

VR Fact Sheet 2019 - An Overview of VR Movies & Games

Angela Jank, Fabian Kozich, Felix Fröhlich,
Prof. (FH) Mag. Dr. Kai Erenli
Film-, TV and Media Production
FH des BFI Wien
Vienna, Austria

***Abstract* – The consumption of Virtual Reality content has been steadily increasing over the past years. Even though there are numerous statistics about market size, hardware sales and user behavior, there is still a major lack of the documentation of Virtual Reality projects. This paper describes the approach taken by a project team to gather important data about existing Virtual Reality content and to add it to the VR Fact Sheet 2018, creating a new updated version, the VR Fact Sheet 2019. Therefore 1096 Virtual Reality projects were identified, evaluated and documented.**

I. INTRODUCTION

In order to update the existing VR Fact Sheet 2018 a new project team consisting of six students and one academic project lead was formed. The main goal of the project team was to update the previous fact sheet with new VR content from 2018. The decision was made to reevaluate the predefined categories from the fact sheet and to make adjustments to improve usability and significance. Unfortunately, it became clear that the underlying problems while gathering information for the project were similar to the ones the previous project team were faced with.

II. UNDERLYING PROBLEMS

First, the project team agreed on classifying VR Films and VR Games. After more research, it became obvious that it is very difficult to strictly differentiate between films and games in VR. The main reason for this is, as soon as there is a certain level of interactivity and alteration in a VR film, it shows a lot of characteristics of a game.

Martin Stegmayer, an Austrian expert in the field of VR filmmaking, states that right now there is still a lack of experience in VR to be able to specifically classify a VR film or a VR game. Therefore, the project team decided to make a few adjustments to the existing VR Fact Sheet 2018. There are now three main classifications – film, game and tech/art experience. Tech/art experience lists content that cannot be fully recognized as a film or a game in the traditional sense. For example, this category mainly contains hybrid forms and movies with gaming elements. It also itemizes content such as music videos or art exhibitions.

In contrast, the film category, therefore, mainly consists of 360-degree videos with a linear story line and a low level of immersion and changeability. With games, on the other hand, a high level of interactivity and participation is required.

The further the team looked into the matter, the more it became clear that gathering data for VR films is much more complex than for games. Most of the games and important facts about them can be easily found on major gaming platforms such as *Viveport*, *Oculus Store*, *Playstation Store* and *Steam*. In contrast, there are no obvious databases

where one can find all of the relevant data for films. This means the project team had to gather all the information from different sources in order to be able to categorize them in the VR fact sheet. For this matter, mainly festival catalogues, press articles and blog entries were analyzed. However, it still became evident that it was very difficult or even impossible to find all the relevant data for certain films.

III. ADJUSTMENTS

Besides adding the new classification "tech/art experiences", the VR Fact Sheet 2019 now differentiates between fictional and non-fictional films. It also contains information about the player mode for games – single or multi player. The category "availability (countries)" was deleted since the distribution of VR titles on the internet provides worldwide availability in any case.

Based on the first findings and identification of obstacles to overcome, the following facts & figures were documented by the team. Overall, 1096 VR projects in the given period were found and analyzed. They can be classified as:

- . VR Films: 119
- . VR Games: 861
- . VR tech/art experiences: 116

It is important to mention that the research team did not only classify VR content from 2018, it also added projects from the years before which are not included in the facts and figures.

In order to create a certain order and structure, the Fact Sheet 2019 now consists of three different lists, one for each classification. Each list obeys different criteria which are further explained in the following chapters.

IV. LIST, FACTS & FIGURES VR MOVIES

A. List 1: VR Movies

1. Title
2. Genre
3. Type
 - a. fictional
 - b. non-fictional (for documentaries)
4. Length
5. Release Year
6. Production Country
7. Production Company
8. Language(s)
 - a. Spoken Language
 - b. Without Dialogue
9. Subtitles (Language)
10. Animated
11. Selling Price
12. Age Rating
13. Supported Devices
 - a. Mobile
 - b. Oculus
 - c. HTC Vive
 - d. Playstation VR
 - e. other
14. Data Volume
15. Festival Participation(s)
16. Availability (Platform)

B. Facts: VR Movies

Upon adding the 119 projects identified into the list developed, the following conclusions can be drawn in regard of VR Movies:

1) Genre, type and animation

The most prominent genre by far is drama. Comedy and sci-fi are also quite common. Furthermore, documentaries are with 44% even more common than the year before (33%). In addition, more than 30% of the classified movies are fully animated.

2) Length and selling price

50% of the films are available at no cost for the VR movie itself. If titles are included

where no information about the selling price was found, the percentage increases to astounding 90%. Only 10% of the movies have a running time of more than 20 minutes. Most of the movies are between 5 and 10 minutes.

3) Production country

More than half of the movies were produced in the US. However, it is notable that a very large amount of different countries all over the world are creating VR content.

4) Supported devices and availability (on platforms)

In comparison to the 2018 Fact Sheet, the "big players" among the VR platforms have remained:

- Oculus Store
- Viveport
- Steam
- Playstation Store
- Mobile based: Google Playstore and Apple Store

However, there is a major new player which comes from Microsoft. There is great amount of VR content that can be consumed via Windows Mixed Reality. Most of the content that is classified as "Other" is available for Windows Mixed Reality. Therefore, there should be a new and separate category for Windows Mixed Reality introduced for the upcoming factsheets.

C. Findings VR Movies

As last year, gathering data about VR movies seemed to be a big challenge for the research team. The reason for this is that many movies that were still in the festival run in 2018 were not yet available to the public. More than 30% of the movies have premiered on festivals. Therefore, definite data could not be obtained. This was especially problematic for

the categories "data volume, subtitles, selling price, supported devices and availability".

In the end, it can still be observed that most of the movies are for free and available on mobile based platforms such as Google Playstore and Apple Store. There is also a clear trend for the increasing number of content available via Windows Mixed Reality. It must also be noted that the project team could not gather an exhaustive number of VR movies due to the lack of databases for them, further explained in chapter II Underlying Problems.

D. Overview of facts identified for VR Movies

1) Top 3 genres

Drama	43
Comedy	14
Sci-Fi	14

2) Type

fictional	78
non-fictional	41

3) Top 5 production countries

USA	61
Canada	20
Great Britain	16
France	14
Germany	6

4) Language

English	99
N/A	14
German	5
French	2

5) Subtitles

Yes	4
N/A	115

6) Supported Devices

Oculus	44
HTC Vive	13
Mobile	54
Other	28

7) Data Volume

0 - 5 GB	29
5,01 - 10 GB	3
> 10,0 GB	1
N/A	86

8) Length

0 - 5 Min.	19
5 - 10 Min.	36
10 - 15 Min.	30
15 - 20 Min.	13
> 20 Min.	9
N/A	12

9) Availability (Platform)

Google PlayStore	45
iTunes	40
Oculus	27
Samsung VR	24
Steam	11

10) Age Rating

3	5
7	1
12	4
16	2
17	3

11) Selling Price

free	57
0,01€ - 5€	8
5,01€ - 15€	2
N/A	52

V. LIST, FACTS & FIGURES VR GAMES

A. List 1: VR Games

1. Title
2. Genre
3. Type
 - a. Singleplayer
 - b. Multiplayer
4. Length
5. Release Year
6. Production Country
7. Production Company
8. Language(s)
 - a. Spoken Language
 - b. Without Dialogue
9. Subtitles (Language)
10. Selling Price
11. Age Rating
12. Supported Devices
 - a. Mobile
 - b. Oculus
 - c. HTC Vive
 - d. Playstation VR
 - e. other
13. Data Volume (GB)
14. Working Storage (RAM)
15. Availability (Platform)

B. Facts: VR Games

Gathering data about VR games was not as much of a challenge as for VR movies since there are major platforms that contain relevant data. The main concern was the extensive amount of games found on Steam, Oculus Store, Viveport and Playstation Store. The project team has listed 861 VR games.

The following conclusions can be made in regard of VR games in 2018:

1) Genre and type

There are certain genres that could easily be identified as the common genres in the VR games industry. Action and adventure titles are the most popular ones, whereas more than half of the games can be classified as action games. Additionally, 28% of the titles are simple casual games.

Furthermore, the single player mode is predominant in the VR game industry. More than 80% are for single players. In conclusion, online multi player modes are still of significant lesser importance.

2) Length and selling price

The main problem while classifying VR games was finding relevant data for a game's length/playing time. The reason for this is that it either was not listed or that a lot of games were simple casual games where a real playing time cannot be stated due to their repetitive playing characteristic.

In addition, 12% of the games are available for free. Only 7% can be considered as high end titles since their selling price is more than 20€.

3) Release year and production country

In comparison to the VR Fact Sheet 2018 which contains 203 games, 861 titles were categorized for 2019's catalogue. There can be a significant increase in the number of VR games productions observed. However, it must be noted that the previous VR Fact Sheet from 2018 focuses on high-quality titles and VR movies.

The US are still the leading production country of VR games, but a lot of content was produced from companies in many different countries all over the world.

4) Supported devices and availability (platform)

It became apparent that HTC Vive is the leading device for VR games. 93% of the games are available for HTC Vive, followed by Oculus with 69%. Content for Playstation VR is still in its beginnings. Only 8% can be consumed via PS VR. However, most of the content for PS VR is of high-quality and therefore more expensive, whereas a lot of casual mini games, which are for free or less than 5€, can be consumed with HTC Vive or Oculus.

In addition, Steam is clearly the leading platform for VR games. 96% of the content can be purchased and downloaded from Steam.

C. Findings VR Games

In conclusion, the amount of VR games has increased drastically. The increasing number of games produced over the last years still points to a strong upward trend in the industry. However, it must be noted that right now the VR games industry mainly consists of smaller indie titles rather than big high-end titles since there are only few games of high quality.

The "big players" among the industry have remained, but Windows Mixed Reality is gaining significance in this medium too.

It is also worth mentioning that some games where you can disrupt the story and interact with the environment have run on festivals as "VR film". This proves again that it is very difficult to draw a strict line between VR games and films.

D. Overview of facts identified for VR Movies

1) Top 5 genres

Action	467
Adventure	307
Casual	240
Simulation	204
Sport	132

2) Type

Multiplayer	34
Singleplayer	698
Singleplayer & Multiplayer	129

3) Top 5 production countries

United States of America	199
No informations	158
China	75
Great Britain	51
South Korea	44

4) Top 5 languages

English	814
Chinese	125
French	80
Japanese	76
German	75

5) Top 5 subtitles

English	296
Chinese	86
German	56
French	56
Spanish	51

6) Data Volume

0 - 2,5 GB	496
2,51 - 5 GB	179
5,01 - 7,5 GB	37
7,5 - 10 GB	65
> 10 GB	38

7) Working Storage RAM

8 GB	402
4 GB	327
6 GB	19
16 GB	16
2 GB	14

8) Supported Devices

HTC Vive	800
Oculus	593
Other	269
PlayStation	71

9) Availability

Steam	829
Oculus	213
Vive	166
PlayStation	75

10) Age Rating

N/A	713
3	45
12	38
16	23
7	22

11) Selling Price

0-4,99€	198
5-9,99€	225
10-19,99€	232
20-29,99€	56
30€+	5
N/A	24
free	104

almost identical to the games' and movies' ones. It should also be noted that 15 of the 116 tech-art experiences have run on festivals and 87% are animated.

1) Top 5 genres

Simulation	50
Adventure	20
Casual	12
Documentary	11
Education	8

VI. LIST, FACTS & FIGURES TECH/ART EXPERIENCES

A. List 1: VR Experiences

1. Title
2. Genre
3. Type
 - a. Singleplayer
 - b. Multiplayer
4. Length
5. Release Year
6. Production Country
7. Production Company
8. Language(s)
 - a. Spoken Language
 - b. Without Dialogue
9. Subtitles
10. Animated
11. Selling Price
12. Age Rating
13. Supported Devices
 - a. Mobile
 - b. Oculus
 - c. HTC Vive
 - d. Playstation VR
 - e. other
14. Data Volume (GB)
15. Working Storage (RAM)
16. Location Based
17. Availability (Platform)
18. Festival Participation(s)

2) Type

Singleplayer	110
Multiplayer	2
Singleplayer & Multiplayer	4

3) Production Country

USA	42
Great Britain	11
France	8
Germany	5
Japan	5

4) Top 5 languages

English	101
French	6
Japanese	5
Chinese	4
German	3

5) Subtitles

English	17
Chinese	4
Japanese	4
French	2

D. Findings Tech/Art Experiences

Since this classification contains hybrid forms, 360-degree music videos and art/museum exhibitions, the findings are

6) *Data Volume*

0 - 2,5 GB	51
2,51 - 5 GB	22
5,01- 7,5 GB	3
7,5 - 10 GB	2
> 10 GB	6
N/A	32

7) *Working Storage RAM*

4 GB	38
8 GB	31
No informations	36
16 GB	7

8) *Supported Devices*

Oculus	61
HTC Vive	80
PlayStation	4
Other	25
Mobile	3

9) *Availability*

Steam	85
Oculus	26
Vive	26
PlayStation	5

10) *Age Rating*

N/A	107
12	6
3	5
6	2
13	2

11) *Selling Price*

0 - 2,5€	11
2,51 - 5€	14
5,01 - 7,5€	6
7,51 - 10€	12
> 10€	5
free	64

12) *Length*

0-9 Min.	4
10-14 Min.	8
15-20 Min.	8
21-30 Min.	5
31 Min.+	5

VII. CONCLUSION

Virtual Reality content has definitely increased over the last years. However, VR is still in its beginning and has not reached its peak yet. According to statista, the estimated worldwide gross for 2021 in VR is 19 billion US-dollar in. Furthermore, the sales are estimated to grow continuously over the next few years.¹ Hence, there is great potential for developing high quality content, defining VR media and improving hardware. As mentioned, VR games were much easier to classify than VR films. The differentiation between games and films in virtual reality is very difficult and has yet to be defined. Even

VR experts, such as Martin Stegmayer, find it complicated to differentiate between these two media and to define "immersion". Furthermore, Stegmayer is not surprised by the large increase of VR content productions. This also proves Gartner's study of 2018 where virtual reality is not mentioned in the hype cycle for emerging technology since VR is now an existing technology that finds consumers.² The overpowering number of VR games shows that games are much more common than VR movies among consumers and producers.

In the end, the main reasons that stop potential customers from buying VR goggles are they are simply not interested, they are too expensive or they suffer from motion sickness.³ Hence, VR still has to go through an extensive development process in order to reach more consumers and to make it to in-home entertainment.

ACKNOWLEDGMENT

The data for the updated VR Fact Sheet 2019 was gathered by Lena Watzek, Angela Jank, Emil Schönauer, Fabian Kozich, Alexander Kimla and Felix Fröhlich under the supervision of Prof. (FH) Mag. Dr. Kai Erenli.

"Thank you to Martin Stegmayer for the interview and providing us further information regarding the VR industry"

REFERENCES

(1) Statista:

<https://de.statista.com/statistik/daten/studie/318536/umfrage/prognose-zum-umsatz-mit-virtual-reality-weltweit/>

(2) Gartner's blog:

<https://www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-cycle-for-emerging-technologies-2018/>

(3) Nielsen, Thrive Analytics / Statista:
<https://www.statista.com/chart/9442/interest-in-virtual-reality/>

PLEASE NOTE

Sometimes the total number of the figures given in the individual tables do not always add up to the total number of films or games. The reason for this is that some tables only contain the top 3 or top 5 of a certain category. Furthermore, for some categories more than one data can be applied. For example, a game or film can contain more than one genre.

Visit: virtuellewelten.at for the VR Fact Sheet 2019