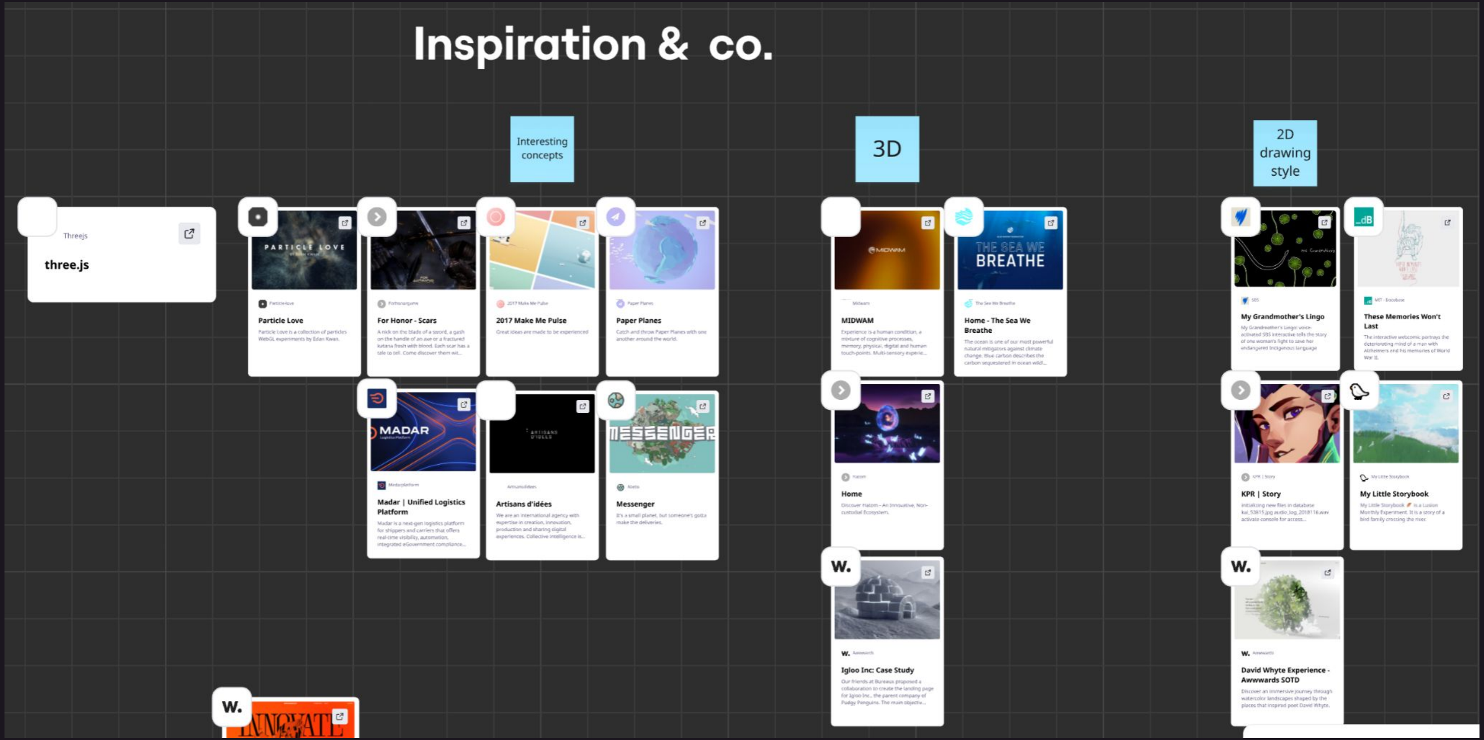
The Shader Planetarium

Inspiration für das ganze Mentorat

www.igloo.inc

Mehr Beispiele...



Inspiration & co.

Interesting concepts

3D

2D drawing style

Threejs

three.js

Particlelove

Particle Love

Particle Love is a collection of particles WebGL experiments by Edan Kwan.

Forhonorgame

For Honor - Scars

A nick on the blade of a sword, a gash on the handle of an axe or a fractured katana fresh with blood. Each scar has a tale to tell. Come discover them wit...

2017 Make Me Pulse

2017 Make Me Pulse

Great ideas are made to be experienced

Paper Planes

Paper Planes

Catch and throw Paper Planes with one another around the world.

Madarplatform

Madar | Unified Logistics Platform

Madar is a next-gen logistics platform for shippers and carriers that offers real-time visibility, automation, integrated eGovernment compliance...

Artisansdidees

Artisans d'idées

We are an international agency with expertise in creation, innovation, production and sharing digital experiences. Collective intelligence is...

Abeto

Messenger

It's a small planet, but someone's gotta make the deliveries.

Midwam

MIDWAM

Experience is a human condition, a mixture of cognitive processes, memory, physical, digital and human touch-points. Multi-sensory experie...

The Sea We Breathe

Home - The Sea We Breathe

The ocean is one of our most powerful natural mitigators against climate change. Blue carbon describes the carbon sequestered in ocean wildl...

Hatom

Home

Discover Hatom - An Innovative, Non-custodial Ecosystem.

Awwwards

Igloo Inc: Case Study

Our friends at Bureaux proposed a collaboration to create the landing page for Igloo Inc., the parent company of Pudgy Penguins. The main objectiv...

SBS

My Grandmother's Lingo

My Grandmother's Lingo: voice-activated SBS interactive tells the story of one woman's fight to save her endangered Indigenous language

MIT - Docubase

These Memories Won't Last

The interactive webcomic portrays the deteriorating mind of a man with Alzheimers and his memories of World War II.

KPR | Story

KPR | Story

Initializing new files in database kai_53815.jpg audio_log_2018116.wav activate console for access...

My Little Storybook

My Little Storybook

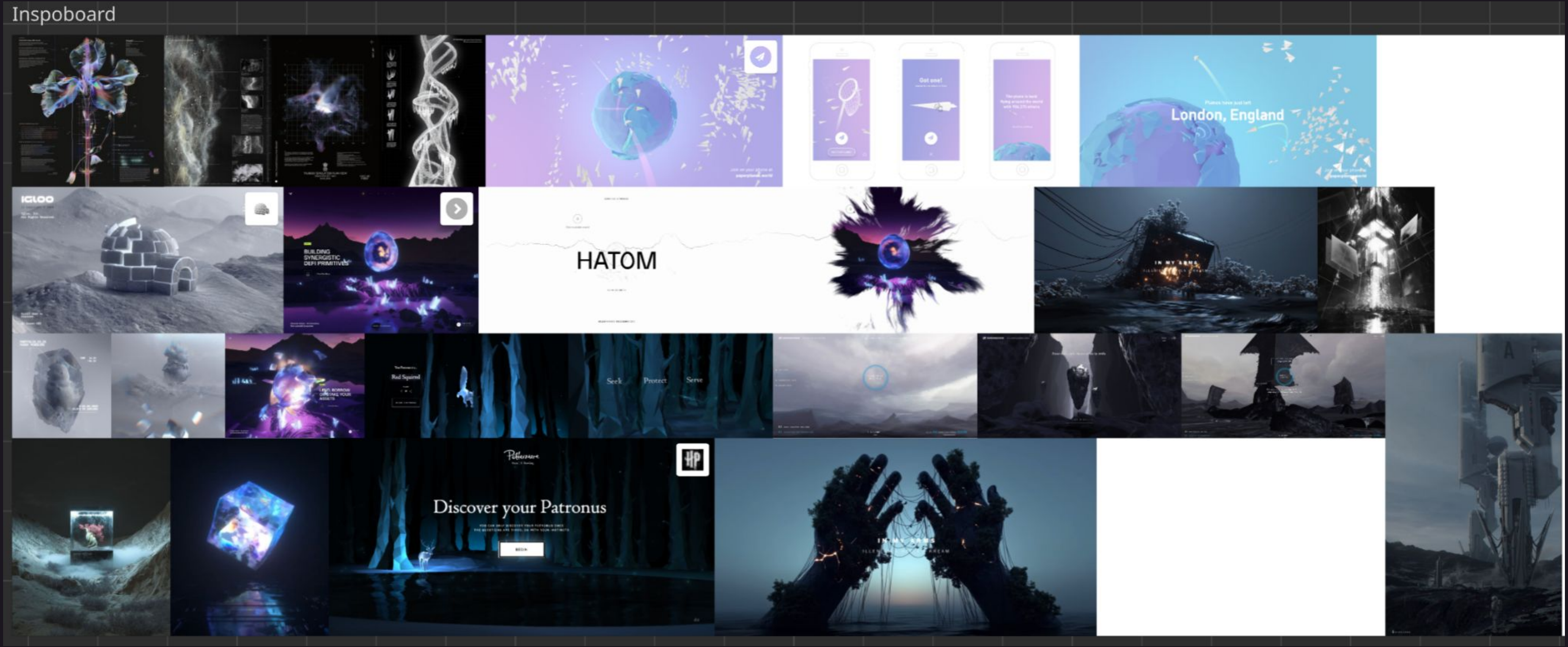
My Little Storybook 🪶 is a Lusion Monthly Experiment. It is a story of a bird family crossing the river.

Awwwards

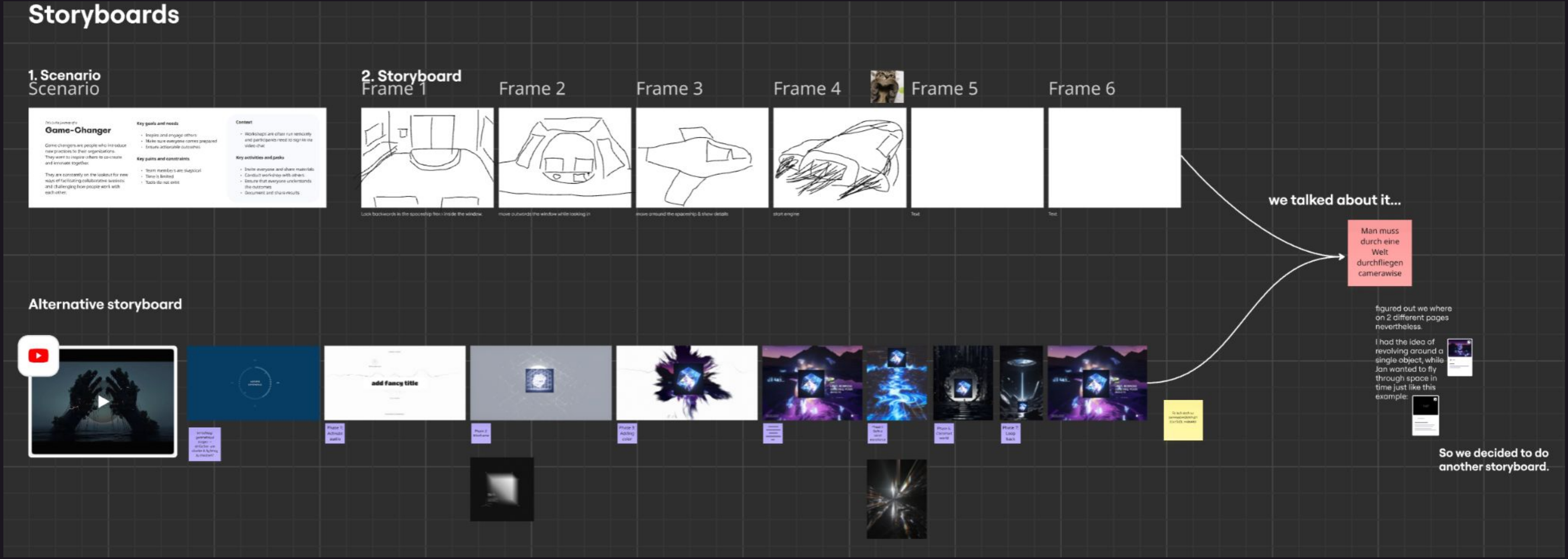
David Whyte Experience - Awwwards SOTD

Discover an immersive journey through watercolor landscapes shaped by the places that inspired poet David Whyte.

...Mehr Inspiration...



...huh, ein Konzept?



Storyboards

1. Scenario

Scenario

Game-Changer

Game changers are people who introduce new practices to their organizations. They want to inspire others to co-create and innovate together.

They are constantly on the lookout for new ways of facilitating collaborative sessions and challenging how people work with each other.

Key goals and needs

- Inspire and engage others
- Make sure everyone comes prepared
- Ensure actionable outcomes

Key pains and constraints

- Team members are skeptical
- Time is limited
- Tools do not exist

Context

- Workshops are often run remotely and participants need to sign in via video chat

Key activities and tasks

- Invite everyone and share materials
- Conduct workshop with others
- Ensure that everyone understands the outcomes
- Document and share results

2. Storyboard

Frame 1	Frame 2	Frame 3	Frame 4	Frame 5	Frame 6
Look backwords in the spaceship from inside the window.	move outwords the window while looking in	move arround the spaceship & show details	start engine	Text	Text

we talked about it...

Man muss durch eine Welt durchfliegen camerawise

Alternative storyboard

figured out we where on 2 different pages nevertheless.

I had the idea of revolving around a single object, while Jan wanted to fly through space in time just like this example:

So we decided to do another storyboard.

...huh, ein Konzept? 2.0

Environemental & story setting
Audio: Soft, ambient

Cam moves towards person
Audio: pauses

Person shatters through glass, glass particles reflecting and flying
Cam moves quickly through window
Audio: only glass shattering

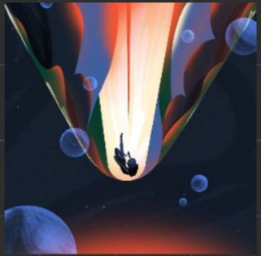
breaking through floor

jump / fall from cliff

Person falling
Audio: environemental sounds and soft bg music

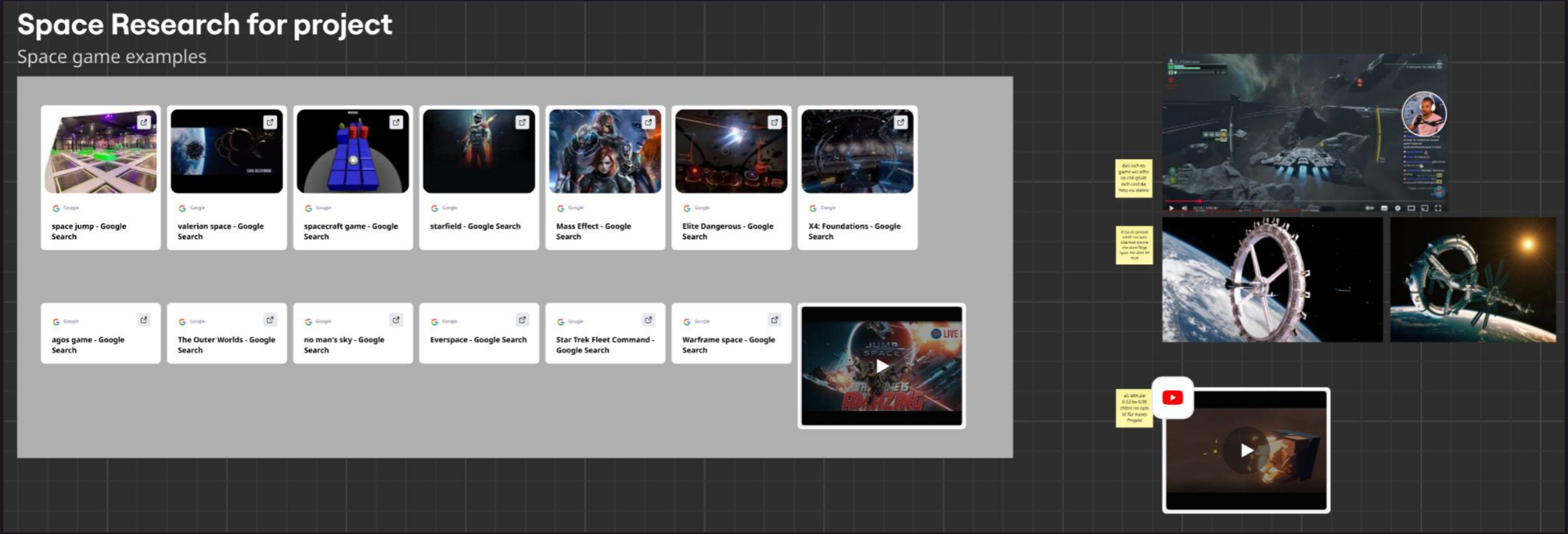
panic and intense fall?

Bright metorite appearing, cam softly swinging up but not leaving the person out of frame
Audio: environemental sounds and soft bg music


Meteorite "catching person", cam zooming in, person dissappears and you become meteorite in first person view
Audio: intense environemental sounds, flying sounds

Flying thourgh spheres, which are clickable
Audio: tbd

...huh, ein Konzept? 2.0



Space Research for project

Space game examples

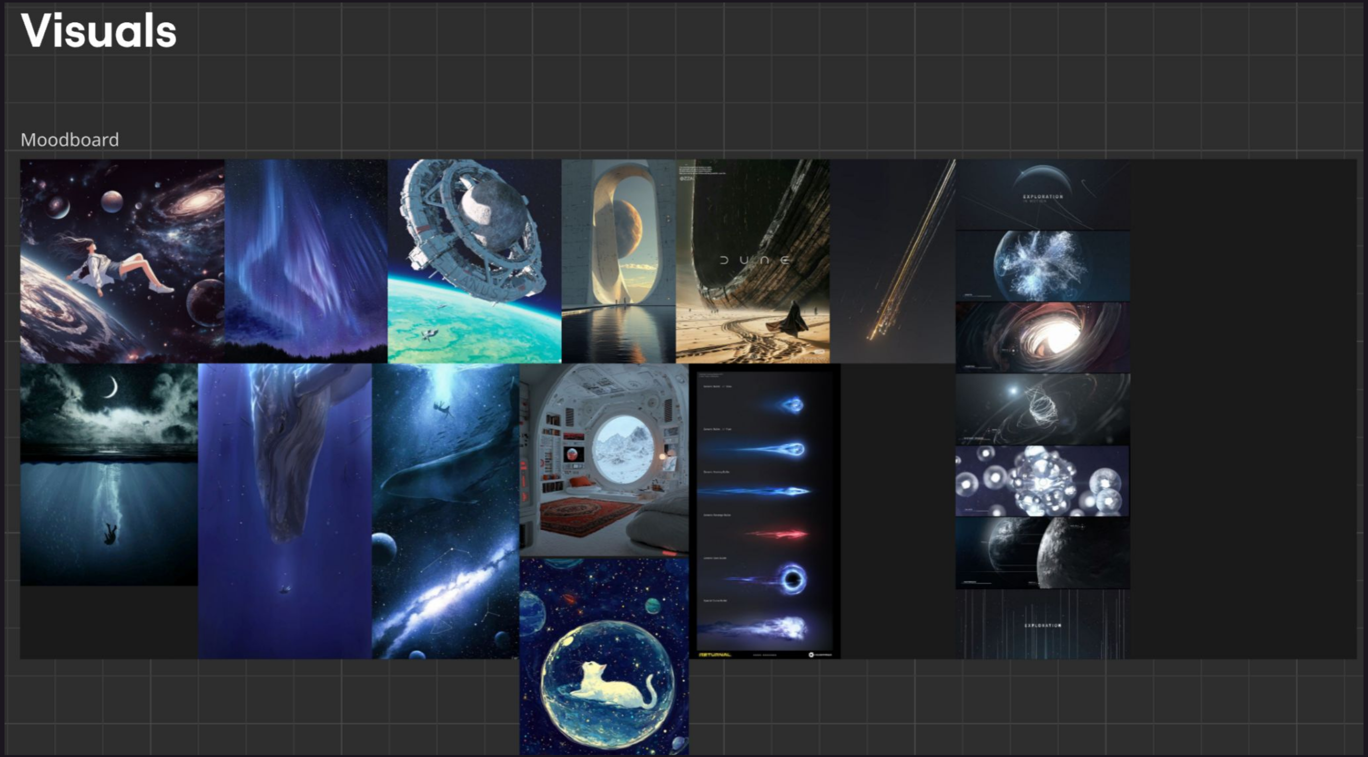
- space jump - Google Search
- valerian space - Google Search
- spacecraft game - Google Search
- starfield - Google Search
- Mass Effect - Google Search
- Elite Dangerous - Google Search
- X4: Foundations - Google Search
- agos game - Google Search
- The Outer Worlds - Google Search
- no man's sky - Google Search
- Everspace - Google Search
- Star Trek Fleet Command - Google Search
- Warframe space - Google Search

das isch es game wo scho se chli gfüllt isch und da hets ou steine

[illegible]

ab Minute 0:22 bis 0:35 chönt no öpis sii für üses Projekt

Und ein moodboard :)



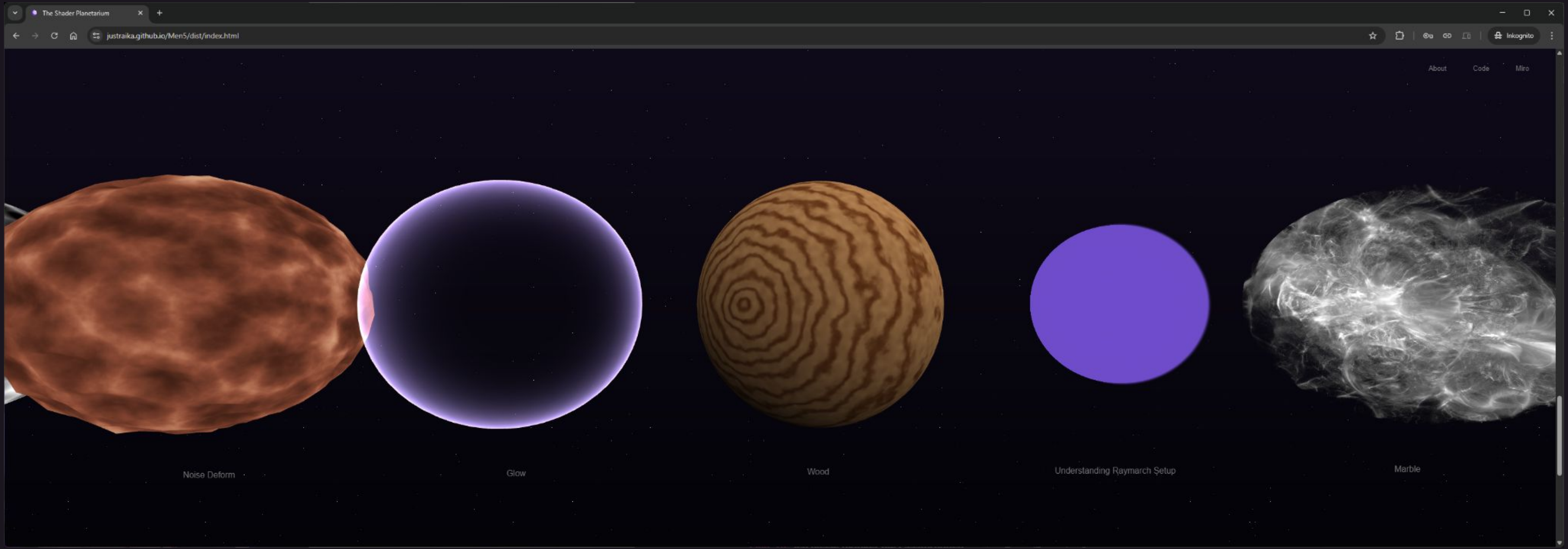
Mentoren

Reto	Technisches Setup und Integration
Dragica	Shaders

DAS SEMESTER

Panik

Demo: The Reality



justraika.github.io/Men5

In the realm of computer graphics

Technical stuff

Setup of project and research of tools **In the realm of computer graphics**

Node

1. Download and install node.js.
2. Initialize a server:
    a. In VSC, check if Node installed correctly: *npm -v*
    b. If no version is shown, restart VSC. Make sure you're in cmd and not powershell.
    c. Type *npm install -g http-server*
    d. Type *cd* and paste your *folder path* to the project
    e. Type *http-server* to start up the server
3. Point your browser at http://localhost:8080/
4. Enjoy.

- Checking if node is installed: *node -v*
- Getting latest node version: *npm update -g npm*

Node.js — Run JavaScript Everywhere

Nodejs

Node.js - Run JavaScript Everywhere

Node.js® is a free, open-source, cross-platform JavaScript runtime environment that lets developers create servers, web apps, command line t...

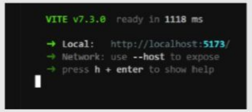
Medium

How to Setup a Simple HTTP Server/ Local...

In this article, I am going to explain to you how to set up a simple HTTP web server on local machine using NodeJS. http-server npm package...

Node wird nicht auf Github gepusht, muss individuell installiert werden

Vite


```
  VITE v7.3.0  ready in 1118 ms

  ➜  Local:   http://localhost:5173/
  ➜  Network: use --host to expose
  ➜  press h + enter to show help
```

[illegible]

- Run server: *npm run dev*
- Interrupt server: *Ctrl + C*

Does my browser support Webgl?

Webgl

Your browser supports WebGL

Hmm. While your browser seems to support WebGL, it is disabled or unavailable. If possible, please ensure that you are running the latest driv...

Debugging Tool (maybe)

Three.js DevTools - Chrome Web Store

Developer tools extension for Three.js

Extension (mandetory) for VSC

Shader programming (GLSL, HLSL) - Compu...

Shader Languages

GLSL = OpenGL Shading Language	**HLSL** = High Level Shading Language	**CG** = C for Graphics	**WGSL**
Influenced by C-Syntax, aber eigene Sprache	Influenced by C++-Syntax, aber eigene Sprache	depricated 2012	Influenced by Rust/Typescript, aber eigene Sprache
By Khronos	By Microsoft	By Nvidia	
Wird an WebGL gekoppelt	Wird an Direct3D gekoppelt	Kann an WebGL oder Direct3D gekoppelt werden	Wird an WebGpu gekoppelt

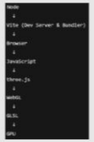
3d Web libraries

three.js	Babylon.js	PlayCanvas	A-Frame	Processing (by book of shaders)	openFrameworks
Golden standard. Versatile, well-documented, and supported by a large community	[illegible]	[illegible]	3D/VR experiences without complex WebGL code. Built on top of 3js. Suited for smaller projects and prototypes		

Projektstruktur

GLSL Direkte code language an die GPU	**ThreeJS** Zwischenlayer damit wir die Scheisse nicht in WebGL language schreiben müssen	**WebGL** Schnittstelle zwischen Web und GPU, die die code snippets kompiliert damit man GPU aus dem Browser [illegible]	**Node** Startet Dev-Server	**Vite** Dev-Server	**JS** Erstellt Szene, Kamera, Renderer

Node betreibt Vite, Vite servt JavaScript, JavaScript nutzt three.js, three.js nutzt WebGL, WebGL kompiliert GLSL, die GPU rendert.


```
Node
 ↓
Vite (Dev Server & Bundler)
 ↓
Browser
 ↓
JavaScript
 ↓
three.js
 ↓
WebGL
 ↓
GLSL
 ↓
GPU
```

Vue/Svelte framework, falls wir mehr UI brauchen, sonst reicht vanilla js

JS über TS, weil das Projekt klein gehalten wird

Why do we use GLSL over WGSL [illegible]

[illegible]

Online Node Playground

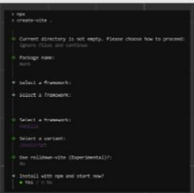
threejs

three.js - playground

3js libraries & plugins

Particle Systems

- three.quarks
- three-nebula


```
> npx
> create-vite .

◇ Current directory is not empty. Please choose how to proceed:
│ Ignore files and continue
◇ Package name:
│ [illegible]
◆ Select a framework:
◆ Select a framework:

◇ Select a framework:
│ Vanilla
◇ Select a variant:
│ JavaScript
◇ Use rolldown-vite (Experimental)?:
│ No
◆ Install with npm and start now?
│ ● Yes / ○ No
```

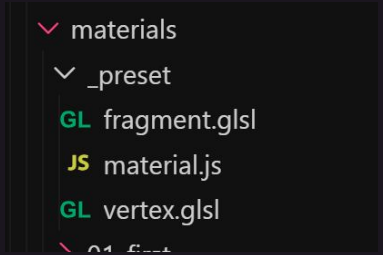
Nika & Jan

Techsetup

- GLSL
- Three.js
- Vite
- HTML / CSS / JS
- Node.js

Filestruktur & technical Highlights

- setup
    - background.js, events.js, intro.js, render.js, scene.js, ui.js
- shaders
    - chunks
        - noise_curl.glsl, noise_fbm.glsl, noise_perlin3D.glsl, noise_perlin4D.glsl, [...]
    - materials
- main.js
- assets.js
- utils.js

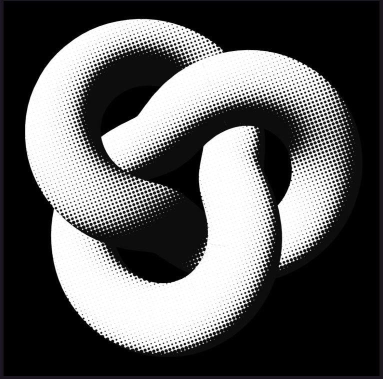


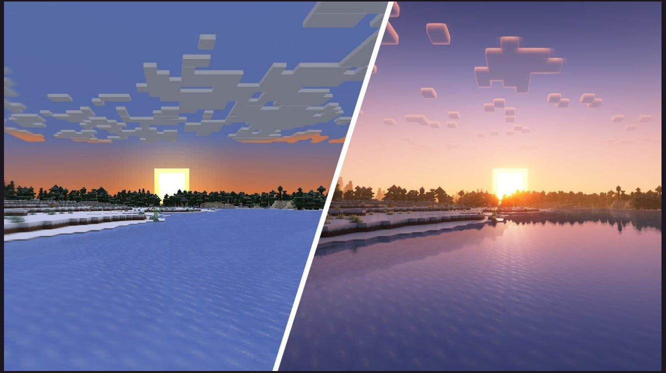
```
materials
  _preset
    fragment.glsl
    material.js
    vertex.glsl
```

What is a shader?

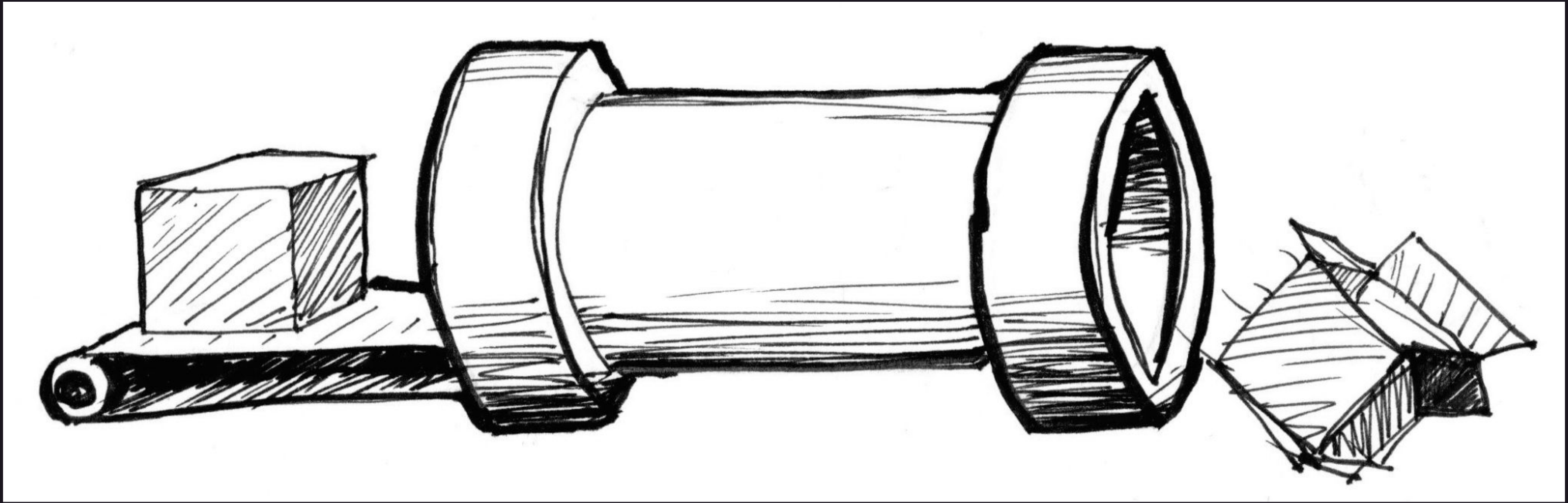
Was sind Shader?

© webgl-shaders.com

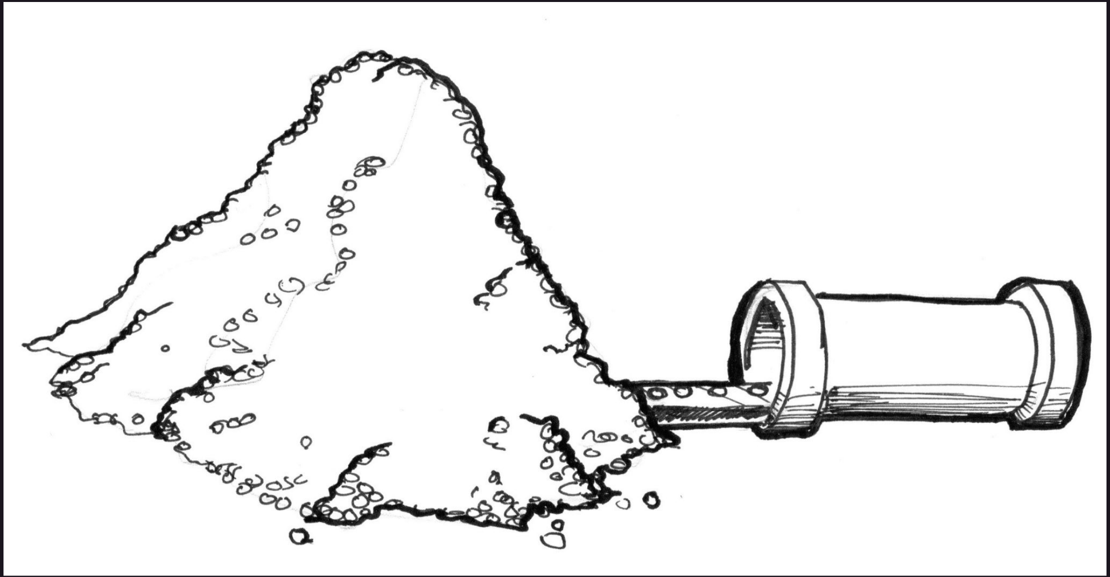




Wie Shader funktionieren


© thebookofshaders.com

Wie Shader funktionieren


© thebookofshaders.com

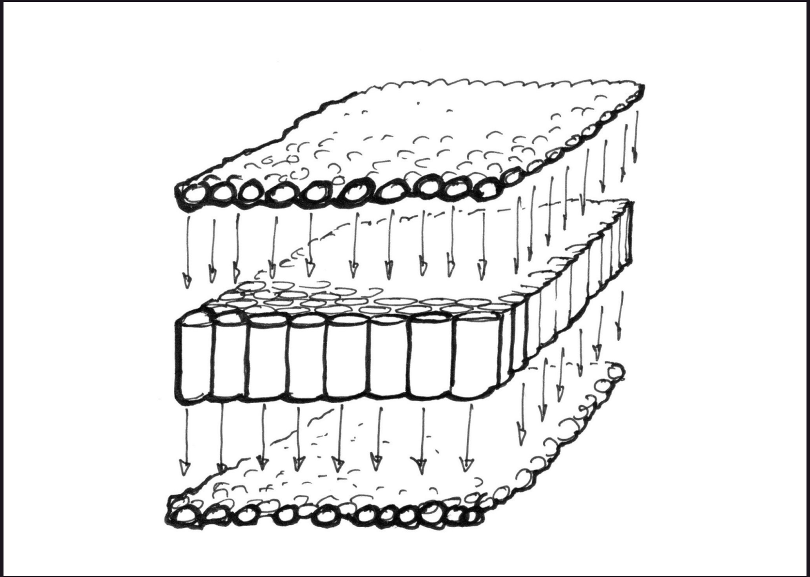
1920 * 1080 * 60

= 124’416’000

3840 * 2160 * 60

= 497’664’000

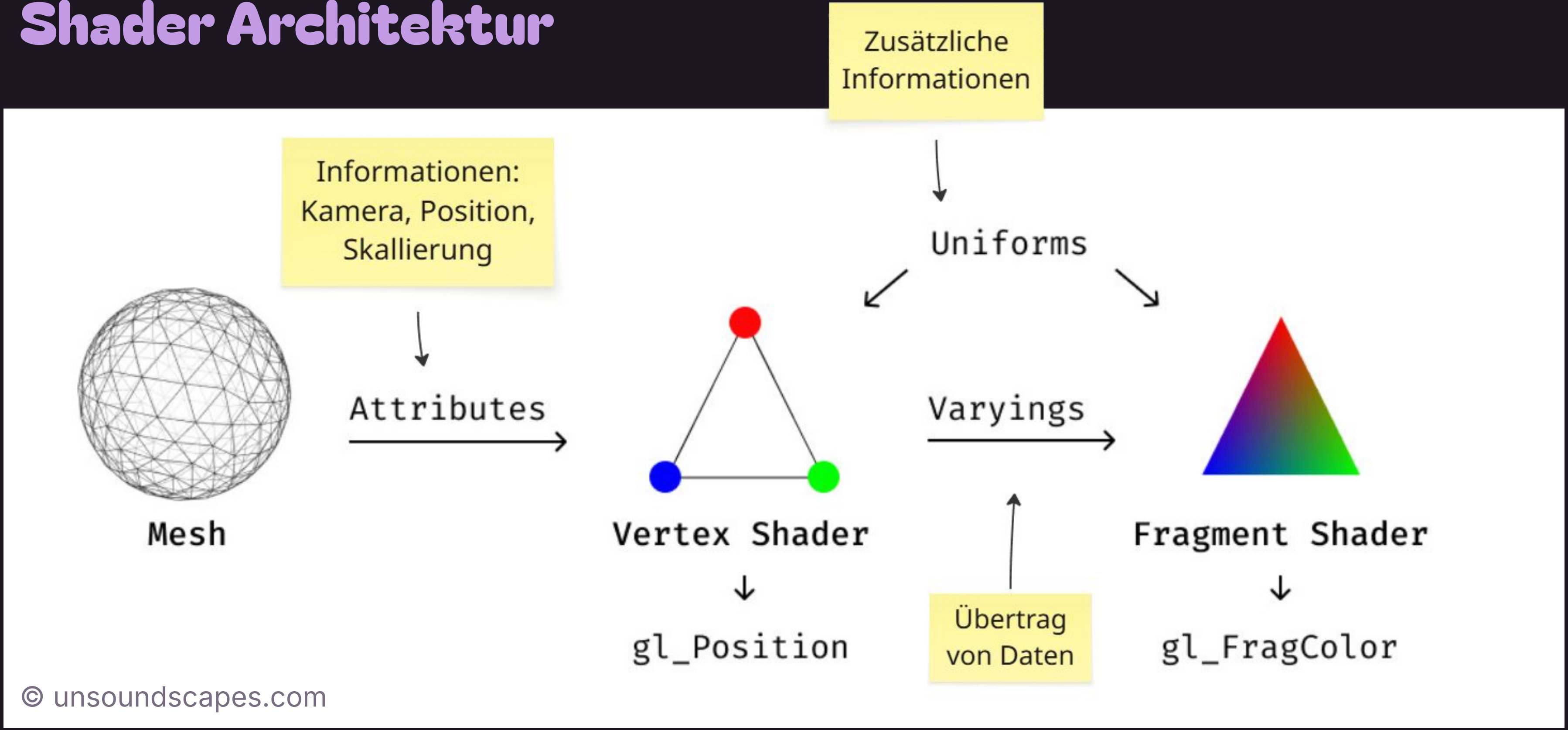
Wie Shader funktionieren



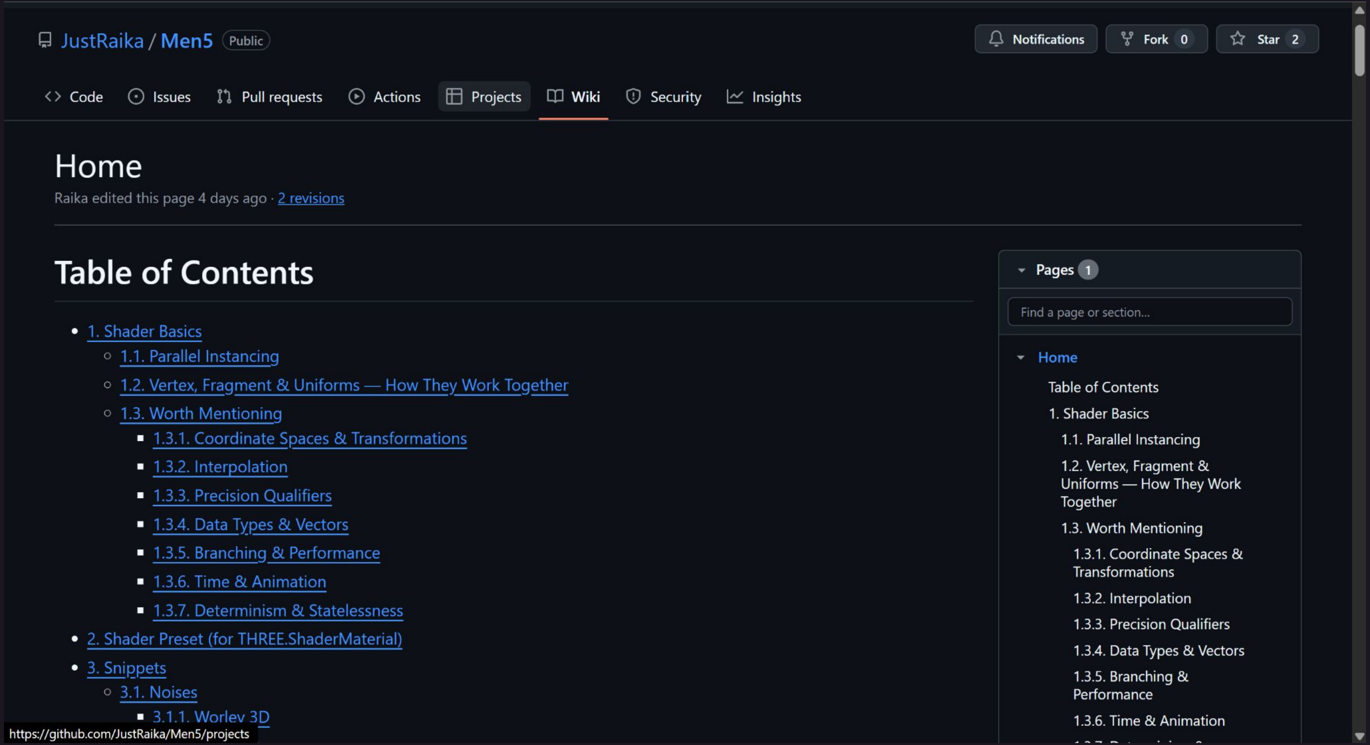
© thebookofshaders.com

- Parallel
- Unabhängig
- Unabhängig und blind
- Keine Überprüfungen
- Alles definiert

Shader Architektur



Mehr im Wiki!!! (danke Jan)



Home

Raika edited this page 4 days ago · 2 revisions

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https://github.com/JustRaika/Men5/projects

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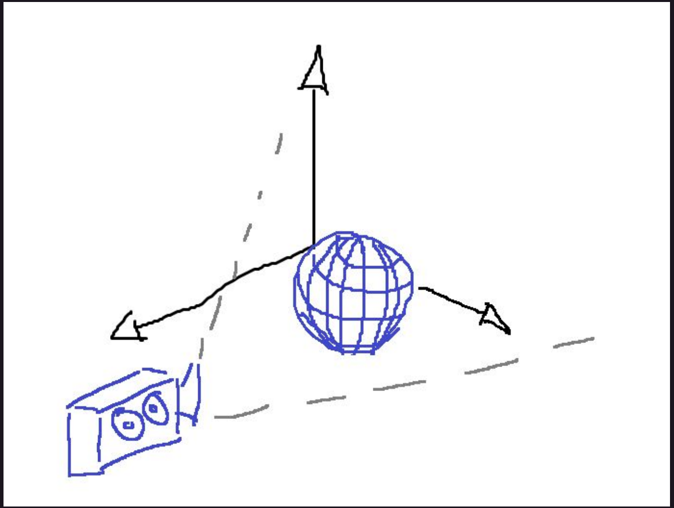
1.2. Vertex, Fragment & Uniforms — How They Work Together
1.3. Worth Mentioning
1.3.1. Coordinate Spaces & Transformations
1.3.2. Interpolation
1.3.3. Precision Qualifiers
1.3.4. Data Types & Vectors
1.3.5. Branching & Performance
1.3.6. Time & Animation

Our Website

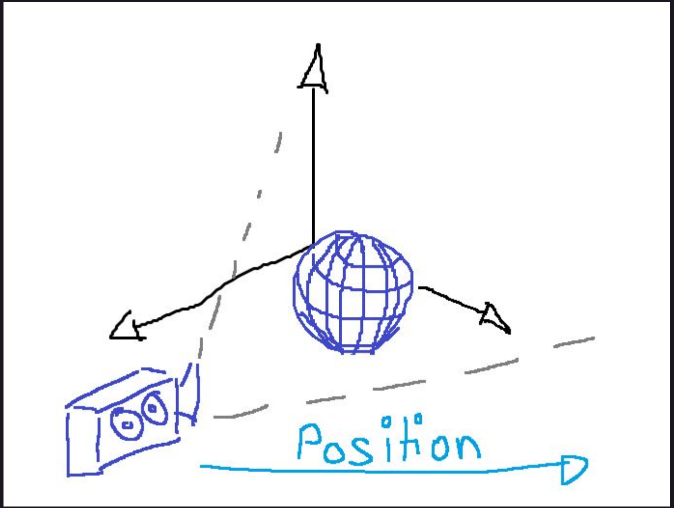
Raymarching

Traditional 3D



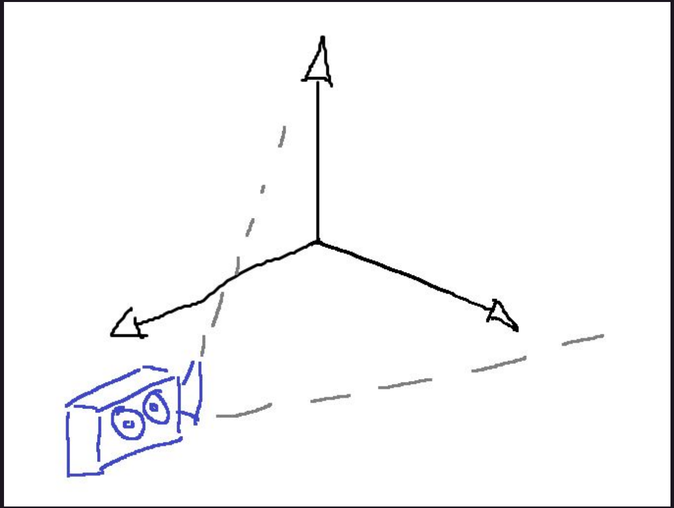
- Three.js
- Mesh
- Shader

Traditional 3D



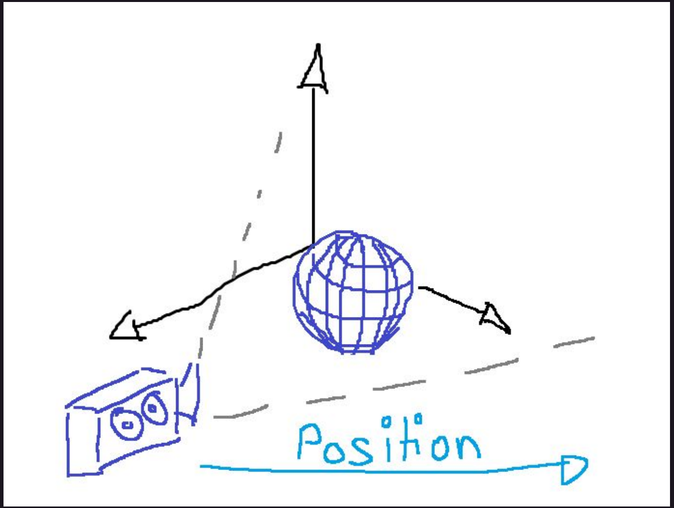
- Three.js
- Mesh
- Shader

Raymarching (im fragment shader)



- Fragment shader

Traditional 3D



- Three.js
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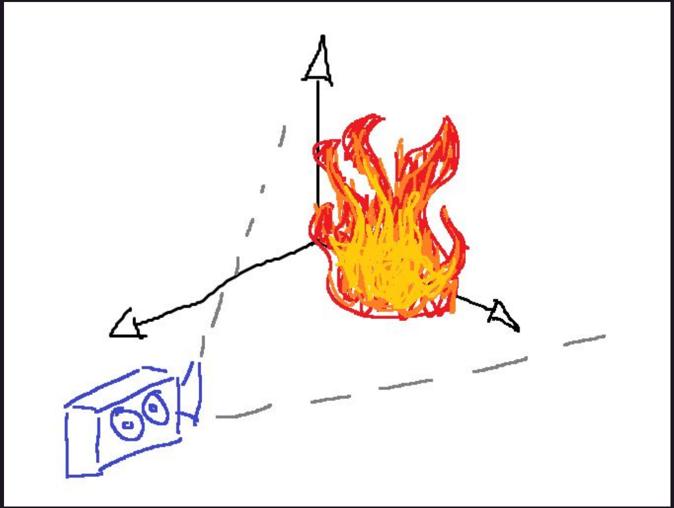
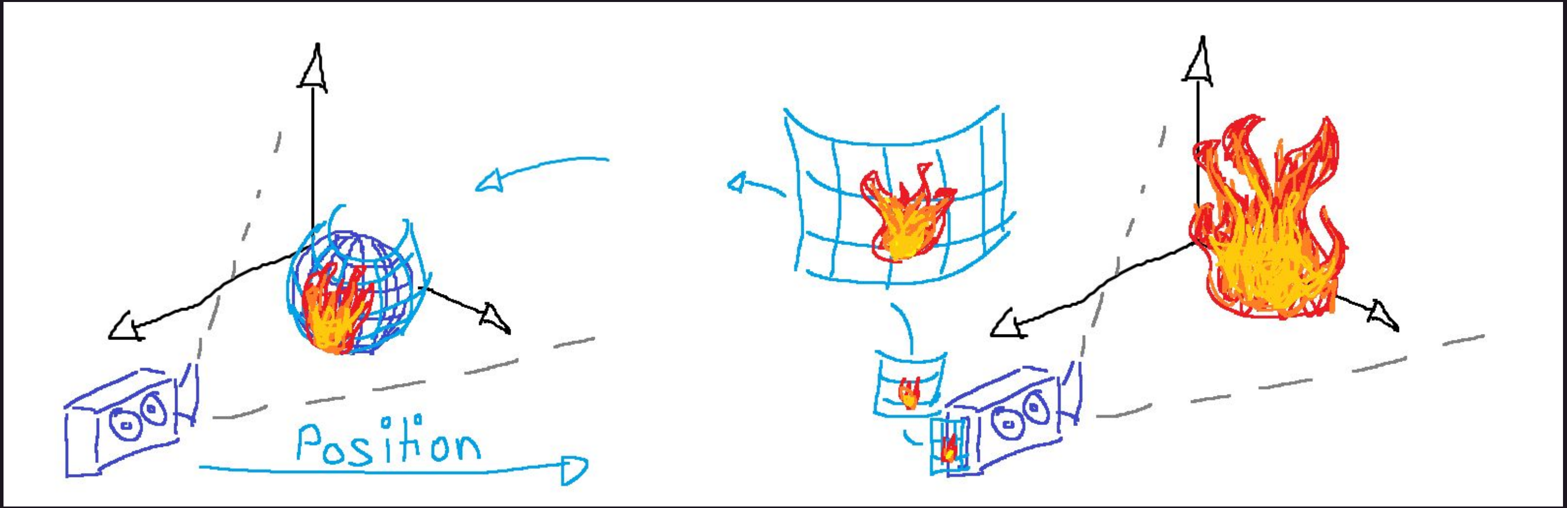
Raymarching (im fragment shader)



- Fragment shader
- Volumen durch mathematische Ausdrücke
- Eigener Renderer mit Licht, Schatten, Farben, etc.

Traditional 3D

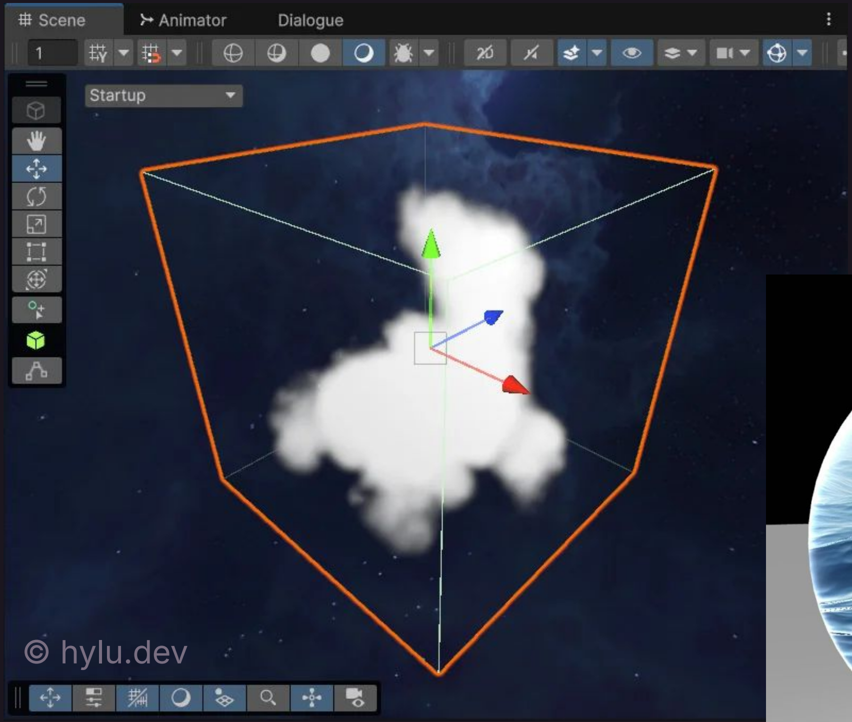
Raymarching (im fragment shader)

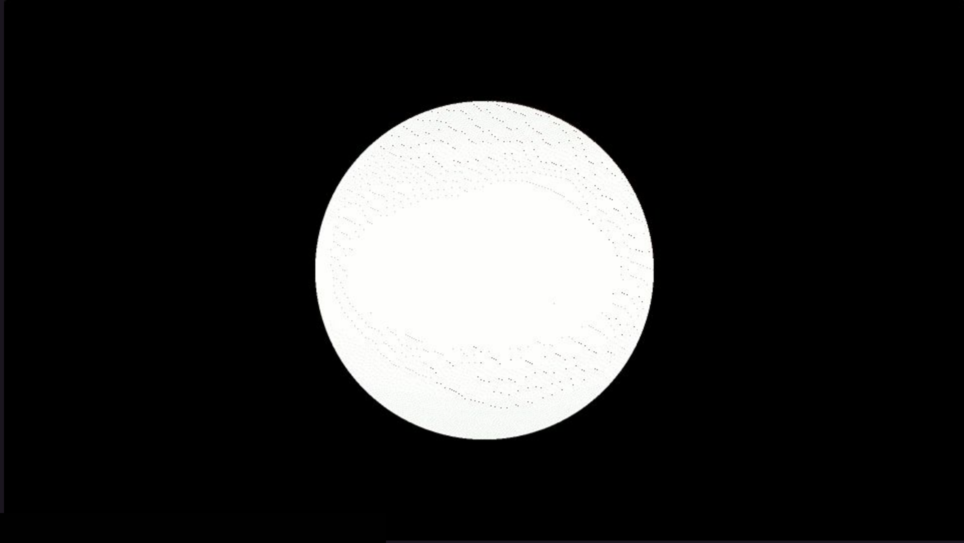


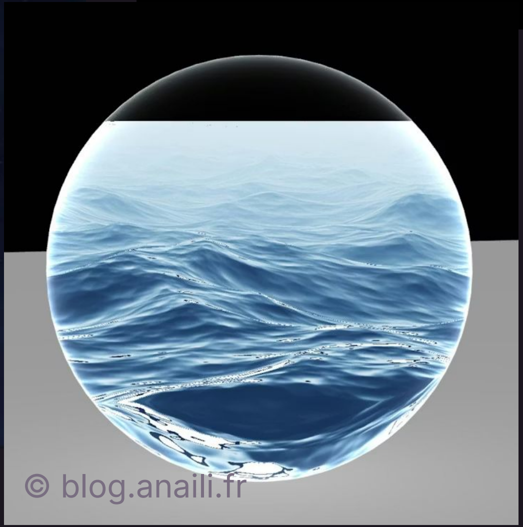
- Three.js
- Mesh
- Shader

- Fragment shader
- Volumen durch mathematische Ausdrücke
- Eigener Renderer mit Licht, Schatten, Farben, etc.

Beispiel Raymarching







Wrap up

Learnings

- Basics verstanden
- Verschiedene Renderer
- Vertex- und Fragment Shader, Uniforms, Varyings
- Displace
- Farbe verändern und berechnen
- Noises und Zufall
- Raymarching
- Unendliche Möglichkeiten
- Alles ist viel Komplexer als gedacht
- Alles dazwischen, was nicht funktioniert hat
- (Noch) mehr Erfahrung mit 3D Web Projekten

Ausblick

- Kein abgeschlossenes Ende
- Experimentieren und Ausprobieren
- Konzept umsetzen