

Wie had ooit gedacht dat drones kapot
knallen zo leerrijk kon zijn

Malarkey Rebellion

Bachelorproef door Jef Belmans

Story

Target: Jef Belmans, 21 jaar, born and raised in Antwerpen.

Pursuing game development

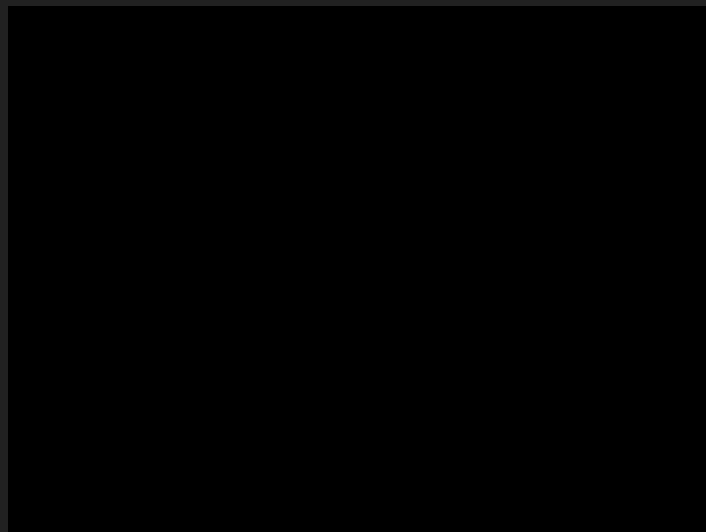
My sequel: DAE at Kortrijk

One dream

Gameplay programmer bij DICE Stockholm



The journey



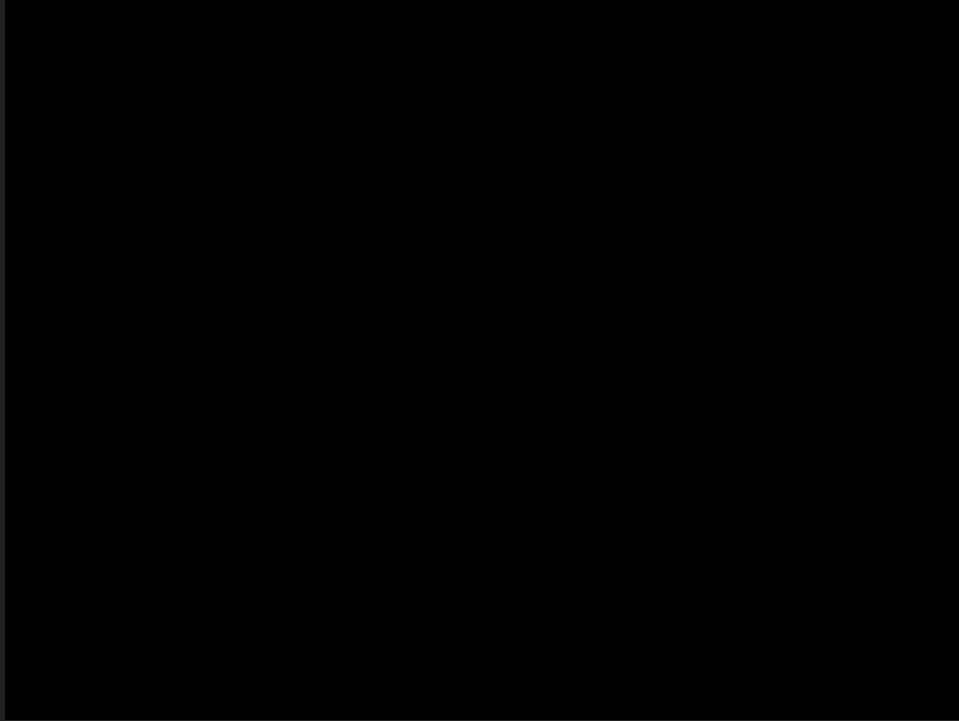
A photograph of Jeremy Clarkson, a middle-aged man with grey hair, wearing a grey suit jacket over a blue shirt. He is standing outdoors in a grassy field with trees in the background. To his left, a silver car is partially visible, and a person is leaning over it. In the background, another person is holding a camera. The sky is overcast.

Speed has never killed anyone.
Suddenly becoming stationary,
that's what gets you.

—— *Jeremy Clarkson* ——

AZ QUOTES

Malarkey Rebellion is ready!



The meat (tofu if you're vegan) of the game

- Munitie buidel
- Verschillende, modulaire vuurwapens
- Waves upon waves upon waves of danger
- Interactieve end-of-round shop
- bHaptics Tactsuit integratie
- *“What are you waiting for? Christmas?”*



Challenge #1: interacties

Unity's XR framework is zeer mager

Kost te veel tijd om zelf al de interacties te ontwikkelen

- > Gameplay zelf komt dan in gevaar

Interacties moeten logisch en vloeiend zijn

- > Nefast voor de fun factor

Het wiel heruitvinden is tijdverlies

All-out mayhem, explosies en humor

Solution: VR Interaction Framework

Na overleg met vakdocent

- Bevat basis interacties en extra's
- Goede fundatie om op te bouwen
- Gegoten tot visie van mijn spel



Challenge #2: performantie

Draw calls in mijn project de FPS hog

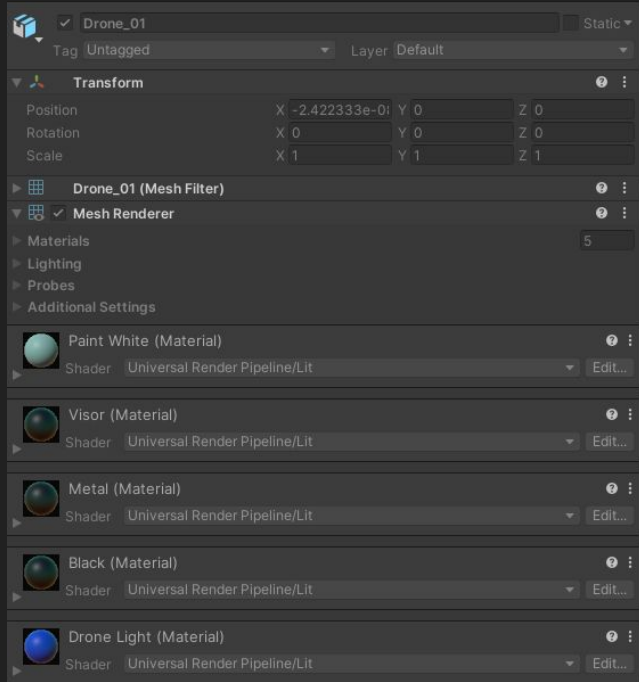
Verts, tris en vooral materials tot een minimum reduceren

Trusty ol' Blender to the rescue

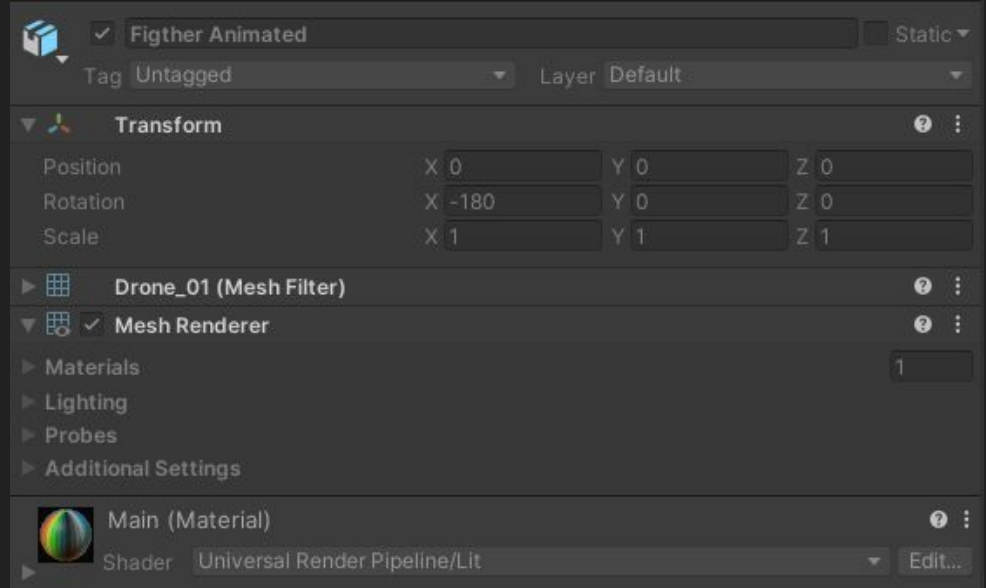
Bake them lights

Combine them meshes

Solution #1: draw calls reduceren



Voor



Na

Solution #1: draw calls reduceren

Statistics

Audio:
Level: -74.8 dB DSP load: 0.2%
Clipping: 0.0% Stream load: 0.0%

Graphics: 394.3 FPS (2.5ms)
CPU: main 2.5ms render thread 1.0ms
Batches: 42 Saved by batching: 19
Tris: 9.2k Verts: 18.3k
Screen: 1716x882 - 17.3 MB
SetPass calls: 16 Shadow casters: 0
Visible skinned meshes: 0
Animation components playing: 0
Animator components playing: 0



Voor

Statistics

Audio:
Level: -74.8 dB DSP load: 0.2%
Clipping: 0.0% Stream load: 0.0%

Graphics: 368.0 FPS (2.7ms)
CPU: main 2.7ms render thread 1.0ms
Batches: 11 Saved by batching: 0
Tris: 6.1k Verts: 11.7k
Screen: 1716x882 - 17.3 MB
SetPass calls: 3 Shadow casters: 0
Visible skinned meshes: 0
Animation components playing: 0
Animator components playing: 0



Na

381.8%

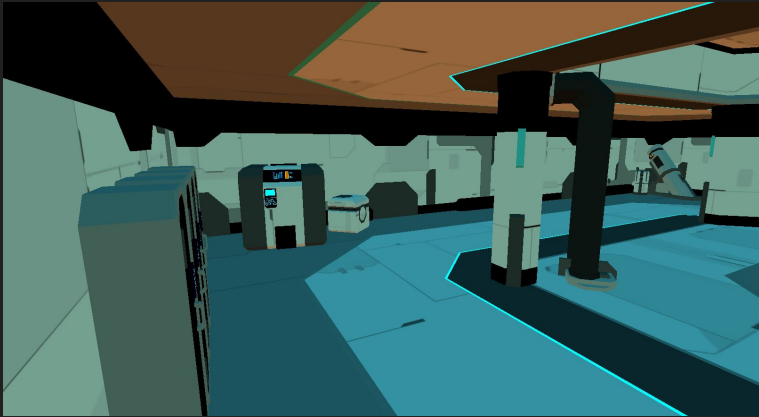
Reductie van draw calls: per drone

Solution #2: baked lighting

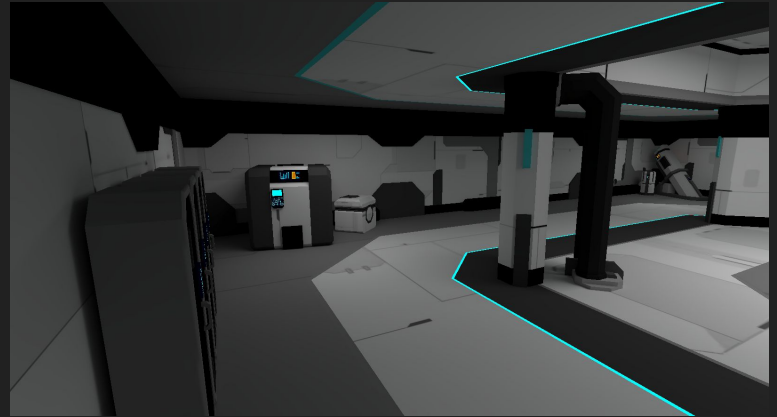
Gedaan met Bakery, Unity's progressive niet robuust

Realtime shadows: a big no no

Zonder baked GI



Met baked GI



Other solutions

Occlusion culling: Overdraw verminderen

Mesh Combine Studio: Combineert meshes met dezelfde materials

> Bevordert occlusion culling vanwege cells

	Batches	Vertices	Triangles
Original*	408	99190	179925
Combined*	20	99190	179925
Saved	95.1%	0.00%	0.00%
Boost	2040.0%	100.00%	100.00%
Combine Time: 60.00 ms			

2040%

Reductie van draw calls: alle statische objecten

I'm here to chew bubblegum and kick ass...
and I'm all out of bubblegum.