

Decoding payments message standards

October 2019



Foreword

Dear readers,

It is our pleasure to bring to you the latest edition of PwC's payments newsletter.

In this edition, we have focused on the technology behind message formats and specifications for processing transactions across various payments systems, the benefits of message standardisation across payment rails, and how ISO 20022 can help to achieve security and transparency across domestic and cross-border payments.

We have also evaluated the ISO 20022 payments message standard and use cases, compared this standard with other existing payments message standards, and provided suggestions on the way forward towards standardisation.

We hope you will find this to be an insightful read.

To know more about payments message standards or share feedback, please write to: vivek.belgavi@pwc.com or mihir.gandhi@pwc.com



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Introduction

Introduction

The International Organisation for Standardisation (ISO), an international body which sets global and commercial standards worldwide, has defined various standards for facilitating the flow of messages related to payments/financial transactions. Over the years, many countries have adopted various standards for domestic payments transfer such as ISO 8583, ISO 15022, American National Standards Institute (ANSI) X12, and Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT).



Figure 1: ISO payments messaging standards over the years

Some of the challenges faced by payments messaging standards built decades back are:

1	2	3
The standards heavily	Payments	Different applications,
use 'free-format' fields	systems using	resources and
to convey supporting	different formats	skillsets are
information, limiting	of standardisation	needed to support
both the extent of	results in technical	various messaging
data collection in a	failures, loss of	standards. This has
standard format and	information and	a direct impact on
performing contextual	non-standardised	costs incurred by
analysis.	reporting.	firms.

Uniform standards play an effective role in standardising payments flows. With large-scale domestic and international financial transactions being conducted daily, uniform use of standards is essential.

Over the last decade, ISO 20022 has emerged as the key global standard for developing modernised financial market infrastructures. At present, most payment systems follow the ISO 20022 standards, resulting in improved efficiency, lower costs and the avoidance of errors.

ISO 20022 is fast emerging as a global benchmark for successful, real-time, high and low-value payments across domestic, regional and international flows of financial transactions.

Globally, industries are keen to quickly adopt ISO 20022 to reap its benefits. ISO 20022 allows for quicker implementation of payments standards at lower costs, by creating one standardised file format for all financial instruments (FIs) and payment types.

Introduction

What is ISO 20022?

ISO 20022 was published in 2014. It is a global standard for financial messaging, that provides a standard model across business domains such as payments, securities, trade services, card services, foreign exchange (FX). The standard defines messages with clarity of purpose and convey information between parties within a payment chain. It also defines message specifications for each message type.¹



1. https://www.iso20022.org

Main features of ISO 20022





Open standard: Specifications are free and available for further development, as it is an open standard and can be continuously modified to meet users' needs.



Network agnostic: The syntax is inter-operable with computer operating systems across networks.



Increased data carrying capacity and improved structure: More data carrying capacity under ISO 20022 allows for improved identification of the originators and end-beneficiaries of payment instructions.



The table below compares ISO 20022 with two popular payments standards: ISO 8583 and ISO 15022.

	ISO 20022	ISO 8583	ISO 15022
Definition	ISO 20022 allows for transaction flows across payment service providers (PSPs)/aggregators/ various types of financial institutions in the payments value chain. The protocol of ISO 20022 is richer in terms of data elements and controls.	Defined as the workhouse of legacy payments, ISO 8583 is a standard available across various versions of the payment systems. Almost 95% of card-based payments make use of this standard. i.e. card schemes/Unified Payments Interface (UPI) etc.	It sets the principles necessary to provide different users with the tools to design message types to support their specific information flows. ISO 15022 replaces the securities messaging standard set by ISO 7775. It is also a predecessor to ISO 20022.
Syntax	Unified modeling language (UML)/extensible markup language (XML) are the formats used in this standard. The use of short tag names is also part of ISO 20022's syntax.	ISO 8583 uses the bit map format, where each data element is assigned a definite position indicator in a control field. The assigned position is used to identify and indicate the presence of data elements for a specific message.	ISO 15022 provides two syntaxes, one compatible with the preceding standard, and the other compatible with the EDIFACT.
Current usage	ISO 20022 is being widely used across financial services worldwide. Central financial organisations in most countries are opting for the ISO 20022 standard. Other financial organisations such as Financial Exchange (FIX) Protocol Limited, International Swaps and Derivatives Association (ISDA), International Securities Association for Institutional Trade Communication (ISITC), Omgeo, Society for Worldwide Interbank Financial Telecommunication (SWIFT) and Visa are also adapting ISO 20022. ²	Electronic Funds Transfer at Point of Sale (EFTPOS) and ATM transactions use ISO 8583 at various points in the financial communication chain. The Mastercard and Visa networks use the 8583 standard as their base authorisation for communications related to card payments messages, as do many other institutions and networks.	It is used for messaging related to SWIFT transactions.
Standard parts	The ISO 20022 financial services message scheme has eight parts – metamodel, UML profile, modeling, XML schema generation, reverse engineering, message transport characteristics, registration and ASN. 1 generation.	The ISO 8583 standard specification has three parts. Part 1: Messages, data elements, and code values Part 2: Application and registration procedures for Institution Identification Codes (IIC) Part 3: Maintenance procedures for the aforementioned messages, data elements and code value	ISO15022 is splits into two parts – ISO 15022-1:1999 which is related to data fields, message design rules and guidelines and ISO 15022-2:1999 Securities – Maintenance of the Data Field Dictionary and Catalogue of Messages.

^{2.} https://www.swift.com/

Messaging standards – a comparison

Key takeaways

- 1. ISO 20022 is capable of handling rich data, compared to the other standards.
- 2. ISO 20022 is more versatile for integration, though it is mainly developed in XML format, compared to the bit map or free format for ISO 8583/ISO 15022.
- 3. ISO 20022 comes with predefined mandatory fields for standardising messages. Institutions can decide on the optional parameters that can be modified for ISO 20022, based on their requirements.



Key considerations and way forward

Key considerations and way forward

Implementation of ISO 20022 standards must aim to achieve the intended benefits and take into consideration the various challenges involved.



Intended benefits

Capable of sharing rich information

ISO 20022 is capable of carrying large data sets and messages. Users of the standard can choose the quantity of data to share for necessary insights.

Integration between both domestic and cross-border payments

ISO 20022 is capable of integrating and standardising domestic and cross- border payments in market practices, by rolling out standard guidelines.

Inter-operability and harmonisation

ISO 20022 allows for harmonisation of previously known inter-operable formats, and simplified data consumption and transmission. Underlying syntax of XML and the structured platform makes this standard more feasible for payments.

Efficiency gain and cost-savings

ISO 20022 makes financial messaging more efficient by standardising and harmonising payments message formats, increases straight-through processing (STP) rates, and simplifies cost-intensive processes such as payment processing, investigations, data analytics and reporting.



Challenges

Data truncation

Potential data truncation during the co-existence period comes with a risk for all agents and challenges for the beneficiary. Intermediary service providers can be among the first movers to ensure full data delivery.

Implementation cost

Significant investments in technology and resources by organisations are required to realise the full benefits of ISO 20022. There could be cost implications for direct participants, PSPs and end users, depending upon the level of standard implementation.

Industry-wide effort

Implementation of ISO 20022 recommends a standardised approach, where all stakeholders are expected to put in efforts instead of individual organisations following the standards, adding to the complexity of the implementation.

Challenges of implementation

For accepting a new message type for inbound electronic messages, institutions need to make sure that additional translation utilities are in place. Institutions must ensure that for a certain time period, their systems support both ISO 20022 and the legacy message format.

Implications for operations

The ISO 20022 messaging standard will necessitate changes not only in the core payments process, but also in reconciliations, confirmations, cash management, liquidity management and other business functions of financial transactions. ISO 20022 standard messages can carry extensive remittance data, providing companies with the opportunities to automate the reconciliation of payments.

Implications for regulators

ISO 20022 increases transparency and supports financial institutions in securing payment processing compliances, which are subject to regulations by authorities. The implementing country can decide the regulatory norms and guidelines on the structure, settlement and dispute. Domestic central systems would need to play an active role defining, maintaining and settlement of their system build upon the ISO 20022 messaging standard and make it compliant with other regulatory bodies.

Implications for business

The value proposition of ISO 20022 and associated data elements is that it is possible to use predefined vocabulary easily understood across the industry. It aims to provide industry agreed definitions for various financial services terminologies such as accounts, transfers, settlements.

The 3X data storage available with ISO 20022 provides improved data management, along with dashboards providing insights into analytics. This provides a key competitive advantage to the institutions which use it for various payments transaction flows.

Implications for technology

It would be necessary to provide support for both old and new standards for a certain time period. A clear architectural roadmap and planned approach are essential for capitalising the ISO 20022 messaging standard and integration of financial services. Firms should explore the standard-based integration technologies with the new XML-based emerging standards. Institutions should consider deployment of platform-neutral technologies such as ISO 20022 and use them with existing computing infrastructure.



Key considerations and way forward

Adaptation methods: Various firms have adopted different approaches for implementing ISO 20022.

1.

Like-for-like: In this adaptation method, rather than enhancing the system, the new ISO 20022 standard message attributes are replicated in the existing financial functionality of an institution. As ISO 20022's rich functionality is matched to the legacy capability, and as no new functionality is introduced or modified on the existing system, this facilitates end-to-end transaction inter-operability. Typically, 'like-for-like' is seen as an intermediate step towards full implementation of ISO 20022. It requires efforts on exploring the ISO 20022 catalogue repository and examining the messaging components, data types and existing data specifications, business process catalogue of the institution and performing the necessary mapping

This approach enables institutions to first become ISO 20022-enabled and then to evolve towards full implementation of ISO 20022 at a later stage, with richer services. This approach is currently being adopted by a significant share of high-value payments market infrastructure around the world.³

2.

Full implementation: It is the approach taken by organisations that want to leverage the full potential of ISO 20022 messages, with the goal of offering additional and/or improved services that take advantage of additional message flows and data elements inherent in the ISO 20022 messaging standard. Alternatively, market infrastructures select a 'full implementation' approach when a 'like-for-like' approach is simply not practical – for example, where replicating legacy functionality would be too restrictive or too limited.⁴

^{3.} https://www.swift.com/

^{4.} Ibid.

Market updates

Market updates

Implemented and planned adaptation of the ISO 20022 standard by countries across the world





Payments technology updates



Payments technology updates

ISO 20022 for API and new technologies

SWIFT

New technologies such as APIs, however, come in all shapes and sizes, using divergent technologies. Without the adoption of common standards, proliferation of APIs is likely to lead to inefficient and ineffective fragmentation, defeating their original purpose.

(Read more.)

Financial message automation

Volante Tech

ISO 20022 is just the start. API banking, data lake integration, regulatory reporting, real-time transaction processing and the move to cloud demand a new approach to messaging.

Messages and data are the heart of financial services. Payments, capital markets, treasury, trade and other financial businesses generate trillions of messages and terabytes of data every day as they take digital transformation to the next level.

(Read more.)

Dealing with multiple "spinning plates" of the ISO 20022 adoption journey

Volante Tech

As in any implementation project, operational and technical teams are required for installation, testing, parallel runs, and eventual conversion.

Adoption of a new standard requires integration of the new formats into every system affected by the new message format.

(Read more.)

New messaging standards for UK payments: ISO 20o22

Bank of England

The UK payments industry is moving to ISO 20022, which is the emerging global standard for payments messaging. This standard creates a common language for payments data across the globe. To adapt to the new messaging standard and accompanying data requirements, your organisation might have to make process and technology changes.

(Read more.)

SWIFT seeks open banking network

Times of India

The hyper-connected future of tomorrow could see us enabling seamless cross-border payment experience via domestic real-time systems, without the need for beneficiary bank account information. Open banking, which will play a big role in this experience, is something SWIFT is building capabilities around.

(Read more.)



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