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IEEE Standard for Data Format for Blockchain Systems

IEEE Computer Society

Developed by the
Standards Activities Board

IEEE Std 2418.2™-2020

IEEE

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Abstract: Data format requirements for blockchain systems are established in this standard. This standard addresses data structures, data types, and data elements.

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Introduction

This introduction is not part of IEEE Std 2418.2-2020, IEEE Standard for Data Format for Blockchain Systems .

At present, the digital economy has become the consensus of global development, and blockchain, as the core technical element in the digital economy, has developed rapidly from POC verification to small-scale exploration. However, due to the lack of unified conceptual consensus and consistent data standards, there are many problems, such as isolated technology platform, single application mode and disjointed industrial ecology. In order to conclude and summarize best practices based on standards, it is necessary to find the key standardization objects of blockchain technology, and on this basis, gradually use standardized methods to establish a systematic standard family to guide the rapid and benign development of the industry. From a technical perspective, the core of the digital economy is data, a new generation of information technology such as the AI, Blockchain, Cloud Computing, and Big Data is using its own technical characteristics to maximize synergies data value, and blockchain technology through its properties for the data to provide credible, consensus and tamper-proof technology security, and the financial attributes of value exchange provides the system safeguard for the digital environment. By giving general blockchain system, this standard data format requirements, laid the chain block of data as the core of standard foundation, and can be applied to the construction based on the data on the basis of these standards (including deposit certificate, traceability, etc.), based on the data of assets standards (including digital asset exchange/sharing platform and the private key management tools, digital assets life cycle management, and other related standards), based on the exchange of data sharing standard (including data sharing and exchange strategy, data sharing and exchanging interface specification, cross chain, etc.). By building a standard family of blockchain based on data, we can establish basic consensus and unified methodology in the industry, reduce the cost of learning and collaboration in the blockchain industry, improve the efficiency of technology to service conversion, and provide practical guidance for the service of technology.

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IEEE Standard for Data Format for Blockchain Systems

1. Overview

1.1 Scope

This standard establishes data format requirements for blockchain systems. This standard addresses data structures, data types, and data elements.

1.2 Purpose

This standard provides data format reference for organizations planning to use blockchain technology for constructing blockchain systems, while guiding blockchain service organizations on building data structures in blockchain system(s), and provides references about data formats for middleware service organizations during constructing blockchain systems(s).

1.3 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which nodeviation is permitted (shall equals is required to).[1,2]

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (should equals is recommended that).

The word *may* is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (can equals is able to).

2. Normative references

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[1]The use of the word *must* is deprecated and shall not be used when stating mandatory requirements, *must* is used only to describe unavoidable situations.
[2]The use of *will* is deprecated and shall not be used when stating mandatory requirements, *will* is only used in statements of fact.