



STARSTRUCT

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INTRODUCTION



This document presents guidelines for design, development and updates on Starstuct, a star-based learning tool. For consistent and effective results a designer with basic HTML, Javascript, or animation skills is desired for updates. Also included in this document are details on the project concept, the process, and an outline of visual styles used.

MEET TEAM MYLO



Bryan Ricci

Co-Leader



Tiffany Chieng

Developer Lead



Neala Hurst

Designer



Angelic Brown

Developer



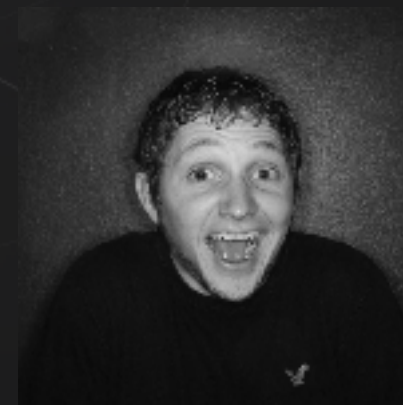
Robert Hyman

Co-Leader



Hannah Peckham

Designer



Toby Fitch

Designer



Mike Burns

Developer

Science Intimidates Students



Students

- Interactive learning experience
- Visual immersion
- Customization, an ability to create something unique

WHY STARSTRUCT

- Students deserve to be as engaged by their curriculum as they are enlightened.
- Excited students follow curriculum with passion, go beyond requirements, and yearn for more.
- We build projects that rekindle the spirit of exploration, and connect students with their universe.

MAIN OBJECTIVES



- Engage students in grades 5-8 with simulations of stars.
- Students will learn new curriculum while collaborating.
- Beautiful visuals will enrich the learning experience.

WHAT WILL BE TAUGHT



- Composition of stars
- Elements' effect on composition, mass
- Abstract learning

SPECIFICS



- Supernovas – Star Death
- Chemical Composition
- Types of stars (sizes, variable stars, binary stars, protostars)
- Nebulas – Star Birth

Starmap

iPad App

About

Handheld planetarium application for iPhone/iPad.
Interactive sky atlas app with many star gazing features.

+

Gaze at stars.
Eye piece mode shows how the sky will appear in a telescope.
Includes information about galaxies, clusters and nebulae.

-

Astronomy tool, over an educational experience.
Lacks information about star composition
and how stars effect the larger scale of the solar system.

iTunes U

Education

Higher education audio and visual content available for learning.

Columbia and Stanford participate.

Allows users to gain knowledge not usually available to them.
There are many Astronomy topics available for viewing/ listening.

Many of the talks are not for the younger target audience.
Most videos are simply of a teacher speaking, no other visuals or other interactions.

e-Books

Learning

Text books for studying stars and astronomy are now available as eBooks for Kindle, Nook, and other platforms.

There is a wealth of information within textbooks. Self-guided information for the reader.

The amount of information is intimidating within textbooks.
These eBooks do not leverage design or technology, and are digital copies of older books.

USE CASE

The Classroom



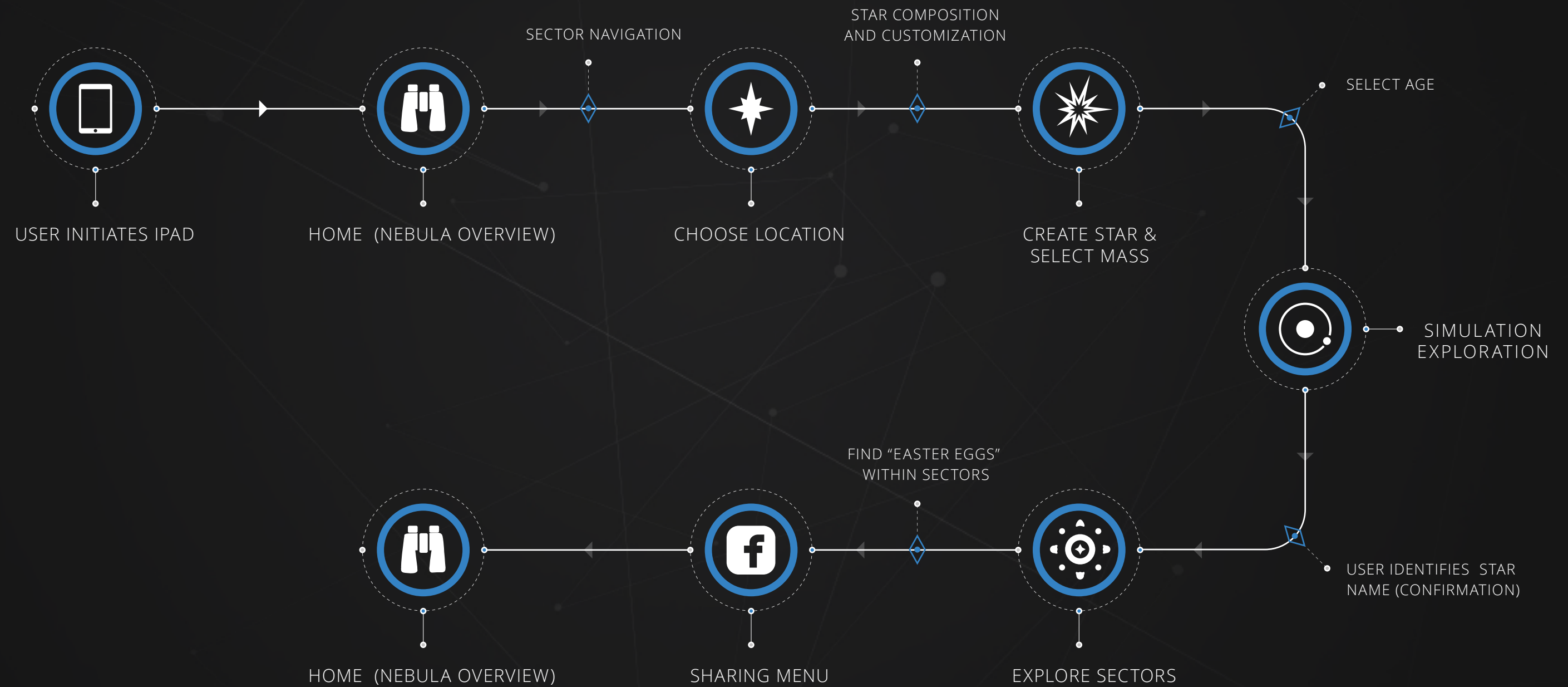
- 1 Starstruct is ideal for grade school level students. When learning about science and astronomy Starstruct can be integrated into lesson plans.
- 2 The students will use the application to create their own star, learn how elements effect the star visually, and how size and mass effects life span.
- 3 Once the stars are created, students can add them to the classroom solar system and be able to explore what they have created as well as explore other students creations.
- 4 The classroom solar system then becomes a "class pet" and can be watched over a period of time and see how the stars life spans progress and change.

Exhibit




- 1 Starstruct as an interactive installation is appealing for visitors of ImagineRIT or a museum. Through stunning visualizations, Starstruct draws the visitors in.
- 2 The users will use the application to learn how several factors can influence the outcome of how a star is made and how its lifetime is impacted.
- 3 After a star is created, users can add them to RIT's galaxy and be able to explore what other content were created by other users.
- 4 RIT's solar system can be accessed at any time during the day or users can return to the exhibit to view their star's progress and what has changed since they created their star.

USER FLOW




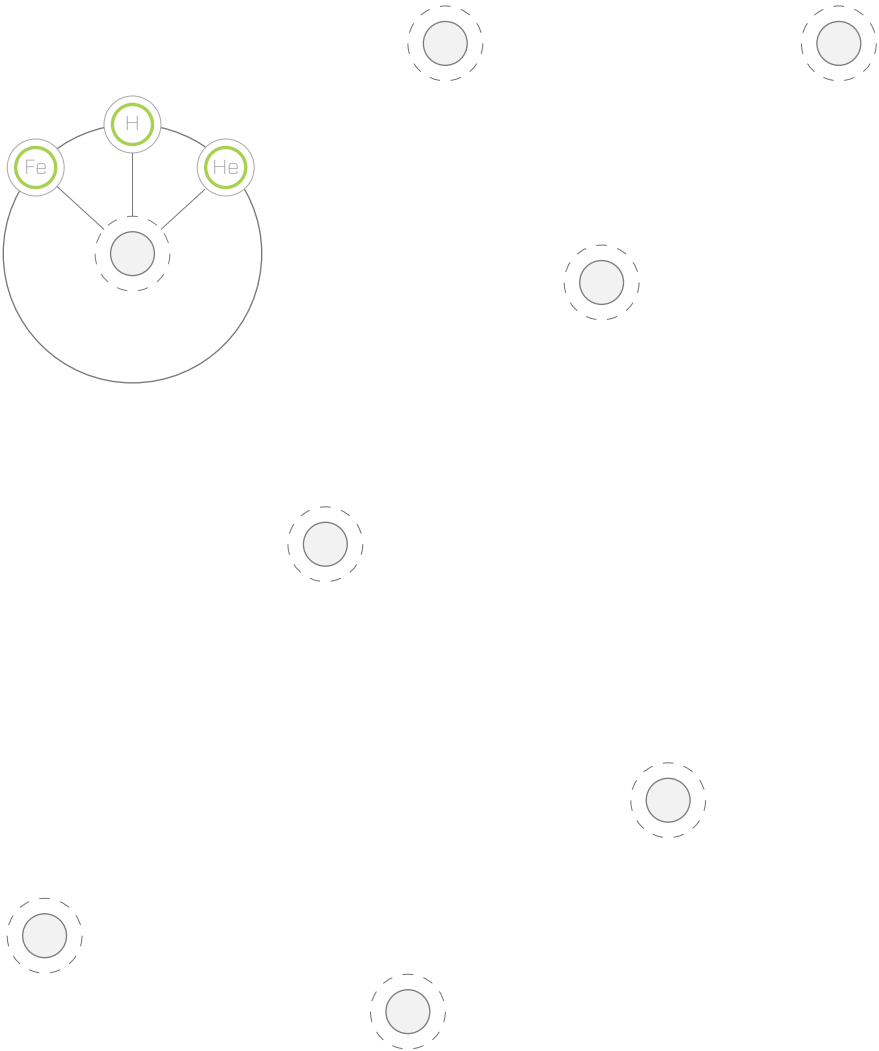
WIREFRAMES

- This is the exploration page. From this page you can explore the sector and see locations for potential stars.
- This page also is the location for exploration tasks and other data information that may be relevant.
- You can also navigate to different sectors from this page.



SECTOR NAME





DATA LOG

FACTS

EXPLORATION TASKS

	5		11		7
	8		8		2
	6		1		15

WIREFRAMES

- This is the star creation page. From here a user can create a star, and change its mass.
- Scrub the timeline to see how the star ages and view statistics about stars' size, brightness, and temperature.
- The gravity and scale simulation buttons will also appear to teach more about your star.



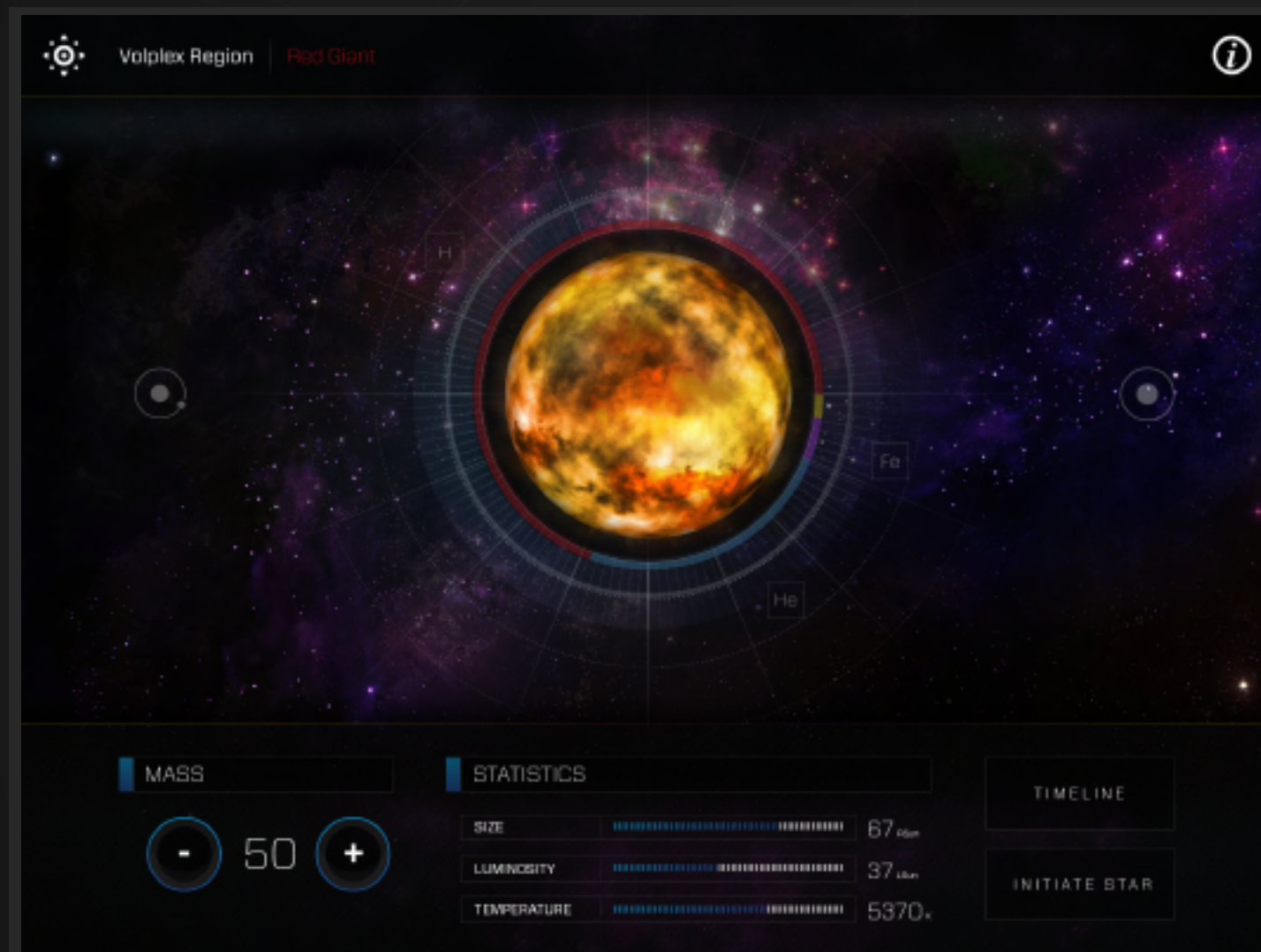
STYLE CHANGES



- Google launched their 100,000 Stars chrome experiment (using WebGL, CSS3D, and Web Audio)
- Style changes to our application were made due to this new competition
- Re-focused new design and UI for our target audience

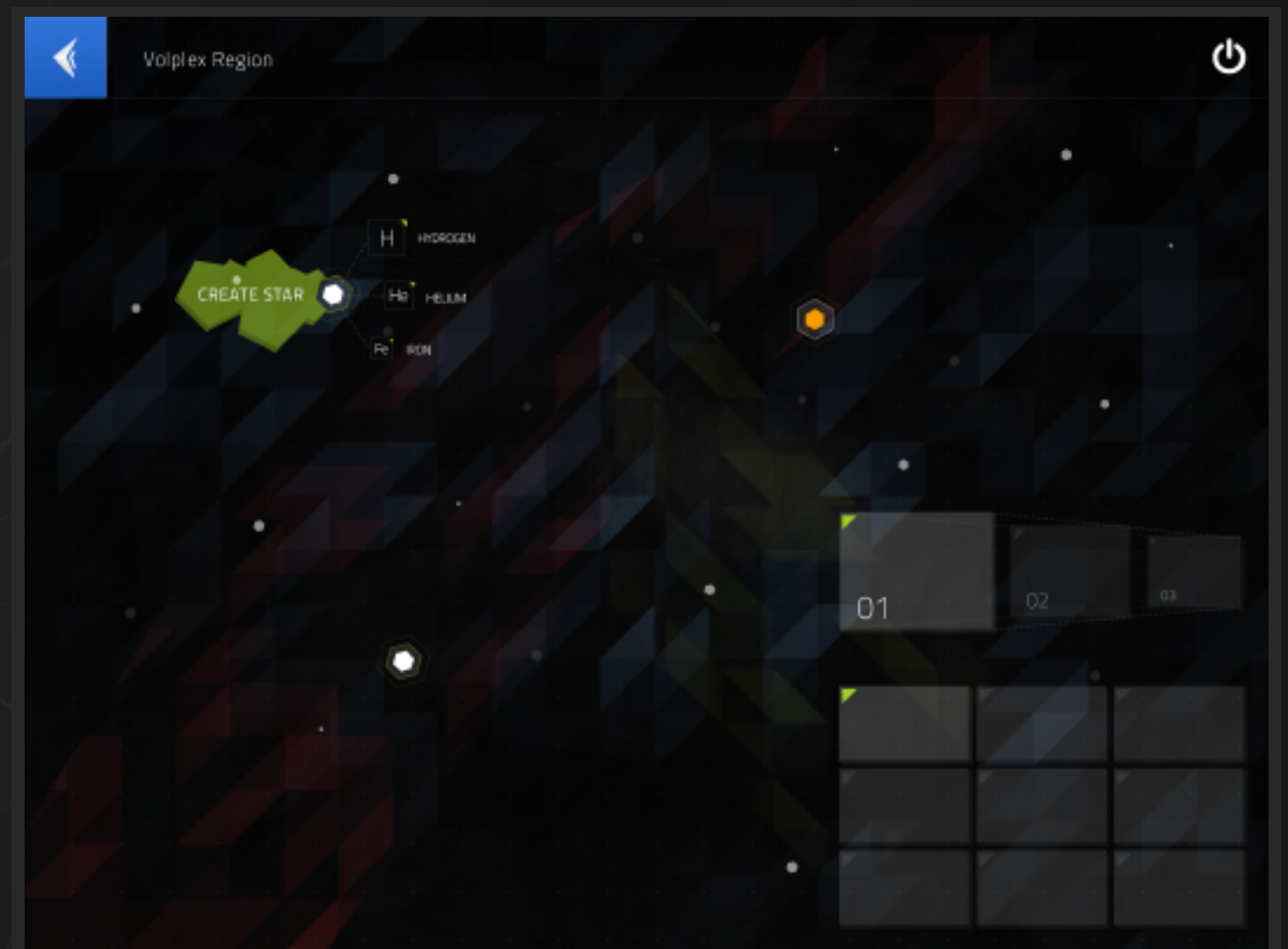


UX/UI ITERATIONS



- We went through many design iterations
- On the left is an example of our first style with realistic imagery
- We changed this to be more polygonal as seen to the right

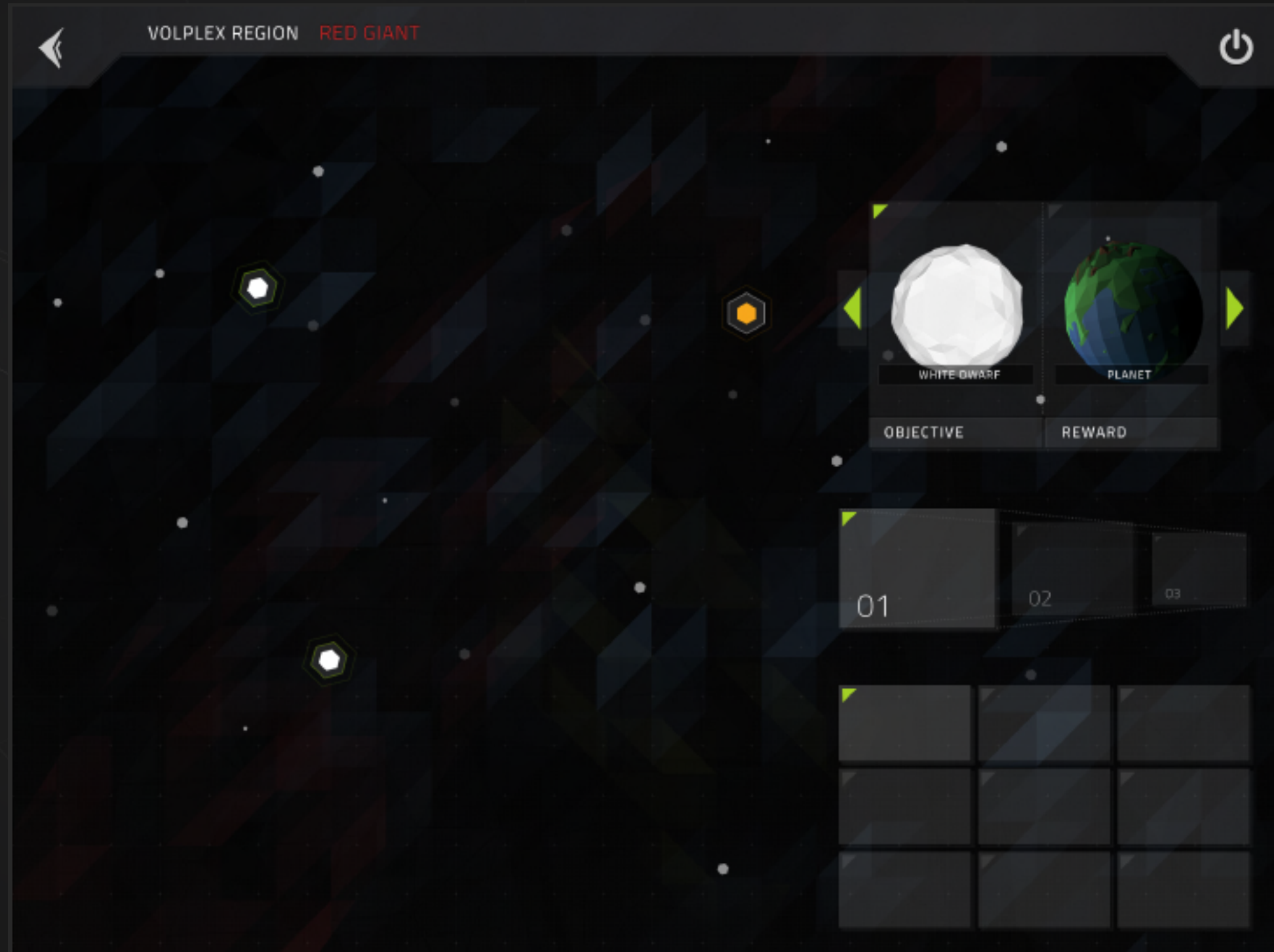
UX/UI ITERATIONS



FINAL DESIGN



FINAL DESIGN



STYLE GUIDE

Titillium Web

Semibold

Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!/?#%&\$@*[{(/|\)}

Regular

Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!/?#%&\$@*[{(/|\)}

Light

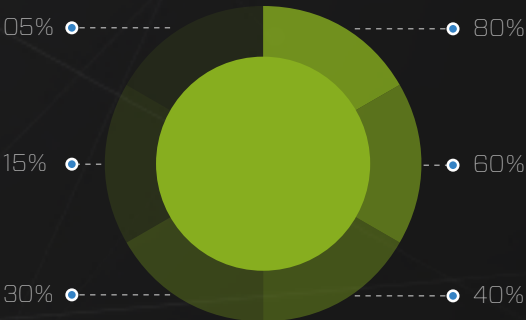
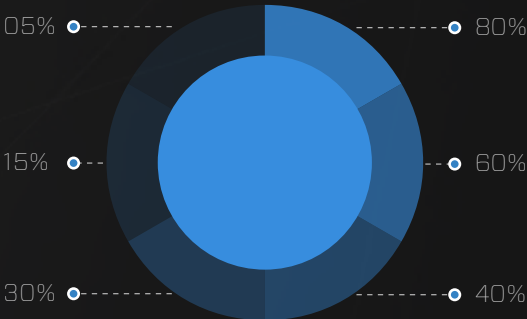
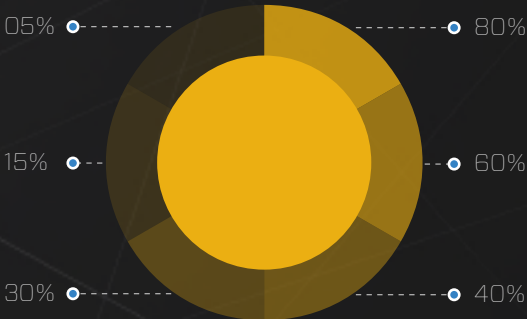
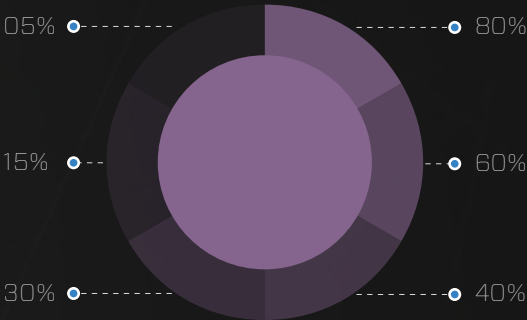
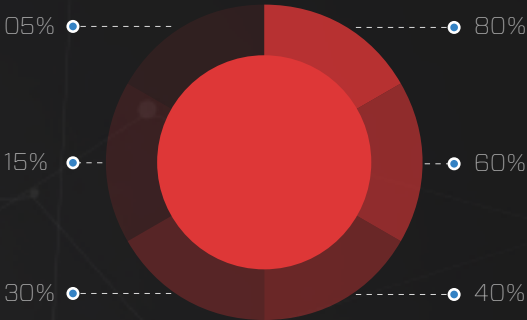
Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!/?#%&\$@*[{(/|\)}

Thin

Aa

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!/?#%&\$@*[{(/|\)}



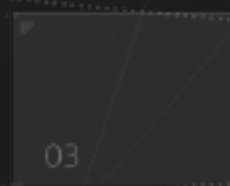
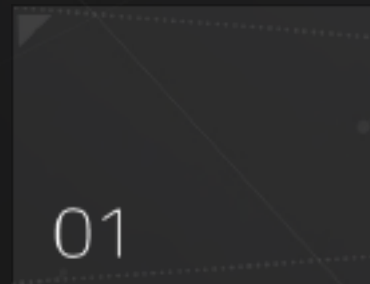
STYLE GUIDE

LOGO



DESIGN DIRECTION

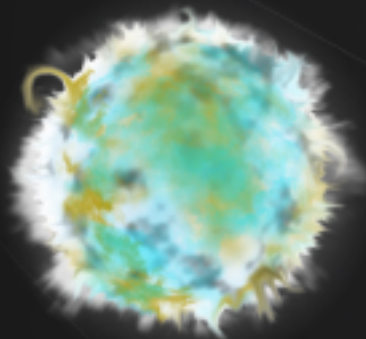
- Bold
- Clean
- Crisp
- Geometric
- Low-poly



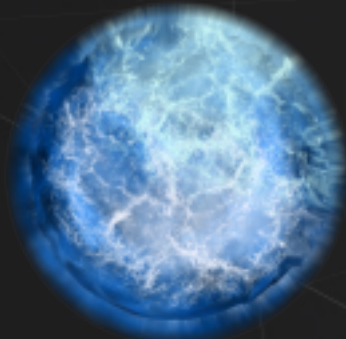
STAR ITERATIONS



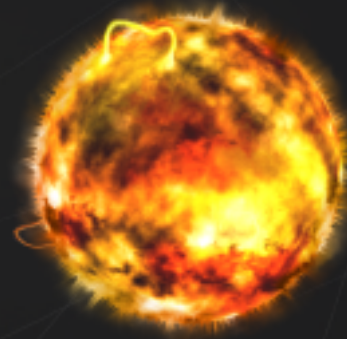
VERSION 1



VERSION 2



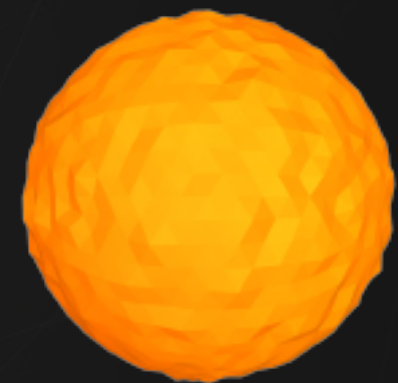
VERSION 3



VERSION 4



VERSION 5



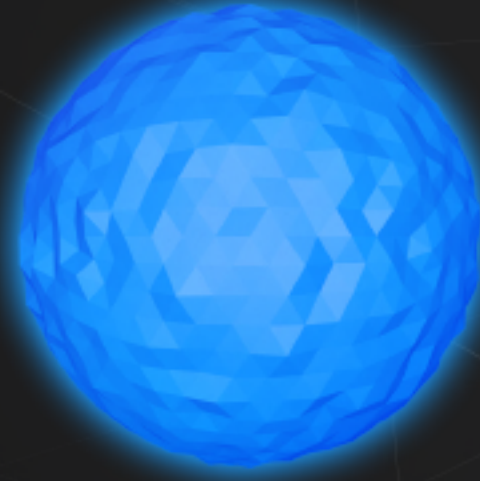
FINAL STYLE

MODELS



Stars

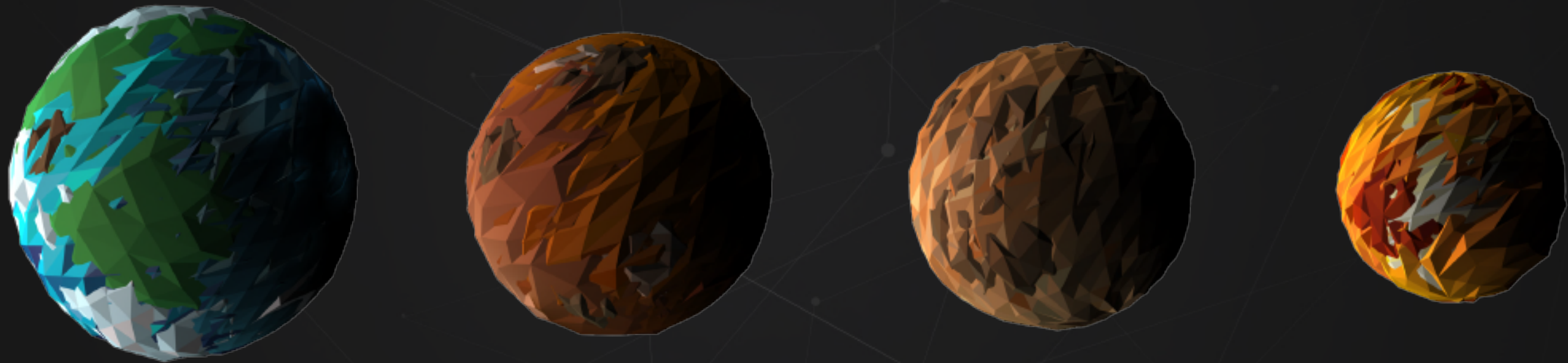
- Symmetrical (with exception to variable stars)
- Animated pulse effect



Moons

- Must have craters!
- Twist effect not recommended for Moons, but okay for Asteroids
- Non-spherical / odd-shaped

MODELS



Planets

- NO craters
- Grid base with polygonal landscape if applicable
- Twist Effect can be used

DEVELOPMENT

For this project, we tried to push technology to the max. Barring concessions for usability, this mentality should be continued with the project.



Technologies

- Originally focused on using Adobe Edge
- Pre loaded js libraries are more robust; couldn't use any old code from the JQuery library
- Using Easel JS, Tween JS, and will use pre loaded JS by the end of the project



Road Blocks

- We faced a lot of issues with using different technology within the project
- Making sure the animated star worked on iPad was a challenging process
- Retina is not supported in the browser.

DEVELOPMENT PROCESS

1

An Adobe Edge H5 HTML 5 CSS CSS 3 D DATA
P Processing.js jQ JQuery N Node.js

- Our original intention was to use Adobe Edge and a JQuery library for Starstruct

2

An Adobe Edge H5 HTML 5 CSS CSS 3
D DATA

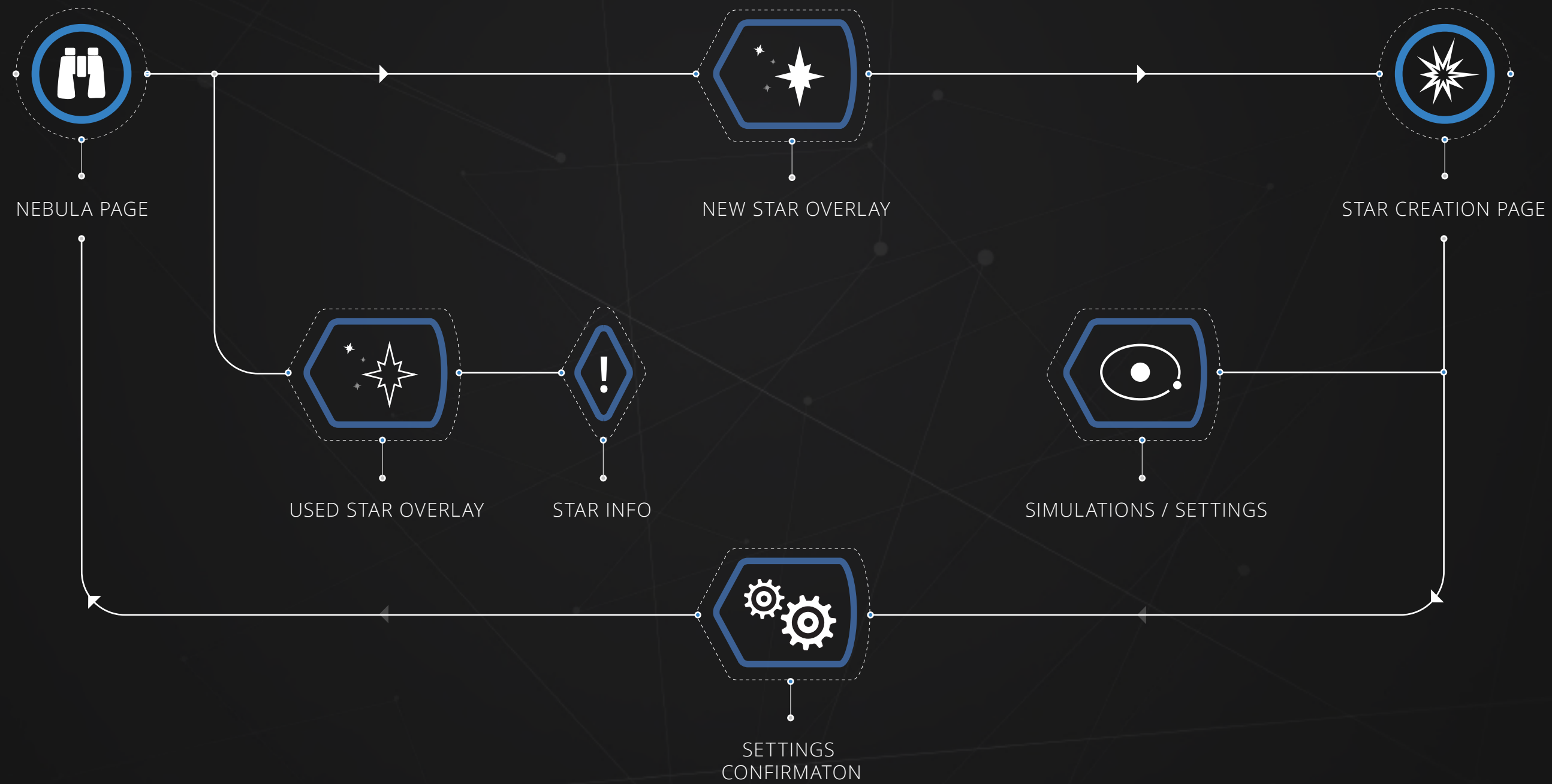
- Several versions of the interface were created, however the animations were being limited by Adobe Edges features

3

jQ JQUERY H5 HTML 5 CSS CSS 3
D DATA P PHP JS CREATE.JS

- After much trial and error, these are the current technologies we have implemented

SITE STRUCTURE



CLIENT/SERVER MAP

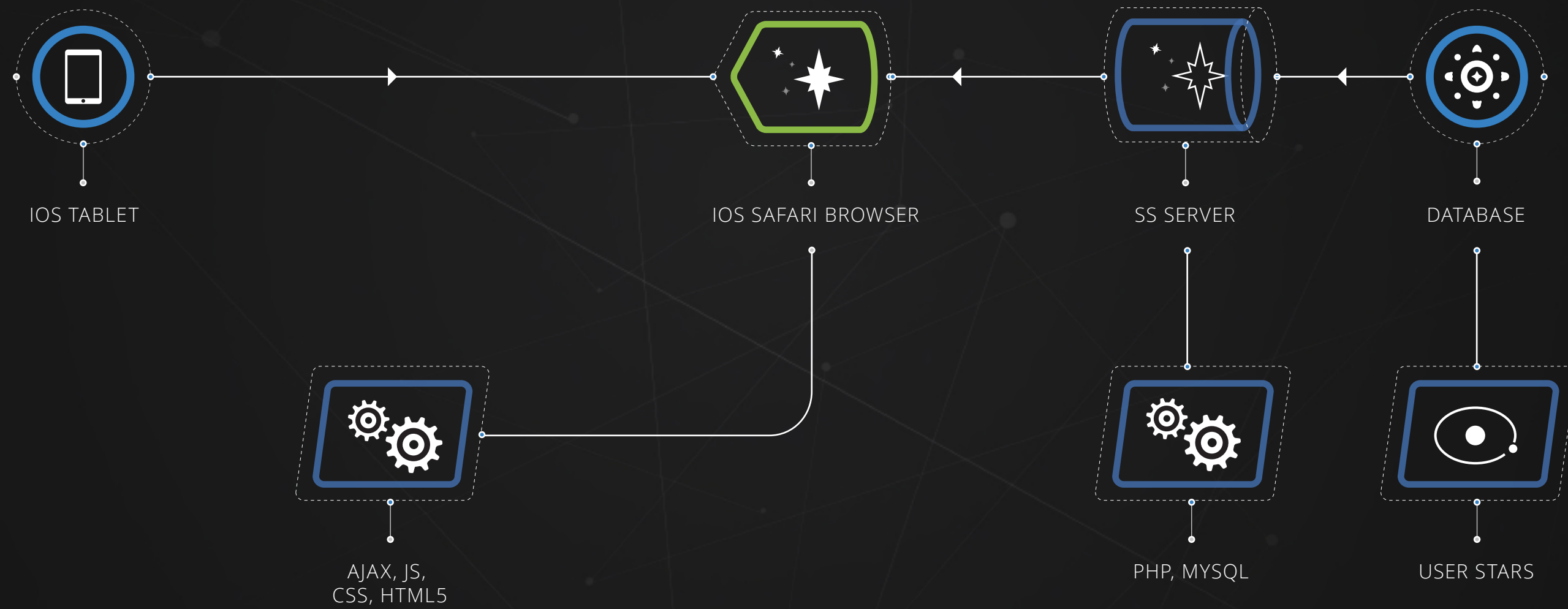
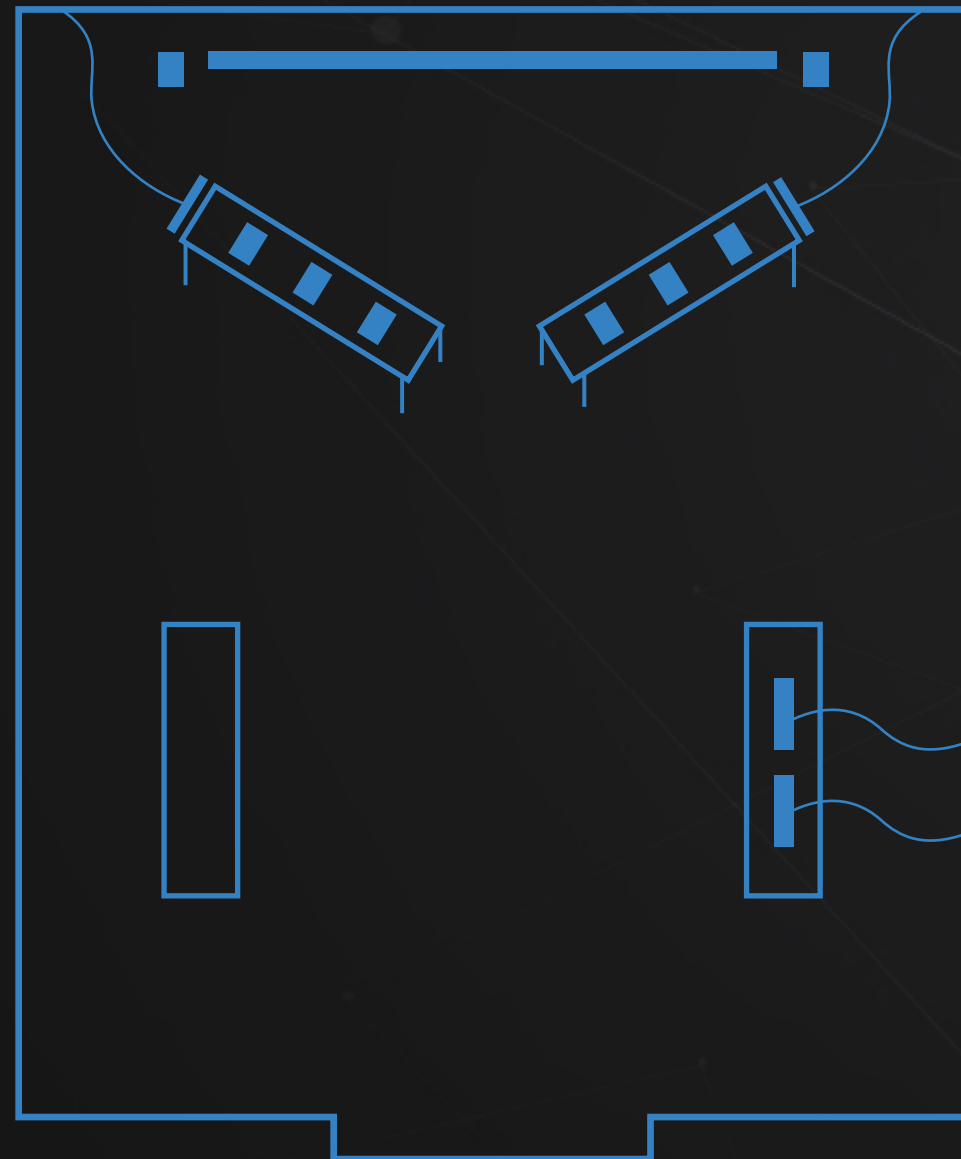
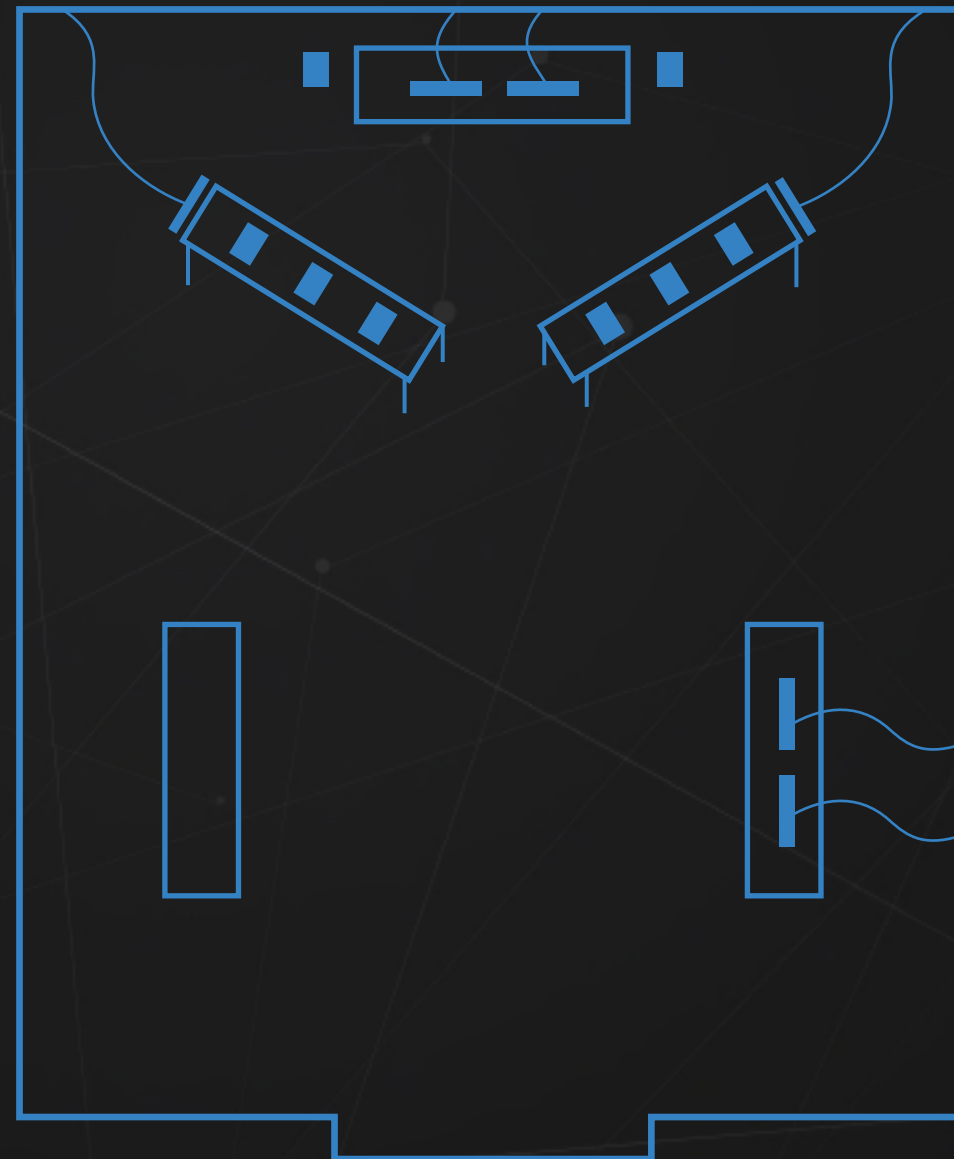


EXHIBIT SPACE + REQUIREMENTS

IMAGINE RIT ROOM



ALT. PRESENTATION ROOM



IMAGINE RIT

- 2 Extension cords
- Small Speakers
- 8 iPads
- 2 iMacs
- 4 Tables
- 2 Power supplies
- Projector/Screen

PRESENTATION

- 2 Extension cords
- Small Speakers
- 8 iPads
- 4 iMacs
- 5 Tables
- 2 Power supplies
- Projector/Screen

SUMMARY



• What We Learned

- Developers
 - Using Java Script libraries is the best method in creating the sector navigation and star creation.
 - Communication is essential!
- Designers
 - 3D modeling the stars allows relatively easy animation and allows for a fun and youthful low poly style.
 - Proper organization and planning of information as well as communication, is vital.

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SUMMARY



STARSTRUCT

Starstruct is a senior team project at Rochester Institute of Technology. We all learned about working as a team, about ourselves, and of course, about stars. The final product is hosted on our website: www.starstruct.com



STARSTRUCT