Health Port White Paper

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Introduction

Over the past decade, the global EHR (Electronic Health Records) market has experienced significant growth. There have been many factors driving this growth and the results have ultimately benefited healthcare organizations, healthcare providers, and consumers (a.k.a. patients).

Despite all of this growth and benefit, there is a key problem that has yet to be solved—the true portability and ownership of a consumer's personal health data and EHR. *The path to EHR interoperability is no clearer today than it was when medical records began transitioning from paper to digital files. That delay has left physicians frustrated, policymakers baffled and vendors making more promises than progress for better data exchange (source).* As a result, and despite massive strides in technological advancement, consumers still do not own, nor control their personal electronic health records. Consumers are the key stakeholders in the healthcare system, and the consumer stands to gain more than any other entity. Providing a comprehensive portable electronic health record for consumers would help to eliminate care and treatment delays, as well as to ensure that any healthcare practitioner involved in the consumer's care has a full picture of the consumer's healthcare needs. The goal of Health Port is to place ownership of the electronic health record where it belongs: portably, with the consumer. Health Port will provide individual consumers the ability to personally control the contents of, and access to their personal electronic health records, regardless of situation or location.

Health Port is a consumer-centric healthcare information system that will bring consumers a portable, interoperable, decentralized, integrated system for managing their personal electronic health records. Health Port will leverage blockchain technology in order to achieve this. Consumers will control access to their records via private key and will be the ultimate gatekeeper to their medical data via blockchain-based storage. By utilizing this technology, private health data is secure and protected from data breaches that have been

commonplace over recent years. Health Port is a HIPAA compliant, borderless, open platform.

With vast amounts of data already being captured in existing EHR implementations, the timing is optimal for leveraging and consolidating existing data for consumer benefit. Health Port will disrupt the global EHR market by removing the barriers currently in place by intermediaries, ultimately allowing consumers open access to their complete personal health records.

Market Overview

Handwritten paper medical records are inevitably giving way to electronic medical records (EMRs). Although digital medical records have been around for at least 30 years, significant financial investment over the past decade has resulted in data portability and accessibility that was previously not available (source).

The Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted as part of the American Recovery and Reinvestment Act of 2009, was signed into law on February 17, 2009, to promote the adoption and meaningful use of health information technology. Subtitle D of the HITECH Act addresses the privacy and security concerns associated with the electronic transmission of health information, in part, through several provisions that strengthen the civil and criminal enforcement of the HIPAA rules (source).

There has been an increased focus worldwide on EHR standards and implementations. This has lead to increased vendor competition in the market along with financial incentives for healthcare systems and providers to implement EHRs in a timely manner. In the United States, there has been significant growth due to the HITECH Act.

Transparency Market Research estimates that the global electronic health records market, which was pegged at US$ 23.22 bn in 2016, will exhibit a promising 5.7% CAGR from 2017 to 2025 and rise to a valuation of US$38.29 bn by 2025 (source).

Currently there are over 1,000 EHR software providers in the marketplace with varying levels of functionality and integration capabilities. While there are many EHR software providers in the marketplace, the majority of the acute care business is dominated by a few key players.

A new report from KLAS found Epic and Cerner each held about one-quarter of the acute care hospital EHR market share in 2016. Epic had 25.8 percent of the market, while Cerner had 24.6 percent. Meditech followed close behind, claiming the next biggest share of the market at 16.6 percent. McKesson and AthenaHealth were closer to the bottom of the pack, with 4.6 percent and 1.6 percent respectively(source).

While there have been improvements in portability and accessibility of Electronic Health Records (EHR), the industry remains fragmented with multiple EHR standards and systems. As a result, consumers are left without a single source of truth in relation to their personal health records, forcing them to navigate a complicated web of disparate systems that lack a clear picture of their overall health record.

Portability of one's personal health data is another important concept that relates to creating standardization among the syntax used to create health records and the ability to easily transport this data across disparate systems. Many studies have shown that portable and easily transferable data can considerably improve health-care services and enhance patient care. However, portability of EMRs is a challenge that has not generally been solved yet and still needs to be perfected to secure a coordinated health-care system (source).

While great strides have been made to promote and improve consumer wellness and quality of care via EHR systems, portability and consolidation of an individual's personal health data remains a significant obstacle requiring additional strategies to overcome. Having a single source of truth for a consumer's health record that is ultimately controlled by the consumers themselves is the key to leveraging the industry's technologic investment and progress. This will allow consumers (rather than just healthcare providers, organizations, and insurers) to ultimately extract the benefit from decades of investment and growth.

Current State (The Problem)

It has become commonplace for consumers to interact with healthcare providers as their medical history is being documented in an EHR real time. These records are then leveraged throughout the consumer's lifetime in order to more accurately diagnose and prescribe care, improve safety, and ensure accurate billing and reimbursement. The "completeness" of this electronic history is vital for maintaining a longitudinal view of the documented medical history for future use and benefit. While the electronic health record market is flush with funding

and provides opportunity for reimbursement and profit, the benefits of advancement should not be focused on those currently reaping the benefits; hospitals and providers. Consumers should receive the benefit from the technological advancements in electronic health records implementations. This consumer benefit has not come to fruition, conversely, consumers are currently at a disadvantage when dealing with these new systems, due to information blocking and lack of interoperability. *"We've spent nearly $40 billion on EHRs in the U.S., yet we continue to not have a high level of interoperability and information sharing, and that's where most of the value of EHRs is derived," says Janet Marchibroda, MBA, director of the health innovation initiative for Bipartisan Policy Center, a think tank in Washington, D.C. (source).*

Currently, there are thousands of different EHR systems being used with varying forms of integration via protocols such as HL7. These systems have improved consumer safety, legal compliance, and revenue while being closed systems that lack the portability and integration features truly necessary for consumers to take control of their personal EHR. Despite all of the recent innovation and proliferation in the EHR space, consumers are still not in control of their own medical records. Instead, consumer's personal data is siloed and in the hands of the hospitals and providers. Consumers are burdened with the responsibility of requesting health records from multiple providers and/or hospital systems and are left without an electronic solution for storing their consolidated/integrated personal health record.

The current system of extracting consumer data from EHR systems is heavily reliant on humans to be motivated to execute a series of steps in order to safely secure and move medical records. Examples of this are the provider specific consumer portals that are being implemented by health care providers. While this improves a consumer's access to a portion of their personal electronic health record, consumer's are left with only a fraction of their total health record rather than the complete, full view. They may have the ability to download consumer data related to a specific visit or provider, but lack a specific, integrated repository to securely store and access this data. Currently, a consumer's overall big picture medical record is spread and isolated across the many systems they interact with throughout their healthcare journey.

As evidenced by the lack of commitment to interoperability, the current EHR marketplace is being run stakeholders who are looking out for their own best interests instead of leveraging the consumer-centric focus that is needed to truly revolutionize healthcare and dramatically

improve consumer outcomes. *Not only are the record systems not incentivized to make interoperability successful, they have multiple business reasons to see it fail. First off, if a patient had portability with their data, they would no longer be locked into the data silos these records have become. Patients could share snippets of their health data as easily as sending an email. The national coordinator's office's interoperability mindset prioritizes hardwiring electronic medical records and syncing technology; portability prioritizes the patient, utilizing a snapshot of their data in something like a universally readable PDF they can share as they choose. But these record organizations hold patient's data back in order to not lose business. In a very real sense, a patient's ID is the provider's intellectual property (source).*

As long as the EHR industry has the opportunity to flub interoperability, it will. EHR vendors and healthcare providers both have a huge motivation to not have interoperability work; as interoperability makes them both vendors and providers fireable. Patients who can move healthcare records around can switch doctors. Doctors who can move healthcare records around can switch EHR vendors (source).

In addition to consumers not being able to fully leverage the massive amounts of data that are being generated throughout their healthcare encounters, healthcare providers are left with a partial view of a consumer's medical history based on what has been documented/executed in their specific software implementation, but lacking all of the data from the consumers interaction with other providers utilizing different systems and databases.

The goal of the EHR industry needs to be to do what is in the consumer's best interest. It is clear that interoperability is of benefit to consumers and will result in improved healthcare. *While most people support these goals, some individual participants in the health care and health IT industries have strong incentives to exercise control over electronic health information in ways that unreasonably interfere with its exchange and use, including for patient care (source).*

A national survey conducted by Julia Adler-Milstein and Eric Pfeifer of the University of Michigan Schools of Information and Public Health showed that information blocking remains widespread to date. Respondents reported that vendors, hospitals and health systems routinely engaged in information blocking. Limited interoperability of products was one of the most common forms of this practice among vendors. Hospitals and health systems, on the other hand, were often found to offer preferential treatment to a specific type of EHR and coerced providers to adopt it.

Respondents also experienced hospitals controlling the flow of patients by not sharing their information openly (source).

The healthcare environment has experienced many growing pains as a result of the mass adoption and investment in EHR systems. These growing pains are highlighted by unbalanced power and resulting information blocking and lack of interoperability. In the current environment, the consumer ultimately loses.

The EHR market is primed for disruption and the transfer of power into the hands of consumers will turn the industry upside down. In order to improve consumer care and healthcare outcomes, interoperability needs to be focused on along with removing the ability of parties to engage in information blocking.

Future State (The Solution)

It's time to put patients at the center of their own data. It's time to throw away convoluted and vendor-manipulated API working groups favoring the data-fiefdom mindset of electronic medical records that prioritize intellectual property and profits over consumer and public health needs. Why shouldn't we consumers help create and manage our health data portability?

It's time to tear up the national coordinator's road map and align modern health towards the only true north—patient-centered control of data flows (source).

Health Port will leverage the current consumer data being generated by software already implemented by healthcare providers and give consumers the power to be the gatekeeper of their own consolidated/integrated electronic health records. Consumer's will now own the control and storage of their electronic health records via decentralized storage. The result will be a consolidated/integrated medical record that is always available with access controlled by the consumer. This fundamental shift will extract immense value from current EHR systems, ultimately benefiting consumer care through improved outcomes. These benefits, along with taking control of access to data, will significantly improve a consumer's ability to manage their personal healthcare journey. Additionally, providers will be left with a more accurate picture of a specific consumer's health, providing them with the comprehensive information they need to provide better care to consumers.

Health Port is built upon the fundamentals of open-source software, reliability, and leveraging decentralized storage in order to shift consumer specific data away from the current centralized, disparate systems that have been heavily invested in by both governments and healthcare organizations worldwide. The solution being implemented by Health Port focuses on putting the consumer first, which is a fundamental shift from the current industry standard. As a result, tremendous value will be extracted from the current systems and transferred directly into the hands of the consumers. Health Port is a HIPAA compliant solution that is driven by consumer action for consumer benefit. Health Port empowers consumers to consolidate and leverage provider, hospital, and insurer-generated data for personal ownership and benefit. No longer are consumers having to make cumbersome medical records requests from various touchpoints in their healthcare journey. Now they have access to a fully integrated medical record anytime, anywhere and can choose which healthcare providers and organizations to share that valuable data access with.

Open Source EHR systems are the future of healthcare. An Electronic Health Care record that is not open source is essentially a black box. How it works is a mystery known only to the developers. This "big secret" is totally incompatible with the ideals of science (source).

The Health Port framework will allow consumers to easily consolidate their disparate medical records into one access point that is driven by a private key which they control. Consumers then have the ability to decide who to share their medical data with, without need for making medical records requests or relying on failing health information exchanges. As a result, consumers will own access to their personal health information, with no other parties being able to access the information without the consumer granting permission.

Health Port will serve as a decentralized repository and framework (API) upon which a new ecosystem of solutions and apps may be built. This will allow developers to provide relevant solutions to real healthcare problems while leveraging Health Port's user base (consumers a.k.a. patients). While developers will be able to build on top of the Health Port framework, they will be fundamentally blocked from retrieving consumer medical records without consumer permission. Consumers will serve as the gatekeeper to their data via private key and will enjoy freedom to choose the specific apps they would like to authorize and utilize. This allows developers to build upon a proven, robust decentralized repository, while consumers

maintain control in regards to managing personal health data and controlling access to such records.

Initial Market Penetration

Health Port will enter the market on January 4, 2019 via a proof of concept MVP DApp delivering the following to consumers:

1. Ability to document, store, and retrieve health record data via the Tron Network through the use of a simple, user-friendly interface. Documentation types initially supported upon release include Allergy Documentation, Medication List, and Procedure History. Additional functionality will continue to be added to the MVP in order to offer consumers additional options for capturing and accessing their personal health data.

2. A real-world use case for blockchain technology that may be used in a simple way without any previous awareness of blockchain technology required. This includes the ability to create a wallet, store and retrieve data, interact with smart contracts, and move utility tokens across the network through a simple, familiar web interface. Through the Health Port MVP, all this functionality is easy to use and requires no previous blockchain or crypto knowledge, no fiat onramps, and no need to deal with crypto exchanges.

Participation in this MVP will be incentivized by capturing data from consumers in exchange for EHR token distributions. Early adopters will be distributed EHR tokens for completing different steps of documentation within the Health Port decentralized application. This will leverage a captive, enthusiastic user base of early adopters, which can be built upon for further expansion.

EHR Network Utility Token

EHR utility tokens are intended for use on the Health Port platform, a new Blockchain-based electronic health record system. Ownership of the tokens carry no rights other than the right to use them as a means to obtain services on the Health Port platform, and to enable usage of and interaction with the platform, if successfully completed and deployed. The tokens do not represent or confer any ownership right or stake, share or security or equivalent rights, or any right to receive future revenue shares, intellectual property rights or any other form of participation in or relating to the Health Port platform. The tokens are

not refundable and are not intended to be a digital currency, security, commodity or any other kind of financial instrument.

Token Details

- Token Name = HealthPort
- Token Symbol = EHR
- Total EHR Supply = 50,000,000,000
- Token Standard = Tron Network TRC10
- Token Utility = Data storage and retrieval on the Health Port network will be governed by the use of EHR tokens.

Token Allocation

- 51% Consumer Distribution (DApp Useage Distributions & Air Drops, Tron Network Super Representative Rewards Distribution, Hackathons/Developer Challenges, etc.)
- 29% Health Port Operations
- 20% Founding Developers & Visionaries

EHR is a utility token meant for use in the Health Port platform. It is transferable. While the token may be traded on the exchanges, we will not encourage or facilitate this exchange trading in any way.

Conclusion

There has been great progress made with the investment in and implementation of electronic health records. This progress has greatly improved consumer care, healthcare reimbursement, and the ability of healthcare providers to improve the quality of care that they provide to consumers. While there have been vast improvements and large amounts of money invested, consumers still hold the least amount of power in the system.

Arming consumers with the ability to control the consolidation and delivery of their health records is a benefit desired not only by consumers, but also by healthcare providers. *Surveys show that the majority of doctors believe that exchanging health information with other providers could help them deliver better care. But they don't want to spend time searching for the information; they want it delivered to them (source).*

Health Port will leverage the current state of electronic health records, extract value from the existing systems, and transfer control back into the consumer's hands. As a result, consumers will now have the ability to experience portability and the consolidation of their health records from disparate systems. consumers will no longer be saddled with having to perform cumbersome and costly medical records requests or trying to manage their health via multiple consumer portals. Additionally, they will hold the keys to their consolidated health record and control access to it. This is unlike current consumer portals, which are hospital/office specific and not owned by the consumer.

Previous research has shown that robust interoperability could deliver significant savings by reducing duplicative utilization, and improve patient satisfaction with their healthcare by ensuring they don't have to endure redundant testing (source).

Health Port will provide a simple framework, allowing consumers to provide their past medical history to providers at time of treatment. Health Port will provide compatibility with centralized EHR systems, allowing it to be the decentralized source of truth for consumer electronic health records. This will put the power of interoperability into the consumers hands, allowing them to be the driving force in the improved quality of care that they will be receiving.

Health Port will become the open-source framework upon which other electronic health record decentralized applications can be built. This will help consumers because they will only have one medical record to manage and be able to utilize their account across many different useful applications without having to worry about moving their health record data around to multiple providers. This framework will benefit app developers as they will immediately have a built in user base and audience that can use their decentralized application.

In conclusion, vast improvements and investment have been made in regards to electronic health records. Throughout these cost intensive implementations, healthcare providers and insurers have reaped rewards, while consumers haven't fully realized the benefits. Health Port will disrupt the EHR market by allowing consumers to extract value from currently implemented EHR systems in order to better control and improve the quality of care that they receive.

Stay tuned as we will be formally announcing our team and roadmap in the coming months. Official announcements will be made via our Blog on Medium: https://medium.com/@healthport