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Financial services — Universal financial industry message scheme —

Part 9: Syntax generation requirements and rules

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

Partie 9: Règles et exigences de construction syntaxique

Reference number
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Foreword

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

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

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

A list of all parts in the ISO 20022 series can be found on the ISO website.

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

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Introduction

The ISO 20022 series defines a scalable, methodical process to ensure consistent descriptions of messages throughout the financial services industry.

The purpose of the ISO 20022 series 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 the ISO 20022 series was the rapid growth in the scale and sophistication of messaging within financial services during the 1990s using the ISO 15022 series. The financial services industry (hereafter referred to as "the industry") created the first version of the ISO 20022 series as the successor to the ISO 15022 series in response to that trigger. Since the ISO 15022 series, the industry has broadened the scope from securities to the entire industry for the ISO 20022 series.

The ISO 20022 series is based on open technology standards, which historically have evolved more rapidly than the industry itself. Consequently, the ISO 20022 series 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 the ISO 20022 series has emerged followed the widespread adoption of the internet for business. The eXtensible Mark-up Language (XML) emerged as the de facto standard for document representation on the internet and it became the first syntax for the ISO 20022 series.

The modelling process is further refined into three levels which, in addition to the messaging technology standard, is why the ISO 20022 series 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[2]. 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 Unified Modelling Language (UML) because it is widely supported and supports multiple levels of abstraction. The models created in accordance with ISO 20022-1 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. ISO 20022-1 defines a process by which these models can be created and maintained by the modellers.

The model artefacts are stored in an ISO 20022 Repository (hereafter referred to as "the Repository"). The Repository and physical level artefacts are exposed in a publicly accessible location, such as a website, serviced by a Registration Authority. The name and contact information of the Registration Authority for the ISO 20022 series can be found at www.iso.org/maintenance_agencies.

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.

The ISO 20022 series is organized into the following parts.

— ISO 20022-1 describes the metamodel of all the models and the Repository according to ISO/IEC 19502:2005 (MOF).

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

— ISO 20022-3 describes a modelling method to produce models for the ISO 20022 series.

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

— ISO 20022-5 covers business concept model interoperability, and logical model alignment and reverse engineering.

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— 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.

— This document describes generic guidelines, which are used to define schema generation rules for any specific syntax.

This document is a set of "meta rules" (i.e. guidelines) which specifies how to develop and document a set of syntax generation rules for specific syntax scheme (e.g. XML, ASN.1 and JSON) from the meta model to facilitate interoperability. Figure 1 depicts the relationship of this document with ISO 20022-1 and specific syntax schemes. A set of generation rules is necessary to transform the logical level of the metamodel defined in ISO 20022-1 to the physical representations.

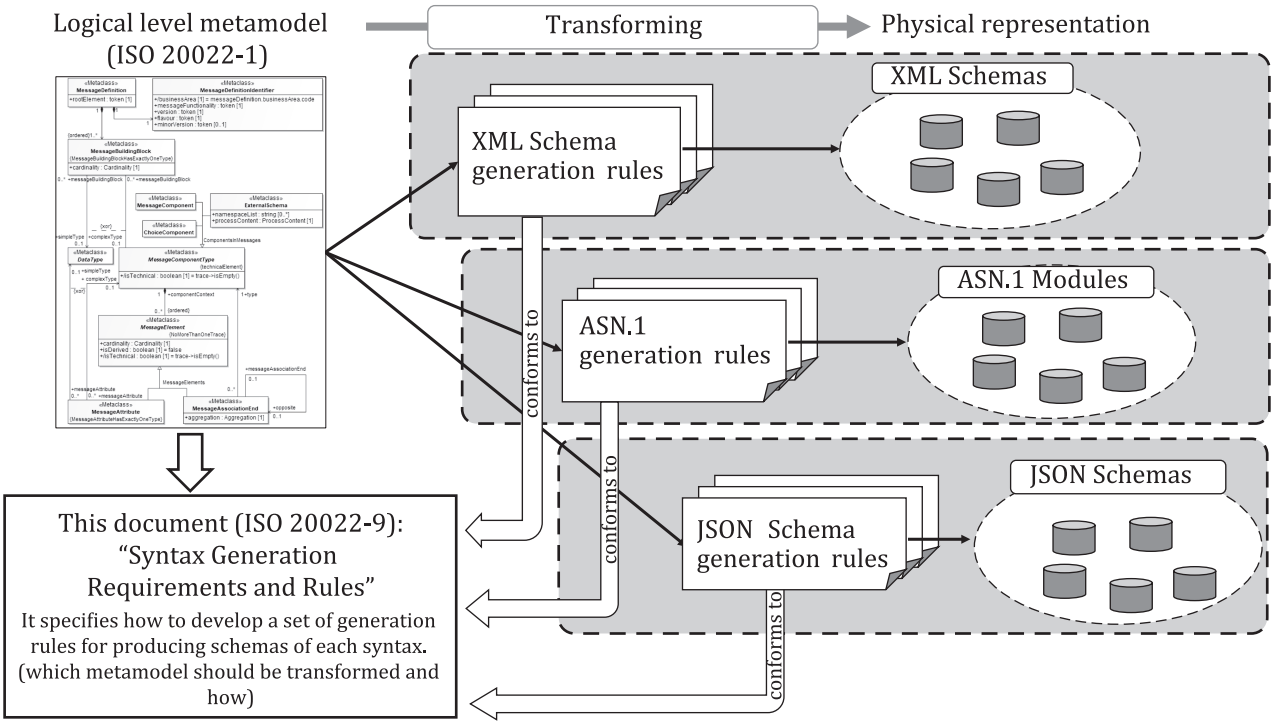


Figure 1 — Relationship of this document with ISO 20022-1 and specific syntaxes

NOTE This document provides a guideline framework to document syntax scheme generation rules which is modelled after ISO 20022-4 and ISO 20022-8. Although ISO 20022-4 and ISO 20022-8 are standalone documents in the ISO 20022 series, they are regarded as conforming to this document. This document is not a specification that supersedes ISO 20022-4 and ISO 20022-8.

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Financial services — Universal financial industry message scheme —

Part 9: Syntax generation requirements and rules

1 Scope

This document complements the ISO 20022 Metamodel, as specified in ISO 20022-1, with generic requirements and guidelines to define specific syntax generation rules for other encodings in order to produce schemas based on each specific syntax generation rules in compliance with this document. Such specific syntaxes include XML, ASN.1 and JSON. (XML and ASN.1 do not imply ISO 20022-4 XML schema generation and ISO 20022-8 ASN.1 generation only. W3C XML Schema, ASN.1 and JSON can be used to express or define a variety of schema types.)

Under this metamodel-driven and syntax-agnostic approach of ISO 20022 series, interoperability is ensured at the conceptual level of the metamodel specified in ISO 20022-1, rather than at the physical level of syntaxes specified in ISO 20022-4 and ISO 20022-8.

In this document, "schema" refers to the "SyntaxMessageScheme" defined in ISO 20022-1. However, for ease of reading, this document will hereafter refer to it as "schema" which is a general term for design documents that define data structures.

The metaclass “MessageDefinition” that is described in ISO 20022-1:2026, Figure 13 is the target of the transformation specified in this document, but the metaclass “MessageChoreography” is not. In other words, this document is only the rules for the syntax of the data representation language. For example, Application Programming Interface (API) specific aspects are outside the scope of this document.

Regarding the concept of conformance to this document, see Annex B.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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

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

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

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