INTERNATIONAL STANDARD

ISO 20022-5

Financial services — Universal financial industry message scheme —

Part 5:
Reverse engineering

Services financiers — Schéma universel de messages pour l'industrie financière —

Partie 5: Ingénierie inverse

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Foreword

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

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 20022-5 was prepared by Technical Committee ISO/TC 68, *Financial services*.

This first edition cancels and replaces ISO/TS 20022-5:2004.

ISO 20022 consists of the following parts, under the general title *Financial services — Universal financial industry message scheme*:

— *Part 1: Metamodel*

— *Part 2: UML profile*

— *Part 3: Modelling*

— *Part 4: XML Schema generation*

— *Part 5: Reverse engineering*

— *Part 6: Message transport characteristics*

— *Part 7: Registration*

— *Part 8: ASN.1 generation*

ISO 20022-1:2013, ISO 20022-2:2013, ISO 20022-3:2013, ISO 20022-4:2013, ISO 20022-5:2013, ISO 20022-6:2013, ISO 20022-7:2013 and ISO 20022-8:2013 will be implemented by the Registration Authority by no later than the end of May 2013, at which time support for the concepts set out within them will be effective. Users and potential users of the ISO 20022 series are encouraged to familiarize themselves with the 2013 editions as soon as possible, in order to understand their impact and take advantage of their content as soon as they are implemented by the Registration Authority. For further guidance, please contact the Registration Authority.

For the purposes of research on financial industry message standards, users are encouraged to share their views on ISO 20022:2013 and their priorities for changes to future editions of the document. Click on the link below to take part in the online survey:

http://www.surveymonkey.com/s/20022_2013

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Introduction

This International Standard defines a scalable, methodical process to ensure consistent descriptions of messages throughout the financial services industry.

The purpose of this International Standard is to describe precisely and completely the externally observable aspects of financial services messaging in a way that can be verified independently against operational messaging.

The trigger for the creation of this International Standard was the rapid growth in the scale and sophistication of messaging within financial services during the 1990s using ISO 15022. The financial services industry (from here on referred to as "the industry") created the first version of this International Standard as the successor to ISO 15022 in response to that trigger. Since ISO 15022, the industry has broadened the scope from securities to the entire industry for this International Standard.

This International Standard is based on open technology standards, which historically have evolved more rapidly than the industry itself. Consequently, this International Standard adopted a model-driven approach where the model of the industry's messaging can evolve separately from the evolution of the messaging technology standards. The period during which this International Standard has emerged followed the widespread adoption of the World Wide Web (the Web) for business. XML (eXtensible Mark-up Language) emerged as the *de facto* standard for document representation on the Web and it became the first syntax for ISO 20022.

The modelling process is further refined into three levels which, in addition to the messaging technology standard, is why this International Standard is based on four levels: the Scope level, the Conceptual level, the Logical level and the Physical level.

This four-level approach is based on the first four levels of the Zachman Framework. The remaining two levels of the Zachman Framework are equivalent to the implementations and the operational levels, respectively.

In ISO 20022-1, the first, second and third levels are described in UML (Unified Modelling Language) because it is widely supported and supports multiple levels of abstraction. The models created in accordance with this International Standard are technology independent in that they do not require any particular physical expression or implementation. Such models aim to describe all parts of the message exchange. The models form the definition of the protocol between participants exchanging messages. This International Standard defines a method that describes a process by which these models can be created and maintained by the modellers.

The models and the Physical level artefacts are stored in a central repository, serviced by a Registration Authority. This International Standard's repository is available on the World Wide Web and offers public access for browsing.

The Repository is organized into two areas:

⎯ A DataDictionary containing the industry model elements likely to have further or repeated use.

⎯ A BusinessProcessCatalogue that contains models describing specific message definitions and business processes, and physical syntax implementations.

This International Standard is organized into the following parts.

⎯ ISO 20022-1 describes in MOF (Meta-Object Facility) the metamodel of all the models and the Repository.

— ISO 20022-2 covers the UML profile, a grounding of general UML into a specific subset defined for this International Standard (to be used when UML is selected to define the models).

— ISO 20022-3 describes a modelling method to produce models for this International Standard.

— ISO 20022-4 covers XML schema generation rules to transform a Logical level model into a Physical level description in the syntaxes.

— This part of ISO 20022 covers logical model alignment and reverse engineering of existing message syntaxes.

— ISO 20022-6 covers message transport characteristics that define the quality of service required by the business process definitions so that they can operate successfully.

— ISO 20022-7 describes the process of managing the registration of models and physical syntax implementations.

— ISO 20022-8 gives ASN.1 syntax generation rules to transform a Logical level model into a Physical level description in ASN.1.

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ISO 20022-5:2013
https://standards.iteh.ai/catalog/standards/sist/5d3578cb-1475-4cd1-8ea8-
b3e3a9efa85b/iso-20022-5-2013

Financial services — Universal financial industry message scheme —

Part 5:
Reverse engineering

1   Scope

This part of ISO 20022 was prepared to complement ISO 20022-1. The reverse engineering guidelines explain how to extract relevant information from existing IndustryMessageSets in order to prepare the submission to the ISO 20022 Registration Authority of equivalent, ISO 20022 compliant BusinessTransactions and MessageSets.

The ISO 20022 Repository will contain all ISO 20022 compliant BusinessTransactions and MessageSets, as outlined in ISO 20022-1. The approach to be followed for adding ISO 20022 compliant BusinessTransactions and MessageSets to the Repository can be classified according to the following scenarios.

a)   Case 1:

— No ISO 20022 compliant BusinessTransactions and MessageSets exist.

— No IndustryMessageSet exists.

EXAMPLE   Collective Investment Vehicles.

— Approach: full development of ISO 20022 compliant BusinessTransactions and MessageSets using ISO 20022-3.

b)   Case 2:

— No ISO 20022 compliant BusinessTransactions and MessageSets exist.

— One or more IndustryMessagesets exist.

EXAMPLE   Securities Pre-Trade (FIX MessageSet exists).

— Approach: conversion of the IndustryMessageSet(s) into ISO 20022 compliant BusinessTransactions and MessageSets, using ISO 20022-5.

c)   Case 3:

— ISO 20022 compliant BusinessTransactions and MessageSets exist.

— One or more existing IndustryMessageSets exist as well.

EXAMPLE   Securities Post-Trade (FIX, Omgeo MessageSets exist).

— Approach: comparison of the existing IndustryMessageSet(s) with the ISO 20022 compliant BusinessTransactions and MessageSets and extension of the ISO 20022 compliant BusinessTransactions and MessageSets as necessary, using ISO 20022-5.

This part of ISO 20022 describes the activities of ISO 20022 reverse engineering from the point of view of the user who wants to verify that the business functionality, covered by his own IndustryMessageSet, is covered by ISO 20022 compliant BusinessTransactions and MessageSets. The intention of this part of ISO 20022 is not to attempt to define a "methodology" for reverse engineering.

It describes the following set of required activities.

1) Extract relevant information from existing IndustryMessageSets and compare it to the related information in the ISO 20022 Repository.

2) Use the results of this comparison for the development of ISO 20022 compliant BusinessTransactions and MessageSets.

3) Submit the resulting update requests to the Registration Authority.

NOTE   It is not the intention of reverse engineering to systematically create ISO 20022 compliant versions of all existing IndustryMessageSets. Update requests are always based on a valid business justification.

4) Prepare the migration to the ISO 20022 compliant BusinessTransactions and   MessageSets.

The main objectives of this part of ISO 20022 are to:

— capture the industry knowledge covered by existing IndustryMessageSets;

— build upon former standardization efforts in the industry when building ISO 20022 compliant BusinessTransactions and MessageSets;

— ensure that the resulting ISO 20022 compliant BusinessTransactions and MessageSets cover fully the business scope of existing IndustryMessageSets;

— maximize interoperability between existing IndustryMessageSets and ISO 20022 compliant BusinessTransactions and MessageSets;

— support the migration from existing IndustryMessageSets to ISO 20022 compliant BusinessTransactions and MessageSets.

2   Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20022-1, *Financial services — Universal financial industry message scheme — Part 1: Metamodel*

3   Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20022-1 and the following apply.

3.1
IndustryMessage
message that offers a particular MessageDefinition functionality (possibly multi-functional) and whose MessageDefinition is part of an IndustryMessageSet

3.2
message item
element or field used at a particular place in a MessageDefinition

NOTE   This exact place is typically described by the MessagePath.

3.3
MessagePath
exact position in a particular MessageDefinition

NOTE   This position is uniquely identified by the full hierarchy (i.e. "path") from the message level (i.e. the highest level) down to the element level (i.e. the lowest level).

4   Activities and deliverables

4.1   General

There are four main activities in the ISO 20022 reverse engineering:

—   gap analysis;

—   development of ISO 20022 compliant BusinessTransactions and MessageSets;

—   ISO 20022 registration;

—   preparation of migration.

The major objectives and deliverables related to these activities are described in this clause.

4.2   Gap analysis

The objectives of the gap analysis are to:

a)   determine the BusinessArea of the IndustryMessageSet and identify the corresponding BusinessArea, BusinessProcesses, activities and supporting BusinessTransactions in the ISO 20022 BusinessProcess Catalogue;

b)   compare Business Participants in ISO 20022 BusinessProcesses and BusinessTransactions to the parties that use the IndustryMessages, or that are identified in the IndustryMessages;

c)   verify whether existing MessageInstances offer the complete MessageDefinition functionality that is offered by the IndustryMessages;

d)   evaluate whether the business content of the relevant MessageInstances cover the business content of the individual IndustryMessages;

e)   compare the meaning and the data typing of the used MessageComponentTypes and/or BusinessComponents to the individual IndustryMessage items.

The deliverables of the gap analysis are as follows.

1)   Documentation concerning the coverage, the differences and the gaps between the IndustryMessageSet and the ISO 20022 compliant BusinessTransactions and MessageSets. This documentation concerns the following repository items:

⸺   BusinessAreas;

⸺   BusinessProcesses;

— BusinessTransactions and MessageSets;

— MessageDefinitions (including MessageDefinition Constraints);

— BusinessRoles;

— BusinessComponents (including BusinessElements and Constraints);

— MessageComponentTypes (including MessageElements and Constraints);

— DataTypes.

2) The documentation of the IndustryMessageSet for those repository items that were missing (i.e. the gaps) or for which a difference was identified.

4.3 Development of ISO 20022 compliant BusinessTransactions and MessageSets

The objectives of this activity are to:

— complete the gap analysis with all additional information that is required to define or complete ISO 20022 compliant BusinessTransactions and MessageSets;

— define the required updates and additions to the existing ISO 20022 compliant BusinessTransactions and MessageSets.

This step shall focus only on the identified gaps and differences. It shall verify whether a valid business justification exists to include this additional information to rectify these gaps and differences in the ISO 20022 repository. It shall also take into account that the goal of reverse engineering is not to question (except with respect to business justification), modify or complement the business functionality that is currently supported in the IndustryMessageSet.

The deliverable of this activity is a detailed documentation describing how the existing ISO 20022 compliant BusinessTransactions and MessageSets shall be updated to incorporate the identified gaps and differences.

4.4 ISO 20022 Registration

The objective of this activity is to prepare the information in order for the ISO 20022 Registration Authority to request the update of the ISO 20022 repository with all required additions and modifications.

The deliverables are the requests to the ISO 20022 Registration Authority to add or modify Dictionary Items and/or Catalogue Items.

4.5 Preparation of migration

The objectives of this activity are as follows.

a) To define and document the relationship between the IndustryMessageSet and ISO 20022 compliant BusinessTransactions and MessageSets. The required amount of information will depend on the chosen migration path:

— in case of a "big bang" migration, it will be sufficient to only document the relationship in a way that supports the convergence towards ISO 20022;

— in case of an accepted period of coexistence, there will be a need to have "bi-directional" documentation that not only supports the convergence towards ISO 20022, but also a backwards mapping to the IndustryMessageSets.

b) To define a plan for the migration to the ISO 20022 compliant BusinessTransactions and   MessageSets.

The deliverables of this activity are:

1) the convergence documentation,

2) the coexistence documentation (optional), and

3) the migration plan.

5 Workflow

5.1 General

This clause contains a detailed workflow description of the four main activities in ISO 20022 reverse engineering.

5.2 Gap analysis

5.2.1 General

5.2.1.1 Preliminary remarks

The gap analysis requires considerable expertise and documentation regarding the IndustryMessageSet. In case this documentation is not readily available, it will be necessary to perform a thorough analysis of the IndustryMessageSet and its use (see the first step in Figure 1).

The gap analysis also requires considerable documentation about the ISO 20022 compliant BusinessTransactions and MessageSets. The repository outputs will include this documentation.

Gap analysis is crucial for all subsequent steps.

— Identifying the differences and gaps will define the scope of the subsequent development of ISO 20022 compliant BusinessTransactions and MessageSets and ISO 20022 registration.

— Identifying the overlaps will provide the required information for the convergence documentation and the related migration.