EKO Blockchain Platform - the AWS of Blockchain Application

Steve X. Chen*
EchoLink Project
Palo Alto, California, USA
steve@echolink.tech

March 23, 2018
Go Bears! 150 Years

Abstract

We introduce EKO Blockchain Platform for fast development and deployment of data driven blockchain applications. Blockchain and real world data are currently segregated. This makes it difficult for application developers to utilize the benefits brought by blockchain. Taking the lessons learned from building the EchoLink service, we distill all the necessary components of making successful blockchain applications and offer these components as services. With EKO Blockchain Platform, developers may take advantage of all the benefits brought by blockchain while not being entangled by the low level issues associated with blockchain technology. The EKO Blockchain Platform provides businesses and developers a fast and efficient way to develop and deploy blockchain applications. EKO Blockchain Platform is the AWS of blockchain application.

Figure 1: EKO Blockchain Platform = EKO Blockchain Application Service (EKO BAS) + EKO Mobile + EKO Social

*corresponding author

Contents

List of Figures

1 Introduction

Blockchain technology offers unique advantages over traditional data storage solutions. The immutability and time-stamp features offer developers an unique way to instill trust into the applications. Distributed data storage solutions associated with blockchain development promises safe and encrypted data storage solutions at a lower cost over competing cloud storage solutions.

Over the last couple of years, many application developers have explored ideas of building applications on blockchain technology. On a high level, it all makes sense. Upon closer inspection, however, it is increasingly evident that it is not an easy task to build enterprise level blockchain applications. Developers have to spend a tremendous amount of time and effort dealing with low-level blockchain layer details, while their energy could be better spent on application level design and development.

EKO Blockchain Platform and its three major components, EKO Blockchain Application Service (EKO BAS), EKO Mobile, and EKO Social, aim to bridge the gap between low-level blockchain interfaces and high-level application design and architecture.

- EKO BAS - EKO Blockchain Application Service enables businesses and developers to focus on data and how users will utilize the data. Blockchain offers dramatically different ways to store, process, and present data in a trusted way. EKO BAS offers businesses and developers the immutability and trust associated with blockchain through EKO BAS interfaces. EKO BAS interacts with the fundamental blockchain and distributed data storage layers, so that businesses and developers are not bogged down by the low-level details of blockchain and distributed data storage.
- EKO Mobile - Mobile devices constitute the most prevalent computing format in the world, and yet there is no easy way for mobile devices to communicate and interact with blockchain and distributed data storage. EKO Mobile bridges the gap between mobile devices and blockchain. EKO Mobile offers fast development and deployment of mobile blockchain applications.
- EKO Social - Social networks occupy a central role in our digital world. Similar to the situation between mobile devices and blockchain, social networks and blockchain can not easily communicate. Social network applications and blockchain can mutually benefit each other. EKO Social aims to bridge the gap between social networks and blockchain.
- EKO Blockchain Application Toolbox - EKO Blockchain Application Toolbox offers businesses and developers a full set of tools to develop and deploy data driven blockchain applications.

EKO Blockchain Platform strives to offer fast development and deployment of blockchain based data driven applications, thus enabling wider and quicker adoption of blockchain technology in every segment of the economy. Our ultimate goal is to enable the building of a high-trust economic system through blockchain technology.

1.1 Advantages of Blockchain

We believe the central benefit of blockchain to businesses and developers is its ability to present data in a trusted manner. The immutability and time-stamp features of blockchain are central to distill trust in applications. Through properly designed infrastructure, data that are locked up in business vaults and that are currently not easily accessible can be brought the public in a trusted and trustworthy manner. All of this can be done at a lower cost than current non-blockchain system.

Businesses, organizations, and various agencies around the world possesses a tremendous amount of data. A lot of these data are meant to be used by the public. What prevents many such public data from being utilized by the public is the high cost of providing such a service. Centralized applications require large staff to set up and maintain. Distributed blockchain applications, on the other hand, requires dramatically less resources to maintain. The built-in economic system associated with blockchain applications offers a way to properly incentivize stakeholders, which dramatically reduces the on-going cost of maintaining a public access system. Through properly designed blockchain applications, deep web or deep data applications become feasible and cost-effective. A whole new category of deep data and deep web application could be effectively and efficiently built and deployed using blockchain technology.

1.2 Utilization of Blockchain for Application Development

Most of blockchain applications in the present time centers around financial payments. This is understandable given that the first successful and practical embodiment is Bitcoin, a peer-to-peer digital cash payment system. Various other blockchain payment systems followed Bitcoin into wide acceptance. Financial service is the first sector that blockchain technology has been successfully applied. It is by no means the only sector that could be disrupted in a positive way by blockchain technology.

We believe the immediate next sector that blockchain could prove disruptive is deep web and data associated with deep web. Modern day search engines crawl the web for surface data. Surface data are content that could be index by search engines. Prime examples of surface data are public web pages. Businesses and organizations also possesses a tremendous amount of data and content that are not in the form of web pages. They include presentations, pdf files, and other data stored in databases.

In many situations, deep web data are public information meant to be consumed by the general public. Deep web data are different from proprietary and private data. Through properly designed blockchain solutions, deep web data could be brought to the public in an efficient and cost-effective manner. One of the primary aim of the EKO Blockchain Platform is to make access to deep web data possible. In order to bring such deep data available, it requires an active effort on the part of data owners. One major problem that prevents data owners to make deep data available is the tremendous amount of resources required.

We believe data driven applications built on blockchain technology could open up a whole new format of search applications. Data driven blockchain application would be the next disruptive category of blockchain application in addition to financial payment solutions.

In the case of Deep Web Search: According to Popular Science: ”[Deep web] is a place where online information is password protected, trapped behind paywalls, or requires special software to access—and it’s massive. By some estimates, it is 500 times larger than the surface Web that most people search every day. Yet it’s almost completely out of sight. According to a study published in Nature, Google indexes no more than 16 percent of the surface Web and misses all of the Deep Web. Any given search turns up just 0.03 percent of the information that exists online (one in 3,000 pages). It’s like fishing in the top two feet of the ocean—you miss the virtual Mariana Trench below.”

2 Current Issues Facing Blockchain Application Development

Given the benefits of blockchain technology, what is preventing the wider adoption of blockchain and quicker deployment of blockchain applications?

The simple answer is that there is virtually no easy connection between blockchain and the existing IT data infrastructure. There is a ”misconception” that blockchain applications can access all the data on the web and existing IT infrastructure, and vice versa.

Additionally, in order to develop blockchain applications, developers need to deal with the low-level blockchain interfaces directly. As there are many competing blockchain platforms in the market, dealing with low-level blockchain intricacies has become an arduous task for developers.

Furthermore, current blockchain technology does not support the scale and performance requirements of large scale business applications. The time required to process transactions on existing blockchains does not meet the needs of business grade applications. New methods of taking advantage of blockchain's unique characteristics while making sure blockchain applications can meet the expectations of businesses and users are necessary.

The issues outlined above all surfaced during the development process of our core EchoLink Service. The problems we encountered must have been and will be encountered by other blockchain application developers in their own development efforts. It is our goal to distill and solve these issues and provide a better blockchain application platform to businesses and developers.

Thus, EKO Blockchain Platform is born.

3 Our Solution - EKO Blockchain Platform

EKO Blockchain Platform is the AWS of blockchain application. The EKO Blockchain Platform provides businesses and developers a fast and efficient way to develop and deploy blockchain applications. Taking the lessons learned from building the EchoLink service, we distill all the necessary components of making successful blockchain applications and offer these components as services.

With EKO Blockchain Platform, developers may take advantage of all the benefits brought by blockchain while not being entangled by the low level issues associated with blockchain technology.

3.1 Components of EKO Blockchain Platform

EKO BAS EKO Blockchain Application Service - Fast development and deployment of Data Driven Blockchain Applications.

EKO Mobile Blockchain integration with mobile and IOT devices. Mobile device is the dominant computing platform in the world. Yet current blockchain applications are virtually inaccessible to mobile devices. EKO Mobile aims to bridge the gap between mobile devices and blockchain by allowing developers to deploy data driven blockchain applications tailored to mobile devices efficiently.

EKO Social Social networks meet blockchain applications. EKO Social offers an option to developers to attach social identity to distributed applications. EKO Social offers one more option to developers to develop innovative distributed blockchain applications for real world situations.

EKO Blockchain Application Toolbox EKO Blockchain Application Toolbox offers businesses and developers a full set of tools to develop and deploy data driven blockchain applications. The EKO BAT enables businesses and developers to make deep web data accessible on blockchain and doing so in an efficient and cost effective manner.

3.2 Advantages of EKO Blockchain Platform

EKO Blockchain Platform frees developers from the low-level interactions with the blockchain layer, so that developers and businesses may focus on what's really important, data. The major innovation of blockchain is the way it stores data, which is dramatically different from any traditional database. We believe blockchain and distributed data storage solutions will complement traditional databases. EKO Blockchain Platform offers businesses and developers a solution to bring deep data to the users, and unlock previously untapped value in their businesses.

The ultimate goals of EKO Blockchain Platform are:

- Data Driven Blockchain Application
- Blockchain Application Layer with Multi-chain Support
- Real-World/Internet Data Integration and Interaction

4 Conclusion

We distill the lessons learned from developing the core EchoLink Service into several services and tools for blockchain developers and created the EKO Blockchain Platform. The issues we faced in the process of developing the core EchoLink Service are common to blockchain developers. As blockchain and blockchain applications are still in their infancy, we believe EKO Blockchain Platform would be an important enabling technology driving towards wider and speedier adoption of blockchain technology.

4.1 Future Work

We plan to release updates and details on EchoLink Service and EKO Blockchain Platform on a monthly basis or as new versions become available.

4.2 Acknowledgements

We would like to acknowledge several industry veterans for advising our project.

4.3 Versions and Revisions to this position paper

- v. 1.0 – March 2018, initial release