Business Document Envelope Version 1.1

Committee Specification 01

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Technical Committee:

OASIS Business Document Exchange (BDXR) TC

Chair:

Kenneth Bengtsson (kenneth@alfa1lab.com), Alfa1lab

Editors:

G. Ken Holman (gkholman@CraneSoftwrights.com), Crane Softwrights Ltd.
Kenneth Bengtsson (kenneth@alfa1lab.com), Alfa1lab

Additional artefacts:

The ZIP containing the complete files of this release is found in the directory:

- http://docs.oasis-open.org/bdxr/bdx-bde/v1.1/cs01/

The following directories have normative artefacts:

- http://docs.oasis-open.org/bdxr/bdx-bde/v1.1/cs01/mod
- http://docs.oasis-open.org/bdxr/bdx-bde/v1.1/cs01/xsd
- http://docs.oasis-open.org/bdxr/bdx-bde/v1.1/cs01/xsdrt

Related work:

This specification supersedes:

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Declared XML Namespaces:

http://docs.oasis-open.org/bdxr/ns/bde/1.0/Envelope
http://docs.oasis-open.org/bdxr/ns/bde/1.0/AggregateComponents
http://docs.oasis-open.org/bdxr/ns/bde/1.0/BasicComponents
http://docs.oasis-open.org/bdxr/ns/bde/1.0/ExtensionComponents
http://docs.oasis-open.org/bdxr/ns/bde/1.0/QualifiedDataTypes
http://docs.oasis-open.org/bdxr/ns/bde/1.0/UnqualifiedDataTypes

Abstract:

This specification defines a business-oriented artefact enveloping a payload of one or more business documents or other artefacts with supplemental semantic information about the collection of payloads as a whole. This is distinct from any transport-layer infrastructure envelope that may be required to propagate documents from one system to another. A business document envelope describes contextual information important to the sender and receiver about the payloads, without having to modify the payloads in any fashion.

Status:

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Appendixes

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1 Introduction

1.1 A business document envelope

The metaphor of a paper envelope in which one places business documents for transport or management is apt to describe the role of a business document envelope in relationship to its payloads. Concepts of routing, authentication, non-repudiation and concealment all apply in both the metaphor and the electronic equivalent.

The OASIS Business Document Envelope specifies an XML vocabulary [**XML**] expressing in machine-processable syntax the semantics of enveloping a payload of content with information about that content.

This specification details example candidate scenarios in which a payload envelope plays a role, and the use cases identified in such scenarios.

This specification enumerates the information components of the payload envelope and formally describes the semantics of each component.

This specification mandates a suite of XML schemas [**XSD1**][**XSD2**] and additional limitations describing the document constraints against which a conforming instance MUST validate without error.

Normative markings

All clauses not marked as “non-normative” and also not a subclause of a clause marked as “non-normative” are to be considered normative. All notes and examples are non-normative.

1.2 Terminology

1.2.1 Key words

The key words MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, OPTIONAL and SHOULD in this document are to be interpreted as described in [**RFC 2119**].

1.2.2 Terms and Definitions

schema
: An expression of constraints placed on XML content.

structural schema
: An expression of structural constraints placed on XML elements, attributes and textual content.

value constraints
: An expression of constraints placed on the values of attributes and textual content.

1.2.3 Symbols and Abbreviations

DTQ
: Data type qualifications

RFC
: Request for comment

XSD
: XML Schema Definition

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XSLT
: Extensible Stylesheet Language Transformations

1.2.4 Key concepts

validation
: The act of testing an XML document against a set of structural constraints (as expressed in a schema) or value constrains (as expressed in an arbitrary XML processing language, for example, XSLT).

1.3 Normative References

[**CCTS 2.01**] *UN/CEFACT Core Components Technical Specification, Version 2.01*15 November 2003 *http://www.unece.org/fileadmin/DAM/cefact/codesfortrade/CCTS/CCTS_V2-01_Final.pdf*

[**genericode**] *Code List Representation (Genericode) Version 1.0.* Edited by Anthony B. Coates. 28 December 2007. Committee Specification 01. http://docs.oasis-open.org/codelist/genericode/. Latest version: http://docs.oasis-open.org/codelist/genericode/doc/oasis-code-list-representation-genericode.html.

[**RFC 2119**] S. Bradner, , *Key words for use in RFCs to Indicate Requirement Levels*, BCP 14, RFC 2119, March 1997, <*http://www.rfc-editor.org/info/rfc2119*>.

[**XML**] *Extensible Markup Language (XML) 1.0 (Fifth Edition)*, T. Bray, J. Paoli, C. M. Sperberg-McQueen, E. Maler, F. Yergeau, Editors, W3C Recommendation, 26 November 2008, *http://www.w3.org/TR/2008/REC-xml-20081126/*. Latest version available at *http://www.w3.org/TR/xml*.

[**XSD1**] *XML Schema Part 1: Structures Second Edition*, H. S. Thompson, D. Beech, M. Maloney, N. Mendelsohn, Editors, W3C Recommendation, 28 October 2004, *http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/*. Latest version available at *http://www.w3.org/TR/xmlschema-1*.

[**XSD2**] *XML Schema Part 2: Datatypes Second Edition*, P. V. Biron, A. Malhotra, Editors, W3C Recommendation, 28 October 2004, *http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/*. Latest version available at *http://www.w3.org/TR/xmlschema-2*.

1.4 Non-Normative References

[**CMS**] *Cryptographic Message Syntax (CMS)*, R. Housley, September 2009, *https://tools.ietf.org/html/rfc5652*.

[**PGP**] *OpenPGP Message Format*, J. Callas, L. Donnerhacke, H. Finney, D. Shaw, R. Thayer, November 2007, *https://tools.ietf.org/html/rfc4880*.

[**xmldsig**] *XML-Signature Syntax and Processing Version 1.1*, D. E. Eastlake, J. Reagle, D. Solo, F. Hirsch, M. Nyström, T. Roessler, K. Yiu, Editors, W3C Recommendation, 11 April 2013, *http://www.w3.org/TR/2013/REC-xmldsig-core1-20130411/*. Latest version available at *http://www.w3.org/TR/xmldsig-core1*.

[**XMLEnc**] *XML Encryption Syntax and Processing*, Donald Eastlake, Joseph Reagle, 10 December 2002, *http://www.w3.org/TR/2002/REC-xmlenc-core-20021210/*.

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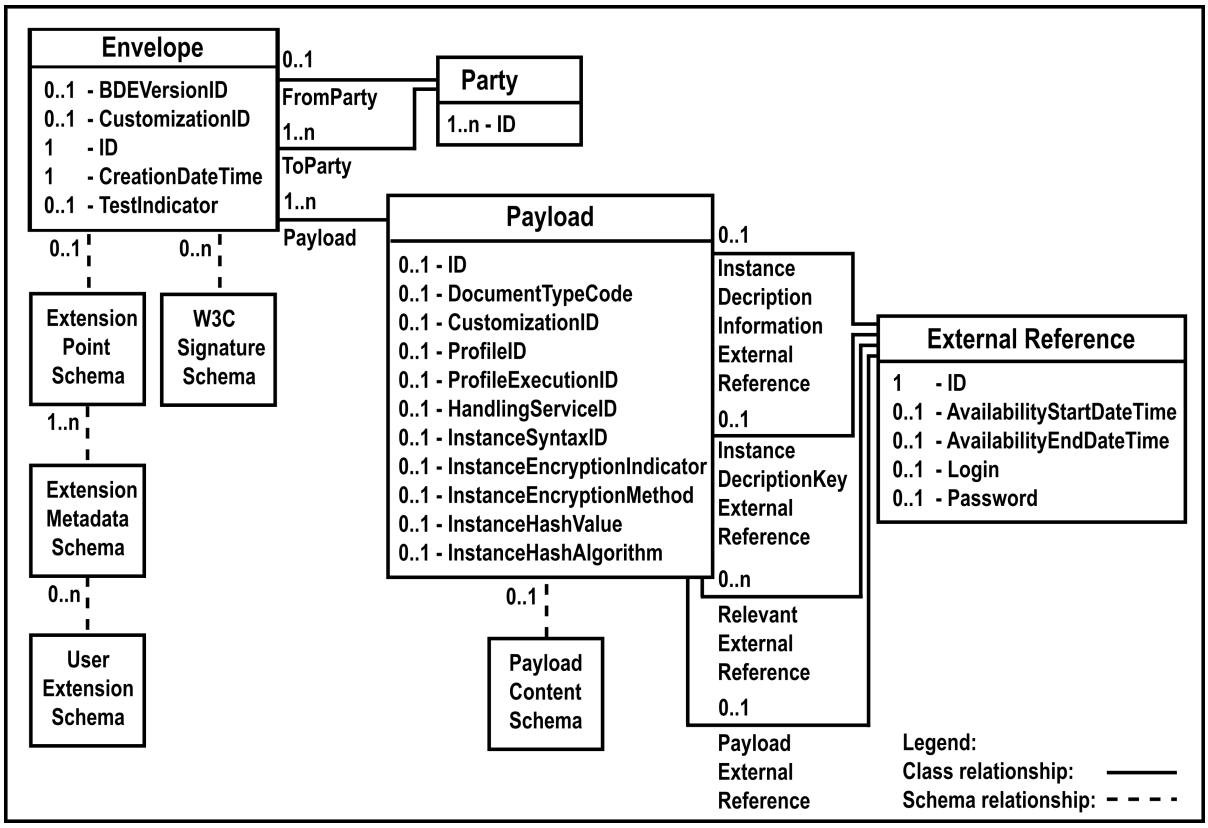
2 Envelope information

2.1 Class diagram

The CCTS-modeled classes of information in the envelope model, and the relationships between them and the additional schema fragments that satisfy non-CCTS-modeled content are depicted in Figure 1, “Information classes”.

Figure 1. Information classes



Note

The requirements upon which the envelope semantics were chosen are listed in Appendix C, *Requirements (Non-Normative)*

2.2 The envelope class

2.2.1 CCTS and non-CCTS envelope information

The information described in an envelope is documented in two parts.

The basic information related to the envelope is modeled as CCTS classes.

Additional information related to the envelope is not modeled as CCTS classes. This includes extension and signature information. Such information is realized in the schema expressions as additional document constraints.

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2.2.2 Basic envelope information

The CCTS-modeled objects in the envelope class are as follows, indicating the requirements being met by the object:

Supports	Name (Unqualified data type)	Description	Crd	Rationale
BDE-02	BDEVersionID (Identifier)	The version of the specific envelope model in use.	0..1	To allow coexistence of different versions of envelopes without using the namespace. The element identifies which syntax version is being used.
BDE-18	CustomizationID (Identifier)	The identification of a customization or use of the envelope model.	0..1	To distinguish a particular set of conventions of use of the envelope, including subsetting, expected extensions and applications.
BDE-01	ID (Identifier)	Unique ID for the envelope for tracking purposes.	1..1	The envelope needs to be tracked.
BDE-03	CreationDateTime (DateTime)	Date and time when the envelope was created.	1..1	The creation date and time needs to be recorded.
BDE-17	TestIndicator (Indicator)	There is a requirement to identify that the content inside the envelope is for test purposes.	0..1	The test flag enables the recipient to identify an incoming message as a test or production message.
BDE-04	FromParty (Party class)	An unambiguous identification of the party that originated the envelope.	0..1	The sender need not be identified, but if so, is done with an identifier, such as for example a GS1 GLN identifier.
BDE-05	ToParty (Party class)	Unambiguous identification of the parties to receive the envelope.	1..n	The receivers each need to be identified by some identifier, such as for example a GS1 GLN identifier.
BDE-07	Payload (Payload class)	The actual payload, such as an invoice, to be processed at next level.	1..n	An envelope without payload serves no purpose.

2.2.3 Additional envelope information

2.2.3.1 Extension information

Through the use of extension metadata and content, additional user-defined information that is not modelled by the CCTS classes can be added to the envelope instance.

The extension point is an OPTIONAL construct as the initial child of the document element. The extension point, when it exists, MUST contain one or more user-defined extensions, with each extension wrapped with OPTIONAL extension metadata identifying properties of the extension.

Name (Unqualified Data Type)	Description	Crd	Rationale
BDEExtensions	A container for all extensions present in the document.	0..1	This is the single point of access to all extensions as the first child of the main document.

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BDEExtension	A single extension for private use.	1..n	There may be many extensions added to a single document.
ExtensionID (Identifier)	An identifier for the Extension assigned by the creator of the extension.	0..1	This identifies the extension amongst other extensions within the document.
ExtensionName (Name)	A name for the Extension assigned by the creator of the extension.	0..1	This identifies the extension in natural language within the document.
ExtensionAgencyID (Identifier)	An agency that maintains one or more Extensions.	0..1	This identifies who created the extension.
ExtensionAgencyName (Name)	The name of the agency that maintains the Extension.	0..1	This identifies who created the extension.
ExtensionAgencyURI (Identifier)	A URI for the Agency that maintains the Extension.	0..1	This identifies who created the extension.
ExtensionVersionID (Identifier)	The version of the Extension.	0..1	This distinguishes one version of the extension from another.
ExtensionURI (Identifier)	A URI for the Extension.	0..1	This identifies the extension amongst other extensions outside of any document.
ExtensionReasonCode (Code)	A code for reason the Extension is being included.	0..1	This gives the author the opportunity to give rationale by way of a code.
ExtensionReason (Text)	A description of the reason for the Extension.	0..1	This gives the author the opportunity to give rationale by way of a text description.
ExtensionContent	The definition of the extension content.	1	This is the parent element of the extension content.

There are no restrictions on the extension content. See Section 3.5.2, “Extension content” for more information.

2.2.3.2 Signature information

This meets requirement BDE-06.

Through the use of the W3C Digital Signature [**xmldsig**] zero or more signatures can be added to the envelope.

The signatures are grouped as the final children of the document element.

Note

The **`val/`** subdirectory includes examples of envelope documents with bona fide digital signatures as described in Appendix D, *Demonstration environment (Non-Normative)*.

2.3 The party class

The CCTS-modeled objects in the party class are as follows, indicating the requirements being met by the object:

Supports	Name (Unqualified Data Type)	Description	Crd	Rationale

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BDE-04, BDE-05	ID (Identifier)	An unambiguous identification of a party.	1..n	The party needs to be identified by some identifier, such as for example a GS1 GLN identifier.

Note

The Identifier unqualified data type offers various attributes that distinguish the semantics expressed by the identifier element value, as summarized in the Identifier data type summary. The element content provides for any normalized string value, which includes the expression of a Uniform Resource Identifier (URI) if needed.

2.4 The payload class

2.4.1 CCTS and non-CCTS payload information

The information described in a payload is documented in two parts.

The basic information related to the payload is modeled as CCTS classes.

The payload content is not modeled as CCTS classes. Such information is realized in the schema expressions as additional document constraints. The rationale for this element is that it is required to be able to include the payload information when that payload information is intended to be part of the envelope. The name of the item is “PayloadContent”, its cardinality is “0..1” and its description is:

> The content of the payload when it is included in the envelope.

In a single instance of the payload class, the payload external reference and the payload content are mutually exclusive and one of them MUST exist.

2.4.2 Basic payload information

The CCTS-modeled objects in the payload class are as follows, indicating the requirements being met by the object:

Supports	Name (Unqualified Data Type)	Description	Crd	Rationale
BDE-08	ID (Identifier)	A unique identification of the payloads contained within the envelope.	0..1	Required to be able to identify the content of the payload without having to look inside the envelope.
BDE-09	DocumentTypeID (Identifier)	This element identifies the type of the payload instance in the envelope.	0..1	To enable a Service registry lookup to verify and identify the type of payload.
BDE-11	CustomizationID (Identifier)	Identifies the customization that applies to the received document.	0..1	May be used to control validation of the content of the document that is contained in the document instance.
BDE-12	ProfileID (Identifier)	Identifies the profile that the payload document is part of.	0..1	May be used to route the incoming document to the correct process dependent on which business process the payload instance is part of, e.g. an order response that is part of a process

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				defined in the identified profile.
BDE-12	ProfileExecutionID (Identifier)	Identifies the particular instance of an executing profile that the payload document is part of.	0..1	This distinguishes between multiple executing instances of a given profile.
BDE-13	HandlingServiceID (Identifier)	Identifies the service that should process the payload instance.	0..1	Can be used to look up the target service that should be used to process the payload instance.
BDE-09	InstanceSyntaxID (Identifier)	Identifies the syntax that the payload document is expressed in.	0..1	Makes it possible to route the incoming message to the appropriate process depending on the document syntax.
BDE-15	InstanceEncryptionIndicator (Indicator)	An indicator to state whether the payload instance is encrypted or not.	0..1	The fact that a payload is encrypted may need to be identified in order to ensure correct processing.
BDE-15	InstanceEncryptionMethod (Text)	The method used to encrypte the payload instance.	0..1	The fact that a payload is encrypted may need to be identified in order to ensure correct processing.
BDE-16	InstanceHashValue (Text)	Hash total of the unencrypted payload document.	0..1	The hash provides a check of the integrity of any unencrypted payload.
BDE-16	InstanceHashAlgorithm (Text)	Algorithm used to calculate the hash total of the unencrypted payload document.	0..1	Different schemes for calculating the hash are possible to be used and so should be identified.
BDE-20	InstanceDecryptionInformationExternalReference (External Reference class)	Decryption information that is available external to the envelope.	0..1	To give general information regarding the decryption of an encrypted payload instance.
BDE-20	InstanceDecryptionKeyExternalReference (External Reference class)	Decryption key data that is available external to the envelope.	0..1	To give specific key information regarding the decryption of an encrypted payload instance.
BDE-10	RelevantExternalReference (External Reference class)	A reference to a business case, document or other issues which are relevant to the handling of the envelope.	0..n	To enable routing and other handling, such as opening of an envelope based on the referenced information such as a reference to a specific call for tender to which the envelope contains a response (e.g. a tender).
BDE-19	PayloadExternalReference (External Reference class)	The reference to the payload when it is not included within the envelope.	0..1	In use cases where the sender wants to make the recipient aware of the existence of a document stored at an external location and is not contained within the business document envelope itself.

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2.4.3 Additional payload information

Certain information related to the payload is not modeled as a CCTS class, rather, it is realized in the schema expressions as a set of additional document constraints. See Section 3.5.3, “Payload content” for more details.

2.4.4 Positional semantics of multiple payloads

When there exists more than one payload in a business document envelope, the first payload in document order SHALL be considered the primary payload.

2.4.5 Non-XML payload syntax constraint

When the payload syntax is not XML it MUST be encoded in the payload content in such a way as not to interfere with the XML processing of the content as simple text. Sensitive XML markup characters in simple text, the “<”, “&” and “>”, MUST be escaped using an entity or a numeric character reference.

Note

Binary payloads cannot be processed as simple text in an XML document without being encoded. To be well-formed, such content is encoded using a technique such as Base64 or Xxencoding, both of which can be used in the raw without character escaping. A technique such as Uuencode cannot be used in the raw because its encoded repertoire includes sensitive XML markup characters that would need to be escaped in order to be used.

2.5 The external reference class

The CCTS-modeled objects in the external reference class are as follows, indicating the requirements being met by the object:

Supports	Name (Unqualified Data Type)	Description	Crd	Rationale
BDE-10, BDE-19	ID (Identifier)	An identifier through which an external resource can be located or de-referenced.	1..n	Resources not contained within the envelope need to be identified by some mechanism through which the resource can be obtained.
BDE-21	AvailabilityStartDateTime (DateTime)	The start date and time when the information is available.	0..1	Resources may be constrained by when in time they first become available.
BDE-21	AvailabilityEndDateTime (DateTime)	The end date and time when the information is available.	0..1	Resources may be constrained by when in time they are no longer available.
BDE-21	Login (Text)	Text describing any login details to access the information.	0..1	Access to a resource may be constrained by a login credential.
BDE-21	Password (Text)	A password needed to access the information.	0..1	Access to a resource may be constrained by a password credential.

Note

The Identifier unqualified data type offers various attributes that distinguish the semantics expressed by the identifier element value, as summarized in the Identifier data type summary. The

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element content provides for any normalized string value, which includes the expression of a Uniform Resource Identifier (URI) if needed.

2.6 Model expression

The document model is expressed in three ways, found in three files of the model subdirectory:

- **mod**
  - **BDE-Model-1.1.ods**
    - model information expressed in an Open Office spreadsheet
  - **BDE-Model-1.1.xls**
    - model information expressed in an Excel spreadsheet
  - **BDE-Entities-1.1.gc**
    - model information expressed in a genericode [**genericode**] file

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3 XML schemas

3.1 Schema expression

The structural document constraints of the envelope are expressed normatively as a set of W3C XSD XML Schemas [**XSD1**][**XSD2**].

3.2 The schema subdirectories

The schemas are delivered in two subdirectories:

- **xsd**
  - CCTS documentation is included as XSD annotations
- **xsdrt**
  - runtime version such that CCTS documentation is not included as XSD annotations
  - without the annotations a W3C schema processor has less work to prepare for validating documents

In both subdirectories there is a single subdirectory of common files:

- **common**
  - included schema fragments by any document fragment

3.3 The envelope schema

The following is the only Document ABIE schema:

- **BDE-Envelope-1.1.xsd**
  - the base envelope schema fragment that incorporates other schema fragments

3.4 Non-content data type common schemas

The following are read-only schema fragments in the common subdirectory:

- **BDE-CommonAggregateComponents-1.1.xsd**
  - the Library ABIE element declarations
- **BDE-CommonBasicComponents-1.1.xsd**
  - the Library BBIE element declarations
- **BDE-CommonExtensionComponents-1.1.xsd**
  - the Document ABIE extension metadata declarations
- **BDE-QualifiedDataTypes-1.1.xsd**
  - the qualified data types (empty; none are defined)
- **BDE-UnqualifiedDataTypes-1.1.xsd**

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    - the unqualified data types based on the core component types
    - see Section 3.6, “Unqualified data type attributes” for more details
- **BDE-xmldsig1-schema-1.1.xsd**
    - the XML Digital Signature 1.1 schema driver fragment copyrighted by W3C
- **BDE-xmldsig11-schema-1.1.xsd**
    - the XML Digital Signature 1.1 schema fragment copyrighted by W3C
- **BDE-xmldsig-core-schema-1.1.xsd**
    - the XML Digital Signature Core schema fragment copyrighted by W3C
- **CCTS_CCT_SchemaModule-1.1.xsd**
    - the Core Component Types schema fragment copyrighted by UN/CEFACT

3.5 Content data type common schemas

3.5.1 Modifiable schema fragments

There are two content data type schema fragments in the common subdirectory, one for each of the extension content and the payload content. These are the only schemas intended to be edited by users should they wish to validate the content of their extensions or payloads. No changes are necessary to the schemas if it is not important to validate these portions of the document.

Should users wish to impose constraints on the extension or the payload contents, the only edits necessary of the content schema are for the importation of the schemas to be engaged for validation purposes. No edits are necessary for the content element, though one may wish to do so to exclude content other than that for which schemas are provided.

3.5.2 Extension content

The extension content schema fragment describes constraints on content placed in extensions.

- **BDE-ExtensionContentDataType-1.1.xsd**

The extension content element’s name is `<{extensions prefix}:ExtensionContent>`, for example, `<ext:ExtensionContent>`. It is the last element child of `<{extensions prefix}:BDEExtension>`.

Any given extension content may have as its child at most one apex (or top-most) element in the XML element tree. The absence of content is provided for situations where a processing application chooses to elide foreign unrecognized-namespace elements from the XML element tree.

The distributed version of this file imports the version of XAdES schemas current at the time of publication. XAdES constructs are used within W3C XML Digital Signatures. These import directives can be replaced with the importation of future versions of XAdES schemas as needed.

- **BDE-XAdES01903v132-201601-1.1.xsd**
    - the v1.3.2 XAdES schema fragment from the etsi.org web site
- **BDE-XAdES01903v141-201601-1.1.xsd**
    - the v1.4.1 XAdES schema fragment from the etsi.org web site

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3.5.3 Payload content

The payload content schema fragment describes constraints on content placed in payloads.

- **BDE-PayloadContentDataType-1.1.xsd**

The payload content element's name is <{aggregate prefix}:PayloadContent>, for example, <eac:PayloadContent>. It is the last element child of <{aggregate prefix}:Payload>.

Any given payload content element may have as its child exactly one apex (or top-most) element in the XML element tree, or it may consist solely of text that would typically represent encrypted content or non-XML content. Special care needs to be taken that all non-XML payload content is encoded according to XML text encoding rules, such as the escaping of special markup characters, so as to permit an XML processing application to correctly interpret the non-XML content.

The schema declarations are unable to prevent flagging the payload content having a combination of both text and a single element as a constraint error. Detecting such a condition is the responsibility of the processing agent.

The schema declarations are unable to prevent flagging the payload content having empty content as a constraint error. Detecting such a condition is the responsibility of the processing agent.

3.6 Unqualified data type attributes

In the Business Document Envelope model each BBIE is indicated to have a particular component name (specifying the element name) and to be of a particular unqualified data type (specifying the base type value constraints and the attributes).

Based on the 10 approved core component types described in section 8.1 of [**CCTS 2.01**], there are 20 available unqualified data types for BBIE values. Each data type has a constraint on its content (the component) and a possibly-empty selection of available possibly-mandatory attributes (the supplementary components).

Note

Not all of the unqualified data types listed in this table are used in the standardized components of the envelope. All defined types are enumerated here for completeness in the event that a CCTS-based extension is created by a community of users that relies on one of the unqualified data types not used by the standardized components of the envelope.

Data Type	Base type (XSD)	Supplementary component (attribute)	Cardinality	Type (XSD)	Definition
Amount	xsd:decimal	A number of monetary units specified using a given unit of currency.			
		currencyID	required	xsd:normalized-String	The currency of the amount.
		currencyCodeListVersionID	optional	xsd:normalized-String	The VersionID of the UN/ECE Rec9 code list.
Binary Object Graphic Picture Sound	xsd:base64Binary	A set of finite-length sequences of binary octets.			
		mimeCode	required	xsd:normalized-String	The mime type of the binary object.
		characterSetCode	optional	xsd:normalized-String	The character set of the binary object if the mime type is text.

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Video		encodingCode	optional	xsd:normalized-String	Specifies the decoding algorithm of the binary object.
		filename	optional	xsd:string	The filename of the binary object.
		format	optional	xsd:string	The format of the binary content.
		uri	optional	xsd:anyURI	The Uniform Resource Identifier that identifies where the binary object is located.
Code	xsd:normalized-String	A character string (letters, figures, or symbols) that for brevity and/or language independence may be used to represent or replace a definitive value or text of an attribute, together with relevant supplementary information.			
		languageID	optional	xsd:language	The identifier of the language used in the code name.
		listAgencyID	optional	xsd:normalized-String	An agency that maintains one or more lists of codes.
		listAgencyName	optional	xsd:string	The name of the agency that maintains the list of codes.
		listID	optional	xsd:normalized-String	The identification of a list of codes.
		listName	optional	xsd:string	The name of a list of codes.
		listSchemeURI	optional	xsd:anyURI	The Uniform Resource Identifier that identifies where the code list scheme is located.
		listURI	optional	xsd:anyURI	The Uniform Resource Identifier that identifies where the code list is located.
		listVersionID	optional	xsd:normalized-String	The version of the list of codes.
		name	optional	xsd:string	The textual equivalent of the code content component.
DateTime	xsd:dateTime	An instance of time according the Gregorian calendar.			
Date	xsd:date	One calendar day according the Gregorian calendar.			
Time	xsd:time	An instance of time that occurs every day.			
Identifier	xsd:normalized-String	A character string to identify and uniquely distinguish one instance of an object in an identification scheme from all other objects in the same scheme, together with relevant supplementary information.			
		schemeAgency-ID	optional	xsd:normalized-String	The identification of the agency that maintains the identification scheme.

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		schemeAgency-Name	optional	xsd:string	The name of the agency that maintains the identification scheme.
		schemeDataURI	optional	xsd:anyURI	The Uniform Resource Identifier that identifies where the identification scheme data is located.
		schemeID	optional	xsd:normalized-String	The identification of the identification scheme.
		schemeName	optional	xsd:string	The name of the identification scheme.
		schemeURI	optional	xsd:anyURI	The Uniform Resource Identifier that identifies where the identification scheme is located.
		schemeVersionID	optional	xsd:normalized-String	The version of the identification scheme.
Indicator	xsd:boolean	A list of two mutually exclusive Boolean values that express the only possible states of a property.			
Measure	xsd:decimal	A numeric value determined by measuring an object using a specified unit of measure.			
		unitCode	required	xsd:normalized-String	The type of unit of measure.
		unitCodeListVersionID	optional	xsd:normalized-String	The version of the measure unit code list.
Numeric Value Percent Rate	xsd:decimal	Numeric information that is assigned or is determined by calculation, counting, or sequencing. It does not require a unit of quantity or unit of measure.			
		format	optional	xsd:string	Whether the number is an integer, decimal, real number or percentage.
Quantity	xsd:decimal	A counted number of non-monetary units, possibly including a fractional part.			
		unitCode	optional	xsd:normalized-String	The unit of the quantity
		unitCodeListAgencyID	optional	xsd:normalized-String	The identification of the agency that maintains the quantity unit code list
		unitCodeListAgencyName	optional	xsd:string	The name of the agency which maintains the quantity unit code list.
		unitCodeListID	optional	xsd:normalized-String	The quantity unit code list.
Text Name	xsd:string	A character string (i.e. a finite set of characters), generally in the form of words of a language.			
		languageID	optional	xsd:language	The identifier of the language used in the content component.
		languageLocaleID	optional	xsd:normalized-String	The identification of the locale of the language.

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4 Conformance

A Business Document Envelope instance exhibits conformance when complying with all of the following criteria:

1. The instance MUST NOT violate any document constraints expressed by the schema in Section 3.3, “The envelope schema”

2. Any XML element that is not extension content MUST NOT be empty.

3. The `<{aggregate prefix}:Payload` element SHALL have one or the other of the `<{aggregate prefix}:PayloadContent>` element child or the `<{aggregate prefix}:PayloadExternalReference>` element child (that is, it MUST NOT have both).

4. The `<{aggregate prefix}:PayloadContent>` element SHALL NOT have a combination of text and an element (that is, it MUST either be a non-empty string of text or be a single element).

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Appendix A Package structure (Non-Normative)

This Committee Specification 01 is published as a zip archive in the http://docs.oasis-open.org/bdxr/bdx-bde/v1.1/cs01/ directory. Unzipping this archive creates a directory tree containing a number of files and subdirectories. Note that while the two XML files comprise the revisable version of this specification, this revisable XML may not be directly viewable in all currently available web browsers.

The base directory has the following files:

`bdx-bde-v1.1-cs01.xml`
The revisable form of the document.

`bdx-bde-v1.1-cs01.html`
An HTML rendering of the document.

`bdx-bde-v1.1-cs01.pdf`
A PDF rendering of the document.

These are the non-normative subdirectories in the package:

`art`
Diagrams and illustrations used in this specification.

`db`
DocBook stylesheets for viewing in HTML the XML of this work product.

`val`
Demonstrative validation of the example instances with the envelope schemas.

See Appendix D, *Demonstration environment (Non-Normative)* for details.

The normative subdirectories in the package are listed in normative clauses.

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Appendix B Revision History (Non-Normative)

B.1 Major version BDE 1.0

BDE version 1.0 Committee Specification 01 was published 02 August 2105. Version 1.0 established the namespaces to be used for all minor revisions of the Business Document Envelope.

B.2 Minor Revision BDE 1.1

B.2.1 Backwards Compatibility

BDE version 1.1 is a minor revision of BDE version 1.0. This new version only adds new business objects to meet user requirements identified after the completion of BDE version 1.0.

Version 1.1 is fully backward compatible to version 1.0 in that every XML instance that validates with the BDE 1.0 schemas will also validate with the BDE 1.1 schemas.

B.2.2 Schema changes from BDE 1.0 to BDE 1.1

B.2.2.1 Changes to Library Elements, BDE 1.0 to BDE 1.1

Table B.1. Changes to Library Elements BDE 1.1 from BDE 1.0

Aggregate BIE	Basic or Association BIE	Changes for BDE-1.1
ExternalReference		
	AvailabilityStartDateTime	Added
	AvailabilityEndDateTime	Added
	Login	Added
	Password	Added
Party		
	ID	Changed cardinality from 1 to 1..n
Payload		
	InstanceDecryptionInformationExternalReference	Added
	InstanceDecryptionKeyExternalReference	Added

Note

The change in cardinality for the `ID` child of `Party` is a repair to a fault in the published BDE 1.0 schema expression of the BDE 1.0 specification's constraints. This is not a change reflecting new user requirements.

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B.2.2.2 Changes to Document Elements, BDE 1.0 to BDE 1.1

Table B.2. Changes to Document Elements BDE 1.1 from BDE 1.0

Aggregate BIE	Basic or Association BIE	Changes for BDE-1.1
Envelope		
	ToParty	Changed cardinality from 1 to 1..n

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Appendix C Requirements (Non-Normative)

C.1 High-level and non-functional requirements

- The BDE must be an electronic envelope and universally understandable document header that allows its originator to send one or more electronic business documents to a recipient.
- The BDE must be payload agnostic, meaning that it must function completely independently from its content.
- The BDE must be an independent work product with no bindings or references to specific document standards.
- The BDE must be transport protocol agnostic, meaning that it must be possible to send and receive a BDE through any file transfer protocol.
- It must be possible to route a BDE through several intermediaries and networks.
- It must be possible for the sender and receiver of a BDE to keep its payload confidential from end to end.
- It must be possible for the receiver of a BDE to verify the integrity of its payload.
- A gateway or intermediary must be able to route a BDE without any knowledge of its payload.
- The BDE should support business scenarios where it is required to unambiguously establish the identity of its sender.
- The BDE should support business scenarios where it is required to keep the identity of its sender hidden.

C.2 Functional requirements

Requirement	Description
BDE-01	A BDE must contain an identifier that uniquely identifies the envelope.
BDE-02	It must be possible to specify the BDE version of the envelope.
BDE-03	A BDE must contain a timestamp for its creation.
BDE-04	A BDE must contain unambiguous identification of its final recipient.
BDE-05	It must be possible to include information in a BDE that unambiguously identifies the originating party.
BDE-06	It must be possible for the originating party to digitally sign a BDE with any number of signatures.
BDE-07	A BDE must contain one or more payloads.
BDE-08	It must be possible to uniquely identify each payload in a BDE.
BDE-09	It must be possible to specify the document syntax for each payload in a BDE.
BDE-10	It must be possible to identify the reference to a relevant resource, such as a specific agreement, case, document, prior correspondence, etc.
BDE-11	It must be possible to identify any customization that applies to the document of a given payload.

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Requirement	Description
BDE-12	It must be possible to specify if the document of a given payload is a transaction in a business process with a predefined profile ID.
BDE-13	It must be possible to specify the appropriate service for handling the document of a payload, if not specified by a predefined profile ID.
BDE-14	It must be possible for a BDE to contain payloads that have been encrypted, as long as they have been expressed in such a way as to not interfere with the XML schema.
BDE-15	It must be possible for the recipient to identify if a given payload of a BDE has been encrypted.
BDE-16	It must be possible to include the hash value of an unencrypted payload of a BDE in order to verify its integrity.
BDE-17	It must be possible to set a flag identifying a BDE as a test message.
BDE-18	It must be possible to specify a particular customization of the use of a BDE.
BDE-19	It must be possible to include a link to a document stored at an external location instead of including the document as payload content, to support use cases where the BDE is used to notify the recipient of the existence of a document and not to send the document itself.
BDE-20	It must be possible to include a reference to each of either general information and/or specific key information regarding the decryption of the payload instance.
BDE-21	It must be possible to express constraints on the availability of external reference information by specifying any or all of availability start and end times, and/or any login and password information.

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Appendix D Demonstration environment (Non-Normative)

A working example of using the schemas with an XML instance is demonstrated in the `val/` directory. This directory has a number of simple test files:

- **`simpleExample.xml`**
  - a simple envelope with three payload instances, the second of which is simple text (note the escaped special characters) and the other two of which are XML

```
<?xml version="1.0" encoding="UTF-8"?>
<Envelope xmlns="http://docs.oasis-open.org/bdxr/ns/bde/1.0/Envelope"
  xmlns:ebc="http://docs.oasis-open.org/bdxr/ns/bde/1.0/BasicComponents"
  xmlns:eac="http://docs.oasis-open.org/bdxr/ns/bde/1.0/AggregateComponents">
  <ebc:ID>123</ebc:ID>
  <ebc:CreationDateTime>2015-02-08T20:34:00-04:00</ebc:CreationDateTime>
  <eac:FromParty>
    <ebc:ID>A</ebc:ID>
  </eac:FromParty>
  <eac:ToParty>
    <ebc:ID>B</ebc:ID>
  </eac:ToParty>
  <eac:Payload>
    <eac:PayloadContent>
      <myDocumentHere>
        <myElement>My Content</myElement>
        <myElement>My Content</myElement>
        <myElement>My Content</myElement>
      </myDocumentHere>
    </eac:PayloadContent>
  </eac:Payload>
  <eac:Payload>
    <eac:PayloadContent>
Non-XML payload here, with sensitive characters
escaped such as &amp;, &lt; and ]]&gt;.

Any text, provided it has been escaped, can be included in a payload.
    </eac:PayloadContent>
  </eac:Payload>
  <eac:Payload>
    <eac:PayloadContent>
      <myOtherDocumentHere>
        <myOtherElement>My Content</myOtherElement>
        <myOtherElement>My Content</myOtherElement>
        <myOtherElement>My Content</myOtherElement>
      </myOtherDocumentHere>
    </eac:PayloadContent>
  </eac:Payload>
</Envelope>
```

- **`simpleExampleFailSyntax.xml`**
  - an envelope document with an XML well-formedness error (the end tag for the creation date and time is missing the closing right-angle bracket)

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- **simpleExampleFailModel.xml**
  - an envelope document with an XML validity error (a misspelled element for the creation date and time)
- **simpleExampleExtension.xml**
  - a simple envelope with a user-defined extension adding information to the envelope
- **simpleExampleDecrypt.xml**
  - a simple envelope referencing time-sensitive decryption information
- **simpleExampleMultipleToPartyXMLEnc1.xml**
  - an envelope with multiple `ToParty` elements and encrypted content (see Appendix E, *Encrypting payloads to multiple recipients (Non-Normative)*)
- **simpleExampleSignedNotFinal.xml**
  - a simple envelope digitally signed with a single signature in such a way that allows additional signatures to be embedded in the envelope
- **simpleExampleSignedFinal.xml**
  - a simple envelope digitally signed with a single signature in such a way that does not allow additional signatures to be embedded in the envelope
- **simpleExampleSignedNotFinalAdditional.xml**
  - a simple envelope digitally signed with two signatures, having added one to `simpleExampleSignedNotFinal.xml`
- **simpleExampleSignedFinalAdditionalFail.xml**
  - a simple envelope digitally signed with two signatures, having added one to `simpleExampleSignedFinal.xml`
  - the document validates against the BDE schemas, however digital signature verification software flags this as the final signature being invalid because additional information (the second signature) was added to the document
- **simpleExampleSignedDetached.xml**
  - the detached digital signature of `simpleExample.xml`, signed in such a way that allows additional signatures to be embedded in the envelope
  - this is an instance of the W3C digital signature vocabulary and is not an instance of the business document envelope, and so this is not validated as part of the test script

Note

The digital signatures in these test files are bona fide and can be verified with suitable digital signature software.

To invoke the schemas with the demonstration instances, navigate to the directory and invoke the test script:

- in Windows:

```
test.bat
```


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- in shell:

```
sh test.sh
```

The result on the screen should appear as follows:

```
val $ sh test.sh

################################################################
Validating simpleExample.xml
################################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

################################################################
Validating simpleExampleFailSyntax.xml
################################################################
============== Phase 1: XSD schema validation ==============
org.xml.sax.SAXParseException: The end-tag for element type
"ebc:CreationDateTime" must end with a '>' delimiter.
at org.apache.xerces.parsers.AbstractSAXParser.parse(Unknown Source)
at org.apache.xerces.jaxp.SAXParserImpl$JAXPSAXParser.parse(Unknown Source)
at org.apache.xerces.jaxp.SAXParserImpl.parse(Unknown Source)
at javax.xml.parsers.SAXParser.parse(SAXParser.java:277)
at com.nwalsh.parsers.XJParser.xsdParse(Unknown Source)
at com.nwalsh.parsers.XJParser.parse(Unknown Source)
at com.nwalsh.parsers.XJParse.run(Unknown Source)
at com.nwalsh.parsers.XJParse.main(Unknown Source)
Exception in thread "main" java.lang.NullPointerException
at com.nwalsh.parsers.XJParser.printParseStats(Unknown Source)
at com.nwalsh.parsers.XJParse.run(Unknown Source)
at com.nwalsh.parsers.XJParse.main(Unknown Source)
Attempting well-formed, namespace-aware parse
Fatal error:file:///Users/admin/t/artefacts-bdx-bde-v1.0-csd01wd01-test/
val/simpleExampleFailSyntax.xml:7:3:The end-tag for element type
"ebc:CreationDateTime" must end with a '>' delimiter.

################################################################
Validating simpleExampleFailModel.xml
################################################################
============== Phase 1: XSD schema validation ==============
Attempting well-formed, namespace-aware parse
Error:file:///Users/admin/t/artefacts-bdx-bde-v1.0-csd01wd01-test/val/
simpleExampleFailModel.xml:6:26:cvc-complex-type.2.4.a: Invalid
content was found starting with element 'ebc:CreationDateTimex'. One
of '{"http://docs.oasis-open.org/bdxr/ns/bde/1.0/BasicComponents":
CreationDateTime}' is expected.
Parse succeeded (0.12) with 1 error and no warnings.

################################################################
Validating simpleExampleExtension.xml
################################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
```

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```
No code list validation errors.

############################################################
Validating simpleExampleDecrypt.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

############################################################
Validating simpleExampleMultipleToPartyXMLEnc1.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

############################################################
Validating simpleExampleSignedNotFinal.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

############################################################
Validating simpleExampleSignedFinal.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

############################################################
Validating simpleExampleSignedNotFinalAdditional.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

############################################################
Validating simpleExampleSignedFinalAdditionalFail.xml
############################################################
============== Phase 1: XSD schema validation ==============
No schema validation errors.
============ Phase 2: XSLT code list validation ============
No code list validation errors.

val $
```

The test script invokes the validation script using the following::

- in Windows:

  validate.bat schema-file instance-file

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- in shell:

```
sh validate.sh schema-file instance-file
```

The validation script invokes the schema script using the following:

- in Windows:

```
w3cschema.bat schema-file instance-file
```

- in shell:

```
sh w3cschema.sh schema-file instance-file
```

The validation script invokes the XSLT script using the following:

- in Windows:

```
xslt.bat instance-file stylesheet-file output-file
```

- in shell:

```
sh xslt.sh instance-file stylesheet-file output-file
```

The empty stylesheet **BDE-DefaultDTQ-1.1.xsl** is a placebo that would be replaced with an XSLT stylesheet imposing value validation constraint checking on a given instance of a business document envelope.

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Appendix E Encrypting payloads to multiple recipients (Non-Normative)

The BDE supports sending business documents to multiple recipients using a single envelope, which is obtained by adding multiple instances of the ToParty element to the BDE envelope.

When encrypting payloads of envelopes with multiple recipients, users SHOULD make use of encryption technologies that support multiple recipients so that an encrypted payload to multiple recipients can be contained in a single instance of a BDE envelope's PayloadContent. Examples of encryption technologies supporting multiple recipients are [**CMS**], [**PGP**] and [**XMLEnc**].

The workings of individual encryption technologies and methodologies are beyond the scope of this specification, however an example of using [**XMLEnc**] with multiple recipients has been included in the `val/` subdirectory.

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