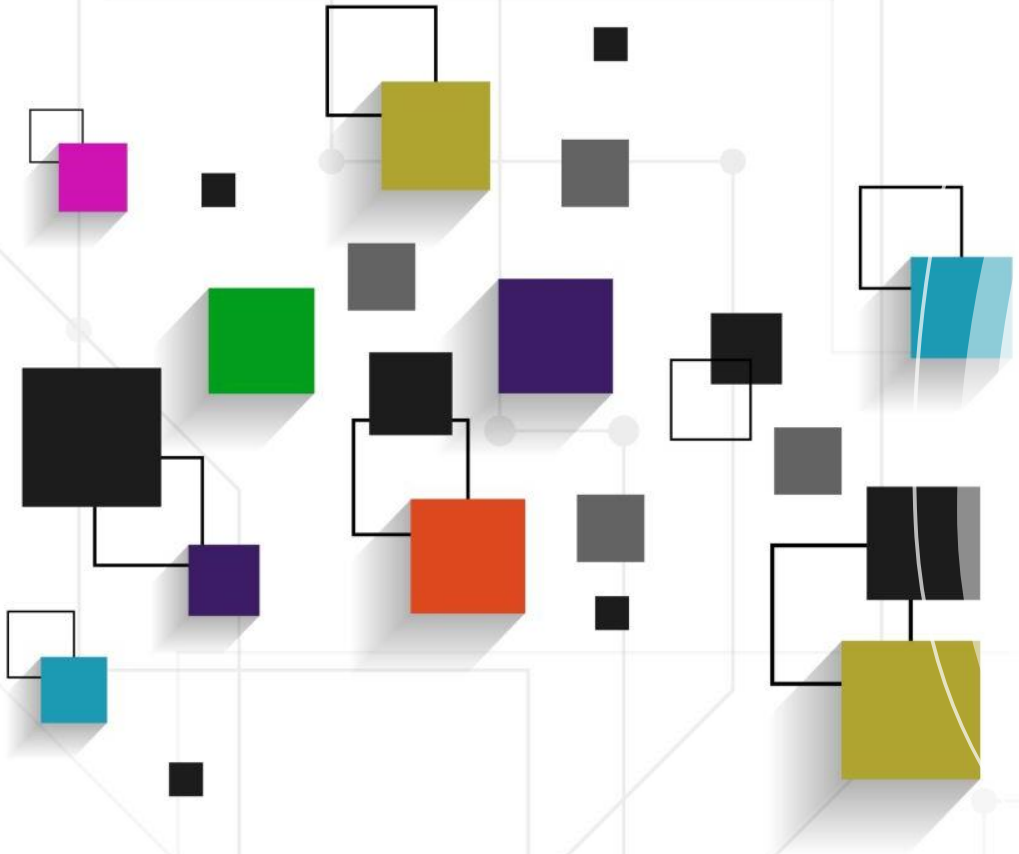


AR/VR Workshop
Introduction

Phillip G. Bradford

University of Connecticut

Full select demo – how you can do …

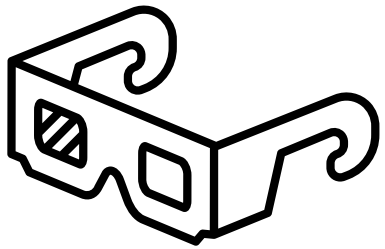
Basic-Mars-Landing

Module demo highlights: 3D image

Outline

Overview

No installations needed



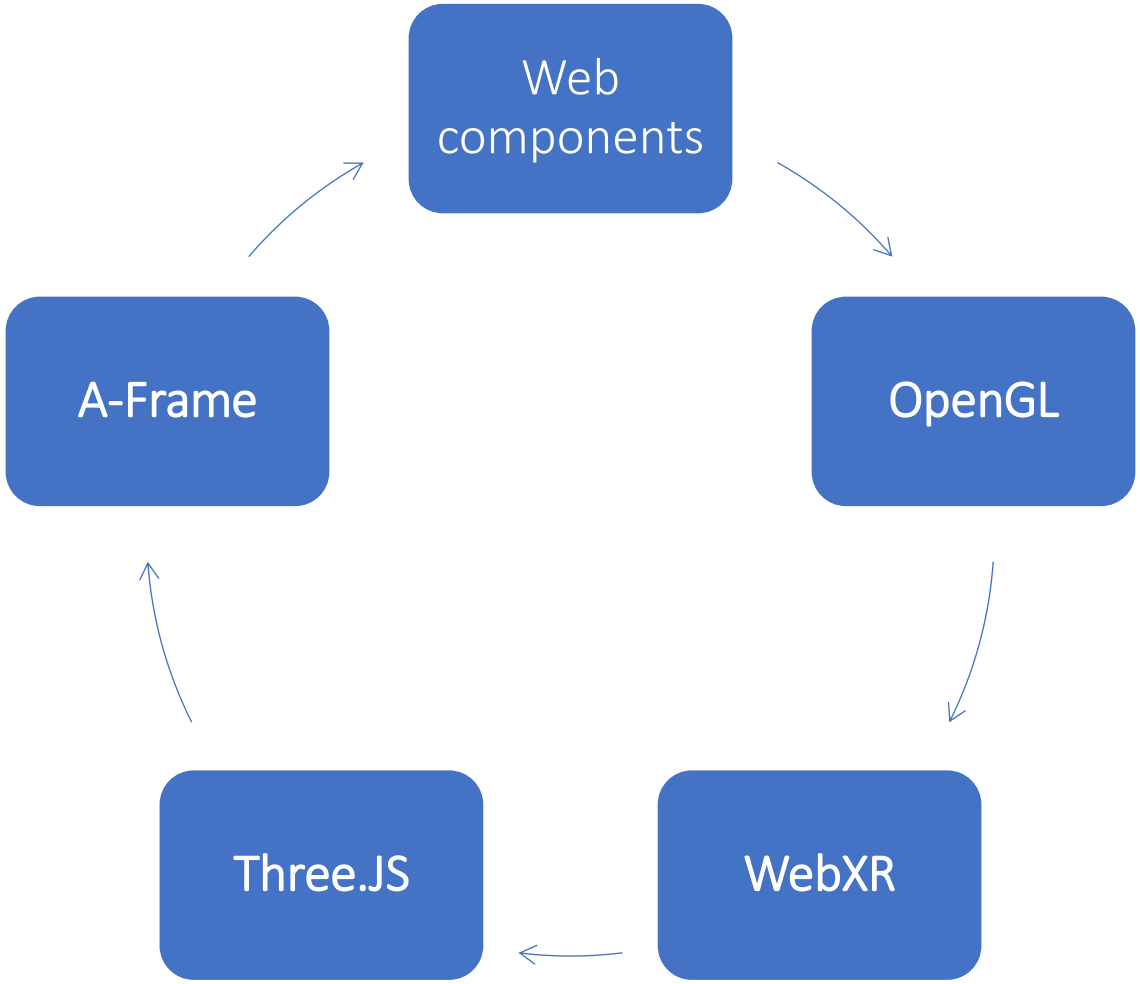
Glitch

What is Glitch.com?

Get an account in Glitch.com

Our first VR/AR examples

High level view and learning path



A-frame

3D virtual reality system built by Mozilla

A-frame is a component system built on **Three.js**

Three.js is built on **WebXL** which is built on **WebGL**

A-frame is HTML that uses web-components

Declarative – tell it what you want to see,

it figures out how to do it

No installation VR

Nothing installed

You may use Python3

To get started, get a free account on **Glitch.com**

What is glitch?

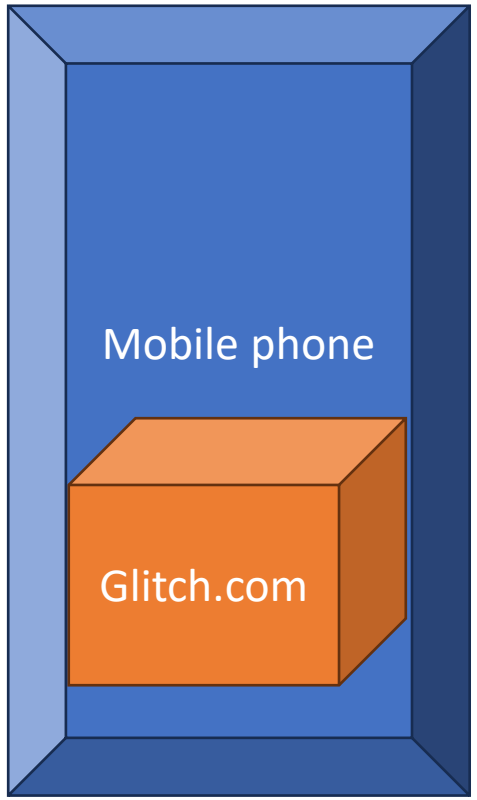
Cloud-based development environment

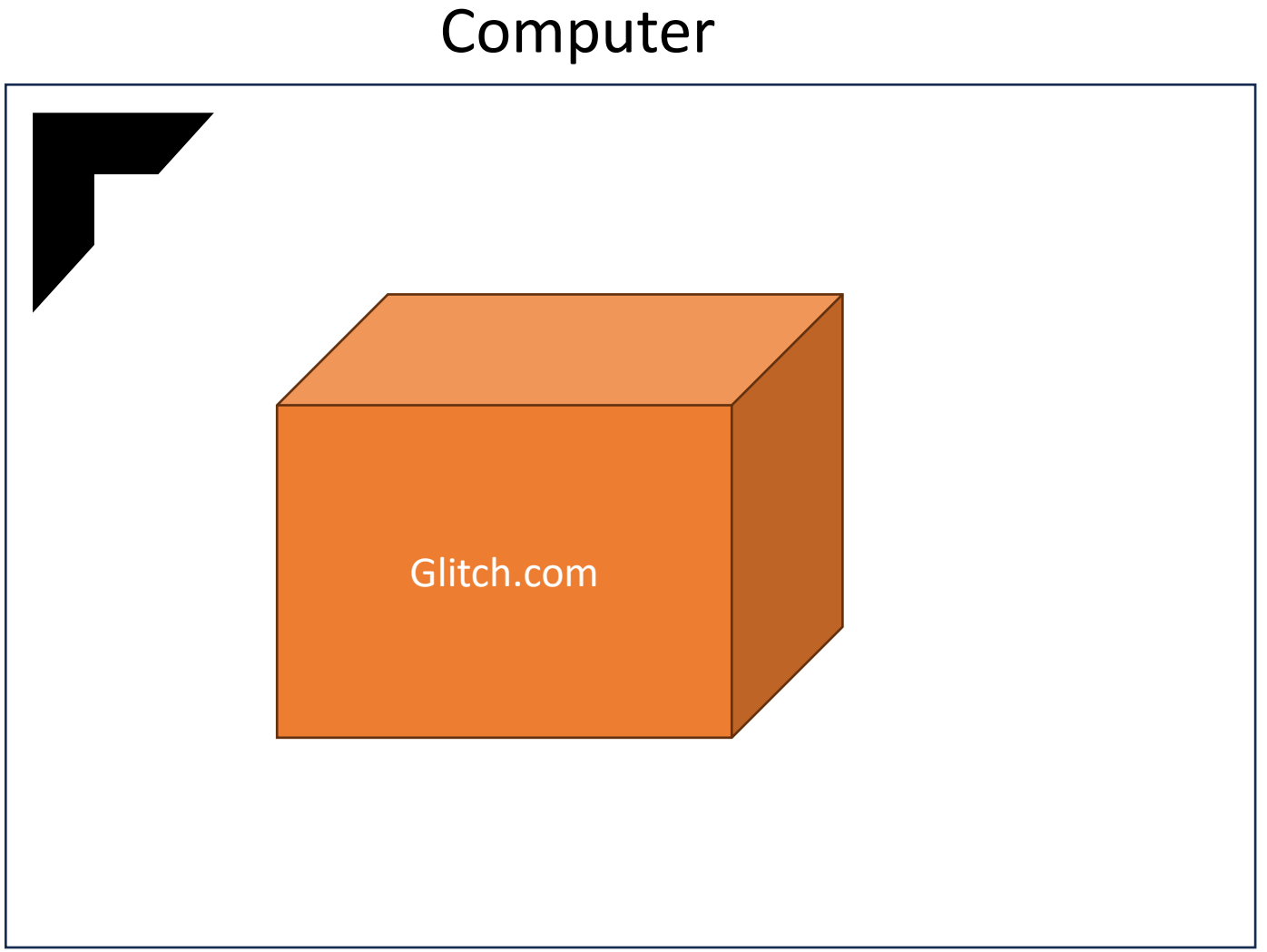
Fast development

Gives you a URL for each project

A-Frame is run through the on-line glitch environment

Glitch.com Overview





Sign up for glitch

Glitch can stand alone or can be hooked to via google

Sign up on **glitch**

The same account on your laptop and your phone

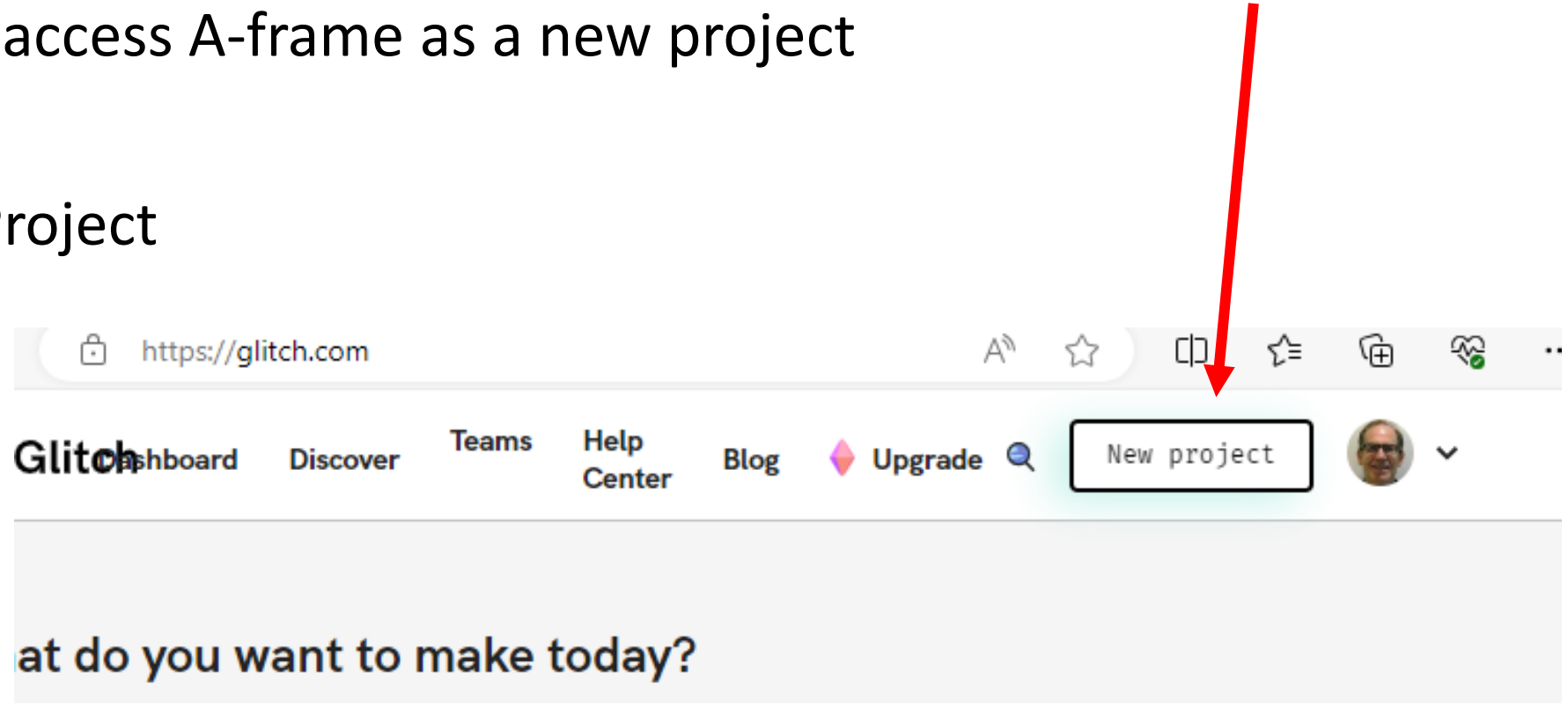
Changes in **glitch** on your laptop will be seen on your phone

Using A-frame in glitch

Once you create a glitch.com account

access A-frame as a new project

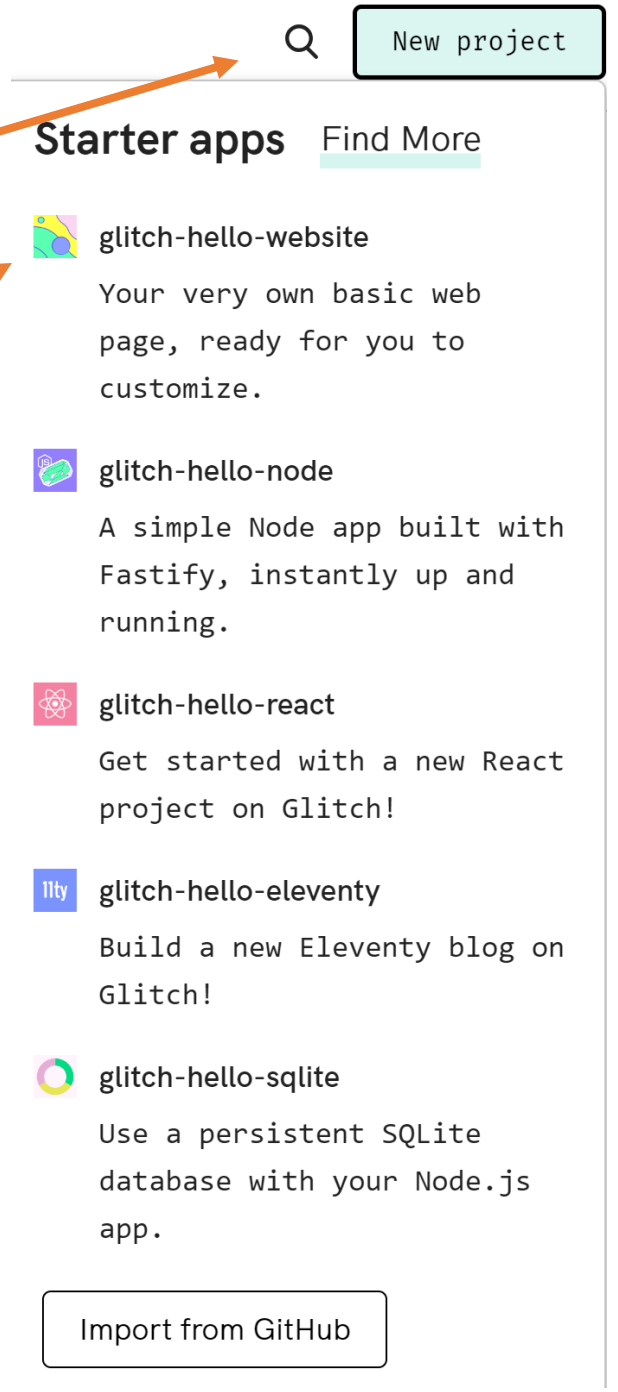
New Project



Glitch Hello Website

Select New project

Select glitch-hello-website



Basic HTML

```
<html>
  <head>

  </head>
  <body>

  </body>
</html>
```

Working with Glitch

Replace the original **index.html** in Glitch with

1. The contents of not-index.html in p01
2. Find the same project on your phone name as Glitch shows on your laptop
3. Put your Virtual Reality Glasses on you phone and look through them
4. You should see HELLO A-Frame!!! on a dark blue background

All that work and we end up with a blue background!
How can we improve the background?

Replace index.html with not-index.html

```
<html>
<head>
   <meta charset="utf-8">
   <title>Hello A-Frame Example</title>
    <script src="https://aframe.io/releases/1.4.1/aframe.min.js"></script>
 </head>
<body>
   <a-scene>
    <a-sky color="#0000EE"></a-sky>
    <a-text
     font="kelsonsans"
     color = "#FFFFFF"
     value="HELLO A-Frame!!!"
     width="6"
     position="0 -1 -5"
    ></a-text>
 </a-scene>
 </body>
</html>
```

```
<a-scene>
    <a-sky color="#0000EE“>
     </a-sky>
    <a-text
     font="kelsonsans"
     color = "#FFFFFF"
     value="HELLO A-Frame!!!"
     width="6"
     position="0 -1 -5"
    ></a-text>
</a-scene>
```

VR glasses steps

Login to **glitch** on your phone to synchronize it with your laptop

On your phone go to your Dashboard

Go to Projects

Select the same project you are working on in your laptop

Use VR glasses to view the project on your phone

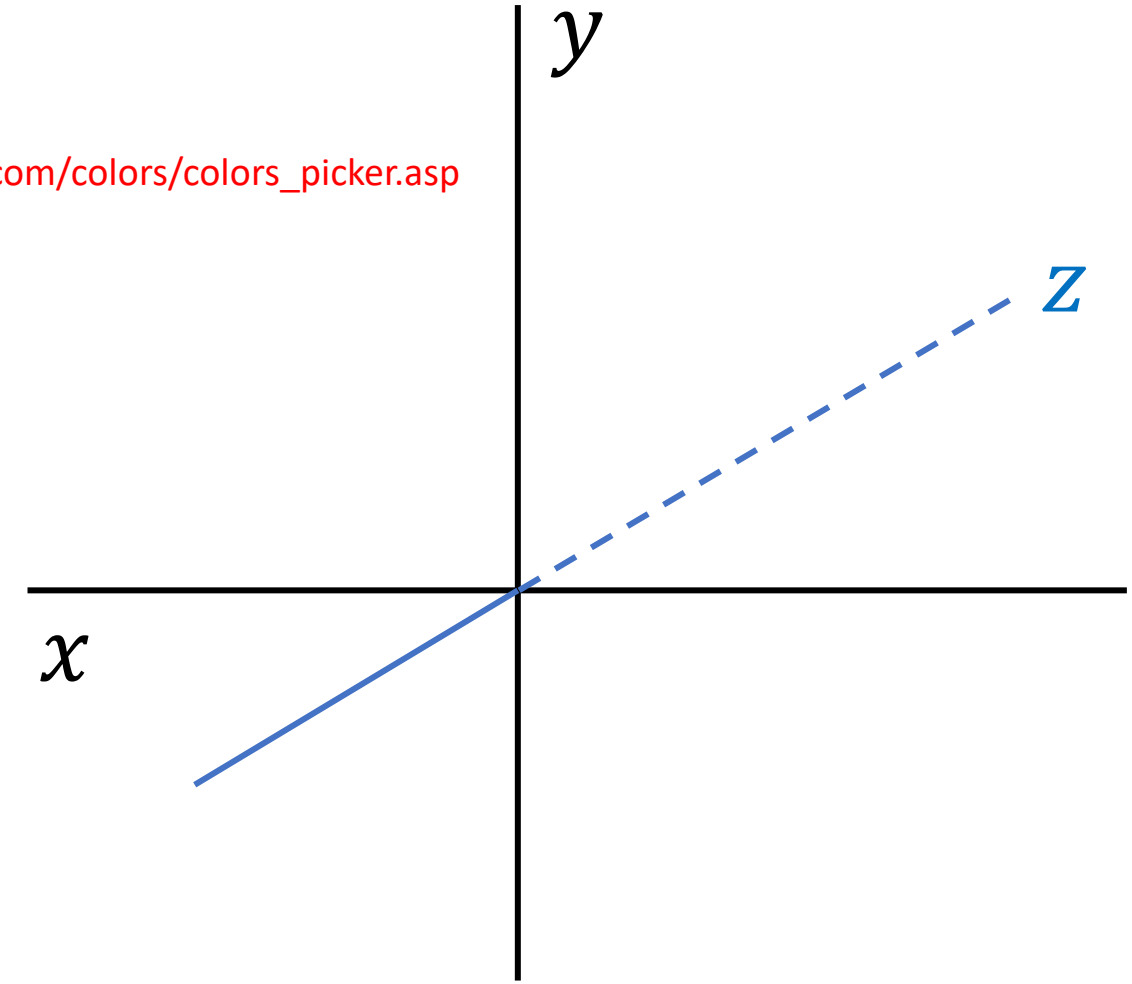
simple-sky.html

```
<a-scene>
    <a-sky color="#0105EF">      Select a color at https://www.w3schools.com/colors/colors_picker.asp
    </a-sky>

    <a-text
     font="kelsonsans"
     color = "#FFFFFF"
     value="HELLO A-Frame!!!"
     width="6"
     position="0  -1  -5“    Note: x-horizontal,   y-vertical, and   z-depth*
    ></a-text>

  </a-scene>
```

*this translates to 1 meter below the origin and 5 meters into the page



simple-sky.html: changing the view

```
<a-scene>
    <a-sky color="#0105EF">
    </a-sky>
    <a-text
     font="kelsonsans"
     color = "#FFFFFF"
     value="HELLO A-Frame!!!"
     width="6"
     position="0   -1   -5"
    ></a-text>
  </a-scene>
```

Replace the current index.html on glitch with not-index.html
Simple-sky.html

← a-scene now looks like this

How to upload a picture into glitch

To use a photo (Moving_Forest_1050_700.webp in p01/IMAGES) as a background upload it into glitch this way

Make sure to copy the new URL something like

```
<a-sky
      src="https://cdn.glitch.global/4cb2dafe-67a2-4c7f-b424-b5ef32487f34/Moving_Forest_1050_700.webp?v=1696984169228">
 </a-sky>
```

Adding a picture to simple-sky.html

```
<html>
 <head>
  <script src="https://aframe.io/releases/1.4.1/aframe.min.js"></script>
 </head>
 <body>
  <a-scene>
   <a-sky
    src="https://cdn.glitch.global/4cb2dafe-67a2-4c7f-b424-b5ef32487f34/Moving_Forest_1050_700.webp?v=1696984169228"
    >
   </a-sky>
   <a-text
    font="kelsonsans"
    value="HELLO A-Frame from Earth!!!"
    width="6"
    position="-2.5   0.25  -1.5"
   ></a-text>
  </a-scene>
 </body>
</html>
```

Putting it all together

You have now created virtual reality text on a 3D background

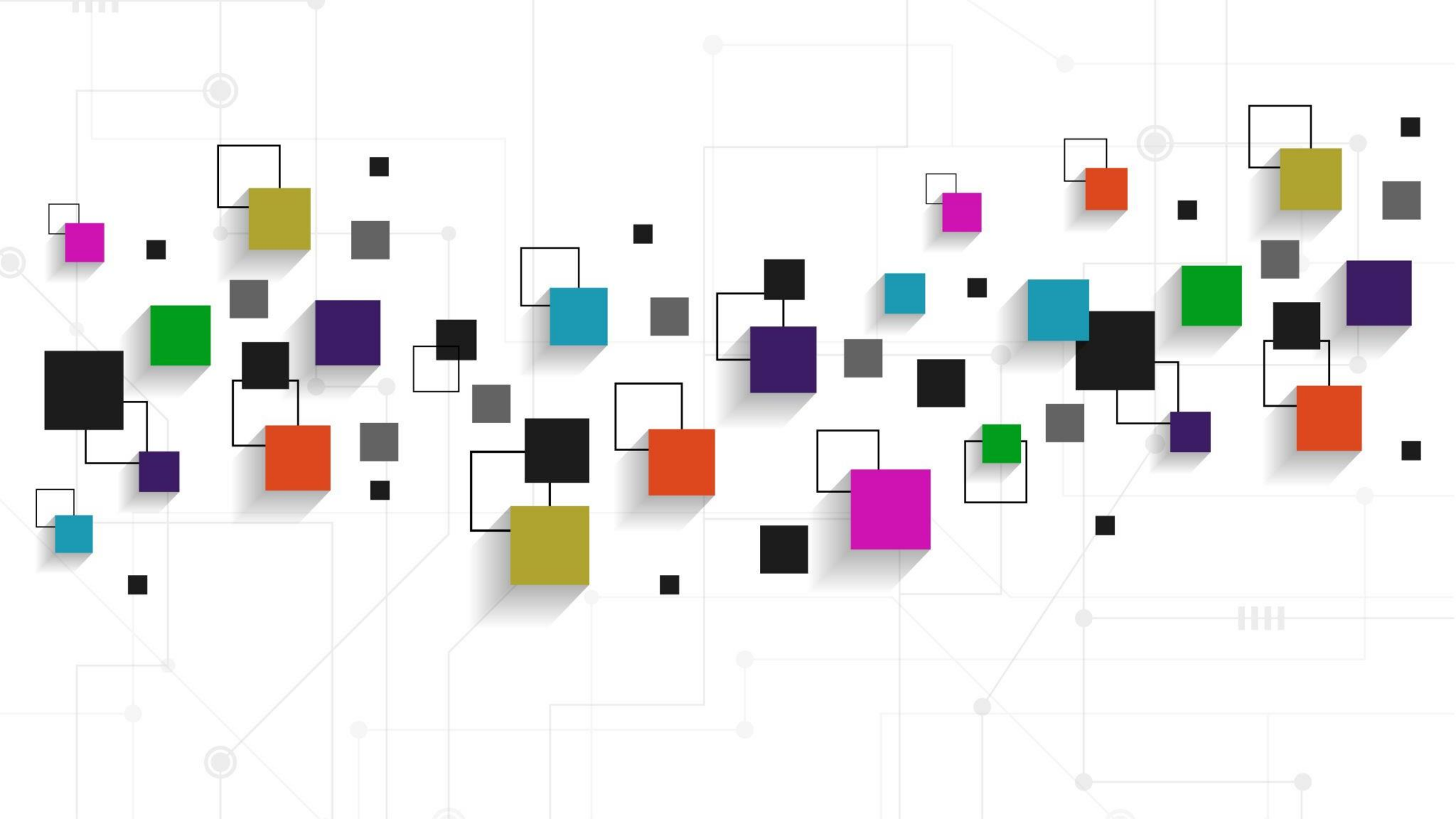
We can also

1. Change background – to the nebula

What if it doesn't work? TROUBLESHOOTING!

2. Move text around in the nebula

What if it doesn't work? TROUBLESHOOTING!



Getting a-frame from aframe.io

```
<head>
   <script src="https://aframe.io/releases/1.4.1/aframe.min.js">
   </script>
</head>
```

Or to run outside of Glitch.com to help TROUBLE SHOOTING

```
 <body>
   <script src="js/aframe.io_releases_1.4.1_aframe.min.js"></script>
```

TROUBLESHOOTING!

CTRL-ALT-I in browser for a-frame debugging

SHIFT-CTRL-J in browser for Chrome/FireFox debugging

CTRL-O in browser to load a file