
Document filename:	DDM-G-023 MultiPayloadMessageSpecification		
Directorate / Programme	Architecture, Standards and Innovation	Project	Data Dictionary and Messaging
Document Reference	DDM-G-023		
Department Head	Richard Kavanagh	Status	Approved
Owner	Kevin Sprague	Version	2.0
Author	Kevin Sprague	Version issue date	28/10/2015
		Review date	28/10/2016

Multi Payload Message Specification

Revision History

Version	Date	Summary of Changes
0.1	26/10/2009	First draft for comment.
0.2	26/10/2009	Following first review with the Interoperability Development Lead.
0.3	29/10/2009	NHS CFH Interoperability Messaging Team review.
0.4	09/11/2009	NHS CFH Interoperability Messaging Team review.
0.5	09/11/2009	The first version sent to NHS CFH business analysis team.
0.6	11/05/2010	The Boolean value for the seperableInd attribute in Subject1 has changed from "False" to "True". The model has been changed from an R-MIM to a D-MIM. Some attributes values have changed from fixed to default for flexibility.
0.7	20/05/2010	NHS CFH Interoperability Messaging Team review. DMIM renamed COMT_DM000010UK01. Cardinality change for ControlProcess.id, to 1..2.
0.8	24/05/2010	"Two Types of Message Payload" section added for clarity.
0.9	26/05/2010	NHS CFH Interoperability Messaging Team review.
1.0	10/10/2013	Rebranded to HSCIC and made final. No other changes.
2.0	28/10/2015	Update for changes to the Care Act 2014

Glossary of Terms

Term / Abbreviation	What it stands for
Health and Social Care Information Centre (HSCIC)	The Health and Social Care Information Centre is a data, information and technology resource for the health and care system and plays a fundamental role in driving better care, better services and better outcomes for patients in England.
Payload	This refers to domain content in a message
Multi-Payload Message (MPM)	The message format for carrying a combination of CDA and non CDA HL7 messages, linked by a common Control Act in the payload.
Health Level Seven Version 3 (HL7 v3)	(Health Level 7) ANSI-accredited standards for electronically defining clinical and administrative data in the healthcare industry. The "7" comes from application layer 7 in the OSI model, which is the highest level where programs talk to each other. For information, visit www.hl7.org .
Reference Information Model (RIM)	The HL7 information model from which all other information models (e.g. R-MIMs) and messages are derived.
Refined Message Information Model (R-MIM)	An information structure that represents the requirements for a set of messages. A constrained subset of the Reference Information Model (RIM) which <i>May</i> contain additional classes that are cloned from RIM classes.

Domain Message Information Model (D-MIM)	A form of Refined Message Information Model (R-MIM) constructed to represent the totality of concepts embodied in the individual R-MIMs needed to support the communication requirements of a particular HL7 domain.
Spine	<p>The Spine is a set of national services used by the NHS Care Record Service. These include:</p> <p>The Personal Demographics Service (PDS), which stores demographic information about each patient and their NHS Number.</p> <p>The Summary Care Record (SCR). The Summary Care Record is a summary of patient's clinical information, such as allergies and adverse reactions to medicine.</p> <p>The Secondary Uses Service (SUS), which uses data from patient records to provide anonymised and pseudonymised business reports and statistics for research, planning and public health delivery.</p> <p>The Spine also provides a set of security services, to ensure access to information stored on the Spine is appropriately controlled.</p>
PSIS	<p>Personal Spine Information Service</p> <p>The central database on the Spine containing clinical records for each NHS patient.</p>
Transactions and Messaging Service (TMS)	The message handling application element of the Spine.
Message Handling Service	A software component that handles connectivity to the Transaction Messaging Service (TMS) as well as sending and receiving messages on the TMS. The MHS is responsible for handling all XML-constructed messages sent between NHS systems. All messages from business systems to national services must pass through the Spine MHS node for forwarding to the requested service.
Clinical Document Architecture (CDA)	A document mark-up standard that specifies the structure and semantics of "clinical documents" for the purpose of exchange.

Document Control:

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1 Introduction

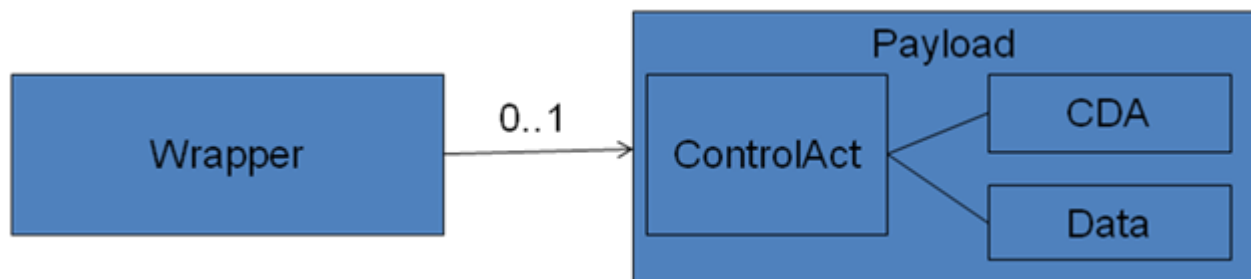
1.1 Purpose of Document

The purpose of this document is to provide a background to vendors about the Multi-Payload Message (MPM) Structure, which allows different message types to be sent within a single payload. The reader of this document is expected to have a basic level of understanding of HL7 v3 messaging, and Clinical Document Architecture (CDA).

1.2 Requirements For a New Message Format

There is a business requirement for a generic message specification that allows for multiple messages and multiple message types to be sent within the same wrapper. Hence the name of this specification is Multi-Payload Message (MPM). The messages are linked, so there are no issues in the case of message failure.

The concept is to introduce a controlling act in the payload that links the multiple payloads within the message, as shown in a very simplified diagram below:



If any Message Handling Service (MSH) removes the outer message wrapper, this has no effect on document linkage, since there is a Control Act in the payload, as shown in the above diagram.

There is no requirement or intention for the messages of this structure to ever go to PSIS. However, the CDA documents contained in the structure maybe PSIS compliant or copies of documents held on PSIS.

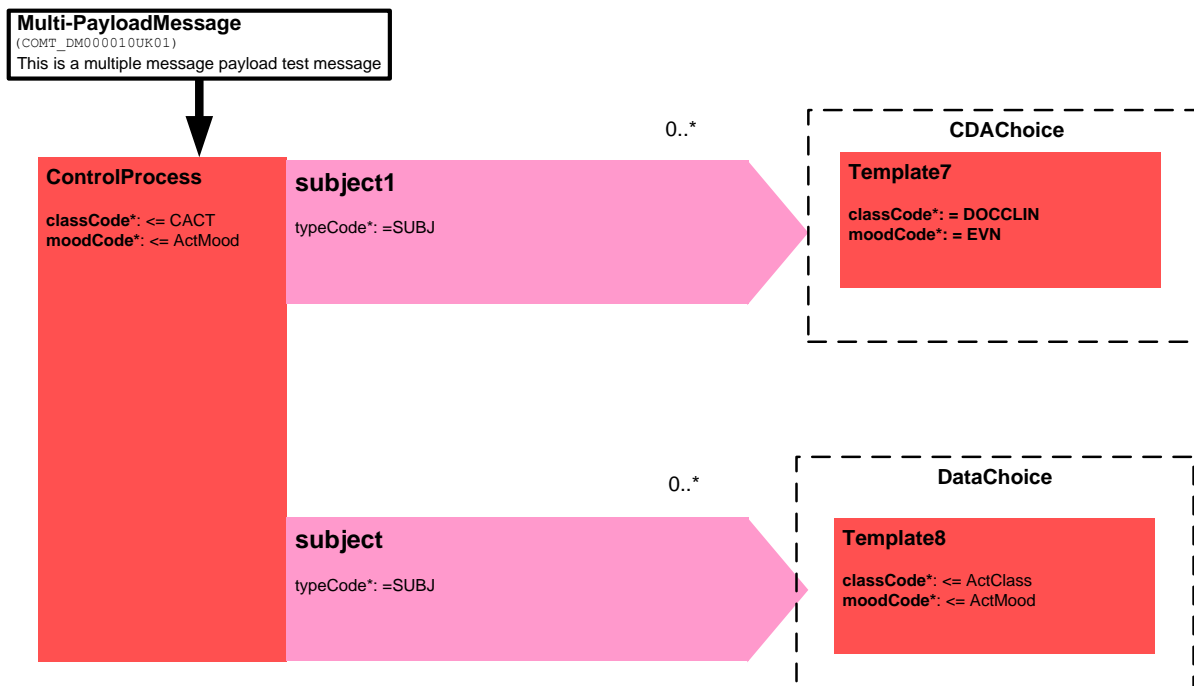
At the time of this publication, an example of the use of this specification is:

“Hospital Discharge Notifications – Care Act 2014”.

This example is in the Health and Social Care Integration (HSCI) Domain Implementation Specification, in the Hospital Discharge Notifications to Social Care message domain.

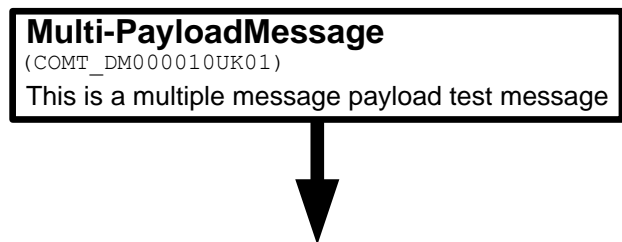
In this case, the payload of an Assessment Notice contains Assessment Notice data, a renderable CDA version of the Assessment Notice and optionally a Health and Social Care Contact Assessment.

2. The Main Components of a HL7 Multi-Payload Message D-MIM.



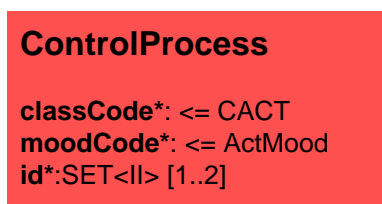
The MPM specification is for an abstract model, it is a D-MIM, and should never be messaged. Hence it does not have a schema associated with it. The reader should refer to the R-MIM specifications, in the relevant message domain for more detailed descriptions.

2.1 The Entry Point



The entry point, of this MPM describes this abstract model as a D-MIM. The artefact id of the model is *COMT_DM000010UK01*) where *CO*=Common and *MT*= Message Type.

2.2 The “ControlProcess” Act



The ControlProcess Act, is a Control Act. It provides a single linking mechanism across all the classes in the model that it inhabits.

This Control Act has an id constrained to SET<II>[1..2]. Where there is a need for an Instance Identifier to control a business process, the first Instance Identifier is the process identifier, and the second is an identifier for this message instance.

If there is no requirement to have an identifier for a business process, the attribute is constrained to II, and contains an instance identifier for the control act only.

2.3 Two Types of Message Payload

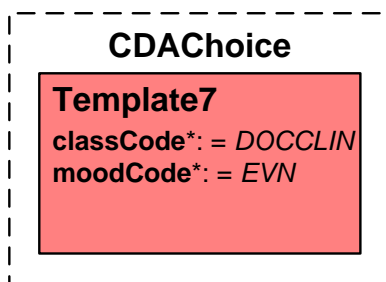
There are two types of message payload in the MPM:

- The CDAChoice carries valid CDA documents
- The DataChoice carries non-CDA HL7 messages.

It is important to note that although both payloads connect via their respective actRelationships to the Control Act, the SeperatableInd and the ContextConductionInd in the respective actRelationships are different.

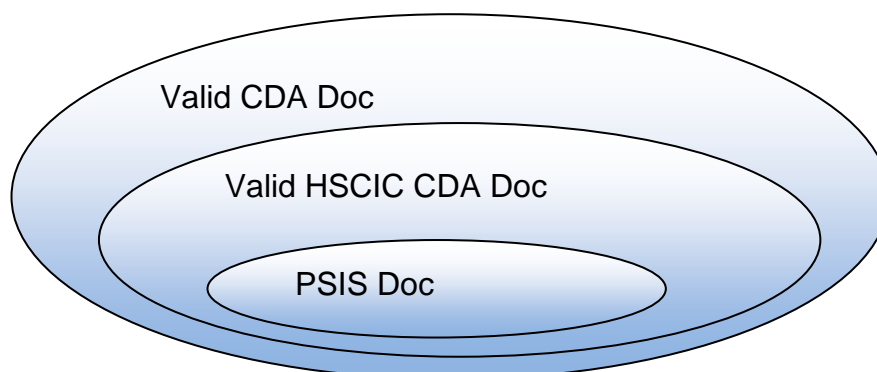
2.4 The CDAChoice

The CDAChoice, shown below, is an abstract placeholder used to allow the insertion of one or more CDA documents:



These are refinements of any valid CDA documents, for example:

- A valid CDA document
- A valid HSCIC CDA document
- A copy of a document already stored on PSIS

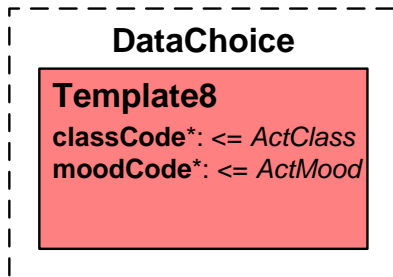


In the D-MIM and any derived model containing the CDAChoice, the ContextConductionInd is fixed to "False" and the SeperatableInd is fixed to "True" in the actRelationship that connects it to the Control Act. So associations in the Control Act are not conducted across the ActRelationship to the CDA document(s), and the CDA document(s), may be interpreted independently of the Control Act. For example, the author of the CDA document concerned

may be different to the author of the Control Act. In summary, the CDA documents can be separated from the MPM.

2.5 The DataChoice

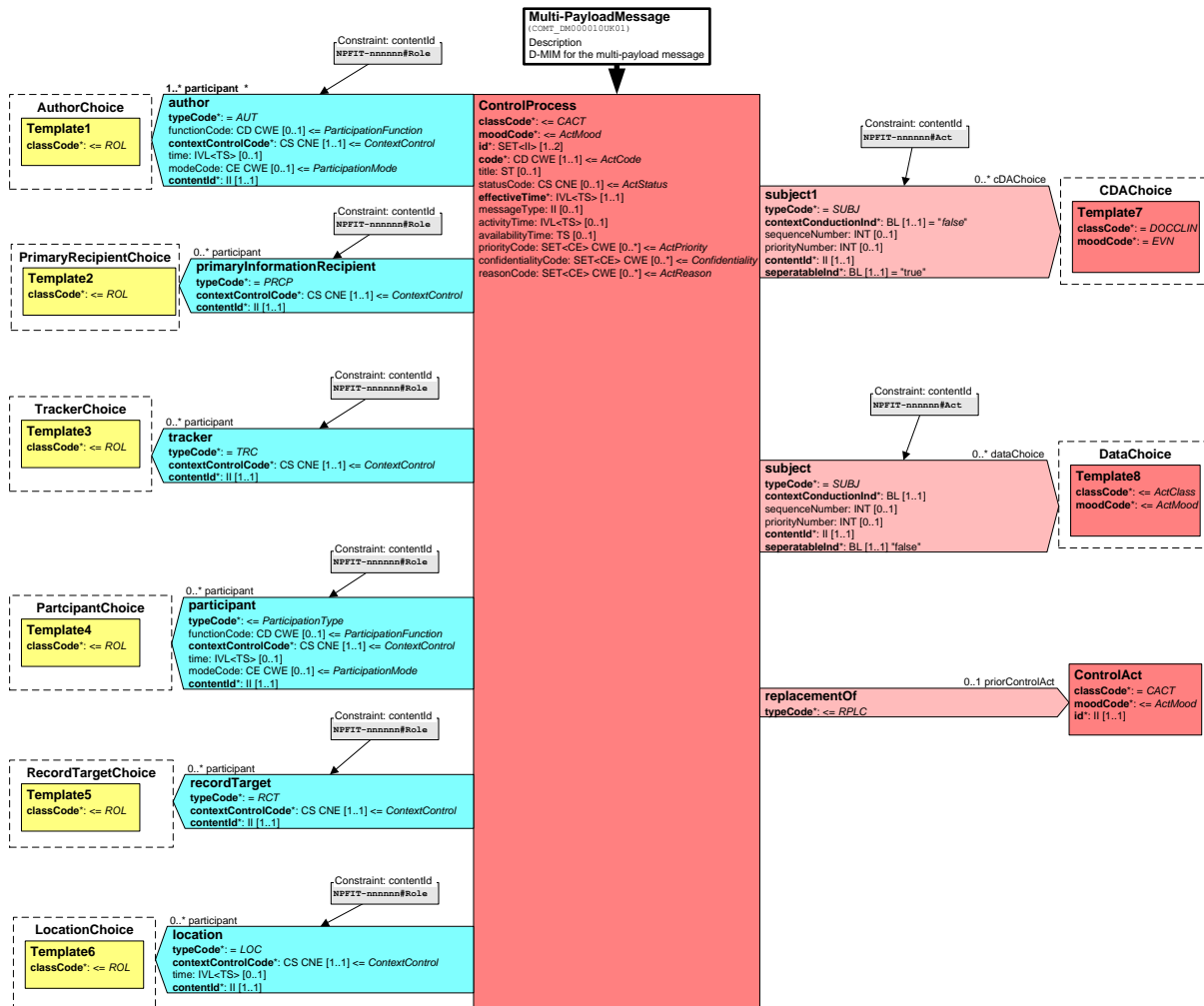
The DataChoice is an abstract placeholder used to allow the insertion of non-CDA HL7 message at runtime:



In the D-MIM and any derived model containing the DataChoice, the ContextConductionInd is not fixed to any value and the SeperatableInd defaults to "false" in the actRelationship that connects it to the Control Act. So, associations in the Control Act could be conducted across the ActRelationship to the DataChoice (if ContextConductionInd is "True") and the DataChoice may not be interpreted independently of the Control Act (if the seperatableInd is "False"). For example, the author details of the Control Act could be conducted across to the DataChoice.

3 A More Detailed Version of the Multi-Payload D-MIM

This section describes in more detail the classes and their function within the following static model:



3.1 ControlProcess

The “ControlProcess” is a type of Control Act, it is the focal entry act of the static model, and is shown below. In any derived R-MIM model, this ControlProcess may have a different name, since class names carry no semantic meaning in HL7.

ControlProcess

```

classCode*: <= CACT
moodCode*: <= ActMood
id*: SET<II> [1..2]
code*: CD CWE [1..1] <= ActCode
title: ST [0..1]
statusCode: CS CNE [0..1] <= ActStatus
effectiveTime*: IVL<TS> [1..1]
messageType: II [0..1]
activityTime: IVL<TS> [0..1]
availabilityTime: TS [0..1]
priorityCode: SET<CE> CWE [0..*] <= ActPriority
confidentialityCode: SET<CE> CWE [0..*] <= Confidentiality
reasonCode: SET<CE> CWE [0..*] <= ActReason

```

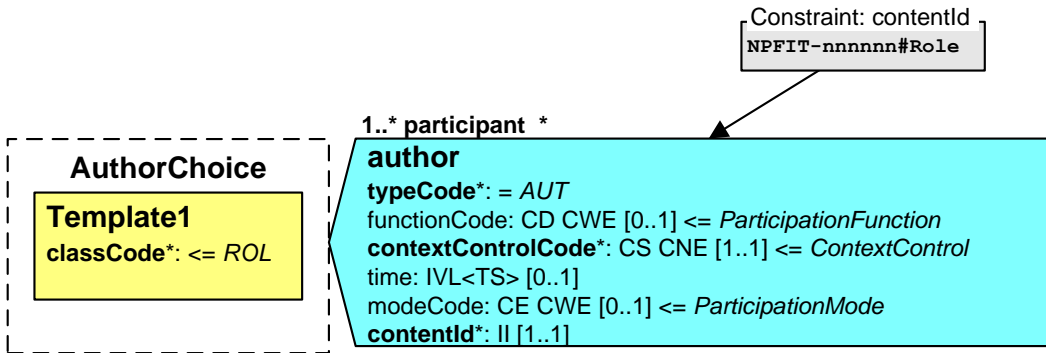
NOTE: Structural attributes and fixed value attributes are not described here, since more detailed information about them can be found in the relevant model tabular view.

ControlProcess Attribute	Mandatory [M]	Description
id* : SET<II> [1..2]	[M]	There must be at least one unique identifier present to provide a linking mechanism between the payloads.
code* : CD CWE [1..1] <= ActCode	[M]	Like all HL7 Acts, it must have a code, to describe what the act is. The code attribute is mandatory, it has a data type of coded with extensions (CWE) and is constrained in the individual RMIMs to use a HSCIC vocab.
title : ST [0..1]		This attribute carries the text associated with the code carried in act.code.
statusCode : CS CNE [0..1] <= ActStatus		A code specifying the status of the ControlProcess act, e.g “completed”.
effectiveTime* : IVL <TS> [1..1]	[M]	The effectiveTime is a mandatory attribute and is the operation time of the act; it will vary from domain to domain.
messageType : II [0..1]		MessageType identifies the message.
activityTime : IVL <TS> [0..1]		This records the total time when an act occurs, or, depending on the mood, is supposed to occur, scheduled to occur, etc... For example it could include preparation time. The activityTime can provide a needed administrative / scheduling function by providing a more complete time that needs to be anticipated for the act.
availabilityTime : TS [0..1]		When the information was recorded on a “source system”.
priorityCode : SET <CE> CWE [0..*] <= ActPriority		A set of codes to indicate any priority associated with the ControlProcess act.
confidentialityCode : SET <CE> CWE [0..*] <= Confidentiality		A set of codes to indicate whether the information can be sealed or not.

ControlProcess Attribute	Mandatory [M]	Description
reasonCode : SET <CE> CWE [0..*] <= ActReason		A set of codes to indicate the reason for the ControlProcess act.

3.2 AuthorChoice

It is mandatory that the details of the party that authored the control act are captured within the AuthorChoice. Therefore, the participation to this choice is mandatory, to ensure an audit trail of who authored this.



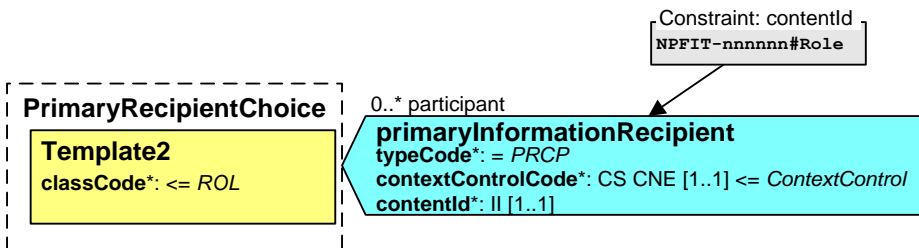
An author has responsibility for the information given in the act; some attributes of this participation are described in the table below.

NOTE: Structural attributes and fixed value attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

Author Attribute	Mandatory [M]	Description
functionCode *:CD CWE [0..1] <= ParticipationFunction		A code from the vocabulary shown, indicating the function of the document author.
time *: IVL <TS> [0..1]		The time which the author authored the Control Act.
modeCode : SET <CE> CWE [0..1] <= ParticipationMode		The mode (e.g. face to face) in which the author participates in the Control Act.

3.3 PrimaryInformationRecipientChoice

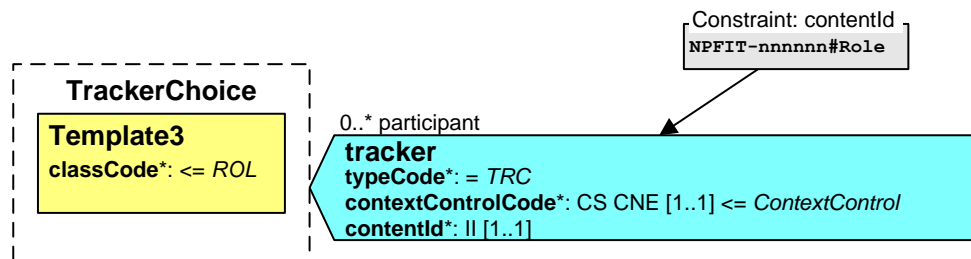
If there is a requirement for a primary information recipient, then this is recorded within the PrimaryRecipientChoice, as shown below.



A primary information recipient is a type of information recipient to whom the information in an act is primarily directed.

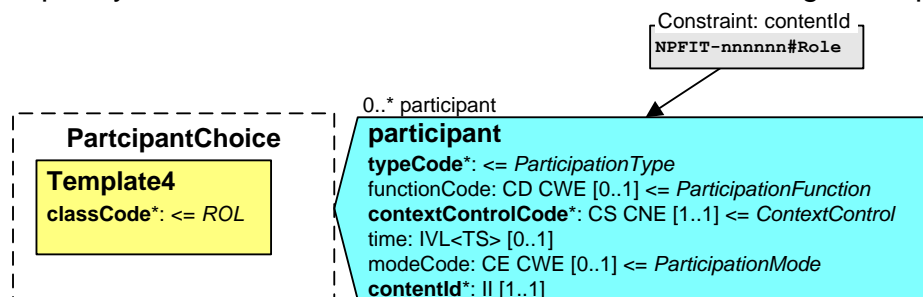
3.4 TrackerChoice

A tracker is like a copy recipient, this is recorded within the TrackerChoice, as shown below.



3.5 ParticipantChoice

The purpose of the ParticipantChoice, is to carry any information about any participation not explicitly modelled elsewhere in the D-MIM, i.e. this is a generic participation.

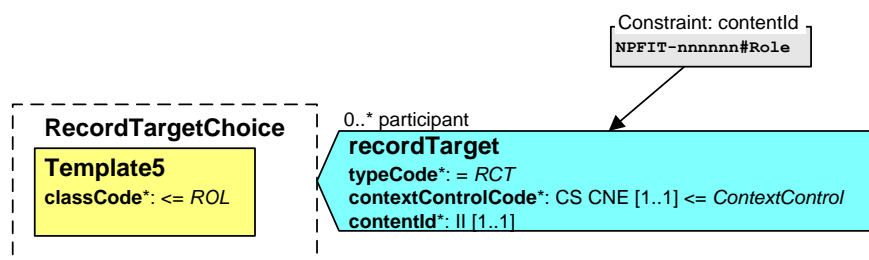


NOTE: Structural attributes and fixed value attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

Participant Attribute	Mandatory [M]	Description
functionCode *: CD CWE [0..1] <= ParticipationFunction		A code from the vocabulary shown, indicating the function of the participant.
time *: IVL <TS> [0..1]		The time interval when the participant was involved in the Control Act.
modeCode : SET <CE> CWE [0..*] <= ParticipationMode		The mode (e.g. face to face) in which the ParticipantChoice role participates in the Control Act.

3.6 RecordTargetChoice

The purpose of the RecordTargetChoice is to carry the patient details. In general, a record target in HSCIC messaging always represents the patient record.

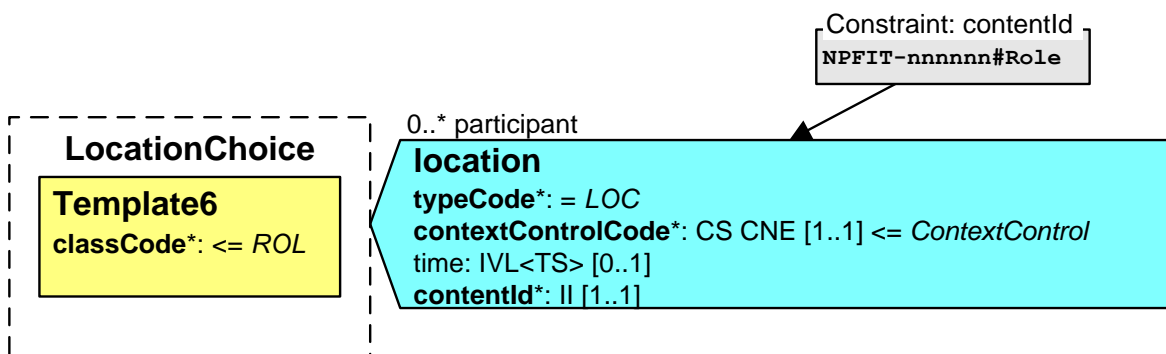


NOTE: Structural attributes and fixed value attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

recordTarget Attribute	Mandatory [M]	Description
contentId* : II [1..1]	[M]	This mandatory attribute, where it has a value in an instance, providing a unique forward pointing identifier for a template which constrains the classes and attributes which follow. The attribute is intended simply as a structural navigational aid and should not be relied upon as an indicator of semantic meaning.

3.7 LocationChoice

The purpose of the LocationChoice is to represent the facility where the act is done, see below:

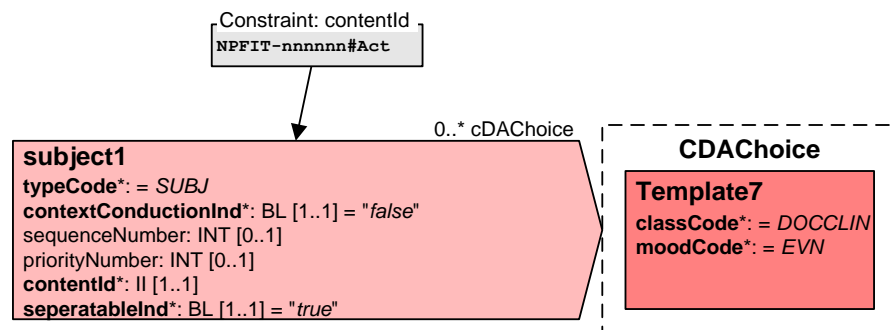


NOTE: Structural attributes and fixed value attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

Location Attribute	Mandatory [M]	Description
time : IVL <TS> [0..1]		The time which the location was involved with the Control Act.

3.8 CDAChoice

The purpose of the CDAChoice is to carry the CDA documents (see below):

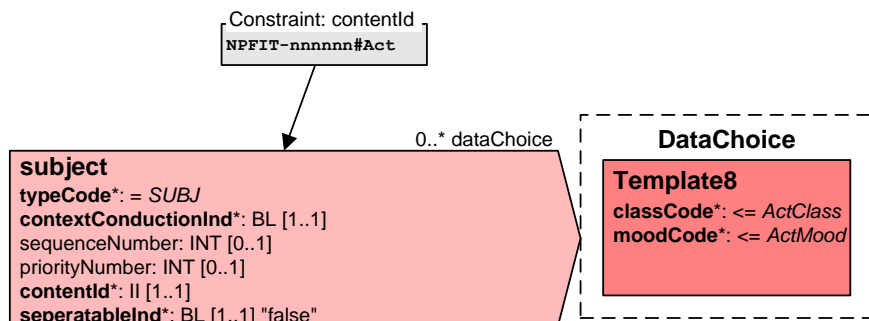


NOTE: Structural attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

Subject1 Attribute	Mandatory [M]	Description
contextConductionInd (BL) { Fixed="false" }	[M]	A value of "false" indicates that associations in the parent act are not conducted across the ActRelationship to the child act. This reinforces that the CDA document is a stand alone document.
sequenceNumber : INT [0..1]		Sequence of the processing of the CDA documents.
priorityNumber : INT [0..1]		Priority of the processing.
seperatableInd : BL [1..1] = "true"	[M]	Indicates that the target Act is intended to be interpreted independently of the source Act. This provides a way of separating a CDA document from the Control act. System suppliers need to be aware that since the CDA document is separate from the Control Act, then the necessary audit trail and replacement semantics need to be maintained.

3.9 DataChoice

The purpose of the DataChoice is to carry HL7 messages that are not CDA, see below:



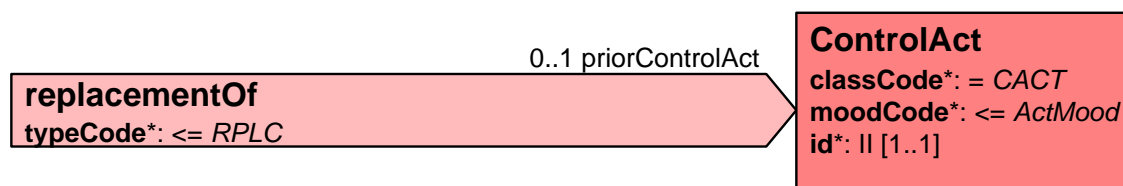
Where the business case requires the data used to support business processes other than rendering as a document, the DataChoice is an appropriate place to carry this.

NOTE: Structural attributes are not described here, since more detailed information about them can be found in the relevant domain model tabular view.

Subject Attribute	Mandatory [M]	Description
contextConductionInd (BL)	[M]	This determines whether associations in the parent act are or are not conducted across the ActRelationship to the child act.
sequenceNumber: INT [0..1]		The sequence of the processing of the DataChoice.
priorityNumber: INT [0..1]		The priority of the processing the DataChoice.
contentId*:II [1..1]	[M]	This mandatory attribute, where it has a value in an instance, providing a unique forward pointing identifier for a template which constrains the classes and attributes which follow. The attribute is intended simply as a structural navigational aid and should not be relied upon as an indicator of semantic meaning.
seperatableInd BL [1..1] "false"	[M]	This is used to indicate if the target Act can be interpreted independently of the source Act, i.e. whether data can be separated from the Control Act. Note, this value is not fixed in the D-MIM, and defaults to "false", but maybe fixed in the R-MIM.

3.10 Replacement Semantics

This provides a reference to the Control Act (the ControlProcess Act) being replaced, see below.



For the first message there will be no Control Act to replace, so this class will not be sent. Hence the cardinality on the replacementOf actRelationship is 0..1. In subsequent iterations of the message, this class shall contain the identifier of the Multi-Payload message being replaced.