



# South Carolina Health Information Exchange (SCHIEEx)

Interoperability Services Guide Draft  
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## Table of Contents

Introduction .....	4
Objective .....	4
Intended Audience .....	4
On-boarding Considerations: .....	4
Background .....	5
Guiding Principles .....	6
SCHIEEx Technology Overview.....	7
A Brief Overview of NwHIN Standards and IHE .....	9
Integrating the Healthcare Enterprise (IHE) .....	9
Clinical Document Architecture .....	10
Continuity of Care Document .....	10
HITSP CDA Content Modules (C83).....	10
HITSP C32 .....	10
IHE PCC.....	11
What it means to “Connect to SCHIEEx” .....	11
Resources Provided by the SCHIEEx to Participants .....	11
SCHIEEx PIX Management Service .....	12
SCHIEEx XDS.b Document Registry .....	12
Audit Services.....	12
Consent Services .....	12
Exchange with the Public Health Immunization Registry: SCDHEC Immunization Registry Reporting and Retrieval Services.....	13
A Step-by-Step Overview of SCHIEEx Data Flow.....	13
Step 1 – Provide Patient Information .....	14
Step 2 – Provide Documents.....	14
Step 3 – Retrieve Documents.....	15
SCHIEEx IHE Participation Part I. Architecture.....	16

Overview: Connecting to SCHIEEx .....	16
SCHIEEx IHE Participation Part II: Sending Content .....	18
Content Validation and Testing Process .....	18
Getting Connected- Process Flow .....	20
Preparation: .....	20
Step 1: Register in the SCHIEEx Website and submit the signed SCHIEEx Legal Agreements and Associated Business Documents.....	20
Step 2: Complete Basic Content and Interface Validation and submit the SCHIEEx Participant Technical Test Credentialing Application.....	20
Step 3: Complete Technical Verification and Validation .....	21
Step 4: Complete the SCHIEEx Online Subscription and Order Form .....	21
Step 5: Receive your Production Technical Package .....	21
Technical Preparation Checklist.....	21
Test 1 – Provide Patient Information.....	21
Test 2 – Obtain SCHIEEx Affinity Domain Patient Identifier .....	22
Test 3 – Register Document with Registry .....	22
Test 4 – Query Registry by Patient Identifier .....	23
Test 5 – Retrieve document from Repository (as Repository actor) .....	23
Test 6 – Query Registry for On-demand documents associated with patient.....	23
Additional Resources and References .....	24
PIX and XDS.b and BPPC Profiles.....	24
IHE Patient Care Coordination (PCC) Profiles or Content profiles .....	24
<a href="http://www.ihe.net/Technical_Framework/upload/IHE_PCC_Suppl_Immunization_Content_Rev2-2_TI_2011-09-09.pdf">http://www.ihe.net/Technical_Framework/upload/IHE_PCC_Suppl_Immunization_Content_Rev2-2_TI_2011-09-09.pdf</a> .....	24
HITSP C32 .....	24
Wiki Pages.....	25
Annotated XDS Examples.....	25

## Introduction

### Objective

This document provides a technical overview of the South Carolina Health Information Exchange (SCHIEx) and the standards-based specifications regarding connectivity to SCHIEx. First, this guide is intended to serve as an introduction to the technical services, implementation methodology and national standards that have been employed to develop SCHIEx into a highly secure and standards-based platform that will serve as the backbone for health information exchange in the state of South Carolina. Second, this guide will detail the national standards and technical requirements that must be implemented by Exchange Participants. The step-by-step “on-boarding” process that will enable your organization to connect to SCHIEx is discussed in detail.

### Intended Audience

This document is intended for prospective SCHIEx Participants who are seeking an introduction to the technical services provided by SCHIEx and an outline of the work process required to take part in the Exchange. It is intended for technical users familiar with health care information technology standards such as those promulgated by HITSP (Healthcare Information Technology Standards Panel), ONC (Office of the National Coordinator), and IHE (Integrating the Healthcare Enterprise).

On-boarding to SCHIEx implies that your organization can securely exchange clinical information on patient with other healthcare organizations that are also part of the exchange. Please ensure that you have the right stakeholder group engaged in evaluating and making decisions around the On-boarding Considerations listed below.

### On-boarding Considerations:

- What are your high level goals in connecting to the exchange?
- What kind of clinical information do you want to make available via the exchange and when do you want to publish this information - for e.g. you might decide to publish an encounter summary document, containing problems, medications, allergies and results formatted as a HITSP C32 at the time of patient discharge or as a PCP, you may decide to publish a referral summary, containing a reason for referral, history of present illness, active problems etc., for a patient that requires follow up by a specialist
- What steps must be taken to designate any information requiring special protection under applicable laws as such in your electronic medical record system and, if necessary, to withhold such information from SCHIEx.
- Do you plan to utilize the SCHIEx platform for Public Health Reporting?
- What kind of clinical information are you interested in receiving from the exchange and how do you plan on making that part of your current workflow so the clinician is presented with the right information at the right time

- What systems do you want to use in order to on-board to the exchange and do they have the capabilities required for on-boarding?
- Do you have the capability to host your document sharing repository or do you plan to utilize a third party hosting solution?

### Background

South Carolina is in the forefront of health information technology (HIT) with both public and private initiatives in support of HIT even before the American Recovery and Reinvestment Act of 2009 (ARRA) and incentive funding. Launched in 2007, SCHIEEx is an innovative statewide initiative that provides a state-level information highway that connects healthcare providers and stakeholder groups to each other across South Carolina. Originally seeded with claims data, SCHIEEx was built on a federated architecture that delivers a 10-year health history of more than 4.3 million South Carolina citizens inferred from Medicaid and UB92/HCFA1500 claims. This broad dataset, which covers all of South Carolina, is now being supplemented by deep clinical data from prescription history sources, South Carolina's immunization registry, and local and regional EMR-enabled healthcare providers.

SCHIEEx provides core HIE network services such as a statewide master patient index (MPI), a statewide record locator service (RLS), authentication services, and audit services that can be leveraged by participants of the exchange. . **Figure 1** illustrates the services of SCHIEEx.

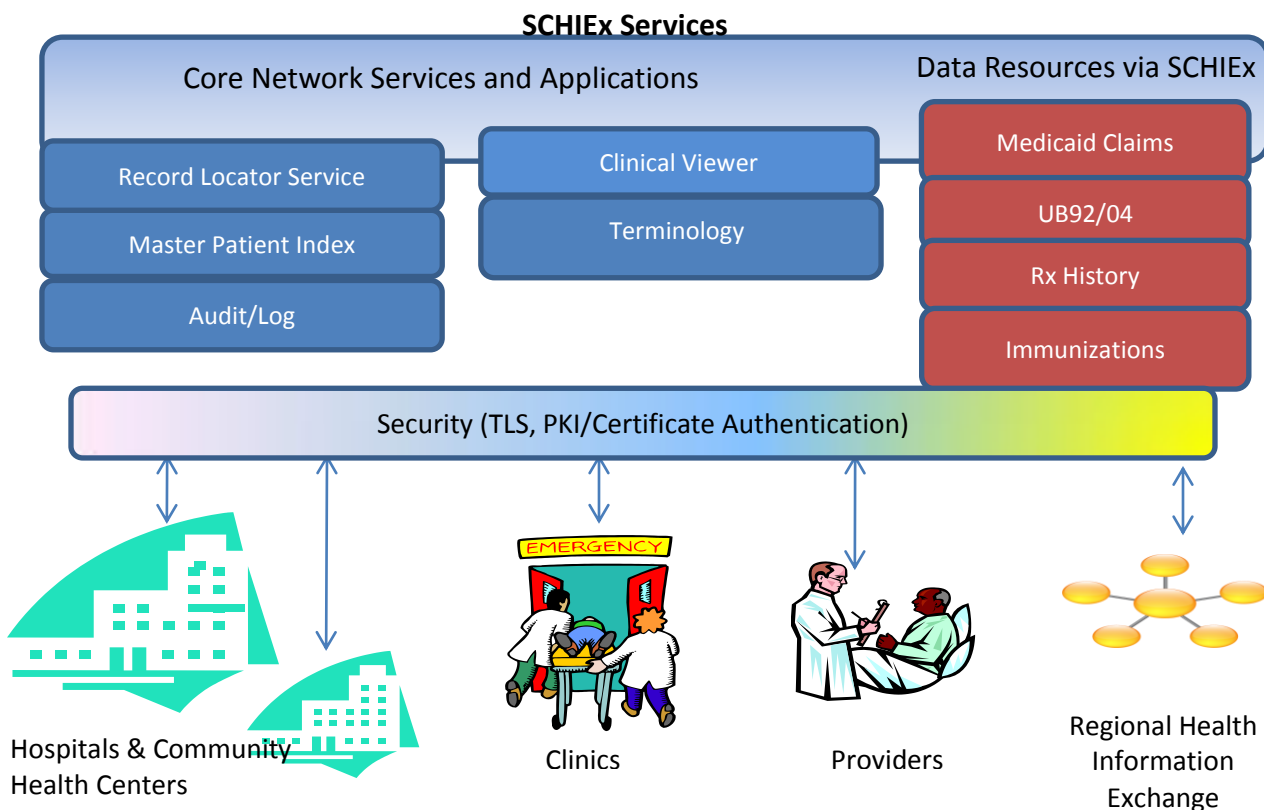


Figure 1 - SCHIEx Overview

## Guiding Principles

SCHIEx has been developed in a multi-year effort with close collaboration between a diverse set of stakeholders in the state of South Carolina and in concert with nationally recognized standards and policies set forth by the Office of the National Coordinator for Health Information Technology. The following guiding principles have been established to ensure the development of an effective technology platform to serve the needs of South Carolina:

- **SCHIEx is built on open technology standards for health information exchange and interoperability.** Eligible South Carolina organizations that wish to participate in SCHIEx can implement the necessary interfaces by selecting from a wide range of health information technology vendors with electronic health record systems that will have been certified to comply with nationally established standards.
- **SCHIEx is highly secure and committed to patient privacy.** Every aspect of the health information exchange process is secured in order to protect private patient health information. SCHIEx Participants are required to implement a PKI certificate-based encryption scheme that protects patient information in transport and authenticates Exchange Participants. All centrally located demographic information is secured using an industry leading crypto-hash persistence

mechanism that guarantees sensitive demographic information cannot be revealed through the network.

- **SCHIEx is designed as federated information architecture.** SCHIEx minimizes the amount of information that will be managed centrally. Clinical data is persisted in Participant managed repositories and will be available to other SCHIEx Participants only when a verifiable clinical relationship has been established with the relevant patient.
- **SCHIEx focuses on delivering highly valuable health data to providers.** SCHIEx has already implemented interfaces to a wide array of state-level health data assets such as Medicaid and UB92/04 claims information, so that new Participants can potentially have access to clinical data for a large set of their patients – avoiding the “Empty HIE” problem.

### SCHIEx Technology Overview

SCHIEx is built using open technology standards that fully comply with the specifications established by the Nationwide Health Information Network (NwHIN). NwHIN is a set of standards, services, and policies that enable secure health information exchange over the Internet. The NwHIN will provide a foundation for the exchange of health IT across diverse entities, within communities, and across the country.

SCHIEx is modeled after the Markle Foundation’s *Connecting for Health Framework* and implements a “network of networks” approach for health information exchange across South Carolina. SCHIEx is built on a commercial off-the-shelf software (COTS) technology stack that uses a federated, service-oriented architecture (SOA) to deliver a standards-compliant enterprise service bus to deploy and operate a statewide HIE.

Key items of note in this architecture are its flexibility and compliance with NwHIN and HITECH/ARRA Meaningful Use Final Rule standards:

- SCHIEx is designed as a federated model where the edge systems adapters are physically located adjacent to the source.
- SCHIEx provides a statewide Master Patient Index (MPI) service.
- SCHIEx also implements a Record Locator Service (RLS) which serves as a “white pages” for the state providing pointers to clinical information about a given patient.
- SCHIEx provides the Service Access Layer which provides a trusted uniform transport and security infrastructure based on web services following NwHIN standards. These standards (i.e. IHE ATNA) describe the security environment (user identification, authentication, authorization,

and access control), audit requirements, and transport-level requirements (TLS) to ensure each network node complies with the guiding principles of SCHIEEx for security and privacy.

- SCHIEEx provides a Clinical Viewer web application. It is specifically designed to provide visualization and data monitoring tools that are tailored to the wealth of claims data available to the Exchange, in order to drive provider productivity and improved patient care outcomes.

Figure 2 shows SCHIEEx Services and the standards used for interoperability for healthcare providers to connect. It demonstrates compliance with national interoperability standards to facilitate connecting to the NwHIN and other states. Similarly the Healthcare Information Technology Standards Panel (HITSP)/ integrating the Healthcare Enterprise (IHE) compliant standards (Patient Identifier Cross Reference (PIX)/Physician Data Query (PDQ), Cross Enterprise Document Sharing (XDS.b)/CCD allows providers from disparate and diverse healthcare settings to connect to SCHIEEx.

## SCHIEEx ...a network of networks

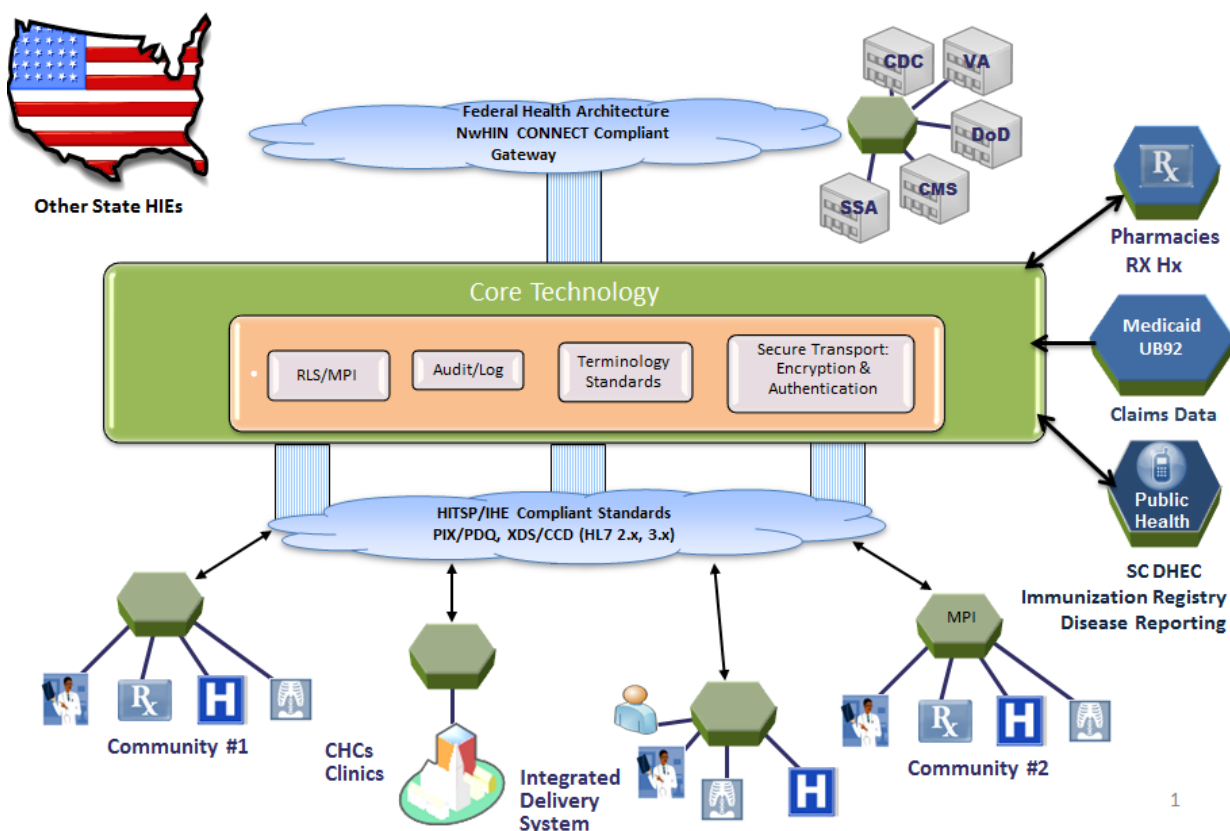


Figure 2: SCHIEEx Services and Standards-based Interoperability



### A Brief Overview of NwHIN Standards and IHE

A basic understanding of the standards, services and policies mandated by the NwHIN is necessary to understand the technical requirements specified for every SCHIEx Participant. An introduction to the core standards is provided in this section. Detailed documents describing these standards are available at:

#### **NwHIN History and Background**

[http://healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_nhin\\_historical\\_background\\_information/1409](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_nhin_historical_background_information/1409)

#### **Integrating the Healthcare Enterprise: IT Infrastructure Technical Framework**

[http://www.ihe.net/Technical\\_Framework/index.cfm#IT](http://www.ihe.net/Technical_Framework/index.cfm#IT)

#### **HITSP Harmonization Framework**

<http://www.hitsp.org/harmonization.aspx#Components>

### Integrating the Healthcare Enterprise (IHE)

IHE is an industry-leading initiative that seeks to facilitate the exchange of information among healthcare systems by creating detailed specifications for specific use cases that optimize established standards.

IHE has published a set of “Integration Profiles” (an amalgamation of existing standards and supplemental usage constraints designed for a specific use case) that define the core interoperability services implemented by SCHIEx. Specifically, the following integration profiles must be understood and implemented by participating organizations:

1. **PIX:** Patient Identifier Cross Reference
2. **XDS.b:** Cross Enterprise Document Sharing
3. **ATNA:** Audit Trail and Node Authentication
4. **CT:** Consistent Time
5. **BPPC:** Basic Patient Privacy and Consent (see the [Consent Services](#) section)

IHE also tests and certifies compliance with these integration profiles at carefully planned and supervised events called Connectathons. SCHIEx core network service technologies have been certified with regards to the relevant integration profiles. It is recommended that participating organizations select information technology vendors that have also been certified at a recent IHE Connectathon. While the majority of this document focuses on the transport, handshake, and mechanism of exchange, the actual “content” of what health information may be exchanged from a technology standpoint is governed by the following industry standards:

## Clinical Document Architecture

**Clinical Document Architecture (CDA)** is an HL7 document markup standard that specifies the structure and semantics of "clinical documents" for the purpose of exchange. CDA documents derive their machine-processable meaning from the HL7 Reference Information Model (RIM) and use the HL7 Version 3 Data Types. CDA is flexible XML-based clinical document **architecture**. CDA itself is not a specific document, but can be used to express many types of documents.

A CDA document can contain many data sections, all of which contain narrative text, and some of which contain structured data elements, some of which are coded. There are many types of CDA documents, including CCD, XDS-MS Discharge Summary (HITSP C48), History and Physical (HITSP C84), Lab Report (HITSPC37), etc.

## Continuity of Care Document

**Continuity of Care Document (CCD)** describes constraints on the HL7 Clinical Document Architecture, Release 2 (CDA) specification. It specifies a core data set of the most relevant administrative, demographic, and clinical information facts about a patient's healthcare, covering one or more healthcare encounters. It provides a means for one healthcare practitioner, system, or setting to aggregate all of the pertinent data about a patient and forward it to another practitioner, system, or setting to support the continuity of care.

CCD is just one type of CDA document. Other types of CDA documents can contain some of the same CCD sections, but different sections as well.

## HITSP CDA Content Modules (C83)

**HITSP CDA Content Modules (C83)** describes a library of sections that can be combined into various CDA document types. In addition, a document type can include additional sections, even those not a part of it. So for example a CCD could add a Reason for Referral section added and still be a valid CCD. In addition, the sections in C83 can contain structured data, described as "Entry Content Modules" that are being assembled into a "HITSP Data Dictionary" that describes the data elements and the constraints (optionality, repeatability, and value sets) for each data element

## HITSP C32

**HITSP C32**, The HITSP Summary Document Using HL7 Continuity of Care Document (CCD) Component describes the document content summarizing a patient's medical status for the purpose of information exchange. The content may include administrative (e.g., registration, demographics, insurance, etc.) and clinical (e.g., problem list, medication list, allergies, test results, etc.) information. Any specific use of this Component by another HITSP specification may constrain the content further based upon the requirements and context of the document exchange. This specification defines content in order to promote interoperability between participating systems. Any given system creating or consuming the document may contain much more information than conveyed by this specification. Such systems may include Personal Health Records (PHRs), EHRs (Electronic Health Records), Practice Management Applications and other persons and systems as identified and permitted.

## IHE PCC

**IHE Patient Care Coordination (PCC)** domain was established in July 2005 to deal with integration issues that cross providers, patient problems or time. It deals with general clinical care aspects such as document exchange, order processing, and coordination with other specialty domains. PCC also addresses workflows that are common to multiple specialty areas and the integration needs of specialty areas that do not have a separate domain within IHE.

IHE PCC Profiles include document types like Medical Summary (MS), Emergency Department Referral (EDR), Exchange of Personal Health Record Content (XPHR), Immunization Content (IC) etc. that form the initial set of documents accepted by the SCHIEEx registry.

## What it means to “Connect to SCHIEEx”

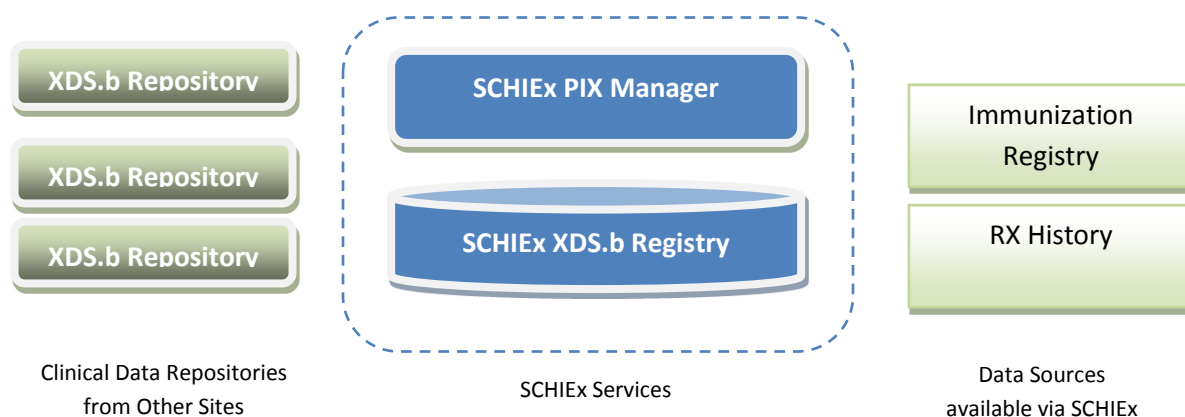
Connecting to SCHIEEx means that your organization will be able to send and receive health information amongst other SCHIEEx Participants that have been “on ramped” to SCHIEEx by leveraging the MPI, RLS, and core network services offered by SCHIEEx.

Participants must agree to abide by all policies and procedures that govern the operation of SCHIEEx (see [www.SCHIEEx.org](http://www.SCHIEEx.org) for detailed policy documents).

In order to connect to SCHIEEx, the health information systems in your organization will need to implement the technical services and interfaces described in the “Step-by-Step Overview of SCHIEEx Data Flow” section below. In addition, your organization will need to follow the process steps outlined in “Getting Connected- Process Flow” in order to demonstrate standards-based exchange capabilities and obtain your credentials and connectivity information.

## Resources Provided by the SCHIEEx to Participants

SCHIEEx implements a set of IHE and NWHIN standards compliant services to facilitate the flow of clinical data between Participants. These network-level services are intended to support the federated management of clinical data by providing secure patient identity management and record location for all patients in the state of South Carolina.



### SCHIEEx PIX Management Service

SCHIEEx provides statewide PIX Management service that provides identity management services to SCHIEEx Participants. Participants will send demographic information for the patients that they manage to the SCHIEEx PIX Manager which implements a robust record linking algorithm to link together patient records across the state.

The SCHIEEx PIX Management Service implements the PIX (Patient Identifier Cross-Referencing) IHE integration profile.

### SCHIEEx XDS.b Document Registry

SCHIEEx provides a statewide XDS.b Document Registry that provides record location services for all clinical data available through SCHIEEx. Participants will register metadata describing the clinical documents that they are making available through their XDS.b Repositories so that other sites can easily obtain a catalog of all clinical data and its managing repository for a particular patient.

The SCHIEEx Document Registry implements the XDS.b (Cross Enterprise Document Sharing-b) IHE integration profile.

As part of the SCHIEEx connectivity testing, participants will be provided guidance on certain metadata values like the PIX namespace to use, Repository id (to avoid conflicts across participants), Source id etc. A root OID will be provided for the source ID and the Participant must ensure that each facility, within their organization, that is connecting to SCHIEEx is assigned a different source ID based on the root OID that is provided.

### Audit Services

SCHIEEx captures audit data for identity management and its core clinical data services. SCHIEEx does not provide a centralized store of audit information for clinical data that is managed in locally implemented XDS.b repositories. Participants that are managing these locally implemented repositories are required to implement appropriate audit services as described by the IHE ATNA Secure Node Integration Profile.

### Consent Services

IHE BPPC (Basic Patient Privacy Consent) profile is used to record and communicate patient opt out/cancel opt out preferences. *Opt-out* and *cancel opt-out* preferences are global, triggering a system wide implementation of the patient's desired status. Participants can choose to send the BPPC document with or without a scanned document part. Note that the "formatCode" is required to be **urn:ihe:iti:bppc:2007** and this is the same as what is required by the IHE standards.

Details of BPPC and content requirements are currently addressed by ITI-TF Volume 1 and Volume 3. As of April 2011, there is a change proposal that addresses the issue of where to indicate the privacy policy being acknowledged by the patient.

The code element of the Patient Privacy Acknowledgement Service Event should be present and the expected code attribute values are as follows:

**Opt-out OID:** 1.3.6.1.4.1.37619.2.1

**Cancel Opt-out: OID:** 1.3.6.1.4.1.37619.2.2

In the code element, the codeSystem attribute should be set to “1.3.6.1.4.1.37619” and the codeSystemName should be “SCHIEx”

The documentationOf/serviceEvent/effectiveTime element’s low value is taken into consideration when patient opt status changes are being effected on the SCHIEx network. The effectiveTime/low value has to be before the time the document is published to the repository. The effectiveTime/high element is ignored. If the patient chooses to reverse opt decision after a certain point in time, then a separate BPPC with the right opt status is required to be registered.

### **Exchange with the Public Health Immunization Registry: SCDHEC Immunization Registry Reporting and Retrieval Services**

If you are an organization that is interested in having immunization administration information from your organization flow through to the SC Immunization Registry (DHEC) with SCHIEx as a gateway, you have that option available to you. This service enables you to leverage your connectivity to SCHIEx to also satisfy the needs to reporting to the Immunization registry.

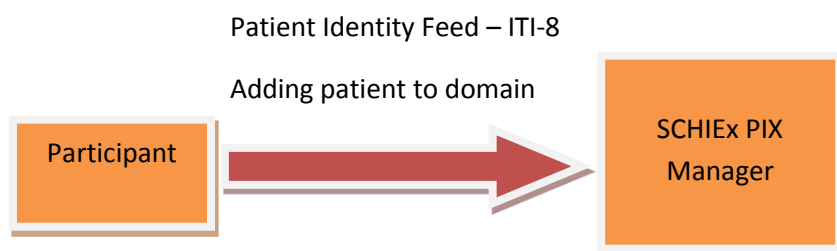
In order for dataflow to be functional, you will need to create and register a NIST compliant stable Immunization Content document (IHE PCC) or a NIST compliant stable HITSP C32 with the Immunization section populated with CVX or CPT coded immunization records. This will be tested for, in depth, in “Step 3: Complete Verification and Validation” of the on-boarding process if the participant chooses to leverage this functionality. You can also request to test this as part of step 1 if you are interested in finding and fixing any issues that might arise. Please contact your SCHIEx technical resource to indicate your preferences.

**Note that connecting to SCHIEx also allows you to retrieve the Immunization history on a patient.** The history is available as an on-demand Immunization Content document that is registered with the SCHIEx registry, if a patient match can be made within the Immunization Registry.

### **A Step-by-Step Overview of SCHIEx Data Flow**

Patient demographic information and clinical data flow through SCHIEx and utilize its standards-compliant services in the following manner:

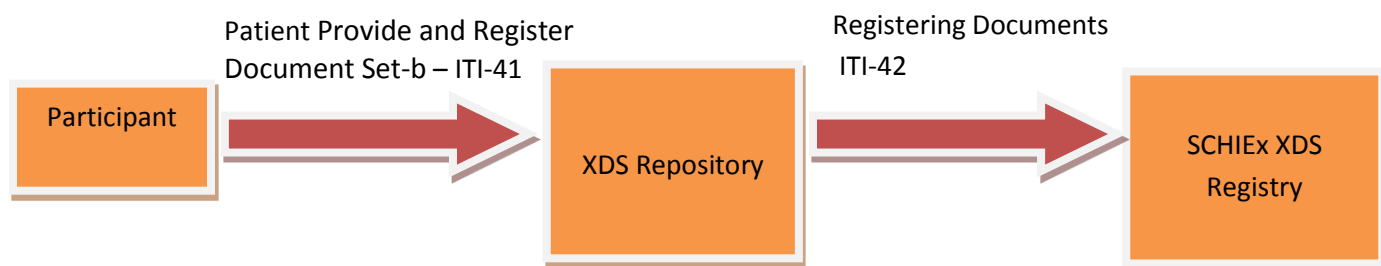
## Step 1 – Provide Patient Information



The participant, the Patient Identity Source, sends a Patient Identify Feed (ITI-8) transaction to add/update a patient in the domain specified in the transaction. SCHIEEx PIX Manager then handles the cross-referencing of patients across multiple domains and ensures that any documents in the Registry will be associated with this patient.

Patient information must be provided to and processed by the SCHIEEx PIX Manager before documents can be submitted or retrieved for that patient.

## Step 2 – Provide Documents

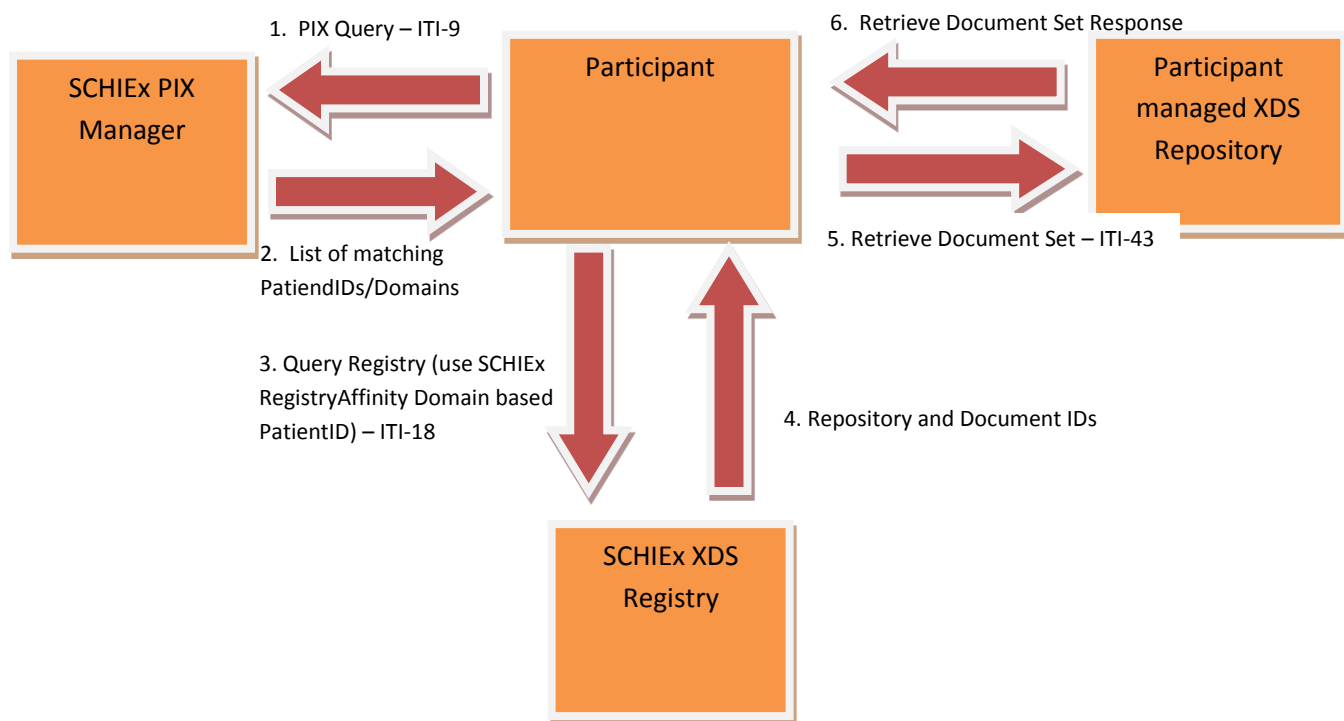


Now that a patient is in the system, the participant can begin adding documents associated with that patient. The participant, the Document Source, will send a Provide and Register Document Set-b (ITI-41) transaction to an XDS Repository.

The results of this transaction are:

- The document(s) in the transaction are then stored in a Repository and available for retrieval
- The provided documents are registered with the SCHIEEx XDS Registry

### Step 3 – Retrieve Documents



After patient information has been provided and there are documents associated with the patient, the general flow required to retrieve available documents for a patient is as follows:

- Participant sends a PIX Query (ITI-9) transaction. The SCHIEEx PIX Manager responds with a list of cross-referenced matching patient IDs/domains. The patient id associated with the “SCHIEEx” Registry Affinity Domain should be the id used for registry transactions
- Participant queries the SCHIEEx XDS Registry via a Query Registry (ITI-18) transaction using the cross-referenced SCHIEEx Registry Affinity Domain based identifier that was received from the PIX Manager. The SCHIEEx XDS Registry returns URI(s) and document information.
- Participant queries the appropriate repositories with the provided URI(s) and document information via Retrieve Document Set (ITI-43) transaction. The queried repositories return a document set.

The result of these transactions will be a CDA document set that may contain demographics, problems, procedures, medications, allergies, etc. (depending on the information available at that site). This document set will contain the clinical information from other SCHIEEx participants about the patient in question.

## SCHIEEx IHE Participation Part I. Architecture

### Overview: Connecting to SCHIEEx

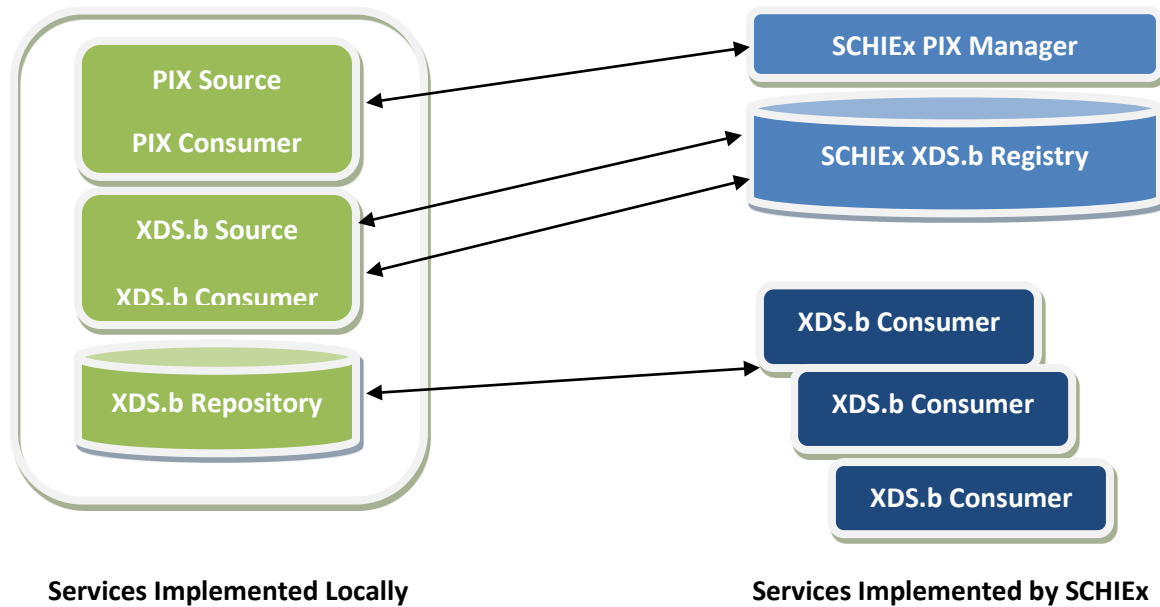
Participants connect to the Exchange using IHE standards. The Participant will utilize the SCHIEEx PIX Manager Service and XDS Registry Service for master patient index and record location functionality. The actual clinical content and its storage are implemented by the Participant.

- The Participant will register the document with SCHIEEx XDS Registry and implement XDS Repository functionality (either offered by their native EMR or a local gateway of choice selected by the Participant.) The Participant is responsible for responding to inbound requests by others in the Exchange querying the Participant’s local XDS Repository,

### Minimum required transactions to be implemented by the Participant

Integration Profile	Description of Required Functionality
ITI-8: Patient Identity Feed (as Patient Identity Source)	The site will send patient demographics to the SCHIEEx PIX Management Service.
ITI-9: PIX Query (as Consumer)	The site will query the SCHIEEx PIX Manager to receive a record location list.
ITI-10: Patient Identity Update (as Consumer)	From the SCHIEEx PIX Manager, the site will receive updates about new patient record links based on PIX feeds from other participants
ITI-18: Query Registry (as Consumer )	The site must query the SCHIEEx XDS.b Registry for data from other SCHIEEx Participants. Note that it is required that sites be able to query for both “stable” as well as “on-demand” documents since either could be registered by any given document source/repository
ITI-41: Provide and Register Document Set-b (as Source)	The site must populate its own XDS.b Repository with clinical data for its patients.
ITI-42: Register Document Set-b (as Repository or Integrated Document Source/Repository)	The site must populate the SCHIEEx XDS.b Registry with meta data for its patients’ clinical documents.
ITI-43: Retrieve Document Set (Repository or Integrated Document Source/Repository)	The site must respond to queries to its XDS.b Repository from other SCHIEEx Participants.
ITI-43: Retrieve Document Set (as Consumer)	The site must be capable of retrieving documents from a Document Repository





### Data Flow Summary by Exchange Function

Exchange Function	Data Flow Summary
Record Location	<ol style="list-style-type: none"> <li>1. Local PIX Consumer sends patient demographic information to the SCHIEx PIX Manager.</li> <li>2. The PIX Manager responds with record location information (patient and domain identifiers) for matching patient records available in SCHIEx.</li> </ol>
Sending Clinical Data	<ol style="list-style-type: none"> <li>3. The site sends clinical data to its XDS.b Repository which must in turn register the documents with the SCHIEx Registry.</li> <li>4. Other Participants on SCHIEx will query the SCHIEx XDS.b Registry.</li> <li>5. The site will then query the XDS.b Repository for clinical documents.</li> </ol>
Receiving Clinical Data	<ol style="list-style-type: none"> <li>6. The site's XDS.b Consumer service queries the SCHIEx Registry for available clinical documents.</li> <li>7. The site will then query the XDS.b Repository for clinical documents.</li> </ol>

### SCHIEEx IHE Participation Part II: Sending Content

SCHIEEx supports a number of industry standard content formats that can be registered in the SCHIEEx XDS.b Document Registry. All acceptable document formats are specific implementations of the CCD (Continuity of Care Document) specification which is built on the NIST/HL7 CDA R2 Clinical Document Architecture. Document standard content formats that will pass validation and can be registered with SCHIEEx include:

1. HISTP/C32 v2.x Summary Documents
2. IHE Laboratory Report- 2008 (or later)
3. IHE Laboratory Report (HITSP/C37)- 2007 (or later)
4. IHE XDS-MS Referral Summary (HITSP/C48)- 2009 (or later)
5. IHE XDS-MS Discharge Summary (HITSP/C48)- 2009 (or later)
6. IHE EDR Emergency Department Referral (HITSP/C84)- 2009 (or later)
7. IHE XPHR Personal Health Record Abstract- 2009 (or later)
8. IHE IC Immunization Content- 2009 (or later)
9. IHE BPPC Basic Patient Privacy Consents- 2009 (or later)
10. IHE XDS-SD Cross Enterprise Sharing of Scanned Documents – 2009 (or later)

Additional formats not shown on the above list may be validated and accepted by SCHIEEx. Please contact a SCHIEEx technical resource if you would like to propose an additional content specification.

### Content Validation and Testing Process

SCHIEEx requires that Participants successfully completed the NwHIN approved NIST testing process to ensure that appropriate CCD/C32 and other document profiles can be created by the sending system.

This process is managed and provided by the National Institutes of Standards and Technology and can be found at:

<http://xreg2.nist.gov/cda-validation/validation.html>

Detailed Documentation regarding the Schematron rules for relevant documents can be found at:

<http://xreg2.nist.gov/cda-validation/downloads.html>

This site will enable the Participant to test compliance with NwHIN standards prior to approaching SCHIEEx about a connection. The following diagram shows the NIST CDA Validation tool that should be used.

FAQs Contact

## CDA Guideline Validation

[Home](#) [Validation Tool](#) [Downloads](#) [Web Service](#) [Meaningful Use](#)

1. Upload the file for validation:  No file chosen

2. Please select the level of detail:

Everything (Errors, Warnings, Notes)

Errors and Warnings only

Errors Only

3. What would you like this file to validate to?

Name	Description	Dependencies (if applicable)
<input checked="" type="radio"/> CDA R2	HL7 CDA R2 (with no extensions)	
<input type="radio"/> CCD	Continuity of Care Document	• CDA R2
<input type="radio"/> CRS Level 1 & 2	HL7 Care Record Summary	• CDA R2
<input type="radio"/> CDA4CDT (header only)	HL7 CDA For Common Document Types (CDA4CDT) -- header only	• CDA R2
<input type="radio"/> HITSP/C32 v2.5 -- HITSP/C83 v2.0	HITSP/C32 v2.5 Summary Documents Using HL7 CCD	• CDA R2 (With HITSP Extensions) • CDA4CDT (header only and with IHE modifications) • CCD
<input type="radio"/> HITSP/C32 v2.5 -- HITSP/C83 v1.1	HITSP/C32 v2.5 Summary Documents Using HL7 CCD (using HITSP/C83 v1.1)	• CDA R2 (With HITSP Extensions)

## Getting Connected- Process Flow

SCHIEEx has established the following step-by-step procedure for your organization to establish and validate a standards-compliant interface to SCHIEEx.

### Preparation:

- Review the SCHIEEx Interoperability Services Guide. A recorded technical Webcast about the Guide is available on the *For Providers - Implementation Resources* page of the SCHIEEx Website.
- Review the SCHIEEx Policy Manual. The Manual includes the policy and legal documents that outline the terms of the service and describe the duties and responsibilities of each Participant and the SCHIEEx. A recorded Webcast about SCHIEEx and key policy requirements is available on the *For Providers- Implementation Resources* page of the SCHIEEx Website.
- Contact SCHIEEx to schedule a time to discuss Connecting to SCHIEEx and to clarify technical, policy, or general questions. SCHIEEx staff is available to participate in a call with you and your technology representatives to discuss your technical readiness for on-boarding

### Step 1: Register in the SCHIEEx Website and submit the signed SCHIEEx Legal Agreements and Associated Business Documents.

Step 1 involves registering a SCHIEEx Participant Account. Once registered you will be able to view and complete the SCHIEEx onboarding steps using this secure Website account. Executable versions of the SCHIEEx Participation Agreement and the Business Associate Agreement will be available along with information about additional documents that will need to be submitted.

### Step 2: Complete Basic Content and Interface Validation and submit the SCHIEEx Participant Technical Test Credentialing Application

Validate your content and basic interface functionality using the following testing resources:

- **Content Validation:** use the NWHIN approved NIST testing website explained in the "[Content Validation and Testing Process](#)" section above.
- **Interface Functional Validation:** use the "[Technical Preparation Checklist](#)" in this guide to complete this step. For Interface Functional Validation, you will require some metadata information like the PIX namespace ID for your organization, repository ID, a uniqueID root etc. Please send an email to [schiexinfo@ors.sc.gov](mailto:schiexinfo@ors.sc.gov) to request these when you are ready.

Please be ready to share a representative sample of the various document types that you expect to register with SCHIEEx. The current list of accepted document types is provided in the [SCHIEEx IHE Participation Options Part II: Sending Content](#) section of the Guide.

Complete the SCHIEEx Participant Technical Test Credentialing Application. Please be prepared to indicate your preferences for document repository and content format as part of the Test Credentialing

Application. Once completed, you will be sent the **TEST Technical Package** that will be required for Step 3 of the process.

Testing in this step is conducted in a **sandbox** environment and all testing as part of this step should be conducted using test/mock patient data.

### Step 3: Complete Technical Verification and Validation

After you have completed the initial content and interface validation you are ready to complete the SCHIEx verification and validation procedures outlined in the Test Technical Package.

The package will include:

- Technical connectivity for Test: URLs, etc.
- Test Certificates
- PIX Domain namespace ID for your organization
- Document meta-data specification (accepted types, classes, etc.)

Testing in this step is conducted in a **test** environment and all testing as part of this step should be conducted using test/mock patient data.

### Step 4: Complete the SCHIEx Online Subscription and Order Form

As part of this step, each participant is required to complete the SCHIEx Subscription and Order Form that's available online.

Once Steps 1-4 are completed, each SCHIEx membership applicant will be evaluated by the SCHIEx Coordinating Committee. The Committee meets the third Thursday of each month.

### Step 5: Receive your Production Technical Package

After you complete the Verification & Validation process and receive approval from the SCHIEx Coordinating Committee, you will be provided with a SCHIEx production technical package. With the SCHIEx policy and legal requirements in place, you are now ready to begin participating in SCHIEx.

## Technical Preparation Checklist

This part of the on-boarding process is aimed at basic connectivity testing between your system and SCHIEx. It serves to weed out connectivity issues, if any, early in the process. This testing is not TLS secured testing but please be informed that TLS secured testing will be involved in later steps in the on-boarding process.

### Test 1 – Provide Patient Information

The consuming site will add a patient to their assigned test domain on the sandbox server with the identifier abc123. The patient will have the following information:

First name: Helen

Last name: Demoski

Middle name: Bleh



Configuration	<a href="http://secure.careevolution.com/InteropSandbox/lheAdapter/XdsRegistryService/XdsRegistryService/">http://secure.careevolution.com/InteropSandbox/lheAdapter/XdsRegistryService/XdsRegistryService/</a>
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### Test 4 – Query Registry by Patient Identifier

The consuming site now queries the SCHIEx Registry to obtain document IDs for that patient and the repository ID where that document is stored. The consuming site can then retrieve those documents from the repositories.

When querying the registry, the patient ID should be the ID for your patient from the registry affinity domain that was retrieved in step 2, followed by '^&1.3.6.1.4.1.37619&ISO'. Expect the return set for this query to include the document registered by you in step3 and at least one additional document.

#### Transaction

Transaction	ITI-18 – Registry Stored Query
Actor	Document Consumer
Required Parameters	Patient identifier filter, provided as \$XDSDocumentEntryPatientId Status filter, provided as \$XDSDocumentEntryStatus
Return	A list of document IDs or document metadata
Sandbox Configuration	Registry Uri : <a href="http://secure.careevolution.com/InteropSandbox/lheAdapter/XdsRegistryService/XdsRegistryService/">http://secure.careevolution.com/InteropSandbox/lheAdapter/XdsRegistryService/XdsRegistryService/</a>

### Test 5 – Retrieve document from Repository (as Repository actor)

This will be a basic connectivity test to ensure that the SCHIEx testing harness will be able to retrieve the document registered as part of Test 3 from your repository. Please contact your SCHIEx technical resource when Test 3 is complete.

#### Transaction

Transaction	ITI-43 – Retrieve Document Set
Actor	Document Repository
Required Parameters	Repository Id, Document Id
Return	A CDA document
Configuration	RepositoryId and EndPoint to be provided by the Participant

### Test 6 – Query Registry for On-demand documents associated with patient

The consuming site queries the SCHIEx Registry to obtain document IDs for that patient and the repository ID where that document is stored. The consuming site can then retrieve those documents from the repositories.

When querying the registry, the patient ID should be the ID for your patient from the registry affinity domain that was retrieved in step 2, followed by '^&1.3.6.1.4.1.37619&ISO'. Expect the return set for this query to include the document registered by you in step3 and at least one additional document.

#### Transaction

Transaction	ITI-18 – Registry Stored Query
Actor	Document Consumer
Required Parameters	<p>Patient identifier filter, provided as \$XDSDocumentEntryPatientId                      Status filter, provided as \$XDSDocumentEntryStatus, Document Type filter provided as \$XDSDocumentEntryType filter</p> <p>For this test,                      \$XDSDocumentEntryType should contain the values that represent both:</p> <p>Stable: urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1, as well as                      On-Demand: urn:uuid:34268e47-fdf5-41a6-ba33-82133c465248</p>
Return	A list of stable and on-demand document IDs or document metadata; note that the return set should contain at least one document entry whose object type is urn:uuid:34268e47-fdf5-41a6-ba33-82133c465248
Sandbox Configuration	<p>Registry Uri :</p> <p><a href="http://secure.careevolution.com/InteropSandbox/IheAdapter/XdsRegistryService/XdsRegistryService/">http://secure.careevolution.com/InteropSandbox/IheAdapter/XdsRegistryService/XdsRegistryService/</a></p>

## Additional Resources and References

### PIX and XDS.b and BPPC Profiles

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_ITI\\_TF\\_Rev8-0\\_Vol1\\_FT\\_2011-08-19.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol1_FT_2011-08-19.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_ITI\\_TF\\_Rev8-0\\_Vol2a\\_FT\\_2011-08-19.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol2a_FT_2011-08-19.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_ITI\\_TF\\_Rev8-0\\_Vol2b\\_FT\\_2011-08-19.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol2b_FT_2011-08-19.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_ITI\\_TF\\_Rev8-0\\_Vol3\\_FT\\_2011-08-19.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Rev8-0_Vol3_FT_2011-08-19.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_ITI\\_Suppl\\_On\\_Demand\\_Documents\\_Rev1-2\\_TI\\_2011-08-19.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_ITI_Suppl_On_Demand_Documents_Rev1-2_TI_2011-08-19.pdf) (On-demand documents)

[http://www.ihe.net/Technical\\_Framework/](http://www.ihe.net/Technical_Framework/) (Link to latest IHE Technical Profiles)

### IHE Patient Care Coordination (PCC) Profiles or Content profiles

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_PCC\\_TF\\_Rev7-0\\_Vol\\_1\\_2011-09-09.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_PCC_TF_Rev7-0_Vol_1_2011-09-09.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_PCC\\_TF\\_Rev7-0\\_Vol\\_2\\_2011-09-09.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_PCC_TF_Rev7-0_Vol_2_2011-09-09.pdf)

[http://www.ihe.net/Technical\\_Framework/upload/IHE\\_PCC\\_Suppl\\_Immunization\\_Content\\_Rev2-2\\_TI\\_2011-09-09.pdf](http://www.ihe.net/Technical_Framework/upload/IHE_PCC_Suppl_Immunization_Content_Rev2-2_TI_2011-09-09.pdf)

### HITSP C32

[http://www.hitsp.org/ConstructSet\\_Details.aspx?&PrefixAlpha=4&PrefixNumeric=32](http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=32)



### Wiki Pages

[http://wiki.ihe.net/index.php?title=Patient\\_Identifier\\_Cross\\_Referencing](http://wiki.ihe.net/index.php?title=Patient_Identifier_Cross_Referencing)

[http://wiki.ihe.net/index.php?title=Cross\\_Enterprise\\_Document\\_Sharing](http://wiki.ihe.net/index.php?title=Cross_Enterprise_Document_Sharing)

### Annotated XDS Examples

[http://wiki.ihe.net/index.php?title=Annotated\\_StoredQuery\\_Transaction](http://wiki.ihe.net/index.php?title=Annotated_StoredQuery_Transaction)

[http://wiki.ihe.net/index.php?title=Annotated\\_ProvideAndRegister.b\\_Transaction](http://wiki.ihe.net/index.php?title=Annotated_ProvideAndRegister.b_Transaction)

[http://wiki.ihe.net/index.php?title=XDS.b#Example\\_Retrieve\\_Document\\_Set\\_transaction](http://wiki.ihe.net/index.php?title=XDS.b#Example_Retrieve_Document_Set_transaction)