



Predictions for Blockchain in 2020

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Keywords: Artificial Intelligence, Blockchain, ConVerge-2-Xcelerate, e-Identity Solutions, Healthcare, Maturation, Minimum Viable Traction, Predictions, Privacy, Production, Return-on-Adoption, Return-on-Investment, Scale

Section: Discussion

During our 2019 ConVerge2Xcelerate (ConV2X) conference in Boston, we focused on the theme “Proving Market Value with Pragmatic Innovation in Healthcare” (see <https://conv2x-2019.eventcreate.com/>). This year, along with Blockchain in Healthcare Today (BHTY) editorial board members, conference speakers were invited to join with Tory Cenaj, Publisher of BHTY, to contribute their expertise and share insights for the near-term landscape of blockchain in healthcare.

GEORGE T. MATHEW

Two predictions are worth highlighting. First, there will be more specific use cases that can significantly be better handled by blockchain. These include interoperability, data monetization/ownership/consent.

Second, eventually these will overlap with the existing tech use cases, including provider

credentialing and verification, and claims processing. Financial institutions that are not already in healthcare will go here first.

DENNIS A. PORTO

The largest public protocols will become increasingly dominant in the blockchain space. Similar to how the Internet developed, private (enterprise-focused) blockchains will go the way of closed intranets—perhaps useful in limited scenarios but overshadowed by the open public protocols.

Lightweight alternatives to blockchains (e.g., timestamps) will gain traction in the large majority of instances where censorship resistance of a blockchain is not helpful. Across the health sector generally, sensors of all kinds will help curate our health data. These sensors will bring to light trends and detect (or prevent) disease. Proliferation of health sensors combined with artificial intelligence

(AI) will prompt new discoveries that will make us healthier. However, they will pose threats to privacy. And some of the technology behind blockchains (e.g., encryption, time stamps, peer-to-peer networks) will be unbundled to manage this large data set and protect patients.

RON RIBITZKY

The year 2020 will be marked as the year of *Minimum Viable Traction* of blockchain in health care (Figure 1). Historically, in 2019, we emphasized *viable*, which was marked by proving market value, albeit anecdotal and sporadic. This followed the equivalent of *Entrepreneur Drag-racing Fanfare* as blockchain in healthcare initial coin offerings (ICOs) came and went in 2018.¹⁻⁹

Going forward, successful and pragmatic new-era practitioners will apply their passion toward transforming academic grand vision, private-sector marketing campaigns, and continuously evolving technology capabilities to minimal viable traction (MVT) of blockchain-enabled solutions in healthcare.^{1,2,4-9}

Primarily due to the fundamental decentralized “democratization” characteristic of blockchain, achieving MVT is not just about a technology engineering marvel. Rather, it is about harmonization of the new information democracy. We call it “The blockchain triad.”^{1,4,5,8,9}

1. **Disruptive disintermediated business model** “owned” by executive leadership in private and public sectors alike.

2. **Disruptive decentralized operating model** required to make the new business model work—engaging ecosystem like never before.
3. **New technology architecture** required to make the two work by harmonizing on-chain, off-chain, interoperability, with legacy integration put in place.

In order to help drive the cross-functional teams working in tandem to make the grand vision of blockchain in healthcare happen, new-era practitioners will up-level the value of measure key performance indicators (KPIs) from return-on-investment to return-on-adoption (Figure 2).^{1,2,4-9}

Second, blockchain will emerge as the desired foundation for software-as-a-medical-device (SaMD) followed by service-as-a-medical device (SeMD). Expanding its play in Internet-of-Things (IoT) in general, blockchain will emerge as the desired foundation for the new model of trust required for FDA-regulated SaMD and SeMD to gain real-world market traction.^{4,9-12}

The new blockchain-enabled model of trust of SaMD and SeMD will help drive return-on-adoption in that it will equip consumers with methods and tools to govern access to and use of the data they produce.^{4,8,9,13} Blockchain-enabled SaMD and SeMD will be key to consumers reaping the economic and



Figure 1—The market traction gap.

Source: <https://medium.com/wildcat-venture-partners/the-final-hurdle-reaching-minimum-viable-traction-and-preparing-to-scale-86b77cf0e52d>



Figure 2—Reliable indicators of minimum variable traction.

Adapted from: <https://medium.com/wildcat-venture-partners/the-final-hurdle-reaching-minimum-viable-traction-and-preparing-to-scale-86b77cf0e52d>

economic-equivalent benefits monetizing their data.^{4,8,9,13,14}

SUSAN RAMONAT

I expect pharmaceutical supply chain consortia to move from projects to limited-scale production environments.

ULI C. BROEDL

While the value proposition of blockchain technology in healthcare, including trust; transparency; auditability; stakeholder empowerment; cost reduction via automation of processes in a trusted environment; and health outcome improvement seems compelling, blockchain technology in healthcare will continue to be in experimentation mode during 2020.

Indeed, 2020 will see technological progress with advances in blockchain scalability, interoperability, security, and privacy. There will be more use cases that combine blockchain

technology with other innovative solutions, in particular AI. We can also expect an increase in presentations of successfully completed pilots (i.e., the field still needs to develop a “failure culture” to openly discuss and learn from unsuccessful projects) driving broader awareness of, interest in, and experimentation with blockchain technology in healthcare.

The speed of technological progress, however, is not matched by the development of key non-technological aspects of blockchain technology and its application, including, but not limited to, best governance practices, regulatory standards, and legal frameworks that address liability and intellectual property rules in a decentralized ecosystem.

We can only expect broad adoption of blockchain technology in healthcare if both technological and non-technological challenges in a decentralized ecosystem are addressed in a manner that allows

win-win situations for all stakeholders while mitigating risk. While the 2019 Gartner prediction for blockchain technology in healthcare may be somewhat pessimistic (mainstream adoption is expected to take more than 10 years from now¹⁵), it is fair to conclude that we, presently, are still at the stage of experimentation with a novel technology that, however, has the potential to dramatically change and improve our approach to healthcare.

ANH L. NGO

In the year 2020, we start seeing maturity in business models for healthcare startups that integrate blockchain technology in their platforms. Companies that do not have sustainable business models in healthcare based on the use of blockchain will likely experience liquidity challenges, especially if there is a financial recession in the world's major economies. These are especially true for companies that received financing or capital from traditional investment firms.

As mentioned in 2019, use of the blockchain in healthcare and medicine will likely be intertwined with other aspects of technological advances such as AI, IoT, and mobile applications for ease of adoption and use.

In the near term, I still believe the most viable blockchain deployments in healthcare are projects involving financial transactions and where there is a direct measurable creation in monetary value and hence a revenue model for the blockchain-related company. Those segments include micropayments (e.g., deductibles, prescriptions, traditional cash pay), insurance processing and claims submissions, and payments and quality assurance involving medical supply chain management. These are areas where high friction, massive inefficiencies, and costs can be reduced with a new way of managing trust in a transaction.

Areas of healthcare with blockchain utilization that may gain some adoption include physician credentialing, patient consent management, and medical records. Extracting a revenue model to create self-sufficiency for these projects, however, may be difficult in 2020.

KEVIN A. CLAUSON

In 2020, there will be increased adoption of distributed ledger technology and blockchain technology in the healthcare arena, in spite of a substantially smaller spotlight being shown on blockchain itself. This longitudinal shift from focusing on the technology to what the technology enables patients, clinicians, and healthcare systems to accomplish will represent a major milestone in the journey of blockchain toward true integration and maturity.

FRANK RICOTTA

I envision eight advances in blockchain pertaining to healthcare in 2020. These include e-identity, consent, integration and data collection, initiatives by non-governmental organizations (NGO), consolidation, clinical research, supply chain, and fraud.

We will see early adoption of e-identity solutions that will become the basis of health profiles. Adoption of blockchain-based identity solutions will be driven by regulatory pushes for individuals to have access to their health information. The identity solutions will evolve to health profiles that push beyond health records to include additional information such as genomic data and data on health and wellness. Health profiles will drive creation of new access models and speed up the adoption of personalized medicine, telehealth, and AI.

Blockchain solutions will drive consent, especially in use cases requiring consent to flow between providers and individuals. This solution

will support granular consent as mandated by consumer protection laws such as General Data Protection Regulation (GDPR) in Europe and those beginning to take effect in the United States.

Specifically, in the clinical research area, a blockchain solution will emerge as the preferred integration and data coordination platform for advanced digital and clinical therapeutics.

The NGO initiatives will begin to rely on blockchain solutions for supply chain, aide distribution, and funds management to combat fraud and provide transparency for their initiatives across the health spectrum (e.g., access to care, food, water, medicine).

We will see a consolidation of blockchain solutions, and larger integrators will begin to incorporate, as a core technology, enablement capability within their solution stacks. New market leaders will emerge outside of the cryptocurrency technology stacks that are better suited to deal with complex data structures and smart contracts as related to data ownership and monetization.

Contract research organization (CRO) solutions will begin to deploy blockchain solutions to support advanced clinical research to include improved person and provider engagement and access. We will see the pharmaceutical sector driving the adoption of blockchain within the supply chain ecosystem. Finally, regulators will embrace blockchain capabilities to deal with fraud, especially as it relates to the opioid epidemic.

TORY CENAJ

I expect 2020 to unveil blockchain developments with a keener eye toward pursuing best practice, standards, guidelines, and regulation. The market clamors for use cases and standards on a

continuous basis. The need to advocate and respond clearly originates from both practical and regulatory trenches. As a result, we expect BHTY will present an overall influx of use cases through 2020.

Education remains a critical component for success, as early adopters and innovators pass the baton to the marketplace for evaluation of research and efforts. As in any analysis, the financial impact should be included to gauge success and impact on democratic change in our health system. Too many remain disenfranchised and disquieted.

CONCLUSIONS

Among all the specific advances predicted by our panel for blockchain in healthcare during the next 12 months, one encompassing theme becomes apparent. A maturation process for blockchain in healthcare is occurring.

Entrepreneurs, innovators, and executives in the public and private sectors will continue their focus on proving market value, while successful early adopters will go ahead toward closing the market traction gap (Figure 1).

Each of our experts touched on it. Anh Ngo and Tory Cenaj tell us straightforwardly that maturity in business models is occurring. To this end, Ron Ribitzky calls for a laser-sharp focus on user experience throughout the blockchain triad to produce scalable return-on-adoption (Figure 2).

More specifically, George Mathew predicts interoperability, data monetization/ownership/consent, credentialing and verification, and claims processing. Dennis Porto envisions the largest public protocols becoming dominant in the blockchain space, while Susan Ramonat foresees the pharmaceutical supply chain consortia moving from projects to limited-scale

production. Uli C. Broedl envisions technological progress with advances in blockchain scalability, interoperability, security, and privacy.

Kevin Clauson tells us that the focus is now on accomplishment—what the technology enables patients, clinicians, and healthcare systems to do. And Frank Ricotta lists solutions for e-identity, consent, integration and data collection, NGO initiatives, consolidation, clinical research, supply chain, and fraud.

FINAL THOUGHTS

Thanks to our intrepid authors for sharing their unique perspectives. We look forward to the market using the BHTY evidence-based platform to share more knowledge, and both positive and negative research, with the sector.

In closing, over the last few years, we have marveled at the increasing number of hospitals, startup innovation labs, incubators, investors, and universities seeking capital to attract invention and attention. We invite and encourage BHTY manuscript submissions to include the financial impact of outcomes to evaluate overall market cost reduction and, where possible, demonstrate the impact and/or direct benefit(s) to patients. Let us begin this collective effort today.

Funding statement: No outside funding was provided for this article.

Contributors: All authors contributed to the content of the article.

Conflicts of Interest: See BHTY Editorial Team for information about authors: <https://blockchainhealthcaretoday.com/index.php/journal/about/editorialTeam>

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