Technical Aspects

1. Software toolchain
2. How to make reality convincing
3. Example: compass
4. Example: voices

Repository: https://github.com/domenicus/VR-Mapping

Software toolchain

1. We deliver all content through the browser. All of our code is JavaScript and HTML.
2. We do not have a serverside component; any HTTP server will do (e.g. Apache, Nginx).
3. To access VR we depend on the WebVR browser API, the Gamepad API, and the A-Frame JavaScript library.
4. Firefox controls the headset on our behalf through SteamVR.

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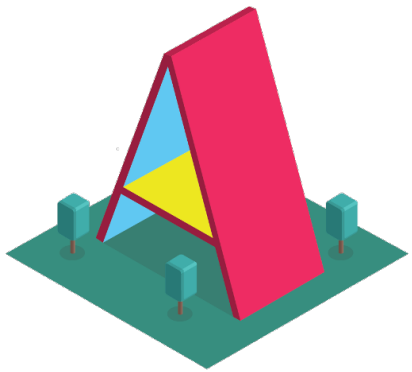
Why A-Frame



When we set out, we wanted to ensure we weren't tied to a single headset or a single computer. The easiest way to achieve this is to use a headset-agnostic, OS-agnostic framework like A-Frame.
A-Frame is completely open source, meaning that we can make our own modified copies and keep and distribute them without issue. This avoids relying on a commercial software licencing agreement for future availability.

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How to make reality convincing

We started with very basic environments, like rooms with flat maps on the wall. We learned a variety of important lessons:

1. Sharp transitions are scary, slow transitions are nauseating.
2. Turning around is annoying.
3. Boring space is bad space.

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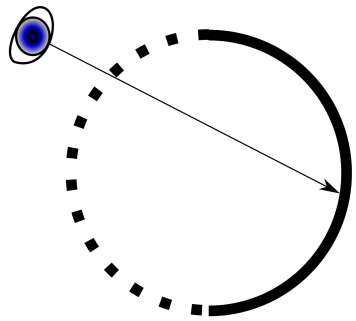
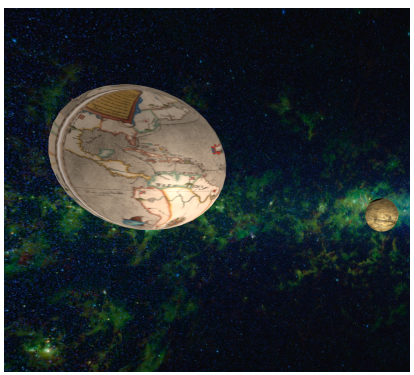
Compass





1. At first, we just started people in front of a map. This was not exciting.
2. So, we added an introductory space, with a 'portal' to get in. We made our 'portal' by putting an image on the 'inside' of a globe, and making the walls transparent from the outside.
3. We ultimately transformed the introductory space to the literal vision of space we now have, but the portal had captured out attention as the 'Aleph' from Borges.
4. We kept the portal, since it was a good (and philosophically satisfying) transition.

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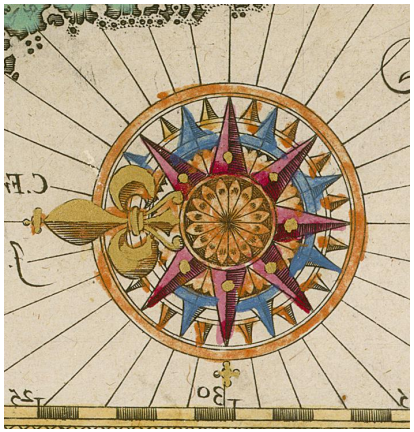
Compass



1. To really have an Aleph, we needed to be able to access **all** the maps, not just one.
2. We put all the maps in one little portal, and let the user select which one they want. This was also very convenient!
3. We decided to use a motif from one of the maps we studied, a compass.
4. We made a 3D model and attached it to the portal, making it feel more physical.

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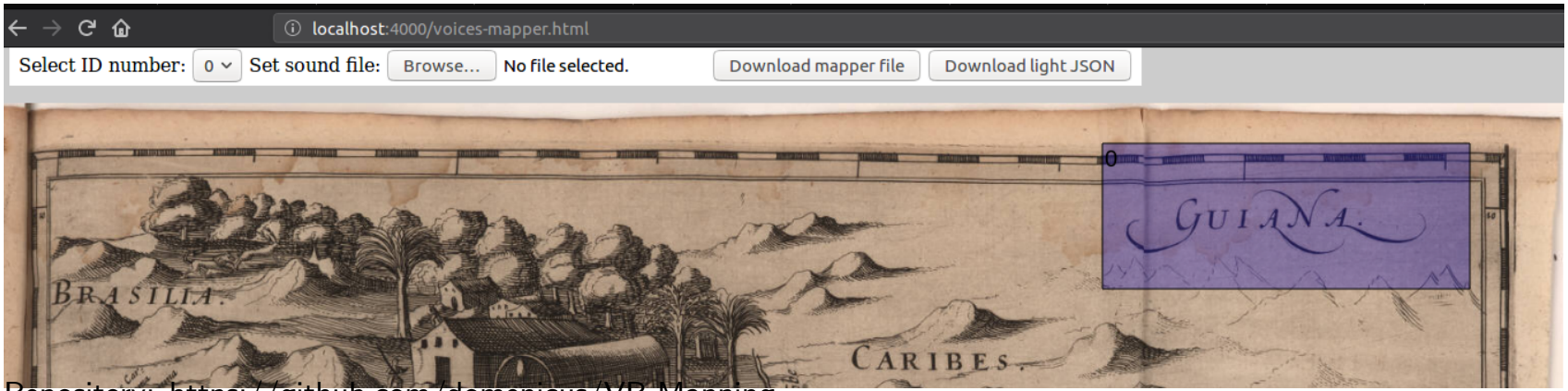
Voices

1. We first experimented with having a box of information on one side of the screen.
2. Reading text in VR is both boring and occasionally difficult.
3. So, we decided to have voice annotations.
4. We created a flat, non-VR tool to graphically map audio files onto the map.
5. We used to play audio whenever the user looked at the right area, but it was annoying.
6. We play the audio back when the user zooms in – giving them context only when they ask for it.



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