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ISO International Standards make a positive contribution to the world we live in. They facilitate trade, spread knowledge, disseminate innovative advances in technology, and share good management and conformity assessment practice.

ISO supports this brochure, which has been prepared by SWIFT, as a useful source of information for current and potential users of ISO 20022.

ISO/TC 68, Financial services

ISO 20022 was developed and is maintained by ISO/TC 68, the ISO technical committee responsible for standardization in the field of banking, securities and other financial services. Its current portfolio consists of 51 standards or related documents and its membership comprises the NSBs of 29 countries, plus the following stakeholder organizations: ANNA, ECB, GLEIF, MasterCard, SWIFT, UN/CEFACT, VISA.

International Organization for Standardization

ISO: www.iso.org



ISO20022

SWIFT 6th Limited Edition

by The Swift Standards Team

for
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Foreword

In our industry, where trust, interoperability and resilience are key requirements, the quality of data exchanged between us, closer and closer to real-time, and between increasingly diverse stakeholders in the value chain, is of paramount importance.

This is why financial services industry experts have developed ISO 20022, a global and open standard for information exchange, that's being adopted by a growing number of users in various domains: securities, payments, foreign exchange, cards and related services, notably for end-to-end straight-through processing (STP), components management or regulatory reporting. Just take a look at the ISO 20022 website, and you'll be impressed by the scope of what's already covered!

The ISO 20022 standard provides a methodology to describe business processes and a common business language. It can be rendered in different syntaxes, enabling implementations for messaging and application programming interfaces (APIs). It's supported by a central repository, which includes a data dictionary and a catalogue of messages – and is accessible to all.

From a business point of view, the usage of this universal messaging standard, versatile by design and maintained by a broad community of professionals, improves efficiency in delivering products and services.

And it is a success: ISO 20022 implementations are spreading across all domains and regions by replacing legacy standards and supporting new business needs.

Many thanks to SWIFT for their continuous support and involvement in ISO work. This book will help managers better understand how migrating to ISO 20022 can improve their business.

Patrice Hertzog

Chairman, ISO TC68/SC9 Information Exchange for Financial Services

Introduction

While many people in the financial services industry have heard about ISO 20022, few truly understand what it's about and what's so great about it. At SWIFT, we're convinced that ISO 20022 can bring profound benefits to the financial services industry, as it improves end-to-end processing across domains and geographies that currently use vastly different standards and information formats. This book removes the mystery from ISO 20022; it helps you understand why it matters, and lets you see how you can benefit from it.

And we're not the only ones who love ISO20022! Both securities and payments systems covering all major currencies have either adopted ISO 20022 or are in the process of adopting it, and the financial community has now decided that it's time for *all* payments to move from SWIFT MT to ISO 20022. ISO 20022 represents a big opportunity to improve the quality of payments data, end-to-end, which enables improved efficiency, compliance and customer experience.

Foolish Assumptions

This book makes some foolish assumptions about you, the reader:

- » You're interested in information processing in the financial services industry.
- » You know something about how the financial industry works.
- » You've heard about ISO 20022 and you want to know more: what it aims to do; who uses it and why; and how to use it yourself.
- » You want to contribute to the ISO 20022 effort.
- » You regularly send or receive payment instructions, confirmations or statements in MT form and are therefore facing a global change to ISO 20022.

While some knowledge of the industry and the use of information processing might be helpful when reading this book, we explain all the concepts and terms when we first introduce them.

In addition, we've added a glossary of terms and acronyms in the appendix.

How This Book Is Organised

This book comprises seven chapters and a glossary. If you don't have time to read the whole book, we suggest you flip to Chapters 5 and 6 and read the summaries: Ten Great Things about ISO 20022 and (Almost) Ten Things to Tell Your CIO about ISO 20022. Most importantly, be sure to read Chapter 2. Your world is going to change, and there are things you'll need to learn and do.

- » **Chapter 1 – Lifting the Lid on ISO 20022:** This part introduces the key concepts of financial messaging; it explains where ISO 20022 fits in, and outlines what makes it different from other standards.
- » **Chapter 2 – Seeing ISO 20022 in Practice:** This part focuses on the use of ISO 20022 – where it's currently being used, and for what; it also contains some helpful advice on implementation. ISO 20022 is changing the world of payments and this chapter tells you what you need to know.
- » **Chapter 3 – Understanding the ISO 20022 Organisation:** Here we explain the ISO organisation, and describe the various committees and working groups that together define, maintain and promote the standard.
- » **Chapter 4 – A Perfect Match: ISO 20022 and SWIFT:** SWIFT is a major contributor to ISO 20022 on many fronts. This part describes SWIFT's long relationship with the standard, and the services that SWIFT can offer to help implementers and contributors.
This chapter also describes the ISO Adoption Programme, and how it affects all institutions using SWIFT for payments.
- » **Chapter 5 – Ten Reasons to Adopt ISO 20022:** Here, we give you ten good reasons why ISO 20022 is good for you and good for your business.
- » **Chapter 6 – (Almost) Ten Things to Tell Your CIO about ISO 20022:** A summary of the key points in the book.

» Chapter 7 – (More than) Ten Useful Links for Standards

Implementers: Find websites to further your understanding.

Although most of the terms and acronyms you need are explained as we go, we've also collected these into a glossary, which you'll find in the back of the book.

Dip in and out of the book as you wish. You can go to any chapter that looks interesting or even read it from front to back!

Icons Used in This Book

All *For Dummies* books use little icons in the margins, to help you navigate the information.



EXAMPLE

The Example icon indicates examples to illustrate a point and inspire you.



TIP

The Tip icon signifies particularly useful advice.



REMEMBER

This icon highlights important information to bear in mind.

Beyond the Book

If you want to discover more about SWIFT and ISO20022 after reading this book, please visit www.swift.com.

IN THIS CHAPTER

- » Introducing financial messaging standards
- » Understanding how ISO 20022 is different

Chapter **1**

Lifting the Lid on ISO 20022

In essence, ISO 20022 is a recipe for making financial standards. This chapter starts off by delving into what financial standards are, before coming to ISO 20022 itself later in the chapter.

What Are Financial Standards?

In this context of this book, financial standards are definitions of everything, from broad concepts to microscopic pieces of business data, and all points in between. These definitions are captured in a highly structured model, which can then export those definitions to developers and users of applications, screens, messages, API calls and any other data representation that needs to speak the language of financial transactions with clarity and precision.

To conduct their business, financial institutions exchange massive amounts of information with their customers and among themselves. Such exchanges only work if the sender and receiver of a message have a common understanding of how to interpret this information. This is especially true if either party wishes to rely entirely on computers to process information.

Grasping the basics: Syntax and semantics

To be able to eliminate the need for human intervention to interpret the data, the financial industry has created message definitions – that is, agreements on how to organise the data they want to exchange in structured formats (*syntax*) and meaning (*semantics*). Based on such message definitions, they will exchange messages, as illustrated by the following extract of a simple payment instruction.



EXAMPLE

Suppose ExampleBank in Utrecht, the Netherlands (Bank Identifier Code (BIC) EXABNL2U) has been requested by its corporate customer ACME NV, Amstel 344, Amsterdam to transfer 12,500 US Dollars on 06 April 2022 from its account 8754219990. Instead of addressing the above instruction to its US Dollar correspondent in unstructured text, ExampleBank sends a structured message based on a standard message definition:

```
<CdtTrfTxInf>

<IntrBkSttlmAmt Ccy='USD'>12500</IntrBkSttlmAmt>

<IntrBkSttlmDt>2022-04-06</IntrBkSttlmDt>

<Dbtr>

<Nm>ACME NV.</Nm>

<PstlAdr>

    <StrtNm>Amstel</StrtNm>

    <BldgNb>344</BldgNb>

    <TwnNm>Amsterdam</TwnNm>

    <Ctry>NL</Ctry>

</PstlAdr>

</Dbtr>

<DbtrAcct>
```

```
<Id>  
  <Othr>  
    <Id>8754219990</Id>  
  </Othr>  
</Id>  
</DbtrAcct>  
<DbtrAgt>  
  <FinInstnId>  
    <BIC>EXABNL2U</BIC>  
  </FinInstnId>  
</DbtrAgt>  
</CdtTrfTxInf>
```

The above example is an excerpt from an ISO 20022 Customer Credit Transfer in the XML syntax.

Messaging standards provide clear definitions of the information and data formats (field lengths, codes, character sets) that can be exchanged between parties. The above message, for example, contains the line

```
<IntrBkSttlmAmt Ccy='USD'>12500</IntrBkSttlmAmt>
```

to indicate the currency and amount of the transaction. The underlying standard for a Customer Credit Transfer message tells you that this field is mandatory, that it starts with the tag ‘IntrBkSttlmAmt’ and that the information in the field must consist of three letters (the ISO currency code) and up to 18 digits for the actual amount.

ISO 20022 is just one example of a standard used in the financial industry. The following section gives some context by describing financial messaging, the standards it uses and some of the problems posed by the multitude of such standards.

So many standards, so little time

‘The great thing about standards is that there are so many to choose from’. It’s an old joke, but very relevant in the financial industry. Many different standards exist covering different geographies and business areas. Many individual institutions even use their own proprietary standards internally and/or with their customers.



EXAMPLE

This excerpt is taken from a SWIFT Single Customer Credit Transfer message (MT103) that does more or less the same thing as the ISO 20022 Customer Credit Transfer shown earlier. You’ll note that most information is the same, but the tags and the order of the fields are different:

:32A:06042022USD12500,

:50F:/8754219990

1/ACME NV.

2/AMSTEL 344

3/NL/AMSTERDAM

:52A: EXABNL2U

Here’s another example of the same information, this time using the Fedwire proprietary standard:

{1520}20220406xxxxxxxxxxxx {2000}000001250000

{5000}D8754219990ACMENV.*AMSTEL 344*AMSTERDAM*
NETHERLANDS* {5100}BEXABNL2U*

All of the above examples provide the same information, but each uses a different standard.

Processes and value chains in financial services often cover different geographical and business areas. The proliferation of different messaging standards in the financial industry creates problems in automating these end-to-end chains. Two significant barriers exist to a common understanding of information shared by the people and computers involved in such processes: the use of different syntaxes (structure) and the use of different semantics (meaning).

The syntax barrier

The *syntax* is the format in which the information in a message is structured. Unless the reader understands a specific syntax, it's not possible to understand the message content. There's a lot of confusion about the difference between a standard and a syntax. The *standard* describes the agreement on what information is expressed, while the *syntax* is the format, or the 'language' used to express that information. It's difficult for two people to have a conversation unless they both use and understand the same language. The same is true for syntax. Globalisation and the ever-increasing need for end-to-end processing increases the problem.



TIP

In ISO 20022, the most widely used syntax is eXtensible Markup Language (XML). The use of short tag names (like `<PstlAdr>` to represent a postal address) is also part of the syntax.

XML is one of the most popular formats to encode documents (or messages) electronically on the internet. It enables communities to define their own identifiers (or *tags*) and format (or *data type*) for each component of a message. With XML, data is marked up by using opening and closing tags that indicate the meaning and structure of the information that is communicated. For example, `<Dt>2022-09-29</Dt>` is an XML representation of 29 September 2022. The combination of opening and closing tags with the data is called an *element*.

The MT103 Single Customer Credit Transfer extract illustrated earlier in this part uses a SWIFT proprietary syntax. It too uses tags, called *field tags*, to introduce data. These are alphanumeric characters between colons. This is followed by the actual field content. In the example, `:52A:` is the field tag (Ordering Institution) and `EXABNL2U` is the field content.

The semantic barrier

Once the syntax is out of the way, another barrier appears: the semantic barrier. Specialists in different domains or countries have developed their own jargon or vocabularies. Different words might refer to the same concept, or worse, the same word could have different meanings.

SOME WIDELY USED STANDARDS

- **ISO 15022** is currently the predominant securities standard in cross-border settlement, reconciliation and corporate action processing. It was introduced around 1998 to replace ISO 7775, which was much less structured and often omitted crucial settlement information. The adoption of ISO 15022, mandated in 2003, has led to a dramatic increase in Straight Through Processing (STP) rates. In settlement messages, for example, it's common to come across STP rates of more than 95 per cent. One of the standard's advantages is its data dictionary-based approach, which enables reuse and standardisation of data across all messages. About half of the 40 million messages that are exchanged on the SWIFT network every day are ISO 15022.
- **ISO 8583** is used for almost all credit and debit card transactions, including ATMs. Several hundred million ISO 8583 messages are exchanged daily between issuing and acquiring banks.
- **FIX** is the predominant standard of the securities front office. Millions of indications of interest, trade instructions, executions and so on are sent each day using the FIX protocol.
- **FpML** stands for Financial products Markup Language. It uses the XML syntax and was specifically developed to describe the often complicated contracts that form the base of financial derivative products. It is widely used between broker-dealers and other securities industry players to exchange information on Swaps, CDOs and so on.
- **SWIFT proprietary**, also known as MT messages, is the standard for messaging in correspondent banking, foreign exchange and documentary credits. Over 11,000 financial institutions around the world use this standard to exchange millions of messages per day over the SWIFT network.
- **Proprietary domestic standards** are also widely used. DTCC is an example of a market infrastructure using proprietary standards. Each day some 40 million messages are exchanged with DTCC to clear and settle US domestic securities trades.
- **XBRL** is a flexible XML-based standard for exchanging business information, which specialises in providing easy automation for information found in unstructured documents.

For example, what some players in the payments industry call an Ordering Customer, others refer to as Payer or Payor, while still others talk about a Payment Originator or Initiator. The context also plays a role here: the Payment Originator/Initiator is a Debtor/Payor in a credit transfer, while that Payment Originator/Initiator is a Creditor/Payee in a direct debit.

These different names create difficulties when you're looking at end-to-end integration. You need (expensive) expert knowledge to understand what the specialists mean and how to reconcile the information.



REMEMBER

In order to understand the information exchanged in a particular business domain, you need to be familiar with the details of the specific syntaxes and the underlying semantics. This requires a significant investment in time and technology.

ISO 20022 Basics

The previous section sketched two barriers to a common understanding of information shared between people and computers involved in these processes: the use of different syntaxes and the use of different semantics or interpretation of terms. ISO 20022 was designed to help overcome these barriers. In this section, we see what makes ISO 20022 special.

ISO 20022 is the agreed methodology used by the financial industry to create consistent message standards across all the business processes of the industry.

The ISO 20022 method is based on the concept of separate layers. We distinguish between three layers: the top layer provides the key business processes and concepts; the middle layer provides logical data models and flows; and the bottom layer deals with syntax.

Business processes and concepts

One of the key characteristics of the ISO 20022 methodology is that there's a distinction between the business and the way it's represented in a message, that is, the syntax. The ISO 20022 methodology starts with the creation of the business model. Put simply, this is the definition of the activity or business process,

the business roles and actors involved in that activity and the business information needed for the activity to take place.

The business information is organised into business components containing business elements. For example, when looking at the processes involved in a credit transfer, key notions such as debtor (the party that pays), creditor (the money receiver), debtor agent (the bank of the debtor), creditor agent (the bank of the creditor) and payment are identified. Each of these components has further details. Figure 1-1 shows a simplified business information model, represented in Unified Modeling Language (UML).

Central is the payment itself, which is associated with the debtor agent and creditor agent, which are both financial institutions. The payment is also associated with a debtor and creditor, which are both parties (in other words, persons or organisations, financial or other) which, in turn, have elements such as a name and address. Additionally, these parties may be owners of an account. Behind these elements lie further details. A payment, for example, contains elements such as currency and amount, a requested execution date and settlement date, and remittance information.

Logical messages and API resources independent of syntax

Using these business concepts, ISO 20022 then defines logical models, which make up the middle layer.

A logical model is a description of all the information that's needed to perform a specific business activity, independent of syntax. It's composed of message or data components organised in a hierarchical structure. A component contains one or more elements and is derived from a business component by using one, some or all of its elements. The logical structure for the excerpt of the Customer Credit Transfer message can be seen in Figure 1-2.

The component `CreditTransferTransactionInformation` contains four elements. Some of these, `Debtor` and `DebtorAgent` for example, require further definition and are components themselves. Figure 1-2 is a simplified representation that does not show, for example, whether elements are mandatory or optional, as is normally done at this level.

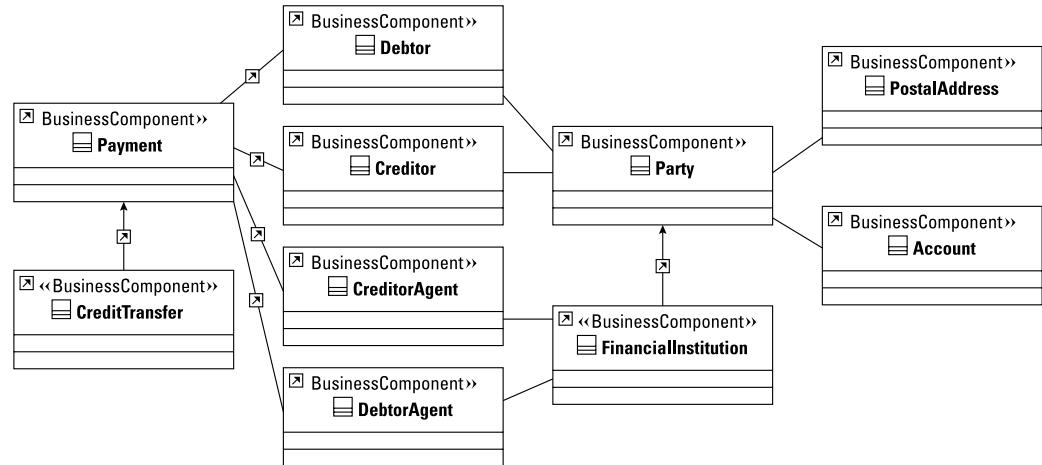


FIGURE 1-1: A simplified business information model for a payment transaction.

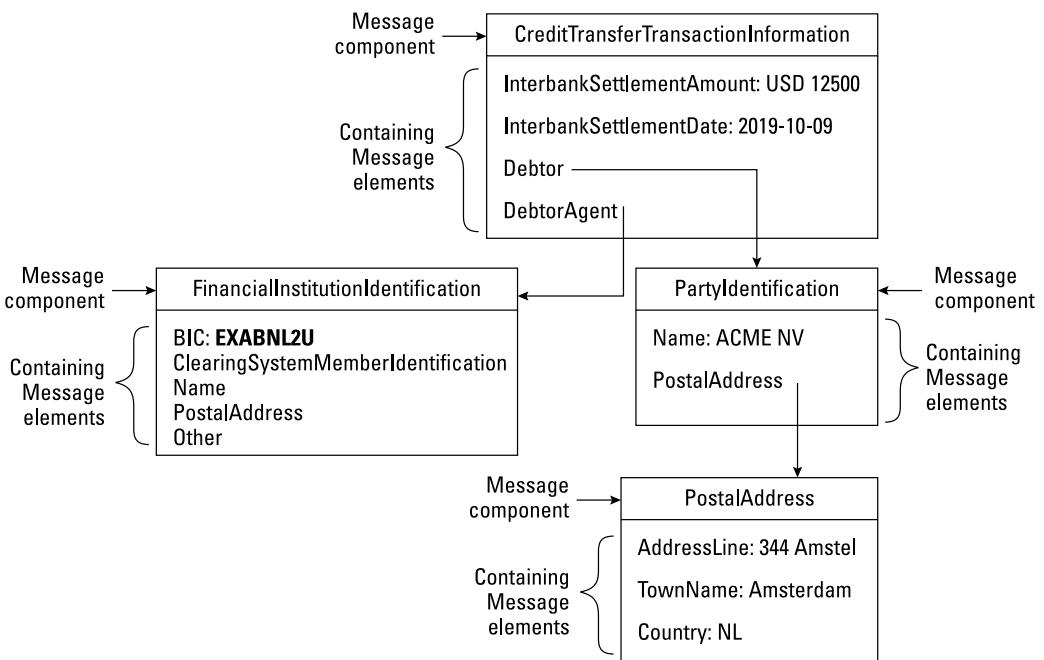


FIGURE 1-2: Part of the logical message structure or API resource for a credit transfer.

Depending on the solution, these components may represent messages or API resources.

Where the business activity requires a Credit Transfer to be managed through an API instead of messages, CreditTransferTransactionInformation could specify an API resource instead of a message. In a later step, API resource actions can then be specified to manage the credit transfer resource (for example, create the credit transfer, change it, view it and so on).



REMEMBER

A key feature of ISO 20022 is the ability to reuse business and message components across all messages and API resources. Whether it's a credit transfer or a credit card payment, or a securities or foreign exchange transaction that needs to be modelled, the component 'PostalAddress' can be used to express a party or financial institution's address where appropriate. Individual elements such as 'InterbankSettlementAmount' and 'InterbankSettlementDate' can also be reused.

The syntax

As explained earlier, the ISO 20022 methodology is based on the concept of separate layers. The business model and the logical data model and flows are two of those layers. The third layer, the syntax, is the physical representation of the logical model. ISO 20022 uses XML and specifies how to convert a message model to XML. However, in a particular business domain, a message model could be expressed in a syntax different from XML, for example, the SWIFT proprietary syntax or the FIX syntax, if agreed.

It's all in the repository

All the content described so far is stored in a common repository.

A dictionary forms part of this repository. The ISO 20022 dictionary, much like the *Oxford English Dictionary*, lists the name of a component, its structure (with references to sub-components that may be described elsewhere in the dictionary) and, most importantly, what the component means and how it should be used or interpreted. Just as with words in the English language, the meaning often depends on the context. For instance, the specific meaning can depend on whether the context is a national or international payment or a securities transaction on a stock exchange. The entry for DebtorAgent tells you that it is the

‘Financial institution servicing an account for the debtor.’ It also tells you that when referring to a Debtor Agent, you should use the structure called FinancialInstitutionIdentification, which defines the data required to identify a financial institution – its name and address, Business Identifier Code (BIC) and so on. If you look up this message component in the dictionary you’ll find the entry shown in Figure 1-3.

The screenshot shows a web-based interface for querying ISO 20022 message components. At the top, there's a navigation bar with links for Home, Search, and the current page, FinancialInstitutionIdentification7. Below the navigation is a breadcrumb trail: Your trail: FinancialInstitutionIdentification7 - FinancialInstitutionIdentification7 - Registered ✓. A horizontal menu bar includes Description, Content, Message Impact, and History. The main content area is titled 'FinancialInstitutionIdentification7' and describes it as 'Set of elements used to identify a financial institution.' Below this, a table lists the elements of the message component:

ELEMENTS	DEFINED IN	TYPE	ISO
BIC [0..1]	FinancialInstitutionIdentification7	BICIdentifier	✓
Code allocated to a financial institution by the ISO 9362 Registration Authority as described in ISO 9362 ‘Banking - Banking telecommunication messages - Business identifier code (BIC)’.			
ClearingSystemMemberIdentification [0..1]	FinancialInstitutionIdentification7	ClearingSystemMemberIdentification2	✓
Information used to identify a member within a clearing system.			
Name [0..1]	FinancialInstitutionIdentification7	Max140Text	✓
Name by which an agent is known and which is usually used to identify that agent.			
PostalAddress [0..1]	FinancialInstitutionIdentification7	PostalAddress8	✓
Information that locates and identifies a specific address, as defined by postal services.			
Other [0..1]	FinancialInstitutionIdentification7	GenericFinancialIdentification1	✓
Unique identification of an agent, as assigned by an institution, using an identification scheme.			

FIGURE 1-3: The ISO 20022 web query tool showing details of a message component.

ISO 20022 standardises such components across all data exchanges used in the financial industry. So, whenever a message is received that mentions ‘debtor agent’ it’s clear what it means and what to expect in terms of descriptive data about the debtor agent.



REMEMBER

The crucial notion here is reusability. For example, the data structure FinancialInstitutionIdentification (with all its substructures) is used to describe all financial institutions in ISO 20022 messages. Similarly, the message component DebtorAgent is used across all financial data exchanges whenever a financial institution plays that role in a transaction.



TIP

Currently, the ISO 20022 repository holds around 775 business components and more than 800 message definitions.

What Makes ISO 20022 So Useful?

ISO 20022 offers three things:

- » A formal business model for the financial services industry, which can be used as a reference for many different purposes, including building standardised messages and APIs (Application Programme Interfaces).
- » A method to develop well-structured financial messages and API resources (as described in the previous section).
- » A way to unify the many existing standards.

A message definition in any existing standard can be looked at logically as a description of what data is exchanged in the message, its structure and what it means. Such a ‘logical’ message definition can be mapped to the business definitions of ISO 20022. This is critical in making standards interoperable: it enables the use of multiple standards and multiple syntaxes to support the same business process, as information from these can be mapped unambiguously to the business process itself. So, the advantages of ISO 20022 over other standards fall into two categories: those concerned with using the standard itself, and those concerned with interoperability with other standards and APIs.

Using ISO 20022

The advantages of using ISO 20022 fall into three main categories: linking messages to business processes; reusing components; and business-driven models that allow for the generation of XML for messaging solutions and JSON Schemas for RESTful API solutions. Read on for more details.

Linking messages to business processes

Each part of an ISO 20022 message, or API resource, is linked to business components (in the model) that are meaningful and easily recognisable to users and can be linked to the data in back-office applications.

Reusing components that are well documented and structured

Since the components and elements are reused across messages and API resources, institutions need to map them only once to

their internal data structures. It's therefore much easier to introduce new messages or resources as most of the components will already be known and mapped to back-office applications. Maintenance is also a lot easier, since most of the changes can be made at the component level.

Appreciating the benefits of XML syntax

While the key feature of ISO 20022 is the use of common business models, when the XML syntax is used, it also brings significant benefits. The message format description is contained in an XML schema. This file is machine readable, so implementation of new messages, or changes to existing messages, requires less manual effort. It also enables easy manipulation of messages by most modern software, including mapping the information to other formats and standards.



REMEMBER

XML is an *international open standard*, which means that it enjoys widespread support across industry boundaries and gets extensive support from vendors. Being an international standard also means that a wide variety of XML editing, document management, validation and other off-the-shelf tools are available. These tools allow the automatic injection of message definitions and lower the cost for their validation and their integration into back-office systems.

Appreciating the benefits of JSON

One alternate format that's gaining more and more momentum is JSON (JavaScript Object Notation). JSON is a lightweight data-interchange open standard. It's easy for humans to read and write and it's easy for machines to manage. It's widely used for interacting with APIs on the web. Consequently, many supporting tools are available.

ABOUT XML, XML SCHEMAS AND JSON

The eXtensible Markup Language (XML) is a simple text-based format for representing structured information. XML uses tags set between angled brackets to identify items of information. Each data item is enclosed by a pair of opening and closing tags. The combination of opening and closing tags and the data they contain is called an

element. Elements can contain other elements, to group related information together, for example:

```
<address>  
  <number>1</number>  
  <street>Short Lane</street>  
  <city>London</city>  
</address>
```

One advantage of XML is that it is (reasonably) easy for people to read and understand. However, this readability comes at a cost: XML is sometimes criticised for being more verbose than other syntaxes and therefore less efficient to transmit and store. Compression tools can overcome this problem, lessening its impact on user communities where a more compact syntax is needed, for example, in (pre-) trade messages for securities exchanges, where microseconds count.

An *XML schema* sets out the permitted structure for an XML document (or message). It defines, among other things, which elements are allowed in a document, the order in which they should appear, which are mandatory and which are optional. XML schemas can be used by a computer to check whether a message conforms to its definition or not. The ISO 20022 methodology describes how to generate an XML schema from a logical message definition, for messages that will use the XML syntax. XML schemas are provided to formally define the structure of all ISO 20022 XML messages.

JSON (Java Script Object Notation) is a simple text-based format for representing structured information.

JSON uses less markup than XML because there are no end tags (compare it to the XML sample above). Element names aren't wrapped inside '<' and '>.' Name and value are separated by a colon ':'. Text values are wrapped inside a single quote, numbers inside a double quote. Aside from that, JSON instances are like XML instances.

```
<address>  
  number: "1"  
  street: 'Short Lane'  
  city: 'London'
```

(continued)

(continued)

A JSON schema, similar to an XML schema, sets out the permitted structure for a JSON document. It defines which elements are allowed in a document, the order in which they should appear, which are mandatory, which are optional and so on.

JSON schemas can be used by a computer to check whether a document conforms to its definition or not. The ISO 20022 methodology describes how to generate a JSON schema from a logical model.

JSON is the predominant syntax used for API resource definitions and thus by extension, in RESTful APIs.

ISO 20022 and other standards

ISO 20022 covers the entire financial industry, enabling a common understanding and interpretation of information across diverse areas such as foreign exchange trading and credit card payments. One big advantage is that this facilitates mapping between standards. For example, the MT103 Single Customer Credit Transfer field *52a Ordering Institution* and the ISO 20022 *DebtAgent* element are structured differently, but still describe essentially the same business concept: the financial institution that services the account of the ordering customer (or debtor). Therefore, both can be mapped to the same ISO 20022 business component. This is a powerful concept, because it lays the foundation for different standards to be able to work with each other (known as *interoperability*). We get into the details of interoperability in the following chapters. The main point here is that such mapping makes life a lot easier for all the parts involved in providing such interoperability: applications, translation services and so on. Such interoperability enables automated transfer and straight-through processing across entire processing chains.

IN THIS CHAPTER

- » Examining who uses ISO 20022 today
- » Understanding standards coexistence
- » Grasping the latest adoption plans in payments and securities markets
- » Undertaking ISO 20022 implementation

Chapter 2

Putting ISO 20022 into Practice

ISO 20022 is really catching on. Many large financial infrastructures, financial institutions and user communities are using ISO 20022 for their payments, FX and securities businesses. Just as importantly, many other existing standards are now being mapped to ISO 20022.

A global ISO 20022 programme is underway to assist all banks and financial institutions to adopt ISO 20022 for all payments and reporting exchanges, which will be completed in 2025. You can learn more about this at <https://www.swift.com/standards/iso-20022/get-ready-iso-20022-cbpr>.

Checking Out Payments, Funds & Securities, Forex, Cards and Trade

ISO 20022 organises financial definitions in business areas – well-recognised functional domains in the industry. These business areas are uniquely identified by four-character codes called

business area codes. The ISO 20022 catalogue includes over 800 messages covering the following business areas:

- » acmt: Account Management
- » auth: Authorities Communications
- » caaa: Acceptor to Acquirer Card Transactions
- » cain: Acquirer to Issuer Card Transactions
- » catm: Card Terminal Management
- » catp: ATM Card Transactions
- » caam: ATM Management
- » pacs: Payments Clearing and Settlement
- » pain: Payments Initiation
- » camt: Cash Management
- » remt: Payments Remittance Advice
- » fxtr: Foreign Exchange Trade
- » colr: Collateral Management
- » setr: Securities Trade
- » sedl: Securities Clearing
- » sese: Securities Settlement
- » semt: Securities Management
- » seev: Securities Events
- » tsin: Trade Services Initiation
- » tsmt: Trade Services Management
- » reda: Reference Data

Payments

ISO 20022 messages are available for the complete end-to-end payments chain: customer to bank (payment), bank to bank (payment clearing and settlement) and reporting (cash management). Messages are also available for supporting functions such as exceptions and investigations, bank account management, remittance advice, direct debit mandate management and regulatory reporting. The coverage is continuously expanding, driven by industry requirements. Amongst the big drivers for adopting ISO 20022 in the payments arena are the market infrastructure

adoption programmes in all reserve currency markets and others, as well as the global ISO 20022 programme for cross-border payments (see www.swift.com).

Funds

ISO 20022 messages are used for fund orders, transfers, reconciliation, price reporting and fund cash forecast reports. Messages also support the requirements to handle the complexity for hedge funds and the fund processing passport (FPP) information. The main driver in this business area is the desire to eliminate fax or email communication and manual processes, and to facilitate straight-through processing (STP).

Securities clearing and settlement, and corporate actions

Recent years have seen the creation of new global and regional market infrastructures (MI) to facilitate the clearing and settlement of securities and other instruments. In addition, many existing national MIs are facing significant investments as they prepare to enable cross-border access and cater for the needs of foreign participants. Both existing and new MIs will have to decide which messaging standard/syntax to use in communication with their participants.

A large number have chosen ISO 20022, including T2S (TARGET2-Securities), the US Depository Trust and Clearing Corporation (DTCC), China Central Securities Depository and Clearing Co. (CCDC) and JASDEC, the Japanese Central Securities Depository and, more recently, the Euro Collateral Management System (ECMS).

Whenever necessary, new ISO 20022 messages have also been developed to address the specific business functions covered by these MIs.



TIP

Many players affected by these market infrastructure projects are planning to implement the ISO 20022 messages before the scheduled live dates of the MIs, to ensure that they're ready.

An important factor in the adoption of ISO 20022 in the securities industry was the *Giovannini Protocol*. This protocol aimed to harmonise the clearing and settlement of securities in Europe by

eliminating several barriers to efficient cross-border processing. One of these barriers (Barrier 1; see the Glossary) is the different standards and communication protocols used for accessing Central Securities Depositories (CSD). The industry specified that CSDs had to support the use of ISO messages for the clearing and settlement of European cross-border securities transactions. Those flows that are common across MIs are covered by both ISO 15022 and ISO 20022, in an interoperable way.

The same is true for the asset servicing business, where the industry is looking to automate the generation of corporate action information. The basic functionality is covered by both standards. Additional functionality, for example, proxy voting, has only been developed in ISO 20022.

A more recent catalyst for the use of ISO 20022 messages is the choice of ISO 20022 by financial authorities for regulatory reporting purposes. In Europe, the European Central Bank, the Bank of England and the European Securities and Markets Authority (ESMA) have already opted for ISO 20022. In the US, the Commodities Futures Commission (CFTC) and the Securities Exchanges Commission (SEC) are mandating the use of ISO 20022 for derivatives reporting by 2023, and similar mandates are expected in Canada, Singapore, Australia, Hong Kong and Japan.

Cards

Since 2010, the development of cards-related ISO 20022 messages has been booming. As of 2016, a portfolio of about 60 messages has been available to support acceptor to acquirer POI activities and POI terminal management, ATM interface for transaction processing and ATM management, and a first series of acquirer to issuer card messages aiming at providing an ISO 20022 alternative to the ISO 8583 standard.

Forex

Market infrastructures, such as CLS and China Foreign Exchange Trade System (CFETS), use ISO 20022 messages to exchange critical post trade foreign exchange information with their participants.

Trade

In the trade services area, a suite of ISO 20022 messages has been developed that cover e-invoice, invoice financing, demand

guarantees and standby letters of credit, as well as factoring services.

Understanding How Standards Coexist

Will the whole world speak English one day, replacing native languages? Who knows? Similarly, although it would be great to all speak the same language in the Financial Industry, different standards and syntaxes are used for the time being . . . and they work! For example, FIX, FpML, SWIFT proprietary and many domestic standards are in use and generally do a good job at serving specific goals and business domains.

However, widespread adoption of ISO 20022 will have significant benefits for individual firms and the financial system, for example by enriching the data carried in payments messages, improving compatibility across technology platforms and creating opportunities for collaboration and innovation.

While standards, like languages, evolve over time, real migrations are rare. Check out some examples of standards (and migrations from older, so-called legacy standards to new ones) in the wider world:

- » **Left-hand versus right-hand drive:** About half of the world drives on the left-hand side of the road and the other half drives on the right-hand side. Clearly, it would be more efficient if we all drove on the same side of the road: there'd be no need to make cars in two versions, bigger markets for used cars, no adaptation for continental Europeans who choose to live in the UK, or for retired London investment bankers starting wine farms in France or Italy! Still, we know of only two documented cases of migration: Sweden changing to the right-hand side in 1966 and Samoa to the left-hand side in 2009.
- » **Railway gauges:** The initial free-for-all has given way to a clear global standard (the 4 ft 8½ in Stephenson standard). There have been migrations, notably the American South after the Civil War and many of the early railways in Britain, like Brunel's Great Western Railway. Plenty of other gauges are still in use: Russia, Iberia and parts of Australia, for example, still use much wider gauges.

» **Alphabets and characters:** Large parts of the world use non-Latin character sets to write: Russia, Japan, China and the Arab world to name just a few. Again, there have been migrations, notably the migration of Turkey to the Latin character set by Atatürk, but the use of non-Latin characters appears well-entrenched. ICANN (Internet Corporation for Assigned Names and Numbers) has now enabled the use of Arab and Chinese character domain names.

You can find plenty more examples: voltage and electricity plugs, ring binders, computer keyboards (QWERTY versus AZERTY) and so on. While you can make a clear case for a single global standard for all these cases, differences persist, and migrations are rare. Surprisingly, migration costs are often substantial due to hardware replacement, retraining, conversion of existing data and so on.

Financial standards are subject to the same dynamics. Financial institutions have invested enormous resources in building systems that use existing standards. It's certainly possible to replace one standard with another, as the migration of the securities industry from ISO 7775 to ISO 15022 has proven, but there needs to be a strong business case to do so.

Why not force migration to ISO 20022?

Why doesn't the French or German government force their population to abandon their native language and only speak English? Well, because apart from the fact that their voters would throw them out of office in the blink of an eye, it would cost too much and cause far too much trouble to be worth doing – that's why. Already today the financial community is a dominant user of ISO financial services standards.

It worked for ISO 7775 to ISO 15022, didn't it?

Indeed, it did. In 2004, the securities industry completed a migration from the legacy ISO 7775 standard to ISO 15022 – a more modern and functionally superior messaging standard. This migration brought enormous benefits to the community, as processing important information was made mandatory in messages. This enabled the securities clearing and settlement industry to increase straight-through processing rates from around 60 to

70 per cent to currently more than 95 per cent, which translates into billions of savings in operating cost reductions. So, although securities players had to change their back-office systems and communication interfaces, the benefits of adopting the new standard more than outweighed the substantial migration cost.



REMEMBER

The migration to an updated standard has already taken place for some parts of the securities industry. The ISO 15022 messages for corporate actions and securities settlement and reconciliation that replaced ISO 7775 are already well-structured and based on a data dictionary. For players with large legacy systems in these spaces, the benefits of migration from ISO 15022 to ISO 20022 may not outweigh the cost. Obviously, it's a different story for areas like investment funds and asset servicing (proxy voting, for example), where ISO 20022 messages offer significant benefits over current practice, which largely revolves around fax, phone and file transfer.

Wouldn't these securities players find it easier to have everything in ISO 20022? Probably. But the reality is that today, the securities industry is used to dealing with multiple formats, including a host of domestic proprietary ones, and the business case for a forced industry wide migration in securities markets is weak.

What about MT 103s and ISO 20022 messages?

In payments it's a different story.

For European retail payments, the first migration to ISO 20022 is now complete. Financial institutions in Europe have adopted ISO 20022 messages, supported with specific implementation guidelines, to meet the specific Single Euro Payments Area (SEPA) community requirements. ISO 20022 is now the common standard for SEPA compliant payments and has replaced a multitude of domestic standards.

As adoption progresses further, some players will find it easier to use ISO 20022 for all their interbank payments. Furthermore, banks that have gone through an implementation in the interbank area are also starting to look at implementation in the payment initiation and reporting space. By the end of 2025, adoption of ISO 20022 throughout the correspondent banking domain will be complete.

ISO 20022 for Cross-border Payments – Preparation Starts Now

By the end of 2025, ISO 20022 will have become the de facto standard for global cross-border payments. The payments world will enjoy some specific advantages:

- » **Better, richer, higher-quality data exchanges:** ISO 20022 messages can contain more and richer data than their MT equivalent. This richer data will meet some long-term demand from customers (who want more remittance information carried with the payment instruction), regulators and risk managers (who want better assurance that screening and testing measures are effective) and business managers (who want to be able to mine databases of payments for insights into customer preferences).
- » **New capabilities:** ISO 20022 messages, with their richer and better-structured data content, offer line-of-business managers the ability to improve and innovate banking products faster and better than MTs.
- » **Improved operational efficiency:** ISO 20022 messages will lead to higher end-to-end STP rates, with fewer false positives arising from poor-quality risk-bearing information in payments-related exchanges.

Bearing these clear goals in mind, the community of financial institutions involved in payments and reporting has joined many of the world's premier payments market infrastructures (including the Federal Reserve and The Clearing House in the US, the Bank of England in the UK, the Eurosystem in the EU and HKICL in Hong Kong) in transitioning to ISO 20022 in the same time frame. In scope is the entire network of more than 11,000 banks involved in interbank (and inter-institution) payments on the SWIFT platform, as well as the banks connected to the 100+ market infrastructures that are adopting or planning to adopt ISO 20022.

From Coexistence to Interoperability

To continue with our language analogy, does everyone use translators to communicate with foreigners? Of course not; most people have some knowledge of other languages and sometimes one of the participants in the conversation will revert to an ‘internal’ translation and switch to the language of the conversation partner. Often, both participants settle on a *lingua franca* (English, Swahili, Hindi), whereby both parties translate internally to and from this third language. Life is also made easier by the fact that most service providers (telecommunications, banks, governments) allow customers to work with them in the language of their choice.

Financial institutions are no different. Many use their own internal formats to store information and exchange it between applications. They then map this information to whatever format is needed for the outside world. Even when these outside formats change, they often continue to use the old version internally and map it to the new format before sending it out. It’s true that the securities industry migrated from ISO 7775 to ISO 15022 in 2004, but many securities players still use ISO 7775 internally and with some of their customers. Similarly, in 2003, SWIFT replaced its workhorse MT 100 Customer Transfer with a new format, the MT 103 Single Customer Credit Transfer, but several institutions still use the MT 100 internally. Typically, these institutions find it cheaper to map/transform the information to and from the new format than to change their legacy applications.

For centuries, people dreamt of a common language (for example, Esperanto) to breach the communication gap. However, this dream never materialised. Standardisers shared a similar dream over 10 years ago and are now facing the same issue: multiple standards aren’t going away any time soon. Therefore, coexistence isn’t a short-term situation, and the challenge becomes one of interoperability between different standards.

Interoperability products and services

Interoperability refers to the seamless execution of a business process by various counterparties with different levels of automation and time-to-market requirements or capacity. There are many



REMEMBER

aspects to interoperability, but the ability to map different messaging standards is an important element.

Rapid developments in software technology make mapping increasingly feasible and cheap. Given a set of rules, interoperability tools (such as middleware components) can easily transform information from one message standard/syntax to another. Let's take an example of the simple credit transfer message mentioned in Chapter 1.

Figure 2-1 illustrates the debtor and debtor agent details as shown in the form of a SWIFT MT 103 and an ISO 20022 pacs.008 message. Arrows represent the mapping of data from one message to the other.

	MT 103	Pacs.008.001.02
Example 1: identification of the debtor agent	:52A:EXABNL2U	<DbtrAgt> <FinInstnId> → <BIC>EXABNL2U</BIC> </FinInstnId> </DbtrAgt>
Example 2: account number of the debtor	:50F:/8754219990 1/ACME NV. 2/AMSTEL 344 3/NL/AMSTERDAM	<DbtrAcct> <Id> → <Othr> <Id>8754219990</Id> </Othr> </Id> </DbtrAcct> <Dbtr>
Example 3: name and contact details of the debtor	:50F:/8754219990 1/ACME NV. 2/AMSTEL 344 3/NL/AMSTERDAM	<Nm>ACME NV.</Nm> <PstlAdr> <StrtNm>Amstel</StrtNm> <BldgNb>344</BldgNb> <TwnNm>Amsterdam</TwnNm> <Ctry>NL</Ctry> </PstlAdr> </Dbtr>

FIGURE 2-1: Mapping an MT103 to an ISO 20022 Credit Transfer.



REMEMBER

Middleware is software that can adapt the outputs of one system to the inputs of another, so that they can communicate. What middleware needs is a set of mapping rules that tells it to take the information from one field in the MT message and move it to the correct corresponding element in the ISO 20022 message. In the first example, the information in field ':52A:' is moved to the BIC element in the component called 'DebtorAgent'. The mapping is straightforward as this field in MT has only one equivalent element in the ISO 20022 message.

In the second example, the information on the first line of field ':50F:' is moved to the account identification element in the component called 'DebtorAccount'.

The third example is more complex: part of the information in the MT field :50F: has to be split into the ISO Name and Postal-Address elements in the component called 'Debtor'. Sometimes information may not fit in the field or the element in the destination message, in which case the overflow needs to be inserted elsewhere or dropped. The good news is that such mapping and translations are increasingly available between commonly used standards, and interoperability tools (such as integration components) enable users to configure their middleware to execute such mappings. The increasing use and availability of electronic dictionaries makes this even easier.

ISO 20022, the foundation of interoperability

We've claimed that ISO 20022 is the way to unify standards and syntaxes, and we've explained how ISO 20022 can interoperate with other standards. We'll now explain how ISO 20022 can further facilitate interoperability by acting as an *interoperability hub*.

In foreign exchange, deals involving less common currency pairs are generally carried out over a hub (in this case, a trading portal), usually in US dollars (USD) or in Euros (EUR). For example, the Thai Baht is first converted into USD, after which the USD can be traded for, say, Bolivian Pesos. Similarly, translation and mapping rules are generally only available between the most common standards. This is where ISO 20022 increasingly plays the role of interoperability hub; work is underway to map the information in many standards into ISO 20022.

Look at the example of the *International Payments Framework* (IPF), in which two infrastructures on different continents use different syntaxes and where ISO 20022 enables translation. USD transfers for Europe initiated in the US Automated Clearing House (ACH), using the NACHA proprietary format will first be mapped into ISO 20022 as a common format. The message is then sent to the European participants, who will map the incoming ISO 20022 message into an outgoing ISO 20022 transfer message. You can see an example of this mapping system in Figure 2-2.

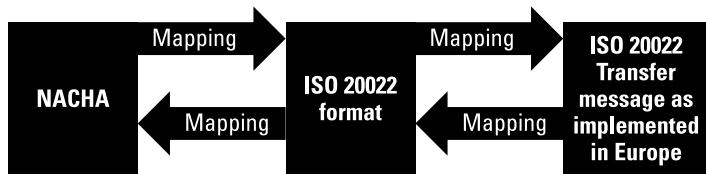


FIGURE 2-2: Mapping from a US NACHA payment to a European ISO 20022 message.

ISO 20022 Implementation

As ISO 20022 adoption increases across the Financial Industry, it will impact different types of players in a variety of ways. The following sections cover some of the main cases.

Small player in a single business area with mature standards

If you're a small player that's active in a single business area, then generally you should be able to adopt ISO 20022 at your own pace (as long as you're fully ready to support payments by the end of 2025). Most large counterparties and service providers are equipped to continue to support existing formats, for example, by using the interoperability tools described earlier in the chapter.

Focused player in a business where ISO 20022 standards are heavily used

Focused players in areas such as European retail payments or the funds industry need ISO 20022 to operate. Players with legacy systems that use existing standards (domestic, proprietary or other) may decide not to migrate these systems to ISO 20022, but instead rely on mapping at the middleware level.

For players facing new investments, however, it makes sense to be ISO 20022 compatible from the start. Examples could be transfer agents in Asia that are making investments to replace the current fax and phone communications, and participants of securities or FX market infrastructures.

A side-benefit of the ISO 20022 approach for new players is that you can use all of the existing data definitions from published ISO 20022 content as the basis for defining your internal data structures. This is possible thanks to the separation between the semantic layer and the message layer and the consistent usage of the dictionary.



TIP

Implementers need to maintain appropriate decoupling of the internal versus external structures through proper architectural layers but using internal structures close to the standard significantly simplifies integration tasks, since a lot of the mappings would become very straightforward.

Global financial institution that's active in many businesses

You deal with a multiplicity of languages and formats on a daily basis: many different messaging formats across geographies and businesses, and large complex legacy systems that are very expensive to change. It is also likely that your institution already uses enterprise scale middleware – sometimes known as Enterprise Application Integration (EAI) software – to connect applications and communications interfaces, mapping and transforming information as needed. In a highly simplified form, your overall architecture could look similar to Figure 2–3.

This approach insulates your channels and back-office applications from changes in the standard by isolating ISO 20022-specific definitions and processing in the EAI software. It also enables you to reuse common functionality, such as network connectivity, across multiple implementations. Typical EAI software includes features for mapping data from proprietary internal formats or other standards to and from ISO 20022, enriching messages with data from other systems and orchestrating message flows. EAI also features a range of adaptors that connect to standard data exchange or storage mechanisms – databases, message queues, mail servers and so on – and standard software applications, such as Enterprise Resource Planning (ERP) systems.

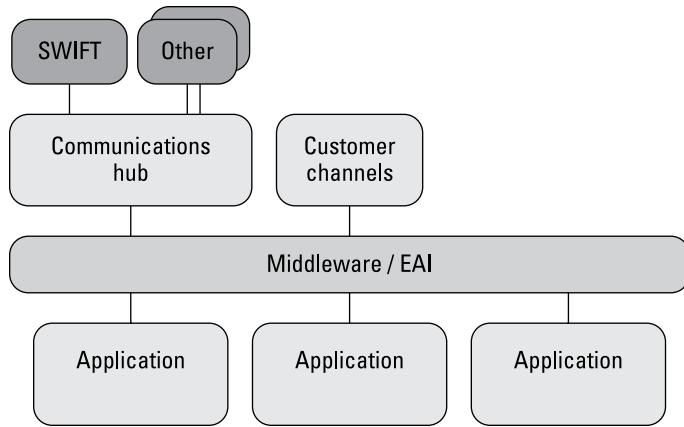


FIGURE 2-3: Enterprise Application Integration software (middleware) connects applications to each other and to external networks such as SWIFT.

Implementation Considerations

You have many questions to consider when implementing the ISO 20022 standard, including:

- » Which business processes does ISO 20022 support?
- » What are the touchpoints in my organisation and my application landscape?
- » How will I get message data into – and out of – my applications?
- » What data do I need to fulfil the minimum requirements of the messages I'll generate? (This may not just be the mandatory fields; depending on the context in which the message is to be used and the service to be offered, other data may also be required.)
- » Where can I find the data – is it in my back-office system already? If not, can I find it elsewhere and use my EAI's enrichment capability to add it to a message?
- » What business event should trigger the production of outgoing messages?
- » What processing steps are required? For example, do I need to batch and un-batch messages?
- » Is manual authorisation of messages required?

- » What should I do with invalid or rejected messages?
- » If my solution requires a conversational message processing style (request-response), what do I need to do to accept the request and create the response?
- » What is the messaging style? (Depending on the type of solution, messages may be exchanged with partners interactively, on a store-and-forward basis or in batch files.)



TIP

By considering these questions, it should be possible to decide on the most efficient way to implement an ISO 20022 messaging solution and determine the impact on existing systems and processes. In some cases – for example, when replacing a legacy format with ISO 20022 – much of the ‘plumbing’ will already exist and the principal effort will be in adapting to the new message formats and connectivity requirements. In other cases – for example, implementing a new solution for a new market – the impact on the existing landscape may be more dramatic. The good news is that, using an EAI-based approach, much of the logic built for one solution can be reused in another. Therefore, the effort of implementing new solutions decreases dramatically over time. It’s possible to have an overall strategic picture of ISO 20022 adoption, towards which you migrate piecemeal, responding to business drivers – but with each implementation smoothing the way for those that follow.

Cost of implementation

How much does implementation cost? This is a difficult question because no two institutions are alike. However, the fact that ISO 20022 mostly uses XML syntax does help, not only because the popularity of XML has driven commoditisation in the XML tools market, and first-class integration tools are available from many vendors and open-source projects; but also because XML skills are increasingly easy to find. The balance of implementation cost has, therefore, tilted away from technology concerns towards business analysis. From a business analysis point of view, the consistency across data element definitions enforced by the dictionary (and the separation of the semantic layer) significantly simplifies the exercise, especially as people build up ISO 20022-specific skills. With the critical mass that ISO 20022 has in the industry, the likelihood of reusing content you’ve seen before is very high indeed.

Building for the future

ISO 20022 messages and API resources are designed to support current and future business needs around the world. To this end, specifications include international characters in narrative fields, long identifiers and references, large monetary amounts and precise interest and exchange rates. If you're a technical architect or a designer of back-office systems, you should consider both the semantics of ISO 20022, which provide an internationally agreed common vocabulary for financial industry concepts, and the physical forms in which these concepts are represented. In this way, you can guarantee that systems will be aligned with ISO 20022 for messaging and API resources purposes, but also with the industry's collective wisdom regarding the best ways to represent financial data for present and future needs.

IN THIS CHAPTER

- » Delving into ISO 20022 governance
- » Explaining the role of the Registration Authority
- » Meeting the technical support group

Chapter 3

Understanding the ISO 20022 Organisation

The ISO 20022 standard is open, which means that any organisation can develop and improve the ISO 20022 catalogue. You don't need to be affiliated with ISO, but you are obliged to comply with the rules set out in the ISO 20022 standard. The standard describes the method to develop the messages, definitions, and API resources as well as the process to get them approved and published as part of the official portfolio of ISO 20022 publications.

Thirty-seven organisations have already embarked on developing ISO 20022 messages.

A governance structure containing a series of bodies and procedures has been created to monitor the use of the standard and to help organisations develop successful and compliant messages. You can find more information at www.iso20022.org.

In this chapter we describe the process for the development of a new set of messages, API resources and the relevant bodies for each of the steps.

Business Justification Submission and Approval



TIP

If you want to develop ISO 20022 messages, or API resources, you first must introduce a *business justification* describing the scope and purpose of the messages or resource and their benefits for future users. The business justification is reviewed and approved by the ISO 20022 Registration Management Group (RMG). The RMG is the highest ISO 20022 body supervising the overall process. It's composed of senior industry experts representing countries or international organisations.

The RMG analyse your business justification and assess the need for the message or API resource development, check that the messages or resources don't overlap with existing ISO 20022 messages or resources, and then verify their attractiveness for the international financial community. Specifically, the RMG judges whether the application meets key criteria. These include:

- » Is there a clear business need for these messages or API resources?
- » Does the scope address the requirements of the targeted users?



TIP

For updates or changes to existing messages or API resources, a Change Request (CR) needs to be submitted. The submission of a CR is either done by the original submitter of the Business Justification (BJ) for that message, message set, or API resource, or by a group of submitters that includes the original submitter of the BJ.

Developing Candidate ISO 20022 Messages and API Resources

Approval of your business justification gives you the green light to start developing the messages or API resources. Before you start, you need to contact the ISO 20022 Registration Authority (RA).

The RA is the guardian of the ISO 20022 repository, which includes all existing ISO 20022 messages, API resources and the dictionary of ISO 20022 components. SWIFT acts as the RA under a contractual agreement with ISO.

The RA provides the input and guidelines required to develop syntax independent logical message models or API resources. For this, you can reuse existing ISO 20022 message components or ask the RA to create new components, if necessary.



TIP

You need a *modelling tool* to design the message models. SWIFT can provide you with the Standards Editors tool, which was developed by SWIFT to use for its own development of ISO 20022 message models and, in its role of ISO 20022 RA, to verify the compliance of ISO 20022 message models and API resources submitted by others.

Where possible, the RA assists submitting organisations during the development of the message models or API resources, to ensure that they're adhering to rules, and to answer questions. When the message models or API resources are ready (these are called *candidate ISO 20022 messages or resources*), the RA validates their compliance and generates evaluation documentation, which includes the full description of your messages and the derived ISO 20022 XML or API resources and the derived JSON schemas.

Approving Candidate ISO 20022 Messages and API Resources

The RA distributes the evaluation documentation to the appropriate ISO 20022 Standards Evaluation Groups (SEGs) for validation. The SEGs are groups of industry experts, representing the (future) users of ISO 20022 messages. There are currently five SEGs, each covering a specific business domain: payments, securities (including derivatives), foreign exchange, trade services and cards.

Over 400 experts, representing 23 countries and 18 international organisations, currently participate in the ISO 20022 SEGs. Their role is to ensure that your candidate messages and API resources truly address the requirements of the community of users they represent.



REMEMBER

You're required to participate in the evaluation of your candidate messages or API resources. The SEG may require that you make some changes to ensure future adoption of your messages or API resources by the international community.

Publishing ISO 20022 Messages and API Resources

Upon approval by the SEG, your messages or API resources become *ISO 20022 compliant messages or resources*.

The RA will officially register your messages, or API resources, and any new components in the ISO 20022 repository, and publish them at www.iso20022.org. The messages or API resources and their schemas are made available, free of charge, to the entire community, but you remain the owner of the messages or API resources, and you'll be contacted in case users request a modification to the messages or API resources.

MEETING THE TECHNICAL SUPPORT GROUP (TSG)

One more ISO 20022 group might be of interest to you.

The Technical Support Group advises submitting organisations, the RMG, the RA and the SEGs on the most appropriate and consistent interpretation of the ISO 20022 standard. You can get in touch via www.iso20022.org/contact-us.

IN THIS CHAPTER

- » Understanding SWIFT's role in the ISO 20022 standard
- » Discovering tools and services for submitters
- » Using tools and services for implementers

Chapter 4

A Perfect Partnership: ISO 20022 and SWIFT

ISO 20022 grew out of a previous standard in the securities messaging space, ISO 15022. SWIFT was one of the key contributors to ISO 15022 and maintained this leading role in the development of ISO 20022. This chapter outlines SWIFT's role in the development of ISO 20022, and the services SWIFT offers to standard setters and to users of the standard.

Understanding SWIFT's Role in the ISO 20022 Standard

SWIFT's commitment to ISO 20022 is broad and deep. In 2000, SWIFT drafted the original ISO 20022 specification as part of the ISO working group that developed the standard.

In June 2004, SWIFT was appointed Registration Authority (RA) for the standard – a role that SWIFT continues to fulfil. The RA is responsible for maintaining and publishing the central repository of ISO 20022 content and ensuring its integrity. The first formal edition of the standard was approved and published by ISO in December of 2004. Besides the RA support for message and

definition development explained in the previous chapter, SWIFT, in its role of RA, also developed and continues to support and update ISO 20022 web resources, including www.iso20022.org and the web query tool shown in Chapter 1.

The RMG – the body responsible for the overall supervision of the registration process – was formed in January 2005. SWIFT sends delegations representing both the RA and SWIFT to RMG meetings.

In June 2005, the first two ISO 20022 Standards Evaluation Groups (SEG) were formed for the business domains of Payments and Securities. In 2006, two more SEGs were formed for Trade and Foreign Exchange business, followed in 2008 by a new SEG for Cards. In 2016, a specific Derivatives sub-SEG was created to work within the Securities SEG. The role of the SEGs is to review submitted message definitions in terms of their business content – SWIFT is represented on all SEGs.

In addition to the expertise that SWIFT, as RA, contributes to ensure the validity of the business content of the standard, SWIFT is also active on the technical front. It participates in periodic technical reviews of different aspects of the standard to ensure feedback is considered and that it improves and adapts to constantly changing business, market and technology environments. In many ways, SWIFT's work is never done!

The ISO 20022 standard makes rigorous demands on the quality of submitted content. The RA is responsible for ensuring that content meets these demands before it's officially registered.



REMEMBER

SWIFT is the major submitter of content to the standard. Seventy-five per cent of the message definitions currently included in the ISO 20022 catalogue were developed by SWIFT, sometimes on behalf of other submitting organisations. SWIFT also actively promotes ISO 20022 in its commercial offerings, in the media and at industry events.



TIP

SWIFT also offers several tools and services for developers of ISO 20022 content, to help submitting organisations develop and submit content that conforms to the standard.

Standards Editor

The Standards Editor is a customised modelling tool that's used within SWIFT to create standards content in the ISO 20022 repository and to generate documentation and XML schemas. SWIFT provides a 'lite' version of the same tool, called the Editor, which can be used by other submitting organisations.

SWIFTNet

SWIFTNet is SWIFT's secure IP network, which connects over 11,000 financial institutions and corporations around the world.

SWIFT offers a variety of services over SWIFTNet for users of ISO 20022 messages, including interactive messaging (which includes message validation) and file transfer.

For more information about SWIFT's network services, visit www.swift.com.

Implementation tools and services



REMEMBER

Many tools exist to support coexistence and interoperability. Some of these tools are provided directly by SWIFT, but many others are available from SWIFT partners with SWIFT providing key elements and input.

Translation and mapping rules

For some key areas, such as high-value payments, SWIFT has developed mapping rules between SWIFT's existing and widely used MT messages and ISO 20022 messages. These were developed with key members of the SWIFT community and are made available to members and partners on MyStandards.

Machine readable standards definitions

You can download the ISO 20022 message models and dictionary that are the source for ISO 20022 content from www.iso20022.org, where you will also find the message schemas and documentation. In addition, SWIFT can provide several useful representations of the ISO 20022 content, which can be used to accelerate the development of artefacts such as input screens and user documentation.

Middleware and interface products

SWIFT enables its own interface products to support ISO 20022, as do many other vendors of connectivity and middleware products.

Standards management tools

MyStandards is a web-based platform provided by SWIFT to facilitate the management and implementation of ISO 20022 (and FIN MT) standards and related market practice information.

Everyone can browse the ISO 20022 standards in MyStandards on www.swift.com/mystandards.

Implementation consultancy

SWIFT provides a variety of consulting offerings for ISO 20022 implementation.

Training

SWIFT provides a comprehensive range of self-study modules covering all aspects of ISO 20022 development and implementation. You can find it at <https://www.swift.com/our-solutions/services/swiftsmart>.

As the use of ISO 20022 messaging has increased over the last few years, developing a consistent approach for implementation of ISO 20022 solutions has become increasingly important. Consistency is required both in the way that message standards are used and how releases are managed.

In order to promote harmonisation, SWIFT has launched an industry programme to ensure a cost-effective and seamless adoption of ISO 20022 by the Payments community.

You can see more details at www.swift.com/standards/iso-20022-harmonisation-programme.

IN THIS CHAPTER

- » Using the Dictionary and web query tool
- » Making the most of interoperability
- » Ensuring a high level of business validation

Chapter 5

Ten Reasons to Adopt ISO 20022

Hopefully, this book has told you everything you need to know about ISO 20022.

Here are the top ten reasons why ISO 20022 is right for your business:

- » The ISO 20022 standard has a clearly defined and well-managed global governance process, open to anyone in the industry who wants to participate.
- » The ISO 20022 Dictionary helps the financial community align and do business by providing concise definitions for common business concepts.
- » ISO 20022 definitions are created collaboratively by industry experts from around the world, to ensure their completeness and accuracy.
- » The Registration Management Group (RMG) has representation from and works actively with other standards bodies to promote interoperability.

- » You can use ISO 20022 definitions as the basis for your own internal communication needs.
- » ISO 20022 mostly uses XML – technical syntaxes which enjoy great support from software platforms and tools. But the standard is designed to allow the use of other syntaxes as new requirements emerge.
- » ISO 20022 schemas provide a high level of business validation, reducing the risk of sending or receiving incorrect data.
- » The ISO 20022 maintenance process enables users to shape the development of the messages on which they rely.
- » ISO 20022 messages are free for anyone to implement on any network.
- » The ISO 20022 web query tool allows anyone to explore the ISO 20022 Dictionary; no special software is required.

IN THIS CHAPTER

- » Providing a common language
- » Enabling flexibility
- » Inviting continuous improvement

Chapter 6

(Almost) Ten Things to Tell Your CIO about ISO 20022

Now that you know all about ISO 20022 and why it's right for your business, tell people about it!

Here are (nearly) ten things about ISO 20022 to be sure to tell your CIO:

- » ISO 20022 is an open standard that anyone can use, and to which anyone can contribute.
- » ISO 20022 is a methodology for defining financial data content – it's a standard for messaging standards as well as for APIs.
- » Currently, over 800 messages have been defined, and many more are on the way.
- » It's not just about messages or APIs – ISO 20022 provides a common language for machines and people to exchange information about financial business. This common language is set out in a formal dictionary.

- » ISO 20022 is a business standard; its principal focus is on the content of the dictionary, rather than the technicalities of how data is exchanged.
- » You can use the dictionary to help translate between messages that use different syntaxes, as well as APIs, and to solve other kinds of problems where a shared understanding of the business is important, such as internal system integration.
- » Although ISO 20022 messages are mostly exchanged in XML, ISO 20022 doesn't depend on a specific message syntax. If a different syntax is required to satisfy a business or technical requirement, or if a new syntax emerges, ISO 20022 can accommodate it.
- » ISO 20022 adoption is gathering pace in major markets around the world. It's already being used by some of the world's largest Securities Financial Market Infrastructures. All institutions who send or receive payments-related MT messages over SWIFT will begin a global transition to ISO 20022. Many of the world's Payments Market Infrastructures have announced plans to make the same change. In regulatory reporting for securities, multiple jurisdictions are standardising around ISO 20022.

IN THIS CHAPTER

- » Delving deeper into languages
- » Discovering trade communications
- » Finding help from SWIFT

Chapter **7**

(More than) Ten Useful Links for Standards Implementers

Feel like you've learnt a lot about ISO 20022 but want to know more? Here's a list of useful URLs for ISO and other standards bodies.

- » ISO 20022: www.iso20022.org
- » SWIFT: www.swift.com
- » ISO 15022: www.iso15022.org
- » FIX Protocol Limited: <http://www.fixtradingcommunity.org>
- » Financial products Markup Language (FpML): www.fpml.org
- » eXtensible Business Reporting Language (XBRL): www.xbrl.org
- » Extensible Markup Language (XML): www.w3.org/XML
- » International Securities Association for Institutional Trade Communication (ISITC): www.isitc.org
- » MyStandards: www.swift.com/mystandards

- » Securities Market Practice Group: www.smpg.info
- » Payments Market Practice Group: www.swift.com/pmpg
- » ISO 20022 Programme Hub: www.swift.com/standards/iso-20022-programme

Glossary

ACH: Automated Clearing House that's used to clear retail payments between banks in a country or region.

Application Programming Interface (API): A connection between computers or between computer programs. An API is a type of software interface, offering a service to other pieces of software.

Business components and elements: Business concepts used and processed to perform the various financial activities, such as 'Account', 'Trade' and 'Party'. Business components are usually characterised by a series of 'business elements'. For example, a 'Trade' will be characterised by business elements such as Trade Date, Trade Time, Trade Price and Trade Place.

Business justification: Document prepared by an organisation wishing to develop and register ISO 20022 content. The document describes the content to be developed, and the purpose and benefits for the industry. It's submitted for the approval of the ISO 20022 Registration Management Group (RMG).

Coexistence: The situation of multiple standards existing at the same time in the same business space. Within SWIFT, this refers to the coexistence between the MT and MX standards. This also refers to the set of measures being taken to make the situation easier to handle by the community (publication of mapping rules, translation services and so on).

Components: See Business components and message components.

Corporate action: An event initiated by a public company that affects the securities issued by the company. Also refers to the sub-domain of the financial services industry related to the management of such events.

CSD: Central Securities Depository. An organisation holding securities to enable book entry transfer of securities. The physical securities may be immobilised by the depository, or securities may be dematerialised (so that they exist only as electronic records).

Dictionary: Part of the ISO 20022 repository that contains all items that can be reused during business modelling and message definition activities.

EAI: Enterprise Application Integration. Middleware to connect applications and communication interfaces. Typical EAI software includes features for mapping data between various formats, enriching messages with data from other systems and orchestrating message flows.

FIN: The messaging service offered by SWIFT for the secure and reliable exchange of MT messages in store-and-forward mode. By extension, the syntax used to format these MTs.

FIX: Financial Information eXchange. A communication protocol designed by the FIX Protocol Limited (FPL) for transmission of messages in specific areas of the securities processing life cycle, for example, the pre-trade and trade spaces.

FpML: Financial products Mark-up Language. A primarily XML-based communication protocol dedicated to OTC derivative contracts processing life cycle. FpML is owned by the International Swaps and Derivatives Association (ISDA).

Giovannini Protocol: In its 2003 report, the Giovannini Group, as advisor to the European Commission, published a report identifying 15 barriers to efficient EU cross-border clearing and settlement. The group, under the chairmanship of Dr Alberto Giovannini, CEO of UNIFORTUNE SGR SpA, stated that SWIFT, through the Securities Market Practice Group (SMPG), should define a solution to eliminate Barrier 1, which cites national differences in information technology and interfaces used by clearing and settlement providers.

InterAct: A private SWIFT network established between members of a financial community for the purpose of exchanging transaction and other financial data.

Interoperability: The capability to easily exchange business information while using different message standards. ISO 20022 promotes global use of syntax-neutral business and message components as a common denominator to achieve interoperability between standards using different syntaxes.

ISO: The International Organization for Standardization. An international standard-setting body, composed of representatives from more than 160 national standards organisations, that promulgates worldwide standards in a variety of domains aiming at facilitating cross-border exchanges of goods, services and techniques.

ISO 15022: An ISO standard that describes the syntax for developing securities messages used mainly to support back-office-related

transaction flows. It replaced the previous securities messaging standard, ISO 7775.

ISO 20022 RA: Registration Authority that offers the services described in an ISO standard on behalf of and under a contractual agreement with the International Organization for Standardization.

ISO 20022 Repository: Repository maintained by the ISO 20022 RA which contains the financial business models, message definitions and components defined in compliance with the ISO 20022 standard.

ISO 20022 RMG: Registration Management Group in charge of the supervision of the ISO 20022 registration process.

ISO 20022 SEG: Standards Evaluation Groups in charge of validating candidate ISO 20022 messages within the scope of the business justification and ensuring that they address the needs of their (future) international community of users.

Message: A set of structured information exchanged between two parties involved in a financial transaction.

Message component and element: A reusable data structure used for assembling message definitions. The data defined in a message component is 'traced' back to the business components and business elements. In simple terms, business components define the business meaning; message components create data structures for messaging.

MI: Market Infrastructure. A system that provides services to the financial industry for trading, clearing and settlement, matching of financial transactions and depository functions.

Middleware: Software that enables data to be exchanged among different systems with standard communication components and tools for formatting, mapping and processing.

MT: The traditional ': tag: value' Message Types for use on the FIN service offered by SWIFT.

MX: An XML message exchanged over SWIFTNet, whether or not it is ISO 20022 compliant.

MyStandards: A web-based platform provided by SWIFT to manage and implement standards and related market practices.

RTGS: Real Time Gross Settlement System.

Semantics: The study of meaning, usually in language. The word is often used in ordinary language to denote a problem of understanding that comes down to word selection or connotation.

SEPA: Single Euro Payment Area.

Standards Editor: Standards work station developed by SWIFT to support the development of ISO 20022 compliant models and messages and the ISO 20022 RA services.

Editor: ‘Lite’ version of the Standards Editor, developed by SWIFT and offered to submitting organisations.

SWIFT: Society for Worldwide Interbank Financial Telecommunication (see www.swift.com).

Syntax: Physical format of a message used to identify and represent the conveyed pieces of information.

T2S: TARGET2 Securities. An initiative of the Eurosystem, TS2 is an IT platform that aims to make settlements across national borders simpler and more cost-efficient.

TARGET2: The Eurosystem-owned European Real Time Gross Settlement (RTGS) system. TARGET2 is one of the largest high-value payment systems in the world.

Taxonomy: The classification in a hierarchical system, typically organised by supertype-subtype relationships, also called generalisation-specialisation relationships or, less formally, parent-child relationships.

TC 68: ISO Technical Committee 68 in charge of all ISO standards to support financial services.

Translation rules: Set of rules to be used to map the pieces of information included in a message expressed in one syntax to the equivalent message expressed in another syntax.

UML: Unified Modeling Language. The visual modelling language used in ISO 20022 to represent the industry business model.

XBRL: eXtensible Business Reporting Language. An open data standard for financial reporting.

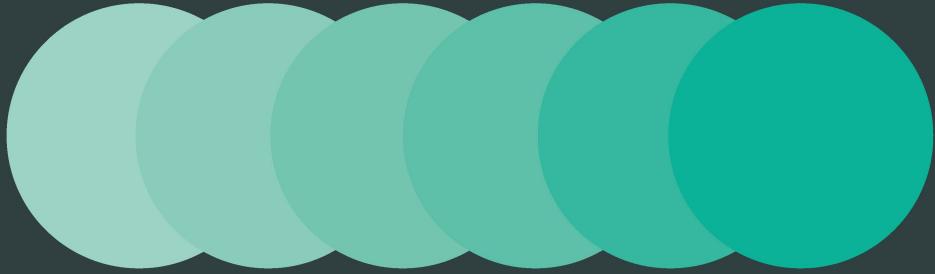
XML: eXtensible Mark-up Language. Popular syntax to encode documents (or messages) electronically on the internet. XML allows communities to define their own identifiers (or tags) and format (or data type) for each component of a message. One of the two official ISO 20022 syntaxes with ASN.1.

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- Why ISO 20022 is more attractive than other message standards
- Why and when you should adopt ISO 20022
- How to sell it to your management



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