ISO 20022 Business Message Envelope Message Usage Guide Version 1.0

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This Message Usage Guide for the Business Message Envelope was drafted by the ISO 20022 Technical Support Group (TSG) and approved by the ISO 20022 Registration Management Group (RMG).

Contents

1   Introduction

This guide helps business analysts and software developers understand how to use the ISO 20022 Business Message Envelope (BME) in various business scenarios for the exchange of ISO 20022 business messages.

It provides a comprehensive view of how the Business Message Envelope is applied to ISO 20022 messages with or without the optional ISO 20022 Business Application Header (BAH).

This guide acts as a supplement to the Message Definition Report and the XML schema of the Business Message Envelope which are published on the ISO 20022 website (www.iso20022.org).

Additional documents, published by individual user communities, may be available that discuss the implementation of the BME in a more specific context. This guide should serve as the general basis for these more specific community implementation guides.

Currently, the included descriptions and examples that are used in this document are based exclusively on the ISO 20022 XML syntax. In the future, there may be a requirement to include descriptions or examples in other syntaxes such as ASN.1 or additional syntaxes, if supported by future editions of the ISO 20022 standard and the related ISO 20022 registration procedures.

1.1   How this Guide was created and how it is maintained

This guide was created as a joint effort by the ISO 20022 Technical Support Group (TSG), drafting the solution for the ISO 20022 Business Message Envelope including this Message Usage Guide, and the ISO 20022 Registration Management Group (RMG) which provided the mandate to the TSG to develop the ISO 20022 Business Message Envelope and approved this document and ratified its publication.

This guide is maintained by the TSG and published on the ISO 20022 website.

1.2   The ISO 20022 Standard

'ISO 20022 – Universal financial industry message scheme' is an international standard published by the International Organization for Standardization (ISO) and developed by Sub-committee 9 (SC 9) 'Information exchange for financial services' of Technical Committee 68 (ISO/TC 68) 'Financial Services'.

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

The application of this process results in models and artefacts stored in a central repository, serviced by a Registration Authority. This repository is available on the World Wide Web and offers public access for browsing at www.iso20022.org.

For more information on ISO in general and the ISO 20022 standard in particular, please visit https://www.iso.org.

Comprehensive information for how the ISO 20022 standard can be applied to request the development and/or maintenance of ISO 20022 message sets and the applicable registration procedures are available at www.iso20022.org.

1.3   Terminology

An ISO 20022 Message together with its Business Application Header forms an ISO 20022 Business Message.

The ISO 20022 Business Message Envelope provides an ISO 20022 construct which binds[1] the ISO 20022 Business Application Header to the corresponding ISO 20022 message.

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[1] The term 'binding' as used in this BME MUG is not to be confused with 'data binding'.

## 1.4 Separation of business and technical layers in the ISO 20022 standard

ISO 20022 business messages, encompassing an ISO 20022 message and, optionally, a related ISO 20022 Business Application Header, are designed to be transport protocol independent.

The ISO 20022 standard does not provide any message transport conventions of its own (including header or trailer).

The BAH is created before a transport routing header, if any, is applied to the business message and is retained after the transport header is removed.

1.5 Binding of ISO 20022 Business Application Header and its related ISO 20022 Message

As the BAH and the related ISO 20022 message make up the complete business content of an ISO 20022 business message, it is important to ensure that both entities remain closely coupled whilst in transit from the sending Business Application A to the receiving Business Application B.
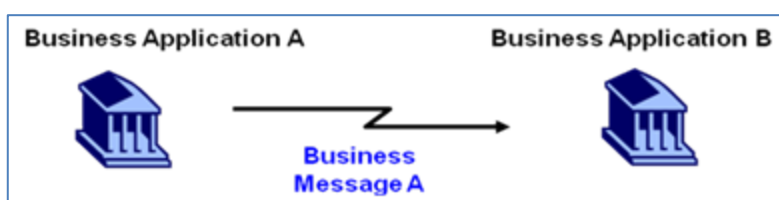
The approach for coupling both entities is commonly referred to as binding. This binding is typically realised through an envelope or wrapper which embraces both the ISO 20022 BAH and the related ISO 20022 message. The envelope can be defined by a pertinent XML schema, applicable business rules and corresponding business definitions.

This approach is in analogy to the classical postage envelope which contains a letter (corresponding to the ISO 20022 message) and an optional cover sheet (corresponding to the BAH) with some standardised addressing and further referencing information.

In implementations of business processes based on ISO 20022 message flows, several approaches can be witnessed that aim to ensure the binding of BAH and a related ISO 20022 message.

In contexts where ISO 20022 messages are exchanged through dedicated messaging services or networks it is common practice that the service or network operator provides its own binding mechanism in the form of a proprietary envelope. In some cases, it may be that the function of the business envelope is fulfilled by a technical wrapper of the lower level technical messaging protocols.

Please refer to the Message Usage Guide of the ISO 20022 Business Application Header (BAH MUG, available on the ISO 20022 website) which provides an illustrative example of a proprietary binding envelope (see chapter 1.5 'Link between a Business Application Header and its Message').

Since the advent of the ISO 20022 Business Message Envelope (BME), the BME can be employed as a standardised binding approach which is independent of third party providers and can hence be employed independently of use cases and providers of business services, messaging services or network providers, and so on.

In the following diagram, the instance of an ISO 20022 Business Message Envelope, encapsulating an instance of the ISO 20022 BAH and an instance of an ISO 20022 message, can be considered as an illustrative example of this standardised binding approach:
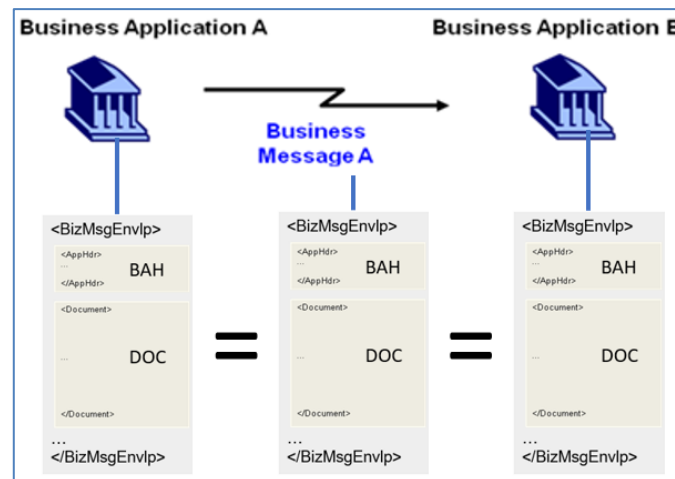
2   Scenarios

2.1   Introduction

This section outlines the application scenarios for the ISO 20022 Business Message Envelope.

The list of scenarios is not exhaustive and new scenarios may be added to future editions of this document.

2.2   Simple scenario

In the simple scenario, Business Application A exchanges business messages with business application B.

The BME encapsulates the BAH and the ISO 20022 message. The BME is applied by the sending business application A.

The BME ensures that the business message remains unchanged end-to-end and that the business message is therefore identical on business application A, whilst in transit through a potential network messaging service and upon arrival at the receiving business application B. The BME lends itself to archiving the business message as one single entity at each actor in this chain.

If the BME were not employed, there is a risk that the BAH may be stripped off the business message by any entity in the chain. In particular, in cases where not all information of the BAH is duplicated in the ISO 20022 message itself or in cases where BAH elements are ignored, this could lead to situations where vital business information is no longer available for inspection, processing and/or archiving.

2.3   Multiple message flows scenario

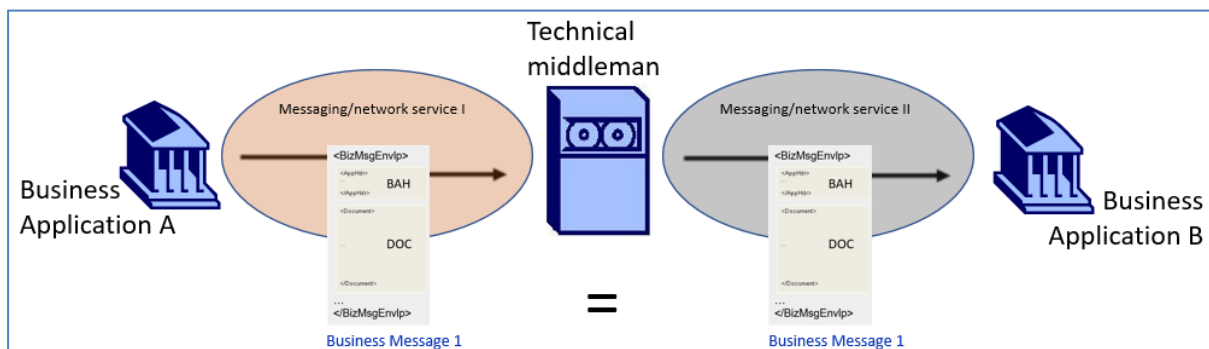In this scenario, Business Application A maintains four separate exchanges of Business Messages 1, 2, 3 and 4 with Business Applications B, C, D and E, respectively.
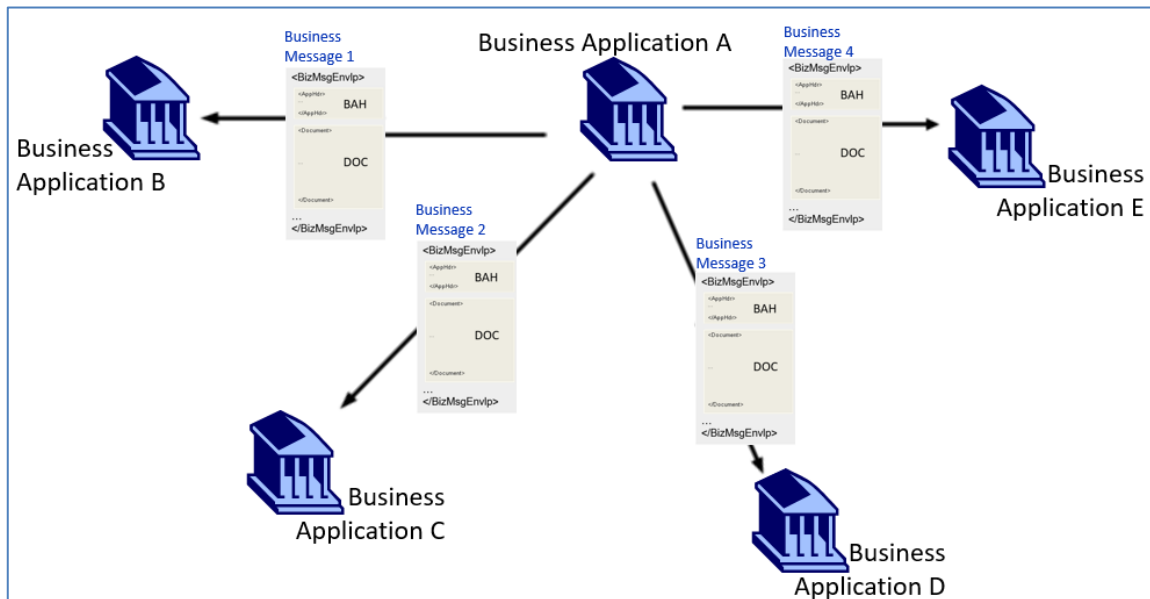
By consistently employing the BME for all ISO 20022 message exchanges, the processing of ISO 20022 business messages can be standardised independently of business domains, actors, network and service providers.

If however for some of these links proprietary binding approaches were to be employed, this is likely to require higher maintenance and operational efforts and to carry higher risk for processing errors due to inconsistencies between the different binding mechanisms.

2.4   Technical middleman scenario

In this scenario, Business Application A exchanges via an intermediary which does not fulfil a business function (a so-called technical middleman) ISO 20022 business message 1 with Business Application B.

The technical middleman forwards, to Business Application B, business message 1 as received from Business Application A without modifying or extending the content of the business message.

In this scenario, it is common that the technical middleman acts as a bridge between two separate communication environments, each with their specific messaging service, network service provider, technical protocols, technical headers and trailers and so on.

By encapsulating the components of a business message, the BME shields the business message from any technical mechanisms that are employed to forward the message.

In absence of the BME, it is common that each communication environment provides its proprietary binding mechanisms. These may not be sufficiently compatible to ensure that all business information can be conveyed across the technical middleman to the recipient business application. Typically such

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proprietary mechanisms foresee their own specific binding envelopes or resort to using a binding mechanism of an underlying technical communications protocol in replacement of a business-level binding approach including proprietary business headers.

Examples of such proprietary mechanisms based on proprietary headers are provided in the MUG of the ISO 20022 Business Application Header available on the ISO 20022 website.

As a result, it cannot be ensured that all business content arrives at business application B to the same extent as if the technical middleman were not to be present.

2.5 Technical middleman tracking scenario

Whilst technical middlemen do not play a role in the business process and are therefore not reflected as an actor in the logical business model, they nevertheless need to ensure the timely delivery of business messages which they forward, upon receipt from business application A, to business application B.

In the classical postal services it is customary that such intermediary couriers attach to the postal envelope various reference information details related to the delivery. This reference information can, amongst others, be used to review the progress in delivery of a postal letter through the chain of intermediary postal couriers. To this end, advanced couriers provide tracking applications which provide up-to-date information on the delivery status.

In analogy to the classical postal services, the BME provides an optional facility entitled 'Reference' that technical intermediaries can use for applying references to the BME.

A reference must, as a minimum, state a reference value ('Value') and identify the issuer of the reference ('Issuer') and can optionally indicate a name of the reference ('Name'). For specific or exceptional application scenarios, a supplementary data component is also available in order to cater for data elements that are not available in the default reference element.
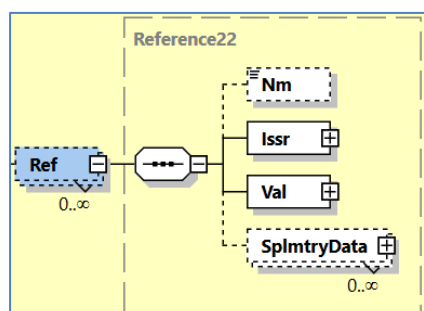
The references applied to the BME by potentially multiple technical intermediaries can be used to enquire about the delivery status and delivery progress of a business message and its BME. To this end, the technical intermediaries can maintain tracking databases and tracking applications in which amongst others the receipt and forwarding timestamps for each business message and its BME can be persisted and be made available for enquiries.

It is at the discretion of the technical intermediaries which information items they make available in their tracking applications.
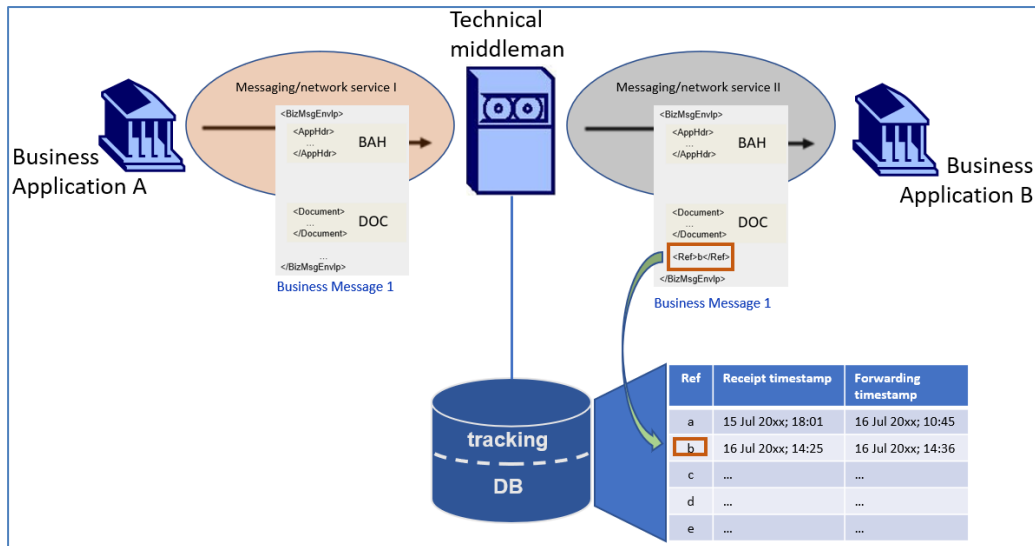
Whilst the tracking process is not part of the underlying ISO 20022 business process to which the business message belongs, the tracking information can nevertheless contribute to the timely execution of the message flow of an ISO 20022 business process.

For instance, if a business deadline was missed due to a delay in message delivery, the tracking information provided by a technical intermediary can be employed to investigate the cause of the delay.

Thus, the optional reference facility included in the BME can be harnessed for purposes of exceptions and investigations handling and, in general terms, to ensure the quality of service of the underlying business process.

As is common in implementer communities, the provisions for the processing and use of optional ISO 20022 facilities are typically detailed in market practice guides or service provider implementation guidelines. Therefore, it may be that the use and support of optional references in the BME is specified in such implementer community specific documentation.

3 Frequently Asked Questions

3.1 Can the BME be employed for binding multiple ISO 20022 messages to a single BAH?

In ISO 20022 terms a business message is defined as an ISO 20022 message with its optional ISO 20022 Business Application Header (BAH).

Therefore, the function of the BME consists of binding the two constituent parts of a business message into a single entity.

As is specified in the BME schema and corresponding MDR, the BME is restricted to a single ISO 20022 message with an optional single BAH.
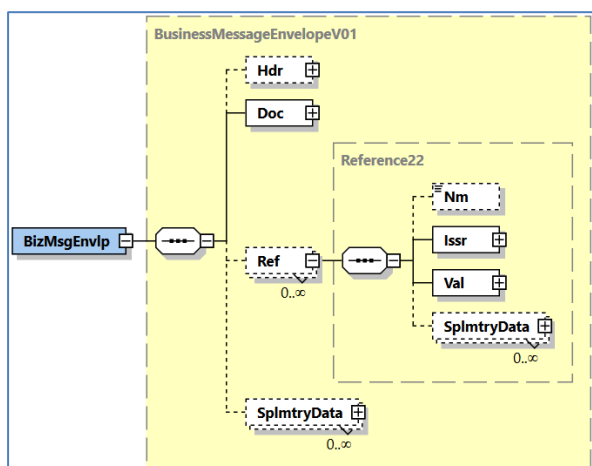
If, in a particular application environment, it is required to combine or aggregate multiple business messages into a larger container, such as a file, then a different dedicated facility has to be used.

The BME is conceived in a way that it can be employed in combination with such aggregating containers (such as files).

3.2 Can the BME be employed for ISO 20022 messages that are used without the BAH?

The purpose of the BME consists in binding the BAH to its related ISO 20022 message. If for a particular business process ISO 20022 messages are used without the BAH, the application of the BME may at first sight seem inappropriate as it may seem that it does not provide any immediate benefits as far as the binding function is concerned.

However, if an actor is active in multiple business processes, it may be advantageous for consistency to employ the BME for all ISO 20022 messages, whether or not they are used in combination with the BAH. In addition, if technical middlemen are used in an implementation context, the optional references could enable message tracking independently of whether a BAH is used in combination with ISO 20022 messages or not.

An employment of the BME at an early or initial stage of an implementation, even if messages at that time are used without the BAH, may pave the way for a subsequent introduction of the BAH, for instance, if the BAH is considered to contribute to standardisation or if the relevant ISO 20022 messages may at some stage be maintained in order to support the use of the BAH.

3.3 Is the BME mandatory for ISO 20022 messages that are used with the BAH?

The BME is conceived as an optional facility in order to enable a consistent binding mechanism independently of underlying messaging/network services, technical middlemen, business domain, business process and so on.

Prior to the advent of the BME, alternative binding mechanisms have already been employed to fulfil similar purposes as the BME.

The intended optionality of the BME does not preclude that precursor binding mechanisms continue to be employed independently of whether ISO 20022 message are modelled for the use with the BAH and whether ISO 20022 messages are employed in combination with the BAH.

3.4 Can the BME be employed for implementations that comprise both messages that are used with the BAH and messages that are used without the BAH?

If in a particular implementation context a mix of ISO 20022 message are in use, some of which use the BAH whilst some others do not, the BME can be employed to provide consistency across business processes and message sets.

For instance, such an approach would enable the use of the optional references in order that message delivery tracking can be employed independently of whether a BAH is in use or not.

3.5 Can the BME be employed for binding proprietary headers to ISO 20022 messages?

The BME is conceived as an ISO 20022 facility.

Whilst it may be possible to employ the BME for binding of non-ISO 20022 headers, i.e. instead of the ISO 20022 BAH, and ISO 20022 messages, this application would not yield an ISO 20022 compatible implementation, but instead a proprietary implementation.

In the interest of standardisation such approaches are discouraged.

3.6 What is the difference between the BME and a network protocol envelope?

The BME is an envelope that ensures the delivery of business messages which encompass an optional BAH and a related ISO 20022 message from a sending business application to a receiving business application.

Whilst in transit from the sending to the receiving business application, the business message may be carried over one or several messaging networks, each with their own specific network protocol facilities including network protocol envelopes and headers.

In absence of a BME, it is common practice that the network protocol facilities are employed to fulfil the functions of the business level BME in order to bind a BAH and a related ISO 20022 message. As these network-specific facilities are confined to their own network environment, not all functions of the BME can be realised to their full extent. For instance, the tracking of messages across multiple networks and technical middlemen is typically not possible if only network protocol facilities are used.

Also, there may be implementations which map the BAH into a proprietary network headers or strip off the BAH from its accompanying ISO 20022 message. The latter approach may seem viable if some or all BAH elements are believed to be replicated in the accompanying ISO 20022 message. Inherent to such scenarios is the permanent risk that vital business information is lost whilst business messages are in transit from sending to receiving business application. With the consistent employment of the BME such downsides can be avoided.

3.7 As the BME is a new facility, is it mandatory for proprietary binding envelopes to be migrated to the BME?

The BME is conceived as an optional facility. In light of this optionality, there is no requirement that an existing proprietary binding envelope is replaced by the BME.

Nevertheless, it may be conducive over time to migrate to the BME in order that the complete functionality of the BME can be exploited and be made available to a community of ISO 20022 implementers. Thus, the community would be able to benefit from future enhancements and the further evolution of the BME through the maintenance process.

3.8 Is support of the BME a pre-requisite to claim ISO 20022 compliance?

As the BME is conceived as an optional facility, it is not required to be employed in order to achieve ISO 20022 compliance. This reasoning is in analogy to a similar consideration regarding the BAH.

For further information on ISO 20022 compliance, the ISO 20022 Compliance Checklist should be consulted. The ISO 20022 Compliance Checklist provides guidance to implementers about some key aspects to be considered in order to be as compliant as possible with the standard. The ISO 20022 Compliance Checklist was defined by the ISO 20022 Registration Authority (RA) and Technical Support Group (TSG).

3.9 What is the advantage of the BME over proprietary binding envelopes?

The BME constitutes a standardised and consistent mechanism that can be employed independently of message set, business process and business domain. A such the efforts for development, maintenance and implementation of potentially multiple proprietary mechanisms can be minimised when the BME is employed.

The BME ensures that business messages, encompassing an optional BAH and a related ISO 20022 message, remain together as one entity whilst in transit from a sending to a receiving business application including scenarios that span multiple messaging networks and technical middlemen. This contributes to the consistent exchange and processing of business content.

If used, the optional facility of the BME to track the delivery of business messages through specific references can further contribute to the timely delivery of business messages. The availability of tracking references can be used to provide tracking databases and applications that can enable and alleviate the handling of exceptions and investigations, for instance, if business deadlines were missed due to a delay of message delivery through a chain of potentially multiple networks and technical middlemen.

3.10 Does a message sender or receiver need to support the optional references of the BME?

The references of the BME which are conceived to be used for tracking purposes are optional elements and therefore neither a sending nor a receiving business application is obliged actively to support the references.

If it chose so to do, a sending business application could add its own tracking reference to the BME.

A receiving business application would, as a minimum, need to be able to receive a BME which contains one or several references that were added by entities involved in the transmission of the business message, typically a technical middleman or potentially a sending business application. The receiving business application could choose to ignore the content of the references, if it were not able to process them or if it did not determine any value in making use of tracking information that may be obtained through the references.

As is common in implementer communities, the provisions for the processing and use of optional ISO 20022 facilities are typically detailed in market practice guides or service provider implementation guidelines. Therefore, it may be that the use and support of optional references in the BME is specified in such implementer community specific documentation.

3.11 Is a technical middleman obliged to provide references for tracking purposes?

The references of the BME are an optional element and consequently do not constitute a mandatory facility that a technical middleman is obliged to support.

Nevertheless, it has become common practice that technical middleman provide transparency of their quality of service regarding reliable forwarding of business messages. To this end, tracking databases, applications and services are employed to demonstrate attainment of service levels.

If a technical middleman were not to attach its own references to the BME of business messages, it must, at a minimum, be able to receive BMEs that include one or several references and to forward the BME with the existing references and the business message unchanged towards the destination business application.

3.12 How does a (tracking) reference on the BME differ from references within the business message?

In the delivery of business messages from a sending to a receiving business application via potentially multiple technical middlemen a number of references of different types can be witnessed and differentiated.

First and foremost, each business message is identified by its unique BusinessMessageIdentifier (BizMsgIdr). In case of ISO 20022 messages that were modelled for the use without the BAH, an equivalent element is available within the ISO 20022 message. Even if technical middlemen are involved in the delivery of business messages from sending to receiving business applications, the BusinessMessageIdentifier remains unchanged. The BusinessMessageIdentifier is not dependent on the presence or not of technical middlemen.

In an end-to-end business process which encompasses multiple business messages, each message is identified by its own BusinessMessageIdentifier (see label '1' in the diagram below). The BusinessMessageIdentifier is commonly employed as a cross-reference to other business messages of the same business process. Message elements for this purpose are typically called PreviousMessage or RelatedMessage.

If a business process encompasses multiple business messages, be it of the same or different business areas (as indicated by the first 4 letters of the message definition identifier), that all belong to the same business context, a dedicated end-to-end business reference can be employed for this purpose and be used in each message that pertains to this business context (see label '2' in the diagram below). For instance, such an approach can be employed to indicate a business transaction context shared amongst a number of business messages. Each business message carries the shared business reference in a dedicated message element. As a case in point, the UETR (a universally unique identifier to provide an end-to-end reference of a payment transaction) in the payments domain or the UTI (a unique trade identifier that can be agreed by all business actors in an end-to-end two-sided securities transaction) in the securities domain may be considered.

Last but not least, if technical middlemen are involved in the delivery of business messages from sending to receiving business application, they may employ references to support tracking purposes related to timely message delivery. These references can be added to the BME of a business message (see label '3' in the diagram below).
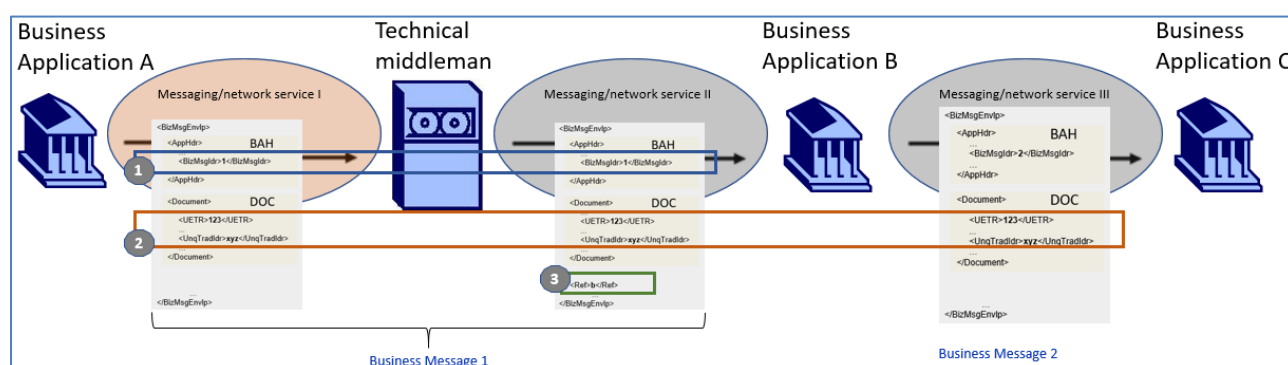
The three types of references, the BusinessMessageIdentifier, the end-to-end business references and the technical tracking references fulfil their distinct purposes and can be employed in concert as illustrated in the diagram above. None of the three types of references can fulfil the function of one or several of the other types. In general, one end-to-end business reference relates to multiple BusinessMessageIdentifiers. Conversely, one BusinessMessageIdentifier can relate to one or several references for technical tracking purposes.

4 Appendices

4.1 Related Documents and Guides

The complete catalogue of ISO 20022 messages, including the Message Definition Reports and XML schemas, is available on the ISO 20022 website: www.iso20022.org. The latest versions as well as any preceding versions of the schemas are available free of charge. Other useful documentation available from the ISO 20022 website includes:

- ISO 20022 Repository - Data Dictionary.

- Introduction to 'ISO 20022 – Universal financial industry message scheme'
  in the form of an introductory presentation on the ISO 20022 standard
  family.

Further useful information is available from the following sources:

- In-depth information on XML can be found at:
  http://www.w3c.org/XML

- In-depth information on XML Schema can be found at:
  https://www.w3.org/XML/Schema#resources

- The UNICODE character set database can be found at:
  http://unicode.org/Public/UNIDATA/Blocks.txt

Revision Record

Revision	Date	Author	Description	Sections affected
0.1	25/04/2023	Rainer Vogelgesang (Swiss TSG member)	Initial draft version	All
0.2	30/06/2023	Rainer Vogelgesang (Swiss TSG member)	Updated underlying template (BAH 3.0), incorporated 1st round of TSG review feedback	All
0.3	14/07/2023	Rainer Vogelgesang (Swiss TSG member)	Incorporating 2nd round of TSG review feedback	All
0.4	29/09/2023	Rainer Vogelgesang (Swiss TSG member)	Incorporating CSH review feedback	Section 1.4
1.0	13/10/2023	ISO 20022 RA	Approved version	All

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