XY0 2.0 Platform: The Sovereign Internet Platform based on the XYO Protocol

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Abstract

The XYO 2.0 Platform is a system implementation of the XYO Protocol as defined in the XYO Protocol Whitepaper published in January 2018. It focuses on providing a solution that achieves high performance without sacrificing the sovereignty, provenance, and permanence that is the goal setout by the whitepaper. This XYO 2.0 Platform also expands the usage of the core concepts defined in the White Paper to be useful in a much broader set of use-cases, specifically not limiting its use to location. The implementation set forth in this Yellow Paper adds additional protocol definitions to provide guidelines through which future components and alternative implementations can be created while maintaining the ability for them to work together to form a singular XYO Network.

1 Introduction

During the last decade, Web 3 development has been primarily focused on expanding the use of shared ledgers to create decentralized systems. Even though there have been great strides on this front, the very core of this effort is flawed in two ways.

First, shared ledgers moves the control of a system from being fully centralized (effectively a kingdom model) towards a decentralized solution that is based on majority rule and finality (effectively a democracy or republic). Like with all governance systems, the natural evolution of these systems have pulled back from maximizing decentralization towards more centralized concepts for practical, regulatory, or other, potentially sinister, reasons. Even if this pull-back did not occur, the ceiling of shared ledger decentralization is that of majority rule and not true sovereignty.

Second, the performance of shared ledger technology has been and will always be substantially (orders of magnitude) slower and more costly than their centralized equivalents. By its very definition, a shared ledger must either has massive redundancy of data and validation, or lean on trusted systems to improve performance.

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This implementation of the XYO 2.0 Platform combined with the core concepts of the XYO Protocol strives to provide full decentralization with nodes that are 100 percent sovereign while using cryptographic technologies and concepts to deliver a trustless network that has performance at scale comparable or better than the performance of an equivalent Web 2 system and orders of magnitude better than equivalent Web 3 systems. This combination not only delivers on the goals of Web 3 visionaries, but also delivers on the goals set forth by the original founders of the internet. The current Web 2 implementation of the internet is completely devoid of sovereignty, provenance, and permanence and we must reverse that trend by delivering a solution that is the foundation for the Sovereign Internet by combining the core tenants of Web 2 and Web 3 combined with the concepts of the XYO Protocol as set out in the original XYO White Paper.

2 Practical Decisions

In producing the XYO 2.0 Platform, various practical decisions have been made to facilitate interoperability and reduce ambiguity in the protocol.

2.1 Programming Language

The initial version of the XYO 2.0 Platform has been developed using TypeScript. We chose this due to the expansive tools that are available for developing with TypeScript and the compatibility that Javascript (the output of compiling TypeScript) allows for. As a result, this implementation can be used on browsers and with the NodeJS runtime, both on desktop and on mobile devices. The sacrifice of this decision is that running the technology stack on IoT devices, especially battery powered devices will be negatively impacted. This can be addressed by creating limited native implementations of the Platform for those devices.

WebAssembly is used for various high performance cryptographic algorithms since WebAssembly can be seamlessly interacted with from Javascript. Over time, it is possible that more TypeScript based code could be replaced with WebAssembly, but that will be done with care since there are costs of doing this when it comes to understandability of code and debugging.

2.2 Module System

2.3 User Interface

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References

[1] Trouw, Arie; Levin, Markus; Sheper, Scott *XYO Protocol White Paper*. XYO Website. January 2018