

Introduction to Ethereum in Healthcare

Background

[Ethereum](#) is a global, open source blockchain that can be used as the basis for exciting new types of decentralized business models. Launched in 2015, Ethereum offered something that its blockchain predecessors did not: smart contract technology. [Smart contracts](#) are computer programs built to automatically and autonomously execute when predetermined criteria are met, with no need for third party enforcement. They run on the Ethereum Virtual Machine (EVM), a software platform built into Ethereum that enables programmability and allows users to build and run their own decentralized applications (dApps) on the blockchain. This capability has made Ethereum a powerful business tool and has fueled its adoption across a wide range of sectors.

Healthcare is one key vertical in which Ethereum holds significant potential and where it is already being put to great use. It should come as no surprise that the healthcare sector must adhere to a wide range of rules and regulations, starting at the local level and going up to the federal and even international levels. Failure to comply can mean everything from steep fines to business-crippling reputational damage to risking patient safety. Ethereum offers the security, functionality and versatility to address these requirements. EVM smart contracts are considered “Turing-complete,” which means they can support a wide range of computational instructions and can be written to automate just about everything. This flexibility and versatility is part of what makes Ethereum uniquely well-suited to the needs of the healthcare vertical. Additionally, the platform has a few important mechanisms in place to deliver the security demanded by the space as well as maintain the required privacy.

Let’s start with security. First, Ethereum is a [Proof of Stake \(PoS\)](#) platform, meaning it requires two-thirds of platform contributors, or “validators” to approve all block proposals and imposes crippling fines on any validator who attempts to make a malicious proposal. This helps eliminate any bad actors and keeps the platform secure. Additionally, Ethereum’s smart contract capabilities offer another level of security. Smart contracts are undisputable “if-then” statements that execute exactly as they are coded, without fail, and CANNOT be altered by a third party. The protection of the PoS platform and the immutable nature of the smart contracts that enable dApps to run are key in providing the security that the healthcare space requires.

QUICK TAKEAWAYS



Ethereum is a global, open source blockchain that features smart contract technology, code that allows users to build and run a wide-range of decentralized applications (dApps). The protocol is being put to use across sectors and holds significant potential for the healthcare space.



Healthcare is a highly regulated industry, and failure to comply carries steep consequences for both business and patient well-being. Ethereum offers the security, privacy, functionality and versatility needed to address these requirements.



Ethereum provides more long-term flexibility for cross-protocol compatibility than any other blockchain. This is an important “future-proofing” consideration for the healthcare industry, which requires extensive cross-system and cross-platform communication.



Of course, given the sensitive nature of healthcare data, maintaining complete privacy is also critical. In addition to providing high levels of security, Ethereum also offers the ability to build private networks, which helps address this critical need. Additionally, like many industries, the healthcare space benefits from the efficiency and scalability provided by the host of [Layer 2 \(L2\) Ethereum technologies](#) now available. L2 solutions are built on top of the Ethereum Mainnet, or main Ethereum chain, and allow many transactions to be consolidated into one, thus enabling the improved scalability and faster transaction speeds that the healthcare space requires.

One challenge that has long plagued healthcare providers is the plethora of independent systems that keep data siloed and often fail to communicate as smoothly as needed. With the rise of electronic medical records (EMR), one common pain point for the industry was enabling these various systems to safely access and share patient data, so that healthcare providers could have a complete and accurate view of patient records. As we look toward a more heavily blockchain reliant future for this sector, interoperability should be top of mind, and this is another area in which Ethereum excels. Many blockchain protocols are EVM compliant, which means building natively on Ethereum provides more long-term flexibility for cross-protocol compatibility than any other blockchain selection. In this sense, building with Ethereum delivers effective “future proofing” for an industry that requires extensive cross-system and cross-platform communication.

While Ethereum is already proving its value in the healthcare space, use of the platform is still relatively new. Due to significant complexities and requirements, healthcare can sometimes lag behind other verticals when it comes to the adoption of new technologies, and it was not the first sector to make inroads with Ethereum. During the platform’s early days, initial blockchain skepticism proved to be a bit of a roadblock in healthcare adoption, but the advancement of privacy-enhancing technologies, as well as the ability to run public, private and hybrid deployment patterns working in concert, have caused the industry to take notice and truly see the value that the protocol has to offer.

Today, there is still much exploration occurring with Ethereum in healthcare, but its use is becoming more common across departments. Given Ethereum’s versatility, it can help drive efficiencies and lower costs across a wide range of business units, including billing, supply chain, health data management, and beyond. The maturity level of each of those use cases differs, but as the Ethereum platform itself continues to develop we are likely to see advancement across the board.

HOW DO I FIND OUT MORE?



Watch: The EEA’s webinar, “[Web3 and Healthcare: Where We Are and Where We’re Going](#),” presented by Sean Manion, PhD, Chief Scientific Officer at Equideum Health.



Read: “[Blockchain in Healthcare and the Life Sciences](#),” by ConsenSys.

[View file in web page](#)

About the EEA

The [Enterprise Ethereum Alliance \(EEA\)](#) enables organizations to adopt and use Ethereum technology in their daily business operations. The EEA empowers the Ethereum ecosystem to develop new business opportunities, drive industry adoption, and learn and collaborate.

To learn more about joining the EEA, reach out to james.harsh@entethalliance.org or visit <https://entethalliance.org/become-a-member/>.

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