

IMPACT (aka Exec Summary)

My idea is to create a vehicle customisation system that uses various existing methods as well as unconventional, imaginative, and unexpected ones, to join into one project to impact the current industry to attempt a 'newer' way of doing.

I share and analyse ways the industry has currently thought about vehicle customisations, as well as discussed other methods from places that do not involve cars as inspiration. This can be found in the context and theory section of this document.

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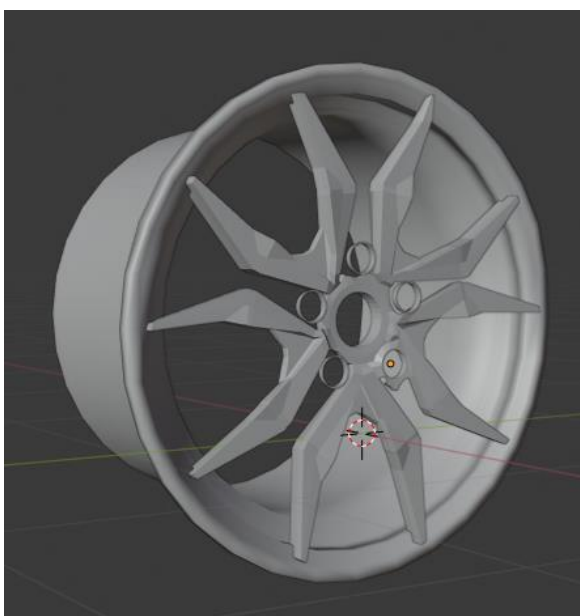
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RATIONALE

AGI S1 made me think about what was true to me. Graphics and 3D work has always been a passion of mine, but cool graphics are not enough if they are not a part of a bigger project. I would like to work on refining my craft and focus in on it while making a customising screen, for vehicles (imaginary features too, not just generic cars). In CPS, I dabbled in coding and button layout. I am interested to go deeper in this field too; either solo or collaborative as these skills will benefit me in the future as either a solo or as a small team. I want to be more of an all-rounder while still focusing on 3D. I believe my main goal would be, **how can I make a low to no budget project about customisation, have a point of difference and have the illusion of being made as a Triple A title?** I would need to contextualise what makes a triple a game what it is - see what aspects I can incorporate in my own way into the project. It would take a lot of research and planning. I would also need to think creatively about how the project will be handled; it would have to be made in a smart way. AGI S1 also made me aware that environment design requires a lot of considerations in terms of the mood, the setting, and secret easter eggs.

While an environment is not currently my main project goal, I would require an environment to set the mood, such as a back alley or a garage. There's a lot of considerations for the theme of the project such as, a street style, an old fashion style, or as Oneeb from class suggested "A magic based one, a sci fi one, an organic one?" (Neuman, 2021, July. 21) all these ideas are great, throughout the weeks I will discover which one is right for the project, make a corresponding environment and match the selection to a UI style. I may also think of other options depending on how I see the project going.

During the approaching end of the Uni break, I wanted to create a car, which is what sparked my interest in a project around vehicles. I created this during that time in about an hour or two, its not much but it was the beginning stages of a car tire rim.



CONTEXT

For this project I will be both a developer and an artist (and basically everything else). Customisation has been done in different ways, and I am looking to make my own project with different methods throughout the process.

Some examples of more 'generic' car customisation can be seen below. It is still important to discuss it as I will point it out below.

Car Customisation in **GTA 5**.

[https://youtu.be/ Kpi9u2uyPs?t=344](https://youtu.be/Kpi9u2uyPs?t=344) (CubicSlice, 2016, Mar. 18)



Car Customisation in **Need for Speed: Most Wanted**.

<https://youtu.be/zCT6W3euaKA?t=115> (NFS Cracker, 2017, Jul. 24)



Car Customisation in Wreckfest.

<https://youtu.be/Gssh04DBqPU?t=43> (RGC, 2018, Jun. 11)



Real life examples of connection methods, hinges, etc. (This image is an example of ideas in my head; these parts are 3D printed, I thought it would be a good showcase regardless).

<https://images.app.goo.gl/X4KswBMWiFMpvdP79> (Tulsyan, S. 2018)



CONTEXT REFLECTION

There is more context in the theories section.

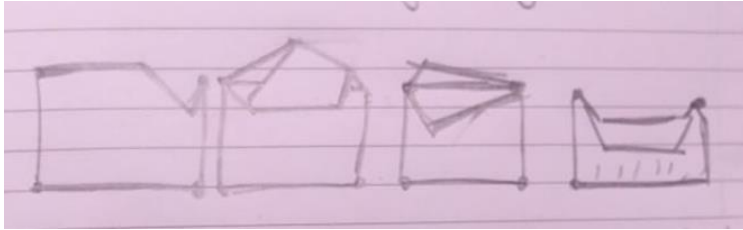
In the industry, car games have generally had the ability to allow the player to customise their ride, the 3 examples I shown earlier of GTA 5, Need for Speed: Most Wanted and Wreckfest, have a similar method of customisation, where the user selects a part, and it replaces it. This method they use is fun to play with however not original. These examples **still influence my project**, they allow me to see this as a component of a potential solution. In my pitch, I will have elements of this **as well as other references and ideas from other ideas**. I know I needed more than just this, after consulting with Jadd, and receiving feedback from Matt, Oneeb and Tony.

I then continued thinking outside of this realm and made a concept based on how real-world parts work, I did some tests and felt it was unnecessary and limiting to make them like a puzzle piece, I then made the following concept, where instead of pieces I just **match the outside vertices and customise the interior**.

THEORIES

Body to body connection

Both sides of the body would need to match vertices, so that connecting is possible. A pro to this is that in theory, the vehicle can be somewhat unlimited in length.



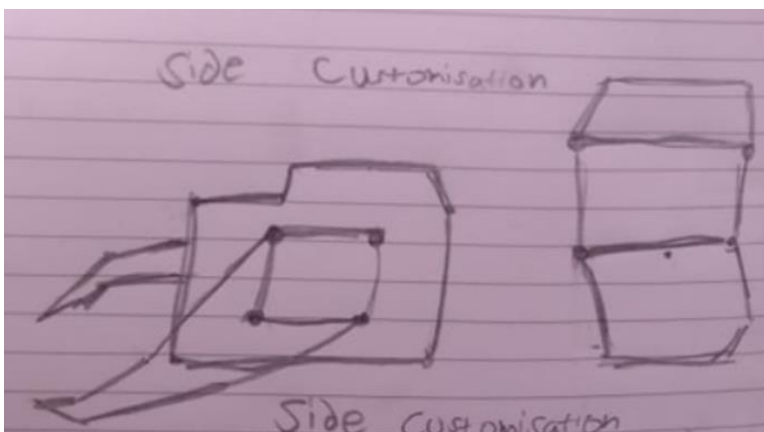
Front to body connection

Middle vertex's must match. The front of the car does not need to match like the body section.



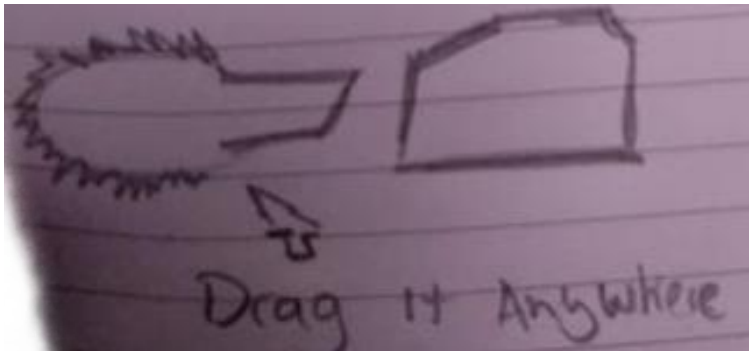
Side Customisation

Not as strict as the previous ways of connection, it only requires space to be added. Could add some interesting shapes and styles



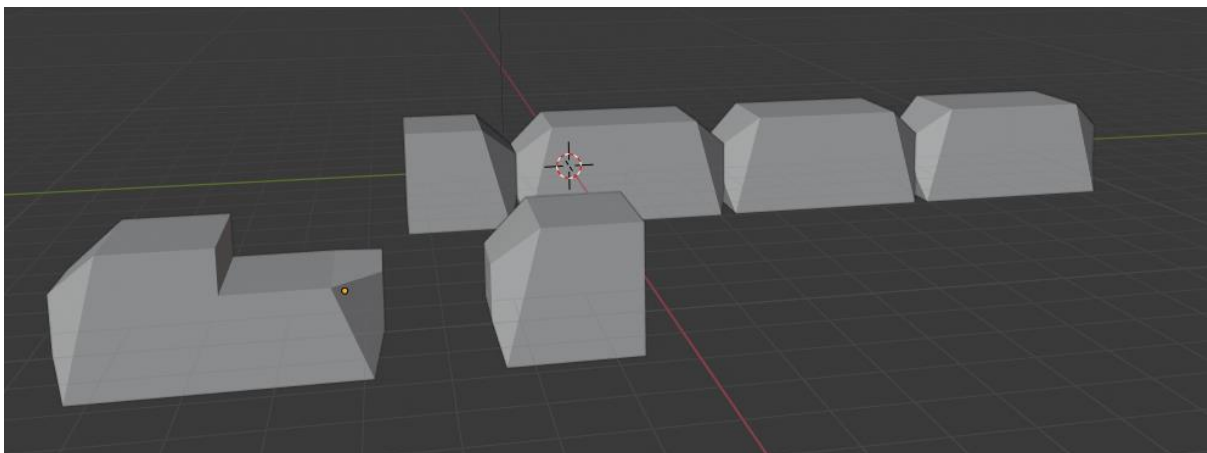
Accessories

Drag it anywhere you want.



I tested this theory and while it was limiting on the vertical axis, I was able to get it to kind of work. (Please bear with quality, it was made for testing only). The Side customisation worked well, especially as in this project I'm not as focused as stacking the sides of the vehicle as much as the length.

Tests for the accessories section will come later; however, I'm assuming it would work based on how free the system is, it's way less restrictive than the body-to-body method is. It is like my side customisation idea in the sense that I don't foresee stacking a chainsaw on a chainsaw for example. I will test it possible other theories in future too.



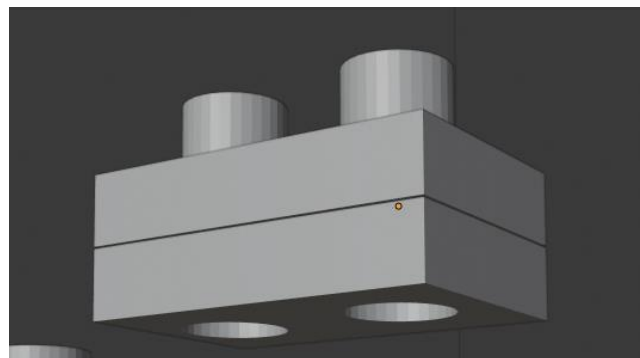
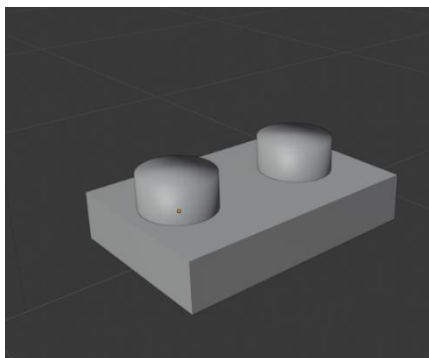
At this stage, I was unhappy with the idea, it was good in some ways but horrible in others.

World customisation in LEGO® Builder's Journey

https://www.youtube.com/watch?v=2p71ltZ_gH0&t=4s&ab_channel=NVIDIA GeForce (NVIDIA GeForce, 2021, Jun. 1)



I really liked this sort of idea, there is an emphasis on the vertical, and a lot of opportunity for custom ideas, so I opted to test this method too, the purpose was to explore and play around with it to gather more information. I decided to just do it in Blender instead of buying it, I thought it would be more beneficial this way as I have full control of the project and can try other concepts too.



As suspected, I like the vertical control of this, as it works well, but now I am restrictive in the horizontal axis.

I also tested putting these Lego connection methods on the side of the block to rectify this problem, but I was then limited by the actual customisation of each part, as there were too many technical factors. unfortunately, I did not take pictures nor save this work....

I was also not looking to make a carbon copy LEGO game, but thus far all my tests were 'failures', everything I tried had a negative to it.

And then it hit me.... I was focusing too much on the cons of each method, and I didn't fully appreciate the pros... My idea is a combination of all the methods I discussed! I will use them for the benefits and use a different style for the sections that would be classified as a con! More on this in the method section.

On another note, I opted to move away from cars from the feedback I received from Matt, I searched "100 different vehicles" I was surprised I found a video that talks about it. I'm not too concerned with showing the video itself, but the thumbnail of the video is super helpful.

<https://images.app.goo.gl/c77PGx6AmXgrBbjW8>



Tony also suggested a game called F-Zero which has vehicles with other very interesting shapes and sizes

https://www.youtube.com/watch?v=E6G2Kd0bgHs&ab_channel=DarthMarino



Between these two examples I just provided I have so many different shapes, proportions, and sizes as reference to generate new ideas and begin creatively creating my own concepts. I am not just limited to these, but the sample size is quite huge.

METHODS

Plan

Week 1	Develop the project in unity, get it organised, try making code work, etc.
Week 2	More code to the degree that the project works bare bones.
Week 3	Start to work on a full vehicle (This is very important as the first one will provide scale; the features will determine how most of the project work).
Week 4	Continue/Finish up the full vehicle (This is very important as the first one will provide scale; the features will determine how most of the project work).
Week 5	Use substance designer to create a material – try to tweak patterns and colours while project is running (by using code or something) to get a sense of capabilities. Also test how I can change the parts within the project.
Week 6	Based on the tests of week 5, proceed in an appropriate manner. Refine some more material options or make some car parts.
Week 7	Make car parts.
Week 8	add some cool soundtracks and SFX.
Week 9	Plan and begin working on the environment it will all be situated in.
Week 10	finish environment, make UI based on the theme of the chosen location.
Week 11	Make sure the project works perfectly so I don't need to stress in week 12 about that, then make car parts.
Week 12	Make more car parts for the remainder of the time left.

Overview

Minor-Project-Intention V2.0 examines a wide range of customisation options, combines them in a unique way as well has some creative custom flare to the project

How I see this working

The user will start with the main body select, here they can select the body pieces and the length of the vehicle using my custom method, the user will then be able to go to the custom side system where they will be able to customise the other Axis. Afterwards I will attempt to use a Lego like system that will allow for vertical customisation, the pieces won't look like Lego pieces, that is not a requirement, however they will be made in a way so that they are stackable, then they will go to a more specific system where they will be able to customise smaller pieces like rims, tires etc. Finally, they will be able to customise the colours. This is highly experimental and sounds like a lot, but hopefully all goes well!

Production

I have listed all the elements of this project that I deem important. I hope to focus on the 3D art the most, as that is my thing, while I attempt to make all the elements work as good as possible, although time constraints may affect quality. To reiterate my current enquiry is: *how can I make a low to no budget project about customisation, have a point of difference and have the illusion of being made as a Triple A title?* This document counts as preproduction, so I'm ready to jump into production and if an idea or a branch comes to mind, I can update the document and draw more images as I go, such as the overall aesthetic as mentioned below in environment section.

Customisation of colouring and décor

I want the user to be able to customise the colour of the vehicle and potentially the décor, so I am thinking about creating a substance material in substance designer and install a plug-in into Unity to control this somehow. I would need to code this to work, so it will take a lot of research and trial and error to pull off.

Customisation of car parts

When modelling a car, I will also make the components of it in different parts to separate the vehicle. I will make multiple different styles of parts and swap them in the project so that it is possible to customise. I am aware that the sizing of the parts needs to be somewhat consistent, so it all works according to plan.

UI

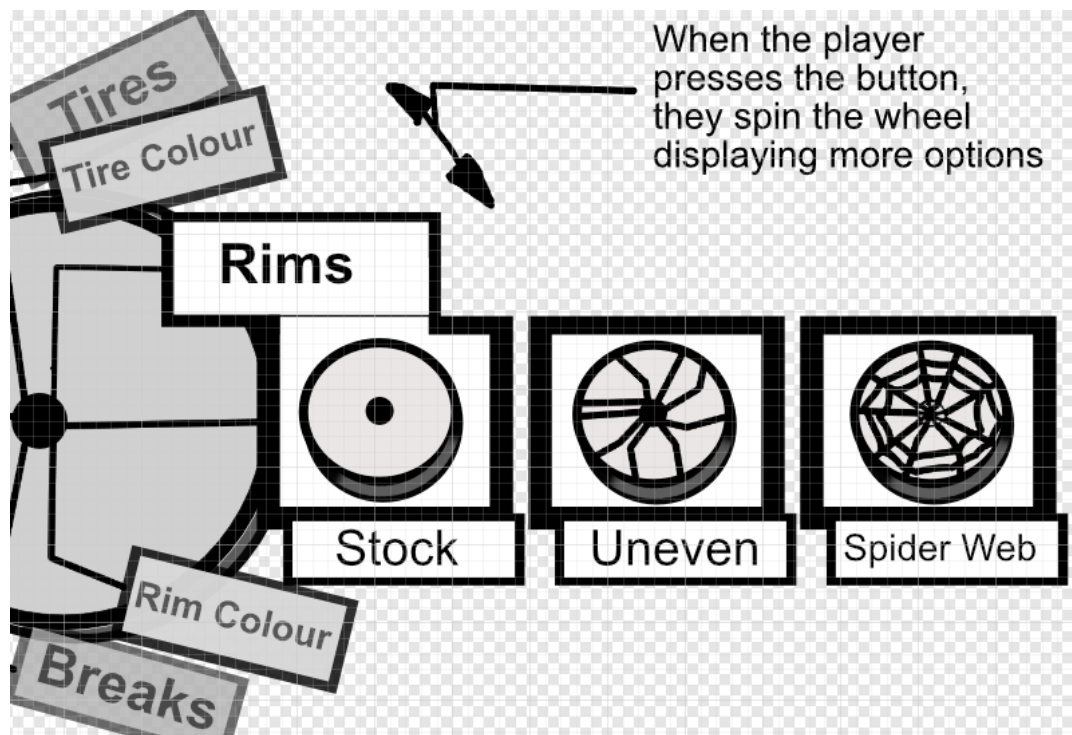
A UI will be apparent as it gives the user a way to interact with the project. It will share a theme with the environment to set the mood. As mentioned, there are 6 different ways of customisation

- Length
- Width
- Height
- Details
- Accessories
- Colour

It is highly ambitious especially as I'm not a coder, but I can rescope if needed.

The UI would need to be different per section. Length is about adding horizontally so UI can be draggable or on the top and bottom of the screen, width, and height work similarly, but on different axis.

Below is a UI idea I came up with. My idea has evolved this idea might be outdated however, I decided to include it anyway as I think it's still interesting. It uses rims and tires to layout the information.



Environment

Customisation will need somewhere to be situated in, initially I am thinking about a mechanic garage however, this is common so I will consider other places that a car can be customised. I can set the mood differently based on the location. e.g. in a street and give the whole project a street vibe, or a professional place and make the UI elements and models more elegant etc.

Sound

Currently I desire SFX and music for this project, for music that will be downloaded from somewhere as music is difficult to create especially as I will need something crazy good to in a theoretical sense 'compete' with other triple A titles. SFX may be also outsourced from somewhere, additionally I have some power tools I can borrow to make them custom too, let us see where this project takes me.

Compatibility

I put this here as its important to consider if it will be mouse and keyboard or controller, I am currently unsure. I know I must make it for MAC as that's what most of the teachers use, additionally it will be made on Windows as that's the platform I'm on. Some aspects of the project may have compatibility issues but, I will try my best and get it tested if needed.

OUTCOMES (PICTURES OUTDATED)

Vehicle Customisation Project



I am looking to create a project where you can customise a vehicle with different parts. This idea is generally seen before gameplay and a lot of car racing games have them as they are important. As a solo project I think the scope is just right, coding is still difficult for me but manageable. Cars are also difficult to make but I will be able to put a lot of time on the art which is what I want. I want to create a place where you can make some cool looking cars but also some whimsical ones too.

The metrics on how we could articulate the success is if the cars in project can be customised in many different areas, with at least 1-3 parts per section and it demonstrates a unique proof of concept. since I'm not a coder, I don't think its super fair to base the grading too much on the code even though, it might be super ambitious with my current skillset and it might be the thing that has to be rescope, but I am excited to at least try very hard. Regardless by the end of the semester, the project should be in a workable state one way or another.

Customisation in games is important "Studies have examined customization as a mechanism to foster motivation in games, and investigated its effect or importance to users in relation to other engagement attributes or game features." (Turkay S, Adinolf, S, 2015)
Something else I can do meaningfully to distinguish the project

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