WESTERN SYDNEY UNIVERSITY

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ASSIGNMENT COVER SHEET

(INDIVIDUAL ASSIGNMENT)

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Unit number:	1041		
Tutorial group:	1		
Tutorial date:		Tutorial time:	
Lecturer or tutor's name:	Mauricio Novoa		

ASSIGNMENT DETAILS

Title:	Scope and User Research
Length:	1237W, excluding in-text reference and titles
Due date:	15/08/2022 11:59pm

The College time/date stamp

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ENGR1041 A1, Blake Reed, Lack of affordable and Immersive equipment for VR

Abstract

Virtual reality is a fairly new concept in the world of gaming. With many advances through computing power driven by the search for better performance of gaming, we have reached a point of limitation with mere computer screens. People strive for more, and in result of that we have virtual reality. Through a headset designed to make use of both our eyes we are immersed in an interactive 3D world. This technology is still young therefore equipment to provide true immersion is either noin-existent ot too expensive for any average person. To that end companies have made use of headsets that hold smartphones. These headsets simply use to lenses to focus each eye of a two pov screen, which is provided via other software downloaded to the phone and/or computer. While this does work the computing power of a phone is considerably less than an actual VR headset, therefore graphics, fps, etc all suffer. However with current technology this is the compromise which must be made. However further technologies make use of the power of a computer, which runs the game and simply uses the phone as a monitor to display what the computer generates. This too works however current free software is still not perfect and some lag and poor graphics and gameplay will still be experienced, even through a wired connection. Through multiple interactions of an array of controllers, ideas about what the best direction for VR to take is thoerised and through this will be improved upon in the future.

Research

Through personal testing iot has become thoroughly clear that there are gaps and room for improvement when it comes to virtual reality. Virtual reality is still thoroughly in the “experimental” phase [1]. Therefore the state of the art technology and equipment is very expensive, and doesn’t provide the full immersion people are looking for. There are cheap alternatives, however these require additional setup and knowledge needed from the user. Now a fully immersive experience will need research and resources that cannot be provided in 6 months, therefore the current focus in on the controllers. There are no cheap ways to experience the current full experience VR can offer[2]. The aim is to provide a cheap way to feel immersed in the world of virtual reality, at an affordable cost.

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[1] https://www.theringer.com/2021/1/12/22226387/virtual-reality-playstation-xbox-oculus

[2] https://www.thetechwire.com/why-are-vr-headsets-so-expensive/#:~:text=The%20major%20reason%20VR%20headsets,.%2C%20adding%20real%20customer%20value.

There are new advancements in the world of VR. One such piece is a device that emits oder to its user. A fantastic piece of technology for about A$3500[3]. Other advancements such as Omnidirectional Treadmills are even coming into the consumer market, this device allows the user to walk any amount of distance in any direction and still be in the same place. Still at a whopping A$2800[4]. As we come further down the line we find data gloves which campture the movement of the users hand and inputs it into VR, this unfortunately costs A$1400. The trend here is obvious and simple, Fully immersive VR equipment is very expensive, and for what your getting with the current technologies some would say it's not even worth it. To even get started you need a headset that can range from 400 to over 1000 A$[5]. As mentioned before there are alternative headsets that make use of smartphones, however the performance is less that desirable and that market has come to a standstill, it is quite difficult to even find a headset for a phone, especially since Google has discontinued its Daydream View headset while Samsung hasn't updated the Gear VR since 2015[5].

For a benchmark lets look at the Oculuis Quest 2 released in 2020, at A$790 on Amazon[6]. It has a refresh rate of only 90hz[7] which is well below the standard for decentg gaming at 120hz, with a pc or new generation console. Furthermore it has a resolution of 1832x1920, far behind the Xbox series X (released 2020, A$750)[8] which has a resolution of 7680 x 4320. The headset also has a horizontal field of view of only 90 degrees[9], which is not even up to the standard of the human eye which has a horizontal field of view of 135 degrees[10]. Futhermore the smartphone alternative being even further behind. Therefore through crunching the numbers it is proven that the technology behind virtual reality is very expensive and still far behind it's full potential, proven by benchmarks set by other technologies.

Through hands on research it has been found that current controller schemes are useful only in certain areas. Therefore I propose that the best way to move forward is to provide different controllers with there own unique uses in mind.For research I made use of a headset designed to hold a smartphone and the apps Riftcat, steam, steamVR and for a test I played Euro Truck Simulator 2, a game where the player drives a truck in first person. As for findings, the joysticks of the xbox controller were superior for steering, and triggers superior

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[3] https://vaqso.thebase.in/

[4] https://www.gmw3.com/2020/10/the-virtuix-omni-one-is-a-consumer-vr-treadmill-coming-2021/#:~:text=Set%20to%20launch%20in%202021,VR%20headset%20and%20operating%20software.

[5] https://au.pcmag.com/virtual-reality-1/42713/the-best-vr-headsets

[6] https://www.googleadservices.com/pagead/aclk?sa=L&ai=DChcSEwioucL46Mj5AhX8kmYCHXHuDDgYABADGgJzbQ&ae=2&ohost=www.google.com&cid=CAESbeD2Kj4jvHL62i18ovExUeLFteQHxVVBzb-bq6ZTr4UUFU5zUj5tSjJUiKW9ZesElQafZWHfl0gTdrSwo0FBVHeedX1ievR3ozZOEHl8CyZpCcuscXB8MS4ZBCbD2p6XbtnMpmfodTlTHJDvepk&sig=AOD64_0U2vlLZx_RZHMwWxf7yUFWYiSAMg&ctype=5&q=&ved=2ahUKEwikv7r46Mj5AhVqw3MBHbD4D4sQ9aACKAB6BAgBEEI&adurl=

[7] https://benchmarks.ul.com/compare/best-vr-headsets

[8] https://www.gamesradar.com/au/xbox-series-x-price-bundle-deals/#:~:text=Considering%20the%20unexpectedly%20reasonable%20Xbox,shouldn't%20be%20a%20surprise.

[9] https://smartglasseshub.com/oculus-quest-2-fov/

[10] https://www.techtarget.com/whatis/definition/field-of-view-FOV#:~:text=The%20human%20eye%20and%20field%20of%20view&text=Each%20individual%20eye%20has%20a,is%20necessary%20for%20depth%20perception.

for acceleration and breaking, with variable control being offered through these technologies. The VR remotes were superior in the application of virtually grabbing things or steering a wheel also, it also has triggers for acceleration and breakibng, however as with the xbox controller these are controlled with the fingers which lets the technology down immersion-wise. The wireless tilt sensing of the smartphone was also very useful for steering but was very difficult to press any buttons. The keyboard offers alot of areas control but no motion control and it was difficult to locate specific buttons, as well as there being too many to simply memorise. The mouse was also good for steering but lack the amount of buttons needed and also required a flat surface to be used. Therefore each controller has it's pros and cons depending on application.

The person who would be most interested in this technology is a gamer. A young most likely male who has little money and likely small living conditions. As a gamer they have experienced much of what gaming has to offer and strives for more, current virtual reality technology is not fully immersive and with the less than amazing graphics the gamer is likel to get bored, and when new technology comes out they will have to find more money. This unfortunate reality is what the main consumer of virtual reality technology faces. Going into this assessment I expected expensive equipment and a learning curve to overcome. Throughout initial research I found this to be true, however cheaper alternatives are available. However through testing I found these cheap alternatives to be inferior. The future direction that should be taken, is a controller designed for a specific application. My role through this resercjh was to determine if current technologies allow for an immersive virtual reality experience. I believe the technology is almost there and equipment that come close to this goal can be found on market but for very high prices.

This can be done cheaply in most cases through simple technologies such as the Arduino Uno. The best cause of action is not to try and pack everything into omne device, but to make multiple devices that excel in the specific operation. My goal for this assignment is to prove that a fully immersive experience can be closely achieved through affordable means, which current technologies. For what is the point of having all this technology if nobody can afford to buyt it?

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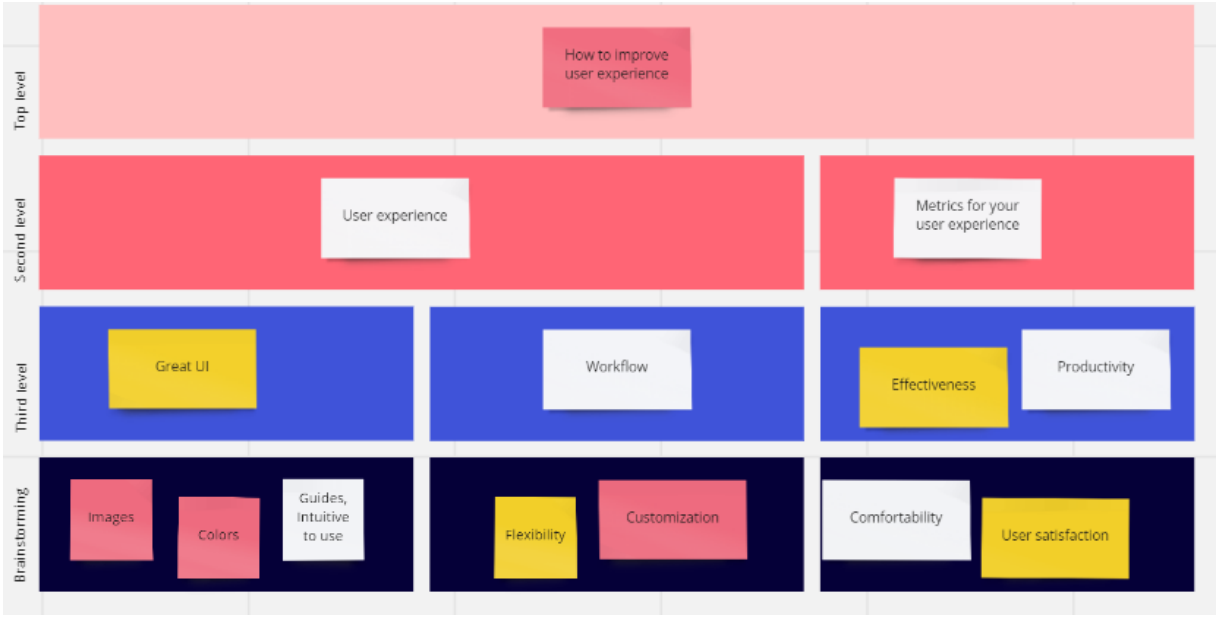
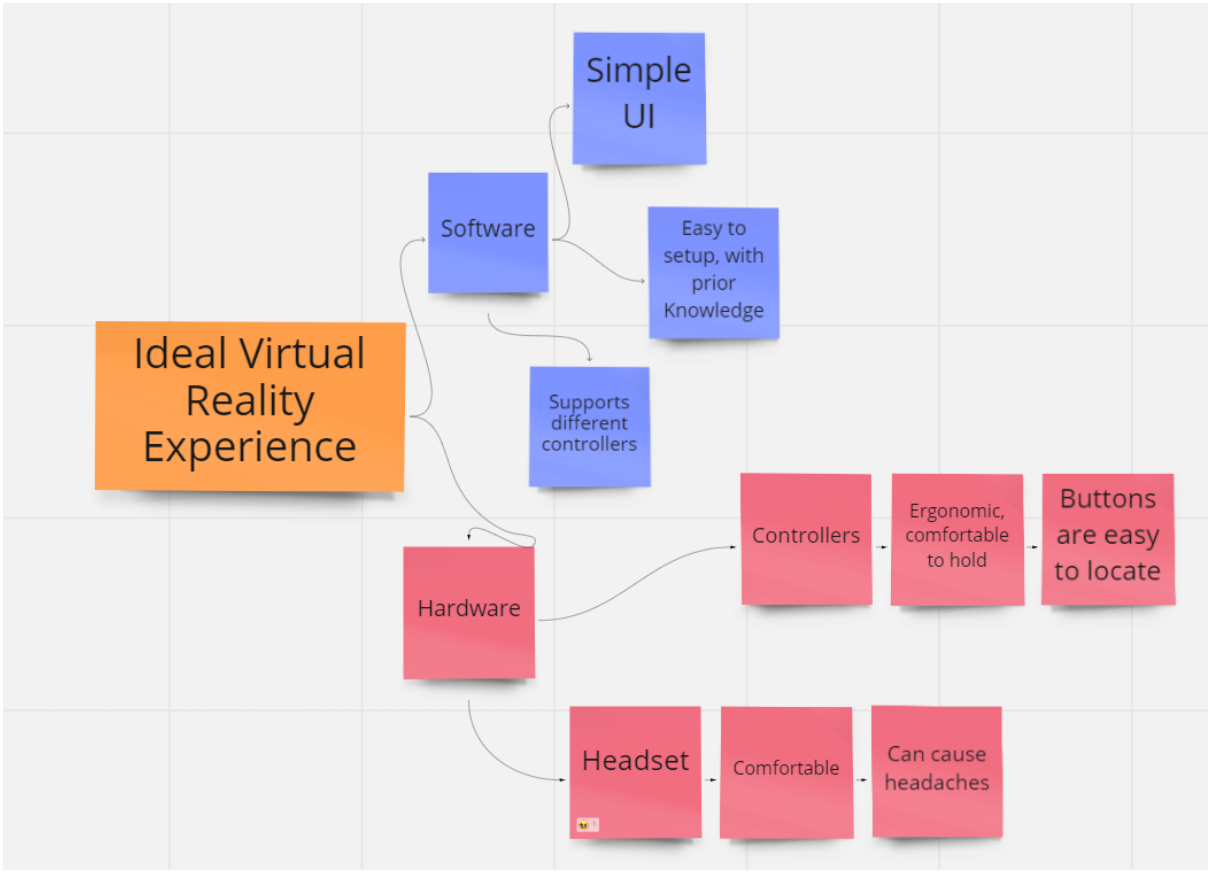
Appendix

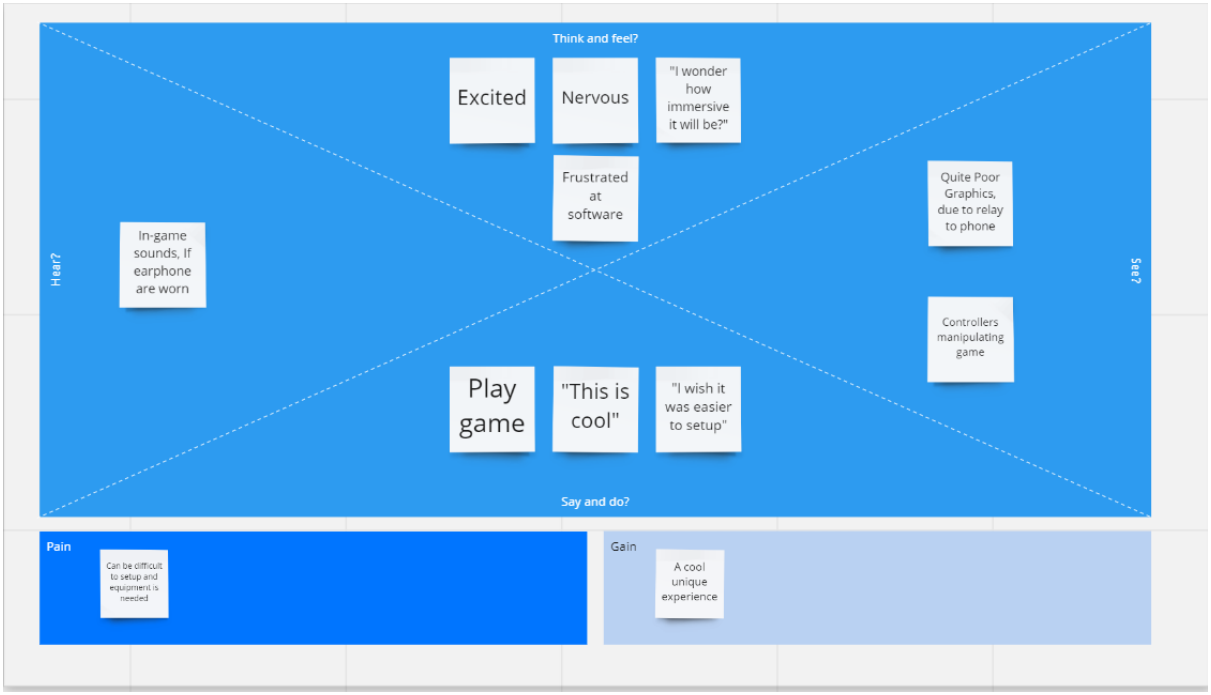
Affinity Map



Concept Modelling



Empathy Mapping



Four-Sight Strategy

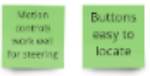
Back-Sight	Cross-Sight	Insight	Foreight
With no prior experience expectations were set by others experiences. A difficult yet worthwhile experience was expected.	Each controller tested has it's own limitations.	Current technologies require additional setup. Most worthwhile equipment is expensive.	I intend to create a controller designed for a specific purpose, as VR is closer to real life different tools are required for different jobs, as in real life.
I expected all equipment to be quite expensive.	Full immersion is not yet possible.	It was discovered through the use of multiple controllers that there are still many improvements to be made.	A cheap way to experience VR is needed.

Jouney Maps

Keyboard	Phase of journey	Stage 1	Stage 2	Stage 3
	Process ownership What is the user doing, when, where, how? Insert photo, movie of key moment in the stage	Connecting	Configuring	Using
	Customer Feeling What is the user feeling? You can add further visual evidence here (e.g., photos, videos, etc.)	Confused, Nervous	Confused, Excited	Excited, Nervous, Relieved
	Actions What does the user do?	Get controller Connect the controller		Run game using controller Reflect on experience
	Touchpoint What part of the interaction is characteristic with the chosen controller?	Wireless	Not much needed	
	Customer Thought What does the user think about the controller?	Quite simple	Quite simple	

Mouse	Phase of journey	Stage 1	Stage 2	Stage 3
	Process ownership What is the user doing, when, where, how? Insert photo, movie of key moment in the stage	Connecting	Configuring	Using
	Customer Feeling What is the user feeling? You can add further visual evidence here (e.g., photos, videos, etc.)	Confused, Nervous	Confused, Excited	Excited, Nervous, Relieved
	Actions What does the user do?	Get controller Connect the controller		Run game using controller Reflect on experience
	Touchpoint What part of the interaction is characteristic with the chosen controller?	Wireless		Buttons are easy to locate
	Customer Thought What does the user think about the controller?	Quite simple		Buttons easy to locate

Smartphone	Phase of journey	Stage 1	Stage 2	Stage 3
	Process ownership What is the user doing, when, where, how? Insert photo, movie of key moment in the stage	Connecting	Configuring	Using
	Customer Feeling What is the user feeling? You can add further visual evidence here (e.g., photos, videos, etc.)	Confused, Nervous	Confused, Excited	Excited, Nervous, Relieved
	Actions What does the user do?			
	Touchpoint What part of the interaction is characteristic with the chosen controller?			
	Customer Thought What does the user think about the controller?			

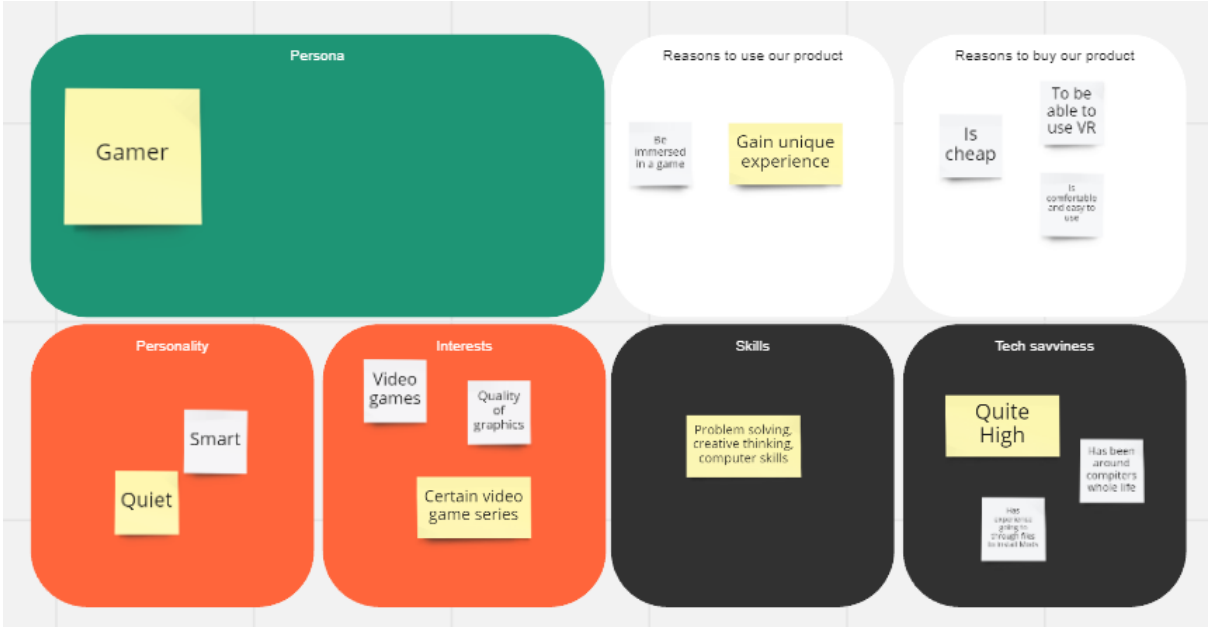
VR Remote	Phase of journey	Stage 1	Stage 2	Stage 3
	Process ownership What is the user doing, when, where, how? Insert photo, movie of key moment in the stage	Connecting	Configuring	Using
	Customer Feeling What is the user feeling? You can add further visual evidence here (e.g., photos, videos, etc.)	Confused, Nervous	Confused, Excited	Excited, Nervous, Relieved
	Actions What does the user do?			
	Touchpoint What part of the interaction is characteristic with the chosen controller?			
	Customer Thought What does the user think about the controller?			

Xbox Controller	Phase of journey	Stage 1	Stage 2	Stage 3
	Process ownership What is the user doing, when, where, how? Insert photo, movie of key moment in the stage	Connecting	Configuring	Using
	Customer Feeling What is the user feeling? You can add further visual evidence here (e.g., photos, videos, etc.)	Confused, Nervous	Confused, Excited	Excited, Nervous, Relieved
	Actions What does the user do?	Get Controller Connect the controller		Run game using controller Reflect on experience
	Touchpoint What part of the interaction is characteristic with the chosen controller?	Cable was required		Buttons are easy to locate
	Customer Thought What does the user think about the controller?	Quite simple	Deafult settings work well	Joysticks work well for steering Buttons easy to locate

Taxonomy

TAXONOMY	Keyboard	Xbox controller	VR Motion Controllers	Mouse	Smartphone
Screenshot					
Website	https://store.steampowered.com/app/227300/Euro_Truck_Simulator_2/	https://store.steampowered.com/app/227300/Euro_Truck_Simulator_2/	https://store.steampowered.com/app/227300/Euro_Truck_Simulator_2/	https://store.steampowered.com/app/227300/Euro_Truck_Simulator_2/	https://store.steampowered.com/app/227300/Euro_Truck_Simulator_2/
Game played	Euro Truck Simulator 2	Euro Truck Simulator 2	Euro Truck Simulator 2	Euro Truck Simulator 2	Euro Truck Simulator 2
Product Features	Array of similar shapes buttons, excepting one large button	Ergonomic, two joysticks two sets of four buttons, two triggers with smaller buttons above them	Ergonomic, A joystick per remote with a set of buttons for each remote	Two main buttons, scroll and motion sensor	Screen with overall touch sensing
Deployment	Windows 10 Installed Steam VR	Windows 10 Installed Steam VR	Windows 10 Installed Steam VR	Windows 10 Installed Steam VR	Windows 10 Installed Steam VR
Best for	Games with complex controls	Fine movements	Two handed usage	Fine movements in multiple axis	Only used if access to other options unavailable
Ease of Use	Many buttons means placement of fingers on device may be complicated	Quite easy to grasp as made to fit in hands, knowledge of button locations is needed	Quite easy to grasp as made to fit in hands, knowledge of button locations is needed	Quite easy to grasp as made to fit in one hand, knowledge of button locations is needed, needs flat surface	No way of telling where buttons are from touch as screen is flat, needs a surface to rest on
Action	Tapping/holding of specific buttons	Tapping of buttons and movement of joysticks	Tapping of buttons and movement of joysticks	Tapping/holding of buttons, moving items across surface	tapping/holding specific location on screen
Environment	Desk	Desk, Chair, Lounge, Standing	Desk, Chair, Lounge, Standing	Desk	Desk
Interaction	Tapping/holding of specific buttons	Tapping of buttons and movement of joysticks	Tapping of buttons and movement of joysticks	Tapping/holding of buttons, moving items across surface	tapping/holding specific location on screen
Object	Flat board, each button finger-sized	Made to fit within two hands ergonomically	Made to fit within each hand ergonomically	Made to fit within a hand ergonomically	Flat board designed to be looked at and screen touched is specific visually allocated areas
User	Someone who uses keyboards a lot and knows button locations	Person who plays Xbox	Person who prefers to and can use the item	Person with limited space or no access to other items	Person with no access to other items

User Persona



UX Checklists

#	UX Review Checklist	Controller: Keyboard		Game: Euro Truck Simulator 2	
		Yes/No	Comments	Yes/No	Comments
Visibility					
1.1	Is there a consistent icon and design scheme throughout the game?	N/A		Yes	
1.2	Does the interface tell where the user is at any given moment?	Yes		No	
1.3	Do the software display error messages?	N/A			
1.4	When clicking on button or completing a process, does the system provide proper feedback to the user?	N/A		Yes	
Match with the real world					
2.1	Are icons easy to understand?	Yes		Yes	
2.2	When prompting an action, are words in the message consistent with it?	N/A		Yes	
2.3	Are tasks described in terminology familiar to users?	N/A		Yes	
2.4	Does the system follow a real environment process?	N/A		Yes	
User control and freedom					
3.1	Can users cancel out of operations in progress?	N/A		No	
3.2	Can users move forward and backward between fields or options?	N/A		No	
3.3	Can users set their own system or session as default?	Yes		Yes	
3.4	Does the application allow users to recover from errors easily?	N/A		Yes	
Consistency and standards					
4.1	Are there salient visual cues to identify the active section?	N/A		Yes	
4.2	Does each page have a title?	Yes		No	
4.3	Do notifications appear at the same position of the application?	N/A		Yes	
Help to recover from errors					
5.1	Is sound used to signal an error?	No		Yes	
5.2	Are prompts stated constructively and without criticism?	N/A		No	
5.3	Do prompts imply that the user is in control?	N/A		No	
5.4	If humorous is used, is it appropriate and inoffensive to the user?	N/A		Yes	
5.5	Does the system support both novice and expert users?	Yes		Yes	
Recognition rather than recall				No	
6.1	Are prompts, cues, and messages placed where the eye is likely to be looking on the screen and also distinguish between sections?	N/A		Yes	
6.2	Does the system provide mapping: that is, are the relationships between controls and actions apparent to the user?	N/A		No	
Flexibility, aesthetic and minimalist design					
7.1	Are all icons in a set visually and conceptually distinct?	No		Yes	
7.2	Are field labels brief, familiar, and descriptive?	Yes		Yes	
Overarching Conclusions					
8.1	**Learnability:** The application is not complex. The user doesn't have to put an extra effort to understand what the product is about. The application should tell a story to reveal itself.	Yes		Yes	
8.2	**Effectiveness:** Completeness and accuracy with which users achieve their goals.	No		Yes	
8.3	**Efficient:** Speed and accuracy with which work can be done.	Yes		No	
8.4	**Forgiving:** The design allows the users to recover from errors and prevent errors by error detection and correction	No		No	
8.5	**Engaging:** How pleasant, satisfying and interesting the application is	No		Yes	

#	UX Review Checklist	Controller: Mouse		Game: Euro Truck Simulator 2	
		Yes/No	Comments	Yes/No	Comments
Visibility					
1.1	Is there a consistent icon and design scheme throughout the game?	N/A		Yes	
1.2	Does the interface tell where the user is at any given moment?	No		No	
1.3	Do the software display error messages?	N/A			
1.4	When clicking on button or completing a process, does the system provide proper feedback to the user?	N/A		Yes	
Match with the real world					
2.1	Are icons easy to understand?	No		Yes	
2.2	When prompting an action, are words in the message consistent with it?	N/A		Yes	
2.3	Are tasks described in terminology familiar to users?	N/A		Yes	
2.4	Does the system follow a real environment process?	N/A		Yes	
User control and freedom					
3.1	Can users cancel out of operations in progress?	N/A		No	
3.2	Can users move forward and backward between fields or options?	N/A		No	
3.3	Can users set their own system or session as default?	N/A		Yes	
3.4	Does the application allow users to recover from errors easily?	N/A		Yes	
Consistency and standards					
4.1	Are there salient visual cues to identify the active section?	N/A		Yes	
4.2	Does each page have a title?	Yes		No	
4.3	Do notifications appear at the same position of the application?	N/A		Yes	
Help to recover from errors					
5.1	Is sound used to signal an error?	Yes		Yes	
5.2	Are prompts stated constructively and without criticism?	N/A		No	
5.3	Do prompts imply that the user is in control?	N/A		No	
5.4	If humorous is used, is it appropriate and inoffensive to the user?	N/A		Yes	
5.5	Does the system support both novice and expert users?	Yes		Yes	
Recognition rather than recall				No	
6.1	Are prompts, cues, and messages placed where the eye is likely to be looking on the screen and also distinguish between sections?	N/A		Yes	
6.2	Does the system provide mapping: that is, are the relationships between controls and actions apparent to the user?	N/A		No	
Flexibility, aesthetic and minimalist design					
7.1	Are all icons in a set visually and conceptually distinct?	No		Yes	
7.2	Are field labels brief, familiar, and descriptive?	Yes		Yes	
Overarching Conclusions					
8.1	**Learnability:** The application is not complex. The user doesn't have to put an extra effort to understand what the product is about. The application should tell a story to reveal itself.	Yes		Yes	
8.2	**Effectiveness:** Completeness and accuracy with which users achieve their goals.	No		Yes	
8.3	**Efficient:** Speed and accuracy with which work can be done.	No		No	
8.4	**Forgiving:** The design allows the users to recover from errors and prevent errors by error detection and correction	No		No	
8.5	**Engaging:** How pleasant, satisfying and interesting the application is	Yes		Yes	

#	UX Review Checklist	Controller: Smartphone		Game: Euro Truck Simulator 2	
		Yes/No	Comments	Yes/No	Comments
Visibility					
1.1	Is there a consistent icon and design scheme throughout the game?	N/A		Yes	
1.2	Does the interface tell where the user is at any given moment?	Yes		No	
1.3	Do the software display error messages?	N/A			
1.4	When clicking on button or completing a process, does the system provide proper feedback to the user?	N/A		Yes	
Match with the real world					
2.1	Are icons easy to understand?	Yes		Yes	
2.2	When prompting an action, are words in the message consistent with it?	N/A		Yes	
2.3	Are tasks described in terminology familiar to users?	N/A		Yes	
2.4	Does the system follow a real environment process?	N/A		Yes	
User control and freedom					
3.1	Can users cancel out of operations in progress?	N/A		No	
3.2	Can users move forward and backward between fields or options?	N/A		No	
3.3	Can users set their own system or session as default?	Yes		Yes	
3.4	Does the application allow users to recover from errors easily?	N/A		Yes	
Consistency and standards					
4.1	Are there salient visual cues to identify the active section?	N/A		Yes	
4.2	Does each page have a title?	Yes		No	
4.3	Do notifications appear at the same position of the application?	N/A		Yes	
Help to recover from errors					
5.1	Is sound used to signal an error?	Yes		Yes	
5.2	Are prompts stated constructively and without criticism?	N/A		No	
5.3	Do prompts imply that the user is in control?	N/A		No	
5.4	If humorous is used, is it appropriate and inoffensive to the user?	N/A		Yes	
5.5	Does the system support both novice and expert users?	Yes		Yes	
Recognition rather than recall				No	
6.1	Are prompts, cues, and messages placed where the eye is likely to be looking on the screen and also distinguish between sections?	N/A		Yes	
6.2	Does the system provide mapping: that is, are the relationships between controls and actions apparent to the user?	N/A		No	
Flexibility, aesthetic and minimalist design					
7.1	Are all icons in a set visually and conceptually distinct?	Yes		Yes	
7.2	Are field labels brief, familiar, and descriptive?	Yes		Yes	
Overarching Conclusions					
8.1	**Learnability:** The application is not complex. The user doesn't have to put an extra effort to understand what the product is about. The application should tell a story to reveal itself.	Yes		Yes	
8.2	**Effectiveness:** Completeness and accuracy with which users achieve their goals.	No		Yes	
8.3	**Efficient:** Speed and accuracy with which work can be done.	No		No	
8.4	**Forgiving:** The design allows the users to recover from errors and prevent errors by error detection and correction	No		No	
8.5	**Engaging:** How pleasant, satisfying and interesting the application is	No		Yes	

#	UX Review Checklist	Controller: VR Remote		Game: Euro Truck Simulator 2	
		Yes/No	Comments	Yes/No	Comments
Visibility					
1.1	Is there a consistent icon and design scheme throughout the game?	N/A		Yes	
1.2	Does the interface tell where the user is at any given moment?	Yes		No	
1.3	Do the software display error messages?	N/A			
1.4	When clicking on button or completing a process, does the system provide proper feedback to the user?	N/A		Yes	
Match with the real world					
2.1	Are icons easy to understand?	Yes		Yes	
2.2	When prompting an action, are words in the message consistent with it?	N/A		Yes	
2.3	Are tasks described in terminology familiar to users?	N/A		Yes	
2.4	Does the system follow a real environment process?	N/A		Yes	
User control and freedom					
3.1	Can users cancel out of operations in progress?	N/A		No	
3.2	Can users move forward and backward between fields or options?	N/A		No	
3.3	Can users set their own system or session as default?	N/A		Yes	
3.4	Does the application allow users to recover from errors easily?	N/A		Yes	
Consistency and standards					
4.1	Are there salient visual cues to identify the active section?	N/A		Yes	
4.2	Does each page have a title?	Yes		No	
4.3	Do notifications appear at the same position of the application?	N/A		Yes	
Help to recover from errors					
5.1	Is sound used to signal an error?	No		Yes	
5.2	Are prompts stated constructively and without criticism?	N/A		No	
5.3	Do prompts imply that the user is in control?	N/A		No	
5.4	If humorous is used, is it appropriate and inoffensive to the user?	N/A		Yes	
5.5	Does the system support both novice and expert users?	Yes		Yes	
Recognition rather than recall				No	
6.1	Are prompts, cues, and messages placed where the eye is likely to be looking on the screen and also distinguish between sections?	N/A		Yes	
6.2	Does the system provide mapping: that is, are the relationships between controls and actions apparent to the user?	N/A		No	
Flexibility, aesthetic and minimalist design					
7.1	Are all icons in a set visually and conceptually distinct?	No		Yes	
7.2	Are field labels brief, familiar, and descriptive?	Yes		Yes	
Overarching Conclusions					
8.1	**Learnability:** The application is not complex. The user doesn't have to put an extra effort to understand what the product is about. The application should tell a story to reveal itself.	Yes		Yes	
8.2	**Effectiveness:** Completeness and accuracy with which users achieve their goals.	No		Yes	
8.3	**Efficient:** Speed and accuracy with which work can be done.	No		No	
8.4	**Forgiving:** The design allows the users to recover from errors and prevent errors by error detection and correction	No		No	
8.5	**Engaging:** How pleasant, satisfying and interesting the application is	No		Yes	

#	UX Review Checklist	Controller: Xbox Controller		Game: Euro Truck Simulator 2	
		Yes/No	Comments	Yes/No	Comments
Visibility					
1.1	Is there a consistent icon and design scheme throughout the game?	N/A		Yes	
1.2	Does the interface tell where the user is at any given moment?	No		No	
1.3	Do the software display error messages?	N/A			
1.4	When clicking on button or completing a process, does the system provide proper feedback to the user?	N/A		Yes	
Match with the real world					
2.1	Are icons easy to understand?	Yes		Yes	
2.2	When prompting an action, are words in the message consistent with it?	N/A		Yes	
2.3	Are tasks described in terminology familiar to users?	N/A		Yes	
2.4	Does the system follow a real environment process?	N/A		Yes	
User control and freedom					
3.1	Can users cancel out of operations in progress?	N/A		No	
3.2	Can users move forward and backward between fields or options?	N/A		No	
3.3	Can users set their own system or session as default?	N/A		Yes	
3.4	Does the application allow users to recover from errors easily?	N/A		Yes	
Consistency and standards					
4.1	Are there salient visual cues to identify the active section?	N/A		Yes	
4.2	Does each page have a title?	Yes		No	
4.3	Do notifications appear at the same position of the application?	N/A		Yes	
Help to recover from errors					
5.1	Is sound used to signal an error?	Yes		Yes	
5.2	Are prompts stated constructively and without criticism?	N/A		No	
5.3	Do prompts imply that the user is in control?	N/A		No	
5.4	If humorous is used, is it appropriate and inoffensive to the user?	N/A		Yes	
5.5	Does the system support both novice and expert users?	Yes		Yes	
Recognition rather than recall				No	
6.1	Are prompts, cues, and messages placed where the eye is likely to be looking on the screen and also distinguish between sections?	N/A		Yes	
6.2	Does the system provide mapping: that is, are the relationships between controls and actions apparent to the user?	N/A		No	
Flexibility, aesthetic and minimalist design					
7.1	Are all icons in a set visually and conceptually distinct?	Yes		Yes	
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Overarching Conclusions					
8.1	**Learnability:** The application is not complex. The user doesn't have to put an extra effort to understand what the product is about. The application should tell a story to reveal itself.	Yes		Yes	
8.2	**Effectiveness:** Completeness and accuracy with which users achieve their goals.	Yes		Yes	
8.3	**Efficient:** Speed and accuracy with which work can be done.	No		No	
8.4	**Forgiving:** The design allows the users to recover from errors and prevent errors by error detection and correction	No		No	
8.5	**Engaging:** How pleasant, satisfying and interesting the application is	Yes		Yes	