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HL7 Context Management "CCOW" Standard: Subject Data Definitions, Version 1.6, February 2011

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IMPORTANT NOTES:

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Changes from Version 1.4:

- Added View identity subject definition.
- Added sections for each identity and annotation subject describing the type of application synchronization required (i.e., constant vs. temporary synchronization).
- Removed specification of Patient.Id.Alternate, which was deprecated in V1.4.
- Clarified in Section 1.7 the formulation of an item name for a repeating item but which has only a single value.
- Added chapter at end that lists all context agent coupon values in a single table.

Changes from Version 1.5:

- Added support for SAML assertions into User Identity Subject section.
- Added "Tk" role for saving SAML assertions for use by certain requesting applications.

1 Introduction

This document provides the specification of the standard context data subjects and items that are supported for all subjects in the HL7 Context Management Architecture (CMA), as well as the means for organizations to define custom context data subjects and items.

1.1 DOCUMENT OVERVIEW

It is beyond the scope of this document to provide all of the details that are needed in order to fully implement conformant CMA applications and components. The necessary additional details are covered in a series of companion specification documents. These documents are organized to facilitate the process of defining additional link subjects and to accelerate the process of realizing the CMA using any one of a variety of technologies:

- There is an HL7 context management specification document defining the overall process and specification of context management. It does so in a subject and technology neutral fashion. Concurrent with the publication of this document, the following document has been developed:

  Health Level-Seven Standard Context Management Specification, Technology- And Subject-Independent Component Architecture, Version CM-1.6

- There is an HL7 context management user interface specification document for each of the user interface technologies with which CMA-enabled applications can be implemented. Each document reflects the user interface requirements established in this document in terms of a technology-specific look-and-feel. Concurrent with the publication of this document, the following document has been developed:

  Health Level-Seven Standard Context Management Specification, User Interface: Microsoft Windows and Web Browsers, Version CM-1.6

- There is an HL7 context management component technology mapping specification document for each of the component technologies. Each document provides the technology-specific details needed to implement CMA-compliant applications and the associated CMA components, as specified in this document. Concurrent with the publication of this document, the following documents have been developed:

  Health Level-Seven Standard Context Management Specification, Component Technology Mapping: ActiveX, Version CM-1.6

  Health Level-Seven Standard Context Management Specification, Component Technology Mapping: Web, Version CM-1.6

Finally, the context management subjects and technologies that are of interest are determined by the HL7 constituency. There is an HL7 context management data definition specification document for the defined link subjects. The document defines the data elements that comprise a link subject. This is the current document that you are reading:

> Health Level-Seven Standard Context Management Specification, Subject Data Definition, Version CM-1.6

The organization of this set of documents is illustrated in Figure 1: Organization of HL7 Context Management Specification Documents.

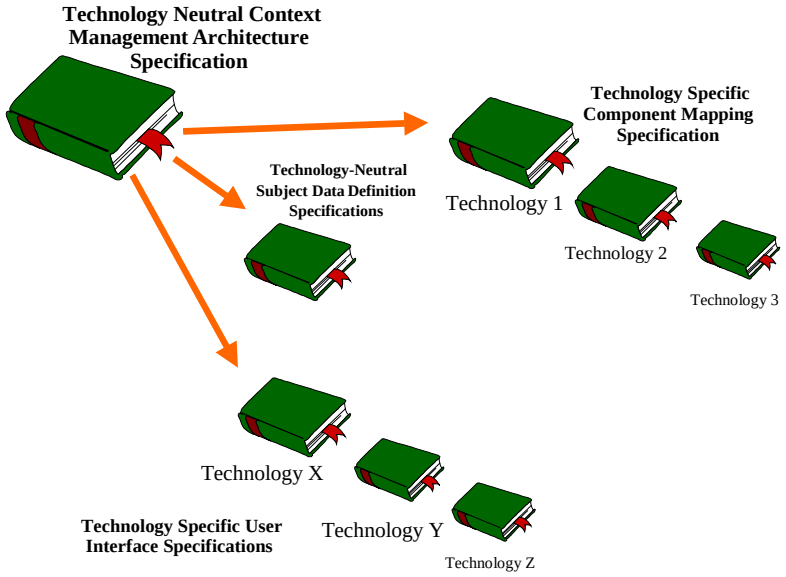

Figure 1: Organization of HL7 Context Management Specification Documents

1.2 CONTEXT DATA SUBJECT

Context data are grouped by subject. An identity subject contains data that represents the identity of a real-world entity or concept. An annotation subject contains data pertaining to a real-world entity or concept identified in an identity subject to which the annotation subject is related. An action subject represents a task that may be performed on behalf of the user, including the inputs needed to perform the task and the outputs that represent the result of performing the task.

Each subject is described by a set of context data items. Each context data item is structured as a name/value pair. The allowed name and data type is defined for each context data item. This document specifies the standard HL7 identity subjects, the standard HL7 annotation subjects, and the standard HL7 action subjects, as well as a framework for defining custom identity, annotation, and action subjects and items.

1.3 SUBJECT SECURITY

Subjects may be defined as common, or secure. Any application or agent may set or get the data for a common subject. In contrast, only applications and agents with the appropriate privileges may access the data for a secure subject.

There are two types of security available for secure subjects. Subjects for which applications and agents must have appropriate privileges to set and/or get the subject's data shall be specified in their data definitions as "Secure subject, authenticated sets and gets." Subjects for which applications and agents must have appropriate privileges to set the subject's data, but for which any application or agent may get the subject's data, shall be specified in their data definitions as "Secure subject, authenticated sets only."

1.4 CUSTOM SUBJECT AND ITEM NAMING CONVENTION

Standard context subjects and items are specified by HL7. Custom subjects and items are not defined by HL7, but may co-exist in systems that employ the standard subjects and items. The intent is to allow specification of completely new subjects and additional data items by an organization, partnership or consortium. See Section 1.12 for some of the implications of the use of custom items and subjects.

In order to accommodate this use of the CMA while protecting applications that may not know (or care to know) about these custom subjects and/or items, a mandatory naming convention is specified. The general scheme of the convention is the addition of the meta-descriptor as a prefix to the subject or item name.

This unique identification of this descriptor shall be formed using the organization's World Wide Web Consortium (W3C) domain name. In the case of custom subjects and/or items defined by more than one organization, it is up to the group of organizations to use one of the member's W3C domain name or to create a new registered W3C domain name.

An example of a custom subject, shown as having been defined by 3M Health Information Systems, is:

```
[mmm.com]DateRange
```

An example of an item within a custom subject is:

```
[mmm.com]DateRange.id.[mmm.com]StartDate
```

An example of a custom item within the standard patient subject, shown as having been defined by GE/Marquette Medical Systems, is:

```
Patient.Co.[mei.com]Current_medications
```

For consistency, standard subject and item names are conceptually represented as using the descriptor [hl7.org], for example:

```
[hl7.org]Patient
```

The descriptor [hl7.org] shall not be used by an organization other than Health Level Seven. It can be assumed that Health Level Seven will not define custom items or custom subjects.

The descriptor may be omitted when the desired descriptor can be inferred from the following rules:

1. The default descriptor is [hl7.org].
2. The subject descriptor shall serve as the descriptor for all items within the subject unless an item name contains a descriptor different from the one used with the item's subject name.
3. The context manager shall omit descriptors, including [hl7.org], from the subject name and/or item names of any items it returns to its clients whenever the descriptor can be inferred. This rule supports backward compatibility with applications designed prior to Version 1.1 of the HL7 Context Management Specification. For example, a client will never see the descriptor [hl7.org] when it accesses the list of item names for the current context from the context manager.
4. A context participant may optionally use descriptors when accessing the context data even when the descriptor could otherwise be inferred.

The following examples illustrate these rules. These examples are somewhat contrived for the purpose of illustrating the rules and do not necessarily represent real-world practices.

The following is <u>not</u> a valid context item name:

```
[mmm.com]DateRange.co.[hl7.org]StartDate
```

The following are equivalent context item names for a standard subject:

```
[hl7.org]Patient.co.[hl7.org]Name
[hl7.org]Patient.co.Name
Patient.co.[hl7.org]Name
Patient.co.Name
```

The following are equivalent context item names for a custom subject:

```
[mmm.com]DateRange.id.[mmm.com]StartDate
[mmm.com]DateRange.id.StartDate
```

The following denote different context items names. The first represents a standard item for a standard subject. The second represents an item in a custom subject. The third represents a custom item in a standard subject:

```
Encounter.co.AdmitDate
```



```
[mmm.com]Encounter.co.AdmitDate
Encounter.co.[mmm.com]AdmitDate
```

An organization may define custom items for a custom subject defined by another organization. The following examples denote three different items for the same custom subject:

```
[mmm.com]DateRange.id.[mmm.com]StartDate
[mmm.com]DateRange.id.[sentillion.com]EndDate
[mmm.com]DateRange.id.[sentillion.com]StartDate
```

Note that the item [mmm.com]DateRange.id.[sentillion.com]StartDate is not the same as [mmm.com]DateRange.id.[mmm.com]StartDate.

1.5 CONTEXT DATA ITEM FORMAT

The general format of a context data item name is:

```
Subject_label.role.Name_prefix.optional_name_suffix
```

Subject_label is the name of the subject to which the item belongs.

Role indicates the role of the item, as follows[1]:

Id = identifier data, which is used to identify a real-world entity or concept.

Co = corroborating data, which is used by applications and/or users to corroborate the identity of a real-world entity or concept.

An = annotating data, which is data pertaining to a real-world entity or concept.

In = input data, which is data that represents an input to a context action.

Ou = output data, which is data that represents an output from a context action.

Tk = Security token context data item. Not returned unless the token contains information indicating that the requestor is identified as a valid recipient of the token (e.g., for SAML this is in the audience field) and the requestor has securely bound to the context manager.

To = timeout data, which is data that represents the desired timeout interval for a context action.

Name_prefix is the name of the item within the context of its subject.

Optional_name_suffix is optional for data items. Its purpose is to enable multiple items to represent the same logical concept. For example, at a particular site, patients may be identified by multiple medical record numbers. Each item that represents a patient medical record number would have the same item subject label, role, and item name prefix. However, each item name would have a different site-defined item name suffix.

An example using the medical record number and two sites would be

```
Patient.Id.MRN.SaintElsewhereInpatient
```

and

```
Patient.Id.MRN.SaintElsewhereCommunityClinic
```

The formal syntax for an item expressed in BNF format is:

<Item> : <Subject>”.”<Role>”.”<ItemName>[“.”<OptionalSuffix>]

<Subject> : [“[“<W3Cname>”]”]<Name>

[1] In previous versions of this specification, an additional role of ZZ was defined and used to indicate non-standard organizationally defined data. This role is now deprecated, with the functionality being implemented through the custom subjects and custom items.

<ItemName>: ["["W3Cname"]"]<Name>

<OptionalSuffix> : <Name>

<Name> : {0-9, A-Z, a-z,_}[1][<Name>]

<W3Cname> : <Name> [“.”<W3Cname>]

<Role> : “ID” | “Id” | “id” | “iD” | **“**IN” | “In” | “in” | “iN” | “CO” | “Co” | “co” | “cO” | “AN” | “An” | “an” | “aN” | **“**OU” | “Ou” | “ou” | “oU” | **“**TK” | “Tk” | “tk” | “tK | **“**TO” | “To” | “to” | “tO”

The HL7 Standard Context Management Specification, Technology-and-Subject-Independent Component Architecture specification document should be consulted for additional details on the use of context item names.

1.6 SUBJECT DATA DEFINITION CONSTRAINTS

The specification for an identity subject shall include the data definition for at least one identifier data item and may include the data definitions for zero or more corroborating data items. Data definitions for annotation, action input, and action output data items are not allowed for an identity subject.

The specification for an annotation subject shall include the data definition for at least one annotation data item. Data definitions for identifier, corroborating, action input, and action output data items are not allowed for an annotation subject.

The specification for an action subject shall include the data definition for at least one data item that represents an action input and at least one data item that represents an action output. Data definitions for identifier, corroborating, and annotation data items are not allowed for an action subject.

An identity subject may be dependent upon another identity subject. An identity subject shall never be dependent upon an annotation subject. An annotation subject shall always be dependent upon an identity subject. An annotation subject shall never be dependent upon another annotation subject. An action subject is never dependent on any other subject, nor shall any subject depend upon an action subject.

1.7 REPEATING DATA ITEM VALUES

Certain context data items may have multiple item values, otherwise known as repeating items (to be consistent with established HL7 terminology). Such an item is represented as a set of context data items, such that the name for each item is essentially the same but the value for each item may be different. The items that represent a set of repeating items are denoted by having the same item subject label, role, and name prefix, but each of which has a different numeric value for a required item name suffix, starting with the value of one (1) and incrementing by one (1) for each successive item in the set. No ordering of the item values is implied by the assignment of this suffix. The suffix only enables the formulation of a distinct name for each repeating item. No meaning shall be imparted to a suffix other than to denote an item within a list of items. In the case where an application is setting just one value for a potentially repeating item, the item name suffix is still required and shall be one (1).

This means that a context data item whose values may repeat may not be additionally denoted by a site-specific, application-specific, or other such suffix.

The following example illustrates a repeating context data item represents the possible set of phone numbers for a hypothetical patient demographics annotation subject:

Name	**Value**
Demographics.An.PhoneNumberHome.1	(888)555-1111
Demographics.An.PhoneNumberHome.2	(888)555-2222

Demographics.An.PhoneNumberHome.3 (888)555-3333

Only an item that is explicitly indicated in its data definition as being allowed to repeat shall be represented in the context as a repeating item and shall therefore use the item name suffix in this manner. There is no limit as to how many values may be included in a list of repeating values. An application or agent may need to iterate through the entire list to be sure that all pertinent values are found.

1.8 CASE SENSITIVITY

Item names and item values whose data type is a character string shall be treated as "case insensitive" unless specifically noted otherwise. This means that context participants and context management components shall not rely on the case of a case insensitive context item name or value when applying decision or comparison logic.

1.9 ITEM NAMES, MEANING, CONSTRAINTS, AND DATA TYPES

Where applicable, the HL7 Version 2.4 Specification for healthcare data interchange via messaging is used as the basis for context data item names, meaning, semantic constraints and value data type. Further, all the HL7 character-encoding conventions for representing data values is employed, unless otherwise noted. This includes the conventions for delimiting the components that comprise a complex data type.

The relevant portions of the HL7 Version 2.4 Specification are cited as part of the context subject data definitions that appear later in this document.

Whenever an HL7 table is cited, including so-called user-defined tables, the default tables defined in the HL7 Version 2.4 Specification shall be used.

1.10 LOCALIZATION

Context data item names shall be represented in English, regardless of the country and/or locale that a context participant or context management component is being used in. This is because users of context-enabled applications generally do not see context data item names. In contrast, context data item values, which generally are seen by users of context-enabled applications, shall be represented in the appropriate local language.

1.11 REQUIRED ITEMS

Every context change transaction requires that the value for at least one identifier (`Id`) item for at least one identity subject be set by the application that instigated the transaction.

1.12 IMPLICATIONS OF THE USE OF CUSTOM SUBJECTS AND ITEMS

Allowing the definition of custom items and subjects is necessary for maximizing the utility of the Context Management Standard. However, there are interoperability implications for vendors and users when applications that employ custom subjects and/or items are deployed.

In the absence of custom subjects and items, context-enabled applications are truly 'plug and play' when they correctly implement the Context Management Standard. In the worst case, certain applications may not support all of the standard context subjects, but will nevertheless interoperate properly using the subjects it does support. For example, an application might be User Link-enabled and Patient Link-enabled, but might not be Encounter Link-enabled.

With the introduction of custom subjects, the potential exists for interoperability conflicts as the Context Management Standard evolves. The problem arises when an organization defines a custom context subject and a similar subject is subsequently standardized. Prior to the standard, the applications that supported the custom subject worked together to offer the user an enhanced context sharing capabilities. Subsequent to the standardization of the subject these application will still interoperate with each other, but will not interoperate with applications that support the newly standardized subject.

Similar situations may arise with custom items. However, a custom item elaborates an existing subject, whereas a custom subject defines an entirely new context concept. The risk of not interoperating is greater due to custom subjects than it is due to custom items.

The primary means for avoiding, or at least minimizing, compatibility issues due to custom subjects and/or items is for organizations to provide migration paths for their applications. A new release of the application can be provided when a previously custom subject or item is superseded by a standard definition for a similar subject or item. Alternatively, the organization can enable its applications such that they are configurable in the field. This would allow reconfiguration of the custom subject or item name with the standard name. Yet another approach is to implement a mapping agent-like application that maps a custom subject and/or item to the appropriate standard subject or item.

In general, the best use of a custom subject or item is for prototyping and demonstrating a context concept that could then be subsequently standardized for use among the entire HL7 community. The next best use is by a single organization that is creating an integrated suite of components with proprietary context-sharing capabilities and is therefore unlikely to be standardized.

It is recommended that the use of custom subjects and items be pursued with caution. It is further recommended that when custom context content is necessary, that custom items for standard subjects are used in lieu of custom subjects. In doing so, the risk of encountering interoperability problems is at least reduced.

2 User Identity Subject

The user subject is an identity subject that identifies a real world application user. A user is a person who has the capability to operate an application and in so doing is represented to the application via an account defined specifically for the user and/or defined for the functional role of the user as denoted by an application-specific classification of user roles.

2.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"User"
Subject type	Identity
Synchronization	Constant
Security	Requires authentication to set subject
Subject Dependencies	None
Mapping Agent Coupon Value	-2

2.2 SHARING USER CONTEXT AT A SITE

A particular real world user may be identified at a site using a different logon name for each application.

Therefore, in the specification of the user subject certain context subject identifier items (see Section 2.3) may be differentiated by a site-defined suffix. A User Link-enabled application shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get user context data. This suffix may be the name of a locale, facility, application, or other sensible identifier, such that the "context" for interpreting the user context data can be readily represented.

2.3 DATA DEFINITIONS

The standard context data items for the user subject are specified below.

User Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
User.Id.Logon.*Suffix*	User's logon name (No meaning for HL7)	ST	None	Value is case sensitive. For example, "ksmith" and "Ksmith" are two different logon id values.

An application shall set a value for the item defined above whenever it sets the user context.

User Subject Corroborating Item Name	HL7 Meaning	HL7 Data Type	HL7 Semantic Constraints on Values	Case Sensitive
User.Co.Name	User's name (No meaning for HL7)	XPN	None	No

An application may optionally set a value for items defined above when it sets the user context.

2.3.1 USE OF SAML ASSERTIONS FOR USER AUTHENTICATION

A user may be identified to a participating application using information encoded within a SAML token issued from a trusted identity provider. When a SAML assertion is set into the user context, the token must be validated by the context manager as to timeliness, source, and audience field. The validated SAML token may be saved in context for use by requesting applications if the requesting application's join name appears in the SAML token's audience field and the application has done a secure binding, otherwise the token is not returned as an item in the set of context data items for the user subject. As expiration approaches, the SAML token must be refreshed by the authenticating application with a more current assertion issued from a trusted identity provider or the authenticating application may initiate a user logout.

The standard context data items for holding the validated SAML token are specified below.

User Subject Token Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
User.Tk.SAML.*Suffix*	User's SAML authentication token (No meaning for HL7)	ST	See below	Value is case sensitive.

The item defined above may be set when a valid SAML identity assertion issued from a trusted identity provider is received for the purpose of either authenticating a user to a context session or refreshing an extant assertion nearing expiration by an authenticating application. Transport of SAML identity assertions must be accomplished over TLS or SSL.

2.4 EXAMPLES OF USER SUBJECT ITEMS

Below are examples of user subject items:

Example Item Names	Example Item Values
User.Id.Logon.3M_Clinical_Workstation	k_marchant
User.Id.Logon.Logician	kylem
User.Id.Logon.Carevue	KM01230
User.Co.Name	Kyle Marchant

Below are examples of an authentication token item:

Example Item Names	Example Item Values
User.Id.Logon.Logician	kylem
User.Tk.SAML.*SecurityDomainA*	64-bit encoded string

The format of item holding the SAML token allows the flexibility of saving multiple tokens when authentication may occur from multiple security domains.

3 Patient Identity Subject

The patient subject is an identity subject that identifies a real world patient. A patient is a person who is subject to receive, is receiving, or has received healthcare services.

3.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"Patient"
Subject type	Identity
Synchronization	Constant
Security	None
Subject Dependencies	None
Mapping Agent Coupon Value	-1

3.2 SHARING PATIENT CONTEXT AT A SITE

A particular real world patient may be identified at a site using one of several identifiers. Further, some of these identifiers may represent the same conceptual concept, but may nevertheless have different values for different applications. For example, various applications may use the concept of a medical record number as the means for identifying patients, but may nevertheless employ different medical record number values to represent the same people.

Therefore, in the specification of the patient subject certain context subject identifier items (see Section 3.3) may be differentiated by a site-defined suffix. A Patient Link-enabled application shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get patient context data. This suffix may be the name of a locale, facility, application, or other sensible identifier, such that the "context" for interpreting the patient context data can be readily represented.

3.3 DATA DEFINITIONS

The subject label for the patient identity subject is "Patient".

The standard context data items for the patient subject are specified below.

Patient Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Patient.Id.MRN. *Suffix*	Patient's medical record number, per PID-2	ST	HL7 Table 0203 Identifier Type = MR	No
Patient.Id.MPI	Patient's identifier in the "Master Patient Index", per PID-2	ST	HL7 Table 0203 Identifier Type = PT or PI (as agreed upon by context sharing systems) and Assigning Authority represents the MPI system	No

Patient Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Patient.Id.NationalIdNumber	Patient's national identifier number, per PID-2	ST	HL7 Table 0203 Identifier Type = PT and Assigning Authority represents agreed upon National Authority	No
Patient.Id.IdList	A list of patient identifiers for a patient, per PID-3	CX	May be a repeating set of CX item values (per Section 1.7), each of which contains one identifier that denotes the same patient (Driver's license and social security number may be among these identifiers)	No

An application shall set a value for at least one of items defined above whenever it sets the patient context.

Note that the items Patient.Id.MRN, Patient.Id.MPI, and Patient.Id.NationalIdNumber are all slated for deprecation in the future, with Patient.Id.Idlist being the surviving data item for this subject.

Patient Subject Corroborating Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Patient.Co.PatientName	Patient's legal name, per PID-5	XPN	Table 0200	No
Patient.Co.AliasName	Alias name for the patient, per PID-9	XPN	Table 0200	No
Patient.Co.DateTimeOfBirth	Patient's Date and time of birth, per PID-7	TS	None	No
Patient.Co.Sex	Patient's gender, per PID-8	IS	Table 0001	No
Patient.Co.DLN	Patient's driver's license number, per PID-20	DLN	None	No
Patient.Co.SSN	Patient's Social Security Number, per PID-19	ST	None	No

An application may optionally set a value for items defined above when it sets the patient context.

3.4 EXAMPLES OF PATIENT SUBJECT ITEMS

Below are examples of patient subject items:

Example Item Names	Example Item Values
Patient.Id.MPI	001KM002130-JJXXX-98
Patient.Id.MRN.St_Elsewhere_Clinic	SEC-KMAR-00hjd7792
Patient.Id.MRN.St_Somewhere_Clinic	SSC-KMAR-00WSB887455
Patient.Co.DateTimeOfBirth	19580317
Patient.Co.PatientName	Marchant^Kyle^^^^
Patient.Id.IdList.1	001KM002130-JJXXX-98^^^^PI^^^
Patient.Id.IdList.2	SEC-KMAR-00hjd7792^^^St_Elsewhere_Clinic&&^MR^^^
Patient.Id.IdList.3	SSC-KMAR-00WSB887455^^^St_Somewhere_Clinic&&^MR^^^

4 Encounter Identity Subject

The encounter subject is an identity subject that identifies a real world patient encounter. A patient encounter is an interaction between a patient and healthcare participant(s) for the purpose of providing patient service(s) or assessing the health status of a patient. For example, outpatient visit to multiple departments, home health support (including physical therapy), inpatient hospital stay, emergency room visit, field visit (e.g., traffic accident), office visit, occupational therapy, telephone call.

A single patient may have many encounters within a healthcare enterprise. (The exact definition of encounter varies among institutions.) For example, one encounter could be for an acute care or inpatient visit, while another might be for an outpatient check-up such as a doctor's office follow-up visit. A patient may have more than one encounter on the same day.

4.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"Encounter"
Subject type	Identity
Synchronization	Constant
Security	None
Subject Dependencies	Dependent upon patient subject (See note)
Mapping Agent Coupon Value	-3

Note: This is because an encounter is something that a patient experiences. As such, the encounter context and the patient context must represent the same real world person.

4.2 SHARING ENCOUNTER CONTEXT AT A SITE

Individual applications generally have different methods for creating an identifier for an encounter. Some combine the values of multiple identifiers extracted from other application data in order to create a unique encounter identifier. For example, some applications use the combination of Medical Record Number (PID-2) and Account Number (PID-18) to identify an encounter.

To compound this situation, different applications may have different concepts about what encounter means. A financial application may only have a concept of an encounter being a patient account, while a clinical application may have a more granular concept of a patient visit. The current HL7 Patient Administration specification (i.e., Chapter 3 of the HL7 2.**4** Specification) uses a visit indicator on the PV1 message segment (PV1-51) to distinguish whether the "visit" being communicated refers to an account level or visit level information.

Finally, it is also possible for different applications to use the same identifier value to represent different real world patient encounters. For example, two applications may coincidentally use the same visit number to represent two different encounters by the same patient.

Therefore, in the specification of the encounter subject all context subject items (see Section 4.3) may differentiated by a site-defined suffix. An Encounter Link-enabled application shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get encounter context data. This suffix may be the name of a locale, facility, application, or other sensible identifier, such that the "context" for interpreting the encounter context data can be readily represented.

4.3 DATA DEFINITIONS

The item subject label for the encounter identity subject is "Encounter".

The standard context data items for the encounter subject are specified below.

Encounter Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Enconter.Id.VisitNumber.*Suffix*	Visit Number, per PV1-19	ST	HL7 Table 0203 Identifier Type = VN	No
Encounter.Id.AlternateVisitId.*Suffix*	Alternate Visit Id, per PV1-50	ST	HL7 Table 0203 Identifier Type = VN	No
Encounter.Id.AccountNumber.*Suffix*	Account Number, per PID-18	ST	HL7 Table 0203 Identifier Type = AN	No

An application shall set a value for at least one of the items defined above whenever it sets the encounter context.

Encounter Subject Corroborating Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Encounter.Co.VisitIndicator.*Suffix*	Visit indicator, per PV1-51	IS	HL7 Table 0326	No
Encounter.Co.AdmitDateTime.*Suffix*	Admission cate/time, per PV1-44	TS	None	No
Encounter.Co.DischargeDateTime.*Suffix*	Discharge Date/Time, per PV1-45	TS	None	No
Encounter.Co.PatientClass.*Suffix*	Patient class, per PV1-2	IS	HL7 Table 0004	No
Encounter.Co.AdmissionType.*Suffix*	Admission type, per PV1-4	IS	HL7 Table 0007	No
Encounter.Co.AssignedPatientLocation.*Suffix*	Patient's current location, per PV1-3	PL	None	No
Encounter.Co.ServicingFacility.*Suffix*	Servicing facility, per PV1-39	PL	HL7 Table 115 This field is used in a multiple facility environment to indicate the facility with which this visit is associated.	No
Encounter.Co.PatientType.*Suffix*	Type of patient, per PV1-18	IS	HL7 Table 0018	No

An application may optionally set a value for items defined above when it sets the encounter context. It is highly recommended that the application also explicitly set the corroborating Visit Indicator item to ensure other applications know the type of encounter context being shared.

4.4 EXAMPLES OF ENCOUNTER SUBJECT ITEMS

Below are examples of encounter subject items:

Example Item Names	Example Item Values
Encounter.Id.VisitNumber	11111A
Encounter.Co.AdmitDateTime	19990515
Encounter.Co.DischargeDateTime	19990516

5 Observation Request Identity Subject

The observation request subject is an identity subject that identifies the request (i.e., order) for an observation, test or procedure. An observation is an answer or result value in response to an observation request. The types of observation values and the constraints on these values depend on the observation request. The observation request subject is modeled on the HL7 OBR (observation request) segment.

The observation request subject enables context data sharing at a discrete order level. With subjects already defined for patient and encounter, the observation request subject supports context sharing among systems that provide discrete orders and observations.

5.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"Observation"
Subject type	Identity
Synchronization	Constant
Security	None
Subject Dependencies	Dependent upon patient subject (See note)
Mapping Agent Coupon Value	-4

Note: The observation request subject is dependent upon the patient subject because an observation request is something that pertains to a patient. As such, the observation request context and the patient context must represent the same real world person.

Further:

1. An Observation Request Link-enabled application that understands the current patient context but does not understand the observation request context shall clearly indicate this fact to the user.
2. An Observation Request Link-enabled application may manage multiple observation types, but may not be capable of establishing the observation request context for all of these types. A example of this is Central Data Repository (CDR), which accumulates results from multiple source systems (such as Radiology, Lab, and Cardiology systems). An Observation Request Link-enabled CDR application would then be capable of setting the Observation Request subject, upon user selection, for each of those results received from a source system. However, it is possible that the data required to set the observation request subject, an order number, is not supplied by one or more of the source systems. In this event the CDR application would set the observation request context to empty when the user selected a result of this type.

5.2 USE OF OBSERVATION REQUEST CONTEXT SUFFIX

An observation request is represented by a set of results pertaining to a specific test or procedure that has been performed on the patient. The observation request is typically associated with a specific source system from which an observation request was requested via an order, but more than one system may possess results pertaining to the observation request.

An example of this may be the results associated with a chest x-ray order (i.e., observation request). The complete observation request may consist of a textual impression and supporting images. The result sent to the results reporting application via an HL7 results messaging interface may only contain the textual portion of the report. Other systems, such as a PACS, may contain associated results such as the actual x-ray images.

In the HL7 messaging realm, the order number is the usual way that an observation request and its associated results are identified. With Observation Request -Linked applications, the user is generally interested in viewing one, or several, of the results associated with an observation request. However, as these results are generally identified with the same order number, it can be the case that each system uses the same identifier even though it possesses a different specific result.

Therefore, in the specification of the observation request subject all context subject items (see Section 4.4) may be differentiated by a site-defined suffix. An Observation Request Link-enabled application shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get observation request context data. The recommended value for the suffix is the system identifier as defined for the HL7 Message Header Segment component 3 (MSH-3). Use of this identifier as the suffix enables the establishment of an observation request context consisting of just one result, some, or all of the results pertaining to a particular observation request.

5.3 DATA DEFINITIONS

The item subject label for the observation request identity subject is “Observation”.

The standard context data items for the observation subject are specified below.

Observation Request Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Observation.Id.Placer_Order_Number.*Suffix*	Placer Order Number per OBR-2	EI	None	No
Observation.Id.Filler_Order_Number.*Suffix*	Filler Order Number per OBR-3	EI	None	No

An application shall set a value for at least one of the items defined above whenever it sets the observation request context.

Observation Request Subject Corroborating Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Observation.Co.System_Id.*Suffix*	Application Identifier per MSH-3	HD	None	No
Observation.Co.Service_Id.*Suffix*	Universal Service Identifier per OBR-4	ST	None	No
Observation.Co.Date_Time.*Suffix*	Observation Date / Time per OBR-7	TS	None	No
Observation.Co.Service_Desc.*Suffix*	Service Description (component of filler order #) per OBR-3.2	EI	None	No

An application may optionally set a value for items defined above when it sets the observation request context.

5.4 EXAMPLES OF OBSERVATION REQUEST SUBJECT ITEMS

Below are examples of observation request subject items:

Example Item Names	Example Item Values
Observation.Id.Filler_Order_Number.EKGIS1	0111234519990723134223
Observation.Co.System_Id.EKGIS1	EKGIS1
Observation.Co.Service_Id.EKGIS1	EKG
Observation.Co.Date_Time.EKGIS1	19990723134223

6 DICOM Study Identity Subjects

In the DICOM standard, instances of objects (such as images, waveforms and reports) are entities in an information model that consists of a hierarchy of:

- Study
- Study Component
- Series
- Instance

Though the context data items that define a single instance of a DICOM object are sufficient alone to uniquely identify it, in practice it is useful to share context at a level "above" the individual instance (e.g. to share the same study, study component or series). Accordingly, separate context subjects are defined that correspond to each of these levels.

The data definitions for these DICOM identity subjects are presented in the following sections.

6.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	For DICOM study subject, "DICOMStudy" For DICOM study component subject, "DICOMStudyComponent" For DICOM series subject, "DICOMSeries" For DICOM instance subject, "DICOMInstance"
Subject type	Identity
Synchronization	Constant
Security	None
Subject Dependencies	Dependent upon patient subject (See note)
Mapping Agent Coupon Value	For DICOM study subject, -6 For DICOM study component subject, -7 For DICOM series subject, –8 For DICOM instance subject, –9

Note: The DICOM study subject is dependent upon the patient subject. This is because a DICOM study is something that pertains to a specific patient. As such, the DICOM study context and the patient context must represent the same real world person.

The DICOM study component subject is dependent upon the DICOM study subject. The DICOM series subject is dependent upon the DICOM study component subject. The DICOM instance subject is dependent upon the DICOM study series subject. These dependencies are due to the inherent hierarchical relationship among the DICOM objects represented by these subjects.

6.2 USE OF CONTEXT SUFFIX

Differentiation of DICOM subject identifier values via a suffix is not necessary, since the ISO UIDs used to represent the identity of DICOM objects are globally unique.

6.3 DATA DEFINITIONS

6.3.1 DICOM Study Identity Subject

The DICOM study subject is an identity subject that represents a specific DICOM study object for a specific patient.

The standard context data items for the DICOM study subject are described below.

DICOM Study Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
DICOMStudy.Id.InstanceUID	See below	HD	See chapter 3	No

An application shall set a value for the item defined above whenever it sets the DICOM study context.

The value of the `DICOMStudy.Id.InstanceUID` item corresponds to either:

- The DICOM Study Instance UID (0020,000D) attribute of a composite DICOM object
- The DICOM SOP Instance UID (0008,0018) attribute of a normalized DICOM object of the Detached Study Management SOP Class

In order to facilitate the cross-referencing of a DICOM study with the order that caused the study to be created, an application that sets a value for the DICOM study context may optionally set a value for one or both of the corroborating data items defined below when it sets the DICOM study context. The meaning of these items, their data type, semantics and constraints on values, case sensitivity, and use of the item name suffix is exactly the same as specified for the observation request identifier items specified in Chapter 5, Observation Request Identity Subject:

DICOM Study Subject Corroborating Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
DICOMStudy.Co.Placer_Order_Number.*Suffix*	Placer Order Number per OBR-2	EI	None	No
DICOMStudy.Co.Filler_Order_Number.*Suffix*	Filler Order Number per OBR-3	EI	None	No

Note: In a future version of this specification that is subsequent to the ratification of HL7 V2.5, a third corroborating data item will be defined for the DICOM study subject. Specifically, DICOMStudy.Co.Accession_Number.*suffix* will be specified per the OMI Imaging Order Message (Event O23) Proposal submitted by HL7 Imaging Integration SIG for inclusion in HL7 V2.5.

Below are examples of DICOM study subject items:

Example Item Names	Example Item Values
DICOMStudy.Id.InstanceUID	^1.2.840.113619.6.48.2367.1^ISO

6.3.2 DICOM Study Component Identity Subject

The DICOM study subject is an identity subject that represents a specific DICOM study component object for a specific patient.

The standard context data items for the DICOM study component subject are described below.

DICOM Study Component Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
DICOMStudyComponent.Id.InstanceUID	See below	HD	See chapter 3	No
DICOMStudyComponent.Id.ClassUID	See below	HD	See chapter 3	No

An application shall set a value for all of the items defined above whenever it sets the study component context.

The value of the `DICOMStudyComponent.Id.InstanceUID` item corresponds to either:

- The DICOM SOP Instance UID (0008,0018) attribute of a normalized DICOM object of the Detached Study Component Management SOP Class.
- The DICOM SOP Instance UID (0008,0018) attribute of a normalized DICOM object of the Modality or General Purpose Performed Procedure Step SOP Classes.

The value of the `DICOMStudyComponent.Id.ClassUID` item corresponds to either:

- The DICOM SOP Class UID (0008,0016) attribute of a normalized DICOM object of the Detached Study Component Management SOP Class (i.e. "`1.2.840.10008.3.1.2.3.2`").
- The DICOM SOP Class UID (0008,0016) attribute of a normalized DICOM object of the Modality Performed Procedure Step SOP Class (i.e. "`1.2.840.10008.3.1.2.3.3`") or General Purpose performed Procedure Step SOP Class (i.e. "1.2.840.10008.5.1.4.32.3").

Below are examples of DICOM study component subject items:

Example Item Names	Example Item Values
DICOMStudy.Id.InstanceUID	^1.2.840.113619.6.48.2367.1^ISO
DICOMStudyComponent.Id.ClassUID	^1.2.840.10008.3.1.2.3.3^ISO

6.3.3 DICOM Series Identity Subject

The DICOM series subject is an identity subject that represents a specific DICOM series object for a specific patient.

The standard context data items for the DICOM series subject are described below.

DICOM Series Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
DICOMSeries.Id.InstanceUID	See below	HD	See chapter 3	No

6.3.4 DICOM Instance Identity Subject

The DICOM instance subject is an identity subject that represents a specific DICOM instance object for a specific patient. " DICOM instances are specific instances of objects, such as images, waveforms or reports.

The standard context data items for the DICOM instance subject are described below.

DICOM Instance Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
DICOMInstance.Id.InstanceUID	See below	HD	See chapter 3	No
DICOMInstance.Id.ClassUID	See below	HD	See chapter 3	No
DICOMInstance.Id.ReferencedFrameNumber	See below	NM	See chapter 3	No

An application shall set a value for all of the items defined above whenever it sets the instance context.

The value of the DICOMInstance.Id.InstanceUID item corresponds to:

- The DICOM SOP Instance UID (0008,0018) attribute of a composite DICOM object of one the Storage SOP Classes

The value of the DICOMInstance.Id.ClassUID item corresponds to:

- The DICOM SOP Class UID (0008,0016) attribute of a composite DICOM object of one the Storage SOP Classes

Below are examples of DICOM instance subject items, in this case corresponding to selected frames of an XA image object instance:

Example Item Names	Example Item Values
DICOMStudy.Id.InstanceUID	^1.2.840.113619.6.48.2367.1^ISO
DICOMInstance.Id.ClassUID	^1.2.840.10008.5.1.4.1.1.12.1^ISO
DICOMInstance.Id.ReferencedFrameNumber	1~10~11~32

7 View Subject

The view subject is an identity subject that identifies a particular view, screen, or presentation that each application in a set of context-sharing applications are to render such that the applications collectively present a coordinated series of data displays and associated application controls required to support a user's task. For example, if a doctor is preparing for her rounds, then she might interact with an application designated for enabling users to set the view context to indicate her desire to synchronize the applications for rounds review. Upon selecting this view, the View Link-enabled applications present data displays and application controls that are appropriate for facilitating the process of preparing for rounds review.

After the applications are synchronized to the current view, the user may then freely navigate the application to a different display and/or set of controls. The user may resynchronize the applications to the current view by selecting this view again, or the user may synchronize the applications to another view by selecting a different view.

The views that are available to users to select from are site-specified and may be defined by the site to accommodate specific user roles, specific users, groups of users, and so on. The item subject label for the view subject is "View". The data value for this subject is represented as an alphanumeric string.

7.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"View"
Subject type	Identity
Synchronization	Temporary
Security	Authentication required to set subject
Subject Dependencies	None
Mapping Agent Coupon Value	-10

7.2 SHARING VIEW CONTEXT AT A SITE

Individual applications will generally have a variety of views ranging from a few (e.g., representing major application functions) to many (e.g., representing every application screen) that they are capable of presenting and will assign application-specific values for each such view. However, it is not necessary for applications to have the same view context values in order to share view context. Instead, the View Mapping Agent can be configured with a site-specific mapping of the view data values used by the various applications in the site's context system. The logic that the View Mapping Agent applies to perform the mapping of view data values may be simple or it can be arbitrarily sophisticated. This logic is clearly implementation-dependent and may vary across different View Mapping Agent implementations.

To accommodate mapping values for the view subject, the item name for the view subject identifier item (see Section 7.7, Data Definitions) shall be differentiated across applications via a site-defined suffix. A View Link-enabled application shall be configurable such that it can be configured on-site as to which suffix it is to use when it interacts with the context manager to set or get view context data. This suffix shall

be the name of the application, or other sensible identifier, such that the "context" for interpreting the view context data can be readily represented.

For example, a clinical documentation application might use the value "meds" to represent its medication history view while a physician order entry application might use the value "Medication History". The View Mapping Agent would be configured so that it knows that these two values represent the same view. Whenever one of these applications sets the view context the View Mapping Agent would see to it that the corresponding view subject item was added to the context.

The fact that applications do not need to have a common vocabulary of view subject data values enables interoperability and allows a high-degree of site-specific adaptation of the collective behavior of their applications.

7.3 PRE-DEFINED VIEW SUBJECT DATA VALUES

A View Link-enabled must support two pre-defined view subject values in addition to application-specific views:

"Stay" means that the application should not change its current view, or if it is not possible to literally remain on the current view then the application should present a view that is close to the current view

"Home" means that the application should present its highest-level view (i.e., most general or default view), where this view might depend upon the circumstances as well as the values of other context subjects

The View Mapping agent can be configured such that it sets the view subject value for an application to one of the above pre-defined values, causing the application to respond accordingly to a view context change instigated by another application.

7.4 TREATMENT OF EMPTY VIEW CONTEXT

If the view context is empty then applications are not constrained as to which view they should present. The view that is presented is determined by the application.

The View Mapping Agent can be configured such that it sets the view subject value for an application to empty, allowing the application to be unconstrained in terms of its response to a view context change instigated by another application.

7.5 TREATMENT OF UNRECOGNIZED VIEW SUBJECT DATA VALUES

If the value for the view context is not recognized by an application then the application should behave as though the view context is empty.

7.6 WHEN TO SET THE VIEW CONTEXT

Per the CMA, as with any context change transaction, an application shall only set the view context in response to a user gesture directed at the application. Therefore, an application shall not set the view context when it is a participant in a context change transaction that was instigated by another application. This policy keeps a system of applications from thrashing among view context changes.

7.7 DATA DEFINITIONS

The standard context data items for the view subject are specified below.

Encounter Subject Identifier Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
View.Id.View. *Suffix*	The application view to be presented	ST	None	No

7.8 EXAMPLES OF VIEW SUBJECT ITEMS

Below are examples of view subject items all representing the same logical view:

Example Item Names	Example Item Values
View.Id.View.3M_Clinical Workstation	Meds
View.Id.View.CareVue	Medications
View.Id.View.Logician	MedsHistory

8 Certificate Annotation Subject

The certificate subject is an annotation subject that contains a digital certificate for the user currently identified in the user identity subject. The item subject label for the certificate subject is “Certificate”.

In future the certificate subject may be extended to support certificates for context entities other than the current user.

The certificate subject allows multiple applications to share the same certificate for a given user. Without a common source for the certificate of the current user, applications may be forced to maintain application-specific certificates for each user. If each application maintains a separate certificate for a user, the user will be faced with managing multiple certificates and their protection mechanisms. For example, the user might need to remember different password or pass-phrase for each certificate in order to “unlock” each certificate. The need to remember multiple passwords or pass-phrases can become quite onerous.

The certificate subject provides a mechanism for applications to locate a shared certificate for the current user. Therefore, the user needs to only remember a single pass phrase. The certificate subject relies on the ability to store the user’s certificate in a secure manner in a public place, specifically the common context.

PKCS 12 v1.0: Personal Information Exchange Syntax, describes a method and the format for storing and exchanging certificates protected either by a public key or by a password. The exchange format used for the certificate subject is PFX as defined in PKCS #12.

The *Password privacy mode* shall be used to protect the user certificate in the PFX rather than the *Public-key privacy mode*. This eliminates the problem of managing the keys used to decrypt user certificates. In *Password privacy mode* the user certificate may be protected by either a password or a pass-phrase. The user provides their password or pass-phrase to an application whenever the application needs to use the certificate, for example, to sign a clinical document. For maximum security, certificates that are maintained in the certificate subject shall be protected by pass-phrases which are less susceptible to attacks than passwords.

8.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	“Certificate”
Subject type	Annotation
Synchronization	Constant
Security	Authentication required to set or get subject
Subject Dependencies	User (see note)
Mapping Agent Coupon Value	-5

Note: Whenever the user subject changes, the certificate subject must be changed or cleared. The certificate for one user must not be used for another user. The addition of future certificates may increase the number of subjects upon which this subject is dependent.

8.2 SHARING CERTIFICATE CONTEXT AT A SITE

Each certificate enabled context subject instance, for example a user, at a site should ideally have only one certificate that is used by applications when a signature is required, for example, when signing documents. Because this ideal may not be achieved at all sites, the certificate item in the subject may be differentiated by a site-defined suffix. A Certificate Link-enabled application shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get certificate context data. This suffix may be the name of a locale, facility, application, or other sensible identifier, such that the "context" for interpreting the context data can be readily represented.

8.3 DATA DEFINITIONS

The standard context data items for the certificate subject are specified below.

Certificate Subject Annotation Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Certificate.An.User.*Suffix*	User's certificate data in a PFX as defined in PKCS#12	ST	None	No

A certificate annotation agent shall set a value for the item defined above whenever it sets the user certificate context.

Certificate Subject Annotation Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
Certificate.An.UserName	User's name	XPN	None	No

A certificate annotation agent may optionally set a value for items defined above when it sets the user certificate context.

8.4 EXAMPLES OF CERTIFICATE SUBJECT ITEMS

Below are examples of certificate subject items:

Example Item Names	Example Item Values
Certificate.An.User	<PFX containing the common certficate for the current user>
Certificate.An.User.Logician	<PFX containing a certificate specific to Logician>
Certificate.An.UserName	Marchant^Kyle^^^^

9 Authenticate-User Action Subject

The authenticate-user action subject enables an application to request that the user be authenticated. The application can optionally specify the name of the user, as denoted by the user's logon name that the application is expecting to authenticate. The action result indicates whether or not the user was successfully authenticated, and if so, returns the user's logon name. If the user was authenticated and the authenticated user's logon name matches the expected name (if any), then the action result indicates that the authenticated succeed. Otherwise, the action result indicates that the action failed.

9.1 ATTRIBUTES

The following table summarizes the attributes for this subject:

Subject label	"AuthenticateUser"
Subject type	Action
Synchronization	N/A
Security	Authentication required to request or perform action
Subject Dependencies	None
Mapping Agent Coupon Value	None (see note)
Action Agent Coupon Value	-11

Note: An authenticate-user action subject-specific mapping agent is not required. The user mapping agent (See Chapter 2, User Identity Subject) may be used to map certain inputs and outputs for the authenticate user action, as specified in Sections 9.2 below.

9.2 DATA DEFINITIONS

The item subject label for the authenticate-user context action subject is "AuthenticateUser".

9.2.1 Action Input Data Items

The standard input data items for the authenticate-user action subject are specified below. This action subject does not support timeouts.

Authenticate-User Input Data Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
AuthenticateUser.In.ExpectedUserLogon.*Suffix* Name for mapping is: User.id.logon.*Suffix* where the value of Suffix is preserved when the name is created	The logon name of the specific user that is expected to authenticate	ST	An empty string "" indicates that are not expecting any particular user	Value is case sensitive. For example, "ksmith" and "Ksmith" are two different logon id values.

An application shall set a value for the item defined above whenever it requests that the authenticate-user action be performed.

9.2.2 Action Output Data Items

Authenticate-User Output Data Item Name	Meaning	Data Type	Semantic Constraints on Values	Case Sensitive
AuthenticateUser.Ou.Status	Indicates whether user was successfully authenticated	ST	Success is represented by the string "Pass" and failure is represented by the string "Fail"	No
AuthenticateUser.Ou.Logon.*Suffix* Name for mapping is: User.id.logon.*Suffix* where the value of *Suffix* is preserved when the name is created	Logon name of the user	ST	User's logon name will be provided even if they could not be authenticated	Value is case sensitive. For example, "ksmith" and "Ksmith" are two different logon id values.
AuthenticateUser.Ou.Name Name for mapping is: User.Co.Name	Authenticated user's name	XPN	May be an empty string "" if the user's name is not known	No

An authenticate-user action agent shall set a value for each of the items defined above whenever it returns the results of performing the authenticate-user action.

10 Custom Subjects

Item subject labels and item names for a custom subject shall be defined per Sections 1.4 and 1.5

The available roles are `Id` and `Co`. It is at the discretion of the defining entity (provider institution, vendor, or consortium) to define the required name descriptors and any optional name suffixes for a particular custom subject.

10.1 SECURITY

The specification for a custom subject must indicate whether or not the subject is secured.

10.2 CUSTOM SUBJECT DEPENDENCIES

A custom subject may be dependent upon another standard or custom subject. However, a custom subject shall not require that a standard subject, or a custom subject defined by another organization, be dependent upon it.

10.3 CUSTOM SUBJECT AGENT COUPON VALUES

A context agent (i.e., mapping agent, annotation agent, action agent) for a custom subject shall be assigned a site-specific unique coupon value such that the value of the coupon is in the range -10,000 to –20,000.

10.4 SHARING CUSTOM CONTEXT AT A SITE

A custom subject may identify a real world object or concept that has multiple synonymous identifiers. Therefore, in the specification of a custom subject the names of the identifier items for a custom subject may be differentiated by a site-defined suffix.

An application enabled to support a particular custom subject shall be configurable such that it can be configured on-site as to which suffix (or suffices) it is to use when it interacts with the context manager to set or get context data for the custom subject. This suffix may be the name of a locale, facility, application, or other sensible identifier, such that the "context" for interpreting the custom context data can be readily represented.

10.5 EXAMPLE OF A CUSTOM IDENTITY SUBJECT

Below is an example of a custom identity subject with several items. In this example the W3C name for 3M is used as the subject qualifier, and a hypothetical Payer subject is defined. Note that a declaration is required by the defining organization for each item as to its meaning, data type, case sensitivity, and security. Optionally, examples may be given to clarify meaning.

Example Item Names	HL7 Meaning	HL7 Data Type	HL7 Semantic Constraints on Values	Case Sensitive	Example Item Values
[mmm.com]Payer.Id	Payer identifier	ST	Must be a valid payer id	No	234-56-7890
[mmm.com]Payer.Co.Name	Payer's name	ST	None	No	HMO Blue

11 HL7 Data Type Reference

The item data types referenced in this document, and their character-encoded representation, are the same as those specified in the HL7 Version 2.**4** Specification, Chapter 2. The specifications for the overall character encoding scheme can be found in HL7 Version 2.4, Section 2.5, 2.6, and 2.7. The definitions for the specific HL7 data types used in this document can be found in HL7 Version 2.4, Section 2.9, as summarized below:

Data Type	Data Type Name	HL7 Section Reference
CX	Extended composite ID with check digit	2.9.12
EI	Entity Identifier	2.9.17
HD	Hierarchic Designator	2.9.21
ID	Code Value for HL7-Defined Table	2.9.22
IS	Coded Value For User Defined Table	2.9.23
ST	String	2.9.43
NM	Numeric	2.9.28
XPN	Extended Person Name	2.9.54
XAD	Extended Address	2.9.51
XTN	Extended Phone Number	2.9.55
DLN	Driver's License Number	2.9.13
DT	Date	2.9.15
TS	Time Stamp	2.9.47

The formatting information for each of these fields is specified below, with its corresponding description and HL7 specification section identifier.

11.1 CHARACTER ENCODING CONVENTIONS

Only the encoding characters and escape sequences indicated below shall be used. Custom encoding characters, although allowed by HL7, shall not be employed:

Delimiter	Value	Usage
Field Separator	|	Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment.
Component Separator	^	Separates adjacent components of data fields where allowed.
Subcomponent Separator	&	Separates adjacent subcomponents of data fields where allowed. If there are no subcomponents, this character may be omitted.

11.2 CX

Extended composite ID with check digit:

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (ID)> ^ < assigning facility (HD) ^ <effective date (DT)> ^ <expiration date (DT)>

This data type is used for specifying an identifier with its associated administrative detail.

11.3 EI

Defines a given entity within a specified series of identifiers:

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ < universal ID type (ID)>

11.4 HD

Defines an entity that has responsibility for managing or assigning identifiers:

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

11.5 ID

A string drawn from an HL7-defined table of legal values.

11.6 IS

A string drawn from a user-defined table of legal values.

11.7 ST

A character string, not including special HL7 characters such as ^ or &.

11.8 NM

A number represented as a series of ASCII numeric characters.

11.9 XPN

A person's name:

Components: <family name (ST)> & <family name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Example: Smith^John^J^III^DR^PHD^L

11.10 XAD

An address:

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)>^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code(ID)>

Example: 1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^

11.11 XTN

A phone number:

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Example: (415)555-3210^ORN^FX^

11.12 DLN

A driver's license number:

Components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

11.13 DT

A date:

Format: YYYY[MM[DD]]

Example: 19880704

11.14 TS

A time stamp:

Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ][^<degree of precision>]

Example: 19760704010159-0500

12 Context Agent Coupon Assignments

Agent	Coupon	Reference
Patient Mapping Agent	-1	Patient Identity Subject
User Mapping Agent	-2	User Identity Subject
Encounter Mapping Agent	-3	Encounter Identity Subject
Observation Request Mapping Agent	-4	Observation Request Identity Subject
Certificate Annotation Agent	-5	Certificate Annotation Subject
DICOM Study Mapping Agent	-6	DICOM Study Identity Subjects
DICOM Study Component Mapping Agent	-7	DICOM Study Identity Subjects
DICOM Series Mapping Agent	-8	DICOM Study Identity Subjects
DICOM Instance Mapping Agent	-9	DICOM Study Identity Subjects
View Mapping Agent	-10	View Subject
Authenticate-User Action Agent	-11	Authenticate-User Action Subject