
# HL7 v3 Implementation Guide

| Version | Date | Author | Comments |
|---|---|---|---|
| 0.1 | 20.05.2008 | René Spronk | Initial draft version of the document |
| 1.0 | 22.08.2008 | René Spronk | Errata; added chapter 7 |
| 1.0b | 01.09.2008 | Torgny Neuman | Final document |
| 2.0 | 12.06.2009 | Morten Myhre | Version 2.0 |
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| 3.0b | 16.07.2009 | René Spronk | Errata |
| 3.0c | 12.08.2009 | Morten Myhre | Errata |

# 1 Introduction

All services in this document are based on the Normative Edition 2008 of HL7 version 3.

The intent of this document is to describe the key aspects of the services and the HL7 v3 documents related to them.

For additional information about HL7 and the HL7 version 3 standards, see http://en.wikipedia.org/wiki/HL7 and http://hl7book.net/index.php?title=HL7_version_3

## 1.1 Changes

**Version 3.0c**

- Changed the use of 'center' in the EncounterManager.FindEncouters query. Section 3.4.1.1.

**Version 3.0**

- Added new Encounter related methods in section 3.4.
- Added documentation of the new 'telecom' and 'name' attribute of the ServiceDeliveryLocation class to the EncounterManager.FindEncounters model; see section 3.4.1.2 for details.
- Added documentation of the link between an encounter and its prior appointment to the EncounterManager.FindEncounters model; see section 3.4.1.2 for details.
- Added a description of the option to identify both a ward and a bed in the response to the EncounterManager.FindEncounters service; see section 3.4.1.2 for details.
- Changed the erroneous OID 2.16.578.34.1000.4 to 2.16.578.1.34.1000.4 throughout the document.
- Two new services related to document management have been added to section 3.5.

**Version 2.0**

- Updated chapter 7 about WSDL and schemas.
- Corrected event name PatientRegistry.PatientRevised to PatientRegistry.RecordRevised.
- Updated figure and text related to search criteria for PatientRegistry.FindCandidtes and PersonRegistry.FindCandidates.
- Updated CareRecordManager.GetCareRecordProfile. Both active and completed encounters will be returned.
- Added two story boards to EncounterManager.FindEncounters.
- Clarified which encounters will be returned when using low and high values in EncounterManager.FindEncounters query.
- Clarified which encounters will be returned when using low and high values in EncounterManager.FindScheduledEncounters query.
- Clarified how administrative entities should be returned. (Chapter 4.2.5)
- Updated information regarding deceasedInd element of generic person payload model (Chapter 5.2.1). Element is mandatory if person is deceased.
- Removed references to Helse Vest and DIPS, to make the implementation guide more generic.
- Added coding system for health care organizations.
- Added new Encounter related methods in section 3.4.
- Added documentation of a new 'name' attribute of the ServiceDeliveryLocation class to the EncounterManager.FindEncounters model; see section Error: Reference source not found for details.
- Added documentation of the link between an encounter and its prior appointment to the EncounterManager.FindEncounters model; see section Error: Reference source not found for details.

**Version 1.1**

- The use of the 'DIPS internal patient identifier' (in RegistrationEvent.id, with OID 2.16.578.1.34.2.17) is no longer supported. An HL7-NullFlavor will be used instead. This leads to changes in the descriptions of all interactions sent by DIPS.
- Added documentation of thee new additional/optional query parameters for the PersonRegistry.FindCandidates service in section 3.2.2.1.
- Added documentation of thee new additional/optional query parameters for the PatientRegistry.FindCandidates service in section 3.1.4.1.
- Added documentation for the (optional) use of @displayname next to the mandatory @code and @codeSystem for sending diagnosis codes (based on the Norwegian ICD-10 coding system) in the CareRecordManager.GetCareRecordProfile service. See section 3.3.1.2 for details.
- Added another way of identifying the administrative entity (Fylke/Kommune/Bydel, and country if the patient moved from Norway to another country) associated with the Person/Patient to section 4.2.5. Add a new section 4.3.7 to document the related coding system.
- Updated an erroneous example related to a patient who moved to Sweden in section 4.2.5.

**Version 1.0:**

- The participation code in section 3.3.1.2 for subject2 has been changed from SBJ to SUBJ.
- Updates materials to use 2.16.578.1.34.2.17 as the OID for the "DIPS internal patient identifier".
- The location of the 'DIPS internal patient identifier' was changed: it was moved from Patient.id to RegistrationProcess.id. This has an impact on all PatientRegistry messages sent by DIPS. See sections 3.1 and 4.5.2.
- In sections 3.1.4.2 and 3.2.2.2 the @classCode of queryMatchObservation was corrected to be 'OBS'.
- Added the use of the statusCode attribute in the OtherIDs class in section 4.5.1.
- Added a description of the deceasedInd and deceasedTime lements in section 4.5.1.
- Added chapter Error: Reference source not found which describes the normative nature of the published WSDL and Schema.
- Added a description of error handling mechanism in chapter 5, as well as in sections 4.4.1 and 4.4.2, related to malformed query parameters, or illegal combinations of query parameters.
- Moved the description of PatientPerson participations (subjectOf, subjectOf1, subjectOf2, providerOrganization) from the documentation in the PatientRegistry chapter to section 4.5.2
- The use of the final NE2008 schema (up to now we used a pre-publication version of the schema) leads to a few minor corrections in the documentation of the "Resolve Duplicates" interaction. See subject1 and priorRegisteredRole in section 3.1.3.1.

# 2 Definitions and relationships

Definitions used in this document:

| | |
|---|---|
| OID | Object Identifiers |
| NNPR | Norwegian National Population Register (*Folkeregister*) |

## 2.1 Assumptions

- A1: For privacy reasons the author (a person) of a query that is related to the demographics data of a patient/person should be sent. Medical data is subject to additional privacy/auditing regulations.
    - Audit logging should be compliant to: http://www.shdir.no/samspill/informasjonssikkerhet/norm_for_informasjonssikkerhet_i_helsesektoren_232354.
    - Based on the requirements above, a decision has been made to include (in those messages not automatically generated by a software application) the "user identifier" of the person sending a message in all messages.

- A2: In all communication the patient will be identified using the F-Number (if available); the D-number (if the F-number isn't available). Within Helse Vest other identifiers may be sent in addition to the F or D-number.
    - In the first phase H-numbers as defined by KITH should be used. http://www.kith.no/templates/kith_WebPage____609.aspx

- A3: The standard used will be Normative Edition 2008 of the HL7 version 3 standard. The IHE HL7 v3 profiles aren't used – the Norwegian requirements go beyond the restricted model used in that profile.

- A4: The F-Number as well as the D-Number is used to both identify a person as well as a person-in-the-context-of-healthcare (a patient).

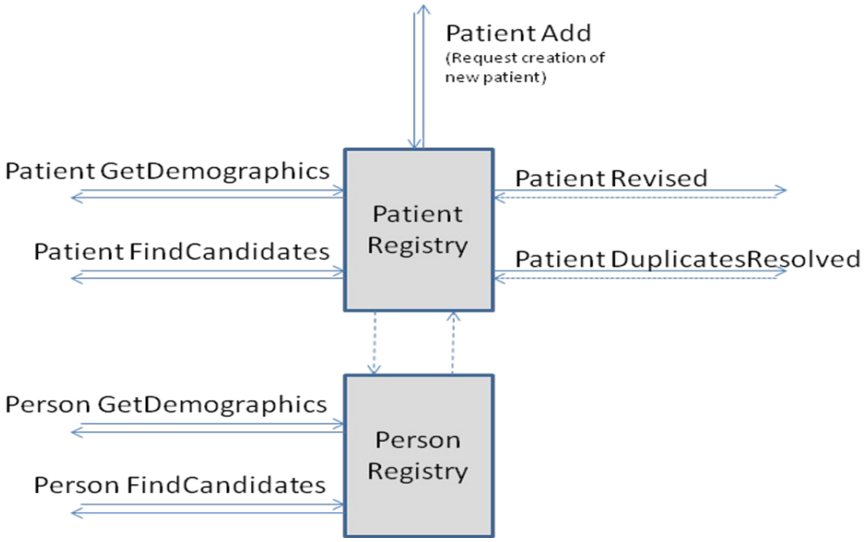
- A5: There will be one patient master (PAS) and there is one person master (Folkeregister).

    - There will be a maximum of one person.id (either the F-number or the D-number –in that order of preference-), and a maximum of one Patient.ids (either the F-number, the D-number or the H-number –in that order of preference-). All other known Ids for the Patient (older, previously used, temporary Ids, non-preferential IDs) should be sent in the OtherIds.id attribute.
- A6: There is a tightly controlled process when it comes to the merging of patient identifiers. The un-merging of previously merged patient identifiers rarely happens.
    - There will be a notification interaction from the Patient Registry to other applications. This to inform these applications that it should merge all data associated with a set of patient identifiers.
    - There won't be a notification from the Patient Registry in case identifiers are un-merged: this remains a manual process.
    - An interaction from an application to the Patient Registry to request that identifiers be merged (as well as un-merged) won't be supported. Merges are exclusively made in the Patient Registry itself.

## 2.2 Architecture of Identity and Demographics data management

The architectural model related to the management of person/patient identifiers and demographics data is based on one core principle: there will be one patient master (Patient registry, PAS) and there is one person master (Person Registry, Folkeregister).

- A new patient can only be created within the Patient Registry. This could either be a manual process using the Patient Registry application, or another software application could use a service to request that the Patient Registry create a new patient.
- All updates related to patient demographics (including the merging of patient identifiers) are made available by the Patient Registry to other software applications in the form of notifications.
- To get hold of the latest demographic information (and the best quality in terms of identifiers) software applications can query the Patient/Person Registry using an identifier of the Patient/Person.
- In order to determine whether a patient/person is already present in the registry software applications have the option to search for potential matches using partial demographics person/patient information.



## 2.3 Implementation of Notifications

The concept of notification messages is based on other systems subscribing to changes of some specified information elements in the patient administrative system. The patient administrative system is referred to as EPJ (Electronic Patient Journal). Activation of specified events will trigger the EPJ to publish notifications to a middleware solution (for example Microsoft BizTalk Server) which will distribute the notification messages to the subscribing systems or services. The following figure illustrates the concept for the Patient Registry Duplicates Resolved message.

# 3 Services

This chapter contains the description of a number of services. The semantic interchange model used by the services is based on the international HL7 version 3 standards.

## *3.1 PatientRegistry*

### 3.1.1 Method: PatientRegistry.GetDemographics

This storyboard demonstrates querying a patient registry to get demographic information for a registered patient. (PRPA_ST201307UV02). See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_ST201307UV02-str

The querying system sends a query with a patient identifier to a Patient Registry application. The query will be either based on the F-number, the D-number or the emergency patient identifier (the H-number).

The query interaction has an immediate response. The response interaction as sent by the Patient Registry will contain all known identifiers of the patient as well as the demographics details of the patient.

**Interaction List**

| | |
|---|---|
| Patient Registry Get Demographics Query | PRPA_IN201307NO |
| Patient Registry Get Demographics Query Response | PRPA_IN201308NO |

Note that the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the query interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201307UV02-rmi

The payload model of the response interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201303UV02-rmi

See the electronic archive for example XML-instances.

### 3.1.1.1 Structure of the query interaction

The query interaction (Patient Registry Get Demographics Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **parameterList** | |
| | The parameterList contains the list of parameters. | |
| 2 | **patientIdentifier** | |
| | The patientIdentifier forms the parameter of this query interaction. | |
| 3 | **value** | @root, @extension. |
| | Contains the patient identifier. This is a unique identification of a patient. @root contains an identification of the 'unique patient identification mechanism' (i.e. the OID for F-Number, D-Number, etc.), and @extension contains the identifier created according to that identification mechanism. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value 'Patient.id' | |

### 3.1.1.2 Structure of the response interaction

The response interaction (Patient Registry Get Demographics Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG',<br>@moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. This identifier isn't valued in this message, the nullFlavor attribute contains the fixed value 'MSK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry.<br>@typeCode contains the fixed value 'SBJ'. | |
| 3 | **Patient** | |
| | *Root element of the generic patient payload model. See section 4.5.2 for a description of its structure.* | |
| 2 | **custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value 'CST'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |

### 3.1.2 Method: PatientRegistry.RecordRevised

See the Patient Registry Record Revised (PRPA_ST201302UV02) storyboard which describes the scenario in which a change has been made in a patient registry which leads to a notification interaction being sent to other applications. See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_ST201302UV02-str

The notification interaction has an immediate response in the form of an Accept Acknowledgement. Note that an Accept Acknowledgement serves both as an assurance that the interaction was received, and as a statement that the interaction was –at a glance- syntactically correct.

**Interaction List**

| | |
|---|---|
| Patient Registry Record Revised | PRPA_IN201302NO |
| Accept Acknowledgement | MCCI_IN000002UV01 |

Note that one of the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the revise interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201302UV02-rmi

The Accept Acknowledgement response interaction has no payload. It's definition can be found here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvci/uvci_GenericMessageTransmission.htm#MCCI_IN000002UV01-int

See the electronic archive for example XML-instances.

#### 3.1.2.1 Structure of the revision interaction

The revision interaction (Patient Registry Record Revised) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion. | |

| | | |
|---|---|---|
| | @classCode contains the fixed value ‘REG’, @moodCode contains the fixed value ‘EVN’ | |
| 2 | **Id** | @nullFlavor |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. This identifier isn’t valued in this message, the nullFlavor attribute contains the fixed value ‘MSK’. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value ‘active’ | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value ‘SBJ’. | |
| 3 | **Patient** | |
| | *Root element of the generic patient payload model. See section 4.5.2 for a description of its structure.* | |
| 2 | **custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value ‘CST’. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value ‘ASSIGNED’. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |

### 3.1.2.2 Structure of the response interaction

The response interaction (Accept Acknowledgement) is defined as a Transmission Wrapper (see section 4.4.1). The interaction doesn’t contain a ControlAct wrapper nor a payload.

### 3.1.3 Method: PatientRegistry.DuplicatesResolved

See the Patient Registry Record Revised (PRPA_ST201304UV02) storyboard which describes the scenario in which two patient records are merged: one of the records "survives", the other does not. This change in the patient registry leads to a notification interaction being sent to other applications. See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_ST201304UV02-str

The notification interaction has an immediate response in the form of an Accept Acknowledgement. Note that an Accept Acknowledgement serves both as an assurance that the interaction was received, and as a statement that the interaction was –at a glance- syntactically correct.

**Interaction List**

| | |
|---|---|
| Patient Registry Duplicates Resolved | PRPA_IN201304NO |
| Accept Acknowledgement | MCCI_IN000002UV01 |

Note that one of the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the revise interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201303UV02-rmi

The Accept Acknowledgement response interaction has no payload. Its definition can be found here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvci/uvci_GenericMessageTransmission.htm#MCCI_IN000002UV01-int

See the electronic archive for example XML-instances.
The surviving registration (RegistrationEvent.statusCode = "Active") links via the replacementOf act relationship to the deprecated registration (PriorRegistration.statusCode = "obsolete"). A copy of the surviving patient record is sent in the payload message.

#### 3.1.3.1 Structure of the duplicates resolved interaction

The revision interaction (Patient Registry Duplicates Resolved) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |

| | | |
|---|---|---|
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. This is the set of demographics data which survives the merging process. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. This identifier isn't valued in this message, the nullFlavor attribute contains the fixed value 'MSK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **Patient** | |
| | Contains the identification of the patient role which will survive the merging process with another patient role. | |
| 4 | **id** | @root, @extension, |
| | Contains exactly one Patient.ids (either the F-number, the D-number or the H-number –in that order of preference-).<br>@root contains the OID of the identification scheme, @extension contains the identification number according to that identification scheme.<br>Note: all other known Ids for the Patient (older, previously used, temporary Ids, non-preferential IDs) should be sent in the OtherIds.id attribute. | |
| 4 | **statusCode** | @code |
| | @code contains the fixed value 'active'. | |
| 4 | **patientPerson** | |
| | Contains information about the person playing the role of patient. The details provided can be used to determine whose information is being merged. | |
| 5 | **Id** | @root, @extension |
| | Contains a maximum of one unique person identifier. @root contains an identification of the 'unique person identification mechanism' (the OID for F-Number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism.<br>If both F-number and D-number are known, only the (current) F-number should be sent using this element. | |
| 5 | **Name** | |
| | Occurs once only. Contains a name of the person. For merging purposes the identifier(s) of the person will be used. The name is however mandatory for corroborative purposes.<br>See section 4.2.2 for a description of the sub elements and the usage of the sub elements. | |
| 5 | **asOtherIds** | @classCode |
| | Contains all old/non-preferential Person identifiers (e.g. a D-Number if the F-Number is also known). It also contains any old/non-preferential Patient identifiers (e.g. emergency numbers, older numbers from merged registrations). Patient identifiers may only be included if the interaction is sent by/to a Patient registry. | |

| | | |
|---|---|---|
| | @classCode contains the fixed value ‘ROL’ | |
| 6 | **Id** | @root, @extension |
| | May occur multiple times. Each occurrence contains one unique person/patient identifier. @root contains an identification of the ‘unique person identification mechanism’ (e.g. the OID for an emergency number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism. | |
| 6 | **scopingOrganization** | |
| | Identifies the organization that forms the context of the OtherIds.id identifiers. In this case: Helse Vest. | |
| 7 | **Id** | @root, @extension |
| | Contains the identification of Helse Vest.<br>@root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 4 | **providerOrganization** | @classCode, @determinerCode |
| | Identifies the organization that is aware of the patient identifiers as contained in the Registry. Here: Helse Vest. | |
| 5 | **Id** | @root, @extension |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 5 | **contactParty** | @classCode, @nullFlavor |
| | @classCode contains the fixed value ‘CON’. @nullFlavor contains the fixed value ‘NA’. | |
| 4 | **subjectOf** | |
| | Root element of an observation that identifies the kommune/bydel associated with the patient. See 4.2.5 for details of the sub-elements and attributes. | |
| 2 | **Custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value ‘CST’. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value ‘ASSIGNED’. | |
| 4 | **Id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 2 | **replacementOf** | |
| | | |
| 3 | **priorRegistration** | @classCode, @moodCode |
| | The registration activity of the old/replaced/merged set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value ‘REG’, @moodCode contains the fixed value ‘EVN’ | |
| 4 | **Id** | @root, @extension |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. | |
| 4 | **statusCode** | @code |
| | @statusCode contains the fixed value ‘obsolete’ (due to the merging process this registration is now no longer valid, i.e. obsolete) | |
| 4 | **Subject1** | @typeCode |

| | | |
|---|---|---|
| | Contains the subject of the old/merged registration. @typeCode contains the fixed value ‘SBJ’ | |
| 5 | **priorRegisteredRole** | @classCode |
| | Contains the identification of the old/merged patient role. @classCode contains the fixed value ‘PAT’. | |
| 6 | **Id** | @root, @extension |
| | Contains the primary identifiers of the old/merged patient record, e.g. an emergency identifier. @root contains the OID of the identification mechanism, @extension contains an identification number according to that identification mechanism. | |

### 3.1.3.2 Structure of the response interaction

The response interaction (Accept Acknowledgement) is defined as a Transmission Wrapper (see section 4.4.1). The interaction doesn’t contain a ControlAct wrapper nor a payload.

### 3.1.4 Method: PatientRegistry.FindCandidates

This storyboard demonstrates querying a patient registry to retrieve potential matches based on partial patient demographic information. (PRPA_ST201305UV02). See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_ST201305UV02-str

The querying system sends a query with a combination of the following query parameters: Date-of-birth, administrativeGender (sex), family name, given name, address, deceased and administrative entity. The HL7 interaction has been constrained; the service only supports queries that fulfil these minimum requirements:

- Date-of-birth + (at a minimum) two letters of the family name
- Sex + (at a minimum) two letters of the family name
- Date-of-birth + sex

In addition to the above, the following optional query parameters can be supplied to further limit the size of the result set:

- Given name
- Address (notably street address)
- Deceased indicator (true or false)
- Administrative Entity (Fylke/Kommune/Bydel)

*All of the search criteria must be implemented in the service, they are only optional from the clients' point of view.*

| | Gender | Birth date | Family name (min 2 first chars) | Given name | County/Municipality/Borough | Deceased | Address |
|---|---|---|---|---|---|---|---|
| **PatientRegistry** | **r** | **r** | **r** | **o** | **o** | **o** | **o** |
| | **Version 1.0** | | | | **Version 1.1** | | |

*- At least 2 of the 3 criterias maked with an 'r' must be included in the query*
*- Criterias marked with an 'o' are optional*
*- Version 1.1 has support for 3 extra search criterias*

The query interaction has an immediate response. The response interaction as sent by the Patient Registry will contain a set of patient demographics data; the demographics data of patients that are as close a match to the supplied parameters as possible. The HL7 interaction has been constrained: the service will return a maximum of 50 candidates.

**Interaction List**

| | |
|---|---|
| Patient Registry Find Candidates Query | PRPA_IN201305NO |

| Patient Registry Find Candidates Query Response | PRPA_IN201306NO |
|---|---|

Note that the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the query interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201306UV02-rmi

The payload model of the response interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201310UV02-rmi

See the electronic archive for example XML-instances.

### 3.1.4.1 Structure of the query interaction

The query interaction (Patient Registry Find Candidates Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **parameterList** | |
| | The parameterList contains the list of parameters. | |
| 2 | **AdministrativeObservation** | |
| | AdministrativeObservation is one of the optional parameters of this query interaction. It contains an identification of the Fylke/Kommune/Bydel and the country of residence (if not equal to Norway). | |
| 3 | **Value** | @xsi:type @code @codeSystem |
| | @xsi:type contains the fixed value "CE". @codeSystem contains the fixed OID value "1.0.3166.2.2". @code contains a code (according to ISO 3166 part 2) for | |

| | | |
|---|---|---|
| | the Fylke, the Fylke+Kommune, or the Fylke+Kommune+Bydel. | |
| 4 | **semanticsText** | |
| | The element contains the fixed value ‘AdministrativeObservation’ | |
| 2 | **livingSubjectAdministrativeGender** | |
| | livingSubjectAdministrativeGender is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family name, patient gender) query parameters be used. | |
| 3 | **Value** | @code, @codeSystem |
| | Contains a code for the administrative gender. @codeSystem is fixed to 2.16.840.1.113883.5.1 , @code should be either M (Male), F (Female), or UN (Undifferentiated/Ambiguous). | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘LivingSubject.administrativeGender’ | |
| 2 | **livingSubjectBirthTime** | |
| | livingSubjectBirthTime is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family name, patient gender) query parameters be used. | |
| 3 | **Value** | @value |
| | Contains the date of birth of the patient. At least the year has to be specified. The format of @value is YYYYMMDD. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘LivingSubject.birthTime’ | |
| 2 | **LivingSubjectDeceased** | |
| | LivingSubjectDeceased is one of the optional parameters of this query interaction. It contains an indication (a Boolean) of whether or not the person is deceased. If the element is omitted, the response will return both living and deceased patients. | |
| 3 | **Value** | @value |
| | @code should contain either ‘true’ or ‘false’. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘LivingSubjectDeceased’ | |
| 2 | **livingSubjectName** | |
| | livingSubjectName is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family name, patient gender) query parameters be used. | |
| 3 | **Value** | |
| | Contains part of the family name of the patient. | |
| 4 | **Family** | |
| | Contains (at least two characters, starting from the beginning of the name) the family name of the patient.<br>Example: If this element contains ‘Nore’, all family names starting with Nore will be seen as candidates in the response message: NORE, NOREBØ, NOREEN, NOREGER, NOREID, NOREIDE, NOREKVAL, NOREKVÅL and so on. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘LivingSubject.name’ | |
| 2 | **PatientAddress** | |
| | PatientAddress is one of the optional parameters of this query interaction. It contains (part of) the street address of the patient. | |
| 3 | **Value** | |
| | See section 4.2.3 for the structure of the data type used to convey (parts of) | |

| | | |
|---|---|---|
| | addresses. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘Patient.addr’ | |

### 3.1.4.2 Structure of the response interaction

The response interaction (Patient Registry Find Candidates Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. *Note that this interaction may contain zero or many subject elements.* | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion. @classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. This identifier isn't valued in this message, the nullFlavor attribute contains the fixed value 'MSK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **Patient** | |
| | *Root element of the generic patient payload model. See section 4.5.2 for a description of its structure.* | |
| 4 | **subjectOf1** | |
| | Identifies the degree-of-match between this response records and the parameters as sent in the query. | |
| 5 | **queryMatchObservation** | @classCode, @moodCode |
| | @classCode contains the fixed value 'OBS'. @moodCode contains the fixed value 'EVN'. | |
| 6 | **Code** | @code, @codeSystem |
| | @codeSystem contains the fixed value '2.16.578.1.34.5.2'. @code contains the fixed value 'PERC'. This indicates that the percentage of match is sent. | |
| 6 | **Value** | @xsi:type, @value |
| | The Person registry currently uses a fixed value of 80% for all records. @xsi:type contains the fixed value 'REAL'. @value contains the fixed value '80'. | |
| 2 | **custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value 'CST'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5. | |

| | |
|---|---|
| | @extension contains the fixed value 983658725. |

### 3.1.5 Method: PatientRegistry.AddPatient

This is a new use-case not (yet) covered by the international HL7 version 3 standard. The storyboard is as follows:

1. There is a new born baby. This person is not known in the Folkeregister. The clinical system which deals with the information about the birth sends a request to the Patient Registry for an H-number (emergency number). The request contains: Birth date, sex, name, address, kommunenr and maybe bydel. The Patient Registry responds with an ID (H-number) and the set of demographics detail as provided in the request.
2. The clinical system for emergency patients sends a request to the Patient Registry to register the new patient. The clinical system has verified with the Folkeregister: the person is known in that registry. The request to the Patient Registry contains: F- or D-number, Birth date, sex, marital status, names, address, kommunenr and maybe bydel that has been found in the Folkeregister. The Patient Registry responds with a confirmation that the patient was successfully registered, as well as with a full set of demographics details. The request to add the patient will fail if the patient already exists (the PatientRegistry.getDemographics method should have been used instead).

As stated above, this storyboard isn't supported in the HL7 version 3 standards. However, the following Storyboard is close to it:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_ST201311UV02-str.

The payload models of both the request as well as the response will be similar to this model:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Patient.htm#PRPA_RM201303UV02-rmi

**Interaction List**

| | |
|---|---|
| Patient Registry Request Add Patient | PRPA_IN201911NO |
| Patient Registry Patient Added | PRPA_IN201912NO |
| Patient Registry Patient Not Added | PRPA_IN201913NO |

Note that the above interactions use the "NO" realm code. The models used are (currently) specific for this project and will be brought forward for inclusion in the international standard.

#### 3.1.5.1 Structure of the request interaction

The revision interaction (Patient Registry Request Add Patient) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |

| | | |
|---|---|---|
| | The requested registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'RQO' | |
| 2 | **Id** | @nullFlavor |
| | Registration request activities aren't identified in Helse Vest because the sender of a request isn't a registry. @nullFlavor contains the fixed value 'UNK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **Patient** | |
| | *Root element of the generic patient payload model. See section 4.5.2 for a description of its structure. Note that the person playing the patient role may have an identifier (F or D number).* | |
| 2 | **author** | @typeCode |
| | Identifies the author of the request for the registration. @typeCode contains the fixed value 'AUT'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **Id** | @extension. @root |
| | User ID assigned by Helse Vest IKT to identify the person.<br>@root contains the fixed value 2.16.578.1.34.3.1.<br>@extension contains the user identifier. | |

### 3.1.5.2 Structure of the response interaction (successful)

The response interaction (Patient Registry Patient Added) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). Note that ./acknowledgement/typeCode/@code equals AA (success).

The final part of the interaction is the subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Identifies the registration process within the Patient Registry of a set of patient demographics data. This identifier isn't valued in this message, the nullFlavor attribute contains the fixed value 'MSK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **Patient** | |
| | *Root element of the generic patient payload model. See section 4.5.2 for a description of its structure.* | |
| 2 | **custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value 'CST'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |

### 3.1.5.3 Structure of the response interaction (failure)

The response interaction (Patient Registry Patient Not Added) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2).

Note that ./acknowledgement/typeCode/@code equals AE (failure), and that ./controlActProcess/reasonOf/detectedIssueEvent/@code should be used to convey the reason for the rejection of the request.

The final part of the interaction is the subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | *This element and all sub-elements are a 100% copy of the rejected request. See section 3.1.5.1 for a description of these elements.* | |

## 3.2 PersonRegistry

### 3.2.1 Method: PersonRegistry.GetDemographics

This storyboard demonstrates querying a person registry to get demographic information for a person. (PRPA_ST101307UV02). See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_ST101307UV02-str

The querying system sends a query with a person identifier to a Person Registry application. The query will be either based on the F-number or the D-number.

The query interaction has an immediate response. The response interaction as sent by the Person Registry will contain the F-Number (and/or D-Number) of the person as well as the demographics details of the person.

**Interaction List**

| | |
|---|---|
| Person Registry Get Demographics Query | PRPA_IN101307NO |
| Person Registry Get Demographics Query Response | PRPA_IN101308NO |

Note that the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the query interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_RM101307UV02-rmi

The payload model of the response interaction is shown here: http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_RM101303UV02-rmi

See the electronic archive for example XML-instances.

#### 3.2.1.1 Structure of the query interaction

The query interaction (Person Registry Get Demographics Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |

| | | |
|---|---|---|
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **parameterList** | |
| | The parameterList contains the list of parameters. | |
| 2 | **identifiedPersonIdentifier** | |
| | The identifiedPersonIdentifier forms the parameter of this query interaction. | |
| 3 | **value** | @root, @extension. |
| | Contains a unique person identifier. @root contains an identification of the 'unique person identification mechanism' (the OID for F-Number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value 'IdentifiedPerson.id' | |

### 3.2.1.2 Structure of the response interaction

The response interaction (Person Registry Get Demographics Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a person. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Registration activities aren't identified in Helse Vest because there is only one Person Registry. @nullFlavor contains the fixed value 'UNK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **identifiedPerson** | @classCode |
| | @classCode contains the fixed value 'IDENT' | |
| 4 | **Id** | |

| | | |
|---|---|---|
| | Contains a unique person identifier. @root contains an identification of the 'unique person identification mechanism' (the OID for F-Number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism. | |
| 4 | **statusCode** | @code |
| | @code contains the fixed value 'active' | |
| 4 | **identifiedPerson** | |
| | Root element of the generic person payload model. See section 4.5.1 for a description of its structure. | |
| 4 | **assigningOrganization** | @classCode, @determinerCode |
| | Identifies the organization that has assigned the person identifiers. (Skattedirektoratet) | |
| 5 | **Id** | @root, @extension |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 974761076. | |
| 5 | **contactParty** | @classCode, @nullFlavor |
| | @classCode contains the fixed value 'CON'. @nullFlavor contains the fixed value 'NA'. | |
| 4 | **subjectOf** | |
| | Root element of an observation that identifies the kommune/bydel associated with the patient. See 4.2.5 for details of the sub-elements and attributes. | |
| 2 | **Custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value 'CST'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |

### 3.2.2 Method: PersonRegistry.FindCandidates

This storyboard demonstrates querying a person registry to retrieve potential matches based on partial person demographic information. (PRPA_ST101305UV02). See http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_ST101305UV02-str

The querying system sends a query with a combination of the following query parameters: Date-of-birth, administrativeGender (sex), family name, given name, address, deceased and administrative entity. The HL7 interaction has been constrained; the service only supports queries that fulfil these minimum requirements:

- Date-of-birth + two letters in family name
- Sex + two letters in family name
- Date-of-birth + sex

In addition to the above, the following optional query parameters can be supplied to further limit the size of the result set:

- Given name
- Address (notably street address)
- Deceased indicator (true or false)
- Administrative Entity (Fylke/Kommune/Bydel)

*All of the search criterias must be implemented in the service, they are only optional from the clients' point of view.*

| | Gender | Birth date | Family name (min 2 first chars) | Given name | County/Municipality/Borough | Deceased | Address |
|---|---|---|---|---|---|---|---|
| **PersonRegistry** | **r** | **r** | **r** | **o** | **o** | **o** | **o** |
| | **Version 1.0** | | | | **Version 1.1** | | |

*- At least 2 of the 3 criterias maked with an 'r' must be included in the query*
*- Criterias marked with an 'o' are optional*
*- Version 1.1 has support for 3 extra search criterias*

The query interaction has an immediate response. The response interaction as sent by the Person Registry will contain a set of patient demographics data; the demographics data of patients that are as close a match to the supplied parameters as possible. The HL7 interaction has been constrained: the service will return a maximum of 50 candidates.

**Interaction List**

| | |
|---|---|
| Person Registry Find Candidates Query | PRPA_IN101305NO |
| Person Registry Find Candidates Query Response | PRPA_IN101306NO |

Note that the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the query interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_RM101306UV02-rmi

The payload model of the response interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpa/uvpa_Person.htm#PRPA_RM101310UV02-rmi

See the electronic archive for example XML-instances.

#### 3.2.2.1 Structure of the query interaction

The query interaction (Person Registry Find Candidates Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **parameterList** | |
| | The parameterList contains the list of parameters. | |
| 2 | **AdministrativeObservation** | |
| | AdministrativeObservation is one of the optional parameters of this query interaction. It contains an identification of the Fylke/Kommune/Bydel and the country of residence (if not equal to Norway). | |
| 3 | **Value** | @xsi:type @code @codeSystem |
| | @xsi:type contains the fixed value "CE". @codeSystem contains the fixed OID value "1.0.3166.2.2". @code contains a code (according to ISO 3166 part 2) for the Fylke, the Fylke+Kommune, or the Fylke+Kommune+Bydel. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value 'AdministrativeObservation' | |
| 2 | **IdentifiedPersonAddress** | |
| | IdentifiedPersonAddress is one of the optional parameters of this query interaction. It contains (part of) the address of the person. | |
| 3 | **Value** | |
| | See section 4.2.3 for the structure of the data type used to convey (parts of) addresses. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value 'IdentifiedPerson.addr' | |
| 2 | **personAdministrativeGender** | |
| | PersonAdministrativeGender is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family name, person gender) query parameters be used. | |
| 3 | **Value** | @code, @codeSystem |
| | Contains a code for the administrative gender of the person. @codeSystem is fixed to 2.16.840.1.113883.5.1 , @code should be either M (Male), F (Female), or UN (Undifferentiated/Ambiguous). | |
| 3 | **semanticsText** | |
| | The element contains the fixed value 'Person.administrativeGender' | |
| 2 | **personBirthTime** | |
| | PersonBirthTime is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family | |

| | | |
|---|---|---|
| | name, person gender) query parameters be used. | |
| 3 | **Value** | @value |
| | Contains the date of birth of the person. At least the year has to be specified. The format of @value is YYYYMMDD. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘Person.birthTime’ | |
| 2 | **PersonDeceased** | |
| | PersonDeceased is one of the optional parameters of this query interaction. It contains an indication (a Boolean) of whether or not the person is deceased. If the element is omitted, both living and deceased persons will be returned. | |
| 3 | **Value** | @value |
| | @code should contain either ‘true’ or ‘false’. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘PersonDeceased’ | |
| 2 | **personName** | |
| | personName is one of the parameters of this query interaction. The use of this query (within Helse Vest) requires that at least two of the (date of birth, family name, person gender) query parameters be used. | |
| 3 | **Value** | |
| | Contains part of the family name of the person. | |
| 4 | **Family** | |
| | Contains (at least two characters, starting from the beginning of the name) the family name of the person. | |
| 3 | **semanticsText** | |
| | The element contains the fixed value ‘Person.name’ | |

### 3.2.2.2 Structure of the response interaction

The response interaction (Person Registry Find Candidates Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a person.<br>*Note: in this interaction the subject element may occur zero, or many, times.* | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Registration activities aren't identified in Helse Vest because there is only one Person Registry. @nullFlavor contains the fixed value 'UNK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **subject1** | @typeCode |
| | Identifies the object that is in the registry. @typeCode contains the fixed value 'SBJ'. | |
| 3 | **identifiedPerson** | @classCode |
| | @classCode contains the fixed value 'IDENT' | |
| 4 | **Id** | |
| | Contains a unique person identifier. @root contains an identification of the 'unique person identification mechanism' (the OID for F-Number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism. | |
| 4 | **statusCode** | @code |
| | @code contains the fixed value 'active' | |
| 4 | **identifiedPerson** | |
| | Root element of the generic person payload model. See section 4.5.1 for a description of its structure. | |
| 4 | **assigningOrganization** | @classCode, @determinerCode |
| | Identifies the organization that has assigned the person identifiers. Norwegian ministry of finance | |
| 5 | **Id** | @root, @extension |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 974761076. | |
| 5 | **contactParty** | @classCode, @nullFlavor |
| | @classCode contains the fixed value 'CON'.<br>@nullFlavor contains the fixed value 'NA'. | |
| 4 | **subjectOf1** | |
| | Identifies the degree-of-match between this response records and the parameters as | |

| | | |
|---|---|---|
| | sent in the query. | |
| 5 | **queryMatchObservation** | @classCode, @moodCode |
| | @classCode contains the fixed value ‘OBS’.<br>@moodCode contains the fixed value ‘EVN’. | |
| 6 | **Code** | @code, @codeSystem |
| | @codeSystem contains the fixed value ‘2.16.578.1.34.5.2’. @code contains the fixed value ‘PERC’. This indicates that the percentage of match is sent. | |
| 6 | **Value** | @xsi:type, @value |
| | The Person registry currently uses a fixed value of 80% for all records. @xsi:type contains the fixed value ‘REAL’. @value contains the fixed value ‘80’. | |
| 4 | **subjectOf2** | |
| | Root element of an observation that identifies the kommune/bydel associated with the patient. See 4.2.5 for details of the sub-elements and attributes. | |
| 2 | **Custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value ‘CST’. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value ‘ASSIGNED’. | |
| 4 | **Id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |

## 3.3 CareRecordManager

### 3.3.1 Method: CareRecordManager.GetCareRecordProfile

This storyboard illustrates the use of this method. It involves querying a Care Record Manager application for a list of encounters that are ongoing or have taken place in the past, including the discharge diagnoses associated with those encounters.

**Find Last 20 Encounters**
Adam Everyman is at home and suffers a sudden onset of chest pain. The pain continues during the next half an hour. Eve Everyman, his wife, calls the emergency phone number. Nurse Nightingale at the emergency unit identifies the patient (using the patient name, birth date and gender: Patient Registry Find Multiple Candidates). Using the patient identifier (F-number 24035412356) she initiates a Get Care Record Profile Query to get hold of the last 20 (inpatient/outpatient) encounters of Adam Everyman, including discharge diagnoses related to those encounters. The returned information provides her with contextual information for the clinical history. She notices that Adam has had frequent encounters with the Cardiology department, associated with diagnoses codes 'minor stroke' and 'high blood pressure'.
She orders an ambulance and sends a message related to a planned encounter to the Good Health Hospital emergency room application.
Nurse Theresa receives the message from the emergency room application about Adam Everyman and she initiates a Get Care Record Profile Query to get hold of the last 20 encounters of Adam everyman, including discharge diagnoses related to those encounters. She can see that Adam Everyman has been at the Cardiology department on May 4, 2008, and based on this information she requests additional data from that departmental system in preparation of the arrival of the patient.

The querying system sends a query with a person identifier to a Care Record Manager application. The query will be either based on the F-number, the D-number, or an Emergency patient identifier.

The query interaction has an immediate response. The response interaction will contain the details of all known historic and ongoing encounters. Both the querying application (if it explicitly requests so) as well as the responding system may introduce an upper limit in the number of encounters returned.

**Interaction List**

| | |
|---|---|
| Get Care Record Profile Query | QUPC_IN043100NO |
| Get Care Record Profile Response | QUPC_IN043200NO |

Note that the above interactions use the "NO" realm code, and not the original "UV". The models used are equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the query interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpc/uvpc_CareRecordQuery.htm#QUPC_RM040300UV-rmi

The payload model of the response interaction is shown here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvpc/uvpc_CareRecord.htm#REPC_RM004000UV-rmi

#### 3.3.1.1 Structure of the query interaction

The query interaction (Get Care Record Profile Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **initialQuantity** | @value |
| | Optionally contains a numeric value that specifies the maximum number of matches (encounters) the responding application should include in the response. | |
| 1 | **initialQuantityCode** | @code, @codeSystem |
| | Use only if the initialQuantity element is used. If initialQuantity has a value @code should contain RD, and @codeSystem should contain 2.16.840.1.113883.5.1112 | |
| 1 | **parameterList** | |
| | The parameterList contains the list of parameters. | |
| 2 | **patientId** | |
| | The patientIdentifier forms the parameter of this query interaction. | |
| 3 | **value** | @root, @extension. |
| | Contains the patient identifier. This is a unique identification of a patient. @root contains an identification of the 'unique patient identification mechanism' (i.e. the OID for F-Number, D-Number, etc.), and @extension contains the identifier created according to that identification mechanism. | |

### 3.3.1.2 Structure of the response interaction

The response interaction (Get Care Record Profile Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject/registrationEvent element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of this revision interaction is an updated registration of a patient. | |
| 1 | **registrationEvent** | @classCode, @moodCode |
| | The registration activity of this set of demographics data. Note that in this project this is used in a minimalistic fashion.<br>@classCode contains the fixed value 'REG', @moodCode contains the fixed value 'EVN' | |
| 2 | **Id** | @nullFlavor |
| | Registration activities aren't identified in Helse Vest because there is only one Patient Registry. @nullFlavor contains the fixed value 'UNK'. | |
| 2 | **statusCode** | @code |
| | @statusCode contains the fixed value 'active' | |
| 2 | **custodian** | @typeCode |
| | Identifies the custodian of the registration, the organization that maintains the registry. Here: Helse Vest. @typeCode contains the fixed value 'CST'. | |
| 3 | **assignedEntity** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'. | |
| 4 | **id** | @extension. @root |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 2 | **subject2** | @typeCode |
| | @typeCode contains the fixed value SUBJ. | |
| 3 | **careProvisionEvent** | @classCode, @moodCode |
| | *This is the root element of the care provision model. The model itself is described elsewhere in this document.* | |

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **careProvisionEvent** | @classCode, @moodCode |
| | Contains information related to an encounter. @classCode contains the fixed value ENC. @moodCode contains the fixed value EVN. | |
| 1 | **Id** | @root, @extension |
| | Contains the unique identifier of the encounter. @extension contains the identifier itself, and @root contains the OID which identifies the identification mechanism used to create the identifier. | |
| 1 | **Code** | @code, @codeSystem |
| | Identifies the kind of encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |

| | | |
|---|---|---|
| 1 | **statusCode** | @code |
| | Contains the status of the encounter. For historic encounters, the value of @code is fixed to 'completed'. | |
| 1 | **effectiveTime** | |
| | Identifies the time (frame) during which the encounter took place. | |
| 2 | **Low** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements must both be populated. @value contains the start date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br>*Low may not be combined with its sibling element center.* | |
| 2 | **High** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements must both be populated. @value contains the end date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br>*High may not be combined with its sibling element center.* | |
| 2 | **Center** | @value |
| | For (ambulatory) encounters that occurred on one particular day, and where the admit/discharge time are unknown: @value contains the date the encounter took place in YYYYMMDD format.<br>*If admit/discharge time is known, elements low and high must be used instead.*<br>*Center may not be combined with either its sibling elements low or high.* | |
| 1 | **Subject** | @typeCode |
| | Identifies the subject of the encounter. @typeCode contains the fixed value SBJ. | |
| 2 | **Patient** | @classCode |
| | The subject is played by a patient role. @classCode contains the fixed value PAT. | |
| 3 | **Id** | @root, @extension |
| | Contains exactly one Patient.id (either the F-number, the D-number or the H-number –in that order of preference-).<br>@root contains the OID of the identification scheme, @extension contains the identification number according to that identification scheme. | |
| | **statusCode** | @code |
| 3 | Contains the fixed value 'active'. | |
| 3 | **patientPerson** | @determinerCode, @classCode |
| | Identifies the person playing the role of patient. @determinerCode contains the fixed value INSTANCE. @classCode contains the fixed value PSN. | |
| 4 | **Name** | @use |
| | Occurs one or more times. Contains the name(s) of the person.<br>See section 4.2.2 for a description of the sub elements and the usage of the sub elements. | |
| 1 | **Performer** | @typeCode |
| | Identifies the performer of the encounter activity in the form of a department. @typeCode contains the fixed value PRF. | |
| 2 | **responsibleParty** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED' | |
| 3 | **Code** | @code, @codeSystem |
| | Identifies the type of performer, i.e. the type of department. | |

| | | |
|---|---|---|
| | @code contains a code identifying the department type,<br>@codeSystem contains the OID which identifies the coding scheme. | |
| 3 | **agentOrganization** | @classCode,<br>@determinerCode |
| | Identifies the department.<br>@classCode contains the fixed value ORG.<br>@determinerCode contains the fixed value INSTANCE. | |
| 4 | **Id** | @root, @extension |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 4 | **Name** | |
| | The element contains an unstructured name of the department identified by the id element (the RESH identifier). | |
| 1 | **pertinentInformation3** | @typeCode,<br>@contextConductionInd |
| | Contains clinical information that is of some relevance to the encounter.<br>@typeCode contains the fixed value PERT.<br>@contextConductionInd contains the fixed value 'true'. | |
| 2 | **Observation** | @classCode, @moodCode |
| | Contains the discharge diagnoses (primary and –optionally- secondary). | |
| 3 | **Code** | @code, @codeSystem |
| | Identifies that this is an observation of type 'discharge diagnoses'.<br>@codeSystem contains the fixed value 2.16.840.1.113883.5.4.<br>@code contains the fixed value DISDX. | |
| 3 | **Value** | @code, @codeSystem,<br>@xsi:type @displayName |
| | Contains the primary discharge diagnoses, coded using the Norwegian version of ICD-10. @xsi:type contains the fixed value 'CE'.<br>@codeSystem contains the fixed value 2.16.578.1.12.4.1.1.7110.<br>@code contains the ICD-10 code.<br>@displayName contains a human readable description of the diagnosis code. The description should be taken from the Norwegian version of ICD-10. | |
| 3 | **targetOf** | @typeCode |
| | Contains clinical information that is of some relevance to the primary discharge diagnoses, i.e. this part identifies the secondary diagnoses. @typeCode contains the fixed value PERT.<br>*Note that this element and child elements are optional if there is no secondary diagnosis.* | |
| 4 | **Observation** | @classCode, @moodCode |
| | Contains the secondary discharge diagnosis. | |
| 5 | **Code** | @code, @codeSystem |
| | Identifies that this is an observation of type 'discharge diagnoses'.<br>@codeSystem contains the fixed value 2.16.840.1.113883.5.4.<br>@code contains the fixed value DISDX. | |
| 5 | **Value** | @code, @codeSystem,<br>@xsi:type @displayName |
| | Contains the primary discharge diagnoses, coded using the Norwegian version of | |

| | |
|---|---|
| | ICD-10. @xsi:type contains the fixed value ‘CE’.<br>@codeSystem contains the fixed value 2.16.578.1.12.4.1.1.7110.<br>@code contains the ICD-10 code.<br>@displayName contains a human readable description of the diagnosis code. The description should be taken from the Norwegian version of ICD-10. |

## *3.4 EncounterManager*

### 3.4.1 Method: EncounterManager.FindEncounters

This storyboard demonstrates querying an Encounter Manager (an application which contains information about encounters) for both active and completed encounters. This use case is also known as "who is here", or "who is sitting in the waiting room".

**Textual storyboard #1**: Patient Eva Everywoman enters the waiting room of the Ear, Eye and Mouth Unit (EAM) and reports to the desk of the Simone Support, the secretary of the EAM Unit. Simone registers Eva as being "present", and requests Eva to take a seat. Dr. Mike Molar, a dental surgeon who works for the EAM unit, opens a module in his software application and requests to see a list of all those persons that are available in the waiting room of the EAM Unit and waiting for the start of an outpatient (ambulatory) encounter (*Find Encounters Query*, PRPA_IN900301NO, and *Find Encounters Query Response*, PRPA_IN101351NO). Dr. Molar sees that Eva is present and has been waiting the longest time. He goes to the waiting room and asks Eva to join him in his office for a consultation.

**Textual storyboard #2**: Dr. Eric Eye, an eye specialist who works for the EAM unit, opens a module in his software application and requests to see a list of all those persons that have been admitted for an inpatient stay -and that are still present in the hospital (*Find Encounters Query*, PRPA_IN900301NO, and *Find Encounters Query Response*, PRPA_IN101351NO). Dr. Eye sees that one of the patients he's been consulted for is still in the hospital and decides to call his colleague to see if further consultation will be necessary.

**Textual storyboard #3**: Simon Support, a secretary at the clinical biochemistry laboratory, requests the sample list for the 8 o' clock round at the children's clinic. The sample list software application queries the encounter manager for the location, down to bed-level) of each patient on the list (*Find Encounters Query*, PRPA_IN900301NO, and *Find Encounters Query Response*, PRPA_IN900351NO). The complete sample list is printed out and given to the staff responsible for the sample collection round.

**Textual storyboard #4**: Clerk Kent, a secretary at the radiology department has a list of inpatients scheduled for examination during the day. As the appointment for the patient Adam Everyman is getting close, Kent opens a module in his software application and request to see at which ward Everyman is admitted. (*Find Encounters Query*, PRPA_IN900301NO, and *Find Encounters Query Response*, PRPA_IN900351NO). Kent

then makes a phone call to the ward and asks them to have the patient delivered to the examination room in 30 minutes.

**Textual storyboard #5:** Bill Costly, the secretary responsible for preparing the invoices at the radiation therapy department, has a list of all patients treated the last day. For each patient on the list, Costly opens a module in his software application and request to see if the patient was an inpatient or outpatient at the time of the treatment. (*Find Encounters Query*, PRPA_IN900301NO, and *Find Encounters Query Response*, PRPA_IN900351NO). If the patient was an outpatient, Costly prepares an invoice.

The query interaction has an immediate response. The response interaction will contain the details of all known encounters that match the search criteria as listed in the query interaction. The number of encounters in the response interaction is maximized to 250 encounters. If 250 encounters are returned in a response interaction one should sent the query again with more specific query parameters.

See http://www.hl7.org/v3ballot2008sep/html/domains/uvpa/uvpa_EncounterQueries.htm#PRPA_ST900301UV02-str for a closely related HL7 storyboard. The query interaction however has a mandatory patient.id – which isn't appropriate in the above use-case.

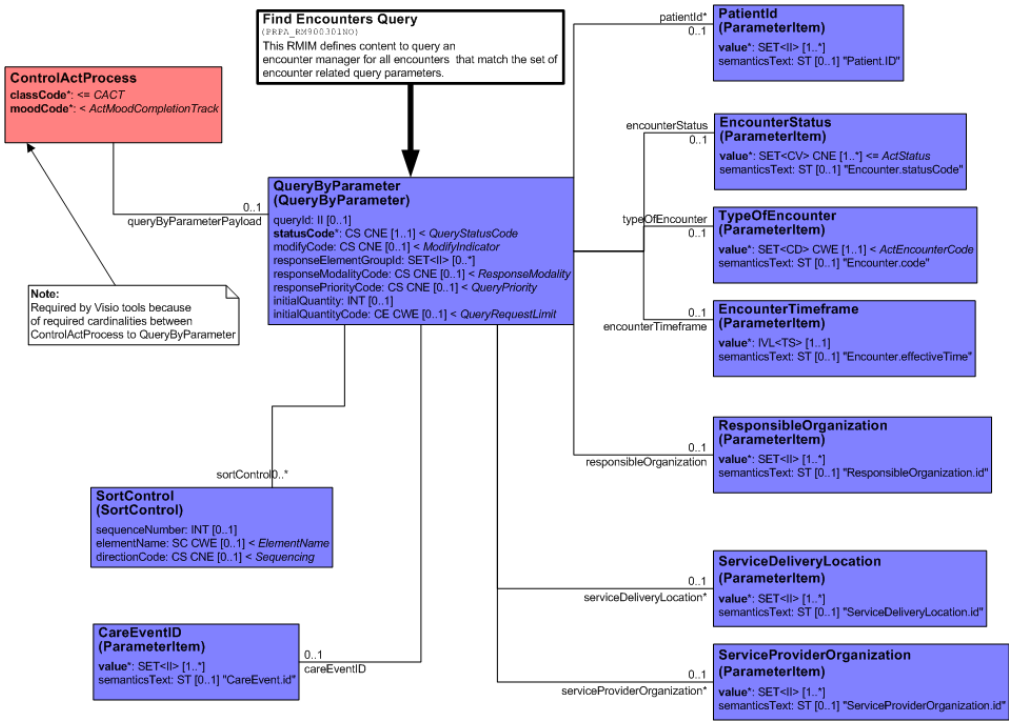
**Interaction List**

| | |
|---|---|
| Find Encounters Query | PRPA_IN900301NO |
| Find Encounters Query Response | PRPA_IN900351NO |

Note that the above interactions use the "NO" realm code. There are currently no corresponding UV (Universal) artefacts.

### 3.4.1.1 Structure of the query interaction

The query interaction (Find Encounters Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.




*Model of QueryByParameter (Find Encounters Query)*

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **PatientId** | |
| | This (optional) query parameter contains the identification of the patient that is the subject of the returned encounter(s). | |
| 2 | **Value** | @root, @extension |
| | Contains the patient identifier. This is a unique identification of a patient. @root contains an identification of the 'unique patient identification mechanism' (i.e. the OID for F-Number, D-Number, etc.), and @extension contains the identifier created according to that identification mechanism. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Patient.ID' | |
| 1 | **EncounterStatus** | |
| | This optional query parameter contains the status of the encounter, e.g. to distinguish between encounters that are still active, and encounters that have | |

| | | |
|---|---|---|
| | ended.<br><br>*Note: If EncounterStatus is omitted , both active and completed encounters will be returned.* | |
| 2 | **Value** | @code, @codeSystem |
| | Contains the status of the encounter. Typical values for @code are 'active' (the encounter is ongoing), 'completed' (encounter has ended; patient has been discharged), or 'aborted' (abnormal termination of an encounter). @codeSystem contains the fixed value "2.16.840.1.113883.5.14", the identifier of the HL7 ActStatus coding system. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Encounter.statusCode' | |
| 1 | **TypeOfEncounter** | |
| | This (optional) query parameter contains the type of encounter, e.g. to distinguish between inpatient and outpatient (ambulatory) encounters. | |
| 2 | **Value** | @code, @codeSystem |
| | Identifies the kind of encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Encounter.code' | |
| 1 | **EncounterTimeFrame** | |
| | This (optional) query parameter contains the interval during which the encounter takes place/took place. | |
| 2 | **Value** | |
| | Identifies the time(frame) during which the encounter took place. | |
| 3 | **Low** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the start date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br><br>If the query contains low and high elements, the following encounters will be returned:<br>• Encounters starting between low and high<br>• Encounters ending between low and high<br>• Encounters starting before low and ending after high<br><br>*Low may not be combined with its sibling element center.* | |
| 3 | **High** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the end date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br><br>If the query contains low and high elements, the following encounters will be returned:<br>• Encounters starting between low and high<br>• Encounters ending between low and high | |

| | | |
|---|---|---|
| | • Encounters starting before low and ending after high<br><br>*High may not be combined with its sibling element center.* | |
| 3 | **Center** | @value |
| | For both inpatient and ambulatory encounters: @value contains the date and time the encounter took place in YYYYMMDDHHMMSS format. All encounters starting before and ending after the date and time will be returned.<br><br>*Center may not be combined with either its sibling elements low or high.* | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Encounter.effectiveTime' | |
| 1 | **ResponsibleOrganization** | |
| | This (optional) query parameter contains the identification of an organization (or: part of an organization) which has the overall responsibility for the encounter. The parameter constrains the responses to those encounters where the organization responsible for the encounter is equal to the specified IDs in this parameter.<br>Note: this does not automatically imply responsibility for the service delivery location (bed/room/ward), see the description ServiceProviderOrganization query parameter. | |
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ResponsibleOrganization.id' | |
| 1 | **ServiceDeliveryLocation** | |
| | This (optional) query parameter contains an identification of the location where (medical) services are provided to the patient. Examples include an identification of the bed, room (and waiting room) or unit (ward). | |
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the service delivery location (bed, room, ward, unit, etc.) according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ServiceDeliveryLocation.id' | |
| 1 | **ServiceProviderOrganization** | |
| | This (optional) query parameter contains the identification of the organizational unit (Clinic) which is responsible for the service delivery location (ward/room/bed or waiting room).<br>Note: this does not automatically imply overall responsibility for the encounter, see the description ResponsibleOrganization query parameter. | |
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |

| | | |
|---|---|---|
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ServiceProviderOrganization.id' | |

### 3.4.1.2 Structure of the response interaction

The response interaction (Find Encounters Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of the response message, i.e. an encounter that matches the parameters as provided in the query. The subject (and child elements) may have zero or more repetitions. | |
| 1 | **encounterEvent** | @classCode, @moodCode |
| | Contains information related to an encounter. @classCode contains the fixed value ENC. @moodCode contains the fixed value EVN. | |
| 2 | **Id** | @root, @extension |
| | Contains the unique identifier of the encounter. @extension contains the identifier itself, and @root contains the OID which identifies the identification mechanism used to create the identifier. | |
| 2 | **Code** | @code, @codeSystem |
| | Identifies the kind of encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |
| 2 | **statusCode** | @code |
| | Contains the status of the encounter.<br>For ongoing encounters, the value of @code will be equal to 'active'.<br>For completed encounters, the value of @code will be equal to 'completed'.<br>For aborted encounters, the value of @code will be equal to 'aborted'. | |
| 2 | **effectiveTime** | |
| | Identifies the time(frame) during which the encounter took place. | |
| 3 | **Low** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the start date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br>*Note: Low may not be combined with its sibling element center.* | |
| 3 | **High** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the end date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br>*Notes: High may not be combined with its sibling element center. High may be empty if the encounter is still ongoing, i.e. if its statusCode equals to 'active'* | |
| 3 | **Center** | @value |

| | | |
|---|---|---|
| | For (ambulatory) encounters that occurred on one particular day, and where the admit/discharge time are of no importance: @value contains the date the encounter took place in YYYYMMDD format.<br>*Notes: Center should only be used if there is no available information regarding start and end time of the encounter.*<br>*Center may not be combined with either its sibling elements low or high.* | |
| 2 | **Subject** | @typeCode |
| | Identifies the subject of the encounter. @typeCode contains the fixed value SBJ. | |
| 3 | **Patient** | @classCode |
| | The subject is played by a patient role. @classCode contains the fixed value PAT. | |
| 4 | **Id** | @root, @extension |
| | Contains exactly one Patient.id (either the F-number, the D-number or the H-number –in that order of preference-).<br>@root contains the OID of the identification scheme, @extension contains the identification number according to that identification scheme. | |
| 4 | **patientPerson** | @determinerCode, @classCode |
| | Identifies the person playing the role of patient. @determinerCode contains the fixed value INSTANCE. @classCode contains the fixed value PSN. | |
| 5 | **Name** | @use |
| | Occurs one or more times. Contains the name(s) of the person.<br>See section 4.2.2 for a description of the sub elements and the usage of the sub elements. | |
| 2 | **Location** | @typeCode |
| | Contains the current location where the encounter takes place/ or the last location where the encounter has taken place. @typeCode contains the fixed value 'LOC' | |
| 3 | **ServiceDeliveryLocation** | @classCode |
| | *See separate description of ServiceDeliveryLocation below*. | |
| 2 | **inFulfillmentOf** | @typeCode |
| | Contains information about the appointment which is associated with the encounter.<br>@typeCode contains the fixed value 'FLFS'. | |
| 3 | **appointment** | @classCode, @moodCode |
| | @classCode contains the fixed value 'ENC'; @moodCode contains the fixed value 'APT'. | |
| 4 | **Id** | @root, @extension |
| | Contains the unique identifier of the appointment. @root contains the OID of the identification mechanism for appointments; @extension contains the identification as assigned within that identification scheme. | |

The **ServiceDeliveryLocation** may consist of two hierarchical elements (Bed and Ward), or of one single element (Ward).

In the case where both the Bed and the Ward are known, ServiceDeliveryLocation is defined as follows:

| Nesting Level | **Element** | Attributes |
|---|---|---|
| 0 | **ServiceDeliveryLocation** *(bed)* | @classCode |
| | Contains the current location where the encounter takes place/ or the last location | |

| | | |
|---|---|---|
| | where the encounter has taken place. @classCode contains the fixed value 'SDLOC' | |
| 1 | **Id** | @root, @extension |
| | Contains the unique identifier of the service delivery location (a bed) according to DIPS. Note that DIPS uses its own bed identifiers, beds are not identified using RESH.<br>@root contains the fixed value 2.16.578.1.34.2.18<br>@extension contains the identifier as assigned by DIPS. | |
| 1 | **Code** | @code, @codeSystem |
| | Identifies the type of ServiceDeliveryLoaction, in this case a Bed. @codeSystem contains the fixed value '2.16.840.1.113883.5.1060'; @code contains the fixed value 'BED'. | |
| 1 | **Name** | |
| | Contains the name of the ServiceDeliveryLocation (the bed). Example: "Ward 17, bed 5". | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'active'. | |
| 1 | **serviceProviderOrganization** | @classCode, @determinerCode |
| | Contains a unique identifier for the organization or organizational part (e.g. Clinic) responsible for the location (ward/bed). | |
| 2 | **Id** | @extension. @root |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry | |
| 3 | **partOf** | @typeCode |
| | Contains the identification of the ward. | |
| 4 | **ServiceDeliveryLocation** | |
| | *This ServiceDeliveryLocation identifies the ward related to the bed. See description below for details.* | |

In the case where the Ward is the only thing known, ServiceDeliveryLocation is defined as follows:

| Nesting Level | **Element** | Attributes |
|---|---|---|
| 0 | **ServiceDeliveryLocation** *(ward)* | @classCode |
| | Contains the current location where the encounter takes place or the last location where the encounter has taken place. @classCode contains the fixed value 'SDLOC' | |
| 1 | **Id** | @root, @extension |
| | Contains the unique identifier of the service delivery location (the ward) according to the RESH Registry (Register for Enheter i Spesialisthelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 1 | **Code** | @code, @codeSystem |
| | Identifies the type of ServiceDeliveryLoaction, in this case a Ward. @codeSystem contains the fixed value '2.16.840.1.113883.5.1060'; @code contains the fixed value 'WARD'. | |

| | | |
|---|---|---|
| 1 | **Name** | |
| | Contains the name of the ServiceDeliveryLocation. Example: “Ward 17”. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value ‘active’ | |
| 1 | **telecom** | @value |
| | @value contains the telephone number of the ward. The first four characters of @value SHALL be ‘tel:’. Example: tel:950788302 | |
| 1 | **serviceProviderOrganization** | @classCode, @determinerCode |
| | Contains a unique identifier for the organization or organizational part (e.g. Clinic) responsible for the location (the ward).<br>@classCode contains the fixed value ‘ORG’; @determionerCode contains the fixed value ‘INSTANCE’. | |
| 2 | **Id** | @extension. @root |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |

### 3.4.2 Method: EncounterManager.FindScheduledEncounters

***Note: Description of interactions and message content is known to be incomplete (notably in the area of the identification of the equipment). A new version of this implementation guide will contain a finalized description.***

This storyboard demonstrates querying a Schedule Manager (an application which contains information about scheduled encounters) for planned encounters.

**Textual Storyboard #1:** Dr. Rudolf Röntgen, a Radiologist, has been informed that his patient, Eve Everywoman, has arrived in the waiting room of the Radiology department. Dr. Röntgen opens a module in his software application and requests to see what imaging equipment has been scheduled for Eve. (*Find Appointments Query*, PRSC_IN010701NO, and *Find Appointments Query Response*, PRSC_IN010751NO). He sees that her examination is scheduled to take place using imaging equipment known as ‘CT number 1’.

**Textual Storyboard #2:** Dr. Rudolf Röntgen, a Radiologist, opens a module in his software application and requests to see a list of all patients that are scheduled to have

an examination (today) involving the imaging equipment known as 'CT number 1'. (*Find Appointments Query*, PRSC_IN010701NO, and *Find Appointments Query Response*, PRSC_IN010751NO). Dr. Röntgen sees that the next appointment is in 10 minutes, for patient Eve Everywoman.

The query interaction has an immediate response. The response interaction as sent by the EncounterManager will contain all known scheduled encounters that match the search criteria as listed in the query interaction.

**Interaction List**

| | |
|---|---|
| Find Appointments Query | PRSC_IN010701NO |
| Find Appointments Query Response | PRSC_IN010751NO |

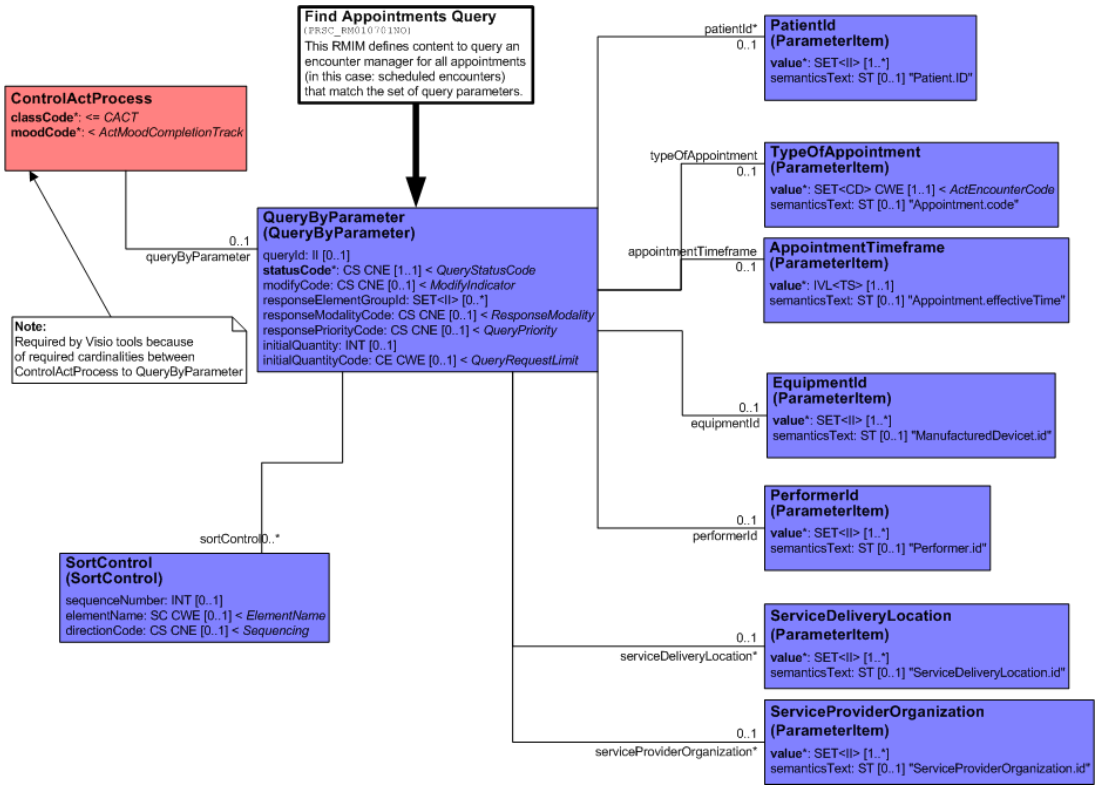
Note that the above interactions use the "NO" realm code. There are currently no corresponding UV (Universal) artefacts.

### 3.4.2.1 Structure of the query interaction

The query interaction (Find Appointments Query) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the QueryByParameter element, and child elements.

The use-cases require the following query parameters to be available in the query:

- Patient.id (the subject of the encounter)
- Physician.id (as scheduled)
- Equipment.id (as scheduled)
- Ward/room (as scheduled)
- Clinic (as scheduled)
- Encounter.code (as scheduled)
- Time/date (of the scheduled encounter)




*Model of QueryByParameter (Find Appointments Query)*

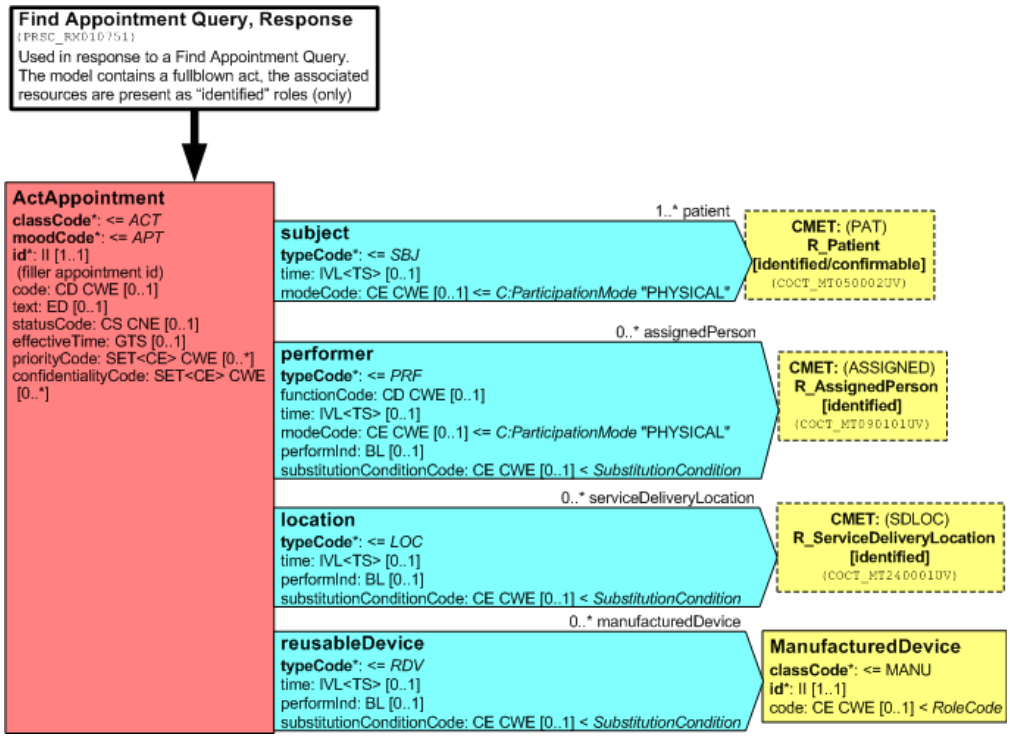
| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **queryByParameter** | @moodCode, @classCode |
| | The QueryByParameter class contains the specification of the query. | |
| 1 | **queryId** | @extension, @root |
| | The id contains the unique identification of this query instance. @root contains an identification of the 'unique query instance numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension<br>Note: re-use same @extension/@root as used to identify the message instance in the Transmission Wrapper, see section 4.4.1. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'new' | |
| 1 | **PatientId** | |
| | This (optional) query parameter contains the identification of the patient that is the subject of the returned appointment (scheduled encounter). | |
| 2 | **Value** | @root, @extension |
| | Contains the patient identifier. This is a unique identification of a patient. @root contains an identification of the 'unique patient identification mechanism' (i.e. the OID for F-Number, D-Number, etc.), and @extension contains the identifier created according to that identification mechanism. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Patient.ID' | |
| 1 | **TypeOfAppointment** | |

| | | |
|---|---|---|
| | This (optional) query parameter contains the type of appointment, e.g. to distinguish between scheduled inpatient and outpatient (ambulatory) encounters. | |
| 2 | **Value** | @code, @codeSystem |
| | Identifies the kind of scheduled encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Appointment.code' | |
| 1 | **AppointmentTimeFrame** | |
| | This (optional) query parameter contains the interval during which the scheduled encounter is intended to take place. | |
| 2 | **Value** | |
| | Identifies the time(frame) during which the encounter is scheduled to take place. | |
| 3 | **Low** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the start date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br><br>If the query contains low and high elements, the following scheduled encounters will be returned:<br>• Encounters scheduled to start between low and high<br>• Encounters scheduled to end between low and high<br>• Encounters scheduled to start before low and end after high<br><br>*Low may not be combined with its sibling element center.* | |
| 3 | **High** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the end date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br><br>If the query contains low and high elements, the following scheduled encounters will be returned:<br>• Encounters scheduled to start between low and high<br>• Encounters scheduled to end between low and high<br>• Encounters scheduled to start before low and end after high<br><br>*High may not be combined with its sibling element center.* | |
| 3 | **Center** | @value |
| | For (ambulatory) encounters that occurred on one particular day, and where the admit/discharge time are of no importance: @value contains the date the encounter took place in YYYYMMDD format.<br>*Center may not be combined with either its sibling elements low or high.* | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Appointment.effectiveTime' | |
| 1 | **EquipmentId** | |
| | This (optional) query parameter contains the identification of a piece of reusable equipment that is scheduled to be used during the appointment (encounter). | |

| | | |
|---|---|---|
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the device (equipment) according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ManufacturedDevice.id' | |
| 1 | **ServiceDeliveryLocation** | |
| | This (optional) query parameter contains an identification of the location where (medical) services are scheduled to be provided to the patient. Examples include an identification of the bed, room (and waiting room) or unit (ward). | |
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the service delivery location (bed, room, ward, unit, etc.) according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ServiceDeliveryLocation.id' | |
| 1 | **ServiceProviderOrganization** | |
| | This (optional) query parameter contains the identification of the organizational unit (Clinic) which is responsible for the scheduled service delivery location (ward/room/bed or waiting room).. | |
| 2 | **Value** | @root, @extension |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten).<br>@root contains the fixed value 2.16.578.1.34.1000.4,<br>@extension contains the identifier from the RESH registry. | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'ServiceProviderOrganization.id' | |
| 1 | **PerformerId** | |
| | This (optional) query parameter contains the identification of the healthcare provider (person) that is scheduled to be the main responsible party for the appointment (scheduled encounter) | |
| 2 | **Value** | @root, @extension |
| | Contains a HPR-number of the healthcare professional. @root contains the fixed value '2.16.578.1.34.1000.3' | |
| 2 | **semanticsText** | |
| | The element contains the fixed value 'Performer.id' | |

### 3.4.2.2 Structure of the response interaction

The response interaction (Find Appointments Query Response) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the Subject element, and child elements.




| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | The subject of the response message, i.e. an encounter that matches the parameters as provided in the query. The subject (and child elements) may have zero or more repetitions. | |
| 1 | **ActAppointment** | @classCode, @moodCode |
| | Contains information related to a scheduled encounter. @classCode contains the fixed value ENC. @moodCode contains the fixed value APT. | |
| 2 | **Id** | @root, @extension |
| | Contains the unique identifier of the scheduled encounter. @extension contains the identifier itself, and @root contains the OID which identifies the identification mechanism used to create the identifier. | |
| 2 | **Code** | @code, @codeSystem |
| | Identifies the kind of scheduled encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |
| 2 | **effectiveTime** | |
| | Identifies the time(frame) during which the encounter is scheduled to take place. | |
| 3 | **Low** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should both be populated. @value contains the start date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional. *Note: Low may not be combined with its sibling element center.* | |
| 3 | **High** | @value |
| | For (inpatient) encounters longer than one day, and for those encounters where admit and discharge time are of importance, the low and high elements should | |

| | | |
|---|---|---|
| | both be populated. @value contains the end date of the encounter in YYYYMMDDHHMMSS format. The time part of the value is optional.<br>*Notes: High may not be combined with its sibling element center.High may be empty if the encounter is still ongoing, i.e. if its statusCode equals 'active'* | |
| 3 | **Center** | @value |
| | For (ambulatory) encounters that occurred on one particular day, and where the admit/discharge time are of no importance: @value contains the date the encounter took place in YYYYMMDD format.<br>*Notes: Low and high elements must be used because the time of the scheduled appointment is of importance.*<br>*Center may not be combined with either its sibling elements low or high.* | |
| 2 | **Subject** | @typeCode |
| | Identifies the subject of the scheduled encounter. @typeCode contains the fixed value SBJ. | |
| 3 | **Patient** | @classCode |
| | The subject is played by a patient role. @classCode contains the fixed value PAT. | |
| 4 | **Id** | @root, @extension |
| | Contains exactly one Patient.id (either the F-number, the D-number or the H-number –in that order of preference-).<br>@root contains the OID of the identification scheme, @extension contains the identification number according to that identification scheme. | |
| 4 | **patientPerson** | @determinerCode, @classCode |
| | Identifies the person playing the role of patient. @determinerCode contains the fixed value INSTANCE. @classCode contains the fixed value PSN. | |
| 5 | **Name** | @use |
| | Occurs one or more times. Contains the name(s) of the person.<br>See section 4.2.2 for a description of the sub elements and the usage of the sub elements. | |
| 2 | **ReusableDevice** | @typeCode |
| | Contains the identification of a reusable device (equipment) which is scheduled to be used during the appointment. @typeCode contains the fixed value 'RDV' | |
| 3 | **ManufacturedDevice** | @classCode |
| | Contains a unique identifier of the device. @classCode contains the fixed value 'MANU' | |
| 4 | **Id** | @root, @extension |
| | RESH identifier for one specific piece of equipment. @root contains the fixed value '2.16.578.1.34.1000.4'. | |
| 2 | **Performer** | @typeCode |
| | Contains the identification of the healthcare provider (a person) that is scheduled to perform the appointment (and to be the responsible party for the appointment). @typeCode contains the fixed value 'PRF' | |
| 3 | **assignedPerson** | @classCode |
| | Contains a unique identifier of the healthcare provider. @classCode contains the fixed value 'ASSIGNED' | |
| 4 | **id** | @root, @extension |
| | The HPR-number of the healthcare professional. @root contains the fixed value '2.16.578.1.34.1000.3' | |
| 2 | **Location** | @typeCode |

| | | |
|---|---|---|
| | Contains the location where the encounter is scheduled to take place. @typeCode contains the fixed value ‘LOC’ | |
| 3 | **ServiceDeliveryLocation** | @classCode |
| | Contains the current location where the encounter is scheduled to take place. @classCode contains the fixed value ‘SDLOC’ | |
| 4 | **Id** | @root, @extension |
| | Contains the unique identifier of the service delivery location (bed/room/ward) according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten). @root contains the fixed value 2.16.578.1.34.1000.4, @extension contains the identifier from the RESH registry. | |
| 4 | **serviceProviderOrganization** | @classCode, @determinerCode |
| | Contains a unique identifier for the organization or organizational part (e.g. Clinic) responsible for the location (ward/bed/room). | |
| 5 | **Id** | @extension. @root |
| | Contains the unique identifier of the department/organization according to the RESH Registry (Register for Enheter i SpesialistHelsetjenesten). @root contains the fixed value 2.16.578.1.34.1000.4, @extension contains the identifier from the RESH registry. | |

## 3.5 DocumentManager

The DocumentManager supports a series of services related to the management of documents in a document archive.

A document is a *persistent* (unchangeable) object. Whenever a document is transmitted (e.g. a document in a PDF format, a TIFF image, or a CDA document) one has to send document management metadata alongside the actual document object.

### 3.5.1 Method: DocumentManager.ProcessNewDocument

This storyboard demonstrates the sending of a new document to a document management archive.

**Textual Storyboard #1**: Dr. Simon Surgeon has performed an operation earlier today and decides to write a 'Surgery Note' document. Once he has finalized the document he decides to share it with others in his hospital by uploading it to the central document archive (*Original Document with Content*, RCMR_IN000002NO.)

The notification interaction has an immediate response in the form of an Accept Acknowledgement. Note that an Accept Acknowledgement serves both as an assurance that the interaction was received, and as a statement that the interaction was –at a glance- syntactically correct.

**Interaction List**

| | |
|---|---|
| Original Document with Content | RCMR_IN000002NO |
| Accept Acknowledgement | MCCI_IN000002UV01 |

Note that one of the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the Document Notification interaction is shown here:

http://www.hl7.org/v3ballot2009jan/html/domains/uvmr/uvmr_DocumentManagement.htm#RCMR_RM000050UV02-rmi

The Accept Acknowledgement response interaction has no payload. Its definition can be found here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvci/uvci_GenericMessageTransmission.htm#MCCI_IN000002UV01-int

See the electronic archive for example XML-instances.

#### 3.5.1.1 Structure of the document notification interaction

The document notification interaction (Original Document with Content) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2). The final part of the interaction is the subject element, and child elements.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **Subject** | |
| | Contains the payload of the interaction. | |
| 1 | **ClinicalDocument** | @classCode, @moodCode |
| | Contains metadata of the document, e.g. the ID of the document, the document type, the document title and the document language.<br>@classCode contains the fixed value 'DOCCLIN'; @moodCode contains the fixed value 'EVN'. | |
| 2 | **Id** | @root, @extension |
| | Contains a unique identifier of this document. @root identifies (using an OID) the identification mechanism itself, and @extension the identification assigned within that identification mechanism.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/id element. | |
| 2 | **Code** | @code, @codeSystem, @displayName |
| | This attribute identifies the document type. @code contains a code from the LOINC coding system; @codeSystem contains the fixed value '2.16.840.1.113883.6.1', @displayName the name of the document type, e.g. 'Discharge Summary'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/code element. | |
| 2 | **Text** | @mediaType, @representation |
| | The use of this element is mandatory in the DocumentManager.ProcessNewDocument (RCMR_IN000002NO) service, and disallowed in the DocumentManager.ProcessDocumentReplacement (RCMR_IN000015NO) service.<br>The element contains the document. Note that non-plain-text files must be Base64 encoded, this requirement is also true for XML files.<br>For CDA documents:<br>• The @mediaType attribute contains the fixed value 'application/hl7- | |

| | | |
|---|---|---|
| | sda+xml'. The@representation attribute contains the fixed value 'B64'.<br>• The element itself contains the Base64 representation of the CDA document. | |
| 2 | **statusCode** | @code |
| | Contains the status of the document within the overall document management lifecycle.<br>• @code contains 'active' for new documents in the context of the DocumentManager.ProcessNewDocument (RCMR_IN000002NO) service<br>• @code contains 'obsolete' for documents that have been replaced – in the context of the DocumentManager.ProcessDocumentReplacement (RCMR_IN000015NO) service. | |
| 2 | **effectiveTime** | @value |
| | @value contains the date and time the document was created, in YYYYMMDDHHMM format.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/effectiveTime element. | |
| 2 | **confidentialityCode** | @code, @codeSystem |
| | @code contains the fixed value 'N'; @codeSystem contains the fixed value '2.16.840.1.113883.5.25'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/confidentialityCode element. | |
| 2 | **recordTarget** | @typeCode |
| | Identifies the patient (and subject) of this document. @typeCode contains the fixed value 'RCT'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/recordTarget element. | |
| 3 | **Patient** | @classCode |
| | Identifies the Patient using an F or D number. @classCode contains the fixed value 'PAT'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/recordTarget/patientRole element. | |
| 4 | **Id** | @root, @extension |
| | Contains exactly one Patient.id (the F-number, the D-number or the H-number – in that order of preference-). @root contains the OID of the identification scheme; @extension contains the identification number according to that identification scheme.<br>See section 4.2.1 for details.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/recordTarget/PatientRole/id element. | |
| 4 | **statusCode** | @code |
| | @code contains the fixed value 'active'. | |
| 4 | **patientPerson** | @classCode, @determinerCode |
| | Identifies the person that plays the role of patient. @classCode contains the fixed value 'PSN'; @determinerCode contains the fixed value 'INSTANCE'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the | |

| | | |
|---|---|---|
| | ClinicalDocument/recordTarget/PatientPerson/Patient element. | |
| 5 | **Name** | @use |
| | Occurs one or more times. Contains the name(s) of the person.<br>See section 4.2.2 for details.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/recordTarget/PatientPerson/Patient/name element. | |
| 2 | **Author** | @typeCode |
| | Identifies the author of the Document. @typeCode contains the fixed value 'AUT'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/author element. | |
| 3 | **Time** | @value |
| | The time that the document was created; @value contains the same value as the clinicalDocument/effectiveTime/@value attribute.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/author/time element. | |
| 3 | **assignedAuthor** | @classCode |
| | @classCode contains the fixed value 'ASSIGNED'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/author/assignedAuthor element. | |
| 4 | **Id** | @root, @extension |
| | Contains the HPR number of the person who created the document.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/author/assignedAuthor/id element. | |
| 2 | **Custodian** | @typeCode |
| | Identifies the organization responsible for archiving the 'master version' of this electronic document. @typeCode contains the fixed value 'CST'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/custodian element. | |
| 3 | **assignedCustodian** | @classCode |
| | Identifies the role of custodian as played by an organization. @classCode contains the fixed value 'ASSIGNED'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/custodian/assignedCustodian element. | |
| 4 | **representedOrganization** | @classCode,<br>@determinerCode |
| | Identifies the organization that acts as the custodian. @classCode contains the fixed value 'ORG'; @determinerCode the fixed value 'INSTANCE'.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/custodian/assignedCustodian/representedCustodian element. | |
| 5 | **Id** | @root, @extension |
| | Identification of the custodian organization.<br>Note: if the document that's being referred to is a CDA document, the value of this element can be copied from the ClinicalDocument/recordTarget element. | |
| 2 | **componentOf** | @typeCode |
| | Identifies the encounter this document is associated with. @typeCode contains the | |

| | | |
|---|---|---|
| | fixed value ‘COMP’. | |
| 3 | **encompassingEncounter** | @moodCode, @classCode |
| | Contains the details of the encounter. @classCode cointains the fixed value ‘ENC’; @moodCode contains the fixed value ‘EVN’. | |
| 4 | **Id** | @root, @extension |
| | Contains the unique identifier of the encounter. @extension contains the identifier itself, and @root contains the OID which identifies the identification mechanism used to create the identifier. | |
| 4 | **Code** | @code, @codeSystem |
| | Identifies the kind of encounter (e.g. ambulatory, inpatient). @codeSystem contains the OID associated with the coding system listed in section 4.3.6. @code contains a code from that coding system. | |
| 4 | **effectiveTime** | High, low |
| | Conatins the time(frame) during which the encounter took place / is taking place. | |
| 4 | **Location** | @typeCode |
| | Identifies the location/the responsible clinic for the encounter. @typeCode contains the fixed value ‘LOC’. | |
| 5 | **healthcareFacility** | @classCode |
| | Identifies the location of the encounter. @classCode contains the fixed value ‘SDLOC’ | |
| 6 | **serviceProviderOrganization** | @classCode |
| | Identifies the responsible clinic for the encounter. @classCode contains the fixed value ‘ORG’ | |
| 7 | **Id** | @root, @extension |
| | Clinic responsible for the ward/room/bed; RESH identifier. @root contains the fixed value ' 2.16.578.34.1000.4’; @extension the RESH identifier. | |

#### 3.5.1.2 Structure of the response interaction

The response interaction (Accept Acknowledgement) is defined as a Transmission Wrapper (see section 4.4.1). The interaction doesn’t contain a ControlAct wrapper nor a payload.

### 3.5.2 Method: DocumentManager.ProcessDocumentReplacement

This storyboard demonstrates the notification to a document management archive by the author of a document that the document has been/will be replaced by a newer version.

**Textual storyboard #1:** Dr. Simon Surgeon has made a 'Surgery Note' available to the centralized document archive. He finds out that that document needs to be corrected, so he notifies the centralized document archive (*Document Replacement*, RCMR_IN000015NO) that the document has been, or will be, replaced by a corrected version of the document.

The notification interaction has an immediate response in the form of an Accept Acknowledgement. Note that an Accept Acknowledgement serves both as an assurance that the interaction was received, and as a statement that the interaction was –at a glance- syntactically correct.

**Interaction List**

| | |
|---|---|
| Document Replacement | RCMR_IN000015NO |
| Accept Acknowledgement | MCCI_IN000002UV01 |

Note that one of the above interactions use the "NO" realm code, and not the original "UV". The models used are (currently) 100% equivalent to the international models. By using the NO realm the artefact identifier can be used for versioning purposes at some future point in time.

Each interaction is defined in the form of two wrappers (which contain meta-data related to the information exchange) and a so-called payload model. The payload model of the Document Notification interaction is shown here:
http://www.hl7.org/v3ballot2009jan/html/domains/uvmr/uvmr_DocumentManagement.htm#RCMR_RM000050UV02-rmi

The Accept Acknowledgement response interaction has no payload. Its definition can be found here:
http://www.hl7.org/v3ballot2008MAY/html/domains/uvci/uvci_GenericMessageTransmission.htm#MCCI_IN000002UV01-int

See the electronic archive for example XML-instances.

### 3.5.2.1 Structure of the document replacement interaction

The document replacement interaction (Document Replacement) is defined as a Transmission Wrapper (see section 4.4.1) and a ControlAct wrapper (see section 4.4.2).

The final part of the interaction is the subject element, and child elements. The model is the same as the model documented in section 3.5.1.1, with the additional requirement that:

- The ClinicalDocument/statusCode/@code attribute be valued with 'obsolete' to identify that the document has been replaced by another document.
- The ClincalDocument/text attribute may not contain the document.

#### 3.5.2.2 Structure of the response interaction

The response interaction (Accept Acknowledgement) is defined as a Transmission Wrapper (see section 4.4.1). The interaction doesn't contain a ControlAct wrapper nor a payload.

# 4 Model Elements

## *4.1 Object Identifiers (OID)*

OIDs are an ISO mechanism for the unique identification of objects. Within the context of HL7 interactions OIDs are quite often used to uniquely identify an identification scheme (a particular methodology for the identification of a class of objects, e.g. HPR-number) or a coding system (a terminology; a table of codes; e.g. ICD-10, Sivilstand). For an introduction to OIDs, see http://www.ringholm.de/docs/00900_en.htm

Commonly used OIDs (i.e. used for a purpose that is wider in scope than the regional healthcare organization; used in communications between healthcare regions) can be found in OIDs registries such as www.oid-info.com, www.hl7.org, HL7 OID registry in the UK (http://www.hl7.org.uk/version3group/oids.asp) and in Norway www.volven.no.

NOTE! www.volven.no does only present the last part of the OID their branch (2.16.578.1.12.4.1) must prefix all OID before they are referenced.

NOTE: All OIDs with an element of 999 or 9999 are for documentation purposes only. They will be replaced by permanent OIDs once these have been assigned/found/applied for.

Helse Vest is used as an example representing a regional healthcare organization throughout this document.

The Helse Vest OID is: 2.16.578.1.34. Helse Vest will use subbranches of that OID to identify objects or coding systems. Updated information: http://www.oid-info.com/get/2.16.578.1.34

### 4.1.1 Coding Systems

The following are OIDs for coding systems:

| OID | CodingSystemName | Description | Issuer |
|---|---|---|---|
| 2.16.578.1.12.4.1.1.7220 | Norwegian NCPM | NCPM Procedure Codes | |
| 2.16.578.1.12.4.1.1.7210 | Norwegian NCSP | NCPS Codes | |
| 2.16.578.1.12.4.1.1.7110 | Norwegian ICD-10 | Norwegian version of the International Classification of Diseases 10th Edition | World Health Organisation |
| 2.16.578.1.12.4.1.1.1302 | Norwegian Job classification code | Job classification code (*Yrkeskode ;tre-tegnskode*). See www.volven.no – search for 1302. | SSB - Statistisk sentralbyrå |
| 2.16.840.1.113883.6.5 | SNOMED | SNOMED codes | College of American Pathologists |
| 1.0.3166.1.2 | ISO 3166-1 (second edition) | Country codes as per ISO 3166-1:2007 | ISO |
| 1.0.3166.2.2 | ISO 3166-2 (second edition) | Country subdivisions (for county / kommune/ bydel) as per ISO 3166-2:2007 | ISO |
| 2.16.578.1.34.1000.6 | Maritalstatus (Sivilstand) | Norwegian marital statuscode according to Folkeregister | Folkeregister |
| 2.16.578.1.34.5 | Helse Vest code tables | (not used; serves as an intermediate node only) | Helse Vest |
| 2.16.578.1.34.5.1 | Administrative Observation types related to patients | Coding system. | Helse Vest |
| 2.16.578.1.34.5.2 | Type of observation as to the query match in responses to a “Find Candidates” query | Coding system.<br>One current value:<br>PERC: the percentage of match with the query parameters, as determined by the registry. A higher percentage expresses a better match. | Helse Vest |
| 2.16.578.1.34.5.3 | Business-level errors | Coding system.<br>Current values:<br>KNOWNPAT: The identified patient is known to the receiving system. The patient can’t be created twice.<br>VALIDATION: The query parameters are not valid or insufficient.<br>AUTHENTICATION: The user could not be authenticated.<br>AUTHORIZATION: The user is not authorized.<br>OTHER: Other errors | Helse Vest |

### 4.1.2 Identification Schemes

The following are OIDs for identification schemes (Helse Vest is used here as an example of a Healthcare org). :

| OID | Identification SystemName | Description | Issuer |
|---|---|---|---|
| 2.16.578.1.34 | Helse Vest | Root OID for the Helse Vest organization. | Norwegian Post and telecommunications authority |
| 2.16.578.1.34.1 | Software applications used within Helse Vest | Identification scheme for software applications used within Helse Vest RHF including subsidiaries | Helse Vest IKT |
| 2.16.578.1.34.2 | Patient identification schemes as used within Helse Vest | (not to be used. Intermediate node in the OID structure) | Helse Vest IKT |
| 2.16.578.1.34.2.1 | Helse Vest common emergency patient identifier | Also known as “H-Number” | Helse Vest |
| 2.16.578.1.34.2.2 | Obsolete; do not use any more | Replaced by 2.16.578.1.34.2.17 | Helse Vest |
| 2.16.578.1.34.2.11 up to 2.16.578.1.34.2.16 | Obsolete; do not use any more | Replaced by 2.16.578.1.34.2.17 | Helse Vest |
| 2.16.578.1.34.2.17 | Helse Vest internal patient identifier. | Internal, unique, patient ID used within Helse Vest. Used by software applications only – not by healthcare workers. Also known as “DIPS Internal patient ID”. | Helse Vest |
| 2.16.578.1.34.3 | Employee/healthcare worker identification schemes as used within Helse Vest | (not to be used. Intermediate node in the OID structure) | Helse Vest IKT |
| 2.16.578.1.34.3.1 | User identifiers | Person identifier for users of software applications in Helse Vest. Assigned by Helse Vest IKT. | Helse Vest IKT |
| 2.16.578.1.34.1000 | External identification schemas | Identification schemas that is owned and maintained by organizations external to Helse Vest where the owner does not have assigned an OID, then we have assigned an identifier. These identifiers will be replaced with official OID when they are available. | Helse Vest IKT |
| 2.16.578.1.34.1000.1 | F-number | Person identifier (for Norwegians and permanent residents) as contained in the Norwegian person register; length=11 digits (*Fødelsenummer, F-nummer*) | The kingdom of Norway |
| 2.16.578.1.34.1000.2 | D-Number | Person identifier (for non-permanent residents) as contained in the Norwegian person register; length=11 digits (*D-nummer*) | The kingdom of Norway |
| 2.16.578.1.34.1000.3 | HPR-Number | Identification system for healthcare practitioners in Norway | Healthcare ministry of Norway |
| 2.16.578.1.34.1000.5 | Norwegian | Identification scheme for Norwegian | Brønnøysund |

| OID | Identification SystemName | Description | Issuer |
|---|---|---|---|
| | organization ID | organizations (*Enhetsregister - Brønnøysund*)<br>See www.brreg.no | |
| 2.16.578.1.34.1000.4 | RESH Register for Enheter i SpesialistHelsetjenesten | Identification of departments and organizational units<br>http://www.shdir.no/norsk_pasientregister/resh/ | SHDIR |

## 4.2 Data Types

### 4.2.1 Patient and Person identifiers

Most of the patients treated in Norwegian health care are registered in the Norwegian Person registry (Folkeregister) and have a unique eleven digit number. This person identifier is also used to identify the patient. Two types of identifier exist:

- The F-Number: this identifier is also used to identify the patient. The F-Number is assigned to persons living in Norway on a permanent basis.
- The D-Number: Persons that are not living in Norway on a permanent basis can in some circumstance be registered in NNPR with a unique eleven digit number (a D-number).

These identifiers are meaningful to the user of a software application and hence are shown to the user.

A Patient may have one or more other patient identifier assigned within a regional healthcare organization. These identifiers shall not be communicated outside of the organization. Identifiers assigned within a regional healthcare org. may include:

- Temporary identifier: An application within the organization may assign an emergency/temporary identifier (H-Number) to a patient. Most of these identifiers are linked to either an F-number, a D-number or a PAS-identifier at a later point in time.

The Patient Registry has its own internal identifier for a patient's "set of demographics data – including the above patient identifiers":

- Internal PAS identifier: the PAS application within the regional healthcare organization will assign a unique internal identifier. This identifier is used exclusively for electronic communications and should never be shown to a user.

The following XML-snippet is an example of how these identifiers are conveyed as part of the HL7 version 3 model:

```
<patient>
   <!-- Response contains one of F/D/H number, and the internal DIPS patient ID -->
   (see RULE#1)
   <id root="2.16.578.1.34.1000.1" extension="24109642356" assigningAuthorityName="F-Number"/>

   ... patient demographics ..
   <patientPerson>
      <!-- ONE Person identifier from the Folkeregister: here: F number -->
     (see RULE #2)
      <id root="2.16.578.1.34.1000.1" extension="24109642356"/>
          ... person demographics ..
      <asOtherIDs>
     (see RULE#3)
         <!-- Used to convey all old/ non-preferential IDs. Here: the old D-Number for this person/patient -->
         <id root="2.16.578.1.34.1000.2" extension="64109642356" assigningAuthorityName="D-Number"/>
      </asOtherIDs>
    </patientPerson>
</patient>
```

When it comes to identifiers the following rules apply:

1. The Patient class shall have at least 1, and at most 2 identifiers: Either the F-number or the D-number (in that order of preference; if both a F-number and a D-number are known, only the F-number shall be sent here), and the temporary identifier.
2. The Person class shall have at most 1 identifier: Either the F-number or the D-number (in that order of preference; if both a F-number and a D-number are known, only the F-number shall be sent here).
3. The OtherIDs class shall contain all other known identifiers: the D-number if the F-number is also known; old temporary identifiers; non-preferential F-number if the F-number of the person changed/merged, etc.

### 4.2.2 Patient name

The structure of the name follows the Folkeregister and divides the name into two (or three) parts:

```
<name>
   <given>Ola</given>
   <given>Petter</given>
   <family>Nordmann</family>
</name>
```

Names from Folkeregistrert should be marked with use=OR=Official registry.

```
<name use=”OR”>
   <given>Ola</given>
   <given>Petter</given>
   <family>Nordmann</family>
</name>
```

Previous/birth/maiden name is supported using the validTime attribute. ValidTime (with attributes low and high) specifies the validity range of the name.

```
<!-- Birthname, used/valid up to 1-1-2000  -->
  <name>
     <given>Jan</given>
     <given>Helge</given>
     <family>Nielsen</family>
     <validTime>
        <high value="20000101"/>
     </validTime>
   </name>
```

Note that the name attribute is *repeating*, i.e. multiple (types of) names could be sent. It is up to the receiver (based on the value of the use attribute, and validTime) to decide what name it wants to use or import in its database.

### 4.2.3 Address

The address data type will be used as follows:

- streetAddressLine for street name and house number. streetAddressLine may occur multiple times.
- postalCode for ZIP/postal code
- city for city (poststed)
- country defaults to Norway, and should be used for addresses outside of Norway.

When it comes to the address of the patient, the address from the Folkeregister shall be sent as part of the Person (entity) class, using the HP use code.

```
<!-- The postal address from Folkeregister -->
<patientPerson>
        <addr use="HP ">
                <streetAddressLine>Hallskaret 72</streetAddressLine>
                <postalCode>5117</postalCode>
                <city>ULSET</city>
        </addr>
</patientPerson>
```

In addition to the Folkeregister address the Patient may have other (temporary) addresses. These shall be sent as part of the Patient (Role) class. Only H (Home), WP (Workplace), PST (Postal address) and TMP (temporary) shall be used a use code, HP is reserved for the Folkeregister address.

```
<!-- The temporary postal address is manually entered -->
<patient>
        <addr use="H PST">
                <streetAddressLine>Thormøhlens gate 12</streetAddressLine>
                <postalCode>5006</postalCode>
                <city>BERGEN</city>
        </addr>
<\patient>
```

Example of a foreign address, followed by a temporary Norwegian Address:

```
<!-- The postal address is manually entered -->
<addr use="H PST">
        <streetAddressLine>Storgatan 123</streetAddressLine>
        <postalCode>464 05</postalCode>
        <city>MELLERUD</city>
        <contry>Sverige</contry>
</addr>
<addr use="TMP PST">
        <streetAddressLine>Thormøhlens gate 12</streetAddressLine>
        <postalCode>5006</postalCode>
        <city>BERGEN</city>
</addr>
```

### 4.2.4 Telephone and mail

All telecommunication devices used by a person or patient are modelled as URLs. The voice telephone *URL*s begin with “tel:” fax URLs begin with "fax:" and mail address with “mailto”.

<telecom use="**H**" value="**tel:55354257**" />
<telecom use="**H**" value="**fax:56542558**" />
<telecom use="**WP** MC" value="**tel:97555786**" />
<telecom use="**WP**" value="**mailto:tor.nordmann@helse-vest-ikt.no**" />
<telecom use="**H**" value="**mailto:tor.nordmann@broadpark.no**" />

The following codes will be used in the “use” attribute:

- H – Home
- WP – Work
- MC can be used (in addition to H or WP) to denote that this is a mobile phone.

Country codes shall be used if the telephone/fax number is located outside of Norway. The default country code (if not explicitly listed) is +47.

### 4.2.5 Administrative Entity associated with a Patient or Person

Next to the postal address the patient is part of (an inhabitant of) an administrative entity within Norway. The identification of the administrative entity is of importance for a multitude of organizational/administrative purposes, e.g. it has an impact on financial arrangements between the administrative entities, as well as on the choice of preferential healthcare provider organizations where care is delivered.

Depending on where the patient lives this can be either specified using a code to identify a Kommune (and the Fylke as well), or a code to identify the Bydel (and the Kommune and Fylke as well), or (for those living outside of Norway): a code for the Fylke as well as a code for the country of residence.

There are two special values to denote that persons are located outside of Norway:

1. NO-9900 Within EU/EEA
2. NO-9000 Outside EU/EEA

The Administrative Entity is identified the following way:

1. Three observations, one for Fylke, one for Kommune and one for Bydel (ADMFYL, ADMKOM, ADMBYD respectively)
2. and one single observation with the ADMREG observation code (see section 4.3.7 for a description of the code).

In addition, an additional observation will be sent if the patient has moved from Norway to another country:

- An observation with the ADMSTT observation code (see section 4.3.7 for a description of the code). This observation may only be sent in combination with the values NO-9900 and NO-9000.

Note: The person registry methods do not have support for this kind of information. If the person has moved from Norway, no administrativeObservationEvent element will be returned.

Note: in version 1.0 of this specification ADMREG was the only observation used. As of version 1.1 the administrative region will be sent containing all representations (up to four observations).

**Example 1:** If the administrative entity is known as precise as a Bydel (in large cities):

```
<Patient>
 ... other elements ...
<subjectOf>
   <administrativeOservationEvent>
      <code code="ADMFYL" codeSystem="2.16.578.1.34.5.1"/>
      <value xsi:type="CE" code="NO-12" displayName=" Hordaland"
          codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
   </administrativeOservationEvent>
</subjectOf>
<subjectOf>
   <administrativeOservationEvent>
      <code code="ADMKOM" codeSystem="2.16.578.1.34.5.1"/>
      <value xsi:type="CE" code="NO-1201" displayName="Bergen, Hordaland"
```

```
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMBYD" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-120108" displayName="Åsane (Bergen, Hordaland)"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMREG" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-120108" displayName="Åsane (Bergen, Hordaland)"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
```

**Example 2:** If the administrative entity is known as precise as a Kommune:

```
<Patient>
 ... other elements ...
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMFYL" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-12" displayName="Hordaland"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMKOM" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-1201" displayName="Bergen (Hordaland)"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMREG" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-1201" displayName="Bergen (Hordaland)"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
```

**Example 3:** If the person has moved from Norway to Sweden:

```
<Patient>
 ... other elements ...
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMREG" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="NO-9900" displayName="Within EU/EEA"
            codeSystem="1.0.3166.2.2" codeSystemName="ISO 3166-2:2007"/>
    </administrativeOservationEvent>
</subjectOf>
<subjectOf>
    <administrativeOservationEvent>
        <code code="ADMSTT" codeSystem="2.16.578.1.34.5.1"/>
        <value xsi:type="CE" code="SE" displayName="Sweden"
            codeSystem="1.0.3166.1.2" codeSystemName="ISO 3166-1:2007"/>
    </administrativeOservationEvent>
</subjectOf>
```

## *4.3 Coding systems*

### 4.3.1 Maritalstatus (Sivilstand)

The Folkeregisteret uses the following coding system (with OID 2.16.578.1.34.1000.6) for Maritalstatus (Sivilstand):

0 = Uoppgitt
1 = Ugift
2 = Gift
3 = Enke/-mann
4 = Skilt
5 = Separert
6 = Registrert partner - Partnership between person of same sex
7 = Separert partner
8 = Skilt partner
9 = Gjenlevende partner

Example:

```
<maritalStatusCode code="2" codeSystem="2.16.578.1.35.1000.6"/>
```

### 4.3.2 Administrative Gender

The administrative gender indicates the gender of a person. Values are: M (Male), F (Female) and UN (Undefined – ambiguous). The codes are taken from the HL7 AdministrativeGender coding system with OID 2.16.840.1.113883.5.1.

Example:

```
<administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>
```

### 4.3.3 Healthcare organization types

As coding system for organization types in healthcare (e.g. hospital, GP practice, etc.), the identification scheme for Norwegian organizations will be used. (Enhetsregisteret – Brønnøysund) The OID of the coding system is 2.16.578.1.34.1000.5. The OID has been assigned by Helse Vest, but might be replaced by Brønnøysundregisterets own OID at a later time.

### 4.3.4 Healthcare provider types

A coding system for healthcare provider types (person roles within healthcare organizations, e.g. physician internal medicine, head nurse, radiologist) has yet to be decided upon.

The HPR register is a candidate, it uses the following concepts (without codes):

Ambulansearbeider, Apotektekniker, Audiograf, Bioingeniør, Ergoterapeut, Fotterapeut, Fysioterapeut, Helsesekretær, Hjelpepleier, Jordmor, Kiropraktor, Klinisk ernæringsfysiolog, Lege, Omsorgsarbeider, Optiker, Ortopediingeniør, Ortoptist, Perfusjonist, Provisorfarmasøyt, Psykolog, Radiograf, Reseptarfarmasøyt, Sykepleier, Tannhelsesekretær, Tannlege, Tannpleier, Tanntekniker, Vernepleier.

### 4.3.5 Job code

A coding system for Job types has yet to be decided upon. Candidate: Jobcallcode – www.ssb.no.

### 4.3.6 Encounter Types

The table below shows the ActEncounterCode (2.16.840.1.113883.5.4) coding system, which identifies the type of encounters.

| | | |
|---|---|---|
| . . **AMB** | ambulatory | A comprehensive term for health care provided in a healthcare facility (e.g. a practitioneraTMs office, clinic setting, or hospital) on a nonresident basis. The term ambulatory usually implies that the patient has come to the location and is not assigned to a bed. Sometimes referred to as an outpatient encounter. |
| . . **EMER** | emergency | A patient encounter that takes place at a dedicated healthcare service delivery location where the patient receives immediate evaluation and treatment, provided until the patient can be discharged or responsibility for the patient's care is transferred elsewhere (for example, the patient could be admitted as an inpatient or transferred to another facility.) |
| . . **FLD** | Field | A patient encounter that takes place both outside a dedicated service delivery location and outside a patient's residence. Example locations might include an accident site and at a supermarket. |
| . . **HH** | home health | Healthcare encounter that takes place in the residence of the patient or a designee |
| . . **IMP** | inpatient encounter | A patient encounter where a patient is admitted by a hospital or equivalent facility, assigned to a location where patients generally stay at least overnight and provided with room, board, and continuous nursing service. |
| . . . **ACUTE** | inpatient acute | An acute inpatient encounter. |
| . . . **NONAC** | inpatient non-acute | Any category of inpatient encounter except 'acute' |
| . . **SS** | short stay | An encounter where the patient is admitted to a health care facility for a predetermined length of time, usually less than 24 hours. |
| . . **VR** | virtual | A patient encounter where the patient and the practitioner(s) are not in the same physical location. Examples include telephone conference, email exchange, robotic surgery, and televideo conference. |

### 4.3.7 Administrative Observation types

A coding system for Administrative Observations related to Persons and Patients. The coding system has OID 2.16.578.1.34.5.1.

The coding system contains the following coded concepts:

| Code | Short description | Notes |
|---|---|---|
| ADMREG | Fylke, Kommune, Bydel | Contains either<br>Fylke, or<br>Fylke and Kommune, or<br>Fylke, Kommune and Bydel |
| ADMFYL | Fylke | Contains Fylke (only) |
| ADMKOM | (Fylke and) Kommune | Contains Fylke and Kommune |
| ADMBYD | (Fylke, Kommune and) Bydel | Contains Fylke, Kommune and Bydel |
| ADMSTT | Stat (Country) | Contains an identifier of the Country |

## 4.4 Wrapper Elements

This section documents some of the aspects of the wrappers as used in HL7 version 3 interaction.

All HL7 version 3 interactions contain a Transmission Wrapper, an optional Trigger Event Control Act Wrapper (mostly referred to as the ControlAct Wrapper, present in 99% of all interactions) and a so-called Payload (in 90% of interactions there is exactly 1 payload, some interactions –notably responses to queries- may contain zero or multiple payloads).

### 4.4.1 Transmission Wrapper

The Transmission Wrapper has the aim to identify the sending and receiving applications, the time that the interaction was sent, as well as some other meta data related to the interaction. The description below is limited to those elements used in this project.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | *Root element* | |
| | The root element is equal to the interaction type, e.g. PRPA_IN201103NO. It has the same value as the ./interactionId/@extension attribute. | |
| 1 | **id** | @extension, @root |
| | The id contains the unique identification of this instance of the interaction.<br>@root contains an identification of the 'unique interaction numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 1 | **creationTime** | @value |
| | Contains the date/time the interaction was sent. Format: YYYYMMDDHHMMSS. | |
| 1 | **versionCode** | @code |
| | Contains the base version of HL7 version 3 used in this interaction. Fixed value 'NE2008'. | |
| 1 | **interactionId** | @root, @extension |
| | Identifies the interaction ID (the type of service). @root contains the fixed value '2.16.840.1.113883.1.6'. @extension contains the identifier as specified for the interaction, e.g. PRPA_IN201103NO. The value of @extension has to be equal to the name of the root element in the XML instance. | |
| 1 | **processingCode** | @code |
| | Processingcode is a mandatory attribute within all interactions. @code shall either have the value T (Test) or the value P (Production).<br><br>• P = Production. The receiver of the interaction shall process the contents of the interaction in a production environment and the production database. If an interaction with a processingCode equal to P is received by a test application (based on a test database) the receiving application shall not process the interaction and shall create an error message.<br>• T = Test. The receiver of the interaction shall process the contents of the interaction in a test environment and the test database. If an interaction | |

| | | |
|---|---|---|
| | with a processingCode equal to T is received by a production application (based on a production database) the receiving application shall not process the interaction and shall create an error message. | |
| 1 | **processingModeCode** | @code |
| | *No further description*. Fixed value 'T'. | |
| 1 | **acceptAckCode** | @code |
| | Specifies whether or not the receiver should send an Accept Acknowledgement (MCCI_IN000002UV02 interaction) in response to this interaction. @code should be set to NE (Never), except in notifications (e.g. PatientRegistry.RecordRevised, PatientRegistry.DuplicatesResolved) where it should be set to AL (Always). | |
| 1 | **receiver** | @typeCode |
| | Identifies the receiving software application by means of an abstract identifier. @typeCode has the fixed value 'RCV' | |
| 2 | **Device** | @classCode, @determinerCode |
| | Identifies a software application. @classCode has the fixed value 'DEV', @determinerCode has the fixed value 'INSTANCE' | |
| 3 | **Id** | @root, @extension |
| | The id contains the unique identification of a software application. @root contains an identification of the 'Helse Vest identification mechanism for software applications' with fixed value '2.16.578.1.34.1'. @extension contains the identifier created according to that identification system.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 1 | **Sender** | @typeCode |
| | Identifies the sending software application by means of an abstract identifier. @typeCode has the fixed value 'SND' | |
| 2 | **Device** | @classCode, @determinerCode |
| | Identifies a software application. @classCode has the fixed value 'DEV', @determinerCode has the fixed value 'INSTANCE' | |
| 3 | **Id** | @root, @extension |
| | The id contains the unique identification of a software application. @root contains an identification of the 'Helse Vest identification mechanism for software applications' with fixed value '2.16.578.1.34.1'. @extension contains the identifier created according to that identification system.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 1 | **Acknowledgement** | @typeCode |
| | The acknowledgement part is mandatory in response interactions, and may not be used in 'initiating interactions'.<br>The purpose of the acknowledgement class is to identify if the interaction has been successfully processed, and to identify the interaction to which this is a response.<br>@typeCode identifies if the interaction has been successfully processed.<br>• If the response interaction is MCCI_IN000002UV02 then the allowable values for @code are either 'CE' (error, content not processed), or 'CA' (accepted, contents processed).<br>• For any other interaction the allowable values are for @code are either 'AE' (error, content not processed), or 'AA' (accepted, contents processed).<br>*Note: for now the identification of error codes and error locations (described in* | |

| | | |
|---|---|---|
| | *chapter 5) is limited to a few possible errors. The scope of the error handling will be enlarged in future phases of this implementation guide..* | |
| 2 | **targetMessage** | |
| | Identifies the original interaction to which this is a response. This is equal to the values of /id/@root and /id/@extension as contained in the original interaction. | |
| 3 | **Id** | @root, @extension |
| | The id contains the unique identification of this instance of the interaction. @root contains an identification of the 'unique interaction numbering mechanism as used by this particular sending software application', and @extension contains the identifier created according to that numbering mechanism.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 1 | **controlActProcess** | |
| | *This element forms the start of the ControlAct wrapper, which is described in a different section/table.* | |

Example:

```
<PRPA_IN201307NO ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"   >
        <!-- Unique identification of this message instance. Root derived from that of the sending application
-->
        <id extension="3948375" root="2.16.578.1.34.1.145.1"/>
        <!-- Time message was sent -->
        <creationTime value="20080719140010"/>
        <versionCode code="NE2006plus"/>
        <!-- Fixed values for GetPatientDemographics query -->
        <interactionId extension="PRPA_IN201307NO" root="2.16.840.1.113883.1.6"/>
        <processingCode code="P"/>
        <processingModeCode code="T"/>
        <acceptAckCode code="NE"/>
        <receiver>
                <device>
                        <!-- Receiving software application. Helse Vest assigned application identifier -->
                        <id extension="922" root="2.16.578.1.34.1"/>
                </device>
        </receiver>
        <sender>
                <device>
                        <!-- Sending software application. Helse Vest assigned application identifier -->
                        <id extension="145" root="2.16.578.1.34.1"/>
                </device>
        </sender>
        <controlActProcess>
        ....
        </controlActProcess>
</PRPA_IN201307NO>
```

### 4.4.2 ControlAct Wrapper

The ControlAct wrapper has the aim to convey data about the event which caused (triggered) the sending of this interaction. Description below is limited to those elements used in this project.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | **controlActProcess** | @moodCode, @classCode |
| | The controlActProcess identifies the person or software application that is responsible for triggering the interaction, i.e. the person/application that has sent the interaction.<br>@moodCode has the fixed value 'EVN'. @classCode has the fixed value 'CACT'. | |
| 1 | **authorOrPerformer** | @typeCode |
| | Identifies the sender (the author) of this interaction. For auditing purposes all interactions shall contain the identification of the author. The author can be either a person (identified by means of the Helse Vest IKT user identifier), or a software application (identified by means of an Application ID as assigned by Helse Vest IKT).<br>@typeCode contains the fixed value 'AUT'.<br>The authorOrPerformer is identified as either an assignedDevice **or** a assignedPerson. | |
| 2 | **assignedDevice** | @classCode |
| | Identifies a software application. Software applications can be the author of an interaction if the contents of the interaction (the payload) was generated automatically, e.g. whenever a software application generates a response to a query. @classCode contains the fixed value 'ASSIGNED'<br>(either assignedDevice or assignedPerson must be present) | |
| 3 | **Id** | @root, @extension |
| | The id contains the unique identification of a software application. @root contains an identification of the 'Helse Vest identification mechanism for software applications' with fixed value '2.16.578.1.34.1'. @extension contains the identifier created according to that identification system.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 2 | **assignedPerson** | @classCode |
| | Identifies a person. @classCode has the fixed value 'ASSIGNED'<br>(either assignedPerson or assignedDevice must be present) | |
| 3 | **Id** | @root, @extension |
| | The id contains a unique identification of a person. @root contains an identification of the 'Helse Vest identification mechanism for application users' with fixed value '2.16.578.1.34.3.1'. @extension contains the identifier created according to that identification system.<br>@root contains the 'namespace' of the identifier as contained in @extension | |
| 1 | **Subject** | |
| | *This element forms the start of the Payload model, which is described in a different section/table. This element may not occur in all interactions.* | |
| 1 | **QueryByParameter** | |
| | *This element forms the start of the specification of a query, which is described in a* | |

| | | |
|---|---|---|
| | *different section/table. This element may not occur in all interactions.* | |
| 1 | **QueryAck** | |
| | This element only occurs in responses to queries. It contains information about the number of responses in the subject payload. | |
| 2 | **queryId** | @root, @extension |
| | The id contains the unique identification of the original query instance. Note: re-use same @extension/@root as present in the query interaction, see section 4.4.1. | |
| 2 | **queryResponseCode** | @code |
| | @code contains either 'OK' (if one or more records were found), 'NF' (if zero matching records were found), or 'QE' (if the query couldn't be processed because of errors related to the query parameters – see chapter 5 for a description of error handling). | |
| 2 | **resultCurrentQuantity** | @value |
| | Contains the number of responses/records in this response interaction. @value may be 0. | |
| 2 | **resultRemainingQuantity** | @value |
| | Contains the fixed value '0'. | |
| 1 | **reasonOf** | @typeCode |
| | This element occurs only in response interactions. It contains the identification of a business/process-level error. In the current project it is used to identify why a PatientRegistry.Add request could not be fulfilled. @typeCode has the fixed value 'RSON'. | |
| 2 | **detectedIssueEvent** | @classCode, @moodCode |
| | Identifies one single issue/error. | |
| 3 | **code** | @code, @codeSystem, @displayname |
| | @codeSystem contains the OID of the error code table, @code contains a code from that table, and @displayName contains a human readable description of the code.<br>Example <code code="KNOWNPAT" codeSystem="2.16.578.1.34.5.3" displayName="Patient already known. This service requires a new patient."/> | |

Examples in the case that the author of the interaction is a person (e.g. in queries, or request interactions):

```
<controlActProcess moodCode="EVN">
        <authorOrPerformer typeCode="AUT">
        <!-- Identifies the person responsible for sending this message -->
                <assignedPerson>
                        <!-- User ID assigned by Helse Vest IKT  to identify the person -->
                        <id extension="teneur" root="2.16.578.1.34.3.1"/>
                </assignedPerson>
        </authorOrPerformer>
        <subject>
        ....
        </subject>
</controlActProcess>
```

Example in the case that the author of the interaction is a software application (e.g. in an automated response to a query):

```
<controlActProcess moodCode="EVN">
        <authorOrPerformer typeCode="AUT">
        <!-- Identifies the software application responsible for sending this message -->
                <assignedDevice>
                        <!-- Sending software application. Helse Vest assigned application identifier -->
```

```
                        <id extension="922" root="2.16.578.1.34.1"/>
                    </assignedDevice>
                </authorOrPerformer>
                <subject>
                ....
                </subject>
</controlActProcess>
```

## 4.5 Generic Payload Models

This section documents some of the payload models used in multiple HL7 version 3 interactions.

### 4.5.1 Generic Person payload model

The Person payload model has the aim to convey identifying and demographics data related to a person entity. Note: in most circumstances the values for these elements and attributes are populated by the Folkeregister.

The description below is limited to those elements used in this project.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | *Root element* | |
| | The name of the root element of this model is determined by its context. | |
| 1 | **Id** | @root, @extension |
| | Contains a maximum of one unique person identifier. @root contains an identification of the 'unique person identification mechanism' (the OID for F-Number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism.<br>If both F-number and D-number are known, only the (current) F-number should be sent using this element. | |
| 1 | **Name** | @use |
| | Occurs one or more times. Contains the name(s) of the person.<br>See section 4.2.2 for a description of the sub elements and the usage of the sub elements. | |
| 1 | **administrativeGenderCode** | @code, @codeSystem |
| | Contains a code for the administrative gender of the person. @codeSystem is fixed to 2.16.840.1.113883.5.1 , @code should be either M (Male), F (Female), or UN (Undifferentiated/Ambiguous). | |
| 1 | **birthTime** | @value |
| | Contains the date of birth of the person. At least the year has to be specified. The format of @value is YYYYMMDD. | |
| 1 | **deceasedInd** | @value |
| | Optional. Indicates whether or not the person is deceased. @value is set to 'true' in that case.<br>*Note: The element is optional if the person is alive, but mandatory if the person is deceased.* | |

| | | |
|---|---|---|
| 1 | **deceasedTime** | |
| | Optional. Contains the date the person deceased. At least the year has to be specified. The format of @value is YYYYMMDD.<br>*Note: The element is mandatory if element deceasedInd.value equals 'true'.* | |
| 1 | **addr** | @use |
| | Occurs one or more times. Contains the address(es) of the person.<br>See section 4.2.3 for a description of the sub elements and the usage of the sub elements. | |
| 1 | **maritalStatusCode** | @code, @codeSystem |
| | Contains a code for the marital status of the person.<br>@codeSystem is fixed to 2.16.578.1.34.1000.6,<br>@code should be from the table shown in section 4.3.1. | |
| 1 | **asOtherIds** | @classCode |
| | Contains all old/non-preferential Person identifiers (e.g. a D-Number if the F-Number is also known). If the Person is a Patient, it will also contain any old/non-preferential Patient identifiers (e.g. emergency numbers). Patient identifiers may only be included if the interaction is sent by/to a Patient registry.<br>@classCode contains the fixed value 'ROL' | |
| 2 | **id** | @root, @extension |
| | May occur multiple times. Each occurrence contains one unique person/patient identifier. @root contains an identification of the 'unique person identification mechanism' (e.g. the OID for an emergency number, or the OID for D-Number), and @extension contains the identifier created according to that identification mechanism. | |
| 2 | **statusCode** | @code |
| | Indicates (in an indirect way) the status of the above identifiers. @code contains the fixed value 'completed' to indicate the old/non-preferential status of the identifiers. | |
| 2 | **scopingOrganization** | |
| | Identifies the organization that forms the context of the identifiers. In this case: Helse Vest. | |
| 3 | **id** | @root, @extension |
| | Contains the identification of Helse Vest.<br>@root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 1 | **birthPlace** | |
| | Identifies the birth place of the person. | |
| 2 | **addr** | |
| | Contains those parts of the address used to identify the birth place. | |
| 3 | **city** | |
| | Contains the city of birth. | |
| 3 | **country** | |
| | Contains the country of birth. | |

### 4.5.2 Generic Patient payload model

The Person payload model has the aim to convey identifying and demographics data related to a person entity. The description below is limited to those elements used in this project.

| Nesting Level | Element | Attributes |
|---|---|---|
| 0 | *Root element* | |
| | The name of the root element of this model is determined by its context. | |
| 1 | **id** | @root, @extension |
| | Contains one Patient.id (either the F-number, the D-number or the H-number –in that order of preference-).<br>@root contains the OID of the identification scheme, @extension contains the identification number according to that identification scheme. Note: all other known Ids for the Patient (older, previously used, temporary Ids, non-preferential IDs) should be sent in the OtherIds.id attribute.<br>*Note: this element is not allowed/present in a PatientRegistry.Add request. The identity of the patient can't be assigned by the requesting party.* | |
| 1 | **addr** | @use |
| | One or more addresses of the patient. Contains all known addresses, except for the address as registered in the Folkeregister (that address is conveyed as part of the Person class). See section 4.2.3 for a description of the sub-elements of addr. | |
| 1 | **telecom** | @use, @value |
| | One or more telecom details (e.g. phone, fax, e-mail) of the patient. See section 4.2.4 for a description of the sub-elements of telecom. | |
| 1 | **statusCode** | @code |
| | @code contains the fixed value 'active'. This element is not present in all variations of this model: it is not present/allowed in PatientRegistry.UpdateRecord (PRPA_IN201302NO). | |
| 1 | **patientPerson** | |
| | *Root element of the generic person model described in section 4.5.1.* | |
| 1 | **providerOrganization** | @classCode, @determinerCode |
| | Identifies the organization that is aware of the patient identifiers as contained in the Registry. Here: Helse Vest. | |
| 2 | **Id** | @root, @extension |
| | @root contains the fixed value 2.16.578.1.34.1000.5.<br>@extension contains the fixed value 983658725. | |
| 3 | **contactParty** | @classCode, @nullFlavor |
| | @classCode contains the fixed value 'CON'. @nullFlavor contains the fixed value 'NA'. | |
| 1 | **subjectOf1** (in Patient Registry Find Candidates Query Response interactions ONLY, see section 3.1.4.2) | |
| | Identifies the degree-of-match between this response records and the parameters as sent in the query. | |
| 2 | **queryMatchObservation** | @classCode, @moodCode |
| | @classCode contains the fixed value 'OBS'. @moodCode contains the fixed value 'EVN'. | |
| 3 | **Code** | @code, @codeSystem |
| | @codeSystem contains the fixed value '2.16.578.1.34.5.2'.<br>@code contains the fixed value 'PERC'. This indicates that the percentage of match is sent. | |

| | | |
|---|---|---|
| 3 | **Value** | @xsi:type, @value |
| | The Person registry currently uses a fixed value of 80% for all records. @xsi:type contains the fixed value ‘REAL’. @value contains the fixed value ‘80’. | |
| 1 | **subjectOf2** (in Patient Registry Find Candidates Query Response interactions, see section 3.1.4.2)<br>**subjectOf** (in all other interactions) | |
| | Root element of an observation that identifies the kommune/bydel associated with the patient. See 4.2.5 for details of the sub-elements and attributes. | |

# 5 Error Handling

HL7 version 3 contains an elaborate mechanism for the identification of errors, warnings and informative messages.

The most important attribute when it comes to the identification of errors in a response interaction is the Acknowledgement.typeCode (see section 4.4.1). The value of this attribute indicates whether or not the original interaction could be successfully processed or not.

The following codes are used for the response interaction MCCI_IN000002UV02:

- CA - Success
- CE - Error

The following code are used for all other interactions:

- AA – Success
- AE – Error

In the current implementation phase the error handling is limited to errors related to the contents of query parameters only. Examples of such errors include missing parameters in a query, wrong parameter format (e.g. have a letter were there should be a number), or the use of an illegal F-/D-number format.
In case of this category of parameter related errors:

- QueryAck.queryResponseCode shall be set to QE (see section 4.4.2), and
- AcknowledgementDetail.typeCode shall be set to AE (see section 4.4.1)

.The reasonOf element can be used in the response interactions to give a reason why a request is rejected. The OID of the coding system is 2.16.578.1.34.5.3. So far, the following error codes have been defined:

- KNOWNPAT - The patient is already known in the patient registry.
- VALIDATION - The query parameters are wrong or insufficient.
- AUTHENTICATION - The user cannot be authenticated.
- AUTHORIZATION - The user is not authorized.
- OTHER – Other errors. The attribute displayName may contain a useful error message.

**Examples:**

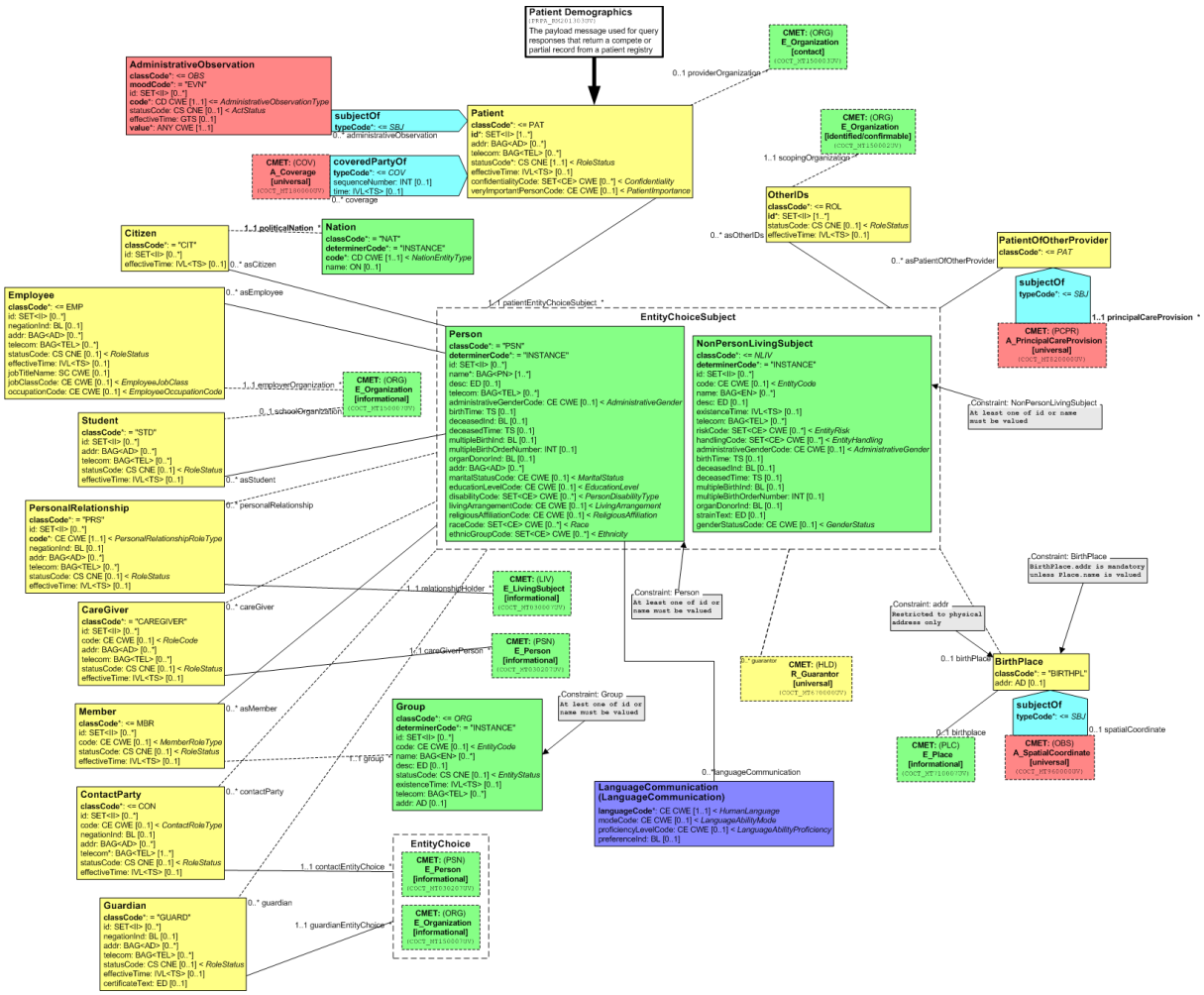
```
<reasonOf typeCode="RSON">
      <detectedIssueEvent moodCode="EVN" classCode="ALRT">
            <code code="KNOWNPAT" codeSystem="2.16.578.1.34.5.3"
displayName="Patient already known. This service requires a new patient." />
      </detectedIssueEvent>
</reasonOf>

<reasonOf typeCode="RSON">
      <detectedIssueEvent moodCode="EVN" classCode="ALRT">
            <code code="VALIDATION" codeSystem="2.16.578.1.34.5.3"
displayName="insufficient parameters in query" />
      </detectedIssueEvent>
```

```
</reasonOf>
```

# 6 Mapping to other models

This section contains a mapping of the data provided by the Folkeregisteret and HL7 version 3 models.

The model below is the payload model used (with minor variations) in most interactions related to patient demographics.



## 6.1 Folkeregisteret

The Norwegian Folkeregisteret (see http://www.skatteetaten.no/Templates/Artikkel.aspx?id=6640&epslanguage=NO for additional information) is a person registry.

| Folkeregister Variabler knyttet til personer | HL7 version 3 equivalent | |
|---|---|---|
| fødselsnummer | Patient.id and Person.id (root OID indicates F-number) | |
| status (bosatt, utvandret, død osv.) | If status = 5: Person.deceasedInd = true | |
| Statusdato | If status = 5: Person.deceasedTime | |
| ?? | Person.birthDate | |
| ?? | Person.administrativeGender | |
| fødested | Birthplace.addr / city | |
| etternavn | Person.name / family ; use = OR | |
| Fornavn | Person.name / given ; use = OR | |
| Mellomnavn | Person.name / given ; use = OR | |
| etternavn som ugift | Person.name / family ; use = birthname | |
| forkortet navn (brukes ved adressering av post) | | |
| Statsborgerskap | Not used - (Citizen) Nation.code | |
| Familienummer | | |
| personkode (referanseperson, ektefelle, barn), | | |
| spesifisert registreringstype (diplomat, klient, adressesperring o.l.) | | |
| sivilstand | Person.maritalStatus | |
| ektefelles fødselsnummer, navn og statsborgerskap | | |
| kommunenummer | | |
| flyttedato | Person.addr / usablePeriod? | Date of last move of address |
| nummerisk bostedsadresse | Person.addr; use = P; usablePeriod after *flyttedato* | |
| postadresse for forsendelse av post | Person.addr; use = HP; usablePeriod after *flyttedato* | |
| land innvandret fra | Person.addr / country ; usablePeriod before *flyttedato* | |
| land utvandret til | Person.addr / country ; usablePeriod after *flyttedato* | |
| stemmerett | | |
| vergemål | | |
| foreldreansvar | | |
| arbeidstillatelse | | |

| | | |
|---|---|---|
| DUF-nummer (nummer i utlendingsmyndighetens register) | | |
| mors fødselsnummer, navn og statsborgerskap | Not used - personalRelationship.E_LivingSubject | |
| fars fødselsnummer, navn og statsborgerskap | Not used - personalRelationship.E_LivingSubject | |
| fødselsnummer og navn for hvert barn | Not used - personalRelationship.E_LivingSubject | |
| medlemskap i Den norske kirke | Not used - Person.religiousAffiliationCode | |
| referanser til utgåtte fødselsnummer/D-nummer. | Person.id /Patient.id (note: previous/old ID) | |

# 7 WSDL and Schemas

WSDL documents are XML documents that describe services as a set of message-enabled or procedure-oriented abstract endpoints. These operations and/or messages and their associated data types are described conceptually, and then bound concretely to a network protocol, message format, and programming language as needed.

A WSDL document defines the following elements for describing services:

- ***Types***: data type definitions
- ***Message***: an abstract definition of the data being transferred
- ***Operation***: an abstract description of a service procedure
- ***Port Type***: an abstract set of operations supported by one or more endpoints
- ***Binding***: a concrete protocol and data format for a given port type
- ***Port***: a single endpoint defined as a binding and a network address
- ***Service***: a collection of related endpoints or ports

This document is published jointly with a set of normative WSDL and Schemas. Together they are an expression of the contract on the 'wire level'. The WSDL provided in NE2008 v2 are strongly typed. That term refers to a service contract that contains a complete definition of its input and output messages in XML Schema, a schema that is either included in the WSDL definition or referred to by that WSDL definition.

The actual WSDL is specific as to the HL7v3 payload message contained in the <soap:Body> definition, with references to the actual schemas involved shown in listing below.

```
<types>
      <xsd:schema targetNamespace="urn:hl7-org:v3"...>
            <xsd:include schemaLocation="../schemas/QUPC_IN043100NO.xsd" />
            <xsd:include schemaLocation="../schemas/QUPC_IN043200NO.xsd" />
            <xsd:element name="QUPC_IN043100NO-Response">
                  <xsd:complexType>
                        <xsd:choice>
                              <xsd:element
ref="hl7:QUPC_IN043200NO" />
                        </xsd:choice>
                  </xsd:complexType>
            </xsd:element>
      </xsd:schema>
</types>
<message name="QUPC_IN043100NO">
      <part name="body" element="hl7:QUPC_IN043100NO" />
</message>
<message name="QUPC_IN043100NO-Response">
      <part name="body" element="hl7:QUPC_IN043100NO-Response" />
</message>
<portType name="CareRecordQueryFulfiller_PortType">
      <operation name="QUPC_IN043100NO_Operation">
            <input message="hl7:QUPC_IN043100NO" />
            <output message="hl7:QUPC_IN043100NO-Response" />
      </operation>
```

```
</portType>
```

The published style of WSDL (“strongly typed”) describes the actual XML instances going in and out as well as the HL7v3 Schema's used. The WSDL can therefore easily be used to validate a service or guide in the design of a service. This generally increases the level of automation, code generation, tool support, and use of standardized middleware. It also produces more stable code and relieves the developer from having to create infrastructure level code. And even a generically implemented service can provide a strongly typed interface definition.

This 'contractual' flavour of WSDL and Schema is the only flavour that will be published, they are normative and the web services they describe should be implemented. Whether they are used 'as is' for code generation is an independent, often environment-dependent question, and *vendors are free to use their own **derived** WSDL and (modified) schemas as long as the contractual WSDL is warranted*.