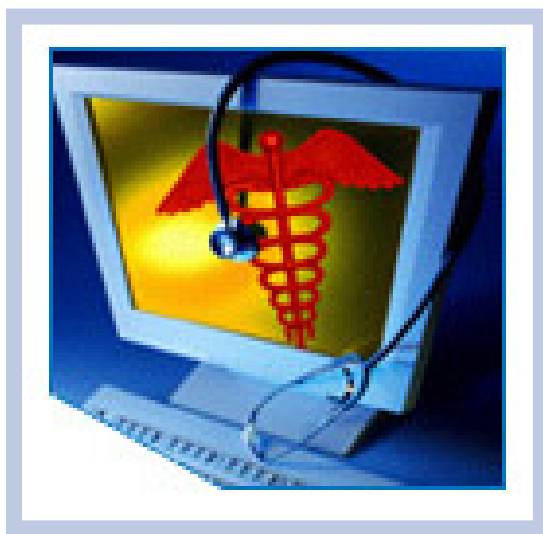


HITSP Emergency Responder Electronic Health Record Interoperability Specification

HITSP/IS04



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



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1.0 INTRODUCTION

As an introduction to the Healthcare Information Technology Standards Panel Emergency Responder-Electronic Health Record (ER-EHR) Interoperability Specification, this section provides a high level overview of the information sharing scenario enabled by following this specification, provides a document map of the construct relationships for the Interoperability Specification, acknowledges the copyright protections that pertain, and provides links to key reference documents and background material.

1.1 INTEROPERABILITY SPECIFICATION OVERVIEW

This section provides a high level definition of this Interoperability Specification and background information about the underlying Use Case that it is based upon.

Pre-hospital care and emergency response lack interoperable information technology and infrastructure and Standard Development Organizations (SDO) consensus standards. From an interoperability perspective, the American Health Information Community (AHIC) Emergency Responder Use Case treats pre-hospital response and care similar to hospital care in spite of heterogeneous pre-hospital organizational structures and overlapping policy jurisdictions which must deal with cross-affinity domain interactions, poor communications, emerging technologies and policies. Additionally, emergency responders must potentially deal with unreliable communications, power and failure prone systems while working under stressful conditions with inadequate resources. HITSP was challenged by wanting to focus on interoperability, achieve closure, be pragmatic and have a futuristic perspective.

The ER-EHR Use Case focuses on the deployment of standardized and secure solutions for accessing and exchanging current and patient-specific historical health information. The historical information typically resides or is available from a Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). The current data can be generated by a variety of emergency responders, and from third party data sources. The Use Case is driven by the requirements of timely electronic access and exchange of critical health information which should support the assessment, stabilization and treatment of the victims of emergency incidents, as well as, on a treatment non-interference basis, facilitate family member reunification, expedite next-of-kin notification following such incidents, and other related matters (e.g., aggregates of victims in different stages of care, needed transport, etc.). This could range from routine incidents involving individuals suffering from motor vehicle crashes or acute episodes of illness, to large groups of people suffering as the result of mass casualty incidents including natural disasters, pandemics and terrorism.

The ER-EHR Use Case covers the workflow from the time responders become aware that there is an emergency. It covers the perspective of incident commencement and situational awareness (9-1-1, Dispatch or Emergency Communications System) to on-site care providers (Emergency Medical Services (EMS), Law Enforcement, Fire) and emergency care clinicians. Emergency care clinicians involved in the care and treatment of emergency incident victims, medical examiner/fatality managers investigating



cause of death, emergency managers, and public health practitioners also use information generated/collected by various responders. This Use Case focuses on interoperability requirements and does not attempt to include all of their functions and interactions, or the data the actors need to perform their particular functions.

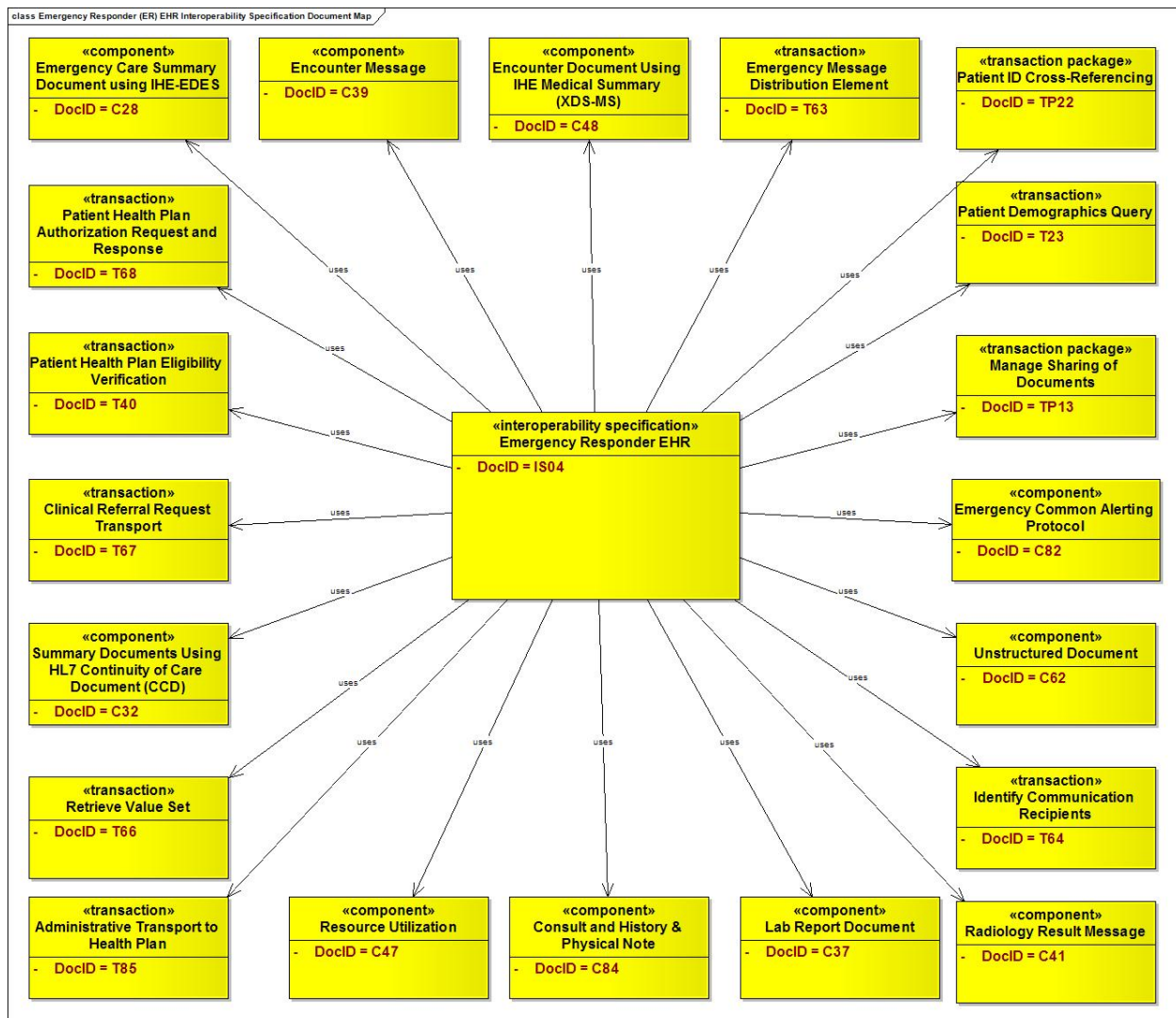
The Emergency Responder EHR envisioned by this Use Case is an amalgam of current emergency incident and patient-specific historical health information collected over time from a number of sources. Patient-specific historical health information includes Emergency Contact Registry (ECON) data, Personal Health Record (PHR) data and Electronic Health Record (EHR) data. Current emergency incident information includes all information from the first notification to an Emergency Responder through the completion of the last encounter. This is defined as an Episode of Care. These data are collected from the beginning of the incident, from a number of systems and are assembled into a growing ER-EHR that is used by the actors within the Use Case as the incident proceeds through the scenarios. We have referred to these data throughout the Interoperability Specification as the Episode of Care Record, which is ultimately loaded into the ER-EHR repository. The reader should recognize that Episode-of-Care data includes the pre-hospital Patient Care Report and patient-specific historical data from the Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). Moreover, the Episode of Care Record is comprised of a number of Encounter Records, including the ED and Definitive Care. The Health Level Seven (HL7) Continuity of Care (CCD) Clinical Summary is used to provide initial clinical information to the emergency responders and is used at each hand off of care to provide clinical information to the Emergency Care Department, Definitive Care, transfer or final disposition of the Episode of Care.

1.2 INTEROPERABILITY SPECIFICATION DOCUMENT MAP

Each HITSP Interoperability Specification (IS) is comprised of a suite of constructs that, taken as a whole, define how to integrate and constrain existing standards and specifications to satisfy the requirements imposed by a given Use Case. The IS groups specific actions and actors to describe the relevant context(s) for the use of HITSP constructs that further identify and constrain standards where necessary. In addition to ISSs, there are three other types of HITSP constructs called Transaction Packages (TP), Transactions (T), and Components (C). The document map in Figure 1.2-1 depicts how this IS integrates and constrains HITSP constructs to support the information exchange, within the defined context of the Use Case. Implementers should read the documents that describe the constructs depicted in the diagram for their details and specific uses. Note that the baseline Security and Privacy constructs are not shown in the diagram; however, they are described in Table 1.2.1-1.



Figure 1.2-1 Interoperability Specification Document Map



1.2.1 LIST OF CONSTRUCTS

The following table lists and describes the HITSP constructs that used by the Interoperability Specification. All references to HITSP specifications are to the current, and Panel approved 'Released for Implementation' versions of the specifications retrieved from www.hitsp.org.

Where HITSP has adopted HL7V3 CDA/CCD for conveying information between EHR and PHR applications and in other healthcare scenarios, it has consolidated common constraints applied against the Content Modules in HITSP/C83 CDA Content Modules. Likewise, HITSP/C80 Clinical Document and Message Terminology maintains commonly applied terminology constraints. Readers should refer to HITSP/TN901 Technical Note for Clinical Documents to better understand how HITSP/C83 and HITSP/C80 are used by other constructs that are based upon CDA/CCD (e.g., HITSP/C32 Summary



Documents Using HL7 Continuity of Care Document (CCD), HITSP/C48 Encounter Document Using IHE Medical Summary (XDS-MS), HITSP/C84 Consult and History & Physical Note).

Table 1.2.1-1 List of Constructs

Construct	Description
HITSP/C19 - Entity Identity Assertion	The Entity Identity Assertion Component 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
HITSP/C28 - Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES)	The Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES) Component is the collection of data from multiple sources (such as physicians, nurses, technologists, etc.) recording the assessments and care delivered by the ED team in response to an ED visit. It is a summary of the patient's current health status and care tendered in the ED between arrival and ED departure. This Component specifies the use of the IHE Emergency Department Encounter Summary (EDES), Technical Framework Supplement, Volume I, Revision 3.0, 2007-2008
HITSP/C32 - Summary Documents Using HL7 Continuity of Care Document (CCD)	The Summary Documents Using HL7 Continuity of Care Document (CCD) Component describes the document content summarizing a consumer's medical status for the purpose of information exchange. The content may include administrative (e.g., registration, demographics, insurance, etc.) and clinical (problem list, medication list, allergies, test results, etc) information. This Component defines content in order to promote interoperability between participating systems such as Personal Health Record Systems (PHRs), Electronic Health Record Systems (EHRs), Practice Management Applications and others
HITSP/C37 - Lab Report Document	The Lab Report Document Component 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 the EHR system (local or remote) of the ordering clinician; transmission of complete, preliminary, final and updated (or notification) to the EHR system (local or remote) or other clinical data system of designated providers of care (with respect to a specific patient); transmission of laboratory result data from electronically enabled healthcare delivery and public health systems in standardized and anonymized format to authorized Public Health Agencies with less than one day lag time
HITSP/C39 - Encounter Message	The Encounter Message Component supports the process of sending patient encounter data (excluding laboratory, radiology) from a Biosurveillance Message Sender to a Biosurveillance Message Receiver
HITSP/C47 - Resource Utilization Message	The Resource Utilization Message Component specifies the message and content necessary to report utilization and status of health provider resources to public health agencies. This specification reflects the current status of harmonization efforts between HL7 and OASIS
HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)	The Encounter Document Using IHE Medical Summary (XDS-MS) Component supports the process of sending patient encounter data (excluding laboratory and radiology) in a document sharing functional flow scenario. Patient encounter data are captured as part of the normal process of care performed by healthcare providers, such as hospitals, emergency departments and outpatient clinics



Construct	Description
HITSP/C62 - Unstructured Document	The Unstructured Document Component is provided for the capture and storage of patient identifiable, unstructured document content, such as text, PDF, and images rendered in PDF. It is based on the Cross-Enterprise Sharing of Scanned Documents (XDS-SD) profile from the Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF)
HITSP/C82 - Emergency Common Alerting Protocol	The Emergency Common Alerting Protocol Component selects the OASIS Common Alerting Protocol (CAP) v1.1 standard, and is used as a multicast notification message sent to an identified channel. The intended recipients are populations such as "all emergency departments in XXX county", "within a geographic area", etc.
HITSP/C84 - Consult and History & Physical Note	The Consult and History & Physical Note Component supports two types of commonly used clinical notes, a consult note, and a history and physical note. It is intended for use to support the exchange of information from a consulting provider to a referring provider; and may also be used to provide background information from a referring provider to a consulting provider (e.g., prior reports)
HITSP/T15 - Collect and Communicate Security Audit Trail	The Collect and Communicate Security Audit Trail Transaction is a means to provide 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
HITSP/T16 - Consistent Time	The Consistent Time Transaction provides a mechanism to ensure that all of the entities that are communicating within the network have synchronized system clocks
HITSP/T17 - Secured Communication Channel	The Secured Communication Channel Transaction provides the mechanisms to ensure the authenticity, integrity, and confidentiality of transmissions, and the mutual trust between communicating parties. Its objectives include providing: mutual node authentication to assure each node of the others' identity; transmission integrity to guard against improper information modification or destruction while in transit; and transmission confidentiality to ensure that information in transit is not disclosed to unauthorized individuals, entities, or processes
HITSP/T23 - Patient Demographics Query	The Patient Demographics Query Transaction is intended to provide a 'list patients and their demographics' query/'patient(s) and their demographics identified' response message pair (QBP^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. The underlying basis for this extraction can be found in the Integrating the Healthcare Enterprise IT Infrastructure Technical Framework, Patient Demographics Query integration profile
HITSP/T40 - Patient Health Plan Eligibility Verification	The Patient Health Plan Eligibility Verification Transaction is intended to provide 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, physician office visit, pharmacy and vision services that are included in the patient's generic health plan benefit
HITSP/T63 - Emergency Message Distribution Element	The Emergency Message Distribution Element Transaction selects the Emergency Data Exchange Language (EDXL) Distribution Element (DE) v1.0 standard, and is a multicast notification message sent to an identified population (assume this is not to the general public, but to specifically identified populations, such as emergency departments)



Construct	Description
HITSP/T64 - Identify Communication Recipients	The Identify Communication Recipients Transaction is intended to serve the purpose of identification of communication recipients and the subsequent purpose of delivery of alerts and bi-directional communications (e.g., public health agencies notifying a specific group of service providers about an event.) The method and criteria by which individuals are added to a directory is a policy decision, which is out of scope for this construct. It uses the Integrating the Healthcare Enterprise (IHE) Personnel White Pages profile which provides access to basic directory information for identifying one or more recipients
HITSP/T66 - Retrieve Value Set	The Retrieve Value Set Transaction is used to transform human or computer vocabularies. For example, it can be used to convert the initial capture of a human-readable concept into a computer vocabulary captured in a document or message that will be communicated. It may also be used in the reverse, to take computer vocabulary and convert to human-readable form
HITSP/T67 - Clinical Referral Request Transport	The Clinical Referral Request Transport Transaction will be used to transport the provider to provider (clinical) referral request interaction. It is based on the Integrating the Healthcare Enterprise (IHE) Document-based Referral Request (DRR) profile which is used to bundle a referral request document with other relevant clinical documents of interest and optionally to send a trigger message to the receiving provider system
HITSP/T68 - Patient Health Plan Authorization Request and Response	The Patient Health Plan Authorization Request and Response Transaction provides a mechanism for a healthcare provider (other than a retail pharmacy) to request approval from a health plan to authorize certain healthcare services, when required by the patient's health plan contract. The information exchanged includes, but is not limited to, approval status for coverage, allowed service provider(s), and certification dates for services that are included in the patient's health plan benefits. The response from the health plan indicates that the health plan has determined that the particular service(s) will or will not be covered, and what is the level of coverage if that information is available from the health plan
HITSP/T85 - Administrative Transport to Health Plan	The Administrative Transport to Health Plan Transaction will be used as the transport for administrative transactions between a provider and a health plan. Examples include a pharmacy obtaining health plan eligibility, and a physician requesting referral or authorization information from a health plan. This construct is based on the CAQH Phase II CORE #270 Connectivity Rule v2.0.0, which addresses the message envelope metadata, the message envelope standards, and the submitter authentication standards for administrative transactions, as well as communications-level errors, and acknowledgements.
HITSP/TP13 - Manage Sharing of Documents	The Manage Sharing of Documents Transaction Package 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
HITSP/TP20 - Access Control	The Access Control Transaction Package provides the mechanism for 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. An example of this is a functional role that has the permission to perform an act (e.g., consumer updating a Personal Health Record (PHR). In an emergency, this construct must support the capability to alter access privileges to the appropriate level (failsafe/emergency access), which may include override of non-emergency consents



Construct	Description
HITSP/TP22 - Patient ID Cross - Referencing	The Patient ID Cross-Referencing Transaction Package is used for identifying and cross-referencing different attributes for the same patient. It contains a query for cross-reference and patient identity feed transactions. These transactions are used to identify patients from a list of potentials, and/or to communicate patient demographic data
HITSP/TP30 - Manage Consent Directives	The Manage Consent Directives Transaction Package 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

1.3 COPYRIGHT PERMISSIONS

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1.4 REFERENCE DOCUMENTS

This section provides a list of key reference documents and background material. If you are already familiar with this information, proceed to Section 2.0.

A list of key reference documents and background material is provided in the table below. These documents can be retrieved from www.hitsp.org.

Table 1.4-1 Reference Documents

Reference Document	Document Description
Emergency Responder Electronic Health Record (ER-EHR) Use Case, December 20, 2006	AHIC Use Case that is the basis of this Interoperability Specification
HITSP Acronyms List	Lists and defines the acronyms used in this document
HITSP Conventions List	Describes the conventions that are used to convey the full descriptions and usage of standards in the HITSP specifications
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
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 system development or refinement



Reference Document	Document Description
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"> • The scope, reference policy background, and Security and Privacy principles used in the development of the constructs • A detailed description and schematics of the conceptual relationship between the Security and Privacy constructs • A mapping of existing standards and constructs to be used in meeting the stated requirements of the AHIC Use Cases • A list of identified gaps and the recommended approaches to resolving those gaps • A roadmap for how the Security and Privacy constructs will evolve and eventually align with other HITSP Interoperability Specifications • A conceptual framework for Security and Privacy management, including reference information on privacy policies, risk assessment, and risk management • 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 <p>HITSP will periodically update this Technical Note as required by the introduction of new contexts for use.</p>
TN901 – Technical Note for Clinical Documents	<p>Developed as a reference document to provide the overall context for use of the HITSP Care Management and Health Records (CMHR) constructs. It includes the following:</p> <ul style="list-style-type: none"> • The scope, background, and principles for use in the development of the CMHR constructs • A detailed description and schematics of the relationship between CMHR constructs • A conceptual framework for the construction of clinical documents • An overview of Clinical Document concepts • An overview of Vocabulary concepts



2.0 REQUIREMENTS

This section provides a high level description of the Emergency Responder-Electronic Health Record (ER-EHR) Use Case, as well as the specific information exchange and data requirements that are extracted from the Use Case. It includes the following information:

- Mapping from the Use Case actions and events, to the derived information exchange and data requirements – this table lists the requirements grouped by actor for each event and related action
- Data requirements – this table further describes the data requirements for each specified information exchange requirement
- Information exchange requirements – this table further describes the information exchange requirements for each applicable Use Case action
- Business Actors – this table defines the business actors that are included for the Interoperability Specification, and maps them to the applicable scenario, information exchange, and data requirements
- High level Diagrams – these diagrams are used to describe the interaction between the business actors, and the data involved in each scenario that is documented

Note that a Use-Case Stakeholder is a person, organization or system that performs business actions in a use-case. A HITSP Business Actor, like Use Case stakeholders, includes systems. Unlike stakeholders, a HITSP Business Actor is an IT system component that supports one or more stakeholders and one or more Technical Actors engaged in exchanging Information. A HITSP Technical Actor is an internal software component (e.g., interface) of an IT system that supports a real world information exchange by implementing a System Data Exchange that helps realize a Business Actor information exchange.

2.1 USE CASE SYNOPSIS

This section provides a synopsis of the ER-EHR Use Case, including applicable scenarios that are part of the Use Case.

This ER-EHR Use Case scenario covers the use of an ER-EHR from the perspective of those responders that first learn about an event by a 9-1-1 emergency center and is dispatched for support care (hereafter referred to as “Emergency Communications Systems (ECS) or Systems”), by on-site emergency care providers (Emergency Medical System (EMS) professionals, Law Enforcement, Fire Department etc.) and emergency care clinicians. It includes those involved in the care and treatment of specific emergency incident victims and aggregations of them, including medical examiner/fatality managers investigating the cause of death, emergency managers, and public health practitioners using information contained in the ER-EHR.

The Use Case begins with the notification awareness of the incident collection of information about the victim and incident. This is followed by dispatch of on-site care providers to the scene of an emergency



incident and including providing them with this information. This information follows the patient through initial treatment, evacuation to emergency medical treatment facilities (transfer from facility to facility) final patient disposition and patient care updates the EHR/PHR.

One key link in this chain of response is the EMS, which has developed its own data standards for many of these purposes. The National Association of State EMS Officials (NASEMSO) in conjunction with its federal partners at the National Highway Traffic Safety Administration (NHTSA) and the Trauma/EMS Systems program of the Health Resources and Services Administration's (HRSA), Maternal Child Health Bureau worked to develop a national EMS database—known as NEMSIS. In addition, the NEMSIS Technical Center was created and is managed by the University Of Utah School Of Medicine. Along with the development of the national system, the NEMSIS program, in collaboration with EMS Stakeholders, developed a national set of data standards, standard data definitions and XML Schema Definitions for exchanging EMS data (or pre-hospital data) among EMS services, local and state governments and the national NEMSIS program. Today, during or after the completion of an emergency run by EMS Services (Ambulance); the EMS Service completes a report called “the Patient Care Report (PCR) also called an Ambulance “Run Report”. These reports are based upon the NEMSIS data standards.

Dispatched Information from 911 Emergency Services needs to be shared with EMS, Law Enforcement and other on-site responders. Healthcare surveillance and situational information from all of these organizations needs to be periodically sent to public health systems to support biosurveillance programs. Similarly, appropriate patient information is sent to other stakeholders, including emergency managers. Hospitals or other appropriate care facilities continually update their resource availability. Emergency Operations Centers (EOC) and public health systems may be local, regional, state or federal.

Useful information in the form of emergency medical response data, may reside in multiple locations, and may be received by public and private parties which traditionally have not been part of the emergency medical response or patient care team. These can range from public health agencies managing Points of Dispensing (PODs) or a vaccine inventory, to a personal physician, to commercial providers of Personal Health Records (PHR), Emergency Contact Registries (ECON), and/or Electronic Health Records (EHR), to automaker Telematics Service Providers (TSP) such as General Motors' OnStar, Ford Motor Company's Sync 9-1-1 Assist and Mercedes-Benz TeleAid with vehicle crash data (e.g., key crash metrics, air bag deployment, multiple impacts, rollover, etc.), or similar kinds of patient status sensing systems.

Two major concepts are described: Small scale incidents and large scale incidents. A small scale incident is one in which one or a moderate number of individuals are injured/ill (require medical attention or treatment), and where the medical resources of an individual city, county or metropolitan area are sufficient to provide medical response and treatment for the casualties. The ability to provide routine care is not compromised. The timescale for response is normally expected to be less than twenty-four hours. Examples may include routine incidents such as motor vehicle crashes, and less common events such as chemical spills or the collapse of an office building.



A large scale or mass casualty incident is one in which the number of casualties/patients is such that the local resources must be augmented by external resources (regional, state and/or federal). The incident may occur across several geographic areas or it may be nationwide in scope. The ability to provide routine care will potentially be curtailed. External command and control is required to best match casualty needs to capabilities. The timescale for on-site response is typically greater than twenty-four hours and may extend to days, weeks or months. In a mass casualty incident, such as a pandemic flu, response and/or care may need to be provided on a virtual/remote basis. Communication networks may be partially or completely unavailable. It is likely that medical treatment facilities will be unable to process incoming patients as rapidly as is required, and triage decisions become critical. Examples may include the crash of a large airliner, a bridge collapse, school bus accident, a large scale terrorist attack, a major military combat operation, a large scale terrorist attack, a major military combat operation, a large natural or man-made disaster such as Hurricane Katrina or an occurrence of pandemic disease.

Additional perspectives address "Provider Authentication and Authorization Information Flows," which defines requirements and provides commentary on:

1. Medical licensing and certification entities which communicate provider-specific licensing and credential information to the Health Information Service Provider
2. Department Of Defense (DOD), Public Health System (PHS), Federal Emergency Management, and other appropriate entities who confirm the licensing and credential information of their medical and related providers
3. DOD, PHS and Federal Emergency Management entities who provide additional information about the medical privileges of the clinical care provider based on the role the provider fulfills within their entity
4. Health Information Service Provider who maps the licensing and certification information
5. Incident control personnel who request confirmation of the medical credentials of a clinical care provider
6. Incident control personnel who request confirmation of the public safety credentials of an on-site law enforcement care provider
7. Emergency Communications System (ECS), on-site, Emergency Department (ED) or other emergency care provider who requests access to emergency information
8. ECS, on-site, ED, or other emergency care provider who seeks to send emergency information

2.1.1 THE EMERGENCY COMMUNICATIONS SYSTEM ACTOR AND FUNCTIONS

In the past, emergency medical response has generally been viewed as a voice call to 9-1-1 followed by the dispatch of an EMT (Emergency Medical Technician) or other first responder who provides stabilizing on-site care to a patient and transports them to a hospital for treatment. That responder typically had very limited information about the patient or hospital resource availability. This ER-EHR Use Case conceives of a much broader and richer information environment in which both medical and non-medical stakeholders play critical roles, contributing, sharing and using information to create more informed and efficient emergency medical response.



9-1-1 call centers, Dispatch, and Emergency Management are important stakeholders in the provision of emergency medical care and response to an incident. Each stakeholder represents distinct functions. Often these are done in entirely separate locations by separate departments of local and state government (or companies under contract by them). Elsewhere all three functions may be combined in a single entity. Furthermore, involvement of these stakeholders may vary depending on the location or nature of the incident. The advent of modern information technology (e.g., network-centric architectures) is expanding the traditional functions of these stakeholders/functions, adding capabilities and extending their role in emergency response from one time events (e.g., take a call, then dispatch an ambulance), to on-going support of an incident and making the information available to all on site and other responders who are directly or indirectly involved. Network-centric architecture is favored because it allows these functions to be performed in different places, by different parties within the continuum of care, without replacing all legacy systems.

The ER-EHR Use Case includes these stakeholders in the initiation of the encounter record and subsequent sharing and use of the expanding amount of data about victims and incidents. Because these actors can play very different roles in different areas and different incidents, as a technical and architectural convenience within the ER-EHR Interoperability Specification, we use the encompassing terms “Emergency Communications System (ECS)” to represent the future functions of 9-1-1/Public Safety Answering Points (PSAPs) (and the information sources and parties, public and private, that connect to them), Dispatch (including Emergency Medical Dispatch (EMD) decision support applications), Emergency Communications Systems, and Emergency Management/Emergency Operations Centers (EOCs), whether they are provided in one or more locations, and whether or not they are provided virtually.

We note that they, like all participants in the ER-EHR Use Case, are “architecturally equal”, i.e. they must all be equally interoperable. Their rights to send and receive data should vary based on policy decisions, not information technology, architecture or technology use. The ECS Actor logically includes the following, either as physical entities or functions:

- 9-1-1 (also referred to as Public Safety Answering Points or PSAPs) is the public’s point of contact with the emergency medical response system. This includes both individual 9-1-1 callers, and public and private data sources initiating a response request (e.g., police communicating the need for emergency medical response and the identity of the victim; telematics automatic crash notification; heart monitor alarm; hazmat truck crash indication), or providing information about the request. This function includes gathering as much relevant data on the victim and the incident as quickly as possible from additional sources, including accessing Personal Health Records (PHR), Emergency Contact Registries (ECON) and/or Electronic Health Records (EHR). It is important to note, however, that on-site care providers (like any other authorized party) may access and exchange patient-specific historical health information (i.e., PHR, ECON, EHR) independent of the ECS. In events such as a pandemic flu where the traditional paradigm of rushing victims to hospitals for care may be reversed, the 9-1-1 center may become the access to a form of Virtual Consult, and many of the functions described in the Use Case can be done by EMS or emergency rooms communications capabilities.



The creation of an incident encounter record begins at this point. The information technologies of choice within 9-1-1 centers are a computer aided dispatch system (including EMD software) and a records management system. Interoperability needs to be achieved between these systems. These will then need to interoperate with heterogeneous systems among mobile EMS, other public safety, public health and other units

- Dispatch is when an ambulance, fire truck, helicopter and/or other resources are sent to the scene. Often voice calls and small amounts of associated data are transferred from PSAPs to separate Emergency Medical Services (EMS), fire and/or police dispatch. There are increasingly sophisticated protocols with associated decision support tools, which are generically called Emergency Medical Dispatch (EMD). EMD systems today include functions that are traditionally thought of as EMS. For example, most include the option of “pre-arrival instructions” (e.g., how to help a citizen birth a child). These will become even more sophisticated with the new data being discussed herein. The information technologies of choice are a computer aided dispatch system with EMD response protocols and a records management system. Interoperability needs to be achieved between these heterogeneous systems
- Emergency management is wholly different. It is not concerned with individual events or individual patients, but instead with large-scale disasters, aggregates of patients (e.g., 40 burn patients, 10 dead, and 23 with serious head injuries) and the resources needed to treat them (from skilled people, to staffed hospital beds, to supplies). Traditionally, an Emergency Operations Center (EOC) might typically be a large conference room with representatives from each function sitting in front of a computer and telephone. Now the information technology of choice is an Internet Protocol (IP) based Consequence Incident Management System (CIMS) application that can be accessed from anywhere. It should be interoperable with the operating IT systems of other emergency agencies so it can exchange data. Unlike 9-1-1 and EMS, emergency management has an existing, near real time state and national reporting structure
- The best practice view of the future are Emergency Communications System networks-centric local, regional and state systems where different participants have rules-based access to information, software applications, and decision support applications, when and where they are needed, rather than in defined physical locations. In such a system each function may have its own software application (e.g., CAD, CIMS), but these are interoperable with each other, exchanging the data that each participants need and are authorized to receive. ECCs and ECSs may be physical or virtual entities, but they will provide on-going information technology and communications support to all the responders to an incident – whatever its type or size. This includes supporting the functions discussed above of 9-1-1, Dispatch, and Emergency Management, and also EMS, law enforcement, hospitals, National Guard, transportation, and others

Functional roles and information will differ, but from an information technology architecture standpoint these stakeholders’ interoperability requirements are the same. They are nodes on the emergency medical response network. Indeed, in this respect, they are exactly the same as every other function: EMS, air transport, hospitals, urgent care, public health and law enforcement. They need to be able to



send (contribute) and receive standardized data, in whatever form and amount which serves their needs, using standardized messaging protocols.

2.2 USE CASE REQUIREMENTS

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

The Use Case is driven by the requirements of emergency responders for timely electronic access and exchange of:

- Patient-specific health information (such as a Personal Health Record (PHR)), relating to the history, assessment, stabilization and treatment of the victims of emergency incidents
- Incident information
- Identification of unresponsive victims (on a treatment non-interference basis) to facilitate family member reunification, expedite notification of next-of-kin following such incidents, and other supportive functions such as emergency management

Incidents can range from individuals suffering from routine events such as motor vehicle crashes or acute episodes of illness, to large groups of people suffering as the result of mass casualty incidents including natural disasters and terrorism (i.e., small and large scale incidents as further described above).

The Use Case describes the role of an Emergency Responder Electronic Health Record (ER-EHR) comprising at a minimum: emergency contact information, demographics, medication, special needs (ventilators-wheelchair etc.), allergy and problem list information that can be used to support emergency healthcare activities. Additionally, the Use Case describes the interactions with PHRs/ECONs/EHRs, both using and updating them. It also describes the shared data needs to meet the differing requirements of the emergency responders. There cannot be a “minimum data set” because different actors have different information needs, and those information needs will vary by incident type.

Three perspectives are defined; ECS and on-site care, emergency care and definitive care. Each of these perspectives may provide actual and/or virtual care. In addition, for the sake of simplicity, we use description of Emergency Communications System (ECS) (described in Section 2.0 below) to include a variety of persons, places and functions, including the functions of 9-1-1, dispatch, emergency management, and on-going communication/IT support to on-site and/or in transit emergency response and care.

In this Use Case, ECS staff receives reports of an incident and gathers information on the event and the victims from public and private sources, such as a 9-1-1 call, data feed from a Telematics Service Provider (TSP), Personal Health Record (PHR), Emergency Contact Registry (ECON), and/or Electronic Health Record (EHR) provider. They make initial dispatch decisions, search or query for the patient's PHR/ECON/EHR, start an episode of care record and share information with the on-site care providers as they proceed towards the incident. Trained emergency dispatch staff, may also provide standardized pre-arrival instructions. Decision support EMD enhanced by new data sources, using the ECS, may be able to



provide increasingly sophisticated support to on-site providers and receiving hospitals. It is important to note, however, that any authorized emergency care provider may access and exchange patient-specific historical health information, (i.e., PHR, ECON, EHR) independent of the ECS. The on-site care providers typically include Emergency Medical Technicians (EMTs), Law Enforcement and Fire personnel. They can also include, uniformed services medical personnel and civilian Disaster Medical Assistance Teams (DMATs). EMTs and/or on-site care providers will assess and stabilize the patients' medical conditions, extricate them from dangerous locations, perform triage, and evacuate them to a temporary or permanent Medical Treatment Facility (MTF) to receive emergency care. On-site care providers, typically law enforcement personnel, will make reasonable attempts on a treatment non-interference basis to positively identify patients. On-site care providers usually work outside MTFs, except in the military and Public Health Service (PHS) where they may set up and staff Battalion Aid Stations and Federal Medical Stations (FMS) respectively.

Clinical care personnel operating within an MTF provide emergency care. They usually work in an Emergency Department (ED) or equivalent military or federal facility, evaluating and or treating patients before they are discharged, transferred or admitted to an inpatient facility, or are deceased. As appropriate, clinical care personnel may also provide virtual consults. These include physicians, nurses, advanced practice nurses (e.g., nurse practitioners, nurse anesthetists), physician's assistants, military corpsmen and all other clinical and ancillary personnel at an MTF. A major disaster may also require that urgent care, nursing homes, Auxiliary Care Sites (ACS), surge units, and other treatment facilities shall have access to the information and information technology applications discussed herein.

Definitive care is given by non-ED clinical personnel providing acute, rehabilitative, or custodial care. They evaluate and treat patients in locations other than an ED, such as acute care hospitals, specialty hospitals, dialysis centers, nursing homes and other facilities. These personnel may include physicians, nurses, therapists, technicians, and others.

The ER-EHR Use Case requires the deployment of standardized, widely available and secure solutions for accessing and exchanging healthcare and incident information in all types of incidents (e.g., small and large scale incidents as further described above). Specifically, it requires:

1. The ability to exchange ER-EHR information (i.e., Personal Health Record (PHR), Emergency Contact Registry (ECON), Electronic Health Record (EHR)) and/or Episode of Care information and the ability to access third party information about a patient/victim or an incident from the wide variety of actors that may be involved in the response to an emergency situation, all in the amount and form that the using entity desires. This may include full records, reports, and data elements of which they are composed.
2. The ability to electronically download and automatically populate patient-specific historical health information, such as Patient ID, ECON, PHR and/or EHR data into an Episode of Care record (including a pre-hospital Patient Care Report (PCR)) at ECS, EMS, and elsewhere, supporting real-time messaging of data to these entities, Emergency Department Clinicians and other authorized parties



3. The ability on treatment non-interference basis to ascertain positive patient identification, facilitate family reunification and expedite next-of-kin notification
4. The ability to document and electronically share data from the current emergency encounter or the full Episode of Care record
5. The ability for ER-EHR and PHR providing systems to support remote consults
6. The ability to provide decision support software at each step of emergency medical response from ECS through definitive care, which may include algorithms, dashboards, status reports and views
7. The ability of monitoring device data to be entered automatically into a Patient Care Report and/or encounter record and provide alerts based upon triggers
8. The ability to build and distribute Situational Awareness Reports (or let various actors have access to the data streams about the emergency event). "Situational Awareness Reports" can be categorized as
 - a. Situational centric (e.g., incident description and status)
 - b. Patient centric (e.g., demographics, emergency contact information, and present episode of care)
 - c. Resource centric, (e.g., hospital personnel, bed, specialty, ER status and responder resource and personnel status)
 - d. Public health centric (e.g., anonymized data)

2.2.1 MAPPING OF USE CASE ACTIONS TO INFORMATION EXCHANGE REQUIREMENTS

Section 6.2 contains the perspectives, scenarios, and events from the Use Case. This section maps these events and actions to extracted Information Exchange Requirements (IER), and Data Requirements (DR) that are described in Section 2.2.2. An Information Exchange Requirements (IER) describes a requirement for information exchange between HITSP Business Actors. Data Requirements (DR) define requirements for part, or all of the data exchanged by one or more IERs. The DR's are defined as a set of information attributes with specific details for each attribute. IER's and DR's form the basis for the construct requirements of the Interoperability Specification that are described in Section 3.0.

2.2.2 DATA AND INFORMATION EXCHANGE REQUIREMENTS

This section contains an extraction of data and information requirements (Table 2.2.2-1) and information exchange requirements (Table 2.2.2-2).

Table 2.2.2-1 provides the data requirement numbers, requirement descriptions, and a listing of the actual data elements and information that meet the data requirements. These requirements are referenced from the Data Requirements column of the Use Case Mapping Table provided in Section

Table 2.2.2-1 Data Element and Information Requirements (DR)

Data Requirement Number (DR)	Description
DR1	Demographic Data, including (but not limited to):



Data Requirement Number (DR)	Description	
	<ul style="list-style-type: none"> Name Unique identifier Race 	<ul style="list-style-type: none"> Ethnicity Occupation
DR02	Patient Clinical Summary	
	<ul style="list-style-type: none"> Advance Directive Allergy/Drug Sensitivity Comment Condition Encounter Healthcare Provider Immunization Information Source 	<ul style="list-style-type: none"> Insurance Provider Language Spoken Medication – Prescription and Non-Prescription Person Information Pregnancy Procedure Support Vital Sign
DR06	Health Plan Eligibility Information, including (but not limited to):	
	<ul style="list-style-type: none"> Health Plan related patient demographics (First name, last name, date of birth, health plan member ID) Co-pay Deductibles Limits, and exclusions 	<ul style="list-style-type: none"> Procedure or services coded values Effective date of health insurance coverage actually in operation and in force <p>Note: DR06 is only for the purposes of verifying authorization and eligibility.</p>
DR17	Decision Support Data, including (but not limited to):	
	<ul style="list-style-type: none"> Medication reconciliation Clinical protocols Administrative protocols (e.g., Insurance) 	<ul style="list-style-type: none"> Diagnosis Laboratory results <p>Note: This is a Gap</p>
DR43	Emergency Communications System (ECS) and On-Site Billing Support Report, including (but not limited to):	
	<ul style="list-style-type: none"> Episode of care report Location of incident 	<ul style="list-style-type: none"> Location of patient Hospital patient was taken to Other transportation information in addition to the clinical summary
DR44	Emergency Contact Information (ECON): Emergency Contact Information and other relevant information as specified in the minimum ECON Data Set* as follows:	
	<ul style="list-style-type: none"> Unique ECON Identifier: <ul style="list-style-type: none"> 17 Digit Vehicle Identification Number (VIN#) linked to Emergency Contact Information Driver's License Number (DL#) linked to Emergency Contact Information and/or <ul style="list-style-type: none"> Other Unique ECON Identifier 	<ul style="list-style-type: none"> Name of Emergency Contact Telephone number of Emergency Contact <p>Note: The ECON Identifier is not a Unique ID linked to an individual, it is a Unique ID linked to emergency contact information.</p> <p>*Note: The ECON Data Set is in the process of being defined. Please see gap table in Section 4.2 for more information.</p>
DR45	Incident Information from Third Party Provider: Incident Information from Third Party is provided, which may include:	



Data Requirement Number (DR)	Description	
	<ul style="list-style-type: none"> • GPS location • Vehicle Identification Number (VIN) • Timestamp • Vehicle crash sensor information • GPS location • Sensors, e.g. Insulin monitor • Heart Monitor • Linkage to medical records • Timestamp 	<ul style="list-style-type: none"> • Vehicle crash sensor information • Voice call • Family contacts • Other Third Party services • Consumer fall alert <p>Note: Data will be provided by a variety of third parties, including automaker Telematics Service Provider (TSP) such as:</p> <ul style="list-style-type: none"> ○ General Motors OnStar ○ Mercedes-Benz TeleAid ○ Ford SYNC
DR46	Medical Life Support Monitor Data, including (but not limited to):	
	<ul style="list-style-type: none"> • Vital Signs • Heart Monitor/EKG • Pulse Oximetry (Oxygen levels) 	<ul style="list-style-type: none"> • Respirator • IV pump <p>Note: This DR includes devices for life support/remote monitoring used in ambulances, Emergency Departments, intensive care wards and others.</p>
DR48	Present Episode of Care (ECS) – ECS and On-Site information is provided, including (but not limited to):	
	<ul style="list-style-type: none"> • Present Episode of Care – ECS and On-Site • Complaint (current problem) • Content of 9-1-1 voice call • Mechanism or cause of injury or illness (Chemical spill data, car crash data) • Assessments and Trends <ul style="list-style-type: none"> ○ Vital signs ○ Pain status ○ Glasgow Coma Scale ○ Triage category ○ Testing ○ Other 	<ul style="list-style-type: none"> • Decision Support Information <ul style="list-style-type: none"> ○ URGENCY ○ Other • Treatment <ul style="list-style-type: none"> ○ Meds Administered ○ Procedures ○ Other • Outcomes • Disposition/Plan of Care <p>Note: Data On-Site reporting is defined by the National EMS Information Systems (NEMSIS). For more information refer to the constructs referenced in Table 6.4.-1. (gap in constructs)</p>
DR51	Public Health Data	
	Information to be provided to public health agencies	
DR52	Public Health Protocol	
	Question lists provided by public health to emergency response staff	
DR53	Resource Utilization: Resource Utilization, including (but not limited to):	



Data Requirement Number (DR)	Description	
	<ul style="list-style-type: none"> • Admissions last 24 hours • Discharges last 24 hours • Deaths last 24 hours • Clinical Status • Facility Status • Facility Operations • Staffing • Decontamination Capacity • EMS Traffic Status • Bed Status 	<ul style="list-style-type: none"> • EMS Capacity • EMS Census • Adult ICU • Medical Surgical • Burn • Pediatric ICU • Pediatrics • Negative Flow Isolation • Available Ventilators • Operating Room status • Staff Availability
DR54	Situational Awareness Information: Situational Awareness information is provided, including (but not limited to):	
	<ul style="list-style-type: none"> • Situation • Patient(s) 	<ul style="list-style-type: none"> • Resources
DR61	Present Episode of Care – Emergency Care: Present Episode of Care – Emergency Care information is provided, including (but not limited to):	
	<ul style="list-style-type: none"> • Present Episode of Care – Emergency Care • Complaint (current problem) • Mechanism or cause of injury or illness (Chemical spill data, car crash data) • Assessments and Trends <ul style="list-style-type: none"> ○ Vital Signs ○ Pain Status ○ Glasgow Coma Scale ○ Triage Category ○ Testing ○ Other 	<ul style="list-style-type: none"> • Decision Support Information <ul style="list-style-type: none"> ○ URGENCY ○ Other • Treatment <ul style="list-style-type: none"> ○ Meds Administered ○ Procedures ○ Other • Outcomes • Disposition/Plan of Care <p>Note: Data for Emergency Care is defined by the IHE Emergency Department Encounter Summary (EDES). For more information refer to the constructs referenced in Table 6.4-1.</p>
DR62	Present Episode of Care – Definitive Care: Present Episode of Care – Definitive Care information is provided, including (but not limited to):	
	<ul style="list-style-type: none"> • Present Episode of Care – Definitive Care Facility • Complaint (current problem) • Mechanism or cause of injury or illness (Chemical spill data, car crash data) • Assessments and Trends <ul style="list-style-type: none"> ○ Vital Signs ○ Pain Status ○ Glasgow Coma Scale ○ Triage Category ○ Testing ○ Other 	<ul style="list-style-type: none"> • Decision Support Information <ul style="list-style-type: none"> ○ URGENCY ○ Other • Treatment <ul style="list-style-type: none"> ○ Meds Administered ○ Procedures ○ Other • Outcomes • Disposition/Plan of Care



Data Requirement Number (DR)	Description	
DR63	Common Alerting Protocol content	
	<ul style="list-style-type: none"> Incident alerts, e.g., "Chemical spill has occurred, large number of casualties expected" Weather warnings 	<ul style="list-style-type: none"> Traffic warning
DR64	Agency Locator Registry: Agency Locator Registry, including (but not limited to):	
	<ul style="list-style-type: none"> Agency and services offered by area Supervisory and contact information Incident Type 	<ul style="list-style-type: none"> Incident jurisdiction and interest areas Agency role Electronic addresses for information receipt
DR65	Agency Authorization List: Agency Authorization List, including (but not limited to):	
	<ul style="list-style-type: none"> Recording of the specific, Graphical Information Services (GIS) based rules and policies 	<ul style="list-style-type: none"> List of organizations/roles that are allowed to send and receive messages for a particular geographic area, for different incident types and roles <p>Note: Dynamic allocation of roles and authorizations based on incident type and time and break-glass is necessary</p>

Table 2.2.2-2 below contains an extraction of the Information Exchange Requirements from the Use Case. These requirements are referenced from the Information Exchange Requirements column of the Use Case Mapping Table 6.2-1 provided in Section 6.2

Table 2.2.2-2 Information Exchange Requirements (IER)

Information Exchange Requirement Number (IER)	Description
IER10	Identify patient
IER14	Send/receive/request health plan eligibility: Identify and verify eligibility from Health Plan
IER15	Send/receive/request health plan authorization: Obtain authorization for service from Health Plan
IER16	Send/receive clinical summary
IER17	Send/receive transfer of care data
IER25	Send/receive decision support data
IER27	Send non-patient notification message or alert: For example, (e.g., patient en route)
IER46	Send/receive emergency contact information
IER47	Send/receive information provider data: For example, e.g., telematics
IER48	Send/receive device data
IER50	Send/receive public health data
IER51	Send/receive public health protocol
IER52	Send/receive billing support report
IER53	Send/receive situation report
IER59	Send/receive present episode of care



Information Exchange Requirement Number (IER)	Description
IER60	Send/receive discharge summary: Send/receive discharge/transfer information to personally controlled health record
IER65	Send/receive agency distribution list
IER66	Send/receive agency authorization

2.2.2.1 Data Issues Identified in Use Case

Inherent in the ER-EHR Use Case is the premise that some of the issues and obstacles in today's environment will be addressed through health information technology, message and taxonomy standardization and harmonization activities, policy development, establishment of interoperability policy making bodies at all levels of government representing the full range of safety professions, and other related initiatives. This is not an all-inclusive attempt to cross reference every issue to an information flow. The goal is to point out some practical situations in which an issue or obstacle would arise.

Table's 2.2.1-1, 2.2.1-2 and 2.2.1-3 specify the following issues related to the Use Case scenario perspectives (On-Site, Emergency Care and Definitive Care).

Regulatory or Policy

1. Current policies and regulations are not always considerate of emergency care. As an example, the disaster response to Hurricane Katrina showed some of the policy issues that impact accessing and sharing patient-specific health information, such as a Personal Health Record (PHR), in an emergency. Some issues include:

- The need for the timely development of business associate or other agreements by entities wishing to share patient-specific health information during an emergency can be challenging
- This should include the sharing of License, Credentials and or Privileges across geo-political boundaries and healthcare facilities. In many cases, depending on the scale of the event, these can or will be contained on or in the badge. HITSP provides constructs to enable these security safeguards but does not address the policies that dictate emergency access privileges. Policies must be agreed upon at the geo-political boundaries and healthcare facilities.
- This should include the establishment long, before a disaster event, of standardized, shared core services (also known within HITSP as infrastructure services), including registry of organizations, identity management/access control, and data rights management. Because of the impossibility of negotiating rights on a reciprocal basis between the tens of thousands of organizations that form the pool from which interoperability is required, rights should instead be based on standardized roles (e.g., hospital emergency department, 9-1-1, EOC, EMS unit responding to the incident, EMS in mutual aid area, law enforcement responding to the incident, etc)
- Variations in local policies and state security and privacy regulations impact the ease of cross-jurisdictional sharing of protected health information. The core services affecting rights therefore need to allow policy making entities to record differences based on jurisdiction as well as incident type



- In states such as Florida, there are over 1.2 million licensed drivers that have already linked their emergency contact information to their driver's license number (DL# ECON). It is important that the DL# ECON and VIN# ECON data Interoperability Specifications include validated identities and real time audit functions to ensure authorized motor vehicle owner consents have been authenticated and access privileges granted for a 'break the glass event' so on-scene responders can securely access and exchange a non-responsive crash victim's ECON/PHR/EHR data linked to a unique ECON identifier (i.e., vehicle identification number (VIN#) and/or driver's license number (DL#) at the scene of a motor vehicle crash.
- Whenever emergency access of a healthcare record occurs this should generate a detailed audit trail using HITSP/T15 Collect and Communicate Security Audit Trail – record audit event in a repository.

2. There is widespread and fundamental misunderstanding by emergency practitioners of HIPAA's treatment of medical information in general and emergencies in particular. For example, most are not aware there is a complete exemption in HIPAA for care providers treating a patient involved in an emergency situation. HIPAA was designed to stop abuses, not to be a barrier to providing care to patients in emergencies. There is widespread misunderstanding of how data sharing systems can and should improve patient privacy over today's voice and paper-based methods.

Patients may have concerns about privacy if information about their care in an emergency situation is shared inappropriately. However, ECS and on-site care providers (EMS, Law Enforcement and Fire Department) and clinical care personnel involved in emergency care activities may need to have the capability to "break the glass" in order to gain access to patient-specific historical health information, such as a Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). This has immediate relevance to the clinician's decisions about the care needed or to facilitate family member reunification and expedite next-of-kin notification to reach emergency contacts that have knowledge about certain basic aspects of the patient's health, such as pre-existing conditions, allergies, past episodes of care, current medications, primary care physician, etc. HIPAA allows this, but many practitioners are not aware, or are governed by excessively conservative institutional policies.

Data

3. Data exchanges are hampered by lack of harmonization of the data sets needed to support emergency response, the underlying data definitions, the minimum data required, and inconsistent implementation of existing data standards. This is particularly true between emergency response functions (e.g., Law Enforcement to EMS, EMS to Definitive Care; 9-1-1 to EMS to EOC). Likewise, many existing systems currently supporting emergency responses have not developed interfaces to convert their internal, proprietary coding into standard formats and terminology developed for all safety domains, even where those exist. This issue applies to emergency messaging in general, and to specific substantive areas such as patient information, situational awareness messages, and information describing the resources available to support an emergency response effort (e.g., clinician availability, stockpile inventory, pharmacy inventory, and hospital bed availability).



4. Methodologies for identifying and unambiguously matching patients and their information may vary from system to system, resulting in incomplete access to information at various points in the information exchange.

Authentication and Authorization

5. The lack of technologies to provide core services for inter-organizational interoperability (specifically access control/identity rights management, organizational registry, and data rights management) and the lack of standards for them impose significant costs in money and inefficiency. We lack the technical core service tools, but that is just the first part. Those software core services need to be populated with policies and rules based on the roles of organizations in emergency response. In many areas we still need to establish interoperability policy making bodies at all levels of government representing the full range of safety professions.

We then need ways to enforce those policies. Mechanisms to audit access to patient-specific historical health information, such as a Personal Health Record (PHR), Emergency Contact Registry (ECON), and/or Electronic Health Record (EHR) data across multiple organizations, geographic regions or health information service provider markets are not available. While a local market health information service provider will have the audit data for their own market, mechanisms to create an integrated view of who has accessed patient-specific information across multiple markets will be challenging. Agreed upon standards for audit-related data and standards for exchanging audit information among networks are needed. This need emerges in larger scale incidents during which patients are transported across market boundaries.

Similarly, mechanisms to verify the license, credentials and privileges of a clinical care provider at the scene of an incident or medical treatment facility may not be available to incident control personnel. This becomes most relevant in larger-scale incidents during which personnel from out-of-region arrive on-scene to provide medical care and need to be quickly identified and given permission to enter the scene.

6. Even if a clinical care provider has been issued authentication credentials by a local market health information service provider to access network resources, mechanisms to disseminate those authentication and authorization credentials to all health information service providers in an emergency may not be available.

Technology

7. In general, the emergency response professions have not been focused on sharing data in their response to emergencies. At the present time, real time communications to and from 9-1-1, and to and from Law Enforcement and EMS, are primarily voice transmissions. Information technology has typically been restricted to internal use and after the fact record keeping and reporting. Therefore it is often the case that agencies do not have broadband connections; their software applications (e.g., Computer Aided Dispatch) are unlikely to be set up to exchange data with external parties, much less have interfaces and use new standardized message sets.



As the costs of information and communications technology are typically borne by each individual agency or profession (rather than shared networks and applications), replacement of technology is slow and relatively expensive. Perhaps more importantly, this balkanization means there is no “single place”, single agency, charged with building, owning and operating an integrated overall emergency medical system. Therefore there is no single agency or place where systemic financial and service delivery advantages of interoperability and shared systems, such as an expected lower total cost of ownership, can be envisioned, planned and deployed, much less measured.

8. There are likely to be varying levels of technical infrastructure available to those participating in an emergency response situation. This could be a consequence of the nature of the incident (e.g., electrical power failure) in which certain capabilities are degraded, or the absence of certain capabilities in the infrastructure supporting a specific response group (e.g., no wireless infrastructure capability), or a variance in the ability of agencies to acquire new technology.

Workflow and Ease of Use

9. The scale and complexity of an incident may impact the ability of a provider to effectively utilize patient-specific historical health information (i.e., Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR)) without adversely affecting the pace of providing patient care. There could be situations in which some steps in the Use Case information flow may be difficult or even impossible to perform, resulting in the clinical care providers utilizing alternative information gathering and communication mechanisms which may not be readily integrated with these information tools.

Stand alone EMS-only, or mass casualty-only emergency patient record systems have had limited acceptance. Initial field experience with field information technology systems has shown that adoption and use will be greatest if patient information systems are used and have value in day to day emergency medical events, not just disasters. And, in addition

- (a) There is a strong focus on user needs, especially ease of use
- (b) Information useful to the user is pre-populated from 9-1-1, Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR), and other sources (such as prior ambulance transports of that patient)
- (c) Physical entry requirements for responders who need to use their hands for patient care are minimized (maximizing use of voice to text technology and automatic integration of sensor data, such as data from blood pressure and pulse ox devices)
- (d) Economic and financial benefits are achieved, not just care improvements.

2.2.3 IDENTIFICATION OF BUSINESS ACTORS, MAPPED TO REQUIREMENTS

A Business Actor is an abstraction instantiated as an IT system application used by a Stakeholder in the exchange of data necessary to complete Use Case action(s); a Business Actor is not a Stakeholder. A HITSP Stakeholder is a person, organization or “personified system” that performs actions in a use-case. Only Business Actors as an IT system application are directly engaged, and benefit from the real world



information exchange defined within a business Use Case action. Only Business Actors are associated with Technical Actors, which support the data exchanges of the Business Actors (see Section 3.2 for Technical Actors). The table below identifies the significant Use Case Business Actors, their descriptions, the Stakeholders they support, the Use Case scenarios, and the information exchange or data requirements for which they are used. Refer to the Use Case for a more detailed description of the listed stakeholders.

Note that all the business actors in the table below use the services provided by the Infrastructure Services business actor. Infrastructure services are also known as core services.

Table 2.2.3-1 Business Actors

Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
Provider 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	Administrative and Financial Staff	2, 3	IER14 Send/receive/request health plan eligibility	DR06 Eligibility and Authorization information
		Care Coordinators Clinical Support Staff Healthcare Entities Health Information Management (HIM) Personnel		IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information
Emergency Communications System (ECS)	This business actor is a technical and architectural convenience representing four primary functions: the 911/Public Safety Answering Points (PSAP), Dispatch, and Emergency Operations Centers within the scenarios, along with the external public and private information sources to which they have access, or which access them. In some jurisdictions the location and staff of these functions may be the same. For example, the 911 call center and dispatch are very often co-located, and in small communities, often also	9-1-1/Public Safety Answering Points (PSAP),	1,2,3	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		Dispatch		IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		Emergency Operations Centers (EOC)		IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
		External Public and Private Information Sources		IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
	functions as the EOC in disasters: <ul style="list-style-type: none"> • 9-1-1 • Dispatch • Emergency Management • Private sources of information (e.g., OnStar) • Supporting IT systems 			IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
				IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
				IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
				IER25 Send/receive Decision Support Data	DR17 Decision Support Data
				IER10 Identify Patient	DR01 Demographic Data
				IER50 Send/receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
				IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
				IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol Content
				IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
				IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
				IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
Health Plan System	Systems used by health plans that include administrative and financial functions associated	Care Coordinators Healthcare	2,3	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
	with the coverage and financing of healthcare for the health plan's enrolled members. These functions include information regarding the individual's enrollment, eligibility, coverage and benefits, authorizations, claims, care coordination and other information related to the member	Entities		IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
Electronic Health Record (EHR) System	The Electronic Health Record (EHR) System is a secure, real-time, point-of-care, patient-centric information resource for clinicians	ECS Staff	1,2,3	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		EHR - On-Site		IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		EHR - Other		IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
		EHR - Clinician		IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care - ECS
		EHR - ED			DR61 Present Episode of Care - Emergency Care
		ED Staff System			DR62 Present Episode of Care - Definitive Care
		Public Health Agencies			DR02 Patient Clinical Summary
		Appropriate Shared (HIS) Repositories		IER60 Send/receive Discharge Summary	
		Another Facility		IER53 Send/receive situation report	DR53 Resource Utilization DR54 Situational Awareness Information
		Medical Examiner (ME)		IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
				IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
				IER25 Send/receive Decision Support Data	DR17 Decision Support Data
				IER10 Identify Patient	DR01 Demographic Data



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
				IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
				IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
				IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
				IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
				IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol Content
				IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
Emergency Contact Registry (ECON)	An organized system for the registration, storage, retrieval, and dissemination of emergency contact information for individual persons. The registry contains a person's emergency contact name(s) and contact phone number(s) to assist with unidentified person identification, facilitate family member reunification and expedite next-of-kin notification. The registry responds to unique identifier (e.g., motor vehicle VIN#) queries for emergency contact information. The emergency contacts may provide additional knowledge about certain aspects of a person's health, such as pre-existing conditions, allergies, medications, primary care physician, etc. The registry may also provide an electronic 'pointer' to the availability and location of a person's Personal Health Record (PHR)		1,2	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
Clinical Decision Support Systems	Systems that help clinicians avoid adverse events through prompts and advisory messages. The clinician may also have access to relevant reference information		1,2,3	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
Medical Device	A device that provides measurements from a patient		1,2,3	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
Personal Health Record (PHR) Systems	A healthcare record system used to create, review, annotate and maintain records by the patient or the caregiver for a patient. The PHR may include any aspect(s) of the health condition, medications, medical problems, allergies, vaccination history, visit history or communications with healthcare providers		1,2,3	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
				IER17 Send/receive transfer of care data	DR02 Patient Clinical Summary
				IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
				IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
				IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
				IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
				IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
				IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
				IER25 Send/receive Decision Support Data	DR17 Decision Support Data
				IER10 Identify Patient	DR01 Demographic Data
				IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
Public Health Information System	An automated and integrated system used to document and address information of interest to public health. Local, state, and federal government organizations and personnel use these systems to help protect and improve the health of their respective constituents. A critical effort under this charge is collecting health information to monitor for the existence of emerging health threats appearing in the population and manage these threats once manifested. The staff of these agencies interacts with the public health information system to verify and validate system indications of public health threats, and to assert acknowledgements that may be required by system processes		1, 2, 3	IER50 Send/receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
				IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol



Business Actor	Description	Supported Stakeholders	Use Case Scenario	Information Exchange Requirement Numbers (IER)	Data Requirement Numbers (DR)
Information Service Provider	An incident-driven, third party source of medically related information (e.g.; Home health monitors, Telematics Service Providers)		1	IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
Infrastructure Services	<p>This business actor groups the services that are necessary to support the Use Case, such as:</p> <ul style="list-style-type: none"> • PID service • Locator service • Registry service • Data repository • Security and privacy services <p>These services don't need to be implemented in any one particular location. The actual deployment of the services would be highly influenced by implementation needs and policies.</p> <p>Note: This actor includes what is also known within HITSP IS04 ER-EHR as Core Services</p>	Potentially All	1,2,3	Potentially All	Potentially All

2.2.4 HIGH-LEVEL DIAGRAMS

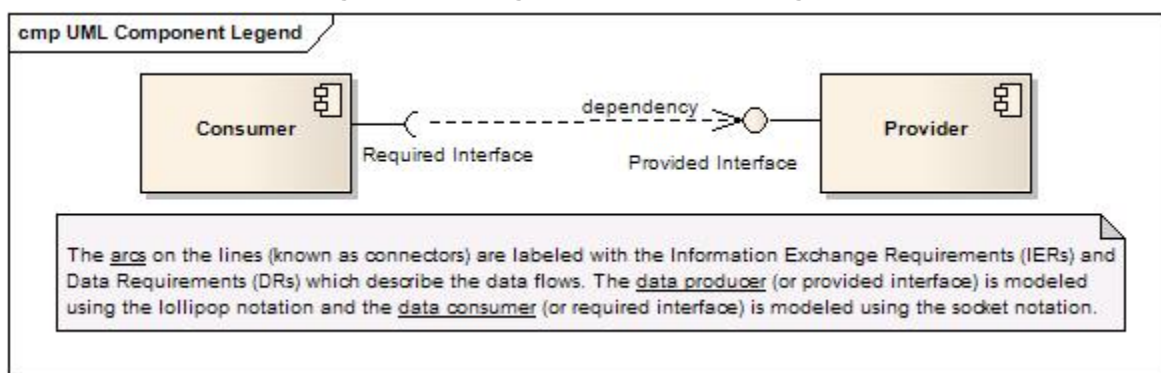
Section 6.3 provides High Level Sequence Diagrams to illustrate each Use Case scenario with a representation of a normal sequence of exchange between the primary actors.

High Level Sequence diagrams are provided in Section 6.3 that illustrates each Use Case scenario with a representation of a normal sequence of exchange between the primary actors. The interactions are supported by the various constructs which will be introduced in Section 3.0 of this Interoperability Specification.

The figures below are Component Data Flow diagrams that illustrate the data flow and information exchanges between the primary HITSP Business Actors. The information exchange and data requirement numbers from tables in Section 2.2.2 are annotated on the diagrams to show how the requirements relate to the primary actors. The in-scope requirements are supported by constructs which will be introduced in Section 3.0 of this Interoperability Specification. Figure 2.2.4-1 is a legend for reading the Component Data Flow diagrams.



Figure 2.2.4-1 Legend for Component Diagrams

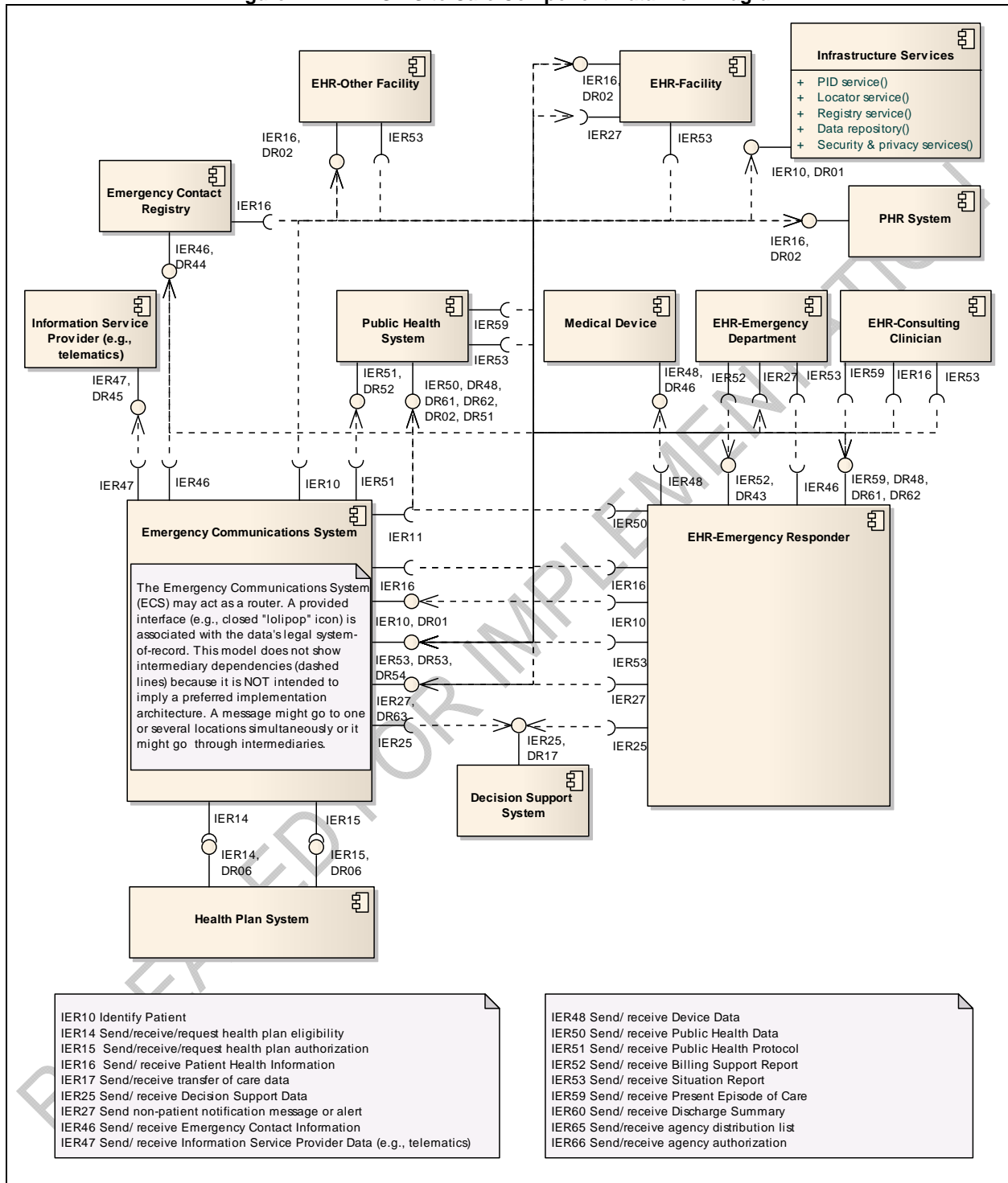


Note that the infrastructure services business actor groups the services that are necessary to support the use-case but don't need to be implemented in any one particular location (e.g., security). The actual deployment of the services would be highly influenced by implementation needs and policies. They are NOT shown on the Figure 2.2.4 diagrams, because they can be placed anywhere. Also note that this actor includes what is also known within IS04 ER-EHR as Core Services.

2.2.4.1 On-Site Care Scenario Perspective Business Sequence Diagram Figure 2.2.4.1-1 illustrates the scenario perspective of On-Site Care.



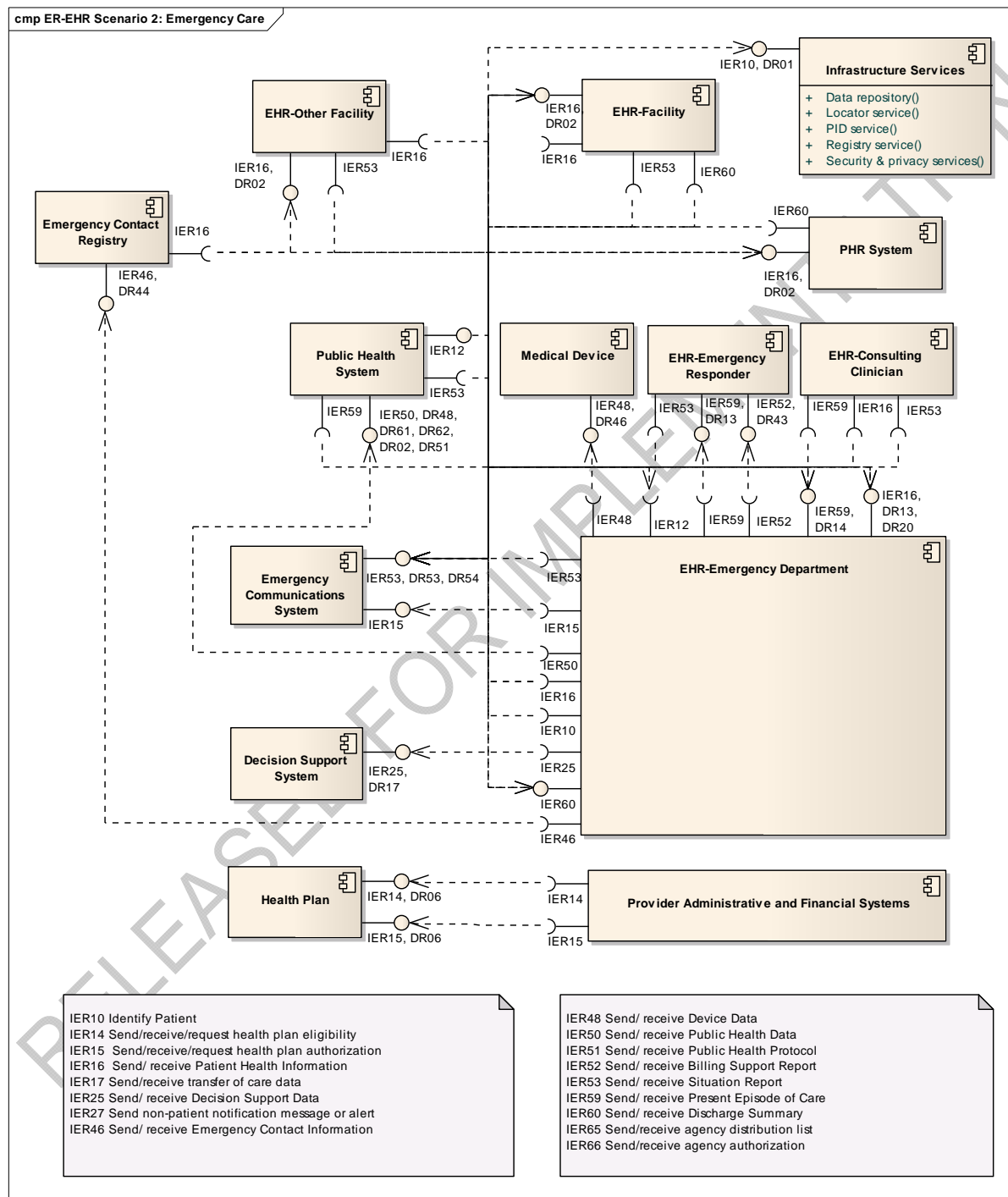
Figure 2.2.4.1-1 On-Site Care Component Data Flow Diagram



2.2.4.2 Emergency Care Scenario Perspective Business Sequence Diagram

Figure 2.2.4.2-1 abstracts out workflow and focuses on Business Actors and their data flows.

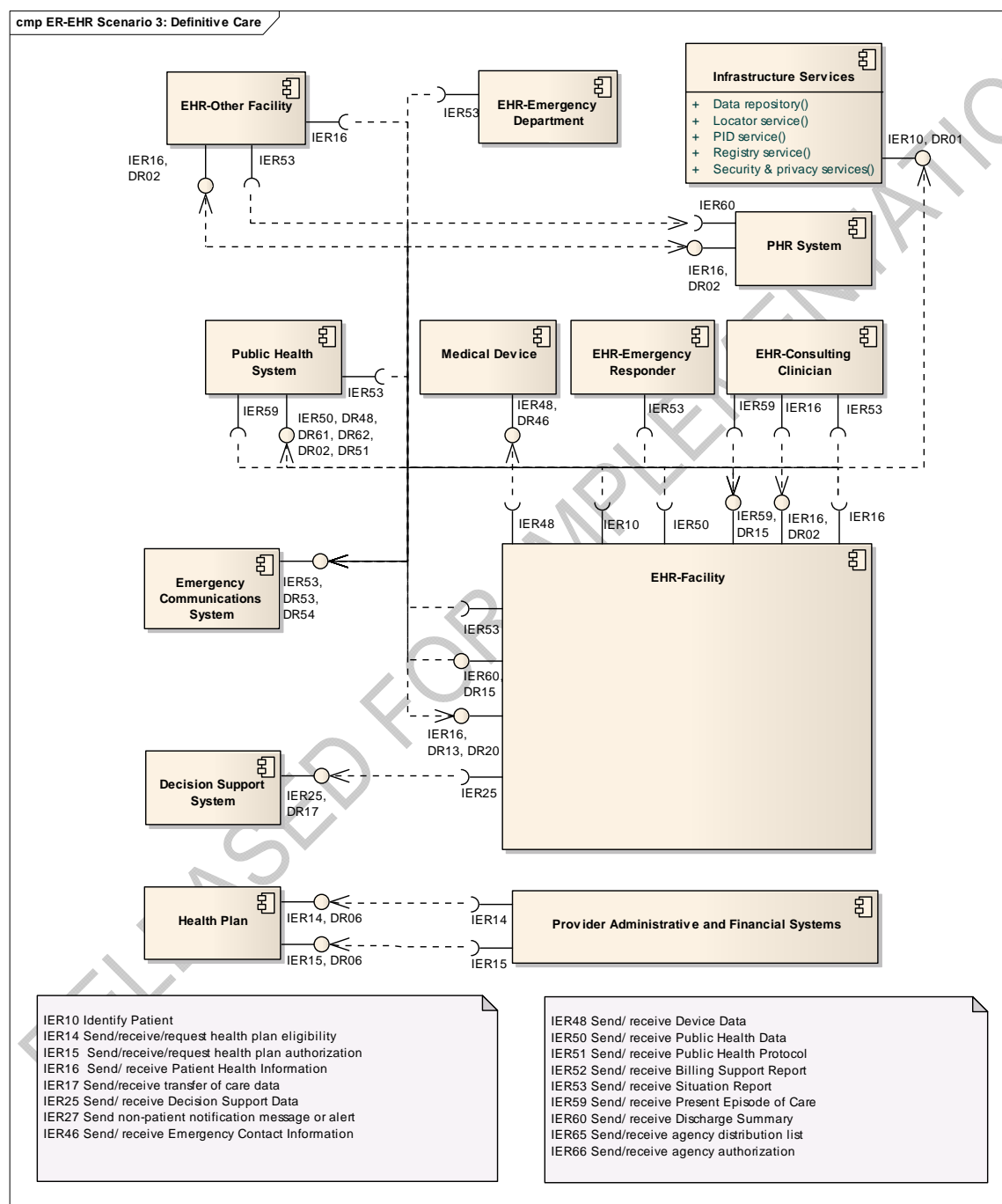
Figure 2.2.4.2-1 Emergency Care Component Data Flow Diagram



2.2.4.3 Definitive Care Scenario Diagram

Figure 2.2.4.3-1 abstracts out work flow and focuses on Business Actors and their data flows.

Figure 2.2.4.3-1 Definitive Care Component Data Flow Diagram



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 design based on the specified Business Actors and their Information Exchange and Data Requirements. It provides a detailed mapping of the specified requirements to HITSP constructs and their Technical Actors, groupings of specific Technical Actors which support Business Actors are specified to further describe the relevant interactions from 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.

Sharing of data across medical and non-medical professions requires agreement and use of a set of messaging standards, common terminology, messaging protocols and core services between medical, EMS, public health, 9-1-1, emergency management, fire services, law enforcement and other actors at local, state and federal levels. Some of these messaging standards and common terminology exist today, but have not been widely adopted. The rest need to be developed and/or deployed outside as well as inside the healthcare domain. This may require cross domain translation services among standardized healthcare transport and vocabulary and other domains' standardized transport and vocabulary. This IS does not address the standardization of non-healthcare domains.

All ER-EHR exchanges of clinical summary information use the HITSP/C32 Summary Documents Using HL7 Continuity of Care Document (CCD). The HITSP Technical Committee has identified the key capabilities (new or modified HITSP constructs) that are necessary to support this version of ER-EHR requirements of the Use Case. These capabilities have been identified out of the pool of considerations as the minimum necessary to effectively support the listed perspectives and events of the Use Case.

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
HIPAA policy compliance is maintained by all organizations handling patient data	1, 2, 3
Situation reports and patient information are periodically sent to public health agencies, ECSs and appropriate other actors and locations, whenever that information is available and/or needed.	1, 2, 3
Event 6.3.2.2 is identified as "Access PHR other Archival Information." This specification only defines the PHR document to retrieve (HITSP/C32-Summary Documents Using HL7 Continuity of Care Document (CCD)). Other archival information may be accessible to the EHR but that is an internal function outside the scope of this Interoperability Specification.	3
As appropriate, education may be part of Treatment for Data requirement 13, 14, and 15	1, 2, 3
Systems store patient data as an encounter. A patient has one to many encounters linked into episodes of care. Each encounter holds documents. Each document holds data. This is analogous to each encounter being a report holding many paper document sections and each document section containing many data pieces. An episode of care contains many reports on the same incident. The file folder also contains incident information on the same topic (e.g., patient). We assume data are communicated in both document and message forms	1, 2, 3
Individual and organizational communications modalities other than telephone and public safety radio exist. These include personal devices such as PDA, IM, P25 and/or, 2G, 3G and 4G wireless data devices, as well as computers linked by broadband between organizations. These devices can be used to exchange information when implementing the Use Case. The various headquarters and offices of the emergency response professions (e.g., ECS, EMS, hospitals, public health) will need to be linked to broadband backbones – as most are not today. The key to success rests on making the systems and software of various professions interoperable with each other and the private sector at the TCP/IP transport level, at the transaction level, at the data level and at the vocabulary level. Communications modalities are out of scope of the ER-EHR. We assume the TCP/IP transport level is universally provided.	1, 2, 3
A wide variety of actors need access to some or all of the data generated by an incident. First, organizational actors need to be able to register their desire to receive/have access to certain kinds of incidents and portions of the total data (patient, situational awareness, etc). Then there need to be role-based access control and data rights management core service applications to govern that access. These core services need to be standardized, and separated from proprietary systems, so they can be shared: i.e. a common access rights management system for each community	

3.1.2 CONSTRAINTS

This section describes the constraints that limit the context in which the Interoperability Specification may be used. 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 context. 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 context.

Table 3.1.2-1 Constraints

Constraint	Use Case Scenario
<p>Discharge messages and documents are not anonymized for transfer of patients (unless to Public Health facilities or the emergency management functions of ECS).</p> <p>Note: Only some ECS messages would be anonymized. Emergency Call Center 9-1-1, dispatch, and EMS support would not be anonymized. Emergency management deals in aggregates, so data would be anonymized</p>	1,2,3



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
The transport network infrastructure is TCP/IP: The actors systems are all connected to Internet protocol broadband networks. Organizations have network gateways; individuals may have appropriate networked mobile devices. All non-IP devices or communications systems have gateways to convert those communications into IP	All
Those networks are governed by standards-based industry and open, service-oriented architectures that are network-centric	All
Within networks there are standardized and shared services that enable secure, appropriate, and accurate information exchanges across data sources and systems to view and use the data. These are functionally external to proprietary messaging or customer premises applications. They include, but are not limited to a variety of enterprise services, including core services to: <ul style="list-style-type: none"> a. identify and authenticate users b. identify and determine providers of care c. record and enforce access control and data access policies d. ensure that the data are true copies of the data as attested by the source e. correctly match patients with data about them across systems f. log transactions and provide an audit trail g. identify data sources, including but not limited to patient-specific historical health information provider (i.e., Personal Health Record (PHR), Emergency Contact Registry (ECON) and Electronic Health Record (EHR) systems h. register organizations and their interest in receiving various kinds of incident data, including patient information 	All
Core pre-hospital datasets are standardized and adhered to	All
Other organizations may be queried for data and matching to the patient <ul style="list-style-type: none"> a. Emergency response organizations b. Individual medical sources c. Private sector sources 	All
Business, billing, insurance, and related economic issues are resolved in ways that support the sharing of information as described herein	All
Support the technical measures to ensure Security and Privacy of consumer/patient health information	All
Authentication service to authenticate requestors and/or data submissions from various locations	All
Appropriate standards protocols, patient identification methodology, consent, security and privacy procedures, will be agreed to by all relevant participants	All
Security and Privacy policies, procedures and practices are commonly implemented to support acceptable levels of consumer/patient security and privacy data	All



Pre-condition	Use Case Scenario
Legal and governance issues regarding data access authorizations, data ownership, and data use are in effect	All
Support the following HITSP Security and Privacy constructs: HITSP/C19 - Entity Identity Assertion HITSP/T16 - Consistent Time HITSP/T17 - Secured Communication Channel HITSP/T15 - Collect and Communicate Security Audit Trail HITSP/TP30 - Manage Consent Directives HITSP/TP20 - Access Control	All

In order to implement the information interchange conforming to this Interoperability Specification and its constructs in a real world environment, the implementer must insure that the implementing systems operate within a secure infrastructure that insures the privacy, integrity and availability of all individually identifiable health information as prescribed by the Health Insurance Portability and Accountability Act (HIPAA), all other applicable laws and regulations and terms of any contracts and agreements. The information interchange standards may also assume that certain information technology infrastructure and functions are in place. These assumptions collectively are the general pre-conditions for conforming to this Interoperability Specification and its constructs.

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
The ECS system and On-Site care team (EMT, Law Enforcement, Fire Department) receive incident and patient-specific historical healthcare information that allows them to improve protocols and thus provide more informed and rapid response; the Emergency Department receives incident and patient data before arrival (i.e. traditional ambulance Patient Care Report (PCR) enhanced as described herein) that allows ED to provide more informed and rapid response. All actors save money by avoiding duplicative entry of the same data, and errors that result from that	1, 2, 3
On-Site care team (EMT, Law Enforcement, Fire Department) directly access and exchange patient-specific historical health information (i.e., Personal Health Record (PHR), Emergency Contact Registry (ECON), and/or Electronic Health Record (EHR) data) relating to the assessment, stabilization and treatment of the victims of emergency incidents, as well as, on a treatment non-interference basis, facilitate family member reunification and expedite next-of-kin notification following such incidents	1,2,
The Emergency Department and definitive care facility creates timely care and outcome summaries for the patient (e.g., clinical disposition reports)	2, 3
The patient is discharged from the ED or definitive care facility and the summary records are transferred to appropriate locations, including anonymized end-to-end data for overall research purposes	2, 3



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
An emergency incident occurs and a response agency is informed of it	1, 2, 3
A private sector sensor or source of information alerts ECS of an emergency and provides data about it	1, 2, 3

3.2 DETAILED DESIGN

This section provides 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 HITSP constructs used to meet the business and technical requirements for this Use Case. Any variances in the Security and Privacy implementation are also described here.

Note that with respect to Security and Privacy, 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 is offered by the basic use of HITSP/TP13 - Manage Sharing of Documents construct. A medium level of assurance is offered by the use of the HITSP/TP13 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 (PKI) (See TN900 for a discussion on the challenges with PKI's).

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 support real world Business Actor information interchanges (see Section 2.2.3 for Business Actor definitions). The table below identifies the Technical Actors and provides 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	Construct
Access Control Service	The enterprise security service that supports and implements user-side and service side access control capabilities. This service would be utilized by the Service User, and/or Service Provider	HITSP/TP20
Administrative Transport Client	A provider sending a request to a health plan has a client role	HITSP/T85
Administrative Transport Server	A health plan responding to a request from a provider has a server role	HITSP/T85
Alert Message Receiver	This actor receives notifications and emergency data from the Message Transmitter	HITSP/T63, HITSP/C82
Alert Message Transmitter	The holder of emergency data that is communicating that data to the message receiver	HITSP/T63, HITSP/C82
Audit Record Repository	Provides a repository for audit events	HITSP/T15
Audit Record Source	Creates and communicates an Audit Record to the Audit Record Repository on behalf of another actor that performs an action requiring logging	HITSP/T15
Consent Directive Requester	Access Consent Directives located through a Consent Registry from Consent Repositories	HITSP/TP30
Consent Originator	Captures consent directives and may publish the consent directive as a document. It is responsible for sending Manage Consent Directive Requests to a Consent Repository. It also supplies Metadata to the Consent Repository for subsequent registration of the Consent within a Consent Registry	HITSP/TP30
Consent Registry	Responsible for providing location information and sender notification regarding consent directives. The Consent Registry receives a Manage Consent Directive Metadata Request	HITSP/TP30
Consent Repository	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	HITSP/TP30
Content Consumer	Responsible for viewing, import, or other processing of content created by a Content Creator Actor	HITSP/C28, HITSP/C32, HITSP/C37, HITSP/C47, HITSP/C48, HITSP/C62, HITSP/TP30, HITSP/C84
Content Creator	Responsible for the creation of content and transmission to a Content Consumer	HITSP/C28, HITSP/C32, HITSP/C62, HITSP/C47, HITSP/C48, HITSP/C84



Technical Actor(s)	Actor Role	Construct
DNS Server	This actor has authoritative location information	HITSP/T64
Document Consumer	Queries a Document Registry for documents meeting certain criteria, and retrieves selected documents from one or more Document Repository actors	HITSP/TP13, HITSP/C19
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	HITSP/TP13, HITSP/C19
Document Repository	Server where the document (e.g., laboratory report) resides	HITSP/TP13, HITSP/C19
Document Source	Producer and publisher of documents and information. It is responsible for sending documents to a Document Repository. It also supplies metadata to the Document Repository for subsequent registration of the documents with the Document Registry Actor	HITSP/TP13, HITSP/C19
Eligibility Information Receiver	The system that initiates an inquiry to the Eligibility Information Source about an individual's insurance eligibility, coverage and benefits	HITSP/T40
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	HITSP/T40
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)	HITSP/C19
Information Receiver for Health Plan Authorization	The system that initiates a request to the Information Source for Health Plan Authorization about an individual's health insurance requirements to obtain an authorization approval for purposes of benefit coverage determination in order to refer the patient for healthcare services	HITSP/T68
Information Source for Health Plan Authorization	The system which holds and maintains the information regarding the individual's health insurance requirements related to an authorization for benefit coverage	HITSP/T68
Node	The originating or terminating point of information or signal flow in a telecommunications network. This actor is equivalent to the Secure Node in the IHE-ITI-TF ATNA transaction	HITSP/T17
Patient Demographics Consumer	Queries the Patient Demographics Supplier for a list of patient demographic information, if any, and receives a list of corresponding patient demographic information from the Patient Demographics Supplier	HITSP/TP23
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, maintains one or more Patient Information Sources of patient demographics data	HITSP/TP23
Patient Identifier Cross-Reference Consumer	Queries the Patient Identifier Cross-Reference Manager for a list of corresponding patient identifiers, if any and receives a list of corresponding patient identifiers from the Patient Identifier Cross-Reference Manager	HITSP/TP22
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 demographic information from the Patient Identity Source	HITSP/TP22



Technical Actor(s)	Actor Role	Construct
Patient Identity Source	Sends patient demographic information to the Patient Identifier Cross-Reference Manager when requested, assigns a unique identifier to each instance of a patient, and maintains a collection of identity traits	HITSP/TP23
Personnel White Pages Consumer	This actor has a use for information that can be found in the Personnel White Pages Directory	HITSP/T64
Personnel White Pages Directory	This actor has authoritative Personnel White Pages information on the human workforce members of the enterprise	HITSP/T64
Referral Dispatcher	This actor processes requests for consultation, and determines whether they can be accepted, declined, or deferred for human decision making	HITSP/T67
Referral Requestor	This actor generates the request for consultations	HITSP/T67
Responding Gateway	Supports all incoming inter-community communications	HITSP/TP13
Service Provider	Represents the system providing a service to all entities that need an assertion or authentication. The service (or assertion) provider is the trusted third party issuer of the trustable identity assertion	HITSP/C19
Service User	Represents any individual entity (such as a clinician or an EHR/PHR system) that needs to make a service request of a Service Provider. The Entity may also be known as a principal and/or entity, which represents an end user, an application, a machine, or any other type of entity that may act as a requester in a transaction. A principal is typically represented in a transaction with a digital identity and the principal may have multiple valid digital identities to use with different transactions	HITSP/C19
Time Client	Establishes time synchronization with one or more Time Servers using either the Network Time Protocol (NTP) or Simple Network Time Protocol (SNTP) algorithms. Maintains the local computer system clock synchronization with Universal Time Coordinated (UTC) based on synchronization with the Time Servers	HITSP/T16
Time Server	Provides Network Time Protocol (NTP) time services to Time Clients. It is either directly synchronized to a Coordinated Universal Time (UTC) master clock (e.g. satellite time signal) or is synchronized by being grouped with a Time Client to other Time Server(s)	HITSP/T16
Value Set Consumer	An actor that receives a specific, new, or updated terminology based on its OID, and possibly its version if the latter is available	HITSP/T66
Value Set Repository	An actor that has the role of providing the Resolved Value Sets	HITSP/T66

Note: The Document Registry and Document Repository technical actors may reside in many different real world business actors. For this table, they are shown in the Personal Health Record (PHR) but could reside in other business actors also (such as, ECS, ECON, EHR, RHIO/HIE, Other Facilities, etc). Similarly, the standardized core services can exist independently, or as part of a messaging provider, a document provider, or message broker service. It is not the intent of this document to illustrate the possible architecture variants, see the HITSP/IS03 Consumer Empowerment and Access to Clinical Information via Networks for real world examples.



3.2.2 CONSTRUCT REQUIREMENTS

This section incorporates the comprehensive business and technical requirements and a detailed specification of the transactions and information content specified to complete the information exchange actions identified in each Use Case scenario.

Table 6.4-1 (see Section 6.0) provides a mapping of the HITSP constructs that will be used in the design of the Interoperability Specification, and the data and information exchange requirements that are being satisfied by the construct. The requirements are limited to those that are deemed within scope for this Interoperability Specification, which are described in Section 3.1. Further details about the required technical actors, transactions, and content are also provided in the sections below.

The Unified Modeling Language (UML) sequence diagrams used in this section incorporate 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 the HITSP constructs listed). The detailed actor Transactions described in these diagrams show all common or independent technical actors, data, and the specific transactions from the HITSP constructs that are used for the Interoperability Specification.

Each Use Case scenario is shown in the Use Case sequence diagrams in Figures 2.2.4.1-1, 2.2.4.2-1 and 2.2.4.3-1. The detailed actor interactions are described in the HITSP constructs or referenced IHE Technical Framework specifications which show how the HITSP constructs are used to support the Interoperability Specification. These technical actor interactions are also shown in Figure 3.2.2. The level of detail of data exchanged between two PHRs, EHRs or between PHR and EHR systems depends upon information contained in these systems – and the information needs of the emergency responders given their different roles and needs in different circumstances. The need may be for one or more data elements, or alternatively for comprehensive information. The specification of the format and the content of the information to be exchanged are as specified in HITSP Components for content summarized below, or the subsets as specified in Table 3.2.3-1. Despite this detailed specification of data elements, some information exchanged may still require the personal assessment of the individuals conducting this information exchange which is pertinent to achieve semantic interoperability but is out of scope of this IS, e.g., the definition of problems as major medical conditions depends upon the clinical judgment of the consumer's trusted healthcare providers.

In order to initially populate the encounter record, we can either begin the entry of personal demographics (e.g., at 9-1-1, ECS) and share that with the healthcare providers, or request information, which can then be imported into the encounter record from a portable PHR or from one or more EHRs/ECONs/PHRs service providers. The exchange between any PHRs would be accomplished via the same process as that accomplished with EHRs.



Summary Documents Using HL7 Continuity of Care Document (CCD) Component

HITSP/C32 Summary Documents Using HL7 Continuity of Care Document (CCD) describes the document content that summarizes a consumer's registration and healthcare summary data information for the purpose of information exchange with a PHR and an EHR system.

NOTE: We are not describing the content of the EHRs/ECONs/PHRs, but the exchange of information among EHR/ECON/PHR systems.

The HITSP/C32 document consists of Content Modules that contain multiple data elements. The list of content modules is:

- Personal Information
- Languages Spoken
- Support
- Healthcare Provider
- Insurance Provider
- Allergies and Drug Sensitivity
- Condition
- Medications – Prescription and Non-Prescription
- Results – Laboratory
- Immunizations
- Encounters
- Vital
- Pregnancy
- Information Source
- Comments
- Advance Directives

HITSP/C32 as a whole contains a designated author that is the consumer and/or their designated agent, such as the parent of a minor child. Every content module, such as a medication, allergy, or problem, contains an author that defaults to the document author or authors unless otherwise specified. When data are copied from another source, such as medication history information from a PBM, the original source and author (such as the prescribing healthcare provider) shall be retained. A consumer shall only edit data that they entered themselves, but they may add a comment (for which they will be the author) to specific content modules in the record or delete any data element they wish to remove from their record. Users should be aware that changing consumer demographics or financial data may cause future consumer linkages and queries to fail. Requesting changes to data in external systems, such as a health plan system that would correct errors in a field, such as name, or indicate changes in address or phone number is not addressed by this specification and has been identified as a gap.



Laboratory Report Document

HITSP/C37 Laboratory Report Document describes the document content that summarizes a set of consumer's laboratory test results for the purpose of information exchange with a PHR system.

This document is intended to hold a complete set of laboratory test results (e.g., resulting from one or more orders). It allows the consumer to maintain the structured and coded form in his or her PHR system a laboratory report in a source attested manner (laboratory or EHR system where the report was created). The laboratory results section in HITSP/C32 serves a complementary purpose in allowing the patient's healthcare summary to include selected lab results relevant in the context of the summary (e.g., abnormal results that resulted in a specific diagnosis or in medication being prescribed).

Figure 2.2.4.1-1 Gives the On-Site Care Scenario Perspective Business Sequence Diagram. Figure 2.2.4.2-1 gives the Emergency Care Scenario Perspective Business Sequence Diagram and Figure 2.2.4.3-1 gives the Definitive Care Scenario Perspective Business Sequence Diagram. The supporting technical actor interactions are shown in the diagrams below.



Figure 3.2.2-1 On-Site Care Detailed Design Diagram Part 1 and Part 2

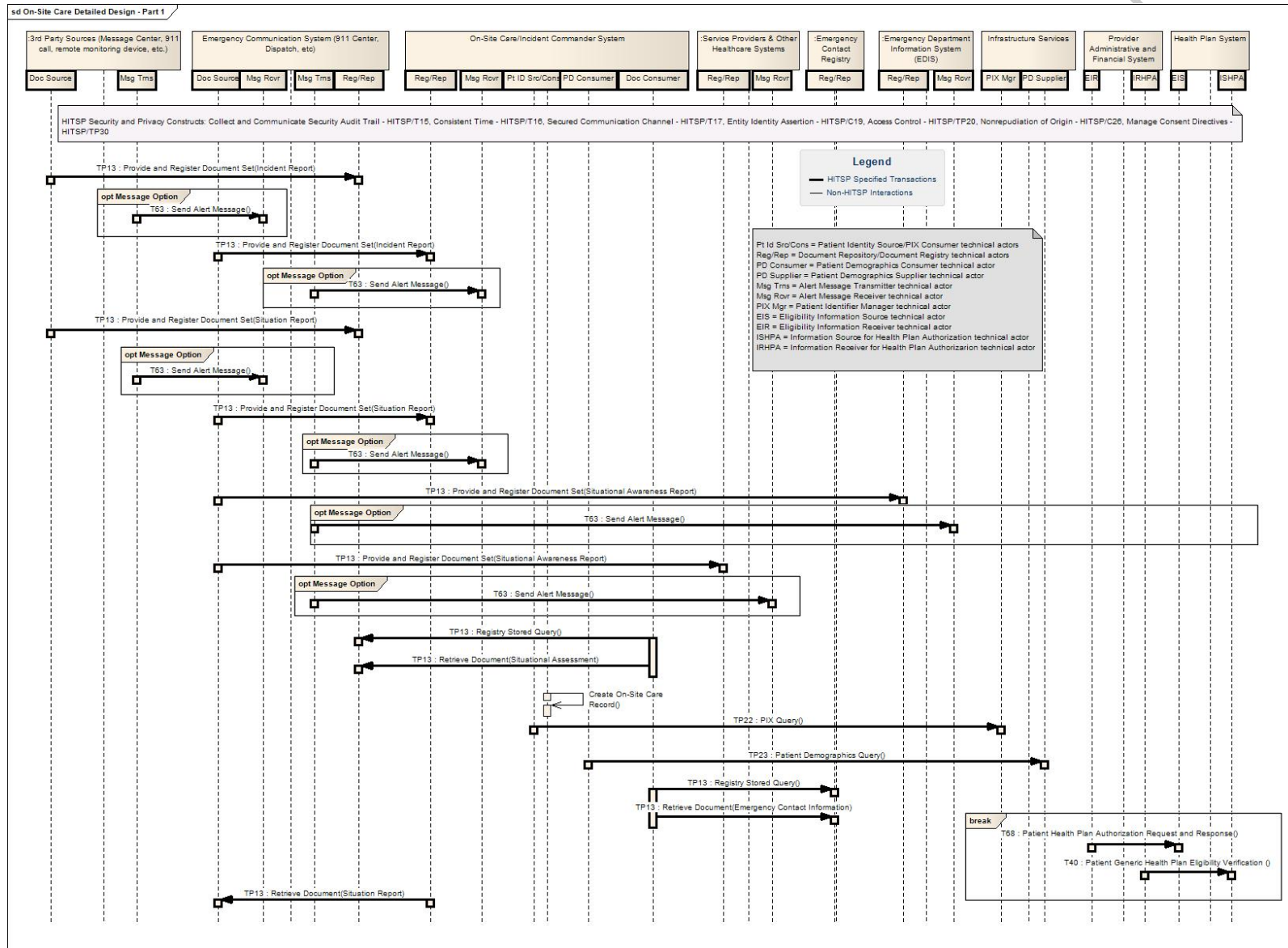


Figure 3.2.2-2 Emergency Care Detailed Design Diagram – Part 1

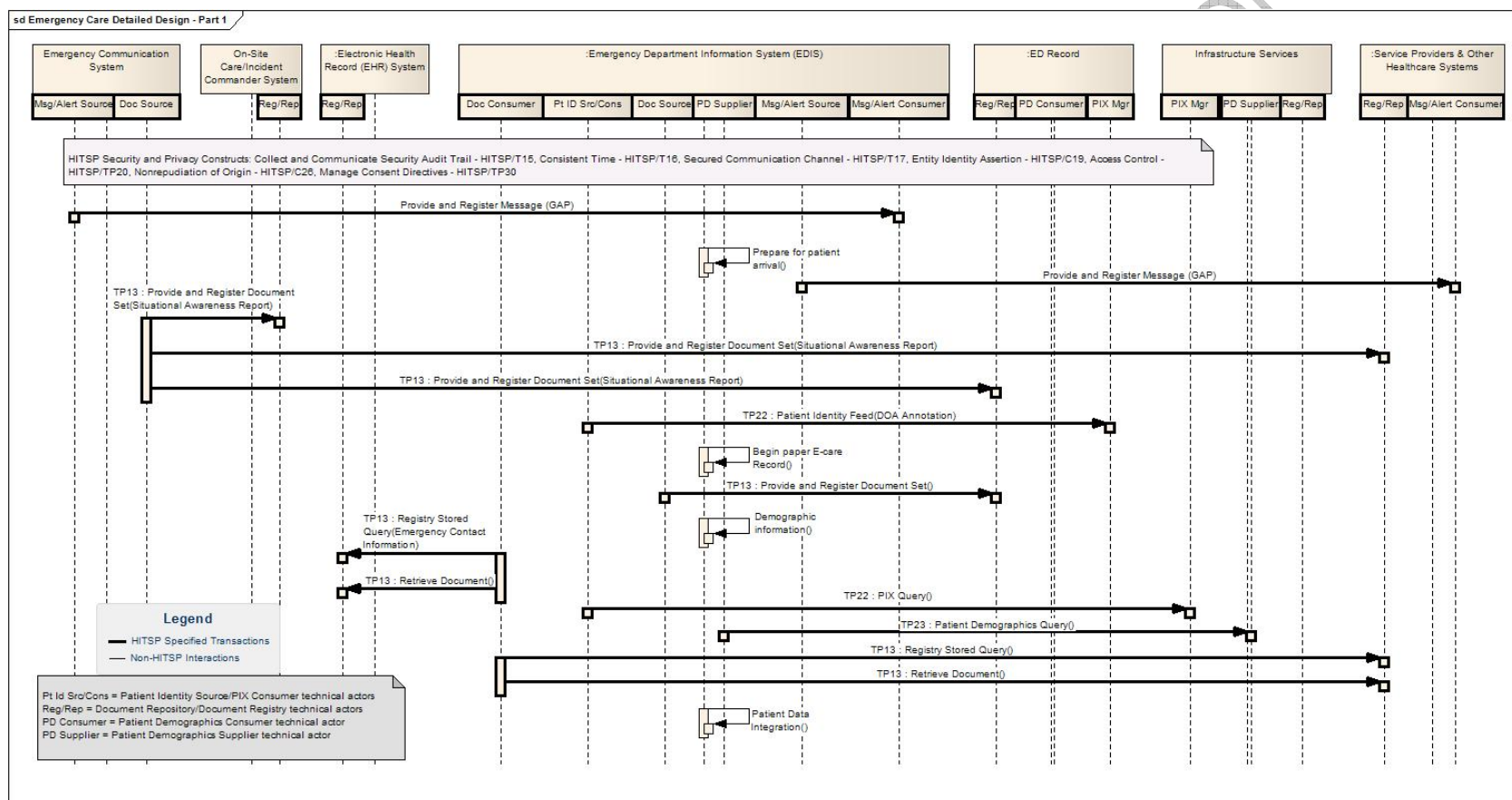


Figure 3.2.2-3 Emergency Care Detailed Design Diagram – Part 2

RELEASED FOR IMPLEMENTATION



sd Emergency Care Detailed Design - Part 2

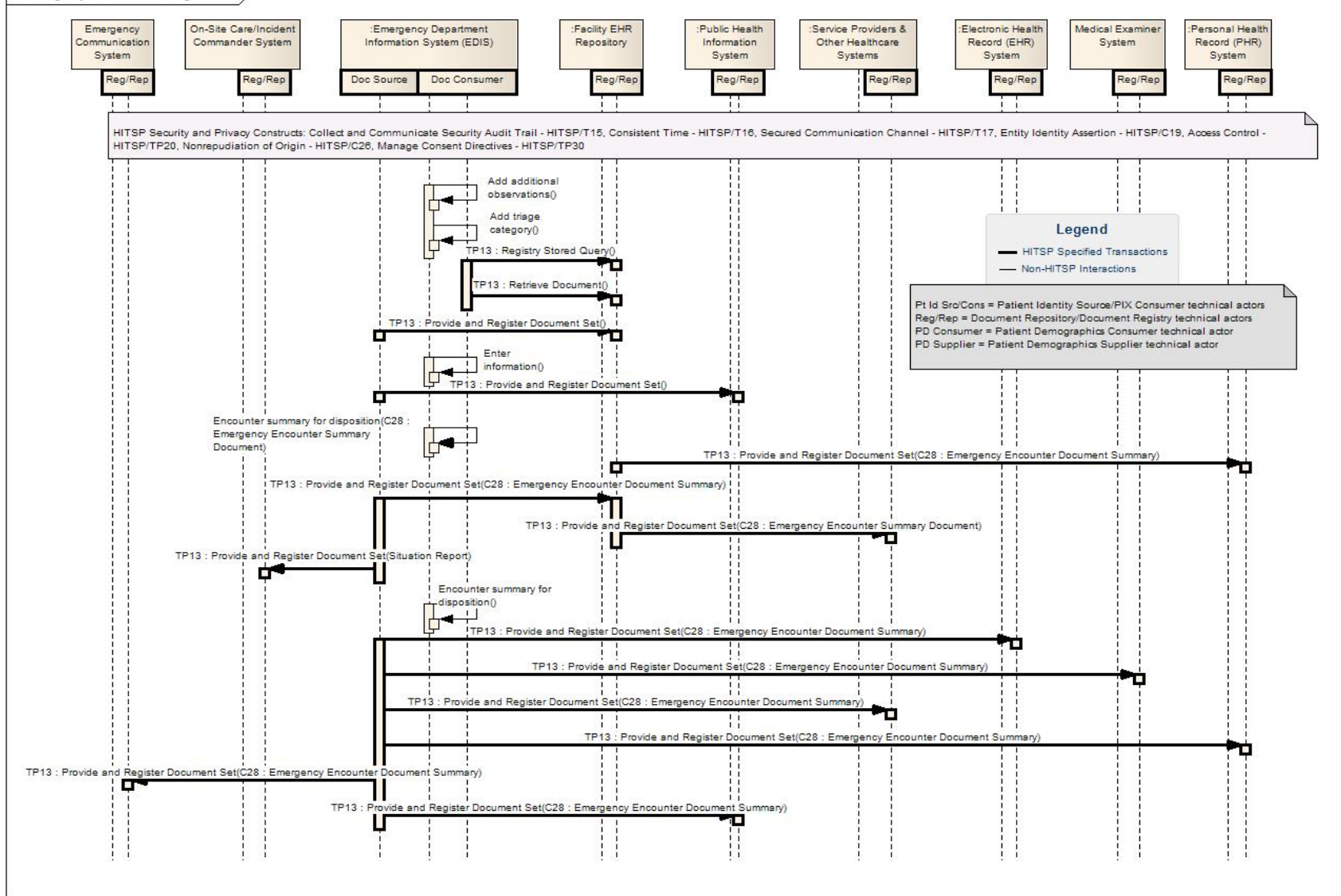
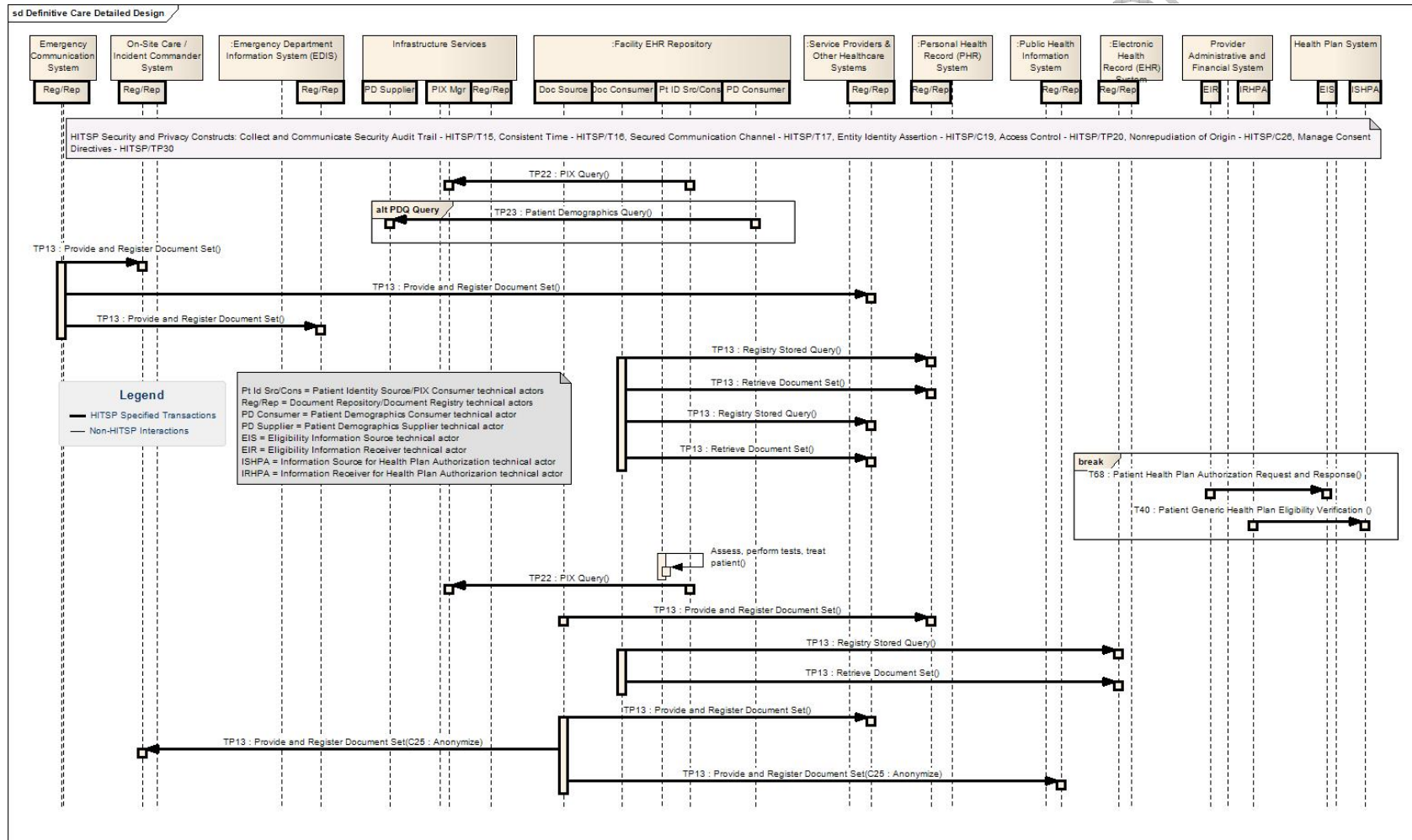


Figure 3.2.2-4 Definitive Care Detailed Design Diagram



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

The table below maps the individual business actors to the technical 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 with each business actor in the Interoperability Specification. For each implemented business actor, the table specifies the following:

1. All Required or Conditionally Required technical actors listed for the business actor shall be supported as specified in the associated construct
2. Optional technical actors listed for the business actor may be supported as specified in the associated construct
3. All Required or Conditionally Required transactions and content subsets listed for each implemented technical actor assigned to the business actor shall be supported as specified in the associated construct
4. Optional transactions and content subsets listed for each implemented technical actor assigned to the business actor 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. Section 1.2 provides a summary description of all the referenced HITSP constructs. Note that this table only shows the business and technical actors that are implemented by the specification. Business actors that are out of scope, or gaps are not included in this section, however, they are discussed in Section 3.1 if they are out of scope or in Section 4.2 if they are found to be gaps where there are no standards.

The following business actors are not mapped for the following reasons:

- Another Facility, Appropriate shared (HIS) repositories, Clinical Staff System, Medical Examiner/fatality manager, Network Service Providers, Other Healthcare Systems, Emergency Department Staff System, Other Third Party Data, Public Health Agencies System – mapping is the same as the Facility EHR Repository business actor
- Public Health Information System – GAP which is addressed by HITSP IS11 Public Health Case Reporting. There needs to be two-way communications between public health and ECS that is not currently occurring.
- Clinician/Clinical Staff – no technical actors
- Core Services – Security and Privacy constructs are specified under the business actors which use them as well as represented by the Infrastructure Services business actor

Note that all the business actors in the table below use the services provided by the Infrastructure Services business actor. Technical actors that are listed in the Infrastructure Services business actor are grouped there for convenience but may be implemented centrally in one place or distributed across several other business actors or edge systems.



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*
Emergency Communications System	Patient Identity Source	C [101]	HITSP/T23	Patient Demographics Query	R
	Patient Identifier Cross Reference (PIX) Consumer	C [101]	HITSP/TP22	Patient Identity Feed	R
				PIX Query	R
	Patient Demographics Consumer	C [101]	HITSP/TP23	Patient Demographics Query	R
	Alert Message Transmitter	R	HITSP/T63	Send Message	R
			HITSP/C82	Send Message	R
			HITSP/C19	Convey Assertion	O
	Alert Message Receiver	R	HITSP/T63	Receive Message	R
			HITSP/C82	Receive Message	R
			HITSP/C19	Convey Assertion	O
	Document Consumer	R	HITSP/TP13	Query Registry	R
				Retrieve Documents	R
			HITSP/C19	Convey Assertion	O
	Document Repository	O	HITSP/TP13	Retrieve Document	R
				Retrieve Documents Set	R
				Provide & Register Document Set	R
			HITSP/C19	Convey Assertion	O
	Document Source	R	HITSP/TP13	Provide & Register Document Set	R
	Content Creator	R	HITSP/C32	Creator-Registration Subset (see Section 3.2.3.1)	C [201]
				Creator-Registration-Coded Subset (see Section 3.2.3.2)	C [201]
				Creator-Medication and Immunization History Subset (see Section 3.2.3.3)	C [201]
				Creator-Medication and Immunization History - Coded Subset (see Section 3.2.3.4)	C [201]
				Creator-Conditions and Allergy Subset (see Section 3.2.3.5)	C [201]
				Creator-Conditions and Allergy -Coded Subset (see Section 3.2.3.6)	C [201]
				Creator-Laboratory Section Subset (see Section 3.2.3.7)	C [201]
				Creator-Laboratory Section -Coded Subset (see Section 3.2.3.8)	C [201]



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
			HITSP/C37	Laboratory Report Document Component	C ^[201]
			HITSP/C62	Unstructured Document	R
			HITSP/TP30	Consent Document Component	R
			GAP	Situation Report/Message Component	R
			GAP	Incident Report/Message Component	R
	Content Consumer	R	HITSP/C32	Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
				Consumer-Registration Discrete Data Import Subset (see Section 3.2.3.11)	O
				Consumer-Medication and Immunization History Discrete Data Import Subset (see Section 3.2.3.12)	O
				Consumer-Conditions and Allergy Discrete Data Import Subset (see Section 3.2.3.13)	O
				Consumer-Laboratory Discrete Data Import Subset (see Section 3.2.3.14)	O
			HITSP/C37	Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
				Consumer-Lab Report Discrete Data Import Subset (see Section 3.2.3.15)	O
			HITSP/TP30	Consent Document Component	R
			HITSP/C47	Resource Utilization	C ^[202]
			HITSP/C39	Encounter Summary (EDES)	R
			HITSP/C48	Encounter Summary (XDS-MS)	R
			HITSP/C62	Unstructured Document	R
			HITSP/C84	Consult and History	R
			GAP	Situation Report/Message Component	R
			GAP	Incident Report/Message Component	R
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/TP20	Access Control Request	O



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Identity Provider	C [102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Consent Originator	R	HITSP/TP30	Provide Document Set	R
				Register Document Set	R
	Consent Repository	O	HITSP/TP30	Register Document Set	R
				Stored Query	R
	Consent Registry	O	HITSP/TP30	Provide Document Set	R
				Register Document Set	R
	Consent Directive Requester	O	HITSP/TP30	Stored Query	R
				Retrieve Document Set	R
Emergency Contact Registry (ECON)	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
	Value Set Consumer (user)	R	HITSP/T66	Retrieve Value Set	R
Emergency Contact Registry (ECON)	Document Source	R	GAP	Provide & Register Document Set	R
	Content Creator	R	GAP	Emergency Contact data set Content Component	R
Electronic Health Record (EHR) System	Patient Identity Source	C [101]	HITSP/TP22	Patient Identify Feed	O
			HITSP/TP22	Patient Identity Management	O
	Patient Identifier Cross Reference (PIX) Consumer	C [101]	HITSP/TP22	PIX Query	R
	Patient Demographics Consumer	C [101]	HITSP/TP23	Patient Demographics Query	R
	Referral Requestor	R	HITSP/T67	Convey/Request Referral	R
	Referral Dispatcher	R	HITSP/T67	Convey/Request Referral	R
	Alert Message Transmitter	R	HITSP/C82	Send Message	R
			HITSP/T63	Send Message	R
			HITSP/C19	Convey Assertion	O
	Alert Message Receiver	R	HITSP/C82	Receive Message	R
			HITSP/T63	Receive Message	R
			HITSP/C19	Convey Assertion	O
	Document Consumer	R	HITSP/TP13	Query Registry	R
				Retrieve Document	R
			HITSP/C19	Convey Assertion	O
	Document Repository	O	HITSP/TP13	Retrieve Document	R
				Retrieve Document Set	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Provide & Register Document Set	R
			HITSP/C19	Convey Assertion	O
	Document Source	R	HITSP/TP13	Provide & Register Document Set	R
			HITSP/C19	Convey Assertion	O
	Content Creator	C ^[104]	HITSP/C28	Emergency Department Encounter	R
		R	HITSP/C32	Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
				Consumer-Registration Discrete Data Import Subset (see Section 3.2.3.11)	O
				Consumer-Medication and Immunization History Discrete Data Import Subset (see Section 3.2.3.12)	O
				Consumer-Conditions and Allergy Discrete Data Import Subset (see Section 3.2.3.13)	O
				Consumer-Laboratory Discrete Data Import Subset (see Section 3.2.3.14)	O
				Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
			HITSP/C37	Consumer-Lab Report Discrete Data Import Subset (see Section 3.2.3.15)	O
				Consent Document	R
				Consumer-Document Display Subset (see Section 3.2.3.9)	R
			HITSP/C39	Encounter Summary (EDES)	C ^[104]
			HITSP/C48	Encounter Summary (IHE XDS-MS)	R
			HITSP/C62	Unstructured Document	R
			HITSP/C84	Consult and History	R
			HITSP/TP30	Consumer-Document Import Subset (see Section 3.2.3.10)	O
			HITSP/C47	Resource Utilization	C ^[202]
			GAP	Incident Report/Message	R
			GAP	Situation Report/Message Component	R
	Content Consumer	R	HITSP/C28	Emergency Department Encounter	R
		R	HITSP/C32	Consumer-Document Display Subset (see Section 3.2.3.9)	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Consumer-Documents Import Subset (see Section 3.2.3.10)	O
				Consumer-Registration Discrete Data Import Subset (see Section 3.2.3.11)	O
				Consumer-Medication and Immunization History Discrete Data Import Subset (see Section 3.2.3.12)	O
				Consumer-Conditions and Allergy Discrete Data Import Subset (see Section 3.2.3.13)	O
				Consumer-Laboratory Discrete Data Import Subset (see Section 3.2.3.14)	O
			HITSP/C37	Consumer-Documents Display Subset (see Section 3.2.3.9)	R
				Consumer-Documents Import Subset (see Section 3.2.3.10)	O
				Consumer-Lab Report Discrete Data Import Subset (see Section 3.2.3.15)	O
			HITSP/C39	Encounter Summary (EDES)	C ^[104]
			HITSP/TP30	Consent Document	R
			HITSP/C47	Resource Utilization	C ^[202]
			HITSP/C48	Encounter Summary (IHE XDS-MS)	R
			HITSP/C62	Unstructured Document	R
			HITSP/C84	Consult and History	R
			GAP	Incident Report/Message	R
			GAP	Situation Report/Message	R
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/TP20	Access Control Request	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Identity Provider	C ^[102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Consent Originator	R	HITSP/TP30	Provide Document Set	R
				Register Document Set	R
	Consent Repository	O	HITSP/TP30	Register Document Set	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Stored Query	R
	Consent Registry	O	HITSP/TP30	Provide Document Set	R
				Register Document Set	R
	Consent Directive Requester	O	HITSP/TP30	Stored Query	R
				Retrieve Document Set	R
	Value Set Consumer	R	HITSP/T66	Retrieve Value Set	R
Personal Health Record (PHR) System	Patient Identity Source	C [101]	HITSP/TP22	Patient Identify Feed	O
			HITSP/TP22	Patient Identity Management	O
	Patient Identifier Cross Reference (PIX) Consumer	C [101]	HITSP/TP22	PIX Query	R
	Patient Demographics Consumer	C [101]	HITSP/TP23	Patient Demographics Query	R
	Document Repository	O	HITSP/TP13	Retrieve Document	R
				Retrieve Documents Set	R
				Provide & Register Document Set	R
			HITSP/C19	Convey Assertion	O
	Document Source	R	HITSP/TP13	Provide & Register Document Set	R
			HITSP/C19	Convey Assertion	O
	Document Consumer	R	HITSP/TP13	Query Registry	R
				Retrieve Documents	R
			HITSP/C19	Convey Assertion	O
	Content Creator	R	HITSP/C32	Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
				Consumer-Registration Discrete Data Import Subset (see Section 3.2.3.11)	O
				Consumer-Medication and Immunization History Discrete Data Import Subset (see Section 3.2.3.12)	O
				Consumer-Conditions and Allergy Discrete Data Import Subset (see Section 3.2.3.13)	O
				Consumer-Laboratory Discrete Data Import Subset (see Section 3.2.3.14)	O
				Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
			HITSP/C37	Consumer-Lab Report Discrete Data Import Subset (see Section 3.2.3.15)	O
				Consent Document Component	R
				Consumer-Document Display Subset (see Section 3.2.3.9)	R
			HITSP/TP30	Consumer-Document Import Subset (see Section 3.2.3.10)	O
	Content Consumer	O	HITSP/C28	Emergency Department Encounter	R
		R	HITSP/C32	Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
				Consumer-Registration Discrete Data Import Subset (see Section 3.2.3.11)	O
				Consumer-Medication and Immunization History Discrete Data Import Subset (see Section 3.2.3.12)	O
				Consumer-Conditions and Allergy Discrete Data Import Subset (see Section 3.2.3.13)	O
			HITSP/C37	Consumer-Laboratory Discrete Data Import Subset (see Section 3.2.3.14)	O
				Consumer-Document Display Subset (see Section 3.2.3.9)	R
				Consumer-Document Import Subset (see Section 3.2.3.10)	O
			HITSP/C39	Encounter Summary (EDES)	R
			HITSP/C48	Encounter Summary (XDS-MS)	R
			HITSP/C62	Unstructured Document	R
			HITSP/C84	Consult and History	R
			HITSP/TP30	Consumer-Lab Report Discrete Data Import Subset (see Section 3.2.3.15)	O
	Audit Record Source	R	HITSP/T15	Consent Document	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/TP20	Access Control Request	O
	Identity Provider	C [102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Access Control Service	R	HITSP/TP20	Access Control Request	O



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
Clinical Decision Support Systems	Patient Identifier Cross Reference (PIX) Consumer	C [101]	HITSP/TP22	PIX Query	R
	Patient Demographic Consumer	C [101]	HITSP/T23	Patient Demographics Query	R
	Document Source	R	HITSP/TP13	Provide & Register Document Set-b	R
			HITSP/T31	Provide & Register Document Set.b	R
			HITSP/C19	Convey Assertion	O
	Content Creator	R	HITSP/C32	Creator-Conditions and Allergies Subset (see Section 3.2.3.5)	R
		R	HITSP/TP30	Consent Document Component	R
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	O	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/TP20	Access Control Request	O
	Identity Provider	C [102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Access Control Service	O	HITSP/TP20	Access Control Request	O
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
Information Service Provider	Document Source	R	GAP	Provide & Register Document Set	R
	Content Creator	R	GAP	Third Party Data Set Content Component	R
	Message Source	R	GAP	Provide & Register message	R
Provider Administrative and Financial System	Eligibility Information Receiver	R	HITSP/T40	Eligibility Information Request	R
				Eligibility Information Response	R
	Information Receiver for Health Plan Authorization	R	HITSP/T68	Health Plan Authorization Information Request	R
				Health Plan Authorization Information Response	R
	Administrative Transport (Client)	R	HITSP/T85	Any ASC X12 transaction	R
	Consent Directive Requester	O	HITSP/TP30	Stored Query	R
				Retrieve Document Set	R
	Content Consumer	R	HITSP/TP30	Consent Document	R
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
	Time Client	R	HITSP/T16	Maintain Time	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Service User	R	HITSP/TP20	Access Control Request	O
	Identity Provider	C [102]	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
Health Plan System	Eligibility Information Source	R	HITSP/T40	Eligibility Information Request	R
				Eligibility Information Response	R
	Information Source for Health Plan Authorization	R	HITSP/T68	Health Plan Authorization Information Request	R
				Health Plan Authorization Information Response	R
	Administrative Transport Server	R	HITSP/T85	Any ASC X12 transaction	R
	Service User	R	HITSP/TP20	Access Control Request	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Identity Provider	C [102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Access Control Service	R	HITSP/TP20	Access Control Request	O
	Content Creator	R	HITSP/TP30	Consent Document	R
	Content Consumer	R	HITSP/TP30	Consent Document	R
	Consent Directive Requester	O	HITSP/TP30	Stored Query	R
				Retrieve Document Set	R
Infrastructure	Patient Identifier Cross-	C [102]	HITSP/TP22	Patient Identity Feed	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				PIX Query	R
				PIX Update Notification	R
	Patient Demographics Supplier	C [102]	HITSP/T23	Patient Demographics Query	R
	Document Registry	C [103]	HITSP/TP13	PIX Identity Feed	R
				Registry Stored Query	R
				Register Document Set-b	R
			HITSP/C19	Convey Assertion	O
	Document Repository	C [102]	HITSP/TP13	Retrieve Document	R
				Retrieve Document Set-b	R
				Provide & Register Document Set-b	R
			HITSP/C19	Convey Assertion	O
	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
	Audit Record Source	R	HITSP/T15	Record Audit Event in Repository	R
	Audit Record Repository	C [102]	HITSP/T15	Record Audit Event in Repository	R
	Time Client	R	HITSP/T16	Maintain Time	R
	Time Server	C [102]	HITSP/T16	Maintain Time	R
	Node	R	HITSP/T17	Secured Communication Channel	R
	Identity Provider	C [102]	HITSP/C19	Provide Assertion	R
				Verify Assertion	O
	Service Provider	R	HITSP/TP20	Access Control Request	O
	Consent Registry	C [103]	HITSP/TP30	Register Document Set	R
				Stored Query	R
	Consent Repository	C [102]	HITSP/TP30	Provide and Register Document Set	R
				Register Document Set	R
	Consent Directive Requester	R	HITSP/TP30	Stored Query	R



Business Actor	Technical Actor(s)	Actor Optionality*	Construct	Transaction/Content (T/C)	T/C Optionality*
				Retrieve Document Set	R
	Access Control Service	C ^[102]	HITSP/TP20	Access Control Request	R
	DNS Server	R ^[102]	HITSP/T64	Find Personnel White Pages	R
	Personnel White Pages Directory	^[102]	HITSP/T64	Query Personnel White Pages	R
	Personnel White Pages Consumer	O	HITSP/T64	Find Personnel White Pages	O
				Query Personnel White Pages	R
	Value Set Consumer (user)	R	HITSP/T66	Retrieve Value Set	R
	Value Set Repository	R ^[102]	HITSP/T66	Retrieve Value Set	R

- **NOTE:** Optionality = “R” for Required, “R2” for Required if Known, or “O” for Optional, or “C” for Conditional. Conditional footnotes are further described below

Implementation Conditions/Constraints

The following table describes the implementation conditions or constraints placed on the technical actors, transactions, or content. The constraint codes listed below correspond to the codes placed in the Actor and Transaction/Content optionality column in Table 3.2.3-1 above. For example, the Patient Demographics Consumer Technical Actor has an optionality code of C ^[105] ^[106] which represents a conditionally required Actor with the constraint codes of 105 and 106 described in the table below.

Table 3.2.3-2 Implementation Conditions/Constraints

Constraint Code	Constraint Description
101	Shall support (Patient Identity Source plus PIX Consumer) and/or Patient Demographics Consumer
102	There should be at least one in a group of business actors
103	There can be ONLY one in a group of business actors
104	Used by emergency department only
201	Shall support either at least one of the subsets of the HITSP/C32 - Summary Document Using HL7 Continuity of Care Document (CCD) or the HITSP/C37 - Laboratory Report Document, or both
202	For systems reporting bed availability, system shall support HITSP Resource Utilization Component

The following sections describe the implementation subset options by which the specification may be implemented in a limited manner. These implementation subsets are focused on delivering specific content. Any dependencies between subsets and business actors are also described. Conformance considerations for implementing this Interoperability Specification and any of its subsets are described in detail in Section 5.0



3.2.3.1 C32 Creator-Registration Subset

This subset impacts the content of the HITSP/C32 Summary Documents Using HL7 Continuity of Care Document (CCD) document produced by a Content Creator Technical Actor. It requires the Content Creator to have the ability to create the content of the following content modules, with variants as specified in the HITSP/C32 construct.

Table 3.2.3.1-1 Creator Registration Subset Content Modules

Content Modules
Person Information
Language Spoken
Support
Healthcare Provider
Insurance Provider
Pregnancy
Information Source
Comments
Advance Directives

Note: HITSP/C32 Required Modules that are not listed above shall contain “unknown”.

The type of payer and type of payer entries contain the concepts but without the HITSP/C32 specified code set.

3.2.3.2 C32 Creator-Registration-Coded Subset

This subset is identical to the Creator-Registration Subset but requires the creation of type of payer and type of payer entries with the HITSP/C32 specified code set.

3.2.3.3 C32 Creator-Medication and Immunization History Subset

This subset impacts the content of the HITSP/C32 document produced by a Content Creator Technical Actor. It requires the Content Creator to have the ability to create the content of the following content module, with variants as specified in the HITSP/C32 construct.

Table 3.2.3.3-1 Creator Medication and Immunization History Subset Content Modules

Content Modules
Person Information
Healthcare Provider
Medications – Prescription and Non-Prescription
Information Source
Comments



Note: HITSP/C32 Required Modules that are not listed above shall contain “unknown”.
The medication entry may contain the concepts but without an associated code.

3.2.3.4 C32 Creator-Medication and Immunization History-Coded Subset

This subset is identical to the Creator-Medication Subset but requires the creation of medication entries with the HITSP/C32 specified code sets.

3.2.3.5 C32 Creator-Conditions and Allergy Subset

This subset impacts the content of the HITSP/C32 document produced by a Content Creator Technical Actor. It requires the Content Creator to have the ability to create the content as specified in the HITSP/C32 construct:

Table 3.2.3.5-1 Creator Conditions and Allergy Subset Content Modules

Content Modules
Person Information
Healthcare Provider
Condition
Allergies and Drug Sensitivity
Information Source
Comments

Note: HITSP/C32 Required Modules that are not listed above shall contain “unknown”.
The condition and allergy entries contain the concepts but without the HITSP/C32 specified code set.

3.2.3.6 C32 Creator-Conditions and Allergy-Coded Subset

This subset is identical to the Creator-Registration Subset but requires the creation of conditions and allergies entries with the HITSP/C32 specified code set.

3.2.3.7 C32 Creator-Laboratory Section Subset

This subset impacts the content of the HITSP/C32 document produced by a Content Creator Technical Actor. It requires the Content Creator to have the ability to create the content as specified in the HITSP/C32 construct:

Table 3.2.3.7-1 Creator Laboratory Subset Content Modules

Content Modules
Person Information
Healthcare Provider
Results
Information Source
Comments



Note: HITSP/C32 Required Modules that are not listed above shall contain “unknown”. The results entries contain the concepts but without the HITSP/C32 specified code set.

3.2.3.8 C32 Creator-Laboratory Section-Coded Subset

This subset is identical to the Creator-Laboratory Section Subset but requires the creation of laboratory results entries with the HITSP/C32 specified code set.

3.2.3.9 Consumer-Document Display Subset

This subset impacts the import of Documents processed by a Content Consumer Technical Actor. It requires the Document Consumer only to have the ability to display either document (e.g., HITSP/C32, HITSP/C37) as requested. (It may not be able to locally import it in the patient record).

3.2.3.10 Consumer-Document Import Subset

This subset impacts the import of Documents processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import into the patient record either of the documents (e.g., HITSP/C32, HITSP/C37 Lab Report Document) as a whole and display it as requested.

3.2.3.11 C32 Consumer-Registration Discrete Data Import Subset

This subset impacts the import HITSP/C32 document processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import the discrete data from one or more of the registration entries in a structured form into the patient record. Coded values shall be maintained.

3.2.3.12 C32 Consumer-Medication and Immunization History Discrete Data Import Subset

This subset impacts the import HITSP/C32 document processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import the discrete data from one or more of the medication and immunization history entries in a structured form into the patient record. Coded values shall be maintained.

3.2.3.13 C32 Consumer-Conditions and Allergy Discrete Data Import Subset

This subset impacts the import HITSP/C32 document processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import the discrete data from one or more of the conditions and allergy entries in a structured form into the patient record. Coded values shall be maintained.

3.2.3.14 C32 Consumer-Laboratory Discrete Data Import Subset

This subset impacts the import HITSP/C32 document processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import the discrete data from one or more of the laboratory entries in a structured form into the patient record. Coded values shall be maintained.



3.2.3.15 C37 Consumer-Lab Report Discrete Data Import Subset

This subset impacts the import of HITSP/C37 Laboratory Report Document processed by a Content Consumer Technical Actor. It requires the Document Consumer to have the ability to import the discrete data from one or more of the entries in a structured form into the patient record. Coded values shall be maintained.

3.2.4 CONSTRUCT DEPENDENCIES

The following table shows a list of constructs with their existing dependencies. Dependencies usually exist when there are some additional pre-requisites for a specific construct. To support a dependent construct, a technical actor must implement all the required actions in the pre-requisite construct, or be grouped together with another construct as specified in the table below:

Table 3.2.4-1 Construct Dependencies

Construct	Depends On (Name of construct that it depends on)	Dependency Type (Pre-condition, Post-condition, General)	Purpose (Reason for this dependency)
No applicable construct dependencies			

3.2.5 ADDITIONAL CONSTRAINTS ON REQUIRED CONSTRUCTS

This section describes the constraints that further limit the constructs that are used by this Interoperability Specification.

Table 3.2.5-1 Additional Constraints on Required Constructs

Data Element	Construct	Constraint	Constraint Type (Pre-condition, Post-condition, General)	Purpose (Reason for this constraint)
All	HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)	Create this document as defined, except the document shall NOT be anonymized unless being sent to a Public Health Facility or Emergency Operations Center	General	Need to transfer real patient data for patient care; other actors need aggregate or trend data, but do not usually need to know individual identities
All	HITSP/C39 - Encounter Message	Create these messages as defined, except the messages shall NOT be anonymized unless being sent to a Public Health Facility or Emergency Operations Center	General	Need to transfer real patient data for patient care



4.0 STANDARDS SELECTION

This section presents the standards required to support each major Use Case event. Standards selection is based on the following process:

- Evaluation: The Technical Committee evaluates the standards using the Tier 2 Readiness Criteria.
- Selection: Based on the Tier 2 evaluations, named standards are selected and listed in the table of selected standards below. 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
- Gap and Overlap Analysis and Recommendations: The Technical Committee also identifies and analyzes gaps and overlaps within the standards industry as they relate to the specific Use Case. The Technical Committee provides a description of the gaps, including missing or incomplete standards, a description of all overlaps, or competition among standards for the relevant Use Cases, and recommendations for resolving these gaps and overlaps

It is HITSP's policy to incorporate only standards that have been approved according to the formal policy of the standards organization, as defined by HITSP, which publishes the standard. HITSP interprets approval to include Standards for Trial Use. The objective is to incorporate only standards that are managed within a formal life cycle process as defined by the standards organization. In some cases, where we believe a standard that is not yet approved may best meet the requirements of an Interoperability Specification, HITSP may provide a roadmap of its future intent conditional on future actions by either or both the standards organization and the HITSP Technical Committee. Thus there are four classes of HITSP-committed standards.

- Approved for Use – standards included for unconditional use within a HITSP construct
- Interim – standards included for use now within a HITSP construct but for a defined time period or conditional on future actions, e.g., "Intended for Use" standard is available
- Provisional - standards that are not yet but are expected to be approved by the standards organization at the time the Interoperability Specification is released by HITSP. A "Provisional" standard becomes an "Approved for Use" standard only if:
 - It is approved by the Standards Organization by the time that the Interoperability Specification is released by HITSP and
 - It is substantially the same as it was when it was provisionally used and
 - It requires no further action by the Technical Committee
- Intended for Use – proposed standards that are roadmapped for future use pending actions by the Technical Committee and/or the standards organization. Therefore a standard is defined as "Intended for Use" if it will not be approved by the standard organization at the time that the HITSP construct is released, but is sufficiently defined to enable detailed evaluation of how well it will meet technical and information exchange requirements.



HITSP may continue to use “Provisional” or “Interim” standards as they existed when incorporated into the HITSP construct if the expected conditions are not satisfied until such time as HITSP can replace it with a more suitable standard. In this circumstance, the standards organization would have no responsibility to maintain or correct this artifact. If a standard “Intended for Use” is not developed and approved in terms of time frame or content as expected by the Technical Committee at the time of its initial selection, it may be replaced. All standards used by HITSP must meet the HITSP selection criteria. The use of “Interim” and “Intended for Use” standards will be weighed against the alternative of simply declaring a gap for HITSP and the standards organizations to resolve.

4.1 STANDARDS

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. In addition, adherence to the selected standards alone is not sufficient to ensure interoperability. In order to ensure interoperability for the Use Case, and to claim conformance to the specification, an implementation must satisfy all the requirements and mandatory statements listed in the HITSP Interoperability Specification, its associated construct specifications, as well as conformance criteria from the selected base and composite standards. A conformant system must also be constrained as specified in Table 3.1.2-1, and implement all of the required technical actors from Table 3.2.3-1, within the scope and implementation subset that is selected.

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

- Regulatory guidance is a legal or other authoritative declaration that HITSP must abide by in standards selection (see Section 4.1.1)
- Selected standards are necessary for interoperability. These are standards that are used to meet information exchange requirements of associated constructs. For example, they are used to realize direct information exchange, to provide the transport mechanism, to specify the content, or to address security (see Section 4.1.2)
- Informative reference standards provide additional background information or guidance, and are not required for interoperability. These standards are not required to implement the Interoperability Specification (see Section 4.1.3)

4.1.1 REGULATORY GUIDANCE

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 this Interoperability Specification.

Table 4.1.1-1 Regulatory Guidance

Regulation	Description
Clinical Laboratory Improvement Amendments (CLIA) of 1988	Establishes quality standards for all laboratory testing to ensure the accuracy, reliability, and timeliness of patient test results regardless of where the test is performed. The Centers for Medicare and Medicaid Services (CMS) regulates all laboratory testing (except research) performed on humans in the U.S. based on CLIA. For more information visit www.fda.gov and www.cms.hhs.gov .



Health Insurance Portability and Accountability Act (HIPAA) -- Administrative Simplification	A listing of national standards plus rules adopted by federal regulation for electronically communicating specified administrative and financial healthcare transactions, and protecting the security and privacy of healthcare information, as applied to the three types of defined covered entities: health plans, healthcare clearinghouses, and healthcare providers who conduct any of the specified healthcare transactions. For more information see the Code of Federal Regulations, Title 45, Parts 160, et. Seq.
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4.1.2 SELECTED STANDARDS

The following table provides a list of standards that are used to meet information exchange requirements of the Interoperability Specification, and the HITSP constructs that use each standard. A detailed description of each standard is also provided in the Appendix.

Note that the standards selected for this Interoperability Specification are Approved for Use as defined in Section 4.0 above.

Table 4.1.2-1 Selected Standards Linked to HITSP Constructs

Standard	HITSP Construct	Remarks/Minor Gaps
Accredited Standards Committee (ASC) X12 270 and 271 transaction standards version 4010, using the Insurance Subcommittee (X12N) Implementation Guides Version Reference Numbers 004010X92	HITSP/T40 - Patient Health Plan Eligibility Verification	
Accredited Standards Committee (ASC) X12 270 and 271 Transaction Standards Version 4010, using the Insurance Subcommittee (X12N) Addenda 004010X92A1	HITSP/T40 - Patient Health Plan Eligibility Verification	
Accredited Standards Committee (ASC) X12 270 Transaction Version Standards Release 004010	HITSP/T40 - Patient Health Plan Eligibility Verification	
Accredited Standards Committee (ASC) X12 271 Transaction Version Standards Release 004010	HITSP/T40 - Patient Health Plan Eligibility Verification	
Accredited Standards Committee (ASC) X12 278 Transaction Version Standards Release 004010	HITSP/T68 - Patient Health Plan Authorization Request and Response	
Accredited Standards Committee (ASC) X12 278 transactions standard version 4010, using the Insurance Subcommittee (X12N) Implementation Guides Version Reference Numbers 004010X94	HITSP/T68 - Patient Health Plan Authorization Request and Response	
Accredited Standards Committee (ASC) X12 278 Transactions Standard Version 4010, using the Insurance Subcommittee (X12N) Addenda 004010X94A1	HITSP/T68 - Patient Health Plan Authorization Request and Response	
Accredited Standards Committee (ASC) X12 Standards Release 004010	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32 and HITSP/C84
American Medical Association (AMA) Current Procedural Terminology (CPT®) Fourth Edition (CPT-4); CPT Evaluation and Management Codes	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84



Standard	HITSP Construct	Remarks/Minor Gaps
CDC Race and Ethnicity Code Sets	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
Council for Affordable Quality Health Care (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase I Operating Rules	HITSP/T40 - Patient Health Plan Eligibility Verification	
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #260 Eligibility Data Content Rule v2.0.0	HITSP/T40 - Patient Health Plan Eligibility Verification	
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #259 AAA Error Code Reporting Rule v2.0.0	HITSP/T40 - Patient Health Plan Eligibility Verification	
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #258 Normalizing Last Name Rule v2.0.0	HITSP/T40 - Patient Health Plan Eligibility Verification	
Council for Affordable Quality Healthcare (CAQH) Phase II Core #270 Connectivity Rule v2.0.0	HITSP/T85 - Administrative Transport to Health Plan	
Federal Information Processing Standards (FIPS) Codes for the Identification of the States, the District of Columbia and the Outlying Areas of the United States, and Associated Areas Publication # 5-2, May, 1987	HITSP/C39 - Encounter Message HITSP/C80 - Clinical Document and Message Terminology	HITSP/C80 Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
Food and Drug Administration (FDA) - Unique Ingredient Identifier (UNII)	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
Food and Drug Administration (FDA) - National Drug Code (NDC)	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
Health Level Seven (HL7) Common Terminology Services (CTS) Release 1	HITSP/T66 - Retrieve Value Set	
Health Level Seven (HL7) HL7 Version 3 Standard: Clinical Document Architecture (CDA), Release 2	HITSP/C37 - Lab Report Document HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS) HITSP/C84 - Consult and History & Physical Note Document	
Health Level Seven (HL7) Implementation Guide for CDA Release 2: Consultation Note	HITSP/C84 - Consult and History & Physical Note Document	
Health Level Seven (HL7) Implementation Guide for CDA Release 2: History and Physical (H&P) Notes	HITSP/C84 - Consult and History & Physical Note Document	
Health Level Seven (HL7) Implementation Guide: CDA Release 2 – Continuity of Care Document (CCD), April 01, 2007	HITSP/C32 - Summary Documents Using HL7 Continuity of Care Document (CCD)	
Health Level Seven (HL7) Standard Code Set CVX - Vaccines Administered	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32



Standard	HITSP Construct	Remarks/Minor Gaps
Health Level Seven (HL7) Standard Code Set MVX - Manufacturers of Vaccines	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32
Health Level Seven (HL7) V3 RBAC, R1-2008, HL7 Version 3 Standard: Role Based Access Control (RBAC) Healthcare Permissions Catalog, Release 1, February 2008	HITSP/TP20 - Access Control	
Health Level Seven (HL7) Version 2.3.1 Chapter 2 – Control, Chapter 3 – Patient Administration	HITSP/TP22 - Patient ID Cross-Referencing	
Health Level Seven (HL7) Version 2.5	HITSP/C39 - Encounter Message HITSP/C47 - Resource Utilization Message Component	
Health Level Seven (HL7) Version 2.5, Chapter 2 – Control, Chapter 3 – Patient Administration, Chapter 5 - Query	HITSP/T23 - Patient Demographics Query HITSP/TP22 - Patient ID Cross-Referencing	
Health Level Seven (HL7) Version 3.0 – Vocabularies and Value Sets	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
Health Level Seven (HL7) Version 3.0 Privacy Consent related specifications RCMR_RM010001 - Data Consent	HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) Exchange of Personal Health Record Content (XPHR)	HITSP/C32 - Summary Documents Using HL7 Continuity of Care Document (CCD)	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Volume 2 Supplement 2007 – 2008 Cross-Enterprise User Assertion (XUA)	HITSP/C19 - Entity Identity Assertion	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) – Revision 5.0 or later, Cross Enterprise Sharing of Scanned Documents (XDS-SD) Integration Profile	HITSP/C62 - Unstructured Document	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Audit Trail and Node Authentication Profile (ATNA)	HITSP/T15 - Collect and Communicate Security Audit Trail	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Audit Trail and Node Authentication (ATNA) Integration Profile, Section 9.1 Authentication	HITSP/T17 - Secured Communication Channel	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Consistent Time (CT) Integration Profile	HITSP/T16 - Consistent Time	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 5.0 or later, Patient Demographics Query (PDQ) Integration Profile	HITSP/T23 - Patient Demographics Query	



Standard	HITSP Construct	Remarks/Minor Gaps
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008 - 2009, Pediatric Demographics, Draft for Trial Implementation (August 22, 2008)	HITSP/T23 - Patient Demographics Query HITSP/TP22 - Patient ID Cross-Referencing	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework, Revision 4.0 or later, Personnel White Pages profile	HITSP/T64 - Identify Communication Recipients	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Document-based Referral Request (DRR)	HITSP/T67 - Clinical Referral Request Transport	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0, Section 10 Cross-Enterprise Document Sharing (XDS.a)	HITSP/TP13 - Manage Sharing of Documents HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 - Registry Stored Query Transaction for XDS Profile Supplement [ITI-18]	HITSP/TP13 - Manage Sharing of Documents HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 XCA Supplement	HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009, Cross-Community Access (XCA), Trial Implementation, October 10, 2008	HITSP/TP13 - Manage Sharing of Documents	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Volume 2 Supplement 2007 – 2008 Cross-Enterprise Document Sharing-B (XDS.b)	HITSP/TP13 - Manage Sharing of Documents HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Patient Identifier Cross-Referencing Integration Profile (PIX)	HITSP/TP22 - Patient ID Cross-Referencing	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2007 - 2008 Basic Patient Privacy Consents (BPPC) – Trial Implementation	HITSP/TP30 - Manage Consent Directives	
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Sharing Value Sets (SVS)	HITSP/T66 - Retrieve Value Set	
Integrating the Healthcare Enterprise (IHE) Laboratory Technical Framework Volume 3 (LAB TF-3) Document-based Transactions, Revision 2.0 - For Trial Implementation, August 16, 2007	HITSP/C37 - Lab Report Document	
Integrating the Healthcare Enterprise (IHE) Patient Care Coordination (PCC) - Emergency Department Encounter Summary (EDES), Technical Framework Supplement, Volume I, Revision 3.0, 2007-2008	HITSP/C28 - Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES)	



Standard	HITSP Construct	Remarks/Minor Gaps
Integrating the Healthcare Enterprise (IHE) Patient Care Coordination (PCC), Revision 4.0, 2008 - 2009, Cross-Enterprise Sharing of Medical Summaries (XDS-MS) Integration Profile	HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)	
International Classification of Diseases, 10th Revision, Procedure Coding System (ICD-10-PCS)	HITSP/C39 - Encounter Message	
International Classification of Diseases, 10th Revision, Related Health Problems (ICD-10-CM)	HITSP/C39 - Encounter Message	
International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)	HITSP/C39 - Encounter Message	
International Classification of Functioning, Disability and Health (ICF)	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C48
International Health Terminology Standards Development Organisation (IHTSDO) Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®)	HITSP/C39 - Encounter Message HITSP/C80 - Clinical Document and Message Terminology	HITSP/C80 Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
International Organization for Standardization (ISO) ISO 3166-1	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
International Organization for Standardization (ISO) PDF/A ISO 19005-1b. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A)	HITSP/C62 - Unstructured Document	
Internet Engineering Task Force (IETF) Network Time Protocol (Version 3) Specification, Implementation and Analysis, "Request for Comment" (RFC) #1305, March, 1992	HITSP/T16 - Consistent Time	
Internet Engineering Task Force (IETF) Simple Network Time Protocol (SNTP) Version 4, "Request for Comment" (RFC) #2030, October, 1996	HITSP/T16 - Consistent Time	
Internet Engineering Task Force (IETF) Tags for Identifying Languages, "Request for Comment" (RFC) # 4646, September, 2006	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
Logical Observation Identifiers Names and Codes (LOINC®)	HITSP/C39 - Encounter Message HITSP/C80 - Clinical Document and Message Terminology	HITSP/C80 Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
National Cancer Institute (NCI) Thesaurus	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
National Library of Medicine (NLM) Unified Medical Language System (UMLS) RxNorm	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C32, HITSP/C48 and HITSP/C84
National Uniform Billing Committee (NUBC) Uniform Bill Version 1992 (UB-92) Current UB Data Specification Manual Field 22, Patient Discharge Status, Codes	HITSP/C39 - Encounter Message	HITSP/C80 Vocabularies are enabled via HITSP/C32 and HITSP/C48



Standard	HITSP Construct	Remarks/Minor Gaps
Organization for the Advancement of Structured Information Standards (OASIS) Common Alerting Protocol (CAP) V1.1, October 2005	HITSP/C82 - Emergency Common Alerting Protocol	
Organization for the Advancement of Structured Information Standards (OASIS) Emergency Data Exchange Language (EDXL) Distribution Element (DE) Version 1.0	HITSP/T63 - Emergency Message Distribution Element	
Organization for the Advancement of Structured Information Standards (OASIS) Security Assertion Markup Language (SAML) Core v2.0 OASIS Standard; ITU-T X.1141	HITSP/TP20 - Access Control	
Organization for the Advancement of Structured Information Standards (OASIS) Emergency Data Exchange Language (EDXL) Hospital Availability Exchange (HAVE) Version 1.0	HITSP/C47 - Resource Utilization	
Organization for the Advancement of Structured Information Standards (OASIS) WS-Trust Version 1.3, March 2007	HITSP/TP20 - Access Control	
Organization for the Advancement of Structured Information Standards (OASIS) eXtensible Access Control Markup Language (XACML), ITU-T Recommendation X.1142, February 2005	HITSP/TP20 - Access Control	
Unified Code for Units of Measure (UCUM)	HITSP/C39 - Encounter Message HITSP/C80 - Clinical Document and Message Terminology	HITSP/C80 Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
United States Postal Service (USPS) – Postal Codes	HITSP/C80 - Clinical Document and Message Terminology	Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84
VHA National Drug File Reference Terminology (NDF-RT) Formulary	HITSP/C80 - Clinical Document and Message Terminology	HITSP/C80 Vocabularies are enabled via HITSP/C/32, HITSP/C48 and HITSP/C84

4.1.3 INFORMATIVE REFERENCE STANDARDS

The following table lists standards that provide additional background information or guidance; however, they are not required for the implementation of the Interoperability Specification.

Table 4.1.3-1 Informative Reference Standards

Standard	Reason for Use
No applicable informative reference standards	

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 selection 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 Use Case requirement. Recommended resolutions were developed through a series of steps including the Technical Committee's initial recommendations, cross Technical Committee validation of the gap, provisional recommendations and peer review by the Technical Committee.

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

At the October, 2007 HITSP Face-to-Face the ER-EHR TC reviewed the identified gaps in a special session with Emergency Medical Service and Law Enforcement Subject Matter Experts. The intent of the session was to: 1) ensure that all gaps had been identified, 2) ensure that the identified gaps have been appropriately framed/described and included on the "Road Map" for closure/resolution, and 3) Identify the appropriate groups or individuals that would help lead an effort to effectively "Close the Gap". During that session, four specific, although related, "gap closing projects" were identified and/or proposed by participants.

The TC agreed that the National Emergency Medical Services Information Systems (NEMSIS) Technical Support Center and the National Trauma Data Bank (NTDB) Technical Center would chair a work group to develop a draft plan which defines a process for closing the gaps at least for these specific four issues. Different organizations will take the initial lead on drafting suggested plans as to how to address some of these issues, subject to NEMSIS' coordination and leadership. The overall plan will be presented to the TC. The plan shall specifically address a process which can be used to reach a collaborative and transparent approach for:

- Identification of and harmonization of current data taxonomies and messaging standards that are/have been in use by the different organizations that operate in the pre-hospital and ED domain and, if necessary, their mapping to standard terminologies and data structures
- Identification of and strategy for involving all the significantly affected stakeholders both in development and in the maintenance of these standards. This will include at a minimum groups such as NEMSIS, NHTSA, HL7, DHS-DM, IHE, NTDB, NASEMSO, APCO, COMCARE, HIMSS, NENA and others
- Identification of and strategy for involving stakeholders both in development and in the maintenance of the messaging/exchange standards
- Plan to develop criteria for SDO selection based on the HITSP Tier 2 Criteria
- How and when SDO approved messaging/exchange standards will be included in a subsequent iteration of HITSP/IS04

The four planned projects for which the NEMSIS chaired work group will report back to the TC are:

- Finding a method of assigning and adopting unique identifiers for both incidents and patients so data from heterogeneous systems can be linked



- Exploring common approaches of delivering third party incident information such as telematics data to the ECS and other emergency responders
- Reaching agreement between healthcare and other emergency responders on a common terminology (“Managed List”) for incident types
- Harmonizing the data taxonomies of hospital, EMS, and other emergency responders to the extent necessary to implement the ER-EHR

In addition to the four projects above, there are four additional gap area projects, which are:

- Decision Support Tools
- Core Services
- Situation Awareness Messaging
- Emergency Contact Registry (ECON)

Details on each of these are discussed in the following table. The table below identifies the Use Case events and known associated HITSP GAPs, along with the recommended resolutions.

Table 4.2-1 Use Case Requirements and Associated Standards Gaps

Requirement Number	Summary Description	Identified Gaps	Recommended Resolution
DR53 DR54 IER53	Resource Utilization Situational Awareness Send/receive situation report	Currently, there is no structured document available for Situational Awareness Information. The OASIS EDXL Resource Messages were designed for multi-domain communications about any sort of physical resource and are useful for this purpose, used in conjunction with the OASIS EDXL Distribution Element.	<p>Use HITSP/C62 – Unstructured Document until gap is resolved except where standards exist</p> <p>The OASIS EDXL Resource Messages may be used for part of this purpose</p> <p>Sponsored by DHS, OASIS EDXL Situational Awareness messages are still in the requirements development stages</p> <p>Recommendation is for HITSP to create constructs to use these standards when they become available</p>



Requirement Number	Summary Description	Identified Gaps	Recommended Resolution
IER46 DR44	Query/receive Emergency Contact Information (ECON) linked to a unique ECON identifier, such as a Vehicle Identification Number (VIN# ECON) or Drivers License (DL# ECON)	A standard enabling law enforcement to securely hand over crash victim ID/ECON information to crash scene EMS providers in an automated and streamlined format	<p><u>Emergency Contact Registry (ECON) Project</u></p> <p>Resolution of this gap is the subject of the 2008 IHE ITI Technical Committee ID/ECON White Paper entitled "Template for Law Enforcement to Hand Over Crash Victim Identity (ID) and Emergency Contact Information (ECON) to EMS Providers Following a Motor Vehicle Crash". The IHE ITI ID/ECON White Paper received stakeholder endorsement and support from the following organizations:</p> <p>Int'l Association of Chiefs of Police Int'l Association of Fire Chiefs Nat'l Association of State EMS Officials Int'l Association of Public-Safety Communications Officials American Association of State Highway and Transportation Officials – Subcommittee on Safety Management Governors Highway Safety Association HIMSS PHR EHR Public Comment Work Group</p> <p>The above stakeholders collectively recommended this gap move forward as 2008-2009 profile work for the IHE PCC Technical Committee as part of the "Pre-Hospital Patient Care Report Profile Proposal". In October 2008, the IHE PCC Planning Committee approved the Pre-Hospital Patient Care Report Profile Proposal to proceed forward to the IHE PCC Technical Committee for final approval in November 2008</p> <p>The ER-EHR Technical Committee participated in Certification Commission on Healthcare Information Technology (CCHIT) October 2008 PHR '09 Criteria Public Comment Period to urge CCHIT to modify it's first draft of '09 interoperability criteria to reflect the PHR interoperability requirements of the HITSP Emergency Responder IS-04, including the definition of a minimum emergency data set (i.e. VIN# ECON data set) for developing PHR criteria that will ensure that PHRs can send and receive data from emergency responder systems</p>
DR45	Incident information from third party service providers such as automaker telematics services information services, e.g., Onstar, TeleAid, etc.	<p>Currently, those telematics suppliers that are providing data to ECS are using the Vehicular Emergency Data Set (VEDS) XML specification. It will be routed in the future by the OASIS EDXL DE discussed above</p> <p>There is no similar structured document available for Incident Information from other Third Party Service Providers</p>	<p>Use OASIS EDXL DE and VEDS for telematics information</p> <p>Use DE and HITSP/C62 - Unstructured Document until other incident payloads such as identity, patient-specific health information and emergency contact information are developed</p>



Requirement Number	Summary Description	Identified Gaps	Recommended Resolution
DR17	Decision Support Data	Currently, there is no structured document for Decision support information The component for decision support does not exist in HITSP	Use HITSP/C62 - Unstructured Document until a structured document is available Will monitor HL7 development of Decision-support structured document.
DR48	Present Episode of Care – ECS	There is no taxonomy, messaging, or structured document available for pre-hospital clinical and related information linking 9-1-1, Dispatch, EMS, Emergency Management, Hospitals and Public Health The need is for messaging for ad hoc collections of this data, rather than a "document". This is a gap	Use HITSP/C62- Unstructured Document pending the availability of a taxonomy and structure document <u>Data Taxonomy Harmonization Project</u> , NEMSIS has developed a plan which describes the recommended process, stakeholders, and current data standards for harmonization of taxonomies and time frames for resolving/addressing data harmonization issues between various pre-hospital, hospital and public health actors. The plan will address the collaboration and involvement of stakeholders such as: NHTSA, HL7, DHS-DM, IHE, NTDB, NASEMSO, APCO, COMCARE, HIMSS, NENA and others Identify and work with appropriate SDOs to define standard data structure
DR43	Ambulance Run Report	There is no taxonomy or structured document available for pre-hospital non-clinical information. (e.g., Billing and financial information)	Use HITSP/C62- Unstructured Document pending the availability of a taxonomy and structure document
DR46	Medical Life Support Monitor Data	Currently, there is no structured document for medical device data such as life signs monitors in ambulances, defibrillators, etc	Use HITSP/C62 – Unstructured Document until a structured document is available We will monitor the RMON Use Case gap resolution This is being monitored in NEMSIS Phase 3.
DR64 DR65 IER65 IER66	Agency Locator Registry Agency Authorization List Send/receive agency distribution list Send/receive agency authorization	While there is an access control service, there is not yet an agency locator service in HITSP	Recommendation is that HITSP create a construct to provide these information flows COMCARE, NENA and other emergency organizations are currently working towards a standard for this with Open Geospatial Consortium (OGC)

4.3 STANDARD OVERLAPS

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



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

Nursing Terminology Overlap

In 2007, an overlap in standards was identified by the HITSP ER-EHR (TC) work group in the Use Case scenario for Present Episode of Care. In particular, many of the individual data elements in Scenario 1 (On-Site), Scenario 2 (ED) and Scenario 3 (Definitive Care) may be captured by nursing and thus will be dependent upon an interoperable nursing terminology schema. Other required information in Nursing Notes, Vital Signs, Triage, Discharge Summary and others included nursing activities will be dependent on elements of an interoperable nursing terminology. A work group of nurses with expertise in nursing terminologies and emergency nursing was convened to address this overlap. The HITSP Nursing Terminology Work Group prepared a work plan and reported back to the ER-EHR Work Group within 45 days. The work effort was completed in April of 2008.

RESOLUTION: "This Interoperability Specification will use the CHI recommended SNOMED CT® as a reference terminology to communicate interoperable information among and between systems, with the HITSP Interoperability Specification Pre-condition that the sending and using systems must use formal coded nursing terminologies such as the Clinical Care Classification (CCC) System and the Omaha System that are integrated in SNOMED CT®." (HITSP/IS02 Biosurveillance, V.3.0 Released for Implementation on 3/27/08)

Table 4.3-1 Use Case Requirements and Associated Standard Overlaps

Requirement Number	Summary Description	Standard Overlap	Recommended Resolution
IER52	Send/receive Billing Support Report	Message in HL7 V2 Message in HL7 V3	There are many sub-domain niche de-facto standards and vocabularies, which provide partial solutions and sometimes overlap. These should be jointly worked and harmonized as part of the HITSP GAP roadmap discussed in Table 4.2.1
DR48	Present Episode of Care – ECS	NEMSIS NIEM/GJXDM	
DR43	Ambulance Run Report	DEEDS NENA	



5.0 CONFORMANCE

This section describes the conformance criteria, which are objective statements of requirements that can be used to determine if a specific behavior, function, interface, or code set has been implemented correctly.

5.1 CONFORMANCE CRITERIA

In order to claim conformance to the specification, an implementation must satisfy all the requirements and mandatory statements listed in the HITSP Interoperability Specification, its associated construct specifications, as well as conformance criteria from the selected base and composite standards. A conformant system must be constrained as specified in Table 3.1.2-1, and implement all of the required actors from Table 3.2.3-1, within the scope, subset or implementation option that is selected from Section 5.2 below.

Claims of conformance to this specification must be made using the following language:
This product conforms to HITSP's Emergency Responder Electronic Health Record Interoperability Specification, available at www.hitsp.org.

5.2 CONFORMANCE SCOPING, SUBSETTING AND OPTIONS

A HITSP Interoperability Specification can be implemented for individual business actors defined in the Interoperability Specification. An implementation claiming conformance to a specific business actor from the Interoperability Specification shall support all of the requirements associated to that business actor as described in Table 3.2.3-1.

This means that for each implemented business actor:

1. All Required or Conditionally Required technical actors listed for the business actor shall be supported as specified in the associated construct
2. Optional technical actors listed for the business actor may be supported as specified in the associated construct
3. All Required or Conditionally Required transactions and content subsets listed for each implemented technical actor assigned to the business actor shall be supported as specified in the associated construct
4. Optional transactions and content subsets listed for each implemented technical actor assigned to the business actor may be supported as specified in the associated construct

Implementers of this Interoperability Specification who follow the principles listed above are being provided a level of implementation flexibility, while maintaining interoperability.



5.3 TEST METHODS

HITSP relies on the conformance test methods, test tools and other test-related material produced by, or under the auspices, of standards developers, profiling organizations and implementation guide producers as part of its collaborative implementation testing effort. Efforts to produce conformance test methods, tools, etc. may be internal to the organization, or provided by an external organization.

A Health Information Technology (HIT) Implementation Testing website has been developed in collaboration with Healthcare Information Technology Standards Panel (HITSP), the National Institute of Standards and Technology (NIST), the Certification Commission for Healthcare Information Technology (CCHIT), and the Office of the National Coordinator (ONC) to advance conformance and interoperability testing capabilities. This website provides HIT implementers with the necessary resources to support and test their implementation of standards-based health systems. For more information, visit NIST at www.nist.gov.



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 selected standards from Section 4.1.2 above:

Table 6.1-1 Description of Standards

Standard	Description
Accredited Standards Committee (ASC) X12 270 and 271 Transaction Standards Version 4010, using the Insurance Subcommittee (X12N) Addenda 004010X92A1	Many of the version X12N 004010 Implementation Guides, including all of those adopted under HIPAA, have Addenda that contain updates -- only -- to the original Implementation Guides. These Addenda are identified as version 004010A1. Implementation Guide 004010X092A1 describes transactions for Health Care Eligibility Benefit Inquiry and Response. Implementation Guides are published by Washington Publishing Company. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 270 and 271 transaction standards version 4010, using the Insurance Subcommittee (X12N) Implementation Guides Version Reference Numbers 004010X92	Detailed Implementation Guides based on release 004010 of the X12 standards. These Implementation Guides provide details on the use of X12 standards to accomplish specific transaction functions. Some of the version 004010 Implementation Guides, but not all, have been adopted as Implementation Specifications under HIPAA. Implementation Guides are published by Washington Publishing Company. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 270 Transaction Version Standards Release 004010	The objective of the Health Care Eligibility/Benefit Inquiry (270) is to provide for the exchange of eligibility inquiry to individuals within a health plan. This transaction can be used by healthcare providers to request coverage and payment information on the member/insured in a batch environment where real time processing is not required. This transaction is also used to provide additional patient eligibility information to support administrative reimbursement for healthcare products and services. This standard is required by HIPAA. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 271 Transaction Version Standards Release 004010	The objective of the Health Care Eligibility, Coverage, or Benefit Information (271) is to provide for the response to eligibility inquiries about individuals within a health plan. This transaction can be used to receive coverage and payment information on a member/insured in a batch environment where real time processing is not required. This transaction is also used to provide additional patient eligibility information to support administrative reimbursement for healthcare products and services. This standard is required by HIPAA. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 278 Transaction Version Standards Release 004010	The objective of the Health Care Service Review – Request for Review and Response (278) is to provide for the exchange of service review requests from a healthcare provider to a health plan, and a corresponding response from the health plan to that healthcare provider. This transaction can be used by healthcare providers to request approval and coverage information on the patient for a particular service type or service. This standard is required by HIPAA. This standard is required by regulatory guidance. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 278 Transactions Standard Version 4010, using the Insurance Subcommittee (X12N) Addenda 004010X94A1	Many of the version X12N 004010 Implementation Guides, including all of those adopted under HIPAA, have Addenda that contain updates -- only -- to the original Implementation Guides. These Addenda are identified as version 004010A1. Implementation Guide 004010X094A1 describes transactions for Health Care Service Review – Request for Review and Response. Implementation Guides are published by Washington Publishing Company. For more information visit www.wpc-edi.com . This standard is required by regulatory guidance. For more information visit www.wpc-edi.com .



Standard	Description
Accredited Standards Committee (ASC) X12 278 transactions standard version 4010, using the Insurance Subcommittee (X12N) Implementation Guides Version Reference Numbers 004010X94	Detailed Implementations Guide based on release 004010 of the X12 standards. These Implementation Guides provide details on the use of X12 standards to accomplish specific transaction functions. Some of the version 004010 Implementation Guides, but not all, have been adopted as Implementation Specifications under HIPAA. This standard is required by regulatory guidance. Implementation Guides are published by Washington Publishing Company. For more information visit www.wpc-edi.com .
Accredited Standards Committee (ASC) X12 Standards Release 004010	Release (version) 004010 of the Accredited Standards Committee (ASC) X12 standards including the X12.5 Interchange Control, X12.6 Application Control Structure, 270 Eligibility, Coverage or Benefit Inquiry, 271 Eligibility, Coverage or Benefit Information and other control standards for the uniform electronic interchange of business transactions. Published by the Data Interchange Standards Association (DISA). For more information visit www.x12.org .
American Medical Association (AMA) Current Procedural Terminology (CPT®) Fourth Edition (CPT-4); CPT Evaluation and Management Codes	A uniform coding system used primarily to identify medical services and procedures furnished by physicians and other healthcare professionals. For more information visit www.ama-assn.org .
CDC Race and Ethnicity Code Sets	The U.S. Centers for Disease Control and Prevention (CDC) has prepared a code set for use in coding race and ethnicity data. This code set is based on current federal standards for classifying data on race and ethnicity, specifically the minimum race and ethnicity categories defined by the U.S. Office of Management and Budget (OMB) and a more detailed set of race and ethnicity categories maintained by the U.S. Bureau of the Census (BC). The main purpose of the code set is to facilitate use of federal standards for classifying data on race and ethnicity when these data are exchanged, stored, retrieved, or analyzed in electronic form. At the same time, the code set can be applied to paper-based record systems to the extent that these systems are used to collect, maintain, and report data on race and ethnicity in accordance with current federal standards. For more information visit www.cdc.gov .
Council for Affordable Quality Health Care (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase I Operating Rules	Provide agreed-upon business rules and guidelines for using and processing eligibility inquiry and response transactions between providers and health plans; in particular those that have been adopted under HIPAA. For more information visit www.caqh.org .
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #258 Normalizing Last Name Rule v2.0.0	Provides agreed-upon business rules and guidelines for using and processing eligibility inquiry and response transactions between providers and health plans; in particular those that have been adopted under HIPAA. For more information visit www.caqh.org .
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #259 AAA Error Code Reporting Rule v2.0.0	Provides agreed-upon business rules and guidelines for using and processing eligibility inquiry and response transactions between providers and health plans; in particular those that have been adopted under HIPAA. For more information visit www.caqh.org .
Council for Affordable Quality Healthcare (CAQH) Committee on Operating Rules for Information Exchange (CORE) Phase II #260 Eligibility Data Content Rule v2.0.0	Provides agreed-upon business rules and guidelines for using and processing eligibility inquiry and response transactions between providers and health plans; in particular those that have been adopted under HIPAA. For more information visit www.caqh.org .



Standard	Description
Council for Affordable Quality Healthcare (CAQH) Phase II Core #270 Connectivity Rule v2.0.0	<p>The CORE #270 Connectivity Rule v2.00 developed by CAQH/CORE Connectivity Subgroup. It includes the following:</p> <ul style="list-style-type: none"> • Scope definition, rationale and policy guidelines • Message envelope and submitter authentication standards (payload agnostic) • Basic conformance requirements for stakeholders in terms of the chosen standards • Message envelope metadata names, syntax and semantics • Message envelope schemas and examples of use • Error handling • Glossary of terms <p>For further information visit www.caqh.org.</p>
Federal Information Processing Standards (FIPS) Codes for the Identification of the States, the District of Columbia and the Outlying Areas of the United States, and Associated Areas Publication # 5-2, May, 1987	<p>A set of two-digit numeric codes and a set of two-letter alphabetic codes for representing the 50 states, the District of Columbia and the outlying areas of the United States, and associated areas. The standard covers all land areas under the sovereignty of the United States, the freely associated states of Federated States of Micronesia and Marshall Islands, and the trust territory of Palau. For more information visit www.itl.nist.gov.</p> <p>NOTE: ASC X12 transactions and ASC X12N Implementation Guides do not allow use of this standard; instead they require use of the U.S. Postal Service's National Zip Code and Post Office Directory -- which provides similar alphabetic code values.</p>
Food and Drug Administration (FDA) - Unique Ingredient Identifier (UNII)	<p>Provides codes developed by FDA to uniquely identify all ingredients used in marketed medications in the United States. Each UNII is assigned based on molecular structure, manufacturing process, or other characteristics. UNII is part of the Federal Medication Terminologies. For more information visit www.fda.gov/oc/datacouncil/SRS.htm</p>
Food and Drug Administration (FDA) - National Drug Code (NDC)	<p>Provides drug codes for prescription medicine and insulin products. NDC is managed by the FDA and is part of the Federal Medication Terminologies. For more information visit www.fda.gov/cder/ndc/database/default.htm</p>
Health Level Seven (HL7) Common Terminology Services (CTS) Release 1	<p>The HL7 Common Terminology Services (HL7 CTS) defines an Application Programming Interface (API) that can be used when accessing terminological content. The CTS specification was developed as an alternative to a common data structure. Instead of specifying what an external terminology must look like, HL7 has chosen to identify the common functional characteristics that an external terminology must be able to provide. As an example, an HL7 compliant terminology service will need to be able to determine whether a given concept code is valid within the particular resource. Instead of describing a table keyed by the resource identifier and concept code, the CTS specification describes an Application Programming Interface (API) call that takes a resource identifier and concept code as input and returns a true/false value. Each terminology developer is free to implement this API call in whatever way is most appropriate for them. For more information visit www.hl7.org</p> <p>It describes a set of API calls that represent the core functionality that will be needed by basic HL7 Version 3 applications.</p>



Standard	Description
Health Level Seven (HL7) HL7 Version 3 Standard: Clinical Document Architecture (CDA), Release 2	The HL7 Clinical Document Architecture is an XML-based document markup standard that specifies the structure and semantics of clinical documents for the purpose of exchange. CDA is one instantiation of HL7's Version 3.0 Reference Information Model (RIM) into a specific message format. Of particular focus for HITSP Interoperability Specifications are message formats for Laboratory Results and Continuity of Care (CCD) documents. Release 2 of the HL7 Clinical Document Architecture (CDA) is an extension to the original CDA document markup standard that specifies the structure and semantics of clinical documents for the purpose of exchange. CDA R2 includes a prose document in HTML, XML schemas, data dictionary, and sample CDA documents. CDA R2 further builds upon other HL7 standards beyond just the Version 3.0 Reference Information Model (RIM) and incorporates Version 3.0 Data Structures, Vocabulary, and the XML Implementation Technology Specifications for Data Types and Structures. For more information visit www.hl7.org .
Health Level Seven (HL7) Implementation Guide for CDA Release 2: Consultation Note	The HL7 Implementation Guide for CDA Release 2: Consultation Note defines additional constraints on the CDA Header and Body used in a Consultation document in the U.S. realm, and provides examples of conforming fragments in the body of the document and an example of a conforming XML instance. For more information visit www.hl7.org
Health Level Seven (HL7) Implementation Guide for CDA Release 2: History and Physical (H&P) Notes	The HL7 Implementation Guide for CDA Release 2: History and Physical (H&P) Notes defines additional constraints on the CDA Header and Body used in a History and Physical document in the U.S. realm, and provides examples of conforming fragments in the body of the document and an example of a conforming XML instance. For more information visit www.hl7.org
Health Level Seven (HL7) Implementation Guide: CDA Release 2 – Continuity of Care Document (CCD), April 01, 2007	The Continuity of Care Document implementation guide describes constraints on the HL7 Clinical Document Architecture, Release 2 (CDA) specification in accordance with requirements set forward in ASTM E2369-05 Standard Specification for Continuity of Care Record (CCR). The resulting specification, known as the Continuity of Care Document (CCD), is developed as a collaborative effort between ASTM and HL7. It is intended as an alternate implementation to the one specified in ASTM ADJE2369 for those institutions or organizations committed to implementation of the HL7 Clinical Document Architecture. For more information visit www.hl7.org .
Health Level Seven (HL7) Standard Code Set CVX - Vaccines Administered	The CDC's National Center of Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set CVX. The implementation of the HL7 standard for immunization data exchange is described in Chapter 4 of the HL7 standard. The codes in HL7 Version 2.3 table 0292, represented the initial content of the external CVX code set. Since vaccines have to be added to this table more quickly than new versions of HL7 are released, this document represents the most up-to-date version of the CVX code set. Items have been added. Others have been added for planning purposes, pending FDA approval. For more information visit http://www.cdc.gov/vaccines/programs/iis/stds/cvx.htm
Health Level Seven (HL7) Standard Code Set MVX - Manufacturers of Vaccines	The CDC's National Center for Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set MVX. The implementation of the HL7 standard for immunization data exchange is described in Chapter 4 of the HL7 standard. The codes in HL7 Version 2.3 table 0227 represent the initial content of the external MVX code set. This document represents the most up-to-date version of the MVX code set. For more information visit http://www.cdc.gov/vaccines/programs/iis/stds/mvx.htm
Health Level Seven (HL7) V3 RBAC, R1-2008, HL7 Version 3 Standard: Role Based Access Control (RBAC) Healthcare Permissions Catalog, Release 1, February 2008	The Healthcare Permission Catalog provides the necessary content for creating interoperable roles facilitating inter-organizational communications and information sharing among healthcare organizations and their business partners. For more information visit www.hl7.org .



Standard	Description
Health Level Seven (HL7) Version 2.3.1 Chapter 2 – Control, Chapter 3 – Patient Administration	The HL7 Version 2.3.1 Messaging Standard is an application protocol for electronic data exchange in healthcare. It and prior versions have widespread use in the U.S. and internationally. Both message formats and value sets/code tables are contained in the standard. For more information visit www.hl7.org .
Health Level Seven (HL7) Version 2.5	The HL7 Version 2.5 Messaging Standard is an application protocol for electronic data exchange in healthcare. It and prior versions have widespread use in the U.S. and internationally. Both message formats and value sets/code tables (e.g., diagnosis type, gender, patient class, result status, specimen collection method, abnormal flags, observation result status codes interpretation, timestamp format) are contained in the standard. Of particular focus for HITSP Interoperability Specifications are message formats described in Chapters 2, 3, 5, and 7 including patient demographic (ADT) and lab result reporting. These are also used within composite standards from IHE for Patient Identity Cross-Referencing and Feed (PIX), Patient Demographics Query (PDQ), and Acknowledgements. For more information visit www.hl7.org .
Health Level Seven (HL7) Version 2.5, Chapter 2 – Control, Chapter 3 – Patient Administration, Chapter 5 - Query	The HL7 Version 2.5 Messaging Standard is an application protocol for electronic data exchange in healthcare. It and prior versions have widespread use in the U.S. and internationally. Both message formats and value sets/code tables (e.g., diagnosis type, gender, patient class, result status, specimen collection method, abnormal flags, observation result status codes interpretation, and timestamp format) are contained in the standard. For more information visit www.hl7.org .
Health Level Seven (HL7) Version 3.0 – Vocabularies and Value Sets	The HL7 Version 3.0 Messaging Standard is an application protocol for electronic data exchange in healthcare. Version 3.0 is based on a Reference Information Model (RIM); which is used to instantiate various message formats. Value sets/code tables are contained in the standard. For more information visit www.hl7.org .
Health Level Seven (HL7) Version 3.0 Privacy Consent related specifications RCMR_RM010001 - Data Consent	The Data Consent RIM captures the data and associations needed to (1) record or report a consumer's consent or dissent to authorize the access, collection, use, or disclosure of personally identifiable information; (2) convey a provider's request or intent to override a patient's recorded consent or dissent; (3) convey a type of consent directive associated with a privacy policy; or (4) to record or report a consumer's consent directive, which is to be applied to future access, collection, use or disclosure of personally identifiable information. For more information visit www.hl7.org .
Integrating the Healthcare Enterprise (IHE) Exchange of Personal Health Record Content (XPHR)	The Exchange of Personal Health Record Content (XPHR) integration profile describes the content and format of summary information extracted from a PHR system used by a patient for import into healthcare provider information systems, and visa versa. The purpose of this profile is to support interoperability between PHR systems used by patients and the information systems used by healthcare providers. This profile does not address all the data exchange requirements of PHR systems. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Volume 2 Supplement 2007 – 2008 Cross-Enterprise User Assertion (XUA)	The Cross-Enterprise User Assertion Profile (XUA) provides a means to communicate claims about the user identity of an authenticated principal (user, application, system...) in transactions that cross enterprise boundaries. To provide accountability in these cross enterprise transactions there is a need to identify the requesting user in a way that the receiver can make access decisions and proper audit entries. The XUA Profile supports enterprises that have chosen to have their own user directory with their own unique method of authenticating the entities, and others that may have chosen to use a third party to perform the authentication. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) – Revision 5.0 or later, Cross Enterprise Sharing of Scanned Documents (XDS-SD) Integration Profile	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. For more information visit www.ihe.net to retrieve Volume 1, and Volume 2 of the framework.



Standard	Description
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Audit Trail and Node Authentication Profile (ATNA)	Audit Trail and Node Authentication (ATNA) establishes the characteristics of a Basic Secure Node. It describes the security environment (user identification, authentication, authorization, access control, etc.) assumed for the node so that security reviewers may decide whether this matches their environments. It defines basic auditing requirements for the node. It defines basic security requirements for the communications of the node using TLS or equivalent functionality. It establishes the characteristics of the communication of audit messages between the Basic Secure Nodes and Audit Repository nodes that collect audit information. This integration profile has been designed so that specific domain frameworks may extend it through an option defined in the domain specific technical framework. Extensions are used to define additional audit event reporting requirements, especially actor specific requirements. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Consistent Time (CT) Integration Profile	The Consistent Time Integration Profile (CT) provides a means to ensure that the system clocks and time stamps of the many computers in a network are well synchronized. This profile specifies synchronization with a median error less than 1 second. This is sufficient for most purposes. The current version of the ITI-TF Final Text, specifies the IHE CT Integration Profile, and other transactions defined and implemented as of October 10, 2008. The latest version of the IHE Technical Framework is available at www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Audit Trail and Node Authentication (ATNA) Integration Profile, Section 9.1 Authentication	Audit Trail and Node Authentication (ATNA) establishes the characteristics of a Basic Secure Node. It describes the security environment (user identification, authentication, authorization, access control, etc.) assumed for the node so that security reviewers may decide whether this matches their environments. It defines basic auditing requirements for the node. It defines basic security requirements for the communications of the node using TLS or equivalent functionality. It establishes the characteristics of the communication of audit messages between the Basic Secure Nodes and Audit Repository nodes that collect audit information. This integration profile has been designed so that specific domain frameworks may extend it through an option defined in the domain specific technical framework. Extensions are used to define additional audit event reporting requirements, especially actor specific requirements. The latest version of the IHE Technical Framework is available at www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 5.0 or later, Patient Demographics Query (PDQ) Integration Profile	Provides ways for multiple distributed applications to query a central patient information server for a list of patients, based on user-defined search criteria, and retrieve a patient's demographic (and, optionally, visit or visit-related) information directly into the application. For more information visit www.ihe.net
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008 - 2009, Pediatric Demographics, Draft for Trial Implementation (August 22, 2008)	The experience of immunization registries and other public health population databases has shown that matching and linking patient records from different sources for the same individual person in environments with large proportions of pediatric records requires additional demographic data. Pediatric Demographics makes use of the following six additional demographic fields to aid record matching in databases with many pediatric records. The latest version of the IHE Technical Framework is available at www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework, Revision 4.0 or later, Personnel White Pages profile	The Personnel White Pages (PWP) Profile provides access to basic directory information on human workforce members to other workforce members within the enterprise. This information has broad use among many clinical and non-clinical applications across the healthcare enterprise. This Personnel White Pages Profile specifies a method of finding directory information on the User Identities (user@realm) supplied by the Enterprise User Authentication (EUA) Integration Profile. For more information, visit www.ihe.net .



Standard	Description
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Sharing Value Sets (SVS)	The Sharing Value Sets (SVS) profile provides a means through which healthcare systems producing clinical or administrative data, such as diagnostic imaging equipment, laboratory reporting systems, primary care physician office EMR systems, or national healthcare record systems, can receive a common, uniform nomenclature managed centrally. Shared nomenclatures are essential to achieving semantic interoperability. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0, Section 10 Cross-Enterprise Document Sharing (XDS.a)	The IHE IT Infrastructure Technical Framework defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of health information to support optimal patient care. Section 10, Cross-Enterprise Document Sharing facilitates the registration, distribution and access across health enterprises of patient electronic health records. IHE Integration Profiles offer a common language that healthcare professionals and vendors may use in communicating requirements for the integration of products. The current version of the ITI-TF, rev. 4.0 for Final Text, specifies the IHE transactions defined and implemented as of August 22, 2007. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 - Registry Stored Query Transaction for XDS Profile Supplement [ITI-18]	The IHE IT Infrastructure Technical Framework defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of health information to support optimal patient care. IHE Integration Profiles offer a common language that healthcare professionals and vendors may use in communicating requirements for the integration of products. The Registry Stored Query Transaction Trial Implementation Supplement specifies an IHE transaction that provides optimization and implementation simplification. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009, Cross-Community Access (XCA), Trial Implementation, October 10, 2008	The IHE IT Infrastructure Technical Framework defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of health information to support optimal patient care. IHE Integration Profiles offer a common language that healthcare professionals and vendors may use in communicating requirements for the integration of products. The trial implementation version of the XCA Supplement to the ITI-Technical Framework specifies the IHE transactions that support access between communities in a manner compatible with the XDS Integration profile. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Volume 2 Supplement 2007 – 2008 Cross-Enterprise Document Sharing-B (XDS.b)	The Cross-Enterprise Document Sharing-B Profile (XDS.b) supplement provides a new implementation choice for the Cross-Enterprise Document Sharing (XDS) Integration Profile based on use of the Web Services and ebXML Reg/Rep standards that is consistent with current developments and best practices in the industry. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 or later, Patient Identifier Cross-Referencing Integration Profile (PIX)	<p>The Patient Identifier Cross-referencing Integration Profile (PIX) is targeted at healthcare enterprises of a broad range of sizes (hospital, a clinic, a physician office, etc.). It supports the cross-referencing of patient identifiers from multiple Patient Identifier Domains via the following interactions: 1) The transmission of patient identity information from an identity source to the Patient Identifier Cross-reference Manager. 2) The ability to access the list(s) of cross-referenced patient identifiers either via a query/response or via update notification.</p> <p>By specifying the above transactions among specific actors, this integration profile does not define any specific enterprise policies or cross-referencing algorithms. By encapsulating these behaviors in a single actor, this integration profile provides the necessary interoperability while maintaining the flexibility to be used with any cross-referencing policy and algorithm as deemed adequate by the enterprise. For more information visit www.ihe.net.</p>



Standard	Description
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0 XCA Supplement	The IHE IT Infrastructure Technical Framework defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of health information to support optimal patient care. IHE Integration Profiles offer a common language that healthcare professionals and vendors may use in communicating requirements for the integration of products. The trial implementation version of the XCA Supplement to the ITI-TF, rev. 4.0 Final Text, specifies the IHE transactions that support access between communities in a manner compatible with the XDS Integration profile. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2007 - 2008 Basic Patient Privacy Consents (BPPC) – Trial Implementation	The Basic Patient Privacy Consents (BPPC) profile provides a mechanism to record the patient privacy consent(s), a method to mark documents published to XDS with the patient privacy consent that was used to authorize the publication, and a method for XDS Consumers to use to enforce the privacy consent appropriate to the use. This profile complements XDS by describing a mechanism whereby an XDS Affinity Domain can develop and implement multiple privacy policies, and describes how that mechanism can be integrated with the access control mechanisms supported by the XDS Actors (e.g. systems). There are two key parts of the profile: 1) It provides a document content specification for capturing a patient acknowledgement of a privacy consent policy or policies. 2) It describes the method by which XD* Actors can enforce the privacy policies determined by the document confidentialityCode related to the patient privacy consents. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Supplement 2008-2009 Document-based Referral Request (DRR)	This profile describes how to relate a referral request document with relevant clinical documents, communicate the group of documents to a referral dispatcher with an optional online transaction to trigger the referral and communicate acceptance. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) Laboratory Technical Framework Volume 3 (LAB TF-3) Document-based Transactions, Revision 2.0 - For Trial Implementation, August 16, 2007	The IHE Laboratory Technical Framework introduces a content Integration Profile Sharing Laboratory Reports (LAB TF-3) that describes a clinical laboratory report as a human-readable electronic document. This document, which may also contain data in a machine-readable format and contains the complete set of final results, produced by a clinical laboratory in fulfillment of one or more test orders for a patient. This document is focused on the sharing of sets of laboratory results in the form of a laboratory report structured document, and is not intended to address ordering or return of laboratory results to the ordering provider. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) Patient Care Coordination (PCC), Revision 4.0, 2008 - 2009, Cross-Enterprise Sharing of Medical Summaries (XDS-MS) Integration Profile	The IHE Patient Care Coordination Technical Framework (PCC TF) defines specific implementations (called Integration Profiles) of established standards to deal with integration issues that cross providers, patient problems or time. The Cross Enterprise Document Sharing of Medical Summaries (XDS-MS) Integration Profile enables sharing of health information between enterprises of a regional health network, and further describes how to map content in a CDA medical document into registry metadata. In the registry, healthcare providers publish pointers to documents stored in distributed repositories. Other healthcare providers may search and retrieve these and other documents. For more information visit www.ihe.net .
Integrating the Healthcare Enterprise (IHE) Patient Care Coordination (PCC) - Emergency Department Encounter Summary (EDES), Technical Framework Supplement, Volume I, Revision 3.0, 2007-2008	The IHE Patient Care Coordination Technical Framework (PCC TF) defines specific implementations (called Integration Profiles) of established standards to deal with integration issues that cross providers, patient problems or time. The Emergency Department Encounter Summary (EDES) enables the sharing of emergency department summary information between enterprises of a regional health network, and further describes how to map content in a CDA medical document into registry metadata. In the registry, healthcare providers publish pointers to documents stored in distributed repositories. Other healthcare providers may search and retrieve these and other documents. For more information visit www.ihe.net .



Standard	Description
International Classification of Diseases, 10th Revision, Procedure Coding System (ICD-10-PCS)	The International Classification of Diseases, 10th Revision, Procedure Coding System (ICD-10-PCS), describes the classification of inpatient procedures for statistical purposes and for the indexing of healthcare records by procedures. ICD-10-PCS is a procedural coding system managed by the Centers for Medicare and Medicaid Services (CMS). For more information visit www.cms.hhs.gov . Note: While ICD-10 is not deployed in US installations, we recognize the need to move toward new releases of coded values.
International Classification of Diseases, 10th Revision, Related Health Problems (ICD-10-CM)	The International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM), describes the classification of morbidity information for statistical purposes and for the indexing of healthcare records by diseases. The National Center for Health Statistics (NCHS), the Federal agency responsible for use of the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) in the United States, developed a clinical modification of the classification for morbidity purposes. For more information visit www.cdc.gov/nchs . Note: While ICD-10 is not deployed in US installations, we recognize the need to move toward new releases of coded values.
International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)	The International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), Volumes I, II (diagnoses) and III (procedures) describes the classification of morbidity information for statistical purposes and for the indexing of healthcare records by diseases and procedures. For more information visit www.cdc.gov/nchs .
International Classification of Functioning, Disability and Health (ICF)	The International Classification of Functioning, Disability and Health, known more commonly as ICF, is a classification of health and health-related domains. These domains are classified from body, individual and societal perspectives by means of two lists: a list of body functions and structure, and a list of domains of activity and participation. Since an individual's functioning and disability occurs in a context, the ICF also includes a list of environmental factors. See www.who.int/classifications/icf/en/ .
International Health Terminology Standards Development Organisation (IHTSDO) Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®)	SNOMED CT consists of a technical design, core content architecture, and Core content. SNOMED CT Core content includes the technical specification of SNOMED CT and fully integrated multi-specialty clinical content. The Core content also includes a concepts table, description table, relationships table, history table, ICD-9-CM mapping, and Technical Reference Guide. Additionally, SNOMED CT provides a framework to manage language dialects, clinically relevant subsets, qualifiers and extensions, as well as concepts and terms unique to particular organizations or localities. For more information visit www.ihtsdo.com .
International Organization for Standardization (ISO) ISO 3166-1	The International Standard for country codes. The purpose of ISO 3166 is to establish codes for the representation of names of countries, territories or areas of geographical interest, and their subdivisions. For more information visit www.iso.org .
International Organization for Standardization (ISO) PDF/A ISO 19005-1b: Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A)	Specifies how to use the Portable Document Format (PDF) 1.4 for long-term preservation of electronic documents. It is applicable to documents containing combinations of character, raster and vector data. For more information visit www.iso.org .
Internet Engineering Task Force (IETF) Network Time Protocol (Version 3) Specification, Implementation and Analysis, "Request for Comment" (RFC) #1305, March, 1992	Describes the Network Time Protocol (NTP): the mechanisms to synchronize time and coordinate time distribution in a large, diverse internet operating at rates from mundane to lightwave. For more information visit www.ietf.org .
Internet Engineering Task Force (IETF) Simple Network Time Protocol (SNTP) Version 4, "Request for Comment" (RFC) #2030, October, 1996	Describes the Simple Network Time Protocol (SNTP) Version 4, which is an adaptation of the Network Time Protocol (NTP). SNTP can be used when the ultimate performance of the full NTP implementation is not needed or justified. When operating with current and previous NTP and SNTP versions, SNTP Version 4 involves no changes to the NTP specification or known implementations, but is rather a clarification of certain design features of NTP. For more information visit www.ietf.org .



Standard	Description
Internet Engineering Task Force (IETF) Tags for Identifying Languages, "Request for Comment" (RFC) # 4646, September, 2006	This document describes the structure, content, construction, and semantics of language tags for use in cases where it is desirable to indicate the language used in an information object. It also describes how to register values for use in language tags and the creation of user-defined extensions for private interchange. This document, in combination with RFC 4647, replaces RFC 3066, which replaced RFC 1766. For more information visit www.ietf.org/rfc/rfc4646.txt .
Logical Observation Identifiers Names and Codes (LOINC®)	A database of universal identifiers for laboratory and other clinical observations. The laboratory portion of the LOINC database contains the usual categories of chemistry, hematology, serology, microbiology (including parasitology and virology), and toxicology; as well as categories for drugs and the cell counts typically reported on a complete blood count or a cerebrospinal fluid cell count. Antibiotic susceptibilities are a separate category. The clinical portion of the LOINC database includes entries for vital signs, hemodynamics, intake/output, EKG, obstetric ultrasound, cardiac echo, urologic imaging, gastroendoscopic procedures, pulmonary ventilator management, selected survey instruments, and other clinical observations. For more information visit www.loinc.org .
National Cancer Institute (NCI) Thesaurus	The NCI Thesaurus is a reference terminology and biomedical ontology used in a growing number of NCI and other systems. It covers vocabulary for clinical care, translational and basic research, and public information and administrative activities. The NCI Thesaurus provides definitions, synonyms, and other information on nearly 10,000 cancers and related diseases, 8,000 single agents and combination therapies, and a wide range of other topics related to cancer and biomedical research. It is part of the Federal Medication Terminologies. For more information visit www.cancer.gov .
National Library of Medicine (NLM) Unified Medical Language System (UMLS) RxNorm	Provides standard names for (1) clinical drugs and (2) drug dose forms as administered to a patient. Also provides links from clinical drugs, both branded and generic, to their active ingredients, drug components (active ingredient + strength), and related brand names. Food and Drug Administration (FDA) National Drug Codes (NDCs) for specific drug products and many of the drug vocabularies commonly used in pharmacy management and drug interaction software are additionally linked to RxNorm. RxNorm is a part of the Federal Medication Terminologies. For more information visit www.nlm.nih.gov
National Uniform Billing Committee (NUBC) Uniform Bill Version 1992 (UB-92) Current UB Data Specification Manual Field 22, Patient Discharge Status, Codes	A code set identifying status of patient discharge on an institutional claim (e.g., inpatient, outpatient, hospice, home care). For more information visit www.nubc.org
Organization for the Advancement of Structured Information Standards (OASIS) Emergency Data Exchange Language (EDXL) Distribution Element (DE) Version 1.0	This is a standard message distribution framework for data sharing among emergency information systems using the XML-based Emergency Data Exchange Language (EDXL). This format may be used over any data transmission system, including but not limited to the SOAP HTTP binding. It is a routing element intended to route payloads of any kind, including other OASIS emergency message standards such as CAP, HAVE and Resource Messaging, but also any of the HITSP constructs, NIEM IEPDS, etc. It is designed to be provisioned by core services to route based on geography, incident type, agency type, or level of government. It can also be provisioned with access control and other security data. For more information visit docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf .
Organization for the Advancement of Structured Information Standards (OASIS) Security Assertion Markup Language (SAML) Core v2.0 OASIS Standard; ITU-T X.1141	SAML, developed by the Security Services Technical Committee of OASIS, is an XML-based framework for communicating user authentication, entitlement, and attribute information. As its name suggests, SAML allows business entities to make assertions regarding the identity, attributes, and entitlements of a subject (an entity that is often a human user) to other entities, such as a partner company or another enterprise application. For more information visit www.oasis-open.org .



Standard	Description
Organization for the Advancement of Structured Information Standards (OASIS) WS-Trust Version 1.3, March 2007	Defines extensions that build on [WS-Security] to provide a framework for requesting and issuing security tokens, and to broker trust relationships. Defines Security Token Service (STS) model for security tokens including requesting, issuing, renewing, canceling and validating. For more information visit www.oasis-open.org .
Organization for the Advancement of Structured Information Standards (OASIS) eXtensible Access Control Markup Language (XACML), ITU-T Recommendation X.1142, February 2005	The Organization for the Advancement of Structured Information Standards (OASIS) standards group developed the eXtensible Access Control Markup Language (XACML) as a language to express and evaluate access decisions. The XACML technical specification includes a profile for RBAC using XACML that complies with the ANSI RBAC standard. The HL7 RBAC Permission Catalog provides a standard vocabulary that can be used for cross-enterprise access control. For more information visit www.oasis-open.org .
Organization for the Advancement of Structured Information Standards (OASIS) Emergency Data Exchange Language (EDXL) Hospital Availability Exchange (HAVE) Version 1.0	Specifies an XML-formatted document that allows healthcare provider organizations to communicate specific utilization information and status of a facility (e.g., hospital, trauma center, nursing home) and its resources; including bed capacity and availability, emergency department status, the available service coverage, and the status of a hospital's facility and operations. HAVE is initially intended for use in disaster or emergency situations. For more information visit www.oasis-open.org .
Organization for the Advancement of Structured Information Standards (OASIS) Common Alerting Protocol (CAP) V1.1, October 2005	This is a simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of networks. CAP allows a consistent warning message to be disseminated simultaneously over many different warning systems, thus increasing warning effectiveness while simplifying the warning task. CAP also facilitates the detection of emerging patterns in local warnings of various kinds, such as might indicate an undetected hazard or hostile act. And CAP provides a template for effective warning messages based on best practices identified in academic research and real-world experience. For more information visit www.oasis-open.org .
Unified Code for Units of Measure (UCUM)	A code system intended to include all units of measures being contemporarily used in international science, engineering, and business. The purpose is to facilitate unambiguous electronic communication of quantities together with their units. The focus is on electronic communication, as opposed to communication between humans. For more information visit aurora.regenstrief.org .
United States Postal Service (USPS) – Postal Codes	United States Postal Service (USPS) – Postal Codes
VHA National Drug File Reference Terminology (NDF-RT) Formulary	Provides standard names for (1) mechanism of action, (2) Physiologic Effect and (3) Structural Class. NDF-RT is part of the Federal Medication Terminologies. For more information visit www.cancer.gov/cancertopics/terminologyresources/page5

The following table contains descriptions of the candidate standards that are referenced by this Interoperability Specification:

Table 6.1-2 Description of Candidate Standards

Standard Name	Description
OASIS Emergency Data Exchange Language (EDXL) Resource Messaging (RM) Version 1.0	This set of Resource Messages provides vehicles when requesting, receiving, deploying and returning resources of any kind during an emergency. These messages are intended to be used with the OASIS EDXL Distribution Element specification. This format may be used over any data transmission system, including but not limited to the SOAP HTTP binding. For more information visit docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf .



Standard Name	Description
Vehicular Emergency Data Set (VEDS)	The Vehicular Emergency Data Set (VEDS) is an XML based data specification that determines useful and critical elements needed to prove an efficient emergency response to vehicular emergency incidents. Developed by a diverse group of emergency practitioners from 9-1-1, EMS, and hospitals, along with industry, VEDS identifies crash and medical data elements. VEDS is the de facto standard currently being used in the field by OnStar. Visit for more information www.comcare.org/veds.html .
National Highway Traffic Safety Administration NEMSIS Data Set	<p>The NHTSA EMS Uniform PreHospital Dataset, Version 2.2.1 is composed of three separate components. A Demographic Dataset provides a standardized set of definitions describing an EMS System. An EMS Dataset provides a standardized set of definitions describing an EMS event. The third component of the Version 2.2.1 standard is an XML format and definition created to promote the movement of the Version 2.2.1 data elements between data systems.</p> <p>Any implementation of the NHTSA Version 2.2.1 dataset must include the use of the Demographic dataset, EMS dataset, and XML standard. This document provides over 400 definitions which can be implemented by an EMS system. The National EMS Information System Initiative (NEMSIS) serves to provide technical assistance for the implementation of the dataset. National data elements are defined which should be collected by a National EMS Database but additional data elements should be considered for use at the state and local levels depending on each state or local EMS systems need. The goal of NEMSIS is to establish an EMS data system at the local, state, and national levels. For more information visit www.nemsis.org.</p>

6.2 USE CASE TO INFORMATION EXCHANGE AND DATA REQUIREMENTS

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

Table 6.2-1 Mapping of Use Case Actions to Information Exchange Requirements

Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
Emergency Responder EHR Use Case: ECS Business Actor – Scenario 6.1 On-Site Care Note: this business actor often supports first responders such as EMTs			
6.1.1 On-Site Management and Coordination	<p>6.1.1.1 On-Site care providers are dispatched. Patient information from Emergency Communications Systems will be communicated to On-Site care providers. Emergency medical operations personnel coordinate response deployment.</p> <p>Note: This situation commences with the incident awareness, then with ECS gathering information and then with the On-Site care providers being dispatched.</p> <p>Note: Information about the incident and the patients is collected from various sources: 9-1-1 calls, third party data bases, Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). An emergency care record is begun. On-Site care providers are dispatched based on initial triage decisions and resource information. At this stage of</p>	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS
		IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
		IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>response, responders need access to only relevant data elements, which may vary based on the circumstances.</p> <p>DATA: Patient's name, location, chief complaints, key patient-specific health information, incident information.</p> <p>Discussion: For small scale incidents, basic information such as patient's name, location, gender, and chief complaint are gathered by the 911 telecommunicator from the individual making the emergency call when possible. Data from private sources such as automaker Telematics Service Provider (TSP) crash description information may also be available. Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) data, combined with the above, can be critical to patient identification, proper triage, and pre-arrival instructions. For larger scale incidents, dispatchers may gather less specific information about individual patients. Information provided by the caller on the size and nature of the incident, and characteristic injuries of the patients associated with the incident will allow the proper personnel/units/apparatus to be dispatched. An emergency care record is commenced and all gathered information is sent to the responding on-site care team answering the dispatch call.</p> <p>Note: This action is performed by the 9-1-1 and Dispatch functions, which gather as much information about the patient and the incident until the on-site units arrive EMD is informed by oral questions posed by the 9-1-1 call taker; future generations of EMD will electronically accept data inputs from multiple sources. All data gathered is shared with the on-site care providers as they approach the incident. It is important to note, however, that on-site care providers may access and exchange patient-specific health information (PHR, ECON, EHR) independent of ECS.</p> <p>In the future, the EMD protocol of questions for 9-1-1telecommunicators to ask emergency callers can be altered automatically by authorized public health officials to ask specific questions if threshold indicator answers have been given (e.g., "any recent foreign travel?" If "yes", ask the following four questions"). This requires interoperability between ECS systems and public health.</p> <p>Dispatchers are informed about a variety of resource information with standardized data messages: for example, hospital, bed and specialty availability; closest ambulance and air transport availability</p> <p>Note: Public health messaging and data systems need to be interoperable with EMD software in Dispatch entities. Data needs to be able to flow both ways. These interactions account for the other possibilities such as "discharged," deceased, as do emergency care and definitive care with the associated patient information updates</p> <p>Note: In order to have data shared between heterogeneous systems and applications, specialized forms of infrastructure services are required. Just as email could not move easily around the Internet without Domain Name Servers, similar utilities are required here. ER-EHR calls them "core services". Two in particular are needed: a commonly accessible agency locator registry for organizations needing data, and the applications to store access control policies and provide identity management for those organizations. The organizations need to register in the agency locator registry the services they offer in a particular area, what incident information they want, for what geographic areas, and to what electronic address(es) they want information</p>	IER10 Identify Patient	DR01 Demographic Data
		IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
		IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
		IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol Content
		IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	sent. Similarly, securely communicating across multiple networks and domains requires a shared, standardized, and role-based identity management and access control system, and data rights management service. These do not set policies, but instead allow registration of policies by the various appropriate decision bodies at each level of government. Policies will vary by incident type, geography, role, and other factors. These core services allow discover of interested/responsible agencies to invoke these policies electronically by the wide variety of systems in use.		
	6.1.1.2 Situational Awareness Report from Dispatch/EOC to ED facility and Other Providers Note: ECS includes 9-1-1 dispatch and Emergency operation Center (EOC) Discussion: Gather information to keep all involved entities informed of the situation. Depending on the needs and requests of the different actors, local policies and legal requirements, this shared data and Situational Awareness Reports will differ by actor and incident type. Medical, patient, resource, incident, traffic, environmental and other information make up Situational Awareness Reports. For interoperability purposes, this means that every entity in the emergency medical response process (medical or not) needs to be interoperable with emergency messages and data from a wide variety of emergency and non-emergency sources, in addition to messages and data elements that make up the ER-EHR. This is a continuous process throughout an incident. Note: Within ECS, 9-1-1/Dispatch and an Emergency Operations Center (when it is activated in a disaster), systems monitor the number and types of patients, number of ambulances and other resources in an area, and availability of medical services (e.g., neurosurgery), including staffed beds. They receive data from individual line agencies, aggregate the information and send situational messages and reports to appropriate parties. Note: Use of core services. As noted in 6.1.1.1, core services are generally required to enable knowledge of the addresses of the organizations and their rights.	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS
		IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
		IER50 Send/receive Public Health Data	DR13 Present Episode of Care – ECS DR20 CCD Clinical Summary DR23 Public Health Data
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
		IER65 Send/receive Agency Distribution list	DR64 Agency Locator Registry
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
	6.1.1.3 On-Site care providers assess the situation, determine the scope of required care and evacuation, notifying responding agencies of the situational assessment, and organize additional units if required. Discussion: Emergency personnel arrive on-site and perform an assessment of the incident site to determine the scope of medical care and evacuation required, and/or this is done remotely by the ECS. In certain incidents, care and evacuation will require multiple On-Site teams. If the initial On-Site team recommends that additional resources are required such as additional EMS teams, fire and rescue, police and other response units, they shall be able to convey this information back to the Emergency Communications System by	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
		IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>voice and data messages. After On-Site assessment and communication with the Emergency Communications System, the need for an On-Site triage collection point and a medical incident command post may be established as part of the overall Incident Command System (ICS) response, if ICS has been activated. Until an incident command post is operational, the first team may serve to organize subsequent arriving units. Once the command post has become operational, the incident commander will assume command over the incident site and all assigned personnel. Depending on the type of incident, the incident commander may or may not be from a medical profession.</p> <p>Note: the access control system identified in the prior section must be dynamic, so that rights can be altered in real time to reflect, for example, the change in rights that stems from the appointment as Incident Commander.</p> <p>Note: Depending upon state or local policies for a Mass Casualty Incident, first responders may be required to place a triage tag on each patient. This tag usually displays triage condition, chief complaint and an ID for each patient. It may also be a bar code identifier or RFID tag for the emergency encounter record (Episode of Care) and EHR.</p>	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
6.1.2 Continue collection of Patient information	<p>6.1.2.1 Collection of patient information is for each instance of care.</p> <p>Discussion: On-Site crews start with the information received from the Emergency Communications System to begin collection of On-Site information. This may take several forms similar to the traditional ambulance pre-hospital Patient Care Report (PCR) or a field medical card, but the emergency care record needs to function as a dynamic continuity of care record, and provide access to the relevant information gathered to date on the victim, and decision support tools that acted on that information. At this stage of response (and ECS), responders need access to only relevant data elements. The patient information is entered and verified with patient, family members, or others who may have the information at the incident scene, or from third party Personal Health Record (PHR), Emergency Contact Registry (ECON), Electronic Health Record (EHR) databases. PHR, ECON and/or EHR data and information from electronic monitors, e.g., pulse oximetry and blood pressure may be entered into the Patient Care Report (PCR) automatically.</p> <p>The IT systems of the responders should be capable of sending alarm messages to various parties and roles based on absolute thresholds of patient data (e.g., low blood pressure), and/or negative trends (e.g., falling Glasgow coma scores from 9-1-1 call to scene to ambulance), or falling pulse oximetry.</p>	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS
6.1.3 Access additional patient health information	<p>6.1.3.1 Additional patient information may be accessed and viewed from health information repositories such as existing patient electronic health records (either from an individual healthcare entity or a health information service provider), handheld storage devices, or web-hosted personal health records. Other sources such as patient registries may be accessed to view information such as emergency contact information and prescriptions. The queries for information are secondary to the stabilization and treatment of the patients.</p> <p>Note: Patient information may be accessed by authorized responders.</p> <p>Note: Other sources of information may be accessed such as an Emergency Contact Registry (ECON) to reach persons who have knowledge about certain</p>	IER16 Send/receive Patient Health Information IER59 Send/receive Present Episode of Care IER48 Send/receive Device Data	DR02 Patient Clinical Summary DR48 Present Episode of Care – ECS DR46 Medical Life Support Monitor Data



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	aspects of the patient's health, such as pre-existing conditions, allergies, medications, primary care physician, etc.	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	Discussion: ECS and/or On-Site care providers, typically law enforcement, will make reasonable attempts on a treatment non-interference basis to positively identify the patient and to obtain a Patient ID. If the patient can be identified the ECS and/or On-Site care providers send a query to receive relevant patient-specific historical health information from a Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). Both the query and retrieval are auditable. If the patient can't be identified, a patient identifier is added to the ECS and/or On-Site information.	IER65 Send/receive agency distribution list	DR64 Agency Locator Registry
	Note: The information source could also be a person at the scene or a 9-1-1 caller who has basic knowledge about the patient's health condition. Note: On a treatment non-interference basis, ECS and/or on-site care providers, typically law enforcement, in addition to attempts to positively identify patients, will also facilitate family member reunification and expedite next-of-kin notification. Note: The American Red Cross reunification data base and the National Center for Missing and Abused Children (which has been given responsibility for reunification of children with families) have been designated as national repositories so they might have use of ECON as well. Note: ECS and/or on-site care providers will have the ability to electronically download and automatically populate with data from Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) data into a pre-hospital Patient Care Report (PCR) supporting real-time messaging of Patient ID, ECON, PHR and/or EHR data to and from Emergency Department Clinicians and others. If information is not available from the Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR), the ECS and/or On-Site crew will enter as much information as possible in a manual mode, on a treatment non-interference basis. The information source could be the patient, family member, or friend who has knowledge about certain basic aspects of the patient's health condition, such as allergies, past episodes of care, current medications, primary care physician, etc. Note: The patient needs to be designated to a medical treatment facility; this action may be taken at any point prior to and during transportation.	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
	6.1.3.1A Information from the Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) is not available (this would include jurisdictions that have not yet implemented electronic On-Site care information collection)	No interoperability requirements	No data requirements
6.1.4 Assess, triage and treat patient	6.1.4.1 EMTs will assess the patient's condition, develop a working diagnosis, determine triage category, and treat the patient's injuries and/or illnesses in order to stabilize the patient for transportation to the designated medical treatment facility. (Note: the patient may not have sufficient injuries to require transport) Note: ECS may provide pre-arrival medical instructions to persons on the scene. ECS may provide Virtual Consult.	IER59 Send/receive Present Episode of Care. Based on EMD protocols, different levels of care will be dispatched, and ECS may provide pre-arrival instructions	DR48 Present Episode of Care – ECS



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>Note: Decision support software may make predictions of likely injuries, and give appropriate protocol for response.</p> <p>Discussion: On-Site care providers perform an assessment of the patient's condition and develop a working diagnosis. Based upon predetermined triage criteria, the ECS or the On-Site care team makes a decision regarding the level of care required (e.g., transport to the closest hospital or to a trauma center), the mode of transportation (ground or air) required by the patient, and the priority of movement (delayed, immediate, minimal or expectant). The On-Site team reviews the updated On-Site information to identify risks associated with the patient's pre-existing conditions, medications, allergies, and then administers basic treatment of patient injuries and/or illnesses accordingly, in order to stabilize the patient for transportation to the designated medical treatment facility. If available, they may utilize virtual consultation by a qualified clinician to assist in the assessment process.</p> <p>ECS shares data with ED, medical control, and other appropriate stakeholders, in addition to On-Site. Core services enable locations/addresses of these organizations and their rights.</p>	<p>IER65 Send/receive Agency Distribution List</p> <p>IER66 Send/receive Agency Authorization</p>	<p>DR64 Agency Locator Registry</p> <p>DR65 Agency Authorization List</p>
6.1.5 Update On-Site care information	<p>6.1.5.1 The On-Site care treatment team updates the On-Site care information on the treatment provided</p> <p>Note: Hospitals are continually reporting their bed and specialty services availability via standardized messages to ECS, which may distribute them to interested organizations (e.g. Department of Health), using information from core services.</p> <p>Discussion: The patient's destination, mode of transport and priority of movement are determined by communications between On-Site, ECS, and medical control at a hospital, and sent by the On-Site team to the ECS, or determined by the ECS, and communicated to others, such as the receiving hospital, along with relevant information. This decision may trigger access rights for the Episode of Care Record by the receiving hospital.</p> <p>Note: Decision support software should suggest to dispatchers and on-site personnel where to send patients by combining patient information from the encounter record with resource availability information from hospitals reported regularly using the OASIS EDXL HAVE message.</p>	<p>IER59 Send/receive Present Episode of Care</p> <p>IER53 Send/receive Situation Report</p> <p>IER65 Send/receive Agency Distribution List</p> <p>IER66 Send/receive Agency Authorization</p>	<p>DR48 Present Episode of Care – ECS</p> <p>DR53 Resource Utilization DR54 Situational Awareness Information</p> <p>DR64 Agency Locator Registry</p> <p>DR65 Agency Authorization List</p>
6.1.6 Transport patient	<p>6.1.6.1 Transport the patient to the designated medical treatment facility</p> <p>Discussion: On-Site care information is updated with any treatment rendered en route. Any medications, changes in vital signs, etc. are updated in the Patient Care Record (PCR). This may include information feeds from automated medical devices such as blood pressure monitors. The recording of the information may take place on-site, in the transport vehicle or at the destination facility.</p> <p>Note: We need interoperability between the pre-hospital Patient Care Report (PCR) and electronic monitoring equipment in ambulances/aircraft and the Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or</p>	<p>IER59 Send/receive Present Episode of Care</p> <p>IER27 Send non-patient notification message or alert</p> <p>IER48 Send/receive Device Data</p>	<p>DR48 Present Episode of Care – ECS</p> <p>DR63 Common Alerting Protocol Content</p> <p>DR46 Medical Life Support Monitor Data</p>



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>Electronic Health Record (EHR) systems.</p> <p>We need interoperability of voice to text so that treatment at the site and enroute can be recorded in real time, without imposing additional responsibilities on EMTs, and thus are useful to the receiving facility in real time.</p> <p>Note: Although not stated, the patient disposition may be similar to 6.2.6.1a, c, d, e. These alternative dispositions are not significant because they do not impact the requirement for HITSP Interoperability</p>		
6.1.7 Provide Information	6.1.7.1 The ECS and On-Site care information is made available to the receiving facility	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	<p>Discussion: Receiving facilities regularly report to the ECS their status, the numbers and types of staffed beds, and the types of staffed services available.</p> <p>On-Site care information is made available to the receiving facility and/or the appropriate repositories through the ECS network, or directly. In certain cases, information will be provided by On-Site and ECS providers to air ambulance services. The On-Site treatment team updates the Patient Care report (PCR) with treatment provided to the patient by the transportation team (if required). If the patient requires transport, the On-Site treatment team transmits the updated encounter record(s) to the ECS system so it can be accessed by appropriate parties. The designated receiving facility accesses the information so that appropriate resources (including clinicians) may be available at the time of patient arrival. Appropriate information is sent to (or accessed by) EOCs and public health agencies that use the information to track health resources and conduct biosurveillance respectively. The information taken from ECS systems for public health and EOC purposes is usually non-identifying or pseudonymized.</p> <p>Note: In this action data are likely transmitted to an EOC system, and depending on business rules, provided automatically to other appropriate actors. These transactions are enabled and/or governed by core services.</p>	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS
		IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR02 Patient Clinical Summary DR51 Public Health Data
		IER17 Send/receive Transfer of Care Data	DR48 Present Episode of Care – ECS
		IER65 Send/receive Agency Distribution list	DR64 Agency Locator Registry
		IER6 Send/receive Agency Authorization	DR65 Agency Authorization List
	6.1.7.1A Power or communication failures	No Interoperability Requirements	No Data Requirements
<p>Emergency Responder EHR Use Case: ED System Business Actor – Scenario 6.2 Emergency care</p> <p>Note: this business actor supports Emergency Department Staff</p>			
6.2.1 Emergency care site management and	6.2.1.1 The emergency care facility is notified by the Emergency Dispatch Center regarding the in-bound patient.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
coordination	<p>Note: The Emergency Dispatch Center is supported by the Emergency Communications System</p> <p>Discussion: ED clinical care personnel are notified by the Emergency Communications System of the in coming patient. Today this is often accomplished by verbal radio communication from an ambulance. In the future, this will generally be a message initiated by the EMS staff transporting the patient, which will also contain the patient Episode of Care record. Depending on the network, this may involve human intervention at an ECS facility, or may simply pass through ECS IT services. Thus all three systems need to be interoperable.</p> <p>If information recorded by ECS functions and/or during On-Site care and transport is available, ED clinical care personnel receive and review the record (chief complaint, incident information, emergency contact information, demographics, diagnosis, triage outcome, trend lines for vital signs, treatment provided; decision support indications) to ensure appropriate resources are available (e.g., specialists, lab tests, blood products, radiology etc) to appropriately treat the patient upon arrival. An alert may be sent to the patient's primary care physician by the ECS or ED (if applicable), or by a private data service</p> <p>Note 1: Reasonable efforts to notify the patient's immediate family or other emergency contacts are performed as soon as possible</p> <p>Note 2: As appropriate, ED clinical care personnel may also access and review patient-specific historical health information from the Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) data</p> <p>Note 3: The functional actors in this action will differ based on the location, nature, and size of the incident</p> <p>Note 4: The address of the actors for an incident in a particular area, their roles and rights will be governed by core services.</p>	IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER10 Identify Patient	DR01 Demographic Data
		IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol content
		IER17 Send/receive Transfer of Care Data	DR48 Present Episode of Care – ECS
		IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
	<p>6.2.1.2 ECS systems send Situational Awareness Reports to all involved medical units and systems</p> <p>Note: For interoperability analysis convenience, the EOC has been subsumed within the ECS. In actual environments, they may be physically separate; but, electronically linked and have the same interoperability requirements</p> <p>Discussion: As information is gathered from a number of sources, ECS systems will prepare and disseminate situational awareness messages and reports keeping all involved (or interested, e.g., mutual aid partners) and authorized entities informed of the situation</p> <p>Note: Throughout an incident, non-patient messages about the incident will flow among all the entities involved. These make up Situational Awareness Reports when aggregated. In a large incident the overall situational awareness reporting function is done by emergency management and the action will be performed by a CIMS system when an Emergency Operations Center is activated.</p>	IER 06 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
		IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
6.2.2 Episode of Care Record	<p>6.2.2.1 The patient is logged into the emergency care facility, thus starting the Episode of Care Record for this instance of care.</p> <p>Discussion: When the patient arrives at the ED, clinical care staff will log the patient into the system used at their facility and create a record for each patient and for each encounter. If it is still lacking, registration information (emergency contact information, patient demographics, employer, health insurance, etc.) is added to the clinical information derived from the ECS and On-Site care record</p>	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER10 Identify Patient	DR01 Demographic Data
		IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
		IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
	<p>ACTION: 6.2.2.1A Patient is dead on arrival.</p> <p>Discussion: A) A new phase of the emergency care record is begun for the patient. If it was not added by ECS or by the On-Site team directly or from third party sources during those phases, registration information (emergency contact information, patient demographics, employer, health insurance, etc.) is added to the clinical and other information already in the record. Once the patient is pronounced dead by a physician, the emergency care is so annotated and the encounter record is closed</p>	Same as Action: 6.2.2.1 (send to PHR if available)	Same as Action: 6.2.2.1
	<p>6.2.2.1B Power or communication failures</p> <p>Discussion: B) Devices go to generator or battery backup, and off line operation. If power outages are long term, a paper copy of the health record is begun for the patient. Once power and IT communications are restored, the information can be automatically uploaded or entered into the electronic Episode of Care Record, possibly by scanning the record. Additional sites at remote locations and redundant. Resilient links to them must be employed as backups for the primary repository in case of widespread communications and power outages caused by natural or man-made disasters.</p>	No Interoperability Requirements	No data Requirements
	<p>6.2.2.1C Patient cannot be identified</p> <p>Discussion: C: An emergency care record is started with a unique patient identifier as soon as any agency in the chain knows there is a patient or victim. If and when the patient's identity is established and validated, this is added to the record. This should allow access to additional sources of information about patient-specific historical health information (e.g., Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR). Note: In ACTION: 6.2.2.1c when a patient cannot be identified, a unique "temporary" patient identification number should be assigned</p>	No Interoperability Requirements	No data Requirements



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
<p>6.2.3 Access additional patient health information Note: This can happen anywhere in the patient care chain.</p>	<p>6.2.3.1 Additional patient information may be accessed and viewed from health information repositories such as existing patient electronic health records (either from an individual healthcare entity or a health information service provider), handheld storage devices or web hosted personal health records. Other sources such as patient registries may be accessed to view information such as emergency contact information, prescriptions, and insurance claims databases (if available)</p> <p>Note: Other sources of information may be accessed such as emergency contact registry to reach persons who have knowledge about certain aspects of the patient's health, such as pre-existing conditions, allergies, medications, primary care physician, etc.</p> <p>Access rights are governed by the relevant core service.</p> <p>Discussion: As soon as the patient identity is established, a query is sent to the Healthcare Information System (HIS) for information on the patient. The local HIS utilizes available information exchange services to request, locate, and retrieve patient-specific information, such as a Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) from other sources. Such information may reside within a regional RHIO/HIE, with commercial entities, with local ambulance services, and other commercial provider services. The ECS, On-Site care information and the retrieved Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) are accessible to the clinical staff and should be integrated into the Episode of Care Record. For ease of use, the information may be selected and formatted according to the clinical staff's preferences. Indeed, wherever feasible, time and expense should be saved by pre-populating fields with information that is already known about a patient (e.g., Ambulance companies often maintain data bases on persons they have previously transported)</p> <p>Note: The information source could also be a person at the scene who has knowledge about the patient's health condition</p>	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
		IER25 Send/receive Decision Support Data	DR17 Decision Support Data
		IER10 Identify Patient	DR01 Demographic Data
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
	<p>6.2.3.1A Patient presents without an ECS/On-Site care record.</p> <p>Note1: Additional patient information may be accessed and viewed by authorized entity in the chain of emergency medical response (i.e. ECS, On-Site, ED)</p> <p>Entity in the chain of emergency medical response (i.e. ECS, On-Site, ED)</p> <p>Discussion:</p> <p>A: Patients who enter the emergency facility through a means other than contacting ECS or On-Site care, such as self-referral, brought in by family or friends, etc. will have their relevant emergency contact information, demographics, allergies, and past episodes of care captured by the ED staff who shall log them in and start a new emergency care encounter record. A query for the patient's health information will be sent out through the HIS and ECS. The local HIS utilizes available information exchange services to request, locate, and retrieve patient information from other sources.</p> <p>Note: interactions of medical records/encounter records with decision support software may suggest what may be wrong (predictor) with the patient and suggestions on patient treatment (treatment protocol).</p>	Same as Action: 6.2.3.1	Same as Action: 6.2.3.1



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
6.2.4 Assess, triage, perform tests and treat patient	6.2.4.1 The clinical staff reviews treatment provided by On-Site care providers and validates their initial assessment, adding any additional observations, and determining the patient's triage category. Clinical personnel treat the patient's injuries or illness. Discussion: Based on information developing at the site or in transit to an ED (or changes by the availability of services at a medical facility), medical control within ECS may change the initial assessment and re-route the patient to another treatment facility. The clinical staff verifies and validates the On-Site care provider's initial assessment, adding any additional observations and making triage decisions as to the priority for treatment. The outcome of this activity would be a working diagnosis of the patient's conditions. If available, the clinical staff may utilize virtual specialty consultation by a qualified clinician to assist in the assessment process. The patient's injuries or illnesses are treated with the clinical staff referring to the Episode of Care Record as part of the process.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
	6.2.4.1A Access the patient's EHR via emergency facility's IT systems integrated with EHR repositories Discussion: A: If the treatment facility possesses an IT infrastructure with its own EHR, the demographic and clinical information contained in the Episode of Care Record will be uploaded into the facilities' repository and used to populate/update the patient's EHR.	Same as Action: 6.2.4.1	Same as Action: 6.2.4.1
6.2.5 Input information in emergency care record	6.2.5.1 As treatment progresses, information such as the results of diagnostic tests, treatment, and medications rendered, and any changes to the treatment plan are entered into the emergency care record. Information is continually sent to public health agencies for population health monitoring purposes. Discussion: Information is added to the Episode of Care Record by the clinical care staff. This will update the working diagnosis, treatment rendered, medications given, and profiles for limits to Activities of Daily Living (ADL). Diagnostic testing results are also collected and updated into the Episode of Care Record. This may include information feeds from electronic medical devices such as blood pressure monitors. It will allow for on going updates of suggested treatment using decision support tools.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER25 Send/receive Decision Support Data	DR17 Decision Support Data
		IER50 Send/receive Public Health Data	DR61 Present Episode of Care – Emergency Care DR02 Patient Clinical Summary DR51 Public Health Data



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
6.2.6 Complete emergency disposition; Provide information	6.2.6.1 Once treatment is complete, the patient is directed to any follow-on care as deemed necessary. Discussion: Once the patient has received the needed care at the emergency facility, the patient encounter disposition summary is prepared and in action 6.2.6.2 is sent to the appropriate follow-on facility if the patient is not discharged.	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	6.2.6.1A Patient is discharged. Discussion: A: If the patient requires no further treatment, the appropriate notations are made in the emergency care record by the clinical care staff, closing the patient encounter.	Same as Action: 6.2.6.1 (Send data to PHR system if available)	
	6.2.6.1B Patient is admitted to inpatient status. Discussion: B: If the patient is admitted to the definitive care portion of the facility, the emergency care is so notated by the clinical care staff and is closed for that patient encounter. The emergency record is sent by the clinical care staff to the admissions office and the receiving ward.	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
		IER14 Send/receive/request health plan eligibility	DR06 Eligibility and Authorization information
		IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information
	6.2.6.1C Patient is transferred to another in-patient facility. Discussion: C: If the patient is transferred to another facility, the Episode of Care Record is so notated by the clinical care staff and the patient encounter is closed. The Episode of Care Record will be sent to the new facility so its staff can prepare for the patient. This may be done in the form of a notification to extract the record from the facility EHR repository.	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER59 Send/receive Present Episode of Care	DR61 Present Episode of Care – Emergency Care
		IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
		IER14 Send/receive/request health plan eligibility	DR06 Eligibility and Authorization information
		IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>6.2.6.1D Patient is deceased.</p> <p>Discussion: D: If the patient dies in the emergency care facility, a notation is made in the emergency care record by the clinical care staff of the time and circumstance of the death and the record is then closed for that patient encounter. Notification is sent by the clinical care staff to the Medical Examiner (currently by telephone) of the date and cause of the patient's death, and to the ECS for redistribution to appropriate stakeholders.</p>	Same as Action: 6.2.6.1 (Send data to PHR system if available)	Same as Action: 6.2.6.1
6.2.6 Complete disposition; Provide information	<p>6.2.6.2 Once treatment is complete, information about the patient encounter will be available with other records relating to the patient, including (if they are available) any facility-based records and personal health records. It will also be available to the appropriate repositories.</p> <p>Discussion: Patient encounter disposition is transmitted via the HIS to the appropriate repository (or repositories). The Episode of Care Record is used to populate or update the patient's electronic health record and the PHR. Information exchanges may also occur with laboratories, pharmacies, blood banks etc. Information is sent to appropriate ECS systems and public health agencies to track health resources and conduct biosurveillance respectively. The information sent to ECS systems is generally non-identifying or anonymized/pseudo anonymized.</p> <p>With appropriate privacy protections, such as anonymization, patient information should be available for end to end system analysis and research.</p>	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER53 Send/receive situation report	DR53 Resource Utilization DR54 Situational Awareness information
		IER50 Send/receive Public Health Data	DR61 Present Episode of Care – Emergency Care DR02 Patient Clinical Summary DR51 Public Health Data
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
		IER17 Send/receive transfer of care data	DR61 Present Episode of Care – Emergency Care
Emergency Responder EHR Use Case: EHR System Business Actor – Scenario 6.3 Definitive care Note: this business actor supports clinical staff			
6.3.1 Access/Start EHR (if required)	<p>6.3.1.1 Access existing facility electronic health record or start a new electronic health record if one does not already exist for this patient.</p> <p>Discussion: A query is sent by the clinical care staff to the facility database for existing information on the patient.</p>	IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER14 Send/receive/request health plan eligibility	DR06 Eligibility and Authorization information
		IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information
		IER17 Send/receive transfer of care data	DR61 Present Episode of Care – Emergency Care



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	<p>6.3.1.1A Power or communication failures.</p> <p>Discussion: A: If there is a general power failure, ECS entities and hospitals should shift over to generators. Devices should be able to operate without a network connection; storing and forwarding data when and if there are breaks in wireless communications with the ECS networks. A number of methods can be used to transfer data along with the patient when network access is not possible. Data can be stored on removal media. As a last resort, practitioners may resort to paper copies of the health record of the patient. Once power and IT communications are restored, the information can be re-entered into the electronic health record, possibly by scanning the record.</p> <p>Note: It is critical that all networks, servers, and data base systems used meet commercial best practices for redundancy and resilience, including "hot backup."</p>	No Interoperability Requirements.	No data requirements.
	<p>6.3.1.1B Patient cannot be identified.</p> <p>Discussion: B: A record is started with a patient identifier. Note: In ACTION: 6.3.1.1B when a patient cannot be identified, a unique "temporary" patient identification number must be assigned.</p>	No Interoperability Requirements.	No data requirements.
	<p>6.3.1.2 ECS system sends Situational Awareness Reports to all involved medical units and systems.</p> <p>Discussion: All involved medical units are defined by the agency locator service; their rights are governed by the access control service.</p> <p>As information is gathered from a number of sources, ECS systems prepare and disseminate that data and Situational Awareness Reports, keeping all involved entities informed of the situation.</p> <p>In addition to the business actors described herein, a variety of agencies may require that they receive subsets of the information collected.</p> <p>Core services: A common registry for organizations needing data and the access control and identity management for those organizations must be provided. The organizations need to register the services they offer in a particular area, what incident information they want, for what geographic areas, and to what electronic address(es) they want information sent.</p> <p>Similarly, communicating across multiple networks and domains requires a shared, standardized, and role-based identity management and access control system, and data rights management service.</p>	IER53 Send/receive situation report	DR53 Resource Utilization DR54 Situational Awareness information
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
		IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol content
		IER65 Send/receive agency distribution list	DR64 Agency Locator Registry
		IER66 Send/receive agency authorization	DR65 Agency Authorization List



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
6.3.2 Access additional patient health information	6.3.2.1 Access Electronic Health Record Discussion: The clinical staff sends a request to the HIS for patient information which may reside within its affiliated repositories. The ECS, On-Site information, emergency care record and the retrieved electric health record is accessible to the clinical staff.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER66 Send/receive agency authorization	DR65 Agency Authorization List
	6.3.2.2 Where feasible, the emergency care record and any archival information (Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) should be integrated with the facility electronic health record. Discussion: The Personal Health Record (PHR), Emergency Contact Registry (ECON), and/or Electronic Health Record (EHR) data may be "view only", or if it can be integrated, it should be used by the clinical care staff to populate a patient record in the facility's patient management system. Note: It should be noted that this comment applies to all authorized business actors.	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
		IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
		IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
		IER25 Send/receive Decision Support Data	DR17 Decision Support Data
		IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
6.3.3 Assess, perform tests, treat patient	6.3.3.1 The clinical staff reviews treatment provided in the emergency setting, makes an assessment, adding any additional observations, performs required tests, and treats the patient's injuries or illness. Discussion: While the patient is in transport or upon arrival of the patient at the treatment facility, the clinical staff reviews the emergency care record concerning treatment provided by emergency care clinicians, adding any additional observations. The outcome of this activity would be an updated working diagnosis of the patient's conditions. The patient's injuries or illness are treated with the clinical staff referring to the electronic health record as part of the process	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
	6.3.3.1A Patient notes from emergency care have been recorded in the EHR repository and clinical staff retrieves information Discussion:	Same as 6.3.3.1	Same as 6.3.3.1



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	A: The clinical staff sends a query via the in-house system (if applicable) requesting the Episode of Care Record health information for the patient. The information is received and the clinical staff combines this information with that from the electronic health record.		
6.3.4 Input information in EHR	6.3.4.1 Information related to diagnosis, tests, and treatment is recorded in the patient's EHR and PHR. Information is continually sent to public health agencies for population health monitoring purposes. Discussion: Clinical care staff updates information to the electronic health record. The EHR is updated with the working diagnosis, treatment rendered, medications given, and profiles. Diagnostic testing results are updated into the electronic health record, ideally without additional entry requirements being placed on the clinical care staff. This should also include information feeds from automated lab systems and automated electronic medical devices.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER50 Send/Receive Public Health Data	DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
6.3.5 Complete disposition; Provide information	6.3.5.1 Patient disposition occurs. Discussion: Patient care information is available for access by authorized clinical care staff in other facilities via the HIS.	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	6.3.5.1A The patient is discharged. Discussion: A: If the patient requires no further treatment, the appropriate notations are made by the clinical care staff in the electronic health record, closing the patient encounter. The updated electronic health record information is sent by the clinical care staff via the HIS to the appropriate repository(ies) to be combined with the patient's electronic health record	Same as 6.3.5.1 (send to PHR system if available)	Same as 6.3.5.1
	6.3.5.1B The patient is transferred to inpatient status at another facility. Discussion: B: The electronic health record is sent directly to the receiving facility. It is also available to the clinical care staff via query through the HIS. Note: Please also see IS09 – Consultations and Transfers of Care	IER16 Send/receive Patient Health Information IER59 Send/receive Present Episode of Care IER60 Send/receive Discharge Summary IER14 Send/receive/request health plan eligibility	DR02 Patient Clinical Summary DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR06 Eligibility and Authorization information



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
		IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information
	6.3.5.1C The patient is discharged with outpatient follow-up. Discussion: C: The updated electronic health record information is available to clinical care staff via query through the HIS.	Same as 6.3.5.1 (send to PHR system if available)	Same as 6.3.5.1
	6.3.5.1D The patient is transferred to another facility. Discussion: D: The updated electronic health record information is sent directly to the receiving facility and is also available to clinical care staff through query via HIS. Note: Please also see IS09 – Consultations and Transfers of Care	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
		IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
		IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
		IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
	6.3.5.1E The patient is deceased. Discussion: E: If the patient dies in the definitive care facility, a notation is made in the electronic health record by clinical care staff of the time and circumstance of the death and the record is then closed for that patient encounter. Notification is sent by clinical care staff to the Medical Examiner (currently by telephone) of the date and cause of the patient's death and to the ECS for redistribution to appropriate stakeholders.	Same as 6.3.5.1 (send to PHR system if available)	Same as Action: 6.3.5.1
	6.3.5.1F The patient is discharged against medical advice. Discussion: F: A notation by clinical care staff is made and signed in the electronic health record, closing that patient encounter.	Same as Action: 6.3.5.1 (send to PHR system if available)	Same as Action: 6.3.5.1
6.3.5 Complete disposition; Provide information	6.3.5.2 Release of information. Discussion: Information on the patient's present episode is sent by clinical care staff to the HIS where it is to be located with existing patient health information in the electronic health record. Appropriate information is sent to ECS systems and	IER59 Send/receive Present Episode of Care	DR62 Present Episode of Care – Definitive Care
		IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness



Event	Action	Information Exchange Requirement(s) (includes security requirements)	Data Requirements
	public health agencies that use the information to track health resources and conduct biosurveillance respectively. The information sent to ECS systems is non-identifying or anonymized.		Information
	Note: A subset of the information (typically only name, location and emergency contact information) should be sent to the American Red Cross' server for its family reunification responsibilities and to the National Center for Missing and Exploited Children for its child reunification responsibilities.	IER50 Send/Receive Public Health Data	DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
		IER17 Send/receive transfer of care data	DR62 Present Episode of Care – Definitive Care
		IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
		IER66 Send/receive Agency Authorization	DR65 Agency Authorization List

6.3 USE CASE SEQUENCE DIAGRAMS

The Use Case sequence diagrams illustrate each Use Case scenario with a representation of a normal sequence of exchange between the primary actors. The event codes from the Use Case are annotated on the diagrams to show how the interactions relate to the Use Case. The interactions are supported by the various constructs which are introduced in Section 3.0 of this Interoperability Specification.

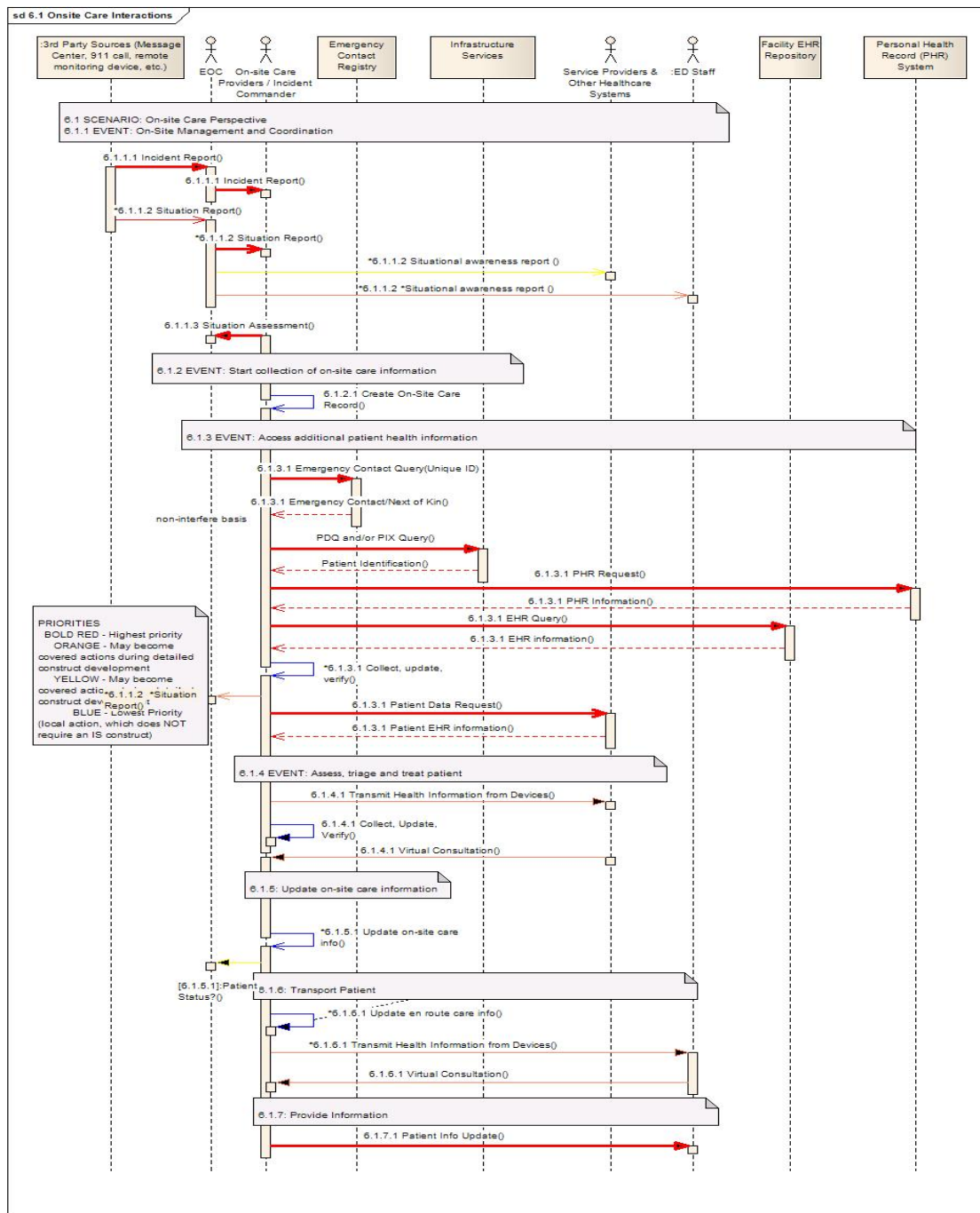
The high level sequence diagrams illustrate each Use Case scenario with a representation of a normal sequence of exchange between the primary actors. The event codes from the Use Case are annotated on the diagrams to show how the interactions relate to the Use Case. The interactions are supported by the various constructs which will be introduced in Section 3.0 of this Interoperability Specification.

6.3.1 ON-SITE CARE SCENARIO PERSPECTIVE BUSINESS SEQUENCE DIAGRAM

Figure 6.3.1-1 illustrates the UML interaction diagram from the scenario perspective of On-Site Care.



Figure 6.3.1-1 On-Site Care Scenario Business Sequence Diagram



This following narrative provides a high level walk through of the flow depicted in the UML diagram in Figure 2.2.4.1-1 On-Site Care Scenario Business Sequence Diagram. A response to a motor vehicle crash involving a single vehicle is utilized as the incident example. It is fictitious and only one simple example of the scenario. The goal is twofold:



- To provide a better understanding of the actions involved regarding ECS access and exchange of patient-specific and incident information with on-site care providers (EMS, Law Enforcement, Fire), and
- To provide on-site care provider (EMS, Law Enforcement, Fire) access and exchange of patient-specific health information, with or independent of the ECS (e.g. exchange of a Personal Health Record, Emergency Contact Registry (ECON), and/or Electronic Health Record (EHR))

Note that in the scenario described below, “HITSP GAP” means that there is no existing HITSP construct with transport data and vocabulary standards. The HITSP GAP road map, in Section 3.0, addresses candidate standards and/or duplicate or overlapping standards which are being suggested or matured to satisfy this need.

Scenario

An Emergency Communications System (ECS) is notified of a motor vehicle crash. The same notification is routed to other emergency agencies that have registered in the agency locator core service to receive notice of bad crashes for that location: the local EMS, air medical service and trauma center. In addition, the local police and highway departments are registered for simultaneous notification. The 9-1-1 telecommunicator attempts to collect data such as victim’s name, location, gender, and chief complaint. Vehicular incident data from automaker Telematics Service Providers (e.g., General Motors’ OnStar, Mercedes-Benz TeleAid) may also be available, including the presence and location of a PHR and parties to contact in an emergency. Other external incident data may be transmitted to, or accessed by the ECS (and other actors depending on specific agency desires and local business rules entered into the core services.). The ECS begins an emergency care record on the victim and supplements it with information derived from questioning the caller that may be relevant (age, gender, partial Glasgow coma scale measurements). If it has an identity, ECS automatically sends out queries for victim-specific historical health information, such as Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) that may be available. From the ECS, the 9-1-1 Telecommunicator/Dispatcher provides the initial patient assessment in deciding what care to dispatch to the scene. These decisions are usually made according to Emergency Medical Dispatch (EMD) protocols. In the future, we expect these to be enhanced by the application of new predictive decision support tools which take advantage of the data sources discussed herein (e.g., melding EMD with the URGENCY crash prediction algorithm). The same data may indicate the need for additional resources from a different profession (e.g., an extrication team from fire services). In some cases, trained telecommunicators may provide telephone pre-arrival treatment instructions of the patient(s) prior to arrival of the first on-site care providers on the scene. All patient, incident, and care information collected by the ECS is entered into an Episode of Care Record in a Computer Aided Dispatch (CAD) system prior to dispatch of personnel to the scene.

On-Site care providers, such as Fire, Police, EMS, or Air Transport are dispatched based upon the above information (Use Case Action 6.1.1.1 – HITSP GAP). All gathered information is sent from the ECS to the responding on-site care team answering the dispatch call (or available to them), and other involved organizations as appropriate (with data messaging and access rights governed by the policies entered



into the relevant core services¹). The fire services extrication team accesses automotive design data on the way to the incident to learn where to cut into this particular vehicle without triggering a side airbag or hitting an electrical cable.

The Emergency Communications System (Emergency Operations Center in a large scale emergency) provides continuous updates about the incident (such as location, situation, patients, etc) by sharing a flow of incident messages and creating Situational Awareness Reports from time to time. These messages and reports are sent to incident stakeholder locations such as EMS, Emergency Department, Incident command, state health department, state EOC, HHS, depending on the incident (Use Case Action 6.1.1.2 - HITSP GAP). If the Incident Command System (ICS) is invoked, there are a large number of standard ICS forms, but there has not been an electronic standardization of the forms or all of their taxonomy.

On-Site care providers (EMS, Law Enforcement, and Fire) arrive at the scene. Police or transportation officials begin traffic diversion. Fire Services staff successfully extricate the victim. The Emergency Medical Technician (EMT) begins treatment of the patient and begins contributing to the pre-hospital Patient Care Report (PCR) (Use Case Action 6.1.2.1), adding to the data already transmitted from the ECS.

One of the crash victims is unconscious and not identifiable. In order to keep the focus of the EMS on delivery of emergency medical services, law enforcement is typically responsible for the identification of unidentified crash victims and/or obtaining the vehicle owner emergency contact information to assist in the identification of unidentified crash victims, facilitate family member reunification and expedite next-of-kin notification. Law Enforcement may accomplish these tasks on a treatment non-interference basis by utilizing the Vehicle Identification Number (VIN) as a unique identifier to query an Emergency Contact Registry (ECON) (Use Case Action 6.1.3.1 – HITSP GAP) to obtain the vehicle owner emergency contact name(s) and phone number(s). The vehicle owner emergency contacts may provide assistance in identifying unidentified crash victims, as well as, providing additional knowledge about certain aspects of victim-specific health information, such as pre-existing conditions, allergies, medications, primary care physician, etc.

Law Enforcement electronically passes the gathered patient-specific historical health information to EMS and other authorized parties, specifically positive victim identification and emergency contact information (ECON). This information may include an electronic 'pointer' to the availability and location of a Personal Health Record (PHR). EMS electronically records the Patient ID (demographics) and Personal Health Record (PHR) 'pointer' information in the pre-hospital Patient Care Report (PCR) system, enabling authorized EMS personnel to send a query (or automatically querying a Patient Identification Service) to determine the location of the Personal Health Record PHR and/or Electronic Health Record (EHR) data

¹ Core Services may implement a collection of standardized, shared services that help ensure security during the sharing of patient information and enable accurate data routing. These include but are not limited to: access control/identity management, data rights management, and location and other information about emergency agencies needed for routing data.



(HITSP/TP22 Patient ID Cross-Referencing (see note). This allows a query or retrieval of the needed documents (Use Case Action 6.1.3.1 – HITSP/TP13 Manage Sharing of Documents (IHE XDS), with the document defined by HITSP/C32 Summary Documents Using HL7 Continuity of Care Document (CCD)). On-site care providers at times will need access to parts of the patient-specific historical health data in a Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR), as opposed to the documents or parts of the documents themselves.

On-site EMS-gathered patient specific historical health information, including Personal Health Record (PHR), Emergency Contact Registry (ECON) and/or Electronic Health Record (EHR) data are electronically downloaded and entered automatically merged into the pre-hospital Patient Care Report (PCR). This supports real-time messaging of patient-specific historical health information (i.e., Patient ID, ECON, PHR and/or EHR data) to Emergency Department Clinicians and other authorized parties.

This information enhances the Dispatch, Virtual and/or on-site care of the patient (Use Case Actions 6.1.4.1, 6.1.5.1, 6.1.6.1). EMS personnel perform tests on the patient requiring medical devices, such as EKG, blood pressure monitors, etc. This device information is automatically added to the pre-hospital Episode of Care Record (including Patient Care Report), which is now available through the ECS to the ED where the patient is being sent based on a matching of hospital resource availability and the needs of the patient. A decision support software application meshes relevant parts of the Episode of Care Record with on-going reports from hospitals on ED, specialty care, operating room and bed availability (Use Case Action 6.1.4.1 – HITSP GAP). The simultaneous receipt of this data, and of trend lines in patient vitals, allows virtual consultation by more expert practitioners at the ED or trauma center. In some cases, the ED may be skipped altogether as the victim is delivered directly to the cardiac unit, operating room, etc.

Before the patient arrives at the ED, the hospital's ED information system has been pre-populated with information about the victim. This includes all the identity, emergency contact information, incident and care information discussed above, and also organ donor and insurance billing information.

The traditional task of creating an EMS ambulance “run report” or PCR is made simpler as most of the information is already in the ECS or EMS system and can be directly printed and/or electronically reported. While the run report may need further editing, EMS should find that this new approach saves report writing time and reduces errors. Some portions of the Encounter Record need to be extracted to update the patient's PHR and/or EHR (Use Case Action 6.1.7.1 HITSP/TP13 Manage Sharing of Documents, with the document yet to be defined – HITSP GAP).

Note: Another example is where law enforcement was not able to ascertain the victim's identity from the emergency contacts in Emergency Contact Registry (ECON), but was able to obtain patient demographics and locations of Personal Health Record (PHR) and/or Electronic Health Record (EHR) data. For this example, the PIX query would not work because a Patient ID is not known. Therefore, a patient demographics query to obtain the Patient's ID from the known PHR/EHR would be required (HITSP/T23 Patient Demographics Query).



6.3.2 EMERGENCY CARE SCENARIO PERSPECTIVE BUSINESS SEQUENCE DIAGRAM

This following narrative provides a high level walk through of the flow depicted in the UML diagram in Figure 6.3.2-1 Emergency Care Scenario Perspective Business Diagram below. It is fictitious and only one simple example of the scenario. The goal is to provide a better understanding of the scenario and to map standard electronic communications to HITSP Transactions.

Initially, all facilities in the immediate area are alerted about an incident because they have registered in the agency locator service and are authorized to receive them in the access control service. Updates are made regarding current resource availability. An Emergency Department receives a notification from the Emergency Communications System (On-Site responders and/or Medical Control functions) about a patient being transported to their facility (Use Case Action 6.2.1.1 – HITSP GAP). The Emergency Communications System (often the Emergency Operations Center in a large scale emergency) provides continuous updates about the incident (such as location, situation, patients, etc.) which from time to time are collected in Situational Awareness Reports. These are formalized as ICS reports if ICS has been activated. These messages and reports are sent to incident stakeholder locations that have registered to receive it such as EMS, Emergency Department, higher level EOCs, etc. (Use Case Action 6.1.1.2 - HITSP GAP).

If there is no power or communications, the Emergency Department uses battery powered devices, and failing those begins a paper record for the patient (Use Case Action 6.2.2.1 – no electronic communications). Patient arrives at ED and the department attempts to obtain patient-specific historical health information via many possibilities, ECON, EHR, PHR, other facilities – If that data has not already been accessed and, where relevant, added to the Emergency Care Record by either the ECS or On-Site care earlier in the response process, the ED queries the various ECONs to determine the patient's contact information (Use Case Action 6.1.3.1 – HITSP GAP).

A query to a Patient Identification Service (PID Service) is required to determine the Patient's ID for the PHR and/or EHR (HITSP/T22 Patient ID Cross-Referencing (see note in Section 2.2.4.1)). After obtaining the proper ID for the PHR/EHR, the ED query/retrieve the needed data (Use Case Action 6.2.3.1 – HITSP/TP13 Manage Sharing of Documents, HITSP/C32 Summary Documents Using HL7 Continuity of Care).

The ED personnel (i.e. nurses, doctors, etc.) perform various tests, collect data and build a report (Use Case Actions 6.2.4.1, 6.2.5.1 - internal ED events). The output of this effort is an ED summary document that can be transmitted to many different authorized entities (Use Case Action 6.2.6.1 HITSP/TP13 Manage Sharing of Documents, with the document defined in HITSP/C28 Emergency Care Summary Document).

The Situational Awareness messages and/or report are updated by the ED and sent to the Incident Commander and the Emergency Communications System (often the Emergency Operations Center in a



large scale emergency) is updated with ED and hospital resource information (Use Case Action 6.2.6.2 – HITSP GAP).

Figure 6.3.2-1 Emergency Care Scenario Perspective Business Sequence Diagram

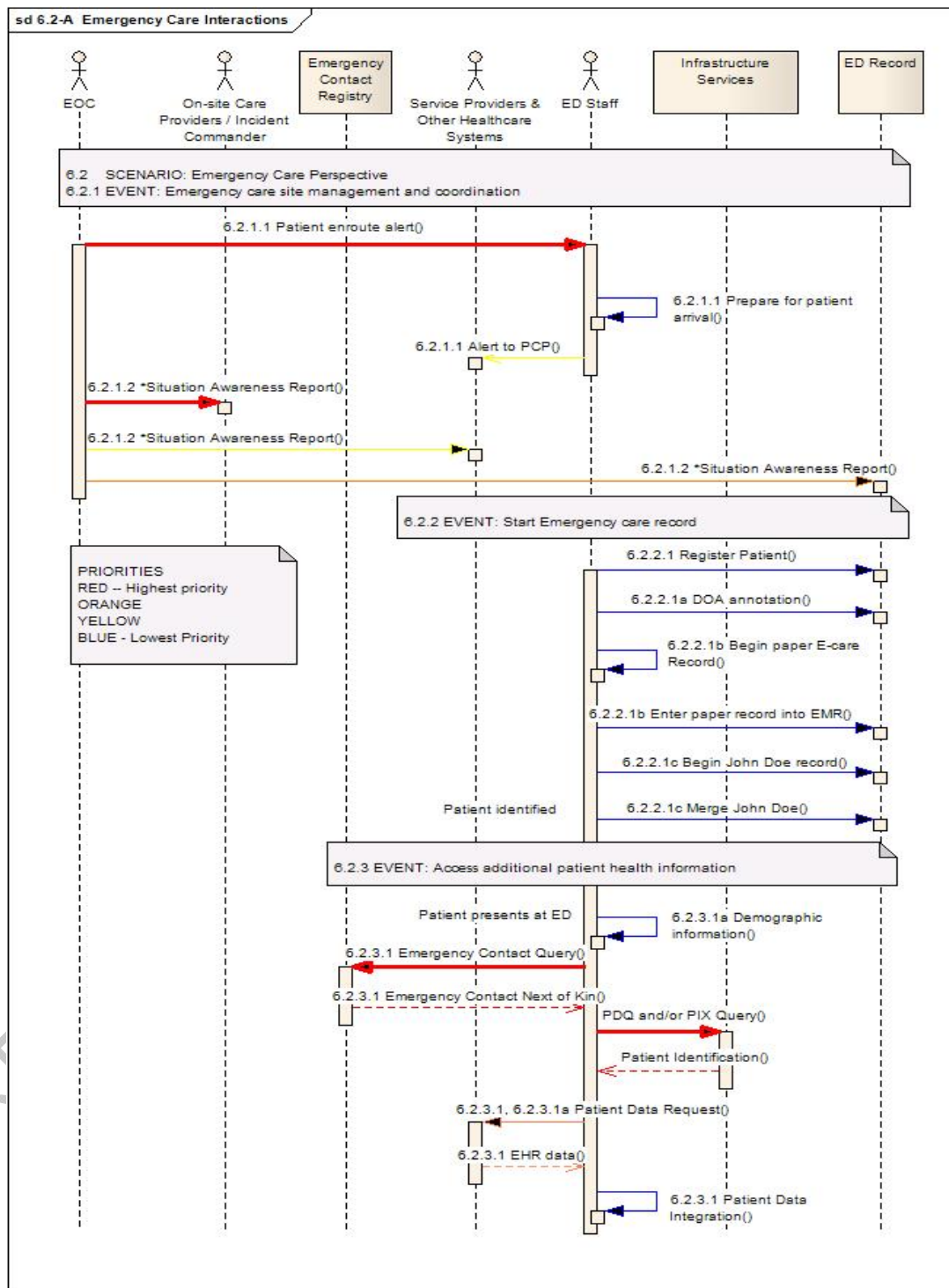
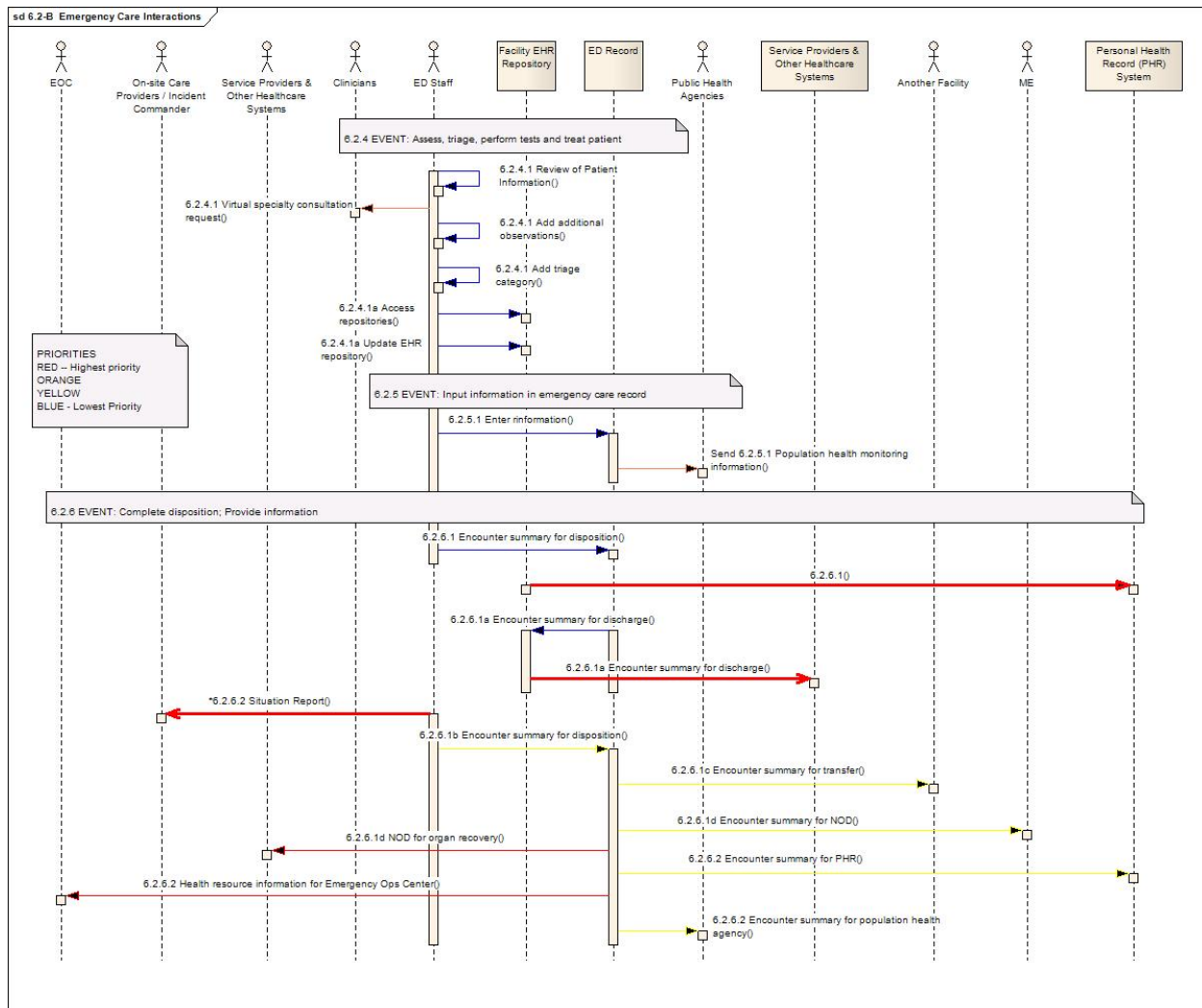


Figure 6.3.2-2 Emergency Care Scenario Perspective Business Diagram Continued



6.3.3 DEFINITIVE CARE SCENARIO DIAGRAM

This following narrative provides a high level walk through of the flow depicted in the UML diagram in Figure 6.3.3-1 Definitive Care Scenario Perspective. It is fictitious and only one simple example of the scenario. The goal is to provide a better understanding of the scenario and to map standard electronic communications to HITSP Transactions.

The Emergency Communications System (Emergency Operations Center in a large scale emergency) provides continuous updates about the incident (such as location, situation, patients, etc) by sending messages about the incident and from time to time creating a Situational Awareness or ICS Report. These messages and reports are sent to incident stakeholder locations such as EMS, Emergency Department, etc. (Use Case Action 6.3.1.2 - HITSP GAP).



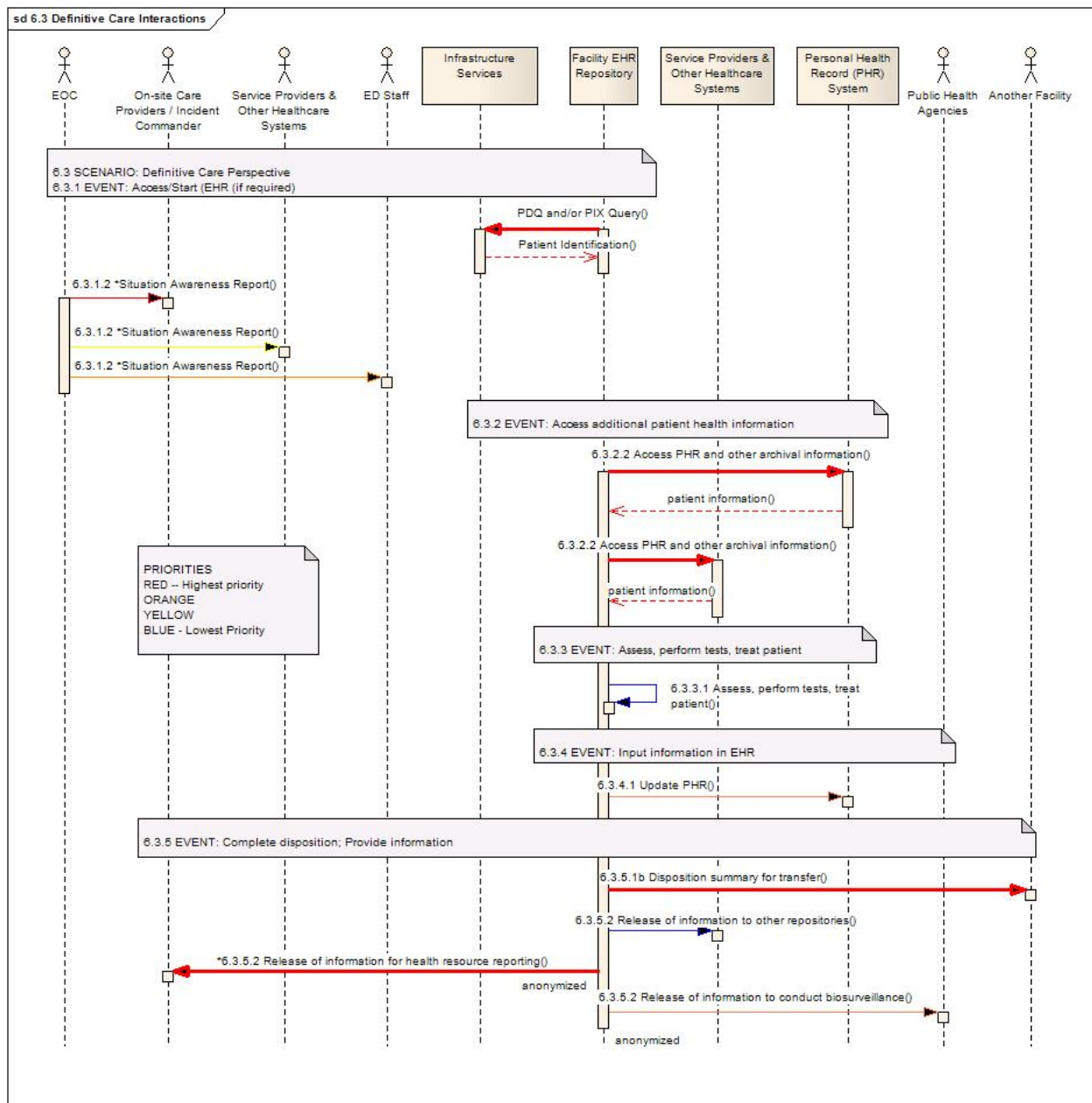
Where feasible and appropriate the emergency care record, or parts of it (including information from ECON) are transferred to others (Virtual consultations, EHR, PHR, etc). A query to a Patient Identification Service (PID Service) is required to determine the Patient's ID for the PHR and/or EHR (HITSP/T22 - Patient ID Cross-Referencing (see note). After obtaining the proper ID for the PHR/EHR, the EMS query/retrieve the needed documents (Use Case Actions 6.3.2.3, 6.2.4.1 – HITSP/TP13 Manage Sharing of Documents, with the document defined by HITSP/C32 Summary Documents Using HL7 Continuity of Care Document (CCD) see note).

The ED discharges the patient with a medical summary document and transfers to other facilities (Use Case Action 6.3.5.1 – HITSP/C48 Encounter Document Using IHE Medical Summary (XDS-MS) and HITSP/C39 Encounter Message). If appropriate, the Red Cross is notified of the name and location of the patient. It may also be that a Red Cross facility is the recipient of the patient.

Note: Event 6.3.2.2 is identified as "Access PHR other Archival Information". This specification only defines the PHR summary document to retrieve (HITSP/C32). Other archival information may be accessible to the EHR but that is an internal function outside the scope of this Interoperability Specification.



Figure 6.3.3-1 Definitive Care Scenario Perspective



6.4 MAPPING OF CONSTRUCTS TO INFORMATION EXCHANGE AND DATA REQUIREMENTS

Table 6.4-1 below provides a mapping of the HITSP constructs that will be used in the design of the Interoperability Specification, and the data and information exchange requirements that are being satisfied by the construct. These requirements are limited to those that are deemed within scope for this Interoperability Specification, which are described in Section 3.1.



Table 6.4-1 Mapping of HITSP Constructs to Requirements

Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)	HITSP/TP22 - Patient ID Cross - Referencing
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary	HITSP/C32 - Summary Document Using HL7 Continuity of Care Document (CCD)
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support	GAP
		HITSP/C62 - Unstructured Document
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients (service)
		HITSP/T66 - Retrieve Value Set
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and On site DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care	GAP – Present Episode of Care – Onsite information
		HITSP/C28 - Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES)
		HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
		HITSP/T66 - Retrieve Value Set
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary	HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T66 - Retrieve Value Set
		HITSP/TP20 - Access Control
IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information	GAP
		HITSP/C62 - Unstructured Document
		HITSP/C47 - Resource Utilization Message
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER48 Send/Receive Device Data	DR46 Medical Life Support Monitor Data	GAP – Structured component for device data
		HITSP/C62 - Unstructured Document Note: pending gap resolution
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider	GAP – Structured component for non-telematics third party service providers
		HITSP/C62 - Unstructured Document Note: pending gap resolution
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER25 Send/receive Decision Support Data	DR17 Decision Support Data	HITSP/C62 - Unstructured Document
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/TP20 - Access Control
IER10 Identify Patient	DR01 Demographic Data	HITSP/T23 - Patient Demographics Query
		HITSP/TP22 - Patient ID Cross - Referencing
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data	Gap – structured document
		HITSP/C32 - Summary Document Using HL7 Continuity of Care Document (CCD)
		HITSP/C62 - Unstructured Document
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T66 - Retrieve Value Set
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol	Gap – structured document
		HITSP/C62 - Unstructured Document
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T66 - Retrieve Value Set
		HITSP/TP20 - Access Control
IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information	HITSP/T40 - Patient Health Plan Eligibility Verification
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T85 - Administrative Transport to Health Plan
		HITSP/TP20 - Access Control



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
		HITSP/TP30 - Manage Consent Directives
IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information	HITSP/T68 - Patient Health Plan Authorization Request and Response
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T85 - Administrative Transport to Health Plan
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol Content	HITSP/C82 - Emergency Common Alerting Protocol
		HITSP/T63 - Emergency Message Distribution Element
IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary	HITSP/C28 - Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES)
		HITSP/C32 - Summary Document Using HL7 Continuity of Care Document (CCD)
		HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/TP13 - Manage Sharing of Documents
		HITSP/C19 - Entity Identity Assertion
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T66 - Retrieve Value Set
		HITSP/TP20 - Access Control
		HITSP/TP30 - Manage Consent Directives
IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry	HITSP/C19 - Entity Identity Assertion
		HITSP/C47 - Resource Utilization Message
		HITSP/C82 - Emergency Common Alerting Protocol
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
IER66 Send/receive Agency Authorization	DR65 Agency Authorization List	HITSP/C19 - Entity Identity Assertion
		HITSP/C47 - Resource Utilization Message
		HITSP/C82 - Emergency Common Alerting Protocol
		HITSP/T15 - Collect and Communicate Security Audit Trail
		HITSP/T16 - Consistent Time
		HITSP/T17 - Secured Communication Channel
		HITSP/T63 - Emergency Message Distribution Element
		HITSP/T64 - Identify Communication Recipients
		HITSP/TP20 - Access Control

Table 6.4-2 provides the mapping by Construct.

Table 6.4-2 Mapping of Requirements to HITSP Constructs

Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
HITSP/C19 - Entity Identity Assertion	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS
		DR61 Present Episode of Care – Emergency Care
		DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization
		DR54 Situational Awareness information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS
		DR61 Present Episode of Care – Emergency Care
		DR62 Present Episode of Care – Definitive Care
		DR02 Patient Clinical Summary
	IER14 Send/receive/request health plan eligibility	DR06 Eligibility and Authorization information
	IER15 Send/receive/request health plan authorization	DR06 Eligibility and Authorization information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS
		DR61 Present Episode of Care – Emergency Care
		DR62 Present Episode of Care – Definitive Care
		DR02 Patient Clinical Summary



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/C28 - Emergency Care Summary Document Using IHE Emergency Department Encounter Summary (EDES)	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
HITSP/C32 - Summary Document Using HL7 Continuity of Care Document (CCD)	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
HITSP/C47 - Resource Utilization Message	IER53 Send/receive Situation report	DR53 Resource Utilization DR54 Situational Awareness information
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/C48 - Encounter Document Using IHE Medical Summary (XDS-MS)	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and Onsite DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
HITSP/C62 - Unstructured Document	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/Receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
HITSP/C82 - Emergency Common Alerting Protocol	IER27 Send non-patient notification message or alert	DR63 Common Alerting Protocol content
	IER65 Send/receive Agency Distribution list	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T15 - Collect and Communicate Security Audit Trail	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and Onsite DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
	IER48 Send/Receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T16 - Consistent Time	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and Onsite DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/Receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T17 - Secured Communication Channel	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
		DR51 Public Health Data
	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T23 - Patient Demographics Query	IER10 Identify Patient	DR01 Demographic Data
HITSP/T40 - Patient Health Plan Eligibility Verification	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
HITSP/T63 - Emergency Message Distribution Element	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
	IER27 Send non-patient Notification Message or Alert	DR63 Common Alerting Protocol content
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T64 - Identify Communication Recipients	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
	IER65 Send/receive Agency Distribution List	DR64 Agency Locator Registry
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/T66 - Retrieve Value Set	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and Onsite DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
HITSP/T68 - Patient Health Plan Authorization Request and Response	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
HITSP/T85 - Administrative Transport to Health Plan	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
HITSP/TP13 - Manage Sharing of Documents	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS and Onsite DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER51 Send/receive Public Health Protocol	DR52 Public Health Protocol
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
HITSP/TP20 - Access Control	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness Information
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization Information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization Information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary
	IER66 Send/receive Agency Authorization	DR65 Agency Authorization List
HITSP/TP22 - Patient ID Cross Referencing	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER10 Identify Patient	DR01 Demographic Data
HITSP/TP30 - Manage Consent Directives	IER46 Send/receive Emergency Contact Information	DR44 Emergency Contact Information (ECON)
	IER16 Send/receive Patient Health Information	DR02 Patient Clinical Summary
	IER52 Send/receive Billing Support Report	DR43 ECS and On-Site Billing Support
	IER59 Send/receive Present Episode of Care	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care
	IER60 Send/receive Discharge Summary	DR02 Patient Clinical Summary
	IER53 Send/receive Situation Report	DR53 Resource Utilization DR54 Situational Awareness information



Construct Name	Information Exchange Requirement Number (IER#)	Data Requirement Number (DR#)
	IER48 Send/receive Device Data	DR46 Medical Life Support Monitor Data
	IER47 Send/receive Information Service Provider Data (e.g. telematics)	DR45 Incident Information from Third Party Provider
	IER25 Send/receive Decision Support Data	DR17 Decision Support Data
	IER10 Identify Patient	DR01 Demographic Data
	IER50 Send/Receive Public Health Data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary DR51 Public Health Data
	IER14 Send/receive/request Health Plan Eligibility	DR06 Eligibility and Authorization information
	IER15 Send/receive/request Health Plan Authorization	DR06 Eligibility and Authorization information
	IER17 Send/receive transfer of care data	DR48 Present Episode of Care – ECS DR61 Present Episode of Care – Emergency Care DR62 Present Episode of Care – Definitive Care DR02 Patient Clinical Summary

6.5 EMERGENCY CONTACT RESOLUTION

Further information is provided in the Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Committee White Paper, 'ID/ECON White Paper' Template for Law Enforcement to Hand Over Crash Victim Identity (ID) and Emergency Contact Information (ECON) to EMS Providers following a Motor Vehicle Crash, Version 2.0, August 22, 2008, which can be retrieved from www.ihe.net.

6.6 ER-EHR ACRONYMS

The following acronyms are referenced within this Interoperability Specification:

(ACS)	Auxiliary Care Sites
(ADL)	Activities of Daily Living
(APCO)	Association of Public-Safety Communications Officials
(BAS)	Battalion Aid Stations
(CAD)	Computer Aided Dispatch
(CIMS)	Consequence Incident Management System
(CCD)	Continuity of Care Document
(DEEDS)	Data Elements for Emergency Department Systems
(DHS-DM)	Department of Homeland Security – Disaster Management
(DMATs)	Disaster Medical Assistance Teams
(DMORTs)	Disaster Mortuary Operational Response Teams
(EHR)	Electronic Health Record
(ECC)	Emergency Communications Center
(ECS)	Emergency Communications System
(ECON)	Emergency Contact Registry



(ED)	Emergency Department
(EMD)	Emergency Medical Dispatch
(EMS)	Emergency Medical Services
(EMTs)	Emergency Medical Technicians
(EOC)	Emergency Operations Centers
(ER-EHR)	Emergency Responder-Electronic Health Record
(ECR)	Episode-of-Care Record
(FEMA)	Federal Emergency Management Agency
(FMS)	Federal Medical Stations
(Global JXDM)(GJXDM)	Global Justice XML Data Model
(HIMSS)	Healthcare Information and Management Systems Society
(HRSA)	Health Resources and Services Administration's
(HIS)	Healthcare Information System
(ICS)	Incident Command System
(ME)	Medical Examiner
(MTF)	Medical Treatment Facility
(NASEMSO)	National Association of State EMS Officials
(NASFE)	National Association of State Fire Marshals
(NEMESIS)	National Emergency Medical Services Information Systems
(NENA)	National Emergency Number Association
(NHTSA)	National Highway Traffic Safety Administration
(NHTSA)	National Highway Traffic Safety Administration
(NIMS)	National Incident Management System
(NIEM)	National Information Exchange Model
(NTDB)	National Trauma Data Bank
(OASIS CAP)	OASIS Common Alerting Protocol
(OASIS DE)	OASIS Distribution Element
(OASIS EDXL)	OASIS Emergency Data Exchange Language
(OASIS HAVE)	OASIS Hospital Availability Exchange
(OGC)	Open Geospatial Consortium
(PCR)	Patient Care Report
(PHR)	Personal Health Record
(PHS)	Public Health Service
(PSAPs)	Public Safety Answering Points
(RFID)	Radio Frequency Identification
(SARs)	Situational Awareness Reports
(TSP)	Telematics Service Providers
(VIN)	Vehicle Identification Number
(VEDS)	Vehicular Emergency Data Set



7.0 DOCUMENT UPDATES

The following sections provide the details of updates made to this document.

7.1 DECEMBER 5, 2007

The changes in this cycle address the following comments:

528, 531, 532, 537, 538, 549, 574, 629, 632, 669, 763, 764, 770, 786, 795, 799, 800, 802, 803, 804, 808, 809, 811, 812, 813, 820, 828, 830, 831, 884, 1171, 1178, 1179, 1182, 1186, 1190, 1191, 1192

The full text of the comments along with the Technical Committee's disposition can be reviewed on the [HITSP Public Web Site](#).

- Incorporated all of the 287 Public Comment TC dispositions into the document
- Added detail to the description of the pre-hospital scenario to provide clarity regarding Interoperability requirements and differentiation among and between the Use Case elements.
 - Introduced the global concept of an Emergency Communications System for Emergency Communications Center to connect the current approach with the more advanced capabilities that are envisioned by the Use Case and underway in the EMS industry
 - Updated the UML diagrams for completeness, accuracy and improved understanding
- Reflected the additional analysis and Section 3.0 Design necessary to identify the appropriate HITSP constructs to support the Use Case
 - Figure 3.2.2-1 and 3.2.2-2 – Detailed Design
 - Table 3.2.3-1 – Detailed Design
 - Made a number of standards selections to support the constructs
- Identified and documented 4.0 Gaps and Overlaps in required standards and created supporting technical actors for the Gaps.
 - Created and documented a Road Map to address the Gaps and Overlaps identified including a planning effort, the identification of a number of interrelated projects and potential resources that will be involved in the resolution
 - Identified a number of Candidate Standards that will require review and analysis as part of the Road Map effort
- Reformatted the document content to adhere to the new HITSP document templates
 - Added diagrams and tables based on the new HITSP document templates

7.2 DECEMBER 13, 2007

Upon approval by the HITSP Panel on December 13, 2007, this document is now Released for Implementation.



7.3 SEPTEMBER 26, 2008

This document has been modified to incorporate gaps and overlaps, which have been resolved in 2008.

7.4 DECEMBER 10, 2008

The changes in this construct address the following comments received during the Public Comment and Inspection Testing period (September 29 – October 24, 2008).

5128, 5131, 5134, 5137, 5180, 5444, 5582, 5593

The full text of the comments along with the Technical Committee's disposition can be reviewed on the [HITSP Public Web Site](#).

Minor editorial changes were made to this construct.

The changes in this cycle address the following comments received during the October 2008 public comment and inspection testing period:

- Incorporated all of the 13 Public Comment TC dispositions into the document
- Updated the gap Table 4.2-1 as per public comments and changed status of standards since last publication
- Updated UML diagrams
 - Updated document map
 - Updated construct names where needed
 - Updated business actor names for clarity
 - Updated component diagrams to match IER and DR harmonized numbering
 - Updated diagrams for clarity
- Added missing standards and corresponding copyrights and amended standards descriptions
- Made editorial changes as suggested by public comments
 - Updated construct names and descriptions
 - Updated business actors and stakeholders as per harmonized spreadsheet
 - Corrected use of IERs and DRs as per public comments
 - Corrected discussion language for clarity
- Moved the following tables and figures to the appendix to allow easier access to the Design Section of the Interoperability Specification:
 - Table 2.2.1-1 – All the tables that provided the Mapping of Use Case Actions to Information Exchange Requirements
 - Figure 2.2.4-1 – All the High Level UML Sequence Diagrams
 - Table 3.2.2-1 – Mapping of HITSP constructs to Requirements

7.4.1 GLOBAL CHANGES

The following changes were applied throughout the document for clarification and consistency.



- Document reformatted to adhere to the new HITSP document templates
- Updated Table 3.2.3-1 to correct references to HITSP TP20 Access Control and HITSP C19 Lab Report Document
- Added IS business actor in order to consolidate use of SPI constructs
 - Removed Locator Service, Data repository, Patient identification service and registries from UML diagrams, business actor tables and Table 3.2.3-1 and replaced them with Infrastructure Services business actor
- Renumbered IERs and DRs as part of HITSP IER and DR harmonization
 - Updated component diagrams in Section 2.2.4
 - Updated IER and DR numbers and names in Tables: 2.2.2-1, 2.2.2-2, 2.2.3-1, 6.2-1, 6.4-1

7.5 DECEMBER 18, 2008

Upon approval by the HITSP Panel on December 18, 2008, this document is now Released for Implementation.

