2020
NRP REPORT

GYEONGGI PROVINCE VR/AR BUSINESS SITUATION SURVEY

2020 NRP REPORT

GYEONGGI PROVINCE VR/AR BUSINESS SITUATION SURVEY

gca Gyeonggi Content Agency

NRP NEW REALITY PARTNERS

2020
NRP REPORT

GYEONGGI PROVINCE VR/AR BUSINESS SITUATION SURVEY

CONTENTS

01

2020 GYEONGGI PROVINCE VR/AR BUSINESS SITUATION SURVEY

INTRODUCTORY REMARKS

· The 2020 Gyeonggi Province VR/AR Industry Situation Survey is based on the analysis of 103 companies. These results were gathered through an online survey that was conducted from August 2020 to October 2020.

· A potential list of 403 Gyeonggi Province VR/AR industry related companies were selected by using the 2019 Gyeonggi Province VR/AR Industry Situation Survey, Gyeonggi Data Dream, online geographic information, and the latest business registration list.

· From the potential list of 403 businesses, 321 were VR/AR companies and 82 were VR experience centers. We were able to get in contact with 299 of these businesses however, only 87 VR/AR companies and 16 VR experience centers provided us with answer to the online survey. So, we received a total response rate of 34.4% of the possible 299 companies.

· The survey was based on the information gathered on August 31st, 2020.

· The contents of the survey were determined with classifications set by Gyeonggi Province and Gyeonggi Content Agency.

## VR/AR Industrial Development Classification System (Proposal)

Major Category	Specific Category	Explanation
SW/ APPS	Videos/Broadcast	Production and distribution of VRAR technology–based film/broadcast/advertisement content
	Advertising/ Smart Signage	Production and distribution of VRAR technology–based advertising/smart signage
	Live Event	Production and distribution of VRAR technology–based play/musical/performance content
	Games/Entertainment	Production and distribution of VRAR technology–based game content
	Healthcare	Production and distribution of VRAR technology–based health/medical content
	Social/Enterprise	VRAR technology–based social networking, individual/business activities (cooperative tools, etc.)
	Retail Commerce	VRAR technology–based shopping service
	Real Estate Commerce	VRAR technology–based real estate service
	Education/E-learning	VRAR technology–based education/ e–learning content/service (infant/ elementary/ middle/ high school/ occupation)
	Military	Production and distribution of VRAR technology–based military training contents and service
	Tourism	Production and distribution of VRAR technology–based tourism/travel services(excluding tourism shopping)
	Sports/Training	Production and distribution of VRAR technology–based sports and training
	Data/Analytics	Production and distribution of VRAR technology–based data visualization
	Journalism	Production and distribution of VRAR technology–based news
	Publication	Production and distribution of VRAR technology–based general books and magazines
	Comics/Webtoon/ Animation/Character	Production and distribution of VRAR technology–based cartoon/webtoon, animation, character
	Music	Production and distribution of VRAR technology–based sheet music, music wholesale/retail, performance, singing practice/ education
	Exhibition	VRAR technology–based art exhibition/ dosent
Solution/ Platform	Engineering/Tools	VRAR technology related work tools
	Systems	VRAR technology–based billing/payment, management system, transmission network
	Graphics	VRAR technology–based CG production, 3D audio production
HW	VRAR Display, Glass	Production and distribution of display and glass device R&D
	3D Lenses	Production and distribution of optical lens R&D
	Position/Room Tracker	Production and distribution R&D of location–based tracker
	Motion Sensor	Production and distribution of motion sensor R&D
	Camera	Production and distribution of 360, 3D camera R&D
	Haptic/Wearable	Production and distribution of tactile sense, R&D of wearable devices/parts
	Treadmill	Production and distribution of R&D for content/service devices
	Processor	Production and distribution of computer processing unit R&D
	Memory(DRAM/SSD)	Production and distribution of R&D on data/command/calculation/processing devices
Location Based	VR Arcade / Theme Park	VR Arcade, experience room, experience center

I. Gyeonggi Province VR/AR Business General Information

01. Business Locations

Businesses are Centered around Specialized Content Locations

Based on the responses, we analyzed that Suwon City (22), Seongnam City (19), and Goyang City (11) has the highest number of business locations. After careful analysis, it was determined that there are commonalities between these three regions. First, each of these areas have designated VR/AR, game, and broadcasting videos as a Regional Specialized Industry. Secondly, each region fosters and develops businesses through promotion agencies and start-up incubation programs.
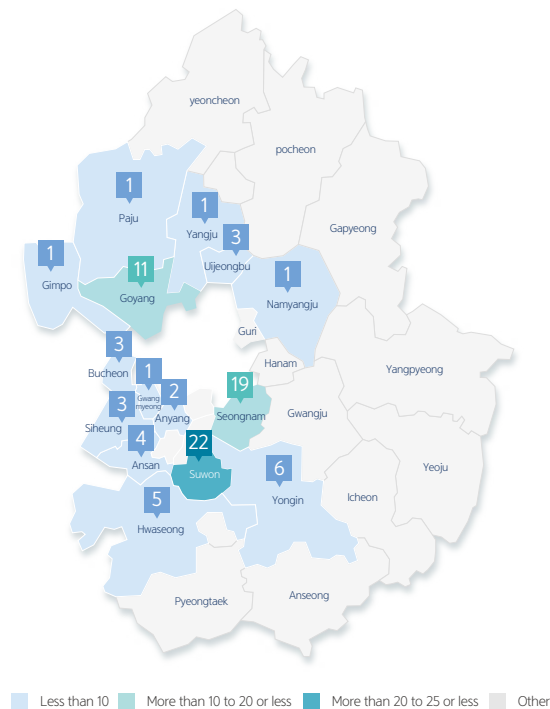
Location	Number of Businesses
Goyang	11
Gwangmyeong	1
Gimpo	1
Namyangju	1
Bucheon	3
Seongnam	19
Suwon	22
Siheung	3
Ansan	4
Anyang	2
Yangju	1
Yongin	6
Uijeongbu	3
Paju	1
Hwaseong	5
Etc.	4[1]

(n=87)

Less than 10 / More than 10 to 20 or less / More than 20 to 25 or less / Other

1) Companies that have moved to other regions, such as Seoul, based on the time of the survey.
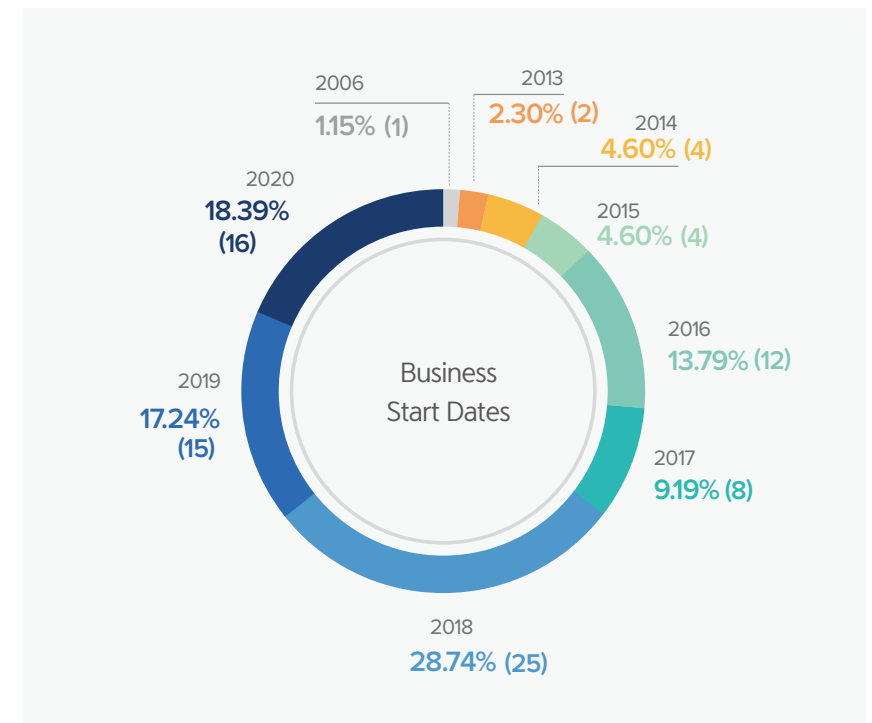
02. Business Start Dates

64.37% of the Total Number of Businesses that Started in the Last 3 years

In Gyeonggi Province, 28.74% of the businesses started in 2018, 18.39% in 2020, and 17.24% in 2019.

With proof of successful VR contents like "Beatsaber," many Korean software companies have joined and have been a stable part of the VR industry.

When GearVR was launched in 2015, there was a 4.6% increase in VR industry startups. Furthermore, with the launch of Oculus, HTC VIVE, and PSVR in 2016, 13.79% of the companies started their businesses. We can assume that these startups became part of the industry because of this increase in technology and hardware.

Business Start Dates

- 2006: 1.15% (1)
- 2013: 2.30% (2)
- 2014: 4.60% (4)
- 2015: 4.60% (4)
- 2016: 13.79% (12)
- 2017: 9.19% (8)
- 2018: 28.74% (25)
- 2019: 17.24% (15)
- 2020: 18.39% (16)

(n=87)

03. Types of Business

Key Startups of Gyeonggi Province VR/AR Industry are Contents Companies

At 38.8%, the key business sector of VR/AR companies was the production of VR/AR contents or services, while the distribution of VR/AR contents or services was 33.0%. 71.8% of the respondents develop and distribute their own contents. Considering that entry into the VR/AR industry was not as fast as that of the competition, the high proportion of software companies can be seen as a natural phenomenon.

There were three cases classified as "Other". Two of these cases were companies that produce, distribute, and sell VR/AR contents and hardware. The third case develops and supplies VR solutions. It is encouraging that there are companies that manufacture and sell hardware, which also creates great content. It is also noteworthy that there was an emergence of solution development companies.

VR arcade location was one of the most effected industries by COVID19, and during the actual field survey, it was confirmed that many businesses were temporarily closed.
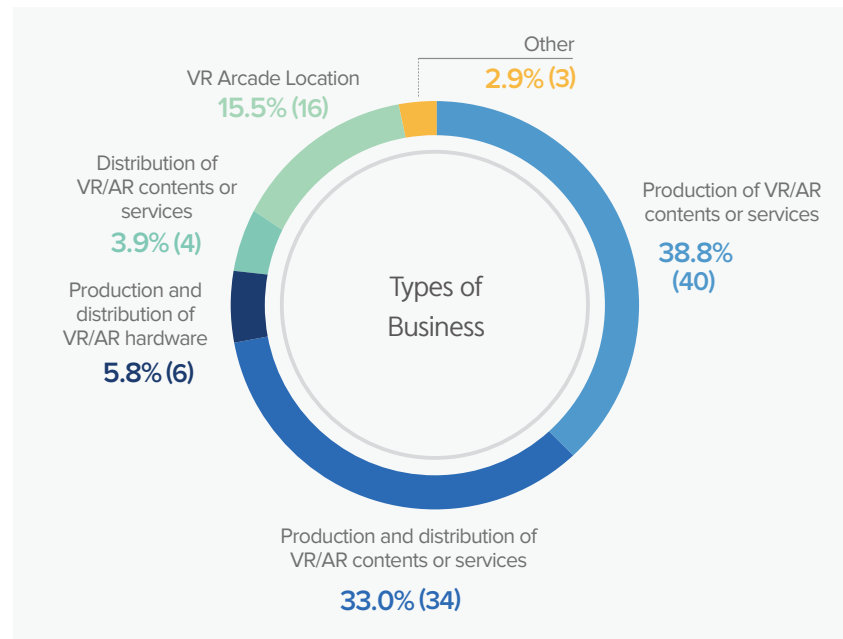

(n=103)

04. VR/AR Contents Categories

Game & Education Contents is Mainstream

Of the VR/AR contents companies in Gyeonggi Province, the largest portion is the game sector with 19.2%. At 14.1%, education and e-learning are the second highest sectors. Both the nationwide survey or the overseas market trends show that the preferred market in VR/AR contents is game and education. From the survey, companies in Gyeonggi Province are also pursuing projects in line with the overall industry trends.

Prior to COVID19, the VR/AR industry was focused on culture, tourism, and healthcare sectors, but now it is estimated that development related to productivity and auxiliary support has increased significantly.
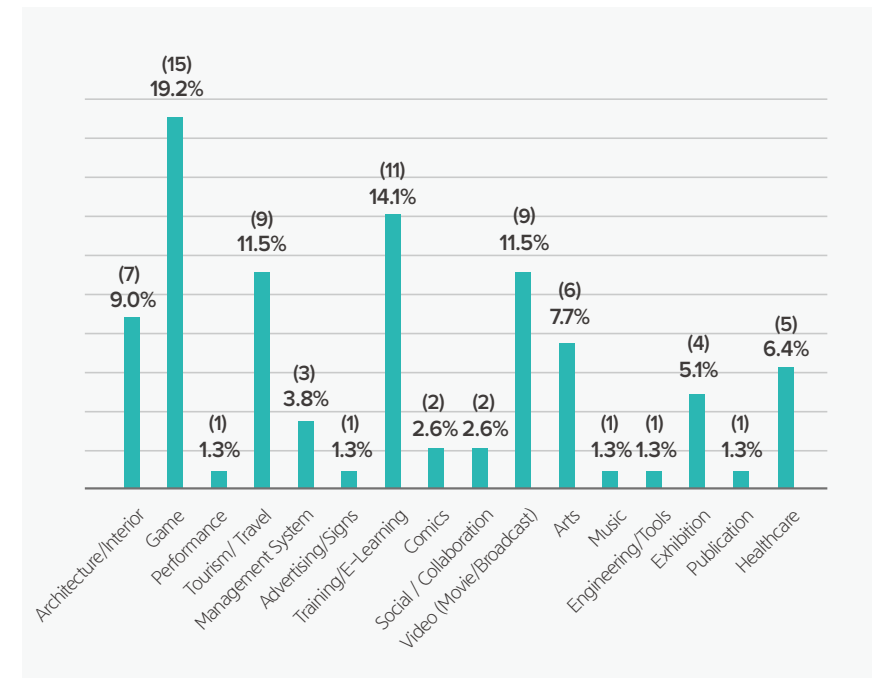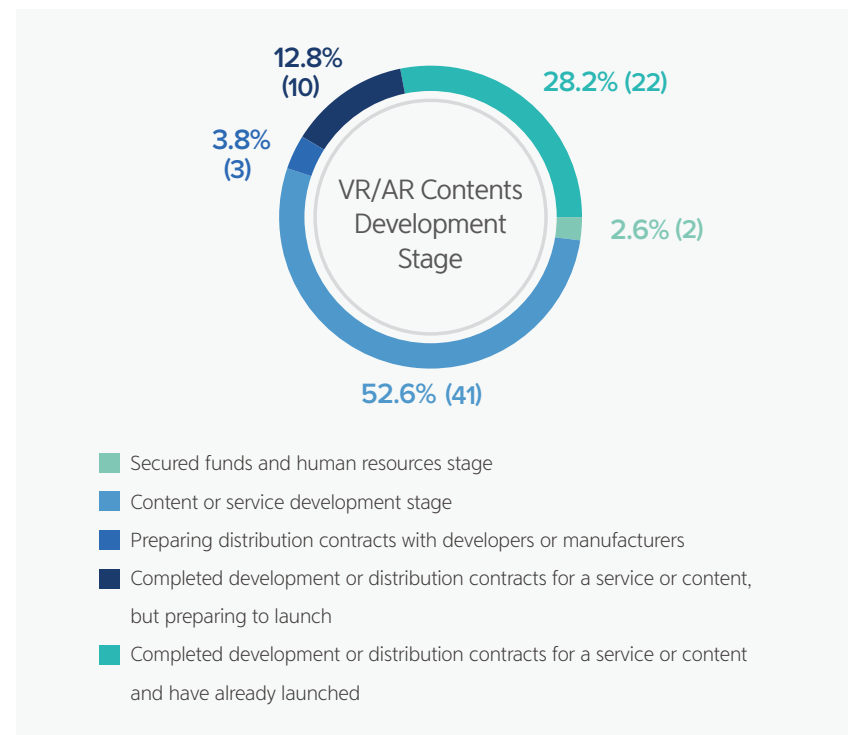

(n=78)

05. VR/AR Contents Development Stage

52.6% of Companies are at the Product Development Stage

The survey results showed that 52.6% of businesses in the Gyeonggi Province, who responded to the survey, are in the development stage of VR/AR contents or services. 28.2% of the companies have launched and commercialized their completed products and 12.8% of the companies with completed products have distribution contracts. On the other hand, 2.6% of the companies are in the early stages of acquiring human resources and funds.

VR/AR companies in the province are in various stages of the business, therefore it is necessary to establish and implement customized support policies according to each of their growth cycles.

12.8% (10)
28.2% (22)
3.8% (3)

VR/AR Contents Development Stage

2.6% (2)

52.6% (41)

- ◻ Secured funds and human resources stage
- ◻ Content or service development stage
- ◻ Preparing distribution contracts with developers or manufacturers
- ◻ Completed development or distribution contracts for a service or content, but preparing to launch
- ◻ Completed development or distribution contracts for a service or content and have already launched

(n=78)

06. VR/AR Hardware Category

Focus is in HMD & Display Device

Of the VR/AR companies in Gyeonggi province, 50% of the hardware manufacturers produce VR/AR displays, such as HMD and VR/AR display devices. 33.3% produce experimental devices and 16.7% create wireless HMD VR expansion devices for PCs. Due to the limited number of VR/AR manufacturing companies, we cannot provide further insight and analysis. However, requests through the promotion agencies have been received to expand the parameters of support for manufacturing companies and to increase the amount of support for those companies.

Experimental devices
33.3% (2)

Wireless HMD VR expansion devices for PCs
16.7% (1)

VR/AR Hardware Category

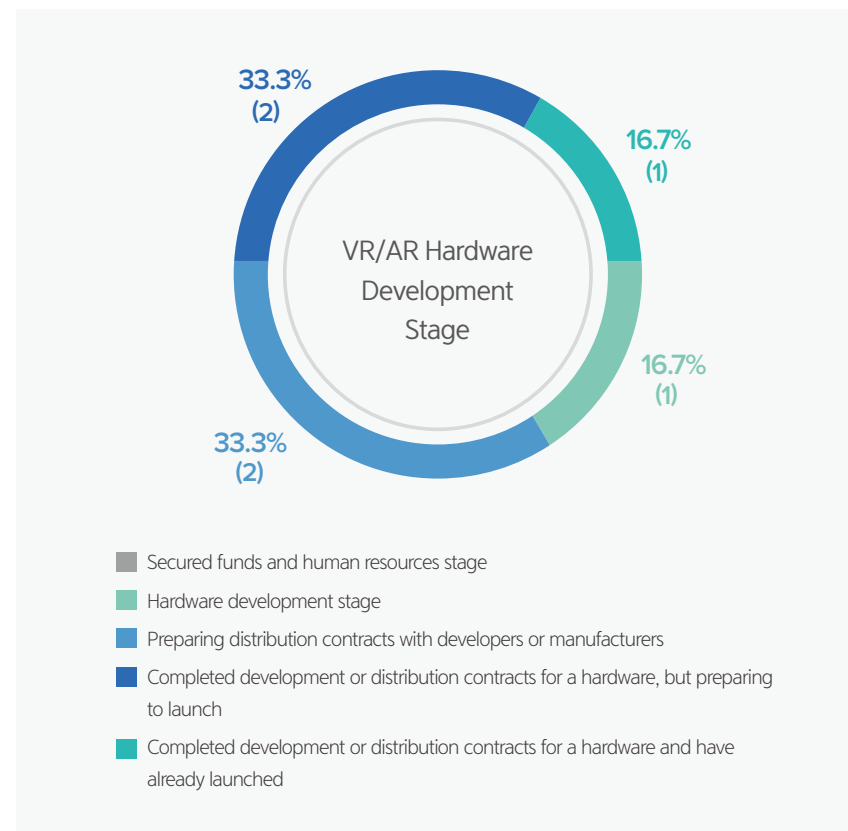HMD (VR/AR Display, Glasses)
50% (3)
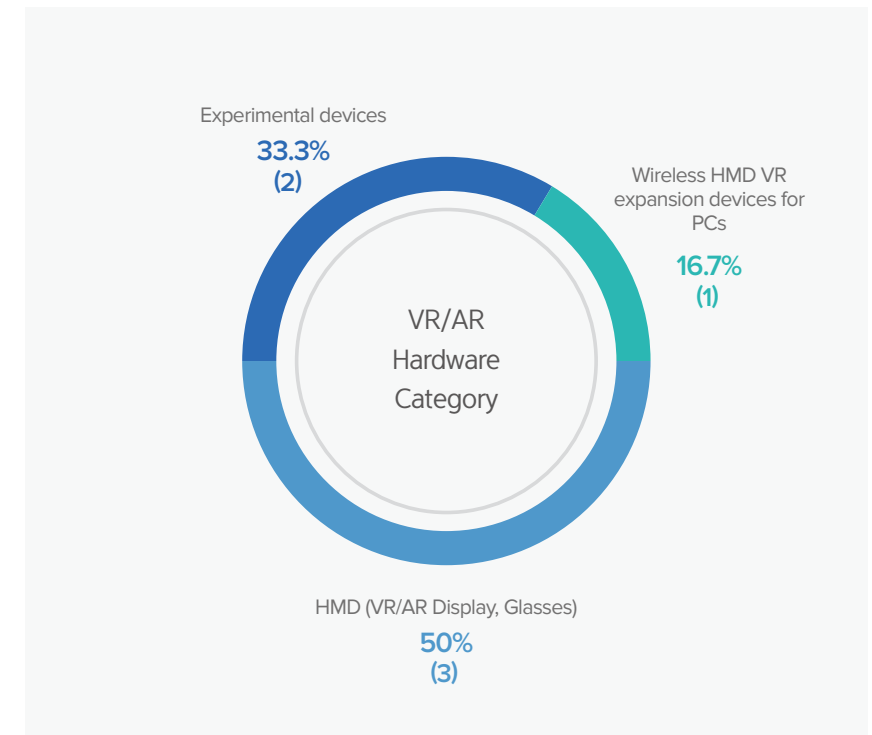
(n=6)

07. VR/AR Hardware Development Stage

50% of Companies have Distribution Contracts

The survey results showed that 33.3% of VR/AR hardware companies have completed development and are preparing distribution contracts. While 33.3% of the companies have already signed distribution contracts and are preparing to launch their products. 16.7% of the companies have already launched their products and 16.7% are in the hardware development stage.

33.3% (2)
16.7% (1)

VR/AR Hardware Development Stage

16.7% (1)
33.3% (2)

- Secured funds and human resources stage
- Hardware development stage
- Preparing distribution contracts with developers or manufacturers
- Completed development or distribution contracts for a hardware, but preparing to launch
- Completed development or distribution contracts for a hardware and have already launched

(n=6)

08. VR Game Genre Preference

45.7% Responded that Action is the Most Popular Genre

In VR arcades, 45.7% of the responses showed that the customers' preference for VR games was action. The action genre was defined as a real-time manipulation of the character's behavior and encompassed shooting, role-playing, and strategy.
The next preferred genre was the less difficult casual genre at 32.6% of the responses. This can be interpreted as a result of VR games that have held the similarities to traditional arcades and the focus of VR games for children in large kid's cafes.
10.9% responded that the horror genre, which includes room escape, was the customers' preference.

4.3% (2) **6.5% (3)**
10.9% (5)

VR Game Genre Preference

45.7% (21)
32.6% (15)

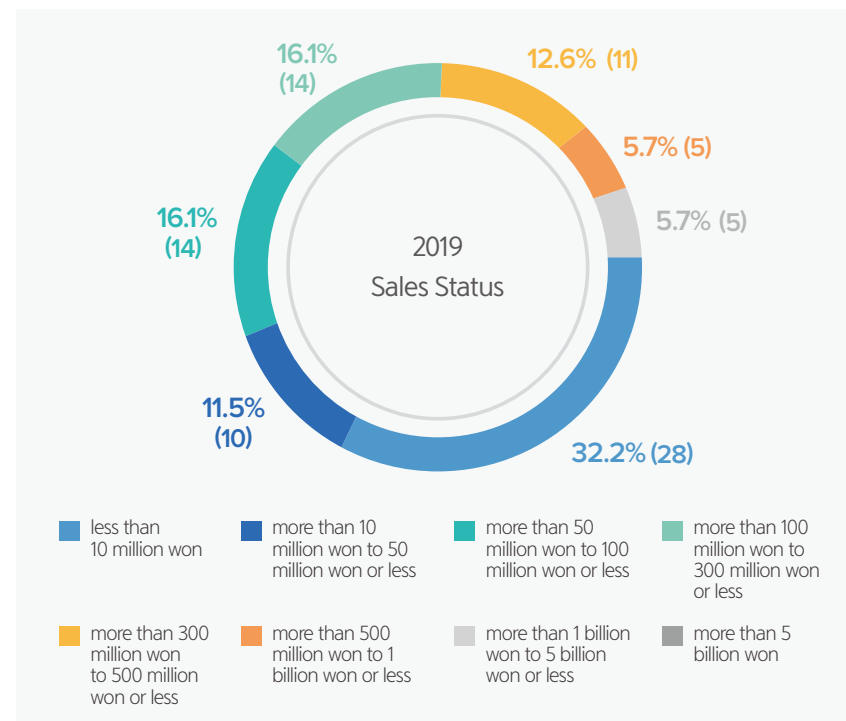- Action ■ Casual ■ Horror ■ Rhythm ■ Sports
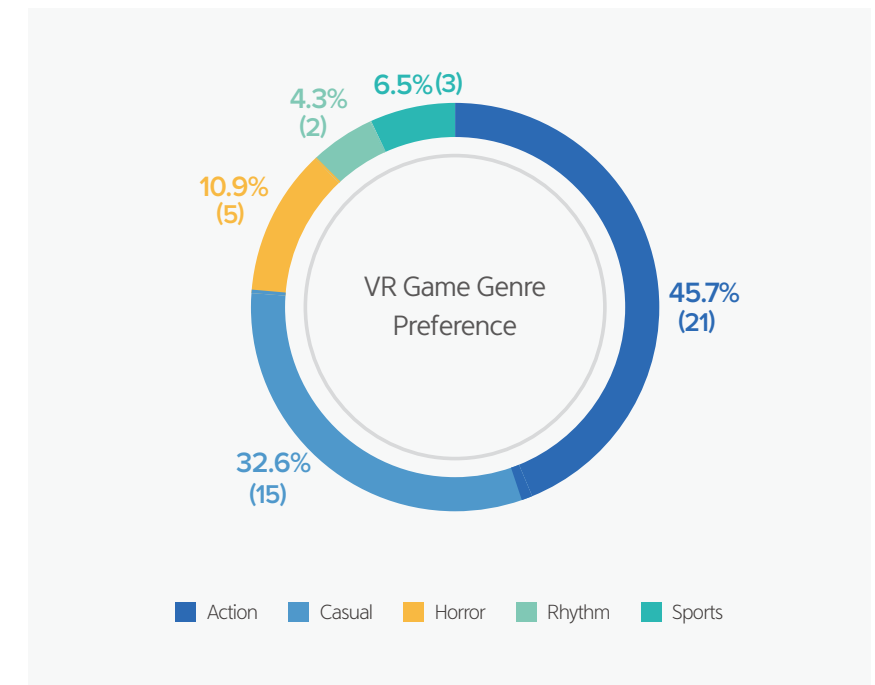
(n=16, Multiple responses)

09. 2019 Sales Status

59.8% of the Companies had Annual Sales of less than 100 million Won

In 2019, sales of less than 10 million won accounted for 32.2% of all respondents. The number of companies with sales of more than 50 million won to 100 million won or less was 16.1% and those with sales of more than 100 million won to 300 million won was also 16.1%. Given the overall level of sales, 75.9% of all respondents said they managed small development teams with sales of less than 300 million won. This is why various support measures and programs are needed to increase the sales of VR/AR companies.

Meanwhile, 5.7% of companies with their own operation and R&D achieved annual sales of more than 1 billion won to 5 billion won and 5.7% of companies achieved sales of more than 500 million won to less than 1 billion won, which can be seen as leading examples of the VR/AR business.

16.1% (14)   12.6% (11)
5.7% (5)
5.7% (5)
16.1% (14)
2019 Sales Status
16.1% (14)
11.5% (10)
32.2% (28)

- less than 10 million won
- more than 10 million won to 50 million won or less
- more than 50 million won to 100 million won or less
- more than 100 million won to 300 million won or less
- more than 300 million won to 500 million won or less
- more than 500 million won to 1 billion won or less
- more than 1 billion won to 5 billion won or less
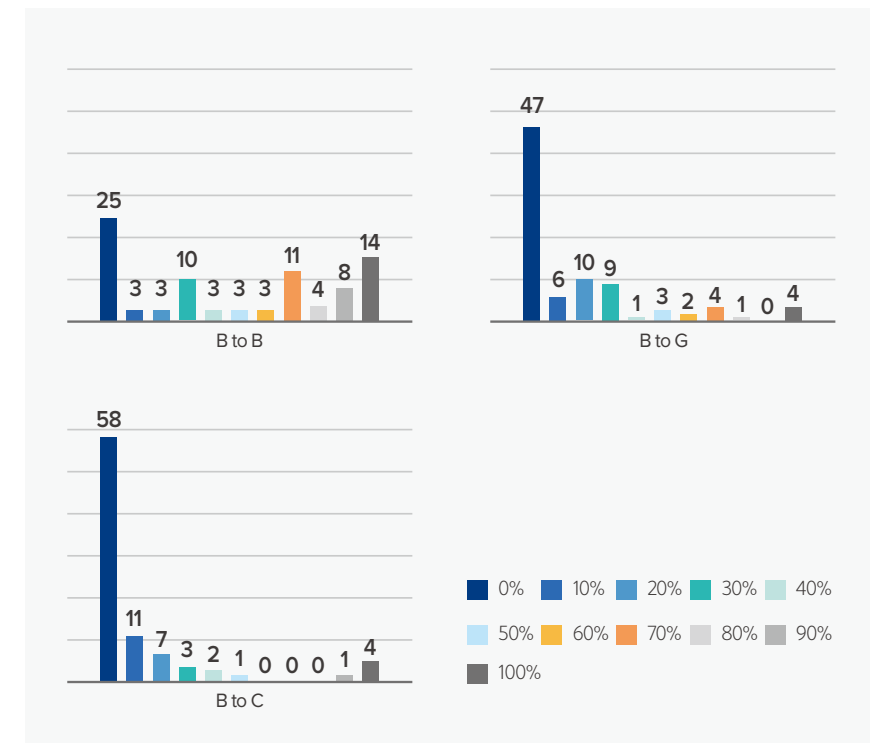- more than 5 billion won

(n=87)

10. 2019 Sales Ratio

Company Products and Services are Key Sources of Revenue

Looking at the proportion of sales by customer type, we can see that B to C sales to the general consumer are very low. There were 21 cases of less than 30% sales to consumers, which accounts for 24.14% of all respondents and 66.67% with no sales.

There were 39 cases, or 44.83% of the responses, where B to B sales accounts for more than 70 percent of a company's total sales. On the other hand, BtoG sales targeting the government were found to be 28.74% (25), less than 30% of total sales, and 54.02% (47) without sales.

As of 2019, company products and services are considered a major source of sales for VR/AR companies in the Gyeonggi Province and it is understood that there was a lower-than-expected sales effect in the B to G sector.

B to B: 25 3 3 10 3 3 3 11 4 8 14
B to G: 47 6 10 9 1 3 2 4 1 0 4
B to C: 58 11 7 3 2 1 0 0 0 1 4

- 0%
- 10%
- 20%
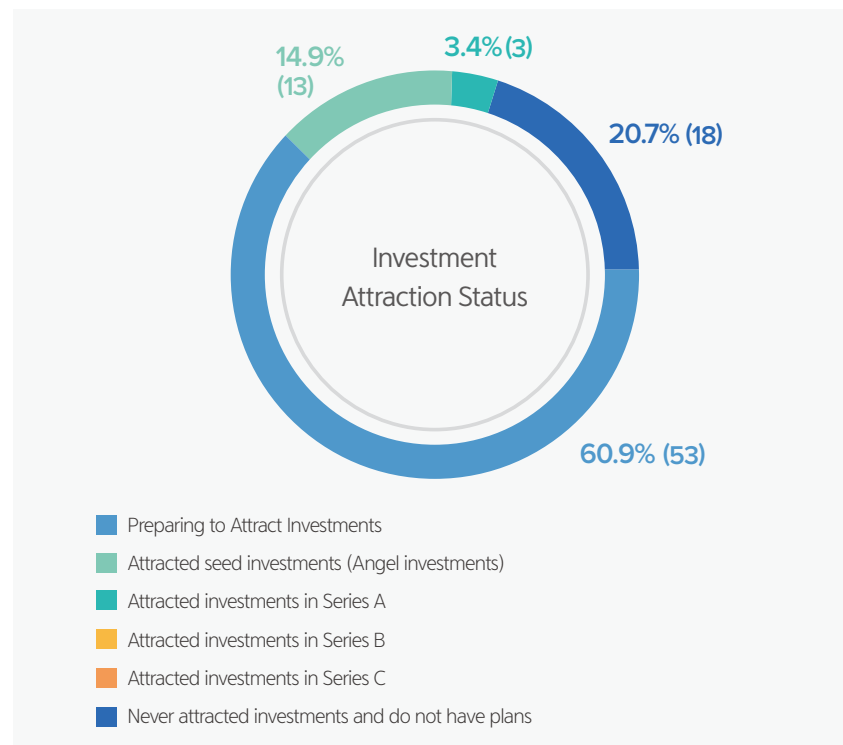- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

(n=87)

11. Investment Attraction Status

18.3% of the Companies have Succeeded in Attracting Investments

Among VR/AR companies in the Gyeonggi province, 18.3% of all respondents said they succeeded in attracting investments.

To further explain, 14.9% have succeeded in attracting a seed investment (Angel investment). 3.4% succeeded in attracting for their Series A.

Many private investments towards the VR/AR sector have become sensitive over the past year or two and new investments are expected to decrease due to the COVID19. However, due to the surge of demand for "non-face-to-face" interaction, attention to the VR/AR industry is rising. Therefore, it is necessary for the government and promotion agencies, as well as the companies themselves, to actively pursue investment-linked programs, so that competitive companies can endure this period.
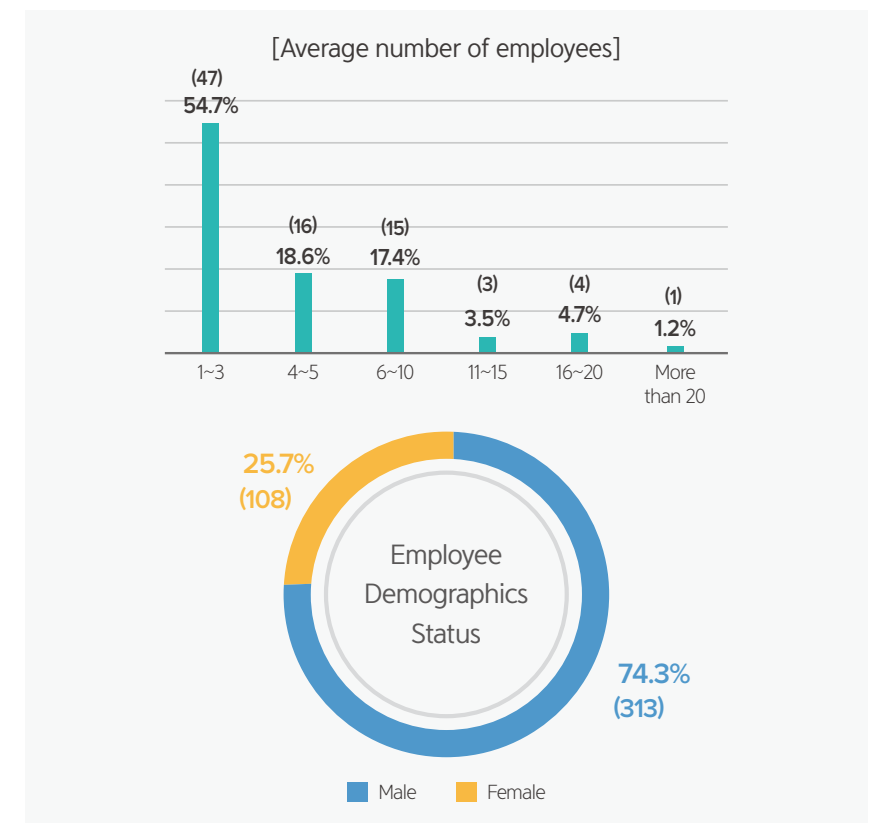

Investment Attraction Status

14.9% (13)
3.4% (3)
20.7% (18)
60.9% (53)

- ■ Preparing to Attract Investments
- ■ Attracted seed investments (Angel investments)
- ■ Attracted investments in Series A
- ■ Attracted investments in Series B
- ■ Attracted investments in Series C
- ■ Never attracted investments and do not have plans

(n=87)

12. Employee Demographics Status

VR/AR Development Teams are Centered on Experienced Members

The number of employees in the VR/AR industry totaled at 421, with an average of 4.8 VR/AR professionals per company. Of the total number, 313 were male and 108 were female, or 74.3% and 25.7%.

When looking at the demographics according to each age group, 129 people, or 30.6%, are between 29 years old or younger, 88 people, or 20.9%, are between 30 to 34, 83 people, or 19.7%, are between 35 to 39, 105 people, or 24.9%, are between 40 to 49, and 16 people, or 3.8%, are 50 or older.


[Average number of employees]

	(47) 54.7%	(16) 18.6%	(15) 17.4%	(3) 3.5%	(4) 4.7%	(1) 1.2%
	1~3	4~5	6~10	11~15	16~20	More than 20

Employee Demographics Status

25.7% (108)
74.3% (313)

- ■ Male ■ Female

(n=87)

II. COVID19 and the VR/AR Industry

01. Industry Outlook

Opportunities that have been brought on by "Non-Face-to-Face" Interaction Consumer Experience

COVID19 has brought changes throughout our daily lives. Among them, a keyword "non-face-to-face" emerged as a major topic in the post-COVID19 era and the prospect of bringing new vitality to the development of the VR/AR industry. 93.1% of the respondents agreed with this point of view, which can also be interpreted as reflecting industry expectations that changes in the environment will serve as an opportunity for industrial development.

Vitalizing the COVID19 and VR/AR industries

93.1% (81)

6.9% (6)

■ Yes, I agree.
■ No, I disagree.

(n=87)
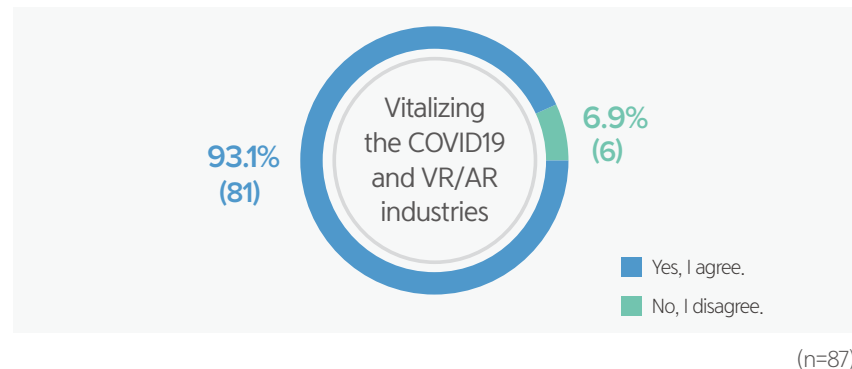
Reasons for Agreement	Reasons for Disagreement
· Due to limitations in physical space, increase in need for non-face-to-face tools through virtual reality	· Averse to using VR/AR devices even after a certain period of time
· Due to COVID19, increasing consumer experience and reducing consumer resistance to virtual reality	
· Role as replacement for existing face-to-face services and other physical experiences	· A lack of technology and markets that are still unfamiliar to consumers
· Due to increased indoor activities, increased demand for digital content	
· Expanding the infrastructure of the VR/AR industry through the advancement of technology and hardware	· Non-face-to-face consumer experience and development of the XR industry are mutually exclusive
· Increased awareness of realistic content	

02. Support Policy

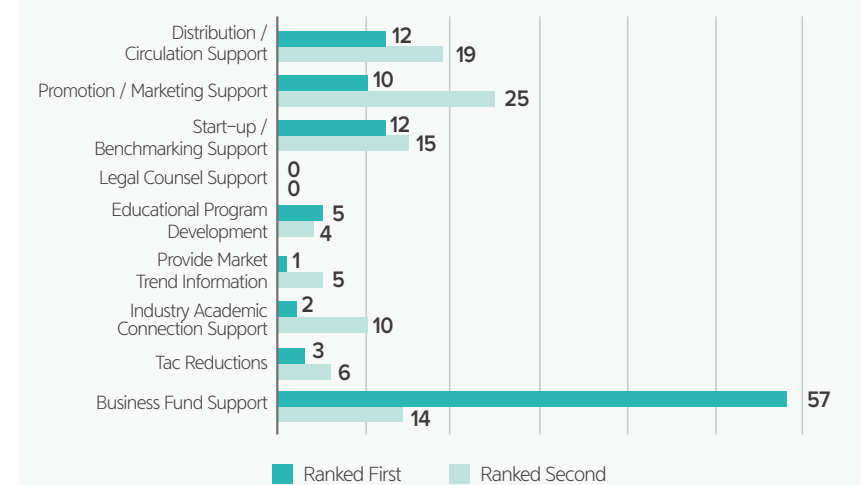### Support Policies are Necessary for Companies to Survive

Since the full-fledged start of the VR/AR industry began in 2015, local companies in Gyeonggi Province have focused on developing contents in the game and education sectors. However, the rate of commercialization of household HMDs is slower than expected and the survivability of XR companies is being threatened by the COVID19's direct hit on the offline experience business. In this current situation, 57 respondents (65.5%) of the total respondents chose "Funding Support Policy," as the top priority for the support measures needed to develop the XR industry.

When taking a closer look at the second ranked choice of support measures, these results become more self-evident. As you can see, in Promotion/ Marketing Support (1st: 10, 2nd: 25), Distribution/ Distribution Support (1st: 12, 2nd: 19), and Start-up/ Venture System Support (1st: 12, 2nd: 15), there is a clear demand for marketing and start-up system support for companies in the early stages, as well as securing sales channels to generate profit. All of these support measures are directly related to the survival of companies and reflect the crisis that VR/AR companies in the Gyeonggi Province are currently experiencing.

Other comments freely expressed by respondents confirmed the following requests at the site:

· Due to the constantly changing nature of VR/AR, small and medium sized businesses need support centers to help improve their hardware capabilities
· Expanding the scale and duration of content production support so that companies can reliably move from development to commercialization and finally generate results.
· Inducing the expansion of the XR market through proactive government tasks and business initiatives.
· Build an environment where various industry stakeholders, contents and hardware developers, R&D, and non-face-to-face service experts can gather.

[Preferences for VR/AR Business Support Policy]

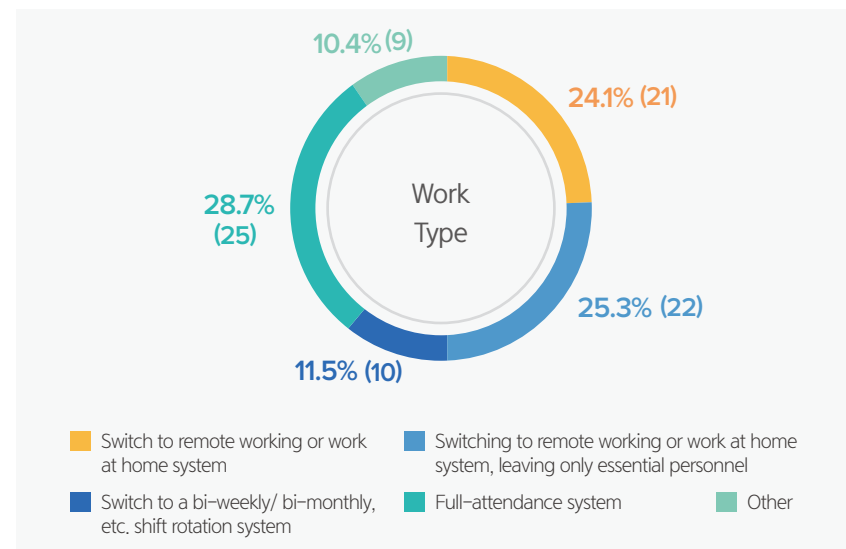|	Ranked First	Ranked Second
Distribution / Circulation Support	12	19
Promotion / Marketing Support	10	25
Start-up / Benchmarking Support	12	15
Legal Counsel Support	0	0
Educational Program Development	5	4
Provide Market Trend Information	1	5
Industry Academic Connection Support	2	10
Tac Reductions	3	6
Business Fund Support	57	14

(n=87, Multiple response)

03. Work Type

Switching to Working Remotely

The COVID19 has led to a shift in working patterns to work remotely or work from homes, so that they can avoid meeting places and refrain from going out. In response, VR/AR companies in the Gyeonggi Province, 81.3% agreed with this trend.

To further explain, 24.1% of the respondents switched completely to working from their homes and 25.3% switched to working remotely except for essential personnel. Among the respondents, 11.5% said they adopted a shift rotation system, while 10.4% said that employment schedules were customized to the company's needs or left the choice up to the employees. Due to the relatively relaxed nature of the IT industry, regardless of workplace and time, the majority of companies were actively cooperating with the government's quarantine policies and overcoming COVID19.

10.4% (9)
24.1% (21)
28.7% (25)
Work Type
25.3% (22)
11.5% (10)

■ Switch to remote working or work at home system
■ Switching to remote working or work at home system, leaving only essential personnel
■ Switch to a bi-weekly/ bi-monthly, etc. shift rotation system
■ Full-attendance system
■ Other

(n=87)

As a result of asking companies the reasons for maintaining a full-attendance system, it was gathered that there was inevitable on-site work for hardware manufacturers or lack of in-house systems for remote work. Others have also maintained a full-attendance system due to the problems that came from remote communication or reduced work efficiency. These locations thoroughly carried out quarantine rules in order to keep the work environment safe.

04. Work Environment in Post-COVID19

62.3% Intend to Maintain Remote Working Systems

Among the companies that switched to working remotely or from home, 62.3% of all respondents said they were willing to maintain the remote working system even after returning to their daily lives. 37.7% of all respondents said they will return back to the full-attendance system. Companies who expressed their intent to maintain the remote system stated that work efficiency has increased due to the remote work system, safety has increased in terms of health and sanitation because employees do not have to meet in crowded places, and operating costs decreased due to the reduction in office space.

COVID19 made it inevitable for companies to work remotely however, companies were able to experience positive effects, such as improved work efficiency and increased employee satisfaction due to flexible work schedules.

37.7% (20)
Intentions to maintain working remotely
62.3% (33)

■ Yes, I intend keep this system.
■ No, I intend to return back to the full-attendance system.
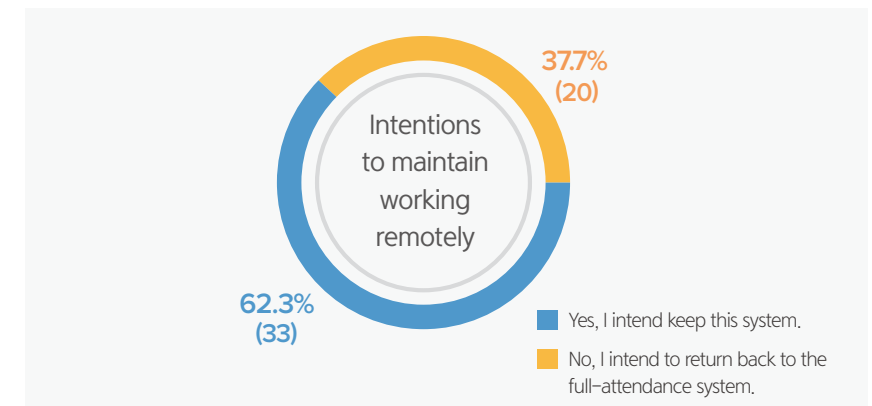
(n=53)

On the other hand, companies who expressed their intention to return to the full-attendance system commented that the efficiency of their work was rather low due to the difficulty of immediate communication and the lack of in-house systems for remote work. Furthermore, the companies expressed the inconvenience of communication when it was needed to work together. Job training and education for newer employees was difficult.

After a certain period of adaptation, it is assumed that these diverse work patterns brought by COVID19 is expected to remain in the post-COVID19 era. Therefore, it will be necessary to pay attention to the demands for remote work systems for small businesses and to think about various support measures.
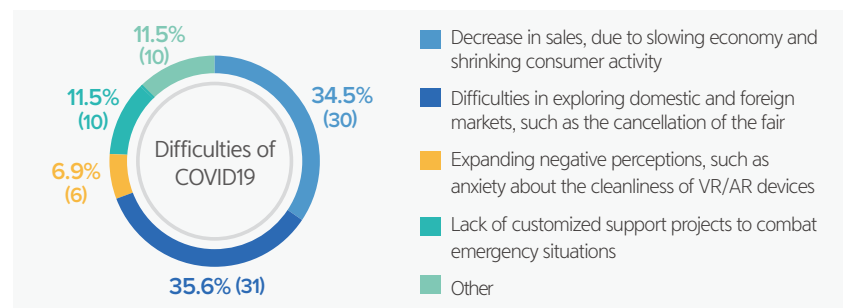
05. Difficulties of COVID19

Difficulties with market exploration and reduced sales

Due to the COVID19, 35.6% of the companies chose "difficulty in exploring domestic and overseas markets, including cancellation of expos", as the top difficulties. In line with the global efforts to prevent the spread of COVID19, the hosting of events and events such as fairs, game shows, and exhibitions have been delayed or changed to a remote system. In the case of VR/AR products that are combined with hardware, the main routes for securing new sales are virtually blocked. This will make it very difficult to increase sales and secure new sources of revenue for a considerable period of time.

34.5% of the companies cited a "decrease in sales due to a slowdown in the economy and decrease in consumer activity". Although the demand for digital contents has increased due to increased indoor activity, the overall economic downturn and decrease in consumer spending has made it harder for these companies.

Competition in the market has become fiercer than ever, because of the falling number of imports. Also, as the economy is feeling the effects of COVID19, there is a decline in individual earnings thus leading to shrinking consumer activities. The small and medium-sized businesses with weak foundations that are vulnerable to changes in the external environment have felt these effects the most.

However, some companies, that develop digital content, have voiced that they have not felt the effects of COVID19 and the volume of inquiries has actually increased due to increased demand of non-face-to-face services.

- **11.5% (10)**
- **11.5% (10)**
- **6.9% (6)**
- **34.5% (30)**
- **35.6% (31)**

Difficulties of COVID19

- Decrease in sales, due to slowing economy and shrinking consumer activity
- Difficulties in exploring domestic and foreign markets, such as the cancellation of the fair
- Expanding negative perceptions, such as anxiety about the cleanliness of VR/AR devices
- Lack of customized support projects to combat emergency situations
- Other

(n=87)

The following opinions were received on how to support the difficulties caused by COVID19.

· Register and broker VR/AR content production services on integrated platforms, such as the Public Procurement Service.
· Integrated networks are needed for domestic and foreign consumers and suppliers to check each other's information.
· Connect VR/AR content with KOTRA, Korea International Trade Association, etc.
· Require improved regulations on VR/AR hardware tailored to amusement park rides.
· Various emergency support needs to be provided to reduce operating expenses, such as production subsidies, labor costs, tax breaks, and office space support.
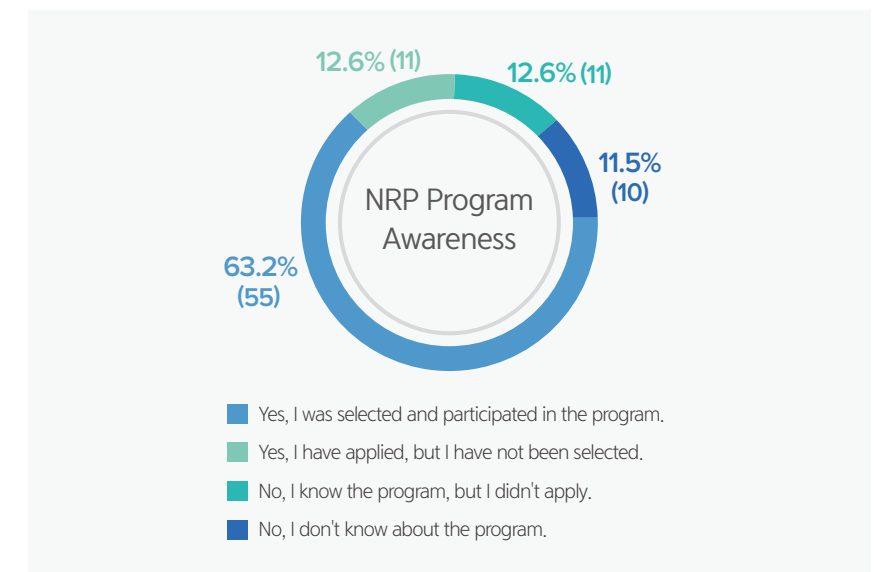
Ⅲ. Corporate Support

01. NRP Program | Awareness

88.5% View the NRP Program as the Main Representative of the Acceleration Programs in Gyeonggi Province

The Gyeonggi Content Agency of the Gwanggyo Cluster is operating a New Reality Partnership (NRP) program to intensively nurture VR/AR companies in the Gyeonggi Province. Over the past five years, about 130 companies have graduated from the NRP program and this year, 30 companies selected through a fierce competition have received production subsidies, office space, and mentoring.

88.5% of all respondents were aware of the NRP program, which has become a representative VR/AR acceleration program in Gyeonggi Province. 63.2% were companies that were selected and received support from the NRP, 12.6% applied but were not selected, and 12.6% knew about the program but did not apply.

Many companies that knew about the program but did not apply because of the complexity of the application process. This point is a constant issue for the majority of government-funded project. Therefore they have continued to place efforts into simplifying the process and making a practical assessment however, the changes must begin with the core processes of the system.

- **12.6% (11)**
- **12.6% (11)**
- **11.5% (10)**
- **63.2% (55)**

NRP Program Awareness

- Yes, I was selected and participated in the program.
- Yes, I have applied, but I have not been selected.
- No, I know the program, but I didn't apply.
- No, I don't know about the program.

(n=87)

02. NRP Program | Reason for Applying

Most Popular Reason is "Fund Support"

When companies were asked about their motivation to apply for the NRP Program, 83.3% (55) chose 'fund support' as the top reason. It can be interpreted that a company that has just entered the VR/AR market at the development stage will need to secure funds, in order to reach a point of generating revenue.

Other items usually had similar levels of response rates. For example, support for small development teams with office space or VR/AR Facility Support, requests for support with content development, and assistance with overseas advancement support or marketing support.

The NRP Program provides different types of support for businesses in different stages of their business. Therefore, we can see a variety of responses from companies in their respective fields.
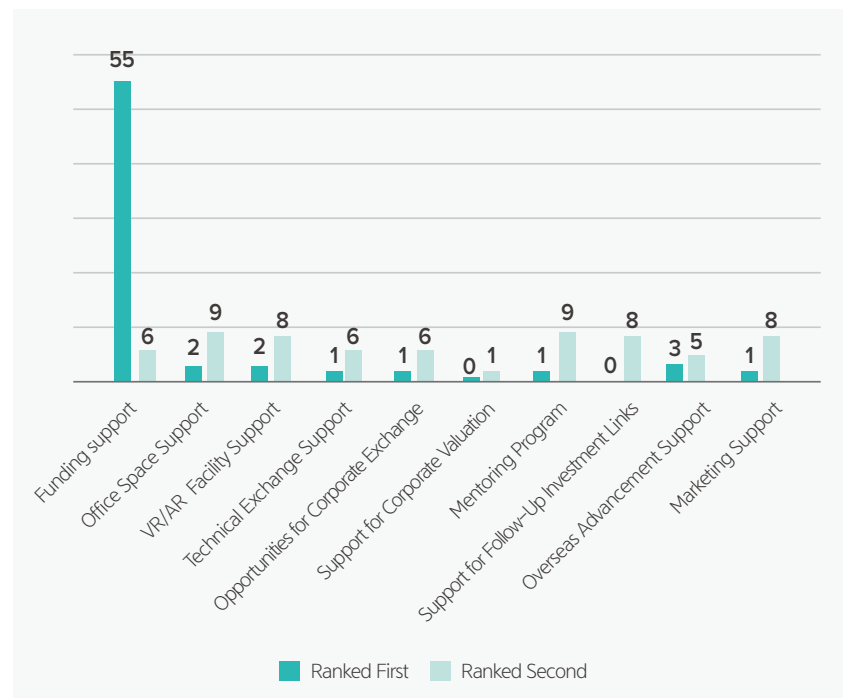
(n=66, Multiple responses)

03. NRP Program | Useful Support Programs

Fund Support and Mentoring Programs

Companies that have participated in the NRP program chose 'fund support' as the most useful support category. The results of the responses were quite clear and unanimous. The responses to other categories are largely the same and the results vary depending on the actual needs of each company.

However, the "mentoring program" was the second-ranked response and compared to the results of the responses to other categories, it can be inferred that the beneficiary companies' satisfaction with the mentoring program was higher than expected.
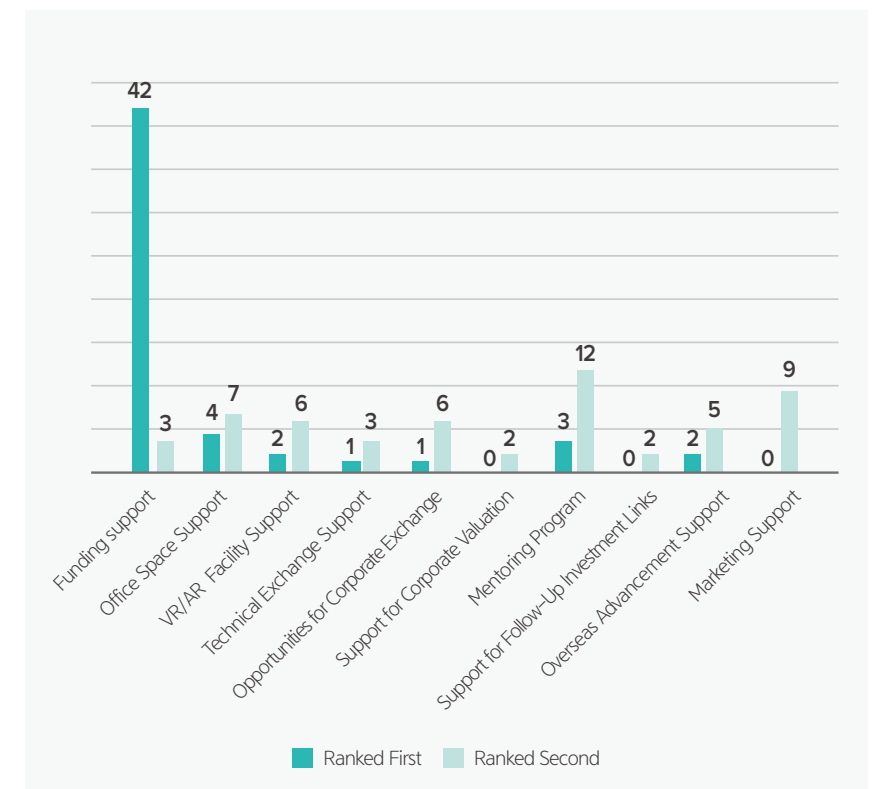
(n=55, Multiple responses)

04. NRP Program | Areas of Improvement

Need to Expand the Scale and Duration of Support

A survey of companies with experience in the NRP program showed that 16 respondents chose "Fund Support" needed to be the area of improvement. "Fund support" was the main motivation for companies to participate in the support program and also the most helpful item for participating in the program. However, the reason why the "Fund Support" was selected for an area of improvement was because the funding amount is insufficient to prepare for the development or commercialization of prototypes, as shown by the answers to other questions.

Fund support was followed by 12 respondents who chose "support for connections with follow-up investments" and 11 respondents chose "marketing support." Due to the decreasing number of private investments in the VR/AR sector, companies are asking the government and other support agencies to be more active in investment-linked activities in order to secure continuous R&D and operating funds. In the case of marketing, it was difficult to confirm the effects of marketing, so a steady and consistent promotion process was requested for improvement. Many others expressed regret over the lack of exchanges between NRP companies. Companies in similar stages and industries can share concerns and come up with solutions to solve these problems together. However, there are limited or no opportunities to do this.

Funding support — 16
Office Space Support — 3
VR/AR Facility Support — 2
Technical Exchange Support — 3
Opportunities for Corporate Exchange — 8
Support for Corporate Valuation — 3
Mentoring Program — 5
Support for Follow-Up Investment Links — 12
Overseas Advancement Support — 6
Marketing Support — 11
Other — 10
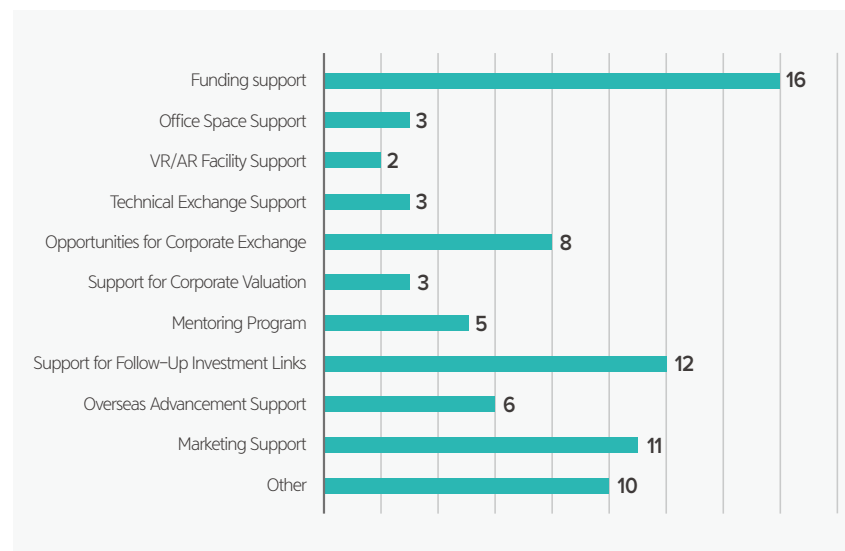
(n=55, Multiple responses)

05. VR/AR Corporate Development Support Requirements

Promotion and Sales of VR/AR Products

Regarding the most necessary support requirements to foster VR/AR companies in the Gyeonggi Province, many of the respondents confirmed that they most urgently need to secure capital, or "Financial Support."

What's interesting is that the second-ranked response results showed similar response rates in the categories of "Technology Development Support," "Project Matching Support," "Marketing/Promotion Support" and "Market Development Support." Most of the VR/AR companies that participated in the survey are estimated to have more than one VR/AR product and generally started their business between 2018-2020. With this background information, it can be seen that in addition to the basic demand for strengthening corporate capabilities, there is a lot of interest in the dissemination of developed products. Helping to build relationships with real demand sources, finding ways to publicize the products, and ultimately sell these products are the requests that these companies are asking from the government and support agencies.

Other comments received included support for industry-academic introductions to solve job openings for small and medium-sized companies, ongoing operation of testbeds that have established VR/AR and 5G environments, establishment of networking showrooms for hardware and software demonstrations, and active exploration of B to G markets.
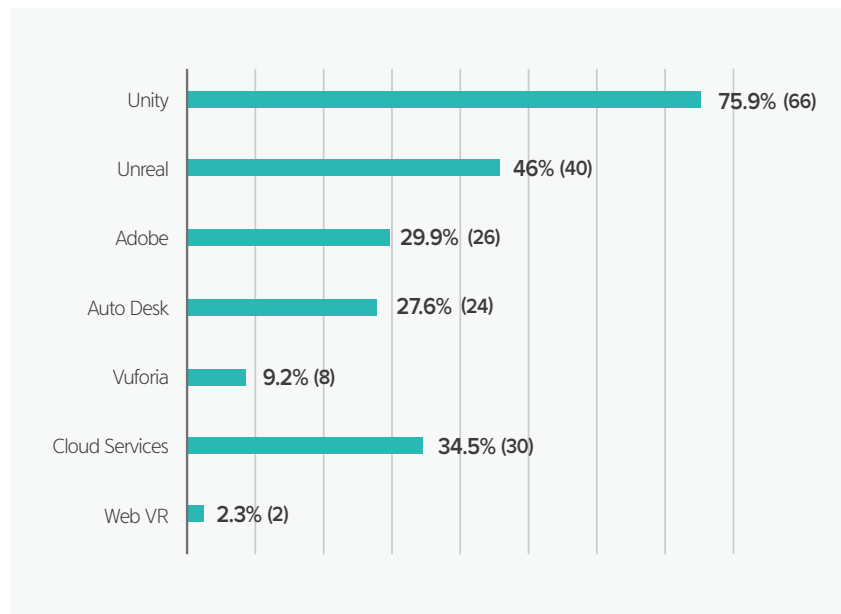

Funding support — Ranked First 72, Ranked Second 2
IP Supply — 1, 4
Publishing support — 1, 9
Technical Development Support — 2, 17
Human Resources Support — 1, 7
Project Matching Support — 4, 16
IR and consulting support — 0, 2
Marketing/Promotion Support — 2, 9
Networking Support — 0, 1
Market Development Support — 3, 16
Office space support — 1, 4

■ Ranked First ■ Ranked Second
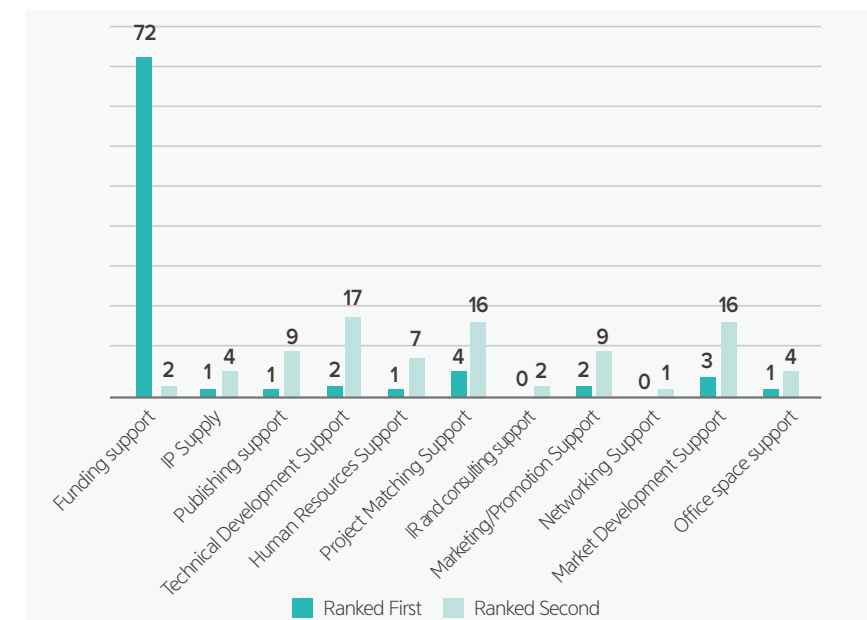
(n=87, Multiple responses)

06. Demand for Development Software

High Preference for "Unity"

When asked "What is the most needed development software and technical support, 75.9% of companies chose 'Unity'. 46% of the companies chose "Unreal," indicating that demand for the engine sector is overwhelming compared to other items. In addition, 29.9% and 27.6% of the companies selected graphic tools, such as "Adobe" and "Auto Desk." 34.5% of the companies chose "Cloud Service".
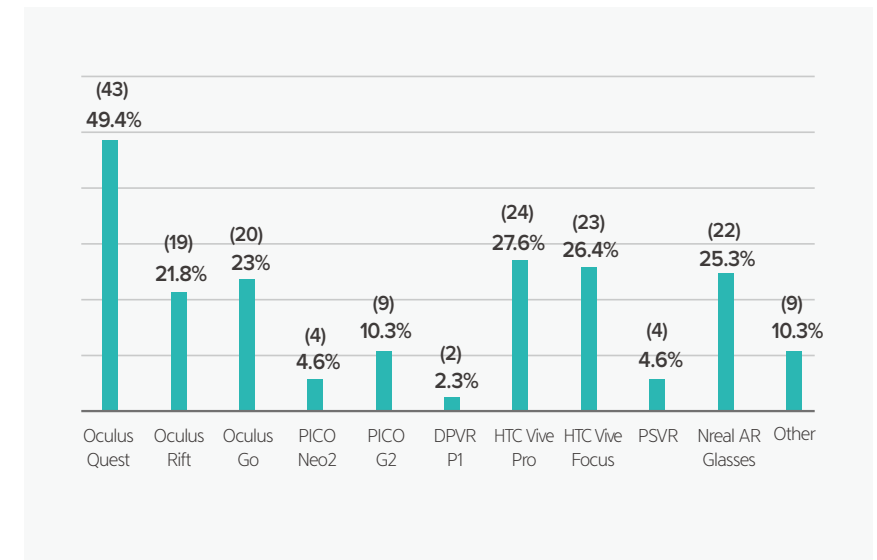

Unity	75.9% (66)
Unreal	46% (40)
Adobe	29.9% (26)
Auto Desk	27.6% (24)
Vuforia	9.2% (8)
Cloud Services	34.5% (30)
Web VR	2.3% (2)

(n=87, Multiple responses)

07. Hardware Development Demand

New Rising Star Nreal AR Glass, Uncompetable Oculus

Among VR/AR hardware, 49.4% of the companies would like to be supplied with the recently released "Quest" series, a 6DoF product by Oculus, which has high global sales. When looking at hardware by different manufacturers, the highest demand was for Oculus products, which holds the top global sales position in Standalone HMD, while HTC's "VIVE" products were selected for PC-type devices.

In addition, 25.3% were interested in the Nreal AR Glass, which was first released by LG in August and is considered to be leader in the AR industry. We were also able to confirm that hardware such as Microsoft's Hololense 2 and HP's Reverb G2 are hard to find in Korea but resonated in the global market.

Oculus Quest	(43) 49.4%
Oculus Rift	(19) 21.8%
Oculus Go	(20) 23%
PICO Neo2	(4) 4.6%
PICO G2	(9) 10.3%
DPVR P1	(2) 2.3%
HTC Vive Pro	(24) 27.6%
HTC Vive Focus	(23) 26.4%
PSVR	(4) 4.6%
Nreal AR Glasses	(22) 25.3%
Other	(9) 10.3%

(n=87, Multiple responses)

08. Participation Level in Promotion Agency Programs

Average 1.5 Companies Participate and Production Support of 102 million won

In order to find out the levels of participation among the different VR/AR promotion agencies, eight promotion agencies were selected and presented to the companies. From the total number of companies, they participated in an average of 1.5 support projects in 2019 with the amount of 62 million won being received by the companies. Meanwhile, 37.9% of respondents did not participate in any of the support projects.

When analyzing the number of participants for each agency, "Gyeonggi Content Agency" was able to secure the most responses with 41 projects, followed by the "Korea Creative Content Agency" with 28 cases. Companies that responded with "Other" are believed to have taken part in local government and private-sector support projects.

Average number of participants in support projects for 2019
1.5개

Average number of support amount for 2019
1억 200만원
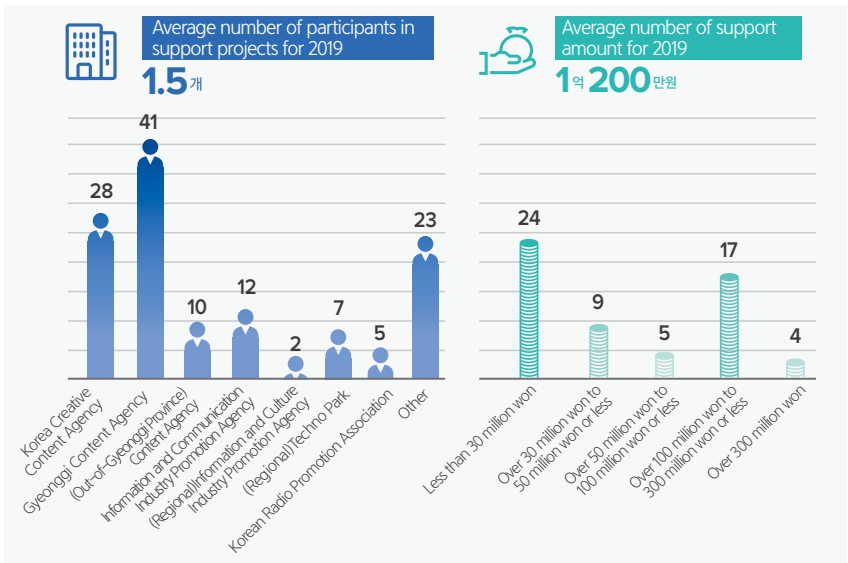
(n=87)

Number of participation from promotion agencies/support projects	0	1	2	3	4	More than 5
Korea Creative Content Agency	60	24	4	0	0	0
Gyeonggi Content Agency	47	35	5	1	0	0
(Out-of-Gyeonggi Province) Content Agency	78	7	3	0	0	0
Information and Communication Industry Promotion Agency	77	8	1	3	0	0
(Regional)Information and Culture Industry Promotion Agency	85	2	0	0	0	0
(Regional)Techno Park	80	5	1	1	0	0
Korean Radio Promotion Association	83	5	0	0	0	0
Other	64	16	3	3	0	1

02

"Changes and Opportunities
that COVID-19 has brought
to the VR/AR Business"

Listening to Global XR Leaders

"Changes and Opportunities that COVID-19 has brought to the VR/AR Business"

Listening to Global XR Leaders

It is not an exaggeration to state that the world is now divided between the pre and post COVID-19 pandemic. Our world and society, in general, has changed in the recent months. In particular, the new normal of an era where contact is limited and "Untact" (no or limited contact) is now a reality. The boundaries between reality and virtual have been blurred due to the spread of this Untact culture. This has also led to an expansion in various industries, as companies are venturing into the Extended Reality (XR).

According to the global research firm "Statista," the global VRAR market is expected to grow from $29.5 billion in 2020 to $160 billion by 2023. We would like to hear from the global leaders of the XR industry about the changes and opportunities brought by this new Untact era and also the current trends and future developments in your respective regions.
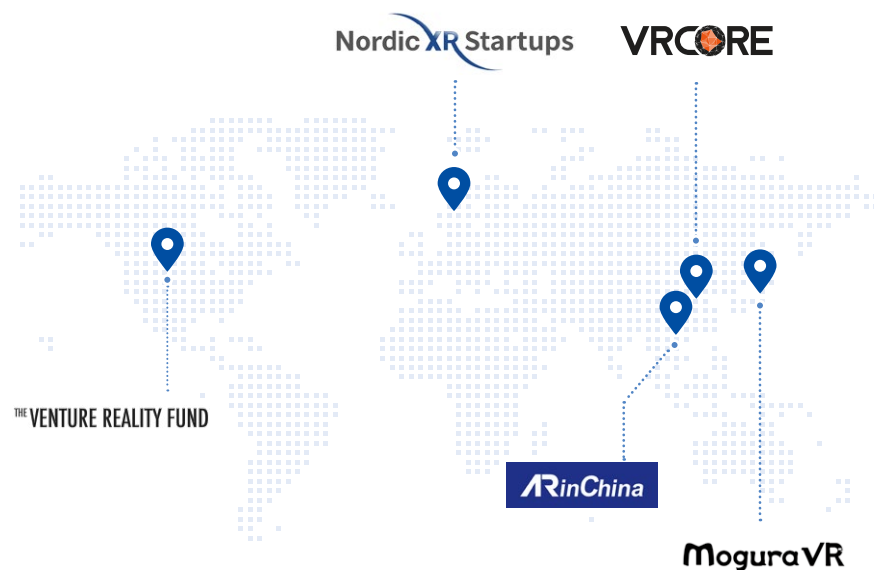
General Partner | Tipatat Chennavasin — THE VENTURE REALITY FUND

He is a General Partner of the Venture Reality Fund investing in early stage VR, AR, and AI companies. He has experience creating VR/AR content and became convinced of the power of VR when he accidentally cured himself of his real life fear of heights while developing in VR. He has established himself as an VR/AR industry spokesperson and thought leader and has contributed to many publications and presented at various industry events worldwide. He is an adviser for many VR/AR companies as well as a mentor for VR/AR incubators and accelerators around the world. He has looked at over 5,000 companies in the space and has invested in 36, including some of the most successful XR companies like Beat Games, Owlchemy Labs, Rec Room, Wave, Varjo and more.

CEO | Rebecca Liu — VRCORE

VRCORE is the most well-known VR developer community in China, which attracts the best Chinese developers and their projects. It is now becoming a global platform that connects the VR developers all around the world to the hardware providers, publishers and investors in China. The VRCORE developer tournament has become to be one of the most important VR competition in China.

CEO | Shun Kubota — MoguraVR

Under the slogan of "Complete Experience to the World," they are a game-specialized media that is launching various businesses to spread more diverse and enjoyable VR/AR experiences around the world. For starters, they have "Mogura VR News", as well as virtual entertainment media "Mogura Live", VR/AR shopping mall "Mogura VR Store" for B2B, and Vtuber shopping mall "Mogura Mall." Furthermore, they conduct various consulting opportunities related to VR/AR and R&D. They are also in the international arena by being part of events such as GDF held in KINTEX, Korea, VR Expo 2016 held in Silicon Valley, U.S.A and are also involved in providing lectures and publishing books specializing in VR.

Managing Director | Petri Rajahalme — Nordic XR Startups

As a Finland-based VR/AR professional accelerator, it invests up to 100,000 euros in pre-Seed and Seed-level startups and runs a six-month incubation program. Along with leading mentors from around the world, the company has been mentoring startups in 15 European region, and is participating in Slush, the largest annual startup event in Northern Europe. Nordisk Film, founded in 1906 in Oslo, and Gumi, the first listed company of the Tokyo Stock Exchange, Japan, jointly invested as a major shareholder, and are in partnership with the Finish Virtual Association (FIVR) and the Finnish Trade Representative (Business Finland), a public institution.

CEO | Michael Zhang — ARinChina

ARinChina.com is the largest domestic media, community, education and network platform focusing on AR industry.

ARinChina was Founded in 2012, we had work with AWE USA, metaio wikitude and vuforia for a long time, As the Augmented Reality Chinese online community, it is the largest AR integrated service platform in China currently. On the early days of the platform, it was based on promoting the domestic development of augmented reality technology, bringing the platform's superiority into full play, providing a high quality, efficient and convenient information exchange window for the industries and enterprises, and providing more opportunities in learning, communicating and discussing for technical professionals; so as to promote the exchange and development of technology, enterprises' information and talents, build the ecological circle of ARinChina-bond AR industry, and create the most authoritative information center and exchange platform in Chinese augmented reality industries.

Q1. It's a time of drastic change, due to this pandemic. Please briefly share the impact of Corona 19 on your region and the XR industry.

the VR Fund
Tipatat
Chennavasin

"

It's a time of drastic change, due to this pandemic. Please briefly share the impact of Corona 19 on your region and the XR industry.
For the most part, COVID-19 is accelerating the XR industry by turning use cases of remote work and collaboration from helpful to necessary. When companies were forced to close offices and employees worked from home, companies like Ford turned to XR tools to allow their designers to collaborate. When doctors and nurses had to be trained on the latest COVID-19 protocols for patient care, major hospitals turned to XR. We saw a lot of conferences and meetup groups also use VR to try and offer a more immersive experience and fight "Zoom-fatigue." This has both increased demand and also fast tracked deployments which has resulted in record revenue for many enterprise XR companies.

For consumers, we did see heavy usage as people stuck indoors during shelter in place turned to XR for entertainment and fitness but because the major VR systems like the Oculus Quest and Valve Index were in limited supply we did not see as much adoption as we could have. Many film and music festivals also turned to VR to give their audiences a richer experience or had virtual concerts streamed on social media that used XR tools for the production.

The only sector that had a negative impact was offline entertainment or location based entertainment consisting of VR theme parks, arcades, cafes and theaters which were shutdown during most of 2020 and many shutdowns are permanent.

CEO
Rebecca Liu

"

For companies all over the world, COVID19 was a very difficult challenge. XR is an emerging industry, consisting of small groups, which have low risk response capabilities. COVID19 has been a huge shock to these startups. Most companies operating in the XR field are having difficulties, but the most serious damage is to the companies engaged in offline experience zones and cultural tourism. However, COVID19 also brought another opportunity. COVID19 has made more companies realize the importance of building a 'digitalized' environment. Furthermore, XR technology provides a more immersive experience and reduces the cost of technology, due to the deployment of 5G. This is an opportunity for companies in various industries to actively consider introducing XR technology to their production activities. For the XR industry, this change will be a great opportunity and will allow broader application into an untapped market.

Mogura VR
Shun Kubota

"

COVID19 is greatly affecting Japan. After a state of emergency was declared across the country on April 7, I was unable to go out on a daily basis for about two months, until May 25. The number of infected people and deaths did not increase as rapidly as in other countries, but the number of infected people remained at a constant level, making it unpredictable. In society, measures to avoid others was set in with the 3 rules of enclosed, close, and dense were implemented in all places. Large-scale events have been put on hold, while the catering and tourism industries have been severely damaged. Japan estimates that about 600 billion yen in economic losses has been incurred due to the postponement of the Olympic Games. However, as the movement to return to daily life in each city area, starting with Tokyo, is growing, more and more people are moving in and out of the streets. To reduce damage to tourism and restaurants, the government is also conducting a campaign to pay for some of the "Go To" gambling, transportation, accommodation, and food and beverage costs.

The XR industry was hit directly due to the large number of location-based VR businesses. However, as 'non-face-to-face' technology increases expectations for the utilization of XR, virtual events using industrial XR or virtual space are becoming very active.

Nordic XR Startups
Petri
Rajahalme

"

In general, Nordic countries had similar responses to Covid-19. Apart from Sweden, who did not put the country in lockdown, all other Nordic countries were shutdown to some extent. This meant that all companies started working remotely and to some degree are still favoring this. All economies are struggling, everybody's expecting negative growth. Companies are all cutting costs, very few are investing. This means that companies who are selling value are struggling. Companies who are selling cost-saving measures/efficiency have a chance. Little by little startups are able to actually setup meetings with potential customers. A lot of the XR market has an extra challenge if their solution includes a headset. Even though companies take meetings via video, it is hard to sell a solution which includes a hardware component if you are unable to showcase this in person. I believe founders are taking a bit more time to develop their ideas before actually taking the step of setting up their companies.

Q2. How are the regions, industries, and XR companies responding to the impact in each of your respective regions? If you have any notable examples, please introduce them.

AR in China
Michael Zhang

At present, the epidemic situation in China has been controlled effectively, and we prefer to divide the time of this year into two stages. Before May 2020, when the epidemic is most serious, most people can't go to work normally. We all enjoy extra long holidays at home, so we have plenty of time to think about how to develop our work and business in the future. At the same time, there's a lot of time to play on the phone and play games, the demands for online content of people is booming. This content contain news, online TV play, game, short video. In addition, it also contain the demands content of AR and VR. The development of entertainment increase XR equipment of shipment volume. In education, universities declare to start experiment Items of virtual simulation which construct many years. School can offer the online classes to the students. Even though you can't go to school, you can learn.

The second stage is from May 2020 to now, the epidemic situation in China is basically stable, and companies in all walks resumed normal production work. However, with the spread of overseas epidemic, the world began to face the pressure of epidemic prevention. As we all know, this stage is also the year that most serious trade friction between China and the United States. The Chinese government has put forward the policy of expanding domestic demand. This policy has also created great opportunities for the XR industry. All offline risky activities are actively exploring the online mode, which has created great opportunities from VR house watching, VR cultural tourism, and XR education. Among them, I think it is the most noteworthy that about virtual exhibition business. It has hosted a top-level meeting of the XR industry in Silicon Valley of the United States for 10 years. The only offline exhibition normally held in 2020 is in Shenzhen, China. And China's exhibition industry has also ushered in a small peak in the second half of the year. The government requires the organizers to promote online meetings actively to prepare for the recurrence of the epidemic.

On the whole, the epidemic has a great impact on the culture and tourism of XR, but at the same time, it has brought new opportunities to education, exhibition and other directions.

the VR Fund
Tipatat Chennavasin

Remote work and collaboration has seen the biggest positive impact. For product design, automotive companies like Ford are using the VR tool Gravity Sketch to design cars remotely and companies are using XR tools like Spatial for design review and collaborative brainstorming sessions that would be impossible over Zoom. In the life science industry, XR technology is helping global biopharma organizations maintain supply chains, navigate the new work protocols, and deliver more reliable yields. Apprentice.io experienced a 15x increase in usage and 6x increase in site deployments at the beginning of 2020 when COVID-19 spread across the world.

For consumer VR, we saw many successful new launches of titles from big AAA games as well as small indies. Valve's Half-Life: Alyx for PCVR, which made over $40M in one month. Indie titles like Friday Night at Freddy's and Onward launch on the Oculus Quest and make millions and become profitable in a month.

Virtual concerts and events also saw big success during COVID-19. With most concert venues closed and tours canceled, the only way for bands to perform was virtually. In Korea, there is the BEYOND LIVE online concert series that combines live video footage with virtual sets, while in the US the biggest virtual concerts have been completely virtual avatar driven in real time 3D game engines like the concerts in Fortnite or the interactive concerts made in Wave and streamed to TikTok, Youtube and other social media channels. We also saw major film festivals like the Tribeca Film Festival partner with the Museum of Other Realities and the Venice Film Festival partner with VRChat and Viveport to allow anyone with the proper VR setup to experience the latest from the comfort of their own home. Even big cultural events like Burning Man switch to a VR format partnering with Microsoft Altspace and received positive reviews from mainstream media and attendees.

In the offline or location base entertainment sector, many of these businesses were already operating on thin margins and struggling and COVID-19 forced small operations to close permanently and even larger players like Sandbox VR declared bankruptcy and others like Spaces and Dark Slope pivoted to enterprise.

"

VR CORE
Rebecca Liu

Currently, life in Chinese society and people have recovered from daily life, and most industries have resumed normal production activities. However, overseas exchanges and business contacts have not yet completely escaped the influence of COVID19. So China's XR industry workers are aiming to find a domestic market and trying to make up with the new demand for the XR business, which has been the trend of COVID19. Along with these industry changes, the government is actively pushing for the development of new technologies, especially the combination of XR and 5G. China Mobile, China Unicom, and China Telecom are focused on building a XR ecosystem from the R&D stage all the way to the platform. As a result, various methods such as cloud rendering, 8K high-vision VR video, VR streaming, VR live, virtual live, and VR conferences have appeared one after another. In June, VRCORE hosted the HTC VIVE Industrial Ecosystem Conference, where a new format that combined offline and online VR meetings was introduced.

"

Mogura VR
Shun Kubota

In the location based VR business sector, 'Bandai Namcore Music' opened large theme parks in Tokyo and Osaka. Joypolis and Tiffonium both opened VR experience zones in Shibuya, Tokyo.

Looking at the industrial XR sector, "Jolly Good" has increased its performance with VR systems for remote training, Toyota has introduced a HoloLens2 at each store, and "Cluster," which provides virtual space services, has been holding virtual events such as "Virtual Pokemon Festival," "Virtual Hamster," and "Virtual Shibuya."
In "Reality," "Wonk" has been doing virtual live for about two hours.

"

Nordic XR
Startups

Petri
Rajahalme

All of the Nordic countries in general have responded in similar fashion. The most notable impact this will have on a longer term is work culture. This is obviously relevant to all markets globally. The most notable shift we saw with one of our companies who are developing remote meeting software in VR (MeetinVR). They saw a 30x increase in companies signing up to their early access program. I personally believe that this shift to remote work is not temporary but will to some extent remain with us even after Covid-19. This provides an interesting market opportunity to companies working in this industry. Even though in general location-based VR (LBVR) is a challenging proposition now and we have seen big players filing for bankruptcy (SandboxVR) our portfolio company (Pikseli) saw record revenues in July in Finland. They are using Cleanbox to clean headsets with UV light and have taken measures to keep distances. In countries where the virus has been kept to some extent under control, this seems to be possible.

In gerenal I feel that the VR industry especially would have benefited from having shelves stocked with headsets (mostly Quest). Unfortunately, Facebook had trouble fulfilling the needs and the headset has been constantly sold-out. I believe a lot more people could have been introduced and sold on the idea of VR as they had to stay at home. From the ones who did have access to VR, we saw that there is a big market in fitness-related apps and games. As gyms were closed a lot of people turned to apps such as FitXR to do their workouts at home.

"

AR in China
Michael Zhang

In the previous stage of the epidemic, I think most of the XR companies were helpless. When the whole social system was stagnant, people only cared about eating and buying vegetables every day. The customers of XR enterprises and their customers are in a state of stagnation, and they worry about this situation. However, the fastest recovery is in the game industry. According to ARINCHINA media, XR company, which makes digital content production in the industry, returns to work relatively quickly. In addition, everyone tried to carry out the home office mode of online collaboration at the beginning of this year. However, their business has been in a state of value-added since the beginning of this year. I think this has something to do with the fact that you spend more time online, the short video is the same principle.

Q3. While VRAR content development and investment have been prolific in the gaming arena so far, which areas would you suggest content producers should focus their efforts in the future?

the VR Fund
Tipatat
Chennavasin

Gaming should continue to be a focus and the main target platform should be the Oculus Quest consumer platform which generated over $100M in revenue in just it's first year. I do not suggest funding for offline or location based entertainment until enough of the population has the vaccine. For consumers, alternative forms of entertainment like virtual concerts and interactive theater or areas like at home fitness or education are also promising areas for investment.

Enterprise is also a very big opportunity, but instead of focusing on just training, the priority should be on productivity or actually doing the work in XR. COVID−19 has made remote training, work, and collaboration essential for business and XR can offer huge advantages over current tools. Also, the newest generation of devices from the Microsoft Hololens 2 and the latest Oculus Quest 2 and other devices powered by the Qualcomm XR2 platform will allow for even more use cases and ease of deployment. The key is to focus on the use cases that provide unarguable and easy to measure return on investment or business impact.

VR CORE
Rebecca Liu

From the perspective of an XR industry source, the combination with traditional industries can bring a wider market and business domain. This is also a goal that Chinese XR developers are working on. Because the future of the XR industry is not limited to entertainment, someone must now proactively identify potential demand for the XR industry and find opportunities for development. At this stage, China's content developers are mainly engaged in vocational education, K12 education, security education, and culture and tourism, but they predict that medical and engineering fields will also have prospects in the future. The challenge facing China's XR companies is that they do not understand the demand for XR and do not offer better solutions using XR technology for the entire industry. We hope that Korean XR companies will be able to help themselves and develop by referring to these examples of China.

Mogura VR
Shun Kubota

VR games will be an area where the market will expand. Compared to the end of 2019, funding and M&A have become more active, and I think the main reason is that the base of VR games has expanded with the introduction of the Oculus quest.

On the other hand, industrial XRs are clearly in demand. Despite the fact that the companies are unveiling their ROIs, there are not many players in the industry yet. More companies are expected to enter the market in the future, but XR content being developed using game engines is different from other industrial application developments. The faster game engineering−based companies and developers are applying technology to industrial XRs, which will play a key role in the expansion.

AR in China
Michael Zhang

Content demand must be in the early stage of high−speed booming, but a lot of investment in content development of AR/VR also appeared in 2016. At that time, the quality of content development was very well, but the market was not mature, and the method which make capital available was too narrow. I think we should also be alert to the situation at that time. Content companies must have a clear understanding of their products. In China, I think content production is more freedom. In fact, there are many ways to realize content for industry, education and offline entertainment, and the quality of content development is not strict. For experienced content companies, I think they should open their minds and cooperate more to try new industry directions. Maybe they can own more advantages in another industry.

Petri
Rajahalme

Gaming has been very challenging as an investment area. Timing and following market trends are extremely important. We saw several examples of studios starting to develop games for the PC VR market and hardware only to run into trouble when the installed base didn't grow and the companies weren't able to optimize their content to standalone devices. Now that we have the first standalone headset out and the next one coming soon (Quest 2), we know what the parameters are for the hardware. There is now again a promise and potential for a big market. For investors there is a benchmark from Beat Games; a 3-person indie studio who created the only big runaway hit in VR gaming. This means that big hits are possible from outside the triple-A market. The biggest potential is in finding a way to maximize the power of VR as Beat Games did with Beat Saber. So my recommendation to gaming studios would be to maximize runway in order for the studio to be able to develop more than just one title. If you put all your eggs in one basket and that game isn't a hit, you risk running everything to the ground. Do small tests where you push the limits of VR and find innovative ways to create new experiences. As for gaming in AR, I believe we are still far from it being ready for bigger markets. Granted Pokemon Go has amassed billions of dollars, however it cannot really be considered as an AR game. Other than that title, no game has been able to truly garner relevant amounts of users. This is testament to the medium (mobile AR) not being ideal for gaming. The potential arrival of consumer grade AR glasses might change that. In general location-based experiences will be very challenging as a category in the near future due to Covid-19. In VR exchanging hardware between consumers is obviously not ideal and in AR you have to keep social distancing in mind.

An emerging trend are shared experiences in VR. Whether it's an escape room people can join from different locations or a more theatrical experience with live actors etc.

In AR content creators should focus on content in the context of advertising, retail/ecommerce. There are plenty of signs pointing in the direction of growing consumption of AR apps in shopping or evidence of better retention/conversion in advertising.

Q4. Entering the post-corona era, XR content companies are facing both opportunities and crisis. What and how should companies prepare to overcome crises and seize opportunities?

the VR Fund
Tipatat
Chennavasin

For companies facing opportunities, they need to validate that the opportunity is genuine and is part of the new normal and not a temporary opportunity that will go away once we are out of the pandemic. They need to understand how to best tackle the increased demand in a way that also builds toward the long term.

For companies in crisis, the need to evaluate if their business model still makes sense in the current climate and factors into the new normal and if not, then a pivot should be considered. Then the question of what to pivot becomes important and it is important to find something that resonates with the team and tech but also something with less competition. There is also the case when the crisis is impacting their customers and then instead of a complete pivot, it could be enough to just pivot their target customers.

Regardless of whether it's to get more resources to seize the opportunities or to buy runway to pull off a pivot, if the company need more capital they should work with existing investors first to secure either a lead or to finance a bridge round. If the company doesn't have investors yet, then it is important to secure project financing through a customer or a government sponsorship.

VR CORE
Rebecca Liu

Although we don't know when COVID19 will end, we can predict what will be the New Normal. Start-ups need to maintain a more flexible and agile scale and keep an eye on cash flows.

They also need to constantly study new technologies and actively look for opportunities. We need to focus our limited time and manpower on projects that are more important for the company's long-term development. All of these efforts will help start-ups survive this huge change that COVID19 has caused.

VRCORE is willing to provide consulting and connections to all content developers in Korea who want to know about trends in the Chinese market.

Mogura VR
Shun Kubota

" In the case of short-term financial difficulties, I would recommend that you reduce investment for the future and operate to meet the immediate needs. UX design, 3D modeling, and engineering of game engines, the main pillars of XR content development, are immutable skills in both entertainment and enterprise areas.

The XR sector has seen an overall increase in demand during the COVID19 era. Just as some location based VR companies are trying to develop solutions for other industries, I think it is very important to try to modify existing financial plans by identifying their strengths in engineering and meeting these increased demands.

" The main advice we have given to companies is to maximize runway. Investors are generally cautious at the moment and are even more cautious about investing in XR. They also have to be flexible and lean: have their ear very close to the market and react quickly, pivot completely if needed. For instance, an LBVR company started to productize their backend to suite enterprise clients and their content-management needs. The opportunities might lie in the longer term. While there is a market for solutions in the short term (mostly in enterprise solutions), there is certainly a promise of a bigger market on the consumer side as well. However, this will probably take longer to be there. The opportunities now lie in developing underlying infrastructure/technology. Apple, Google, Facebook, etc are all in a race to be best positioned for a future consumer AR market. They are active buyers of startups developing underlying technologies.

Nordic XR Startups

Petri
Rajahalme

AR in China
Michael Zhang

" In the post epidemic period, I think that XR content companies should have a positive attitude towards the large industry development cycle. In the past few years, although XR is very hot, most of them are still small pilot, experience and pre-research projects. It can be said that most of the customers' needs are not rigid demand, so the market capacity is also very small. Although the epidemic has not brought technological change in essence, I think this stage is really the arrival of the overall opportunity for the industry, and customers have to think about how to complete their work well, study and social activities without going out. Moreover, customers have more patience and reasons at this stage, and they need to constantly try better ways to complete these things. There are huge opportunities. I believe that there will be content companies that have never been produced in various market segments.

Q5. XR contents must be organically combined, not only with content, but also with devices, platforms, and networks, to effectively satisfy the consumer experience. What kind of support do we need from external sources, such as related agencies and associations, for the overall development and improvement of the industry?

the VR Fund
Tipatat
Chennavasin

" It is very important to understand the latest devices like the Hololens 2, the Nreal, the Oculus Quest 2, HP G2 Reverb, Varjo XR-1 and others and what new use cases they can unlock. The same applies for understanding the benefits of big tech updates like 5G where the bigger bandwidth but more importantly the lower latency could enable huge breakthroughs in tele-work like remote operation of heavy machinery or tele-medicine like remote surgery. Agencies and associations are important for identify the use cases and verifying the market opportunity. We have seen the government, especially the military play a critical role by providing crucial project funding to turn ideas into measurable protoypes/pilots.

VR CORE
Rebecca Liu

" Because industry development is not driven by a single effort, we need to work towards a single goal at each stage. The development of the XR industry will be consistent with the technology development curve.

Hardware and platform support will play a leading role. Industry, agencies, and associations must play a leading and supporting role at the same time. We also need to pay attention to small and medium-sized companies that need more support and attention than large companies. As a VR/AR developer association in China, VRCORE is helping developers with outstanding opportunities for further development, including ordering, public relations, marketing, and cooperative opportunities.

If any Korean developer needs this help, please feel free to contact us.

"

The support needed for the XR industry is to foster talent and create opportunities for experience. I feel that talent development lacks both creative and business talent. As I said before, XR development requires a variety of know-hows, unlike traditional content development.

Talented people with this know-how play an important role in both the production and engineering phases. Now that large-scale development projects are shrinking and often developed by small personnel, avoiding excessive division of labor within the development team, and understanding the process at a certain level leads to faster development and better quality. To be specific about business talent, we need people who can connect demand and technology. That is, talent in business development or sales. Understanding the strengths of your own technology or development team and coordinating them to meet your customer's needs is an essential skill. Because of the lack of such talent, the market is developing content that is unclear in the absence of abstract demand, or that cannot meet the demand sufficiently.

Mogura VR
Shun Kubota

"

Platform support is still critical for the growth of the industry. It is important that companies like Facebook, HTC, Microsoft, etc. keep offering support to developers. With regards to advertising, media agencies should implement AR as an essential tool when they are pitching to their clients. It is also important to support all of the local ecosystems and associations, helping them with getting funding, hardware, etc. so that they can then support the grassroots level, very early stage developers and teams. Investors who are investing in this space need to keep generalist investors informed about the latest trends in the industry, new highlights and news about interesting startups and opportunities.

Nordic XR
Startups

Petri
Rajahalme

"

We all know that it is the best that have special equipment for the experience of XR content. However, at present, XR equipment is in the embarrassing stage of expensive and no content. The problem which can't be solved by a single enterprise, but a complex process that requires the gradual maturity and perfection of the entire ecology. In the past, we often looked forward to a blockbuster app? Content? which could make the XR industry popular quickly. I don't think so. Watching house by the VR I mentioned above has given birth to a unicorn in the real estate field such as Beike looking for the house in China. What he did was not to vigorously promote the X-ray equipment at this stage to maximize the experience, it is on the existing mobile phone hardware platform, many people don't recognize that it's VR content ,and it just show something by Web3D technology, but I'd like to say that it's down to earth. Their team has a profound understanding of the technology.

To some extent, the industry association have active effects at this stage. In China, many industry associations will act as brain trust of the government to provide advice and suggestions for the government in industrial development. This process is very important. The government needs to open up more industries, be willing to try new technologies, be willing to do pilot projects and even encourage the promotion of new technologies. Even many governments are willing to plan new industrial parks for such new technologies and give a good policy subsidies to enterprises. I think the openness of these governments and industries to a large extent has promoted the R & D process of XR company and given them many opportunities for trial and error. I think it will play an important role in the application of a new technology.

AR in China
Michael Zhang

03

Gyeonggi-do VR/AR Industrial Landscape Map

Games/Entertainment

GANITANI | Nextep Studio | dear. architect | REALITY MAGIQ | adobeai

UT+ UTPLUS INTERACTIVE | MAMMOSSIX | BEYOND EXPERIENCE / Barunson | MANABRIUM | POLYART VR content creators

Tourism

나무팩토리 VR Content Factory | NLC No Limit Curation | 프렌쥬 | INDY SPOT | 흥컴퍼니

Education/E-learning

Nextep Studio | AT THE LOBBY COMPANY | INS EDU Human & Education / dear. architect | DEEP.FINE

JWONDER Content Creator Group | INFLUSION | W+ WITHPLUS

소셜 · 협업

(DEEP.FINE)

Advertising/ Smart Signage

NURIMPUI

Data/Analytics

PLANEYE

Retail Commerce

나무팩토리 VR Content Factory

Publication

THE WRITERS

Real Estate Commerce

Nextep Studio | S&A SPACE AD | 대지하임

Music

jungle | EMOTIONWAVE

Exhibition

ARTIVIVE | 9blocks | CRENGINE CREATIVE THE NEXT GENERATION

Sports/Training

HANCOM 한컴위드 | i-SCALE DIGITAL THERAPEUTICS COMPANY

Videos/Advertising

MARTIAN PICTURES | Barunson | AROUND EFFECT WWW.AROUNDEFFECT.COM | JUST RANDOM FILMS | CREATIVE SUMM

Healthcare

strig | Tech Village VR Technology For Human | HANCOM 한컴위드

Comics/Webtoon/Animation/Character

NURIMPUI | COMIXV

SW&APPS

Gyeonggi−do VR/AR Industrial Landscape Map

This industrial map is based on companies that participated in the "2020 Gyeonggi−do VR/AR Business Status Survey" and companies based in Gyeonggi−do, in accordance with the VR/AR Industry Development Classification System proposed by Gyeonggi−do Province and the Gyeonggi Content Agency.

Systems/Tools

inforzia

PLANEYE | HANCOM 한컴워드

Graphics

Barunson | S&A SPACE AD

ALPHA CIRCLE | AST (주)에이에스티 ART SYSTEM TECHNOLOGY

Solution/System

Treadmill

MOTION HOUSE

strig | adobeai

VRAR Display, Glass

REALBLOCKS

3D Lenses

ARLOOK

Processor

ViC

HW&Material

VR Arcade / Theme Park

제대로 놀아보자! 레츠팟 Letsput | BAD VR CURVED 게임장 | VRsquare

VRZONE | VR GAME & CAFE 익사이팅 VR | CAMP VR

Location based Service
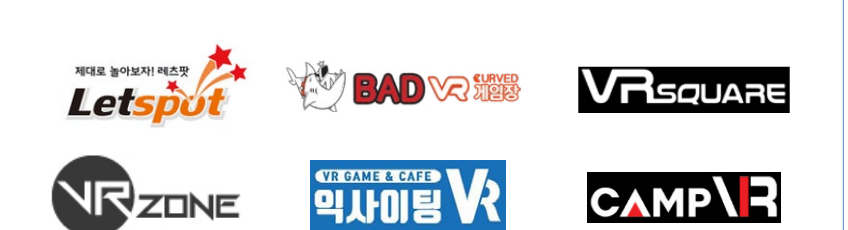
04

Gyeonggi Province VR/
AR Company Information

Gyeonggi Province VR/AR Company Information

The following companies are businesses that participated in the Gyeonggi Province VR/AR Business Situation Report and agreed to the release of their corporate information.

GELTEN	Company name	GELTEN
	E-mail	doublek3066@naver.com
	work	· Children's traffic safety XR content · Walking attraction using motion capturing camera called "Infection Z"

99AGIT	Company name	99agit
	Homepage	www.99agit.com
	E-mail	dashcori@gmail.com
	work	Building a one-man broadcasting system, using 3D characters in virtual space and MCN business

나무팩토리 VR Content Factory	Company name	Namoo Factory
	Homepage	www.namoofactory.com
	E-mail	contact@namoofactory.com
	work	· VR Tour · VR Commerce

9blocks	Company name	9blocks
	Homepage	www.naoarts.com
	E-mail	01@9blocks.kr
	work	VR Sehando

Nextep Studio	Company name	Nextep Studio
	Homepage	www.nextepstudio.com
	E-mail	3dnextep@naver.com
	work	VR/AR/MR contents related to construction, building, game, safety, industry

NURIMPUL	Company name	Nurimpul
	E-mail	feelease@naver.com

dear. architect	Company name	dear.architect
	Homepage	www.deararchitect.kr
	E-mail	front@deararchitect.kr
	work	Wooden block toy game using AR "Roomy"

DEEP.FINE	Company name	Deepfine
	Homepage	www.deepfine.ai
	E-mail	hyunbae@deepfine.ai
	work	· Voice AR platform "ARON" · Voice recognition smart glass virtual secretary system

THE WRITERS	Company name	the Writers
	E-mail	cbpgysky@gmail.com
	work	VR mystery novel "Detective K"

REALITY MAGIQ	Company name	Realitymagiq
	Homepage	www.realitymagiq.com
	E-mail	edjoo@realitymagiq.com
	work	· Next generation VR/AR E-sports game stage "Magic Arena" · VR multiplayer brick breaking game "Space Block Buster"

MANABRIUM	Company name	Manabrium
	Homepage	www.manabrium.com
	E-mail	contact@manabrium.com
	work	Multiple role playing game "LLVR"

MARTIAN PICTURES	Company name	Martianpictures
	E-mail	martianpictures@naver.com

Company name	MAMMOSIX
Homepage	www.mammo6.com
E-mail	chankim@mammo6.com
work	· Galaxy T · Cross platform · Multi-access social platform

Company name	Metanode
Homepage	www.metanode.co.kr
E-mail	yhcho28@gmail.com
work	· Meta interview · Non-face-to-face job interview · TTS, STT, big data matching technology

Company name	Motionhouse
Homepage	www.motionhouse.co.kr
E-mail	jun@motionhouse.co.kr
work	Sensory motion simulator "Motion Gear Type-4U"

Company name	Barunson
Homepage	www.barunson.co.kr
E-mail	jaeha.park@barunson.co.kr
work	· VR Game · VR Movie related solutions

Company name	viako
Homepage	www.viako.com
E-mail	jshwnag@viako.com
work	VR Wireless kid "VR-Reload"

Company name	Striq
Homepage	www.strig.co.kr
E-mail	kyle@getstrig.com
work	Pain visualization app linked to microcurrent massage "StrigPro"

Company name	Space AD
Homepage	www.spacead.kr
E-mail	dcchoi@ispace21.com
work	Multi-faceted cable-linked VR technology based on Building Information Modeling (BIM)

Company name	Psychotherapy VR Laboratory
E-mail	emotionpg@naver.com
work	· Digital cure · Psychotherapy XR content

Company name	Adoba AI
E-mail	dhahn@adoba.net
work	Motion recognition dance battle box "D-AI"

Company name	i-SCALE
E-mail	psisky@kaist.ac.kr
work	Cognitive exercise training system "RUTU"

Company name	Artivive
Homepage	www.artivive.com
E-mail	diane@artivive.com
work	AR applications & platforms specialized in artistic apps

Company name	alphacircle
Homepage	www.alphacircle.co.kr
E-mail	dw.cha@alphacircle.co.kr
work	· VR Video solution "Alpha View" · The technique of synchronizing 360-degree images and reproduction between split images

Company name	At the lobby company
Homepage	www.atthelobby.com
E-mail	atthelobby@naver.com
work	VR Dance training content "VR Dance Show"

Company name	Around Effect
Homepage	www.aroundeffect.com
E-mail	onebob@naver.com
work	AR Animation "The Bosses"

Company name	Eorini VR
Homepage	youtu.be/DXgc-wYOVng
E-mail	uchan2248@gmail.com
work	"Zoo VR"

Company name	ARLOOK
Homepage	www.arlook.co.kr
E-mail	leebr2@arlook.co.kr
work	Telescope to Experience AR Content

Company name	AST co., Ltd.
Homepage	www.astkorea.net
E-mail	arvr@astkorea.net
work	· Sliding AR · Cave VR · Digital twin

Company name	AFLab Digiheim
Homepage	www.digiheim.com
E-mail	digiheim@naver.com
work	· Construction VR · BIM VR · Interior VR

Company name	nlc VR
Homepage	www.nlc.kr
E-mail	admin@nlc.kr
work	VR Tourism Service "VR LAN Travel"

Company name	Wellmedia Lab
E-mail	wellmedialab1@gmail.com
work	VR Logical Circuit Training Content

Company name	Withplus
Homepage	www.gamedu.co.kr
E-mail	kp1003b@gmail.com
work	"Challenge24-AR"

Company name	UT Plus
Homepage	www.utpls.co.kr
E-mail	skynyrd@utplus.co.kr
work	Dojagi: The Korean Pottery

Company name	Emotion Wave
Homepage	www.emotionwave.com
E-mail	ewat@emotionwave.com
work	AI Concert Solution "Lima Public"

Company name	INDY SPOT
Homepage	www.look360.kr
E-mail	indyspot.kr@gmail.com
work	Online Panorama VR portal service "LOOK 360"

Company name	INS Edutainment
Homepage	www.insedu.net
E-mail	ceo@insedu.net
work	AR based mobile tour service "Cracker Play"

Company name	Inforzia
E-mail	shnam@inforzia.io
work	"Flomon"

Company name	Influsion
Homepage	www.influsion.net
E-mail	xzinn@influsion.net
work	VR Solutions for Plant Engineering Training "InWorksVR"

Company name	Just Random Film
Homepage	www.justrandomfilms.com
E-mail	pmt1080@gmail.com
work	VR Film

Company name	J-wonder
Homepage	www.jwonder.co.kr
E-mail	jwonderccg@gmail.com
work	"K-CoolTip Hangul," Korean language learning service where you can travel and learn Korean

Company name	Crengine
Homepage	www.crengine.net
E-mail	jinkook.lim@crengine.net
work	· VR Kite Exhibition Experience Content "VR Art Painter" · VR Exhibition Platform · VR Meeting Platform

Company name	Creative Summ
Homepage	www.creativesumm.com
E-mail	admin@summ.kr
work	· 2D/3D animation production · VR imaging and character production

Company name	Tech Village
Homepage	www.techvillage.co.kr
E-mail	in@techvillage.co.kr
work	Specialized solution for stroke rehabilitation "Rehab Ware VR"

Company name	Polyart
Homepage	www.polyart.co.kr
E-mail	won@polyart.co.kr
work	Cubeland VR

Company name	Prime Panorama
Homepage	www.primepano.co.kr
E-mail	primepano@naver.com
work	· E-model house · Drone VR · Virtual VR Exhibition Hall

Company name	Planeye
Homepage	www.planeye.co.kr
E-mail	tiger@planeye.co.kr
work	3D Interior map metamap using Metaport Solution

Company name	HANCOM with
Homepage	www.hancomwith.com
E-mail	bjkang@hancom.com

Company name	HAN Company
Homepage	www.beonekorea.com
E-mail	marisha@naver.com
work	Mobile game "Korean Peninsula Cultural Heritage Expeditionary Force"
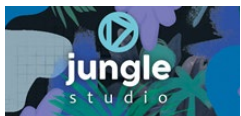
Company name	17 Jungle
Homepage	www.17jungle.com
E-mail	17jungle@gmail.com
work	Gugak Experience "Yes VR"

PARK8

Company name	PARK8
Homepage	www.park8.org
E-mail	tlim@park8.org
work	・Create VR/AR Content ・New Media Art Exhibition Planning ・Dreaming Maestro

Studio Zinza

Company name	Studio Zinza
Homepage	www.youtube.com/channel/UC-EOZ2nmJEwNBMI2sOysPNA?view_as=subscriber
E-mail	studiozinza@gmail.com
work	・The Bird I Made ・Letters ・Art VR & Interactive Exhibition & Picture Book