

With 5G-enabled hospitals for veterans, a better future of healthcare is on the horizon.

Case study

Advancing the next generation of healthcare powered by 5G

A 5G, augmented-reality (AR) clinical visualization system from Medivis, delivered with the Microsoft® HoloLens® 2 headset and Azure® cloud services, will be used to explore next-generation imagery and improve healthcare for veterans.

Challenge: Providing healthcare to 9 million veterans annually

Providing healthcare services for 9 million veterans is complex. To meet its mission to honor America's veterans by providing exceptional healthcare that improves their health and well-being, the Veterans Health Administration (VHA), the largest healthcare system in the United States, strives to be at the forefront of innovation.

Imagine a more precise assessment of a patient's condition, improved quality and safety of surgical interventions, and accelerated, remote-access review through detail-rich, 3D-rendered images. 5G-powered technology could help make mixed-reality-enabled surgery a reality.

Leveraging cutting-edge technology in advancing healthcare services for veterans is a key part of the VHA's approach. In 2019, when the president of the United States stated the importance of winning the race to be the world's leading provider of 5G cellular communications networks, VHA Innovation Ecosystem seized the opportunity and immediately initiated plans to become among the first healthcare systems to adopt 5G.



Through this initiative, the VHA is focused on delivering better quality care to veterans, when and where they want it, and more efficiently, through the innovative application of the nation's most advanced technology.

That's when the VHA Innovation Ecosystem's National Center for Collaborative Healthcare Innovation (NCCHI), located within the VA Palo Alto Health Care System (VAPAHCS), partnered with Verizon and initiated an effort through Verizon's 5G Labs, Medivis and Microsoft to provide veterans with one of the nation's first 5G medical campuses.

Solution

The VHA is deploying advanced, 5G-enabled clinical care systems at the VAPAHCS with a goal to deliver unprecedented improvements in care to our nation's veterans, as well as being a leader in the Fourth Industrial Revolution in healthcare powered by 5G.

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Known as Project Convergence, the initiative brings Verizon's 5G technology, Medivis' 3D holographic clinical visualization system and Microsoft's HoloLens 2 headset with Microsoft Azure together in an effort to reduce costs and improve the quality and safety of surgical care for our nation's veterans. Together, they're delivering a 5G-enabled, AR surgical navigation system.

Today at the VAPAHCS, 5G-enabled, holographic, AR-assisted surgery seeks to leverage the speed and low latency of Verizon 5G, Medivis' Surgical AR platform and Microsoft's HoloLens head-mounted display to deliver breakthrough advances in the quality, safety and cost of care. In the future, Azure cloud store and compute could provide global availability of high-resolution images from its cloud Picture Archive and Communication System (PACS). When combined with Verizon's mobile edge computing (MEC), the VHA could accelerate the era of AR-assisted surgery.

The goal? To advance surgical visualization by transforming traditional 2D imaging data into near real-time 3D holographic visualizations, giving doctors the ability to visualize a patient's anatomy to enhance surgical practices and the precision of care they provide.

With this technology, "a surgeon could have a 3D image superimposed upon a patient so they can see into that patient before they start cutting and have electronic health data displayed on the headset at the same time," according to a Nextgov article.¹

Why is 5G important to veterans?

This use of 5G holographic AR assistance in surgery could help improve the quality, safety and cost of care provided to veterans. Through this platform, the VA aims to deliver the most advanced surgical care available today for the nation's veterans.

"It's really a triangulation of three entities," said Dr. Ryan Vega, Executive Director of the VHA Innovation Ecosystem. "And they're all coming together to really advance this technology."¹

Dr. Osamah Choudhry, neurosurgeon and co-creator of Medivis, agrees. "Successfully treating cancer remains one of the most enormous challenges facing us today," he said. "By taking a two-dimensional patient image, whether that's an MRI or a CAT scan, and converting it to 3D holographic renderings of that same patient, we could better enable surgeons to dissect around and remove the cancer. Verizon 5G Ultra Wideband should allow us to deliver this data to surgeons with, for all intents and purposes, no lag time. And every single millisecond counts because there is basically no room for error or delay."²

Microsoft VP and Chief Medical Officer Dr. David Rhew added, "In the same way GPS provides the right information at just the right time so drivers can maneuver while keeping their hands on the wheel, digital health technology can enable real-time guidance for clinicians while they perform operations and procedures. The VA, Microsoft, Verizon and Medivis are seeking to transform this vision into reality by combining state-of-the-art mixed-reality technology, cloud computing and AI, all on a 5G network."

Moving forward

The VHA's work continues, building upon this platform to deliver ever more sophisticated clinical care solutions that will transform the entire healthcare delivery experience for veterans and the nation.

"We are trailblazing in a way that's not superficial," said Dr. Thomas Osborne, Chief Medical Informatics Officer at the VAPAHCS and director of the agency's NCCHI. "I think all of us ... share the same sentiment that the stuff that we do at local levels is intended and designed to be tested so that we can scale it throughout the whole VA with a larger intent that the rest of the country can benefit from it—and perhaps, the rest of the world."¹

Added Mike Maiorana, Senior Vice President, Verizon Public Sector, "5G and immersive technology have the potential to fundamentally change how doctors provide care and we are proud to be at the forefront of delivering this technology to the men and women who served our country."

Learn more:

Learn more about the VHA Innovation Ecosystem at www.va.gov/innovationecosystem

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¹ Brandi Vincent, "VA Reveals Industry Partners for First 5G-Enabled Hospital," Nextgov, Feb 18, 2020. <https://www.nextgov.com/emerging-tech/2020/02/va-reveals-industry-partners-first-5g-enabled-hospital/163172/>

² Helping Doctors Fight Cancer—Extended, Verizon, <https://www.youtube.com/watch?v=5xsg15c8sfM>
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