INTERNATIONAL STANDARD

ISO
20022-5

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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

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.

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.

5.2.1.2 Main steps

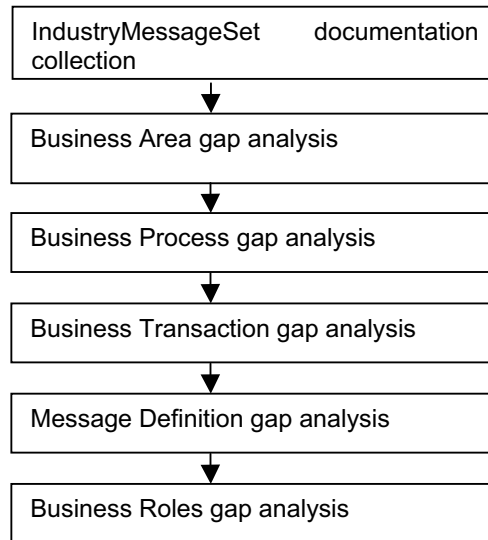The main steps in gap analysis are shown in the following diagram.

| IndustryMessageSet documentation collection |
| Business Area gap analysis |
| Business Process gap analysis |
| Business Transaction gap analysis |
| Message Definition gap analysis |
| Business Roles gap analysis |

Figure 1 — Main steps in gap analysis

These steps, which are described in more detail in subsequent clauses, will be executed in an iterative and incremental way. In the "reverse engineering case 2" scenario (i.e. no existing ISO 20022 compliant BusinessTransactions and MessageSets, as described in the Scope) it is necessary to collect only the IndustryMessageSet documentation.

5.2.2 IndustryMessageSet documentation collection

If the IndustryMessageSet is well documented (i.e. a full description including the BusinessArea, the BusinessProcesses and the BusinessTransactions), this step is limited to the explicit identification of the documentation set.

In many cases, however, the IndustryMessageSet documentation focuses only on the MessageDefinitions and mainly documents the functionality and content of all IndustryMessages. In some cases, even this documentation might be very limited (e.g. restricted to a description of the physical structure). In these cases, it is mandatory to complete the IndustryMessageSet documentation prior to the reverse engineering.

The recommended approach to complete the IndustryMessageSet documentation is depicted in the following diagram and further explained in the text.

1) Start from the description of the IndustryMessage.

2) For each IndustryMessage, describe the MessageDefinition functionality (i.e. the purpose or purposes for which the IndustryMessage can be used). Note that IndustryMessages can be multi-functional and that each function should be described.

3) Describe for each IndustryMessage item the business meaning. The meaning of the Item might depend on the specific MessageDefinition functionality, in case the IndustryMessage is multi-functional. In this case, all meanings shall be described.

```
┌─────────────────────────────────────┐
│     Industry Message description     │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│    MessageDefinition functionality   │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│      Describe business meaning       │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│        Extract BusinessRoles         │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│     Identify BusinessTransactions    │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│      Identify BusinessProcesses      │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│       Identify BusinessAreas         │
└─────────────────────────────────────┘
```
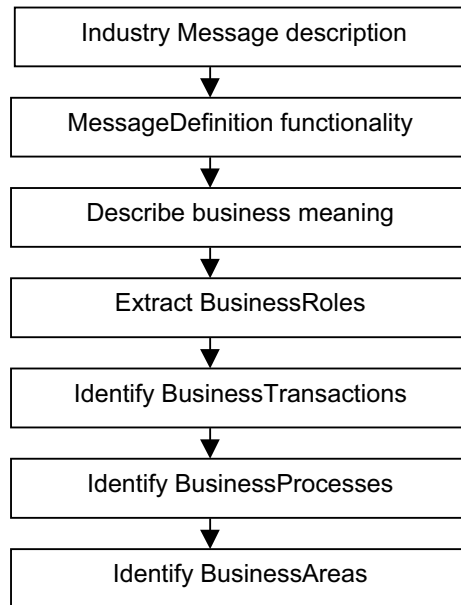
Figure 2 — Recommended approach to complete the IndustryMessageSet documentation

NOTE 1   One of the big challenges of this step is to identify the real business meaning of the fields, e.g. one IndustryMessage field might contain multiple BusinessElements and might contain partial BusinessElements. In such cases, it might have to be combined with other IndustryMessage fields to obtain meaningful BusinessElements.

NOTE 2   A multi-functional IndustryMessage will also contain fields to specify the used functionality. These fields do not have a corresponding MessageElement in the MessageInstance. For these fields, document the MessageDefinition functionality they represent.

NOTE 3   An IndustryMessage might contain "technical" fields, which have no business meaning. In some cases, these fields might have a corresponding technical MessageElement in the ISO 20022 MessageDefinition but they will never have a corresponding BusinessElement.

4)   Extract from each IndustryMessage the BusinessRoles. This is done by identifying the functional roles of the sender and the receiver of the IndustryMessage and by identifying the functional roles of all other parties that appear in the IndustryMessage content.

NOTE 4   "BusinessRoles" indicate functional roles (e.g. buyer, seller, etc.).

5)   Analyse the use of the IndustryMessages in order to identify the "BusinessTransactions" (i.e. the different message flows that occur in the industry) in which the IndustryMessages are used. Document each of these BusinessTransactions, ideally using a message flow diagram and a textual description.

6)   Analyse the list of identified BusinessTransactions in order to identify the BusinessProcesses that are supported.

7)   Identify the BusinessArea(s) to which the BusinessProcesses belong.

5.2.3   BusinessArea gap analysis

5.2.3.1   General

The objective of BusinessArea gap analysis is to identify the ISO 20022 BusinessAreas for which the IndustryMessageSet is used. Additionally, investigate whether the IndustryMessageSet is also used for other BusinessAreas that are not yet part of the ISO 20022 Repository.

5.2.3.2   Input

Input the following information.

a)   A list of ISO 20022 BusinessAreas, including definitions.

b)   IndustryMessageSet documentation related to BusinessAreas.

5.2.3.3   Activities

The recommended approach for BusinessArea gap analysis is depicted in the following diagram and further explained in the text.
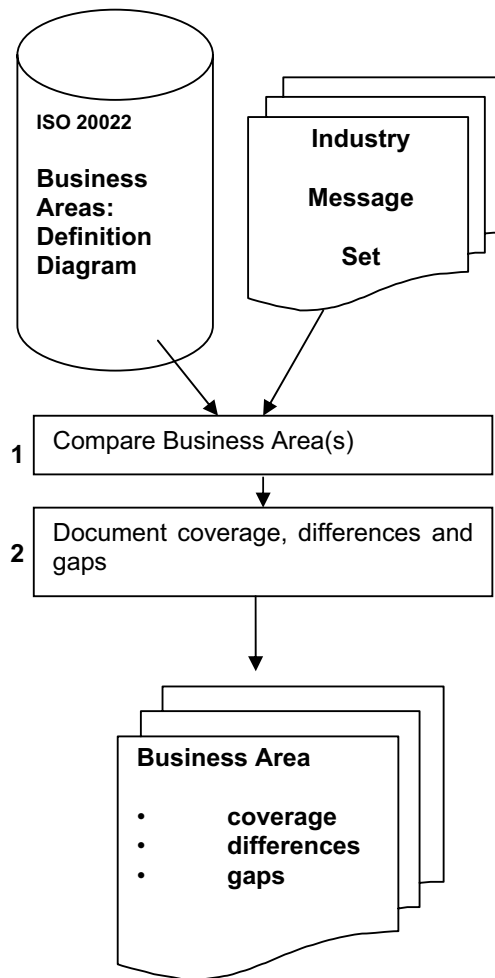
Figure 3 — Recommended approach for BusinessArea gap analysis

a) Go through the list of BusinessAreas that are stored in the ISO 20022 BusinessProcess Catalogue. Use the definitions of these BusinessAreas to identify the BusinessArea(s) that best cover(s) the BusinessArea(s) of the IndustryMessageSet.

b) The following cases can be identified.

1) None of the ISO 20022 BusinessAreas covers the BusinessArea(s) of the IndustryMessageSet.

⎯ Document this additional BusinessArea, based on the documentation of the IndustryMessageSet.

2) One or multiple ISO 20022 BusinessAreas cover precisely the BusinessArea(s) of the IndustryMessageSet.

⎯ Document this coverage.

⎯ Document possible differences that are identified between the definition of the BusinessArea in ISO 20022 and in the corresponding IndustryMessageSet.

3) One ISO 20022 BusinessArea covers more than the BusinessArea(s) of the IndustryMessageSet.

⎯ Document which part of the ISO 20022 BusinessArea covers the IndustryMessageSet.

⎯ Document possible differences that are identified between the definition of the BusinessArea in ISO 20022 and in the corresponding IndustryMessageSet.

4) One or multiple ISO 20022 BusinessAreas cover a part of the BusinessArea(s) of the IndustryMessageSet and the rest of the IndustryMessageSet is not covered.

⎯ Document each coverage (i.e. which part of which ISO 20022 BusinessArea covers which part of the IndustryMessageSet).

⎯ Document the part of the IndustryMessageSet that is not covered, based on the documentation of the IndustryMessageSet.

⎯ Document possible differences that are identified between the definition of the BusinessArea in ISO 20022 and in the corresponding IndustryMessageSet.

5.2.3.4 Output

Output the following information.

— A list of ISO 20022 BusinessAreas that cover (parts of) the BusinessArea(s) of the IndustryMessageSet including, where necessary, a description of which parts of the BusinessArea(s) of the IndustryMessageSet are covered. This list shall include possible differences in definition that have been identified.

— A list of additional BusinessAreas that are not covered by existing ISO 20022 BusinessAreas. Each BusinessArea in this list shall contain a definition, based on the IndustryMessageSet documentation.

5.2.4 BusinessProcess gap analysis

5.2.4.1 General

The objective is to identify the ISO 20022 BusinessProcesses for which the IndustryMessageSet is used and to investigate whether the IndustryMessageSet is also used for other BusinessProcesses that are not yet part of the ISO 20022 Repository.

5.2.4.2 Input

Input the following information.

a) ISO 20022 BusinessProcess documentation:

— definition;

— ISO 20022 BusinessProcess descriptions, BusinessProcess Diagram and Business Activity Diagram.

b) IndustryMessageSet documentation related to BusinessProcesses.

5.2.4.3 Activities

The recommended approach for BusinessProcess gap analysis is depicted in the following diagram and further explained in the text.
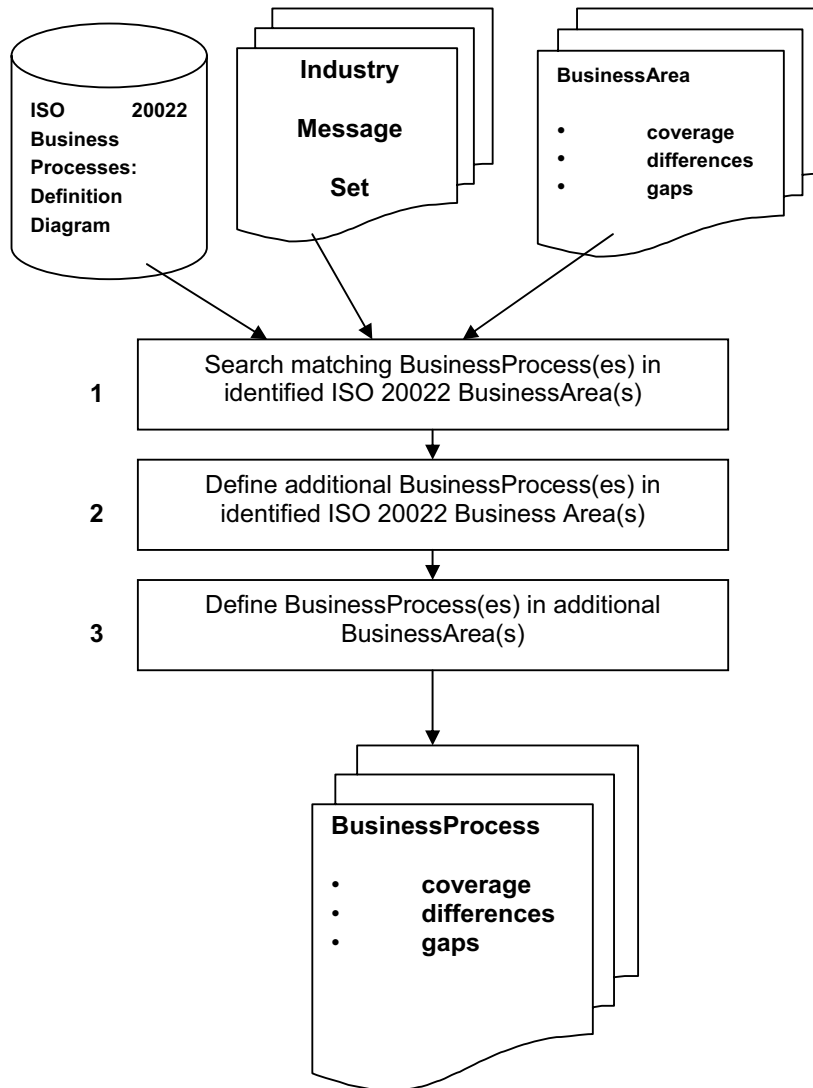

Figure 4 — Recommended approach for BusinessProcess gap analysis

a) For each ISO 20022 BusinessArea that has been identified as one that matches a BusinessArea of the IndustryMessageSet:

  ⸺ go through the list of ISO 20022 BusinessProcesses that are stored in the BusinessProcess Catalogue;

  ⸺ use the documentation to identify the ISO 20022 BusinessProcesses that are supported by the IndustryMessageSet;

  ⸺ document this coverage;

  ⸺ document possible differences that are identified between the definition of the BusinessProcess in ISO 20022 and in the corresponding IndustryMessageSet.

b) For each ISO 20022 BusinessArea that has been identified as one that matches a BusinessArea of the IndustryMessageSet:

  ⸺ identify any BusinessProcesses that are supported by the IndustryMessageSet and that do not yet exist in ISO 20022.

  ⸺ document these additional BusinessProcesses based on the documentation of the IndustryMessageSet.

c) For each BusinessArea that has been identified as one that does not yet exist in ISO 20022, document the BusinessProcesses that are supported by the IndustryMessageSet.

5.2.4.4   Output

Output the following information.

⸺ List of ISO 20022 BusinessProcesses – with reference to their ISO 20022 BusinessArea – that are supported by the IndustryMessageSet. This list will include possible differences in definition that have been identified.

⸺ List of additional BusinessProcesses – with reference to the BusinessArea to which they belong – that are not part of the ISO 20022 Repository. Each BusinessProcess in this list will contain the available IndustryMessageSet documentation.

5.2.5   BusinessTransaction gap analysis

5.2.5.1   General

The objective is to identify ISO 20022 BusinessTransactions for which the IndustryMessageSet can be used. Additionally, investigate whether the IndustryMessageSet is also used for other BusinessTransactions that are not yet part of the ISO 20022 Repository.

5.2.5.2   Input

Input the following information.

a) ISO 20022 BusinessTransaction documentation:

  ⸺ textual definition,

  ⸺ message flow diagram, including message description.

b)   IndustryMessageSet documentation related to BusinessTransactions and MessageDefinition functionality.

5.2.5.3   Activities

The recommended approach for BusinessTransaction gap analysis is depicted in the following diagram and further explained in the text.
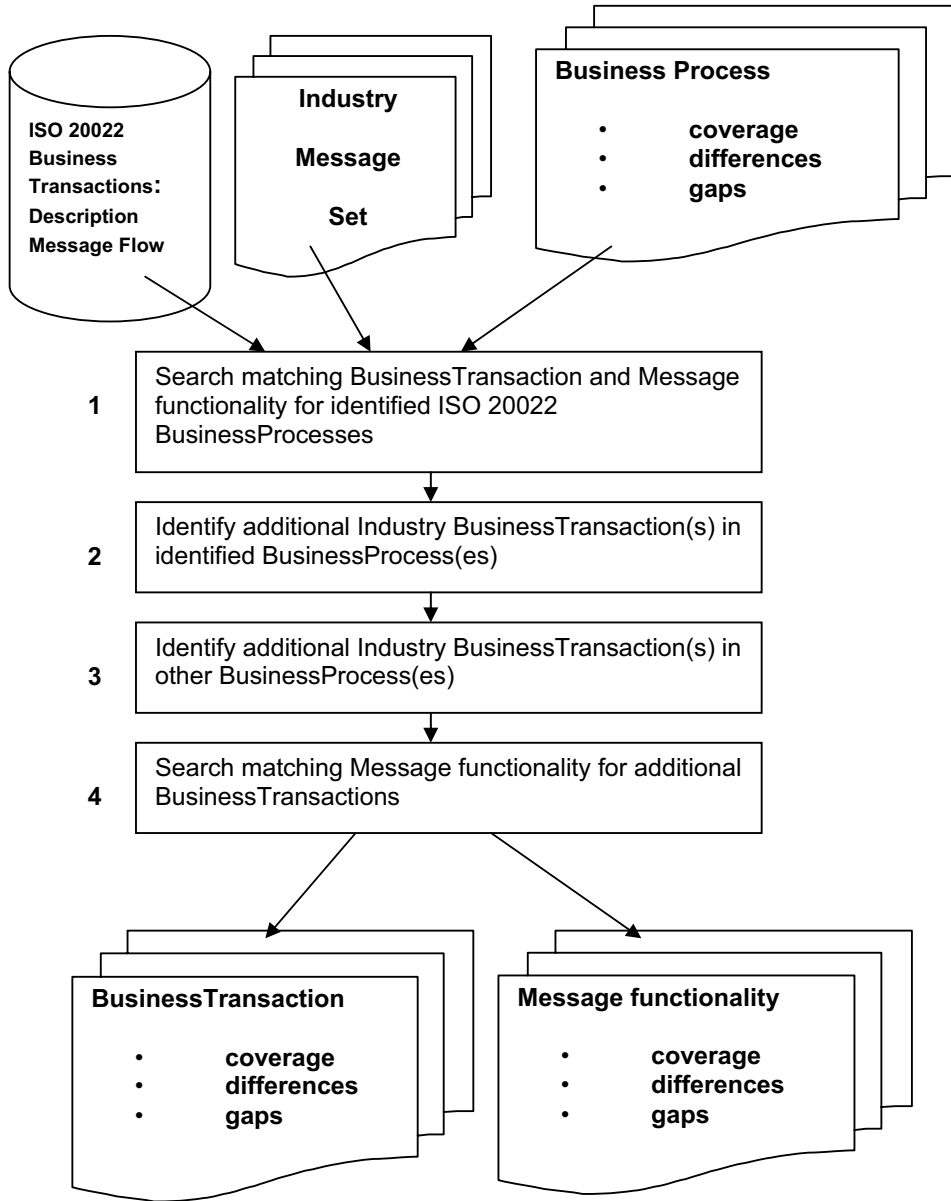
Figure 5 — Recommended approach for BusinessTransaction gap analysis

a)   For each ISO 20022 BusinessProcess that has been identified as one that matches a BusinessProcess of the IndustryMessageSet:

1)   Use the documentation to identify the ISO 20022 BusinessTransactions that are supported by the IndustryMessageSet.

2)   Document this coverage.

3) Document possible differences that are identified between the documentation (textual definition and message flow diagram) of the BusinessTransaction in ISO 20022 and in the corresponding IndustryMessageSet. Identify possible MessageDefinition functionality that is part of the BusinessTransaction in the IndustryMessageSet and that is not part of the ISO 20022 BusinessTransaction. If any such MessageDefinition functionality is identified:

— verify whether any existing MessageInstance(s) offer(s) this MessageDefinition functionality;

— document which MessageInstance(s) cover(s) this MessageDefinition functionality;

— document MessageDefinition functionality that is not covered by any existing ISO 20022 MessageDefinition.

4) Compare the MessageDefinition functionality of the MessageInstances in the various ISO 20022 BusinessTransactions (or message flow diagrams) with the MessageDefinition functionality that is offered by the IndustryMessages.

NOTE   It is important to capture not only the individual message that is used but also to capture the business reason for using this message (i.e. the MessageDefinition functionality). Existing IndustryMessages are namely often "multi-functional" and both the gap analysis and the mapping documentation require the identification of the correct business message.

EXAMPLE   It is not enough to state that the ISO 15022 MT 502 is used; clarify also that it was used, for instance, as an "order to buy" or as an "order cancellation".

5) Document which IndustryMessage(s) cover(s) the MessageDefinition functionality of each MessageInstance in each ISO 20022 BusinessTransaction.

b)   For each ISO 20022 BusinessProcess that has been identified as one that matches a BusinessProcess of the IndustryMessageSet:

1)   identify any additional BusinessTransactions for which the IndustryMessages are currently used and that do not yet exist in ISO 20022;

2)   document these additional BusinessTransactions (including the related BusinessProcess) based on the documentation of the IndustryMessageSet.

c)   For each BusinessProcess that has been identified as one that does not yet exist in ISO 20022:

1)   identify the BusinessTransactions for which the IndustryMessages are currently used;

2)   document these BusinessTransactions (including the related BusinessProcess) based on the documentation of the IndustryMessageSet.

d)   For each BusinessTransaction that has been identified in this step as one that does not yet exist in ISO 20022:

1)   identify the MessageDefinition functionality of all IndustryMessages that are used;

2)   verify whether any existing MessageInstance(s) offer(s) this MessageDefinition functionality;

3)   document which MessageInstance(s) cover(s) the additional MessageDefinition functionality of the IndustryMessages;

4)   document which MessageDefinition functionality of the IndustryMessageSet is not covered by any existing ISO 20022 MessageDefinition.

5.2.5.4 Output

Output the following information.

a) A list of ISO 20022 BusinessTransactions, with reference to their ISO 20022 BusinessProcess and BusinessArea, that are covered by the IndustryMessageSet. This list shall include possible differences in definition that have been identified.

b) A list of additional BusinessTransactions, with reference to their BusinessProcess and BusinessArea, that are not covered by any existing ISO 20022 BusinessTransactions.

c) A list of IndustryMessages (including a particular MessageDefinition functionality in case the IndustryMessage is multi-functional) and their corresponding MessageInstances, if possible with reference to their ISO 20022 BusinessTransaction, BusinessProcess and BusinessArea.

d) A list of additional MessageDefinition functionalities, with reference to their BusinessTransaction, BusinessProcess and BusinessArea, that are not covered by any existing MessageInstances.

5.2.6 MessageDefinition gap analysis

5.2.6.1 General

The objective is to identify ISO 20022 MessageDefinitions that are used in the IndustryMessageSet and to investigate whether the IndustryMessageSet also has other MessageDefinitions that are not yet covered by an ISO 20022 compliant BusinessTransaction and MessageSet.

5.2.6.2 Input

Input the following information.

a) MessageInstances:

    — message functionality;

    — MessageDefinition;

    — Message Constraints.

b) ISO 20022 Data Dictionary:

    — MessageComponentTypes (including MessageElements and Constraints);

    — BusinessComponents (including BusinessElements and Constraints);

    — DataTypes.

c) IndustryMessageSet documentation:

    — definitions, formats and rules of all IndustryMessages and IndustryMessage items.

NOTE 1   One of the key challenges of this step is to identify the real business meaning of the fields. One IndustryMessage field might contain multiple BusinessElements or might contain partial BusinessElements (in which case it might have to be combined with other IndustryMessage fields to obtain meaningful BusinessElements). A multi-functional IndustryMessage also contains fields to specify the used functionality. These fields do not have a corresponding MessageElement in the MessageInstance. Document, for these fields, the MessageDefinition functionality they represent.

NOTE 2   An IndustryMessage might contain "technical" fields, which have no business meaning. In some cases, these fields might have a corresponding technical MessageElement in the ISO 20022 MessageDefinition but they never have a corresponding BusinessElement.

NOTE 3   The format is defined by the primitive DataType plus format constraints (e.g. a string, consisting only of alphabetic characters and with a maximum length of 25, or a set of Codes).

5.2.6.3   Activities

The recommended approach for MessageDefinition gap analysis is depicted in the following diagram and further explained in the text.
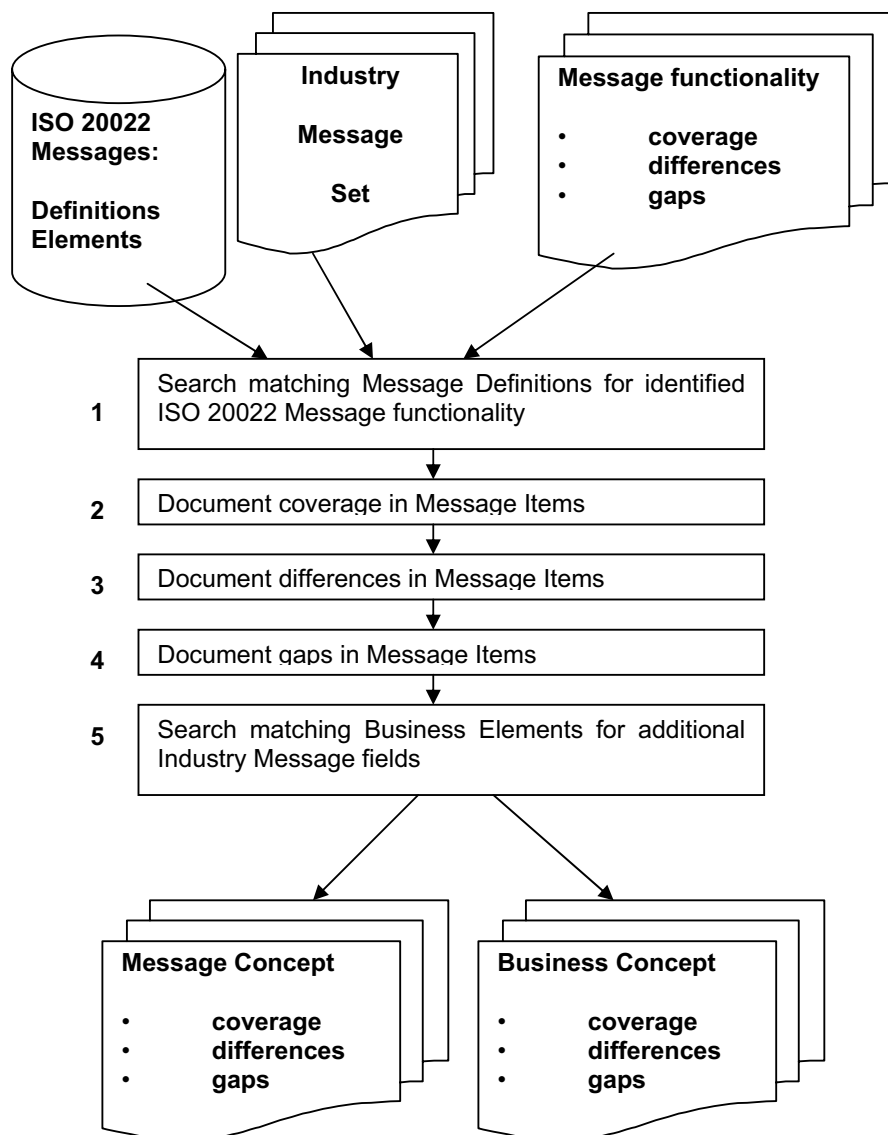

Figure 6 — Recommended approach for MessageDefinition gap analysis

a) For each MessageInstance that has been identified as one that matches a MessageDefinition of the IndustryMessageSet:

   1) Compare its MessageDefinition with the corresponding IndustryMessageDefinition. Take into account the used MessageDefinition functionality in case the IndustryMessage is multi-functional. Also take into account any MessageDefinition Constraints.

   2) Use the definitions of the ISO 20022 MessageConcepts and their corresponding Business Concepts and the documentation of the IndustryMessage items to identify equivalence and difference.

b) Document the coverage in MessageDefinition items.

   1) List corresponding ISO 20022 MessageDefinition items (including the MessageComponentType and MessagePath in the MessageInstance) and IndustryMessage items (including the MessagePath in the IndustryMessage).

   2) Include the BusinessElement (and BusinessComponent) that corresponds to the MessageElement.

c) Document the differences in MessageDefinition items.

   1) List ISO 20022 MessageDefinition items (including the MessageComponentType and path in the MessageInstance) and IndustryMessage item (including the path in the IndustryMessage) where the correspondence is not complete.

   2) Include the BusinessElement (and BusinessComponent) that corresponds to the MessageElement.

   3) Document the differences. These differences can be related to:

      — the underlying business meaning;

      — the used DataType (primitive type, format and/or possible values);

      — the used Constraints.

d) Document the gaps in MessageDefinition items.

   1) List the ISO 20022 MessageDefinition items (including the MessageComponentType and path in the MessageInstance) for which no corresponding IndustryMessage item exists.

   2) List the IndustryMessage items (including the path in the IndustryMessage) for which no corresponding ISO 20022 MessageDefinition item exists.

e) For all IndustryMessage items for which no corresponding ISO 20022 MessageDefinition item exists (note that this might include IndustryMessage items from additional IndustryMessage functionality):

   1) Search the ISO 20022 DataDictionary to identify the BusinessComponent and BusinessElement that correspond to the meaning of the IndustryMessage item.

      i) If the corresponding ISO 20022 BusinessComponent and BusinessElement exist:

         — document them;

         — identify differences or gaps regarding the DataType and Constraints and document these as well.

      ii) If the corresponding ISO 20022 BusinessComponent and/or BusinessElement don't exist:

         — use the IndustryMessage Documentation to document the required BusinessComponent, BusinessElement, DataType and Constraints.

2) A multi-functional IndustryMessage will also contain IndustryMessage items to specify the used functionality. These IndustryMessage items won't necessarily have a corresponding ISO 20022 MessageElement. Document for these IndustryMessage items the MessageDefinition functionality they represent.

5.2.6.4 Output

Output the following information.

a) A list of fully corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent.

b) A list of partially corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent. This list also includes documentation on the differences identified (meaning, data typing and/or rules).

c) A list of industry gaps (i.e. all ISO 20022 MessageDefinition items, including the MessagePaths, for which no corresponding IndustryMessage item exists).

d) A list of ISO 20022 MessageConcept gaps (i.e. all IndustryMessage items, including the MessagePaths, for which no corresponding ISO 20022 MessageDefinition item exists).

e) A list of ISO 20022 Business Concept differences and gaps (i.e. all business concepts that are covered by IndustryMessage items but for which no corresponding ISO 20022 Business Concepts exist).

5.2.7 BusinessRoles gap analysis

5.2.7.1 General

The objective is to identify ISO 20022 BusinessRoles that appear in the IndustryMessageSet and to investigate whether the IndustryMessageSet also covers other BusinessRoles that are not yet covered by an ISO 20022 compliant BusinessTransaction and MessageSet.

NOTE   Some parts of this step can be executed earlier in the gap analysis, namely after the BusinessProcess gap analysis and after the BusinessTransaction gap analysis.

5.2.7.2 Input

Input the following information.

a) ISO 20022 BusinessRoles definitions.

b) ISO 20022 BusinessProcess descriptions, BusinessProcess Diagram and BusinessActivity Diagrams.

c) ISO 20022 BusinessTransaction documentation:

— textual definition;

— message flow diagram, including message description.

d) IndustryMessageSet documentation related to BusinessProcesses, BusinessTransactions and Messages.

5.2.7.3 Activities

The recommended approach for BusinessRoles gap analysis is depicted in the following diagram and further explained in the text.
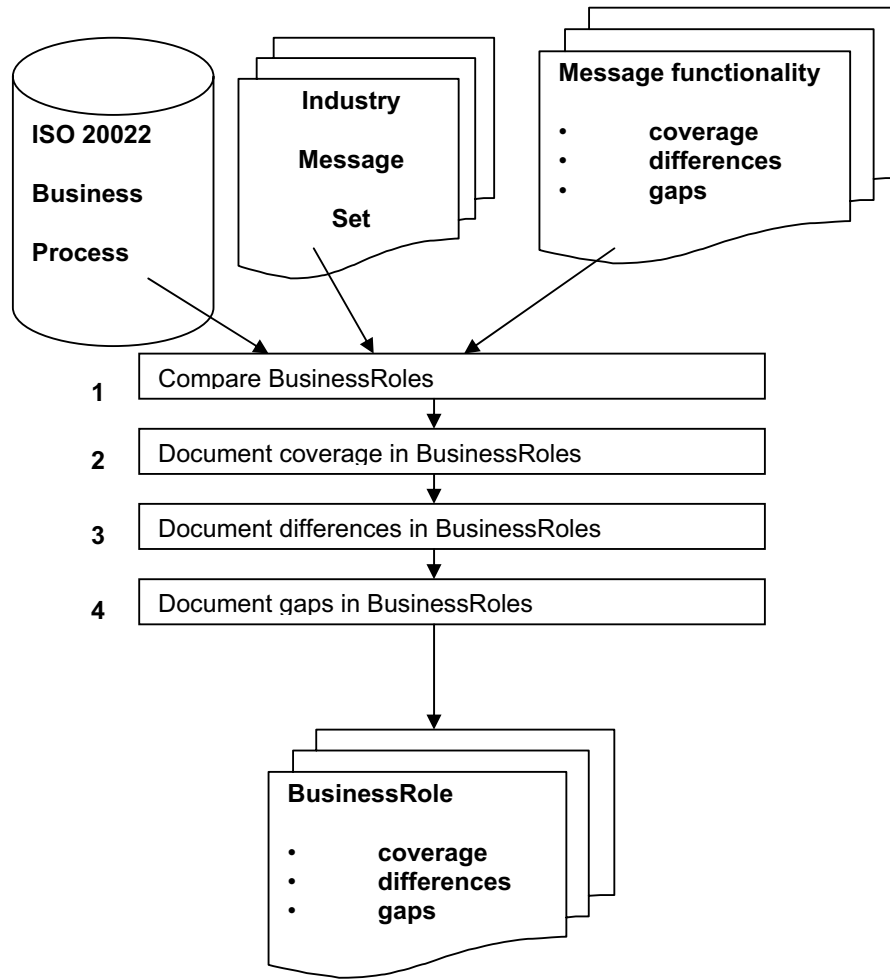
Figure 7 — Recommended approach for BusinessRoles gap analysis

a) Compare the BusinessRoles that appear in the IndustryMessageSet with the ISO 20022 BusinessRoles that appear in corresponding ISO 20022 BusinessProcesses, activities, BusinessTransactions and Messages.

b) Document the corresponding BusinessRoles (i.e. the BusinessRoles that appear both in an ISO 20022 compliant BusinessTransaction and MessageSet and in the IndustryMessageSet).

c) Document possible differences that are identified between the definition of the BusinessRoles in ISO 20022 and in the IndustryMessageSet.

d) Document the identified gaps (i.e. the BusinessRoles that are only covered in the IndustryMessageSet).

5.2.7.4   Output

Output the following information.

a) A list of ISO 20022 BusinessRoles, with reference to their ISO 20022 BusinessTransaction, BusinessProcess and BusinessArea, and their corresponding IndustryMessageSet BusinessRoles (with specification of the relevant IndustryMessage and MessageDefinition functionality). This list includes possible differences in definition that have been identified.

b) List of additional BusinessRoles, with reference to their messages, BusinessProcess and BusinessArea, which are not covered by existing ISO 20022 BusinessRoles.

5.3   Development of ISO 20022 compliant BusinessTransactions and MessageSets

5.3.1   General

The detailed approach to use for this activity is described in ISO 20022-1 and ISO 20022-3. The following remarks should be taken into account when using this approach as part of the ISO 20022 reverse engineering.

a) The development of ISO 20022 compliant BusinessTransactions and MessageSets will be done only for the parts where a difference or a gap has been identified. This implies that the full approach will only be necessary when a complete BusinessArea or BusinessProcess is missing in the ISO 20022 Repository. In other cases, the approach will focus mainly on parts of the logical analysis and/or message design.

b) Wherever possible, the development of ISO 20022 compliant BusinessTransactions and MessageSets will reuse the documentation that is provided by the IndustryMessageSet.

c) The requirements analysis will always be simplified, as the reverse engineering only focuses on the BusinessTransactions that are offered by the IndustryMessageSet.

Development of ISO 20022 compliant BusinessTransaction and MessageSets will be based on the results of the gap analysis. The gap analysis can result in the discovery of following cases:

—   a new BusinessArea;
—   a modified BusinessArea;
—   a new BusinessProcess;
—   a modified BusinessProcess;
—   a new BusinessTransaction;
—   a modified BusinessTransaction;
—   a new Message;
—   a modified Message;
—   a new or modified BusinessRole.

The required development activities of ISO 20022 compliant BusinessTransactions and MessageSets in each of these cases are depicted in the following diagram and further described in the subsequent clauses.
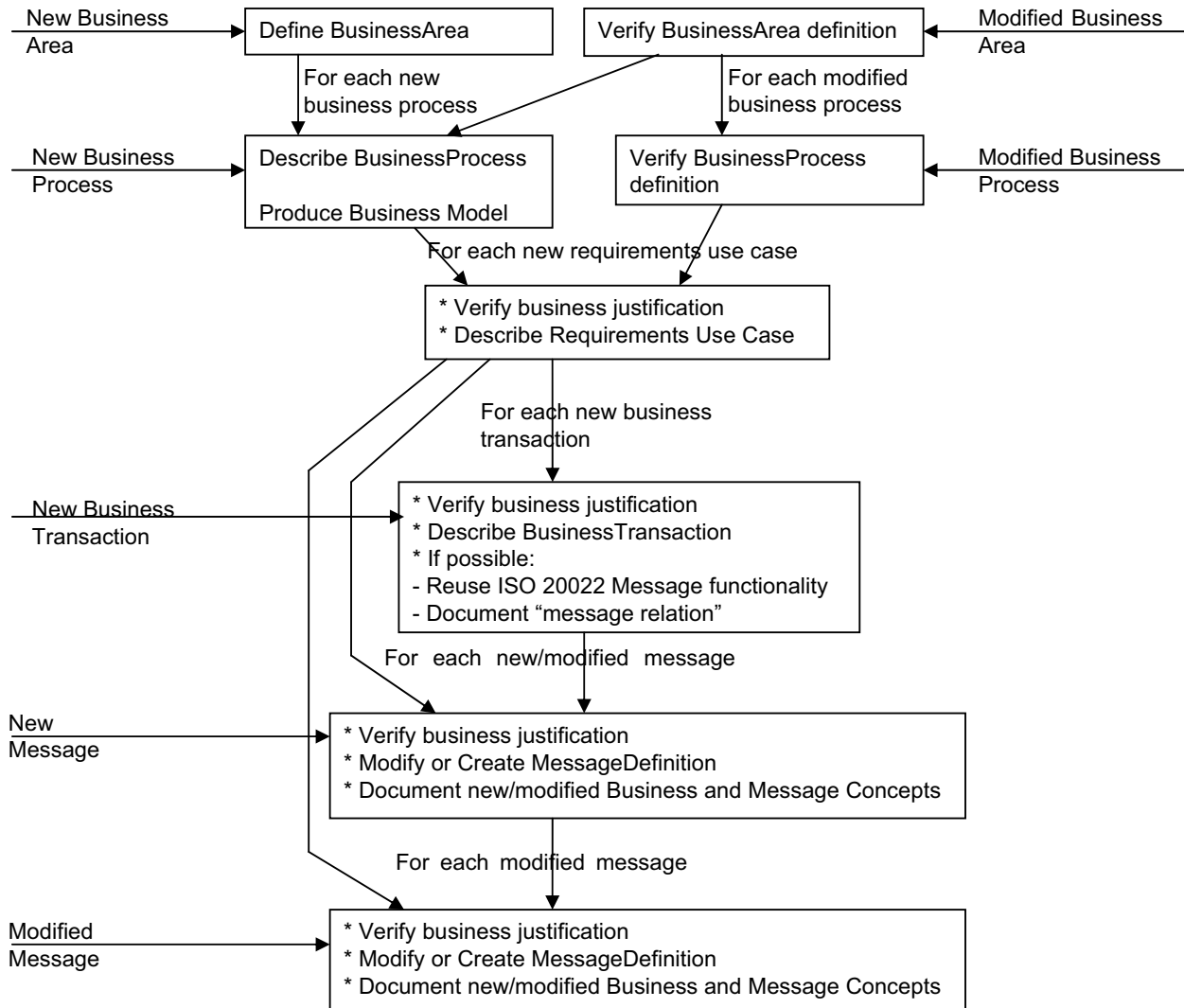
Figure 8 — Required development activities of ISO 20022 compliant BusinessTransactions and MessageSets

5.3.2 A new BusinessArea

5.3.2.1   General

If the gap analysis has identified a new BusinessArea, the complete approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets is followed for this BusinessArea, but with some simplifications.

—   The documentation of the IndustryMessageSet will be reused where possible.

—   As the goal of reverse engineering is not to question, modify or complement the currently supported business functionality, and as the IndustryMessageSet normally offers a real-life solution, the requirements phase and the logical analysis will be driven by this solution.

5.3.2.2   Activities

a) Verify the business justification of the new BusinessArea (i.e. whether there is a real business need to have standardized BusinessTransactions and MessageSets in this BusinessArea).

b) Use the IndustryMessageSet documentation to get the definition of the new BusinessArea. There is no need to go into the business rationale, strategic fit and other similar topics that are part of the normal development approach.

c) Start the overall Business Model based on the BusinessProcesses that have been identified in the IndustryMessageSet documentation.

d) For each BusinessProcess that has been identified for this BusinessArea, follow the "new BusinessProcess" approach (see 5.3.4).

5.3.3   A modified BusinessArea

5.3.3.1   General

If the gap analysis has identified modifications to an existing BusinessArea, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets will focus on activities described for new and/or modified BusinessProcesses.

5.3.3.2   Activities

a) Verify whether there is a need and a business justification to update the definition of the ISO 20022 BusinessArea.

b) For each new BusinessProcess that has been identified for this BusinessArea, follow the "new BusinessProcess" approach (see 5.3.4).

c) For each modified BusinessProcess that has been identified for this BusinessArea, follow the "modified BusinessProcess" approach (see 5.3.5).

5.3.4   A new BusinessProcess

5.3.4.1   General

If the gap analysis has identified a new BusinessProcess, the complete approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets will be followed for this BusinessProcess, but with some simplifications.

—   The documentation of the IndustryMessageSet will be reused where possible.

—   As the goal of reverse engineering is not to question, modify or complement the currently supported business functionality, and as the IndustryMessageSet normally offers a real-life solution, the requirements phase and the logical analysis will be driven by this solution.

5.3.4.2   Activities

a) Verify the business justification of the new BusinessProcess (i.e. whether there is a real business   need to have standardized BusinessTransactions and MessageSets for this BusinessProcess).

b) Use the IndustryMessageSet documentation as a basis to describe the BusinessProcess (i.e. definition, trigger, pre- and post-conditions, arguments and roles).

c) Produce the corresponding Business Model by completing the ISO 20022 Business Model for the BusinessArea:

— add the new BusinessProcess;

— add the Business Activity Diagram;

— add or modify BusinessRoles (if necessary);

NOTE 1 BusinessRoles will only be added if there is a business justification to do so (and not only because they exist in the IndustryMessageSet).

— add or modify BusinessComponents (if necessary);

NOTE 2 BusinessComponents will only be added if there is a business justification to do so (and not only because they exist in the IndustryMessageSet).

— complete definitions where necessary.

d) Execute the requirements analysis to identify the requirements use cases.

e) For each requirements use case that has been identified for this BusinessProcess, follow the "requirements use case" approach (see 5.3.6).

5.3.5 A modified BusinessProcess

5.3.5.1 General

If the gap analysis has identified modifications to an existing BusinessProcess, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets will start from the requirements analysis.

5.3.5.2 Activities

a) Verify whether there is a need and a business justification to update the definition of the ISO 20022 BusinessProcess.

b) Execute the requirements analysis to identify the requirements use cases.

c) For each requirements use case that has been identified for this BusinessProcess, follow the "requirements use case" approach (see 5.3.6).

5.3.6 A requirements use case

5.3.6.1 General

If the previous steps have identified a requirements use case, the following activities shall be executed.

5.3.6.2 Activities

a) Verify the business justification of the requirements use case.

b) Use the IndustryMessageSet documentation as a basis to describe the requirements use case (i.e. definition, trigger, pre- and post-conditions and arguments).

c) Execute the logical analysis to identify new BusinessTransactions and new or modified Messages.

d) For each new BusinessTransaction that has been identified for this requirements use case, follow the "new BusinessTransaction" approach (see 5.3.7).

e) For each additional MessageDefinition functionality that has been identified for this requirements use case, follow the "new Message" approach (see 5.3.9).

f) For each modified MessageDefinition that has been identified for this requirements use case, follow the "modified Message" approach (see 5.3.10).

5.3.7 A new BusinessTransaction

5.3.7.1 General

If the gap analysis has identified a new BusinessTransaction, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets shall mainly focus on the logical analysis and message design, but with some simplifications.

— The documentation of the IndustryMessageSet shall be reused where possible.

— As the goal of reverse engineering is not to question, modify or complement the currently supported business functionality, and as the IndustryMessageSet already offers a real-life solution, the logical analysis will be driven by this solution.

5.3.7.2 Activities

a) Verify the business justification of the new BusinessTransaction (i.e. verify whether real business requirements can be identified for this BusinessTransaction).

b) Use the IndustryMessageSet documentation to create the documentation of the BusinessTransaction (at least textual description and message flow diagram).

c) Where possible:

— reuse existing MessageInstances to support the required MessageDefinition functionality in the new ISO 20022 BusinessTransaction;

— document their relationship with the existing IndustryMessages (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

d) Where no existing MessageInstances can be reused, follow the "new Message" approach (see 5.3.9).

5.3.8 A modified BusinessTransaction

5.3.8.1 General

If the gap analysis has identified a modified BusinessTransaction, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets shall mainly focus on the logical analysis and message design, but with some simplifications.

— The documentation of the IndustryMessageSet shall be reused where possible.

— As the goal of reverse engineering is not to question, modify or complement the currently supported business functionality, and as the IndustryMessageSet normally offers a real-life solution, the logical analysis will be driven by this solution.

5.3.8.2 Activities

a) Verify the business justification of the modified BusinessTransaction (i.e. verify whether real business requirements can be identified for this modification).

b) Use the IndustryMessageSet documentation to modify the documentation of the BusinessTransaction (textual definition and/or message flow diagram).

c) If additional MessageDefinition functionality has been identified that can be supported by existing MessageInstances, document their relation with the existing IndustryMessages (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

d) If additional MessageDefinition functionality has been identified that cannot be supported by existing MessageInstances, follow the "new MessageDefinition" approach (see 5.3.9).

5.3.9 A new MessageDefinition

5.3.9.1 General

If the gap analysis has identified additional MessageDefinition functionality, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets shall mainly focus on the logical analysis and message design, but with some simplifications.

— The documentation of the IndustryMessageSet shall be reused where possible.

5.3.9.2 Activities

a) Verify the business justification of the new MessageDefinition (i.e. verify whether real business requirements can be identified for the identified MessageDefinition functionality).

b) Complete the message descriptions in the BusinessTransactions.

c) If an existing MessageInstance can be modified (slightly) to support the additional MessageDefinition functionality:

  — document the required modifications (i.e. ISO 20022 MessageDefinition items, MessageElements or BusinessElements to be added, Constraints to be added or modified, multiplicity to change, etc.);

  — document the relationship of the resulting modified MessageInstance with the IndustryMessage (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

d) If no existing MessageInstance can be reused or modified:

  — design a new MessageInstance;

  — document the relationship of the resulting modified MessageInstance with the IndustryMessage (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

e) Document any MessageConcepts and/or Business Concepts that need to be added or modified in order to support the required MessageDefinition.

5.3.10 A modified MessageDefinition

5.3.10.1   General

If the gap analysis has identified a modified MessageDefinition (i.e. difference in message content) for an existing MessageInstance, the approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets shall mainly focus on the logical analysis and message design, but with some simplifications.

—   The documentation of the IndustryMessageSet shall be reused where possible.

5.3.10.2   Activities

a)   Verify the business justification of the modified MessageDefinition (i.e. verify whether real business requirements can be identified for this message content).

b)   If the existing MessageInstance can be modified (slightly) to support the modified   MessageDefinition:

— document the required modifications (i.e. ISO 20022 MessageDefinition items, MessageElements or BusinessElements to be added, Constraints to be added or modified, multiplicity to change, etc.);

— document the relation of the resulting modified MessageInstance with the IndustryMessage (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

c)   If the existing MessageInstance cannot be modified because the impact would be too great:

— design a new MessageInstance;

— document the relation of the resulting modified MessageInstance with the IndustryMessageSet (i.e. document corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent).

d)   Document any MessageConcepts and/or Business Concepts that need to be added or modified in order to support the required MessageDefinition.

5.3.11 A new or modified BusinessRole

5.3.11.1   General

If the gap analysis has identified a new or modified BusinessRole, this will either result in the definition of a new or modified BusinessProcess, BusinessTransaction or Message. The approach for the development of ISO 20022 compliant BusinessTransactions and MessageSets will therefore be the approach that is described in these cases.

5.3.11.2   Activities

a)   Verify the business justification of the new or modified BusinessRole (i.e. verify whether real business requirements can be identified for this BusinessRole).

b)   Add or complete the definition of the BusinessRole.

c)   Depending on the case, follow the approach for a new or modified BusinessProcess, BusinessTransaction or Message.

5.4 ISO 20022 registration

The approach for the ISO 20022 registration is as follows.

— Use the information that has been obtained during the previous step (development of ISO 20022 compliant BusinessTransactions and MessageSets) to complete the required ISO 20022 submission templates for all new or modified Dictionary Items and Catalogue Items. Use the official submission templates and follow the related guidelines for these requests.

— Submit the requests to the ISO 20022 Registration Authority.

— The Registration Authority will receive the requests and follow the appropriate process to update the ISO 20022 Repository.

The final ISO 20022 registration might deviate from the original ISO 20022 requests in order to ensure consistency in the ISO 20022 Repository or to ensure full compliance with ISO 20022. These differences need to be identified, as they will have an impact on the exact relationship between the IndustryMessageSet and the corresponding ISO 20022 compliant BusinessTransactions and MessageSets, and hence on the convergence documentation that will be produced in the next activity of the ISO 20022 reverse engineering.

5.5 Preparation of migration

5.5.1 General

This activity uses the results of the previous activities (i.e. gap analysis, development of ISO 20022 compliant BusinessTransactions and MessageSets and ISO 20022 registration) to produce documentation to support the migration towards the ISO 20022 compliant BusinessTransactions and MessageSets.

— Convergence documentation supports the migration of the IndustryMessages to the corresponding MessageInstances.

— Where necessary, additional coexistence documentation can support the coexistence of the IndustryMessageSet and the ISO 20022 compliant BusinessTransactions and MessageSets.

— Migration planning documentation helps the users of the IndustryMessageSet to plan and organize their migration towards the ISO 20022 compliant BusinessTransactions and MessageSets.

This documentation is complementary to the basic documentation of the IndustryMessageSet and to the overall ISO 20022 documentation. The implementation of the ISO 20022 compliant BusinessTransactions and MessageSets shall therefore be based on the full documentation set (i.e. IndustryMessageSet documentation, information in the ISO 20022 Repository, convergence documentation, coexistence documentation and migration planning documentation).

It will be the responsibility of individual organizations to provide (and maintain) this information for their own IndustryMessageSet. This implies that mapping documentation between two IndustryMessageSets will only be available if individual organizations take the initiative to provide this documentation.

5.5.2 Convergence documentation

5.5.2.1 Objectives

The objective of the convergence documentation is to provide sufficient information to find the MessageInstance, ISO 20022 MessageDefinition item and value that corresponds to any value of any IndustryMessage item.

The above objective can be achieved by producing a complete and explicit "convergence table" that contains this information for each possible value in each possible IndustryMessage item. This table would contain all possible paths of the IndustryMessages with the corresponding ISO 20022 MessagePath.

In order to optimize the use and maintenance of this information, it is possible to define "convergence tables" at multiple levels:

⎯ DataType convergence tables;

⎯ Element convergence tables;

⎯ Message convergence tables;

⎯ Message item convergence tables.

These tables are described in more detail in 5.5.2.2. Although the convergence tables are described here as simple tables, this should not be considered as a concrete proposal for implementation. Other forms (such as for instance relational databases, XML documents or XSLT transformation rules) might be better suited for a real implementation.

The convergence documentation will, as much as is practical, be provided in a machine-processable way in order to support organizations wishing to automate the migration. This subclause does not give guidelines on the format to use, as this will depend on the IndustryMessageSet for which convergence documentation is provided.

5.5.2.2   Description of convergence tables

5.5.2.2.1   DataType convergence tables

For each DataType that is used in the IndustryMessageSet, this table identifies the corresponding ISO 20022 DataType(s) that can be used (including the DataType representation). The information can also contain formatting constraints and value conversions.

EXAMPLE 1   Price (FIX) --> Amount (ISO 20022).

EXAMPLE 2   Account Number /35x (ISO 15022) --> AccountNumber_Identifier (ISO 20022).

EXAMPLE 3   Trade Transaction Type /4!c /value = "BASK" (ISO 15022) --> TradeType_Code /value = "BASK" (ISO 20022).

NOTE   It is quite possible that the way a DataType has to be converted partially depends on the element (and even the message) for which the DataType has been used. In this case, the DataType convergence table will contain all possibilities and the exact convergence rule to use will be indicated at element level (or even at message level).

5.5.2.2.2   Element convergence tables

For each IndustryMessage element (or part of it), this table identifies the corresponding MessageElement(s) (including the owning MessageComponentType) and/or BusinessElement(s) (including the owning BusinessComponent) that can be used. The information might also contain more precise information concerning the DataType and its formatting constraints and value conversions.

EXAMPLE 1   MaxFloor (FIX) --> SecuritiesOrderParameters.MaximumShowFloorQuantity (ISO 20022).

EXAMPLE 2   36B.MAXF.Quantity (ISO 15022) --> SecuritiesOrderParameters.MaximumFloorQuantity (ISO 20022).

NOTE   It is quite possible that the way an IndustryMessage element has to be converted is dependent on the message in which it is being used. In this case, the Element convergence table will contain all possibilities and the exact convergence rule to use will be indicated at message level (i.e. in the MessageDefinition item convergence table).

5.5.2.2.3   Message convergence tables

For each message that is used in the IndustryMessageSet, this table identifies the corresponding MessageInstance(s) that can be used. The information might also contain details about the exact

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MessageDefinition functionality and about the conditions under which a particular MessageInstance can be used.

EXAMPLE 1   New Order Single (FIX) --> Order to Buy (ISO 20022), Order to Sell (ISO 20022).

EXAMPLE 2   MT 502 (ISO 15022) --> Order to Buy (ISO 20022), Order to Sell (ISO 20022), Cancellation of Order (ISO 20022).

5.5.2.2.4   Message item convergence tables

This table will provide additional information for IndustryMessage items (or parts) that are used in a particular IndustryMessage and for which the information that is present in the "Element convergence table" and the "Message convergence table" is not sufficient.

EXAMPLE 1   A general rule does not apply (e.g. an IndustryMessage item exceptionally maps to another MessageElement or BusinessElement, or a specific IndustryMessage item value exceptionally converts into another ISO 20022 Element value).

EXAMPLE 2   A general rule is ambiguous (e.g. there are two different BusinessElements into which the IndustryMessage element could be mapped).

NOTE   See Annex A for a more detailed description of the convergence documentation.

5.5.2.3   Development of convergence documentation

5.5.2.4   Input

The input for the production of the convergence documentation comes from all previous activities.

a) Gap analysis:

   gap analysis related to BusinessTransactions or to MessageDefinitions can provide the following input information.

   —   BusinessTransaction gap analysis provides a list of IndustryMessages (including a particular MessageDefinition functionality in case the message of the IndustryMessageSet is multi-functional) and their corresponding MessageInstances.

   —   MessageDefinition gap analysis provides a list of corresponding ISO 20022 MessageDefinition items and IndustryMessage items, including the MessagePaths and the related BusinessElement and BusinessComponent. This list will also include documentation about differences in data typing and possible values.

b) Development of ISO 20022 compliant BusinessTransactions and MessageSets:

   development of ISO 20022 compliant BusinessTransactions and MessageSets related to BusinessTransactions or to Messages can provide the following input information.

   —   Additional links between IndustryMessages and MessageInstances.

   —   Detailed information for these additional linked messages on corresponding IndustryMessage items and ISO 20022 MessageDefinition items, BusinessElements and DataTypes.

c) ISO 20022 registration.

   ISO 20022 registration can provide additional input information in case the final registration of a Message, a MessageConcept or a Business Concept deviates from the request for registration. For instance, this might be the case if a MessageComponentType other than the one requested is used in

a new MessageDefinition, or if a DataType other than the one requested is used for a BusinessElement or MessageElement.

5.5.2.5 Activities

a) Use the information from the ISO 20022 Registration Authority regarding differently registered messages to update the relationship between IndustryMessages and their corresponding MessageInstance.

b) Use the information from the ISO 20022 Registration Authority regarding differently registered MessageConcepts and Business Concepts to update the relationship between IndustryMessage items and ISO 20022 MessageDefinition items, BusinessElements and DataTypes.

c) Go through the list of all linked IndustryMessages and MessageInstances.

d) For each link, complete the following steps.

   1) Define the identification of the two messages.

   2) Define additional constraints (if any) that apply to the IndustryMessage in order to guarantee the desired functionality.

   3) Verify whether the combination of messages and functionality constraints exists already in the MessageDefinition convergence table. If not, add a new row in the MessageDefinition convergence table.

e) Go through the list of corresponding IndustryMessage items and ISO 20022 MessageDefinition   items, BusinessElements and DataTypes.

f) For each corresponding group, complete the following steps.

   1) Identify the DataType of the IndustryMessage item and the ISO 20022 DataType and DataType Representation.

   2) Identify the relevant information on format constraints and on the conversion of the possible values.

   3) Verify whether the combination of DataTypes, format constraints and value conversion exists already in the DataType convergence table. If not, add a new row in the DataType convergence table.

   4) Carry out the identification of the IndustryMessage item (or of the relevant part of, or of the relevant combination) and of the corresponding MessageElement, MessageComponentType, BusinessElement and BusinessComponent.

NOTE   One IndustryMessage field can contain multiple BusinessElements. It can also contain partial BusinessElements (in which case it might have to be combined with other IndustryMessage fields to obtain meaningful BusinessElements).

   5) Search the relevant row in the DataType convergence table.

   6) Verify whether there are additional constraints to be applied to the DataType conversion.

   7) Verify whether the combination of IndustryMessage element, DataType conversion and additional constraints exists already in the Element convergence table. If not, add a new row in the Element convergence table.

   8) Verify whether the available information in the MessageDefinition convergence table and the Element convergence table will always permit the unambiguous definition of the correct ISO 20022 MessageDefinition item (and value) in the correct MessageInstance. If this is not the case:

      — identify the full MessagePath of the IndustryMessage;

— identify the full corresponding ISO 20022 MessageInstancePath;

— verify whether there are additional constraints to be applied to the DataType conversion (i.e. additional with respect to what has been defined in the Element convergence table);

— add a row in the MessageDefinition item convergence table.

5.5.3 Coexistence documentation

5.5.3.1 Objectives

The objective of the coexistence documentation is to provide sufficient information to find the IndustryMessage, IndustryMessage item and value of an IndustryMessageSet that corresponds to any value of any ISO 20022 MessageDefinition item. Coexistence documentation is similar to convergence documentation and can therefore be provided in the same form and based on an identical approach, but working in the opposite direction.

5.5.3.2 Description of coexistence tables

This is similar to the description of convergence tables, except that the roles of "to" and "from" syntax will be inverted.

5.5.3.3 Development of coexistence documentation

This is similar to the development of convergence documentation, except that the direction of any conversion shall be inverted.

5.5.4 Migration planning

5.5.4.1 General

The following topics can be identified in a full migration planning. The actual planning shall be provided by the users and/or owners of the IndustryMessageSet.

5.5.4.2 Internal migration

Internal migration refers to the migration of all internal applications that depend on the use of an IndustryMessageSet towards the use of the ISO 20022 compliant BusinessTransactions and MessageSets. Depending on the architecture that is in place, and on the business overlap between the IndustryMessageSet and the ISO 20022 compliant BusinessTransactions and MessageSets, this might range from the "simple" conversion of a messaging application to a full re-engineering of the internal applications in a given business domain.

5.5.4.3 External migration

External migration refers to the replacement of externally sent and received IndustryMessages by MessageInstances. This step can either be done before the internal migration (in which case a "translation application" will have to take care of the translation between the IndustryMessageSet and the ISO 20022 compliant BusinessTransactions and MessageSets) or together with the internal migration.

5.5.4.4 Industry migration

Industry migration refers to the replacement by the entire industry of all externally sent messages. The following possibilities can be identified.

— The "Big Bang" approach. In this case, the complete industry agrees on a fixed date to migrate all sent messages.

— The "gradual migration" approach. In this case, it is the responsibility of the individual organizations to decide when they will migrate. This implies that there will be a period of coexistence during which any organization might receive both IndustryMessageSets and ISO 20022 compliant BusinessTransactions and MessageSets. This implies the need for bi-directional conversion.

Annex A
(informative)

Convergence documentation

A.1 DataType convergence tables

A DataType convergence table contains the following information (see also the example in A.5.1).

Table A.1 — DataType convergence table content

Convergence rule identifier for reference purposes.	Mandatory
"From" syntax, e.g. FIX, ISO 15022, etc.	Mandatory
"From" DataType, e.g. "Price" (FIX), "Price" (ISO 15022), etc.	Mandatory
"From" format, e.g. "float" (FIX), 15d (ISO 15022), etc.	Mandatory
"To" DataType in ISO 20022 repository, e.g. Amount, etc.	Mandatory
"To" DataType Representation in ISO 20022 Repository, e.g. Text, Code, Indicator, etc.	Mandatory
Value conversion: information explaining how to transform a value expressed in the "IndustryMessageSet DataType" into a value expressed in the corresponding ISO 20022 DataType.	Mandatory

The value conversion information can have the following forms.

a) Value conversion table. In case of an enumeration (e.g. list of codes), it is possible to use a table containing for each "IndustryMessageSet Code" the corresponding "ISO 20022 Code".

— There will not always be a one-to-one relationship between IndustryMessageSet Codes and ISO 20022 Codes (e.g. an IndustryMessage Code might map into multiple ISO 20022 Codes). In these cases, it is necessary to add a condition to the Code correspondence when the DataType is used in a particular IndustryMessageElement.

— In some cases, there is a fixed algorithm to transform the IndustryMessageSet Code into the corresponding ISO 20022 Code (e.g. if the IndustryMessageSet Code is equal to the ISO 20022 Code). In this case, there should be no value table, but one of the other forms.

b) Formal algorithm. This is used when a fixed relationship between IndustryMessageSet value and ISO 20022 value can be described in a machine-processable way.

c) Textual description. This is used when the relationship between IndustryMessageSet value and ISO 20022 value cannot be described in a machine-processable way.

A.2 Element convergence tables

An Element convergence table contains the following information (see also the example in A.5.2).

Table A.2 — Element convergence table content

Convergence rule identifier for reference purposes.	Mandatory
"From" syntax, e.g. FIX, ISO 15022, etc.	Mandatory
"From" element identification, e.g. "MaxFloor" (FIX), 36B.MAXF.Quantity (ISO 15022, etc.	Mandatory
"To" MessageElement identification in ISO 20022 repository, e.g. SecuritiesOrderParameters1.MaximumShowFloorQuantity, etc.	Optional
"To" BusinessElement identification in ISO 20022 repository, e.g. SecuritiesOrderParameters.MaximumShowFloorQuantity, etc.	Mandatory
DataType convergence rule to apply for conversion from IndustryMessageElement to ISO 20022 Element, e.g. DT001, etc.	Mandatory
Additional constraints on the above DataType convergence rule, e.g. restrictions or conditions on the value conversion table or on the conversion algorithm. Where possible, these constraints are expressed in a machine-processable way.	Optional

A.3 Message convergence tables

A message convergence table contains the following information (see also the example in A.5.3).

Table A.3 — MessageDefinition convergence table content

Convergence rule identifier for reference purposes.	Mandatory
"From" syntax, e.g. FIX, ISO 15022, ISO 20022, etc.	Mandatory
"From" message identification, e.g. "New Order Single" (FIX), MT 502 (ISO 15022), etc.	Mandatory
"To" message identification in ISO 20022 repository, e.g. Order to Buy, etc.	Mandatory
Constraints that apply to the convergence rule when converting a particular MessageDefinition functionality of an IndustryMessage into an MessageInstance. Where possible, these constraints are expressed in a machine-processable way. EXAMPLE Information that is required in specific IndustryMessage items, e.g. MessageDefinition items defining the functionality of the message like MT 502.GENL.23G = "NEWM".	Optional
Default values that are used for particular ISO 20022 MessageElements when converting an IndustryMessage into a MessageInstance. EXAMPLE Information that is not explicitly mentioned in the IndustryMessage.	Optional

A.4 MessageDefinition item convergence tables

A MessageDefinition item convergence table should contain the following information.

Table A.4 — MessageDefinition item convergence table content

Convergence rule identifier for reference purposes.	Mandatory
"From" syntax, e.g. FIX, ISO 15022, ISO 20022, etc.	Mandatory
"From" MessagePath, e.g. "New Order Single.MaxFloor" (FIX), "MT502.ORDRDET.36B.MAXF.Quantity" (ISO 15022), etc.	Mandatory
"To" MessagePath in ISO 20022 repository, e.g. "OrderToBuy.SecuritiesOrderParameters.MaximumShowFloorQuantity", etc.	Mandatory
DataType or Element convergence rule to apply, e.g. DT001, etc.	Mandatory if different from normal rules
Additional deviations or constraints. Where possible, these constraints are expressed in a machine-processable way.	Optional

A.5 Examples

A.5.1 DataType convergence table

Table A.5 — DataType convergence table

ID	From			To		Value conversion
	Syntax	DataType	Format	DataType	DataType Represen-tation	
DT001	ISO 15022	Price	15d	Amount	Amount	
DT002	ISO 15022	Currency	3!a	Currency	Identifier	ISO 4217
DT003	ISO 15022	RateTypeCode	4!c	RateType	Code	ListRateTypeCodes
DT004	ISO 15022	QuantityTypeCode	4!c	QtyType	Code	ListQuantityTypeCodes
DT005	ISO 15022	AccountNumber	35x	AcctID	Identifier	

A.5.2 Element convergence table

Table A.6 — Element convergence table

ID	From		To		DataType rule	Constraints
	Syntax	Element	Message Element	BusinessElement		
F001	ISO 15022	97A:CASH.AccountNumber		Account.ID	DT005	
F002	ISO 15022	97B:CASH.AccountNumber		Account.ID	DT005	
F003	ISO 15022	90A:DEAL.Price		Trade.DealPrice	DT001	
F004	ISO 15022	92B:EXCH.FirstCurrencyCode		Exchange.FromCurrency	DT002	
F005	ISO 15022	92B:EXCH.SecondCurrencyCode		Exchange.ToCurrency	DT002	

A.5.3 Message convergence table

Table A.7 — MessageDefinition convergence table

ID	From		To	Constraints	Default values
	Syntax	Message	Message		
M001	ISO 15022	MT 502	OrderToBuy	MT502.GENL.23G = "NEWM" & MT502.ORDRDET.22H.BUSE = "BUYI"	
M002	ISO 15022	MT 502	OrderToSell	MT502.GENL.23G = "NEWM" & MT502.ORDRDET.22H.BUSE = "SELL"	
M003	ISO 15022	MT 502	CancelOrder	MT502.GENL.23G = "CANC"	

Bibliography

[1]   ISO 4217, *Codes for the representation of currencies and funds*

[2]   ISO 15022 (all parts), *Securities — Scheme for messages (Data Field Dictionary)*

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