How to ISO 20022

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ISO® 20022 is a standard created through the International Organization for Standardization (ISO).[1] The International Organization for Standardization is an independent, non-governmental international organization with a membership of 170 national standards bodies. ISO sets standards for various technical topics. Each standard is designated by the prefix "ISO" and a number. For example, the financial industry recognizes "USD" as meaning the U.S. dollar and "EUR" as meaning the euro because of ISO 4217.[2] The industry recognizes "IE" as meaning Ireland and "MY" as meaning Malaysia because of ISO 3166.[3] ISO is responsible for standards ranging from quality (ISO 9001) to information security (ISO 27001) and in other industries ranging from transportation to government.

ISO created ISO 20022 in 2004 as a single standardization approach (methodology, process, repository) to be used by all financial messaging initiatives.[4] It is a broad-ranging standard comprising six business domains and several hundred messages. Payments is one domain. Importantly, the ISO 20022 standard articulates both a robust set of messages and a common data dictionary. The data dictionary can be used outside of the messages, in specifying data elements for Application Programming Interfaces (APIs)[5] as an example.

In recent years ISO 20022 has seen broad adoption. Many of the instant payment schemes around the world are built on ISO 20022. The Single Euro Payments Area (SEPA)[6] has been developed on top of ISO 20022. Swift has transitioned cross-border messages to ISO 20022 and U.S. domestic wire systems are in the process of making the transition to ISO 20022, including the Clearing House Interbank Payments System (CHIPS®) successfully in April 2024 and Fedwire® in March 2025. The Clearing House has been using ISO 20022 for their RTP® system since it was launched in 2017. The Federal Reserve Bank adopted ISO 20022 for their FedNow® Service that went live in July 2023.

ISO 20022 includes an advanced eXtensible Markup Language (XML) to represent data. XML defines a set of rules for encoding data in a format both human readable and machine readable. XML is fundamental to the structure and functionality of ISO 20022, providing a robust format for financial messaging. It simplifies data sharing and stores data in a readable plain text format. XML's hierarchical, extensible, and self-descriptive nature makes it an ideal choice for handling the complex data requirements of the financial industry. The widespread adoption of ISO 20022, driven by the advantages of XML, is set to enhance global financial communication, interoperability, and efficiency.

With this change the world of payments has a more robust standard payment vocabulary which promises seamless integration into Straight Through Processing (STP).[7] XML and ISO 20022 are instrumental in achieving STP in the financial industry. The benefits of STP, including improved efficiency, accuracy, cost savings, and regulatory compliance, make it a crucial goal for financial institutions aiming to enhance their operational capabilities and competitiveness in the global market. The standardization and interoperability provided by ISO 20022, combined with the structured and self-descriptive nature of XML, enables efficient, accurate, and cost-effective transaction processing. Additionally, there is a substantial increase in the data capacity and flexibility of financial messages.

Payments Message Standards

Electronic payments systems – ranging from wire transfers to ACH to debit/credit cards – evolved at different times and built messaging in support of the needs specific to that system at that time. As a result, the industry ended up with a variety of different messaging standards in support of the variety of payment systems. Examples of a few:

- Proprietary Swift Messages – cross-border money movement
- ISO 8583 – card transactions (e.g., credit, debit, prepaid card, push to card)
- Nacha File Format – U.S. domestic ACH

Each of these message standards was built for the requirements of a specific system and use cases. ISO 8583 was designed and used largely for retail financial transactions including the use of cards at ATMs, for eCommerce, and in digital wallets. The Nacha File Format was initially designed for money transfer/payment transactions using batch processing techniques on mainframe computers. Swift designed proprietary messages to support cross-border payments.

These messaging standards were implemented with the technology, programming techniques and economics of the time. This led to decisions for most implementations to use a fixed format message instead of the variable length message specified in the standard. This underutilized the capabilities of the standard.

As these, and other message systems were implemented, little consideration was given to using common data element specifications and data structures in different payment systems. Because of this, applications which interact with multiple payment systems cannot count on consistency in data elements and data structure resulting in incompatibilities between these systems when sending or receiving payments.

In order for data from one system to be sent over a second system, the messages containing the data must be translated into the format compatible with the second system. If the standard for the length and type of data in the second system is different from the first system, some or all of the data may be lost. Agreeing on an aligned ISO 20022 data model across multiple systems and solutions eliminates this problem.

Comparing Payments Message Formats

A key consideration when developing ISO 20022 was to unify the requirements of financial transactions in one specification. The data elements are specified such that information which is common across payments schemes has a common name, type, and specification. ISO 20022 recognizes that different payment systems, and different geographies, may have different requirements. As such, the data elements specifications are built to be flexible and all inclusive.

ISO 20022 also provides for much richer payments data. Robust messages exist to enable payers and payees to communicate with each other about the meaning of the payment. Rather than just supporting a payment message, ISO 20022 supports a business conversation around the movement of value.

Evolving Implementation of ISO 20022

While new to the U.S. community, ISO 20022 has been around since 2004, and some market infrastructures have adopted this messaging standard years ago. The first large scale implementation took place in Europe where ISO 20022 messages underpinned the creation of the Single Euro Payments Area (SEPA) in 2008 for credit transfers and 2009 for direct debits. Since then, many infrastructure projects have followed, for example, India, Japan, China, and Switzerland going live with ISO 20022 for their Real Time Gross Settlement Systems (RTGS)[8] systems during the last decade, with Singapore, South Africa, and others following in 2021/2022.

The big, coordinated push came in March 2023 when six high value payment systems in Europe (TARGET2 and EBA EURO1), Asia Pacific (Australia, New Zealand, Thailand) and North America (Canada) as well as Swift, went live with ISO 20022. Since then, other operators like the Bank of England (June 2023) and The Clearing House (April 2024) went live with ISO 20022 based messaging. The next big milestone will be the migration of Fedwire scheduled for March 2025.

But ISO 20022 is not just for high value payment systems. Many lower value instant payment systems use ISO 20022 messaging, for example, NPP Australia, Singapore, Thailand, European Central Bank's TIPS and EBA Clearing RT1, and both RTP and FedNow in the United States. This reflects the unique characteristic of the payment format catering to multiple payment types from low value batch payments to high value wires and instant payments.

Early adopters of ISO 20022 had to deal with mapping issues of rich data into legacy formats with less rich data still dominant in many local markets. The continued adoption of ISO 20022 will make this easier going forward.

Common issues in the initial adoption phase were incompatible data elements. Many of the new ISO 20022 elements do not map easily into the legacy messages leading to truncation issues. Markets went to great lengths to support interim solutions. One example is the United States where incoming ISO 20022 payments from Swift are supported by a "backpack" field that allows CHIPS and Fedwire senders to include a copy of the incoming cross-border ISO 20022 message in the legacy Fedwire and CHIPS payment instructions. This step ensures all data can be transmitted via the legacy infrastructure to support the Travel Rule[9] and compliance screening processes. Once the U.S. systems adopt the ISO 20022 messages natively this will be a thing of the past.

The global adoption of ISO 20022 by multiple market infrastructures, at different speeds and across different solutions, comes with the challenge of yet again diverging implementations. Multiple industry efforts were set up to address this issue. The Bank for International Settlements Committee on Payments and Market Infrastructures (CPMI) in partnership with the private sector represented through Swift's Payments Market Practice Group (PMPG) consulted the industry on a set of globally harmonized ISO 20022 data requirements to stimulate efficient and transparent cross-border payments using ISO 20022 messaging. The independent High Value Payments Systems Plus (HVPS+) group agreed a common implementation for use of ISO 20022 for high-value payments and will coordinate the roll-out of future changes to remain aligned once all systems are on ISO 20022.

Sample ISO 20022 Use Cases

The introduction of the use cases below will explore various aspects of ISO 20022, demonstrating its pivotal role in transforming payment systems, enriching data quality, and enabling financial institutions to meet the growing demands for transparency and speed in transactions. Through these use cases, we will see how ISO 20022 is not merely a technical specification, but a strategic asset driving the future of financial services.

ISO 20022/RFP Use Case
Transportation Industry (Trucking)
COD Delivery Payment Authorization Solution

Problem Statement

Each day, a large amount of COD (Cash on Delivery) LTL (less than truck load)[10] trucking companies make deliveries. These COD payments are common and require the trucking firm to load the items on a truck from a distribution warehouse and notify the recipient when the truck will arrive at its destination. The amount due in the form of a check is required to be received by the driver to release the goods to the recipient.

In many cases, the goods are presented for delivery only to discover the person responsible for receiving the goods and providing the check is not available. This causes a scenario where the trucking company must leave the site with the goods still on the truck and return them to the warehouse where they are frequently unloaded and prepared for transport and delivered again costing the transportation industry millions of dollars each year. As a result, transportation companies are looking for automated turn-key solutions to track these deliveries and coordinate the payment with the delivery.

Proposed Solution

The success of an automated COD remittance solution for the transportation industry depends upon it being turnkey and addressing all necessary functions. By combining a scheduling system, logistics tracking, client communication capability, payment system, and tracking mechanism the entire process could be automated end to end with a number of checks and balances throughout the process.

Utilizing instant payments coupled with ISO 20022 (for messaging), RfP (requesting funds from the recipient), and RfI (request for information) messages, transportation firms can combine processes including a client communication function, funding mechanism, and issue resolution path as an end-to-end solution for the industry. During a transaction, it is quite possible to build and solve an industry issue while improving customer relations and making payments safer and faster and reducing NSF (non-sufficient funds) checks from the equation.

Summary

By mechanizing what was previously a very manual process, transportation firms can severely reduce costs and redeliveries, hence increasing their net margin while increasing customer satisfaction. With the availability of faster payments, ISO 20022, RfP, and RfI messages, B2B commerce can be enhanced from a customer experience perspective while lowering costs and increasing revenue. It is important to note this solution could not be achieved without the flexible data capabilities of ISO 20022 messaging. ISO 20022 has opened the payments industry to new and innovative opportunities.

ISO 20022Use Case

Tax Payments to the U.S. Treasury

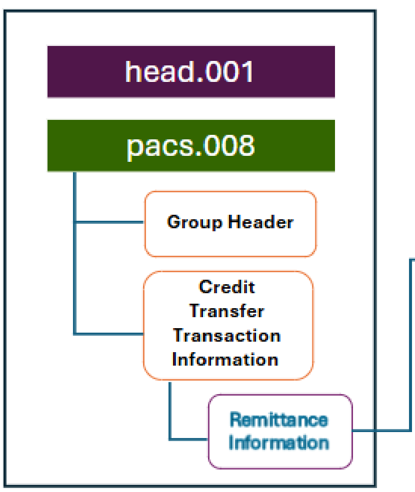
Problem Statement

The U.S. Treasury accepts various payment formats today to collect taxes. In addition to checks and ACH, taxpayers can use wire payments. Particularly for large corporates and U.S. taxpayers living overseas the wire payment option is very relevant. In the legacy format, the taxpayer can include the required reference information in a free format beneficiary information field. However, with ISO 20022 this will change, and the relevant taxpayer information will be included in a structured format.[11]

Proposed Solution

With the migration of Fedwire to ISO 20022 in March 2025 all tax payments via Fedwire will use the structured remittance data. The structured remittance data will ensure that tax payments get automatically applied to the taxpayer's account.

Example: Submitting tax payment details to the IRS



Element	Path	Example
Tax ID	CdtTrfTxinf/Rmtinf/Strd/....//Cdtr/TaxId	999-99-9999
Tax Type Code	cdtTrfTxinf/Rmtin/Strd/...Rcrd/Tp/	10406
Tax Year Period	CdtTrfTxinf/Rmtin/...Rcrd/Prd/Yr/	2025-12-31
Tax Period Type	CdTrfTxinf/Rmtin/...Rcrd/Prd/Tp/	MM04

Example derived from the Fedwire® Funds Service ISO® 20022 Quick Reference Guide[12]

As this example illustrates Tax ID, Tax Type Code, and Tax Period Type will have dedicated data elements that allow for straight through application of the payment to the relevant tax obligation.

Summary

With the introduction of ISO 20022, financial institutions will be able to elevate and share the richness of data with business consumers by providing greater ability to reconcile inbound payments, attribute payments to the correct customer, and enhance remittance data points.

Final Thoughts

ISO 20022 marks a significant advance in financial messaging standardization with its XML-based format, enhancing global payment systems' vocabulary. This standard promises seamless integration into Straight Through Processing systems and a significant increase in data capacity and flexibility. Adopted globally, ISO 20022 will unify financial communications across payments, securities, and trade, offering a robust framework for modern financial transactions.

The FPC Cross-Border Payments Work Group's next report "Distinguishing Advantages in the Format & Structure of ISO 20022 for Instant Payment Adoption" will offer an in-depth analysis of ISO 20022's features, identifying some of the fundamental capabilities that distinguish ISO 20022 from older message standards and enhance instant payment transaction processing.

Cross-Border Payments Work Group

Thank you to the members of the FPC Cross-Border Payments Work Group (CBPWG), sponsored by Mastercard, who contributed to this report.

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About the Cross-Border Payments Work Group

The FPC Cross-Border Payments Work Group covers global industry intiatives, gathering information on various models and use cases for real-time payments across borders with the long-term goal of cross-border interoperability.

About the U.S. Faster Payments Council

The U.S. Faster Payments Council (FPC) is an industry-led membership organization whose vision is a world-class payment system where Americans can safely and securely pay anyone, anywhere, at any time and with near-immediate funds availability. By design, the FPC encourages a diverse range of perspectives and is open to all stakeholders in the U.S. payment system.

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