

Case study

Reimagine Well

HP Virtual Reality utilizes immersive healing experiences to promote cancer patient wellbeing



Industry

Healthcare

Objective

Comprehensive and empowering immersive healing experience solutions for adolescent and young adult cancer patients

Approach

Virtual reality and emerging technologies that inspire wonder and promote, support, or aid the healing process through distractive therapy

IT matters

- Virtual reality headset ideal for healthcare environments
- Advanced computing, 3D scanning, and 3D printing improve patient experiences and wellbeing
- Superior product engineering for patient-friendly emerging technologies

Business matters

- Improved patient experience and satisfaction through impactful end-to-end solutions
- Enhanced patient healing experiences and wellbeing with innovative healthcare delivery and emerging technologies
- Evidence-based medical research to validate effectiveness with adolescents and young adults



“HP’s Virtual Reality headset and emerging technologies can absolutely drive patient empowerment and give them more control over their healing environment.”

– Roger Holzberg, Creative Director and Co-Founder, Reimagine Well

Reimagine Well
EVOLVING THE PATIENT JOURNEY

infusionarium
WHERE WOULD YOU CHOOSE TO HEAL?

Reimagine Well’s founders are a former Disney Imagineer and a renowned clinician and clinical researcher. With an advisory board that includes entertainment company presidents and physicians from leading medical institutions, Reimagine Well uses emerging technologies to evolve the cancer journey with experiential patient-directed “immersive healing experiences” and post-treatment enhanced learning.

In 2017, Reimagine Well joined with HP’s Healthcare team to integrate HP’s Mixed Reality Headsets into pediatric cancer treatment. At the outpatient and inpatient chemotherapy units of Children’s Hospital of Orange County, the partners are working together to prove the solution’s efficacy and agreed to extend their research to further empower young patients on their journey from diagnosis to wellbeing.

A special healing place

“If you could get your healthcare treatment anywhere in the universe, without rules, what place would best promote your healing?”

A Brazilian rainforest or African jungle? Alaskan mountains or Australian oceans? Peace Pagodas? Flying without wings? Or maybe aboard a NASA spacecraft mission to Mars?

Unfortunately, too many adolescent and young adult (AYA) cancer patients face challenging treatments in traditional hospital settings. The National Institutes of Health reports mood disorders three times higher for cancer patients than the general population, with five to 15 percent experiencing major depressive disorder. Rates for AYAs, defined as 15 to 39 year olds, track closely to those numbers.

Unable to escape the loneliness and isolation of lengthy chemotherapy, sometimes for many days a week and sessions as long as 12 hours a day, younger patients are prone to experiencing discomfort and anxiety. In a study examining the sources of discomfort, 50 percent of AYAs experienced fear of pain during and after cancer treatment. These anxieties worsen when immune systems are compromised or flu risks increase, because they may be isolated for days or weeks in a confined space.

“It’s comforting to know the experts at HP understand the critical importance of medical research and how our joint solutions can impact patient wellbeing.”

— Roger Holzberg, Creative Director and Co-Founder, Reimagine Well

AYA patients like Hunter (leukemia) and Lauren (cancer survivor), however, fight disease in their own personally requested universe, pleasantly distracted from IV bags and blinking monitors. Both get their treatment at Children’s Hospital of Orange County (CHOC), in California, and battle cancer with the help of Reimagine Well’s patient-directed immersive healing experiences at the AYA Infusionarium.

Reimagine Well’s founders are Roger Holzberg, a former Disney Imagineer, and Dr. Leonard Sender, a renowned clinician and clinical researcher. They regularly survey their patients with the question, “What is your

special healing place?” then enable those patients to be treated, virtually, in that place. Called an Infusionarium, this solution changes the way Hunter and Lauren, as well as loved ones and staff, view cancer treatment and healing.

In 2017, Reimagine Well joined with the HP Healthcare team to bring cutting-edge compute and display technologies to distractive therapy for cancer patients. Unlike traditional PCs and printers, this HP Mixed Reality Headset technology is different from any seen in a home or office.

Emerging and immersive technologies

For many years, HP’s innovative engineering has delivered emerging print and compute technologies to patient treatment settings. With the recently announced Windows Mixed Reality Headset, HP plans to add virtual reality to advanced healthcare environments.

Part revolutionary and part reality, the HP headset blurs the line between physical and digital. With integrated motion tracking, 1400 x 1400 resolution, and up to a 90Hz refresh rate, the new head-mounted display ensures comfort, convenience, and clear visual quality. And now, it also offers the possibility to improve patient outcomes and population health management.

Prior to this engagement, HP and Reimagine Well had already collaborated on print and compute solutions for cancer treatment and survival. Looking to reinvent what’s possible in this area, the two combined their visions of patient empowerment to create the next generation of distraction therapy techniques.

“Past HP and Reimagine Well cooperation includes large format printers that bring multi-media graphics off the big screen and onto patient room walls,” says Adele Sender, Logistics and Educational Programs, Reimagine Well.

“If the patient wants to be under the sea, we give them more control over their environment, allowing them to print the imagery that transforms their room into a coral reef.”

The partners have also explored the use of Sprout Pro by HP with a built-in 3D scanner and Jet Fusion 3D printers to bring memorable and meaningful objects to reality.

“HP Sprout can empower patients to use their creativity and bring inspirational items to life, like a treasured keepsake from a special family vacation or a cherished grandparent,” adds Roger Holzberg, creative director and co-founder, Reimagine Well.

Working together, HP and Reimagine Well are already providing AYA patients, like Lauren and Hunter, more control over their healing environments. This allows them to be anywhere in the world and create an inspiring reality to ease their cancer journey.

Virtual reality to inspire wonder and fascination

As an award-winning creative director at Walt Disney Imagineering before founding Reimagine Well, Holzberg developed extensive immersive experiences by designing magical theme park attractions and alternate reality video games. In motion pictures, he wrote the Academy Award-nominated “The Living Sea” IMAX documentary.

“The first HP-sponsored project I worked on at Imagineering was ‘Mission: Space’ at Disney World’s Epcot in 2003. Even then, I knew HP was willing to invest in extraordinary experiences for people to deeply learn about and understand their world in new and exciting ways,” Holzberg says.

After his own cancer diagnosis Holzberg left Imagineering to become the first creative director at the National Cancer Institute, launching the “evolution” of cancer.gov and taking the institute into social media and media production. Now a 14-year cancer survivor, Holzberg personally understands the intersection of cancer treatment and emerging technologies.

In 2015, Holzberg met the leaders of HP’s Global Healthcare Solutions team. Over 18 months, they intermittently discussed the art of the possible within AYA cancer treatment before converging on the vision to bring HP’s head-mounted display to Reimagine Well’s creative team, and eventually to CHOC’s AYA cancer center.

“I researched many VR headsets but didn’t find the right technology until connecting with HP,” says Holzberg. “Other companies do not have the products or depth of healthcare industry knowledge that HP has to help build joint solutions that can genuinely transform patient treatment experiences.”

With the HP Windows Mixed Reality Headset, however, Holzberg convincingly found the ideal technology. “The headset’s weight, ergonomics, and overall usability is the best I’ve seen on the market,” says Holzberg. “It’s the most patient friendly for our audience and its promise for immersive healing is leaps and bounds ahead of the other products out there.”

And within the HP Healthcare team, Holzberg found the ideal collaborators. “The HP staff has deep knowledge in the healthcare field which is unique for an innovator with such a breadth of products,” adds Holzberg. “It’s comforting and refreshing to work with HP healthcare experts who fully understand software and hardware, but also speak the language of healthcare with great authority. That makes HP inspiring to work with and gives our hospital partner the confidence needed for an in-depth patient pilot.”

In February 2017, the partners combined HP’s head-mounted display and EliteDesk 800 G3 PC with Reimagine Well’s immersive healing multi-media content at its Los Angeles studios.

“This joint solution shows tremendous potential for distractive therapy with adolescent cancer patients,” says Holzberg. “And it can apply to multiple clinical settings such as inpatient and outpatient, general population, as well as isolation and end of life.”

Collaboration for patient engagement and population health management

With the goal to prove the joint solution’s value through evidence-based research, in May 2017, HP and Reimagine Well brought their cancer treatment and virtual reality expertise to CHOC’s patients.

With this initial foray of VR and head-mounted displays in an outpatient chemotherapy setting, Reimagine Well’s experienced designers and HP engineers showcased several patient-requested 360 videos to the AYA patients.

“The kids were enthralled and fascinated by the immersive experience,” says Sender. “It virtually transported them into another reality and they definitely enjoyed it.”

“It was also comforting to see HP engineers happily come out of the labs and get close to the end users of their innovative work,” adds Holzberg. “It’s clear that HP invests in its

Customer at a glance

Application

Emerging and immersive technologies for improved healing in adolescent and young adult cancer populations

Hardware

- HP Windows Mixed Reality Headsets
- HP Sprout Pro PCs
- HP Jet Fusion 3D printers

Software

- Pediatric and adolescent immersive healing multi-media content

technical staff, who in turn invest in their own healthcare industry knowledge.”

With the proof of their hypothesis, the partners decided to extend their research and further customize the solution to meet the ultimate combined goal—to make a difference in the lives of young patients on their cancer journey.

Next steps for VR and distractive therapy

As a next step, HP and Reimagine Well are planning a more formal study that brings existing Infusionarium patient-requested immersive healing experiences onto HP’s Windows Mixed Reality Headset. The two will take this advancement back to the chemotherapy outpatient environment to further prove its efficacy.

“Chemotherapy treatments and settings can be very traumatic for all patients, young and old,” says Holzberg. A 2009 study shows AYA cancer survivors experience poor mental health twice as frequently as those without cancer. Another reports cancer patients have substantially higher hospitalization rates within a year of diagnosis for depression compared with cancer-free populations.

“While this type of work has never been done before, we are optimistic about our positive physical and emotional impact on adolescent and young adults at CHOC’s cancer center and in multiple hospital settings,” Holzberg adds.

Holzberg and his colleagues also imagine replicating and customizing the HP and Reimagine Well joint solution for applications in adult and senior settings and beyond cancer treatments including post-traumatic stress disorder, kidney dialysis, and even emergency room applications.

“There are so many possible applications for kids, and other patients, to forget what’s going on around them and transport them to a place they’d rather be,” says Sender. “With HP’s vision and commitment to make a difference, we can take them there.”

This is exactly how Reimagine Well took Hunter kayaking on the rapids and Lauren to a Peace Pagoda in ancient China.

Learn more at
hp.com/go/healthcare

Cancer study sources:

- <https://www.ncbi.nlm.nih.gov/pubmed/27324630>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4518700/>

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