



Indie Dev: Trauma Team - Environment Design

Introduction

- Research
- 3D modelling
- Textures
- Unreal Engine 5



Research focus points



STYLE



MOOD



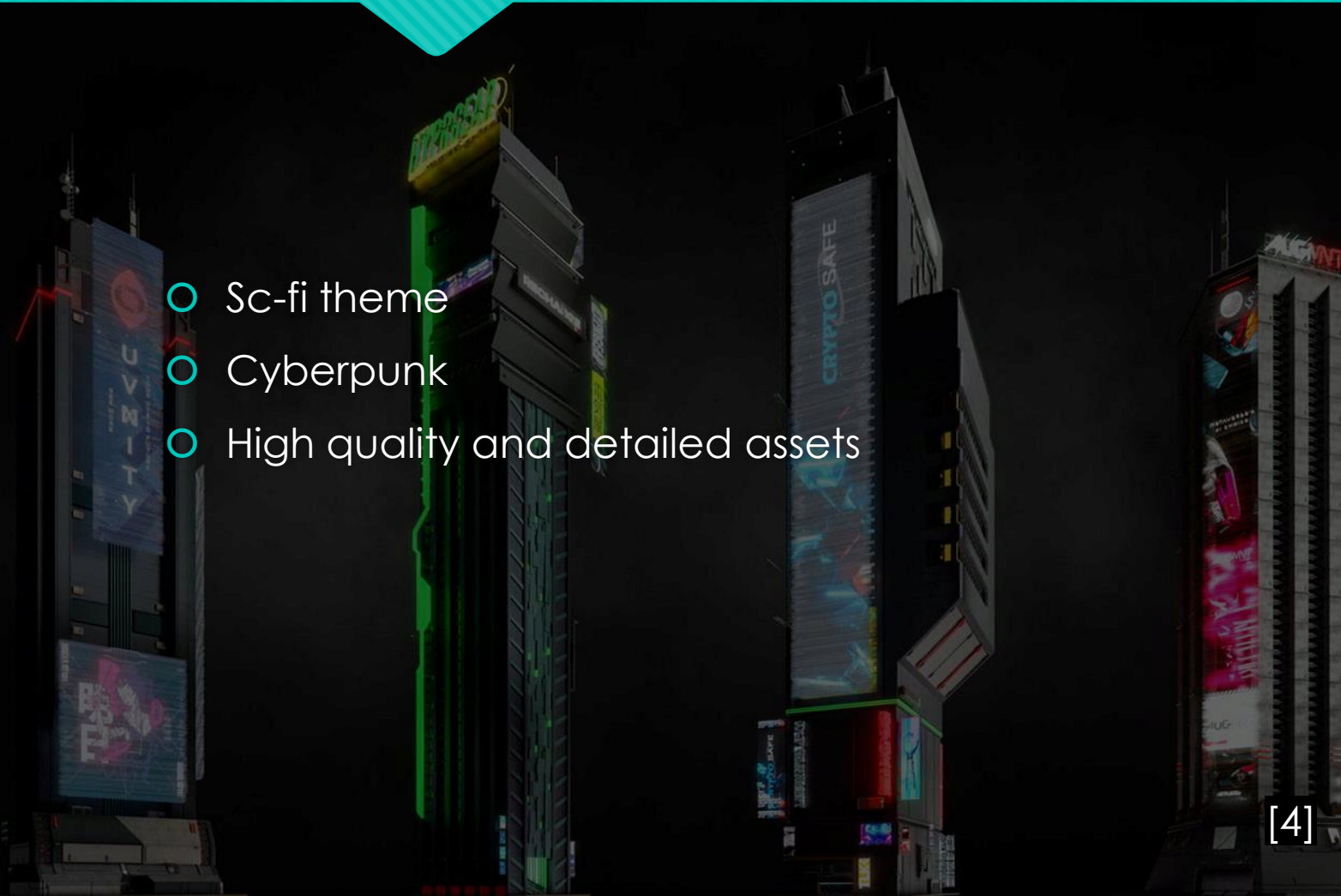
ASSETS



TEXTURES

Style

- Sc-fi theme
- Cyberpunk
- High quality and detailed assets



Mood

- Dark mood
- With overlayed bright colors
- Grungy



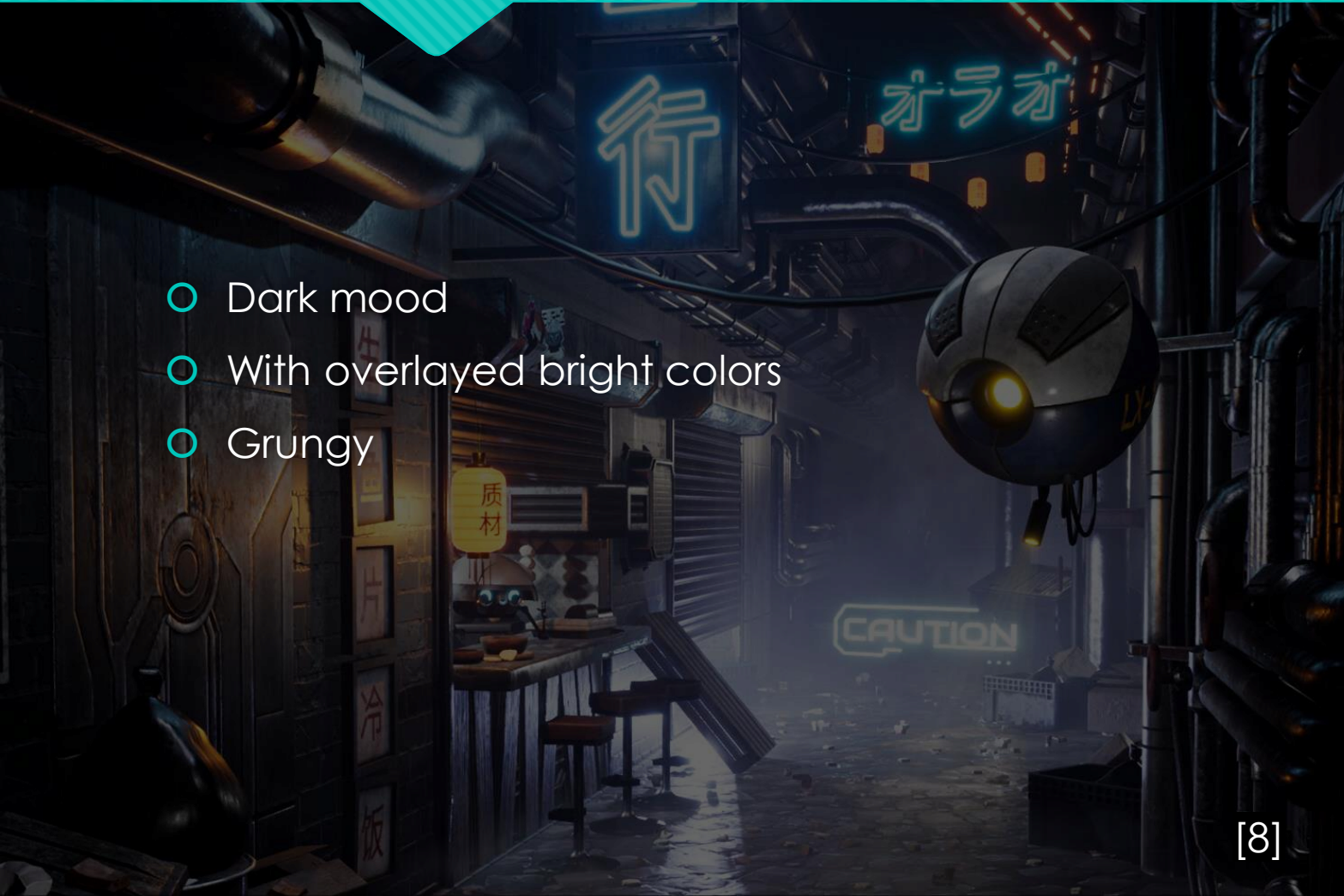
[5]



[6]



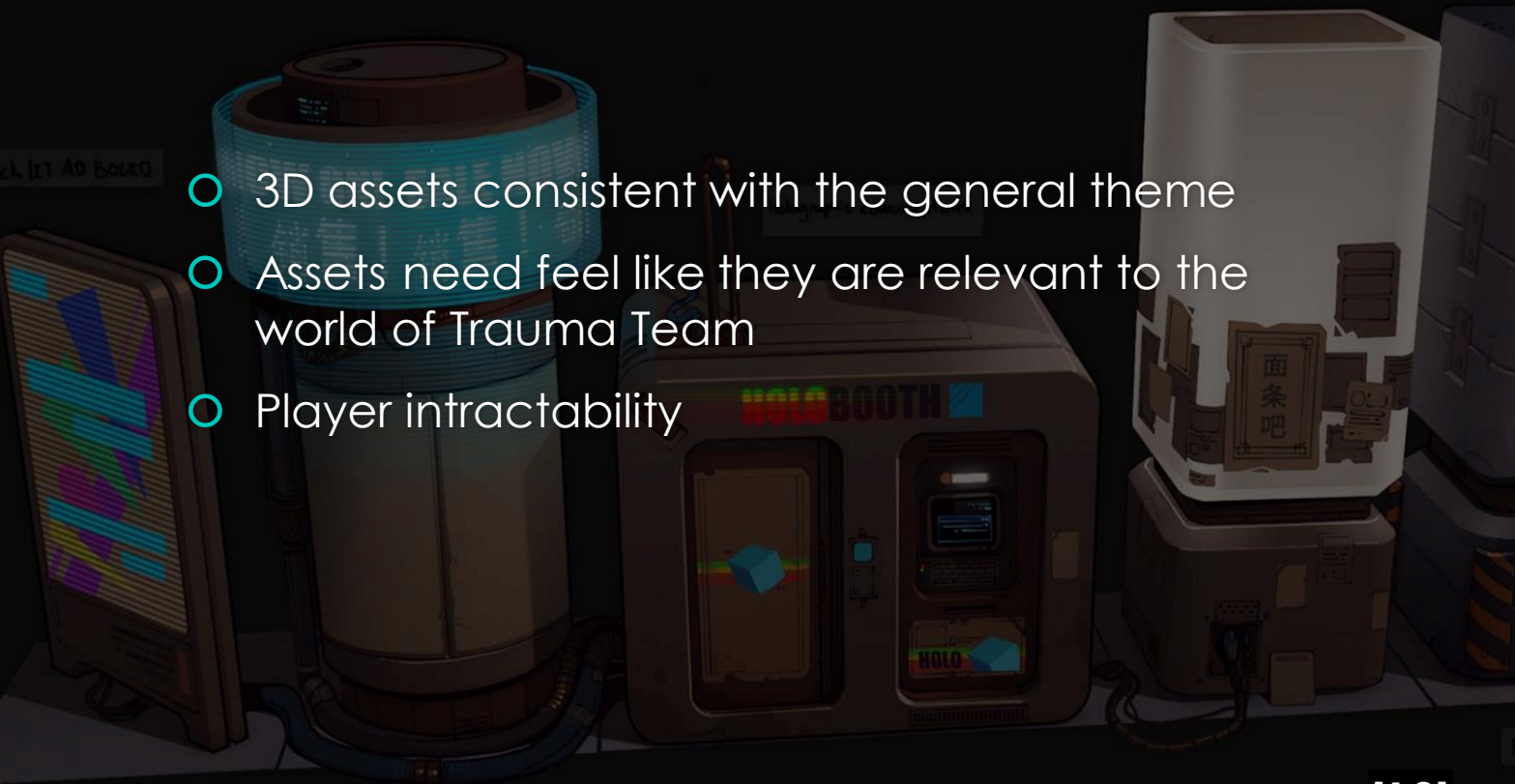
[7]



[8]

3D Assets

- 3D assets consistent with the general theme
- Assets need feel like they are relevant to the world of Trauma Team
- Player intractability



[12]



[9]



[10]



[11]

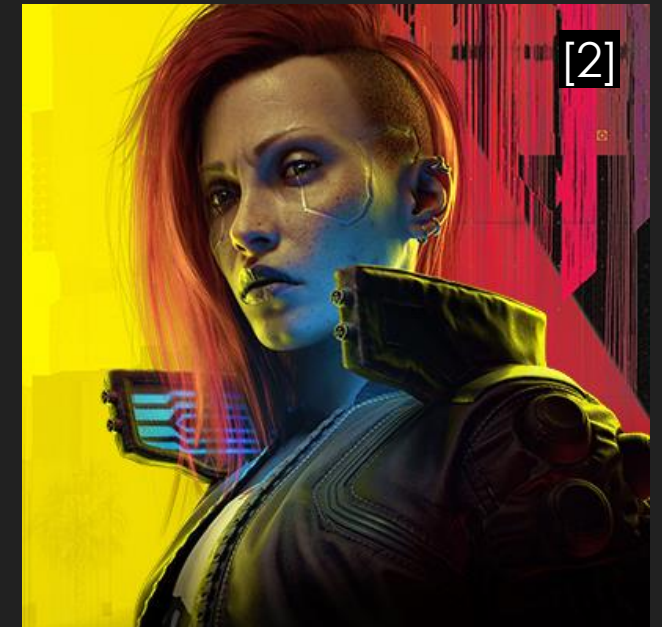
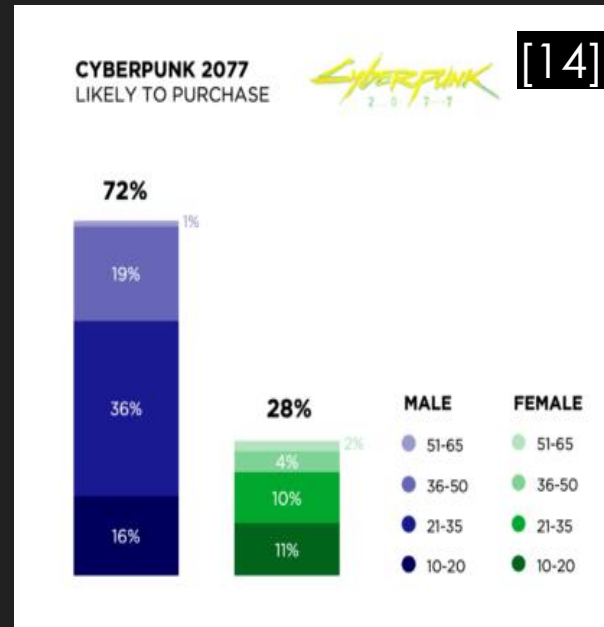
Textures

- Create unique textures
- Make it relevant to the game overall theme



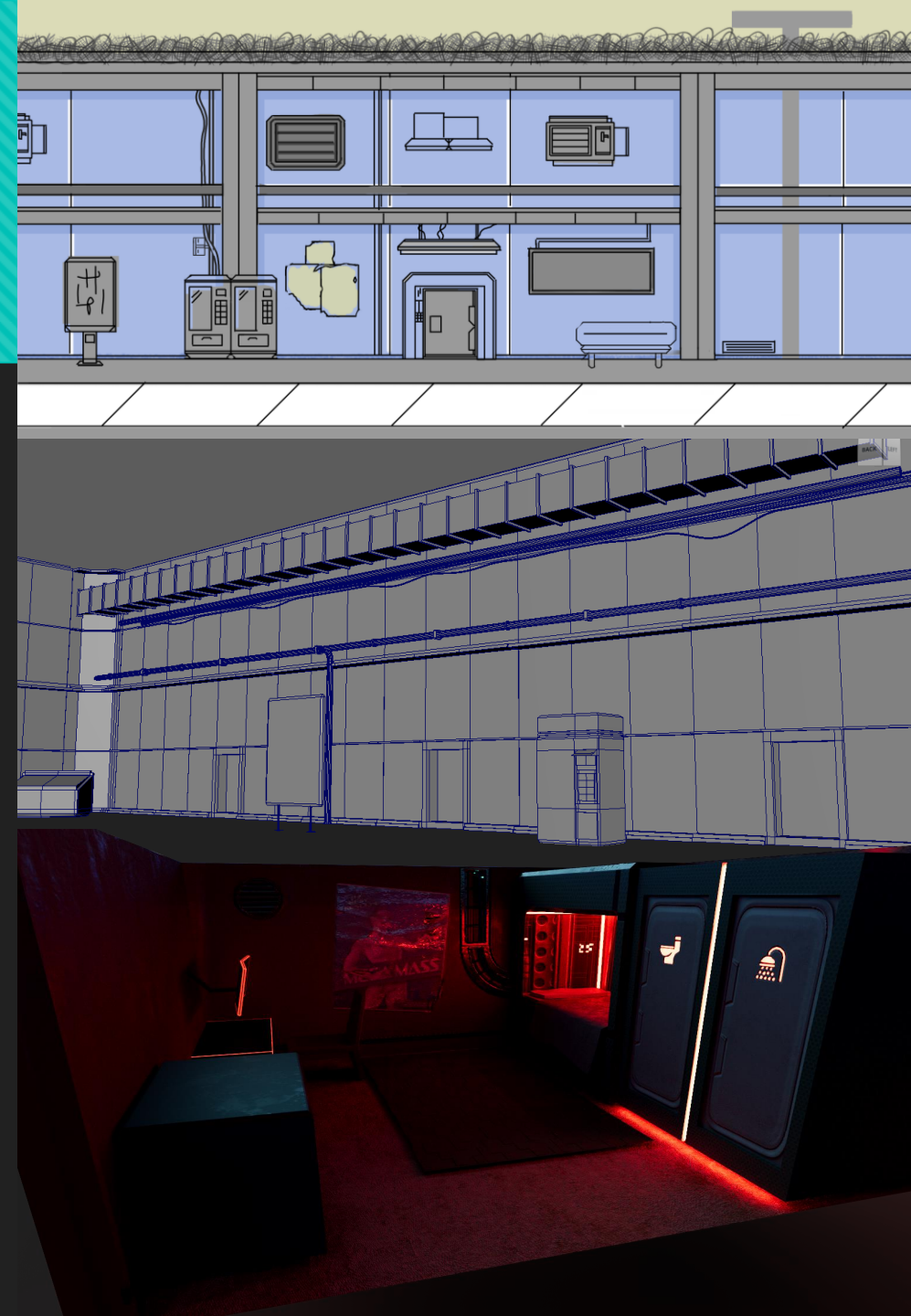
Demographic

- Sci-fi
- Action
- Shooter
- Males between the age 21-35
- PEGI Rating – 18
ESRB - M

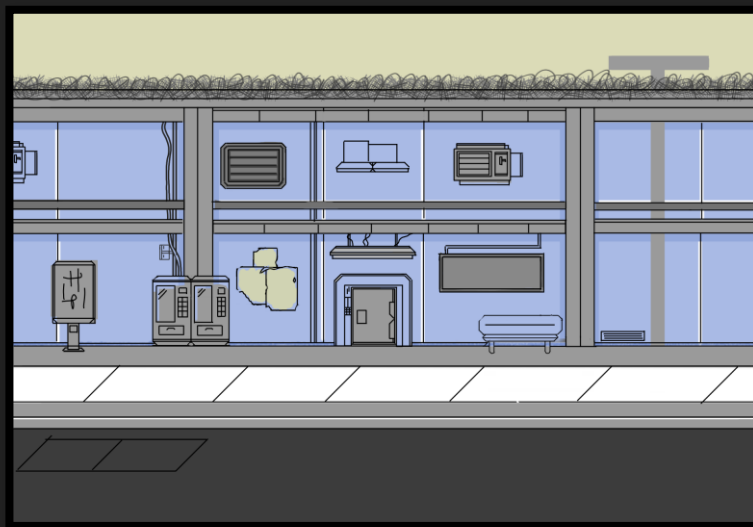
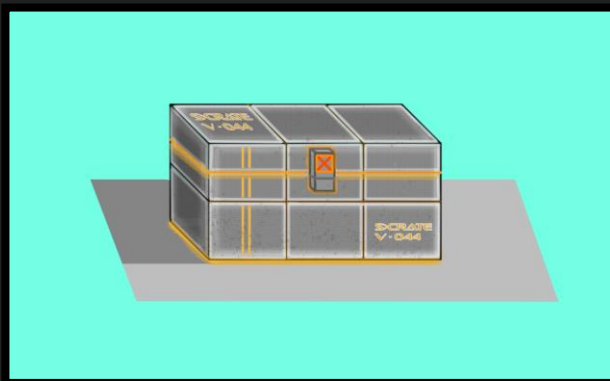


Design Process

- Step 1 : Concept sketch
- Step 2 : 3D model in Maya
- Step 3 : Set dressing using created assets
- Step 4 : UV and Texture
- Step 5 : Combine assets and textures in UE5

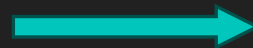


Concept Ideas

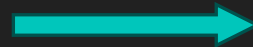


3D Asset Inspiration

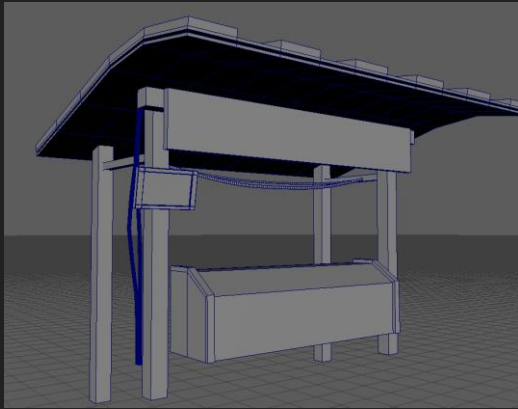
Mixed media
inspiration



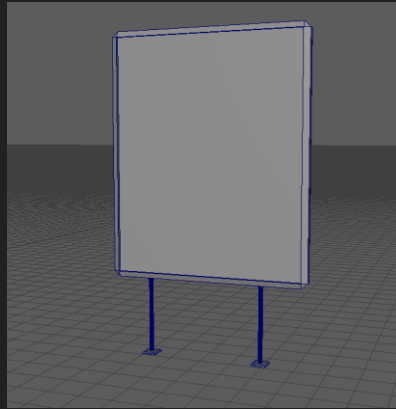
Real life
inspiration



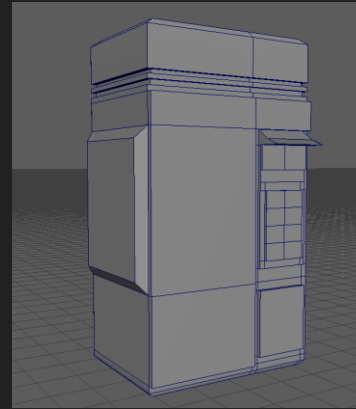
3D Models & Assets



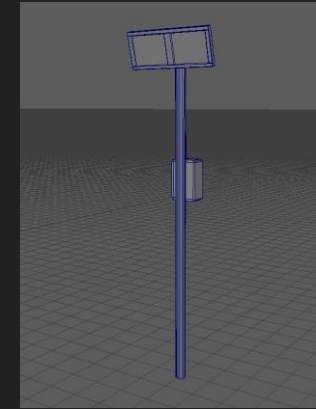
Food Stall



Ad Sign



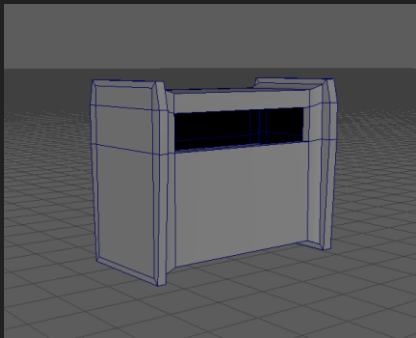
Vending Machine



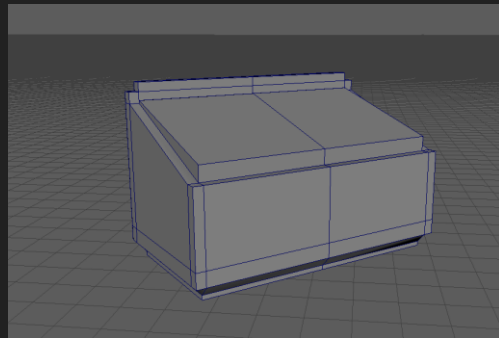
Lamppost v1



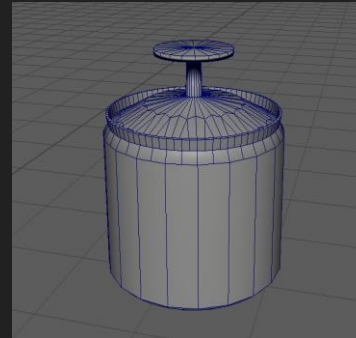
Lamppost v2



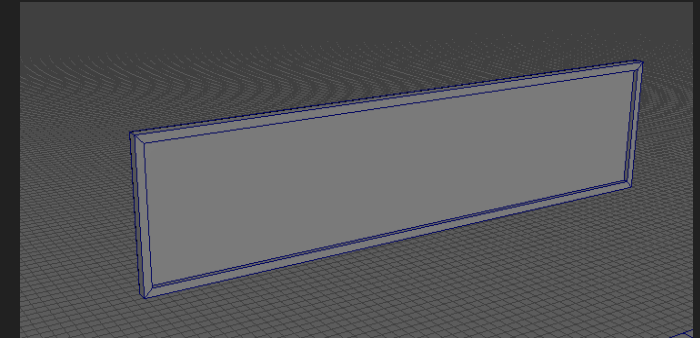
Small Bin



Large Bin

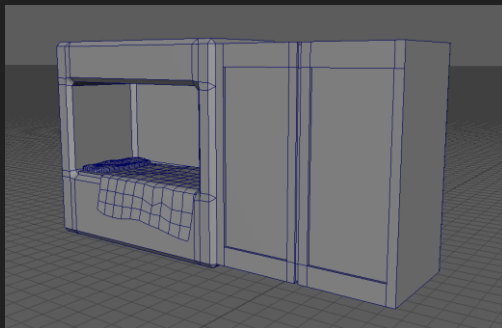


Cannister

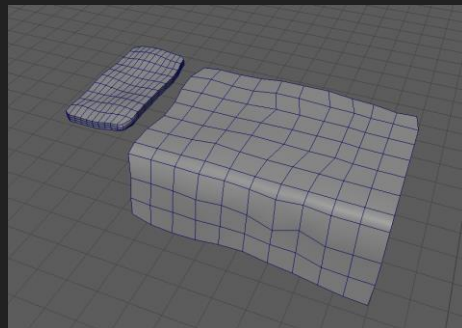


Sign Board

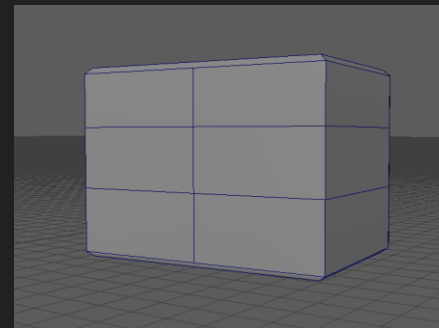
Interior Models



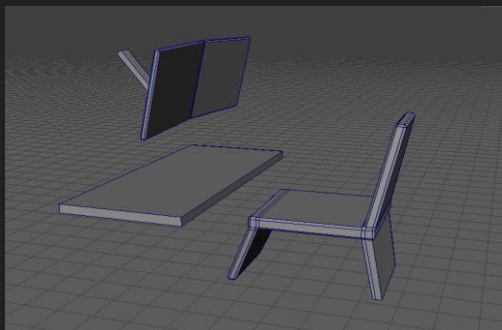
Bed and Restroom



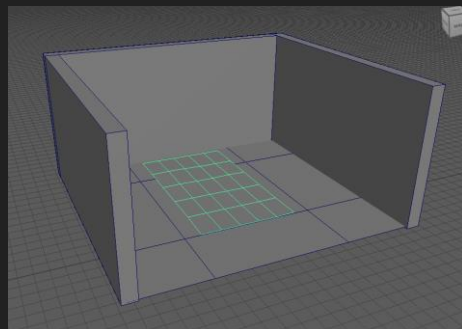
Pillow and Blanket



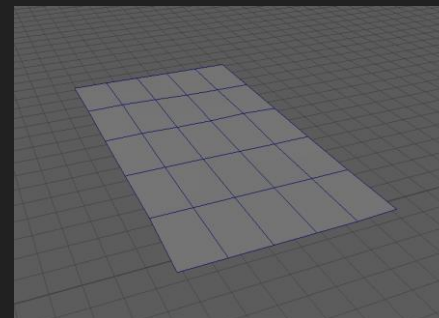
Draws



Desk Setup

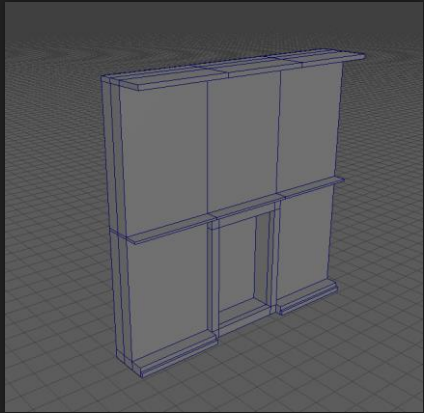


Desk Setup

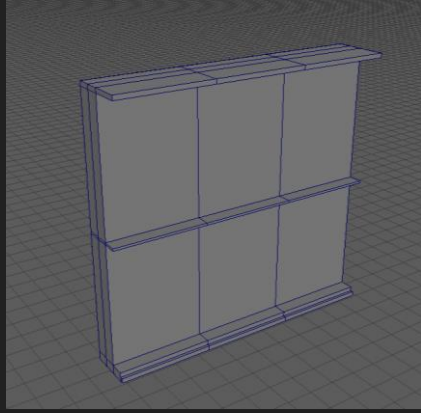


Rug

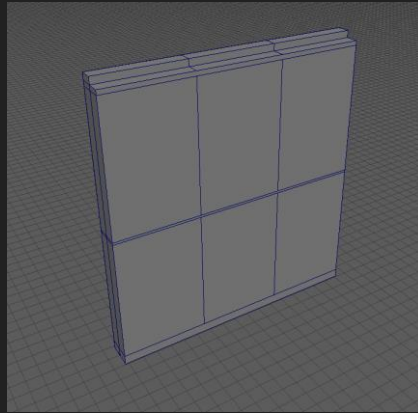
Modular Assets



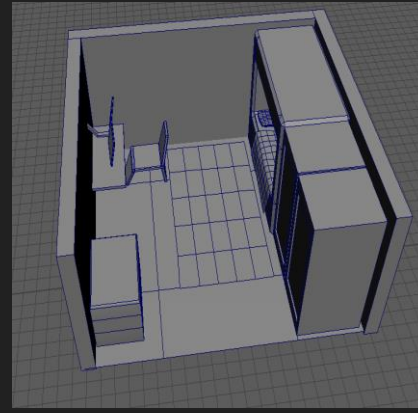
Wall With Door



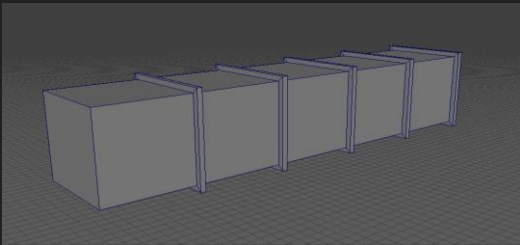
Wall Middle



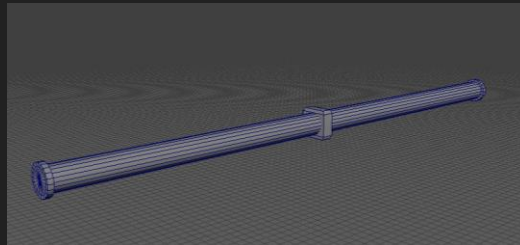
Wall Top



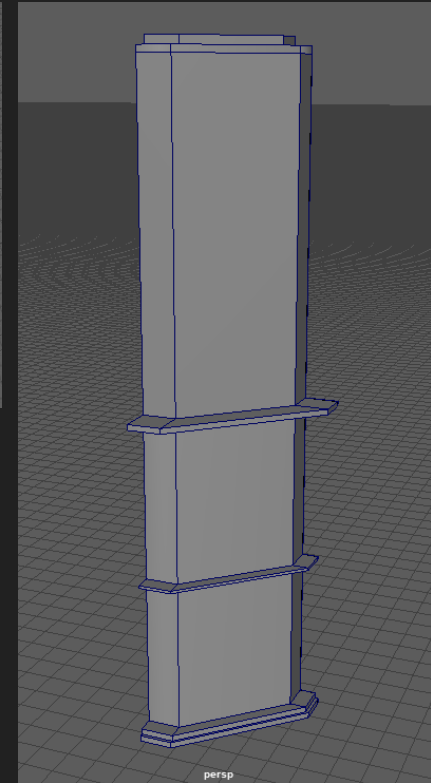
Bedroom



Vent

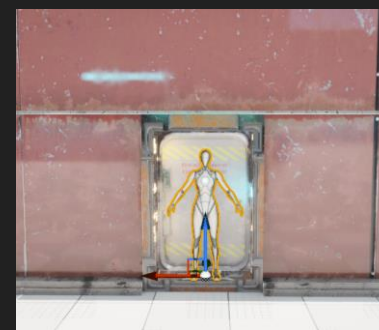
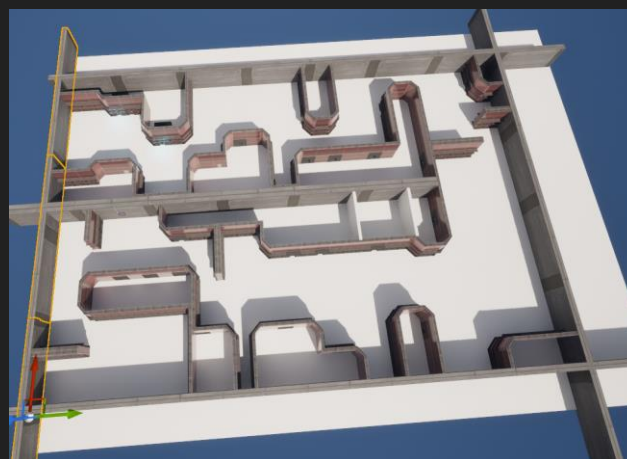
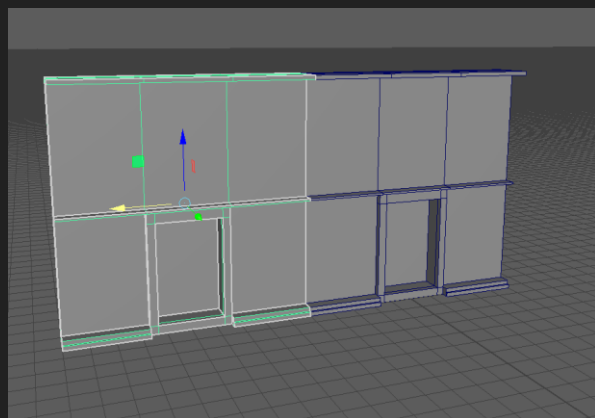
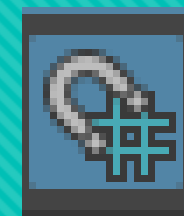


Pipe



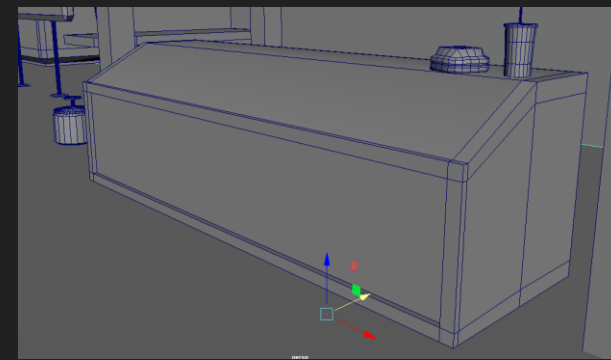
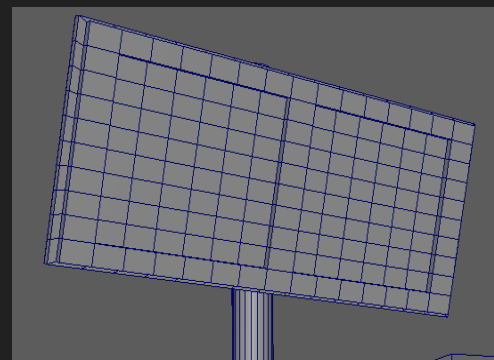
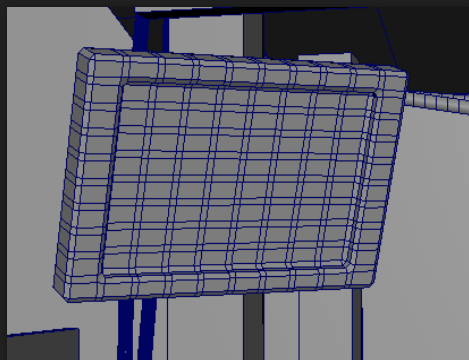
Wall Corner

Modular Assets Implementation

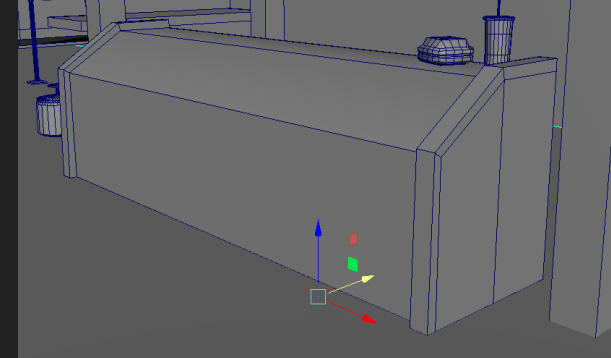
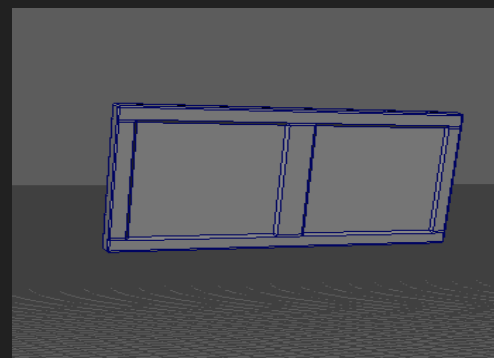
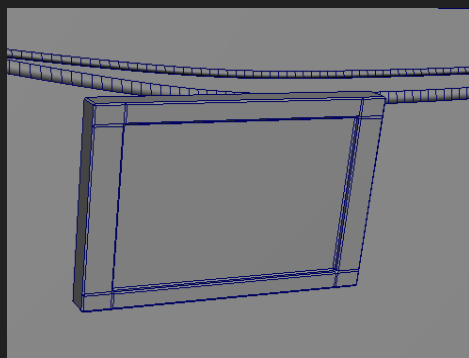


Optimisation

High poly assets



Optimised poly assets



Optimisation Specs



Average FPS – 90 – 120

Computer Specifications

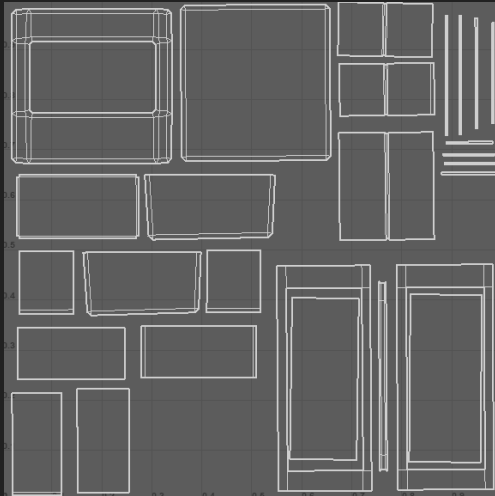
CPU – I7 12700F

GPU – 3070 RTX

Ram – 32 GB (2 x16 GN)

SSD – NVMe WWD Green SN350

Texturing



Step 1 – UV Unwrap

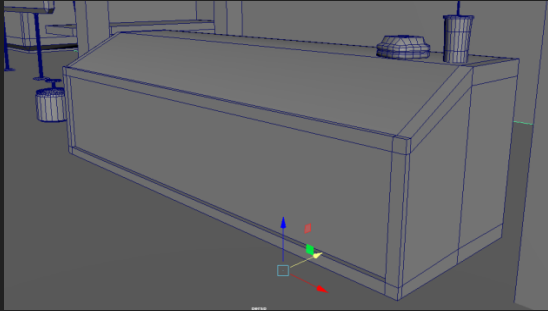


Step 2 – Import model
into substance painter

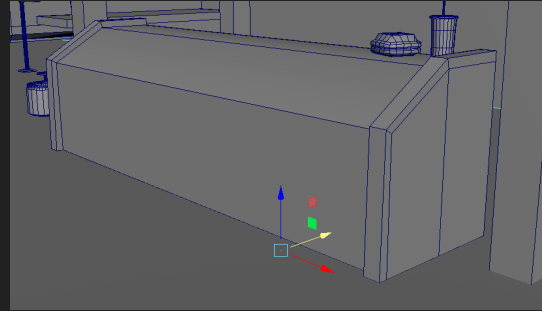


Step 3 – Move FBX file
and textures into UE5 to
assign materials

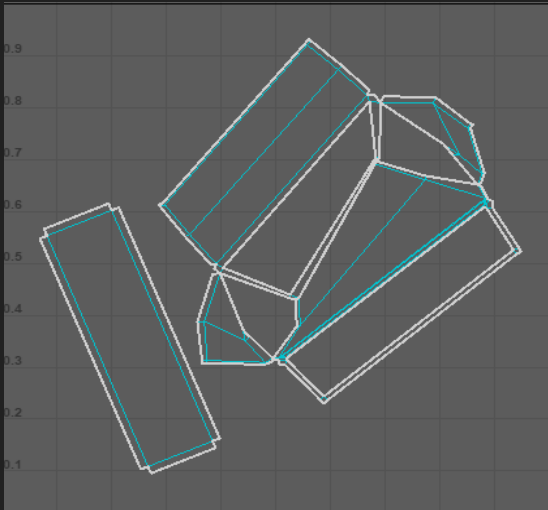
UV Wrapping



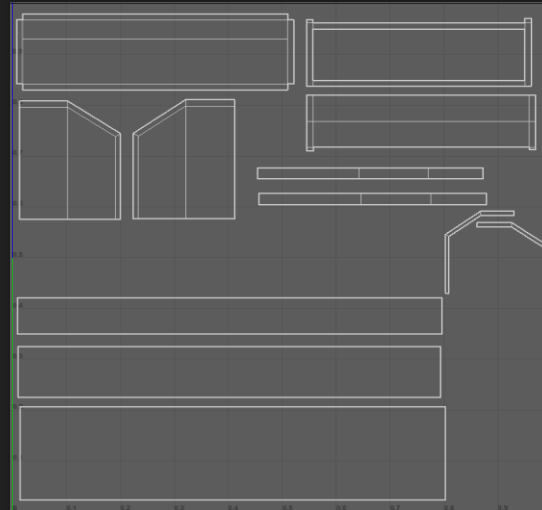
Overlapping
edges and faces



Clean play with
more optimised tri's

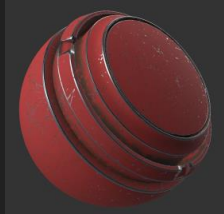


UV Shell not
functioning
properly



UV map cleaner
and easily textured

Substance Painter



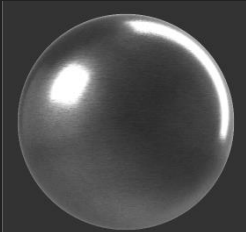
Steel Chipped Paint



Scratched Steel



Brushed Steel



Brushed Steel



PNG Image



Emissive Colour

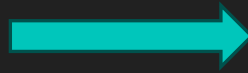
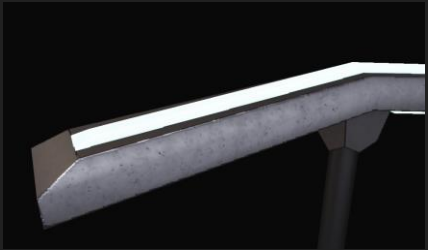


Raw Rubber

1024 x 1024

Using Alphas and Normal maps

Base textures with no alphas

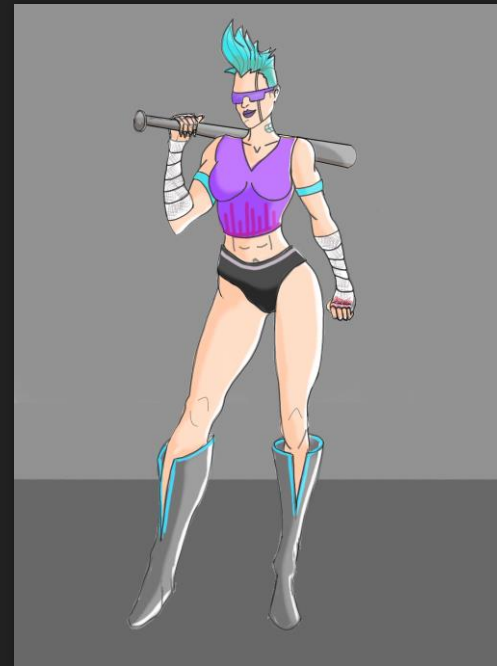


Refined texture with normal data to achieve a higher quality texture



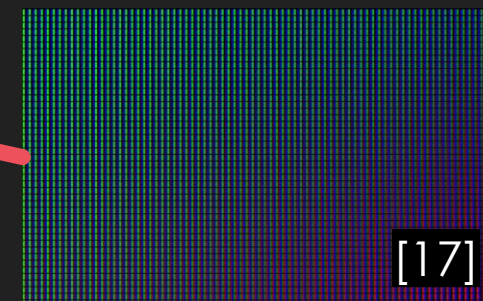
Creating textures

Image from
cyberpunk
Art book



Concept art
by myself

Creating Textures



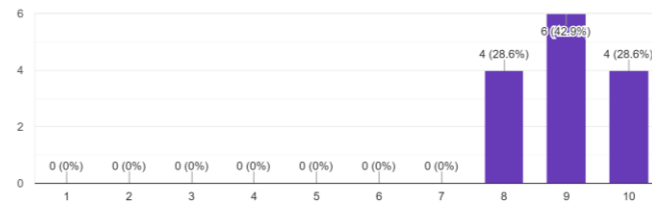
Imported Assets



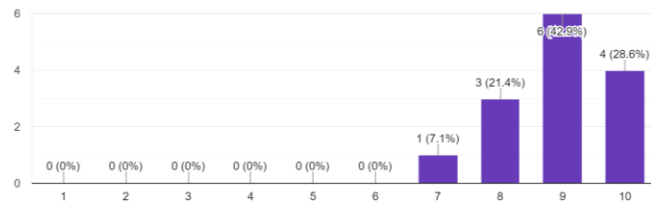
Quixel
Bridge



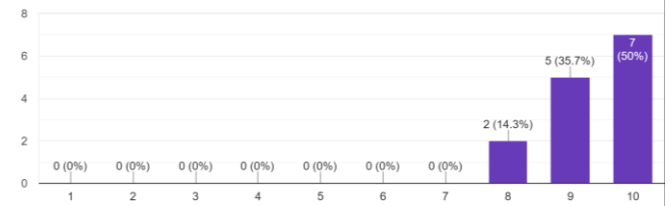
Rate my overall design
14 responses



Rate my models
14 responses



Rate my overall theme
14 responses



Feedback

Q & A

What was your first impression of the environment?

14 responses

Sci fi distopia

Very dynamic and atmospheric. The urban detailing like the graffiti details and florescent lights are quality.

The theme is consistent throughout, the colours work well together and its aesthetically pleasing - especially with the coloured lighting

futuristic, cyberpunk, grungy

Very cool lots of good detail and weathering in the areas with shops/vending machines, but seems a bit empty in the middle area between everything

Cyber Punk styled futuristic, capitalist society.

Gives me a cyber-like first person shooter

I really like how colorful it was despite the tone seeming kinda grungy

Does this remind you of any other particular game?

14 responses

A bit cyberpunk because of the colouring, something dark and gritty, potentially open world like GTA.

cyberpunk 2077

None that I have played personally.

Cyberpunk 2077 / Borderlands / Mass Effect

Cyberpunk 2077 & Deus Ex Series

Reminds me of cyberpunk and a tint of boardlands

Cyberpunk, other city/metro levels in games

ITS NOT EXACTLY THE SAME BUT IT REMINDS ME OF CYBERUNK

Cyberpunk 2077

Any further feedback ?

10 responses

Yeah it's cool, gives me big duke nukem vibes which is sick

Looks great! Would be interested to see further stuff

- The middle of the map is quite barren
the sides are run down with lots of detail like the trash bags, rusted stands and billboards models etc
which gives the feeling of a run down futuristic city, however there is a large gap in the middle where the player would be walking, maybe a change in the flooring or a path here would bring it together, or you could make the area smaller to fill the space more

I really like the atmosphere of the 5th picture. Dark environment with the menacing red neon.

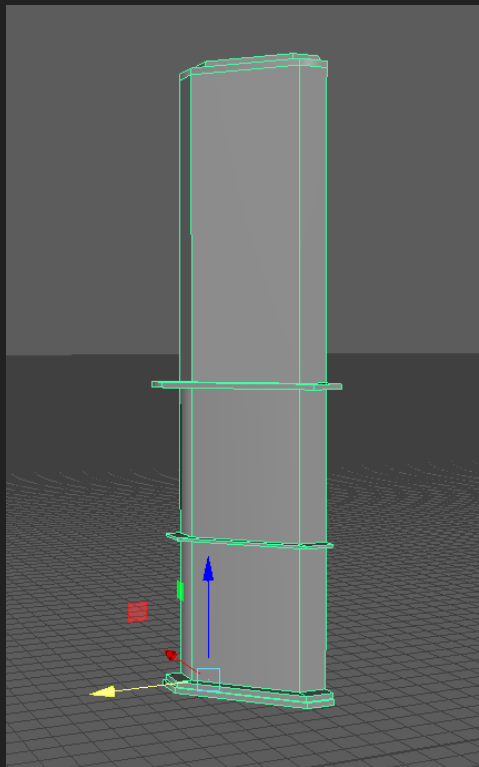
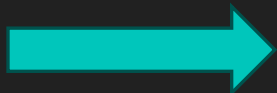
I can see some of the weathering on walls and general items in the environment is a bit repetitive, maybe some more variety in dirt/scratches/rust on things may make things look more different from each other?

really clean assets and models, feels a little empty with the centre of some screenshots being a big empty space but unsure of the gameplay elements that might be involved.

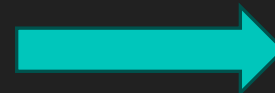
Issues and Problem solving



Lighting issue with faces



Applied fixes to retopology

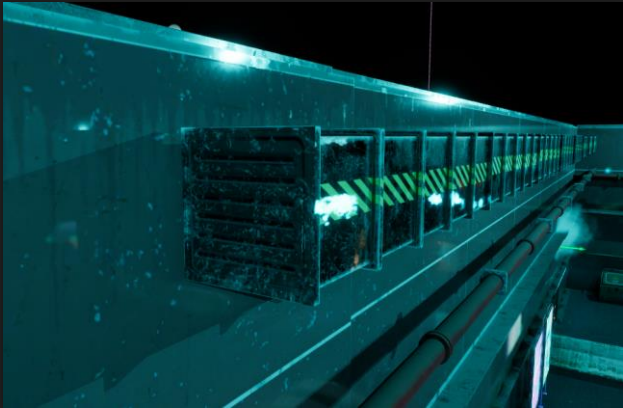


Applied fixes to retopology

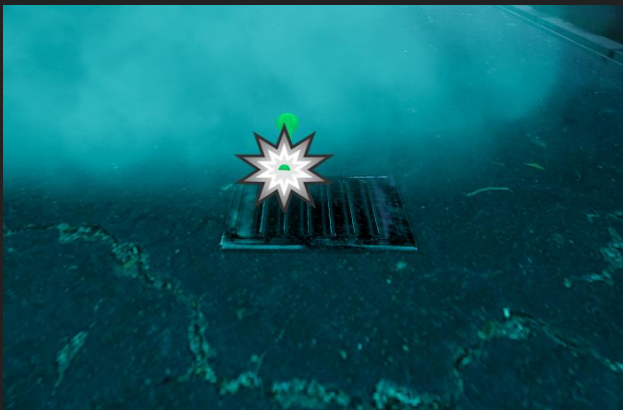
Using Complex meshes



Repurposing Single assets for multiple use

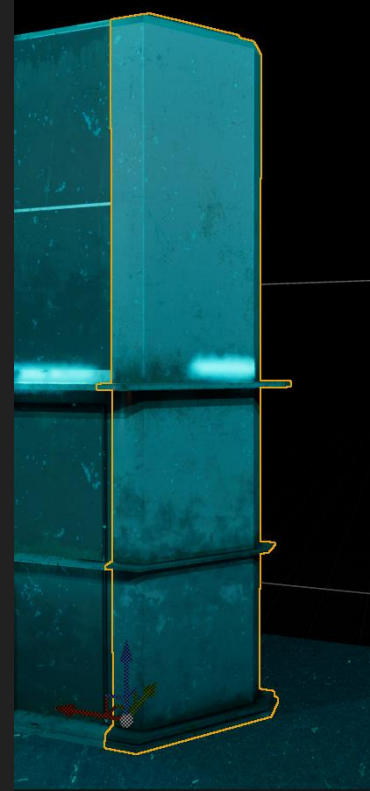


Original purpose -
Ventilation system

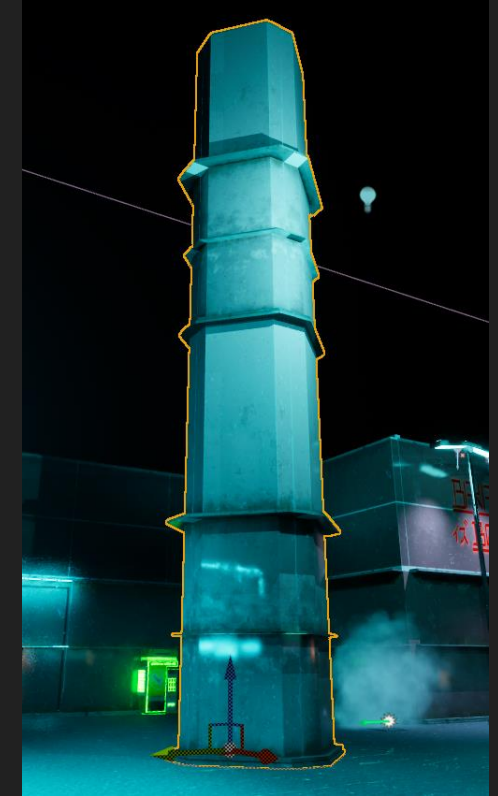


Secondary purpose -
Ground Vents

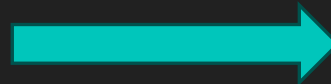
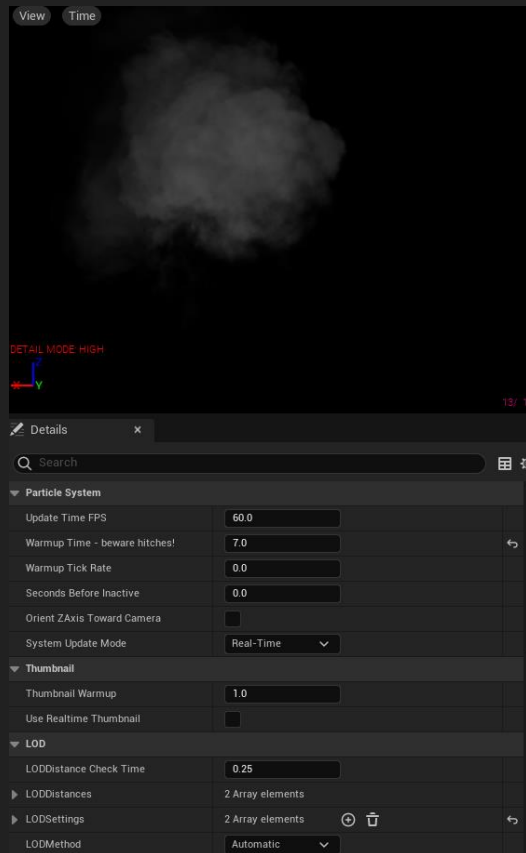
Original purpose -
Modular Corner Wall



Secondary purpose -
Tower



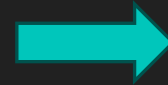
Environment FX - Smoke



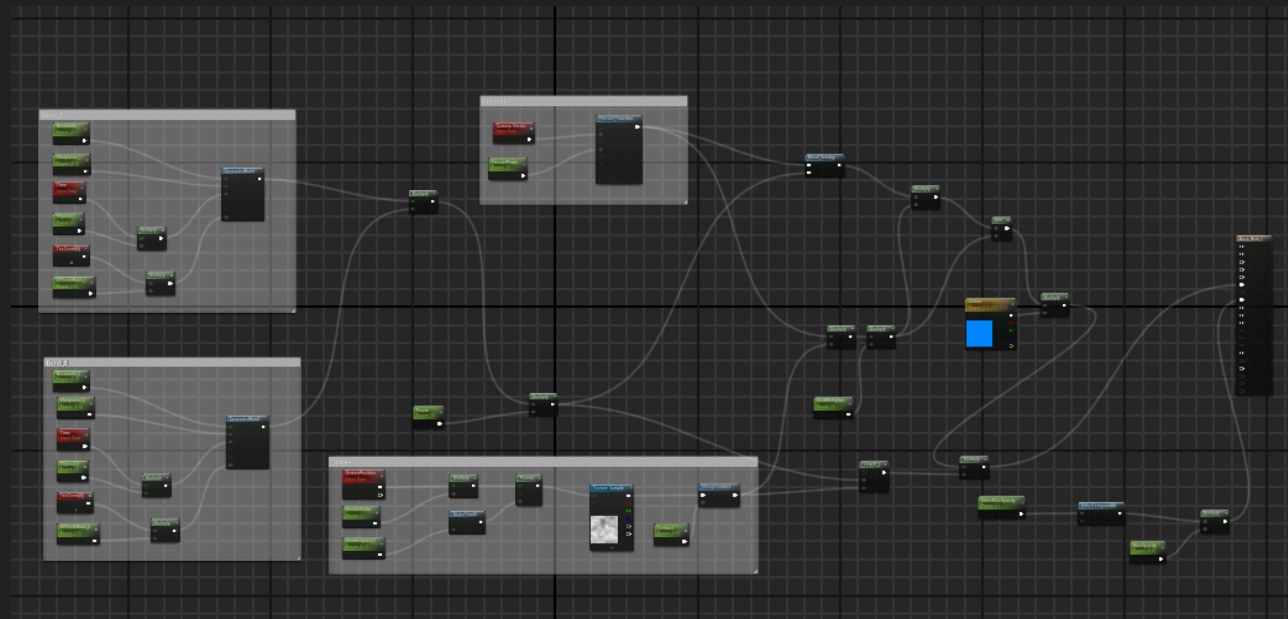
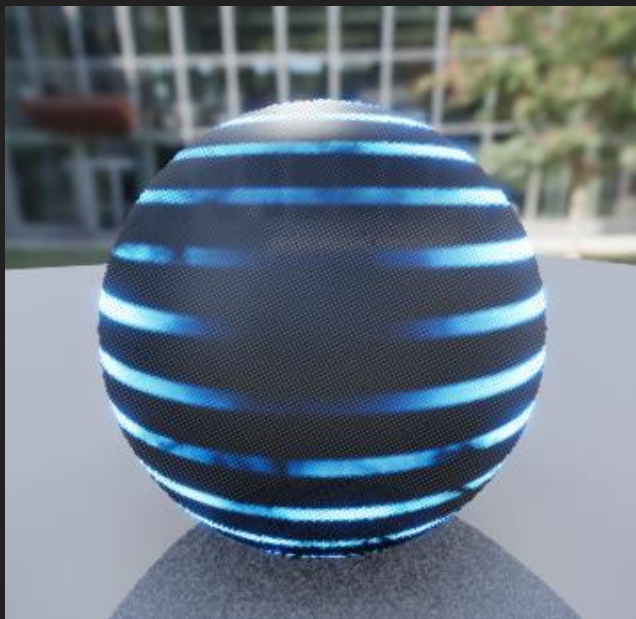
Environment FX - Sparks



Smoke	Sparks	Spark burst
☒ 32	☒ 8	☒ 4
GPU Sprites	GPU Sprites	
Required	Required	Required
Spawn ☒	Spawn ☒	Spawn ☒
Lifetime ☒	Lifetime ☒	Lifetime ☒
Initial Size ☒	Initial Size ☒	Initial Size ☒
Subimage Index ☒	Sphere ☒	Size By Life ☒
Initial Rotation ☒	Const Acceleration ☒	Initial Rotation ☒
Size By Life ☒	Color Over Life ☒	Color Over Life ☒
Color Over Life ☒	Collision ☒	Light ☒
Initial Velocity ☒	Size By Life ☒	
Inherit Parent Velocity ☒		
Const Acceleration ☒		



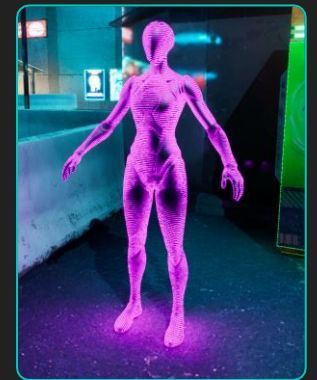
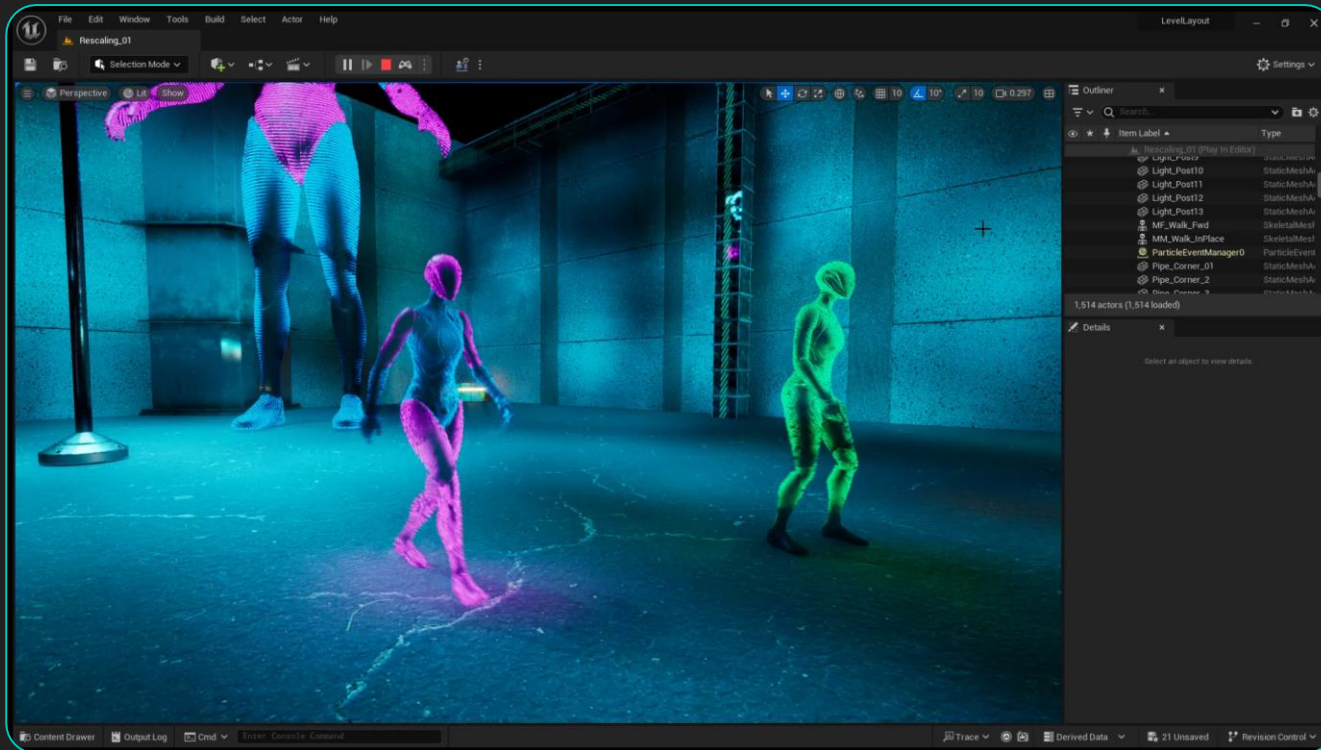
Environment FX - Hologram



Material Properties Panel:

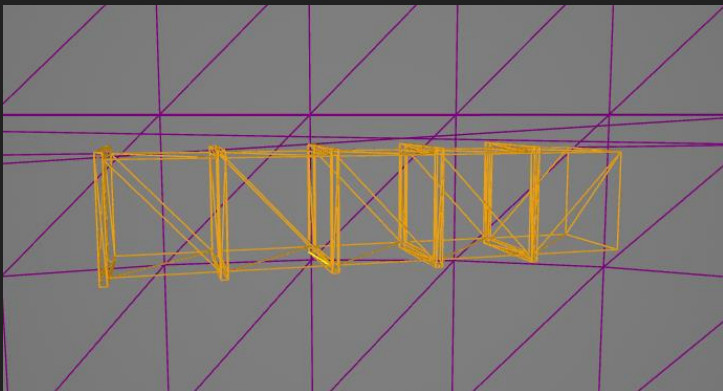
- Band2**
 - Bandwidth_2: 0.5
 - Sharpness_2: 0.192
 - UVScaleBans_2: 1.0
 - VSpeed_2: 0.5
- Band_1**
 - Bandwidth_1: 0.204
 - Sharpness_1: 0.75
 - UVScaleBans_1: 100.0
 - VSpeed_1: 2.081464
- Dither**
 - DitherMaxOpacity: 1.0
 - MaxOpacity: 0.5
- Global Scalar Parameter Values**
 - Contrast: 0.5
 - FresnelPower: 2.022793
 - GlowMultiplier: 7.984576
 - Param: 1.717564
 - SmokeScale: 0.354364
 - SmokeSpeed_Y: 0.004
- Global Vector Parameter Values**
 - Colour: [Pink Color]
- General**
 - Phys Material: None
 - Parent: Base_Holo_1
- Lightmass Settings**
- Material Property Overrides**
- Advanced**

Environment FX - Hologram

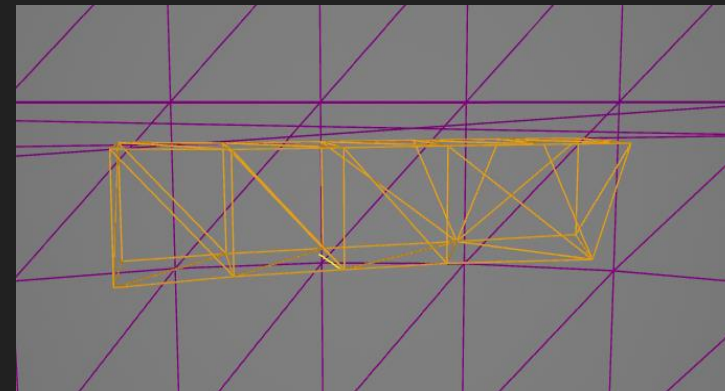


LOD

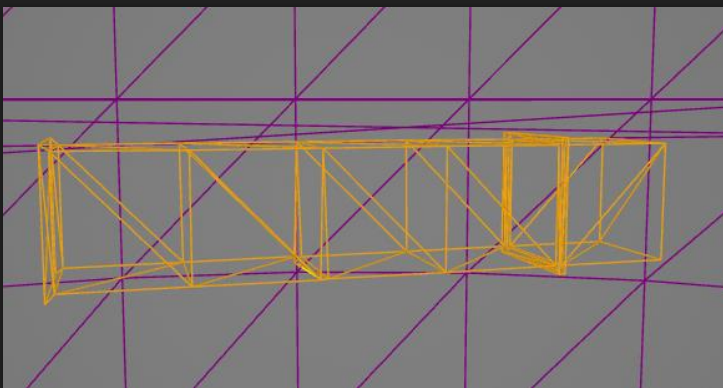
LOD 0



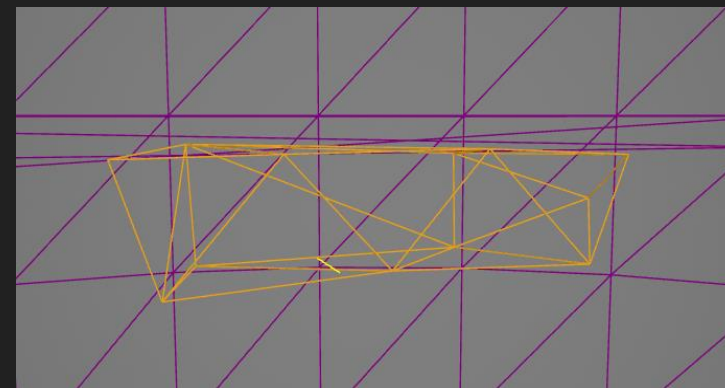
LOD 2



LOD 1



LOD 3



Environment Decals



Graffiti



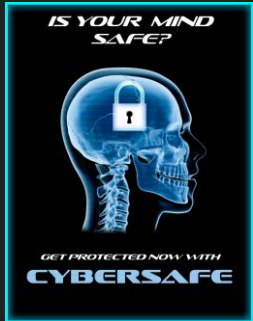
Icons



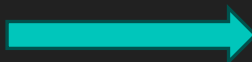
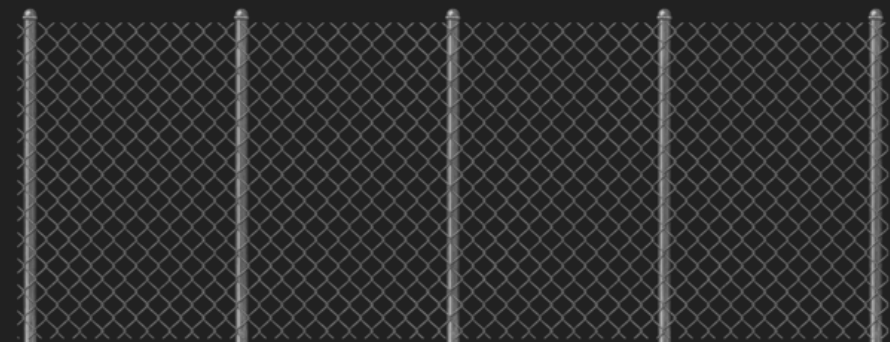
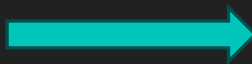
Graphics



[22]



Environment Detailing



Using decals in Unreal Engine 5



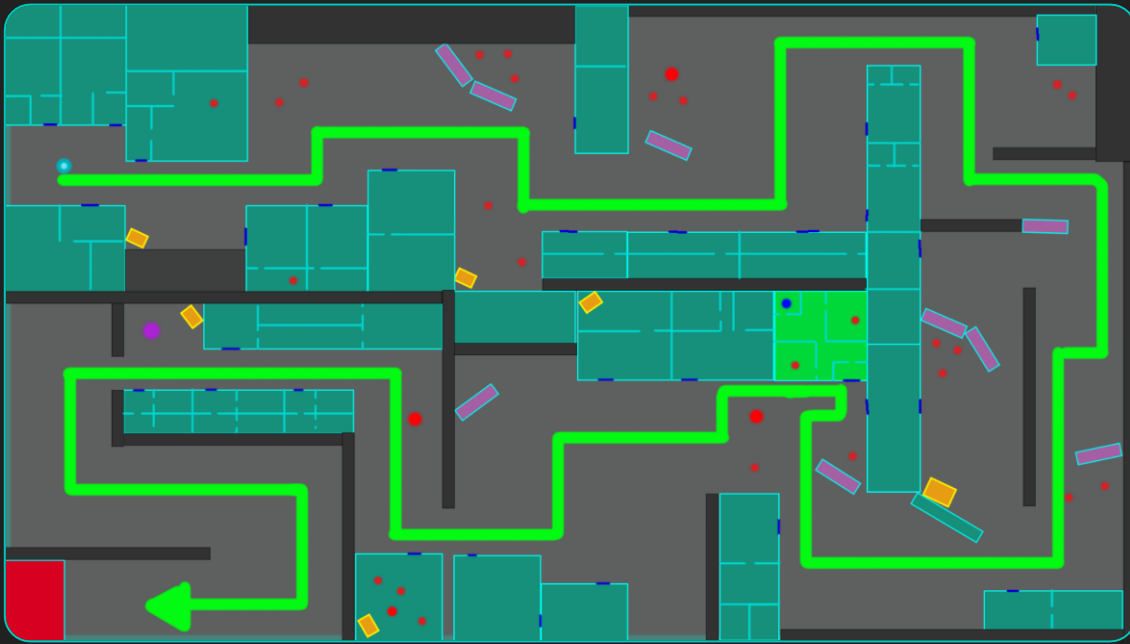
Set Dressing



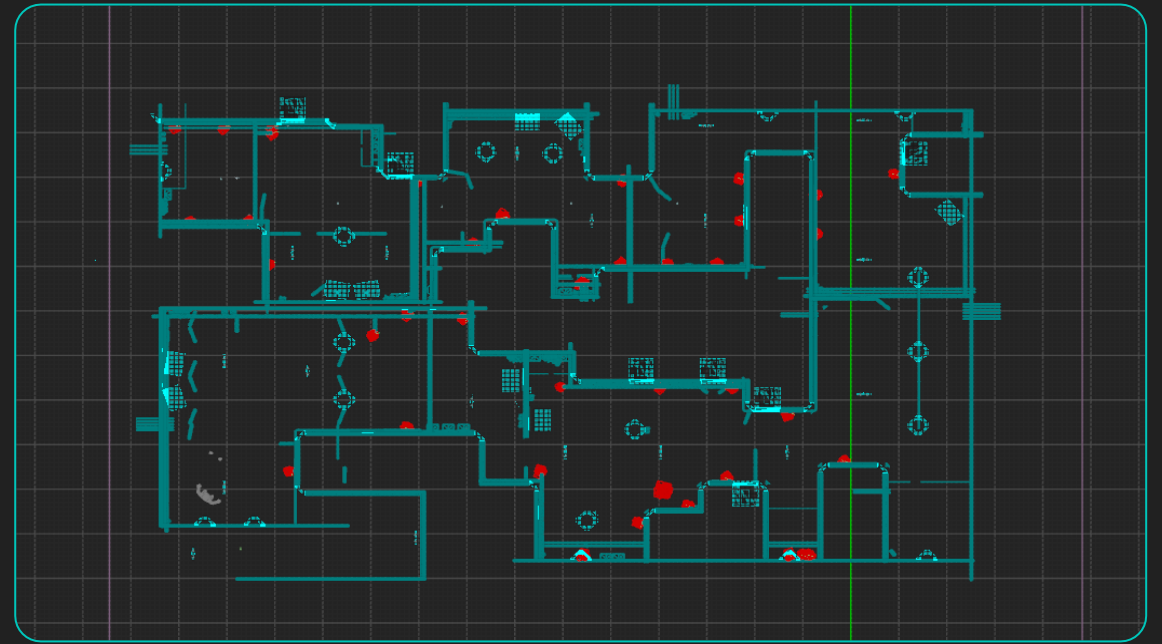
Interior Design



Map Design



Original map design



Top-down wireframe of built map

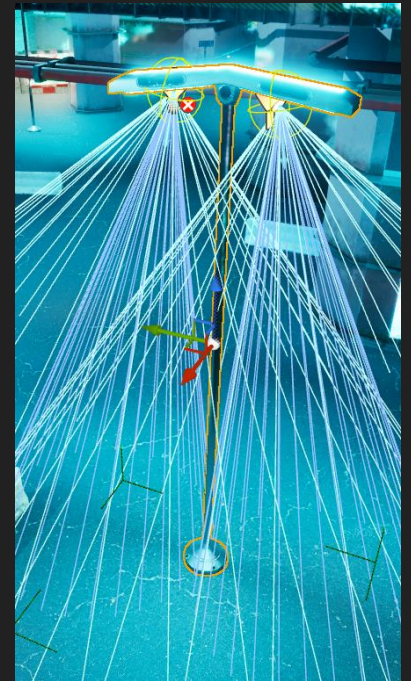
Lighting



Point lighting



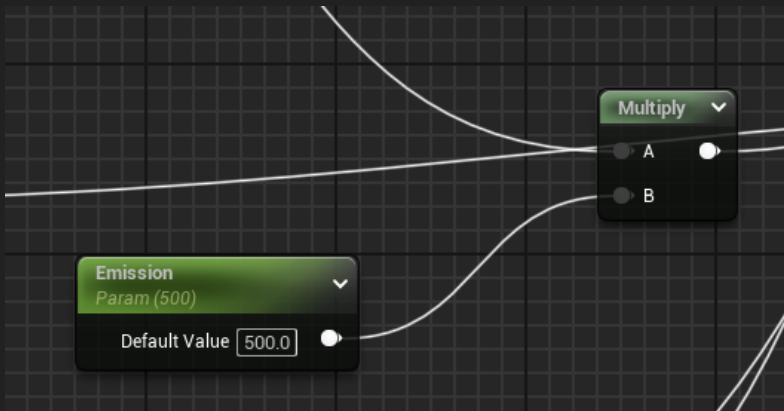
Directional lighting



Emissive



Creating a material instance for emissive sliders

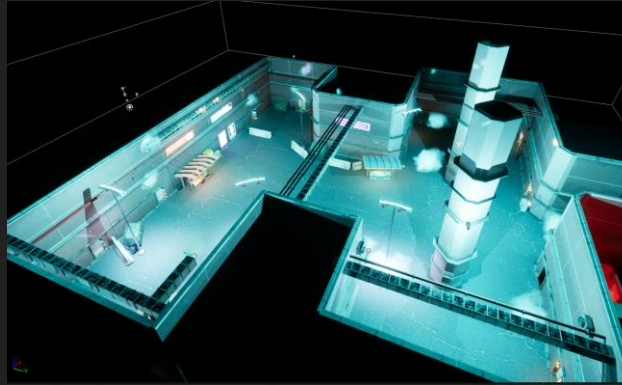


Emissive properties in different lighting settings



Post Processing Volume

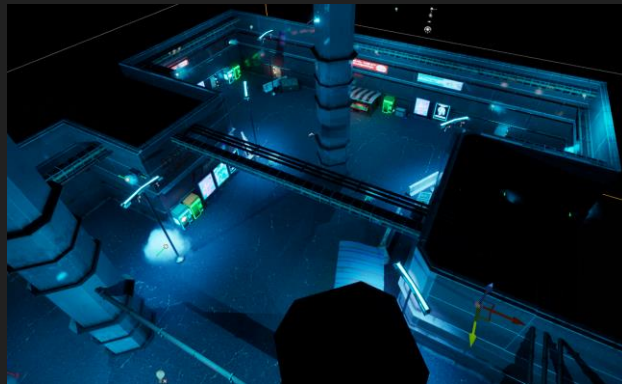
No post processing volume



With post processing volume



Variant post processing and experimentation





Further Development

- Procedural generation – Enables quicker and more efficient asset placing and building
- More animations – Make the world more interactable
- More texture variants – To give the world more variety
- Extra modular assets – To give the map a multi diverse range of modular assets

References

- [1] L. Abbott, Cyberpunk Market, Luke Abbott, <https://www.artstation.com/artwork/1qQWG> (accessed Mar. 3, 2024).
- [2] "Cyberpunk 2077," Home of the cyberpunk 2077 universe - games, anime & more, <https://www.cyberpunk.net/gb/en/cyberpunk-2077>
- [3] "The ascent," Curve Games, <https://curvegames.com/our-games/the-ascent/>.
- [4] "Kitbash3D – Cyberpunk - free 3D models download," UnitySTR, <https://unitystr.com/product/kitbash3d-cyberpunk/> (accessed Feb. 2, 2024).
- [5] "Cyberpunk street neon night lights 4K wallpaper,HD games wallpapers,4K Wallpapers,images,backgrounds,photos and pictures," hdqwalls, <https://hdqwalls.com/cyberpunk-street-neon-night-lights-4k-wallpaper> (accessed Feb. 4, 2024).
- [6] "Cyberpunk Night City store," Playground, <https://playground.com/post/cyberpunk-night-city-store-selling-hot-sauce-perfect-compo-cln6g5v8t06i4s601gb5v05g0> (accessed May 8, 2024).
- [7] A. Tran, "Cyberpunk Alleyway," Art Station - Cyberpunk Alleyway , <https://www.artstation.com> (accessed Mar. 4, 2024).
- [8] M. Pach, "Cyberpunk alley," Art Station - Cyberpunk alley, <https://pahuu.artstation.com/projects/rRoWkG>.
- [9] patrixFollow, "Spaceship - 3D model by Patrix," Sketchfab, <https://sketchfab.com/3d-models/spaceship-382e829e1da044dbae3bdbf5c7891860> (accessed Mar. 5, 2024).
- [10] [1] D. Korbolev, "Artstation - cyberpunk buildings pack and scene | game assets," Cyberpunk Buildings Pack And Scene, <https://www.artstation.com/marketplace/p/Nd5d/cyberpunk-buildings-pack-and-scene> (accessed Mar. 11, 2024).
- [11] P. Tarnowski, "Cyberpunk Phone Booth," Art Station - Cyberpunk Phone Booth, <https://www.artstation.com/artwork/oNPKz> (accessed Mar. 1, 2023).
- [12] L. Viljoen, "Artstation - Luke Viljoen," Hero Grinder Mall Props, <https://www.artstation.com/lukevilljoen> (accessed Mar. 4, 2024).
- [13] Crazy_8Follow, "Game ready cyberpunk neon signs - 3D model by crazy_8 (@korbolevd)," Sketchfab, <https://sketchfab.com/3d-models/game-ready-cyberpunk-neon-signs-2069b35c76a54f589686da1a6c3e9fc9> (accessed Mar. 2, 2024).
- [14] Why gamers play and why they buy: A closer look at those intending to buy cyberpunk 2077 and Pokémon Sword/Shield | newzoo, <https://newzoo.com/resources/blog/why-gamers-play-and-why-they-buy-a-closer-look-at-those-intending-to-buy-cyberpunk-2077-and-pokemon-sword-shield> (accessed Feb. 22, 2024).
- [15] M. BATYLDA, World of Cyberpunk 2077 Deluxe Edition. DARK HORSE COMICS, U S, 2020.

References

- [16] "Pin by Yechuan Cui on 人体结构: Female pose reference, figure drawing models, human poses reference," Pinterest, <https://www.pinterest.co.uk/pin/365636063513017588/> (accessed Mar. 7, 2024).
- [17] "Free vector: Led wall video screen with green, blue and red dot lights on black background.," Freepik, https://www.freepik.com/free-vector/led-wall-video-screen-with-green-blue-red-dot-lights-black-background_9396071.htm#query=computer%20screen%20effect&position=9&from_view=keyword&track=ais&uuid=062d327f-f340-49ae-a691-9f9c1319c79d (accessed Mar. 7, 2024).
- [18] Unblast, "Free mini pills bottle mockup (PSD)," Unblast, <https://unblast.com/free-mini-pills-bottle-mockup-psd/> (accessed Mar. 7, 2024).
- [19] "PNG all," PNG All RSS, <https://www.pngall.com/crime-scene-tape-png/download/150763> (accessed Apr. 24, 2024).
- [20] Gallery.Yopriceville, "Transparent chain link fence PNG clipart," Gallery Yopriceville, https://gallery.yopriceville.com/Free-Clipart-Pictures/Fences-PNG-Clipart/Transparent_Chain_Link_Fence_PNG_Clipart#google_vignette (accessed Apr. 24, 2024).
- [21] "GoHZQ polarised sports sunglasses for men womens polarized cycling sunglasses UV400 protection TR90 superlight frame glasses for driving, fishing, bike (purple) : Amazon.co.uk: Sports & outdoors," GoHZQ Polarised Sports Sunglasses for Men Womens Polarized Cycling Sunglasses UV400 Protection TR90 Superlight Frame Glasses for Driving, Fishing, Bike (Purple) : Amazon.co.uk: Sports & Outdoors, https://www.amazon.co.uk/Polarised-Sunglasses-Polarized-Protection-Superlight/dp/B09Z2LC8P7/ref=asc_df_B09Z2LC8P7/?tag=googshopuk-21&linkCode=df0&hvadid=570429856727&hvpos=&hvnetw=g&hvrand=6477286218672278475&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1007460&hvtargid=pla-1679192567918&mcid=bd606ac3bcd3743811c44df023edba6&th=1 (accessed Mar. 7, 2024).
- [22] Veronawinner, "Shower icon filled flat symbol vector image on vectorstock," VectorStock, <https://www.vectorstock.com/royalty-free-vector/shower-icon-filled-flat-symbol-vector-21348970> (accessed Mar. 8, 2024).

Bibliography

<https://playercounter.com/cyberpunk-2077/>

<https://www.similarweb.com/website/cyberpunk.net/#demographics>

<https://newzoo.com/resources/blog/why-gamers-play-and-why-they-buy-a-closer-look-at-those-intending-to-buy-cyberpunk-2077-and-pokemon-sword-shield>

<https://imgur.com/a/4vJ7OIk>

https://www.youtube.com/watch?v=Kntql5Q9o_8

<https://www.youtube.com/watch?v=AcLIwPyNjZ4>

<https://newzoo.com/resources/blog/why-gamers-play-and-why-they-buy-a-closer-look-at-those-intending-to-buy-cyberpunk-2077-and-pokemon-sword-shield>

<https://playercounter.com/cyberpunk-2077/>

<https://www.similarweb.com/website/cyberpunk.net/#demographics>

<https://www.youtube.com/watch?v=UTvzjJ-gr1k&list=PL94k-7pGx3MChG4GxKemppvN2fjDA9uK3>

<https://www.youtube.com/watch?v=4igTVJOEJw0&list=PL94k-7pGx3MChG4GxKemppvN2fjDA9uK3&index=11>

<https://www.youtube.com/watch?v=OfcsaUh-xol&list=PL94k-7pGx3MChG4GxKemppvN2fjDA9uK3&index=8>

<https://www.youtube.com/watch?v=dGpgCkM5lbA&list=PL94k-7pGx3MChG4GxKemppvN2fjDA9uK3&index=14>

<http://www.drawingreferences.com/?&tag=how+to+draw+lips>

<https://www.unrealengine.com/marketplace/en-US/product/actorcore-daily-motion>

<https://www.youtube.com/watch?v=IWV52h-VHi8>

Cyberpunk 2077," Home of the cyberpunk 2077 universe - games, anime & more, <https://www.cyberpunk.net/gb/en/cyberpunk-2077>

"The ascent," Curve Games, <https://curvegames.com/our-games/the-ascent/>.

<https://www.youtube.com/watch?v=kTQqVNh1REk>

<https://www.youtube.com/watch?v=8ye1ICUnVkl>