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Reference **Data Distribution** data distribution in **Financial Services** financial services

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ISO/DTR 7340

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document ~~are~~ **may be** the subject of patent rights. ISO ~~is~~ **shall not be held** responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 68, *Financial Services*, Subcommittee SC 9, *Information exchange for financial services*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Opening ~~Comments~~comments

With the increasing correlation between financial products, a lot of reference data (trading product, trading institution, ~~and~~ trader information) are shared and reused in financial services. There is an urgent and significant worldwide demand for guidance and standardization of ~~Reference Data Distribution~~ reference data distribution in financial services. Moreover, many industries ~~especially~~ expect efficient data distribution to ensure consistency, integrity, relevance, and accuracy.

This document ~~involves~~covers distribution modes (distributed and centralized), task scheduling, privacy protection, security, and other issues. Data consistency and security are fundamental concerns for distributors, receivers, the ordered execution of the distribution tasks, and independent distribution tasks of different receiver systems. Efficient distribution can achieve the goal of real-time synchronization of reference data, ensure that all organizations receive the most accurate data information in time, and prevent system operation problems caused by information asymmetry.

This document's potential applications are independent of specific business scenarios and irrelevant to data type and data format specifications.

This document is intended to provide:

- ~~to provide~~ reference information for distributors;
- ~~to provide~~ new products and services for developers;
- ~~to provide~~ benefits for receivers using reference data.

The purpose of this document is to simplify the data processing procedure, as well as improve the data distribution reliability and data sharing capabilities. Specifically, it will include two distribution modes: centralized distribution mode and distributed distribution mode. The former is traditional, and the latter is emerging. Therefore, this document will be conducive to promoting new solutions for reference data distribution scenarios, such as distributed ledger technology. ~~The above~~These benefits would be realized between certain service participants and within them.

0.2 How to approach this document

This document aims to provide a comprehensive insight into the development of reference data interfaces (RDIs) to realize efficient reference data distribution in financial services. In this sense, some aspects of the ~~paper~~document are more mature than others (~~e.g. For example, the text is prescriptive~~ where there is room to be ~~prescriptive, we have chosen to be so~~; where areas are less mature, ~~we have chosen to provide~~ commentary on good practice is provided and ~~set out~~ the considerations). set out.

Broadly speaking, the document adopts the following logic:

- ~~Terms~~ terms and ~~Definitions~~definitions: all terms in the document;
- ~~Design Principles~~ design principles: the principles and considerations for the design of the RDI;
- ~~Related Technology~~ related technology: considerations and commentaries on different technologies;
- ~~Business Model~~ business model: the transmission process of public reference data and financial data standards;
- ~~Logical Model~~ logical model: analysis of the logical structure of business data;
- ~~Physical Model~~ physical model: overview and commentaries on the broker-based model and the non-broker-based model;

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- | — ~~Interactions~~ interactions: considerations of the interactions between publishers and subscribers;
- | — QoS ~~Control~~ control: control of the network resource application in the transmission of reference data.

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Reference Data Distribution ~~data distribution~~ in Financial Services ~~financial services~~

1 ~~1~~ Scope

This document discusses the modes, related mainstream technologies, logical models, physical implementation models, data management (data storage and data security), and service quality control used in the reference data distribution in financial services.

This document applies to the reference data distribution and transmission processes in financial services.

2 ~~2~~ Normative references

There are no normative references in this document.

3 ~~3~~ Terms and definitions

~~The~~For the purposes of this document, the following terms and definitions apply ~~to this document~~.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1

reference data

shareable and reusable basic information in financial service scenarios

Note 1 to entry: A large amount of shareable and reusable basic information exists in ~~the~~ financial service scenarios, such as legal entity identification codes (LEI), bank identification codes (BIC), bond issuers, buyers, and sellers, ~~etc.~~

3.2

distributed ledger

data store through a network of distributed nodes

Note 1 to entry: ~~#~~Distributed ledger is a way of recording data that does not need to be stored or confirmed by any centralized entity.

Note 2 to entry: ~~#~~Distributed ledger is the most critical blockchain technology used in the capital market, an asset database that can be shared among multiple sites, different geographic locations, or networks composed of multiple institutions.

3.3

financial technology

technology innovation of traditional financial products and services

Note 1 to entry: ~~#~~Financial technology uses various technological means to innovate the products and services provided in the traditional financial industry to improve efficiency and reduce operating costs.

3.4

full-duplex communication protocol

network protocol based on TCP

Note 1 to entry: ~~#Full-duplex communication protocol~~ realizes full-duplex communication between the client and the server, which allows the server to send information to the client actively.

3.5

remote method invocation

Java interface class library

Note 1 to entry: ~~#Remote method invocation~~ enables objects on the client-side virtual machine to call objects on the server-side Java virtual machine as if they were local objects.

3.6

~~FIX® protocol~~¹

~~Financial Information eXchange protocol~~

~~open electronic communications protocol designed to standardise and streamline electronic communications in the financial services industry, supporting multiple formats and types of communications between financial entities, including trade allocations, order submissions, order changes, executions reporting and advertisements~~

3.7

~~IMIX protocol~~

~~Inter-bank Market Information eXchange Protocol~~

~~IMIX protocol~~

~~financial industry standard based on the FIX protocol and widely used in the inter-bank market.~~

3.78

~~RDI~~

~~reference data interface~~

~~setRDI~~

~~sets of well-defined methods, functions, protocols, routines, or commands used for reference data.~~

4 ~~4~~ Principles

4.1 ~~4.1~~ General

This ~~part~~ clause covers the design principles that are considered ~~upfront~~ front when developing an RDI in financial services.

4.2 ~~4.2~~ Compatibility

The RDI ~~uses~~ refers to some industry standards and is based on ~~an~~ open architecture ~~which is in line with the specifications of the Ministry of Information Industry.~~

4.3 ~~4.3~~ Data ~~Accuraey~~ accuracy

Data accuracy is considered ~~upfront~~ front when developing the RDI to ensure that the data source can be monitored, the data can be transmitted in real -time in batches and the data loss can be recovered.

¹ FIX® is the trademark of FIX Protocol Limited. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

4.4 ~~4.4~~ **High Availability**~~availability~~

High ~~Availability~~~~availability~~ is considered to ensure no error accumulation and low data distribution latency to enable real-time communication.

4.5 ~~4.5~~ **Extensibility**

Where possible, the RDI ecosystem is designed to be as extensible as possible to adapt to future use cases or scenarios. For example, ~~softwares keeps~~~~software keeps~~ an upgrade interface and upgrade space. ~~And~~~~In addition~~, the software entities (e.g. modules, classes, functions, ~~etc.~~) are open for extension but closed for modification based on the ~~Open-Closed Principle~~~~open-closed principle~~.

4.6 ~~4.6~~ **Security**

~~The~~ ~~RDI~~ ensures the security of user information and the information involved in the operation process. Furthermore, it repairs and handles various security vulnerabilities in a timely manner.

4.7 ~~4.7~~ **Maintainability**

Maintainability includes code comprehensibility, testability, modifiability, and system portability.

5 ~~5~~ **Related Technology**~~technology~~

5.1 ~~5.1~~ **Fintech**

Financial technology (~~Fintech~~~~fintech~~) is a business model formed by the integration of finance and technology, specifically including digital payment, online lending, digital currency, equity crowdfunding, and intelligent investment advisory. It mainly utilizes innovative technologies such as the ~~Internet~~~~internet~~, big data, cloud computing, blockchain, and artificial intelligence, to significantly affect the financial markets, financial institutions, and the way financial services are provided.

5.2 ~~5.2~~ **WebSocket**

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The WebSocket protocol is a full-duplex communication protocol based on TCP. It implements full-duplex communication between the client and the server, allowing the server to send information to the client actively.

Most web applications implement long polling through frequent asynchronous JavaScript and XML (AJAX) requests, which is inefficient and wasteful of resources (because it requires constant connections, or the HTTP connection is always open). WebSocket abandons the traditional HTTP request/response mechanism and realizes a more flexible and accessible bilateral communication. The client browser first initiates an HTTP request to the server to establish a WebSocket connection. This request is different from the usual HTTP request as it contains some extra header information. One piece of ~~the~~ additional header information called "Upgrade: WebSocket" indicates that this is an application for a protocol upgrade. The server ~~-side~~ parses this additional header information and then generates a response message back to the client ~~-side~~. Finally, the connection is established, and both parties transfer information freely through the channel until either the client or the server side actively closes the connection.

5.3 ~~5.3~~ **AJAX**

~~AJAX~~~~Ajax~~ (Asynchronous JavaScript and XML) is an integration of several technologies, including:

- dynamic display and interaction by DOM;
- data exchange and processing by XML and XSLT;
- asynchronous data reading by XML HTTP ~~Request~~~~request~~;