



Implementation Guidelines for ISO 20022 Interbank Messages

SIC and euroSIC

Base Document

Version 2.2, valid from 17 November 2023

Change history

All changes made to this handbook are listed below with the version number, change date, a brief description of the change and reference to the chapters affected.

| Version | Date | Description of the change | Chapter |
|--|------------|--|----------------|
| 2.2 | 28.02.2023 | Modifications per SIC Platform Release 4.10 | |
| | | Revision and restructuring of the entire chapter "Message definitions and XML schemas": | 1.4 |
| | | <ul style="list-style-type: none"> New structure in sub-chapters incl. clarification on usage and design principles of XML schemas | 1.4.1 1.4.2 |
| | | <ul style="list-style-type: none"> New CH schema version for the following messages: <ul style="list-style-type: none"> pacs.009.001.08.ch.03.xsd camt.025.001.05.ch.02.xsd camt.029.001.09.ch.02.xsd camt.056.001.08.ch.03.xsd Details according to the separate document "Overview and Change Log for the XML schemas" | 1.4.3 |
| | | <ul style="list-style-type: none"> New schema versions due to update of ISO 20022 version 2019 (CR2023-SIC4-0003): <ul style="list-style-type: none"> pacs.028.001.03.ch.01.xsd camt.027.001.07.ch.01.xsd camt.087.001.06.ch.01.xsd New and modified Implementation Guidelines: <ul style="list-style-type: none"> "IP Transfer Payments" pacs.009 (new, CR-2023-SIC4-0006) "Status Request" pacs.028 (former "SEPA Request for Status Update", CR2023-SIC4-0004) "Individual Debit Stop" acmt.015 / 010 / 011 (new, CR2023-SIC4-0007) | |
| | | Editorial revision of the chapter "Validation portal" incl. addition of clarifying notes on the functional scope | 1.5 |
| | | Update of the chapter "Reference documents" | 1.6 |
| | | Renaming and editorial modification of the chapter "Message transfers for status request" (former "Message transfers for SEPA query status", CR2023-SIC4-0004) | 2.1.5 |
| | | New chapter "Steering" (CR2023-SIC4-0007) | 2.1.8 |
| | | Addition of information on handling of steering messages in the chapter "Duplicate checking" (CR2023-SIC4-0007) | 3.1 |
| Modifications in the chapter "Character set": <ul style="list-style-type: none"> Removal of the note about restricted character set for SEPA transactions in euroSIC (CR2023-SIC4-0003) Clarification of the current system behavior regarding CDATA | 3.3 | | |
| New payment types / use cases in Table 8: <ul style="list-style-type: none"> IPLQTT: Transfer payment to SIC IP service (CR2023-SIC4-0006) IPLQTF: Transfer payment from SIC IP service (CR2023-SIC4-0006) BXDSTM: BX Digital settlement (CR2023-SIC4-0015) | 3.5 | | |

| | | | |
|------|------------|--|------------|
| 2.1 | 07.04.2022 | Errata per SIC Platform Release 4.9 | |
| | | New CH schema version 02 for messages pacs.002 / pacs.004 / pacs.008 / pacs.009 / camt.003 / camt.004 / camt.006 / camt.019 / camt.052 / camt.054 / camt.056 (Details according to the separate document "Overview and Change Log for the XML schemas") | 1.4 |
| 2.0 | 05.11.2021 | Complete revision due to update of ISO 20022 version 2019 | All |
| | | New chapter "Introduction" (replaces and includes the previous chapters "About this document", "Overview of the documentation structure", "Message definitions", "Validation portal", "Reference documents" and Appendix C "Overview of the ISO 20022 messages and schemas") | 1 |
| | | Revision of "Message definitions and XML schemas" | 1.4 |
| | | Revision of "Reference documents" | 1.6 |
| | | Modifications to "Representation of XML messages", paragraph "Data in tables": Reference to individual column information removed due to complete removal of references to SWIFT FIN MT from all Implementation Guidelines | 2.2 |
| | | Modifications to "Character set": Complete revision due to extension and alignment with the character set for customer-bank messages "Swiss Payments Standards" (SPS), specific notes regarding cross-system payments and individual SEPA use cases added | 3.3 |
| | | Definition of "Using the BIC (Business Identifier Code)" clarified (editorial correction) | 3.4 |
| | | Updates to "Assignment of payment use cases to ISO 20022 messages and payment types" | 3.5 |
| | | Modifications to "Representation of XML messages", paragraph "Elements not used in Switzerland": Modified due to changed design principle (unused elements are removed from schema definitions and are therefore no longer visible) | Appendix A |
| 1.13 | 22.03.2021 | Last version based on the previous ISO20022 version status | |
| 1.0 | 01.01.2014 | First edition | |

Table 1: Change history

Please address all suggestions, corrections, and proposed improvements to this document to:

SIX Interbank Clearing Ltd
 Hardturmstrasse 201
 CH-8005 Zurich
 Email: operations.sic@six-group.com
www.six-group.com

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To improve readability, the use of masculine and feminine forms of language are avoided wherever possible. All personal designations are to be regarded as gender neutral.

If you detect any errors in this document or have any ideas or suggestions for improvements, we would be extremely grateful if you would notify these by e-mail to operations.sic@six-group.com.

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1 Introduction

1.1 Overview of the documentation structure

The Implementation Guidelines consist of a base document (this document) with general information concerning all message types, and several module documents – one each per ISO 20022 message type – with message-specific information, including information on the application-specific handling of individual elements. These specify how the messages are to be submitted to and received from the RTGS systems SIC and euroSIC using the ISO 20022 message standard.

These Implementation Guidelines are modular in structure:

- The base document contains general information which applies to all messages.
- The module documents – one for each ISO 20022 message type – contain message-specific information, including information on the application-specific handling of certain elements.
- An XML schema (XSD) and generic XML sample messages are published for each Implementation Guideline.

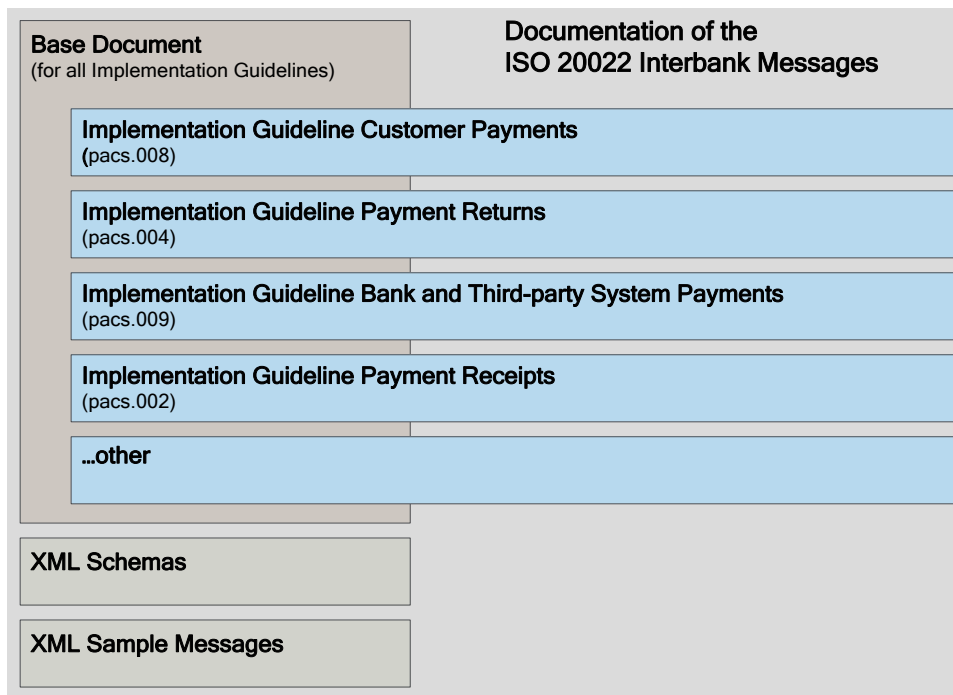


Figure 1: Documentation structure for all ISO 20022 message types

1.2 Target audience

The "Implementation Guidelines for ISO 20022 Interbank Messages" are addressed to all participants of the Swiss RTGS systems SIC and euroSIC.

1.3 Change control

All changes made to this document are listed in the change history with the version number, change date, a brief description of the change and references to the chapters affected.

1.4 Message definitions and XML schemas

1.4.1 General notes

The message definitions for the RTGS systems SIC and euroSIC are based on the ISO 20022 standard. XML schemas for each message-specific Implementation Guideline are also published for the RTGS systems on the www.iso-payments.ch website.

The message definitions in the "Implementation Guidelines for ISO 20022 Interbank Messages" schemas are binding for all RTGS system participants. The published XML schemas serve as an additional component of the message definitions and are used by the RTGS systems for schema checking of incoming ISO 20022 messages.

The published XML schemas can also be used by participants in their own systems and applications. However, it is the exclusive responsibility of the participants to ensure that the XML schemas are interpreted and applied correctly. SIC Ltd accepts no liability whatsoever towards users of the freely available XML schemas in the event of incorrect interpretation.

1.4.2 Design Principles of XML schemas for Interbank Messages

- The schemas published by SIC Ltd are provided with a CH-specific namespace, but are based on the underlying ISO 20022 schemas. This is documented in each XML schema via an introductory text note.

Example:

```
<!--
```

```
(C) Copyright 2022, SIX Interbank Clearing Ltd
XML Schema used in the Swiss Interbank space:
  Suffix part 1: .ch:      Identification as a Swiss (CH) version
  Suffix part 2: .02:     Version of this scheme
```

```
Based on ISO pacs.008.001.08 (urn:iso:std:iso:20022:tech:xsd:pacs.008.001.08)
-->
```

- Elements not used in Switzerland are removed from the XML schemas and are not visible in the illustrations.
- Modifications of the CH schema definitions compared to ISO 20022 (such as removed elements) are indicated in the XML schemas via derived types by means of individual suffixes "_CH_". In addition, the message type and, if necessary, a sequence number are appended. Example: `<xs:complexType name="BranchAndFinancialInstitutionIdentification6_CH_pacs008_2">`
- The definition of the native types according to ISO 20022 is also retained in the CH schema definitions. In the case of changed types, a derivation from the original ISO type is displayed within the corresponding XML schema by means of "restriction". Example: `<xs:restriction base="BranchAndFinancialInstitutionIdentification6">`
- Text elements (for example, with type Max35Text) are not shortened in the XML schemas even if individual length restrictions exist. The verification of such restrictions is checked exclusively by specific business validations.

1.4.3 Overview of message versions, implementation guidelines and schemas

| ISO 20022 Message | CH XML Schema | Implementation Guideline |
|---|---|--|
| pacs.002.001.10 | pacs.002.001.10.ch.02.xsd | Payment Receipts |
| pacs.004.001.09 | pacs.004.001.09.ch.02.xsd | Payment Returns |
| pacs.008.001.08 | pacs.008.001.08.ch.02.xsd | Customer Payments |
| pacs.009.001.08 | pacs.009.001.08.ch.03.xsd | Bank and Third-Party System Payments |
| | | IP Transfer Payments |
| pacs.028.001.03 | pacs.028.001.03.ch.01.xsd | Status Request |
| camt.003.001.07 camt.004.001.08 | camt.003.001.07.ch.02.xsd camt.004.001.08.ch.02.xsd | Settlement Account Query / Query Response |
| camt.005.001.08 camt.006.001.08 | camt.005.001.08.ch.01.xsd camt.006.001.08.ch.02.xsd | Transaction Query / Query Response |
| camt.007.001.08 | camt.007.001.08.ch.01.xsd | Settlement Order Modification |
| camt.008.001.08 | camt.008.001.08.ch.01.xsd | Cancellation |
| camt.019.001.07 | camt.019.001.07.ch.02.xsd | Clearing Day Information |
| camt.025.001.05 | camt.025.001.05.ch.02.xsd | Cash Management Receipts |
| camt.027.001.07 | camt.027.001.07.ch.01.xsd | SEPA Missing Incoming Payment Query* |
| camt.029.001.09 | camt.029.001.09.ch.02.xsd | Return Request Rejection |
| | | SEPA Investigation Resolution* |
| camt.048.001.05 | camt.048.001.05.ch.01.xsd | Liquidity Reservation |
| camt.050.001.05 | camt.050.001.05.ch.01.xsd | Sight Deposit Account Transfers (System Managers) |
| camt.052.001.08 | camt.052.001.08.ch.02.xsd | Recapitulations |
| camt.054.001.08 | camt.054.001.08.ch.02.xsd | Settlement Confirmation |
| camt.056.001.08 | camt.056.001.08.ch.03.xsd | Return Request |
| camt.087.001.06 | camt.087.001.06.ch.01.xsd | SEPA Value Date Adjustment Request* |
| acmt.015.001.03 acmt.010.001.03 acmt.011.001.03 | acmt.015.001.03.ch.01.xsd acmt.010.001.03.ch.01.xsd acmt.011.001.03.ch.01.xsd | Individual Debit Stop |

Table 2: Overview of Messages, Implementation Guidelines and Schemas

* These Implementation Guidelines describe use cases that are currently only permitted for SEPA transactions in euroSIC.

1.5 Validation portal

The implementation of RTGS system messages using the ISO 20022 message standard is supported by a central validation portal.

The goals of the validation portal are:

- To encourage the consistent use of the ISO 20022 message standard, in particular the Implementation Guidelines, by all financial institutions and software vendors.
- To support software developers in the implementation process.
- To prevent errors and problems in the submission and reception of ISO 20022 messages.
- To centralize upstream validation of ISO 20022 messages as a basis for subsequent mandatory testing between financial institutions and RTGS systems.

The validation portal covers the following features:

- Software vendors and financial institutions can upload generated messages to the validation portal via the web.
- The validation results are provided in the form of a generated description of the test result (text and HTML) for viewing as well as downloading.
- The generated description of the validation results distinguishes between an "Error" and a "Hint". While messages with an "Error" are usually rejected by the RTGS systems, a "Hint" is intended to draw attention to possible deviations of the validated message from the recommendations in the Implementation Guidelines. A "Hint" should not result in rejection of the message.

The SIC & euroSIC Validation Portal for Interbank Messages can be accessed at validation.iso-payments.ch/SIC4. Prior registration is required to use the validation portal.

Notes:

- The validation portal does not check changeable parameters or values from external code lists. This includes in particular the following attributes:
 - Valid identifications of parties such as SIC-IID, BIC, LEI
 - Valid currency or country codes
 - Code values according to ISO 20022 External Code Sets
- The validation portal cannot ensure full coverage of all possible message constellations. For this reason, financial institutions and software vendors must carry out tests on the corresponding test environments of the RTGS systems before the productive introduction of the corresponding message definition. Further details regarding testing can be found in the SIC or euroSIC Handbook.

1.6 Reference documents

| Ref | Document | Title | Source |
|------|--|---|-----------|
| [1] | SIC/euroSIC Handbooks | SIC Handbook euroSIC Handbook | SIX |
| [2] | Swiss Business Rules SPS Customer – Bank | ISO 20022 Payments – Swiss Business Rules for Payments and Cash Management for Customer-to-Bank Messages | SIX |
| [3] | Swiss Implementation Guidelines SPS Customer – Bank | ISO 20022 Payments – Swiss Implementation Guidelines for Credit Transfer, Cash Management and Status Report (Customer-to-Bank) | SIX |
| [4] | ISO Messages | ISO 20022 XML Credit Transfers and Related Messages, February 2019: <ul style="list-style-type: none"> • Payments Clearing and Settlement • Cash Management • Exceptions & Investigations ISO 20022 XML Credit Transfers and Related Messages, March 2020: <ul style="list-style-type: none"> • Cash Management • Account Management | ISO 20022 |
| [5] | ISO External code sets | ISO 20022 External code sets | ISO 20022 |
| [6] | SWIFT gpi Market Practices | Annex for Clearing and Settlement through Payments Market Infrastructures | SWIFT |
| [7] | EPC125-05 | SEPA Credit Transfer Scheme Rulebook | EPC |
| [8] | EPC115-06 | SEPA Credit Transfer Scheme Inter-PSP Implementation Guidelines | EPC |
| [9] | EPC132-08 | SEPA Credit Transfer Scheme Customer-To-PSP Implementation Guidelines | EPC |
| [10] | EPC088-22 | EPC Guidance Document – Improve Transparency for Retail Payment End-Users | EPC |

Table 3: Reference documents

| Organization | Link |
|--------------|--|
| SIX | www.iso-payments.ch www.six-group.com/interbank-clearing |
| ISO 20022 | www.iso20022.org |
| EPC | www.europeanpaymentscouncil.eu |
| SWIFT | www.swift.com |

Table 4: Links to relevant internet sites

2 General information

2.1 Message flows

Note about SWIFT InterAct messages

SWIFT InterAct messages received via the RTGS systems must not be acknowledged by the participant.

2.1.1 Payments

The following diagram shows the message flows for payment messages between participants and the respective RTGS systems.

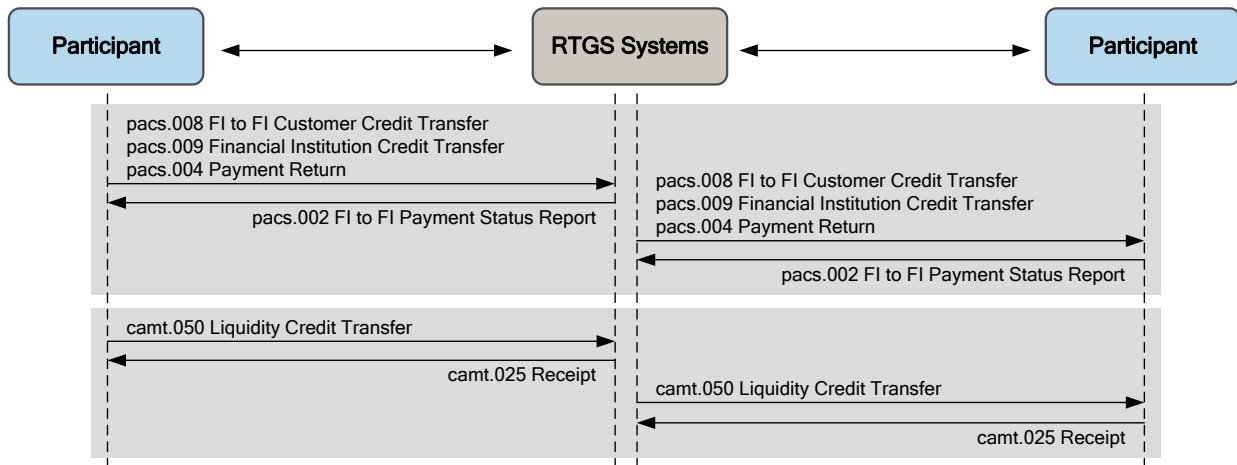


Figure 2: Message flows for payment messages

Commentary on the message flows:

1. A participant sends a "pacs.008" message to the RTGS system.
2. The RTGS system acknowledges receipt by sending a "pacs.002" to this participant.
3. The RTGS system settles the payment and then sends a "pacs.008" message to the participant for whom the payment is intended.
4. That participant acknowledges receipt by sending a "pacs.002" to the RTGS system.

2.1.2 Reconciliation and notification

The following diagram shows the message flows for reconciliation and notification messages between the respective RTGS systems and participants.

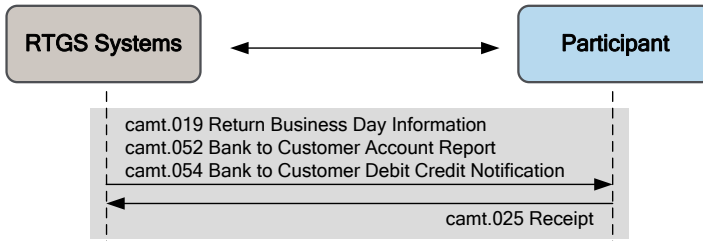


Figure 3: Message flows for reconciliation and notification messages

Commentary on the message flows:

1. The RTGS system sends a "camt.054" message to a participant.
2. The participant acknowledges receipt by sending a "camt.025" to the RTGS system.

2.1.3 Message transfers for the payment return request

The following diagram shows the message flows for a payment return request and rejection of a payment return request. With these messages the system only validates the submitted messages and forwards them to the receiver, but does not really process the messages.

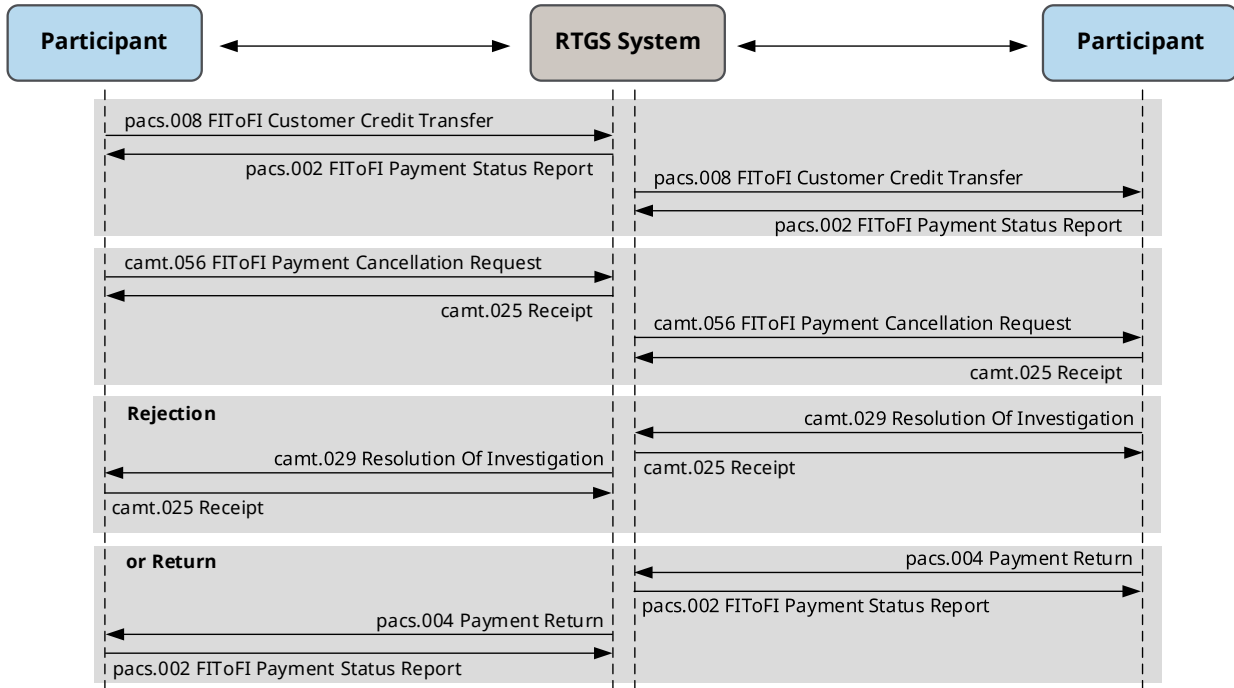


Figure 4: Message flows for payment return requests

Commentary on the message flows (the return request starts at step 3):

1. A participant sends a "pacs.008" message to the RTGS system.
2. The RTGS system settles the payment and then sends a "pacs.008" message to the participant for whom the payment is intended.
3. The Debtor Agent initiates a return request (camt.056).
4. The RTGS system forwards the return request (camt.056) to the Creditor Agent.
5. The Creditor Agent decides to reject the return request and sends a return request rejection (camt.029) to the RTGS system.
6. The RTGS system forwards the return request rejection (camt.029) to the Debtor Agent.
7. As an alternative to the rejection, the Creditor Agent may opt for a return and send a payment return (pacs.004) to the RTGS system.
8. The RTGS system settles the payment return and then sends a "pacs.004" message to the participant for whom the payment return is intended.

2.1.4 Message transfers for SEPA investigations

The following diagram shows the message flows for SEPA investigations. With these messages, the system only validates the submitted messages and forwards them to the receiver, but does not really process the messages.

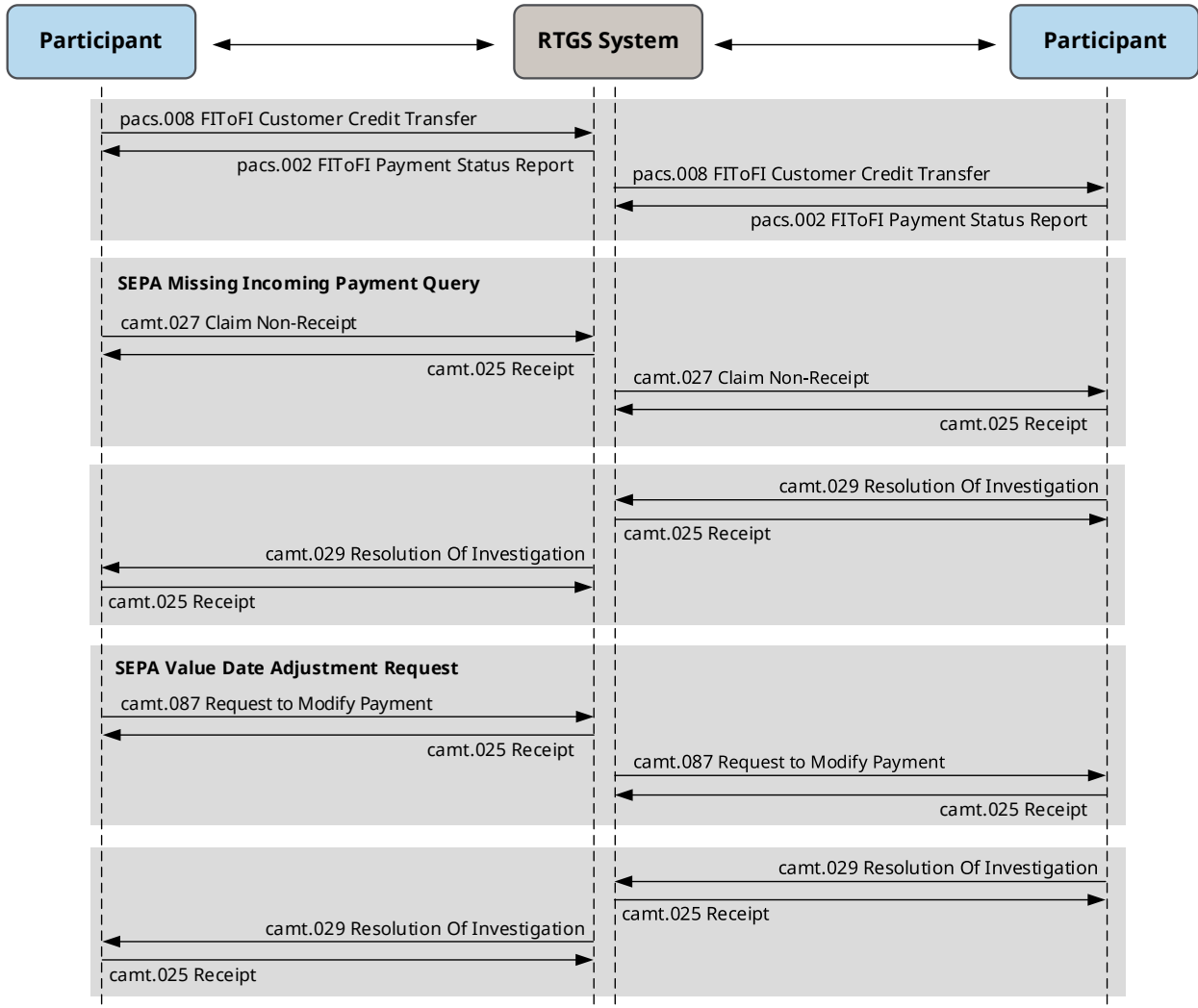


Figure 5: Message flows for SEPA investigations

Commentary on the message flows (the SEPA query starts at step 3):

1. A participant sends a "pacs.008" message to the RTGS system.
2. The RTGS system settles the payment and then sends a "pacs.008" message to the participant for whom the payment is intended.
3. The Debtor Agent initiates a SEPA missing incoming payment query (camt.027).
4. The RTGS system forwards the SEPA missing incoming payment query (camt.027) to the Creditor Agent.
5. The Creditor Agent sends a SEPA resolution of investigation (camt.029) with either a positive or negative answer to the RTGS system.
6. The RTGS system forwards the SEPA resolution of investigation (camt.029) with positive or negative answer to the Debtor Agent.

2.1.5 Message transfers for status request

The following diagram shows the message flows for status request. The status request can be a query for an unanswered "Return Request", an unanswered "SEPA Missing Incoming Payment Query" or an unanswered "SEPA Value Date Adjustment Request". With this message, the system only validates the submitted message and forwards this to the receiver, but does not really process the message.

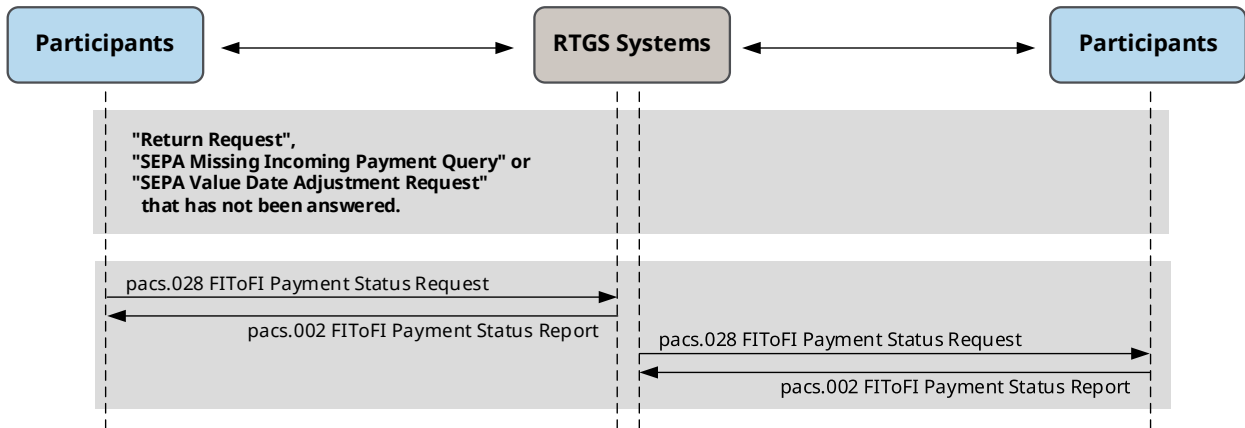


Figure 6: Message flows for SEPA query status

Commentary on the message flows:

1. A Debtor Agent sends a status request (pacs.028) to the RTGS system, because there has been no response to a previously sent "Return Request", "SEPA Missing Incoming Payment Query" or "SEPA Value Date Adjustment Request" message.
2. The RTGS system forwards the status request (pacs.028) to the Creditor Agent.
3. The Creditor Agent responds with a corresponding message* to the RTGS system.
4. The RTGS system forwards the corresponding message* to the Debtor Agent.

* Notes:

- Response to unanswered "Return Request":
"Return" (pacs.004) or "Return Request Rejection" (camt.029).
- Response to unanswered "SEPA Missing Incoming Payment Query":
"SEPA Resolution of Investigation" (camt.029).
- Response to unanswered "SEPA Value Date Adjustment Request":
"SEPA Resolution of Investigation" (camt.029).

2.1.6 Queries

The following diagram shows the message flows for payment query messages between participants and the respective RTGS systems.

Transaction query

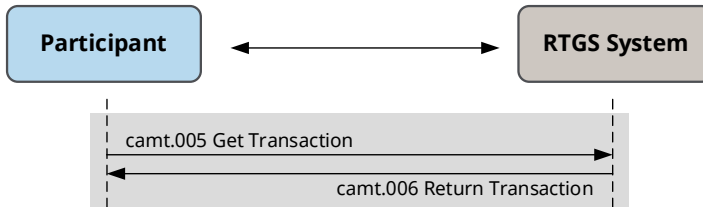


Figure 7: Message flows for transaction query messages

Commentary on the message flows:

1. The participant sends a "camt.005" transaction query message to the RTGS system.
2. The RTGS system acknowledges receipt by sending the participant a "camt.006", containing either the query result or an error message.

Settlement account query

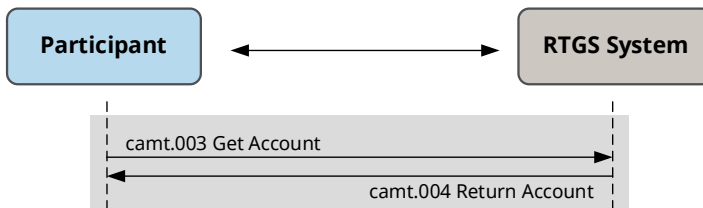


Figure 8: Message flows for settlement account query messages

Commentary on the message flows:

1. The participant sends a "camt.003" settlement account query message to the RTGS system.
2. The RTGS system acknowledges receipt by sending the participant a "camt.004", containing either the query result or an error message.

2.1.7 Modifications

The following diagram shows the message flows for modifications between participants and the respective RTGS systems.

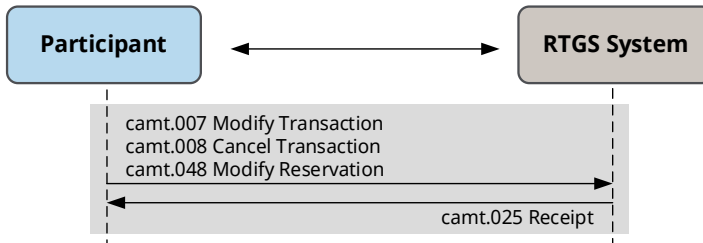


Figure 9: Message flows for modifications

Commentary on the message flows:

1. The participant sends a modification message "camt.007" (settlement order modification), "camt.008" (cancellation) or "camt.048" (liquidity modification) to the RTGS system.
2. The RTGS system acknowledges the receipt by sending a "camt.025" to the participant as confirmation of execution or as an error message.

2.1.8 Steering

The following diagram shows the message flows for steering actions between participants and the respective RTGS systems.

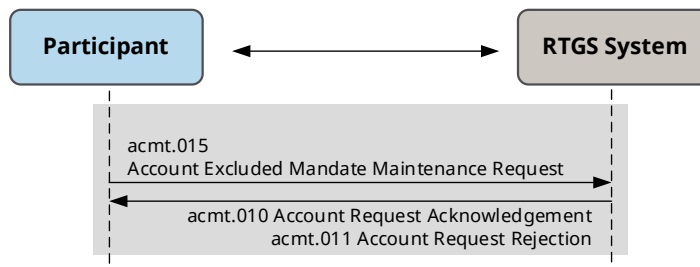


Figure 10: Message flows for steering

Commentary on the message flows:

1. The participant sends a steering message "acmt.015".
2. The RTGS system acknowledges receipt of the ordered action either
 - a. in the positive case as execution confirmation by means of message "acmt.010" or
 - b. in the negative case as a rejection by means of message "acmt.011".

2.2 Representation of XML messages

The logical structure of XML messages is a tree structure. This can be represented in various ways: in diagrams, tables or text. Representation in text is suitable for actual examples of messages, while tables and diagrams are mainly suitable for giving an overview of the XML schemas. The figures shown in the Implementation Guidelines for ISO 20022 Interbank Messages are based on the schema of the Swiss XML message specifications.

XML editors which have the option of graphical representation use symbols which may appear different depending on the type of editor (the illustrations in this document were produced using the editor XMLSpy from Altova GmbH). The main symbols are briefly introduced in Appendix A.

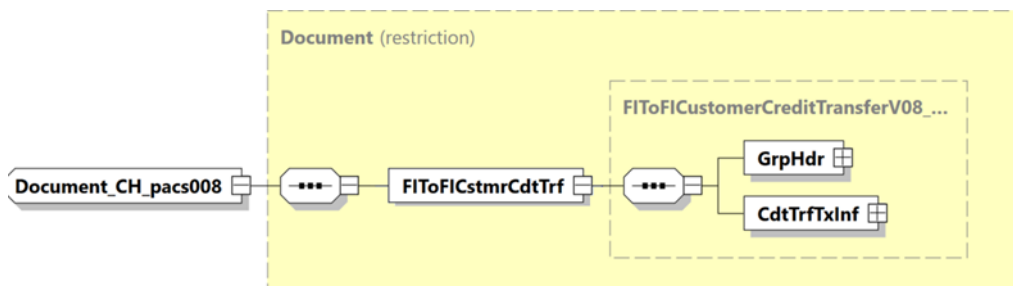


Figure 11: Example of the graphical representation of an XML message

The following conventions apply to the presentation of "Implementation Guidelines for ISO 20022 Interbank Messages":

Description of XML elements

In some publications, the names of XML elements are written as single text strings without spaces, for example "*CreditTransferTransactionInformation*". In the interests of legibility, spaces are generally used in this document.

Data in tables

The tables contain information from the ISO 20022 Standard (Message Item, XML Tag, Multiplicity). The tables also contain information about the Swiss ISO 20022 payment standard as it applies to the RTGS systems.

The first line of each "Definition" column always contains the English name of the technical element highlighted in bold. In the German version of each document, there is a second line that contains the German name in italics. The rest of the text describes the use of the element, and the "Payment Type-specific Definition" column contains more detailed information about its use.

Colors used in the tables

The column headings are marked in **clay brown** for the information from the ISO 20022 standard and **light grey** for the information from the Swiss ISO 20022 payment standard for the RTGS systems. "Parent" elements containing one or more "child" sub-elements are marked in **light blue** in the ISO 20022 columns.

Representation of the tree structure in the tables

To make it easy to know where an element occurs in the tree structure, the Message Item column indicates the hierarchy levels with preceding "+" signs.

For example, the IBAN for the "Debtor Account" is listed as follows:

```
Credit Transfer Transaction Information
+Debtor Account
++Identification
+++IBAN
```

Representation of choices

Elements with a choice are marked in the "XML Tag" column as follows:

```
{Or      for start of the choice
Or}     for end of the choice
```

2.3 Representation of terms from the ISO standard

To be able to better distinguish between terms from the ISO standard and business elements, the Implementation Guidelines for ISO 20022 Interbank Messages use the following representation conventions:

- All terms relating to the underlying ISO standard are written in *italics*.
Exceptions: In the tables of technical definitions that are automatically generated, it is not possible to show individual terms in italics and no italic style is used in headings.
- XML tags are also written in angle brackets. (Example: The transaction status is reported using the `<ReqHdlg>` element. This may only contain the sub-element `<StsCd>`.)
Exception: XML tags separated by forward slashes in path names are written without angle brackets. (Example: The type of reference number can be identified in the element `CdtTrfTxInf/RmtInf/Strd/CdtrRefInf/Tp/CdOrPrtry/Cd`.)
- Names of XML elements are written between quotation marks.
(Example: The "Instructing Agent" is used together with the "Transaction Identification" element and the "Message Identification" for duplicate checking.)

3 Business specifications for interbank messages

3.1 Duplicate checking

For payment messages and message transfers, the RTGS systems perform duplicate checking on two levels:

- Message level
- Payment or transaction level

The two checks are carried out independently of each other.

The RTGS systems only support individual transactions. This means that there must be no errors at either the message level or at the transaction level for the message to be processed correctly.

Duplicate checking is carried out on both levels within the value dates permitted in the RTGS systems. The period therefore extends over the current value date at the time of delivery and two (2) value dates back in time.

If a duplicate is detected during checking at the message and/or transaction levels, the payment is rejected.

Duplicate checking includes the message identification (message level) or the transaction reference (transaction level) in association with identification of the paying or instructing participant.

The following pairs of elements are therefore used for duplicate checking (the appropriate exact elements are listed in the corresponding Implementation Guidelines):

| Level | Element pair |
|------------------------------|--|
| Message level | Message identification paired with the paying or instructing participant |
| Payment or transaction level | Transaction reference paired with the paying or instructing participant |

Table 5: Levels for duplicate checking

Handling for Queries (camt.003 / camt.005), Liquidity Management Participant (camt.007 / camt.008 / camt.048) as well as Steering (actm.015)

No duplicate checking is performed for messages of the type Query, Liquidity Management Participant and Steering.

3.2 Representation conventions

3.2.1 Representation conventions for amount fields

In an XML context, various forms of representation are permitted in the amount fields. To ensure smooth processing, the following specifications apply:

- No use of leading or closing filler characters (space, white space, zero, plus sign).
- The maximum allowed number of decimal points depends on the currency, in accordance with ISO 4217.
- Amounts are always given as absolutes (no preceding characters). Wherever it is technically necessary to show negative amounts (e.g. the balance), the standard provides a separate element for classification purposes (Credit Debit Indicator).

3.2.2 Representation conventions for date fields

In an XML context, various forms of representation are permitted in date fields. To ensure smooth processing, the following representations are defined:

ISODate

Representation in accordance with the W3C specifications: www.w3.org/TR/xmlschema11-2/#date.

Specifying time zones is not supported in the RTGS systems. Dates are interpreted as the local date (Switzerland) or as the RTGS system date. Entering a time zone in an incoming message will cause it to be rejected.

ISODatetime

In contrast to the W3C specifications (www.w3.org/TR/xmlschema11-2/#dateTime), only the following form of representation is supported by the RTGS systems:

| Form of representation | Interpretation in the RTGS systems |
|---|---|
| Local time (YYYY-MM-DDThh:mm:ss) Example: 2021-11-05T10:46:48 | The time entered is interpreted as local time and is considered as the relevant time for all subsequent processing steps. |

Table 6: Representation of ISODatetime

Local time means the current time zone in Switzerland, taking account of summer/winter time (UTC+2 or UTC+1).

All other ways of representing time supported by the "ISODatetime" data type will lead to the submitted message being rejected when it is validated by the RTGS systems.

Exception: This general definition for "ISODatetime" does not apply to the element <CreDtTm>. Here, only the specifications according to W3C are to be considered.

3.3 Character set

Generally speaking, ISO 20022 XML messages can use all characters from the Unicode character set UTF-8 (8-bit Unicode Transformation Format). The message must be UTF-8 encoded, without the BOM – Byte Order Mark.

Only a subset of these characters is actually allowed within the XML messages. This includes the printable characters of the following Unicode blocks:

- Basic-Latin (Unicode point U+0020 – U+007E)
- Latin1-Supplement (Unicode point U+00A0 – U+00FF)
- Latin Extended-A (Unicode point U+0100 – U+017F)

as well as the following additional characters:

- Œ – (LATIN CAPITAL LETTER S WITH COMMA BELOW, Unicode point U+0218)
- œ – (LATIN SMALL LETTER S WITH COMMA BELOW, Unicode point U+0219)
- Ť – (LATIN CAPITAL LETTER T WITH COMMA BELOW, Unicode point U+021A)
- ť – (LATIN SMALL LETTER T WITH COMMA BELOW, Unicode point U+021B)
- € - (EURO SIGN, Unicode point U+20AC)

Notes:

- The range of permitted characters within the interbank message definitions matches that of the "Swiss Payments Standards" customer-bank messages. This allows financial institutions to transport information from payments based on the Swiss recommendations unchanged from the payer's order to the payee's notification without character conversions.
- For cross-system payments that are forwarded by a system participant to another network, the corresponding specifications of these networks must be taken into account and, if necessary, the appropriate character conversions performed. The correct handling of such conversions is the full responsibility of the institutions concerned.

Escapes

The characters below should use the escaped representation (partially optional):

| Character | Description | Escape | Remark |
|-----------|-------------------|--------|-------------------------------|
| & | AMPERSAND | & | Only escape permitted |
| < | LESS-THAN SIGN | < | Only escape permitted |
| > | GREATER-THAN SIGN | > | Escape or character permitted |
| ' | APOSTROPHE | ' | Escape or character permitted |
| " | QUOTATION MARK | " | Escape or character permitted |

Table 7: *Escape characters*

Validation of permitted characters on the schema level

Compliance with the above-mentioned restrictions in text elements is provided by character patterns in the schema. Different sets of characters are permitted depending on the usage of the element:

- **Text fields in general:**

- For general text fields, all printable characters are allowed as per the previous description.
- Pattern: `[\p{IsBasicLatin}\p{IsLatin-1Supplement}\p{IsLatinExtended-A}€$%Tt-[\p{C}]]+`

- **Mandatory references:**

- For the references for message or transaction reference identification at their respective levels, which are mandatory to be used in the context of the duplicate check (see chapter 3.1), only the following restricted character set may be used, which in particular does not allow spaces.
- Pattern: `[A-Za-z0-9+?/:()\.,'\-]*`

Note: This restricted character set also applies to elements referencing one of the previously mentioned references of an original message such as "*Original Message Identification*" (`<OrgnlMsgId>`) or "*Original Transaction Identification*" (`<OrgnlTxId>`).

Using special characters

The following special characters comply with XML syntax but must not be used within text elements/data: tab character (hexadecimal #x9), line feed character (#xA) and carriage return character (#xD).

Using CDATA

The use of CDATA within messages from participants to the RTGS systems is not supported and is ignored. When data is delivered within a CDATA section, the CDATA start and end tags are removed by the RTGS systems and the remaining data content is checked according to the specifications of the corresponding element.

CDATA is only used on payment receipts from RTGS systems to participants resulting from an incorrect payment message, or when answering a query about a single transaction.

3.4 Using the BIC (Business Identifier Code)

Only valid "published BIC"s may be used in all elements intended to indicate a BIC (Business Identifier Code) (<AnyBIC> or <BICFI>).

BICs for financial and non-financial institutions are registered and published by the ISO 9362 Registration Authority in the ISO directory of BICs and consist of eight (8) or eleven (11) contiguous alphanumeric characters.

3.5 Assignment of payment use cases to ISO 20022 messages and payment types

| ISO 20022 message | Use case | Payment type (code) | Name of the payment type |
|--------------------------------------|--|--------------------------------------|--|
| pacs.008 | Customer payment | CSTPMT | Generic customer payment |
| | Direct debit payment | ESRDEB | Direct debit payment (LSV reference) |
| | | IPIDEB | Direct debit payment (IPI reference) |
| | SEPA credit transfer | SEPPMT | SEPA payment |
| SEPFCP | | SEPA fee and/or compensation payment | |
| pacs.009 | FI-to-FI-payment | F2FPMT | FI-to-FI-payment |
| | Cover payment | COVPMT | Cover payment |
| | Compensation payment | CMPPMT | Compensation payment |
| | Sight deposit account transfer by the participant | PPTSD | Sight deposit account transfer by the participant |
| | SECOM settlement | SECSTM | SECOM settlement |
| | Eurex settlement | EUXSTM | Eurex settlement |
| | Repo settlement | REPSTM | Repo settlement |
| | Debit settlement | BCMSTM | Bancomat settlement |
| | | POSSTM | EFT/POS settlement |
| | Terravis settlement | STVSTM | Terravis settlement |
| | Viseca settlement | VISSTM | Viseca settlement |
| | BX Digital settlement | BXDSTM | BX Digital settlement |
| | Transfer payment to SIC IP service | IPLQTT | Transfer payment to SIC IP service |
| Transfer payment from SIC IP service | IPLQTF | Transfer payment from SIC IP service | |
| pacs.004 | Return | CSTRTN | Payment return |
| | | SEPRTN | SEPA payment return |
| camt.050 | Sight deposit account transfer by the system manager | SMTTSD | Sight deposit account transfer by the system manager |
| | Transfer from sight deposit account | SMTFSD | Transfer from sight deposit account |

Table 8: Assignment of payment use cases to ISO 20022 messages and payment types

Appendix A: Symbols used in the XML diagrams

Expand and collapse symbols

Wherever parts of the tree structure can be expanded or collapsed, expand [+] and collapse [-] symbols are added to the symbols in the graphical representation.

These consist of a small square containing either a plus sign or a minus sign.

- ⊕ Expand symbol: when you click on the plus sign, the tree structure is expanded so that subsequent symbols (attributes or so-called child elements) are displayed. The expand symbol then changes to a collapse symbol.
- ⊖ Collapse symbol: when you click on the minus sign, the tree structure is collapsed again, i.e. the subsequent symbols disappear. The collapse symbol then changes to an expand symbol again.

Elements

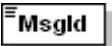

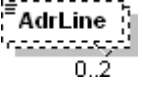
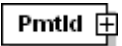

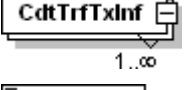
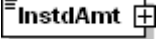
Elements are shown as rectangles containing the name of the element. For mandatory elements, the rectangle is shown with a continuous line, for optional elements the line is dotted.

For complex elements, which, unlike simple elements could contain attributes or other elements (child elements), the rectangle has an expand or collapse symbol on the right.

Three little lines in the top left corner of the rectangle indicate that the element contains data (otherwise the element contains child elements).

Elements which are allowed to occur more than once are shown as two (2) superimposed rectangles. Bottom right, you can see the minimum and maximum number of occurrences.

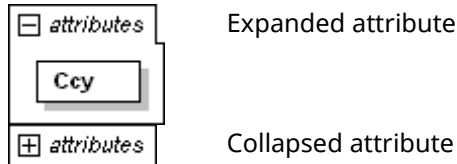
Examples:

| | |
|---|--|
|  | Mandatory simple element |
|  | Optional simple element |
|  | Optional simple element which may occur a maximum of twice |
|  | Mandatory complex element (with child elements) with collapsed tree structure |
|  | Mandatory complex element (with child elements) with expanded tree structure |
|  | Mandatory complex element (with child elements) which can occur any number of times, but at least once |
|  | Mandatory complex element (with attributes) |

Attributes

Attributes are also shown as rectangles, containing the name of the attribute. They are surrounded by a box containing the word "attributes" and an expand or collapse symbol. For mandatory attributes, the rectangle is drawn with a continuous line, and for optional attributes the line is dotted.

Example:



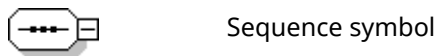
Choice

To the right of a choice symbol, the connecting lines branch off to the possible elements, of which only one can be present in the XML message.



Sequence

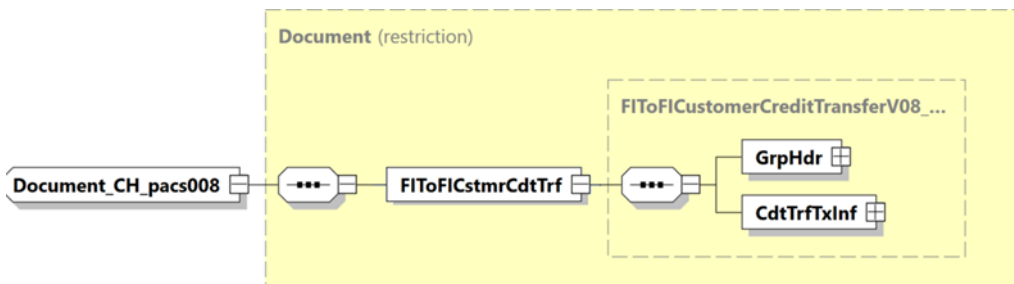
To the right of a sequence symbol, the connecting lines branch off to the elements which are to be used in the XML message in the order shown (optional elements and attributes can of course also be omitted).



Frame

For increased clarity, all the child elements, attributes and other information belonging to a complex element are surrounded by a dotted frame with a yellow shaded background.

Example:



Appendix B: Definition of terms

| Term | Definition |
|---------------|--|
| Concatenation | In concatenation, one external identification (e.g. SIC IID) is connected to another external identification of the same type. Payments in favor of a concatenated identification are automatically routed in the RTGS system to the other identification. Concatenation is a preliminary stage before cancellation. |
| Payment type | One ISO 20022 message type maps to several different forms of payment. To distinguish between them, different payment types are defined (e.g. Generic customer payment, SEPA payment). |
| Use case | A use case describes the interaction between the user and the system that is required in order to achieve a technical objective on the part of the user. The description is in general terms, not related to the specific technical solution. Use cases effectively meet the requirements of the participants. |

Table 9: *Definition of terms*