Microsoft | Customer Stories

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Global pathology experts share data to combat disease with help from Azure

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Executive summary

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PathPresenter has big goals. The scaleup company offers a global image sharing platform for pathology through which it plans to democratize access to the world's pathology knowledge. The aim is to connect pathologists to the vast expertise of their colleagues globally while providing a practical platform to access and use best-in-class AI models. PathPresenter is well on its way to reaching its vision with an enterprise workflow platform that runs on Microsoft Azure Cloud and allows pathologists across the globe to easily share digitized microscope slides for remote consultation, research, and teaching. Despite having less than 20 employees, PathPresenter has built a global community of 45,000+ users in 172 countries with 30+ tier-one institutional customers.

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PathPresenter®

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"Microsoft Azure offers unique solutions in digital pathology that are scalable and can serve digital pathology images several gigabytes in size, even on poor internet connections encountered in remote regions."

Patrick Myles, Chief Executive Officer, PathPresenter

An evolving need

The knowledge and skills of the world's pathologists—medical scientists who study the causes and effects of diseases—are in high demand: up to 70 percent of all healthcare decisions affecting diagnosis or treatment involve a pathology investigation. But the field is encountering problems. More pathologists are retiring than there are students training to replace them; between 2007 and 2017, the number of US pathologists decreased by more than 17 percent. Additionally, pathologists are concentrated in wealthy nations, leaving remote regions of the world needy. It is estimated that in sub-Saharan Africa, for example, there is only one pathologist per million people. The issue of training new pathologists is also challenging. At many institutions, the teaching workflow is wholly microscope-based and hasn't been updated in centuries. Enter PathPresenter, a scaleup company tackling all these problems head-on.

PathPresenter was created in 2017 by dermatopathologist Dr. Rajendra Singh. With the aim of bridging the gap between western and non-western nations, Dr. Singh decided to build a platform that lets pathologists quickly and easily share pathology images (in this case, digitized microscope slides) and associated knowledge with colleagues around the world. Five years later, it has become a leading platform in its field, with three core use cases: clinical care, pathology education, and biopharma research. This year, Dr. Singh was honored by the College of American Pathologists with a lifetime achievement award for PathPresenter.

Three-fold solutions

In clinical care, the experience and knowledge of pathologists is often attached to and siloed within their institutions with limited sharing outside. This approach is reinforced by the logistical difficulties of shipping fragile glass microscope slides around the world, navigating the myriad of different scanner file formats, and the challenges of integrating digital pathology workflows into existing hospital infrastructure. With its broad digital sharing base and deep domain knowledge, PathPresenter is breaking down these barriers and democratizing access to global pathology expertise. The PathPresenter clinical module enables pathologists to receive, view, and sign out cases from their institution–or from cases uploaded from around the world–directly into their institution's existing infrastructure, improving outcomes for patients no matter where they're located.

As digital workflows in pathology are becoming more mainstream, PathPresenter has learned that the first thing prospective pathology residents ask is whether they will be taught traditionally, using a microscope, or whether they will be taught digitally, using new technologies. PathPresenter platform is used in prominent schools such as Boston University, Yale Medical School, and Memorial Sloan Kettering to train the next generation of digital pathologists. In addition to bolstering the pathology curriculum offered by these institutions, the platform is helping them attract the best pathology residents and increase their prestige. Furthermore, this solution empowers remote learning, which has become even more valuable in the age of COVID-19. Students and their instructors are no longer limited to a microscope and fragile glass slides, but instead can work wherever they need to.

In biopharma research, a major challenge in deploying AI models is that clinical trials are often global in nature, and they operate in a number of different settings with different scanner file formats, etc. This presents significant logistical headaches for review by the contract research organization (CRO). The PathPresenter platform offers a nimble and flexible solution for research that is scanner-agnostic, decentralized, and AI-enabled. Pathologists can upload slides from around the world, have a central CRO review the slides, and generate AI results in the cloud. This helps speed up some decision-making processes, such as deciding which patients to accept for a new oncological trial, from days to seconds, accelerating operations as well as increasing accuracy.

Supporting pathologists and patients around the globe

The need for pathology is global, so PathPresenter ensured that its solution was built on technologies that could offer stable, world-wide coverage. "Our *entire framework* has been built using Microsoft Azure cloud technology," says Dr. Cory Batenchuk, Senior Vice President of Operations at PathPresenter. "We selected to specifically partner with Microsoft as we can leverage reliable cloud technology that can be deployed at a global scale to ensure the best level of system performance for our target customers." Cory continued to explain the appeal, stating that "Microsoft Azure offers unique solutions in digital pathology that are scalable and can serve digital pathology images that are several gigabytes in size on even poor internet connections encountered in remote regions." Given the nature of pathology and its vital role in global health, it is, quite literally, a matter of life and death to create solutions that solve the challenges within that field—a matter that requires the best possible technologies.

Dr. Batenchuk was also impressed with the Microsoft Azure open-source library. "Microsoft offers, to our knowledge, the only fully supported open-source library, which accelerated the development of our technologies. The Microsoft team even went as far as to connect us with leading experts in healthcare cloud technologies to help us build our solutions on the Azure platform, providing access via their fast-track program." The team also chose Azure SQL Database the cost-effective option for storing and running queries.

Furthermore, Azure datacenter resources made it possible for the PathPresenter platform to render large images (high-quality microscope scans are usually measured in gigabytes) quickly and without lag even in parts of the world where internet connectivity is poor. "Microsoft offers over 200 data centers around the globe, which is several-fold greater than competitors," says KV Acharya, System Architect and Co-founder at PathPresenter. More datacenters are critical for areas where data cannot leave the country and for launching complex images more quickly. When PathPresenter first started, it was a small company running direct streaming of medical images for medical education for approximately 100 daily users on a single server. After switching to Azure, PathPresenter has been able to do more with less through scaling its platform and adding clinical and research modules to support pathologists and patients across the globe.

Now, PathPresenter has more than 45,000 registered users—10 times that of any comparable solution—and over 30 paying customers, including academic medical centers, pathology practices, and pharmaceutical companies. The FDA is using its systems to create AI reference standards. With customer growth averaging two new customers per month, PathPresenter is forecast to triple its yearly revenue in 2022.

PathPresenter, in collaboration with Microsoft, has not only built a pathway to address the challenges that have burdened pathology but is poised to lead further innovation in the field as well. Moving forward, PathPresenter is focused on ensuring seamless interoperability between scanners, image management software, AI models, and hospital infrastructure, so that it can reduce the reporting burden on pathologists and accelerate the adoption of digital workflows by pathologists and institutions worldwide for the benefit of patients and society. Whatever next year brings, the PathPresenter team is ready to face it.

Find out more about PathPresenter on Twitter, Facebook, and LinkedIn.

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KV Acharya, System Architect and Co-founder, PathPresenter

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CUSTOMER

PathPresenter

PRODUCTS

Azure Cloud Services

Azure SQL Database

ORGANIZATION SIZE

1-49 employees

COUNTRY

United States

BUSINESS NEED

Artificial Intelligence

INDUSTRY

Health Provider

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