Authox

Abstract:

Recent innovation in the field of distributed ledger technologies receiving extensive adoption. Organisations around the globe explorering the potential applications of distributed ledger technology, but it is challenging task to implement blockchain based solutions, as technology is complex to understand and requires extensive knowledge of peer-to-peer networks, cryptography, consensus algorithms etc. To facilitate & ease blockchain application development, offerings are emerging to provide the underlying infrastructure support. These services are more focused on the underlying blockchain network setup and rarely provide support for building blockchain solution is a easy way. Authox is a framework for creating blockchain solutions which are scalable to a significant amount and enabling the ease of development of blockchain based solutions for the enterprise/developers/government organisations. This paper presents a comprehensive overview on Authox platform.

Keywords:

Blockchain, Distributed Ledger Technology, DLT, Smart Contracts

Introduction

A blockchain is essentially a distributed database of records or public ledger of all transactions or digital events that have been executed and shared among participating parties. Each transaction in the public ledger is verified by consensus of a majority of the participants in the system. And, once entered, information can never be erased. The blockchain contains a certain and verifiable record of every single transaction ever made. Bitcoin, the decentralized peer-to-peer digital currency, is the most popular example that uses blockchain technology. The digital currency bitcoin itself is highly controversial but the underlying blockchain technology has worked flawlessly and found wide range of applications in both financial and non-financial world. The main hypothesis is that the blockchain establishes a system of creating a distributed consensus in the digital online world. This allows participating entities to know for certain that a digital event happened by creating an irrefutable record in a public ledger. It opens the door for developing a democratic open and scalable digital economy from a centralized one. There are tremendous opportunities in this disruptive technology and revolution in this space has just begun.

Blockchain technology is poised to change nearly every facet of our digital lives, from the way we send money to the way we heat our homes. By obviating third parties, blockchains promise to make our systems more efficient. By circumventing censorship, they promise to make our systems more equitable. And if properly implemented, they could make our systems more reliable and secure. All these changes will arrive more quickly, and their effects will be compounded, if the development process for the blockchain solution is easy. Today, that is not the case. The advantages of Blockchain technology outweigh the regulatory issues and technical challenges.

Technology infrastructure plays a significant role while building a scalable platform. The infrastructure must provide a sufficient level of flexibility for developers to choose and adopt core protocols for the platform while designing it. Also, the infrastructure must empower an application to allow high performance during its runtime execution. While discussing specifically about building blockchain platforms, such an infrastructure is required must to allow developers to work freely without worrying about the complex blockchain infrastructure.

Introduction to Authox

Blockchain serves as an immutable ledger which allows transactions take place in a decentralized manner. Blockchain-based applications are springing up, covering numerous fields including financial services, reputation system and Internet of Things (IoT), and so on. While blockchain represents amazing possibilities, the current blockchain platform was quite focused on low-level blockchain technology. In order to present a solution that normal user/enterprises/gov can accept and find it useful, there was a huge gap. We realized that any blockchain solution comprises of 3 parts, identity, record keeping and documents, token transfers. These 3 modules, then could be used to develop other blockchain solutions, without reinventing the wheel.

Authox is a framework for creating blockchain solutions which are scalable to a significant amount and enabling the ease of development of blockchain based solutions for the enterprise. The platform encapsulates the complexity which is involved in developing a solution on a blockchain network, giving a deep level of control over the platform, but also it keeps the complexity within itself, which makes development using Authox a great experience. Using these functionalities now one can easily develop customer facing products within no time.

Authox platform follows the layered architecture having four different layers that make it easier to change any module as blockchain technology grows. The platform is composed of following modular layers: Blockchain network layer, Authox protocol layer, Authox business logic layer for token, document & identity and Authox platform API layer, using which developers can create applications as per their needs. (edited)

Authox Architecture:

Blockchain Network Layer: Underlying blockchain nodes will be running here. It gives flexibility to select the underlying blockchain platform as per the application need.
Authox Protocol Layer: This layer provides a set of APIs that will take the request from authox business logic layer and implement the same on the underlying blockchain.

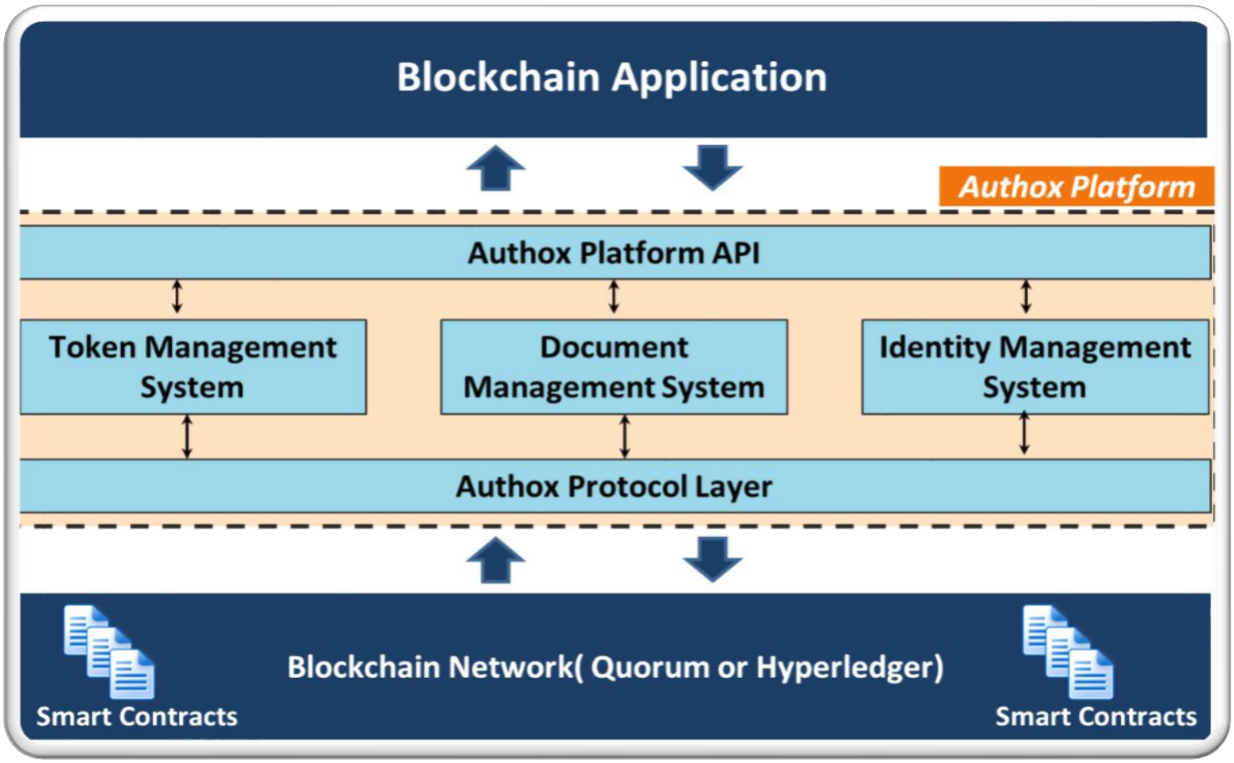

Figure 1: Towards BlockChain Solution Block Diagram

Authox Business Logic Layer: This layer encapsulates the business logic for identity management, document management and token management.
Authox Platform API Layer: This layer provides a set of APIs using which applications can interact with the Authox platform. Developers can build modules over the API that can be used to develop end solutions. These modules are combination of UI components in React, library in Android and node modules.

Authox Identity Management System

Authox Identity Management System provides business logic for creating digital identities on the the underlying blockchain network. Developers can easily implement the digital identity solutions by integrating this in the digital wallet of their choice. Using the wallet user will be able to create digital identities that can be easily verified. Using the wallet user can sign in to any website or app in the eco system without registering. User information is always secure and can only be accessed by users permission.

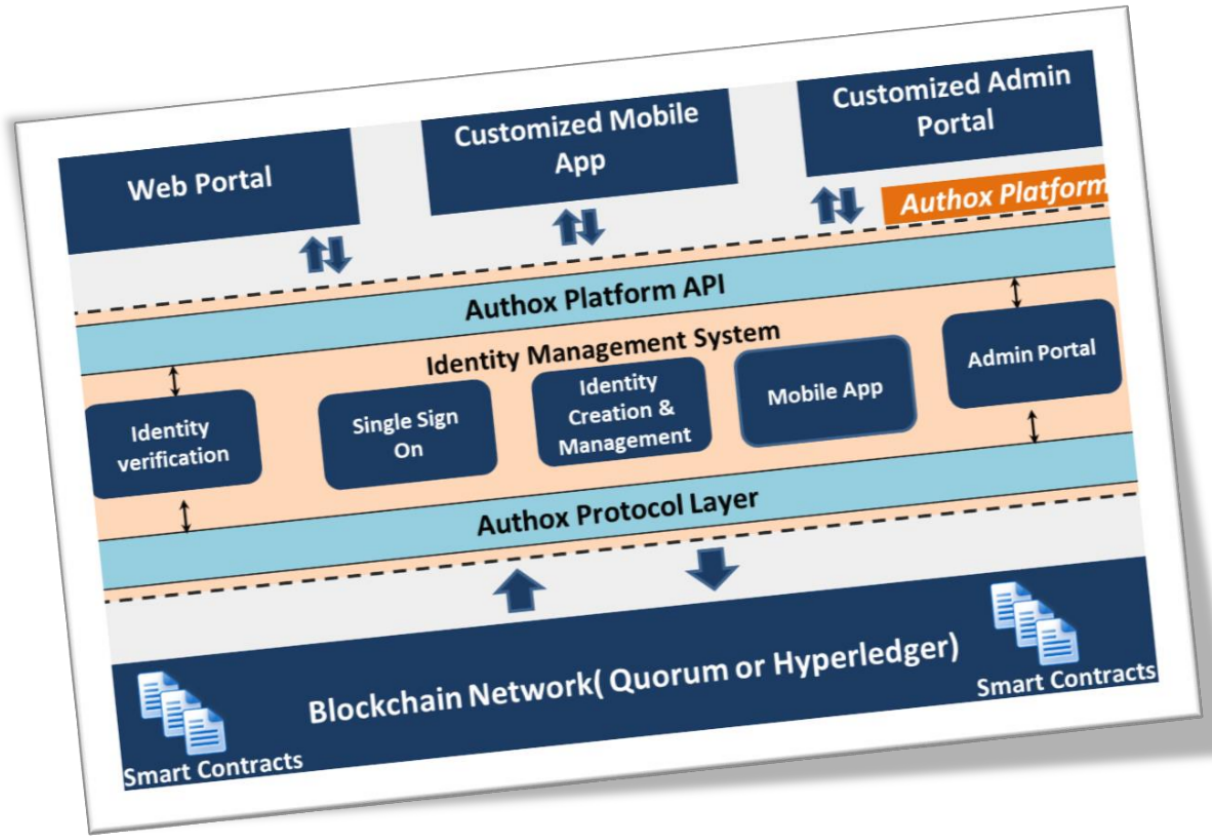

Figure 2: Authox Identity Management Block Diagram

Authox Document Management

Authox Document Management System provides business logic for creating applications that require verification, validation and creation of digital documents. Developers can easily create digital document solution utilising the Authox identity & document Management system. Almost all type of documents can be created and created documents can be associated with person or organization, both od whose identity is managed by Authox identity management system. Created documents can be viewed, verified, signed, sent back or forwarded and tracked throughout the life cycle of the document. Document ownership is always maintained, owner(s) always has full right over the document and ownership can be transferred as well

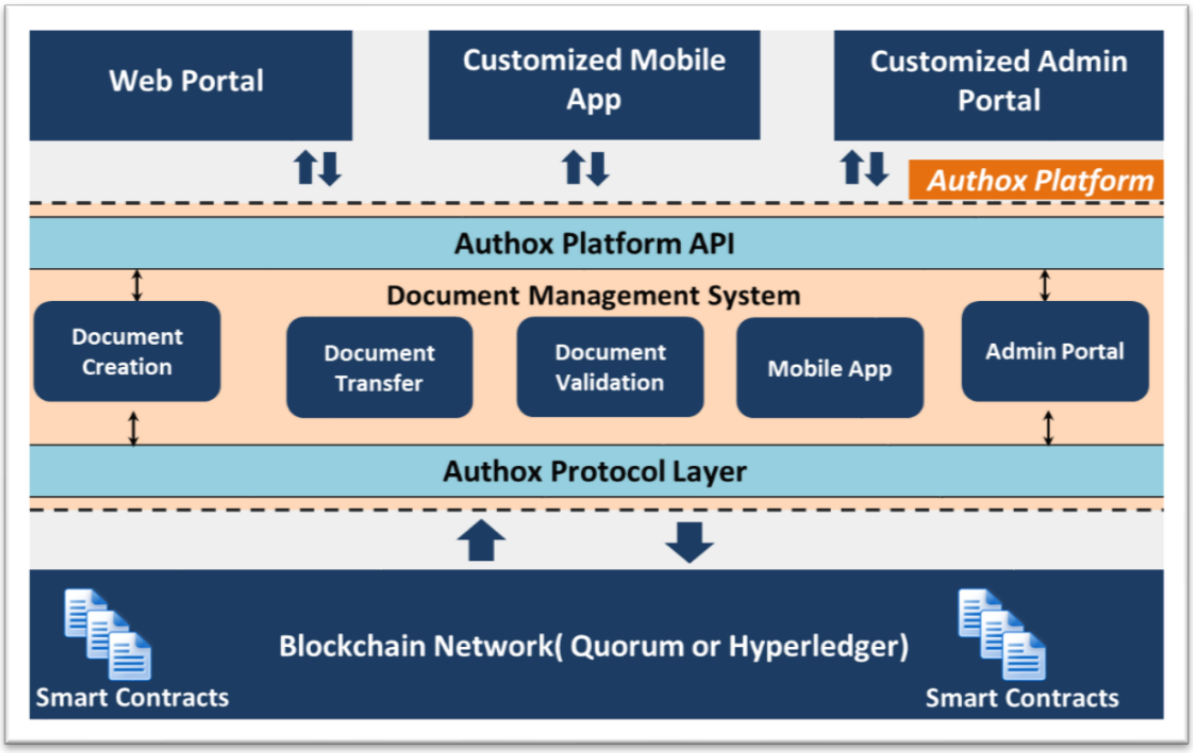

Figure 3: Authox Document Management Block Diagram

Authox Token Management

Authox Identity Management System provides business logic for creating digital identities on the the underlying blockchain network. Developers can easily implement the digital identity solutions by integrating this in the digital wallet of their choice. Using the wallet user will be able to create digital identities that can be easily verified. Using the wallet user can sign in to any website or app in the eco system without registering. User information is always secure and can only be accessed by users permission.

Authox Token Maagement System provides business logic for creating new assets (tokens) with name, symbol and icon of developer choince. Developers can easily manage tokens lifecycle and can create both types of tokens minable or premined.

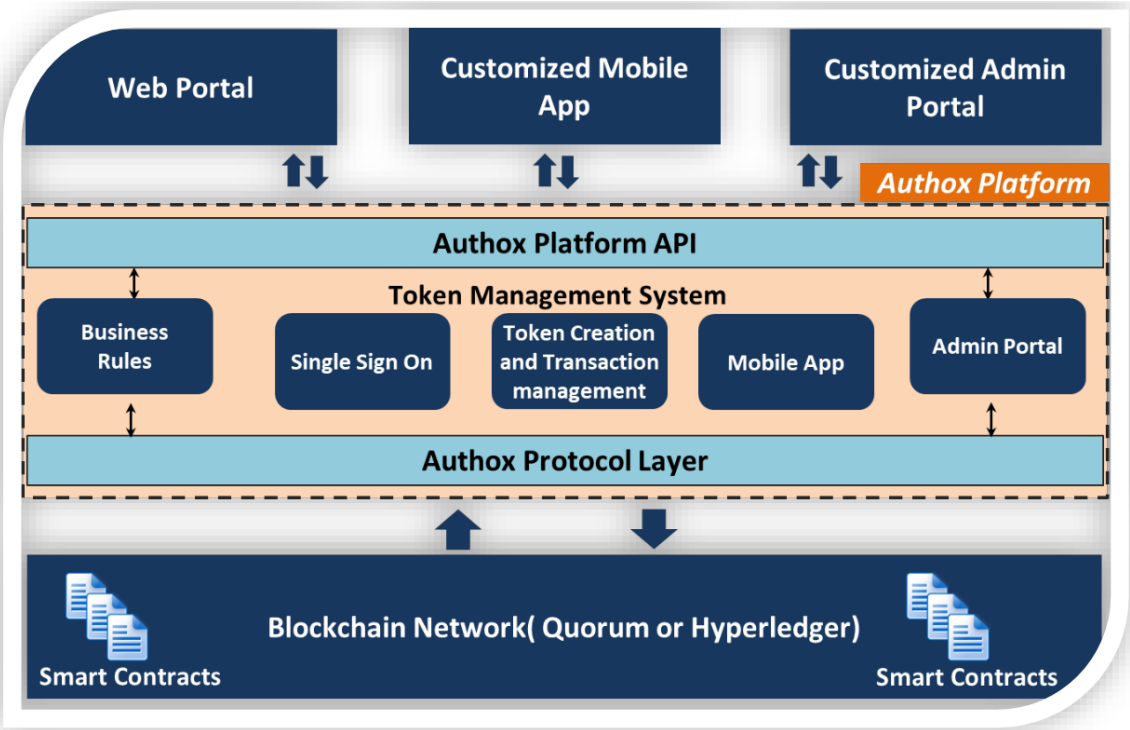

Figure 4:Authox Token Management Block Diagram

Conclusion

Blockchain based application development is in its early stage. But blockchain technology is old enough that the community should start to utilze this futuristic tech. When the first blockchain was invented it sought to solve one very specific problem. But today, organisations are exploreing blockchain use cases in every domain starting from digital assets, identity, document, supplychain, voting and many more. As the problems take on more definition, it becomes clear that there is not a single blockchain platform that can provide solution for all the problems. Authox platform is trying to build an ecosystem where developers have not to worry about the complex blockchain technology. But authox platform also requires continous upgradation to cover majority of usecases.