



# Project 01: Near Futures

*Contemporary Problems  
in Interaction Design*

# Table of Contents

|                       |    |
|-----------------------|----|
| Part A: Ideation      | 01 |
| Part B: Visualization | 24 |
| Part C: Prototype     | 31 |
| Bibliography          | 39 |

# Part A: Signals and Trends

*Research & Preparation*

## Part A: Theme Ideation: Idea Generation

Overall Theme: Artificial Realities: AR/VR

### 01. Health

- **01.A: Mental Health AR/VR**
- 01.B: Education tools
- 01.C: Treatment /surgery assist
- **01.D: AR chip**

### 02. Advertising

- 02.A: AR/VR Ad campaigns
- 02.A: AR/VR enhanced posters

### 03. Gaming

- 03.A: AR First-person shooter games
- 03.B: AR Weapons
- **03.C: AR/VR RPG**

### 04. Art

- 04.A: AR/VR Public Art
- 04.B: AR/VR Art Galleries
- **04.C: AR/VR Art Creation**

### 05. Social Media

- 09.A: AR/VR Vlogging
- 09.B: AR/VR LinkedIn

### 06. Retail

- 06.A: AR/VR Ad campaigns
- 06.B: AR/VR Window Displays

### 07. Sound

- 07.A: VR music video
- 07.B: Visualizing music

### 08. Light

- 08.A: Installations

### 09. Food

- 09.A: AR Taste
- 09.B: Virtual food

### 10. Spaces

- 10.A: AR architecture
- 10.B: Environment detection

### 11. Travel

- 02.A: AR/VR Tours

### 12. Education

- 12.A: AR/VR Classroom
- 12.B: AR chalkboard

### 13. Theatre

- 04.A: Virtually review your dreams
- 04.B: AR interactive shows/movies

### 14. Fitness

- 14.A: AR gym
- 14.B: Sports VR

### 15. Wearables

- 15.A: Smart AR wristbands
- 15.B: Smart AR glasses

\*Bolded trends were chosen for further analysis

## Trend 1: AR/VR Mental Health Care

*Why is this theme significant?*

Augmented reality/Virtual reality and mixed reality based mental healthcare applications are becoming more and more prominently used each year. Some of the most common uses are AR/VR for exposure therapy, situational cognitive behavioural techniques or for identifying triggers (e.g. PTSD patients) of a patient.<sup>1</sup> In the future, there is a wide range of potential uses for this VR/AR technology in therapy, so this would be a very versatile and broad topic to work with for imagining future technologies.

Mental healthcare that uses AR is slowly becoming more possible in a variety of areas in the sector. One emerging area is in its use for exposure therapy. One instance of this currently being developed is an AR tool that is used to help treat phobias more easily. This technology allows therapists to place patients in a safe and controlled exposure therapy situation that helps them to resolve their anxiety. For instance, AR spiders or VR height simulators.

This technology will likely have a broader range of capabilities in the future as its situations/use cases expand.

AR and VR are also emerging as a tool for anxiety relief and meditation. One practical application for VR technology is in visualizing calming situations or mediation guidance. This VR meditation can especially help patients who would prefer to also work on their therapy techniques outside of the therapy office.

Overall, this technology is suitable as a starting point for this project because it is a rapidly growing technology with significant potential to do good and to help the world. It also has a broad range of future possibilities and futurism predictions to base potential prototypes on.

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<sup>1</sup> "Therapy and Mental Health Applications in Reality Technology (MR, AR, VR)," Reality Technologies, September 30, 2018, accessed January 28, 2019, <https://www.realitytechnologies.com/applications/therapy/>.

# Trend 1: AR/VR Mental Health Care

*Signals & Trends Research*

## Trend Name:

AR/VR Mental Health Treatment/Therapy

## Trend Description:

AR/VR mental health treatment is using simulations or artificial realities in therapeutic treatment to help patients with mental illnesses.

Overall, AR/VR mental health treatment is an emerging area where AR/VR technology is used to aid patients and therapists at more effectively treating mental health concerns. The use of this technology is particularly prominent for conditions like PTSD, Anxiety and OCD. Much of the treatment for these conditions involves cognitive behavioural strategies or exposure therapy, which is one of the developing uses for this technology in the present day.

More specifically, AR/VR mental health treatment typically involves simulating scenarios and having the patient either react/roleplay a scenario, or it is used as exposure therapy.<sup>2</sup>

For example, addictions can be treated through using VR simulations of parties to help patients learn to curb their tendencies to partake in drugs or a fear of spiders can be treated using AR/VR exposure to spiders.<sup>3</sup> It can also be part of learning meditation or stress management techniques.

More recently, therapists have also been using this trend to identify and treat triggers in mental health patients. In general, this trend has a wide range of application in mental health, and areas of particular emerging research and development are based on anxiety, addiction and PTSD triggers in particular.<sup>4</sup>

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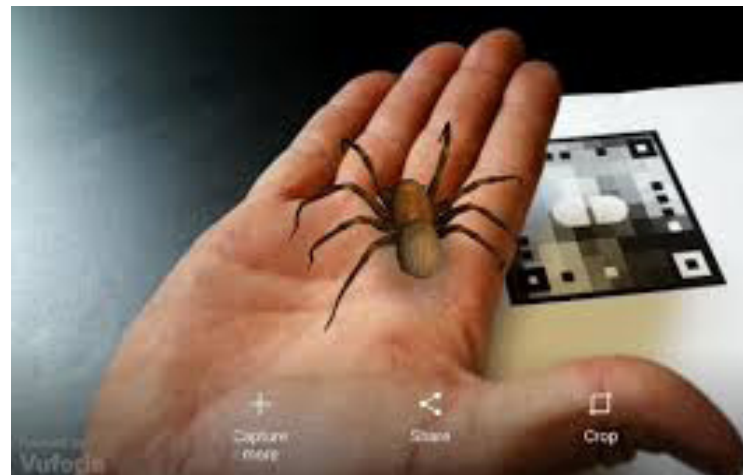
<sup>2</sup> "Therapy and Mental Health Applications in Reality Technology (MR, AR, VR)," Reality Technologies, September 30, 2018, accessed January 28, 2019, <https://www.realitytechnologies.com/applications/therapy/>.

<sup>3</sup> Paul Gregoire, "I Tried Using VR to Cure My Crippling Fear of Spiders," Vice, November 29, 2016, accessed January 28, 2019, [https://www.vice.com/en\\_au/article/bnjbd8/i-tried-to-use-vr-to-cure-my-fear-of-spiders](https://www.vice.com/en_au/article/bnjbd8/i-tried-to-use-vr-to-cure-my-fear-of-spiders).

<sup>4</sup> Huw Oliver, "How Long Before We See Virtual Reality Headsets in Our Mental Health Wards?" Vice, March 27, 2016, accessed January 27, 2019, [https://www.vice.com/en\\_au/article/3bj33y/virtual-reality-mental-health-treatment-uk](https://www.vice.com/en_au/article/3bj33y/virtual-reality-mental-health-treatment-uk).

## Trend 1: AR/VR Mental Health Care

### Supporting Imagery:



The image above is one of the examples of AR technology being used for mental health treatments referenced above. In this example, the patient is being exposed to AR spiders to treat their phobia of spiders.<sup>5</sup>



This first image is a still from a VR meditation application called Guided Meditation VR used to treat anxiety. It is totally immersive into the environment and is styled similarly to a video game.<sup>6</sup>



This is an example of a lab/user test of VR for PTSD symptoms.<sup>7</sup>

<sup>5</sup> Paul Gregoire, "I Tried Using VR to Cure My Crippling Fear of Spiders," Vice, November 29, 2016, , accessed January 28, 2019, [https://www.vice.com/en\\_au/article/bnjbd8/i-tried-to-use-vr-to-cure-my-fear-of-spiders](https://www.vice.com/en_au/article/bnjbd8/i-tried-to-use-vr-to-cure-my-fear-of-spiders).

<sup>6</sup> "Virtual Reality Meditation / VR Relaxation / VR Guided Meditation," Guided Meditation VR for Oculus Rift, HTC Vive, and Gear VR, , accessed January 28, 2019, <https://guidedmeditationvr.com/>.

<sup>7</sup> AudioMania.It, "Virtual Reality Used To Treat Mental Health Problems - 00:00," AudioMania.It, , accessed January 28, 2019, <http://www.audiomania.it/video/2756978/virtual-reality-used-to-treat-mental-health-problems.html>.

# Trend Dimensions: STEEPV

## Social:

- May influence the patient/therapist relationship because patients would not have to explain upsetting triggers, allows the therapist to better understand where patients are coming from.
- Participating in multi-participant treatments may build a better sense of community among patients and aid in reducing stigma

## Technology:

- This trend will influence the development of more realistic AR/VR environments and artifacts, in order to boost the effectiveness of treatments, the realism of the technology and the UX design needs to be smooth, and a significant amount of industry investment has and will continue to go into developing the experience of the graphics and overall feel of AR/VR therapy.
- AR/VR mental health therapy trends have and will also continue to boost awareness and funding for technology-driven healthcare solutions, and in making therapeutic solutions more accessible to direct-to user markets.

## Economic

- AR and VR therapy techniques could make therapy more accessible and affordable to the public, especially if/when these types of systems are made available on low-cost mobile or personal computing platforms.
- Gamified AR/VR treatments may also help to reduce stigma and convince more people to seek treatment, which would increase profitability for mental health service providers and the manufacturers/developers/designers behind these applications.

## Environmental

- This trend, in particular, does not carry significant environmental risk with it, however, VR technology does have some level of environmental impact.
- VR uses primarily plastic headsets and often has batteries or other components that have a short lifespan and are quickly disposed of. Some materials in particular, like those for tracking hand movement, are particularly harmful: “ The volume of material — including ecologically harmful material — also increases with devices for tracking the hands which are required for some VR experiences.”<sup>8</sup>

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8 Is Virtual Reality Technology Bad for the Environment? ARPost, December 12, 2018, ., accessed January 27, 2019, <https://arpost.co/2018/07/12/virtual-reality-technology-bad-environment/>.

# Trend Dimensions: STEEPV

## Politically

- Some of the potential political impacts/ramifications around AR/VR usage in mental health mostly relate to issues of cybersecurity and healthcare privacy. Many people believe that the treatment logs produced by many of these apps are a security issue for the patients who use them “The data they generate will be as personal as the way we sit and walk, as intimate and local as our living rooms. States and corporations will certainly pay dearly for that information.”<sup>9</sup>
- How political candidates navigate this data will likely become an important issue as the data gains company and commercial interest and may need additional protections.

## Values

- AR/VR technology in mental health treatment may be opposed by more traditional viewpoints that therapy needs a human, in-person connection.
- This value set especially impacts upcoming direct to consumer products that would not have a therapist guiding the session

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<sup>9</sup> “The Politics of Virtual Reality,” The American Prospect, , accessed January 27, 2019, <https://prospect.org/article/politics-virtual-reality>.

# Signals & Trends Research

## Signals and Sources:

This trend has recently been the focus of a wide range of new industry products and applications as well as papers on the effectiveness of these types of treatments. Some examples of new products in the last year include technologies like Limbix, which is described in the financial times as “a bit like an app store for therapists” <sup>10</sup> and uses specialized research to develop AR/VR mental health applications that are verified by health professionals.

Other technologies include Virtually Better, which is used for anxiety and PTSD, and Spider World, <sup>11</sup> which is used specifically for arachnophobia. There have also been multiple studies done on the validity of these types of treatments. One study in the Lancet Journal found that “those participants who used the VR program reported having less fear after two weeks.”, despite many of them having had these fears and phobias for decades. <sup>12</sup>

## Counter Trends:

There is not any particularly strong evidence pushing back against this trend, in particular, however, there is some level of push-back against AR/VR healthcare applications as a whole. Many medical professionals are concerned that these technologies will be seen as a replacement for real-world therapy techniques.

This also matches with the trend of people to seek mindfulness and connections with their surroundings and to unplug and disconnect from social media and other online platforms. Since VR/AR could result in patients relying on these virtual means of therapy, there might be push back if people crave a more off-line therapy experience in the future.

## Extrapolations

As of right now, many leaders in this area predict that the use of AR/VR in mental healthcare will move from the research lab into the hands of private practice therapists. At present, it has mainly only been tested in research labs and is not widely used in therapy practices.

In the future, however, it is possible that AR/VR may replace other methods of exposure therapy as a dominant method. As the trend expands, it is likely that the visuals and simulations will become more sophisticated, perhaps also being able to be used by the patient independently throughout their day, without requiring specialized labs or expensive equipment.

## Implications

The expansion of AR/VR into mental health treatment and into healthcare overall will further legitimize the use of AR/VR technology for a wide range of potentially beneficial applications. Since the public right now mainly encounters this technology for gaming or social purposes, it is not viewed as impactful in the same way as AI, Voice UI and other emerging technology trends are. The healthcare and mental health industry’s adoption of this to create more effective treatments will likely result in more development and research investment into this area as well.

<sup>10</sup> Hannah Kuchler, “How Virtual Reality Is Being Used to Treat Mental Health Issues,” Financial Times, July 11, 2018, accessed January 27, 2019, <https://www.ft.com/content/1a9a4cac-83cb-11e8-96dd-fa565ec55929>.

<sup>11</sup> “Therapy and Mental Health Applications in Reality Technology (MR, AR, VR),” Reality Technologies, September 30, 2018, accessed January 28, 2019, <https://www.realitytechnologies.com/applications/therapy/>.

<sup>12</sup> Daniel Freeman et al., “Automated Psychological Therapy Using Immersive Virtual Reality for Treatment of Fear of Heights: A Single-blind, Parallel-group, Randomised Controlled Trial,” The Lancet Psychiatry 5, no. 8 (2018): , doi:10.1016/s2215-0366(18)30226-8.

## Trend 2: AR/VR RPG Games

*Why is this theme significant?*

AR/VR RPG games are an emerging area of the video game industry, with the potential to integrate with a number of other emerging technologies and speculative designs. In recent months, VR/AR RPG games have expanded from being solely storytelling platforms, to also allowing for social connection and personalization. Through advanced facial and body recognition, the user can add their own appearance into the game, and become fully immersed.

AR/VR RPG games are also a strong area of potential for design thanks to their integration with another tech, like AI (IBM Watson for instance) within their design. The uses for AR/VR RPG Games are ever expanding, from social media/networks to AR/VR RPG gaming display/immersion rooms where the user can fully empathize with and see the world through a character's eyes. This is applicable to many areas of design and has wide potential for new storytelling and technological opportunities.

### **Trend Description:**

Artificial reality and virtual reality RPG games are video games and mobile games where the player's gameplay is enhanced through the use of augmented interfaces, objects, weapons etc. in the player's surrounding environment.

In short, AR/VR RPG games enhance and immerse the player into a video game. For instance, when the player takes on the role of a particular character, the environment might be augmented so that the player's space is transformed to seem like it is being viewed through the eyes of that character. They are a rapidly growing subsection of the video game industry, with broad artistic, technological and economic potential due to their advanced immersive experiences.

# Signals & Trends Research

## Supporting Imagery



NOSTOS: a VR RPG game with immersive gameplay and worldbuilding <sup>13</sup>



The Elder Scrolls: Blades: a mobile VR RPG game with realistic combat and high-level customization. <sup>14</sup>



Star Trek VR & AR experience: using realistic interfaces to create a believable fan experience. <sup>15</sup>

<sup>13</sup>Jagneaux,david, "Nostos Is An Open World VR RPG That Looks A Lot Like Sword Art Online," UploadVR, August 23, 2018, , accessed January 28, 2019, <https://uploadvr.com/nostos-is-an-open-world-vr-rpg-that-looks-a-lot-like-sword-art-online/>.

<sup>14</sup> "The Best Upcoming Virtual Reality Games in 2019," ARPost, December 25, 2018, , accessed January 28, 2019, <https://arpost.co/2018/12/27/best-upcoming-virtual-reality-games-2019/>.

<sup>15</sup> Eric Francisco, "Star Trek: Bridge Crew Is a VR RPG in Disguise," Inverse, , accessed January 28, 2019, <https://www.inverse.com/article/20709-star-trek-bridge-crew-vr-game-rpg>.

## Trend Dimensions: STEEPV

### Social:

- People can play online and immerse themselves in a game playing community (really feels like you are there playing with the person in roleplaying VR especially).
- Some VR/AR RPG games allow the player to insert themselves as an avatar, allowing the player to connect with others and socialize within the game itself <sup>17</sup>

### Technology:

- AR/VR RPG Games have led to the development of more convincing AR markers and environments and the necessary funding to develop and expand this technology to other areas (healthcare, retail etc.)
- As graphics capabilities have expanded, these games have led the way in allowing people to insert their own graphics (VR games) or integrate AR elements that interact with the spaces around them. This is a relatively new area for VR/AR in any industry, and RPG games are leading in this space.

### Economic

- Developing VR/AR RPG games has created a fanatic fan base that religiously purchases in-game items and new games.
- Has also encouraged the purchase and development of previously lesser used VR systems (e.g. Oculus Rift)

### Environmental

- Since AR/VR RPG games are often directly implemented into the technology (e.g. mobile phones) that someone already owns, there are minimal environmental concerns attached to this technology
- However, many of the components that are used to make the headsets used to play these types of games (e.g. Oculus Rift), are highly difficult to repair, resulting in significant disposal and sustainable concerns for the more toxic, unrecyclable components often used for the electronic parts. <sup>18</sup>

<sup>17</sup> "Top Five VR Social Experiences," VRFocus, , accessed January 28, 2019, <https://www.vrfocus.com/2017/08/top-five-vr-social-experiences/>

<sup>18</sup> "Is Virtual Reality Technology Bad for the Environment?" ARPost, December 12, 2018, , accessed January 27, 2019, <https://arpost.co/2018/07/12/virtual-reality-technology-bad-environment/>

## Trend Dimensions: STEEPV

### Politically

-One of the major concerns with AR/VR RPG games is how consumers can be protected from hacks and stolen identities. Since full movement patterns, facial recognition, and often components of peoples homes are all documented inside the system, the potential for malicious data usage is high. Governments and courts may need to look at legislation surrounding the usage and protection of this data.

-Depending on the use of VR/AR RPG games, they can take on a political context. For instance, the backlash against a VR based “virtual visit to hurricane-ravaged Puerto Rico.”<sup>19</sup> Depending on the content of these games, they can be used for social/political good, or for chaotic disruption (shooting games, natural disaster games) .

### Values

-Another issue surrounding VR/AR RPG games is surrounding violence. In 2015, a violent AR/VR RPG shooting game (Bullet Train)<sup>19</sup> was pulled from a convention after people were upset at its violent content. Many people feel that AR/VR RPG games encourage people to simulate shooting real people, rather than video game characters.

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19 Emory Craig, “VR and Politics - Facebook Removes Violent VR Game from Conference,” Digital Bodies, February 24, 2018, , accessed January 27, 2019, <https://www.digitalbodies.net/virtual-reality/vr-and-politics-facebook-removes-violent-vr-game-cpac-conference/>.

# Signals & Trends Research

## Implications

Overall, these future extrapolations mean that, in the future, AR/VR may be on the forefront of online social interactions. As the technology to integrate one's own face or body into the game with smart AI continues to advance, many people may begin using this technology as a substitute for face-to-face or voice gameplay interactions. At some point in the future, the graphics and AR markers may be so well integrated that they are indistinguishable from one's real environment.

## Signals and Sources:

AR/VR RPG games have been rapidly expanding and growing in number in the last year or so in the video game industry. Some of the platforms that have been developed for gameplay include Oculus Rift, Sony PlayStation VR, HTC Vive, or even the use of the iPhone's in-phone AR kit development.

Another signal that this trend is on the rise is the discussion of these AR/VR RPG games in the political sphere. As mentioned in the STEEPV analysis, violent AR/VR RPG games have drawn attention from the wider political sphere, especially as one was used and subsequently pulled from a conservative political action conference. The appearance of this trend outside of the gaming and social sphere legitimizes it as both an issue and as an emerging technology.

<sup>20</sup> "Google Trends: VR/AR RPG Games," Google Trends, ., accessed January 27, 2019, <https://trends.google.com/trends/explore?date=all&geo=US&q=VR RPG>.

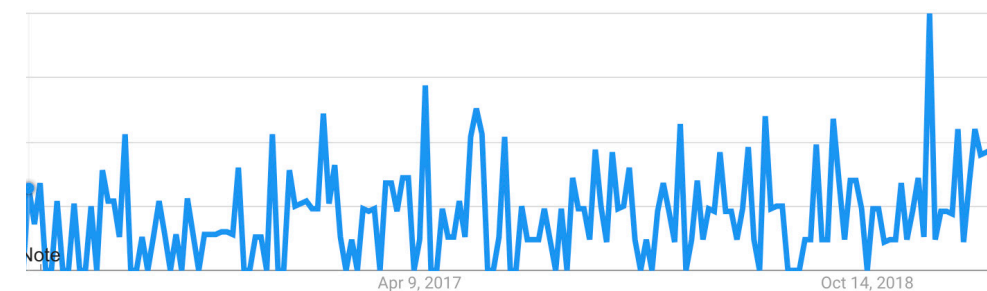
<sup>21</sup> "IBM, Unity Team To Add Watson AI To Virtual Reality," 08/29/2013, ., accessed January 28, 2019, <https://www.mediapost.com/publications/article/315053/ibm-unity-team-to-add-watson-ai-to-virtual-reality.html>.

## Counter Trends:

There is not any particularly strong evidence pushing back against this trend, in particular, however, there is some level of pushback against AR/VR healthcare applications as a whole. Many medical professionals are concerned that these technologies will be seen as a replacement for real-world therapy techniques. This also matches with the trend of people to seek mindfulness and connections with their surroundings and to unplug and disconnect from social media and other online platforms. Since VR/AR could result in patients relying on these virtual means of therapy, there might be pushback if people crave a more offline therapy experience in the future.

## Extrapolations

As this trend continues, games will likely shift from dominantly VR to dominantly AR. Right now, the majority of game production is created for products like the Oculus Rift. However, 10-20+ years later, as technologies like ARKit expand in processing power and capabilities, it is likely that these games will become 1. More portable and 2. More immersive into one's real space, rather than simulating a game environment with VR. Another area where this technology will likely grow in the coming decades will be the integration of AI into these games. This is already occurring where smart AI can be used to play against in the Star Trek RPG game using IBM's Watson AI tech. <sup>21</sup>



## Trend 3: Accessible AR/VR Art

*Why is this theme significant?*

Immersive and interactive art spaces have been around for a while, but most still exist in the physical plane. Spaces like the Digital Art Museum in Tokyo, where different works of digital art are showcased, are still out of reach for most people. The constraints of space, time, and variety of other resources, keep users away from experiencing these environments. In a time when everything is readily available with the touch of a screen, these constraints should not be as influential as they currently are.

One way to reduce these limitations is by recreating immersive and interactive experiences in a virtual reality space and making them available through the web. Users could access these experiences from the comfort of their home using a VR headset. This solution would benefit not only the users but also the artists, who could use virtual reality as an additional medium to showcase their work.

Digital art spaces like the aforementioned museum in Tokyo have the greatest potential for creating these virtual reality spaces; the works of art are already created digitally in a 3D format by artists, programmers, and engineers, and they could be readily implemented for use with virtual reality.

### TREND DESCRIPTION:

More accessible Virtual Reality Art.

While virtual reality art works exist, they are usually made on a computer using 3D modelling software and/or programming. new VR apps like Google Tilt Brush,<sup>22</sup> allow users without a computer background to paint VR masterpieces. Artists and designers alike are now able to not just create but also interact with their artwork.

Google Tilt Brush and similar apps are relatively affordable, which encourages even non-artists/designers to use it. This increased demand is likely to make this technology even more accessible in the future.

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22 Josh McConnell, "'Like Finger Painting': Google's Virtual Reality Painting App Tilt Brush Targets Professional Artists," Financial Post, September 09, 2016, , accessed January 28, 2019, <https://business.financialpost.com/technology/personal-tech/like-finger-painting-googles-virtual-reality-painting-app-tilt-brush-targets-professional-artists>.

# Signals & Trends Research

## Supporting Imagery



escape: Immersive VR Art Exhibit<sup>23</sup>



Examples of virtual reality design are also emerging, like this example of fashion design made with Google tilt brush.<sup>24</sup>



Painting with virtual reality controllers allows even non-artists to create art.<sup>25</sup>

<sup>23</sup> Maria Gomes, "Banz & Bowinkel, Palo Alto, 2017, VR Experience, RESET III and VIRTUAL REALITY Exhibition View, Photo by Nathan Ishar – PRISKA PASQUER," PRISKA PASQUER, September 16, 2017, , accessed April 08, 2019, <https://priskapasquer.art/portfolio-item/banz-bowinkel/20170907-priskapasquer-reset3-virtual-reality-nathanishar-23/>.  
<sup>24</sup> Josh McConnell, "Like Finger Painting": Google's Virtual Reality Painting App Tilt Brush Targets Professional Artists," Financial Post, September 09, 2016, , accessed January 28, 2019, <https://business.financialpost.com/technology/personal-tech/like-finger-painting-googles-virtual-reality-painting-app-tilt-brush-targets-professional-artists>.  
<sup>25</sup> Ryan O'Hare for MailOnline, "Google's Tilt Brush VR App Lets You Paint Virtual Worlds on Digital Canvas," Daily Mail Online, May 11, 2016, , accessed January 28, 2019, <https://www.dailymail.co.uk/sciencetech/article-3584512/Google-Tilt-Brush-lets-paint-virtual-worlds-VR-app-transforms-surroundings-digital-canvas.html>.

## Trend Dimensions: STEEPV

### Social:

- Enhanced accessible VR art could have great implications in our social lives. We already spend a large amount of time looking at our screens and ignoring the real world, VR would exponentially increase this social issue, by effectively blocking our view of the real world.
- Would encourage the creation of art through gamification and inclusivity. Art would be more accessible to non-artists/designers

### Technology:

- More accessible VR art could change the way we use technology now. While in recent years there have been great improvements in technology, most digital art is still screen based (e.g. Wacom Cintiq, which is very technical to use).<sup>26</sup>
- VR could replace screens with a more practical and more interactive/ intuitive medium for creating art.

### Economy:

- VR sets are expected to become more affordable in the future, making them much more accessible to the average user. This will make digital art creation through VR much more common and profitable. Additional types of VR software will likely also become more specific to art, and create a new subset in the market.
- People will be able to develop and potentially sell their own unique art and designs created through VR.
- Can also make art viewing more accessible through affordable art galleries viewable through VR<sup>27</sup>

### Environment:

- VR art can effectively replace traditional toxic artist materials like oil paints, making it much more sustainable and better for the environment.
- Standalone VR sets effectively replace traditional devices like TVs, while mobile VR sets make use of devices most people have on hand already; this minimalism could reduce the need for electronic-making resources, making technology much more sustainable.

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<sup>26</sup> Betty Zhang and Betty Zhang, "VR Museums, Looking towards a Future in Art or Backwards in Accessibility?" Medium.com, December 20, 2017, , accessed January 28, 2019, [https://medium.com/@Betzilla\\_/vr-museums-looking-towards-a-future-in-art-or-backwards-in-accessibility-9349cf3c98ca](https://medium.com/@Betzilla_/vr-museums-looking-towards-a-future-in-art-or-backwards-in-accessibility-9349cf3c98ca).

<sup>27</sup> Betty Zhang and Betty Zhang, "VR Museums, Looking towards a Future in Art or Backwards in Accessibility?" Medium.com, December 20, 2017, , accessed January 28, 2019, [https://medium.com/@Betzilla\\_/vr-museums-looking-towards-a-future-in-art-or-backwards-in-accessibility-9349cf3c98ca](https://medium.com/@Betzilla_/vr-museums-looking-towards-a-future-in-art-or-backwards-in-accessibility-9349cf3c98ca).

## Trend Dimensions: STEEPV

### Political:

-VR art will likely result in an overall increase in the use of VR for activism, graffiti and other purposes. The use of VR in this way may require increased regulations (e.g. where is it acceptable to allow VR art to be created, laws around private property etc.)

### Values:

-Increased accessibility to virtual reality art could have ethical implications, especially for younger or vulnerable users, who might not easily distinguish what is real from what is fake.  
 -Public VR art may lead to concerns and regulation about its content (e.g. restrictions on controversial art) and restrictions on where this art can be created and displayed

### Signals and Sources:

Recent and upcoming releases of VR art software show an increase in accessibility.

VR devices like Google Cardboard and Samsung Gear VR, are replacing traditional computer-based headsets. These devices cost as little as one-tenth of the price of a traditional VR headset, making them excellent entry-level point sets for new users. An upcoming release is the Oculus Quest, which will be released in the spring of 2019. It will a standalone set with built-in sensors that will eliminate the need of placing physical sensors in the “play” space.

One recent release in the VR software category is the Google Tilt Brush app. This app allows VR users to paint in a 3D space, creating instant 3D works of art. 3D design has always been inaccessible for most people due to its specialized software, but apps like Google Tilt Brush could finally get rid of this limitation.<sup>28</sup>

Accessible VR art can also add accessibility to art viewing spaces as well : “ by using Vive, the museum was able to provide this artistic experience to a different audience, which is the physically impaired audience who have to sit in wheelchairs, and therefore can’t really access the actual mirror rooms within the museum,”.<sup>29</sup> So, both art creation and art viewing are becoming more accessible through VR art applications.

28 Josh McConnell, “Like Finger Painting”: Google’s Virtual Reality Painting App Tilt Brush Targets Professional Artists,” Financial Post, September 09, 2016, , accessed January 28, 2019, <https://business.financialpost.com/technology/personal-tech/like-finger-painting-googles-virtual-reality-painting-app-tilt-brush-targets-professional-artists>.

29 “VR for Art’s Sake: How Virtual Reality Can Change the World of Culture,” IT PRO, May 30, 1970, , accessed January 28, 2019, <https://www.itpro.co.uk/technology/31188/vr-for-arts-sake-how-virtual-reality-can-change-the-world-of-culture>.

# Signals & Trends Research

## Counter Trends

Augmented Reality has been increasing in popularity in the last few years, mostly due to its accessibility. Unlike Virtual Reality, AR is readily available on mobile devices, and it's usually much more affordable than the average VR experience. This means that AR art may be more likely to catch on as an accessible form of creation compared to VR art.

## Extrapolations

Virtual reality sets are going to get smaller, more mobile, and more accessible. This minimalist trend in VR is likely to be combined with other artificial realities like AR and AI, creating portable mixed reality experiences. In the future, likely 20 years out, artists will likely be able to create art on the fly, using VR within a mobile device.

## Implications

The main barrier for physical art spaces has been accessibility, and while turning physical art spaces into virtual ones would be a big improvement, users would still need to use a VR set. The minimalistic future of VR would enhance the virtual art space experience, making it more accessible, and more approachable for the average user.

## Trend 4: AR Health Implant Chips

*Why is this theme significant?*

An important and constantly growing development is the awareness of our health and fitness. Nowadays, there are advances in technology to bring medical help to the comfort of the user's home. This ongoing trend can grow to help users who are interested in understanding their mind and body better. "We believe that understanding your hormones and having that lens to what's going on inside your body is information that women are entitled to have,"<sup>30</sup> AR fitness and health trackers allow the patient and doctors have a lens to what's going on inside a person's body that can be put into attention when needed.

Designers have already made AR off-screen interfaces for entertainment purposes such as snapchat, google maps, etc. The development of AR could also be adapted to help health if designers choose to look in that direction. Augmented devices can store real-time data while activated which can inform the user more efficiently. Additionally, biometric authentications can be integrated through fingerprint sensors within to boost security and authentication.

The goal is to create augmented technology that can help users identify their health and fitness information without having to go out of their way. Instead of calling to book an appointment with a doctor, the user can now integrate technology inside them that detects issues and projects them. Using biometric authentications the user can stay aware of any unidentified pain, heart rate, blood pressure, diet, sleeping patterns. "One of the most useful aspects of AR technology in the fitness world is the fact that it can provide you with real-time information about what's going on in your body while you're working out."<sup>31</sup> This development of technology can help users maintain their health and fitness overall.

**Trend name:** AR Health Chip/Tattoo

### **Trend description**

The ability to project personal health care information through AR, from a chip inside the body that is activated by a fingerprint sensor tattoo.

The device is a small chip integrated inside the body of a user. The chip stores real-time information about the user and must be located around a pulse (the wrist or behind the ear). On the skin is a small tattoo to identify exactly where the chip is located and contains biometric authentication to activate the chip to project the information. The chip is activated by only the user's fingerprint placed on top of the tattoo. Once placed, a projection of a shows up not too far from the user's vision that displays a diagram of the user's body and personal health information on the side. This information includes any unidentified pain, heart rate, blood pressure, diet, and sleeping patterns. The diagram also informs the user if they should be concerned about certain health habits and/or if they need to see a doctor as soon as possible. The goal is to efficiently maintain health and fitness goals while also informing the user of any concerns when needed.

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30 "The Future 100: 2019," JWT Intelligence, , accessed January 28, 2019, <https://www.jwtintelligence.com/trend-reports/the-future-100-2019/>  
31 Andrew Medal, "How Augmented Reality Can Help You Achieve Your Fitness Goals," Entrepreneur, August 18, 2017, , accessed January 28, 2019, <https://www.entrepreneur.com/article/298596>.

## Signals & Trends Research

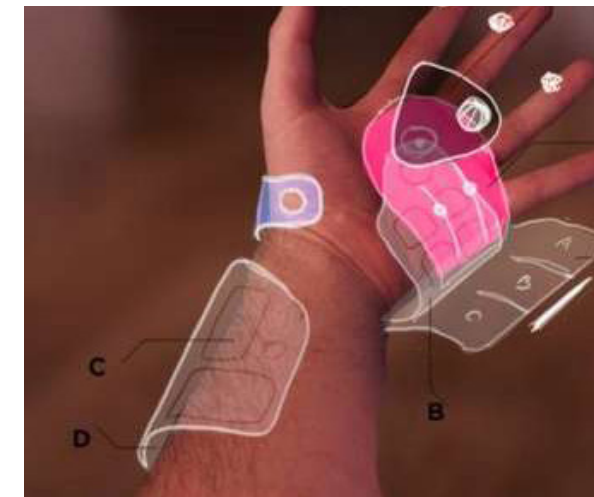
### Supporting Imagery



In the future, doctors may be able to visually project health data through AR. This would provide easier to understand information to patients.<sup>32</sup>



New AR projection tools can help nurses find a vein on patients.<sup>33</sup>



Realistic hand projections can be used to display healthcare data.<sup>34</sup>

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<sup>32</sup> "T Tommy, "Healthcare Management Consulting," Adaptive Workforce Solutions, January  
<sup>33</sup> "Augmented Reality," AccuVein, , accessed April 08, 2019, <https://www.accuvein.com/why-accuvein/ar/>.  
<sup>34</sup> 2019, , accessed January 28, 2019, <https://adaptiveworkforcesolutions.com/>. he <sup>34</sup>Future of Augmented Reality Is "Virtual Wearables"." Pinterest. Accessed January 28, 2019. <https://www.pinterest.ca/pin/550916966912788342/>.

## Trend Dimensions: STEEPV

### Social:

- Can become a trend within social groups e.g. as identifiers or a status symbol especially with the more visible options like tattoos. At first, this technology will likely be associated with being more wealthy (similar to wearables like the Apple Watch)
- This technology might also encourage a better/more transparent patient/therapist relationship though allowing patients to visually see treatment options and become more informed about their health conditions.<sup>35</sup>

### Technology:

- Improves the development of augmented reality and biometric authentication through encouraging wider usage at the patient level
- Encourages research in biometrics for healthcare applications and more advanced security and encryption for AR applications.
- The expansion of AR into storing health data would encourage Research and development into secure and private solutions for biometric storage and sharing

### Economy:

- At least in the technology's early stages, it is likely that only upper (eventually middle class) class people can afford it since
- Impacts health institutions costs and volume of patients; if patients are better able to self advocate and understand their own medical data, less in office visits will be necessary.
- Could lead to a two-tier system since this likely could not be fully funded by OHIP or similar programs

### Environment:

- The physical components of the chips and tattoos are made in factories (depends on how the technology is created) which causes issues with greenhouse gasses, sustainability and safety of materials. This is mainly a concern for the physical manufacture of the implant chips, which is an ideally permanent procedure (this would lessen the impact of the manufacturing)

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35 "T Tommy, "Healthcare Management Consulting," Adaptive Workforce Solutions, January 34, 2019, , accessed January 28, 2019, <https://adaptiveworkforcesolutions.com/>. he 34Future of Augmented Reality Is "Virtual Wearables"." Pinterest. Accessed January 28, 2019. <https://www.pinterest.ca/pin/550916966912788342/>.

## Trend Dimensions: STEEPV

### Political:

Impacts privacy (sharing healthcare data projected into a space, easily viewable by others) and could compromise all of a person's health data if hacked  
 -Impacts the health institutions through less in office visits; could also require regulations due to using direct-to-consumer care

### Values:

-Beliefs that are already against intense health care would find the technology offensive (e.g. alternative medicine, eastern medicine) or potentially invasive. Since it is implanted underneath the skin, this could be a concern for those who do not believe in body modification

-The idea of sharing information can scare people, particularly sensitive healthcare related information.

### Signals and Sources:

There has always been a trend to improve medical treatment the best way we can. Whether it'd be inventing new ways to cure diseases or simply maintenance, health has always been regarded throughout.

AR and VR technologies for patient care are continuing to emerge as a valuable tool for doctors and other healthcare professionals to better serve patients. For AR implants in particular, the advancement of technologies like vein detection has pushed this technology into the spotlight.<sup>35</sup> As techniques for more complicated treatments improve, it is likely that use of AR and AR implants will expand to more areas of healthcare.

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36 "T Tommy, "Healthcare Management Consulting," Adaptive Workforce Solutions, January 34, 2019, , accessed January 28, 2019, <https://adaptiveworkforcesolutions.com/>. he 34Future of Augmented Reality Is "Virtual Wearables"." Pinterest. Accessed January 28, 2019. <https://www.pinterest.ca/pin/550916966912788342/>.

# Signals & Trends Research

## Counter Trends

Trends that are against development of a health system that projects augmented information or uses implants would have more to do with the augmented reality portions rather than health. Because health has always been accustomed to changes, there is usually not a problem with advances. However, augmented reality has been an issue for design trends that are off-screen. When people spend a lot of time passively consuming information--reading but not interacting with people--they report feeling worse afterward.”<sup>37</sup> A system that gives users less interaction can report to making them feel worse afterwards which can sometimes worsen their health.

## Implications

The overall theme is augmented/artificial reality. The future of this trend will encourage the spread of AR/VR technologies for a variety of healthcare applications (not just inside hospitals). This trend will also influence the creation and the use of more personalized AR/VR, rather than mass produced games, social media etc. Through furthering the use of this custom AR, it will encourage innovation and development beyond the rudimentary games currently in existence.

## Extrapolations

(10 years) 2029 - The trend would already be developed. Because the invention seems out of reach in 2019, the developing ages would most likely be around this time or a few years before. The technology is somewhat new and constantly growing in design. The information displayed just shows the fundamentals (basic health information) and hasn't reached completely to everyone yet. Most people using this technology are people who can afford it and hospitals.

(20 years) 2039 - The technology has spread amongst everyone and has become as useful as having a cellphone today. Health has improved immensely increasing human old age 80 years more than 2019. The technology is still constantly growing but no longer contains just basic fundamentals, and is fully customizable to each user's needs, adapting organically without new software development.

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37 "The Future 100: 2019," JWT Intelligence, , accessed January 28, 2019, <https://www.jwtintelligence.com/trend-reports/the-future-100-2019/>



# Part B: Visualisation

*Scenario and World Development*

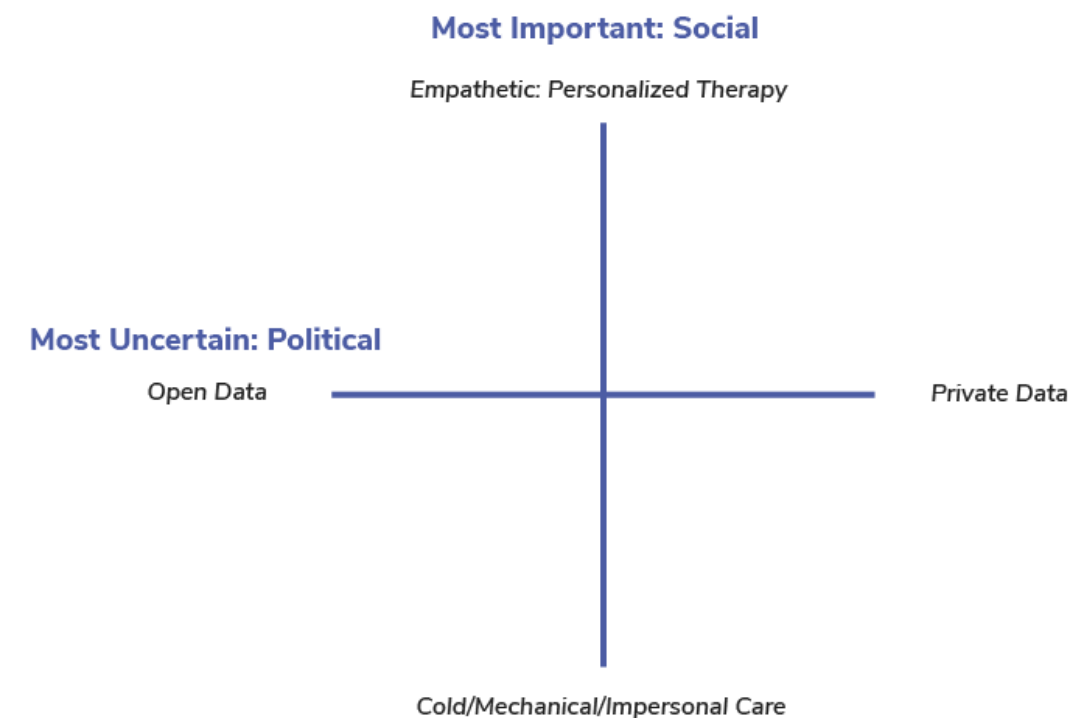
## Part B: Visualisation

### Scenario 1: Uncertainties Matrix

#### Bullet Point Outline of Scenario

- The year is 2030. Anne, a first time AR/VR therapy patient and high school student, and her mother are meeting with Anne's therapist to rework her treatment plan
- She has had her therapist, Lea, for many years, and was diagnosed with generalized anxiety disorder when she was in grade 8
- Recently, her therapist has found that AR/VR therapy has been effective on her older patients, and she is eager to test it out on Anne (a significantly younger patient)
- Although Anne had seen progress through her therapy sessions, she was primarily relying on antidepressant medication to manage her anxiety day to day
- Her mother expressed interest in trying to find alternative treatment methods; they both would prefer medication to be a supplementary treatment method
- Lea took Anne through the process of setting up a personalized VR treatment system, which she could take anywhere and is set up specifically for her symptoms.
- She uses it for the first time after having a particularly difficult day, and the system provides her with an anti-anxiety meditation session, with variances determined by her physiological state.
- The system is able to detect her heart rate and brain activity and helps to regulate her stress hormone levels.
- Anne finds that the system can read her emotions incredibly well as if a trained therapist is on stand-by

- By the time she is done, unlike conventional therapy, she is left with a sense of relief.
- Anne excitedly calls Lea, telling her she feels she has finally found the right fit through the personalization technology, despite her initial concerns



This is the matrix used for the scenario (empathetic and open data were selected as the factors used).

## Part B: Visualisation

### Process for scenario creation

- Therapy is a highly personalized, yet public service
- Becomes empathy driven via open data, and data insights are used to tailor AR treatments and environments for the individual user
- Companies vie for more and more data to personalize services even further
- As data becomes more and more open, resistance grows to the use of these digital mental health tools



Prioritization of wellness environments within the everyday.  
38



Customizable and tailored VR environments based on personal preferences and physiology.<sup>39</sup>

### What is the 'macroenvironment' or 'world' in which the scenario takes place like?

- Main protagonists: large corporations, therapy patient, healthcare providers, health regulators/government
- Wider world became more manipulatable through the openness of personal, cognitive related data. People's views/cognitive states are influenced through corporate buying of data, resulting in cognitive bias.
- Mental health becomes more of a personalized product/commodity, and treatments are public and digital knowledge

### MACRO ENVIRONMENT

- (demographic forces) Trend of increasing mental health concerns will likely continue from the present day, resulting in more demand for care.
- (economic forces) Mental health is viewed as mandatory, funded by government
- (natural/ecological forces) Since AR/VR technology can be implemented into devices that patients already own, there can be certain harmful factors eliminated, e.g. pollution from batteries or other materials
- (technological forces) a significant amount of industry investment will be used to create advanced and smooth UX technology for a realistic AR/VR experience
- (political/legal forces) large corporations will find ways to manipulate the patients to share their personal data while maintaining legalization and care for them
- (social/cultural forces) The stigma towards mental health has disappeared and the need to empathize with those are in now demand. Contrast to this, the exposure of their personal data goes beyond their beliefs which may alter its use after a few years.

38 "The Future 100: 2019," JWT Intelligence, , accessed January 28, 2019, <https://www.jwtintelligence.com/trend-reports/the-future-100-2019/>.  
39 Carly, "My Futuristic Dream Therapy Room," Carly's Couch, March 10, 2014, , accessed April 08, 2019, <https://onthecouchwithcarly.com/my-futuristic-dream-therapy-room/>.

## Part B: Visualization

### ***What are the trends/drivers that helped form this scenario?***

- companies buy and sell data in order to customize therapy
- mental health data is publically available/ not private to just your therapist
- trend toward tailored products; less reluctance to share data among users
- Government has loosened laws around sharing healthcare data to non-direct care providers
- mental healthcare becomes part of the main healthcare system (no longer pseudo-two tier)

### ***How will this scenario affect AR/VR?***

- More awareness of mental health issues in wider society but also there is stigma and employer awareness of who uses these services
- AR/VR tech could be viewed with suspicion by users; only used when necessary
- Helps to develop the tech's capabilities through the use of data, but this growth becomes heavily regulated
- Could also create awareness of VR/AR's potential for other medical uses (e.g. as a training tool) and help grow its use in this space.
- Grow the profile of AR/VR as a health and accessibility tool, rather than just something for social media and/or gaming

## Part B: Visualization

### Scenario 2: Generic Images of the Future

#### *Bullet Point Outline of Scenario*

- Ben is a teen boy living in 2030 who is getting grief counselling for the death of his mother using AR/VR therapy, guided by and created through AI,
  - This method is a brand-new method of therapy, released to the public within the last year
  - He starts out having typical talk therapy sessions with his counsellor and is later referred to a licensed AI therapist once his needs grow beyond the scope of what his therapist can provide
  - He is prescribed an AR/VR therapy toolkit by his AI therapist, but his father is skeptical of the additional cost.
  - When Ben tries the toolkit, he is able to better manage his anger related issues through stress relief exercises. The AI is able to adjust to Ben's mood and suggest relevant techniques
  - He tries to convince Ben to stick out the talk therapy sessions, but Ben is adamant that the hyper-customization of the AI therapy is a much better alternative to a therapist.
  - They end up getting into an argument over the cost, and her father's reluctance to pay for non-traditional therapy services.
  - His father is resistant to diverting those funds to an AI therapist upgrade instead.
- Ben then decides to pay for the first month with his own savings, and prove to his dad the benefits of the tailoring that his AI therapist was providing
  - After the month passes, Ben has made significant process in healing from and managing his grief. He was able to reduce much of the anger associated with the death of his mother as well, and his AI therapist was mostly providing him with short daily sessions and tools for unexpected emotion.
  - Even his father couldn't deny the positive changes brought on by the introduction of a more custom AI therapist and held back on judgement based on his concerns with data privacy and lack of human oversight.
  - He then finally agrees to stop paying for talk therapy and to embrace this more effective form of therapy, albeit still making Ben pay for a small portion of the therapy.

## Part B: Visualization

*Describe the 'macroenvironment' or 'world' in which the scenario takes place*

- Demographic forces: size of population in 2030 will increase which also increases the need for mental health therapy.
- Economic forces: Mental health becomes a trend, therefore, increases its value within the market. Developers/Designers/Health providers work together to improve the AI experience for patients.
- Natural/ecological forces: Robot contains recyclable components but are made in factories which can overall harm the environment.
- Technological forces: Advanced and empathetic AI technology begins to take over the role of humans.
- Political/legal forces: Laws surround the inventions of these AI robots. Can only created by businesses with permission from the government.
- Social/cultural forces: open communities and social therapy for people who want to connect with others. AI takes control of personal therapy sessions

*Description of the process (including images) for scenario creation*

- VR/AR care is changed through AI driven algorithms and real-time customization
- Use of the VR/AR technology is transitioning towards being facilitated by AI technology rather than within a traditional therapy session.
- Therapy is more tailored and predictable in outcomes (doesn't rely on a subjective human therapist)
- AI has become omnipresent, and 95% human-realistic
- No more stigma with mental health results in open communities and social therapy
- Public AI mental health guides, spaces dedicated to the use of AR therapy
- Businesses/Companies are driven empathetically to help/improve mental health
- Hyper-focus on customization and on technology moulding to an individual's circumstances and mood

42 "Meditation Made Easy," Muse, , accessed April 08, 2019, <https://choosemuse.com/>.

43 "Virtual Reality Pod," Glow The Event Store, , accessed April 08, 2019, <http://glowparties.ca/product/virtual-reality-pods/>.



Visual of how VR could be augmented onto a human to have it present always.<sup>42</sup>



VR pod that could be used for communication with Artificial intelligence.<sup>43</sup>

## Part B: Visualization

### Scenario 2: Generic Images of the Future

#### *Discussion of the trends and drivers that informed its creation*

- Stigma against mental health is gone which results in open communities. This improves mental health by driving innovation and research
- As a result, AI therapists are formed from a trend towards personalization, “smart healthcare”
- These trends are already present today, in areas ranging from AI recommended vitamins, to the development of tele-health solutions (over the internet).

#### *Explanation of how this scenario would affect your chosen domain*

In this particular scenario, advanced AI technology and the advent of personalized robots are invented and take over human-like roles and jobs.

This space would allow AR/VR technology to transform by allowing hyper-customization of the visual and service experiences AR/VR tools can provide. It would also likely result in higher adoption and retention of the technology, since this customization is more likely to result in brain dependency.

# Part C: The Prototype

*Creating a VR Mental Health Toolkit*

## Design Statement

Based off of the 2x2 matrix of empathetic care and open data, Levare is a VR experience created to provide users with a fully-immersive mental health therapy experience. It uses cues from the user and their physiology to tailor the experience each time. Though using three different portals, the experience incorporates general stress relief, intrusive thought relief, and an exposure therapy experience to demonstrate the range of possibilities with VR therapy technology in the future.

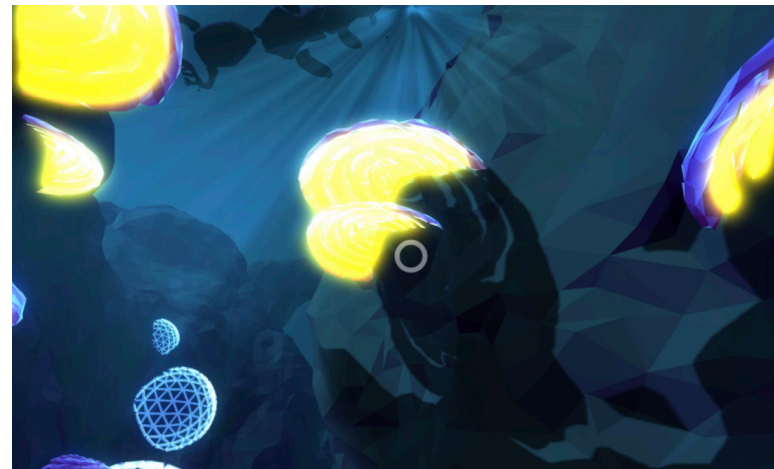
Overall, Levare is designed to create a safe place for users to explore and understand their mental health concerns with an empathetic virtual guide.

## Further VR Research

What types of mental health VR experiences already exist?



**VR Focus:** an Oculus rift-based meditation app created for general stress relief in paradise-like environments. Usually guided. <sup>46</sup>



**Deep:** Panic attack reduction game uses sea life to create a calming environment. <sup>47</sup>



This application out of Oxford university uses VR subway cars to treat paranoia and agoraphobia. <sup>48</sup>

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<sup>46</sup> "Oculus Meditation Archives · Guided Meditation VR for Oculus Rift, HTC Vive, and Gear VR," Guided Meditation VR for Oculus Rift, HTC Vive, and Gear VR, October 26, 1970, , accessed April 08, 2019, <https://guidedmeditationvr.com/tag/oculus-meditation/>.

<sup>47</sup> Joe Donnelly, "Experiencing 'Deep,' the Virtual Reality Game That Relieves Anxiety Attacks," Vice, March 24, 2015, , accessed April 08, 2019, [https://www.vice.com/en\\_au/article/xd5em3/experiencing-deep-the-virtual-reality-game-that-relieves-anxiety-attacks-142](https://www.vice.com/en_au/article/xd5em3/experiencing-deep-the-virtual-reality-game-that-relieves-anxiety-attacks-142).

<sup>48</sup> "Oxford Study Finds Virtual Reality Can Help Treat Severe Paranoia," University of Oxford, , accessed April 08, 2019, <http://www.ox.ac.uk/news/2016-05-05-oxford-study-finds-virtual-reality-can-help-treat-severe-paranoia>.

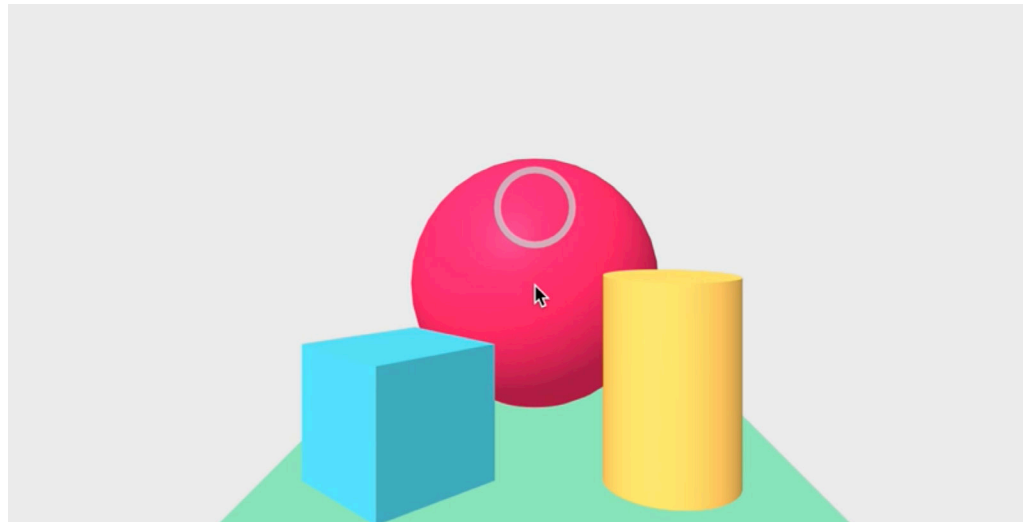
## The Problem & User Needs

**How might we create a mental health VR toolkit for the year 2030?**

**What do users of this VR prototype need for it to be a truly empathetic and personal system?**

- Responds to body and physiological factors (heart rate, hormones, etc.)
- Adapts to many different needs and feels like therapy is handpicked for you (e.g. recommended portal for today)
- Senses changes in response and engagement and makes you feel like you're not alone.
- Emphasizes choosing the portal/ experience that is right for you
- Can also integrate with an existing/ in-person therapist

## Initial Tests of VR



This was our original test of the VR experience with primitive portals. This experience was used for user tests before creating the final prototype.

## Prototype Testing

How did users respond to a VR prototype?

**Feedback on this initial prototype:**

- Sometimes hard to figure out what the cursor is doing
- Need instructions and tool-tips to orient to environment
- Liked the overall visuals and music
- Were confused on how to progress through the scenes

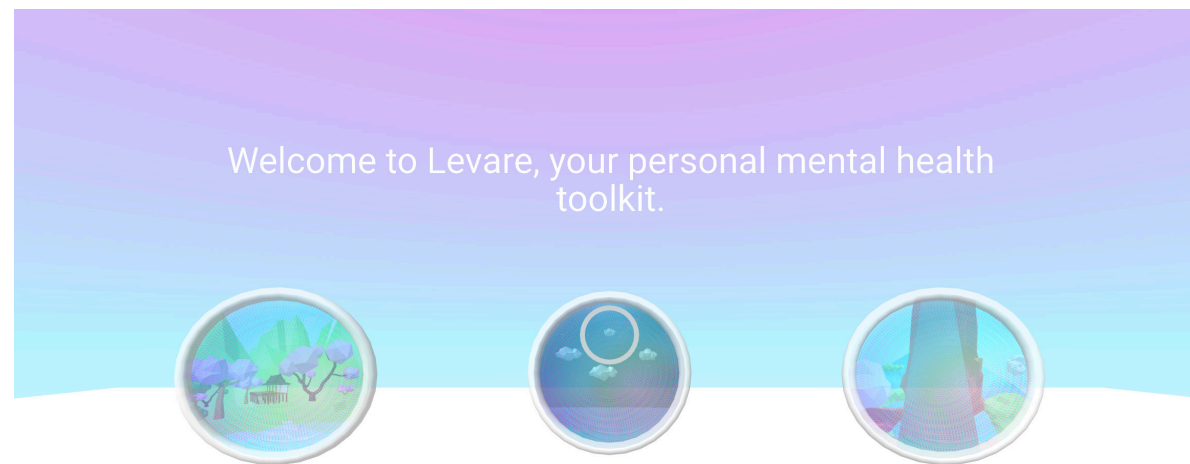
**Overall:** Overall: adding instructions and details about the nature of the portals to give users a feeling of preparation before entering the experience.

## Levare: Latin Verb

Free from (worry/expense)  
to lift up

# The Final Prototype: Levare VR Experience

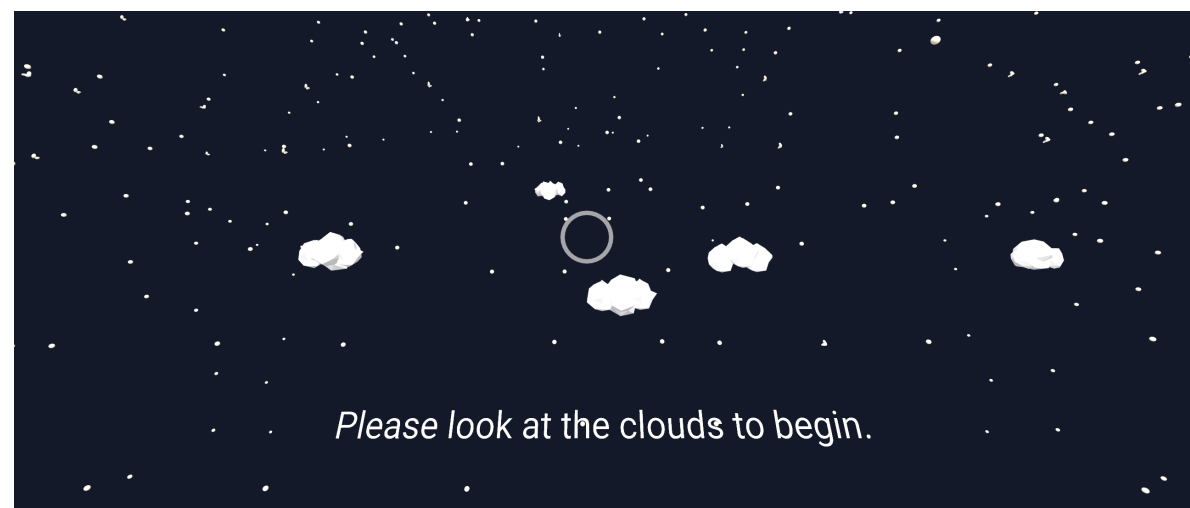
Link to prototype: <http://ixd0011.firebird.sheridanc.on.ca/Levare/>



Introduction to the experience with portals to different rooms.



General stress relief garden with ambient sounds.



Body scanning guided experience for relieving intrusive thoughts.



Bridge exposure experience for height phobias. (intended to be therapist facilitated)

## Next Steps & Reflection

Creating a VR experience for mental health was an interesting design opportunity for our team. Thinking about these technologies from a speculative perspective allowed us to expand the possibilities for what the rooms were capable of, even incorporating brainwave reading and other emerging research.

In the future, we would entirely build out all three rooms, and create more interfaces and tooltips within each of the experiences to better guide the user. Making experiences more customizable would also be an exciting area to explore in a rework of this design as well.

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