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A Revolutionary Solution For The Challenges Of Adopting Blockchain Technology For Tax And Accounting

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Executive Summary

Blockchain has emerged as a revolutionary technology that offers the benefits of decentralization, transparency, and security. The technology has the potential to transform how data is processed, analyzed, and shared in the accounting and tax industry, but first, it has to overcome the obstacles standing in its way. This white paper presents the challenges of implementing blockchain technology for accounting and tax data and the solution that can lead to its widespread adoption and integration into the traditional financial system.

Introduction

Blockchain is a decentralized, digital ledger that records transactions across a network of computers. Blockchain was originally developed as the technology behind the cryptocurrency, Bitcoin. However, today blockchain technology has evolved far beyond just being a platform for digital currencies. It has become a backbone for a variety of decentralized applications (DApps), decentralized finance (DeFi) ecosystems, decentralized exchanges (DEXs) with liquidity pools, and much more.

One of the key features of the blockchain is the ability to record transactions on the blockchain in a transparent and immutable manner. This provides a valuable opportunity for accounting, tax, and auditing, as all transaction data can be retrieved from the blockchain for accounting and tax purposes.

However, extracting and transforming blockchain data for accounting and tax purposes is challenging due to the unique structure and complexity of blockchain data, as well as regulatory compliance.

In this white paper, we propose a solution for extracting and transforming blockchain data for accounting and tax purposes. It outlines the architecture, design, and implementation that Formidium Corp has developed to standardize blockchain data.

The Challenges

Extracting and transforming blockchain data for accounting and tax purposes poses several challenges. These challenges include:

Complex Data Structure

Lack of Standardization

The decentralized and distributed nature of blockchain technology contributes to the complexity of its data structure. The data is structured in blocks that hold a multitude of information, including transaction details, logs, internal calls, smart contract code, and more. Due to this intricate structure, it requires specialized knowledge and expertise to extract and standardize the data for tax and accounting purposes.

There is currently a lack of standardization in the way that financial transactions are recorded and reported on blockchain platforms. This makes it difficult for accountants and tax authorities to understand and compare data between different blockchains and to ensure that financial transactions are being reported consistently.

The Challenges

Encoded Data

Blockchain data is not stored in readable formats for people, they are recorded as hexadecimal encoded strings which makes it challenging for an accountant to understand.

Interoperability

There are many different blockchain platforms in existence, and each has its own data structure and coding language. This makes it difficult to ensure the consistency of data for accounting and tax information.

Regulatory Compliance Requirements

Organizations must comply with various regulatory requirements, such as tax laws and financial reporting standards.

Solution

To address these challenges of extracting and transforming the data stored on a blockchain into an accounting and tax format, our solutions include the following steps: The solution utilizes a multi-tiered structure to

- Effectively consolidate various blockchain data sources
- Promote seamless integration.
- Streamline data management.

EXTRACTION → DATA DICTIONARY → DECODING → DATA MAPPING

INDEXING & RETRIEVAL ← STORAGE ← TRANSFORMATION
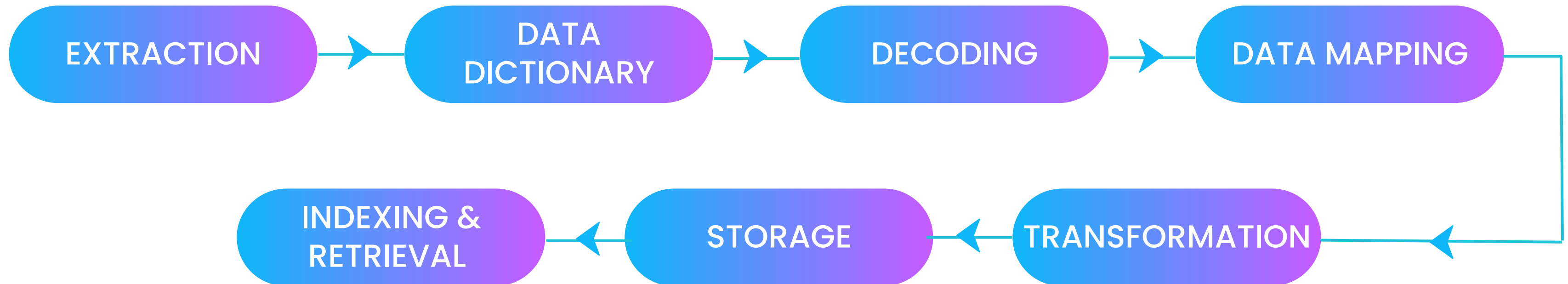
Solution

Raw Data Extraction

The first step is to establish a connection to a blockchain node to retrieve the raw data stored on the blockchain. This can be done by either setting up your own full node or by utilizing a third-party node provider like Infura or Alchemy.

We utilize our personal full node to power our solution, which seamlessly extracts the raw data from the Ethereum blockchain using the standard Web3.js API. The extracted raw data is stored in the database.


Blockchain Node ——Web3 API—→ Fetch Block, Txn & Txn Receipt ——→ Database
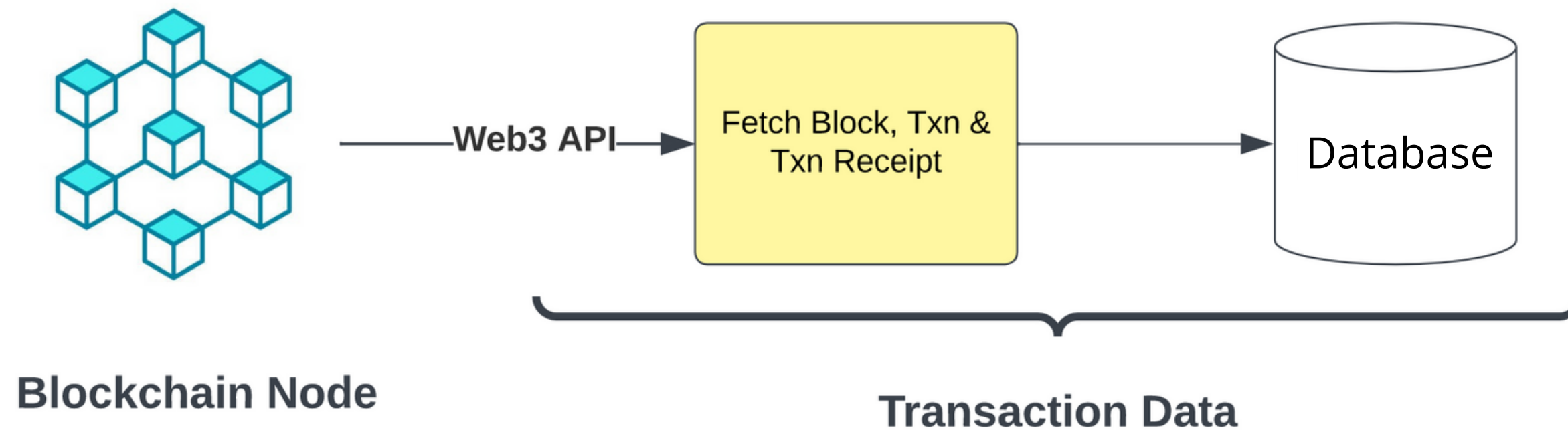
Transaction Data

Solution

Decode Data

The next step is to decode the raw data from a binary or hexadecimal format to a human-readable format. This is the most complex task as the structure of the transaction data depends on the transaction type. For example, a token swap transaction is different than a liquidity pool transaction.

To understand the structure, we need to reference something called the Application Binary Interface (ABI). ABI defines the way data is encoded and decoded when it is sent to and received from the smart contract This is a JSON object that contains all the functions, data structures, event interface definitions, and parameters of a smart contract. The ABI functions as a look-up for matching the hashed signatures in the transaction data against the human-readable interface definition.
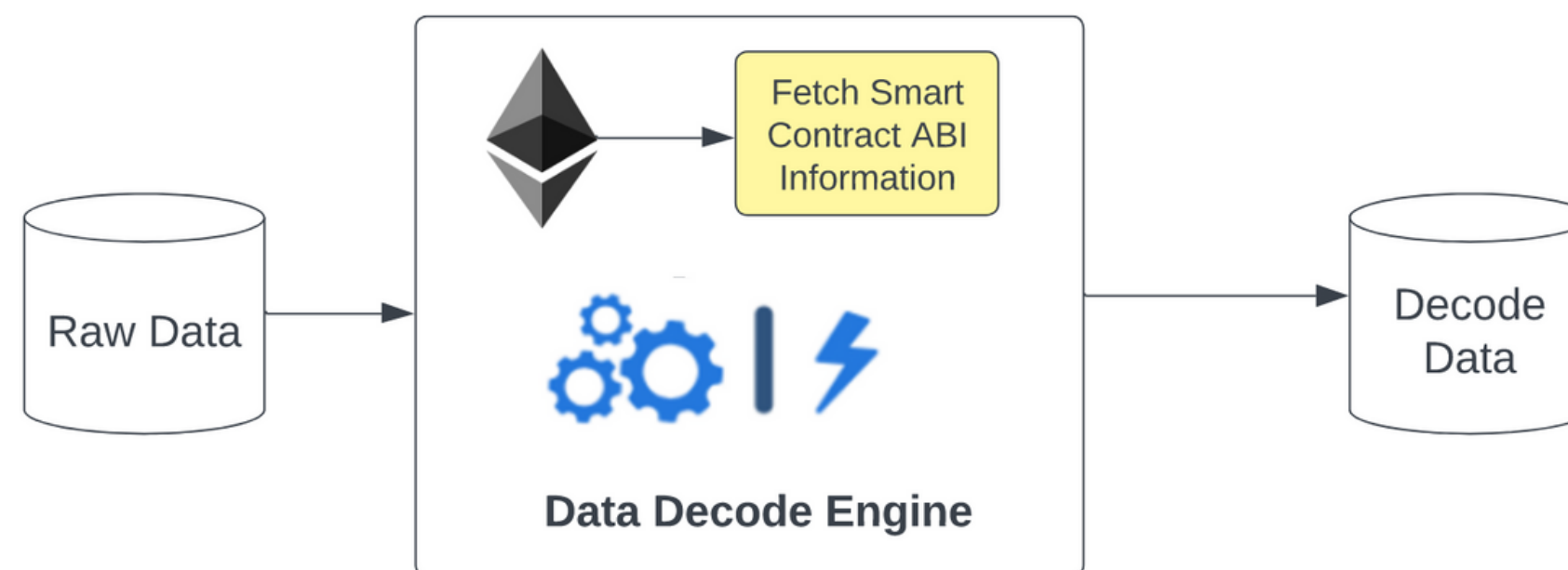
Solution

Metadata

Metadata is an essential component of any blockchain-based system. It includes information about its functions and its data structures. For example, smart contract metadata includes Application Binary Interface (ABI), token name, and decimal precision. We build the metadata engine to extract and store this data.

Data Mapping

This step requires comprehension of the decoded data and its transformation into the desired accounting format. It entails identifying all the essential data elements and aligning them with the corresponding fields in the accounting format.

Solution

Data Transformation

After completing the data mapping process, the next step is to convert the data from its current format to the desired accounting format. This conversion involves the use of data transformation algorithms, which process the data and change it into the required accounting format.

Data Storage

The transformed data is stored in a centralized repository, which is accessible by the accounting software and the relevant stakeholders. It is crucial to store the data in a manner that allows for fast and efficient retrieval due to the substantial volume of blockchain data.

Benefits

By following these technical steps, it is possible to transform the complex data stored on a blockchain into an accounting format that can be easily understood and utilized for tax and accounting purposes.
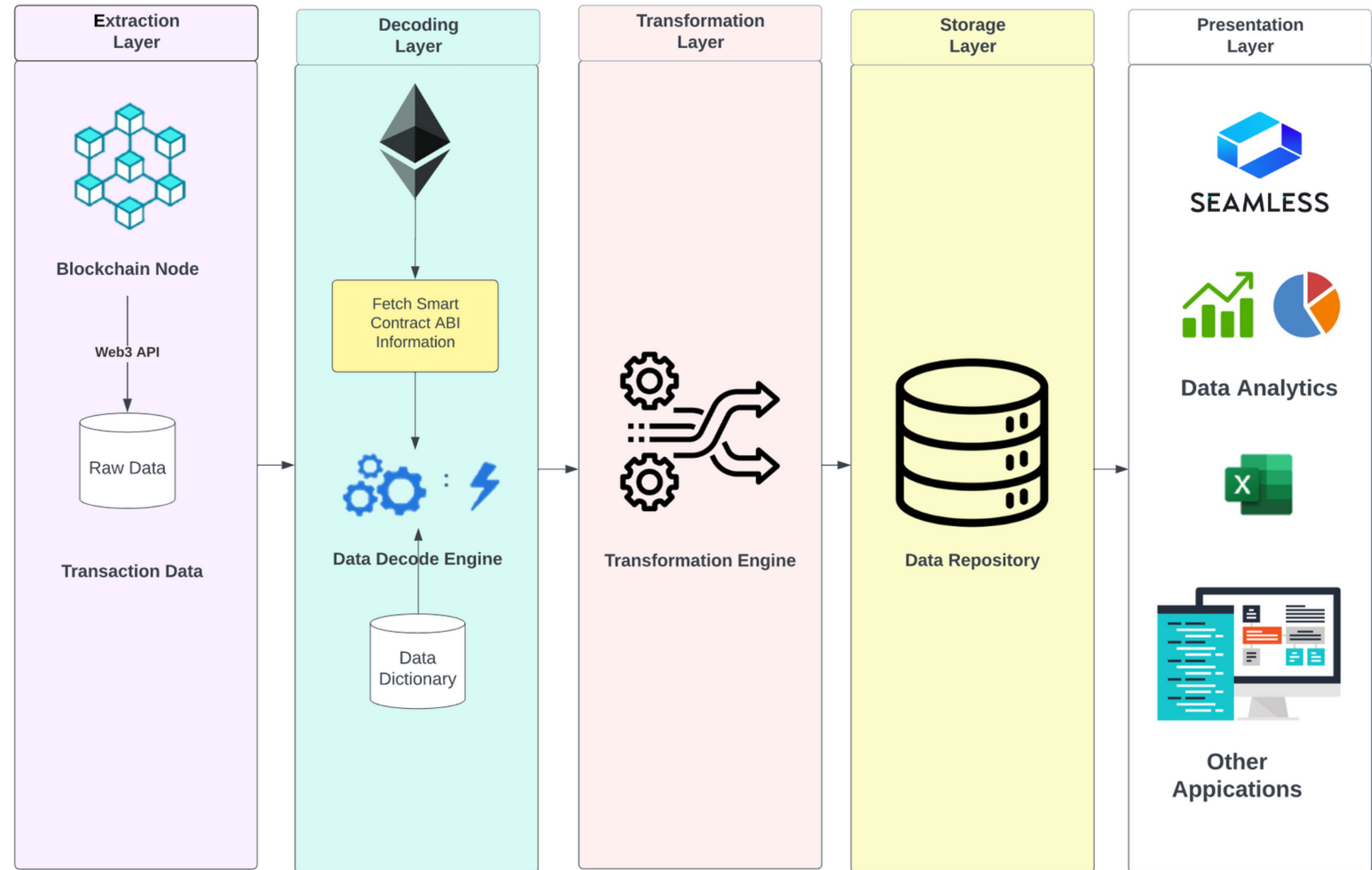
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Formidium Architecture

Conclusion

Blockchain technology has the potential to transform the financial industry by providing a tamper-proof and immutable record of transactions. However, the complex data structure, lack of standardization, and interoperability issues associated with blockchain data make it difficult to integrate blockchain technology into the traditional financial system.

The solution provided by Formidium addresses the challenges of transforming raw blockchain data into a format that is compatible with accounting software. This transformation allows for seamless and precise processing of the data, reduces the risk of errors, and increases efficiency and accuracy, which are crucial aspects for accounting and tax purposes.

Standardizing blockchain data for accounting and tax purposes has the potential to significantly increase the adoption of blockchain technology by governments and tax regulators. By having a standardized and clear system in place, it becomes easier for governments and tax regulators to understand and monitor the use of blockchain technology, making it a more trustworthy and secure system for financial transactions. With standardized data, governments and tax regulators can also be assured that they will have access to the information they need to accurately assess and collect taxes. In short, standardizing blockchain data for accounting and tax purposes will help to promote its widespread adoption and integration into the traditional financial system.

About Formidium

Formidium is a leading global technology-enabled fund administrator and investment back-office technology solutions provider based in Downers Grove, Illinois. Its innovative platform utilizes the proprietary technology applications of Seamless (a web-based fund accounting application integrating portfolio, fund accounting, and investor reporting) and CommonSubDocTM (an investor onboarding portal with extensive AML/KYC features and capital activity tracking, as well as a CRM solution).

Formidium employs over 1000 professionals across its global offices and currently serves more than 1000 investment funds. Formidium's operations and technology are SOC 1, SOC 2 and SOC 3 audited.

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