillset of the group will be the key to a well-rounded project.

Sources

LaserCube Setup Video:
https://www.youtube.com/watch?v=gInHxTcjx4I

Survey Videos:
https://www.youtube.com/watch?v=0nvNmGFf1-k
https://www.youtube.com/watch?v=ZVusZntla6g
https://www.youtube.com/shorts/ACjrVShLFUE

Online Research Links:
https://www.youtube.com/watch?v=3ws_ghQBtrQ
https://www.youtube.com/watch?v=X_o97CaEV44
https://www.youtube.com/watch?v=ecT8CS8U_N8
https://www.youtube.com/watch?v=Dik_xbj0D-U
https://www.youtube.com/watch?v=y2Py-dj1gf4
https://www.youtube.com/watch?v=PrlK5Y74sR8&t=53s