Artwork Content and Response Business Message Standard (BMS)

Release 3.6, Ratified, Mar 2023

Document Summary

Document Item	Current Value
Document Name	Artwork Content and Response Business Message Standard (BMS)
Document Date	Mar 2023
Document Version	3.6
Document Issue	1
Document Status	Ratified

Work Request Reference

Date of WR Submission to GSMP:	WR Submitter(s):	Refer to Work Request (WR) Number(s):
25-Jun-2014	GS1 GO	14-000110
12-Jul-2016	GS1 GO	16-000340
03-Oct-2018	GS1 GO	18-000319

Business Requirements Document (BRAD) Reference

BRAD Title	BRAD Issue Date	BRAD Version
Intelligent Packaging	December 2010	1.0

Document Change History

Date of Change	Version	Changed By	Reason for Change	Summary of Change
12-Jan-2012	BMS 3.0 – Issue 1	Mark Van Eeghem	BMS Release 3.0	See summary of changes
01-May-2013	BMS 3.1 – Issue 1	Coen Janssen	BMS Release 3.1	See summary of changes
15-Sep-2014	BMS 3.2 – Issue 1	Ewa Iwicka	BMS Release 3.2	See summary of changes
01-Mar-1017	BMS 3.3 – Issue 1	Ewa Iwicka	BMS Release 3.3	See summary of changes
15-Oct-2018	BMS 3.4 – Issue 1	Ewa Iwicka	BMS Release 3.4	See summary of changes
02-Feb-2021	BMS 3.5 – Issue 1	Miklos Bolyky	BMS Release 3.5	See summary of changes
05-Jan-2022	BMS 3.5.1 – Issue 1	Miklos Bolyky	BMS Release 3.5.1	See summary of changes
01-Mar-2023	BMS 3.6 – Issue 1	Miklos Bolyky	BMS Release 3.6	See summary of changes

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1 Business Domain View

1.1 Introduction

Message Definition

Artwork Content Message Definition

The Artwork Content message enables to send the product's artwork content that appears on a package (e.g. box, label, bag) or related materials (e.g. printed coupons).

Artwork Content Response Message Definition

The Artwork Content Response message facilitates electronic exception reporting upon processing of an Artwork Content message.

Principles

By trading information on the artwork content in a standard way, manufacturers and artwork/print vendors will improve processing time, quality, and efficiency. Current processes are numerous and time consuming. Each manufacturer follows different approaches, usually based on region and brand to communicate with their vendors, resulting in a very complex environment, increasing time to market and costs to deliver, while simultaneously reducing quality.

This Business Message Standard document defines a standard format for artwork content and a standard message flow whereby artwork content in this standard format is communicated. The standard communication approach will reduce processing time, increase productivity, and reduce error rates. In addition to improved manufacturer / vendor communications, the global schema and message processes could enable manufacturers to accurately communicate artwork content to eRetailers, driving eCommerce speed to market and quality.

✅ **Note**: "Artwork Content" refers to text and graphics exchanged between two partners based on a previously agreed upon template. For example labels, point of sale materials, or displays.

1.2 References

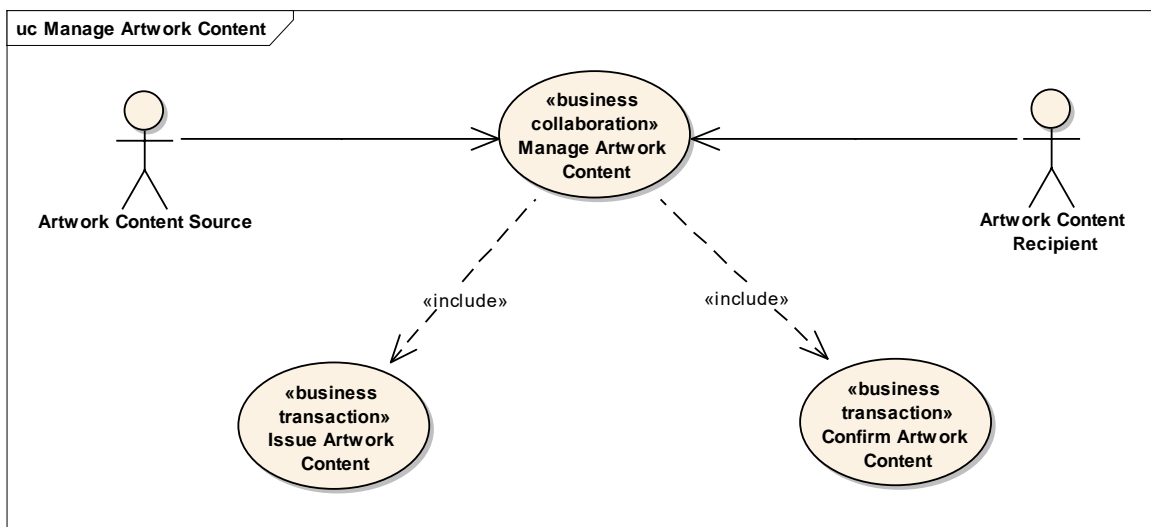| Reference Name	
BRAD Intelligent Packaging, GS1, 2010	
BMS eCom Domain Common Library Release 3.6	The documented design of components that are used in multiple messages within the eCom domain.
BMS Shared Common Library Release 3.6	The documented design of components that are used in multiple messages within the eCom domain and GDSN.

2 Business Context

Context Category	Value(s)
Industry	All
Geopolitical	All
Product	All
Process	Align: Communication of Artwork Content

Context Category	Value(s)
System Capabilities	GS1 System: eCom Artwork Content Management Software Artwork Design Software / Artwork Presentation Software
Official Constraints	None

3   Business Transaction View

3.1   Business Collaboration - Manage Artwork Content

Use Case Diagram

Use Case Definition

Use Case ID	UC-1
Use Case Name	**Manage Artwork Content**
Use Case Description	The objective of this process is to enable trading partners to exchange the product's artwork content that appears on a package (e.g. box, label, bag) or related materials (e.g. printed coupons). This replaces the current cut & paste process which is error prone and labor intensive. This information can consist of textual information, barcode numbers, and references to artwork or logos that can appear on the package or related materials. The artwork content is converted into objects in a graphics layout, also known as artwork. Managing Artwork Content is an iterative process between the Artwork Content Source & Artwork Content Recipient that relates to artwork that is "work in progress". The process continues until the Artwork Content Source has approved the final artwork. Given that the process to exchange artwork content is just one part of the broader workflow process that includes the exchange and approval of graphics or artwork, this 'final approval' is communicated outside of the XML messaging and is based on approval of both the artwork content and the artwork.
Actors (Goal)	Artwork Content Source, Artwork Content Recipient
Performance Goals	

Use Case ID	UC-1
Preconditions	Artwork Content has been created and assembled by the content source. Artwork Content Source has provided artwork, logos, technical drawing, etc... prior to or along with the artwork content, to the Artwork Content Recipient.
Post conditions	The Artwork Content Recipient has received final approval of the artwork from the Artwork Content Source. This implies that all of the artwork content that appears on the artwork has also been approved.
Scenario	**Begins when**... Artwork Content Source has artwork content to share with the Content Recipient.

Step #	Actor	Activity Step
1	Artwork Content Source	Transmits artwork content
2	Artwork Content Recipient	Receives artwork content
3	Artwork Content Recipient	Optionally, sends artwork content (response)
4	Artwork Content Source	Optionally, receives artwork content (response)
5	*Steps 1 thru 4 continue until final approval of the artwork, including the content.*	

Ends when... Artwork Content Recipient has received a notification from the Artwork Content Source that the Artwork Content and Artwork are approved.

Activity Diagram

Not applicable

Sequence Diagrams
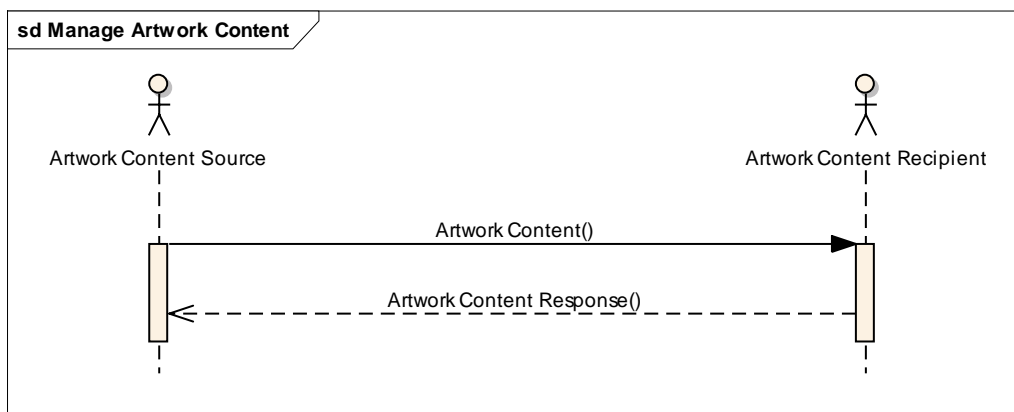
3.2 Business Transaction - Issue Artwork Content

Use Case Definition

Use Case ID	UC-1A
Use Case Name	**Issue Artwork Content**
Use Case Description	The objective is to enable the Artwork Content Source to send the product's artwork content that appears on a package (e.g. box, label, bag) or related materials (e.g. printed coupons). This reduces the use of current manual processes, such as phone, email, etc... and standardizes the communication. This information can consist of barcode numbers, textual information and references to artwork or logos that can appear on the package or related materials. The artwork content is converted into objects in a graphics layout, also known as artwork.
Actors (Goal)	Artwork Content Source, Artwork Content Recipient
Performance Goals	
Preconditions	Artwork Content has been created and assembled by the content source. Artwork Content Source has provided artwork, logos, technical drawing, etc.. prior to or along with the artwork content, to the Artwork Content Recipient. Artwork Content Source has provided artwork and logos to the Artwork Content Recipient.
Post conditions	Artwork Content Recipient has received the artwork content.
Scenario (Primary & Secondary)	**Begins when**… Artwork Content Source has artwork content to share with the Artwork Content Recipient. **Continues with**…

Step #	Actor	Activity Step
1	Artwork Content Source	Transmits draft artwork content
2	Artwork Content Recipient	Receives draft artwork content

Ends when… Artwork Content Recipient has successfully received artwork content.

Related Requirements	Not applicable
Related Rules	Not applicable

3.3   Business Transaction - Confirm Artwork Content

Use Case Definition

Use Case ID	UC-1B
Use Case Name	**Confirm Artwork Content**
Use Case Description	The objective is to send a response message from the Artwork Content Recipient (e.g. Artwork Studio) to the Artwork Content Source (e.g. Manufacturer) to facilitate electronic exception reporting rather than manual review. The response has the following characteristics: The artwork content response must include all of the content initially received from the artwork content source (i.e. copy elements, data carriers, etc..) with additional status information and additions and/or changes to the content. In the best case scenario the artwork content response would match exactly to the original artwork content message with statuses confirming use of the content on the artwork. Alternatively, the artwork content response may include content that is different from the original artwork content message, with statuses indicating changes. *(Note: the artwork content response message is typically accompanied by an artwork proof for visual inspection that are outside the scope of the response).*
Actors (Goal)	Artwork Content Recipient, Artwork Content Source
Performance Goals	
Preconditions	Artwork Content Recipient has received the artwork content from the Artwork Content Source. Artwork Content Recipient has received the artwork and/or logos from the Artwork Content Source *(Note: exchange of artwork occurs as a separate workflow process outside of the message exchange).*
Post conditions	Artwork Content Source has received a response with statuses confirming use of the content on the artwork or indicating changes to the content.
Scenario (Primary)	**Begins when**… Artwork Content Recipient has received and processed the artwork content. **Continues with**… <table><tr><th>Step #</th><th>Actor</th><th>Activity Step</th></tr><tr><td>1</td><td>Artwork Content Recipient</td><td>Transmits artwork content response</td></tr><tr><td>2</td><td>Artwork Content Source</td><td>Receives artwork content response</td></tr></table> **Ends when**… Artwork Content Source has successfully received artwork content response.
Alternative Scenario (Secondary)	Not applicable
Related Requirements	Not applicable
Related Rules	Not applicable

4   Business Information View

4.1   Artwork Content (Message)

Class diagram
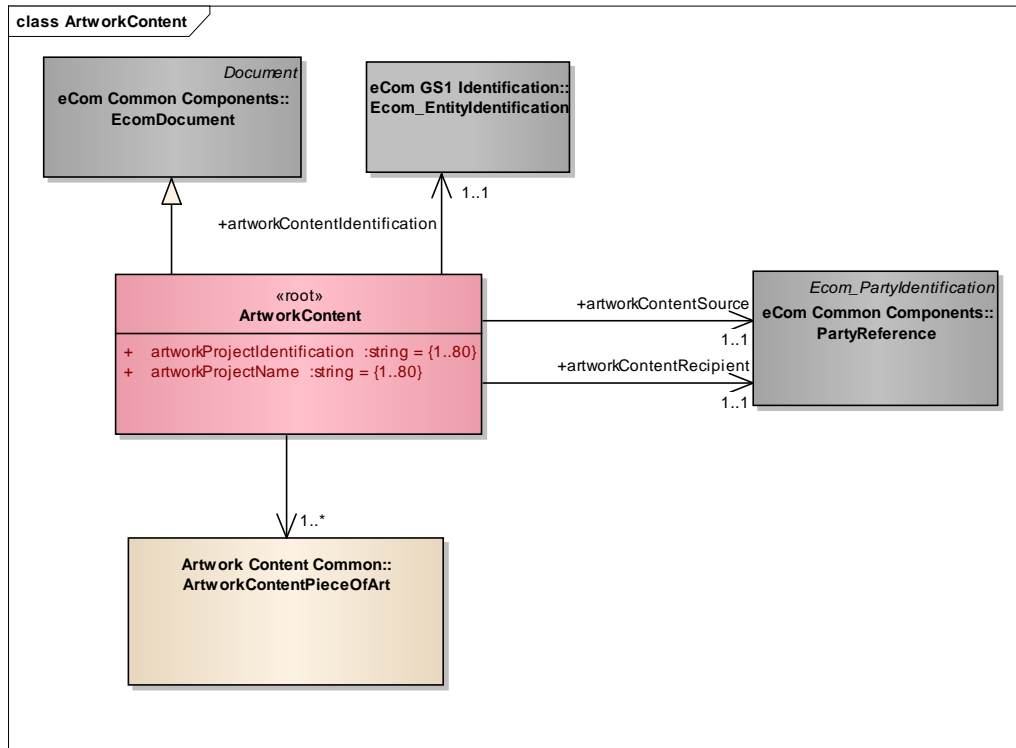
GDD report

The content of the ArtworkContent class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContent

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContent				The Artwork Content message enables to send the product's artwork content that appears on a package (e.g. box, label, bag) or related materials (e.g. printed coupons).	
Association	artworkContentSource	PartyReference	1..1	An entity providing the artwork content.;brad:intelligent_packaging:PKC-4	
Association	artworkContentRecipient	PartyReference	1..1	An entity receiving the artwork content.;brad:intelligent_packaging:PKC-4	brad:intelligent_packaging:PKC-4
Generalization		EcomDocument		Basic information about the content of the message including version number, creation date and time and the placeholder for non-standard attributes.	
Association	artworkContentIdentification	Ecom_EntityIdentification	1..1	Provides the identification of the artwork content message.	brad:intelligent_packaging:PKC-1a WR 15-000314
Association		ArtworkContentPieceOfArt	1..*	The artwork content details for one or more pieces of art.	brad:intelligent_packaging:PKC-4
Attribute	artworkProjectIdentification	string	1..1	Name or number that identifies a work effort. This is typically an identifier for the project in an administrative system such as an MIS system, job tracking system, etc…;brad:intelligent_packaging:PROJ-1	brad:intelligent_packaging:PROJ-1
Attribute	artworkProjectName	string	1..1	Descriptive name for the project.;brad:intelligent_packaging:PROJ-2	brad:intelligent_packaging:PROJ-2

4.2   Artwork Content Response (Message)

Class diagram

GDD report

The content of the ArtworkContentResponse class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentResponseResponse

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentResponse				The Artwork Content Response message facilitates electronic exception reporting upon processing of an Artwork Content message.	
Generalization		EcomDocument		Basic information about the content of the message including version number, creation date and time and the placeholder for non-standard attributes.	
Association	artworkContentResponseIdentification	Ecom_EntityIdentification	1..1	Provides the identification of the artwork content response message.	brad:intelligent_packaging:PKC-1b WR 15-000314
Association		ArtworkContentPieceOfArt	1..*	The artwork content details for one or more pieces of art.	
Association	artworkContentDocumentReference	Ecom_DocumentReference	1..1	Provides the reference to the Artwork Content message in order to correlate to the trading partner's message for which this response is applicable.	brad:intelligent_packaging:PKC-1c WR 15-000314
Association	artworkContentRecipient	PartyReference	1..1	An entity receiving the artwork content.	brad:intelligent_packaging:PKC-4
Association	artworkContentSource	PartyReference	1..1	An entity providing the artwork content.	brad:intelligent_packaging:PKC-4
Attribute	artworkProjectIdentification	string	1..1	Name or number that identifies a work effort. This is typically an identifier for the project in an administrative system such as an MIS system, job tracking system, etc…	brad:intelligent_packaging:PROJ-1
Attribute	artworkProjectName	string	1..1	Descriptive name for the project.	brad:intelligent_packaging:PROJ-2

4.3 Artwork Content Common (Components)

4.3.1 Artwork Content Copy Element
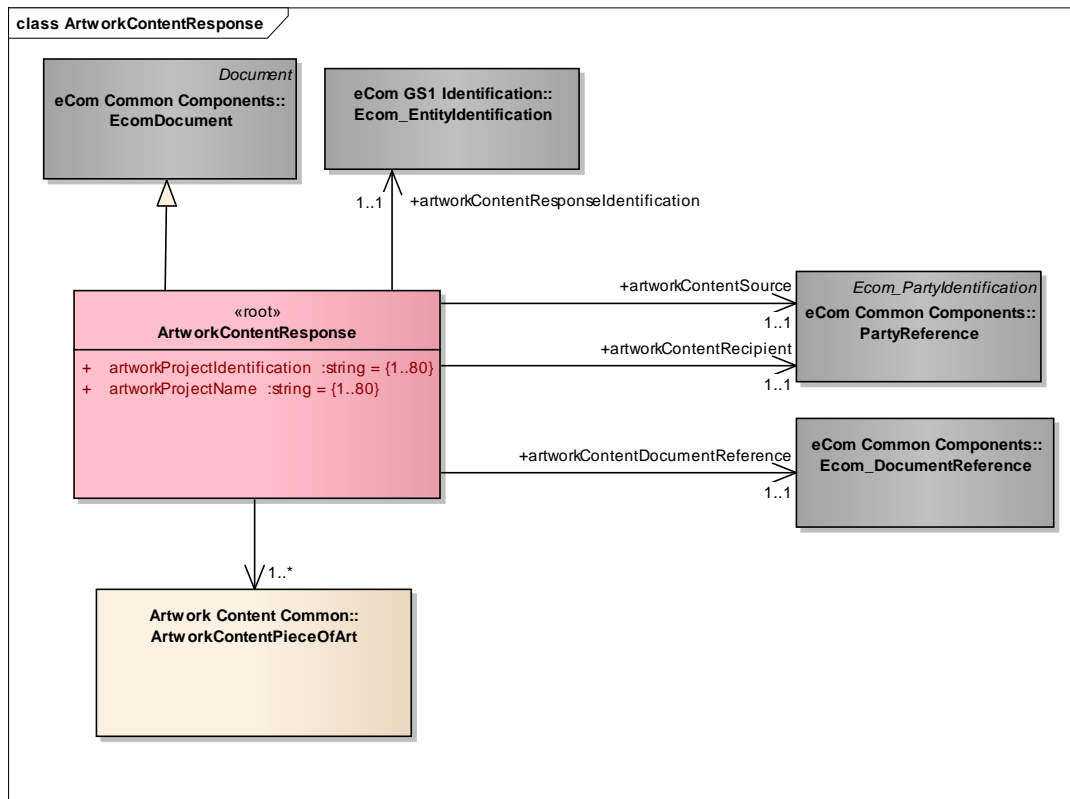
Class Diagram

GDD report

The content of the ArtworkContentCopyElement class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentCopyElement

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentCopyElement				Unique piece of textual information that goes on a piece of art.	
Association		ArtworkContentResponseStatus	0..1	Information on modifications made to the copy element by the artwork content recipient.	brad:intelligent_packaging:CPE-15,CPE-16
Association	textContent	XHTML	1..1	The textual content to be included in the piece of art, including formatting details.	brad:intelligent_packaging:CPE-1a,CPE-1b,CPE-1d,CPE-1e

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Association		SourceReference	0..1	Reference to the external system that is the source of the copy element content.	brad:intelligent_packaging:CPE-10,CPE-11
Attribute	actualNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the data carrier element was actually used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template).	brad:intelligent_packaging:CPE-13
Attribute	copyElementTypeCode	CopyElementTypeCode	1..1	Code specifying the type or copy element. For example: BRAND_NAME.	brad:intelligent_packaging:CPE-2, CPE-3
Attribute	expectedNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the copy element is expected to be used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template).	brad:intelligent_packaging:CPE-12
Attribute	forPlacementOnly	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the content provided is to be used only to validate the placement, sizing, etc., and is not the content that will be included in the final product.	brad:intelligent_packaging:CPE-8
Attribute	instanceSequence	positiveInteger	1..1	Unique identifier for each occurrence of a copy element of the same type and locale. Differentiates the elements of the same type and locale within the same Piece of art or Structured Content.	brad:intelligent_packaging:CPE-4
Attribute	isContentApproved	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the copy content has been approved by the content source.	brad:intelligent_packaging:CPE-7
Attribute	localeSequence	nonNegativeInteger	1..1	Sequence number referencing the locale of the copy element.	brad:intelligent_packaging:CPE-9 WR 15-000212

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	note	Description500	0..1	Free text used to convey information that is not processed by applications. Only meant to present the information to a user as on a screen, in a browser, etc.	
Attribute	optionSequence	positiveInteger	0..1	Unique identifier for each option within a copy element of the same type, instance, and locale.	brad:intelligent_packaging:CPE-5
Attribute	prioritySequence	positiveInteger	0..1	Specifies the selection sequence of content that is destined for the same element type, instance, and locale. The lower the number, the higher the priority. For instance, 1 is 'top priority', followed by 2, 3,etc.	brad:intelligent_packaging:CPE-6

4.3.2   Artwork Content Data Carrier Element

Class diagram

GDD report

The content of the ArtworkContentDataCarrierElement class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentDataCarrierElement

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentDataCarrierDetail				Information used to create (part of) a specific data carrier symbol in a piece of art.	
Attribute	dataCarrierContent	string	1..1	Data to be encoded in the symbol.	brad:intelligent_packaging:DCD-1
Attribute	isContentApproved	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the copy content has been approved by the content source.	brad:intelligent_packaging:DCD-7
Attribute	forPlacementOnly	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the content provided is to be used only to validate the placement, sizing, etc., and is not the content that will be included in the final product.	brad:intelligent_packaging:DCD-6
Attribute	applicationIdentifier	string	0..1	The field of two or more characters at the beginning of a series of elements that uniquely defines its format and meaning. When used, the AI should be encoded in the symbol in front of the Data Carrier Content data.	brad:intelligent_packaging:DCD-4
Attribute	isHumanReadableInterpretationRequired	NonBinaryLogicEnumeration	0..1	Indicator specifying whether the data carrier content is to be included in the human readable interpretation portion of the symbol.	brad:intelligent_packaging:DCD-2

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	addOnSymbolContent	string	0..1	Data to be encoded in a symbol supplementary to the main bar code. For example, information that is contained in a two-digit or five-digit add-on symbol to the right of the main bar code	brad:intelligent_packaging:DCD-3
Attribute	symbolComponentCode	SymbolComponentCode	0..1	Code specifying which component of a composite symbol is to be applied. For example: LINEAR_COMPONENT.	brad:intelligent_packaging:DCD-5
Attribute	sequenceNumber	positiveInteger	0..1	A unique number used to indicate the order in which the data carrier details are to be presented.	
ArtworkContentDataCarrierElement				Information used to create a machine readable data carrier in a piece of art.	
Association		ArtworkContentResponseStatus	0..1	Information on modifications made to the data carrier element by the artwork content recipient.	brad:intelligent_packaging:DCE-7,DCE-8
Association		SourceReference	0..1	Reference to the external system that is the source of the data carrier element content.	brad:intelligent_packaging:DCE-4,DCE-5
Association		ArtworkContentDataCarrierDetail	1..*	Information used to create specific data carrier symbols in a piece of art.	brad:intelligent_packaging:DCE-10,DCE-11
Attribute	dataCarrierElementTypeCode	DataCarrierElementTypeCode	1..1	Code specifying the type of data carrier element. For example: GS1_DATABAR_STACKED.	brad:intelligent_packaging:DCE-1

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	instanceSequence	positiveInteger	1..1	Unique identifier for each occurrence of a data carrier element of the same type and locale. Differentiates the elements of the same type and locale within the same Piece of art or Structured Content.	brad:intelligent_packaging:DCE-2
Attribute	localeSequence	positiveInteger	1..1	Sequence number referencing the locale of the data carrier element.	brad:intelligent_packaging:DCE-3
Attribute	expectedNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the data carrier element is expected to be used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template).	brad:intelligent_packaging:DCE-6A
Attribute	actualNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the data carrier element was actually used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template)	brad:intelligent_packaging:DCE-6B
Attribute	note	Description500	0..1	Free text used to convey information that is not processed by applications. Only meant to present the information to a user as on a screen, in a browser, etc.	brad:intelligent_packaging:DCE-9

4.3.3 Artwork Content Graphic Element

Class diagram

GDD report

The content of the ArtworkContentGraphicElement class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentGraphicElement

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentGraphicElement				Information on an individual graphic, such as symbol or icon, that is to be included on a piece of art.	
Association		SourceReference	0..1	Reference to the external system that is the source of the graphic element content.	brad:intelligent_packaging :GRE-6,GRE-7,GRE-8,GRE-9

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Association	graphicElementReference	SourceReference	0..1	Designates the graphic element, such as a brand logo or recycle symbol that will be included on a piece of art.	brad:intelligent_packaging :GRE-1, GRE-2
Association		ArtworkContentResponseStatus	0..1	Information on modifications made to the graphic element by the artwork content recipient.	brad:intelligent_packaging :GRE-17,GRE-18
Attribute	graphicElementTypeCode	GraphicElementTypeCode	1..1	Code specifying the type of graphic element. For example: RECYCLE_SYMBOL.	brad:intelligent_packaging :GRE-3
Attribute	instanceSequence	positiveInteger	1..1	Unique identifier for each occurrence of a graphic element of the same type and locale. Differentiates the elements of the same type and locale within the same Piece of art or Structured Content.	brad:intelligent_packaging :GRE-4
Attribute	localeSequence	positiveInteger	1..1	Sequence number referencing the locale of the graphic element.	brad:intelligent_packaging :GRE-5
Attribute	isContentApproved	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the copy content has been approved by the content source.	brad:intelligent_packaging :GRE-11
Attribute	forPlacementOnly	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the content provided is to be used only to validate the placement, sizing, etc., and is not the content that will be included in the final product.	brad:intelligent_packaging :GRE-12
Attribute	graphicElementDescription	Description200	0..1	Text describing the type of graphic element (e.g. recycle symbol).	brad:intelligent_packaging :GRE-10
Attribute	optionSequence	positiveInteger	0..1	Unique identifier for each option within a graphic element of the same type, instance, and locale.	brad:intelligent_packaging :GRE-15

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	prioritySequence	positiveInteger	0..1	Specifies the selection sequence of content that is destined for the same element type, instance, and locale. The lower the number, the higher the priority. For instance, 1 is 'top priority', followed by 2, 3,etc.	brad:intelligent_packaging :CPE-6
Attribute	expectedNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the graphic element is expected to be used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template).	brad:intelligent_packaging :GRE-13
Attribute	actualNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the graphic element was actually used within the domain of a specific template (i.e. within a piece of art or within a structured copy element template).	brad:intelligent_packaging :GRE-14
Attribute	note	Description500	0..1	Free text used to convey information that is not processed by applications. Only meant to present the information to a user as on a screen, in a browser, etc.	brad:intelligent_packaging :GRE-19

4.3.4 Artwork Content Locale

Class diagram
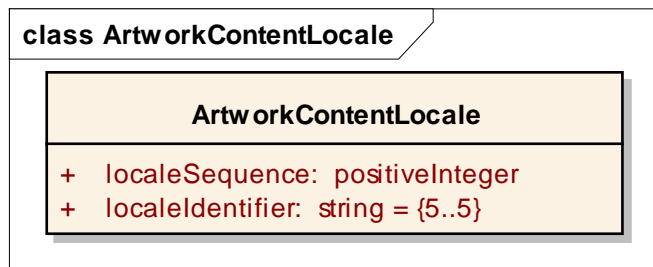
GDD report

The content of the ArtworkContentLocale class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentLocale

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentLocale				Information on the locale (i.e. language and region) and prioritization of the locale for artwork content appearing on a Piece of Art.	
Attribute	localeSequence	positiveInteger	1..1	Prioritizes the locales used on a piece of art.	brad:intelligent_packaging:POAC-7
Attribute	localeIdentifier	string	1..1	Identifier specifying a language within a country or region, for example en-US.	brad:intelligent_packaging:POAC-7

4.3.5 Artwork Content Piece Of Art

Class diagram

```
class ArtworkContentPieceOfArt
```

ArtworkContentPieceOfArt
+ versionIdentifier :string [0..1] = {1..80} + versionDateTime :dateTime [0..1] + pieceOfArtDescription :Description200 [0..1] + pieceOfArtGroupingIdentifier :string [0..*] = {1..80} + packagingComponentDescription :Description80 [0..1]
«association» + avpList :Ecom_AttributeValuePairList [0..1]

+pieceOfArtIdentification → **eCom GS1 Identification:: Ecom_EntityIdentification** 1..1

+artworkTemplate → **eCom Common Components:: SourceReference** 0..1

+associatedTradeItem → **eCom GS1 Identification:: Ecom_TradeItemIdentification** 0..*

→ **ArtworkContentLocale** 1..*

→ **ArtworkContentTechnicalDrawing** 0..1

→ **ArtworkContentCopyElement** 0..*

→ **ArtworkContentStructuredCopyElement** 0..*

→ **ArtworkContentGraphicElement** 0..*

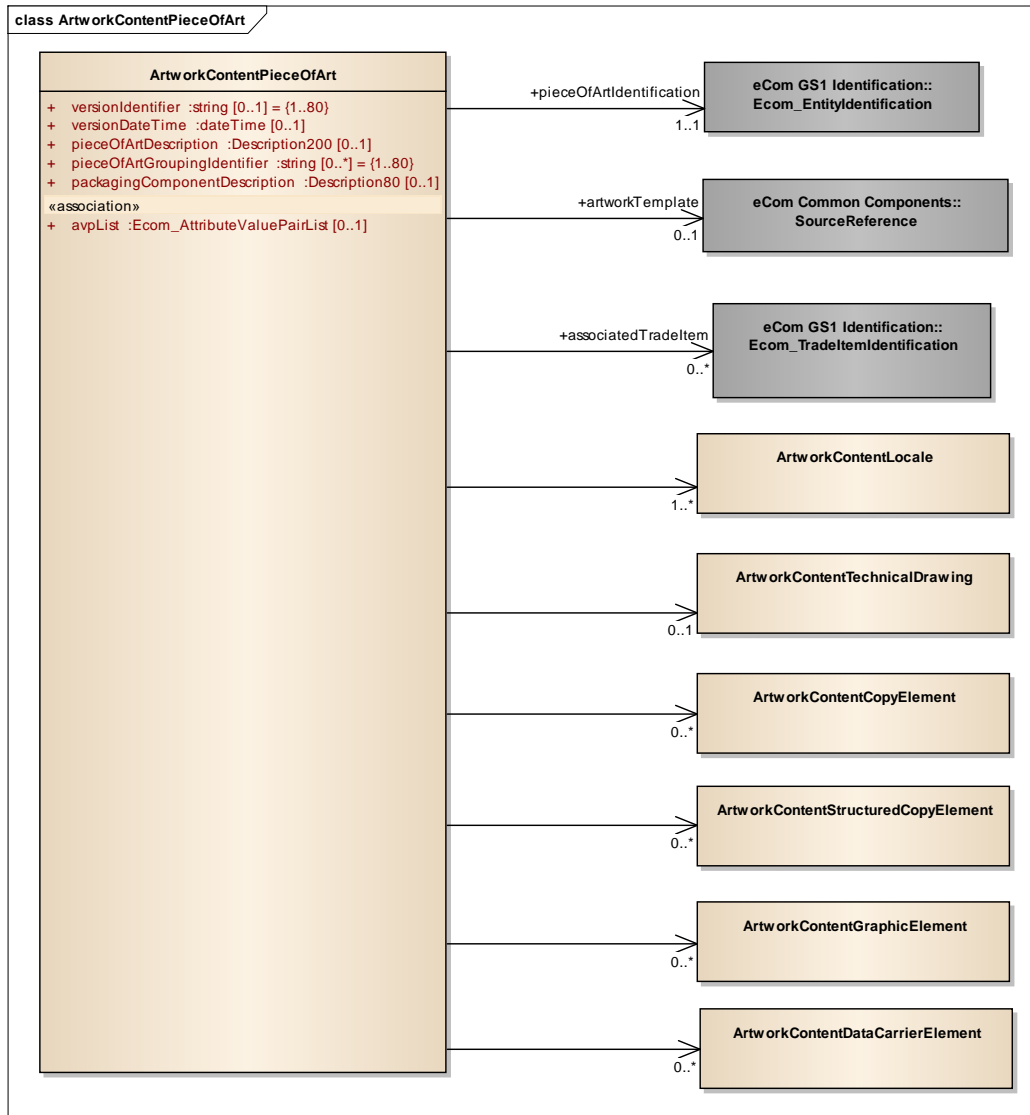→ **ArtworkContentDataCarrierElement** 0..*

GDD report

The content of the ArtworkContentPieceOfArt class, its structure and component definitions can be accessed in the Global Data Dictionary:
http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentPieceOfArt

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentPieceOfArt				Aggregation of all the elements, including copy elements, structured copy elements, graphic elements, technical drawings, and data carriers, that when associated with graphic design, results in a piece of art.	
Association		ArtworkContentStructuredCopyElement	0..*	Structured copy elements contained within the piece of art.	brad:intelligent_packaging:POAC-10
Association		ArtworkContentDataCarrierElement	0..*	Data carrier elements contained within the piece of art.	brad:intelligent_packaging:POAC-12
Association	artworkTemplate	SourceReference	0..1	Unique identification of an Artwork Template for a given Piece of Art.	brad:intelligent_packaging:POAC-4
Association		ArtworkContentGraphicElement	0..*	Graphic elements contained within the piece of art.	brad:intelligent_packaging:POAC-11
Association	associatedTradeItem	Ecom_TradeItemIdentification	0..*	The identification of the Trade Item(s) to which a Piece of art Content is associated.	brad:intelligent_packaging:POAC-5 WR 15-000314
Association	pieceOfArtIdentification	Ecom_EntityIdentification	1..1	Unique identification of a single piece of art.	brad:intelligent_packaging:POAC-1 WR 15-000314
Association		ArtworkContentLocale	1..*	The locales (i.e. language and region) to be supported on the Piece of Art.	brad:intelligent_packaging:POAC-7
Association		ArtworkContentTechnicalDrawing	0..1	The technical drawing to be referenced for this piece of art.	brad:intelligent_packaging:POAC-13
Association		ArtworkContentCopyElement	0..*	Copy elements contained within the piece of art.	brad:intelligent_packaging:POAC-9
Attribute	versionIdentifier	string	0..1	Number or string identifying the version of the artwork content for the Piece of Art.	brad:intelligent_packaging:POAC-2a
Attribute	versionDateTime	dateTime	0..1	Date and time identifying the version of the artwork content for the Piece of Art.	brad:intelligent_packaging:POAC-2b
Attribute	avpList	Ecom_AttributeValuePairList	0..1	Temporary attributes introduced between minor versions.	

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	pieceOfArtDescription	Description200	0..1	A human-readable descriptive name of the piece of art. For example: Front label for a 14 oz product.	brad:intelligent_packaging:POAC-3
Attribute	pieceOfArtGroupingIdentifier	string	0..*	An identifier to group multiple pieces of art into a customer/consumer saleable item. For example, front label and back label would have the same grouping identifier.	brad:intelligent_packaging:POAC-6
Attribute	packagingComponentDescription	Description80	0..1	Describes the physical item that will be printed. For example, front label, back label, overwrap, flexible bag, metal can, etc.	brad:intelligent_packaging:POAC-8

4.3.6   Artwork Content Response Status

Class diagram

```
class ArtworkContentResponseStatus

        ArtworkContentResponseStatus

    +   changedByRecipient:  boolean
    +   changeReason:  Description80 [0..1]
```
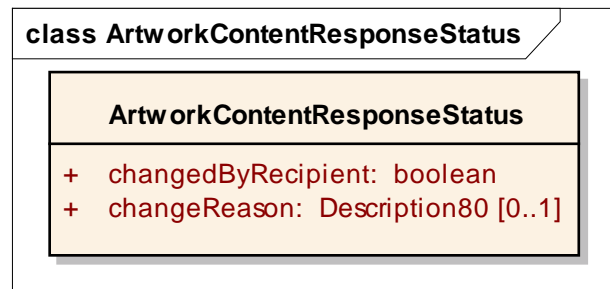
GDD report

The content of the ArtworkContentResponseStatus class, its structure and component definitions can be accessed in the Global Data Dictionary: *http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentResponseStatus*

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentResponseStatus				Information on modifications made by the artwork content recipient.	
Attribute	changedByRecipient	boolean	1..1	Indicates if the Content Recipient has modified the data received from a source.	
Attribute	changeReason	Description80	0..1	Textual explanation describing why information in a particular element of the response message is different from information received.	

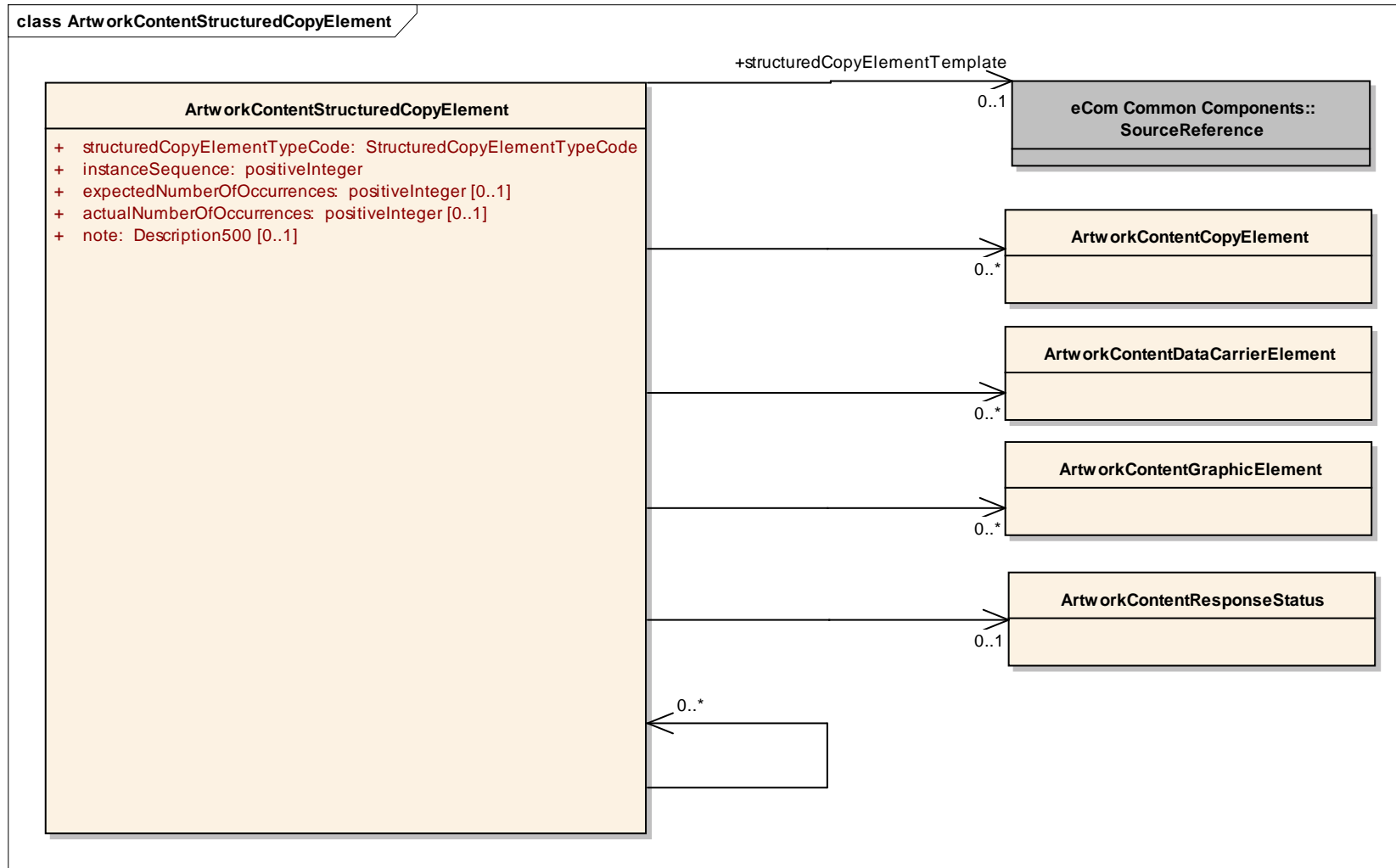### 4.3.7 Artwork Content Structured Copy Element

Class diagram

GDD report

The content of the ArtworkContentStructuredCopyElement class, its structure and component definitions can be accessed in the Global Data Dictionary: *http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentStructuredCopyElement*

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContent StructuredCopy Element				Information, to be included on a piece of art that is highly structured (typically in a table format) and may be regulated (e.g. Nutrition Facts).	
Association	structuredCopyElementTempl ate	SourceReference	0..1	Reference to the template to be used to format the structured copy element.	brad:intelligent_packagin g:SCE-3
Association		ArtworkContentStruct uredCopyElement	0..*	Structured copy elements contained within the structured copy element.	brad:intelligent_packagin g:SCE-9
Association		ArtworkContentRespo nseStatus	0..1	Information on modifications made to the structured copy element by the artwork content recipient.	
Association		ArtworkContentGraph icElement	0..*	Graphic elements contained within the structured copy element.	brad:intelligent_packagin g:SCE-12
Association		ArtworkContentCopyE lement	0..*	Copy elements contained within the structured copy element.	brad:intelligent_packagin g:SCE-10
Association		ArtworkContentDataC arrierElement	0..*	Data carrier elements contained within the structured copy element.	brad:intelligent_packagin g:SCE-11
Attribute	structuredCopyElementTypeC ode	StructuredCopyEleme ntTypeCode	1..1	Code specifying the type of structured copy element. For example: NUTRITION_FACTS.	brad:intelligent_packagin g:SCE-1
Attribute	instanceSequence	positiveInteger	1..1	Unique identifier for each occurrence of a structured copy element of the same type. Differentiates the elements of the same type and locale within the same Piece of art or Structured Content.	brad:intelligent_packagin g:SCE-2
Attribute	expectedNumberOfOccurrence s	positiveInteger	0..1	Indicates the number of times the structured copy element is expected to be used within the domain of a specific template (i.e. within a piece of art or within another structured copy element template).	brad:intelligent_packagin g:SCE-4

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
Attribute	actualNumberOfOccurrences	positiveInteger	0..1	Indicates the number of times the structured copy element was actually used within the domain of a specific template (i.e. within a piece of art or within another structured copy element template).	brad:intelligent_packaging:SCE-5
Attribute	note	Description500	0..1	Free text used to convey information that is not processed by applications. Only meant to present the information to a user as on a screen, in a browser, etc.	brad:intelligent_packaging:SCE-6

4.3.8   ArtworkContentTechnicalDrawing

Class diagram
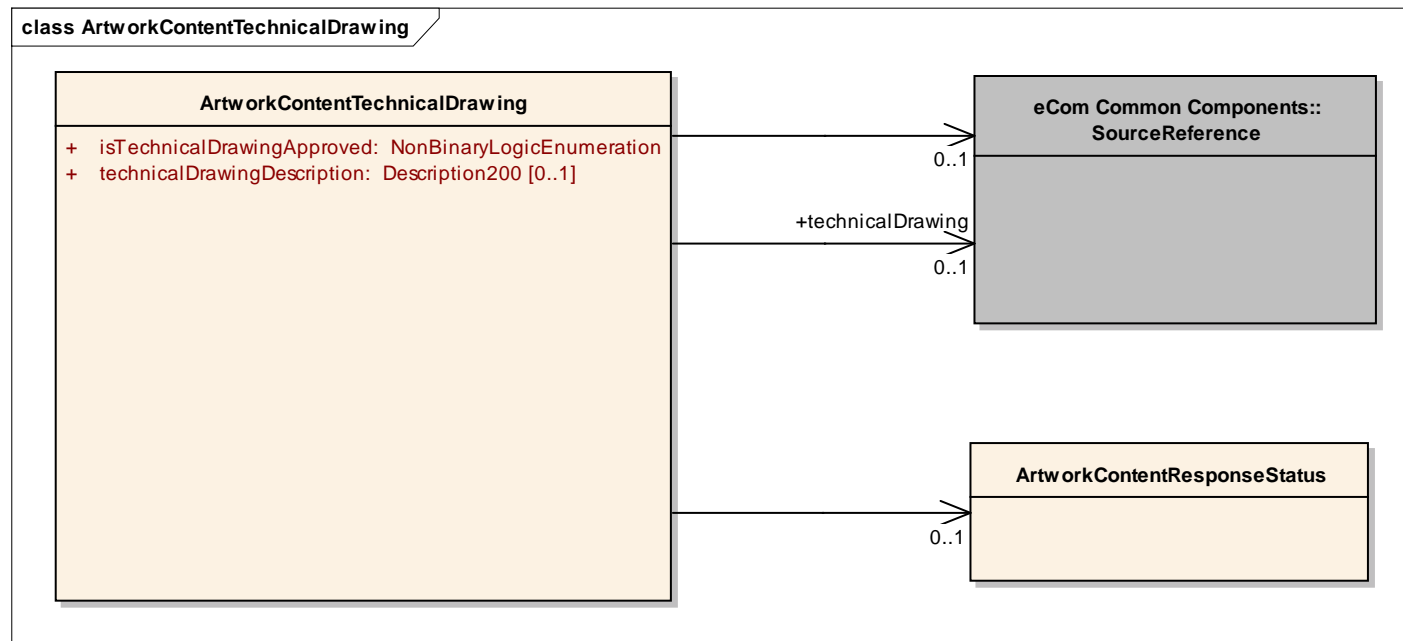
GDD report

The content of the ArtworkContentTechnicalDrawing class, its structure and component definitions can be accessed in the Global Data Dictionary: *http://apps.gs1.org/GDD/bms/Version3_4/Pages/bieDetails.aspx?semanticURN=urn:gs1:gdd:bie:ArtworkContentTechnicalDrawing*

Content	Attribute / Role	Datatype /Secondary class	Multiplicity	Definition	Requirements
ArtworkContentTechnicalDrawing				The 2D shape upon which artwork content will be placed. Used as a reference in placing the artwork content. The technical drawing is used as the basis to show the shape of the package/label and influences the position, size and orientation (e.g. 90 degree angle) of artwork template containers into which copy content will be placed.	
Association	technicalDrawing	SourceReference	0..1	Designates the file or other source that contains an image of the technical drawing.	brad:intelligent_packaging: TLD-1, TLD-5
Association		SourceReference	0..1	Reference to the external system that is the source of the technical drawing, for example the unique key of a database record.	brad:intelligent_packaging: TLD-2, TLD-3, TLD-6, TLD-7
Association		ArtworkContentResponseStatus	0..1	Information on modifications made to the technical drawing by the artwork content recipient.	brad:intelligent_packaging: TLD-9, TLD-10
Attribute	isTechnicalDrawingApproved	NonBinaryLogicEnumeration	1..1	Indicator specifying whether the technical drawing has been approved by the content source.	brad:intelligent_packaging: TLD-8
Attribute	technicalDrawingDescription	Description200	0..1	Textual information to describe what the technical drawing represents. For example: neck label, body label, 1 liter bottle.	brad:intelligent_packaging: TLD-4

4.3.9   Code Data Types

Class diagram
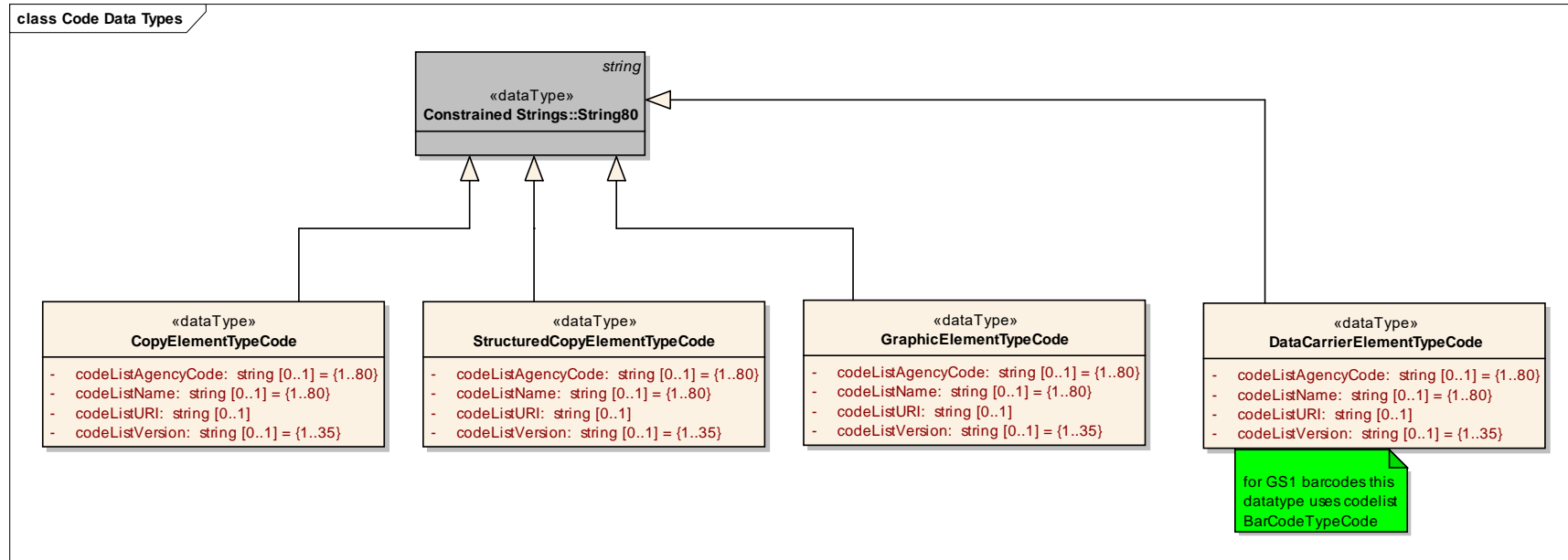
GDD report

Content	Attribute / Role	Datatype /Secondary class	Multi plicity	Definition	Requirements
CopyElementTypeCode				Code specifying a copy element type. Allowed code values are specified in GS1 Code List CopyElementTypeCode. Code values originating from other code lists may also be used, in that case the agency and code list name should be communicated as additional information.	
Generalization		String80			

Content	Attribute / Role	Datatype /Secondary class	Multi plicity	Definition	Requirements
Attribute	codeListAgencyCode	string	0..1	A code representing the agency which manages the applied code list. Allowed code values are specified in GS1 Code List ResponsibleAgencyCode.	
Attribute	codeListName	string	0..1	The name of the code list which provides the code value.	
Attribute	codeListURI	string	0..1	The Unique Resource Identifier (URI) of the code list which provides the code value.	
Attribute	codeListVersion	string	0..1	The version of the applied code list.	
DataCarrierElementTypeCode				Code specifying a data carrier element type. The GS1 Code List BarcodeTypeCode contains values that may be applied. Code values originating from other code lists may also be used. In all cases the agency and code list name should be communicated as additional information.	
Generalization		String80			
Attribute	codeListAgencyCode	string	0..1	A code representing the agency which manages the applied code list. Allowed code values are specified in GS1 Code List ResponsibleAgencyCode.	
Attribute	codeListName	string	0..1	The name of the code list which provides the code value.	
Attribute	codeListURI	string	0..1	The Unique Resource Identifier (URI) of the code list which provides the code value.	
Attribute	codeListVersion	string	0..1	The version of the applied code list.	
GraphicElementTypeCode				Code specifying a graphic element type. Allowed code values are specified in GS1 Code List GraphicElementTypeCode. Code values originating from other code lists may also be used, in that case the agency and code list name should be communicated as additional information.	
Generalization		String80			

Content	Attribute / Role	Datatype /Secondary class	Multi plicity	Definition	Requirements
Attribute	codeListAgencyCode	string	0..1	A code representing the agency which manages the applied code list. Allowed code values are specified in GS1 Code List ResponsibleAgencyCode.	
Attribute	codeListName	string	0..1	The name of the code list which provides the code value.	
Attribute	codeListURI	string	0..1	The Unique Resource Identifier (URI) of the code list which provides the code value.	
Attribute	codeListVersion	string	0..1	The version of the applied code list.	
StructuredCopyElementTypeCode				Code specifying a structured copy element type. Allowed code values are specified in GS1 Code List StructuredCopyElementTypeCode. Code values originating from other code lists may also be used, in that case the agency and code list name should be communicated as additional information.	
Generalization		String80			
Attribute	codeListAgencyCode	string	0..1	A code representing the agency which manages the applied code list. Allowed code values are specified in GS1 Code List ResponsibleAgencyCode.	
Attribute	codeListName	string	0..1	The name of the code list which provides the code value.	
Attribute	codeListURI	string	0..1	The Unique Resource Identifier (URI) of the code list which provides the code value.	
Attribute	codeListVersion	string	0..1	The version of the applied code list.	

✅ **Note:** Reference Shared Common Library Business Message (BMS) Release 3.6 and eCom Domain Common Library Business Message (BMS) Release 3.6 for all common information.

4.4   Enumerations (message specific)

4.4.1   NonBinaryLogicEnumeration

Code	Code Description
FALSE	Negative value.
NOT_APPLICABLE	A statement that an affirmative or negative response is not required for the attribute.
TRUE	Affirmative value.
UNSPECIFIED	Value not stated.

4.5   Code List

Class	Codelist	GDD Link
ArtworkContentCopyElement	CopyElementTypeCode	http://apps.gs1.org/GDD/Pages/clDetails.aspx?semanticURN=urn:gs1:gdd:cl:CopyElementTypeCode
ArtworkContentDataCarrierDetail	SymbolComponentCode	http://apps.gs1.org/GDD/Pages/clDetails.aspx?semanticURN=urn:gs1:gdd:cl:SymbolComponentCode
ArtworkContentDataCarrierElement	DataCarrierElementTypeCode	http://apps.gs1.org/GDD/Pages/clDetails.aspx?semanticURN=urn:gs1:gdd:cl:DataCarrierElementTypeCode
ArtworkContentGraphicElement	GraphicElementTypeCode	http://apps.gs1.org/GDD/Pages/clDetails.aspx?semanticURN=urn:gs1:gdd:cl:GraphicElementTypeCode
ArtworkContentStructuredCopyElement	StructuredCopyElementTypeCode	http://apps.gs1.org/GDD/Pages/clDetails.aspx?semanticURN=urn:gs1:gdd:cl:StructuredCopyElementTypeCode

Note: Refer to the Global Data Dictionary (GDD) for the code values.

5 Business Message Examples

5.1 Example 1

This is an example of the Artwork Content message. It is a full message containing at least one occurrence of all entities. Production messages will typically contain multiple occurrences of many of the elements such as copy elements, graphic elements, etc.

Message example 1

Attribute	Value
ArtworkContent	
creationDateTime	2010-11-30T22:00:00
documentStatusCode	ORIGINAL
documentActionCode	ADD
documentStructureVersion	3.0.1
artworkProjectIdentification	PROJ_1
artworkProjectName	Lovely Hair Holiday Promotion
EntityIdentification (+artworkContentIdentification)	
entityIdentification	Pack_Content1
PartyReference (+artworkContentSource)	
gln	1234567890128
partyName	Manufacturer A
PartyReference (+artworkContentRecipient)	
gln	9998881234564
partyName	Artwork Studio X
ArtworkContentPieceOfArt	
versionIdentifier	1
versionDateTime	2010-11-29T09:00:00
pieceOfArtDescription	Front label for 14oz bottle
pieceOfArtGroupingIdentifier	ProjectID_WaveName
packagingComponentDescription	Brown Box
EntityIdentification (+pieceOfArtIdentification)	
entityIdentification	ABC123
PartyIdentification (+contentOwner)	
gln	1234567890128
SourceReference (+artworkTemplate)	
referenceIdentifier	TEMPLATE567
TradeItemIdentification (+associatedTradeItem)	
gtin	04567898919198
ArtworkContentLocale	
localeSequence	1
localeIdentifier	en-US

Attribute	Value
ArtworkContentTechnicalDrawing	
isTechnicalDrawingApproved	True
SourceReference (+technicalDrawing)	
referenceURI	file://mfr/file1
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
versionIdentifier	VERSION_A
versionDateTime	2010-12-21T00:00:00
ArtworkContentCopyElement	
copyElementTypeCode	MARKETING_COPY (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1
XHTML (+textContent)	
	<body> Makes hair shinier </body>
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
ArtworkContentStructuredCopyElement	
structuredCopyElementTypeCode	NUTRITION_FACTS (codeListURI = urn:gs1:gdd:cl:StructuredCopyElementTypeCode)
instanceSequence	1
expectedNumberOfOccurrences	1
SourceReference (+structuredCopyElementTemplate)	
referenceIdentifier	US Standard Vertical Format
ArtworkContentCopyElement (within ArtworkContentStructuredCopyElement	
copyElementTypeCode	ENERPF_NUTRIENT_VALUE (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1

Attribute	Value
XHTML (+textContent)	
	<body> 25 </body>
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD9
ArtworkContentCopyElement (within ArtworkContentStructuredCopyElement)	
copyElementTypeCode	ENER-_NUTRIENT_VALUE (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1
XHTML (+textContent)	
	<body> 5 </body>
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD10
ArtworkContentGraphicElement	
graphicElementTypeCode	RECYCLE_SYMBOL (codeListURI = urn:gs1:gdd:cl:GraphicElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	TRUE
forPlacementOnly	FALSE
expectedNumberOfOccurrences	1
SourceReference (+graphicElementReference)	
referenceURI	http://domain/symbol1.html
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
versionIdentifier	A123
ArtworkContentDataCarrierElement	
dataCarrierElementTypeCode	EAN-13 (codeListURI = urn:gs1:gdd:cl:BarCodeTypeCode)
instanceSequence	1
localeSequence	1
expectedNumberOfOccurrences	1
SourceReference	
sourceName	CMS1

Attribute	Value
referenceIdentifier	FIELD_A
ArtworkContentDataCarrierDetail	
dataCarrierContent	4512345678906
isContentApproved	TRUE
forPlacementOnly	FALSE
isHumanReadableInterpretationRequired	TRUE

5.2   Example 2

This is an example of the Atrwork Content Response message. It is a full message containing at least one occurrence of all entities. Production messages will typically contain multiple occurrences of many of the elements such as copy elements, graphic elements, etc.

Message example 2

Attribute	Value
ArtworkContentResponse	
creationDateTime	2010-12-01T11:00:00
documentStatusCode	ORIGINAL
documentActionCode	ADD
documentStructureVersion	3.0.1
artworkProjectIdentification	PROJ_1
artworkProjectName	Lovely Hair Holiday Promotion
EntityIdentification (+artworkContentResponseIdentification)	
entityIdentification	Pack_Content_Response1
PartyReference (+artworkContentSource)	
gln	1234567890128
partyName	Manufacturer A
PartyReference (+artworkContentRecipient)	
gln	9998881234564
partyName	Artwork Studio X
DocumentReference (+artworkContentDocumentReference)	
entityIdentification	Pack_Content1
ArtworkContentPieceOfArt	
versionIdentifier	1
versionDateTime	2010-11-29T09:00:00
pieceOfArtDescription	Front label for 14oz bottle
pieceOfArtGroupingIdentifier	ProjectID_WaveName
packagingComponentDescription	Brown Box
EntityIdentification (+pieceOfArtIdentification)	
entityIdentification	ABC123
PartyIdentification (+contentOwner)	

Attribute	Value
gln	1234567890128
SourceReference (+artworkTemplate)	
referenceIdentifier	TEMPLATE567
TradeItemIdentification (+associatedTradeItem)	
gtin	04567898919198
ArtworkContentLocale	
localeSequence	1
localeIdentifier	en-US
ArtworkContentTechnicalDrawing	
isTechnicalDrawingApproved	True
SourceReference (+technicalDrawing)	
referenceURI	file://mfr/file1
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
versionIdentifier	VERSION_A
versionDateTime	2010-12-21T00:00:00
ArtworkContentCopyElement	
copyElementTypeCode	MARKETING_COPY (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1
XHTML (+textContent)	

	`<body>`
	  `<p>Makes hair shinier</p>`
	`</body>`

SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
ArtworkContentResponseStatus	
changedByRecipient	false
ArtworkContentStructuredCopyElement	
structuredCopyElementTypeCode	NUTRITION_FACTS (codeListURI = urn:gs1:gdd:cl:StructuredCopyElementTypeCode)
instanceSequence	1
expectedNumberOfOccurrences	1
SourceReference (+structuredCopyElementTemplate)	

Attribute	Value
referenceIdentifier	US Standard Vertical Format
ArtworkContentCopyElement **(within ArtworkContentStructuredCopyElement)**	
copyElementTypeCode	ENERPF_NUTRIENT_VALUE (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1
XHTML (+textContent)	
	<body><p>25</p></body>
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD9
ArtworkContentResponseStatus	
changedByRecipient	false
ArtworkContentCopyElement **(within ArtworkContentStructuredCopyElement**	
copyElementTypeCode	ENER-_NUTRIENT_VALUE (codeListURI = urn:gs1:gdd:cl:CopyElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	True
forPlacementOnly	False
expectedNumberOfOccurrences	1
XHTML (+textContent)	
	<body><p>5</p></body>
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD10
ArtworkContentResponseStatus	
changedByRecipient	False
ArtworkContentGraphicElement	
graphicElementTypeCode	RECYCLE_SYMBOL (codeListURI = urn:gs1:gdd:cl:GraphicElementTypeCode)
instanceSequence	1
localeSequence	1
isContentApproved	TRUE
forPlacementOnly	FALSE

Attribute	Value
expectedNumberOfOccurrences	1
SourceReference (+graphicElementReference)	
referenceURI	*http://domain/symbol1B.html*
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
versionIdentifier	A123
ArtworkContentResponseStatus	
changedByRecipient	True
changeReason	Changed the source reference, used Symbol1B instead of Symbol1.
ArtworkContentDataCarrierElement	
dataCarrierElementTypeCode	EAN-13 (codeListURI = urn:gs1:gdd:cl:BarCodeTypeCode)
instanceSequence	1
localeSequence	1
expectedNumberOfOccurrences	1
SourceReference	
sourceName	CMS1
referenceIdentifier	FIELD_A
ArtworkContentResponseStatus	
changedByRecipient	false
ArtworkContentDataCarrierDetail	
dataCarrierContent	4512345678906
isContentApproved	TRUE
forPlacementOnly	FALSE
isHumanReadableInterpretationRequired	TRUE

6 Implementation Considerations

6.1 User Guide

The Functional User Guide contains more information about the structure and content of the Artwork Content and Response message: *http://www.gs1.org/docs/ecom/xml/3/3.4/eCom-Trade_messages.html#ArtworkContentandResponse*

6.2 Message Specific Considerations

6.2.1 Association between XML Content and Artwork Templates

Artwork Studios in collaboration with Manufacturers may develop an 'artwork template' to facilitate the process of matching the elements of the XML messaging contents to various locations on one or multiple piece(s) of art. To maximize the effectiveness of this process the best practice is to align artwork templates between manufacturers and artwork studios before the XML content is sent to be used in combination with the template to produce a unique piece of artwork.

When creating the artwork template, the Artwork Studio will identify each location where a copy element, table, graphic element or data carrier will be placed. Each of these locations will be "tagged" with information that matches the information in the XML message. Using this method, the "tagged locations" on the artwork template become placeholders for specific parts of the content that resides in XML messages. Use of these "tagged locations" is similar to the concept of "relative references". This allows information from one or more XML messages to automatically flow into the appropriate locations on the artwork template, allowing for reuse of the artwork template to create multiple pieces of art. It also allows the Artwork Studio the flexibility to change the location of content on the artwork template if necessary to accommodate space constraints, visual appeal, etc...

Note: *It is assumed that collaboration between the Manufacturer and the Artwork Studio will need to occur when changes to the artwork template are identified. For example, if the Manufacturer wants a piece-of-art to have 2 copy elements in different languages concatenated into 1 location instead of appearing in 2 separate locations (top-left for "English", bottom-right for "Spanish), the Manufacturer should contact the Artwork Studio to discuss changes to be made to the Artwork Template.*

Attributes used for Matching XML content to Artwork Template

To enable the process of matching the XML content to "tagged locations" on the Artwork Template, three primary attributes and one secondary attribute are used in combination to establish and maintain the link between template placeholders and the manufacturer supplied content.

Primary Attributes

- **Type** - "Type" describes the logical meaning of a specific object or text. For example, a copy element could be a "marketing claim" or a "brand name".

  The same copy element of a given type could appear in multiple locations on a single piece of art. For example, the brand name which could appear at the top and bottom of the piece of art.

  In addition, there may be multiple occurrences of the same type of object or text statement on a single piece of art. For example, there may be two marketing claims – the first marketing claim indicates that the product "makes hair shinier" while the second marketing claim indicates "made out of 50% recycled materials".   Both are of type "Marketing Claim" and will appear on a single piece of art, but in two separate locations.

- **Locale Sequence –** the "Locale Sequence" is a numeric representing the region and language for the element. The locale sequence is a variable allowing a manufacturer to repurpose an artwork template to cover many languages. For example, the number '1' may represent the "English" language in the "US" region, while the number '2' may represent the "Spanish" language in the "US" region. *(Note: The relationship between the sequence number and the language/region is defined in the piece-of-art content level of the XML message).*

As an example, where content with the same logical meaning will appear in different languages (e.g. English = "makes hair shinier"; Spanish = "hace que el pelo más brillante"), on two different pieces of art, in the same location. In these cases, the locale sequence is used in combination with the Type and Instance attributes to match the XML content to the specific location on the artwork template for a specific piece of art.

- **Instance –** In case the type and locale sequence do not uniquely identify the content for a given Piece of Art, the instance number is used. To ensure that there is consistent use of this attribute, the instance is defined as mandatory in the XML messaging.

  For example, if there are two different claims on one piece-of-art, where the type and locale sequence are the same, a unique instance number must be assigned to each claim.

Secondary Attribute

- **Choice –** in some cases, a manufacturer may want to offer the Artwork Studio multiple options of content to choose from. For example, the manufacturer may have a long version of a marketing claim (e.g. "makes hair shiny, silky, and more manageable"), but they may also have a short version (e.g. "makes hair shiny") that can be used when space on the piece of art is limited. In these cases, the manufacturer will send the same Type, Locale Sequence, and Instance, but will send different option numbers for the long and short versions of the marketing claim. For each of the content options, the manufacturer can optionally indicate the priority of using one option over others.

6.2.2   Artwork Content Response ("aka Roundtrip")

The Artwork Content Recipient will send an Artwork Content Response message to the Artwork Content Source, containing information that allows the manufacturer to verify their intentions have been met. The manufacturer uses the response to identify and process exceptions.

The Artwork Content Response will include version and version date/time to indicate whether content has changed, and an identifier indicating that the content submitted by the manufacturer has been changed by the supplier. The response will also include a count of the number of times an element (e.g. copy element, structured copy, etc..) actually appears on a piece-of-art (number of occurrences).

Refer to the appropriate section of these implementation considerations for additional details

Reconciliation

When the Artwork Content Source receives the response message, they will perform a reconciliation process which includes the following steps:

(1) Compare the content in the response message to the content in their (content management) systems

(2) Review the artwork to verify that it is visually acceptable

Below is an overview of the proposed reconciliation process, with additional details in the swim-lane diagram which depicts who is working on particular steps and whether the step is included in the process of the exchange of messages identified in this BMS or if the step is being handled in a separate process.

If the content source is satisfied that the artwork and the content are complete, correct, and they do not have any additional changes, they will notify the Content Recipient that the artwork is considered 'final'. This 'final' notification is typically done as part of a broader workflow process between the Trading Partners using existing processes and systems, not as part of the XML messaging described in this BMS.

If the content source determines that a change must be made to the content for any reason, they will update the content in their systems and resend the packaging content, starting an iterative process that continues until the content source is satisfied that the artwork is final. The attributes of version and version date/time will help trading partners manage this process.

Also note that when the content source receives the response message, it may be the case that the Content Recipient made changes to the content. If the content source agrees that the modified content is acceptable, they will update their content management systems to reflect the change. A

subsequent XML message to the Content Recipient is not necessary unless there are changes to other elements in a piece of art. When all changes are acceptable, the content source will send the Content Recipient a notification of final acceptance of the artwork and content outside of the XML messaging process. *(Note: the process of exchanging packaging content can be just one of the steps in a broader content management workflow. With the exchange and approval of artwork being part of a broader workflow and outside of the scope of XML messaging, it was decided that the final approval is also outside of the scope of this messaging).*

The use cases for these processes are defined in Section 8 of this document.

Note that the exchange of messages as described in this requirements document will address the exchange of the packaging content *(which includes references to graphic elements)* but not the exchange of the actual graphics or artwork file. It is expected that the workflow process to exchange graphics or artwork files is occurring in parallel or prior to the exchange of messages. This graphics/artwork workflow process is not addressed as part of these requirements.
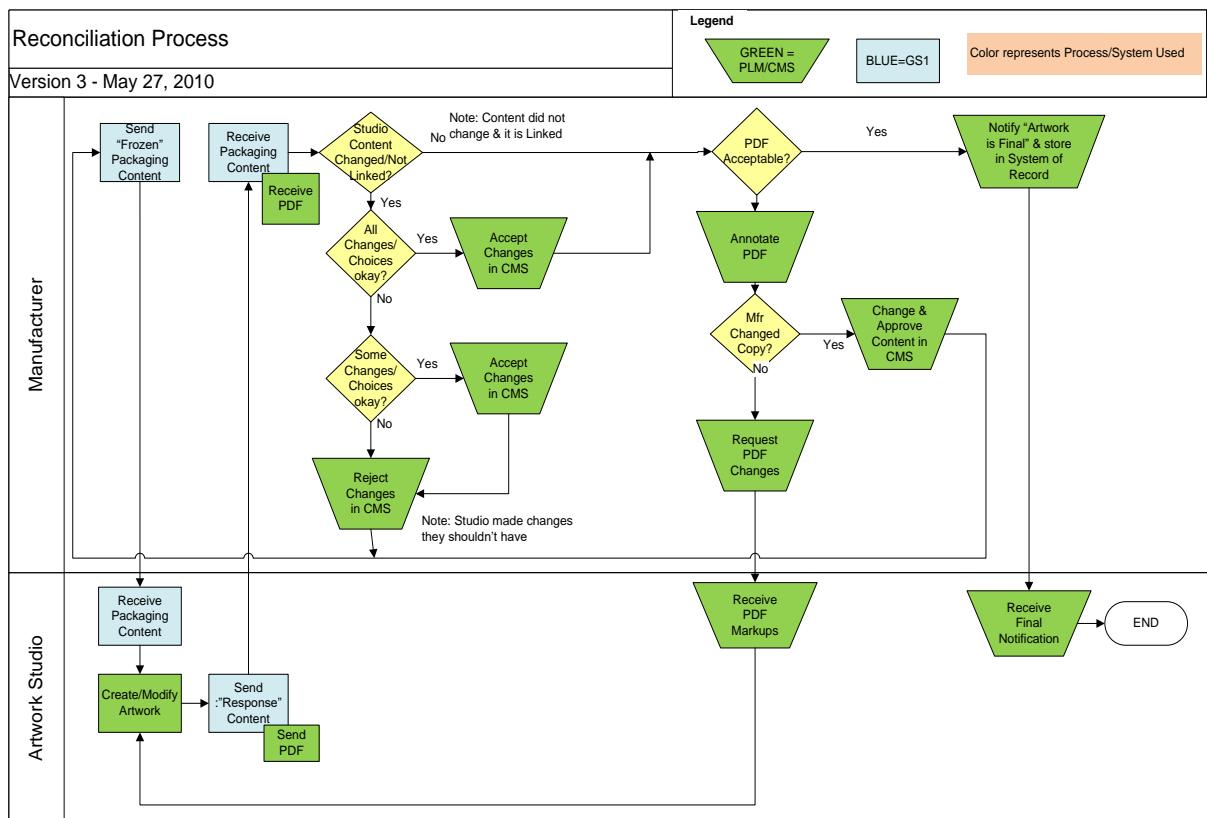
6.3 Attribute or Element Specific Considerations

6.3.1 Copy Element Rich Text

The overall formatting and/or presentation of the content on a piece-of-art is typically defined as part of a style guide. In general, the layout, formatting and presentation of the content is dictated by the artwork (template), not by the XML message. However, within a given copy element, there can be text content that will appear on a product label which consists of specific words, sentences, or paragraphs that require a different style of formatting from the overall content as determined by the artwork template.

To support identification of these format changes, there is a need to identify 'anchor points' or 'tags' within the text which will indicate where a controlled style change should occur. These anchor points are included in the copy element content sent in the Artwork Content and Artwork Content Response messages.

Within this standard, a specific set of anchor point names are defined to enable interoperability between the Manufacturer, the Artwork Studio, and software solution providers supporting the

standard. These include 'bold', 'italic', 'underline', and 'paragraph'. While these anchor point names imply a specific format option, the Artwork Studio should still refer to the manufacturer provided style guide for specific presentation requirements (e.g. font size, font color, etc..), font weight to for bolding.

> **Note:** *Only standard anchor point names of 'bold', 'italic', 'underline' and 'paragraph' will be supported; other tag names that may typically be used for formatting in HTML XHTML or other similar markup languages will <u>not</u> be supported.*

While the 'standard' anchor point names are expected to be used universally by trading partners, additional anchor point or tag names may also be defined using any name which is agreed to by the Manufacturer and the Artwork Studio. For example, an anchor point named 'small_print' could be defined and sent in the Artwork Content message, where the Manufacturer has defined the specific presentation requirements for 'small_print' in the style guide provided to the Artwork Studio.

6.3.2   Extensions

During development of the BRAD there was significant discussion regarding the use of "Private Extensions" within the standard. The decision was made that for the initial release, extensions can be used only as an addition to the end of each document; extensions will not be allowed for each of the elements (i.e. copy element, structured copy element, etc...). The rationale for this decision was based on the principle of maintaining a high degree of interoperability by limiting the number of variations or "flavours" of the standard.

In addition to this it will be possible to apply custom code values for types of copy elements, structured copy elements, graphic elements and data carrier elements. This further enhances the flexibility of the standard.

6.3.3   Graphic Elements

Piece(s) of Art may include graphic symbols which exist as an object or file that can be stored and accessed via many methods. While the requirements indicate that the following attributes are optional to allow for various use cases, at least one of these attributes must be populated:

- Graphic Element Identification
- Graphic Element Uniform Resource

The use case scenarios on which this rule is based include:

- Use of Graphic Element Identification

   A manufacturer may include only a name or some identifier for a symbol in an XML message, and provide the symbol file to the Artwork Studio with that given name/identifier. This assumes that the manufacturer and the artwork studio have agreed on standard names or identifiers for each of the graphic elements or have access to a shard system where the identifiers and visual appearance of the graphic elements is defined. The particular method used to establish such shared 'dictionary' of graphic elements each having a unique name of identifier is outside the scope of this BMS

- Use of Graphic Element Uniform Resource

   The manufacturer may include the Uniform Resource Identifier as a reference to a library or repository or website that contains the graphic element object which may be hosted by the manufacturer, artwork studio, or another agency.

   The URI information in the message may be extracted from a field associated with a given piece of art in the manufacturer's system of record, or the URI information may be stored in a separate location and extracted 'on the fly' during the assembly of the XML message.

6.3.4   Locale & Locale Sequence

The relationship between a "Locale Sequence" number and "Locale" is defined in the Piece-of-Art Content (POAC) section of the message. As described in the requirements, the "Locale" represents a country and language. An example would be 'en-US' representing English in the United States.

When multiple languages appear on a single piece of art, the Locale Sequence number is significant to identifying in which sequences languages appear on a piece-of-art. The numbering should be assigned in order of how the languages appear on the piece-of-art, with the lowest number being the first language. For example, locale sequence=1 means this is the first or primary language used on the piece-of-art. For subsequent sequencing, assign higher numbers. For example, locale sequence=2, locale sequence=3, etc..

This is especially important in relation to "Inline Translations" where the manufacturer has the expectation that the Artwork Studio will concatenate multiple copy elements containing different languages into a single location on a single piece-of-art.

To allow repurposing of artwork templates to cover many languages, the locale must be associated with a locale sequence which will be a variable that is used in each of the elements (e.g. copy element, structured copy element, etc...).

Example 1:
POAC:
Locale en-US = Locale Sequence "1"
Copy Element:
Locale Sequence 1   ← this means that in this example, this copy element is in English.

If the manufacturer decides to change the main language in this Piece-of-Art, or to have another Piece-of-Art for the same product with a different language, the Locale Sequence "1" could be set to a different main language, such as Spanish in the United States ('es-US') as shown below.

Example 2:
POAC:
Locale es-US = Locale Sequence "1"
Copy Element:
Locale Sequence 1   ← this means that in this example, this copy element is in Spanish

6.3.5   Piece of art Identification

Manufacturers today may have various schemes for uniquely identifying a Piece of art within their organization. For example, a manufacturer may uniquely identify a Piece of art based on the Project number or name, along with a unique identifier for the specific piece of art. .

To support a global standard that enables the Content Recipient of the Pieces of art and the Artwork Content message to uniquely identify each Piece of art from a manufacturer, it is recommended that manufacturers assign one unique identifier to be known as the "Piece of art Identification".

For some manufacturers, this may require concatenation of various data fields. In the example above, this means that the manufacturer should concatenate Project Number with the Piece of art identifier to develop the "Piece of art Identification" that would appear in the packaging content message. While we are recommending a best practice to include the Piece of art Identification on the Piece of art, the actual method to obtain this unique identifier may vary depending on the trading partners. .

6.3.6   Source & Source Reference Attributes

Manufacturers who use a content management (e.g. Oracle, SAP, etc..) may have unique identifiers within their database or CMS for each piece of content that will appear on a piece-of-art. There are two attributes in the message standards, "Source" and "Source Reference", which can be used to identify the manufacturer's database and the identifier or key within that database where the content for an element (e.g. copy element, graphics element) is stored.

To allow manufacturers to easily match packaging content response information and/or research exceptions between the response and the manufacturer's database, the Artwork Studio should return this information in the packaging response message.

It is recommended that the Source and Source Reference attributes only be used for Manufacturer information.

6.3.7   Use of "Comment" Attribute

To develop artwork today, manufacturers and artwork studios have followed a number of different processes which typically involved the exchange of excel or word files, paper documents, and phone calls. When developing this standard there were some questions on whether to include "comment" or "free text" fields to allow trading partners the flexibility to include additional instructions or information that may be exchanged in style guides or templates today.

The main drawback of including comments is that it could cause confusion for the Artwork Studio, especially if the Manufacturer includes comments in the messaging that may influence the content itself or that are inconsistent with agreements previously made regarding the artwork template or that exist in a style guide.

The main benefit is to allow flexibility between the Manufacturer and the Artwork Studio to exchange additional information which is not defined by other requirements. This could in theory reduce the number of 'round-trips' (i.e. number of times content and response messages are exchanged) between the Manufacturer and the Artwork Studio.

The final decision was to include a comment field under these specific conditions:

1. Their implementation is optional and whether they will be used or not would be based on agreement between trading partners. In other words, the standard would not dictate that a receiving party must deal with them (but a manufacturer could).

2. Comments would be informational only and there would never be an expectation that any automated function would ever rely on a comment in any way to affect the content of the XML.

6.3.8   Use of 'For Placement Only" and "is Content Approved" Attributes

For each of the elements (i.e. copy element, structured copy element, etc...) in the packaging content message, there are two attributes which are used in conjunction to describe the use and state of the content provided.

For Placement Only

This attribute is an indication of whether the content provided is to only be used to validate the placement, sizing, etc.,, for an element. For example, while a serial number would typically be printed as part of the print production process, the Manufacturer may send a "dummy" serial number to be used by the Artwork Studio just to determine whether or where the serial numbers will fit properly on the piece of art. This information is considered to be used "For Placement Only" and will not be included in the artwork proof that is sent to the print supplier.

Is Content Approved

This attribute identifies the state or status of the content for a given element (i.e. copy element, structured copy element, etc..) within the process lifecycle. For example, prior to final printing, the Manufacturer may have developed a marketing claim 'makes hair shinier and more manageable' that needs to be reviewed and approved by other internal departments. In some cases, the creation of the initial draft of the artwork may be created prior to the marketing claim being approved. In this case, the Manufacturer could send the "Is Content Approved" attribute value of "N" to indicate that the claim has not been approved which means that the Artwork Studio cannot use this information to produce final art.

Scenarios

Below is a table with various scenarios describing how these attributes are used together:

Values	Usage Description
For Placement Only = "Y" Is Content Approved = "Y"	The content is either in a non-printable state or is on a non-printable layer (for the final product) and can be made visible for proofing purposes *(i.e. FPO)* and the Manufacturer is not going to change the content *(i.e. content is approved)* so the Artwork Studio can consider this content to be finished. There is an assumption that the information which appears in the non-printable layer will be populated later, probably in production printing.

Values	Usage Description
For Placement Only = "Y" Is Content Approved = "N"	The Manufacturer has _not_ approved the content, so the Artwork Studio _cannot_ consider this piece of art finished. The Artwork Studio must wait for the Manufacturer to approve _all content_ before the artwork can move to the next stage in the workflow. The content provided is either in a non-printable state or is on a non-printable layer (for the final product) and can be made visible for proofing purposes _(i.e. FPO). For example, a batch number or a bar code that has a "dummy" number._
For Placement Only = "N" or blank Is Content Approved = "Y"	The Manufacturer has approved this content (is Approved) and the content provided appears in the printable layer to appear on the final product.
For Placement Only = "N" or blank Is Content Approved = "N"	The Manufacturer has _not_ approved the content, so the Artwork Studio _cannot_ consider this piece of art finished. The Artwork Studio must wait for the Manufacturer to approve _all content_ before the artwork can move to the next stage in the workflow The content eventually provided by the Manufacturer should appear in the printable layer to appear on the final product.

6.3.9   Use of "Number of Occurrences" Attributes

Occurrences of Content on a Piece of art

When Manufacturers and Artwork Studios collaborate to develop the artwork template, they will identify the locations for the copy content, data carriers, etc. Each location on the artwork template will be tagged as described above. When sending the packaging content message to the Artwork Studio, the Manufacturer will only send the information necessary to match the XML content to the tagged locations; they will _not_ send any information that identifies a specific location.

The Manufacturer will assist the Artwork Studio in ensuring that specific copy appears in the number of locations on a piece of art that is expected, by sending the "Total Number of Expected Occurrences" for each element. This total corresponds to the number of times a single element (i.e. Copy Element, Structured Copy Element, etc...) of the same type, locale and instance will appear on a single piece of art.

When the Artwork Studio completes the development of the piece of art, they will send a response message to the Manufacturer which includes a "Total Number of Actual Occurrences". "Actual Occurrences" corresponds to the number of times a single element of the same type, locale and instance actually appears within the domain of a specific template. A template can refer to an artwork template for an entire Piece-of-Art or refer to a structured copy element template. The Manufacturer can then compare this information to their expected occurrences to more easily identify differences.

Note: The count of the number of occurrences on a template is also an indication of whether the element (copy element, graphic element, etc..) is 'linked' to a template. When the "Actual Occurrences" is 0, the element does not appear on the piece of art.

Occurrences with "Choice" options

As described above, Manufacturers may send multiple options for the Artwork Studio to select from for a given element in the packaging content message. As the Artwork Studio develops the piece of art using the Artwork Template, they may determine that one or all of the options will be used.

When the Manufacturer sends the "Expected Number of Occurrences" each selected option should have the same number of occurrences, indicating how many times any _one_ of the elements is expected to appear. For example, if there are two occurrences, there could be two uses of option 1, two uses of option 2, or one use of option 1 and 1 use of option 2. In all of these examples, the value of the "Expected Number of Occurrences" for the copy element is 2. In the response message, the "Actual Number of Occurrences" may differ from the "Expected Number of Occurrences". In the Response message for the unique combination of type, locale, and instance, the sum of the "Actual Number of Occurrences" across the applied options should equal the "Expected Number of Occurrences" associated with the copy element.

Below are examples with various scenarios.

Example 1 – Artwork Studio selects 1 option

■ The Manufacturer is expecting that the Marketing Claim will occur in 2 locations; the Manufacturer sends Total # of expected Occurrences = 2 for both options.

■ In this example, there are 2 choices from which the Artwork Studio has selected one. The Artwork Studio indicates the Total # of actual occurrences = 2 for Option # 1.

Artwork Content		Artwork Content Response	
Attribute	**Data**	**Attribute**	**Data**
Type	Marketing Claim	Type	Marketing Claim
Locale Sequence	1	Locale Sequence	1
Instance	1	Instance	1
Source	CMS1	Source	CMS1
Source Ref	FIELD_A	Source Ref	FIELD_A
Option	1	Option	1
Body	Makes hair shinier.	Body	Makes hair shinier.
Total # of expected Occurrences	2	Total # of expected Occurrences	2
		Total # of actual Occurrences	2
Type	Marketing Claim	Type	Marketing Claim
Locale Sequence	1	Locale Sequence	1
Instance	1	Instance	1
Source	CMS1	Source	CMS1
Source Ref	FIELD_B	Source Ref	FIELD_B
Option	2	Option	2
Body	Makes hair shiny and silky.	Body	Makes hair shiny and silky.
Total # of expected Occurrences	2	Total # of expected Occurrences	2
		Total # of actual Occurrences	0

✅ **Note:** *The Artwork Studio could have also chosen option # 2, in which case the "Total # of Actual Occurrences" for option # 1 would be 0, and the "Total Number of Actual Occurrences" for option # 2 would be 2 .*

Example 2 – Artwork Studio selects 2 options

■ The Manufacturer is expecting that the Marketing Claim will occur in 2 locations; the Manufacturer sends Total # of expected Occurrences = 2 for both options.

■ In this example, there are 2 options from which the Artwork Studio has selected both; each option will appear in 1 location on the piece of art. The Artwork Studio indicates the Total # of actual occurrences = 1 for option # 1 and for option # 2 (*so the total # of occurrences across options = 2)*

Artwork Content	Artwork Content Response

Attribute	Data	Attribute	Data
Type	Marketing Claim	Type	Marketing Claim
Locale Sequence	1	Locale Sequence	1
Instance	1	Instance	1
Source	CMS1	Source	CMS1
Source Ref	FIELD_A	Source Ref	FIELD_A
Option	1	Option	1
Body	Makes hair shinier.	Body	Makes hair shinier.
Total # of expected Occurrences	2	Total # of expected Occurrences	2
		Total # of actual Occurrences	1
Type	Marketing Claim	Type	Marketing Claim
Locale Sequence	1	Locale Sequence	1
Instance	1	Instance	1
Source	CMS1	Source	CMS1
Source Ref	FIELD_B	Source Ref	FIELD_B
Option	2	Option	2
Body	Makes hair shiny and silky.	Body	Makes hair shiny and silky.
Total # of expected Occurrences	2	Total # of expected Occurrences	2
		Total # of actual Occurrences	1

Occurrences with Structured Copy Elements

Structured Copy Elements, or tables, can be described as 'sub-templates' to the overall artwork template. These 'sub-templates' may actually be defined and reused across multiple pieces-of-art or within multiple artwork templates.

When reuse is needed and structured copy elements are defined, Trading Partners must consider the scope of the domain for the template; that is, the attributes defined within the structured copy element should be considered unique and/or should be a count based only on their use within the structured copy element.

For example, suppose there is copy (e.g. "Percent calories") that could appear as both an individual copy element and as copy element within a structured copy element or table. When used as an attribute within the structured copy element, the "fully-qualified" name could be: "Identification_Type_Instance_Percent_Calories". This fully-qualified name differentiates this copy within the table from other copy which appears as an individual copy element within the overall artwork template.

Additionally, the scope for the "number of occurrences" attributes should also be within the domain of a given template. For example, if Percent calories appears within the structured copy element once, then the "expected number of occurrences" value at the structured copy element level should be '1', and the "expected number of occurrences" at the individual copy element level would also be '1'.

In other words, although the copy content may be the same for a copy element within a table as well as the individual copy element that appears elsewhere on the artwork template, the number of occurrences is specific to either the structured copy element or the overall artwork template.

6.3.10 Version and Version Date/Time

Two attributes, version and version date/time, may be used to help trading partners identify if content has changed. The following principles were followed when determining whether a version identifier and/or version date/time would be used:

■ Version numbers are mandatory when more than 1 version can be valid at any given time. For example, more than 1 version of a recycle symbol could exist and be valid).

This applies to the Artwork Content, Graphic Element, where version is mandatory, and Technical Drawing, where version is optional.

■ Date time stamps are used when only the latest version of a given item is valid. For example, only the latest version of a piece of art content is valid, so date/time stamp is used to uniquely identify the latest content.

This applies to the Artwork Content, Piece of Art Content, and Technical Drawing, where version date/time is mandatory and Graphic Element, where version date/time is optional.

■ To avoid confusion if version date/time was different at individual elements and piece-of-art content, the decision was made to only have version date/time at the piece-of-art content level where it is mandatory.

Note: Version date/time is used at the Piece-of-Art Content level, and is not used for copy elements, structured copy elements, or data carriers. If any of these elements in the Piece-of-Art Content has changed, then the date/time for the Piece-of-Art Content should be updated.

6.4 Nutrient codes

The nutrient related copy element codes are constructed using a fixed part and a tag from the UN/INFOODS standard. The following three constructs are available:

1. "nutrientTypeCode"&_NUTRIENT_VALUE

2. "nutrientTypeCode"&_NUTRIENT_PDV

3. "nutrientTypeCode"&_NUTRIENT_PREFIX.

The table below provides the constructed codes for the most commonly used nutrients, including vitamins.

Code Value	Definition
ENER-_NUTRIENT_VALUE	CALORIES The total amount of calories per serving. The string should represent an integer number. 5 calorie increments should be used up-to and including 50 calories and 10 calorie increments should be used above 50 calories. Examples: 0, 15, 45, 50, 100, 130
ENERPF_NUTRIENT_VALUE	CALORIES_FROM_FAT A statement of the caloric content derived from total fat.
?	CALORIES_FROM_SATURATED_FAT A statement of the caloric content derived from saturated fat.
FAT_NUTRIENT_VALUE	(TOTAL_FAT_MEASURE) The quantitative amount by weight of fat in combination with an optional suffix. Examples: 0g, 0g*, 0.5g, 2mg, 250mg, 1g, 1g**
FAT_NUTRIENT_PDV	(TOTAL_FAT_PDV) Defines the Percent daily value of the total fat based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
FASAT_NUTRIENT_VALUE	(SATURATED_FAT_MEASURE) Measure of the number of grams of saturated fat in a serving defined as the sum of all fatty acids containing no double bonds

Code Value	Definition
FASAT_NUTRIENT_PDV	(SATURATED_FAT_PDV) Defines the Percent daily value of saturated fat based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
FATRN_NUTRIENT_VALUE	(TRANS_FAT) A statement of the number of grams of trans fat in a serving, defined as the sum of all unsaturated fatty acids that contain one or more isolated (i.e., nonconjugated) double bonds in a trans configuration.
FAPU_NUTRIENT_VALUE	(POLYUNSATURATED_FAT) The amount of Polyunsaturated fat as a Regulated Nutrient. This element must be present if Monounsaturated Fat is present.
?	(OMEGA3_POLYUNSATURATED) The amount of Omega-3 Polyunsaturated Fat as a Regulated Nutrient. This nutrient is used on Canadian nutrition facts labels and should not be declared on US nutrition facts labels.
?	(OMEGA6_POLYUNSATURATED) The amount of Omega-3 Polyunsaturated Fat as a Regulated Nutrient. This nutrient is used on Canadian nutrition facts labels and should not be declared on US nutrition facts labels.
FAMS_NUTRIENT_VALUE	MONOUNSATURATED_FAT The amount of Monounsaturated fat as a Regulated Nutrient. This element must be present if Polyunsaturated Fat is present.
CHOL-_NUTRIENT_PREFIX	CHOLESTEROL_LESS_THAN_PREFIX An optional prefix string that should be printed before the quantitative amount by weight of the nutrient using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, <
CHOL-_NUTRIENT_VALUE	CHOLESTEROL_MEASURE Measure of the cholesterol content in a serving expressed in milligrams to the nearest 5-milligram increment.
CHOL-_NUTRIENT_PDV	CHOLESTEROL_PDV Defines the Percent daily value of cholesterol content based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
NA_NUTRIENT_VALUE	SODIUM_MEASURE Measure of the number of milligrams of sodium in a specified serving of food expressed as zero when the serving contains less than 5 milligrams of sodium
NA_NUTRIENT_PDV	SODIUM_PDV Defines the Percent daily value of sodium based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
K_NUTRIENT_VALUE	POTASSIUM_MEASURE Measure of the number of milligrams of potassium in a specified serving of food
K_NUTRIENT_PDV	POTASSIUM_PDV Defines the Percent daily value of potassium based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
CHO-_NUTRIENT_PREFIX	TOTAL_CARBOHYDRATE_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the total carbohydrates using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, <
CHO-_NUTRIENT_VALUE	TOTAL_CARBOHYDRATE_MEASURE Measure of the number of grams of total carbohydrate in a serving expressed to the nearest gram.

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Code Value	Definition
CHO-_NUTRIENT_PDV	TOTAL_CARBOHYDRATE_PDV Defines the Percent daily value of total carbohydrates based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
FIBTSW_NUTRIENT_PREFIX	DIETARY_FIBER_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the dietary fiber using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
FIBTSW_NUTRIENT_VALUE	DIETARY_FIBER_MEASURE Measure of the number of grams of total dietary fiber in a serving, indented and expressed to the nearest gram
FIBTSW_NUTRIENT_PDV	DIETARY_FIBER_PDV Defines the Percent daily value of dietary fiber based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. Examples: 0, 5, 12
FIBSOL_NUTRIENT_PREFIX	SOLUBLE_FIBER_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of soluble fiber using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
FIBSOL_NUTRIENT_VALUE	SOLUBLE_FIBER Measure of the number of grams of soluble dietary fiber in a serving expressed to the nearest gram.
FIBINS_NUTRIENT_PREFIX	INSOLUBLE_FIBER_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the insoluble fiber using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
FIBINS_NUTRIENT_VALUE	INSOLUBLE_FIBER Measure of the number of grams of insoluble dietary fiber in a expressed to the nearest gram.
SUGAR-_NUTRIENT_PREFIX	SUGARS_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the sugars using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
SUGAR-_NUTRIENT_VALUE	SUGARS Measure of the number of grams of sugars in a serving expressed to the nearest gram. Sugars shall be defined as the sum of all free mono- and disaccharides (such as glucose, fructose, lactose, and sucrose).
POLYL_NUTRIENT_PREFIX	SUGAR_ALCOHOL_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the sugars using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
POLYL_NUTRIENT_VALUE	SUGAR_ALCOHOL Measure of the number of grams of sugar alcohols expressed to the nearest gram. For nutrition labeling purposes, sugar alcohols are defined as the sum of saccharide derivatives in which a hydroxyl group replaces a ketone or aldehyde group and whose use in the food is listed by FDA (e.g., mannitol or xylitol) or is generally recognized as safe (e.g., sorbitol). In lieu of the term "sugar alcohol," the name of the specific sugar alcohol (e.g., "xylitol") present in the food may be used in the nutrition label provided that only one sugar alcohol is present in the food.
STARCH-_NUTRIENT_VALUE	STARCH Represents the amount of starch. This nutrient is used on Canadian nutrition facts labels and should not be declared on US nutrition facts labels.
CHO-O_NUTRIENT_PREFIX (GS1 code)	OTHER_CARBOHYDRATE_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the other carbohydrates using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt

Code Value	Definition
CHO-O_NUTRIENT_VALUE (GS1 code)	OTHER_CARBOHYDRATE Measure of the number of grams of other carbohydrates. Other carbohydrates are defined as the difference between total carbohydrate and the sum of dietary fiber, sugars, and sugar alcohol, except that if sugar alcohol is not declared (even if present), it shall be defined as the difference between total carbohydrate and the sum of dietary fiber and sugars.
PRO-_NUTRIENT_PREFIX	PROTEIN_LESS_THAN_PREFIX A prefix string that should be printed before the quantitative amount by weight of the protein using a prefix text that is allowed by the relevant CFR. Examples: Contains less than, less than, &lt
PRO-_NUTRIENT_VALUE	PROTEIN_MEASURE Measure of the number of grams of protein in a serving, expressed to the nearest gram.
PRO-_NUTRIENT_PDV	PROTEIN_PDV Percent daily value of the nutrient based on a 2000 calorie diet, not including the percent sign. The text string should represent an integral decimal value. In some cases (e.g. for Protein) declaration of the percent daily value may be optional and the PDV element may then be omitted. Examples: 0, 5, 12
Vitamins references:	
VITA-_NUTRIENT_PDV	VITAMIN_A_PDV Percent daily value of Vitamin A based on a 2000 calorie diet, not including the percent sign. Vitamin A is retinol. Carotene compounds (found, for example, in egg yolk, butter and cream) are gradually converted by the body to vitamin A (retinol). A form of vitamin A called retinal is responsible for transmitting light sensation in the retina of the eye.
VITC-_NUTRIENT_PDV	VITAMIN_C_PDV Percent daily value of Vitamin C based on a 2000 calorie diet, not including the percent sign. Vitamin C is an essential nutrient found mainly in fruits and vegetables. The body requires vitamin C to form and maintain bones, blood vessels, and skin.
CA_NUTRIENT_PDV	CALCIUM_PDV Percent daily value of Calcium based on a 2000 calorie diet, not including the percent sign. Calcium is a mineral found mainly in the hard part of bones, where it is stored.
FE_NUTRIENT_PDV	IRON_PDV Percent daily value of iron based on a 2000 calorie diet, not including the percent sign. Iron is an essential mineral. Iron is necessary for the transport of oxygen (via hemoglobin in red blood cells) and for oxidation by cells (via cytochrome). Deficiency of iron is a common cause of anemia .
VITD-_NUTRIENT_PDV	VITAMIN_D_PDV Percent daily value of Vitamin D based on a 2000 calorie diet, not including the percent sign.Vitamin D is a steroid vitamin which promotes the intestinal absorption and metabolism of calcium and phosphorus.
VITE-_NUTRIENT_PDV	VITAMIN_E_PDV Percent daily value of Vitamin E based on a 2000 calorie diet, not including the percent sign. Alpha-tocopherol, an antioxidant vitamin which binds oxygen free radicals that can cause tissue damage. Deficiency of vitamin E can lead to anemia . Vitamin E may play a possible role in preventing heart disease and cancer of the lung and prostate .
VITK_NUTRIENT_PDV	VITAMIN_K_PDV Percent daily value of Vitamin K based on a 2000 calorie diet, not including the percent sign. Vitamin K is one of two naturally occurring fat-soluble vitamins (vitamin K1 and vitamin K2) needed for the clotting of blood because of an essential role in the production of prothrombin (a clotting factor). The term vitamin A may also refer to a synthetic compound that is closely related chemically to the natural vitamins K1 and K2 and has similar biological activity

Code Value	Definition
THIA_NUTRIENT_PDV	THIAMIN_PDV Percent daily value of Thiamin based on a 2000 calorie diet, not including the percent sign. Thiamin is a vitamin, C12H17ClN4OS, of the vitamin B complex, found in meat, yeast, and the bran coat of grains, and necessary for carbohydrate metabolism and normal neural activity. Also called vitamin B1
RIBF_NUTRIENT_PDV	RIBOFLAVIN_PDV Percent daily value of riboflavin based on a 2000 calorie diet, not including the percent sign. Riboflavin is an orange-yellow crystalline compound, C17H20N4O6, the principal growth-promoting factor in the vitamin B complex, naturally occurring in milk, leafy vegetables, fresh meat, and egg yolks. Also called lactoflavin, vitamin B2
NIA_NUTRIENT_PDV	NIACIN_PDV Percent daily value of niacin based on a 2000 calorie diet, not including the percent sign. Niacin is a white crystalline acid, C5H4NCOOH that is a component of the vitamin B complex found in meat, wheat germ, dairy products, and yeast and is used to treat and prevent pellagra. Also called nicotinic acid.
VITB6-_NUTRIENT_PDV	VITAMIN_B6_PDV Percent daily value of vitamin B6 based on a 2000 calorie diet, not including the percent sign. A group of closely related chemical compounds with related names -- pyridoxine, pyridoxal and pyridoxamine -- that are transformed within the body to yet another form of vitamin B6, pyridoxal phosphate that acts as a coenzyme.
FOL-_NUTRIENT_PDV	FOLATE_PDV Percent daily value of folate based on a 2000 calorie diet, not including the percent sign. Folate is a folic acid, one of the B vitamins that is a key factor in the synthesis (the making) of nucleic acid (DNA and RNA).
VITB12_NUTRIENT_PDV	VITAMIN_B12_PDV Percent daily value of vitamin B12 based on a 2000 calorie diet, not including the percent sign. Vitamin B12 is a vitamin important for the normal formation of red blood cells and the health of the nerve tissues.
BIOT_NUTRIENT_PDV	BIOTIN_PDV Percent daily value of biotin based on a 2000 calorie diet, not including the percent sign. Biotin is a A colorless crystalline vitamin, C10H16N2O3S, of the vitamin B complex, essential for the activity of many enzyme systems and found in large quantities in liver, egg yolk, milk, and yeast
PANTAC_NUTRIENT_PDV	PANTOTHENICACID_PDV Percent daily value of pantothenic acid based on a 2000 calorie diet, not including the percent sign. Pantothenic acid is a yellow oily acid, C9H17NO5, belonging to and found widely in plant and animal tissues.
P_NUTRIENT_PDV	PHOSPHORUS_PDV Percent daily value of phosphorus based on a 2000 calorie diet, not including the percent sign. Phosphorus is an essential element in the diet and a major component of bone. Phosphorus is also found in the blood, muscles, nerves, and teeth. It is a component of adenosine triphosphate (ATP), the primary energy source in the body.
ID_NUTRIENT_PDV	IODINE_PDV Percent daily value of iodine based on a 2000 calorie diet, not including the percent sign. Iodine is an essential element in the diet used by the thyroid gland to make thyroid hormones. The two most important thyroid hormones are thyroxine (T4) and triiodothyronine (T3). Thyroxine (T4) has four iodine molecules attached to its structure, while triiodothyronine (T3) has three iodine molecules attached to it.

Code Value	Definition
MG_NUTRIENT_PDV	MAGNESIUM_PDV Percent daily value of magnesium based on a 2000 calorie diet, not including the percent sign. Magnesium is a mineral involved in many processes in the body including nerve signaling, the building of healthy bones, and normal muscle contraction. About 350 enzymes are known to depend on magnesium.
ZN_NUTRIENT_PDV	ZINC_PDV Percent daily value of zinc based on a 2000 calorie diet, not including the percent sign. Zinc is a mineral essential to the body that is a constituent of many enzymes that permit chemical reactions to proceed at normal rates. It is involved in the manufacture of protein (protein synthesis) and in cell division. Zinc is also a constituent of insulin, and is concerned with the sense of smell.
SE_NUTRIENT_PDV	SELENIUM_PDV Percent daily value of selenium based on a 2000 calorie diet, not including the percent sign. Selenium is an essential trace mineral that functions largely in the form of proteins, called selenoproteins, which act as enzymes and help prevent damage to cells in the body by oxidants in the environment or those produced by normal metabolism.
CU_NUTRIENT_PDV	COPPER_PDV Percent daily value of copper based on a 2000 calorie diet, not including the percent sign. Copper is involved in the synthesis of hemoglobin, which carries oxygen in the blood. It is also involved with the production of collagen and noradrenalin. It is a blood antioxidant and prevents polyunsaturated fats from going rancid. It is part of many enzymes that either break down or build tissue, in healing processes, and in protein metabolism.
MN_NUTRIENT_PDV	MANGANESE_PDV Percent daily value of manganese based on a 2000 calorie diet, not including the percent sign. Manganese is a trace mineral that has many other functions, including sex hormone production, healthy nerves and brain functioning, the immune system, and the formation of blood.
CR_NUTRIENT_PDV	CHROMIUM_PDV Percent daily value of chronium based on a 2000 calorie diet, not including the percent sign. Chromium is an essential trace element for animals and man which is part of carbohydrate metabolism, being part of glucose tolerance factor (GTF) with niacin and amino acids. It stimulates enzymes that metabolize glucose for energy and synthesize fatty acids and cholesterol. It supports insulin's ability to process excessive amounts of glucose, and may be involved with the synthesis of protein.
MO_NUTRIENT_PDV	MOLYBDENUM_PDV Percent daily value of molybdenum based on a 2000 calorie diet, not including the percent sign. Molybdenum is part of two enzymes involved in electron transport - xanthine oxidase and aldehyde oxidase. The first enzyme helps move liver reserves and is involved in changing iron to the ferric form. The second enzyme is involved in the oxidation of fats. Molybdenum is also involved with copper and nitrogen metabolism, normal cellular function, and making urine.
CLD_NUTRIENT_PDV	CHLORIDE_PDV Percent daily value of chloride based on a 2000 calorie diet, not including the percent sign. Chloride is a major mineral that is necessary for your stomach to make digestive juices and that helps keep your body fluids in balance. Chloride is found in the fluid surrounding all the cells in your body.

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7 Summary of Changes

Any change in the GS1 standards is done based on the Work Request (WR) submitted by the GS1 User Companies or Member Organisations. All Work Requests are documented in the Work Request system available on the GS1 website: ***http://wr.gs1.org***. The system is accessible to registered users. New visitors need to register first, to be able to access it. WRs can be searched by the number referenced in tables below, see: Search Work Requests. The number starts with the two last digits of the year when it was submitted, followed by the consecutive number within that year.

✅ **Note:** WRs submitted earlier than February 2012 should be searched in Old Change Requests.

7.1 BMS Release 3.0.1

First release of this standard.

7.2 BMS Release 3.1

No work requests. Indirect changes due to upgrade to new Shared and eCom Common libraries.

7.3 BMS Release 3.2

Change	Associated WR
class ArtworkContent - maintenance view «root» **ArtworkContent** + artworkProjectIdentification: string = {1..80} + artworkProjectName: string = {1..80} *maintenance* Change: (Verified) 3.2 changed generalisation from Document to eComDocument class to include AVP (WR 14-110)	**14-000110** Add Attribute Value Pair at the root, line item and sub line item levels
class ArtworkContentResponse - maintenance view «root» **ArtworkContentResponse** + artworkProjectIdentification: string = {1..80} + artworkProjectName: string = {1..80} *maintenance* Change: (Verified) 3.2 changed generalisation from Document to eComDocument class to include AVP (WR 14-110)	**14-000110** Add Attribute Value Pair at the root, line item and sub line item levels

Change	Associated WR
class ArtworkContentPieceOfArt - maintenance view **ArtworkContentPieceOfArt** + versionIdentifier: string [0..1] = {1..80} + versionDateTime: dateTime [0..1] + pieceOfArtDescription: Description200 [0..1] + pieceOfArtGroupingIdentifier: string [0..*] = {1..80} + packagingComponentDescription: Description80 [0..1] «association» + avpList: Ecom_AttributeValuePairList [0..1] *maintenance* Change: (Verified) 3.2 added +avpList (WR 14-110)	**14-000110** Add Attribute Value Pair at the root, line item and sub line item levels

7.4 BMS Release 3.3

Change	Associated WR
Changed data type of localeSequence from positiveInteger to nonNegativeInteger to allow the use of value 0, denoting the master copy class ArtworkContentCopyElement - Maintenance view **ArtworkContentCopyElement** + actualNumberOfOccurrences :positiveInteger [0..1] + copyElementTypeCode :CopyElementTypeCode + expectedNumberOfOccurrences :positiveInteger [0..1] + forPlacementOnly :NonBinaryLogicEnumeration + instanceSequence :positiveInteger + isContentApproved :NonBinaryLogicEnumeration + localeSequence :nonNegativeInteger + note :Description500 [0..1] + optionSequence :positiveInteger [0..1] + prioritySequence :positiveInteger [0..1] *maintenance* Change: (New) 3.3 changed data type of +localeSequence from positiveInteger to nonNegativeinteger (WR 15-212)	**15-000212** Allow communication of so-called master copy and the use of this master copy to facilitate identification of all foreign-language translations available for specific copy element in Artwork Content message.

Change	Associated WR
Created Ecom_EntityIdentification class and changed association from the previous EntityIdentification	**15-000314** Make GS1 identification keys optional in GS1 EDI XML
Created Ecom_EntityIdentification class and changed association from the previous EntityIdentification	**15-000314** Make GS1 identification keys optional in GS1 EDI XML
Created Ecom_DocumentReference class and changed association from the previous DocumentReference	**15-000314** Make GS1 identification keys optional in GS1 EDI XML

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Change	Associated WR
Created Ecom_EntityIdentification class and changed association from the previous EntityIdentification	**15-000314** Make GS1 identification keys optional in GS1 EDI XML
Created Ecom_TradeItemIdentification class and changed association from the previous TradeItemIdentification	**15-000314** Make GS1 identification keys optional in GS1 EDI XML

7.5 BMS Release 3.4

No work requests. Indirect changes due to upgrade to new Shared and eCom Common libraries.

7.6 BMS Release 3.5

No work requests. Indirect changes due to upgrade to new Shared and eCom Common libraries.

7.7 BMS Release 3.5.1

No work requests. Indirect changes due to upgrade to new Shared and eCom Common libraries.

7.8 BMS Release 3.6

No work requests. Indirect changes due to upgrade to new Shared and eCom Common libraries.

8 Appendices

Not Applicable

9 Acknowledgements

The following is a list of individuals (and their companies) who participated in the creation, review and approval of this BMS.

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co-chair	Gary Russell	Phototype
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9.2   Development Team Members

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