

# HITSP Consultation and Transfers of Care Use Case Requirements, Design and Standards Selection

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HITSP/RDSS59



*Submitted to:*

**Healthcare Information Technology Standards Panel**

*Submitted by:*

**Provider Perspective Technical Committee  
(Formerly Care Delivery Technical Committee)**

*With input from:*

**Administrative and Financial Domain Technical Committee  
Care Management and Health Records Domain Technical Committee  
Security, Privacy and Infrastructure Domain Technical Committee (Formerly Security and Privacy Technical Committee)**



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## 1.0 INTRODUCTION

As an introduction to the HITSP Consultation and Transfers of Care Use Case Requirements, Design and Standards Selection, this section describes the purpose of the document, the intended audience for the technical content of the document, and how to use this document. It acknowledges the copyright protections that pertain, and provides a list of key reference documents and background material. If you are already familiar with this information, proceed to Section 2.0 Requirements Analysis.

### 1.1 PURPOSE

The Requirements, Design and Standards Selection document is used to define the requirements for the Use Case and the detailed HITSP Interoperability Specification design map of existing standards and specifications that will be used to meet the stated requirements. It is intended to describe the process by which the Use Case was analyzed, standards were selected and the design was developed.

### 1.2 AUDIENCE

The Requirements, Design and Standards Selection document is designed to be used by the HITSP Technical Committees or Work Groups to document their analysis and decisions, other analysts who need to understand and evaluate the requirements, design and selected standards, and by those intending to test the resulting Interoperability Specifications against the Use Case requirements. Understanding and using the relevant set of Interoperability Specifications is a key requirement for establishing interoperability compliance.

### 1.3 HOW TO USE THIS REQUIREMENTS, DESIGN AND STANDARDS SELECTION DOCUMENT

The Requirements, Design and Standards Selection document is divided into five main related sections. Each section provides background information for the Interoperability Specification. Section 1.0 provides a brief introduction to the document. Users of this document who are familiar with the content may choose to proceed to Section 2.0. In Section 2.0, the Requirements Analysis provides a general overview of the Use Case and the specific requirements of the Use Case including a mapping of the Use Case requirements to the extracted interoperability requirements, the data requirements of the Use Case, and an identification of the scenarios, business actors, their interactions, and data elements used in those interactions. The design for the Interoperability Specification is provided in Section 3.0. This includes the scope of the design, mapping of interoperability requirements to the specific technical requirements, actor interactions and groupings, detailed descriptions of data used by the Use Case actors, and a description of existing or new HITSP constructs that will be used by the Interoperability Specification. Section 4.0 describes the Standards Selection process, provides a table of the selected and candidate standards, a Gaps and Overlaps discussion and plan for resolution. Section 5.0 describes the next steps in the HITSP standards harmonization process and Section 6.0 provides relevant appendix material.



### 1.3.1 CONVENTIONS, ACRONYMS AND RESOURCES/REFERENCES

A list of key reference documents and background material is provided in the table below. These documents can be retrieved from the [hitsp.org](http://hitsp.org) Web Site.

**Table 1.3.1-1 Reference Documents**

Reference Document	Document Description
HITSP Interoperability Specification Overview	Provides background information about the HITSP and its role in the overall U.S. efforts to realize large scale interoperability of health information. The document also provides a description of the HITSP process for healthcare standards harmonization and explains how to use the Interoperability Specifications and other related documents to inform your health IT product development or product refinement.
HITSP Conventions List	Describes the conventions that are used to convey the full descriptions and usage of standards in the HITSP specifications
HITSP Acronyms List	Lists and defines the acronyms used in this document
HITSP Glossary	Provides definitions for relevant terms used by HITSP documents
HITSP Harmonization Framework	Describes the current framework within which the Interoperability Specifications are built
Consultation and Transfers of Care, Detailed Use Case, March 21, 2008	AHIC Use Case that is the basis of this Interoperability Specification.
TN900 - Security and Privacy Technical Note	<p>Developed as a reference document to provide the overall context for use of the HITSP Security and Privacy constructs. It includes the following:</p> <ul style="list-style-type: none"><li>• The scope, reference policy background, and Security and Privacy principles used in the development of the constructs</li><li>• A detailed description and schematics of the conceptual relationship between the Security and Privacy constructs</li><li>• A mapping of existing standards and constructs to be used in meeting the stated requirements of the AHIC Use Cases</li><li>• A list of identified gaps and the recommended approaches to resolving those gaps</li><li>• A roadmap for how the Security and Privacy constructs will evolve and eventually align with other HITSP Interoperability Specifications</li><li>• A conceptual framework for Security and Privacy management, including reference information on privacy policies, risk assessment, and risk management</li><li>• A glossary of terms used in all the Security and Privacy construct documents</li><li>• A description of the application of the Security and Privacy constructs to the HITSP Interoperability Specifications for the three initial AHIC Use Cases – Biosurveillance, Electronic Health Records - Laboratory Results Reporting, and Consumer Empowerment</li></ul> <p>HITSP will periodically update this Technical Note as required by the introduction of new contexts for use.</p>





## 1.4 COPYRIGHT PERMISSIONS

### COPYRIGHT NOTICE

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Please note that HITSP will work with the appropriate standards organizations to obtain applicable copyright information for candidate standards.



## 2.0 REQUIREMENTS ANALYSIS

This section provides a high level description of the Consultation and Transfer of Care Use Case as well as the specific requirements that are extracted from the Use Case. It includes the following information:

- Mapping from the Use Case Requirements to the Derived Interoperability Requirements – this table lists the requirements grouped by actor for each event and related action
- Data Element Requirements – this table further describes the data requirements for each specified interoperability requirement and the business actor that is responsible for the data
- Business Actors – this table defines the business actors that are included for the Interoperability Specification
- High level Unified Modeling Language (UML) Business Sequence Diagrams – these diagrams are used to describe the interaction between the business actors, and the data involved in each scenario that is documented

### 2.1 USE CASE SYNOPSIS

This section provides a synopsis of the Consultation and Transfers of Care Use Case, including any applicable scenarios that are part of the Use Case.

The Consultation & Transfers of Care Use Case focuses on the electronic exchange of information between clinicians, particularly between requesting clinicians and consulting clinicians, to support consultations, including specialty services and second opinions. This Use Case also focuses on the exchange of clinical information needed during transfers of care. A transfer of care occurs when a patient is discharged and transferred from one health setting to another, such as to or from an acute care hospital, skilled nursing or rehabilitation facility, or to home with or without home healthcare services. Patients participate in this electronic exchange of information as recipients of information exchange and may designate authorized recipients of healthcare information during consultations and transfers of care.

A provider may be an individual clinician (as in the case of a consultation) or a care delivery setting (as in the case of a transfer of care). Electronic consultation between patients and providers is not included within this Use Case but is addressed in the Patient-Provider Secure Messaging Use Case.

The Use Case identifies standardized clinical information, including a reason for the consult or transfer, necessary patient data, and information about the intended care to be provided by the consulting clinician or receiving care setting. This Use Case also addresses capabilities for consulting clinicians to access and retrieve, as appropriate, additional patient information to supplement that which is sent in the consult request. This Use Case also includes the communication of information needed by the requesting clinician to continue to manage the patient upon completion of a consultation.



Primarily, this Use Case focuses on clinician-to-clinician requests for consultations in circumstances like ambulatory care settings, where information must flow between organizations, and not on information exchange within an organization. The process includes both initiating the request for consultation and providing the relevant clinical findings and care management information back to the originator of the request (typically, the primary care provider). Consultation requests may become a patient referral for the consulting clinician to take over responsibility for managing the patient and providing care.

Transfer of care is focused on providing patient information needed by clinicians to accomplish a transition in care from one care setting to another, particularly transitions between acute, long-term care, nursing facility, rehabilitation facility, home healthcare, and other inter-organizational transitions rather than transfers within a given care setting. In the ambulatory care setting, a referral may constitute a transfer of care from one ambulatory care provider to another ambulatory care provider.

This Use Case assumes the developing presence of electronic systems such as electronic health records (EHRs), personal health records (PHRs), and other local or Web-based solutions supporting clinicians and patients, while recognizing the issues and obstacles associated with these assumptions.

This Use Case includes six perspectives that are intended to indicate roles and functions, rather than organizations or physical locations. Each perspective represents the exchange of clinical information from the viewpoint of the major stakeholders involved in sharing data between clinicians and provider settings.

1. Requesting Clinician
2. Consulting Clinician
3. Discharging/Transferring Setting
4. Receiving Care Setting
5. Patient
6. Information Exchange

## **2.2 USE CASE REQUIREMENTS**

This section describes the Use Case requirements and outlines all the given scenarios at a high level.

The Consultation & Transfers of Care Use Case focuses on the exchange of a core set of information between clinicians, care settings and patients. This Use Case also covers the exchange of information needed to verify eligibility and authorization for services. This Use Case describes two scenarios, Consultations and Transfers of Care.

### **Scenario 1: Consultation**

The Consultation scenario is focused on the sharing of information to support a request for a consultation, the consultation itself, and the sharing of information back to the requesting clinician and patient upon completion of the consultation. This scenario includes the communication of a request for consultation and a core set of clinical and administrative information between clinicians, as well as additional context



specific information which may be provided to and/or requested by the consulting clinician. Requesting clinicians can transmit a core set of patient information, which can include (but is not limited to) reason for the consult request, patient summary information, diagnostic images, procedure reports, laboratory results, etc. Consulting clinicians may also seek access to additional clinical information via an information exchange as necessary and relevant to develop a comprehensive clinical picture. Depending upon patient care needs, consultation requests at times may become patient referrals where the consulting clinician assumes responsibility for managing the patient and providing care.

## Scenario 2: Transfers of Care

The Transfers of Care scenario is focused on the sharing of information to support the discharge and/or transfer of a patient from one care setting to another. The clinical accountability and management of the patient is transferred from one clinician and care setting to another. This scenario includes the sharing of a set of clinical and administrative information between provider organizations, as well as additional information which may be accessed or requested by the new provider of care. The transferring setting can transmit a core set of clinical information to the receiving setting to assist in the coordination and management of patient care and may also send relevant information to the patient's personally controlled health records which may include PHRs, health record banks, etc. This core set of clinical information can include (but is not limited to) patient summary information, discharge summary, plan of care, procedure documentation, and clinical results. The receiving setting may also seek access to additional clinical information via an information exchange as necessary and relevant to develop a comprehensive clinical picture.

### 2.2.1 MAPPING OF USE CASE REQUIREMENTS TO INTEROPERABILITY REQUIREMENTS

This section contains an extraction of business actors, required interactions and conditions/scenarios from the Use Case into a matrix/table.

**Table 2.2.1-1 Mapping of Use Case Requirements to Interoperability Requirements**

Use Case	Perspective/ Business Actor	Scenario	Event	Action	Interoperability Requirement(s) (includes security requirements)	Data Requirement Number
Consultation and Transfers of Care	7.1.0.0 Requesting Clinician	1 Consultation	7.1.1 Evaluate patient and determine need for consult	Action: 7.1.1.1 Evaluate patient and document patient encounter	2	1
			7.1.2 Discuss with patient and select consulting clinician	Action: 7.1.2.2 Select Consulting clinician	6, 7, 18, 21	4, 5, 6



Use Case	Perspective/ Business Actor	Scenario	Event	Action	Interoperability Requirement(s) (includes security requirements)	Data Requirement Number
			7.1.3 Initiate consult request with consulting clinician	Action: 7.1.3.2 Request for consult and core data set sent to consulting clinician	7, 16	1, 2, 6
			7.1.4 Provide access to additional clinical information	Action: 7.1.4.1 Requesting clinician sends additional relevant patient information to the consulting clinician	1, 2, 9, 10, 20	1, 2
				Action: 7.1.4.2 Consulting clinician sends a request for specific information	10	1, 2
				Action: 7.1.4.3 Requesting clinician provides access to additional information requested by the consulting clinician	1, 2, 9, 20	1, 2
			7.1.5 Receive and review consult report	Action: 7.1.5.1 The requesting clinician receives a report from the consulting clinician upon the completion of the consult	12	2, 4
	7.2.0.0 Consulting Clinician	1 Consultation	7.2.1 Receive and review request & determine ability to accept patient	Action: 7.2.1.1 Receive consult request letter and core set of patient data from requesting clinician	1, 2, 4, 5, 7, 16, 17, 20, 21	1, 2, 6
				Action: 7.2.1.2 Receive patient data and evaluate patient	1, 2, 4, 5, 16, 17, 20	1, 2
				Action: 7.2.1.3 Support needs for payer to authorize/cover consultation as appropriate  Note: This authorization could be for additional services performed by the Consulting Clinician (e.g. blood gas testing to qualify for home oxygen)	8, 21	1, 2, 6



Use Case	Perspective/ Business Actor	Scenario	Event	Action	Interoperability Requirement(s) (includes security requirements)	Data Requirement Number
			7.2.2 Request and review additional clinical information	Action: 7.2.2.1 Consulting clinician requests additional patient data	10	1, 2
				Action: 7.2.2.2 Receive and review additional patient information	9	1, 2
			7.2.5 Complete and communicate consult report	Action: 7.2.5.1 Complete consultation report and communicate it to the requesting clinician, patient and other providers of care	3, 11	2, 4
	7.3.0.0 Patient	1 Consultation	7.3.1 Select and coordinate with consulting clinician		Not Applicable	
			7.3.2 Provide permissions for core set of data to be shared		Not Applicable	
			7.3.3 Complete consultation		Not applicable	
			7.3.4 Receive consult report information		12	
	8.1.0.0 Discharging/Transferring Setting	2 Transfers of Care	8.1.2 Select next setting of care	Action: 8.1.2.1 Discuss the next setting of care with the patient or family  NOTE: This step includes verifying eligibility and identifying covered care setting.	6, 18, 21	1, 3, 6
				Action: 8.1.2.2 Support payer needs to authorize transfer of care	6, 7	1, 3, 6
			8.1.3 Initiate plan & coordinate discharge/transfer	Action: 8.1.3.1 Core set of data required for coordinating the transfer process is communicated to the receiving setting	1, 3, 20	1, 3



Use Case	Perspective/ Business Actor	Scenario	Event	Action	Interoperability Requirement(s) (includes security requirements)	Data Requirement Number
				Action: 8.1.3.2 Receiving setting notifies the discharging/transferring setting that it is able to accept the patient	3, 12	1, 3
				Action: 8.1.3.2a Receiving setting notifies the discharging/transferring setting that it is not able to accept the patient	3, 12	1, 3
			8.1.4 Discharge/Transfer patient and transmit available transfer data	Action: 8.1.4.1 Discharge patient from current setting  Note: You send the discharge summary plus appropriate sections of the current episode of care up to and including the entire EHR	1, 3, 20	1, 3
				Action 8.1.4.2 Transfer information that is available for the patient at time of discharge is communicated to the receiving setting	1, 3, 19, 20	1, 3
				8.1.5 Transmit additional relevant patient data upon completion	Action: 8.1.5.2 Communicate patient data to the receiving setting upon availability	1, 3, 20
			8.1.6 Provide access to additional patient data	Action: 8.1.6.1 The discharging/transferring setting receives a request for additional patient data that is not part of the core transfer dataset	9	1, 3
			8.2.0.0 Receiving Setting Perspective	2 Transfers of Care	8.2.1 Receive and review patient data & determine ability to accept patient	Action: 8.2.1.1 The receiving setting receives a request to accept a patient



Use Case	Perspective/ Business Actor	Scenario	Event	Action	Interoperability Requirement(s) (includes security requirements)	Data Requirement Number
			8.2.2 Accept patient & coordinate transfer	Action: 8.2.2.1 Receiving setting notifies the discharging/transferring setting that it is able to accept the patient and begins the transfer coordination process	1, 2, 7, 12, 13, 20	1, 3
				Action 8.2.2.1a Receiving setting notifies the discharging/transferring setting that it is not able to accept the patient	1, 2, 7, 12, 13, 20	1, 3, 6
			8.2.3 Receive and review patient data & evaluate and manage patient	Action: 8.2.3.1 Receive patient data and prepare for patient arrival	1, 2, 7, 14, 20	1, 3, 6
				Action: 8.2.3.2 Review patient data and evaluate patient	17	1, 3
				Action: 8.2.3.3 Receive additional patient data from the discharging/transferring setting	9	1, 3, 6
			8.2.4 Access additional patient data	Action: 8.2.4.1 Receiving setting may request additional data that was not part of the core dataset or additional information previously transmitted by the discharging setting	1, 2, 13, 20	1, 3
	8.3.0.0 Patient Perspective	2 Transfers of Care	8.3.1 Receive discharge/transfer data	Action 8.2.3.1 Receive discharge/transfer information	15	1, 3
				Action: 8.3.1.2 Receive additional or updated information upon availability	9, 15, 19	1, 3

## 2.2.2 DATA AND INFORMATION REQUIREMENTS MATRIX

This section contains an extraction of data and information requirements with a listing of the actual data elements and information that meet the described data requirements.





Table 2.2.2-1 provides the Data requirement numbers and descriptions that map to the Data Requirement Number column of Table 2.2.1-1 above.

**Table 2.2.2-1 Data Element and Information Requirements**

Requirement Number	Description
Data Requirement 1	<b>Identification and Demographic Details, including (but not limited to):</b> <ul style="list-style-type: none"> <li>Dates</li> <li>Patient Demographic Information</li> <li>Insurance and Administrative Information</li> <li>Provider Information</li> <li>Reason for Consultation or Reason for Transfer/Discharge</li> </ul>
Data Requirement 2	<b>Patient Clinical Information provided for Consultation, including (but not limited to):</b> <ul style="list-style-type: none"> <li>Patient History and Diagnosis</li> <li>Pertinent Results</li> <li>Pending Results</li> <li>Medications (Stopped, Modified/Added, On Hold, Current List)</li> <li>Post Consultation treatment summary</li> <li>Post Consultation recommended plan of care</li> </ul>
Data Requirement 3	<b>Patient Clinical Information provided for Transfer, including( but not limited to):</b> <ul style="list-style-type: none"> <li>Past medical history and Diagnosis</li> <li>Physical Exam Details</li> <li>Problems/Conditions</li> <li>Reason of Admission/Visit</li> <li>Discharge Diagnosis and Summary</li> <li>Relevant Images</li> <li>Multidisciplinary Plan of Care</li> <li>Pending Information</li> <li>Pertinent Results</li> <li>Medications (Stopped, Modified/added, On Hold, Current List)</li> <li>Allergies and Adverse Reactions</li> <li>Treatment Summary</li> <li>Procedures</li> <li>Relevant Notes(Case Manager, Therapies, Consults, etc)</li> <li>Advance Directives, Power of Attorney</li> </ul>
Data Requirement 4	<b>Consultation Completion Details, including (but not limited to):</b> <ul style="list-style-type: none"> <li>Consultation Treatment Summary</li> <li>Complete Medication List</li> <li>Recommended Plan of Care</li> <li>Medication Reconciliation Information</li> </ul>
Data Requirement 5	<b>Consulting Provider Registration, including (but not limited to):</b> <ul style="list-style-type: none"> <li>Location</li> <li>Specialty</li> <li>Facilities association</li> <li>Schedule</li> <li>Insurance Plan Associations</li> </ul>
Data Requirement 6 (Eligibility and Authorization Inquiries)	<b>Identification and Demographic Details, including (but not limited to):</b> <ul style="list-style-type: none"> <li>Authorization/certification number for billing submission</li> <li>Health Plan eligibility, co-pay, deductibles, limits, and exclusions.</li> </ul>

Table 2.2.2-2 below contains an extraction of the interoperability requirements from the Use Case. Interoperability requirements map to the Interoperability Requirements column in Table 2.2.1-1 above.



**Table 2.2.2-2 Interoperability Exchange Requirements (IER)**

Requirement Number	Description
IER 1	Send/Receive Clinical Summary
IER 2	Download historical health information from EHR's, PHR, health record banks, etc.
IER 3	Send/receive data from the current encounter or the full Episode of Care record
IER 4	EHR, PHR and Data Bank providing systems support remote consults
IER 5	Decision support software at each step of the consultation, which may include algorithms, dashboards, status reports and views
IER 6	Identify a particular clinician or care setting based upon the patient's clinical and administrative data and the patient's preference
IER 7	Provide data needed by payer in order to authorize or deny reimbursement for care.
IER 8	PHR or EHR provides electronic access list (created by patient) to external PHR or EHR system.
IER 9	Send/receive additional patient information.
IER 10	Send/receive a request for additional patient information
IER 11	Send/receive consult results report
IER 12	Send/receive query/response if the patient can be accepted.
IER 13	Send/receive request for additional data.
IER 14	Send/receive transfer of care information
IER 15	Send/receive discharge/transfer information at personally controlled health record
IER 16	Send/receive consult request and core data for consult.
IER 17	Perform medication reconciliation for any modified medications as stated in the 2007 Medication Management Use Case.
IER 18	The ability to identify and appropriately select a consulting clinician or next setting of care, based on capability and healthcare plan.
IER 19	Support for notification of availability of new/updated data
IER 20	Summary patient record exchange
IER 21	The ability to check the patient's insurance coverage and eligibility.

Finally, Table 2.2.2-3 below provides a mapping of the business actors from the Use Case, to the interoperability requirements from Table 2.2.2-2. Business actors with no interoperability requirements are noted as not applicable.

**Table 2.2.2-3 Business Actors to Interoperability Exchange Requirements**

Business Actor	Interoperability Exchange Requirement
Care Coordinators	N/A
Clinical Support Staff	N/A
Clinicians	N/A
Consumers	N/A



Diagnostic Imaging Service Providers	1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20
EHR System	1, 2, 3, 4, 5(opt), 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
PHR System	1, 6, 8, 22
Electronic Health Record (EHR)/Personal Health Record (PHR) System Suppliers	N/A
Geographic Health Information Exchange/Regional Health Information Organizations	1, 2, 3, 4, 9, 10, 11 (maybe if RHIO has this scope), 13, 19, 20
Health Information Management (HIM) Personnel	N/A
Health Record Banks	Same as PHR
Healthcare Entities	N/A
Healthcare Payers (System)	1, 3, 5, 6, 9, 10, 13, 19, 20
Laboratories (System)	1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20 (same as healthcare providers)
Medication Network Intermediaries (MNIs)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18, 19, 20
Patient	N/A
Providers	N/A
Registries	1, 2, 3, 5, 6, 9, 10, 13, 20

### 2.2.3 IDENTIFICATION OF BUSINESS ACTORS, AND SCENARIOS

This section describes the business actors that impact interoperability requirements for each scenario. A HITSP business actor should generally be an IT system that is directly engaged, and benefits from the real world information interchange defined within a business Use Case action. A business actor may also be a person or organization, however, only IT systems have associated technical actors (see Section 3.2 for technical actors). The table below identifies the significant Use Case business actors, their descriptions and the Use Case scenarios in which they are used.

**Table 2.2.3-1 Business Actors**

Business Actor	Description	Use Case Scenario
Administrative and Financial Systems	Systems used by healthcare provider that include administrative and financial functions associated with the delivery of healthcare. These functions support the delivery and optimization of care, but generally do not impact the direct care of an individual patient.	1, 2
Care Coordinators	Individuals who support clinicians in the management of health and disease conditions. These can include case managers and others. For this Use Case Care Coordinators are the same as Clinicians	2
Clinicians	Healthcare providers with patient care responsibilities, including physicians, advanced practice nurses, physician assistants, nurses, psychologists, pharmacists, and other licensed and credentialed personnel involved in treating patients.	1, 2
Diagnostic Imaging Service Providers	Organizations which provide radiology and diagnostic imaging services to patients in various settings, which perform and analyze the study as ordered by clinicians to assess the health status of patients.	1, 2



Business Actor	Description	Use Case Scenario
EHR System	An electronic, cumulative record of information on an individual across more than one healthcare setting that is collected, managed, and consulted by professionals involved in the individual's health and care. This EHR description encompasses similar information maintained on patients within a single care setting (a.k.a., Electronic Medical Record (EMR)).	1, 2
Geographic Health Information Exchange/Regional Health Information Organizations	A multi-stakeholder entity, which may be a free-standing organization (e.g., hospital, healthcare system, partnership organization) that supports health information exchange and enables the movement of health-related data within state, local, territorial, tribal, or jurisdictional participant group. Activities supporting health information exchanges may also be provided by entities that are separate from geographic health information exchanges/Regional Health Information Organizations including integrated delivery networks, health record banks, and others	1, 2
Health Record Banks	Entities/mechanisms for holding an individual's lifetime health records. This information may be personally controlled and may reside in various settings such as hospitals, doctor's offices, clinics, etc	1, 2
Healthcare Entities	Organizations that are engaged in or support the delivery of healthcare. These organizations could include hospitals, ambulatory clinics, long-term care facilities, community-based healthcare organizations, employers/occupational health programs, school health programs, dental clinics, psychology clinics, care delivery organizations, pharmacies, home health agencies, hospice care providers, and other healthcare facilities.	1, 2
Healthcare Payers	Insurers, including health plans, self-insured employer plans, and third party administrators, providing healthcare benefits to enrolled members and reimbursing provider organizations.	1, 2
Laboratories	A laboratory (often abbreviated lab) is a setting where specimens are sent for testing and analysis are resulted, and then results are communicated back to the requestor. The types of laboratories may include clinical/medical, environmental, and veterinarian, and may be both private and/or public.	1, 2
Medication Network Intermediaries (MNIs)	These entities support the healthcare process by accomplishing communication among providers, pharmacies, and pharmacy benefits managers or payers as needed for medication dispensing and reimbursement. In this role, they are both a conduit for communication and a source of information on aspects of medication management such as medication prescription history, dispensing status, and pharmacy benefits. This group includes Pharmacy Network Intermediaries, ePrescribing Network Intermediaries, clearinghouses, and similar organizations.	1, 2
Patient	Members of the public who receive healthcare services. For hospice providers, the patient and family are considered a single unit of care. Synonyms used by various healthcare fields include client, resident, customer, patient and family unit, consumer and healthcare consumer.	1, 2
Patient Identifier Service	An application that references a patient database for the purpose of identifying a particular patient based on one of many IDs or by matching patient demographics	1, 2
Personal Health Record (PHR)	An electronic, cumulative record of health-related information on an individual, drawn from multiple sources, that is created, collected and managed by the individual or an agent acting for the individual. The content of and rights of access to the PHR are controlled by the individual or agent. The PHR is also known as the electronic Personal Health Record (ePHR).	1, 2



Business Actor	Description	Use Case Scenario
Providers	The healthcare clinicians within healthcare delivery organizations with direct patient interaction in the delivery of care, including physicians, nurses, psychologists, and other clinicians. This can also refer to healthcare delivery organizations.	Same as clinicians
Registries	Organized systems for the collection, storage, retrieval, analysis, and dissemination of information to support health needs. This also includes government agencies and professional associations which define, develop, and support registries. These may include emergency contact information/next of kin registries, patient registries, disease registries, etc.	1, 2
Locator Service	Responds to queries for the test results by providing the list of available test results and their locations within data repositories.	
Data Repository	The system that provides the laboratory test results.	

#### 2.2.4 HIGH-LEVEL UML BUSINESS SEQUENCE DIAGRAM

This section contains an explanation of the relationship between the business actors and data interactions between the primary actors and alternative actors for each Use Case scenario. The UML diagrams that follow illustrate each scenario with a representation of a normal sequence of exchange between the primary actors.

In the following diagrams, the business actor “External Healthcare Entities” is used to represent Diagnostic Imaging Service Providers, Geographic Health Information Exchanges/Regional Health Information Exchange Services, Health Record Banks and Laboratories



Figure 2.2.4-1 represents the UML interaction diagram for the Consultation scenario from the perspective of the Referring Clinician for Event 7.1.1. The referring clinician will evaluate the patient and request the patient's medical history from the PHR and from any other healthcare entities, including but not limited to: Hospital EHR's, Laboratories, Diagnostic Imaging Services, and RHIO's.

**Figure 2.2.4-1 Clinician Evaluates Patient**

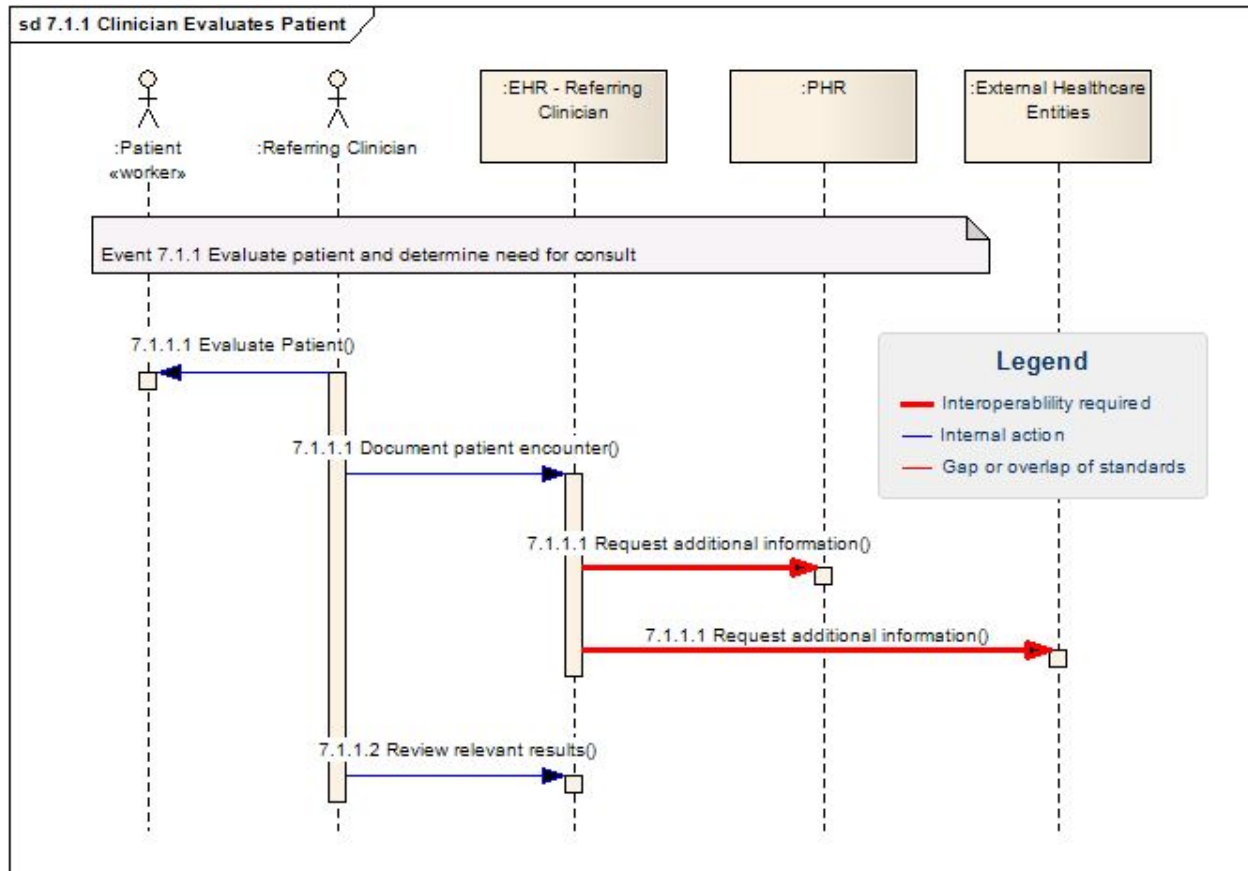


Figure 2.2.4-2 represents the UML interaction diagram for the Consultation scenario from the Referring Clinician's perspective for Event 7.1.2. After evaluating the patient, the referring clinician determines the need to request a consult for the patient. The referring clinician will assist the patient in finding a consulting clinician by recommending a clinician based on the patient's insurance coverage network and/or preferences.

**Figure 2.2.4-2 Select Consulting Physician**

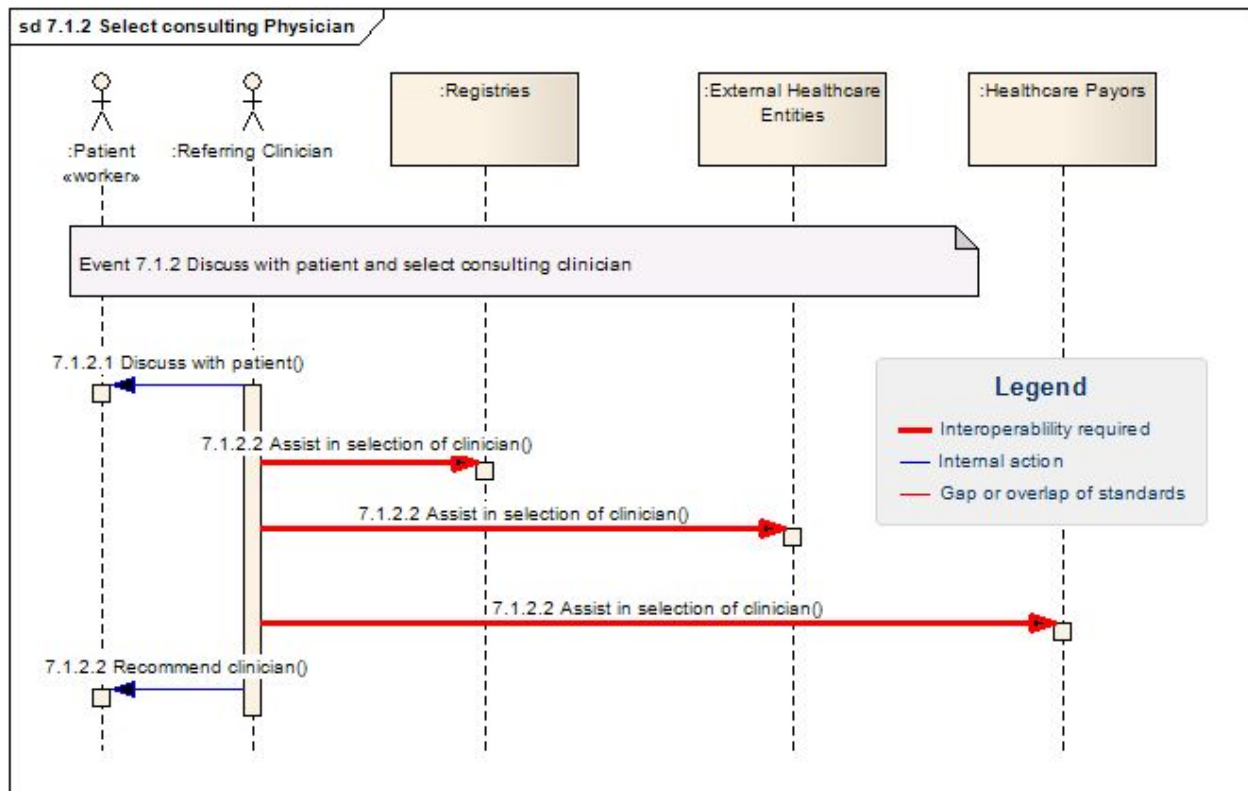


Figure 2.2.4-3 represents the UML interaction diagram for the Consultation scenario, from the Referring clinician's perspective for Event 7.1.3. The referring clinician initiates a request for consult via his EHR to the selected consulting clinician's EHR.

**Figure 2.2.4-3 Initiate Consult Request**

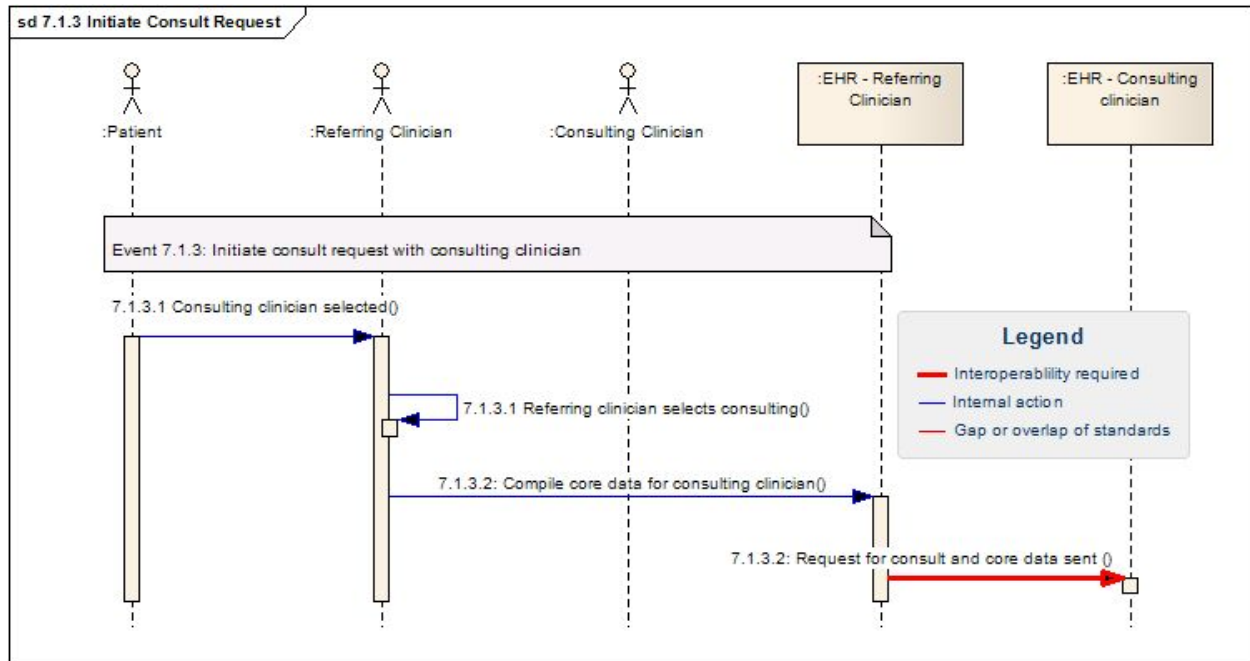




Figure 2.2.4-4 represents the UML interaction diagram for the Consultation scenario, from the perspective of the referring clinician for event 7.1.4. The referring clinician will compile relevant clinical information for the consulting clinician. The referring clinician's EHR will then send the information to the consulting clinician's EHR. The consulting clinician can also enter a request for specific clinical information into his/her EHR. The consulting clinician's EHR will then send a request for the specific information to the referring clinician's EHR. The referring clinician's EHR provides the consulting clinician access to the requested information, either through a web portal or by sending the information to the consulting clinician's EHR.

**Figure 2.2.4-4 Provide Access to Additional Information**

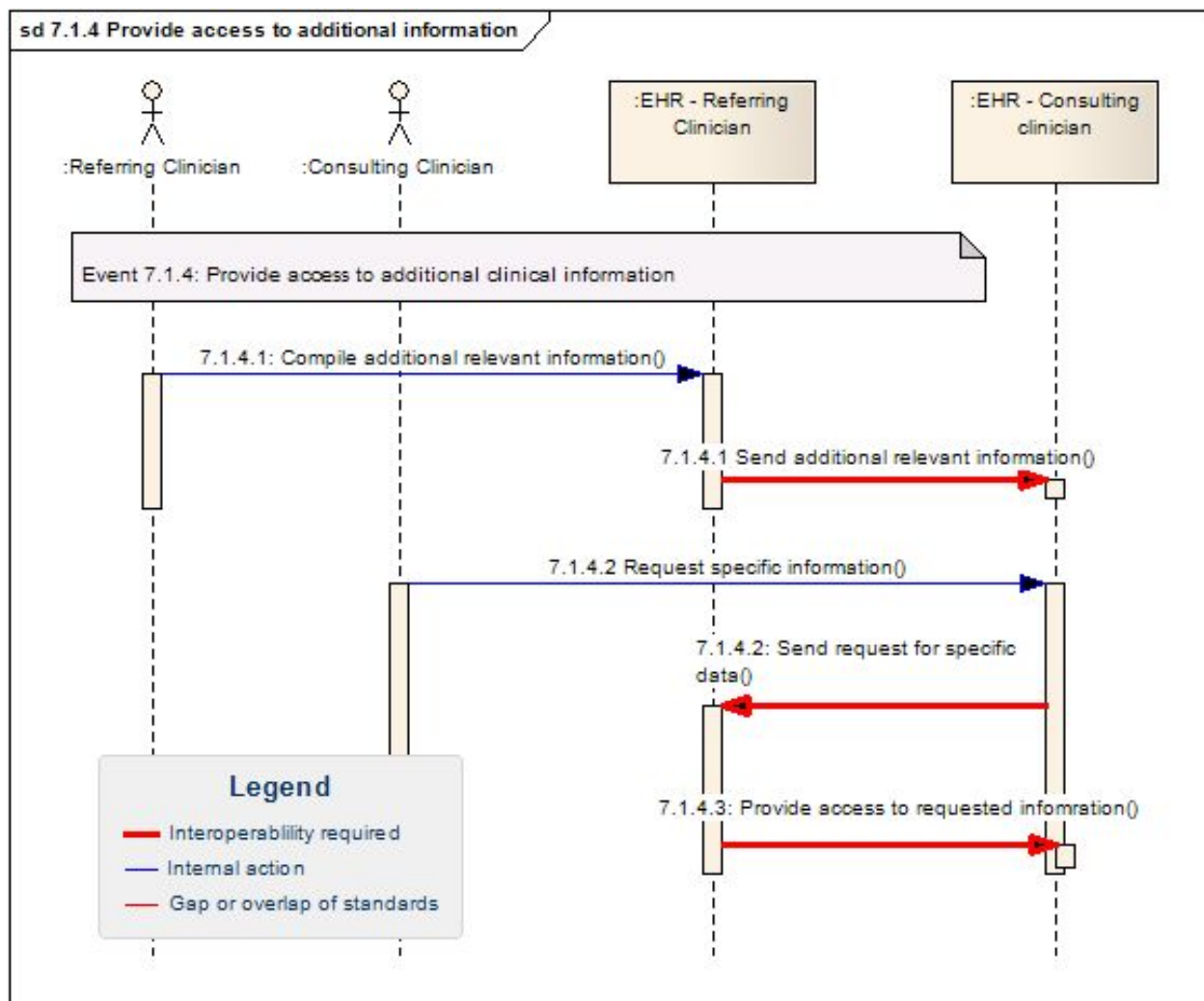


Figure 2.2.4-5 represents the UML interaction diagram for the Consultation scenario from the perspective of the referring clinician for event 7.1.5. The referring clinician's EHR will receive a copy of the consult report from the consulting clinician's EHR. The referring clinician will review the report and continue to manage the patient.

**Figure 2.2.4-5 Receive and View Consult Report**

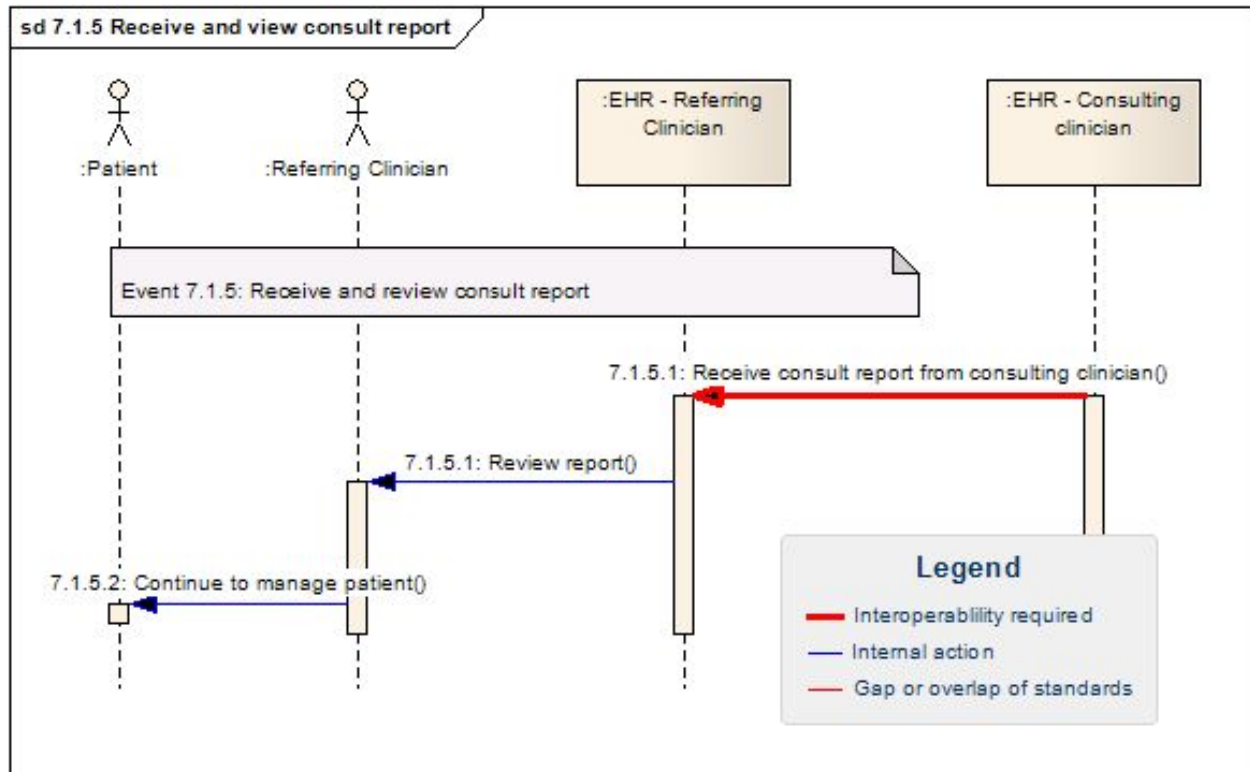


Figure 2.2.4-6 represents the UML interaction diagram for the Consultation scenario from the perspective of the Consulting Clinician for event 7.2. The consulting clinician's EHR receives a consult request and a core dataset from the referring clinician's EHR. The consulting clinician will review the request and the core dataset. He/she will perform medication reconciliation on the patient as per HITSP/IS07 - Medication Management. The consulting clinician will evaluate the patient and will provide needed information to the healthcare payer for the consult to be authorized and covered.

**Figure 2.2.4-6 Consulting view**

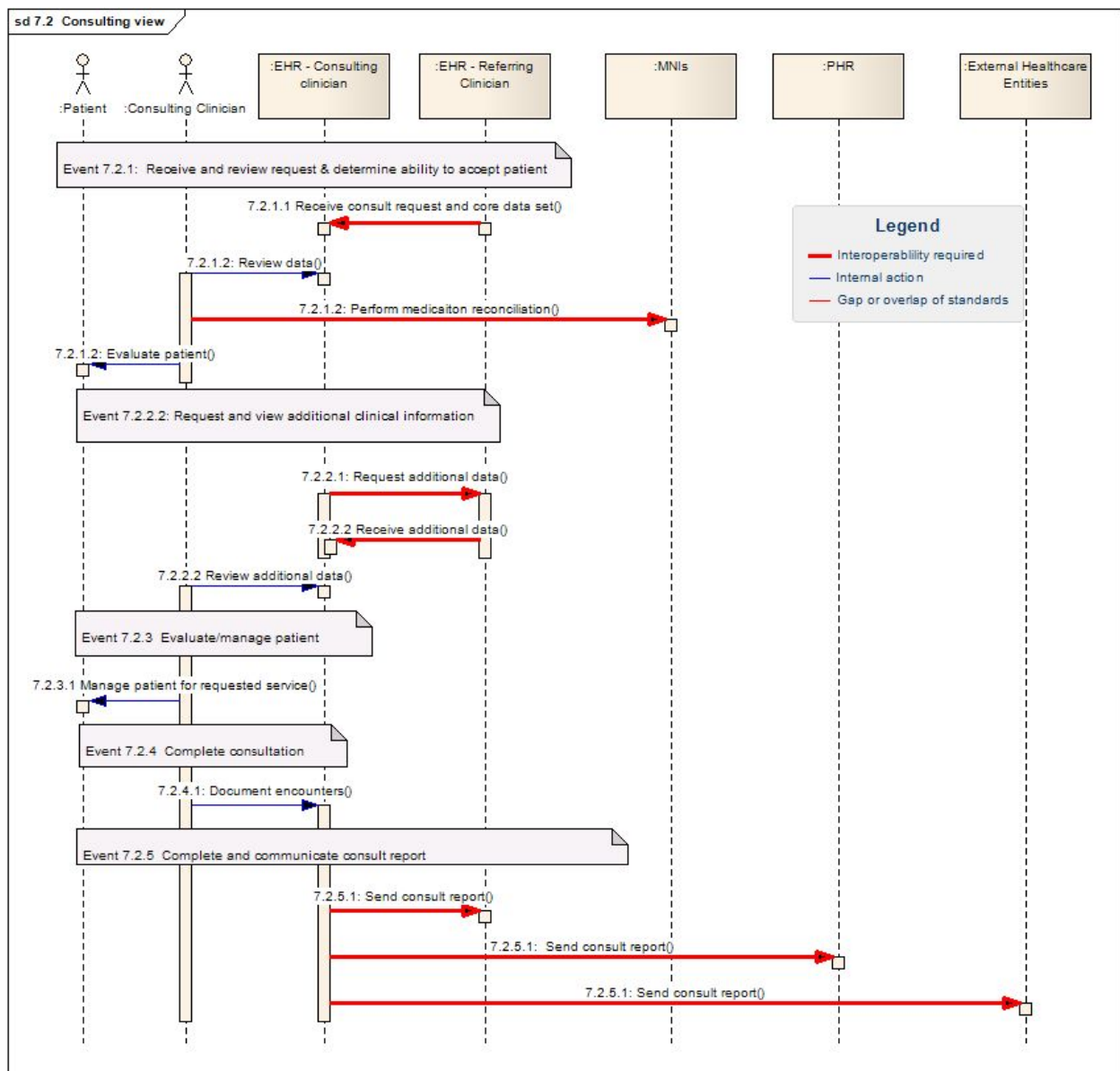


Figure 2.2.4-8 represents the UML interaction diagram for the Consultation scenario from the perspective of the consumer/patient for events 7.3.1 and 7.3.2.

**Figure 2.2.4-8 Consumer View**

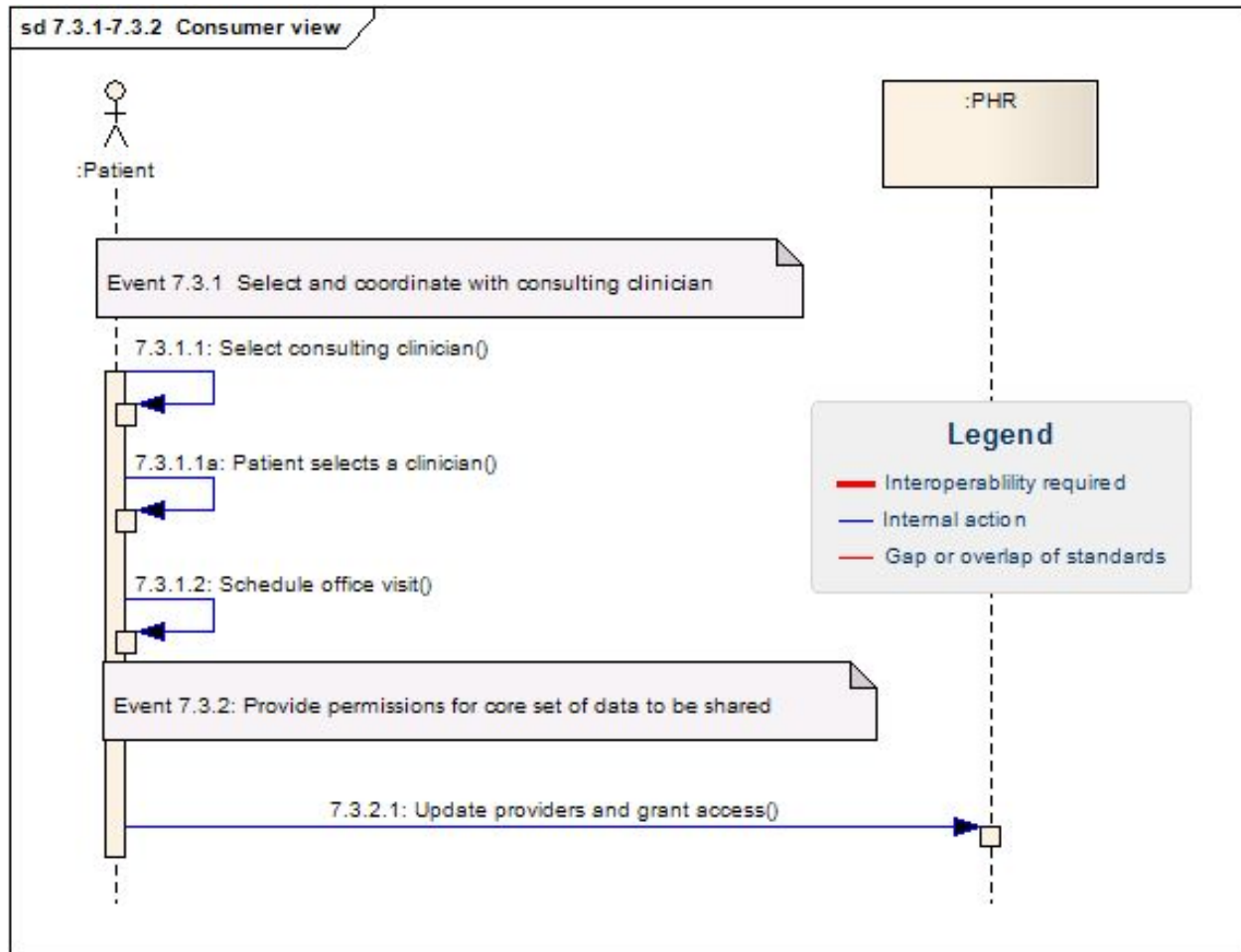


Figure 2.2.4-9 represents the UML interaction diagram for the Consultation scenario from the perspective of the consumer/patient for events 7.3.3 and 7.3.4.

**Figure 2.2.4-9 Complete Consult**

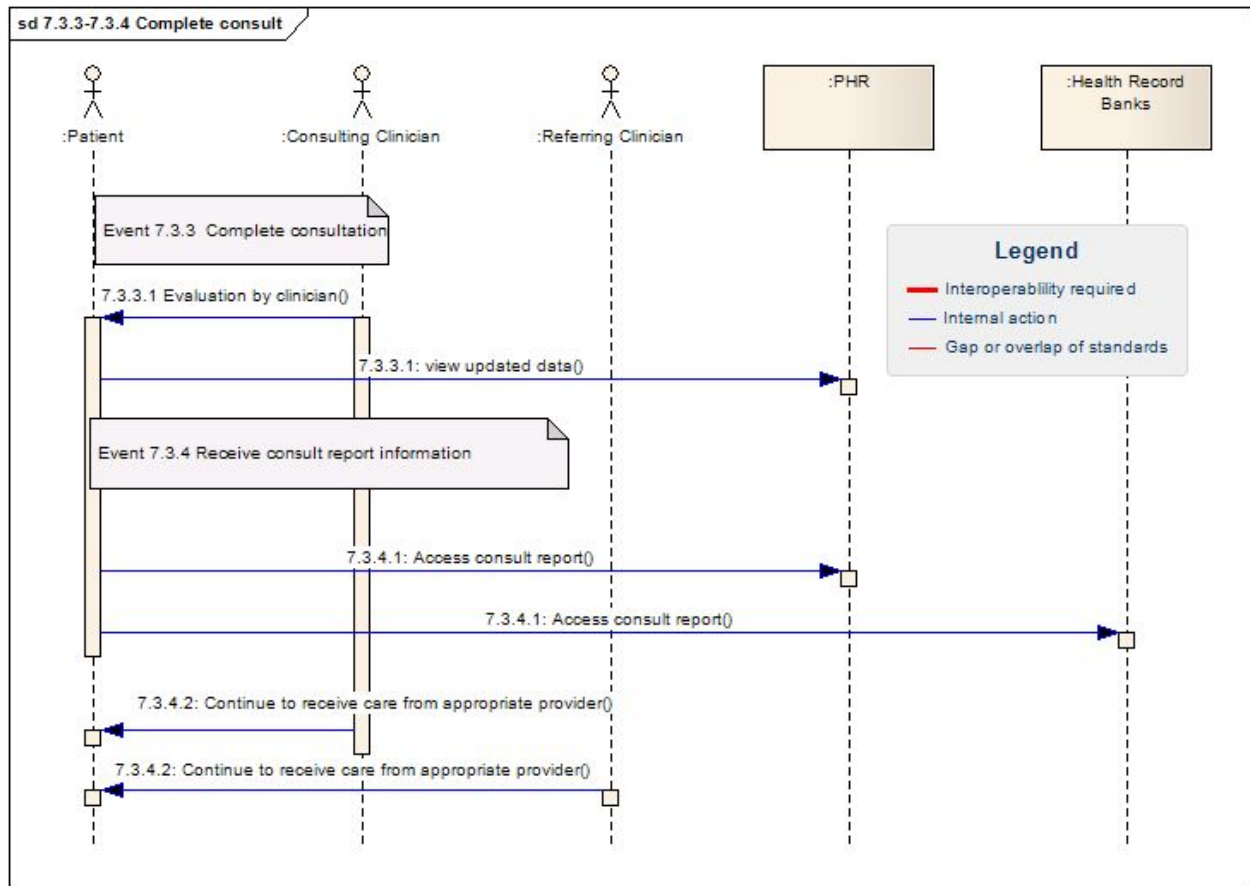


Figure 2.2.4-10 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the transferring facility. The transferring clinician will discuss the transfer with the patient and will request his EHR system to determine what authorization is needed and what coverage is available for the transfer. The transferring EHR will also request an authorization for transfer from the healthcare payer.

**Figure 2.2.4-10 Select Next Setting of Care**

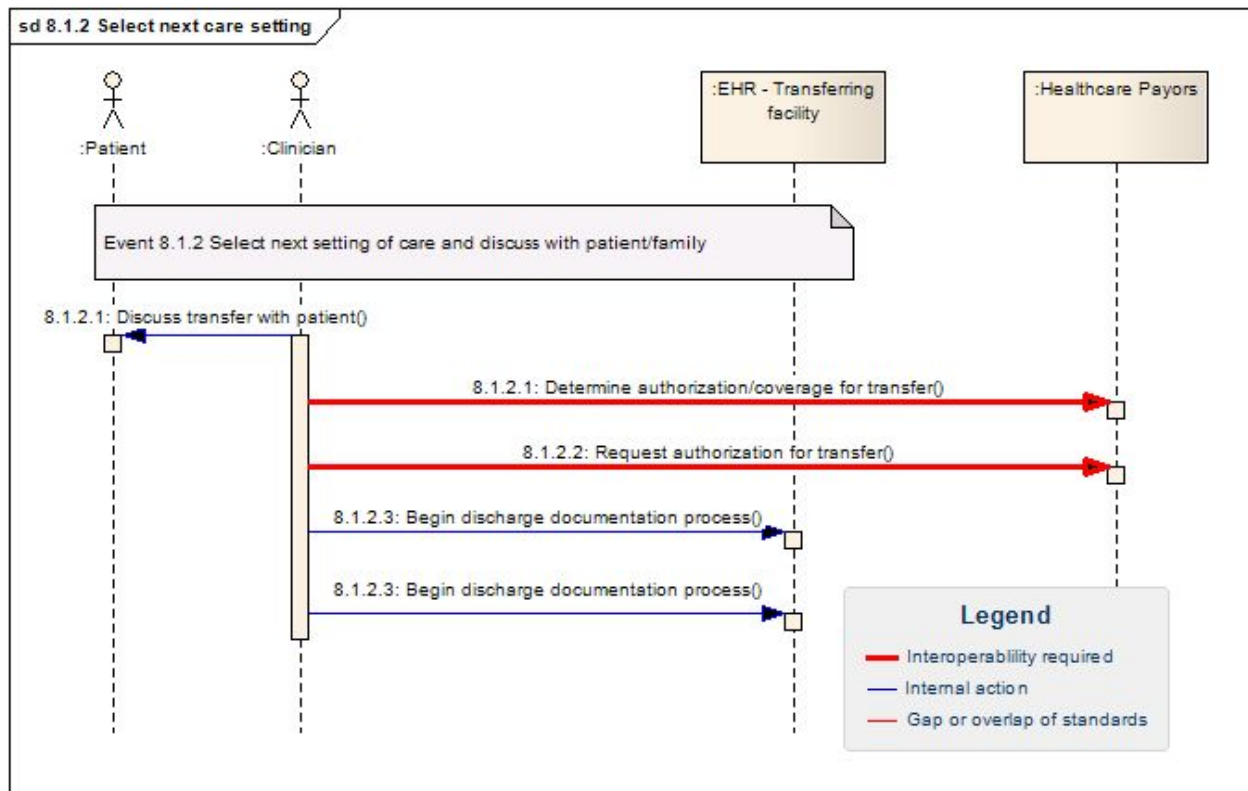


Figure 2.2.4-11 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the transferring facility for event 8.1.3.

**Figure 2.2.4-11 Initiate Plan & Coordinate Transfer/Discharge**

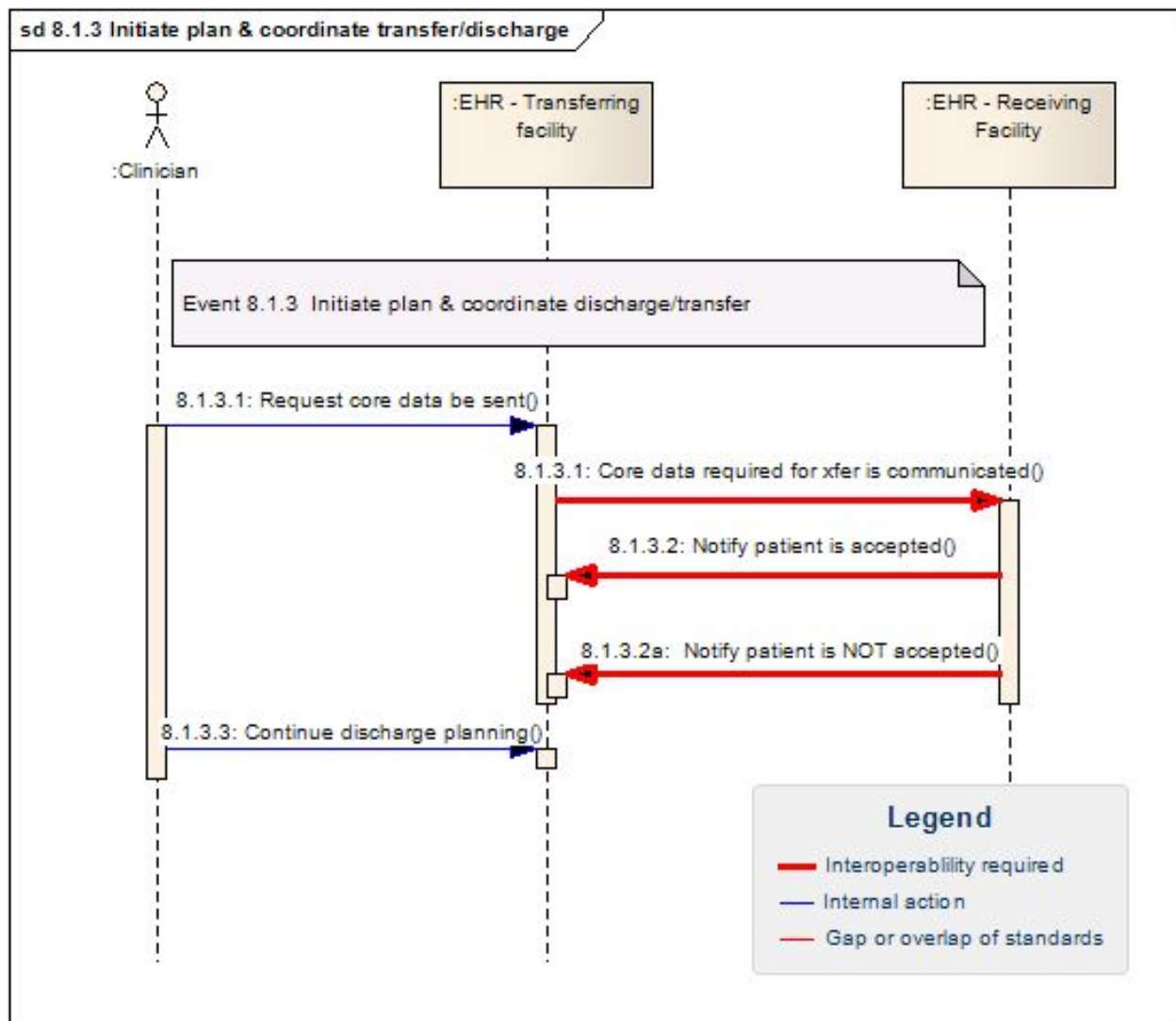




Figure 2.2.4-12 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the transferring facility for events 8.1.4 and 8.1.5.

**Figure 2.2.4-12 Transfer Patient and Send Data**

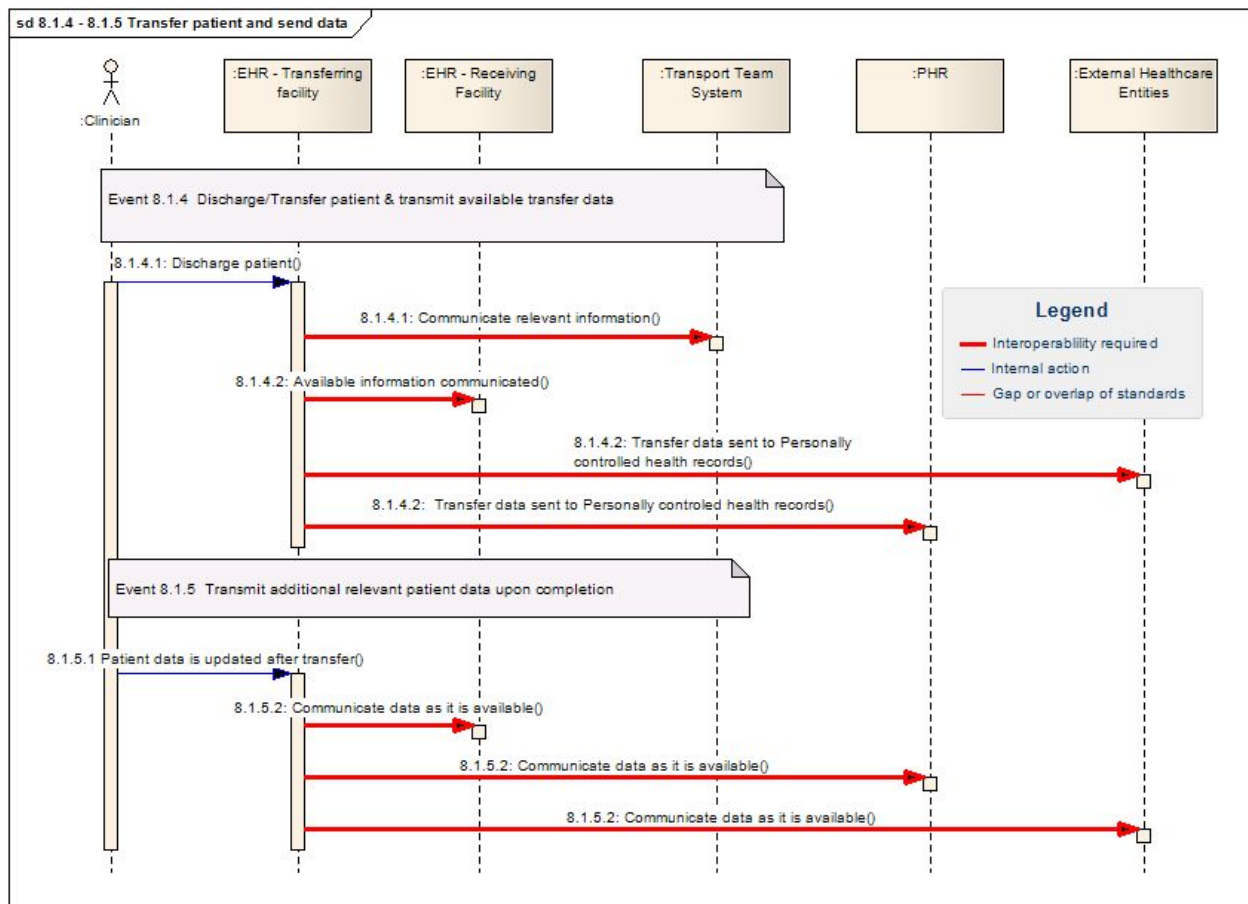




Figure 2.2.4-13 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the transferring facility for event 8.1.6.

**Figure 2.2.4-13 Provide Access to Additional Information**

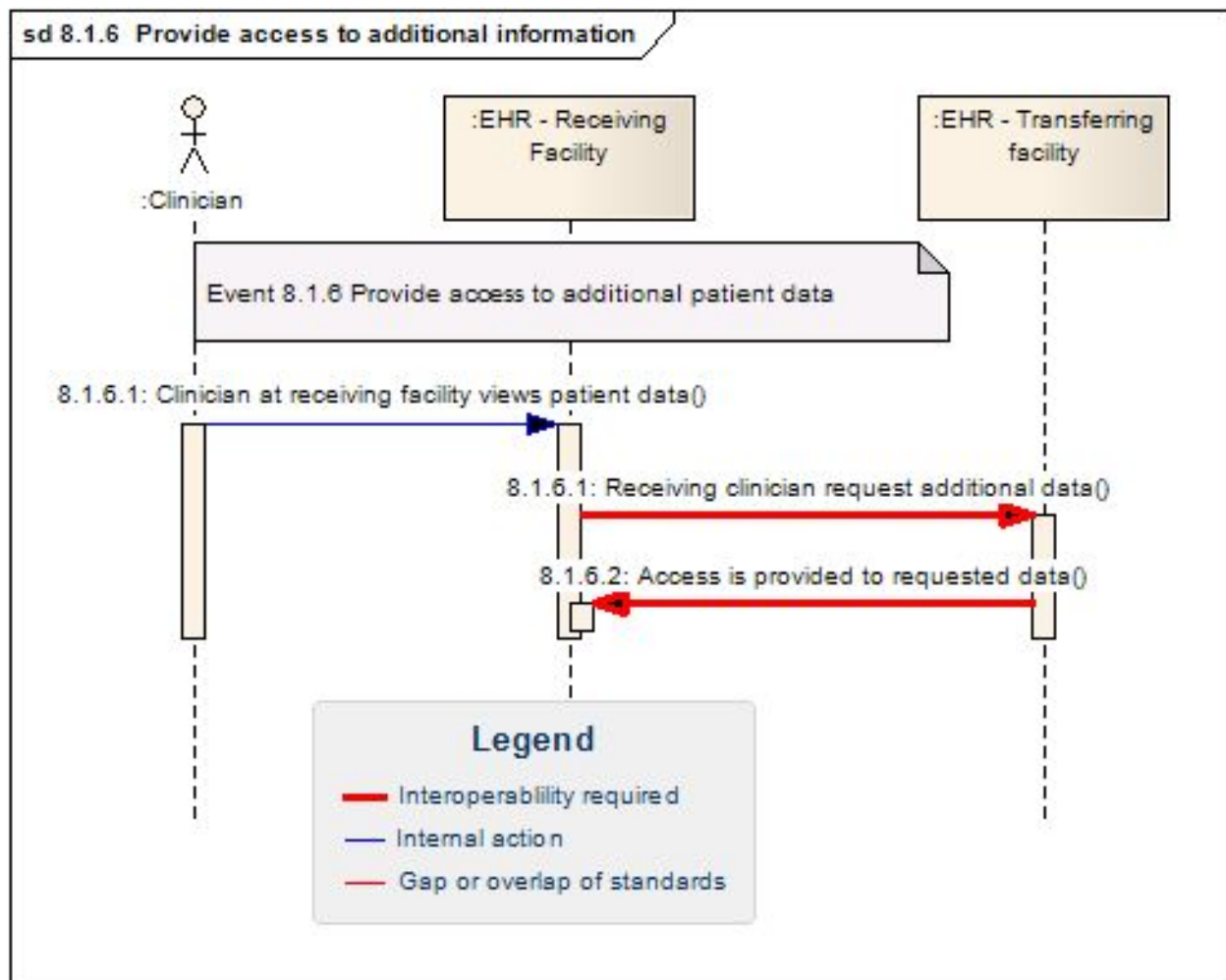


Figure 2.2.4-14 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the receiving facility for events 8.2.1 and 8.2.2.

**Figure 2.2.4-14 Receive Request to Accept Patient**

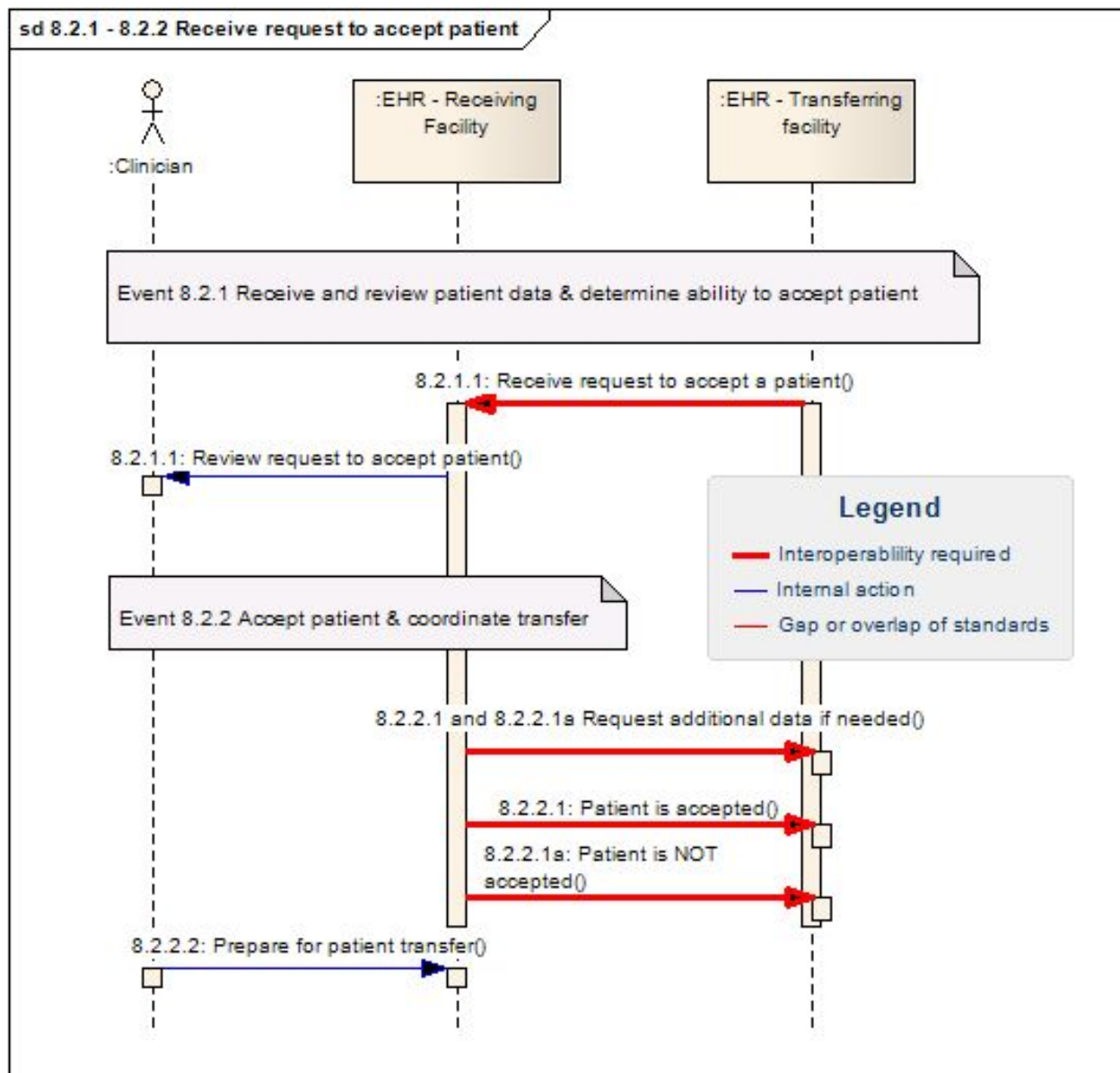


Figure 2.2.4-15 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the receiving facility for events 8.2.3, 8.2.4 and 8.2.5.

**Figure 2.2.4-15 Receive and Manage Patient**

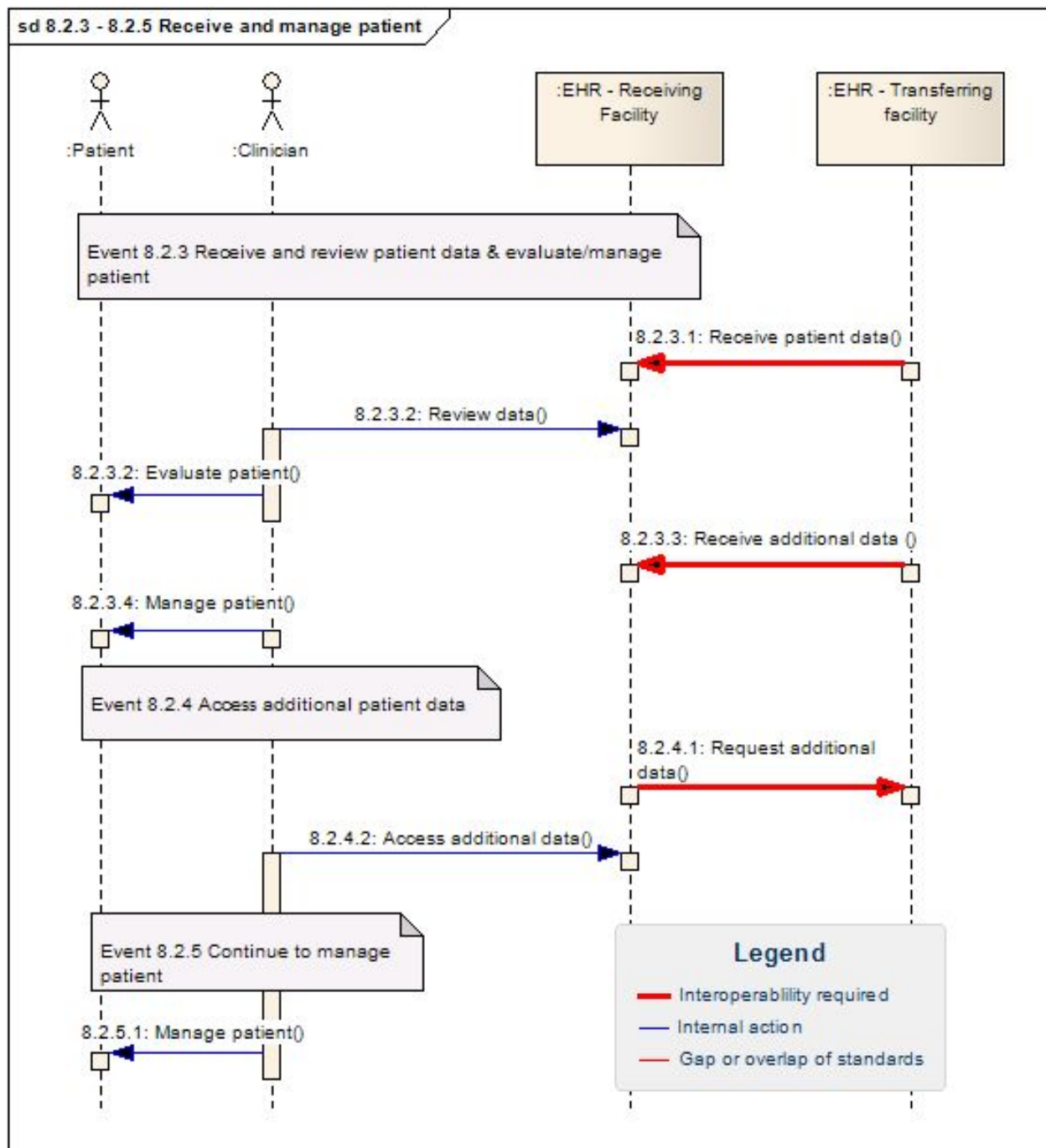
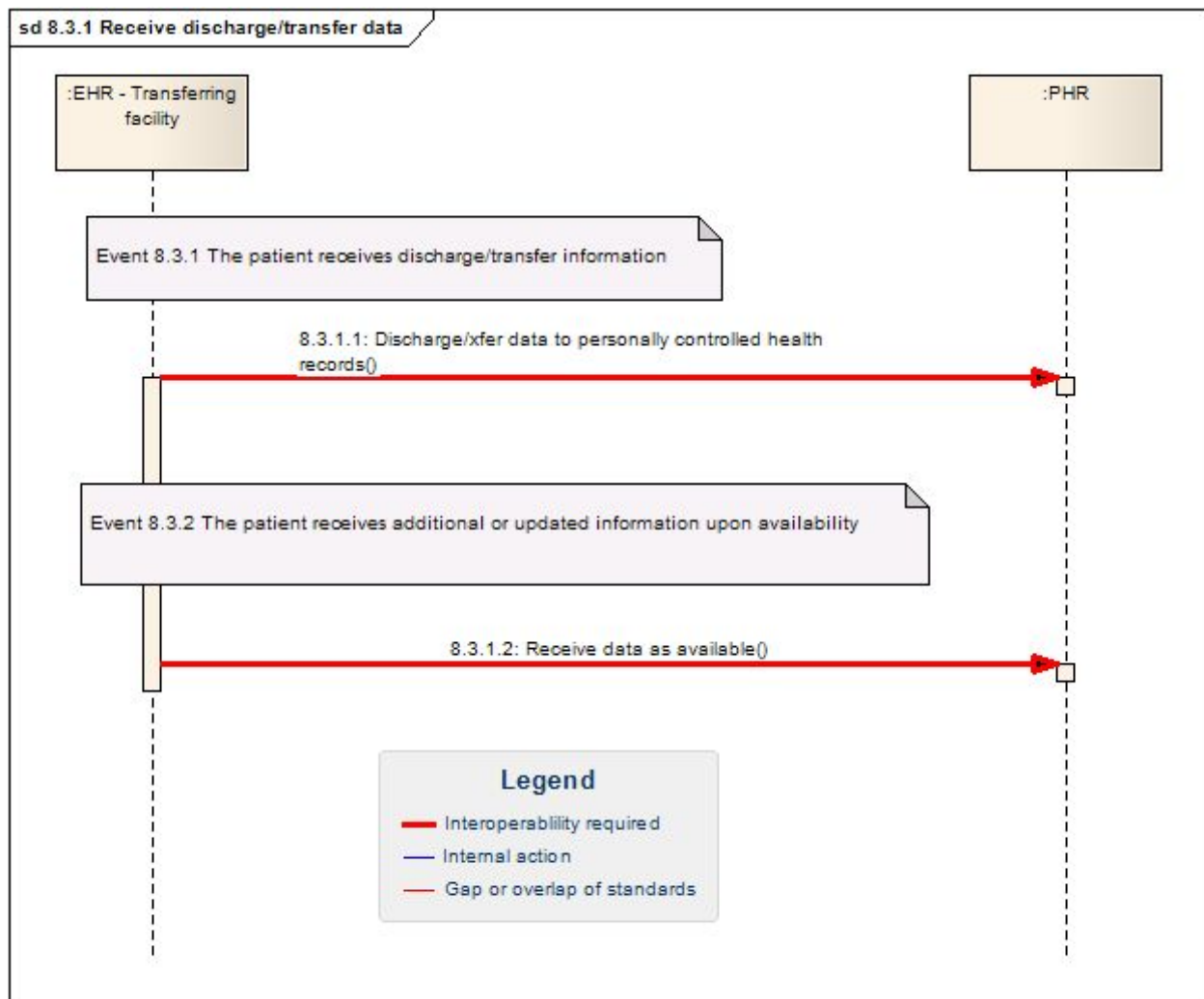


Figure 2.2.4-16 represents the UML interaction diagram for the Transfers of Care scenario from the perspective of the Patient for event 8.3.1.

**Figure 2.2.4-16 Receive Discharge/Transfer Data**



## 3.0 DESIGN

The design for the Interoperability Specification is the result of the requirements analysis and iterative standards selection process. This section describes the events and actions of the design from the specified requirements. It also provides a detailed mapping of the specified requirements to the business and technical actors, and data elements. Groupings of specific actions and actors are illustrated to further describe the relevant interactions as existing or new HITSP constructs required for interoperability.

### 3.1 SCOPE OF DESIGN

This section describes the scope of the design as it relates to the requirements for this Use Case that were identified in Section 2.2 above. The scope identifies the assumptions that provide the boundaries for the specification, and the constraints that limit the use of the specification. In addition, any pre-conditions, post-conditions and triggers that underlie the interactions between the various actors, data and Transactions are provided.

This RDSS has several scope assumptions. First, decision support systems (DSS) are not specifically addressed herein. DSS are quite ubiquitous and are addressed elsewhere in the HITSP process. It is assumed that most actors in the Consultation and Transfers of Care Use Case will employ DSS systems, often fed by remote data from interoperable systems. For example, a consulting physician may use his EHR and receive decision support partially based upon data transmitted, using this design standard, from a PHR, Remote Data Bank, or another EHR. Second, this design document addresses the use of portable media such as CD-ROMs, which may be carried or transmitted from one care system to another. For example, a patient may bring a multi-megabyte optical disk file from one health system to another. An important and third point relates to consultations: they are assumed to be continuing until formally terminated by the involved parties or specifically ordered as a one-time encounter (e.g., to perform a procedure, evaluate a skin rash). Particularly in the inpatient setting, consultations are ongoing over a period of time and involve multiple encounters. Fourth, any notifications to a transport team (e.g., an ambulance team involved in a hospital to hospital transfer) are assumed to occur personally, by telephone, or electronically; they are not further specified in this design document because this was not judged to be within scope. A fifth and final point regards security: pseudonymization and anonymization are assumed to occur using procedures followed in the Security and Privacy Technical Committee. No deviations from the HITSP Security and Privacy constructs as written or used in other design documents are specified or anticipated.

#### 3.1.1 ASSUMPTIONS

This section provides an overview of the assumptions, including the circumstances, actors, policies and/or technologies that need to be in place for the design to be completed as specified. Assumptions are different from constraints which are specifically used to narrow the definition, or indicate limitations of the specified interactions.



**Table 3.1.1-1 Assumptions**

Assumption	Use Case Scenario
Any interfaces with remote monitoring devices will be handled by the HITSP Remote Monitoring Interoperability Specification	All
Patient system accesses updated clinical information via health information exchanges as described in the Consumer Empowerment 2007 Consumer Access to Clinical Information Use Case	All

### 3.1.2 CONSTRAINTS

This section describes the constraints that limit the use of the Requirements and Design, or to which the design must conform in order to be used within the described context. A constraint describes a rule that limits the use of the actors, actions or data within the given context, or to which the interactions must conform to be used within the described scenario. It is a description of the limits and scope of the interactions and can describe actions or events that are not part of the initial definition for the Use Case scenario.

**Table 3.1.2-1 Constraints**

Constraint	Use Case Scenario
No applicable constraints	

### 3.1.3 PRE-CONDITIONS

This section describes the necessary conditions that must be in place prior to the start of each scenario. The pre-conditions are used to convey any conditions that must be true at the outset of a scenario. It describes the context that must be established before the scenario is executed. They are not however the triggers that initiate a Use Case. Where one or more pre-conditions are not met, the behavior of the Use Case should be considered uncertain.

**Table 3.1.3-1 Pre-conditions**

Pre-condition	Use Case Scenario
Assume that all pre-conditions from HITSP/C19, C32, C35, C37, C41, C48, T14, T15, T16, T17, T23, T29, T31, T33, T40, TP13, TP20, TP22, TP30, TP49 are incorporated	All
Support the technical measures to ensure privacy and security of consumer/patient health information	All
Authentication service to authenticate requestors and/or data submissions from various locations	All
Security and privacy policies, procedures and practices are commonly implemented to support acceptable levels of consumer/patient privacy and security	All
Legal and governance issues regarding data access authorizations, data ownership, and data use are in effect	All



Pre-condition	Use Case Scenario
Support the following HITSP Security and Privacy constructs: HITSP/C19 - Entity Identity Assertion – Provide assertion HITSP/T16 - Consistent Time – Maintain time HITSP/T17 - Secured Communication Channel – Authenticate node HITSP/T15 - Collect and Communicate Security Audit Trail – Record audit event in repository HITSP/TP30 - Manage Consent Directive – Capture/Request consent directive HITSP/TP20 - Access Control – Access control request	All
All pre-conditions from the lower level constructs are incorporated	All
When needed, the patient is uniquely registered with the Patient Identity Cross-Referencing service	All
Patient Identities (name, demographics etc.) are known and are consistent with policies	All
When needed, the patient is uniquely registered with the Patient ID Cross-Referencing service	All
Patient Identities are known consistent with policies (name, demographics etc).	All
Prior to patient transfer occurring, the transport team will be notified	2

### 3.1.4 POST-CONDITIONS

This section provides an overview of the conditions or results that must occur at the end of each scenario in order for the scenario to be deemed successfully completed. This includes any required outputs from the scenario, or specific actor states.

**Table 3.1.4-1 Post-conditions**

Post-condition	Use Case Scenario
Assume that all post-conditions from HITSP/C19, C32, C35, C37, C41, C48, T14, T15, T16, T17, T23, T29, T31, T33, T40, TP13, TP20, TP22, TP30, TP49 are incorporated	All

### 3.1.5 PROCESS TRIGGERS

This section describes the triggers, including actors and/or processes, which are necessary to start any scenarios, actions or events. It can be an automatic or manual process or result that in turn starts off another scenario, action or event. A trigger is not the same as a pre-condition that describes a context that needs to be in place at the start of the event.

**Table 3.1.5-1 Process Triggers**

Process Trigger	Use Case Scenario
No applicable process triggers	





## 3.2 DETAILED DESIGN

This section will provide a detailed description of the technical design, along with an analysis of the main interactions and decisions between all actors, actions and data in support of the specific requirements for each scenario of the Use Case. In addition, this section provides the data element details and an overview of the planned constructs used to meet the business and technical requirements for this Use Case. Opportunities for reuse of existing HITSP constructs are outlined, along with a description of any necessary updates to existing constructs. Any variances in the security and privacy implementation are also described here.

Local implementation policy as determined by risk assessment, including assessment of jurisdictional and regulatory requirements, will determine which assurance level of Nonrepudiation of origin is needed. For instance, in document-based transmissions, a low level of assurance is offered by the basic use of HITSP/TP13 - Manage Sharing of Documents construct. A medium level of assurance is offered by use of the HITSP/TP13 – Manage Sharing of Documents construct option called “Document Integrity”. A high level of assurance is offered by the use of the HITSP/C26 - Nonrepudiation of Origin construct which requires the existence of a Public Key Infrastructure (See TN900 for a discussion on the challenges with PKIs).

The detailed applications of the main HITSP constructs required by this specification are shown in the steps below. It is important to recognize the three transport methods that will support a wide variety of environmental factors:

- a) HITSP/TP13 - Manage Sharing of Documents is needed to provide the ability to share documents among Health Information Exchange (HIE) members, and additionally to support a longitudinal health record
- b) HITSP/T31 - Document Reliable Interchange is needed for situations where the consultation is to be forwarded to a particular designated recipient, without the need/desire to upload the information into the HIE.
- c) HITSP/T33 - Transfer of Documents on Media is needed for cases where the consulting individual is not known, or is known to be outside of a document sharing arrangement. This enables consumer choice by allowing the consumer to transport the information. The receiving physician may want to read the physical media to incorporate the information into their PHR/EHR.

Both of the Consultation and Transfers of Care scenarios are focused on the sharing of a set of clinical and administrative information between provider systems. The following describes the sharing of data for document based flows of data:

1. The HITSP/T67 - Referral Request Transaction will pull together the request for a consult with a referral document and all the relevant documents in a folder, and optionally sends a trigger message to the receiving system to indicate that the group of related documents is part of a referral to process.
2. Documents are formed as per HITSP/C32 - Summary Documents Using HL7 Continuity of Care Document (CCD), HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS),





HITSP/C62 - Unstructured Documents, and HITSP/C37 - Lab Report Document, and any other newly defined documents defined in Section 3.2.5.

3. These documents are then transported by one of the following:
  - a. Share the documents in the document sharing system of HITSP/TP13 - Manage Sharing of Documents
  - b. Deliver the documents directly to the consulted system using HITSP/T31 - Document Reliable Interchange, or
  - c. Utilize a removable media such as USB, CD-ROM using HITSP/T33 - Transfer of Documents on Media
4. When using option 3a above, there will additionally be a message sent to the consulted system to indicate that a consult has been requested.
5. The consulted system will utilize the request for consult and the documents in the folder to assist with local management of the consultation
6. Any requests for additional resources can be achieved through queries to the HITSP/TP13 - Manage Sharing of Documents document sharing system
7. When the consult is concluded, a summary document will be placed into the folder and returned to the ordering system.

### 3.2.1 TECHNICAL ACTOR ROLE DESCRIPTIONS

This section identifies the technical actors used within the Interoperability Specification. Note that a technical actor represents an internal software component or IT system, which supports a specific aspect of a real world business information interchange (e.g., set of message exchanges). Technical actors implement system data exchange transactions, which implement real world business actor information interchanges (see Section 2.2.3). The table below identifies the technical actors and gives a description of the technical actor roles involved in the Interoperability Specification.

**Table 3.2.1-1 Technical Actor Role Descriptions**

Technical Actor(s)	Actor Role
Access Control Service	The Access Control Service is the enterprise security service that supports and implements user and service access control capabilities. This service would be utilized by the Service User, and/or Service Provider
Audit Record Repository	This actor provides a repository for audit events
Audit Record Source	The actor that, on behalf of another actor that performs an action requiring logging, creates and communicates an Audit Record to the Audit Record Repository
Consent Directive Requestor	The Consent Directive Requestor accesses Consent Directives located through a Consent Registry from Consent Repositories
Consent Registry	The Consent Registry is responsible for providing location information and sender notification regarding Consent Directives. The Consent Registry receives a Manage Consent Directive Metadata Request
Consent Repository	The Consent Repository is responsible for both the persistent storage of consent directives as well as for their registration with the appropriate Consent Registry. It assigns a Uniform Resource Identifier (URI) and Metadata such as confidentiality codes to the Consent Directive for subsequent retrieval by an authorized consumer, e.g. for association with published personal health information or for evaluation at a policy decision point



Technical Actor(s)	Actor Role
Content Consumer	A Content Consumer Actor is responsible for viewing, import, or other processing of content created by a Content Creator Actor
Content Creator	The Content Creator Actor is responsible for the creation of content and transmission to a Content Consumer
Document Consumer	Queries a Document Registry Actor for documents meeting certain criteria and retrieves selected documents from one or more document Repository actors
Document Recipient	This actor receives a set of documents sent by another actor. Typically this document set will be made available to the intended recipient who will choose to either view it or integrate it into a health record
Document Registry	Maintains metadata about each registered document in a document entry. This includes a link to the Document in the Repository where it is stored. The Document Registry responds to queries from Document Consumer actors about documents meeting specific criteria. It also enforces some healthcare specific technical policies at the time of document registration
Document Repository	Responsible for both the persistent storage of these documents as well as for their registration with the appropriate Document Registry. It assigns a Uniform Resource Identifier (URI) to documents for subsequent retrieval by a Document Consumer
Document Source	The Document Source Actor is the producer and publisher of documents. It is responsible for sending documents to a Document Repository Actor. It also supplies metadata to the Document repository Actor for subsequent registration of the documents with the Document Registry Actor
Eligibility Information Receiver	The system that initiates an inquiry to the Eligibility Information Source about an individual's insurance eligibility, coverage and benefits
Eligibility Information Source	The system which holds and maintains the information regarding the individual's insurance eligibility, coverage and benefits, and responds to the queries initiated by the Eligibility Information Receiver
Identity Provider	The Identity Provider receives the credentials and identifier from the Entity (principal). It may perform authentication at that point or may require additional authentication from another source (the Service Provider)
Initiating Gateway	Supports all outgoing inter-community communications
Laboratory Result Receiver	This actor is the recipient of laboratory result messages (i.e., the ordering clinician or other authorized provider of care)
Laboratory Result Sender	Sends laboratory results as messages or as documents to the ordering clinician or other authorized providers of care
Node	The originating or terminating point of information or signal flow in a telecommunications network.
Notification Receiver	This actor receives notifications of availability for documents in an XDS registry and may optionally send acknowledgments of them
Notification Sender	This actor sends notifications of availability for documents in an XDS registry and receives acknowledgments of these notifications
Patient Demographics Consumer	Queries the Patient Demographics Supplier for a list of patient demographic information, if any
Patient Demographics Supplier	Receives the query for a list of corresponding patient demographics from the Patient Demographics Consumer Sends a list of corresponding patient demographic information to the Patient Demographics Consumer
Patient Identifier Cross Reference Consumer	The Patient Identifier Cross-Reference Consumer either queries for sets of cross-reference patient identifiers. It may also receive notifications about cross-reference changes
Patient Identifier Cross Reference Manager	Receives the query for a list of corresponding patient identifiers from the Patient Identifier Cross-Reference Consumer Sends a list of corresponding patient identifiers to the Patient Identifier Cross-Reference Consumer Receives patient



Technical Actor(s)	Actor Role
Patient Identity Source	Sends patient demographic information to the Patient Identifier Cross-Reference Manager
Payor Authorization Information Receiver	The system that initiates a request to the Authorization Information Source about an individual's insurance requirements to obtain an authorization approval for purposes of benefit coverage determination and reimbursement in order to refer a patient for care or services to another clinician or providers of care
Payor Authorization Information Source	The system which holds and maintains the information regarding the individual's insurance requirements related to an authorization for benefit coverage determination and reimbursement purposes when a patient is referred for care or services, and responds to the query initiated by the Authorization Information Receiver
Person Identification Service	System that maintains a cross-domain person and/or patient index including all known identifiers (real and pseudo) for each person and/or patient within all domains with which it communicates
PIX Consumer	See Patient Identifier Cross Reference Consumer
PIX Manager	See Patient Identifier Cross Reference Manager
Portable Media Creator	The Portable Media Creator writes the selected information from a consumer's PHR to media following the directory structure outlined by XDM
Portable Media Importer	The Portable Media Importer processes all the contents written by a Portable Media Creator on the physical media. The portable Media Importer must successfully process all documents
Referral Requestor	This actor generates the request for consultations
Referral Dispatcher	This actor processes requests for consultation, and determines whether they can be accepted, declined, or deferred for human decision making
Responding Gateway	Supports all incoming inter-community communications
Service Provider	This is the information resource, representing the information repositories and all capabilities that receive process and fulfill authorized request. The Service Provider includes any local access decision and enforcement components that are part of the distributed capabilities. In addition, the Service Provider represents the system providing a protected resource and relies on the provided security service.
Service User	The entity that takes on the actor role of initiator or claimant. This is an initiator actor
Time Client	Establishes time synchronization with one or more Time Servers using the NTP protocol and either the NTP or SNTP algorithms. Maintains the local computer system clock synchronization with UTC based on synchronization with the Time Servers
Time Server	Provides NTP time services to Time Clients. It is either directly synchronized to a UTC master clock (e.g. satellite time signal) or is synchronized by being grouped with a Time Client to other Time Server(s)

### 3.2.2 SEQUENCE DIAGRAM FOR PROCESS FLOW

This section incorporates the comprehensive business and technical requirements and a detailed analysis of the interactions and decisions undertaken for the primary actions in each Use Case scenario. The UML sequence diagrams used in this section incorporates the detailed data requirements for the selected standards (defined in Section 2.2.2), with the technical actors, and their specific and detailed Transactions and content (encapsulated in HITSP constructs). The detailed actor Transactions described in these diagrams show all common or independent actors, data, and the actual transactions from the HITSP constructs that are used for the Interoperability Specification.

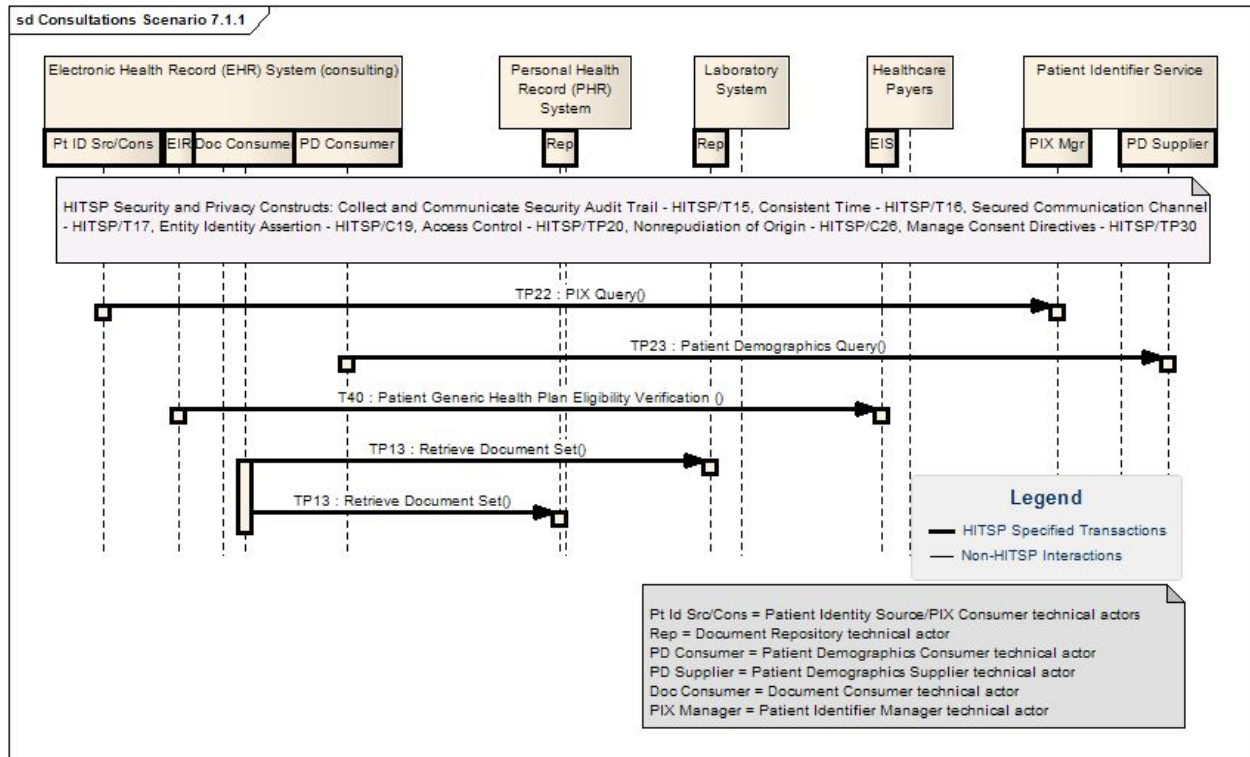
Transactions that make use of existing HITSP constructs are shown explicitly, indicating opportunities for reuse. Table 3.2.3-1 provides the tabular representation of the interactions shown in the UML diagrams below.



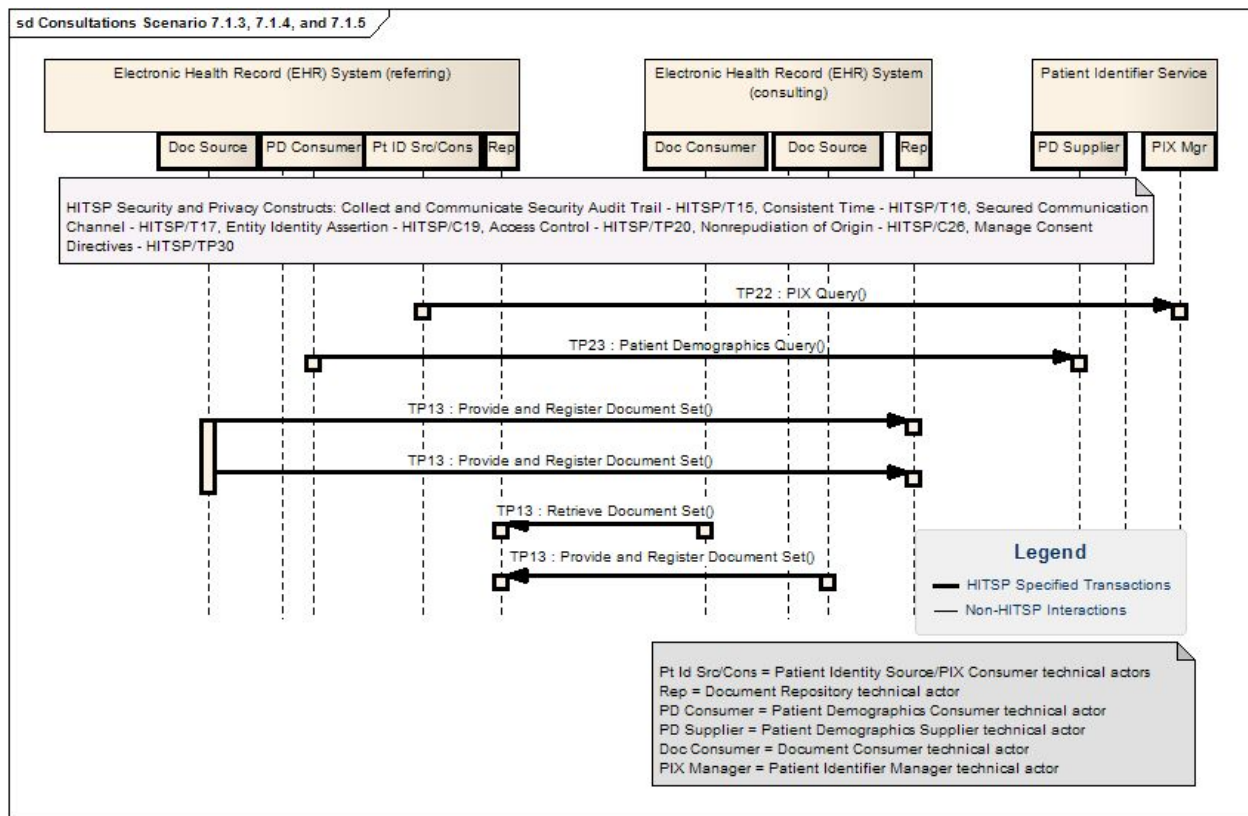
### 3.2.2.1 Sequence Diagrams for Consultation Scenario Process Flows

The diagrams in this section are detailed UML sequence diagrams that illustrate the sharing of a set of clinical and administrative information between provider systems for the Consultation, Request for Consult scenario.

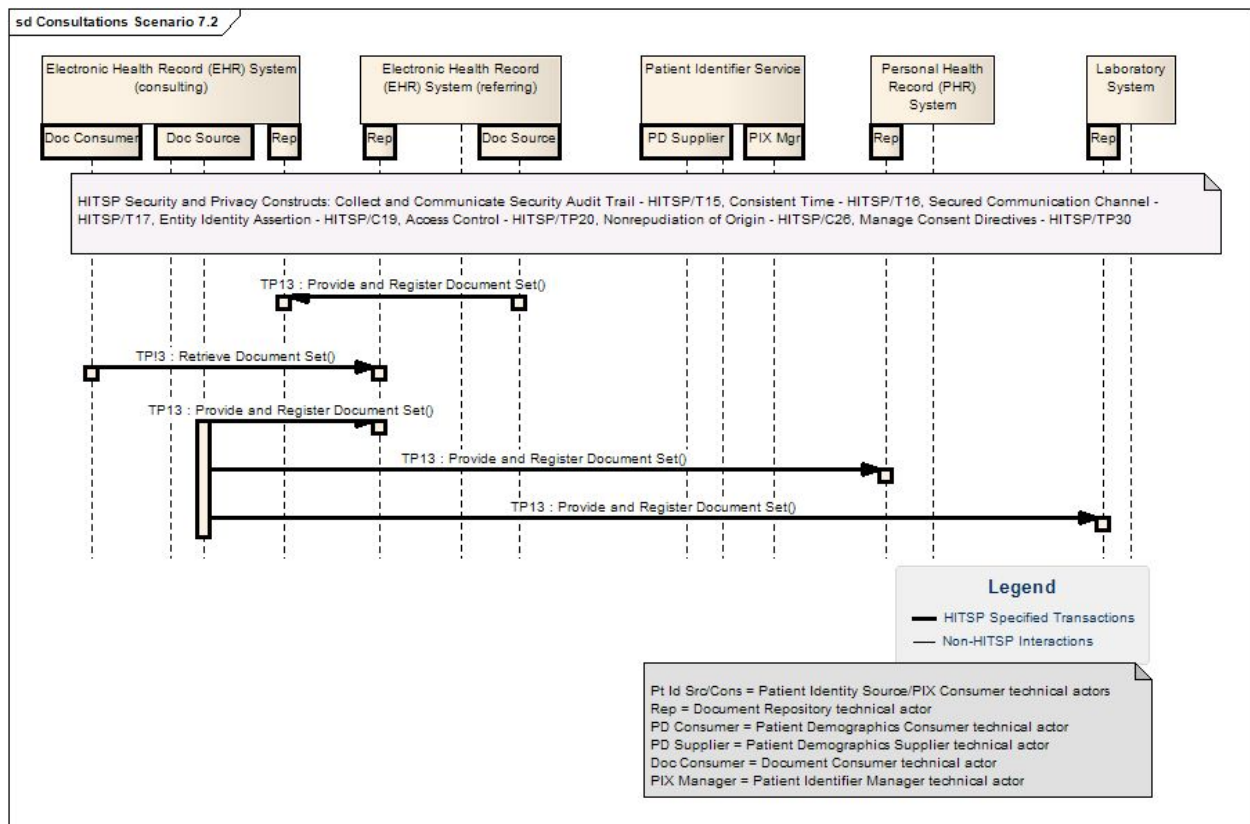
**Figure 3.2.2.1-1 Consultation: Request for Consult (Part 1)**



**Figure 3.2.2.1-2 Consultation: Request for Consult (Part 2)**



**Figure 3.2.2.1-3 Consultation: Request for Consult (Part 3)**

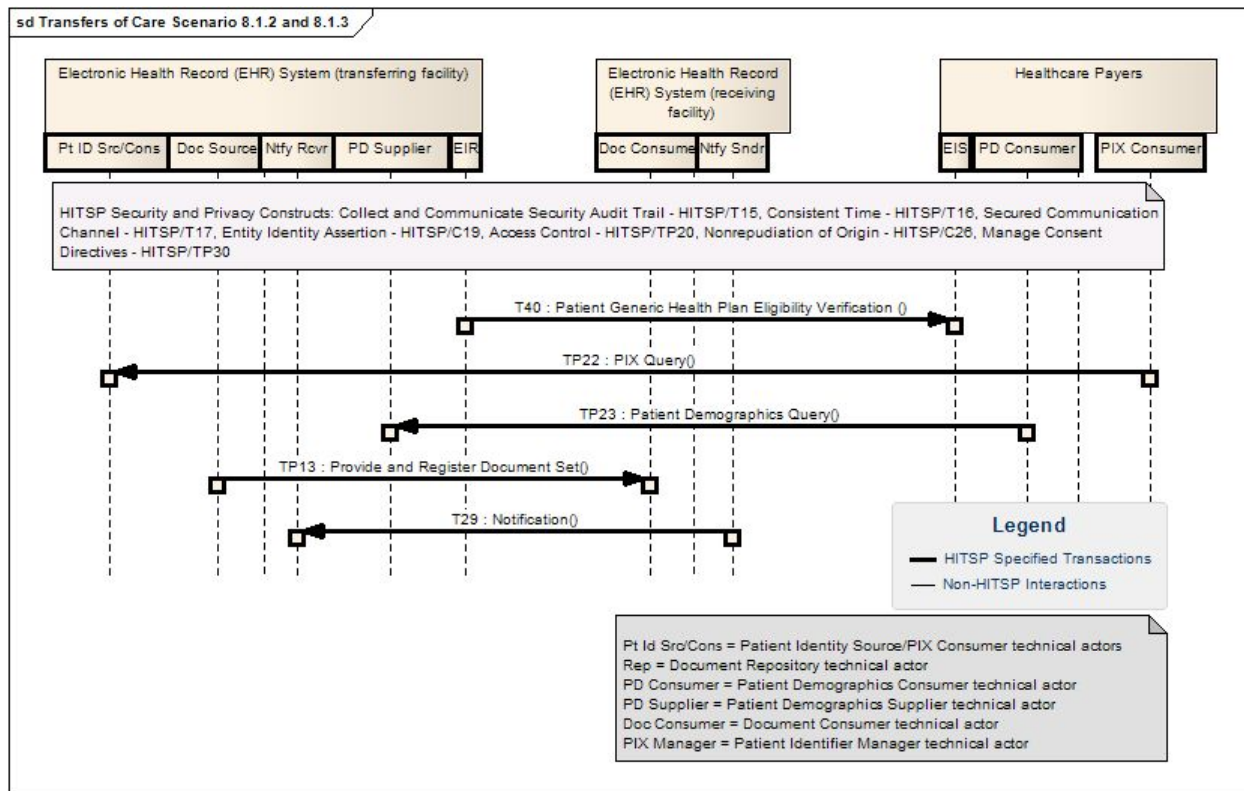




### 3.2.2.2 Sequence Diagrams for Transfers of Care Scenario Process Flows

The diagrams in this section are detailed UML sequence diagrams that illustrate the sharing of a set of clinical and administrative information between provider systems for the Transfers of Care scenario.

**Figure 3.2.2.2-1 Transfers of Care: Sharing of Clinical and Administrative Information (Part 1)**



**Figure 3.2.2-2 Transfers of Care: Sharing of Clinical and Administrative Information (Part 2)**

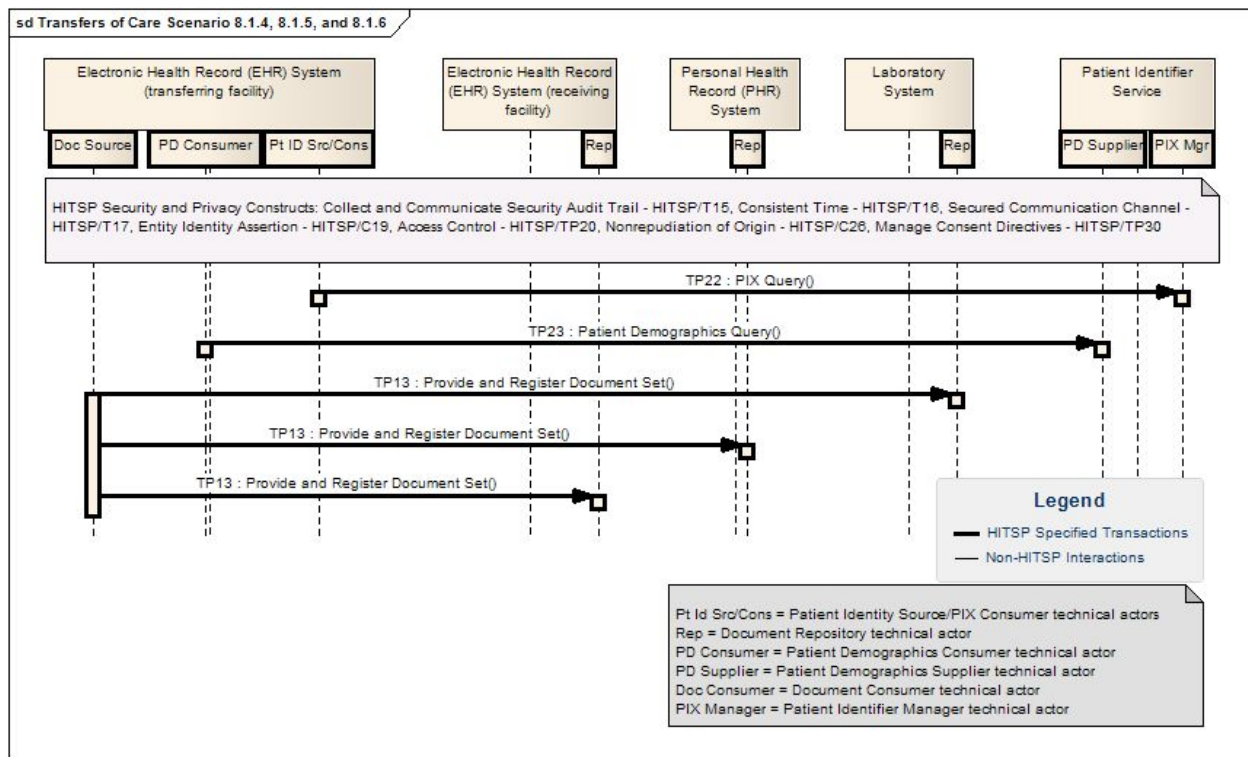
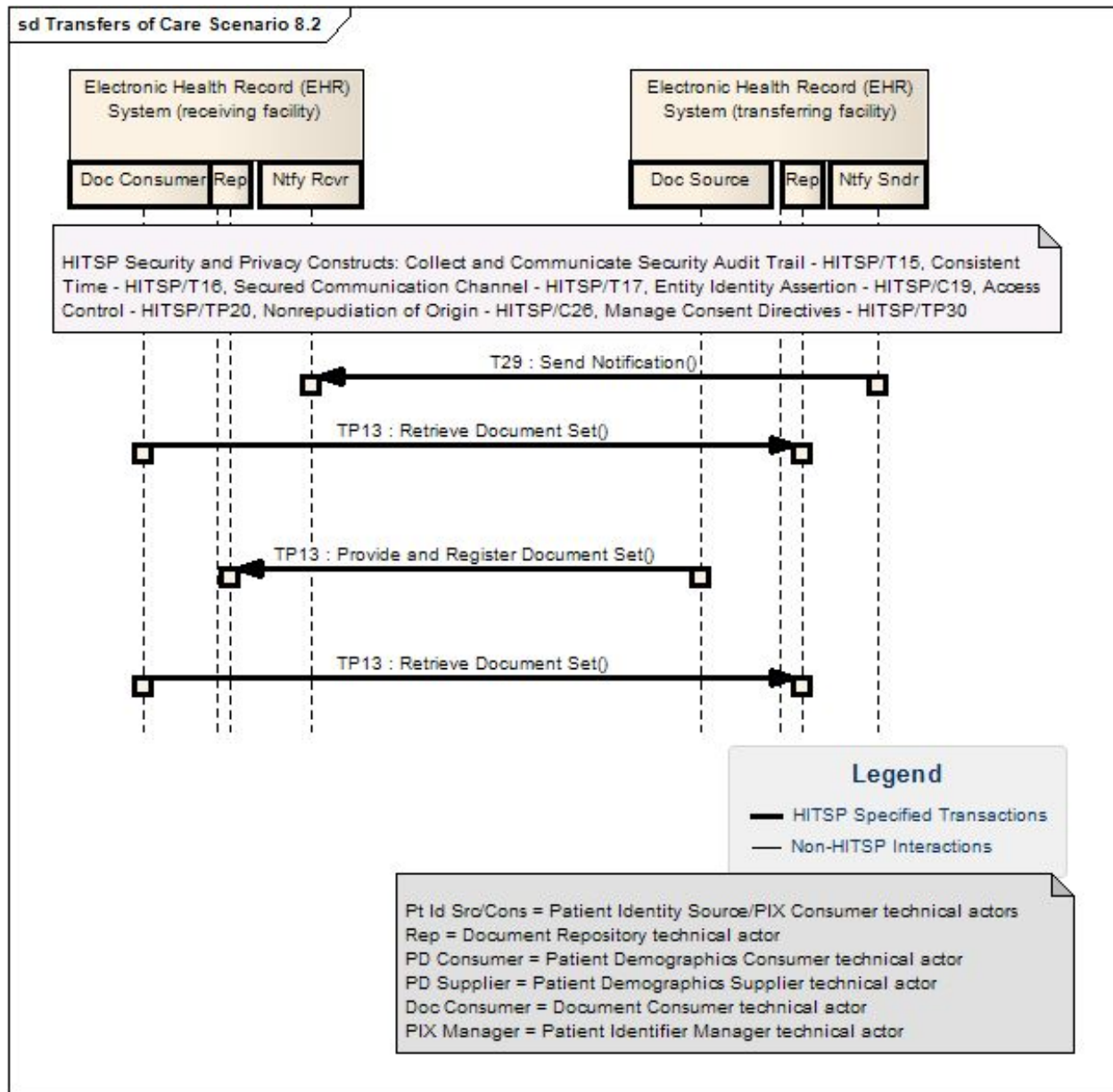
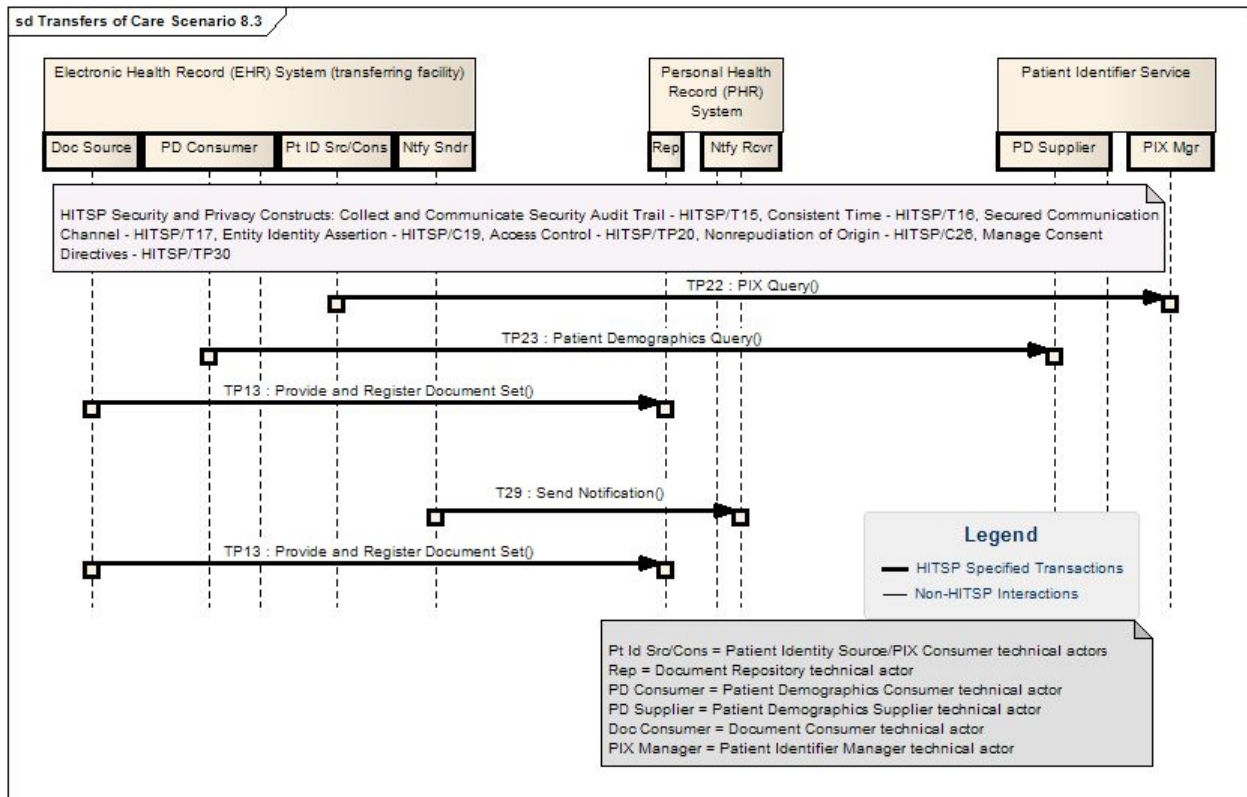




Figure 3.2.2.2-3 Transfers of Care: Sharing of Clinical and Administrative Information (Part 3)



**Figure 3.2.2.2-4 Transfers of Care: Sharing of Clinical and Administrative Information (Part 4)**



### 3.2.3 MAPPING OF BUSINESS ACTORS TO TECHNICAL ACTORS AND CONSTRUCTS WITH OPTIONALITY

The table below maps the individual business actors defined in the Interoperability Specification and depicted in the above detailed UML sequence diagram. Table 3.2.3-1 below specifies the requirements associated to each business actor in the Interoperability Specification. For each implemented business actor, the table specifies:

- The Required or Conditionally Required technical actors that shall be supported as specified in the associated construct
- The Optional technical actors that may be supported as specified in the associated construct.
- All Required or Conditionally Required transactions and content subsets for each implemented technical actor assigned to the business actor that shall be supported as specified in the associated construct
- The Optional transactions and content subsets for each implemented technical actor assigned to the business actor that may be supported as specified in the associated construct

This table also includes the corresponding technical actors associated with the relevant Security and Privacy constructs that are used for this Interoperability Specification.



**Table 3.2.3-1 Business-Technical Actor Mapping to Transaction and/or Content**

Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
Electronic Health Record (EHR) and Personal Health Record System	Patient Identity Source	C[101]	HITSP/TP22	Patient Identify Feed	R
			HITSP/T23	Patient Demographics Query	R
			HITSP/T23	PIX Identity Feed	R
	Patient Identifier Cross Reference (PIX) Consumer	C[101]	HITSP/TP22	PIX Query	R
	Patient Demographic Consumer	C [101], [109]	HITSP/T23	Patient Demographics Query	R
	Initiating Gateway	O	HITSP/TP13	Cross Gateway Query	R
				Cross Gateway Retrieve	R
	Responding Gateway	O	HITSP/TP13	Cross Gateway Query	R
				Cross Gateway Retrieve	R
	Document Source	C [111]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R
			HITSP/T31	Provide & Register Document Set.b	R
	Document Consumer	C [106], [110], [112]	HITSP/TP13	Registry Stored Query	R
				Retrieve Document Set	R
	Document Repository	O [107]	HITSP/TP13	Retrieve Document Set	R
				Provide & Register Document Set-b (XDS.b)	R
				Register Document Set-b (XDS.b)	R
	Content Creator	R	HITSP/C32	Creator-Summary Document using CCD	R
			HITSP/C62	Unstructured Document	O
			HITSP/C41	Radiology Result Message	R
			HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS)	R
			HITSP/TP30	Consent Document Component	R
			HITSP/TP49	Sharing Radiology Results	R
	Consent Directive Requester	O [108]	HITSP/TP30	Stored Query	R
				Retrieve Document Set	R
	Content Consumer	C [113]	HITSP/C32	Consumer-document Display	R
				Consumer-Documents Import	O
			HITSP/TP30	Consent Document Component	R
			HITSP/C37	Consumer-Documents Display	R
				Consumer-Documents Import	O
		R	HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS)	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O
			HITSP/TP20	Access Control Request	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Laboratory Result Receiver	C[105]	HITSP/T14	Laboratory Results	R
	Laboratory Result Sender	C[102]	HITSP/T14	Send Laboratory Results	R
	Notification Receiver	C[109]	HITSP/T29	Receive Notification	R
				Send Acknowledgement	R
	Notification Sender	R	HITSP/T29	Send Notification	R
				Send Acknowledgement	
	Referral Requestor	R	HITSP/T67	Convey/Request Referral	R
	Referral Dispatcher	R	HITSP/T67	Convey/Request Referral	R
	Document Recipient	C[104], C[112]	HITSP/T31	Provide & Register Document Set.b	R
	Portable Media Creator	C [111]	HITSP/T33	Distribute Document Set on Media	R
	Portable Media Importer	C[112]	HITSP/T33	Distribute Document Set on Media	R
	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
	Eligibility Information Source	R	HITSP/T40	Eligibility Information Request	R
Healthcare Payer System	Eligibility Information Source	R	HITSP/T40	Eligibility Information Request	R
	PIX Consumer	C [101]	HITSP/TP22	PIX Query	R
	Patient Demographic Consumer	C [101], [109]	HITSP/T23	Patient Demographics Query	R
	Content Consumer	R	HITSP/C32	Consumer-Document Display	R
				Consumer-Document Import	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O
	Identity Provider	O	HITSP/C19	Access Control	O
				Provide Assertion	R
				Verify Assertion	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
Diagnostic Imaging Service Provider System	Service Provider	R	HITSP/TP20	Access Control Request	R
	Document Source	C [111]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R
		C[111]	HITSP/T31	Provide & Register Document Set-b	R
	Document Repository	O [107]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R
				Register Document Set-b (XDS.b)	R
				Retrieve Document	R
	Document Recipient	C[104], [112]	HITSP/T31	Provide & Register Document Set.b (XDS.b)	R
	Document Consumer	C [106], [110], [112]	HITSP/TP13	Registry Stored Query	R
				Retrieve Document Set	R
	Notification Sender	R	HITSP/T29	Send Notification	R
				Receive Acknowledgement	R
	Notification Receiver	C [109]	HITSP/T29	Receive Notification	R
				Send Acknowledgement	R
	Patient Identity Source	C [101]	HITSP/TP22	Patient Identity Feed	R
			HITSP/T23	Patient Demographics Query	R
	PIX Consumer	C[101]	HITSP/TP22	PIX Query	R
	Patient Demographics Consumer	C[101], [109]	HITSP/T23	Patient Demographic Query	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Consent Directive Requestor	O [108]	HITSP/TP30	Stored Query	R
				Retrieve Document Set-b	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O
			HITSP/TP20	Access Control Request	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	R
				Verify Assertion	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Content Creator	R	HITSP/C32	Creator-Summary Document using CCD	R
			HITSP/C41	Radiology Result Message	R
			HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS)	R
			HITSP/TP30	Consent Document Component	R
			HITSP/TP49	Sharing Radiology Results	R
	Content Consumer	C [113]	HITSP/C32	Consumer-Document Display	R
				Consumer-Document Import	O
			HITSP/C37	Consumer-Document Display	R
				Consumer-Document Import	O
		R	HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS)	R
			HITSP/TP30	Consent Document Component	R
	Laboratory Result Receiver	R	HITSP/T14	Laboratory Results	R
	Portable Media Creator	C [111]	HITSP/T33	Distribute Document Set on Media	R
	Portable Media Importer	C [112]	HITSP/T33	Distribute Document Set on Media	R
	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
	Initiating Gateway	O	HITSP/TP13	ITI-38: Cross Gateway Query	R
				ITI-39: Cross Gateway Retrieve	R
	Responding Gateway	O	HITSP/TP13	ITI-38: Cross Gateway Query	R
				ITI-39: Cross Gateway Retrieve	R
Health Record Bank System	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
			HITSP/TP20	Access Control Request	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Content Creator	C [113]	HITSP/C32	Creator-Summary Document using CCD	R
			HITSP/C41	Radiology Result Message	R
			HITSP/TP49	Sharing Radiology Results	R
			HITSP/C62	Unstructured Document	O
		R	HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS) Component	R
	Content Consumer	R	HITSP/C32	Consumer-Document Display	R
				Consumer-Document Import	O
			HITSP/C37	Consumer-Document Display	R
				Consumer-Document Import	O
				Consumer-Lab Report Discrete Data Import	O
			HITSP/C48	Encounter Document Using IHE Medical Summary (XDS-MS) Component	R
			HITSP/C62	Unstructured Document	O
		R	HITSP/TP30	Consent Document Component	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Patient Demographics Consumer	C[101], [109]	HITSP/T23	Patient Demographics Query	R
	Document Source	C [105], [111]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R
			HITSP/T31	Provide & Register Document Set-b (XDS.b)	R
	Document Repository	O [107]	HITSP/TP13	Provide & Register Document Set-b	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Register Document Set-b	R
				Retrieve Document	R
	Document Recipient	C[104], C[112]	HITSP/T31	Provide & Register Document Set.b (XDS.b)	R
	Document Consumer	C [106], [110], [112]	HITSP/TP13	Registry Stored Query	R
				Retrieve Document Set	R
	Portable Media Creator	C[111]	HITSP/T33	Distribute Document Set on Media	R
	Portable Media Importer	C[112]	HITSP/T33	Distribute Document Set on Media	R
	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
	Eligibility Information Source	R	HITSP/T40	Eligibility Information Request	R
	Initiating Gateway	O	HITSP/TP13	ITI-38: Cross Gateway Query	R
				ITI-39: Cross Gateway Retrieve	R
	Responding Gateway	O	HITSP/TP13	ITI-38: Cross Gateway Query	R
				ITI-39: Cross Gateway Retrieve	R
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Patient Identity Source	C[101]	HITSP/TP22	Patient Identity Feed	R
			HITSP/T23	Patient Demographics Query	R
				PIX Identity Feed	R
	PIX Consumer	C[101]	HITSP/TP22	PIX Query	R
	Consent Directive Requester	O [108]	HITSP/TP30	Stored Query	R
				Retrieve Document Set-b	R
Registries	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O
			HITSP/TP20	Access Control Request	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R





Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
Medication Network Intermediary System	Service User	R	HITSP/C19	Convey Assertion	R
				Provide Assertion	O
			HITSP/TP20	Access Control Request	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Patient Demographics Consumer	C[101], [110]	HITSP/T23	Patient Demographic Query	R
	Patient Identity Source	C[101]	HITSP/TP22	Patient Identity Feed	R
			HITSP/T23	Patient Demographics Query	R
				PIX Identity Feed	R
	PIX Consumer	C[101]	HITSP/TP22	PIX Query	R
	Content Consumer	R	HITSP/TP30	Consent Document Component	R
	Consent Directive Requester	O [108]	HITSP/TP30	Stored Query	R
				Retrieve Document Set-b	R
Laboratory System	Laboratory Result Sender	R	HITSP/T14	Send Laboratory Results	R
	Document Source	C[105]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Document Recipient	C[104]	HITSP/T31	Provide & Register Document Set.b (XDS.b)	R
	Document Repository	O [107]	HITSP/TP13	Retrieve Document Set	R
				Provide and Register Document set-b (XDS.b)	R
				Register Document Set-b (XDS.b)	R
	Notification Sender	R	HITSP/T29	Send Notification	R
				Receive Acknowledgement	R
	Patient Identity Source	C[101]	HITSP/TP22	Patient Identity Feed	R
			HITSP/T23	Patient Demographics Query	R
				PIX Identity Feed	R
	PIX Consumer	C[101]	HITSP/TP22	PIX Query	R
	Patient Demographics Consumer	C[101], [109]	HITSP/T23	Patient Demographics Query	R
	Content Creator	R	HITSP/C37	Creator-Lab Report Document Component	R
			HITSP/C36	Laboratory Result Message	R
	Audit Record Source	R [107]	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R [107]	HITSP/T16	Maintain Time	R
	Time Server	O	HITSP/T16	Maintain Time	R
	Node	R [107]	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/C19	Convey Assertion	R
				Provider Assertion	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Identity Provider	O	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
Locator Service	Document Registry	R [110]	HITSP/TP13	Register Document Set-b (XDS.b)	R
				Registry Stored Query	R
Data Repository	Document Repository	R [107]	HITSP/TP13	Provide & Register Document Set-b (XDS.b)	R
				Retrieve Document Set	R
Patient Identifier	Patient Identifier Cross	R	HITSP/TP22	PIX Query	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Patient Identity Feed	R
				PIX Update Notification	R
	Patient Demographics Supplier	R	HITSP/T23	Patient Demographics Query	R
	Consent Repository	R	HITSP/TP30	Register Document Set	R
				Provide and Register Document Set	R
				Retrieve Document	R
	Consent Registry	R	HITSP/TP30	Registry Stored Query	R
				Register Document Set	R
	Consent Originator	O	HITSP/TP30	Provider and Register Document Set	R
	Identity Provider	R	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
Administrative and Financial System	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
	Payor Authorization Information Receiver	R	HITSP/T68	Patient Health Plan Authorization Request	R
	Payor Authorization Information Source	R	HITSP/T68	Patient Health Plan Authorization Response	R

**\*NOTE:** Optionality = “R” for Required, or “O” for Optional, or “C” for Conditional. Conditional footnotes are further described below.

#### Actor Optionality Conditions

- C [101] - Shall support (Patient Identity Source plus PIX Consumer) and/or Patient Demographics Consumer
- C[102] - EHR system shall support either the Laboratory Result Sender Technical Actor or the Document Source Technical Actor or both actors
- C [104] - Shall be supported if this Actor is a Document Recipient Technical Actor
- C [105] - EHR system shall support either the Laboratory Result Receiver Technical Actor or the Document Consumer Technical Actor or both actors
- C [106] - Document Source or Consent Directive Consumer Technical Actors shall support either the XDS.b option or the XCA option or both options
- C [107] - Shall be grouped with Laboratory Results Receiver and Document Consumer when implemented
- C [108] - Shall be grouped with Document Consumer when implemented
- C [109] - Shall only be implemented when supporting a Document Consumer Technical Actor
- C [110] - Document Source, Document Consumer, Document Repository, and Document Registry shall support the XDS.b option
- C [111] - Business actor shall support at least one of these technical actors to communicate outbound content
- C [112] - Business actor shall support at least one of these technical actors to receive or retrieve inbound content



- C [113] - Business actor will support these as needed for the consultation or transfer of care
- 

### 3.2.4 DATA DETAIL

This section details the data elements and related Transactions that were extracted from the selected standards and describes any corresponding HITSP imposed constraints (e.g., required or optional).

**Table 3.2.4-1 Data Element Constraints**

Data Element	Transaction	Constraint	Constraint Type (Pre-condition, post-condition, general)	Purpose (Reason for this constraint)
To be determined				

### 3.2.5 NEW HITSP CONSTRUCTS

This section describes the new HITSP constructs (including Interoperability Specifications, Transaction Packages, Transactions and Components) that are expected to be used for the Use Case. A current list of all existing HITSP constructs that are being used can be found in Section 3.2.6.

The table below provides a description of the new HITSP constructs that will be created for this Use Case.

**Table 3.2.5.1-1 New HITSP Constructs**

New Construct	Construct Description	Technical Actors	Interoperability or Data Requirement
HITSP/T68 - Health Plan Authorization/Referral Request and Response	Authorization request and response for benefit coverage determination for a specific service	Authorization Information Receiver Authorization Information Source	IER 9
HITSP/T67 - Referral Request	Packages up the referral document, plus other related documents and notifies the referred individual of the package	Referral Requestor Referral Dispatcher	IER 14, IER 16
HITSP/C62 - Unstructured Document	Document that contains simple text such as a note to the patient or a note from the patient. This document could include an unstructured, presentation preserved format, such as pdf.	Content Creator Content Consumer	IER 2  The construct also has the data requirement to include an unstructured, presentation preserved format, such as a pdf document., heart valve data sheets, copies of old surgical reports etc.



### 3.2.6 MODIFICATIONS TO EXISTING HITSP CONSTRUCTS

The table below provides a description of the existing HITSP constructs that will be used for this Use Case. It also specifies whether the construct will require modification based on the new sets of requirements that are being satisfied by the construct.

**Table 3.2.6-1 Existing HITSP Constructs**

HITSP Construct	Construct Description	Technical Actors	Interoperability or Data Requirement Number	Modification Required
HITSP/T40 - Patient Generic Health Plan Eligibility Verification	Provides the status of a health plan covering the individual, along with details regarding patient liability for deductible, co-pay and co-insurance amounts for a defined base set of Generic benefits or services. The base set of benefits includes, but is not limited to, coverage status and patient liability for medical, chiropractic, dental, hospital inpatient, hospital outpatient, emergency, professional physician office visit, pharmacy and vision services that are included in the patient's generic health plan benefit.	Eligibility Information Receiver Eligibility Information Source	6, 18	T40 - Patient Generic Health Plan Eligibility Verification should be modified to support a more service specific inquiry based on the consultation requirements (specialist). More Domain TC discussion is needed about CORE Phase 1 rules with CORE Phase 2 rules – Generic versus Service/Procedure specific inquiries
HITSP/C35 - Lab Result Terminology	Defines the vocabulary for either message-based or document-based laboratory results reporting.	Content Creator Content Consumer	3, 9, 14, 16	No
HITSP/C37 - Lab Report Document	Prescribes the use of the standard Clinical Document Architecture Release 2 (CDA R2), as in the HL7 V3 2006 normative edition profiled by IHE LAB TF-3 for: * Transmission of complete, preliminary, final and updated laboratory results to an EHR system, or other clinical data system of designated providers of care, and * Transmission of laboratory result data from electronically enabled healthcare delivery and public health systems in standardized and anonymized format to authorized Public Health Agencies	Content Creator Content Consumer	3, 9, 14, 16	No
HITSP/C41 - Radiology Result Message	Supports the process of sending radiology result data from a Biosurveillance Message Sender to a Biosurveillance Message Receiver. Radiology result data are captured as part of the normal process of care performed by healthcare providers.	Content Creator Content Consumer	3, 9, 14, 16	No



HITSP Construct	Construct Description	Technical Actors	Interoperability or Data Requirement Number	Modification Required
HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)	Supports the process of sending patient encounter data (excluding laboratory, radiology) in a document sharing functional flow scenario.	Content Creator Content Consumer	1, 2, 3, 9, 14,16,	C48 - Encounter Document Using IHE Medical Summary (XDS-MS) should be modified to include information needed in a Referral Summary, Discharge Summary, and Transfer Summary
HITSP/C32 - Summary Documents Using CCD	Describes the document content summarizing a consumer's registration, medication and health data information contained within a Personal Health Record (PHR) for the purpose of information exchange. This component only deals with the exchange of summary information to and from the PHR.	Content Creator Content Consumer	1, 2, 3, 9, 14,16,	C32 - Summary Documents Using HL7 Continuity of Care Document (CCD) should be updated to include CCD Family History and CCD Social History
HITSP/TP49 – Sharing Radiology Results	Supports the sharing of radiology result data in a document sharing functional flow scenario	Imaging Document Source Imaging Document Consumer	3, 9, 14, 16	No
HITSP/T16 - Consistent Time	Provides a mechanism to ensure that all of the entities that are communicating within the network have synchronized system clocks.	Time Server Time Client	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No
HITSP/T17 - Secured Communication Channel	Provides the mechanisms to ensure the authenticity, integrity, and confidentiality of Transactions, and the mutual trust between communicating parties. It supports both application and machine credentials, and user machines (user nodes).	Node	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No
HITSP/TP20 - Access Control	Provides the mechanism to administer security authorizations which control the enforcement of security policies including: role-based access control; entity based access control; context based access control; and the execution of consent directives. In an emergency, this construct supports the capability to alter access privileges to the appropriate level (failsafe/emergency access), which may include override of non-emergency consents.	Access Control Service Service Provider Service User	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No



HITSP Construct	Construct Description	Technical Actors	Interoperability or Data Requirement Number	Modification Required
HITSP/TP30 - Manage Consent Directives	Describes the messages needed to capture, manage, and communicate rights granted or withheld by a consumer to one or more identified entities in a defined role to access, collect, use or disclose individually identifiable health information (IIHI), and also supports the delegation of the patient's right to consent. The transactions described in this construct are intended to be carried out by HITSP/TP13 - Manage Sharing of Documents.	Consent Originator Consent Repository Consent Registry Consent Directive Requestor	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No
HITSP/T15 - Collect and Communicate Security Audit Trail	Provides assurance that security policies are being followed or enforced and that risks are being mitigated. This document describes the mechanisms to define and identify security relevant events and the data to be collected and communicated as determined by policy, regulation or risk analysis. It also provides the mechanism to determine the record format to support analytical reports that are needed.	Audit Record Source Audit Record Repository	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No
HITSP/TP22 - Patient ID Cross-Referencing	The two transactions within this package are: * The IHE Patient ID Cross-Referencing (PIX) Transaction * The IHE Patient Identity Feed Transaction	Patient Identifier Cross-Reference Consumer Patient Identifier Cross-Reference Manager Patient Identity Source	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 30, 33	No
HITSP/T23 - Patient Demographics Query	Intended to provide a 'list patients and their demographics' query / 'patient(s) and their demographics identified' response message pair (OBP^Q22, RSP^K22) for use wherever such needs exist. This Transaction document extracts the Health Level Seven (HL7) version 2.5 Query and Response data mapping.	Patient Demographics Consumer Patient Demographics Supplier	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 30, 33	No
HITSP/C19 - Entity Identity Assertion	Provides the mechanisms to ensure that an entity is the person or application that claims the identity provided. An example of this Component is the validation and assertion of a consumer logging on to a Personal Health Record (PHR) system.	Service User Identity Provider Service Provider	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 33	No
HITSP/T31 - Document Reliable Interchange	Supports a healthcare delivery organization or clinician who may need to communicate a clinical document to a recipient through direct communication.	Document Source Document Recipient	1, 2, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 28, 29, 31	No



HITSP Construct	Construct Description	Technical Actors	Interoperability or Data Requirement Number	Modification Required
HITSP/TP13 - Manage Sharing of Documents	Supports the sharing of patient records in the form of source attested objects called documents. A healthcare document is a composite of structured and coded health information, both narrative and tabular, that describes acts, observations and services for the purpose of exchange. No assumption is made by this construct in terms of the format and structure of the content of documents shared	Initiating Gateway Responding Gateway Document Source Document Consumer Document Registry Document Repository	1, 2, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 28, 29,31	No
HITSP/T33 - Transfer of Documents on Media	Transports the information from a source to a destination. An example might be to transport data from one healthcare provider to another healthcare provider. Based on the IHE Cross-Enterprise Document Media Interchange Integration Profile.	Portable Media Creator Portable Media Importer	1, 2, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 28, 29, 31	No
HITSP/T29 Notification of Document Availability	Introduces a mechanism allowing notifications to be sent point-to-point to systems within a Cross-Enterprise Document Sharing Affinity Domain (See "IHE IT Infrastructure Cross-Enterprise Document Sharing (XDS) Integration Profile"), eliminating the need for manual steps or polling mechanisms for a Document Consumer to be aware that documents of interest have been registered with an XDS Document Registry Actor.	Notification Sender Notification Receiver	27, 32	No
HITSP/T14 - Send Laboratory Result Message	Supports the transmission of complete, preliminary, final and updated laboratory results to the EHR system of the ordering clinician and providers of care	Laboratory Result Message Sender Laboratory Result Message Receiver	9, 16	No

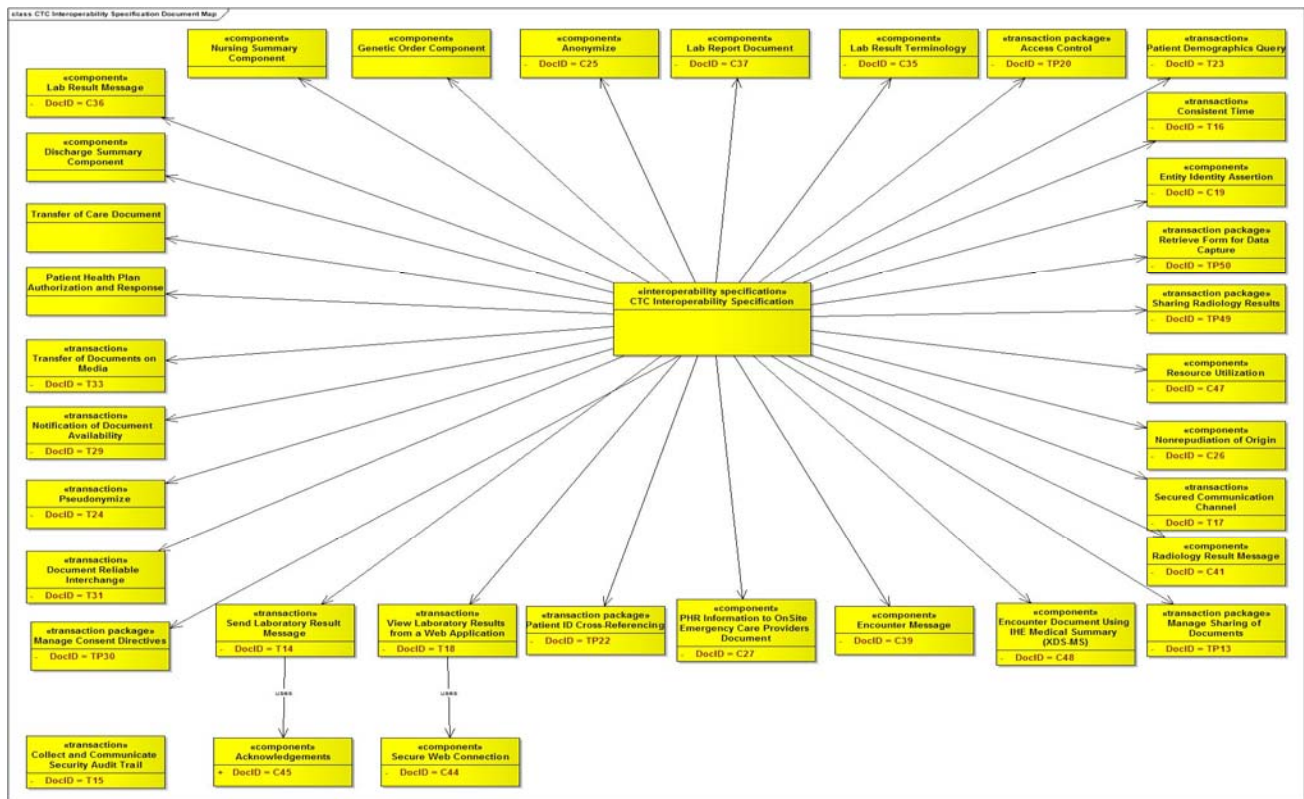
### 3.2.7 DOCUMENT MAP

The document map summarizes the suite of constructs that are the detailed map to existing standards and specifications used to satisfy the requirements imposed by the Consultation and Transfer of Care Use Case. The most effective way to see the construct breakdown is to begin with the document indicated at the top of the diagram.





Figure 3.2.7-1 Requirements, Design and Standards Selection Document Map



## 4.0 CANDIDATE STANDARDS

This section presents the candidate standards that may support the major Use Case events described in the requirements analysis. During Interoperability Specification development, standards selection will be based on the following process:

- **Evaluation:** The Technical Committee evaluates the standards using the Tier 2 Readiness Criteria. Standards considered for use may include provisional or to be named standards
- **Selection:** Based on the Tier 2 evaluations, named standards are selected and listed in Table 4.1.2-1. It is important to understand that the standards selected here are within the context of the specific Use Case requirements and do not necessarily reflect selection in other contexts. During the actual construction of Interoperability Specifications, the Technical Committee may need to refine this listing based on detailed analysis
- **Gap and Overlap Analysis and Recommendations:** The Technical Committee also identifies, and analyzes gaps and overlaps within the standards industry as they related to the specific Use Case. The TC will provide a description of the gaps, including missing or incomplete standards, provide a description of all overlaps, or competition among standards for the relevant Use Cases, and recommendations for resolving these gaps and overlaps

Thus the following section lists a summary of the standards that will be further refined during the Interoperability Specification development phase.

### 4.1 LIST OF SELECTED AND CANDIDATE STANDARDS

This section presents the selected, and candidate standards that may support the Use Case events described in the requirements analysis. As used by HITSP, the term “standard” refers, but is not limited to Specifications, Implementation Guides, Code Sets, Terminologies, and Integration Profiles. A standard should be produced through a well-defined approach that supports a business process and

1. has been agreed upon by a group of experts
2. has been publicly vetted
3. provides rules, guidelines, or characteristics
4. helps to ensure that materials, products, processes, and services are fit for their intended purpose
5. is available in an accessible format
6. is subject to an ongoing review and revision process

Candidate standards are then evaluated using the HITSP Tier 2 Readiness Criteria. Final selection does not occur until the Interoperability Specifications are completed. Thus there may be additions or deletions to this list.

The standards used by the Interoperability Specification fall into the following categories:



- Regulatory and guidance standards are legal or other authoritative declarations that HITSP must abide by. These may also be guidelines and recommendations that HITSP has adopted to aid in the selection of standards (see Section 4.1.1)
- Selected candidate standards are those candidate standards that are selected within the context of the specific Use Case requirements, and are evaluated for inclusion as part of the Interoperability Specification (see Section 4.1.2)

#### 4.1.1 REGULATORY AND GUIDANCE STANDARDS

The following table provides a list of legal or other authoritative guidelines that HITSP must abide by, or has agreed to use as guidance in the selection of standards. Note that only the referenced sections of the regulations are relevant to the Interoperability Specification.

**Table 4.1.1-1 Regulatory and Guidance Standards**

Standard	Description
For Regulatory and Guidance Standards relating to the Security and Privacy of Health Information, please see HITSP/TN900 Security and Privacy Technical Note	

#### 4.1.2 SELECTED AND CANDIDATE STANDARDS

The section provides a mapping of candidate standards that may be required to implement the requirements of the Interoperability Specification to the Use Case action codes which are supported.

Section 3.2 provides a description and listing of the new and existing constructs that are used by this Requirements, Design, and Standards Selection specification. Section 3.2.6 describes existing constructs that are expected to be used in this specification without changes (reused), or modified to include additional requirements (repurposed). Selected standards that are used by existing constructs are provided in the published construct specifications available from [www.hitsp.org](http://www.hitsp.org), and are not duplicated in this document. The following table only lists candidate standards that may be selected to meet use case requirements for new or repurposed constructs used in this specification. A detailed description of each standard is also provided in the appendix.

**Table 4.1.2-1 Selected and Candidate Standards Linked to Requirements**

SDO and Standard Name	Interoperability Requirement	Category	Remarks/ Minor Gaps
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2007 - 2008 Cross Enterprise Sharing of Scanned Documents (XDS-SD)	2	HITSP/C62	



SDO and Standard Name	Interoperability Requirement	Category	Remarks/ Minor Gaps
Accredited Standards Committee (ASC) X12N 278 - Health Care Services Review - Request for Review and Response, Version 4010, May 2000, and Addenda to Health Care Services Review - Request for Review and Response, Version 4010, October 2002	9	HITSP/T68	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Referral Requests: Media Referral Request (MRR) Shared Documents Referral Request (SRR) Referral Request Content (RRC) (Public Comment Version – not a final standard)	14, 16	HITSP/T67	

## 4.2 GAPS WHERE THERE ARE NO STANDARDS

This section describes gaps in standards. Gaps occur in the following two cases, where HITSP has:

- Identified requirements derived from the context that have no standards that meet all tiers of HITSP criteria to merit endorsement for that context
- Identified a single standard that encompasses and singly fulfills a set of tightly-coupled standards from the given context, yet is lacking in fulfilling one or more of the tightly-coupled requirements

The gap is only relative to the specific Consultation and Transfers of Care Use Case event.

Recommended resolutions were developed through a series of steps including the committee's initial recommendations, cross team validation of the gap, provisional recommendations and peer review by the team.

The table below identifies the Use Case events and known associated gaps, along with the recommended resolutions.

**Table 4.2-1 Use Case Events and Associated Gaps**

Event Code	Event Description	Identified Gaps	Recommended Resolution
7.1.3, 7.1.4, 7.2.2	Sending relevant data to consulting clinician.	HITSP does not have a defined construct for all types of data (e.g., EKG) that might need to be sent to a consulting Clinician	To be determined



Event Code	Event Description	Identified Gaps	Recommended Resolution
IER 2, IER3, IER 14		Gap in the standard	Nursing Summary Component Document that contains notes and observations from the nursing staff Content Creator Content Consumer

### 4.3 STANDARD OVERLAPS

This section describes the instances where there are overlaps among standards for the Use Case. The overlap is only relative to the specific Use Case event. Overlaps refer to instances where some of the requirements are met by multiple standards. The overlap is only relative to the specific Consultation and Transfers of Care event. Recommended resolutions were developed through a series of steps including the committee's initial recommendations, cross team validation of the overlap, provisional recommendations and peer review by the team.

The table below presents the identified overlaps and the respective resolution plans.

**Table 4.3-1 Standard Overlaps**

Event Code	Event Description	Standard Overlap	Recommended Resolution
To be determined			



## 5.0 NEXT STEPS

The first step in the HITSP harmonization process is requirements analysis and design. Upon completion of the Requirements, Design and Standards Selection for the Consultation and Transfers of Care Use Case, the following steps will occur:

- This document will be submitted to the HITSP Panel and interested Public for comment
- After the comment period, the Technical Committee or Work Group will disposition the comments, maintaining a written log of all dispositions assigned to the TC/WG
- Persuasive comments will be used to inform the construction of the Interoperability Specification (IS)
- Non-persuasive comments or comments that are not applicable to the construction of the IS will be deferred with reason/explanation (e.g., need additional information or further analysis during construction)
- In parallel to the steps described above, the Technical Committee/Work Group will begin the construction of the Interoperability Specifications



## 6.0 APPENDIX

The following sections include relevant materials referenced throughout this document.

### 6.1 DESCRIPTION OF STANDARDS

The following table contains descriptions of the standards that are referenced by this Requirements, Design, and Standards Selection Specification:

**Table 6.1-1 Description of Standards**

Standard Name	Description
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2007 - 2008 Cross Enterprise Sharing of Scanned Documents (XDS-SD)	This profile defines how to store healthcare metadata in clinical documents, including patient identifiers, demographics, encounter, order or service information, represented within a structured HL7 CDA R2 header, with a PDF or plaintext formatted document containing clinical information. The latest version of the IHE Technical Framework is available at <a href="http://www.ihe.net">www.ihe.net</a> .
Accredited Standards Committee (ASC) X12N 278 - Health Care Services Review - Request for Review and Response, Version 4010, May 2000, and Addenda to Health Care Services Review - Request for Review and Response, Version 4010, October 2002	This is the HIPAA standard for referral and authorization, as referenced in §162.1302 of the Regulation. This HIPAA transaction provides standardized data requirements and content for the exchange of information between providers and review entities. This transaction allows for the following business events and processes: admission certification review request and associated response referral review request and associated response health care services certification review request and associated response extend certification review request and associated response unsolicited notifications inquiries and responses. The HIPAA standard X12 278 is to be used when health care services reviews and requests and responses for review are made. For more information, visit <a href="http://www.x12.org">www.x12.org</a> .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Referral Requests: Media Referral Request (MRR) Shared Documents Referral Request (SRR) Referral Request Content (RRC) (Public Comment Version – not a final standard)	This supplement adds two integration profiles for transmitting referral requests across organizational boundaries and one basic content profile for the documents describing a referral request. The content profile may be extended by additional content profiles with further document specifications for particular referral purposes.  The two transaction profiles correspond to two use cases:  1. A "media" based use case, where the descriptive documents are transmitted on media (CD-R, Email, or USB) and the administration of referral scheduling and tracking remains manual.  2. The "shared documents" use cases, where the descriptive documents are transferred using the XDS mechanisms. This profile has mandatory support for a paper printout based referral mechanism, where the paper referral can be used to convey referral information. It has an optional network referral request where the referral information is sent directly between the referral requestor and the performing provider.  It also adds a content profile:  The Referral Request Content Profile, which describes the folder and document requirements for the documentation that supports a referral request. (This content profile is used by both the Media Referral Request and Shared Documents Referral Request profiles). For more information, visit <a href="http://www.ihe.net">www.ihe.net</a> .



## 6.2 DETAILED DATASET TABLE

**Table 6.2-1 Detailed Dataset for Consultations**

Data ID #	Types of Data	Data Exchanged During Scenario 1: Consultation Flow 1	Data Exchanged During Scenario 1: Consultation Flow 4
1.0	Dates: Consultation/Referral Date, Preferred Date	X	X
2.0	Patient Demographic Information	X	X
3.0	Insurance Information	X	X
4.0	Requesting Clinician Information (Name, Group, Provider ID, Address, Phone)	X	X
5.0	Consulting Clinician Information (Name, Group, Provider ID, Address, Phone)	X	X
6.0	Reason for Consultation	X	X
7.0	Patient History and Treatment Summary	X	X
8.0	Diagnosis	X	X
9.0	Completed and Pending Test Results	X	X
10.0	Services Desired (Initial Consultation Only, Diagnostic Test (Specify), Consultation with Specific Procedures (Specify), Specific Treatment, Global OB Care & Deliver, Other (Explain), Number of Visits)	X	
11.0	Authorization Information (Authorization Number, Start/Stop Dates, Number of Visits Approved)	X	X
12.0	Place of Service (Office, Outpatient Medical/Surgical Center, Radiology, Laboratory, Inpatient Hospital, Extended Care Facility, Other (Specify), Specific Facility Name)	X	X
13.0	Signatures	X	X
14.0	Consultation Treatment Summary		X
15.0	Recommended Plan of Care		X
16.0	Medications (Stopped, Modified/Added, On Hold, Complete List)	X	X





**Table 6.2-2 Transfers of Care Detailed Dataset**

Data ID #	Types of Data	Data Exchanged During Scenario 2: Transfers of Care, Flow 2	Data Exchanged During Scenario 2: Transfers of Care, Flow 3 and Flow 4	Data Exchanged During Scenario 2: Transfers of Care, Flow 5
1.0	Patient Demographics/Admission Data	X	X	
2.0	Insurance Information, Secondary Insurance	X	X	
3.0	Power of Attorney	X	X	
4.0	Administrative Data (For this Encounter), Eligibility Determination/Screening Data for Medicare?		X	
5.0	Reason for Admission	X	X	
6.0	Brief History of Present Illness (Narrative)	X	X	
7.0	History Prior to Illness		X	
8.0	Expected Date of Transfer	X	X	
9.0	Transfer Transport Details/Instructions	X	X	
10.0	Physical Exam		X	
10.1	Vital Signs, Physiologic Factors		X	
10.2	Height, Weight		X	
10.3	Pain Scale		X	
10.4	Skin Assessment/Braden Scale		X	
10.5	Neurological Exam		X	
10.6	Cardiac Exam		X	
10.7	Pulmonary Exam		X	
10.8	Gastrointestinal Exam		X	
10.9	Musculoskeletal Exam		X	
10.11	Genitourinary Exam		X	
10.12	Depression		X	
10.13	Endocrine		X	



Data ID #	Types of Data	Data Exchanged During Scenario 2: Transfers of Care, Flow 2	Data Exchanged During Scenario 2: Transfers of Care, Flow 3 and Flow 4	Data Exchanged During Scenario 2: Transfers of Care, Flow 5
10.14	Impairments - Hearing, Vision, Swallowing, Cognitive/Mental Status, Weight-bearing, Grip Strength, Endurance		X	
12.0	Problems/Conditions	X	X	
12.0	Medication Data	X	X	
12.1	Discharge Medications		X	
12.2	Pre-Admission Medications		X	
12.3	Detail Discrepancies Pre/Post Discharge		X	
13.0	Allergies and Adverse Reactions	X	X	
14.0	Reason for Admission/Visit	X	X	
15.0	Treatment Rendered (e.g. Hospital Course)	X	X	
16.0	Response to Treatment		X	
17.0	Discharge Diagnoses	X	X	
18.0	Procedures Performed	X	X	
19.0	Past Medical History	X	X	
19.1	Encounter/Visit and Surgery History		X	
19.2	Procedure History		X	
19.3	Prior Discharge Summaries			X
20.0	Laboratory Results		X	
21.0	Reports/Results (e.g., Radiology, Cardiology, Operative)		X	
22.0	Multidisciplinary Plan of Care (Pending Orders, Interventions, Encounters, Services, Procedures; Goals, Reminders; Follow-up Instructions; Infection Control)	X	X	
22.1	Medication Orders	X	X	
22.2	Dietary Orders	X	X	
22.3	Medical Equipment Orders (e.g. O2, presence of lines and catheters, baricare bed, wheelchair)	X	X	
22.4	Activity Status/Functional Status Orders	X	X	

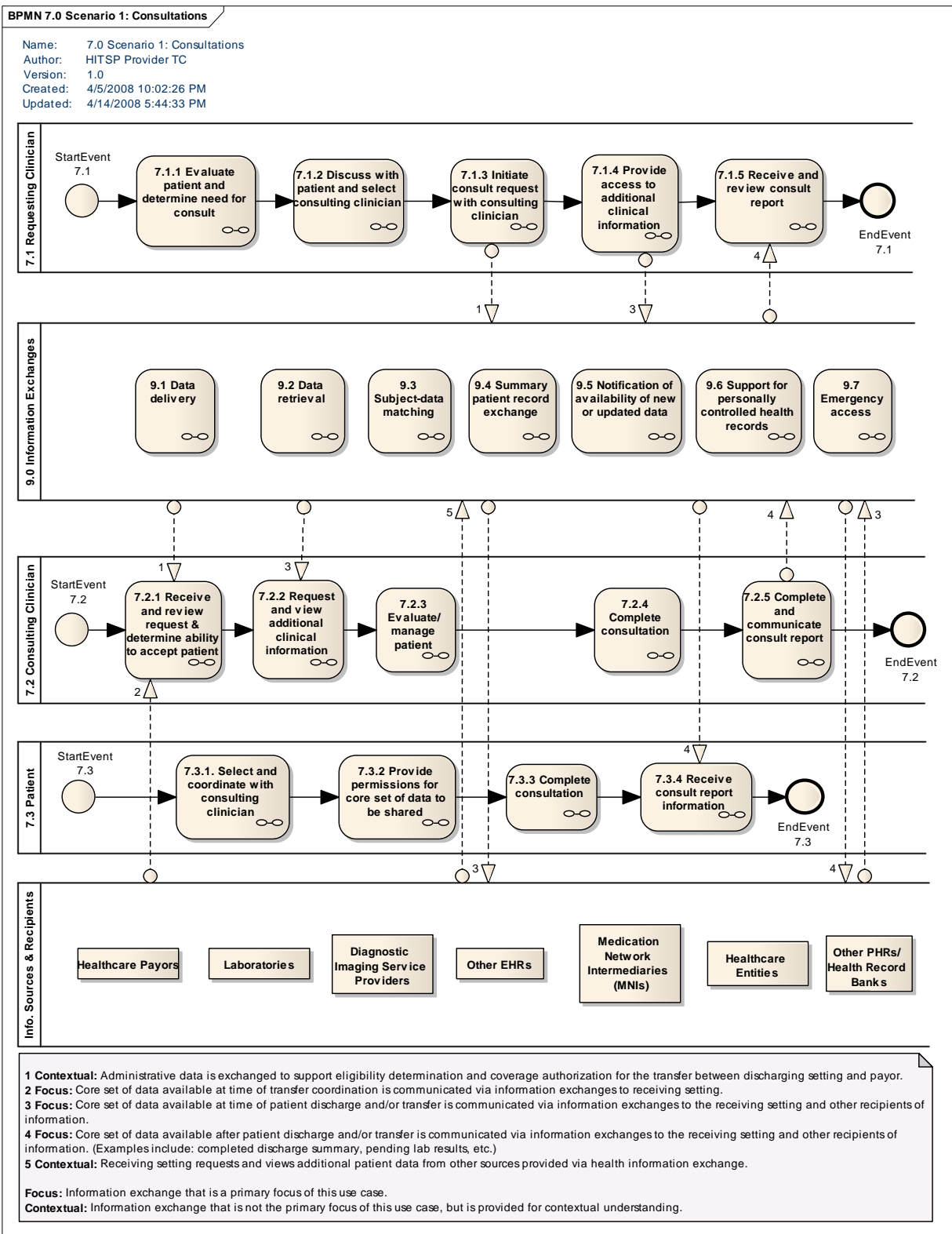


Data ID #	Types of Data	Data Exchanged During Scenario 2: Transfers of Care, Flow 2	Data Exchanged During Scenario 2: Transfers of Care, Flow 3 and Flow 4	Data Exchanged During Scenario 2: Transfers of Care, Flow 5
22.5	Therapy Orders (e.g., PT, OT, ST, RRT)	X	X	
22.6	Nursing Care Orders (e.g. Wound Care, Skin Conditions, Pressure Ulcers, Restraints)	X	X	
22.7	Pain Management	X	X	
22.8	Follow-up Orders		X	
22.9	Activity/Functional Status (e.g. alertness/level of consciousness, fall risk)	X	X	
23.0	Immunizations		X	
24.0	Patient Support, Emergency Contact		X	
25.0	Family History		X	
26.0	Social History		X	
27.0	Pending Data		X	
28.0	Advance Directives, Power of Attorney	X	X	
29.0	Healthcare Providers		X	
30.0	Case Manager/Discharge Planner Transfer Notes	X	X	
31.0	Images (e.g. Radiology, Cardiology, EKG Other)			X
32.0	Therapy Notes			X
33.0	Nursing Notes			X
34.0	Progress Notes			X
35.0	Consult Notes			
36.0	Dietician Notes			X
37.0	H&P (History & Physical)			X
38.0	Bedside Chart, Nursing Assessment			X
39.0	Medication Administration Record (MAR)			X
40.0	Transfusion Report			X
41.0	Patient Forms: Signed Patient HIPAA Form, Informed Consent, DNR			X

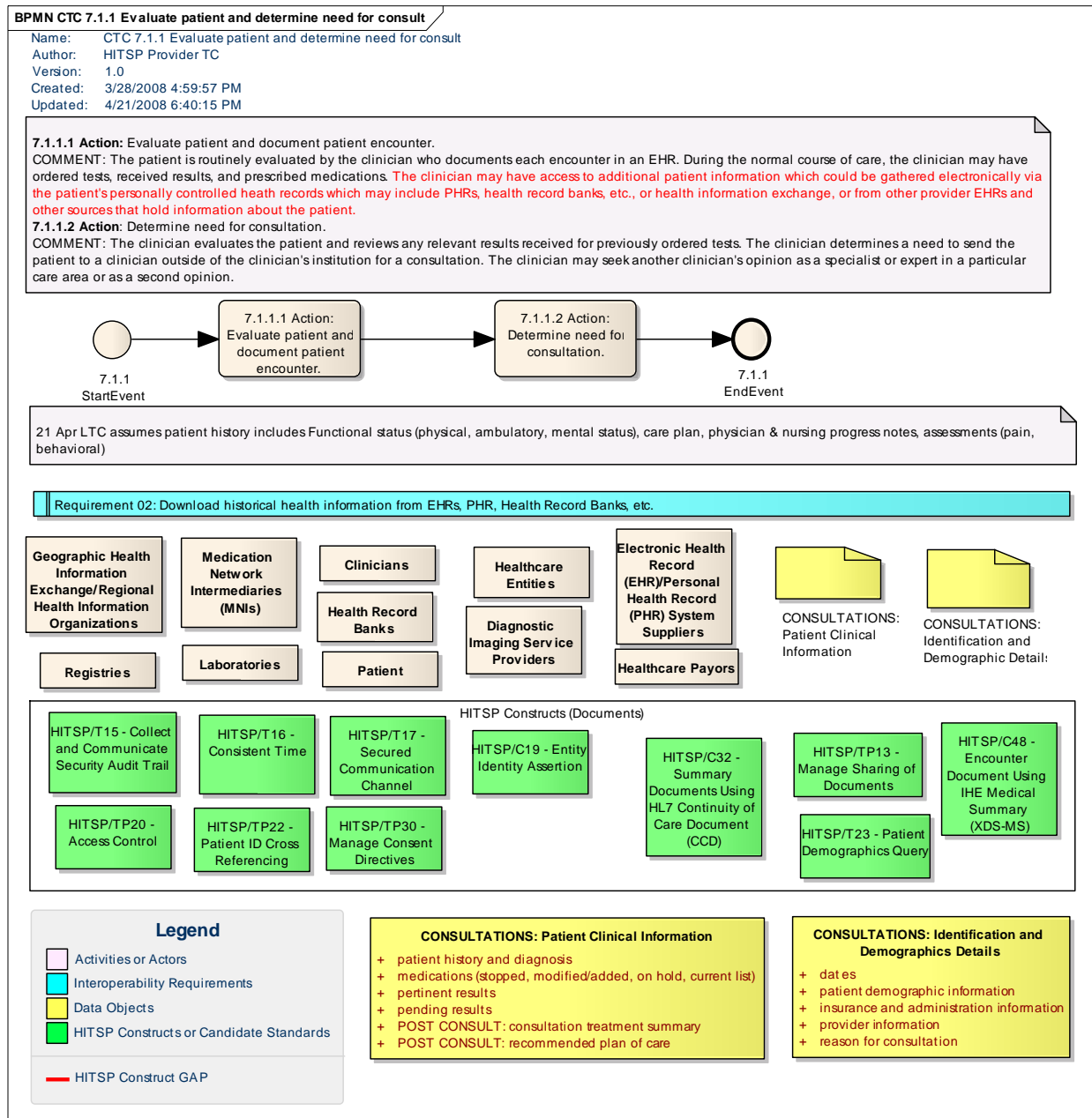


## 6.3 PROTOTYPE BUSINESS PROCESS MODELING NOTATION MODEL

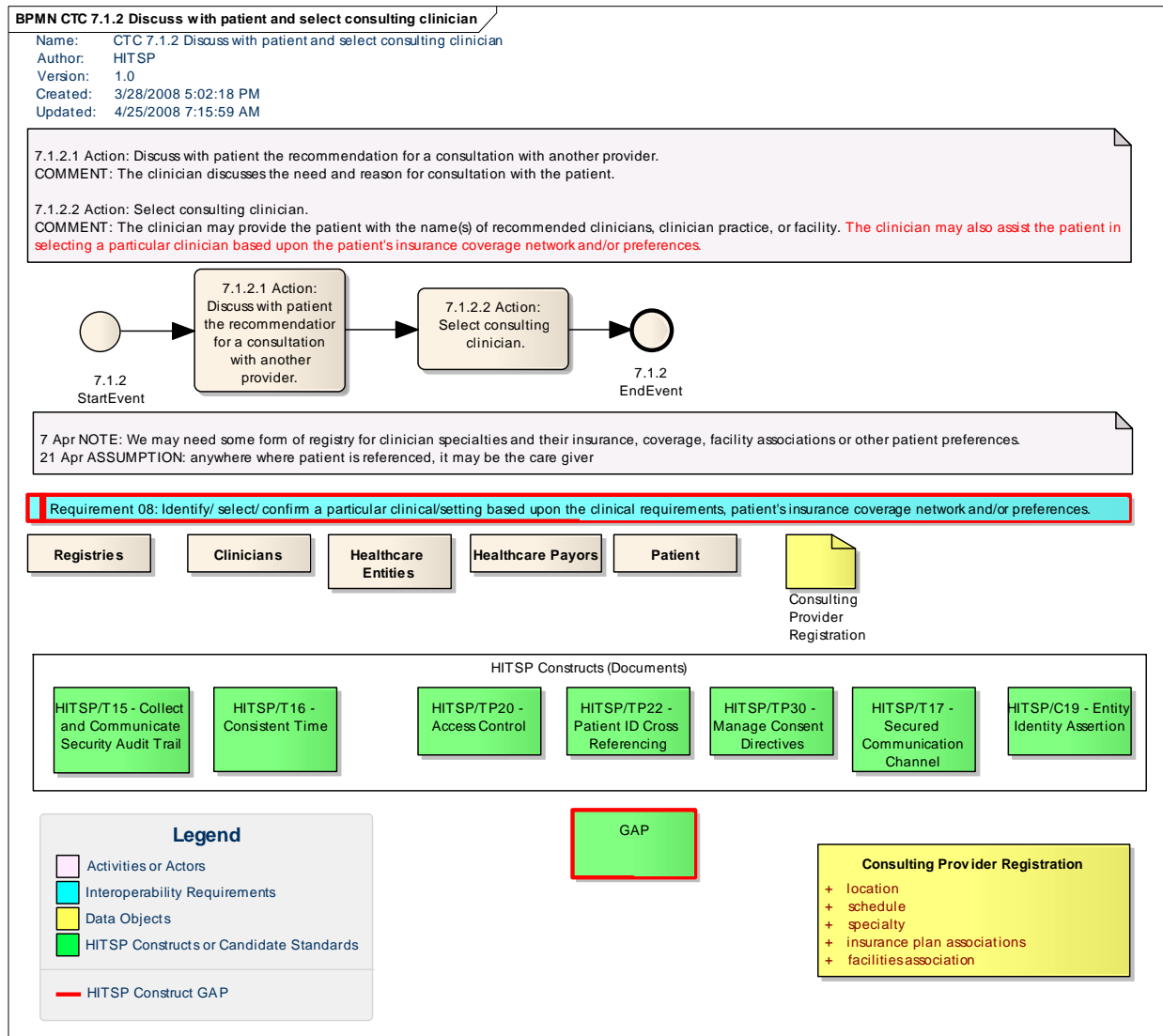
Figure 6.3-1 Scenario 1: Consultation



**Figure 6.3-2 Evaluate Patient and Determine Need for Consult**



**Figure 6.3-3 Discuss With Patient and Select Consulting Clinician**



**Figure 6.3-4 Initiate Consult Request with Consulting Clinician**

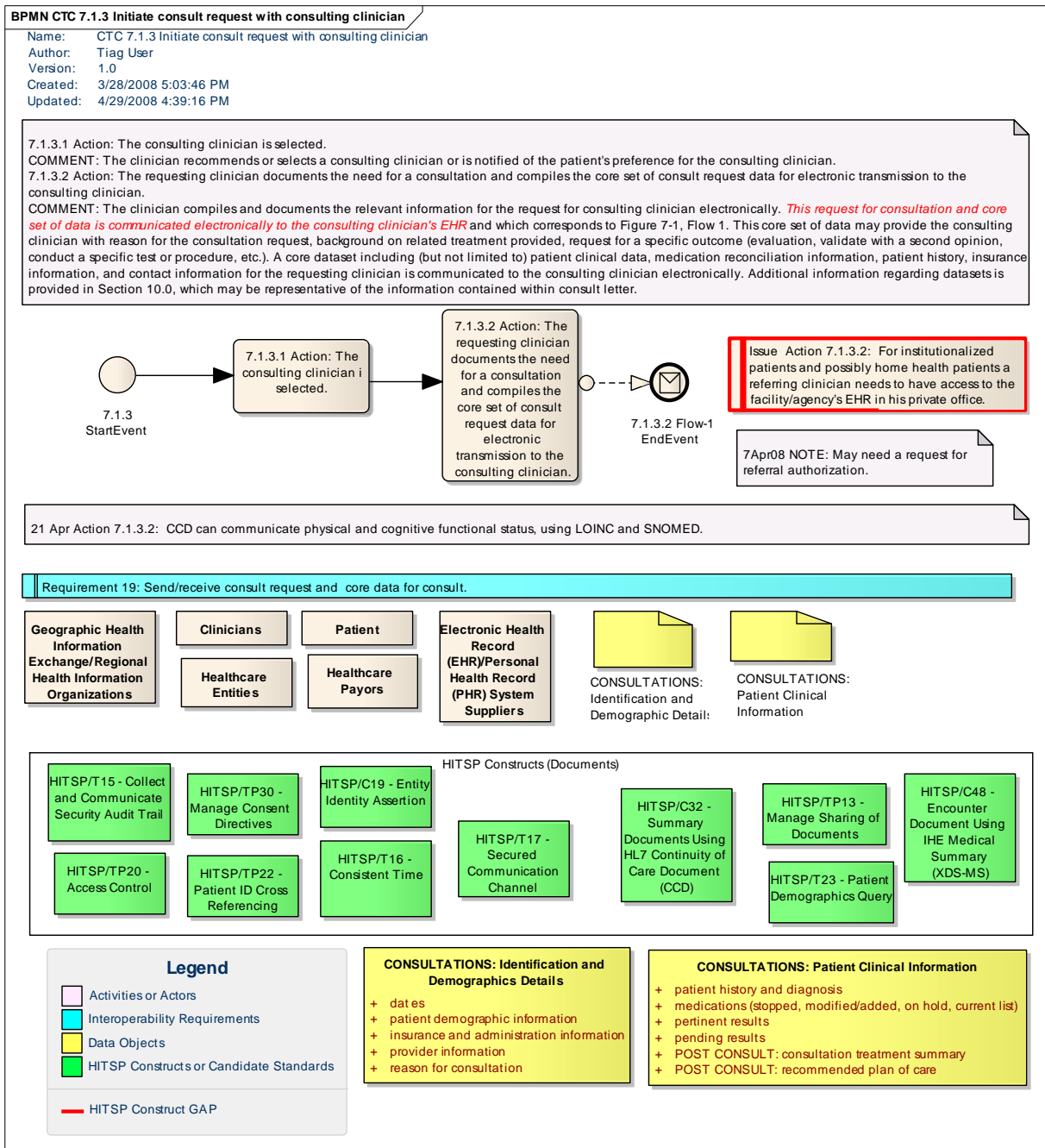
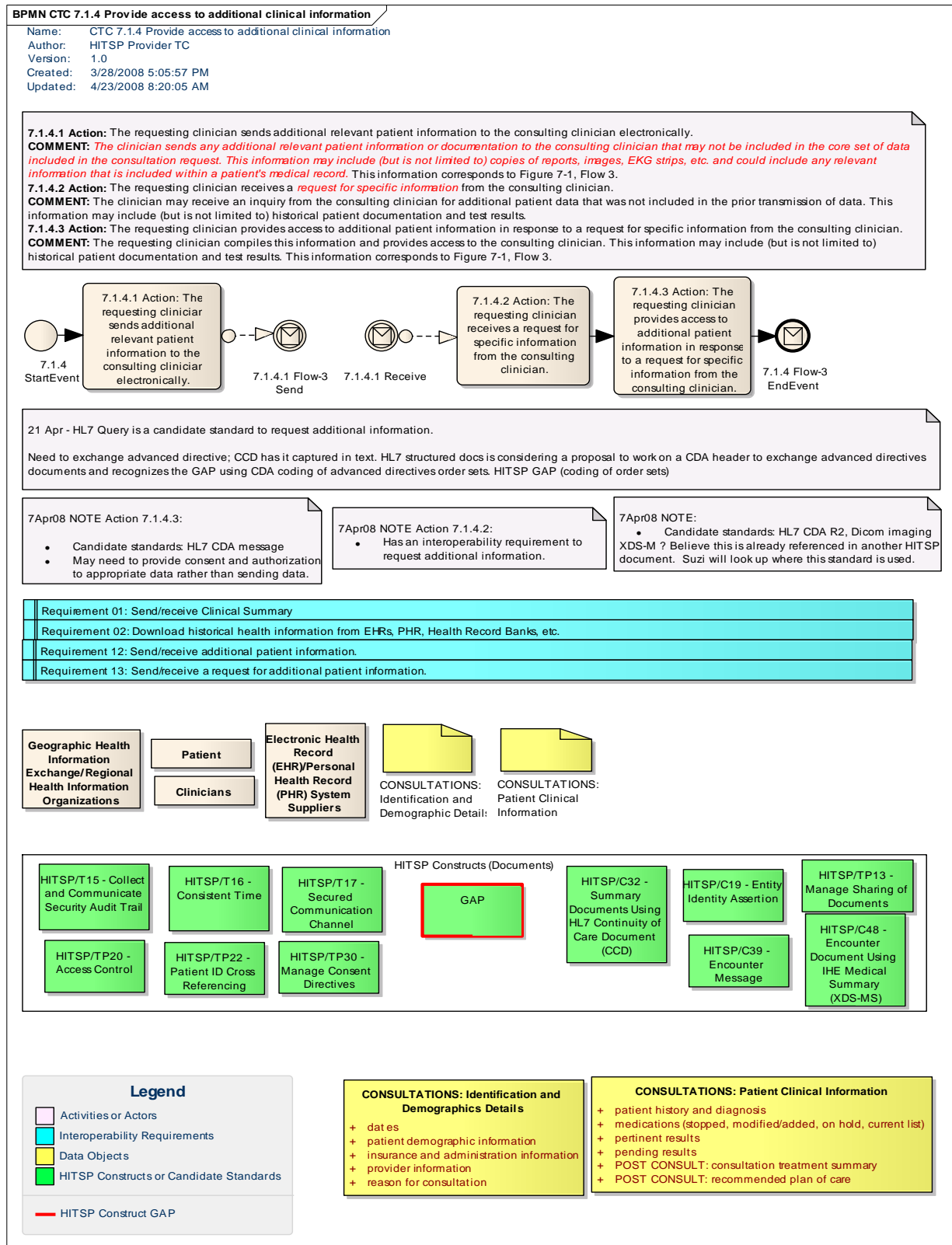
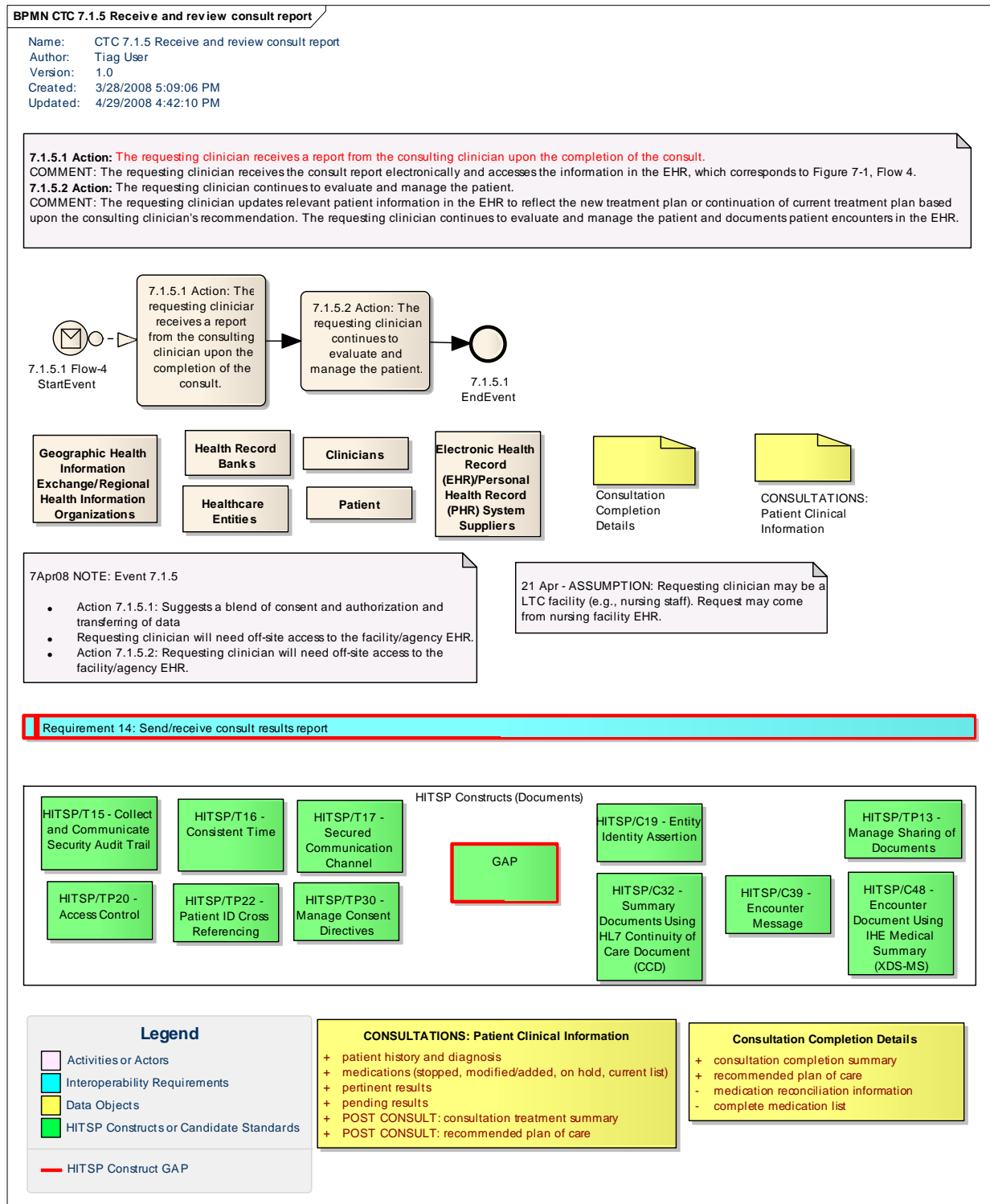


Figure 6.3-5 Provide Access to Additional Clinical Information

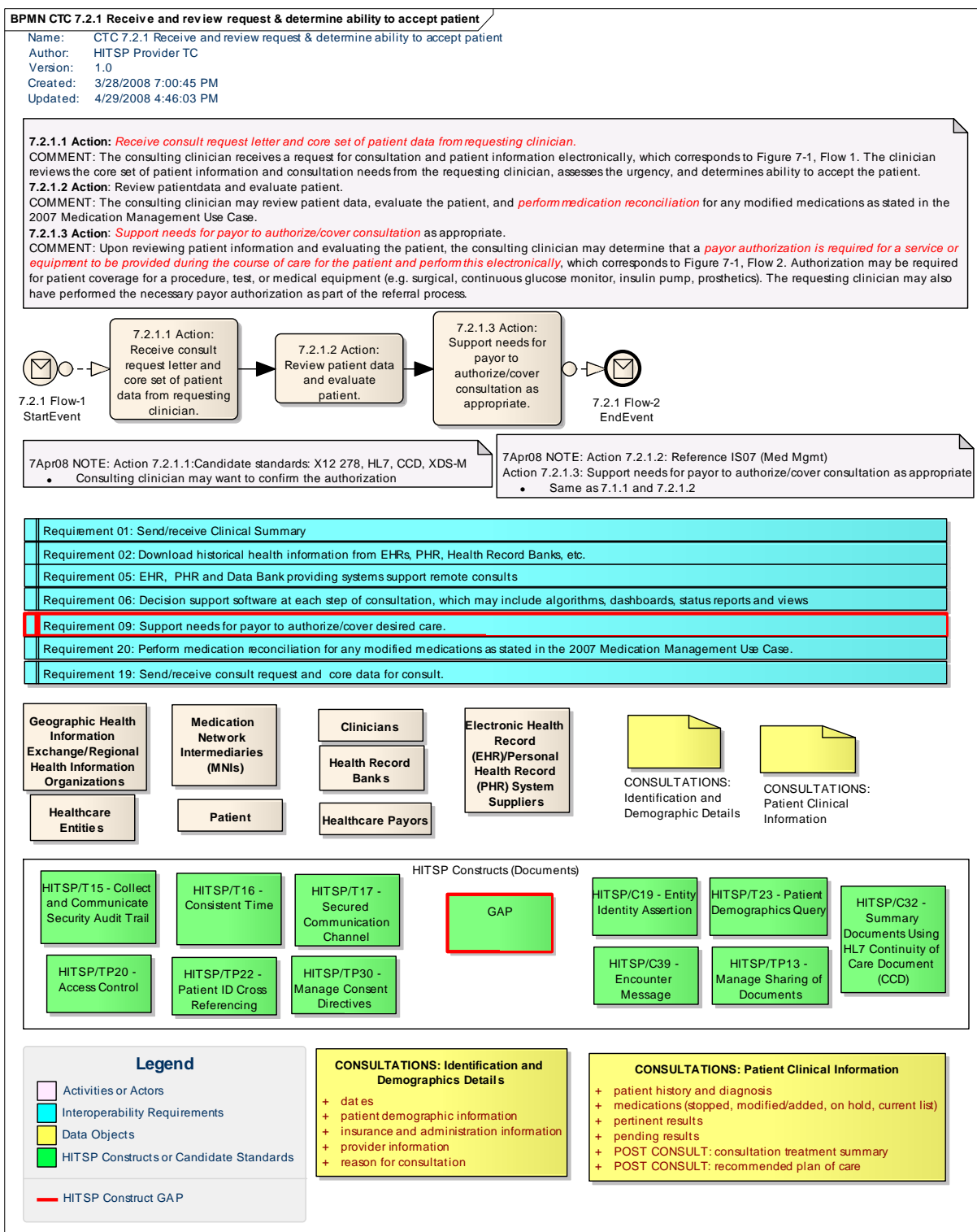




**Figure 6.3-6 Receive and Review Consult Report**



**Figure 6.3-7 Receive and Review Request & Determine Ability to Accept Patient**



**Figure 6.3-8 Request and View Additional Clinical Information**

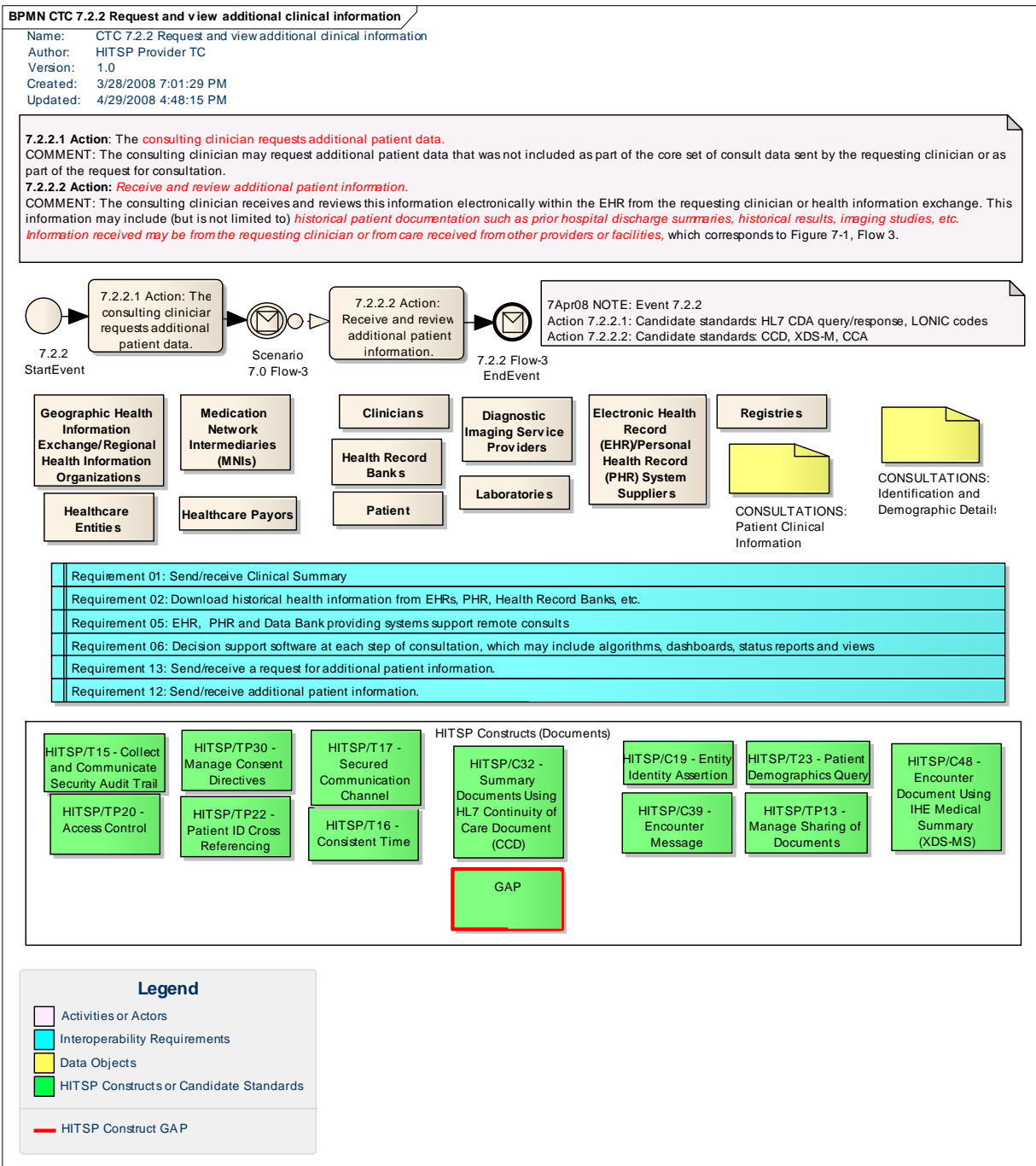


Figure 6.3-9 Evaluate/Manage Patient

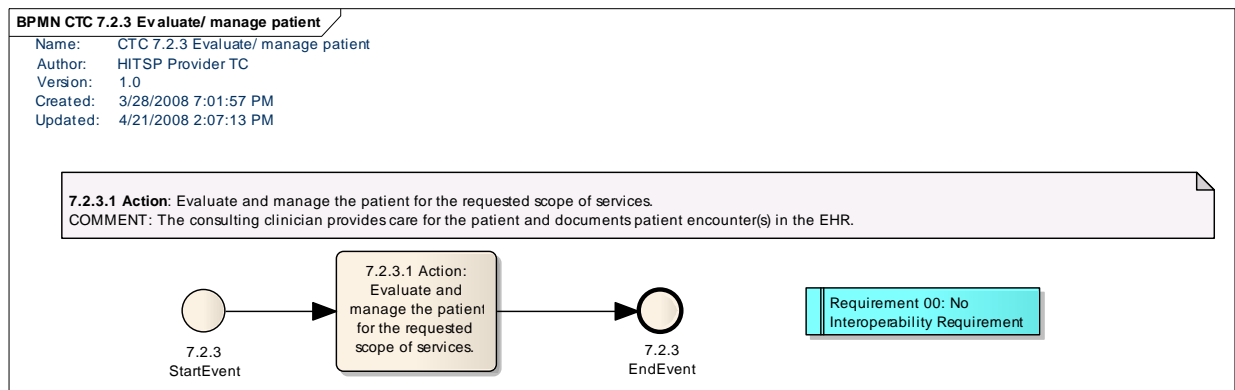


Figure 6.3-10 Complete Consultation

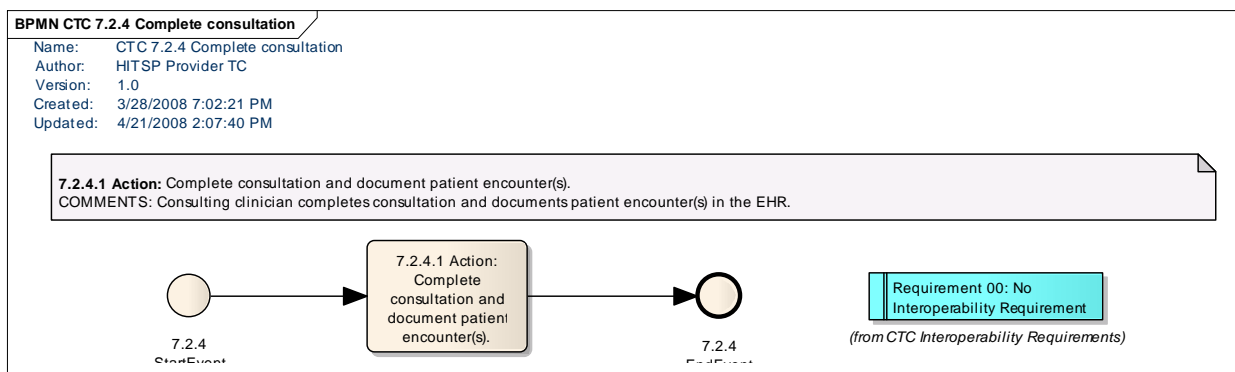
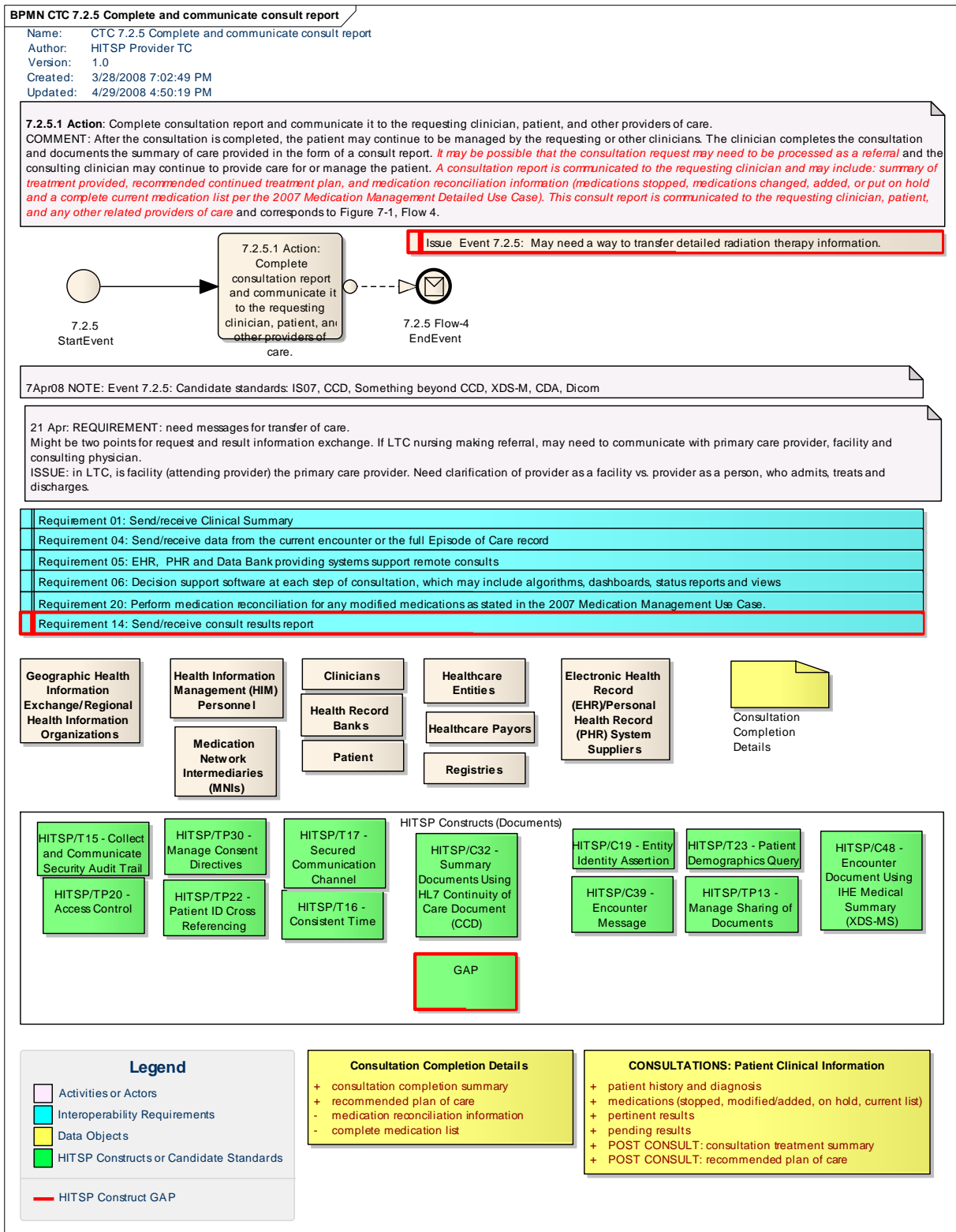
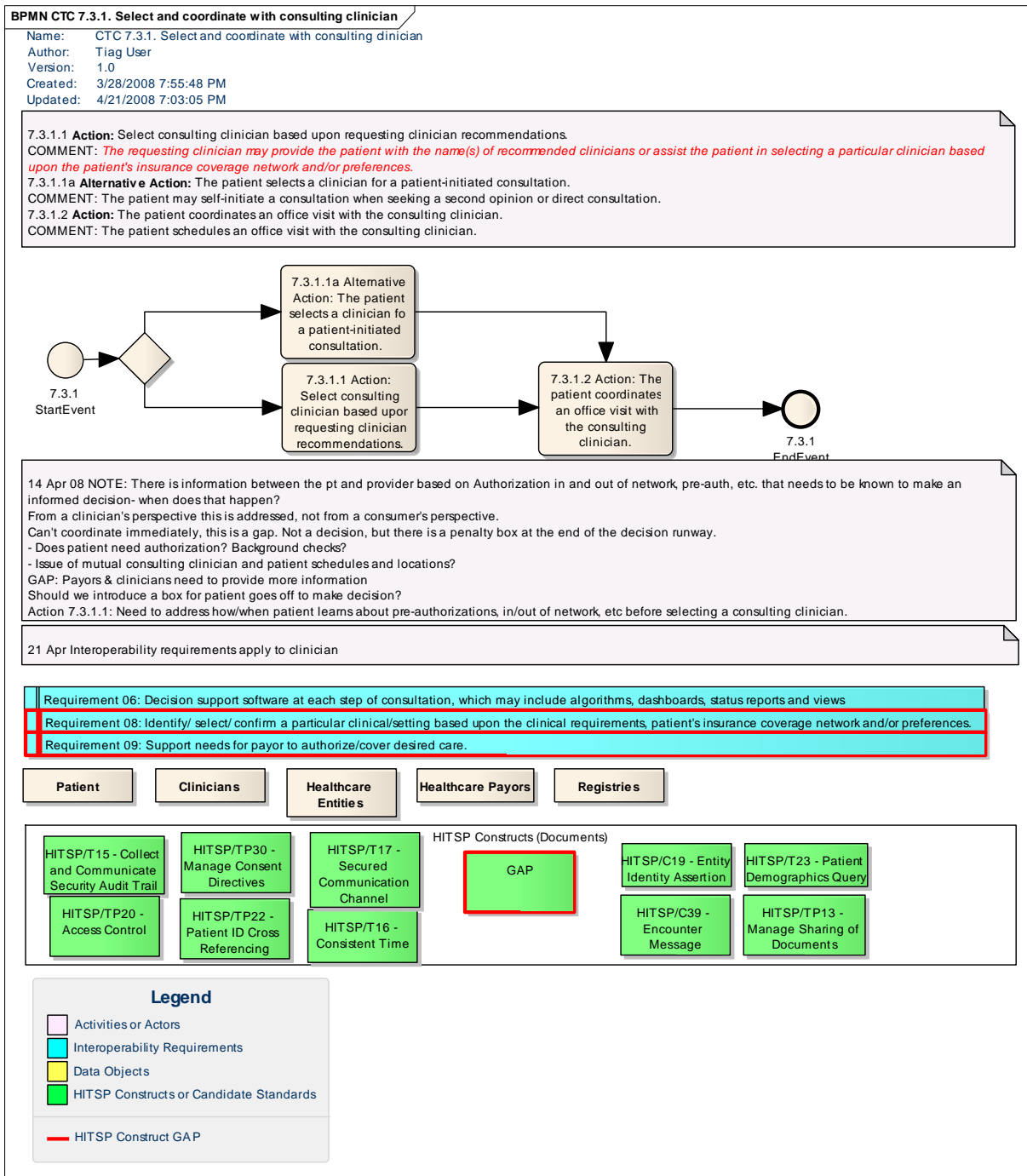


Figure 6.3-11 Complete and Communicate Consult Report



**Figure 6.3-12 Select and Coordinate with Consulting Clinician**



**Figure 6.3-13 Provide Permissions for Core Set of Data to be Shared**

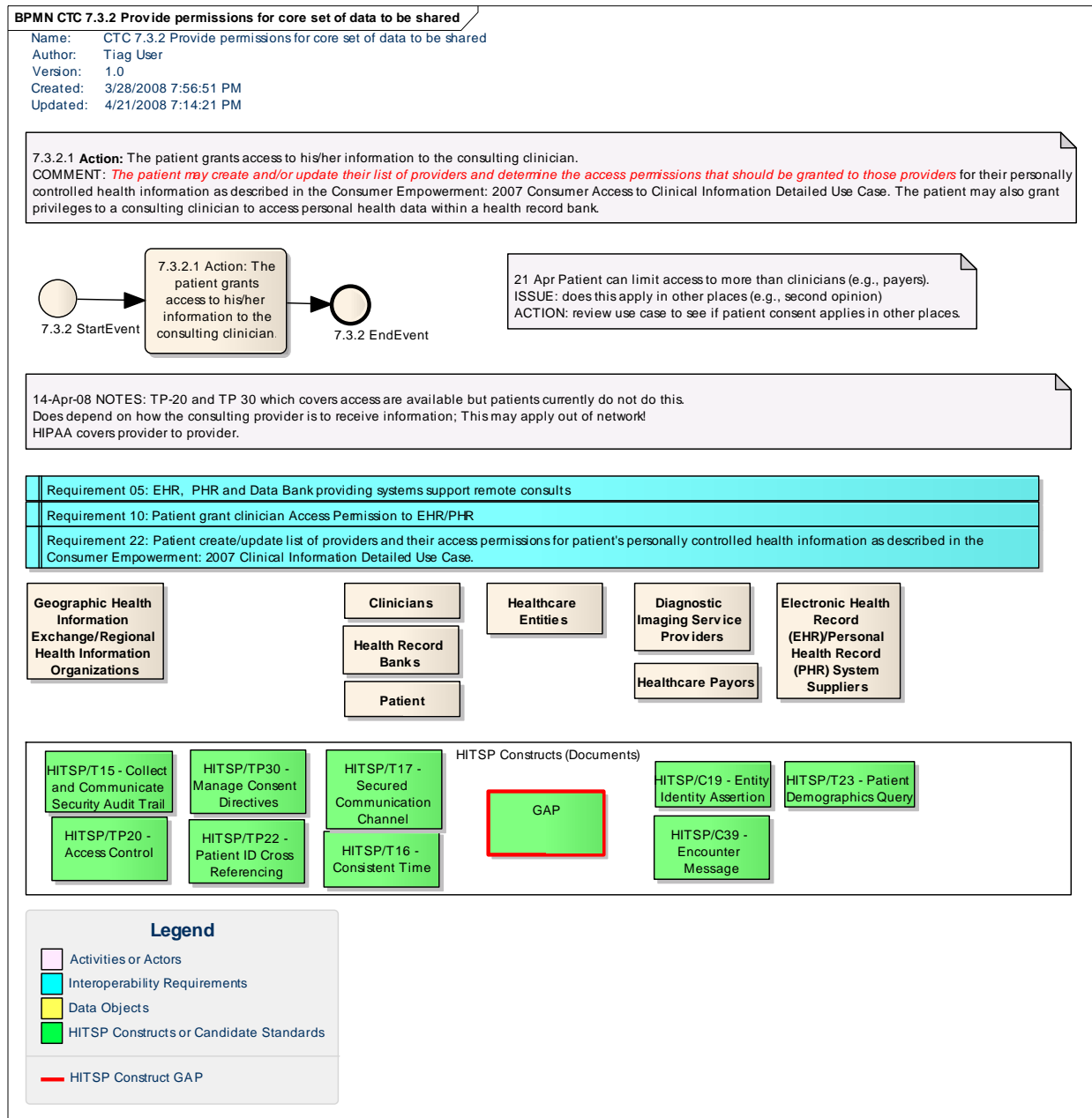


Figure 6.3-14 Complete Consultation

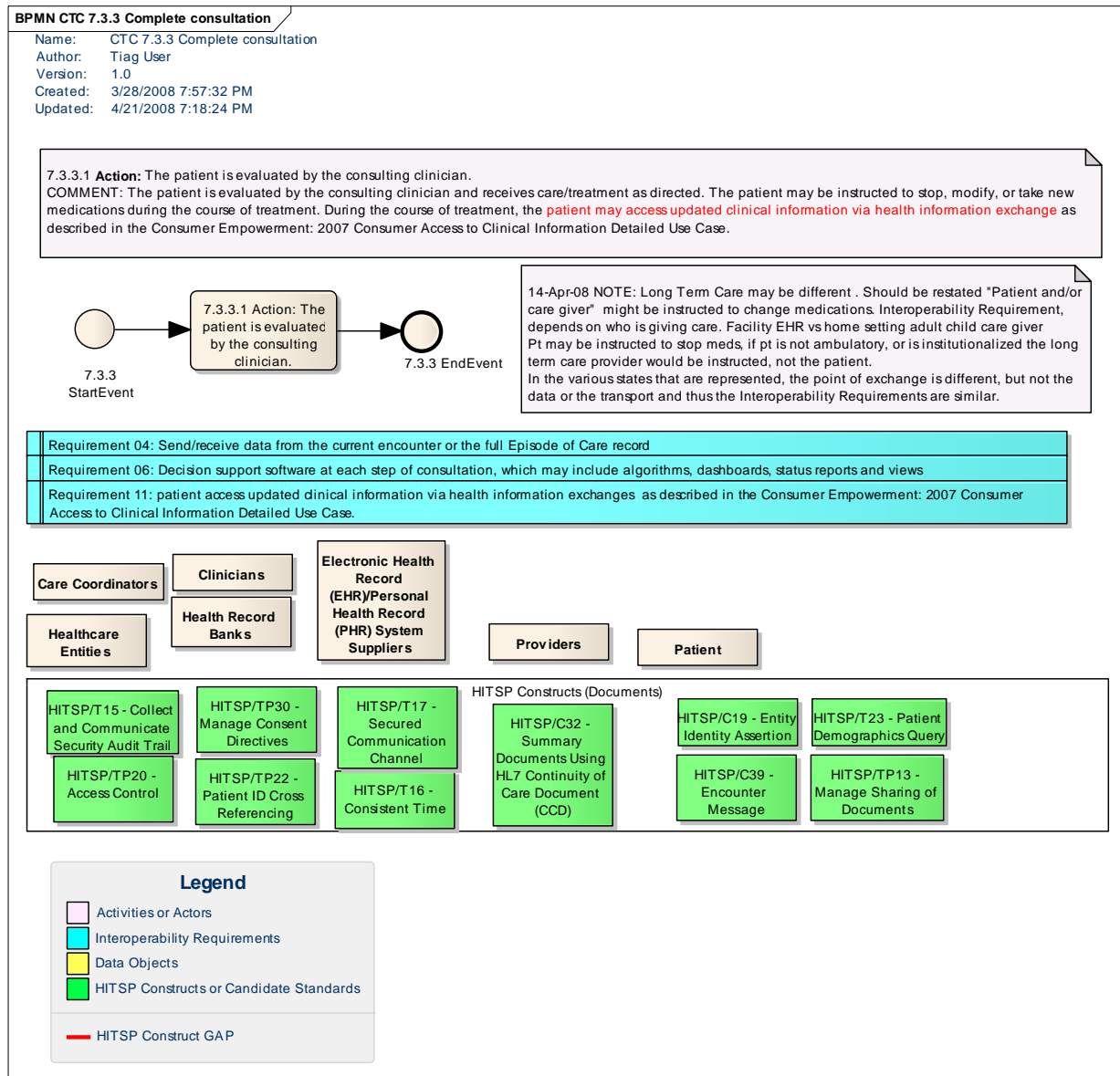
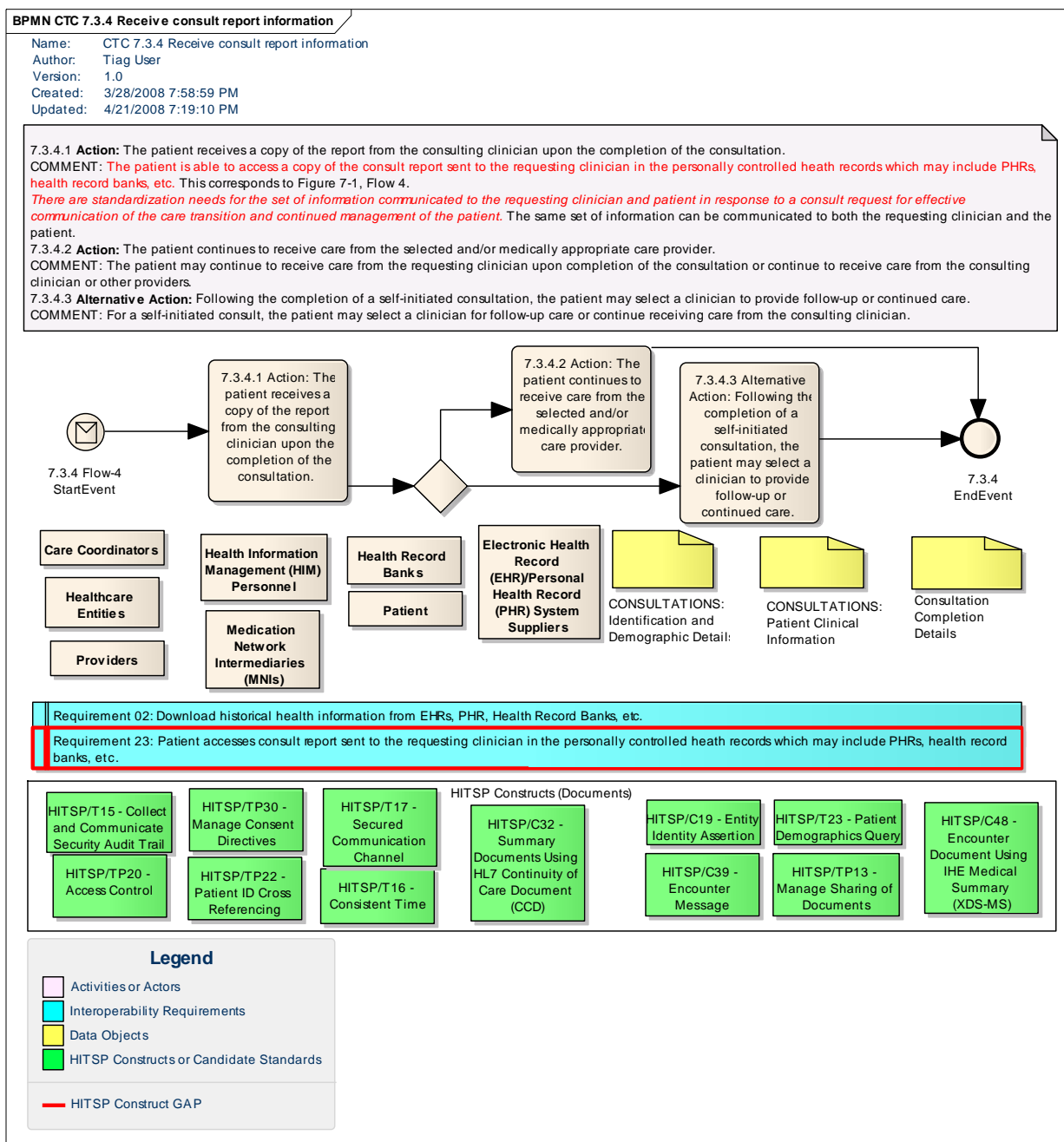




Figure 6.3-15 Receive Consult Report Information



## 7.0 CHANGE HISTORY

The following sections provide the history of all changes made to this document since the last publication.

No changes at this time. This is the first published version.

