Open University of Cyprus

School of Business Administration

Master's in Business Administration

Master Thesis

Business Plan for ViRi Limited Virtual Reality Studio

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Supervising professor
Kristis Hasapis

May 2018

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The following thesis is being submitted as partial requirement
to acquiring a masters in the field of Business Administration
from the school of business administration
under the Open University of Cyprus

May 2018

Executive Summary

ViRi limited is a computer graphics development Studio specializing in the development of Virtual Reality applications, graphics, assets, games, for Windows, Android phones and HTML-5 supported browsers. ViRi will be targeting both large and medium sized companies involved in architectural designs, marketing, Kitchens, developers and educational institutes both in Cyprus as well as anywhere in the world. Additionally, it will target individual customers looking to render their house plans in Virtual Reality.

ViRi's foundation will be its carefully selected talent. People passionate about design, programing and VR for the past 10 years will offer impeccable service based on the invaluable experience they have accumulated practicing a field that has only been blowing up for 3 years.

ViRi will take advantage of the fact that whereas its competitors are at the early stages of VR development, its team has been active in VR for the past seven years. This experience will be key to advance and establish itself in a field that it is expected to pull 4.3 billion of the market revenue by 2020 and 9 billion by 2025.

The company will initially operate without an office for the first 12 months, while it handles tasks that don't require client visits. At year one it will operate out of a small office in downtown Nicosia. It is expected that the studio will reach break even point at year 2 and will double its profits by year 5.

Alexandros and Savvas have a combined track record in VR development of over 50,000 euro and have worked on over 50 VR applications in the past 5 years. Marios is an exceptional programming talent recruited right out of TEPAK 1 year ago and has shown exemplary work in over 12 projects in the past year.

Index

Chapter 1
The Virtual reality

1.1 Market Analysis

The Virtual Reality (VR) industry is just exploding in the computer science world, and even though its commercial, consumer friendly form is relatively new, it has been around for at least ten years. In the past year VR market has generated over 550 million U.S. dollars (statista, 2017) and where most developers are just starting their voyage developing for VR ViRi's team will consist of individuals that have been practicing their skills exclusively for VR for the past seven years thus having a significant head start into the heart and soul of VR. This gives the team the competitive advantage.

The road to VR development can be broken down to three major categories. Derived from these categories will be the general development direction and planning the studio will follow to achieve economic success and growth.

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The first category is all about the hardware companies. These are the companies that design, build and distribute the hardware necessary to experience VR. Hardware includes head mounted displays or headsets, pieces of equipment worn as helmets with integrated screens for both eyes as to mimic the attributes of the eyes and how they see the world and various sensors to track accelerations pitch and orientation. Then there are the positional tracking cameras and usually two controllers.

Joining the VR hardware race are major companies including the newly acquired by Facebook behemoth Oculus Rift against its main competitor in the market at the moment HTC's VIVE. Sony has also already lunched its console version of VR headset for the Playstation4 Pro and Microsoft is expected to release its answer

by the end of the year. By the end of 2018 five more VR headsets are scheduled to be released, including LG's UltraGear VR and Pimax's 8K (Kim, 2018).

Here's a list of all Hardware companies available at the moment in a chart showing their unit sales and their respective market shares for the first quarter of 2017:

Units Sold

	Sony's Playstation 4 VR	Facebook's Oculus Rift	HTC's Vive	Samsung's Gear VR	Google's Daydream	Others
	49%	21%	16%	7%	5%	2%
☐ Units Sold	490000	210000	160000	70000	50000	20000
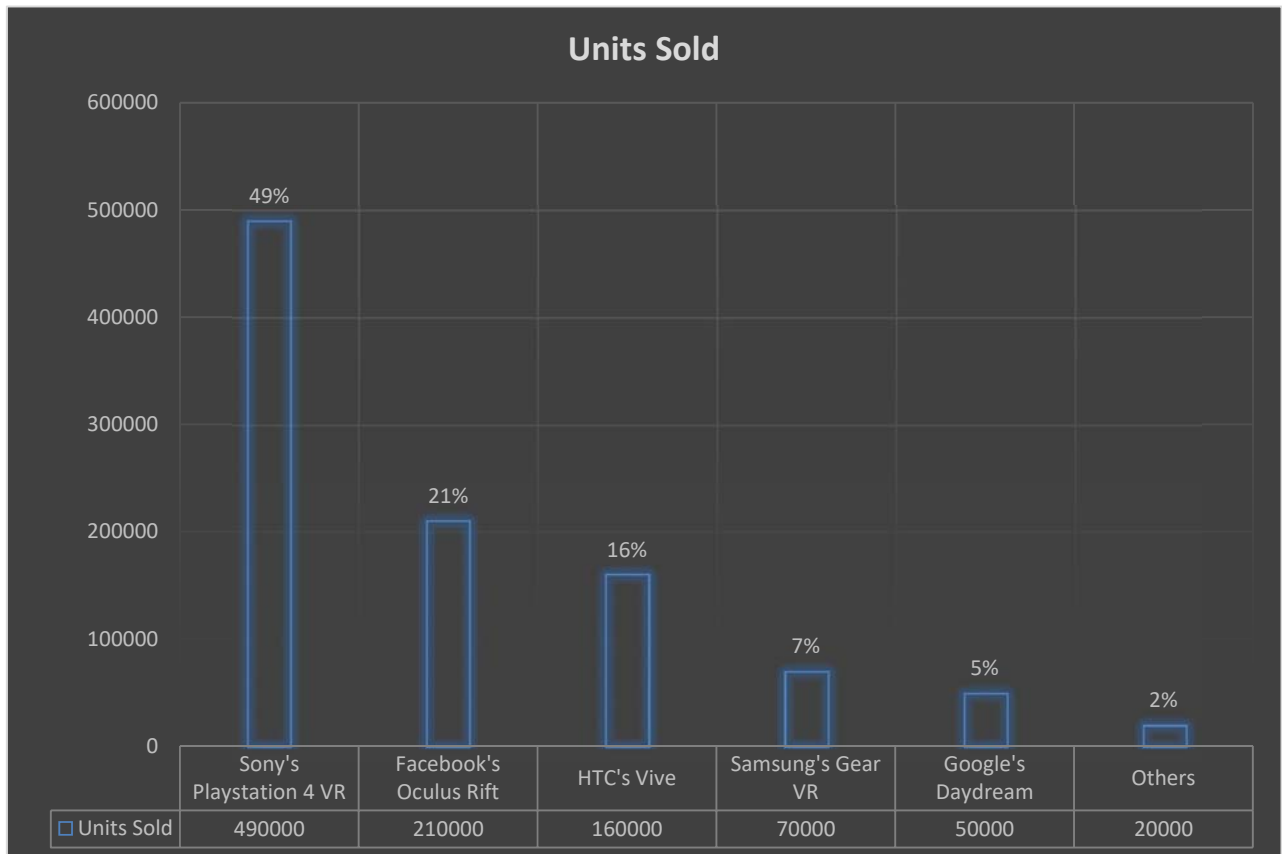
And here is a list of all hardware companies expected to release their own head mounted displays by the end of year 2018.

- Magic Leap One – raised 1.9 billion in funding
- Pimax 8K
- Varjo
- HTC Vive Focus (the wireless version of Vive)
- Oculus Go (the wireless version of oculus)
- Lenovo's Mirage Solo

- LG's UltraGear VR

The international Data corporation has estimated that in the next few years the Headset market will reach the staggering 81.2 million units by 2021. This translates to a compound annual growth rate of 56.2% (Lamkin, 2017).

ViRi will be able to develop content targeting four of the leading five headsets. Oculus, Vive, GearVR and Google Daydream. ViRi will also need to be able to adjust based on upcoming headsets, based on their popularity and accessibility. Initially due to the small starting size of the studio and the requirements of producing an approved Sony PlayStation title, development for the PS4 VR will not be considered.

The second important component in VR is the software companies that support the production, publishing and distribution of VR content.

Out of all available software that support the development for VR, there are two that stand out as the kings of the hill. The first is Unity game engine by Unity and the second is Unreal Engine 4 by Epic games (slant, 2017) (G2, 2018) (Kraft, 2018). 59% of VR developers and publishers have used Unity game engine to launch their apps in 2017. Yet even though Unity studios have developed and published the most apps, developers that choose to work with its main antagonist Unreal Engine 4 by epic games enjoy a higher stream of revenue (Takahashi, 2018). This is mainly due to the fact that Unreal Engine is often used to produce higher quality content (also known as Triple A content) which usually means larger scale projects that appeal to a bigger number and variety of users. These numbers represent the presence of both engines in the gaming and general mobile application category.

Entering the market is easiest through Unity, since it has the most developer/publisher friendly software when it comes to VR developing. Yet better visual results can be achieved with Unreal Engine 4 given the appropriate amount of budget and time (Oliynyk, 2018).

There are however a number of other equally lucrative categories in which other companies have had a foothold in providing VR services for some time before the commercial versions emerged. Companies like WorldViz, which is not included in any of the top VR engines, has been active in providing VR hardware and software in Universities, government organizations and manufacturers in United States and most United Arab Emirates for the past 10 years. It is estimated that 1 in 3 manufacturers in the U.S. will either be using VR or will have plans of adopting VR by the end of year 2018 (Oldham, 2018).

Vizard engine has a distinctive unique way of working graphic wise and programming wise. The market can at best be described as oligopoly. There is at the moment, including WorldViz, one more studio that handles work for them for Vizard engine. Entry to the market is hard due to the engines low mainstream popularity most computer graphics professionals are not adept to using the engine, the core members of ViRi have 6 years' experience working with Vizard and can easily tap into this high demand market. Yet there is a limit to the ability of any given studio to set the price in this market. It is not hard for a company that uses Vizard to switch to similar engines in the search for better service and pricing if they are pushed too much out of their comfort zone. Hence even though it is an easy market for ViRi to enter, the pricing may not be flexible. Nevertheless, the industry standards for graphics generated for the aforementioned industries far exceeds the app and gaming industry standards.

 ViRi will be using both Unity and Unreal engines to enter the mainstream market of assets selling, arch visual representations and mainstream apps.

Furthermore, ViRi staff's unique expertise with Vizard engine will allow for the studio to enter the, at the moment, exclusive markets of medical, educational and manufacturing industries that have already adopted the Vizard engine. This will be the market that will partially yet significantly sustain the studio's growth until it has reached its initial goals and doubles its workforce.

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The third component in the VR market is also what ViRi's mission and purpose will be. Producing VR applications.

3D modeling and computer-generated graphics are mostly known for games and movies, yet they are also widely used in a variety of industries actively such as the manufacturing industry, the architecture industry, the healthcare and the educational system.

First of all, these industries have always depended on 3D graphics for marketing, product showcasing, design and prototyping and showcasing. What VR brings is an opportunity, a technological change that creates an opening in a highly competitive market for companies with very specific skill sets, VR development. As a newly immerging marketing and visualization tool it is a time race that everyone will eventually want to be part or caught up with. Since the benchmark is possibly at its lowest, the timing for a company to enter the market is now, or at least any time before the end of 2019.

1.2 Mission

ViRi's mission as a content creative studio is to produce, create and deliver, high quality VR specific content of high artistic value at reasonable prices.

1.3 Objectives

ViRi's objectives during the first 5 years of operation:

1. To create and provide personalized content at competitive prices, to differentiate by our unmatched customer tailored service and support.
2. To create high quality useful VR assets/services for the wider market.

2.1 Company Ownership

ViRi Limited Studio is a sole proprietorship owned by Alexandros Andreou.

2.2 Board Overview

Director and Secretary: Alexandros Andreou

Alexandros has been working with VR in the past 7 years. Started off as part of University of Cyprus's psychology department technical staff, creating content for experiments and is currently working for a European funded program that intends to bring VR and culture together

Ninja designer: Savvas Avraam

In industry slang the "Ninja" title is given to describe an individual that can do everything, including design, art, coding. Savvas is a highly talented person that can work on all fronts at any given project. Has been working with VR for 7 years alongside Alexandros.

Front End developer: Marios X' Iwannou

Marios is a talent freshly scouted out of the technological university of Cyprus where he finished his computer science degree last year. His thirst for knowledge and information and his character has made him the number one person to turn to when looking to outsource complicated coding tasks.

2.3 Budget Planning

2.3.1 Software

2.3.1.a Drafting

Industry Standards	Price	License Type
Sketchup Pro	570.21	Perpetual / Single
	98.45	Upgrade
AutoCAD	2076	1 Year / Single
SolidWorks	3049	1 Year / Single
Revit	369.05	Monthly / Single
	2970.55	1 Year / Single
	8911.65	3 Year / Single

Alternatives	Price	License Type
BricsCAD	480	Permanent / Single
Chief Architect	1,636.79	Permanent / Single
TurboCaD	410.21	1 Year / Single
	1,230.66	Permanent / Single
Power Draft	1,971.53	Permanent / Single
NANO CAD Plus	147.68	1 Year / Single
	443.04	3 Year / Single
	180.50	1 Year / Network
	541.49	3 Year / Network
ZWCAD	655.54	Permanent / Single
	819.62	Permanent / Network
Sketchup	Free	Freemium
Autodesk Viewer	Free	Freeware
DWG TrueView	Free	Freeware
Design Review	Free	Freeware

2.3.1.b 3D Modeling / Rendering

Industry Standards	Price	License Type
3Ds max	248.05	Monthly / Single
	1,984.40	1 Year / Single
	5,953.20	3 Year / Single
Blender	Free	GPLv2
Maya	248.05	Monthly / Single
	1,984.40	1 Year / Single
	5,953.20	3 Year / Single
Cinema4D	3,570	Perpetual
	892.50	Upgrade

Alternatives	Price	License Type
Fuse	Free Beta	Freeware
Poser	106.65	Perpetual / Single
DAZ Studio	Free	Freemium

2.3.1.c Sculpting, Texturing, Painting

Industry Standards	Price	License Type
Z Brush	734.30	Perpetual / Permanent
Quixel	64.82	Indie / Permanent
Substance	16.41	Monthly / Single
	196.09	Yearly / Single
	236.10	Perpetual / Single
	61.53	Upgrade
Mudbox	12.10	Monthly / Single
	102.85	1 Year / Single
	308.55	3 Year / Single

2.3.1.d Image manipulation

Industry Standards	Price	License Type
Adobe Photoshop CC	30 359.88	Monthly / Single 1 Year / Single
Adobe Illustrator	30 359.88	Monthly / Single 1 Year / Single
GIMP	Free	GPLv2

Alternatives	Price	License Type
PixPlant 3	105.84 48.41	Perpetual / Single Upgrade
Paint.net	Free	GPLv2

2.3.1.e Sound & Video Manipulation

Industry Standards	Price	License Type
Audacity	Free	Freeware
Adobe Audition	30 359.88	Monthly / Single 1 Year / Single

Alternatives	Price	License Type
WavePad	41.02	Permanent
OcenAudio	Free	Freeware

2.3.1.f Realtime Graphics Renderers / Engines

Industry Standards	Price	License Type
Unreal Engine	Free for Enterprise	Freemium
Unity 5	< 82,000 = Free 82,000 – 164,000 = 28.72 > 164,000 = 102.56	Freemium / Single Monthly / Single Monthly Single
CryEngine	5% Royalty – First 5K of annual revenue per project is loyalty free	Royalty
Lumberyard	Free	GPLv2
WorldViz Vizard	1,000	Single

Legend

Monthly/Yearly = Signifies that the license has an expiration date and has to be renewed to continue using the software according to its type

Permanent = Signifies that the license never expires and any future updates or version are also included

Perpetual = Signifies that once bought, the software license never expires but never upgrades to its newer Yearly version either

Upgrade: The cost to upgrade to the newest version of the software considering the ownership of a perpetual license

Single = Signifies that the software can be installed on two terminals but never used by both at the same time

Network = Signifies the number of concurrent users that can use the software

Freemium = Signifies a version of an otherwise premium software with less features and services and or a shop featuring Virtual goods for purchase.

Freeware = Signifies that the software can be used for free but distribution, modification and sale of said software or its produce might fall under certain rules

GPLv2 / General Public License Version 2 = Users can do whatever they wish in regards to this software and any content produced.

Free Beta = In order to test and improve the software before final release, it is currently at a beta phase where it and all its current functionalities are provided for free.

Royalty = Some Software are free to use and instead charge royalties based on annual (usually) revenue produced form anything developed and published using said software

*Price = All prices are in EUR

2.3.2 Hardware

2.3.2.a.I Personal Computers

Component	Intended Purchase	Price	Alternative Option	Price
CPU	Intel i7 8700K	343.40	Ryzen 2 2700x	330
Motherboard	Asus Prime Z370-A	170.56	MSI Z370 Krait	178.57
Ram	Corsair 32GB DDR4	400	Crucial 32GB DDR4	330
Graphics Card	Nvidia GTX 1060 6GB	343.40	AMD RX 580	369.83
Solid State Drive SSD	500GB Samsung 960 EVO M.2	273.43	500GB Crucial MX500	256.82
Hard Drive HDD	Samsung 2TB BarraCuda	61.82	SanDisk 2TB	58.10
Power Supply	EVGA G2 750W	196.04	Corsair HX750i 750W	153.53
Cooling System	Noctua NH-U12S	40	Hiron N-625	38
Case	Fractal Design Define R5	148.81	NZXT H440	127
Operating System	Windows 10	145	Windows 10	145
		TOTAL 2122.46		**1,986.85**

2.3.2.a.II Personal Computers Budget option

Component	Budget Option	Price
CPU	Intel i5 8600K	238.09
Motherboard	MSI Z370_A Pro	111.87
Ram	Crucial 16GB DDR4	140
Graphics Card	GTX 1060 6GB	343.40
Solid State Drive SSD	250GB Crucial MX500	70
Hard Drive HDD	Samsung 1TB	30
Power Supply	EVGA GQ 650W	152.10
Cooling System	CryOrig H7	35
Case	NZXT S340	67.54
Operating System	Windows 10	145
	TOTAL	**1,233**

2.3.2.b Peripherals

Component	Option 1	Option 2	Price Range
Monitor X 2	LG 24MP88HV	BenQ GL2450HM	260
Keyboard	Preference	-	60 - 80
Mouse	Preference	-	60 - 80
Speakers	Creative Gigaworks T20 Series II	Logitech Z200	66.90
Head Set	Preference	-	40 - 60
TOTAL (M)			**506.90**

2.3.2.c VR HMDs

HMD	Price
Samsung Gear VR	30
HTC VIVE	999
Facebook Oculus Rift	449
PlayStation VR	264.98
Google Daydream	45
TOTAL	**1,787.98**

2.3.2.d Motion Capture Suit

Preference	Price	Alternative	Price
Rokoko's Salto	590.47	**Enflux Motion Capture Clothing**	819.28

2.3.2.e Printer, Scanner

Preference	Price	Alternative	Price
Canon Pixma TS8050	149.99	**Samsung M2885FW Xpress**	199

2.3.3 Office Furniture

2.3.3.a Desk / Per Employee

Desk Specifications:

Length of a 24'' Screen is 57 cm. Each Desk should be able to support up to 3 screens and all required peripherals.

Specs:

- Minimum dimensions 160 x 80 x 78 cm
- One Drawer
- PC standing base
- Wire management holes

Since I couldn't find any available options to satisfy my need I designed a custom-made desk and then requested quotes from different suppliers based on the following specs:
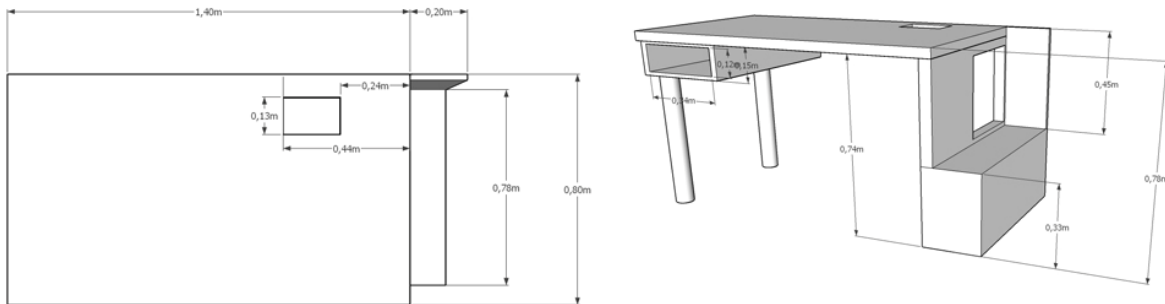
Manufacturer	Quote
MPN Loizou	480
Pittas	340
Athanasis Carpenter	400

2.3.3.b   Chair / Per Employee

Given the nature of the work, and the time that any given employee will be spending sitting on a chair, this was a very important category. A mashup of options was derived from a combination of online review pages and then cross-referenced with customer reviews to validate the accuracy of the reviews as much as possible. Through a list of 15 items a choice was made based on customer reviews and price. The list was constructed with merchandise as reviewed by:

1. The strategist (Builder, 2018)
2. Wirecutter (Klosowski, 2018)
3. Smart Furniture (Anon., 2018)
4. Digital Trends (Liu, 2018)

Prices and customer reviews where there after located and collected from Amazon.uk. Options where narrowed down the following two:

Component	Option 1	Price	Option 2	Price
Desk Chair	Flash Furniture High Black Mesh Executive Swivel	99.99	Ergonomic Mesh Office, Lumbar Ultimate support	128.30

2.3.3.c   General Necessities

Component	Option 1	Price	Option 2	Price
Bookcase	Custom Pittas	60	IKEA Brusali	69.99
Shelf x 2	Custom Pittas	45	IKEA Fjallbo	49.99
Filing Drawer	Custom Pittas	80	IKEA Alex	99
Magnetic Board	Office Marshal	29.99	IKEA Luns	11.90
Bin	Mesh Waste Bin	5	Q Connect Waste Basket	5
	TOTAL	**219.99**		**235.88**

2.3.3.d   Appliances

Item	Option 1	Price	Option 2	Price
Coffee Mixer	Rosenstain & Sohne	19.90	IQ Pop Life Blender	35.90
Espresso Machine	Nespresso Essenza Mini	99	ILLY Francis Y3.2	99
Microwave oven	OTTO MM720CZW	75	PERFECT HOME PH-20LW	69.95
Fridge	BOSCH KGN36NW30	429	BOSCH KDV29VW30	399
Water Dispenser	OTTO TLWYR 11S	129	MATESTAR MAT-6V4W	129
Sandwich Press	Aicok Patini Press	32	Chefman Panini Press	32.80
Barbeque	PAGODA cast Iron BBQ	38.06	Cyprus BBQ Grill 24449	49.94
Gaming Console	PlayStation 4 Pro	399	X Box X	529
	TOTAL	**1220.97**		**1,344.59**

2.3.3.e   Services

Service	Preference	Price /Year	Option 2	Price/Year
Internet and Phone	CableNet Quatro Start 60M	538.80	Primetel 50	729.6
Website hosting	-	100	-	100
	TOTAL	**638.80**		**829.6**

2.3.3.f   Consumables

Item	Preference	Price / Unit	Units per Year	Price / Year
Coffee	Nescafe Classic	5.04	12	64.8
Sugar	Any	1	4	4
Milk	Any	1.31	52	68.12
Espresso Capsules	Nespresso	7	12	84
Bread	Any	1.30	104	135.2
Fruit	Any	Varies	N/A	200
Water	Any	0.7	52	36.4
Toiletries	Any	N/A	N/A	250
Cleaning consumables	Any	N/A	N/A	100
Drinks Extra	Any	N/A	N/A	300
Stationary	Any	N/A	N/A	100
			TOTAL	**1,192.52**

2.3.4 Rent

A definite place to house the company's offices has not been found yet. Based on space and functionality requirements the current market was searched based on the following criteria:
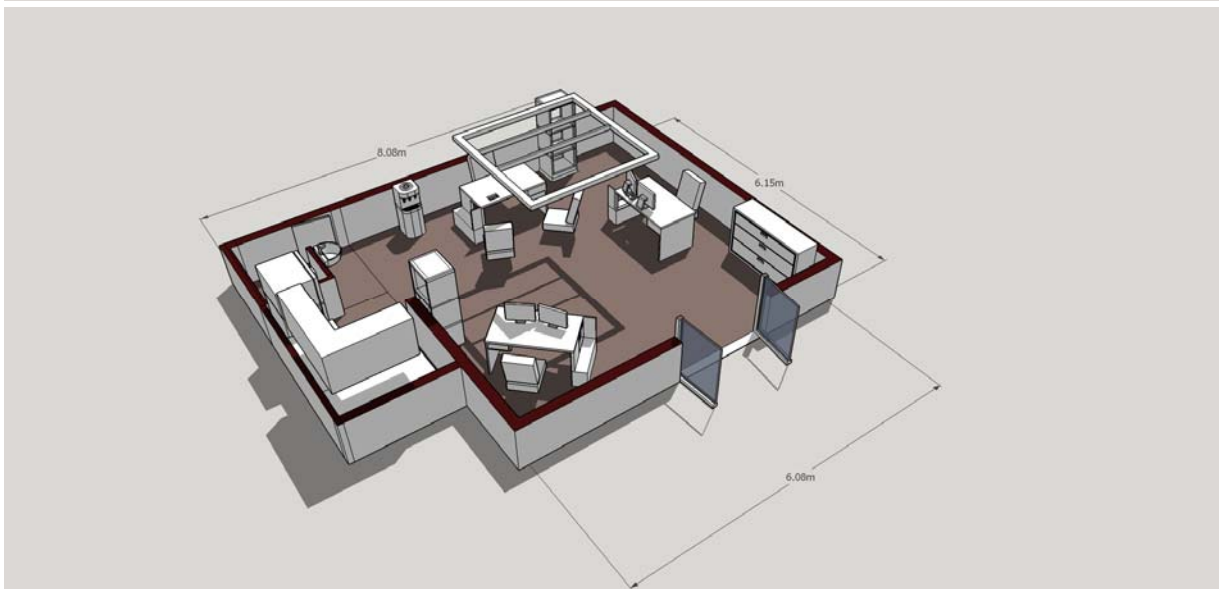
Minimum:

- Open plan shared space
- Three offices and room for the demo set up
- WC
- Kitchen Bench
- AC

Ideally:

- Expanding flexibility
- Parking
- 24h access

Based on these requisites the following draft was devised and the minimum size a space must be in order to suit the company's aesthetic and functional needs was set at 38 sq. meters excluding WC and Kitchen space, or 50 sq. meters all-inclusive.

Alternatively, in order to satisfy the company's projected first expansion a space measuring 48 sq. meters excluding WC and kitchen space, or 64 sq. meters all-inclusive would be ideal.
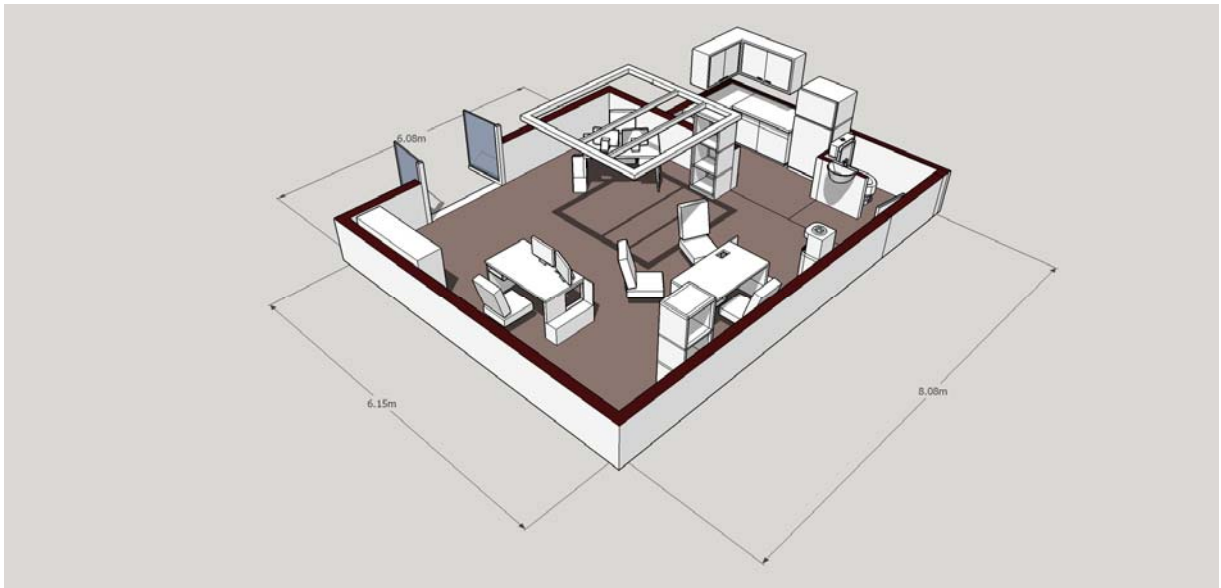
Designs used to calculate minimum space requirements
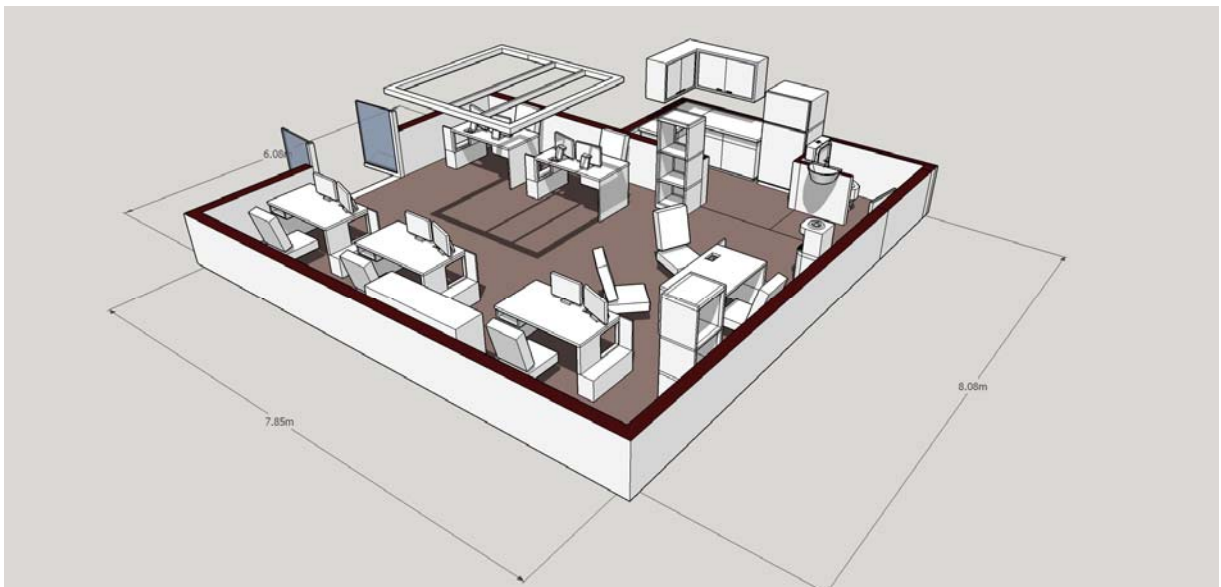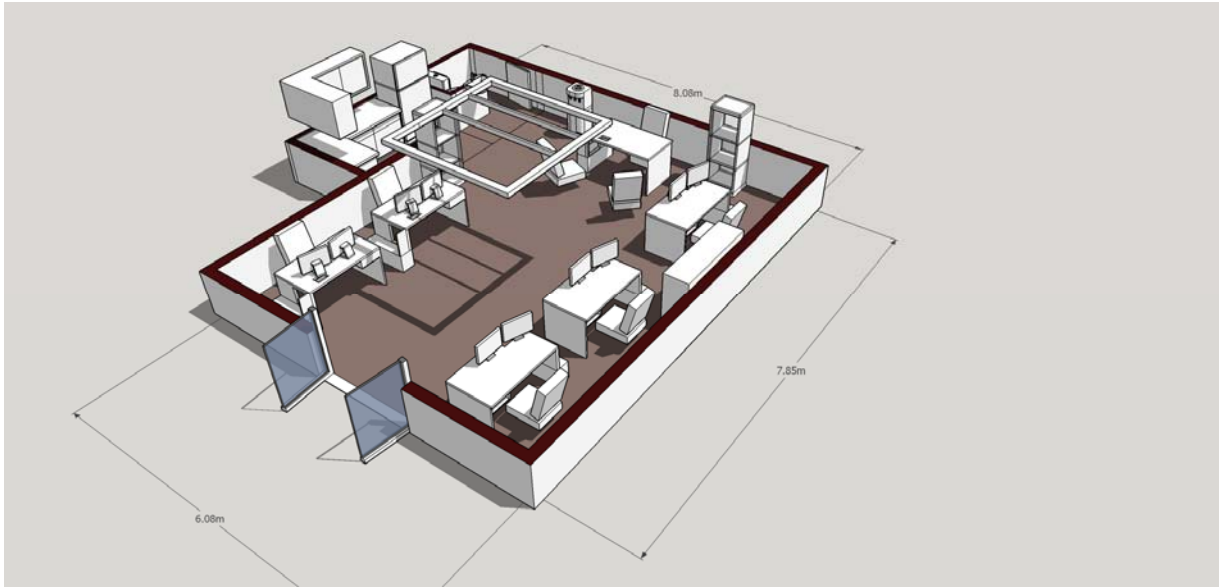
Minimum size that accommodates first growth. Ideal first option.

Based on the calculated space requirement a market research was done in order to produce an estimate for the rent price. The following table shows the findings of my research organized by asking price and size. Additionally, a grading system is used to describe each place's location importance and there's also information

on whether it is a storefront or not. The final piece of information is the shop's general condition and allure.

The location grading system implemented takes into account the following attributes:

1. Shop's distance from prime locations in Nicosia.
2. Parking and accessibility
3. View

Prime locations in Nicosia are considered the busy districts where there are active shops, cafes, restaurants. Areas like Ledras, Makariou, and parts of Egkwmi. Also, central Nicosia locations like Agioi Omologites, Dasoupoli, Pallourgiotissa get a higher mark.

If a location is within a commercial district it gets 3 points, if it is within a central district it gets 4 points, if its has access to close by parking space it gets 2 points. If it has a great view it gets an extra 1 point.

The grades:

- Grade A: Is awarded to locations with a sum of 8 – 10 points
- Grade B: Is awarded to locations with a sum of 6 – 7.9 points
- Grade C: Is awarded to locations with a sum of 4 – 5.9 points
- Grade D: Is awarded to locations with a sum of lower than 4 points

The General Condition and Allure grading system takes into consideration if a shop is relatively new, renovated, has a new kitchen or WC, has a lot of natural lighting coming in, is at a top floor or has a big storefront or any other special styling elements.

	Rent/Monthly	Size/m²	Storefront	Location Grade	General Condition and Allure
1	250	50	Yes	D	D
2	270	80	Yes	B	B
3	300	50	No	A	C
4	350	140	No	B	B
5	380	50	Yes	C	C
6	450	95	Yes	C	C
7	500	65	No	A	B
8	500	150	Yes	D	A
9	550	70	No	B	C
10	680	75	Yes	B	A

Running a standard deviation calculator, we get a mean of 423 with a standard deviation of 137, considering the sample size and the range of prices no outliers where found. By excluding all locations that don't satisfy the 64 sq. meter (1,3,5) and taking only the top four highest graded options (2,4,7,10) the mean price comes up to 450 euro. That will also be the cap of the monthly rent expense.

	Price
Rent / Monthly	**450**

2.3.5 Renovations / Decorations

Item	General Information	Price
Painting Interior	DULUX	41 (16/h)
Sink	SCALE	19.90
WC set	Nerea	44.90
Kitchen Sink	PYRAMIS	39.90
Lamps	Energy saving	20 (2.60/piece)
TOTAL		**165.70**

2.3.6 Utilities

Utility	Price/Monthly	Price/Yearly
Water	15	180
Garbage disposal	8.3	100
Electricity	100	1,200
Heating and Air-Conditioning	125	1,500
TOTAL	**248.3**	**2,980**

2.3.7 Company Registration fees

Item	Price
Incorporation fees	800
Company register annual fee	350
Bank account creation	450
TOTAL	**1,600**

2.3.8 Maintenance and contingency fund.

	Percentage	Allocated EUR
Hardware maintenance		1000
Hardware Costs	5%	641
Software Costs	5%	335
Design Modifications	5%	60
Renovation Costs	50%	80
Utility cost	5%	149
TOTAL		**2,265**

2.3.9 Marketing Annual Budget

Item	Quantity	Cost
Business cards premium	100	50
Business cards Simple	1000	35
Brochures	1000	165
Web page hosting		100
Traveling allowance	-	1,200
Banners	5	100
Social Media Advertising • **Facebook** • **Pinterest** • **Twitter**	-	-
Online Listings • **Google my Business** • **Bing Places for Business** • **Yahoo** • **Freelancer.com** • **Creativepool.com** • **3Cubed.tech**	-	Free Free Free Free Free Free
Cyprus General Expo		2,000
TOTAL		**3,650**

2.3.10 Overview

a. Startup cost Pre-Rent				
Category	**Selection**	**Price**	**Startup Quantity**	**Total**
Hardware				
A. PC	Option 1	2,122.46	4	8,489.84
B. Peripherals	Option 1	506.90	4	2,027.60
C. HMD	Samsung Gear VR	30	2	60
	HTC VIVE	999	1	999
	Oculus Rift	449	1	449
	Google daydream	45	1	45
D. Motion Capture Suit	Preference	590.47	1	590.47
E. Printer/Scanner	Preference	149.99	1	149.99
Software				
A. Drafting	Sketchup	-	2	-
	Autodesk Viewer	-	2	-
B. Modeling	3Ds max	1,984.40/y	1	3,968.80/y
	Blender	-	2	-
C. Sculpting	Substance Painter	236.10	1	236.10
	Z Brush	734.30	1	734.30
D. Image Manipulation Software	Adobe Photoshop CC	359.88/y	2	719.76/y
	Audacity	-	2	-
E. Sound and Video	WavePad	41.02	1	41.02
	Unreal Engine	-	3	-
F. Graphics Engine	Unity 5	-	3	-
	Vizard	1,000	1	1,000
Desk	Pittas	340	3	1,020
Chair	Option 1	99.99	3	300
Company registration fees	-	1,600	-	1,600
Maintenance and contingency fund	-		-	2,036
			TOTAL	**24,467**

b. Monthly operation cost Pre-Rent Period

Category	Cost
Hardware depreciation	213.5
Software rent	391
Software depreciation	111.66
Utility allowance	248.3
Services allowance	53.23
Furniture depreciation	15.71
Marketing	305
Wages & Salaries	3,600
TOTAL	**4,939**

c. Monthly Cost per 3D Designer Pre-Rent Period

Category	Cost
Hardware depreciation	50
Software rent	195.5
Software depreciation	55.83
Utility allowance	82.76
Services allowance	17.74
Furniture depreciation	5.23
Wages & Salaries	1,200
TOTAL	**1,607**

d. Monthly Cost per Programmer Pre-Rent Period

Category	Cost
Hardware depreciation	50
Software rent	-
Software depreciation	10
Utility allowance	82.76
Services allowance	17.74
Furniture depreciation	5.23
Wages & Salaries	1,200
TOTAL	**1,366**

e. Startup Cost Post-Renting Period

Category	Selection	Cost
General Necessities	Option 1	219.99
Appliances	Option 1	1,220.97
Renovations/Decorations	-	165.70
Renovations Contingency fund	-	80
Utility contingency fund	-	149
TOTAL		**1,606.66**

f. Monthly operation cost Post-Renting Period

Category	Cost
Hardware depreciation 20%	213.5
Software depreciation 20%	111.66
Furniture depreciation 14%	15.71
Appliances Depreciation 14%	14.53
Software rent	391
Utilities	248.3
Services	53.23
Consumables	99.37
Wages & Salaries	6,000
Marketing	305
Rent	450
TOTAL	**7,903**

g. Cost per new hire - 3D Designer
   Post-Rent Period

Category	Cost
Startup Cost	
1. **Hardware**	2,629.36
2. **Software**	3,323.68
3. **Desk & Chair**	440
TOTAL	**6,394**
Monthly cost	
1. **Wages & Salaries**	2,000
2. **Consumables**	33.12
3. **Software Depreciation**	55.83
4. **Hardware Depreciation**	50
5. **Utilities**	25
TOTAL	**2,160**

h. Cost per new hire - Programmer
   Post-Rent Period

Category	Cost
Startup Cost	
1. **Hardware**	2,629.36
2. **Desk & Chair**	440
TOTAL	**3,070**
Monthly cost	
3. **Wages & Salaries**	2,000
4. **Consumables**	33.12
5. **Software Depreciation**	-
6. **Hardware Depreciation**	50
7. **Utilities**	25
TOTAL	**2,113**

2.3.11 Aggregated Costs

a. Startup Costs	Cost
Pre-Rent Period	24,467
Post-Rent period	1,607
TOTAL	**26,074**

b. Year 1 Costs

Category	Cost
Wages & Salaries	
• Pre-Rent period	46,800
Software Rent	4,692
Rent	-
Utilities	2,980
Services	638
Consumables	1,193
Hardware Depreciation	2,562
Software Depreciation	1,340
Appliances Depreciation	175
Furniture Depreciation	189
Annual fee payable to the companies Register	350
Marketing	3,650
Loan	19,200
TOTAL	**83,770**

c. Year 2 Costs

Category	Cost
Wages & Salaries	
• Post-Rent period	78,000
Software Rent	4,692
Rent	5,400
Utilities	2,980
Services	638
Consumables	1,193
Hardware Depreciation	2,562
Software Depreciation	1,340
Appliances Depreciation	175
Furniture Depreciation	189
Annual fee payable to the companies Register	350
Marketing	3,650
Loan	19,200
TOTAL	**120,369**

2.3.12 Financing

To help start up the company Alexandros will invest an initial capital of 15,000€. Furthermore, a loan of 150,000€ will be acquired to sufficiently support the company's costs for the first two years.

Financing	
Interest	3.5%
Monthly Payments (for the duration of 108 months)	1,600

Chapter 3
Timeline & Milestones

3.1 Year 1

0 – 3 Months:

1. Architectural asset library reaches 300 unique items
2. Architectural functionalities task completion
3. Company is registered and active
4. Establish foundations with WorldViz

3 – 6 Months:

1. Marios completes the Website Design
2. Business cards are issued
3. Savvas will research current 3D model trends and start developing appropriate models.
4. Alex adds 150 more unique assets to the collection
5. 2 Architectural Demos created in preparation for the Cyprus general expo.
6. 2 educational Demos created in preparation for the Cyprus general expo.

6 – 9 Months:

1. Start selling assets on online marketplace
2. Launch Website
3. Launch social media
4. Make Brochures
5. Develop showcasing platform to attract product companies
6. Start visiting and promoting platform
7. Contact Architecture firms
8. Contact Kitchen creation shops

9 – 12 Months

1. Start visiting potential clients to showcase demo

2. Asset library expanding based solely on market trends
3. Contact private Schools

3.2 Year 2

0 – 3 months:

1. Move into offices
2. Visit Schools to showcase demos
3. Register to online listing sites
4. Start preparations for Year 2 General Expo
5. Contact Universities and start screenings for new talent
6. Pay raise for all employees

6 – 9 months:

1. Studio breaks even starts making profits

9 – 12 months:

1. Start training new talent - Internships

3.3 Year 3

1. Application and insertion of new technologies
2. Research in new line of hardware and software
3. 2 New hires from successful interns
4. Training period on new and emerging technologies - Core
5. Research into new markets
6. Revise marketing strategies and business plan

3.4 Year 4

1. Pay Raise for all employees
2. Training period on new and emerging technologies – New members

Chapter 4
Marketing Strategy

4.1 Marketing Strategy

ViRi studios will initially utilize established networking the core members have acquired as VR freelancers over the past seven years. Steady co-operation's with leading firms in the United States VR scene have opened a variety of markets all over the world though referrals, from Saudi Arabia educational solutions enterprises to European physiological labs. In the past five years there has been a steady flow of projects. Not all projects have been possible to acquire in the past, due to time and workforce limitations.

The projected earnings based on past years are estimated to around 50,000 euro annually. In the span of 5 years the number of projects tripled, though the overall revenue has had a subtler rise (250%).

Marketing will have two fronts at the beginning. Anything that comes through WorldViz's steady flow of VR projects to the team's specialists. Evidently this can also sustain the studios viability in case there is high resistance to change in the targeted local industry. Vizard has a variety of high profile clients, it is expected that within the first six months of operation our studio will have at least four international clients thus acquiring more showcasing capabilities, extending the library even further, building loyalty and expanding the studio's market depending on the kind of client they outsource. In the past WorldViz has outsourced, office architectural projects, fire hazard training projects, medical equipment sales projects, educational projects, advertising projects.

This initial revenue will sustain the studio while it builds up its asset library and gets its demos ready. It is estimated that in 6 months the studio will be able to enter phase 2 and start approaching targeted home development clientele.

Amongst the targeted clientele are a number of architecture firms, developers, general household stores, flooring stores and furniture stores.

At phase 3 the studio will flood the online markets with high quality VR oriented assets. These are assets that are usually in small bundles sold at a relatively low price (jonpolygon, 2017). Every asset created to accommodate the studios architectural needs can be used to produce more revenue by selling it individually at a wider market. In other words, any unique commissioned work provides more than one source of income.

4.2 Sales Strategy

At the six months mark the studio will have a strong asset library, available architectural and educational demos and hopefully will have completed its first 2 big offshore projects thus adding more

Once the company website is ready the Studio will start building and setting up, Twitter, Facebook and Pinterest accounts representing the Studio and regular updates will start flurrying in daily. Having an active presence in social media is extremely important before reaching out to potential clients to promote our Service (verticalresponse, 2018).

In order to approach each client a specific sale strategy has been devised for each individual, uniquely incentivized industry.

4.2.1 International Clientele

4.2.1.a Strategy

Based on international pricing standards out prices are amongst the mid-range. For any given VR project, it would cost a United Kingdom, United states, United Arab Emirates, Australian client almost half of what they would be charged if they would try to commission the project locally.

Since our pricing and quality is our greatest marketing weapon regarding International trading, the following loyalty building strategies have been developed:

1. After every completed project a form will be sent to measure client satisfaction.
2. In our pricing packages we will be offering complementary support for anything that goes wrong for 60 days.
3. The studio will offer 15% discount vouchers after any project between 5,000 to 10,000.
4. Any client that makes an annual bill for over 20,000 an available member of our team will be sent to make face to face contact with said customer wherever they are situated in the world.
5. Any client with an annual bill of over 50,000 will be given a gold status, and they will enjoy a variety of benefits, from special discounts to updated project materials and freebies.

4.2.1.b Pricing

Based on given project, the client will be charged hourly with an hourly rate of 60 euros per engaged employee.

4.2.2 Architecture Firms

4.2.2.a Strategy

No matter how big or small an architectural plan is, the amount of time, and subsequently cost of a project depends on the designs complexity. For a client though the pricing of any service needs to make sense and be calculable in order for the service to make sense. Hence charging each and every different project differently would not work in this case.

4.2.2.b Pricing

The studio has decided in the following pricing method:

House Packages:

Basic Plan

- 6.5€ x m^2 of covered space
- 3€ x m^2 of uncovered space
- 4.5€ x m^2 Gardens and landscaping

Furnish Plan 1

- 50€ - Furnishing Living room
- 100€ – Kitchen

Furnish Plan 2

- 100€ - Furnishing Bedrooms, WCs

Android Support

- Android Version 1 - 50€
- Android Version 2 – 100€

Online support

- Own dedicated link for online viewing – 50€

All packages include two pre-render visits and 3 post-render visits either to our special facilities or house call.

Specials and offers:

- 20% Discount to first time clients
- 15% Discount to every client through referral
- 15% Discount if for every combo of Basic+ Furnish 1 + Furnish 2 Package and either Android or Online platform support

This flexible costing table allows a client to tailor his final product for as low as 1000 euros for a mid-range house of 160 m^2 (mean size of houses build in Cyprus).

Small/Mid Shop/Business Packages:

Basic Plan

- 8€ x m^2 of covered space
- 6€ x m^2 of uncovered space including gardens and landscaping

Furnish Plan

- 200€ - From available range

Restaurant Package

- 200€ - Kitchen
- 150€ - WC

Android Support

- Android Version 1 - 150€
- Android Version 2 - 300€

Online support

- Own dedicated link for online viewing - 200€

Specials and offers:

- 20% Discount to first time clients
- 15% Discount to every client through referral
- 15% Discount if for every combo of Basic + Furnish + Restaurant package and either Android or Online platform support

Corporate Packages:

- Depending on project scale
- 2 meetings free
- Free quotation

4.2.2.c Selling point:

To do a single 3D photo of a House costs an architectural firm 500 – 600 euros if it outsources its work to any professional freelance or studio. To do a significantly lower quality usually inaccurate inhouse photo would cost around 150 euros.

What we provide instead is full access to the entirety of the house, inside and out. Available for PC, android and even online. This 3D representation can be used by the end user to better communicate with the developer, the designer, the Kitchener.

Most customers can't fully understand what their house will look like just by looking at architectural plans and reference images. Things like the length and placement of a window, the lighting and how it enters and fills a house, the ease of access from the kitchen to the living room, how big is the yard and how much shade there is in the evening. These are just a fraction of what a user can experience in VR.

VR will give you the opportunity to survey and change anything you don't like beforehand, hence saving on added time and money. When in construction to build a 25cm wall, paint it, reinforce it costs around 55 €/m^2, that is 825 euro for a single 15m^2 wall. By changing one wall beforehand, at least, 80% of our services is justified, and a lot of time was saved to communicate your needs sufficiently to all parties involved.

4.2.2.d Expected return

A mid-range (price) Kitchen design company does 20-25 kitchens monthly. A high-end design company will do 5-10 and a low range will do 50. There are 20-30 mid-

range kitchen manufacturers and 10-15 active high-end kitchen manufacturers just in Nicosia at the moment. That brings the kitchen market to up to 400 mid-range kitchens per month and 100 high-end kitchens. If 25% of the high-end kitchens and 5% of the mid-range kitchens commission VR representations that would mean a monthly income of 9,000€ monthly.

Our initial research showed that there are 15 mid-range architecture firms active right now in Cyprus. Each studio will handle 10 projects monthly, varying in size and function. If only 5% of the projects commission the lowest possible plan the studio has available that would translate to a monthly income of 7,500 just from mid-range, plain house, simple plan projects.

4.2.3 Furniture & Home décor businesses

4.2.3.a Strategy

The bigger and more diverse the studio's library is, the more attractive it will be to potential clients looking to build a house, a business establishment, redecorate or design. This implies that on the startup, the studio can offer hosting services for aforementioned businesses on selected items for very low prices or even for free. Later on, each business can assess whether they would like to allocate a portion of their marketing budget in order to sustain their presence in the online platform for a yearly fee.

4.2.3.b Pricing

The studio has decided in the following pricing method:

To promote the service:

- Showcasing capability online in 360 VR ready view
- Company logo, item name, pricing (optional) viewable on placement
- Hyperlink to shop page, or any desirable social media
- Free for 3 months

- Upgrade to 6 months for free - If 3 months are deemed not enough time to advertise the product sufficiently and gather enough information to support the platform's advertising power
- Upgrade to 1 year for free - If 6 months are deemed not enough time to advertise the product sufficiently and gather enough information to support the platform's advertising power

Payment schemes:

- Small business annual base charge: 1000 €
- Middle-sized business annual base charge: 2000 €
- Large business annual base charge: 4000 €

4.2.3.c Furniture and appliances:

- "Splashing Around": Free period – 4 select starting pieces
- "Ready, set, dive": First year fee at 15% discount - Add 4 select pieces
- "Full Dive": Second year fee at 5% discount – Add 4 select pieces
- "Used to the ocean": Third year fee at full price - Add 4 select pieces
- "Loyalty = Royalty": Forth year service renewal gets a lifetime fee reduction of 10% - Add 4 select pieces

Adding items to the shop's online library:

- To add 1 item – 50 €
- To add 2 items – 90 €
- To add 3 items – 120 €
- To add 4 items – 150 €
- To add 5 items – 180 €
- To add 10 items – 350 €
- To add 20 items – 600 €
- To add 40 items – 1100 €

4.2.3.d Floors, Paints, Wallpapers:

Payment schemes:

- "Splashing Around": Free period – 8 select starting materials
- "Ready, set, dive": First year fee at 15% discount - Add 8 select materials
- "Full Dive": Second year fee at 5% discount – Add 8 select materials
- "Used to the ocean": Third year fee at full price - Add 8 select materials
- "Loyalty = Royalty": Forth year service renewal gets a lifetime fee reduction of 10% - Add 8 select materials

Adding items to the shop's online library:

- To add 1 item – 25 €
- To add 2 items – 45 €
- To add 3 items – 60 €
- To add 4 items – 75 €
- To add 5 items – 90 €
- To add 10 items – 175 €
- To add 20 items – 300 €
- To add 40 items – 550 €

4.2.3.e Selling point:

For the predetermined annual price, a business gets the following benefits:

1. Online 360, VR ready, 24/7 access to select items of their stock, which they can use to advertise, embed, share, add to their own webpage, add to their social media.
2. Advertising with each customer the studio acquires
3. A dedicated website
4. A virtual showroom
5. A technological and marketing edge over its competitors

6. Careful marketing planning to avoid overlapping of products with other hosted business's
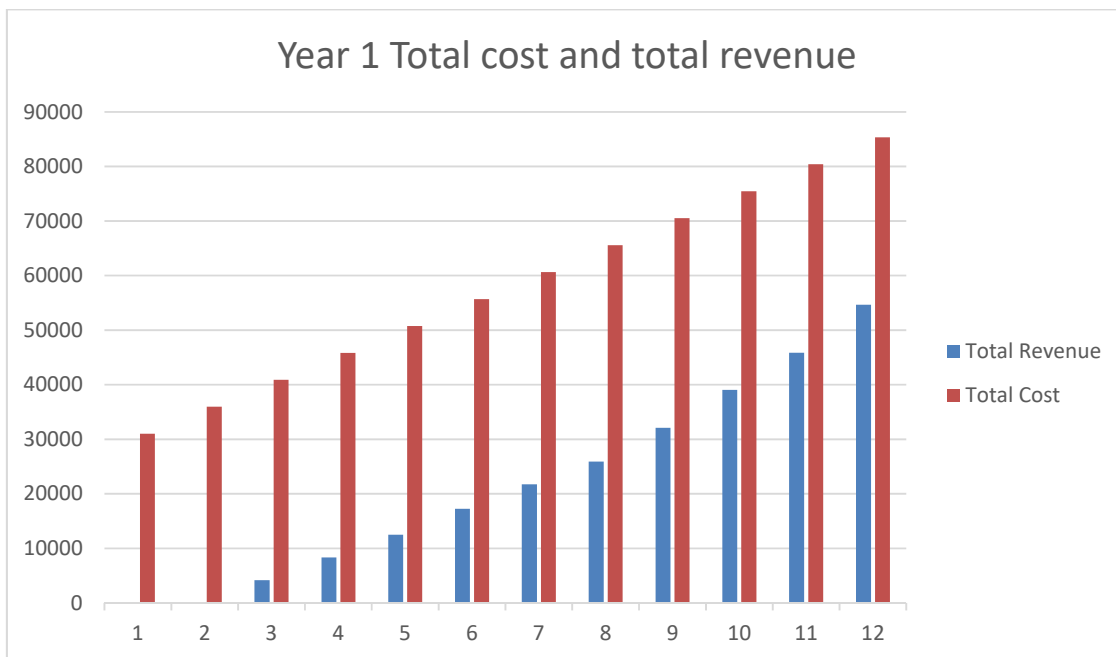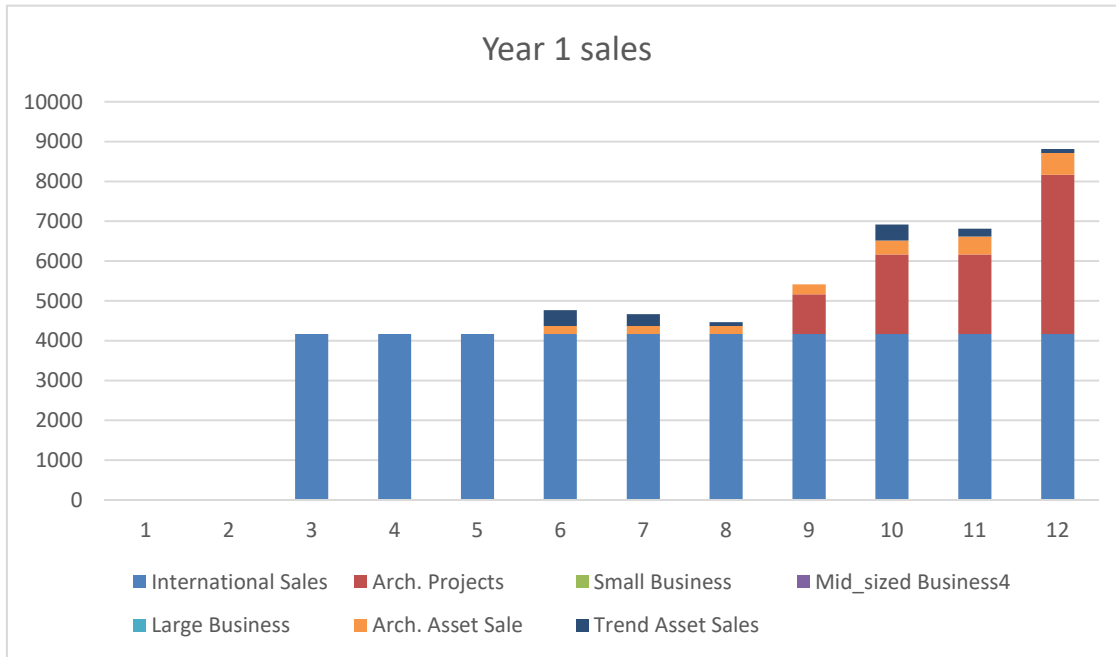7. Equal advertising treatment
8. Excellent value for money

The selling point of the studios services varies depending on the size of a business. For a small business the most important part could most likely be, the online database of its product. For a middle-sized business, the most important part could be to hold the edge over its competitors and for a large size business image and marketing might hold the greatest value.
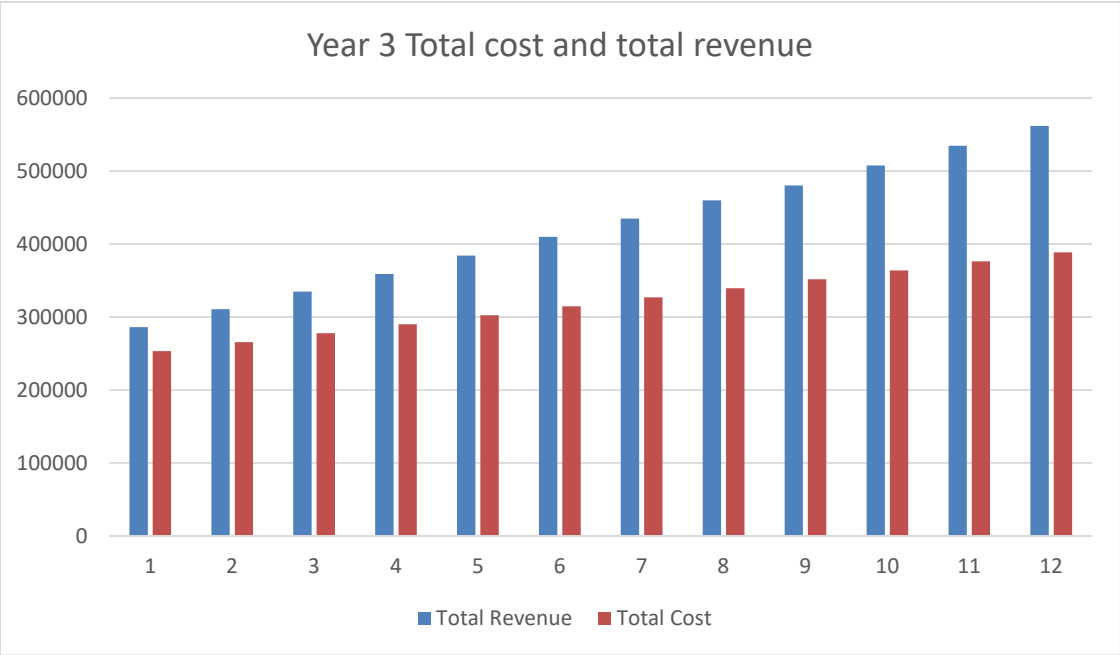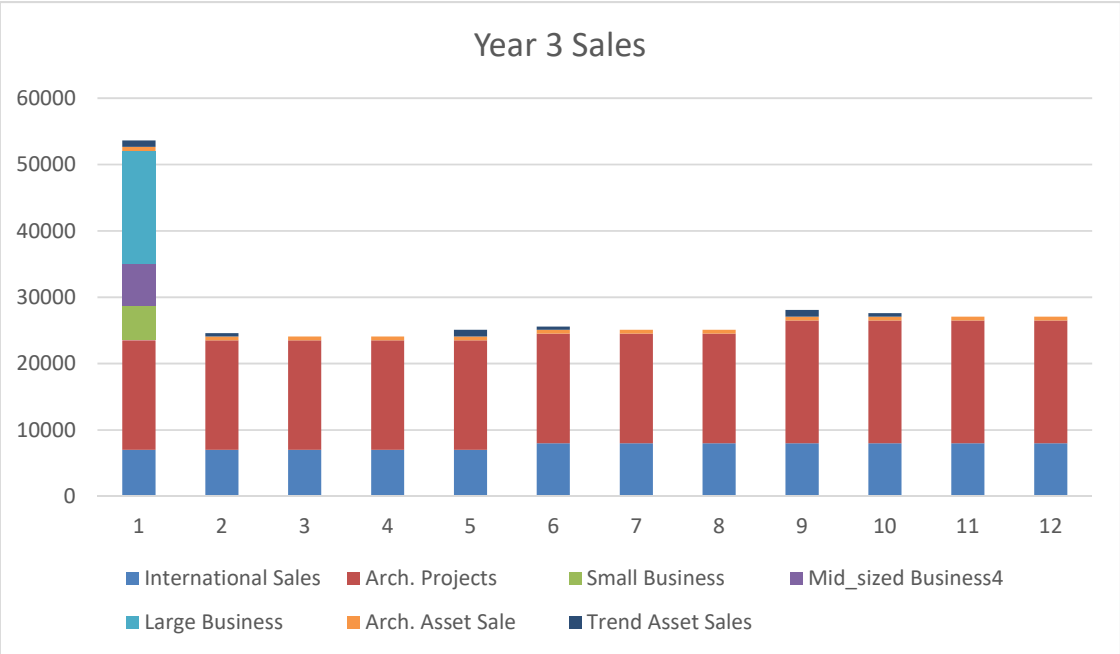
4.2.3.f Expected return

Our research has shown that there are currently 20 small home décor businesses, 15 mid-sized and 5 large ones. Similarly, there are 30 small furniture businesses, 12 mid-sized and 5 large ones. Even though some of these businesses are the same since they deal both in materials and furniture the fee will have to be charged once for each category.

If the studio can get an annual subscription from 10% of small businesses, 20% of mi-sized businesses and 40% of large businesses that would translate to an annual income of 27,000 €, for the simple plan
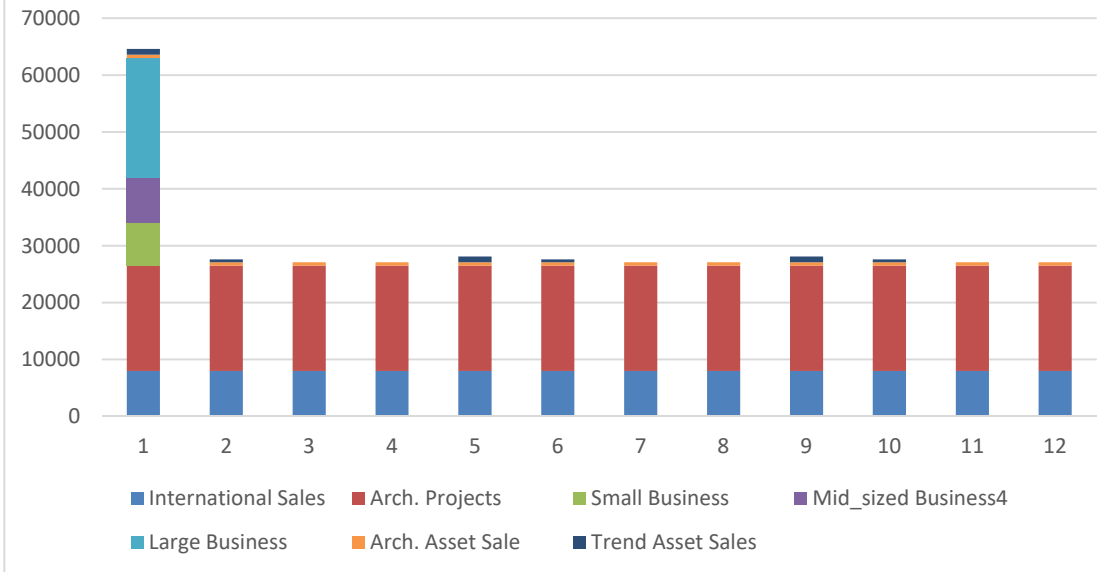
4.3   Sales Forecast

Year 1 sales

Year 1 Total cost and total revenue

Year 2 Sales

Year 2 Total cost and total revenue

Year 3 Sales

Legend: International Sales, Arch. Projects, Small Business, Mid_sized Business4, Large Business, Arch. Asset Sale, Trend Asset Sales

Year 3 Total cost and total revenue

Legend: Total Revenue, Total Cost
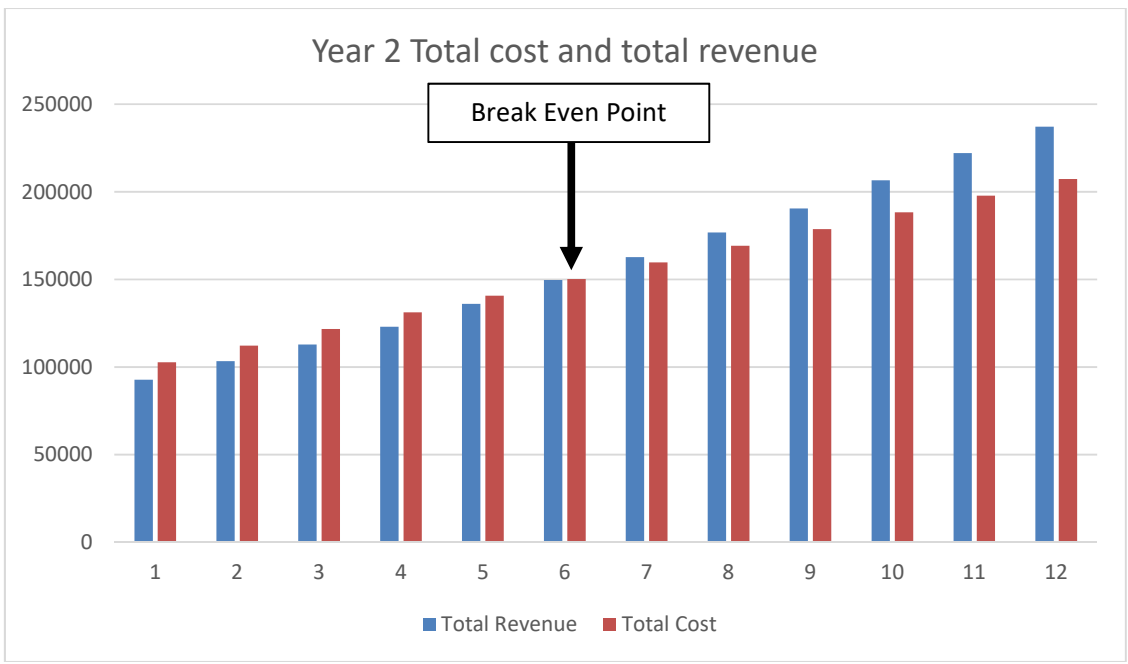
Year 4 Sales

Chapter 5
S.W.O.T. analysis

5.1   Strengths

- Incredibly versatile industry, hardware and software wise there is an abundance of goods in a variety of options and prices.
- Variety of software and close substitutes guarantees financial flexibility. The studio does not depend on one given piece of software for production.
- Variety of hardware and close substitutes guarantees financial flexibility. The studio does not depend on one given piece of Hardware for production
- Alexandros and Savvas have extended experience in the field, from producing and managing projects to dealing with customers and the global market
- Due to early work at the university Alexandros and Savvas have a significant head start over any other new entry in the field of Virtual Reality
- The door to global marketing is open since the studio can easily operate remotely and already has contacts in U.S.A and U.A.E.
- Great pricing, in regards to other VR supporting companies of the global market.
- Excellent service standards based on years of customer experience and an unquenchable love for perfection and quality.
- Highly streamlined work process due to experience results in efficient, productive working habits which in turn result in lower prices and faster development times.

5.2   Weaknesses

- Technology industry in Cyprus is usually highly resistant to change.

- Even though Cyprus's strategic position allows for travel around the world, its secluded location also implies a higher cost when traveling as opposed to other European countries.

5.3   Opportunities

- Virtual Reality gear has taken the 3D modelling industry out of its elitist confines and back to the hands of excited, new, passionate artists. The emergence of this new technology has made it possible for new entries to survive and grow in an established market.
- Alexandros and Savvas are already well established as professionals in the books of WorldViz, which ensues a significant financial boost and sustainability in the studios early months of operation.
- The time for Virtual Reality is now. Global demand is growing every day and the market is not even close to satisfying it.
- Real estate and architectural firms are again on the rise in Cyprus after a long period of blockade.
- There are active global investors situated in Cyprus, which makes Cyprus a portal into Chinese and Russian industry markets.
- There is a chance that Cyprus market has been underestimated and if the demand proves to be too high too soon the studio will not be able to accommodate every request. This will drive away customers to look for alternatives and through this urgently created demand more studios will surface offering this service. This is not a bad thing since ViRi limited depends on its expertise, quality and customer satisfaction to establish its name in the business. For those qualities to be expunged there will need to be comparable competition.

5.4   Threats

- A big percentage of the initial revenue depends the assumption that WorldViz will, as it did in the previews years, continue outsourcing VR projects to the team in the upcoming years as well
- The market is open and easy to enter by competitors.
- Even though VR is a new technology that allows the experience of computer graphics through the real-time medium of HMDs, still there are

very similar, plain 3D renders in the market made at a much lower cost that can be seen as alternatives.

- The studio depends highly on its workforce talent to market its product while remaining relevant and competitive in an everchanging market. Finding suitable talent to expand/sustain this legacy might be an issue.
- After training and equipping artists with the knowledge and know how on how to deliver quality product, employee turn over could, left unchecked, be highly problematic.

5.5 How the Studio is preparing to counter threats

- In order to kickstart ViRi limited, a loan of 150,000 euros will be acquired. This sum is sufficient to support the company's expenses as projected for two years. In case WorldViz does not provide any commissioned work or as much as expected, the studio can still stay afloat and operate with the difference being that the timeframe in which the company will break even will be collectively moving to the end of year two start of year three.
- Having competitors is always a calculated threat, ViRi is not made for the short-term game, it's purpose is to take advantage of the current market opportunities to enter the market not short-term but for the long run. ViRi depends on its expertise, it's ever growing knowledge and it's work quality to distinguish itself from its competitors, regardless if the competition is playing the long game or if its just in it for a piece of the pie from a booming industry.
- ViRi relies on face to face marketing to promote its service and quality of work. Having faith in the quality of the product offered is the number one factor when promoting it. Cyprus maybe resistant to new technologies and change, but it also is very quick to the pie, especially if the competition already has it. By targeting and acquiring key business's the functionality and superiority of customer service achievable through VR will spread and eventually everyone who can have will want it.
- ViRi has devised a wholesome strategy as to how it will perceive, nurture and cultivate local talent to join the company ranks and expand the business

Chapter 6
Talent Management

6.1 Talent acquisition

During its second year of operation ViRi will start networking with universities in anticipation of its internship phase. Any interested and or recommended student will be summoned for an interview from which four individuals will pass onto the internship phase. Besides technical skills and knowledge the purpose of both phases, interviews and internship, is to evaluate the work ethics, quality of character and chemistry of each individual.

By assigning them to group projects with existing members chemistry of each individual can be evaluated.

By assigning them to group projects with each other chemistry in between them can be evaluated.

By assigning them projects to fulfill, their leadership skills and interpersonal skills can be evaluated.

The group will keep track of pending activities through an organizing app updated by any of the core members, weekly. In that app there will be unassigned tasks especially added as to evaluate the interns' initiative.

Extracurricular activities will be organized to strengthen the team's bonds and showcase the spirit of the Studio as a whole.

At the end of three months two/three or four individuals will join the company ranks depending on evaluations and company requirements.

6.2 Talent training

After the initial period has come to an end the talent training will begin. This is the phase where they are employees of the company taking on projects and gathering experience through work and mentorship.

6.3 Incentives

For most individuals the biggest incentive is money. After their salary cover their basic needs though, different incentives could prove very powerful. For example, the need to feel valued for their work, the need to grow as an artist, the need to belong be heard and respected. Besides highly rewarding its talent the studio aims to become such an inspiring workplace of self and team growth.

6.4 Non-stop growth

Artists have the constant need to grow, be engaged, be interested in what they are doing. Technology is swift everchanging sea of knowledge and opportunities and for an individual to feel at the top of their game, confident and productive that need should be fed. In the Studio's timeframe there is a period right after hiring the new employees for the core members to ease off and start putting work towards accumulating new knowledge and work on personal growth, which they can later share. Similarly, the same opportunities will be provided to the new employees and this will be a constant circle throughout the years.

References

Anon., 2018. *Smartfurniture.com.* [Online]
Available at: https://www.smartfurniture.com/top-10-office-chairs.html
[Accessed 30 3 2018].

Builder, M., 2018. *strategist.com.* [Online]
Available at: http://nymag.com/strategist/article/best-office-chairs-home-office-chairs.html
[Accessed 28 3 2018].

G2, 2018. *g2crowd.com.* [Online]
Available at: https://www.g2crowd.com/categories/3d-modeling?segment=all
[Accessed 12 3 2018].

jonpolygon, 2017. *jonpolygon.com.* [Online]
Available at: https://jonpolygon.com/what-3d-models-should-i-make/
[Accessed 28 9 2017].

Kim, S., 2018. *vrandfun.* [Online]
Available at: https://www.vrandfun.com/meet-second-generation-vr-ar-headsets-release-2018/
[Accessed 12 1 2018].

Klosowski, T., 2018. *wirecurtter.com.* [Online]
Available at: https://thewirecutter.com/reviews/best-office-chair/
[Accessed 30 3 2018].

Kraft, C., 2018. *makezine.com.* [Online]
Available at: https://makezine.com/2016/03/24/makers-introduction-vr-best-software-tools-free/
[Accessed 11 3 2018].

Lamkin, P., 2017. *forbes.com.* [Online]
Available at: https://www.forbes.com/sites/paullamkin/2017/11/30/virtual-reality-headset-sales-hit-1-million/#102893712b61
[Accessed 24 11 2017].

Liu, G., 2018. *digitaltrends.com.* [Online]
Available at: https://www.digitaltrends.com/home/best-office-desk-chairs/
[Accessed 30 3 2018].

Oldham, P., 2018. *business.com.* [Online]
Available at: https://www.business.com/articles/virtual-reality-changing-manufacturing/
[Accessed 12 3 2018].

Oliynyk, A., 2018. *masterofcode.com.* [Online]
Available at: https://masterofcode.com/blog/how-to-create-virtual-reality-content
[Accessed 23 3 2018].

slant, 2017. *slant.co.* [Online]
Available at: https://www.slant.co/topics/2202/~game-engines-for-virtual-reality-development
[Accessed 25 11 2017].

statista, 2017. *statista.com.* [Online]
Available at: https://www.statista.com/statistics/784139/virtual-reality-market-size-in-the-us/
[Accessed 12 10 2017].

Takahashi, D., 2018. *uploadvr.* [Online]
Available at: https://uploadvr.com/vr-developers-unity-unreal/
[Accessed 15 2 2018].

verticalresponse, 2018. *verticalresponse.com.* [Online]
Available at: https://www.verticalresponse.com/blog/top-20-places-business-needs-listed-online/
[Accessed 30 3 2018].