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How a Reality Upgrade Can Transform Mainstream Healthcare

An SXR primer on Extended Reality as a new dimension in health and wellness solutions





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“COVID changed everything: the necessity for safety opened up the XR market size and deep understanding of the use of Head Mounted Displays for doctors, engineers and brand builders.”

Charles Kirby, Founder, SindyXR

0.1 Technology, Self-Care and Stepping Outside Physical Reality

The world is emerging from a global pandemic that has disrupted organizations and businesses and challenged them to innovate at speed.

People have been living their lives in a virtual fashion for a prolonged period - and while a pendulum swing back to 'real world' physical experiences is to be expected the notion that people can work, find entertainment, shop and educate themselves remotely is now widely accepted.

This holds true in the world of health, well-being and patient care. The normalisation of telemedicine - the use of information and communication technologies to connect healthcare providers and patients - has accelerated. Across the US alone, nearly half of healthcare consumers are now using telehealth, according to consultancy firm McKinsey—up from one in 10 in 2019.

The global pandemic meant many patients became familiar with audio-only or video calls because they were too unwell to head to clinics and surgeries, located too far away or anxious about exposure to Covid.

A survey by the Royal College of GPs in the UK found that six in 10 appointments in July 2020 were conducted by telephone – not exactly cutting-edge technology but the statistic shows that people are comfortable with the idea of remote patient monitoring (RPM).

Many people are now comfortable using Zoom, Google Meet, Skype, Microsoft Teams, Ring Central, Facebook Messenger and other platforms that added a video camera to their app.

These are impressive steps but they will soon be surpassed by a healthcare revolution that can deliver effective treatment beyond the 2D screen. The expectations for innovation in the sector are illustrated by companies such as Amwell, the US Boston-based telehealth provider previously known as American Well, which raised \$742 million in an IPO in September 2020.



There is evidence from social psychology and organisational behaviour research that people were positive about remote working at the beginning of pandemic; but people are now tired and want to have human interaction rather than through a screen. Anything that can be done to shake things up and make interaction more meaningful and bring people closer together can work wonders for anxiety and happiness.

Dr Pier Vittorio Mannucci



Assistant Professor of Organisational Behaviour

Healthcare was once the sole preserve of experts. Doctors and consultants will always enjoy high levels of trust and respect - but the idea that people can take responsibility for their own well-being and take preventative action is widely accepted.

There are a plethora of digital tools and apps that can help people stay physically and mentally fit. Mobiles or bespoke devices can monitor our heartbeat, oxygen levels and sleep patterns; notifications warn if daily step goals are missed and digital communities are available to encourage and support people in their fitness goals.

New fitness apps with their own eco-systems appear regularly. Fabletics, the athletic apparel brand backed by actress Kate Hudson, has just launched a Fabletics Fit app¹ featuring workouts and meditations; it offers apparel discounts in exchange for reaching fitness goals. These apps generate useful data both for users and their health advisers.

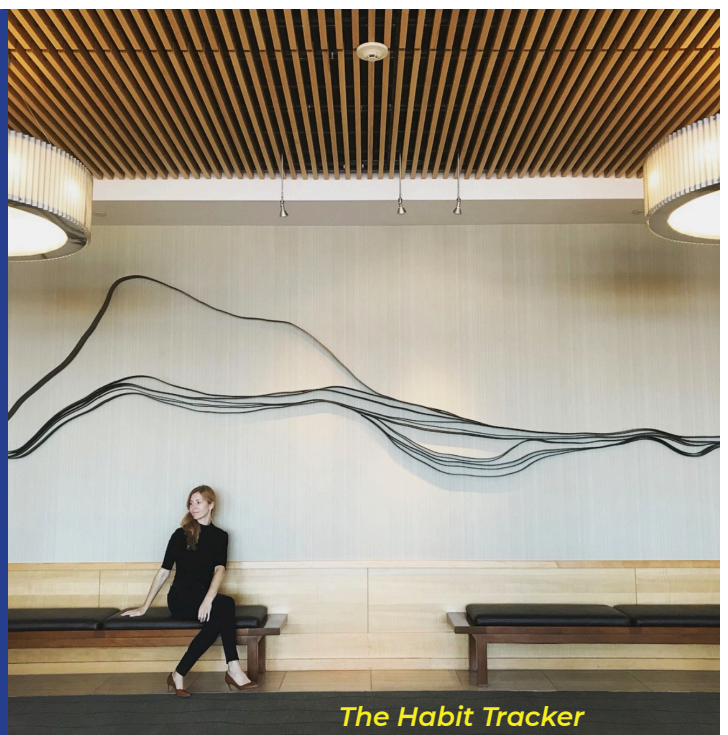
More than a fifth of Americans regularly use a smart watch or wearable fitness tracker to monitor their health (Pew Research Center).² The distribution among age demographics is not uniform – in the UK share of ownership of a smart watch/health tracker is highest amongst Millennials (37.6%) and lowest among Baby Boomers (22.2%).³

The global fitness tracker market size is set for accelerated growth – it took a dip in 2020 as a result of the pandemic but is projected to grow in global value by 6.41% this year and keep momentum with predicted growth of 7.07% for 2026.⁴



With the onset of Covid, patients have been propelled towards virtual health options. This has caused mindset and behavioural changes that are paving the way for new approaches to care, and the incorporation generally, of digital solutions across all industries.

Liz Bullen, CEO & Founder



The Habit Tracker

The combination of people’s receptivity to telemedicine together with the ability to collate useful biometric data from personal monitoring devices presents an intriguing future for healthcare. One based on the use of Virtual Reality and Augmented Reality – and beyond to ‘Extended Reality’ (XR), which embraces both terms. In tandem with the growth of telemedicine, the XR global market is set to explode and was valued at \$15.81 billion in 2020. It is expected to expand at a compound annual growth rate of 18% from 2021 to 2028.⁵

0.2 Brave New Worlds

Basic VR technology is familiar to gamers, enterprise business trainers and culture enthusiasts who like to tour art galleries or travel from their armchairs. It is already being used to treat severe conditions, such as post-traumatic stress disorder (PTSD), in specialist medical units.⁶ Augmented reality is also used in complex surgery as a way for a surgeon to keep vital signs in line of sight and provide guidance with physical body ‘maps’.

Extended reality (XR) is a leap forward involving immersive technologies that bring virtual and real-world elements together in a blended environment. Within this environment a user can interact with physical and digital objects and individuals.

XR is going through an accelerated evolution as systems and software that can integrate mobile apps, web apps and VR environments in new ways emerge. For instance, Microsoft is backing VR/XR technology with the launch of Microsoft Mesh – a mixed reality platform in the cloud that allows users to interact with avatars in a virtual space.⁷

Facebook’s Mark Zuckerberg is also a fan of the potential of XR and said in March 2021: “I’d love to get to the point where you have realistic avatars of yourself, where you can make real authentic eye contact with someone and have real expressions that get reflected on your avatar.”⁸

The involvement of these global brand names will help drive interest and investment in XR and educate more people about the capabilities to benefit all innovators in the sector.

These technologies have a range of applications for both physical and mental health, including diagnostics, therapy sessions and continuous care. A tipping point is coming





for adoption of such technology in mainstream healthcare and those who involve their organisations early will enjoy advantages in economies of scale and learnings.

The conjunction of several factors is changing the landscape :

- Public curiosity and open-mindedness regarding digital health and wellness tools
- The development of best-in-class XR experiences
- Geographically expanded and faster connectivity as wireless 5G rolls out globally
- Proof of effectiveness
- Affordable pricing models for deployment
- Secure compliance with regulations around patient data privacy and security (such as the HIPAA law in the US)
- Security in personal ownership of digital avatars (i.e. can't be stolen/'hacked' thanks to developments in blockchain technology)
- Innovation in LiDAR (Light Detection and Ranging) laser scanning will allow fast updating of a created digital world to match the immediate physical environment?

Liz Bullen of The Habit Tracker says: "There is a lot of momentum happening in this area right now. We are moving towards blended experiences and immersive learning regarding tackling challenges such as food management, nutrition and other health and wellness issues."

0.3 Why XR Excites Healthcare Providers

Society has changed rapidly in significant ways, some of which do not help maintain a healthy populace. Fragmentation of communities means more people live alone. The pace of modern life is eroding empathy and some people are finding it hard to ask for or find help in a form that works for them.

The pandemic and associated restrictions on movement, communication and human contact have exacerbated these problems for many people at each end of the age spectrum.

Older demographics have felt more isolated and vulnerable. A World Economic Forum study of people aged 50 and over in 26 European countries in 2020 found 30% of respondents reported experiencing a depressed mood and the same number reported experiencing anxiety symptoms and sleep problems.¹⁰

Younger demographics in the workforce have felt the pressures of job security and work from home 'burn out'. They are finding an inability to switch off and missing the collaboration and support of colleagues. Nearly 90% of Gen Z and 83% of millennials in a global study stated the pandemic has had a negative impact on their mental health compared to 78% overall. Employees in the US, India and China were among those suffering the most at work.¹¹

Negative health behaviours have also surfaced during the pandemic. There has been a rise in alcohol intake in some countries¹² and an already existing obesity crisis is being fueled by lockdown. An article hosted on the US National Library of Medicine states: "COVID-19 stay-at-home orders have placed children with obesity at risk for disease progression. Excess screen time and sedentary activities may increase during quarantine as normal rules and supervision adjust."¹³

During the pandemic people have also delayed or cancelled important health screenings and follow-up appointments out of fear. There will be an uptick in very preventable diseases and medical complications because of this.





Founder of Seamless Integrated Dynamics
Xtended Reality (SinDyXR)

Charles Kirby, CEO



The Pounds Transformation team has been progressive in the use of unique combinations of blood analysis and remote patient support. Insulin volatility tracked by Wearables was unheard of 10 years ago.

Now their team is blazing a another trail and presenting to its patients next level tools to bring success to the next decade of communication, health and wellness.

We had no idea that Sindy could help their patients but we could not be more proud.



Co-Founder of Pounds Transformation

Charles Cavo, D.O.



Extended Reality (XR) will make it possible to avoid coming in to see a physician which for some patients is quite intimidating.

Millenials & GenZ feel so much more comfortable asking questions about their health and wellness through technology.

We see so many young people who have expressed frustrations on how their pediatricians approached their weight loss issues and XR provides an opportunity for kids to feel more comfortable.



There is a health and anxiety timebomb ticking for the years ahead. This means there is a need to update tools, methods and programs to address changing patient behaviors and meet their wants and needs in a way that chimes with 21st century sensibilities.

The medical world has not kept pace with the ways people want to access information or connect. There is a lack of understanding as to how people absorb helpful advice and how are now engaging with channels that empower them to discuss their issues in a meaningful way.

For instance, social media platforms have proved helpful to young people with depressive symptoms. A 2021 US study found 43% of all 14-22-year-old social media users say that when they feel depressed, stressed or anxious, using social media usually makes them feel better – up from 27% in 2018.¹⁴

An over-riding patient need is the desire to find ‘safe spaces’ – both literally and conceptually - for consultations. Spaces in which those seeking help are comfortable and within which a healthy doctor-patient relationship can be built.

VR and XR environments are a way to provide such spaces, and offer specific benefits including the ability to visualize data in an engaging and interactive way.

They allow the use of elements of ‘gamification’ (found in digital experiences in other sectors from financial services to [education](#)) to help guide users towards healthy behaviors within digital environments.

Assistant Professor of Organizational Behavior Dr Pier Vittorio Mannucci says: “The more there can be interactions that resemble in-person connection, the more meaningful the interaction for the patient. They will not just feel they are being treated remotely because they are not valued.”

The full immersion offered by XR also allows unique experiences to be unlocked that help with physical well-being. In a full 360 degree, 3D environment, motion tracking sensors give a much better notion of physicality to help with full-body and situational dynamics training, as opposed to following a two-dimensional training exercise over platforms like Zoom.



Patients who are communicating remotely will be able to give a much more accurate description of where they are feeling pain than they can via a flat screen, a 2 – 3 cm difference in where there is discomfort can change the advice the doctor or physio gives. Even just seeing a body part more precisely, for example the hand, will be incredibly helpful for assessment and diagnosis.

Integrated XR experiences combined with haptics that give vibratory feedback in real time can be a powerful tool for physical therapy. Barrett Medical, an MIT spin-off, says: “Haptic technologies, such as robotic therapy and virtual reality, can provide engaging sensory environments ... and can provide graded resistance against the patient’s movement.”¹⁵

Bringing such innovation to mainstream health care will involve technology similar to the [Teslasuit](#), a full body haptic ‘skin’ designed to transfer sensation from XR to a human body via electronic impulses. The suits could work in conjunction with [LiDAR scanning](#) for a fully immersive, physically responsive experience.

The technology also allows for Remote Patient Monitoring for continued care, especially for high-risk patients where speedy intervention may be required. Michelle Cavo, CEO and co-Founder of Pounds Transformation observes, “The patient success in augmented reality could lead to success in physical reality.”

XR systems can also help in situations where a patient’s progress is being followed by a team of medical experts. The notion of a single doctor following a patient is becoming obsolete for many categories of medicine, for example cancer treatment recovery, and the ability for a specialist team to meet remotely beyond just using their smartphone and ‘pull’ folders virtually – either with or without the patient – will be invaluable.

A mobile device integrated to the bio-rhythms of the patient working in tandem with an XR system allows health providers to craft personalised treatment plans that can be experienced in dynamic, exciting ways, are outcome orientated and which guide patients along the right path to wellness and recovery.

“

The patient success in augmented reality could lead to success in physical reality.

”

Michele Cavo, PA-C & CEO



Co-Founder of Pounds Transformation

0.4 Showing the Way Forward

[Pounds Transformation](#) is a US business offering progressive medical solutions and support for individuals struggling with weight issues and its team includes registered dietitians and medical experts.

Co-founder and Chief Medical Officer of Pounds Transformation Doctor Charles Cavo says the more he learns about XR technology and the way it can integrate into a programme, the more he understands its potential to help in treatment with obesity.

The ability for a patient to represent as their preferred avatar rather than themselves is of great benefit. Dr Cavo says: “Extended reality will make it possible to avoid coming in to see a physician which for some patients is quite intimidating. Additionally, pediatric patients, specifically teenagers, feel more comfortable asking questions about their health and wellness through the technology. We see so many teenagers who have expressed frustrations on how their pediatricians approached their weight issues and XR provides an opportunity for kids to perhaps feel more comfortable.”

“The XR Tech allows us to provide information in a way that is more entertaining than just reading it or being told by a doctor in an office. What pediatrics patient wants to go see an obesity doctor? However, when they put on their goggles, they gamify the experience.”

He points to wearable devices like Polar or Apple watches as “areas of growth and development for improving healthcare “as they offer daily data points for healthcare providers.”

“SindySIGNALS triangulate the tangible and intangible data every moment that your patients play the game and they take a snapshot. That’s all it is. Whatever can be deduced or extrapolated from that moment is fed back to your Team Cube and they are there to help you. We like to call it I.I. (as opposed to A.I.), just intelligent intelligence. ”

Dr Pier Mannucci adds that an XR experience can help “create the positive emotions important for well-being and a lot of successful outcomes. We know that a positive affect is related to better memory, better physical functions and gives you a sense of control.

“For older people, using XR environments for easy access to information about what they said in previous consultations, the description of their symptoms and what notes were taken down can be more reassuring than relying on having the same doctor in the physical room (which doesn’t always happen) and hoping they remember what was said.”



Case study: Sindy XR and Pounds Transformation's

A Collaborative Project connecting objective, tangible data from wearables and intangible data from AR Games

SindyXR offers a suite of virtual remote working tools that can help empower people to make better health choices, deliver engaging programmes and improve doctor-patient communication.

SXR's solutions include the 'Check Yo Self' mobile app, webapps and its experiential, immersive activations called 'cubes', within which users can appear as an avatar and interact with their consultant or doctor. Biometric information and other data points can be pulled into cubes to be organised into shareable pockets of information that are presented in a digestible, easily visualised way.

The different SXR elements can be integrated to present a complete system for healthcare providers.

The business is currently working with Dr Cavo's team to build immersive 'cubes' specifically for Pounds Transformation patients. Patients can meet their dietitian within these spaces, taking the visual form that best helps them partake in an open discussion about their challenges.

These SindyCUBEs host educational components, such as how diabetics can monitor their blood sugars and the underlying causes of their condition. Patients will be able to find guides to the correct food choices and improve their lifestyle/behaviours to reverse their chronic disease state.

Pounds Transformation is also using the 'Check Yo Self' app, which includes gamification elements. The patient and dietitian can help relate their behavioural scores back to their success/challenges which would build new and better behaviours.

Testing is currently in beta . Dr Cavo says: "Our pediatric patients have the potential to enjoy a pediatric nutritional program without coming into the office to be seen by a doctor who specialises in weight reduction. This will keep patients from feeling so vulnerable (which they may do when they come in to see us.)"

The results: "Using these tools has offered a better interaction with patients and more frequent interaction. Patients being aware that we can see their data do change their behaviours. They consume better foods; they increase their level of activity and they exhibit better blood sugar control."



0.5 The checklist for evaluating a XR solution

A variety of XR software applications and platforms exist or are in development. The IT and technology experts at health and wellness providers who make investment recommendations will need to identify the appropriate solutions that can help support their organisation's services.

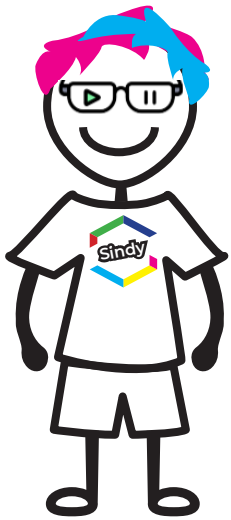
They will need a range of information, from the pricing model to the flexibility of a system to meet future needs, to help in their assessment of a technology solution.

This checklist features 10 questions decision-makers should ask a vendor.

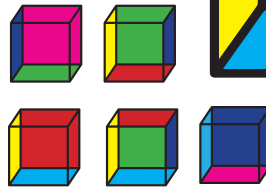
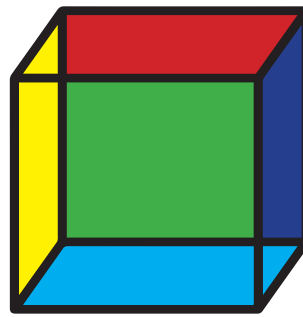
- Is the fee based on a subscription model (SAAS) or a one-off payment?
- How easy is the XR solution to scale for multiple patients and what are the costs for increasing patient volumes?
- Will the supplier offer adequate training on how to use the solution?
- Are there any hidden costs for set up and implementation?
- Can the solution be upgraded easily?
- Will the supplier provide 24/7 tech support?
- Can they show an understanding of the health & wellness sector and patient needs?
- Does the supplier have a track record of successful innovation?
- Is the supplier a thought leader in the XR sector and can they keep you up to date with the latest developments?
- Is the solution data-secure and compliant with local/regional data regulations?

Choosing the right technology will allow health and wellness providers to cater to a wider base of patients. XR technology means a specialist 'centre of excellence' will not be limited by location and this opens more potential revenue streams for private clinics and consultancies. For instance, overseas employees will want access to trusted healthcare brands based in their home country.

VR/XR technology can also deliver efficiencies. Recent events have demonstrated just how expensive it is to maintain multiple waiting and consultation rooms – especially with the ultra-high standards of hygiene now expected.



Sindy's Web App



SindyAR in a web browser builds a series of CUBEs with full ERM plus CYS scores, JabbRGems for prescribed meal plans and most importantly, YOUR TEAMMATES

Your TEAM in Your CUBE!



You decide: Mom? Nutritionist? Siblings or a Coach?

..build urself a team & be sur to check yo self be4 you wreck yo self!

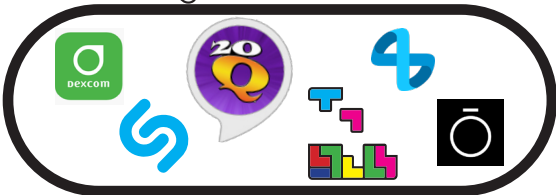


Sindy's Mobile App +

SindyAR on your mobile gamifies goals and strategies throughout your day and reflects stress, anxiety and complex challenges and displays scores right next to your more objective records gathered from wearables and other tracking devices and the CUBE gets you the right teammate at the right time.

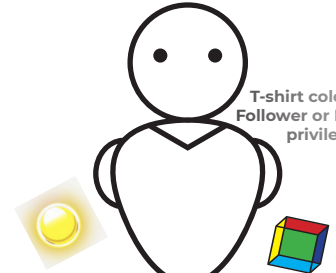


Wearables + SindyXR Games



Sindy's Oculus Virtual Reality App

Head glo = Gem score



T-shirt color = Fan, Follower or Facilitator privileges

Sphere hand = Team play CUBE hand = Wall control

In SindyVR your Avatar is functional, not a cartoon of yourself and your whole Team can be right there with you caring better. Wherever.



Sindy's Physical Reality (no App required)



Truly extending your reality provides an expansion of dimensional space in which to act. Within this space people can represent their full self and this is invaluable in a practice like mindfulness, where practitioners need tools to help increase genuine empathy and deep understanding of how their patients are really feeling.

Founder and CEO SindyXR, Charles Kirby



Kirby went on to say "...that when our VR Dev Team built Cindy as an abstract Avatar it was in response to those uncanny cartoons that our competitors call 'realistic'. We welcome the day that Facebook/Oculus scan my daily physical presence in real time like [James Cameron did with Sigourney Weaver did a dozen years ago](#) but until then, Cindy chose functionality over CGI." It is mind-blowing that body image has become a problem CindyXR can address even marginally. Without the nutritionists at POUNDS we would have NEVER had thought of that!"

The science-fiction writer and 'godfather' of cyberpunk William Gibson said: "The future is already here. It's just not evenly distributed yet." The future is emerging all around constantly in myriad incremental ways - and in many cases it means the application of technology that already exists to new purposes.

Those less-than-optimal VR/XR user experiences that may exist are being addressed. Mobile phone and wearable devices that generate data will evolve into more discrete forms with smart sensors clipped or woven into clothing connected by 5G – Samsung has patents on a 'smart shirt' that can monitor lung disease.¹⁶

Heavy VR headsets will become lighter or obsolete as AR glasses become more sophisticated and overlays and 'floating screens' are refined in their role as interactive interfaces. Sensors interacting with hand movements will displace the current handset controls used in virtual environments.

At the same time as the hardware evolves developers will create personalised XR environments that will be ever more 'real world' realistic– if that's what the user wants – or offer stimulating 'out of this world' imaginary environments.

“

The future is already here. It's just not evenly distributed yet.

”

William Gibson, the Godfather

ABOUT THE AUTHOR

Branwell is Director of Content at Propeller Group, a London based business development firm. He is a former journalist with trade and consumer experience. He has held the position of deputy editor at Marketing Week and spent more than a decade explaining complex business and technology trends in easily digestible language and formats. His interview subjects have ranged from the CEO of Travelodge and the CMO of Fujitsu to the co-founder of Metro Bank and the director of customer experience at British Airways.



Truly extending your reality provides an expansion of dimensional space in which to act. Within this space people can represent their full self and this is invaluable in a practice like mindfulness, where practitioners need tools to help increase genuine empathy and deep understanding of how their people are really feeling. If you want to learn more please reach out for a chat.

Sincerely,
Sindy.



























Sindy's XR Application can be found on a growing number of devices including Oculus, PICO, HP Reverb, Android, iPhone and all common web browsers such as Chrome, Safari and Firefox

[FIND THE MOST UP TO DATE APPS](#)

If you would like to explore the topics discussed in this report and learn more about SXR's solutions for the health and wellness sector please contact Sindy in Fysical Reality at Sindy@SindyXR.com or call them at +01 (631) 459 - 0117 and in Augmented Reality book an appointment here <https://sindyxr.com/engage>



Endnotes

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COLLABORATION HAS CHANGED

We now live in a world where virtual and physical workplaces have become blended. Teams have had to come together wherever they are in the world to debate, create, curate, and demonstrate. Or just do stuff.

Yet somehow it has made collaboration and culture less -dimensional - everyone **connected** within four virtual walls but not always **connecting**.

Sindy XR extends reality to help teams be **better together. Wherever.** It's what your business has dared to dream about

A suite of virtual remote working tools for creative collaboration that uses cutting-edge tech to bridge the gap virtually between WFH and the traditional.

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