



The Future of Healthcare:  
**HOW AI AND BLOCKCHAIN**  
Will Transform the Medical Industry

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Rich Bird | World Wide Industry Marketing Manager for Healthcare and Life Sciences | HPE

At Hewlett Packard Enterprise, an overarching philosophy posits that we live in a world where everything computes, said Rich Bird, HPE’s World Wide Industry Marketing Manager for Healthcare and Life Sciences. Every device we have is connected and secure and carries a certain amount of intelligence.

“We believe that with this connectivity, the security, the data, and the intelligence, we face a situation where this data can be understood, communicated, and worked on more efficiently — and nowhere is that more important than healthcare,” Bird said.

Ultimately, according to Bird, the speed and efficiency of healthcare can be increased to better support clinicians, empower patients, advance medicine, and enable more personalized care and better clinical decision-making, delivering a new style of healthcare. Clearly, both AI and blockchain could play significant roles in that evolution.

### What digital transformation means to healthcare

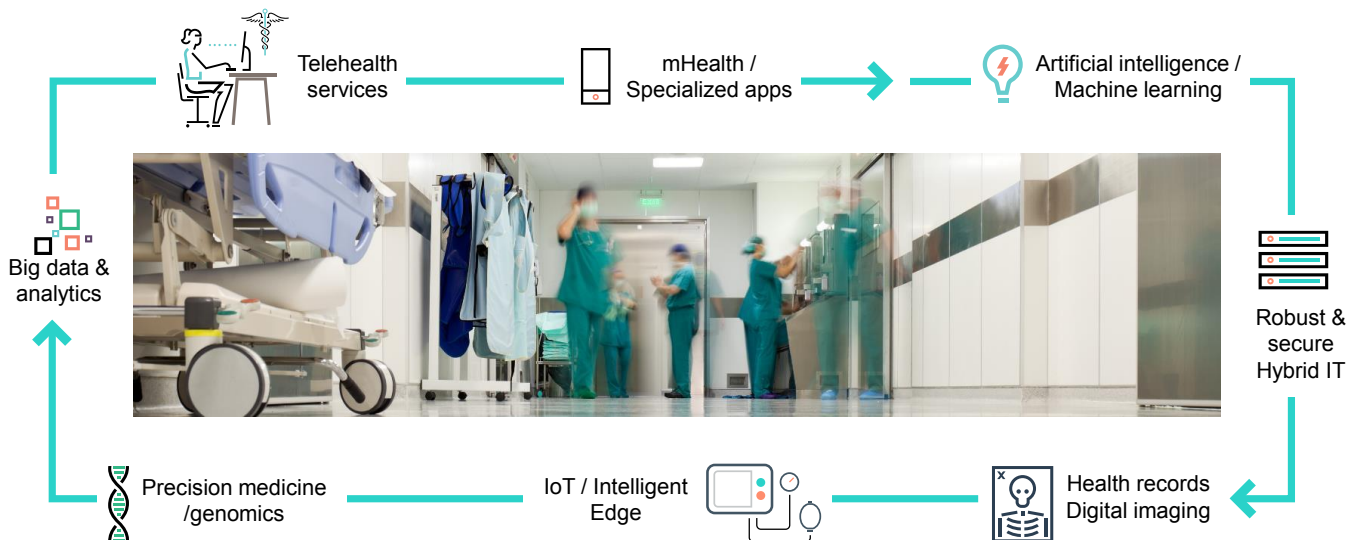
In the entertainment industry, consumers forged a new path by embracing such services as Netflix and Amazon Prime for convenience. “Any digital transformation is driven by the individuals themselves,” Bird said, and that’s true in healthcare.

The Apple Watch and Fitbit are perfect examples. These wearable computing devices enable users to track physical activity, and health and activity markers such as heart rate and the number of steps walked — data that users can leverage for self-care.

In addition, regulated and FDA-approved devices, be they bedside or other devices, that hospitals and health systems use within their facilities or send home with their patients create vast amounts of additional digital data.

However, the digital transformation isn’t just about recording data, according to Bird. It also hinges on diagnostics, the medical exam, and human interaction that, combined with data, bring new experiences to patients (Figure 1).

Figure 1. Technology enablers. It is IT that enables the New Care Continuum!





***“AI is at the forefront of most conversations about technology.”***

**Matthew Quirk** | Global Market Strategy and Development Manager | HPE

## Use cases in AI, blockchain, and digital transformation in motion

AI is at the forefront of most conversations about technology, according to Matthew Quirk, Global Market Strategy and Development Manager for HPE, and with good reason. Hospital investment in AI is expected to deliver cost savings of \$150 billion by 2026. Add to that the benefits of productivity, labor savings, and clinical efficiency, and “that’s when it really starts to get interesting,” he said.

Quirk called out two use cases that refer to the huge potential of blockchain and AI and the pivotal role that OEMs will play in making the advancements possible.

The first use case involves one of HPE’s healthcare technology partners that developed an AI solution for chest radiography and mammography. The company started its journey with AI to address steep growth in imaging in China, where the annual growth rate in imaging is 30%, but the growth rate for radiologists is 4%, creating a clear need for more support. Research showed 20%-30% false negatives in chest radiography and 95% false positives in mammography.

By using cutting-edge AI technology, and developing algorithms on HPE technology platforms, the company saw a 20% rise in detection rates, or earlier detection, and by shortening the reading time by 40%, it realized cost savings as well. By using AI, the company achieved a 50% reduction in recall rates, and from a patient experience perspective, a much faster turnaround time.

The company has now tested more than 1.7 million images and operates in 80 countries. From an OEM perspective, HPE supported it from the design process all the way through testing and deployment as well as supporting the company to scale globally, according to Quirk.

In the second use case, HPE partnered with Nico.labs in the Netherlands to create technology that improves treatment for stroke victims, an initiative fueled by the fact that 1 in 6 people will suffer a stroke in their lifetime, and of those estimated 15 million victims, 6 million will die, and 6 million will become permanently disabled.

Nico.labs, a medical spinoff of the Academic Medical Center of Amsterdam, is collaborating with an enterprise blockchain provider on a hospital pilot program, and HPE has an interest in bringing the right technology partners together, Quirk said. The collaboration’s AI solution, viewable through a program called StrokeViewer, is available for hospitals via the cloud and can elicit accurate results in minutes on any device, anywhere.

The algorithm is based on thousands of CT scans and can capture pictures the naked eye cannot see. For example, it automatically identified blood clots in 88% of the cases as opposed to 68% by neuroradiologists viewing the same scans. Anonymized and encrypted CT scans are sent to the cloud via the internet, and clinicians can log in remotely to view the results in real time, which is critical because the window of time is short for reducing stroke victims’ chances of disability or death.

Confidentiality and data integrity must be guaranteed at the point of exchanging private medical information. Enter blockchain. Though often associated with cryptocurrency, here the blockchain partner working with Nico.labs ensures that the parts in the chain, the people, and the system’s machines are connected via this “unbreakable and safe process.” The CT scans are uniquely coded so they can only be shared with the authorized participants in that chain. “It fully guarantees the security of that patient data,” Quirk said.

***“We always need to answer the question, ‘How has the AI come to its conclusion?’; otherwise, where is the accountability chain? We’ve got to let the complexity mature alongside our understanding of it.”***

Rich Bird | HPE

## Securing our digital future

Of course, security is key to all innovation, whether it’s the physical security in a data center, the online security in a cloud, the penetration barriers to a network, all the way to protecting data within the hospital network. Bird described this as “360-degree visibility to who has access to data, how it’s being changed, and any escalations or attack surfaces yet to be discovered in common operating systems.”

Such security is the only foundation robust enough to support the kind of future healthcare delivery system that enables patients to become the orchestrators of their care, pushing the data as close to the patient as possible with the aim of patients carrying it with them.

## Slow adoption doesn’t equal lack of potential

Bird said organizations must move slowly when forging new ground and innovating new technologies. “We always need to answer the question, ‘How has the AI come to its conclusion?’; otherwise, where is the accountability chain? We’ve got to let the complexity mature alongside our understanding of it,” he noted.

When it comes to blockchain, often implementation of technology can come with challenges, and users feel they were faster without it. Perception can play a key role here, according to Bird and Quirk. For distributed ledger technology, rather than envisioning it as a complete medical record carrying imaging, patient notes, and drug history, and delivering all that data across the life cycle of the patient, it’s really about identity management. That is, using it as a fingerprint to link the ID to other databases and providing assurance of the patient’s identity and the right to access that data rather than loading the whole patient record.

“See it as a transaction, a record of a transaction, and securing that transaction, making sure that the right identity is there keeping a log of it,” said Quirk. “It’s not actually physically doing the delivery.”

The bottom line? As consumers steer the digital transformation, and healthcare’s future takes shape, digital technology will be a keystone of that evolution. And it’s already underway. Rising demand, thanks to aging populations, people living longer with complex conditions, and increasingly costly care, creates an opening for technology to optimize the constrained resources we already have and improve care now, as well as support clinicians. Moving forward, expect to see AI and blockchain feature prominently as innovation pervades the healthcare space, with OEMs such as HPE providing the foundation.

  
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### About HPE OEM Solutions:

HPE OEM Solutions has a long history of working with the world’s largest healthcare original equipment manufacturers (OEMs). We continue to provide them with the IT solutions, infrastructure, support and global supply chain they need to build modern, integrated, patient-centric healthcare solutions that improve patient outcomes.