UnBLOCK
the Chain

Healthcare 2019: the year of the Big Data Blockchain

An in-depth discussion of how Big Data Blockchain solutions address the complex data needs of the healthcare industry.

Big Data Blockchains are solving the industry's security and scalability challenges and hold the potential to transform all facets of the healthcare industry: from decision support to patient empowerment to data sharing and operational improvement.

The healthcare industry generates a ton of data. Large, complex, diverse, highly regulated, messy data. And while EMRs have traditionally sat at the epicenter of all this data, the industry is beginning to recognise that the data we traditionally think of as healthcare data – that is, a person's medical record – is only one part of a person's overall health profile. Their social, environmental and behavioral profile is just as important in determining which medical interventions will work best for them. In addition, each person is part of a community, and each person in that community has valuable information that can help healthcare providers make better decisions.

Going into 2019, the healthcare industry finds itself faced with a multifaceted challenge: how to bring together all of this large, complex, messy data; how to securely make it available to providers, decision support tools and AI algorithms, researchers and other stakeholders; how to give consumers visibility and control over how their data is used; and how to achieve all of this without running afoul of data privacy and security regulations.

Blockchain may be the answer.
Yes, Blockchain is the technology behind cryptocurrencies such as Bitcoin. However, its utility extends far beyond the financial sector. Efforts are underway to deploy Blockchain-based data networks to energy, education, real estate, agriculture and more. For the healthcare industry, Blockchain includes a number of attributes that are particularly useful for managing healthcare data. In particular, it provides a level of transparency and trust that can help healthcare systems gain better control over how data is shared, with whom, and under what circumstances. And the industry is taking notice: according to a 2018 report by PwC Health Research Institute, 49% of global healthcare companies are developing blockchain solutions (**pwc.com/us/en/industries/health-industries/health-research-institute/blockchain-in-healthcare.html**).

In the last 12 months, over 100 companies have been founded with the goal of developing healthcare data sharing services using Blockchain. Most of these solutions use Blockchain only as an access log and permission management system; the actual health data is stored and managed using traditional centralised databases and data warehouses. While this limited use of Blockchain does improve transparency and patient control over data sharing, it does not provide the necessary scalability to support global interoperability and compliance. And perhaps most importantly, data on these systems is still shared using 1:1 data integrations and transfer protocols, making it nearly impossible to recall previously-shared data and comply with GDPR and other "right to be forgotten" laws.

Bringing data onto the chain
BurstIQ, a Denver-based startup, was the first Blockchain company to successfully develop and commercialise a Blockchain protocol that addresses these

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challenges. The company, founded in 2015, recognised the inherent limitations of standard Blockchain protocols and understood that, in order to achieve truly global interoperability, they would need to start from scratch. The result is a unique, Blockchain-based Big Data platform that enables large, complex data to be stored, managed, shared, analysed and monetised on a secure, HIPAA-compliant Blockchain. Their platform is specifically designed to enable global interoperability, bringing together data from any source onto a Big Data Blockchain network that uses specialised smart contracts to manage everything from person-to-person data sharing to national regulatory enforcement. The company has commercialised the platform with large health systems, health information exchanges (HIEs), independent software and service vendors (ISVs), governments and government agencies.

So far, BurstIQ is the only Big Data Blockchain that has achieved commercial success at the enterprise level. Their success has been driven by strong partnerships with health systems and Big Data companies. One such company is Australia-based Image Chain, the first online marketplace for dermatology-related images and associated medical data. The company is using BurstIQ's Big Data Blockchain platform to enable providers and researchers to securely access a treasure trove of images and data that can help them make better clinical decisions and discover new medical breakthroughs. And as part of BurstIQ's global network, they are able to supplement their marketplace with complementary data sets that add value and deepen insights. Most importantly, Image Chain is placing people at the centre of that process – providing individuals with the power to control if and how their data is available on the marketplace and to participate in the monetisation of their data.

For radiology and other imaging-related specialties, Big Data Blockchain and global data marketplaces like the one being offered by Image Chain offer an opportunity to significantly broaden medical knowledge and reduce operational costs. By connecting images and videos to complementary patient and population-level data sets, providers and researchers are able to use machine intelligence and AI tools to reveal correlations and trends – leading to improved diagnostic accuracy and more personalised, effective treatments. In the future, Big Data Blockchains will enable companies to offer low-cost radiology and pathology services with near real-time turnaround speeds. These interpretation services rely on Blockchain's consensus and mining algorithms to allow radiologists and pathologists to remotely view and interpret images through a global decentralised network, without compromising patient privacy or accuracy of the interpretation.

The future of health is Blockchain

The implications of Big Data Blockchain for the global healthcare industry are enormous. Instead of being relegated to the periphery, Big Data Blockchain allows people to operate at the center of the value stream – controlling how their own data is used and monetised. Big Data Blockchain enables interoperability and data liquidity to be achieved on a global scale. It allows regulatory compliance to be automated and adaptable at both a corporate and governmental level. Business intelligence departments, decision support tools, AI engines and other intelligence systems can gain access to new data sets, forming a comprehensive and longitudinal view of clinical, operational, environmental, social and other data. It eliminates the slow and manual processes that have become standard practice for provider credentialing, prior authorisations and claim adjudication. It enables and enhances real-time analytics and intelligence algorithms. It allows data to be managed with far greater specificity, control and accountability. It opens the door to new research collaborations and medical discoveries, greater individual empowerment and engagement, and global health access and equity.

Like all cutting-edge technologies, Blockchain is continuously evolving; both the technology and the market will continue to develop over the next five to ten years. As the technology evolves, early adopters like Image Chain will be well-positioned to lead the market and shape global Blockchain standards. And companies like BurstIQ are proving that Blockchain is ready for the healthcare industry today and will likely become critical infrastructure in the future. ∎

KEY POINTS

- ✓ Blockchain holds the potential to transform how the healthcare industry delivers care, and how individuals access care, on a global scale

- ✓ Traditional Blockchain models offer incremental benefit, but the future of Blockchain in healthcare is being delivered through Big Data Blockchains

- ✓ Early adopters are proving the value of Blockchain and gaining market traction