nehta

P2P Document Delivery

Logical Service Specification

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Final

National E-Health Transition Authority Ltd
Level 25
56 Pitt Street
Sydney, NSW, 2000
Australia.
www.nehta.gov.au

Document Information

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0.01	2011-11-16	Draft for 1st review.
0.02	2011-11-20	1st Review Comments addressed
0.03	2011-11-28	Final review
1.0	2011-11-29	Released to vendors
1.1	2012-03-14	Re-released with amendments listed in appendix A.

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Preface

Document Purpose

This document is a Logical Solution Specification (LSS) for the secure point-to-point delivery of clinical documents. Its focus is the Logical Specification layer as defined in the National eHealth Framework (NeHF). However, in order to provide a business context for these specifications, it also includes the Enterprise viewpoint from the Conceptual Specification layer.

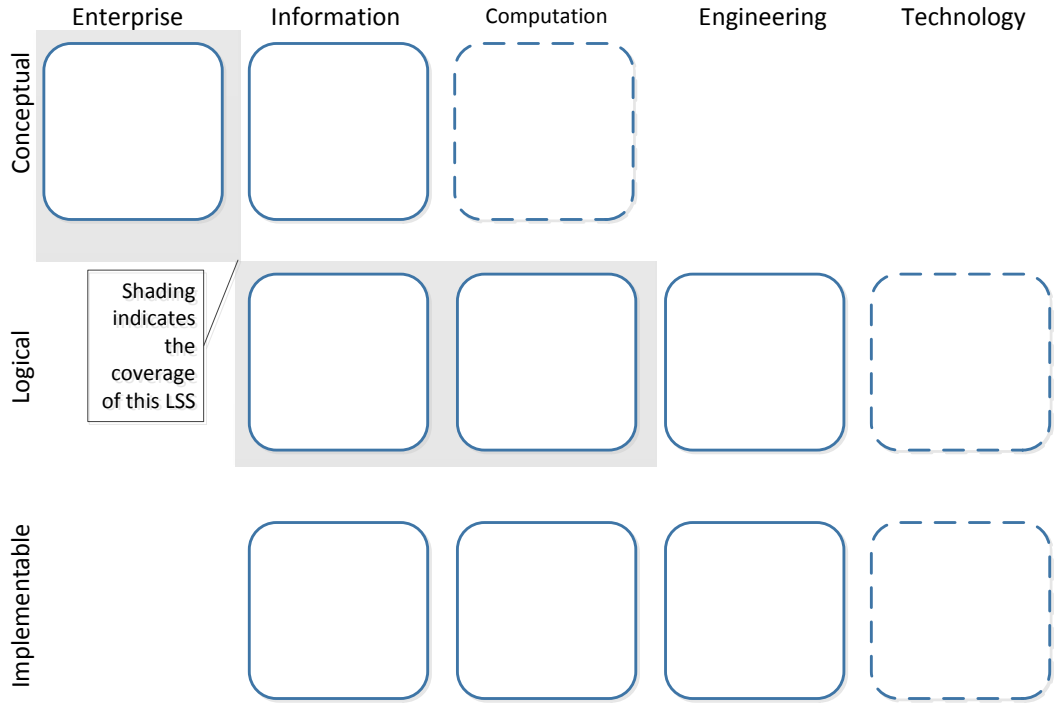

Figure 1: Relationship to National eHealth Framework

The purpose of this (and all LSSs) is to allow for systems to achieve a level of interoperability even when they are implemented using different "technology platforms". In these cases, interoperability is achieved as a result of systems conforming to different Technical Solution Specifications (TSSs)[1] –provided those TSSs in turn comply with the same LSS.

Intended Audience

This document is intended for:

1. Those who are responsible for the development of Technical Solution Specifications for systems that are concerned – at least in part – with the secure delivery of clinical documents between healthcare provider organisations.
2. Those who are responsible for the implementation and testing of systems that claim conformance to a Technical Solution Specification based on this LSS. Conformance points contained in this LSS will be referenced directly by TSSs where they are relevant.

This audience therefore includes (but is not limited to):

- The Australian Healthcare standards development community
- Jurisdictions and Medicare Australia

[1] "Implementable specifications" in the terms of the NeHF

- Organisations that supply software products and services to the healthcare industry

This document makes use of the UML2.3 standard [UML2.3] and of the UML profile for RM-ODP specifications [UMLODP]. Familiarity with UML and service oriented architecture concepts and patterns are assumed.

Definitions, Acronyms and Abbreviations

For lists of definitions, acronyms and abbreviations, see the Definitions section at the end of the document, on page 29.

References and Related Documents

For lists of referenced documents, see the References section at the end of the document, on page 30.

1 Enterprise Viewpoint

This section provides the enterprise context for the logical service specifications contained in section 2.

In accordance with the National e-Health Framework [NeHF], this enterprise viewpoint uses the RM-ODP community model[2].

This section describes the *Provider-to-Provider (P2P) Document Delivery* community in terms of:

- *Objectives:* members of these communities collaborate in order to achieve these objectives.
- *Artefacts*: An artefact represents a business object that is exchanged between participants.
- *Community roles:* A community role classifies a set of "parties" [3] (i.e. organisations and individual persons) that participate as members of a community.
- *Business services:* A business service represents an agreement (explicit or implicit) that binds two[4] participating parties that interact.

1.1 P2P Document Delivery

1.1.1 Overview

The P2P Document Delivery community represents the collaboration of participating healthcare provider organisations so that they can securely exchange clinical documents amongst themselves. Importantly, this objective can be achieved without the need for the healthcare provider organisations to establish bilateral agreements with each other.

The P2P Document Delivery community (see Figure 2) is concerned with organisation-to-organisation document delivery; each document is therefore sent by an identified healthcare provider organisation, acting as a *Document Issuer,* to an identified healthcare provider organisation, acting as a *Document Receiver.*

Individual healthcare providers participate as *Authors* or *Recipients* of clinical documents. They always participate as the representative of a specific healthcare provider organisation (but they may represent different healthcare provider organisations in different interaction instances).

Consumers participate as *Subjects of Care* – they are not directly involved in the delivery of documents; consent to send documents is gathered by the Document Issuer and there is no requirement to transfer evidence that consent was gained outside of the document issuing organisation.

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[2] "Community" is defined in Interoperability Framework Version 2.0 [IF2] as a configuration of entities able to interact and established to meet some objective.

[3] "System roles" are not included in this enterprise viewpoint but are defined in section 2

[4] A business service with more than two participants is also possible but is not required for the communities modelled in this document.

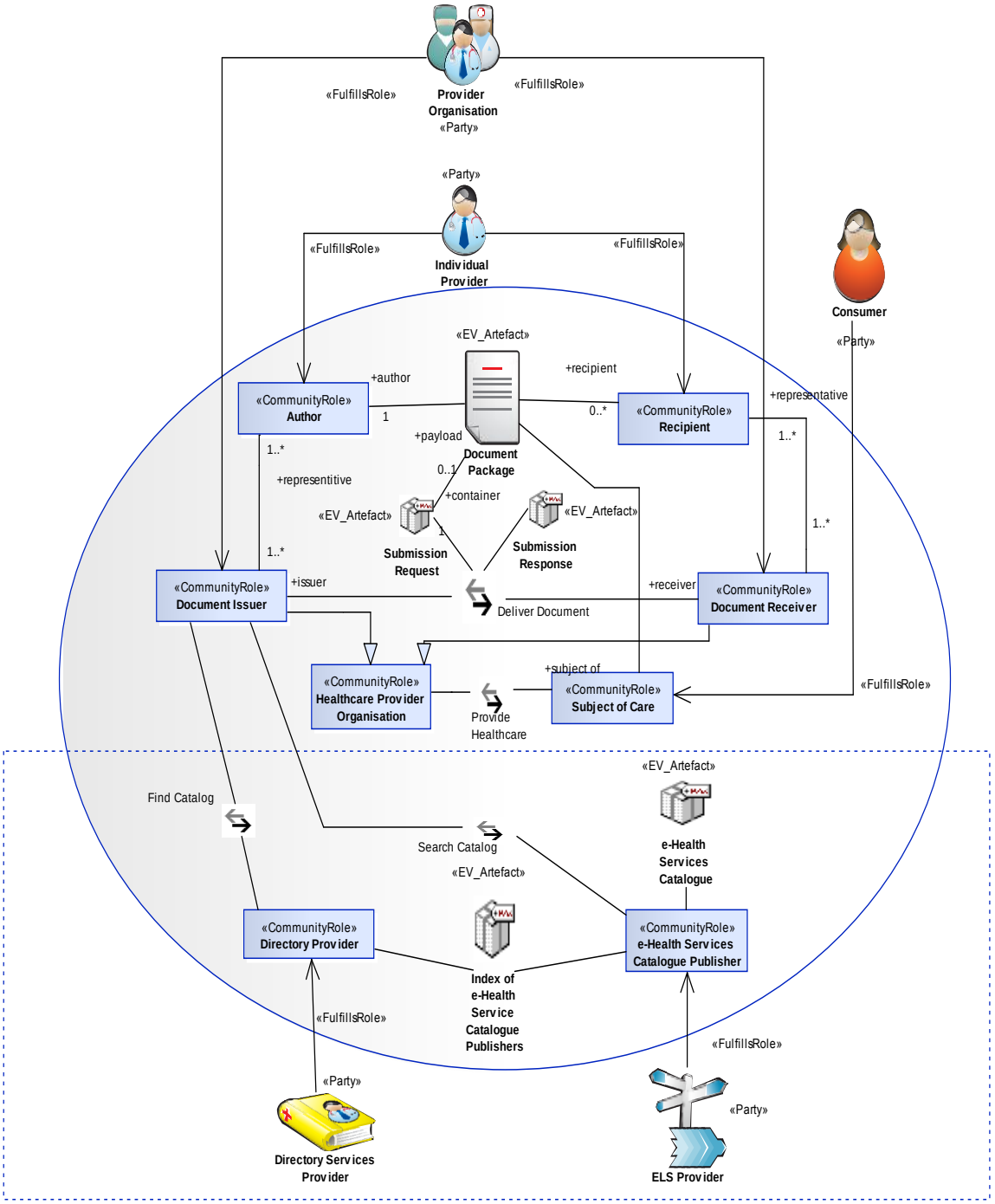

Figure 2: P2P Document Delivery community

1.1.2 Objectives

The objectives of the P2P Document Delivery community are:

1. Secure delivery of clinical documents from one healthcare provider organisation to another identified healthcare provider organisation.
2. Provision of a high level of assurance of document delivery, even when the *Document Issuer* and/or the *Document Receiver* are only intermittently connected to the internet.
3. Delivery of clinical documents between healthcare provider organisations that do not need to have bilateral business agreements in place in order to interact.

1.1.3 Artefacts

1.1.3.1 Document Package

A *Document Package* is "a documentation of clinical observations and services" and is "a defined and complete information object that can include text, images, sounds, and other multimedia content"[5]. A *Document Package* contains a *Clinical Document*, and may include "attachments" such as images or other media files.

1.1.3.2 E-Health Services Catalogue

A searchable list of the e-Health Services that an organisation supports.

1.1.3.3 Index of E-Health Services Catalogue Publishers

A searchable index of the organisations that publish *E-Health Services Catalogues* – the key to search this index is the identity of an organisation; each entry identifies the publisher of the *E-Health Services Catalogue* for the organisation identified by the key.

1.1.3.4 Submission Request

A *Submission Request* is the business object that represents the information sent by a *Document Issuer* to a *Document Receiver.*

Depending on the business function being invoked, a *Submission Request* may contain a *Document Package*.

1.1.3.5 Submission Response

A *Submission Response* is the business object that is generated by a *Document Receiver* in response to a *Submission Request* and is provided back to the *Document Issuer.*

1.1.4 Roles

1.1.4.1 Introduction

The Roles in the P2P Document Delivery Community can be categorised as those involved in healthcare, and supporting roles, that provide infrastructure services.

1.1.4.2 Healthcare Related Role Definitions

These community roles are shown in Figure 2 and are described below.

- *Subject of Care*

[5] Quotes are from HL7 CDA Release 2 [HL7CDA]

A *Subject of Care* is a healthcare recipient as defined in the Healthcare Identifiers Act 2010.

- *Healthcare Provider Organisation*

  A *Healthcare Provider Organisation* is a healthcare provider organisation as defined in the Healthcare Identifiers Act 2010.

- *Document Issuer*

  A *Document Issuer* is a *Healthcare Provider Organisation* which is responsible for issuing a *Document Package* to one or more *Document Receivers*.

- *Document Receiver*

  A *Document Receiver* is a *Healthcare Provider Organisation* which receives a *Document Package* issued by a *Document Issuer*.

- *Author*

  An *Author* is an individual healthcare provider (as defined in the Healthcare Identifiers Act 2010), who is responsible for the contents of a *Document Package*. An *Author* always acts as the representative of a specific healthcare provider organisation.

- *Recipient*

  A *Recipient* is an individual healthcare provider (as defined in the Healthcare Identifiers Act 2010), who is identified by the *Author* of a clinical document as one of its intended recipients. A *Recipient* always acts as the representative of a specific healthcare provider organisation.

1.1.4.3 Supporting Role Definitions

1.1.4.3.1 Background

It is an objective of this community that the *Document Issuer* and the *Document Receiver* not require bilateral business agreements to be in place in order to interact. A *Document Issuer*, however, needs to be informed of which healthcare organisations participate in the P2P Document Delivery community and which do not. This is achieved by the use of one or more *E-Health Services Catalogues* in which *Document Receivers* advertise their support for the *Deliver Document* business service. The P2P Document Delivery community allows for *Document Receivers* to publish their own *E-Health Services Catalogue* or to outsource it; as a consequence there is a requirement for one or more *Directory Providers* to be available so that *Document Issuers* can "discover" the authoritative *E-Health Services Catalogue* for a given *Document Receiver*.

1.1.4.3.2 Roles

These community roles are shown in Figure 2 and are described below.

- *Directory Provider*

  While they provide a far more general searching capability, in the context of the P2P Document Delivery community, a *Directory Provider* is an organisation that allows clients to obtain the publisher of the *E-Health Services Catalogue* for a target organisation. A *Document Issuer* interacts with the *Directory Provider* in order to access the *E-Health Services Catalogue* for an intended *Document Receiver*.

- *E-Health Services Catalogue Publisher*

  An *E-Health Services Catalogue Publisher* is an organisation that provides *An E-Health Services Catalogue* that describes the supported e-Health services of an organisation. *E-Health Services Catalogues* allow a *Document Issuer* to establish the capability of an intended *Document Receiver* to accept the delivery of *Document Packages*.

1.1.5 Business Services

1.1.5.1 Document Delivery

1.1.5.1.1 Overview

This service provides the following capabilities:

1. A *Document Issuer* delivers a *Document Package* to a *Document Receiver* that stores it and makes it available for clinical use within their organisation (by authorised representatives of the *Document Receiver*).
2. The *Document Receiver* notifies the *Document Issuer* when a *Submission Request* was successfully delivered to the *Document Receiver* or when an error was detected that prevented the delivery.

1.1.5.1.2 Functional Specification

- Service Provider:

  Document Receiver[6]

- Service Consumer:

  Document Issuer[6].

- Service Description:

  The service allows a *Document Issuer* to issue a *Document Package* to an identified *Document Receiver*

- Service Functions:
  - Store *Document Package*:

    At the request of a *Document Issuer* (i.e. via the delivery of a *Submission Request)*, a *Document Receiver* accepts a valid *Document Package* and makes it available to the authorised individuals that represent that *Document Receiver*.

  - Acknowledge the delivery of the *Document Package*:

    A *Document Receiver* is required to acknowledge the delivery *Submission Request* and whether or not the *Document Package* was accepted and stored or rejected.

    The *Document Receiver* communicates either a positive or a negative acknowledge with a *Submission Response.*

1.1.5.2 Provide Healthcare

The *Healthcare* business service represents the provision of "healthcare" as defined in the Healthcare Identifiers Act 2010. In the P2P Document Delivery community all *Healthcare* interactions are between a *Subject of Care* and a *Healthcare Provider Organisation* - i.e. for any interaction instance an individual healthcare provider participates as the representative a specific healthcare provider organisation.

1.1.5.3 Supporting Business Services

This section contains a brief description of the supporting business services for P2P Document Delivery.

1.1.5.3.1 Find Catalogue

- Service Provider:

[6] Note that the "service provider" and "service consumer" healthcare provider organisations that participate in a Document Delivery business service interaction are not required to first enter into a bi-lateral agreement in order for them to interact.

Directory Provider

- Service Consumer:

  Document Issuer.

- Service Description:

  The service allows a *Document Issuer* to find the *E-Health Services Catalogue Publisher* that can provide the *E-Health Services Catalogue* for an intended *Document Recipient*.

- Service Functions:
  - Lookup:

    At the request of a *Document Issuer* nominating a target *Healthcare Provider Organisation*, the *Directory Provider* returns the *E-Health Services Catalogue Publisher*.

1.1.5.3.2 Search Catalogue

- Service Provider:

  E-Health Services Catalogue Publisher

- Service Consumer:

  Document Issuer.

- Service Description:

  The service allows a *Document Issuer* to search the *E-Health Services Catalogue* to establish the capabilities for an intended *Document Receiver*.

- Service Functions
  - Lookup:

    At the request of a *Document Issuer* nominating a target *Healthcare Provider Organisation* and a target business service, the *E-Health Services Catalogue Publisher* indicates whether or not that service is provided by that organisation.

2 Computational Viewpoint

The computational viewpoint is concerned with describing the functional decomposition of the system into computational objects which interact at their interfaces, including descriptions of services that objects offer and other objects consume, i.e. service contracts in general terms. These objects describe the key functionality of the system to be built, while assuming that necessary infrastructure support and services are specified elsewhere, using engineering and technology viewpoint concepts described below.

This section of the document contains conformance statements that specify the services in terms of the messages exchanged, the processing required of a service invoker prior to invoking a service, the dependency between the response messages generated and the request message and the prior state of the service provider, the resulting effect (if any) on the state of the service provider and the required processing of response message by the service invoker.

2.1 P2P Document Delivery Architecture

This section provides a UML model, and its accompanying descriptive text, which defines key concepts that are referenced by the conformance statements found this document.

2.1.1 Overview

Figure 3 provides an overview of the P2P Document Delivery Architecture.

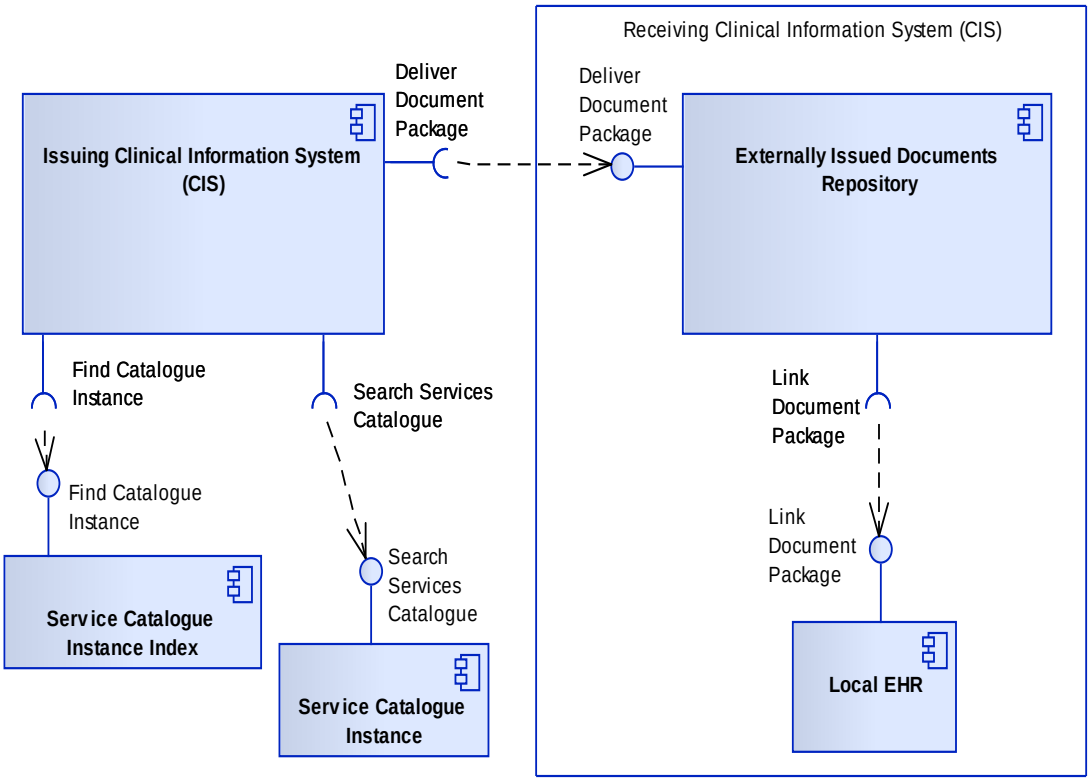

Figure 3: P2P Document Delivery – services overview

In Figure 3 the system roles are represented as UML components or enclosing borders.

2.1.2 System Roles

The P2P Document Delivery architecture is defined in terms of the following system roles.

System Role	Description	System Owner (Community Role)	Reference
Issuing CIS	An Issuing Clinical Information System (CIS) issues *Document Packages* and initiates their delivery to one or more Receiving CISs.	Document Issuer (section 1.1)	Section 2.4
Receiving CIS	The CIS that receives *Document Packages* and links it to the healthcare record of the *Subject of Care*.	Document Receiver (section 1.1)	Section 2.2, Section 2.3, Section 2.4
Externally Issued Documents Repository	A logical component of a CIS that is responsible for: • Updating the Local EHR • maintaining a local copy of *Document Packages* issued by external healthcare providers.	Document Receiver (section 1.1)	Section 2.2
Local EHR	A logical component of a CIS that is responsible for maintaining the local electronic healthcare records of the patients of a healthcare provider organisation.	Document Receiver (section 1.1)	Section 2.3
Services Catalogue Instance	A Services Catalogue Instance publishes, for one or more healthcare provider organisations, a catalogue of the services supported by that healthcare provider organisation. There may be more than one Services Catalogue Instance – the authoritative Services Catalogue Instance for a given healthcare provider organisation can be found by a query to A Services Catalogue Instance Index.	E-Health Services Catalogue Publisher (section 1.1)	Section 2.5
Services Catalogue Instance Index	A Services Catalogue Instance Index provides an index that allows the authoritative Services Catalogue Instance for a given healthcare provider organisation to be located.	Directory Provider (section 1.1)	Section 2.6

Table 1: System roles

2.1.3 Data Types

The parameters to the operations of the service interfaces and the logical model of the state managed by the system roles are represented as UML Data Types – defined in Section 3.

Service interface parameter data types are:

- `DocumentPackage`: A package comprising a clinical document together with all its attachments (defined in section 1.1.3.1)
- `DeliveryAck`: A message that, when it contains an `isSucessful` attribute with the value `TRUE`, informs the invoking system of the successful delivery of a `DocumentPackage`.
- `Identifier`: All identifiers are represented by this logical data type.

- `LookupResult`: A message informing invoking systems of the result of a lookup operation.

Logical state model entries are:

- `EIDRepository`: An entity that contains zero or more instances of a `DocumentPackage`.
- `ServiceCatalogueIndex`: A searchable index of the locations of Service Catalogue Instances – the key is the identity of the organisation whose `ServiceCatalogue` is published by the Service Catalogue Instance.
- `ServiceCatalogue`: A searchable list of the technical services supported by an organisation; where a technical service is identified as a (service interface, service operation and document type) tuple.

2.2 Externally Issued Documents Repository

2.2.1 Introduction

This section contains conformance points that apply to all software products that claim conformance to the Externally Issued Documents Repository system role.

The behaviour of an Externally Issued Documents Repository is defined in terms of the effect that invocations of the `Deliver Document Package` service interface have on the state of the Externally Issued Documents Repository. This state is represented logically as an `EIDRepository` that contains those `DocumentPackages` that have been issued by external healthcare provider organisations and sent to the target Receiving CIS.

2.2.2 Interfaces

P2P L1 An Externally Issued Documents Repository SHALL implement a provider of the `Deliver Document Package` interface.

P2P L2 An Externally Issued Documents Repository SHALL implement an invoker of the `Link Document Package` interface.

2.2.3 Deliver Document Package interface

An Externally Issued Documents Repository implements a provider of the `Deliver Document Package` service interface.

2.2.3.1 Interface Signature

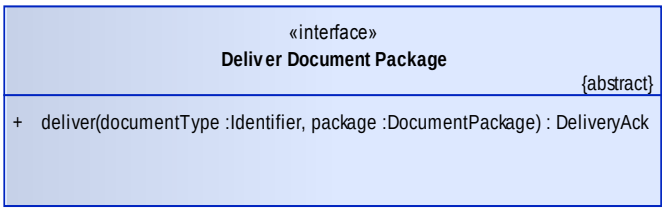

Figure 4: Deliver Document Package service interface signature

2.2.3.2 Deliver operation

2.2.3.2.1 Description

The `deliver` operation is used to send a `DocumentPackage` to a Receiving CIS.

If the request is successful, a `DocumentPackage` sent across this interface will be stored persistently in the Externally Issued Documents Repository.

2.2.3.2.2 Preconditions

The `Deliver Document Package::deliver` operation has been invoked.

2.2.3.2.3 Postconditions

The conformance points in this section do not apply when a fault condition is detected by an Externally Issued Documents Repository.

P2P L3 The Externally Issued Documents Repository SHALL update its `EIDRepository` to include the `DocumentPackage` that was provided as the value of the `package` input parameter.

P2P L4 The Externally Issued Documents Repository SHALL have invoked the `link` operation of the `Link Document Package` interface passing:

the value of the `documentType` input parameter as the `documentType` parameter of the `link` operation; and

the value of the `package` input parameter as the `package` parameter of the `link` operation.

P2P L5 The Externally Issued Documents Repository SHOULD log the invocation event including the date and time, input parameters, return values and error conditions.

P2P L6 The Externally Issued Documents Repository SHALL return a `DeliverAck` with the `isSuccessful` attribute set to `TRUE`.

2.2.3.2.4 Fault Conditions

The following conformance points apply if, as result of the invocation of the `Deliver Document Package::deliver` operation, the `EIDRepository` is not updated to include the input `DocumentPackage`.

P2P L6a The Externally Issued Documents Repository SHALL inform the Recipient, or another responsible system user, of a failed attempt to deliver a `DocumentPackage`.

P2P L7 The Externally Issued Documents Repository SHOULD log the invocation event including the date and time, input parameters, return values and error conditions.

P2P L8 The Externally Issued Documents Repository SHALL discard any pending state changes that are the result of the invocation of the `delivery` operation.

P2P L9 The Externally Issued Documents Repository MAY return a `DeliverAck` with the `isSuccessful` attribute set to `FALSE`.

2.3 Local EHR

2.3.1 Introduction

This section contains conformance points that apply to all software products that claim conformance to the Local EHR system role.

2.3.2 Interfaces

P2P L10 A Local EHR SHALL implement a provider of the `Link Document Package` interface.

2.3.3 Common Conformance Points

This section contains common conformance points that apply to the Local EHR system role independently of any interface invocation.

P2P L11 The Local EHR SHALL be conformant to the Use of Healthcare Identifiers in Health Software Systems, Software Conformance Requirements [NEHTA2011b], where conformance is assessed according to the process described in the Healthcare Identifiers Software, Conformance Assessment Scheme [NEHTA2011a].

P2P L12 The Local EHR SHALL provide a viewing capability for the *Clinical Document* contained in a `DocumentPackage` that is fully integrated within the clinical information system. This capability will conform to the clinical document rendering specification [CDAREND].

2.3.4 Link Document Package interface

2.3.4.1 Interface Signature

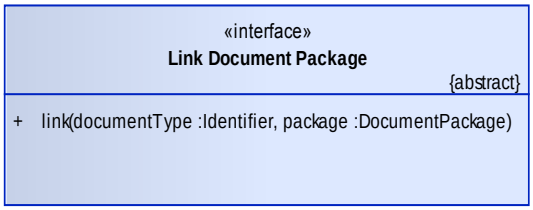

Figure 5: Link Document Package interface signature

2.3.4.2 link Operation

2.3.4.2.1 Description

The `link` operation is used to submit for clinical processing and clinical use a `DocumentPackage` (typically received over the Deliver Document Package service interface of the Externally Issued Documents Repository system role The `DocumentPackage` will be processed, linked to the records of the *Subject of Care* and displayed to clinical staff with an appropriate rendering of the data and relationships.

2.3.4.2.2 Preconditions

None.

2.3.4.2.3 Postconditions

P2P L13 The Local EHR SHALL, process the `package` in accordance with Use of Healthcare Identifiers in Health Software Systems, Software Conformance Requirements [NEHTA2011b].

2.3.4.2.4 Fault Conditions

None.

2.4 Issuing Clinical Information System

2.4.1 Introduction

This section contains conformance points that apply to all software products that claim conformance to the Issuing CIS system role.

The Issuing CIS system role is a peer of a Receiving CIS system role. An Issuing CIS is assumed to be managing in an internal store of `DocumentPackages`, some of which need to be issued to intended *Document Receivers*.

At the time of the decision to transmit a `DocumentPackage`, the Issuing CIS is assumed to be informed of the identity of the intended *Document Receiver*. The Issuing CIS is responsible for interacting with a system that implements the Services Catalogue Instance Index system role, to identify Services Catalogue Instances that will provide Services Catalogues that identify the services that are supported by the intended *Document Receivers*.

The Issuing CIS also has the responsibility for deriving and passing as associated data with a `DocumentPackage`, the document type of the `DocumentPackage`.

2.4.2 Interfaces

P2P L14 An Issuing CIS SHALL implement an invoker of the `Deliver Document Package` interface.

P2P L15 An Issuing CIS SHALL implement an invoker of the `Find Catalogue Instance` interface.

P2P L16 An Issuing CIS SHALL implement an invoker of the `Search Services Catalogue` interface.

2.4.3 Deliver Document Package interface

An Issuing CIS invokes the `Deliver Document Package` service interface.

2.4.3.1 Interface Signature

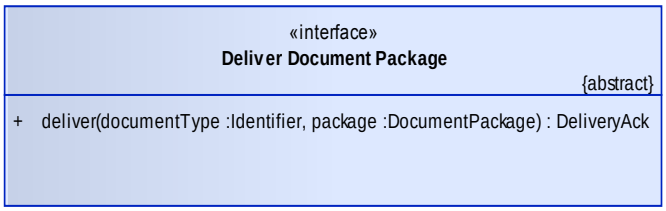

Figure 6: Deliver Document Package service interface signature

2.4.3.2 `deliver` Operation

2.4.3.2.1 Description

The `deliver` operation transfers a `DocumentPackage` to a Receiver CIS that is "owned by" (i.e. operated by or on behalf of) a *Document Receiver* (i.e. a healthcare provider organisation).

2.4.3.2.2 Preconditions

The following have been determined by means that are not constrained by this specification:

- An intended *Document Receiver* has been identified – this organisation is referenced as [Target Receiving Organisation].
- A `DocumentPackage` is available for delivery – this `DocumentPackage` is referenced as [Issued Document Package].
- The `documentType` of the `DocumentPackage` has been identified – this `documentType` is referenced as [Issued Document Type].
- The service instance location of a Services Catalogue Instance Index is known – this service instance location is referenced as [Target Services Catalogue Index Instance].
- A uniquely identified internal event has been triggered to deliver [Issued Document Package] to [Target Receiving Organisation] – this event is referenced as [Delivery Event Id].

The location of the `Services Catalogue Instance` that is authoritative for [Target Receiving Organisation] has been determined (see section 2.4.4) – this service instance location is referenced as [Target Services Catalogue Instance].

The location of the Externally Issued Documents Repository for [Target Receiving Organisation] has been determined (see section 2.4.5) – this service instance location is referenced as [Target Externally Issued Documents Repository].

P2P L17 The Issuing CIS SHALL invoke the `Deliver Document Package::deliver` operation on [Target Externally Issued Documents Repository] passing:

[Issued Document Type] as the value of the `documentType` parameter; and

[Issued Document Package] as the value of the `documentType` parameter.

2.4.3.2.3 Postconditions

P2P L17a The Issuing CIS SHOULD log the invocation event including the [Delivery Event Id], date and time, responsible system user, input parameters, return values and fault conditions.

2.4.3.2.4 FaultConditions

The following conformance points apply if the `Deliver Document Package::deliver` operation on [Target Externally Issued Documents Repository] does not return `DeliveryAck` with `TRUE` as the value of the `isSuccessful` attribute within a time period determined by the underlying messaging infrastructure.

P2P L17b The Issuing CIS SHALL inform the Author, or another responsible system, user, that the [Delivery Event Id] failed.

P2P L18 The Issuing CIS SHOULD log the invocation event including the [Delivery Event Id], date and time, responsible system user, input parameters, return values and all fault conditions.

P2P L19 The Issuing CIS SHOULD log the fault condition DELIVERY_FAULT for [Delivery Event Id].

2.4.4 Find Catalogue Instance interface

An Issuing CIS invokes the `Find Catalogue Instance` service interface.

2.4.4.1 Interface Signature

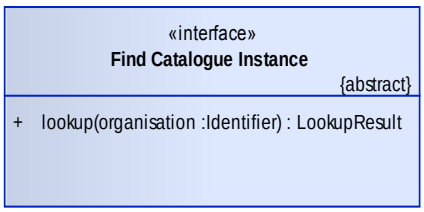

Figure 7: Find Catalogue Instance interface signature

2.4.4.2 lookup Operation

2.4.4.2.1 Description

The `lookup` operation returns the address of a provider of a `Search Services Catalogue` service interface (or an indication that no entry was found for the specification organisation).

2.4.4.2.2 Preconditions

The following have been determined by means that are not constrained by this specification:

- An intended *Document Receiver* has been identified – this organisation is referenced as [Target Receiving Organisation].
- A `DocumentPackage` is available for delivery – this `DocumentPackage` is referenced as [Issued Document Package].
- The `documentType` of the `DocumentPackage` has been identified – this `documentType` is referenced as [Issued Document Type].
- The service instance location of a Services Catalogue Instance Index is known – this service instance location is referenced as [Target Services Catalogue Index Instance].

The following has not yet been determined:

- The location of the `Services Catalogue Instance` that is authoritative for [Target Receiving Organisation] – this service instance location is referenced as [Target Services Catalogue Instance].

P2P L20 An Issuing CIS SHALL determine an unknown [Target Services Catalogue Instance] by invoking the `lookup` operation of the `Find Catalogue Instance` interface on [Target Services Catalogue Index Instance] passing [Target Receiving Organisation] as the value of the `organisation` parameter.

2.4.4.2.3 Postconditions

[Target Services Catalogue Instance] for [Delivery Event Id] has been determined.

2.4.4.2.4 Fault Conditions

The following conformance points apply if the `lookup` operation of the `Find Catalogue Instance` interface on [Target Services Catalogue Index Instance] does not return a `LookupResult` with `TRUE` as the value of the `found` attribute.

P2P L20a The Issuing CIS SHALL inform the Author, or another responsible system, user, that the [Delivery Event Id] failed due to an inability to locate a `Services Catalogue Instance` which is authoritative for the [Target Receiving Organisation].

P2P L21 The Issuing CIS SHOULD log the invocation event including the [Delivery Event Id], date and time, responsible system user, input parameters, return values and all fault conditions.

P2P L22 An Issuing CIS SHOULD log the fault condition NO_CATALOGUE for [Delivery Event id].

2.4.5 Search Services Catalogue interface

An Issuing CIS invokes the `Search Services Catalogue` service interface.

2.4.5.1 Interface Signature

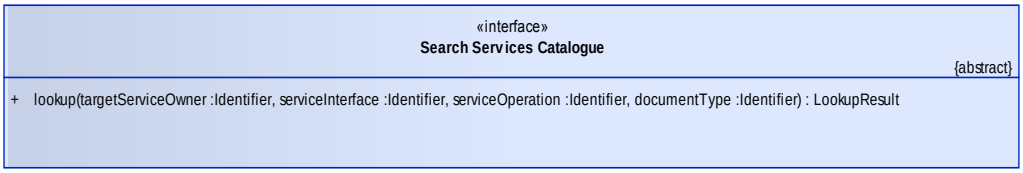

Figure 8: Search Services Catalogue interface signature

2.4.5.2 `lookup` Operation

2.4.5.2.1 Description

The `lookup` operation allows the Issuing CIS to determine if an intended *Document Receiver* supports the `Deliver Documents Package::deliver` operation for the delivery of document packages containing documents of the required type.

2.4.5.2.2 Preconditions

The following have been determined by means that are not constrained by this specification:

- An intended *Document Receiver* has been identified – this organisation is referenced as [Target Receiving Organisation].
- A `DocumentPackage` is available for delivery – this `DocumentPackage` is referenced as [Issued Document Package].
- The `documentType` of the `DocumentPackage` has been identified – this `documentType` is referenced as [Issued Document Type].
- The service instance location of a Services Catalogue Instance Index is known – this service instance location is referenced as [Target Services Catalogue Index Instance].

The location of the `Services Catalogue Instance` that is authoritative for [Target Receiving Organisation] has been determined (see section 2.4.4) – this service instance location is referenced as [Target Services Catalogue Instance].

The following has not yet been determined:

- The location of the Externally Issued Documents Repository for [Target Receiving Organisation] – this service instance location is referenced as [Target Externally Issued Documents Repository].

P2P L23 An Issuing CIS SHALL determine an unknown [Target Externally Issued Documents Repository] by invoking the `lookup` operation of the `Search Services Catalogue` interface of [Target Services Catalogue Instance] passing:

[Target Receiving Organisation] as the value of the `targetServiceOwner` parameter; and

the identity of the `Deliver Documents Package` interface as the value of the `serviceInterface` parameter; and

the identity of the `Deliver Documents Package::deliver` operation as the value of the `serviceOperation` parameter; and

[Issued Document Type] as the value of the `documentType` parameter.

2.4.5.2.3 Postconditions

[Target Externally Issued Documents Repository] for [Delivery Event Id] has been determined

2.4.5.2.4 Fault Conditions

The following conformance points apply if the `lookup` operation of the `Search Services Catalogue` interface of [Target Services Catalogue Instance] does not return a `LookupResult` with `TRUE` as the value of the `found` attribute.

P2P L23a The Issuing CIS SHALL inform the Author, or another responsible system, user, that the [Delivery Event Id] failed due to an inability to locate an endpoint to which to deliver the `DocumentPackage` intended for the [Target Receiving Organisation].

P2P L24 The Issuing CIS SHOULD log the invocation event including the [Delivery Event Id], date and time, responsible system user, input parameters, return values and all fault conditions.

P2P L25 An Issuing CIS SHOULD log the fault condition NOT_SUPPORTED for [Delivery Event id] .

2.5 Services Catalogue Instance

2.5.1 Introduction

The Services Catalogue Instance system role provides a service to allow clients to determine the capabilities of a target organisation.

2.5.2 Interfaces

P2P L26 A Services Catalogue Instance SHALL implement a provider of the `Search Services Catalogue` interface.

2.5.3 Search Services Catalogue interface

A Services Catalogue Instance provides the `Search Services Catalogue` service interface.

2.5.3.1 Interface Signature

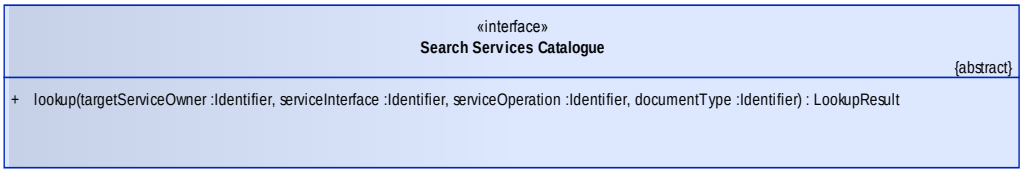

Figure 9: Search Services Catalogue interface signature

2.5.3.2 `lookup` Operation

2.5.3.2.1 Description

See section 2.4.5.2.

2.5.3.2.2 Preconditions

This specification does not constrain the implementation of Services Catalogue Instances with regard to how their `ServiceCatalogue` is populated.

2.5.3.2.3 Postconditions

P2P L27 In response to the invocation of the `lookup` operation of the `Search Services Catalogue` interface, A Services Catalogue Instance SHALL search its associated `ServiceCatalogue` for an entry where all the following fields match:

The `ServiceCatalogue::organisation` field is equal to the value of the `targetServiceOwner` input parameter; and

The `ServiceCatalogue::serviceInterface` field is equal to the value of the `serviceInterface` parameter; and

The `ServiceCatalogue::serviceOperation` field is equal to the value of the `serviceOperation` parameter; and

The `ServiceCatalogue::documentType` field is equal to the value of the `documentType` parameter.

If an entry is found then the Services Catalogue Instance SHALL return a `LookupResult` with the value of the `found` attribute set to `TRUE` and the value of the `location` attribute set to the `location` attribute of the matching entry.

If no entry is found then the Services Catalogue Instance SHALL return a `LookupResult` with the value of the `found` attribute set to `FALSE`.

2.5.3.2.4 Fault Conditions

None.

2.6 Services Catalogue Instance Index

2.6.1 Introduction

The Services Catalogue Instance Index system role provides a service to allow clients to determine the service instance location of A Services Catalogue Instance for a specified target organisation.

2.6.2 Interfaces

P2P L28 A Services Catalogue Instance Index SHALL implement a provider of the `Find Catalogue Instance` interface.

2.6.3 `Find Catalogue Instance` Interface

2.6.3.1 Interface Signature

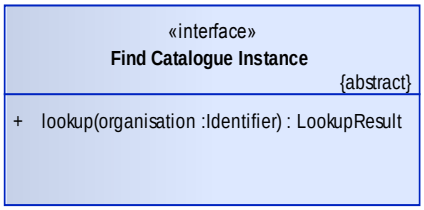

Figure 10: Find Catalogue Instance interface signature

2.6.3.2 `lookup` Operation

2.6.3.2.1 Description

See section 2.4.4.2.1.

2.6.3.2.2 Preconditions

This specification does not constrain the implementation of Services Catalogue Instance Index with regard to how their `ServiceCatalogueIndex` is populated.

2.6.3.2.3 Postconditions

P2P L29 In response to the invocation of the `lookup` operation of the `Find Catalogue Instance` interface the Services Catalogue Instance Index SHALL search its associated `ServiceCatalogueIndex` for an entry where the `ServiceCatalogIndex::organisation` is equal to the value of the `organisation` input parameter.

If an entry is found then Services Catalogue Instance Index SHALL return a `LookupResult` with the value of the `found` attribute set to `TRUE` and the value of the `location` attribute set to the `location` attribute of the matching entry.

If no entry is found then the Services Catalogue Instance SHALL return a `LookupResult` with the value of the `found` attribute set to `FALSE`.

2.6.3.2.4 Fault Conditions

None.

3 Informational Viewpoint

3.1 Introduction

The diagram below contains an illustrative depiction of the significant information items and their relationships. A brief description of some of these information items is provided below.

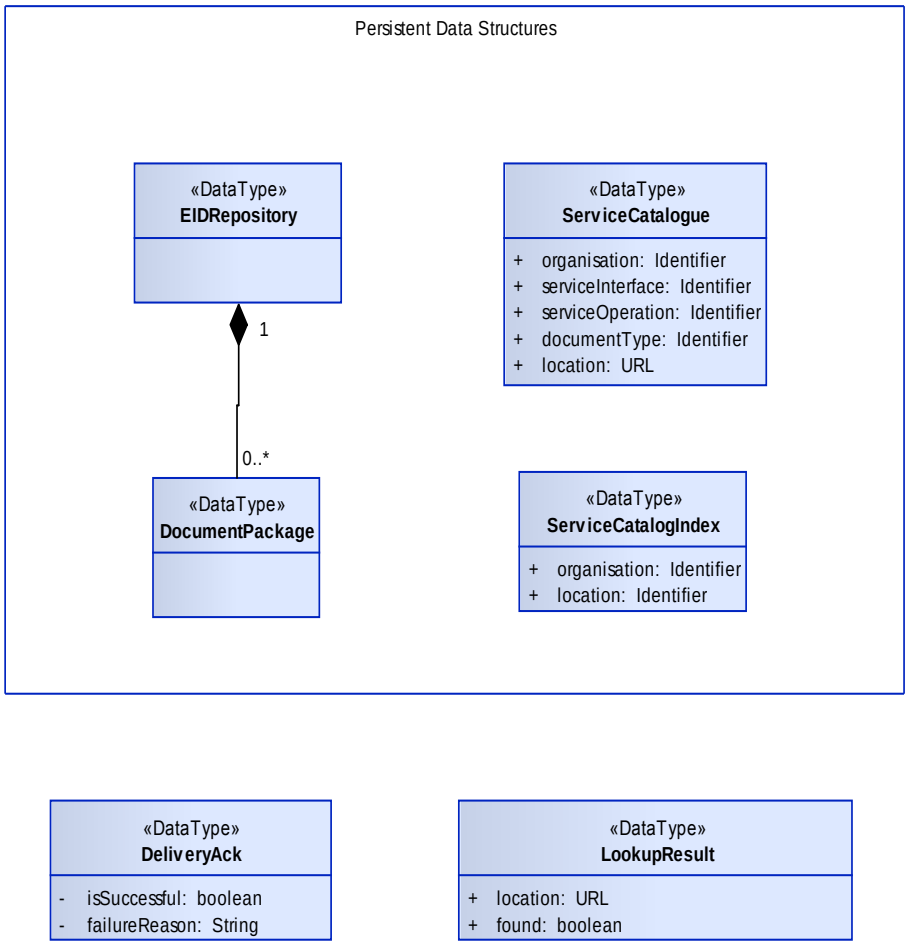

Figure 11: Data types for P2P Document Delivery

3.2 EIDRepository

The `EIDRepository` is a logical data store that is maintained by the Externally Issued Document Repository. `DocumentPackages` are received from external sources via the `Deliver Document Package` interface, and persisted in the `EIDRepository`.

The `EIDRepository` does not impose any restrictions on the uniqueness of its entries.

3.3 DocumentPackage

A `DocumentPackage` represents a Clinical Document package (a Clinical Document and its associated attachments).

3.4 ServiceCatalogue

A `ServiceCatalogue` represents the state managed by a Service Catalogue Instance – it comprises the following attributes:

- `organisation`: this attribute is the identity of the organisation that owns the service instance at the location specified by the `location` attribute.
- `serviceInterface`: this represents the logical service interface supported by the service instance at the location specified by the `location` attribute.
- `serviceOperation`: this represents the specific operation of the service interface supported by the service instance at the location specified by the `location` attribute
- `documentType`: this represents the specific type of clinical document that is supported by the service instance at the location specified by the `location` attribute.
- `location`: this represents the service instance location.

The tuple (`organisation`, `serviceInterface`, `serviceOperation`, `documentType`) is the unique key for each entry.

3.5 ServiceCatalogueIndex

A `ServiceCatalogue` represents the state managed by a Service Catalogue Instance Index – it comprises the following attributes:

- `organisation`: this attribute is the identity of the organisation whose `ServiceCatalogue` is available at the service instance at the location specified by the `location` attribute.
- `location`: this represents the service instance location.

`Organisation` is the unique key for each entry.

Definitions

This section explains the specialised terminology used in this document.

Shortened Terms

This table lists abbreviations and acronyms in alphabetical order.

Term	Description
CDA	Clinical Document Architecture
CIS	Clinical Information System
ELS	Endpoint Locator Service
EHR	Electronic Health Record
HL7	Health Level 7
IETF	Internet Engineering Task Force
LSS	Logical Solution Specification
NeHF	National eHealth Framework
P2P	Provider to Provider
SMD	Secure Message Delivery
TSS	Technical Solution Specification
XML	Extensible Markup Language
URI	Uniform Resource Identifier

Glossary

This table lists specialised terminology in alphabetical order.

Term	Description
Service interface	The definition of the functionality of a service
Service implementation	A product (i.e. software) that conforms to a service interface
Service instance	A specific deployment of a service implementation
Service operation	A service operation represents an individually invoke-able function – a service interface defines one or more service operations.

References

At the time of publication, the document versions indicated are valid. However, as all documents listed below are subject to revision, readers are encouraged to use the most recent versions of these documents.

[REF]	Document Name	Publisher
[CDAREND]	CDA Rendering Guide	NEHTA
[NEHF]	National e-Health Framework	TBD
[NEHTA2011a]	Healthcare Identifiers Software, Conformance Assessment Scheme, version 2.2, NEHTA, 20 April 2011	NEHTA
[NEHTA2011b]	Use of Healthcare Identifiers in Health Software Systems, Software Conformance Requirements, version 1.3.1, NEHTA, 18 April 2011	NEHTA
[SOA-RAF]	Reference Architecture Foundation for Service Oriented Architecture Version 1.0. 06 July 2011, OASIS Committee Specification Draft 03 / Public Review Draft 02	OASIS
[UML2.3]	OMG Unified Modeling Language (OMG UML), Superstructure, Version 2.3	OMG
[UMLODP]	ITU-T Rec. X.906 | ISO/IEC 19793: Information technology - Open distributed processing - Use of UML for ODP system specifications	ISO

Appendix A: Log of changes

This appendix lists the major changes and fixes applied to this document resulting from public feedback and internal testing.

Changes Version 1.0 November 2011 to Version 1.2 14 March 2012

ID	Document Reference		Change Type	Change Detail	Change instigated by	Rational for Change	Date Changed
	Section	Section Name					
1	Page iii	Document Information	Changed Document Information section	Removed Contributor column form Change History Modified comment for version 1.0 Removed Authorisation History Removed Document Authorisation	NEHTA	Alignment with NEHTA document information standards	02/03/2012
2	Page iii	Document Information	Added row to table	Added version 1.1	NEHTA	New version	02/03/2012
3	2.1.2	System Roles	Inserted missing reference	Corrected missing reference	NEHTA		02/03/2012
4	2.1.3	Data Types	Changed definition	Old definition: " A message that informs the invoking system the result of a deliver operation" New definition : "A message that, when it contains an isSucessful attribute with the value TRUE, informs the invoking system of the successful delivery of a DocumentPackage	NEHTA	The new definition makes it clear that only positive acknowledgments definitively communicate the result of an invocation. Not all error cases will result in a negative acknowledgment.	02/03/2012
5	2.2.3.2.3	Postconditions	Changed conformance point	Changed SHALL to SHOULD in	NEHTA	System requirements to	02/03/2012

ID	Document Reference		Change Type	Change Detail	Change instigated by	Rational for Change	Date Changed
				P2P L5		maintain audit logs are not mandatory	
6	2.2.3.2.4	Fault Conditions	Changed paragraph	Changed the first paragraph in this section to clarify the conditions under which the conformance points in this section apply	NEHTA	Clarify required fault processing.	02/03/2012
7	2.2.3.2.4	Fault Conditions	New conformance point	Added conformance point P2P L6a	NEHTA	Faults need to be brought to the attention of a user.	02/03/2012
8	2.2.3.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L7	NEHTA	System requirements to maintain audit logs are not mandatory	02/03/2012
9	2.2.3.2.4	Fault Conditions	Changed conformance point	Changed SHALL to MAY in P2P L9	NEHTA	Receivers are not required to detect all error conditions – sender will retry operations until either they receive either a positive or a negative acknowledgement or the messaging layer abandons the invocation.	02/03/2012
10	2.4.3.2.3	Postconditions	Added missing conformance point number	Added conformance point number P2P L17a to existing paragraph	NEHTA		02/03/2012
11	2.4.3.2.3	Postconditions	Changed conformance point	Changed SHALL to SHOULD in P2P L17a	NEHTA	System requirements to maintain audit logs are not mandatory	02/03/2012
12	2.4.3.2.4	Fault Conditions	Inserted paragraph	Added a paragraph in this section to clarify the conditions under which the conformance points in this	NEHTA	Clarify required fault processing.	02/03/2012

ID	Document Reference		Change Type	Change Detail	Change instigated by	Rational for Change	Date Changed
				section apply			
13	2.4.3.2.4	Fault Conditions	New conformance point	Added conformance point P2P 17b	NEHTA	Faults need to be brought to the attention of a user.	02/03/2012
14	2.4.3.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L18	NEHTA	System requirements to maintain audit logs are not mandatory	02/03/2012
15	2.4.3.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L19.	NEHTA	System requirements to maintain audit logs are not mandatory.	02/03/2012
16	2.4.3.2.4	Fault Conditions	Changed conformance point	Changed P2P L19 to remove the clause that defines the means by which the fault condition is detected.	NEHTA	The paragraph added (change ID 12) now defines the means by which the fault condition is detected	02/03/2012
17	2.4.4.2.4	Fault Conditions	Inserted paragraph	Added a paragraph in this section to clarify the conditions under which the conformance points in this section apply	NEHTA	Clarify required fault processing.	02/03/2012
18	2.4.4.2.4	Fault Conditions	New conformance point	Added conformance point P2P 20a	NEHTA	Faults need to be brought to the attention of a user.	02/03/2012
19	2.4.4.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L21	NEHTA	System requirements to maintain audit logs are not mandatory	02/03/2012
20	2.4.4.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L22.	NEHTA	System requirements to maintain audit logs are not mandatory.	02/03/2012
21	2.4.4.2.4	Fault Conditions	Changed conformance point	Changed P2P L22 to remove	NEHTA	The paragraph	02/03/2012

ID	Document Reference		Change Type	Change Detail	Change instigated by	Rational for Change	Date Changed
				the clause that defines the means by which the fault condition is detected.		added to this section (change ID 17) now defines the means by which the fault condition is detected	
22	2.4.5.2.4	Fault Conditions	Inserted paragraph	Added a paragraph in this section to clarify the conditions under which the conformance points in this section apply	NEHTA	Clarify required fault processing.	02/03/2012
23	2.4.5.2.4	Fault Conditions	New conformance point	Added conformance point P2P 23a	NEHTA	Faults need to be brought to the attention of a user.	02/03/2012
24	2.4.5.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L24	NEHTA	System requirements to maintain audit logs are not mandatory	02/03/2012
25	2.4.5.2.4	Fault Conditions	Changed conformance point	Changed SHALL to SHOULD in P2P L25.	NEHTA	System requirements to maintain audit logs are not mandatory.	02/03/2012
26	2.4.5.2.4	Fault Conditions	Changed conformance point	Changed P2P L25 to remove the clause that defines the means by which the fault condition is detected.	NEHTA	The paragraph added to this section (change ID 12) now defines the means by which the fault condition is detected	02/03/2012