How Blockchain Can Connect and Optimize Healthcare

A LUXOFT AND APPIAN WHITEPAPER

In a competitive landscape, agility is key – and the healthcare industry must meet demands of Millennials and Gen X patients now more than ever as each part of the healthcare ecosystem moves toward a patient-centered world. But to do this in a highly dynamic, rigorously controlled, and competitive market, healthcare must harness the power of digital technology to revolutionize their current systems. With this, they can enhance the patient and member experience, and securely streamline operations while addressing regulatory requirements.

KEY INGREDIENTS FOR PRODUCTIVE HEALTH CARE OPERATIONS

🔑 **Safe, standardized, and evidence-based processes**

🔑 **A competent, well-trained workforce**

🔑 **Effective use of innovative technologies**

Embracing digital is one of the keys to increasing the productivity of healthcare operations.[1]

Traditional healthcare systems are often inaccurate, untimely, siloed, and cumbersome to navigate. Manual processes, paper-based documentation and an overall lack of digitalization run rampant across the industry, making patients frustrated when they receive inaccurate charges, slow service, and repeated appointments for managing the same condition. Fortunately, this frustration is pushing external tech leaders, such as Amazon, to enter the healthcare space and fill the gap.

A large part of why digitization is so crucial is catering to the Millennial generation, who are much more likely to seek out alternative ways to keep their health in check.[2] Similarly, they are more likely to consider convenience an important part of how they engage with their healthcare professionals. For instance, compared to 27% of Gen Xers and 19% of Baby Boomers, 40% of Millennials consider telemedicine an invaluable piece of their healthcare experience.

The way Millennials engage with their physicians, pharmacies, and health insurance companies will likely pave the way for how future generations will view their healthcare experiences. This trend is prevalent in other industries, such as retail and banking, which have incorporated digital solutions to fit the modern consumer's needs.

Patients are embracing digital at a very high rate.[3] For example, more and more patients communicate with virtual chatbots, search through online portals, and use mobile applications to get health answers instead of physically visiting a physician's office. Consumers now have higher standards and are more informed than ever before, expecting on-demand care and complete visibility and control over their healthcare experience.

In this age of digital disruption, Appian and Luxoft are offering end-to-end solutions to some of the current challenges many organizations in the healthcare industry are facing using emerging technology—notably, blockchain for claims processing.

A NOTABLE USE CASE: DISSECTING THE CLAIMS PROCESS

Narrowing down our scope, those in the healthcare industry should understand the power of how their health plans handle individual claims. When healthcare payers handle these claims, they use data information on the patient's medical history in order to achieve a general scope of a patient's health and parties involved, such as physicians or hospitals used previously.[4]

Oftentimes, processing this data is not timely and consists of error-prone manual processes using paper and faxes. This type of process leaves extra room for error with a lack of real-time patient billing information. The claims process costs billions of dollars every year,[5] which go toward administering the time-consuming adjudication and payment of health plan claims. Because of this, those in the industry are looking to minimize this large spend.

BLOCKCHAIN FOR HEALTHCARE PAYER CLAIMS

The claims process can be improved by integrating blockchain, a revolutionary technology that challenges typical processes. Using blockchain enables otherwise primarily siloed parties to connect and securely share non-personal and non-medical data in near-real time. It also allows for the ability to replace physical signatures to ensure accurate billing and that patients have authorized these medical services, reducing the risk of fraud.
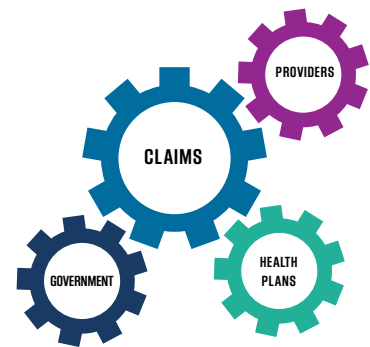
One key healthcare example is deductible management, which Luxoft and Appian can use blockchain to address. Using blockchain, providers can see how much and when a patient has paid, avoiding inaccurate billing and time-consuming refunds. Blockchain can also increase transparency, lower processing costs, and speed up the claims process overall, improving the patient-member experience across the board.

WHY BLOCKCHAIN IN HEALTHCARE?

Blockchain is firmly established as a dynamic force in the current technology landscape. With it, data and transactions can be verified with certainty and without the need for any centralized authority, giving rise to new possibilities across healthcare. Blockchain can enable providers, payers, labs, and patients to interact directly and securely, governed by blockchain-based smart contracts.
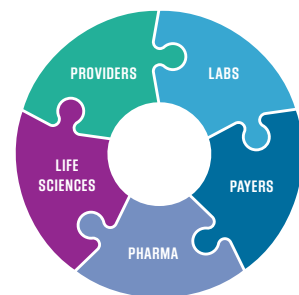
With all the member data, including health history, that healthcare providers hold, putting this information onto a blockchain would allow siloed data to be shared across providers, such as various labs, doctor offices, specialists, and more. This could enable more seamless transitions as members work with various providers.

LUXOFT AND BLOCKCHAIN

As an early adopter of blockchain, Luxoft has experience in developing solutions across all major blockchain-based stacks such as Hyperledger and Corda. Using a platform-agnostic approach ensures the technology selected is best suited for each use case based on specific business requirements, such as supporting private transactions or meeting throughput targets.

Luxoft has also developed industry-specific accelerator adaptors, integrating blockchain with cloud services to simplify enterprise architecture integration. In particular, Luxoft developed a JMS adaptor to communicate with Hyperledger Fabric.

APPIAN AND BLOCKCHAIN

Appian's low-code development enables building and deploying business apps faster than previously thought possible. The Appian platform provides faster integration for:

- Clinical care operations
- Governance, risk, and compliance
- Provider network services
- Revenue cycle administration and operations
- Clinician management
- Member services

Appian makes building blockchain-enabled applications easy by providing a low-code, drag-and-drop designer for building programs that can work directly with smart contracts. This removes the need to learn new frameworks that work with blockchain and greatly accelerates application development. Appian further enables the use of blockchain applications by managing per-user keystores and allowing for client-side signing of smart contract transactions, all without needing to install additional software.

PARTNERING UP TO BRING BLOCKCHAIN TO HEALTHCARE

Implementing blockchain guarantees immutable provider, payer, patient, and laboratory data that is highly secure yet easily accessed by permissioned parties. Appian and Luxoft joined forces to realize these aims.

"At Appian we value our partner ecosystem and are committed to supporting them as we grow in the key healthcare market. Blockchain impacts organizations across all industries, but it is an especially difficult challenge within the healthcare industry given the complexities they face. Through our partnership with Luxoft, our customers now have a solution specifically designed to address these needs within the Appian platform."

- MARC WILSON, FOUNDER AND SENIOR VICE PRESIDENT, GLOBAL PARTNERSHIPS & INDUSTRIES

Appian's robust platform is used extensively across a variety of industries — from financial services to healthcare — making it a strategic choice. Through this valuable partnership, a solution specifically designed to meet needs in the healthcare industry and beyond was created. Using Appian's rapid application development platform, Luxoft built a blockchain adapter that allows users to integrate a blockchain network into their day-to-day business processes — thereby creating a secure, digital environment that facilitates data sharing across systems.

"The launch of this adapter is about helping businesses realize the huge potential of blockchain by making it easier to use," said Vasiliy Suvorov, Vice President of Technology Strategy at Luxoft. "Problems integrating blockchain into existing in-house systems are often the biggest obstacles to its adoption. Now, by integrating blockchain with BPM, a business can leverage the benefits of a decentralized model whilst retaining its existing IT architecture. This means businesses don't have to take out their old IT systems to use blockchain."

USE CASE EXAMPLE: HEALTHCARE ACCUMULATORS SOLUTION

In the healthcare payer space, deductibles and out-of-pocket maximums require strict attention to detail for each individual member. Managed as accumulators, both medical and partnership claims processing systems need to be in sync with real-time information to provide accurate amounts across the healthcare ecosystem.

Recently, a major healthcare organization in the United States came to us with systems lacking real-time information updates for as long as 24 hours, risking inaccurate charges. Reconciling the two systems was a very tedious and time-consuming task, and customer satisfaction was suffering as a result.

However, by leveraging Appian's ability to integrate with countless systems, Luxoft was able to offer a secure, reliable, and auditable way for medical and partnership systems to share and update real-time accumulators. Implemented via Hyperledger Fabric, the accumulator blockchain solution uses channels to isolate and secure data across medical and benefit partnerships.

Integrating blockchain with Appian creates a single, unified interface that boosts business efficiency within the organization while being readily accessible across organizations. With the power of blockchain, this solution can increase customer satisfaction while enabling new partnership opportunities in a trusted environment.

Further, this solution is a step toward moving enrollment, claims adjudication, and payment logic into smart contracts, which can eliminate the need for benefits administration.

FACING THE FUTURE

There is massive potential for blockchain solutions. These solutions will drive a fundamental shift in how different entities and the healthcare industry connect — enabling better outcomes for individuals.

But in order for the healthcare industry to benefit from blockchain, key players in the space need to participate in specific blockchain-based use cases. They need to take part in a deductible or supply chain blockchain by uploading information to the network, which will help attract more participants and increase the value of the data-rich network. Only then will other companies in the healthcare space follow, after seeing how those in the network reap invaluable benefits.

To accomplish blockchain's full potential, open systems and standards are critical. It is important that everyone involved in a blockchain consortium works together to decide on how to operate. Ideal consortiums are comprised of existing partnerships as well as former competitors, revealing a unique ecosystem that is not possible anywhere else.

1. Deloitte, "2017 Global Health Care Sector Outlook", 2017, p.1.

2. Laurie Beaver, "DIGITAL HEALTH BRIEFING: Millennials are leading the consumerization of healthcare — Digital health will help drive wearable shipments — Paper records remain a data hazard for patients", Digital Health Briefing, Business Insider Intelligence, March 26, 2018.

3. Infosys, "Healthcare Insights: Top trends driving the US healthcare industry", volume #2, Infosys Limited, 2016, p.5.

4. Robert Rowley, "Claims data: the good, the bad and the ugly", Flow Health, 2014, p.1-2.

5. Kyle Culver, "Blockchain Technologies: A whitepaper discussing how the claims process can be improved", 2016, p.1.