Emergency Data Exchange Language (EDXL)

Project Initiation Document

For the

PHASE I - Tracking of Emergency Patients (EDXL-TEP) Messaging Standard

Draft Version 4.3

02/18/2010

Precursor to Phase II:

Tracking of Emergency Clients (EDXL-TEC)
(Formerly "EDXL-TEV" – Tracking of Emergency Victims)

Prepared by Evolution Technologies, Inc.
Sponsored by the DHS S&T-OIC EDXL Program
Defined by the EDXL Practitioner Steering Group and TEP Steering Committee

Table of Contents

Document Distribution List

Name	Distributed (Yes / No)	Date (mm/dd/yy)
TEP Project Steering Committee	Yes - Initial Drafts & Revised version Distribution	03/25/2009, 04/02/09, 04/25/2009, 05/20/09, 05/28/09, 07/03/09, 08/20/09, 09/04/09
TEP Project Stakeholder Groups, Vendors & IJIS membership via representative DHS-S&T-OIC Practitioner Steering Group (PSG) and Standards Working Group (SWG)	Yes - Initial Draft Revision	05/28/09 09/10/09
Office of the Deputy Director, Office for Interoperability and Compatibility, U.S. Department of Homeland Security Science and Technology	Yes	05/28/09 09/10/09
All the above	Yes – slight edits for consistency with TEP Specification	02/04/2010 http://www.evotecinc.com/TEP/

Approvals

Role	Organization	Authorized Person	Response	Date
TEP Lead & PSG Co-chair	TEP Project Steering Committee	Kevin McGinnis	Approved for distribution (following version 4.0 revisions below)	05/27/09 09/04/09
PMP	PMP, DHS Office for Interoperability and Compatibility (OIC)	Denis Gusty	Approved for distribution	09/04/09

Modification History

Author	Date <mm/dd/yy>	Reason	Reviewers	Version
Timothy Grapes / William Bowen	3/25/09	Initial Draft PID	TEP Steering Committee	1.0
Timothy Grapes / William Bowen	4/02/09	Revisions from initial review prior to the Dallas face to face	TEP Steering Committee	2.0
Timothy Grapes / William Bowen	4/25/2009	Incorporated revisions from the TEP project face to face meetings, Dallas, TX April 5 - 7	TEP Steering Committee	3.0
Timothy Grapes / William Bowen	5/20/2009	Incorporated revisions from TEP subsequent Steering Committee meetings, Stakeholder webinar (5/12/09), and other organization meetings (e.g. NENA, APCO…)	TEP Steering Committee	3.1
Timothy Grapes / William Bowen	5/28/2009	Final Steering Committee review / revisions prior to distribution to broad stakeholder groups	TEP Steering Committee	3.2
Timothy Grapes / William Bowen	07/03/2009	Incorporate basic comments and edits received; publish for SWG/Stakeholder review	TEP Stakeholders and Standards Working Group	3.3
Timothy Grapes / William Bowen	8/20/2009	Per 157 comments and agreements, re-cast the PID as an overall effort defined within two phases; Phase 1 being EDXL-TEP. Driven by HHS / AHRQ – see Memorandum for Record – EDXL-TEP Feedback & Direction – July 2009	TEP Steering Committee	4.0
Timothy Grapes / William Bowen	09/08/09	Incorporated TEP Steering Committee feedback from review of the 4.0 re-vamped document	TEP Stakeholders and Standards Working Group	4.1

| Timothy Grapes / William Bowen | 2/4/10 | Minor Revision: Incorporated TEP Steering Committee feedback from TEP face to face meetings, Washington DC, and for consistency with the draft TEP Specification. | TEP Project Stakeholder Groups, Vendors & IJIS membership via representative DHS-S&T-OIC Practitioner Steering Group (PSG) and Standards Working Group (SWG) | 4.2 |
| Timothy Grapes / William Bowen | 02/18/2010 | Minor clarifications based upon TEP Requirements and draft Messaging Specification feedback | TEP Steering Committee | 4.3 |

Related work:

This specification is related to:

EDXL-TEP Messaging Standard Research Report & Research Artifacts – January 2009

http://www.evotecinc.com/TEP/

AHRQ - Recommendations for a National Mass Patient and Evacuee Movement, Regulating, and Tracking System

EDXL-TEP Stakeholder Comments (Issues) list

http://www.evotecinc.com/TEP/ **-** TEP-Stakeholder-IssuesRev6 01-25-2010.xls

EDXL-TEP *Executive Summary* f*or PHASE I - Tracking of Emergency Patients* Messaging Standard *V4.2*

http://www.evotecinc.com/TEP/

EDXL Distribution Element v1.0
http://docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.doc

EDXL Resource Messaging v1.0
http://docs.oasis-open.org/emergency/edxl-rm/v1.0/os/EDXL-RM-v1.0-OS.doc

EDXL Hospital Availability Exchange v1.0
http://docs.oasis-open.org/emergency/edxl-have/os/emergency_edxl_have-1.0-spec-os.doc

EDXL Situation Reporting (SitRep)
(Specification development currently in-progress within the OASIS Emergency Management Technical Committee (EM-TC)) process

1 Executive Summary

1.1 Document Purpose

The purpose of the Project Initiation Document (PID) is to define the purpose, objectives, and scope of the Phase I EDXL-TEP (Tracking of Emergency Patients) standard. It will provide a vehicle to communicate and solicit input from broad stakeholder organizations, gain consensus and buy-in, and set the foundation for the detailed *EDXL-TEP Requirements and draft Messaging Specification*. This PID is a perquisite to the *EDXL-TEP Requirements and Messaging Specification Document*, and will be treated as a package. The Specification document shall take precedence where any differences between the two documents.

Version 4.2 is the current version incorporating minimal revisions following Version 4.0, which addressed the 157 stakeholder review comments received and re-cast the effort to expand the overall project scope and define practitioner requirements within two phases. For more information, see the "Memorandum for Record – EDXL-TEP Feedback & Direction – July 2009" (**http://www.evotecinc.com/TEP/**).

This PID will briefly describe the overall effort through Phase II, which will be referred to as Tracking of Emergency Clients (EDXL-TEC) (Formerly "EDXL-TEV" – Tracking of Emergency Victims). But this document focuses on *details* of the Phase I effort EDXL-TEP. The PID has been a "living document" continuously refined as project scope is refined. As scope solidified, the PID was detailed within the *EDXL-TEP Requirements and Draft Messaging Specification* document for submission from the practitioner process into the Standards Development Organization (SDO) process (OASIS). This specification will provide the basis for creation of an open, public and free international messaging standard for seamless information exchange. It will also re-use and provide a basis for related data standardization efforts.

> **Patient -** A person requiring medical oversight or attention, being medically evaluated; or a fatality
>
> **Client -** For the purposes of TEP, the term "client" may be used interchangeably with the term "Patient". The Phase II effort expands "client" to address tracking everyone affected by and requiring emergency service or assistance as a result of a mass casualty incident (e.g. persons displaced, missing, evacuated, sheltering in place, deceased, and/or requiring medical attention (patient)).

1.2 Project Summary

Section 7 of this document provides a complete overview of the Emergency Data Exchange Language (EDXL) background, program, process and current standards. EDXL is a family of practitioner-driven public XML messaging standards, governed by the Organization for the Advancement of Structured Information Systems (OASIS). These standards enable broad emergency data exchange across any disparate systems of local, state, tribal, national, and non-governmental organizations *regardless of infrastructure and technologies used.* Everyday systems with this standard interface may then seamlessly send, receive, display, and process data natively to support their routine business processes and escalated needs. EDXL is not a "data standard" or a new "XML language".

This PID addresses a new EDXL standard, being defined by practitioners in two phases. The complete effort through Phase II TEC expands the Phase I TEP scope to enable standard information sharing for all clients in addition to patients.

Phase I: TEP – Tracking of Emergency Patients
Phase II: TEC – Tracking of Emergency Clients

Phase I (EDXL-TEP)

EDXL-TEP is an XML messaging standard primarily for exchange of emergency client (patient) and tracking information during patient encounter through admission or release. TEP supports patient tracking across the EMS emergency medical care continuum, as well as hospital evacuations and patient transfers, providing real-time information to responders, Emergency Management, coordinating organizations and care facilities in the chain of care and transport.

The TEP purpose embraces larger Phase II effort objectives **for tracking everyone affected by and requiring emergency service or assistance as a result of a mass casualty incident**, but is aimed at increased effectiveness of emergency medical management, patient tracking, and continued patient care capabilities during emergency care. TEP is driven by cross-profession practitioner needs (Practitioner Steering Group), and led by the National Association of State EMS Officials (NASEMSO). It supports select goals of the HHS-Agency for Health and Research Quality (AHRQ) and some gaps identified by the Health Information Technology Standards Panel (HITSP).

Phase II (EDXL-TEC)

EDXL-TEC (Formerly "EDXL-TEV" – Tracking of Emergency Victims) expands the Phase I scope from strictly patient-focused, to support information exchange about general population clients. TEC enables tracking of everyone affected by and requiring emergency service or assistance as a result of a mass casualty incident or disaster. This includes tracking, regulation, sheltering, care and reunification of persons displaced, missing, evacuated, sheltering in place, deceased, and/or requiring medical attention (i.e. a patient). . It is aimed at effective evacuation management, and supports coordination and effective use of assets, client "finding" for family reunification, and gaps identified by HHS-AHRQ processes (Dept. of Health and Human Services-Agency for Health and Research Quality) and the HITSP ER-EHR IS04 effort (Health Information Technology Standards Panel Emergency Response-Emergency Health Record "gaps").

Phase II (EDXL-TEC), information exchanges will focus on support to the following processes. Figure 1 provides a graphical view of the phased approach to requirements definition.

- Track and support client evacuation or sheltering in place.
- Regulating – Track available transportation resources, equipment and supplies for matching to the needs of evacuees and patients
- Provide information to assist with identifying and finding missing persons
- Family re-unification through access to information about clients, special needs and medical special needs populations.
- Sharing of "Self Registration" data to support these processes
- Other processes and information needs possibly involving routes, road conditions, gas/facilities availability, traffic, weather, medical treatment, or shelter capacity.
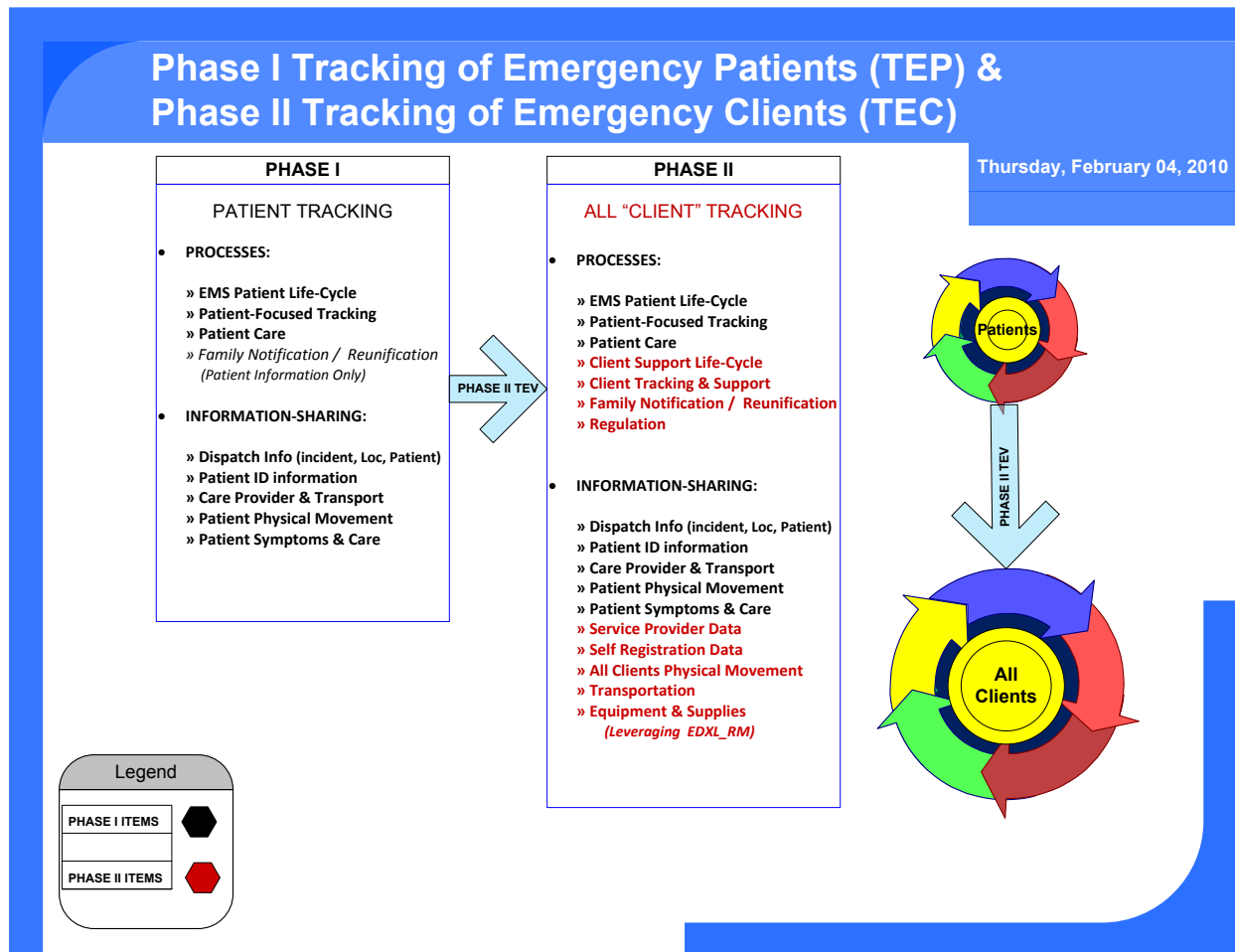
Figure 1 - Tracking of Emergency Clients (TEC) Phases

1.3 Status and Next Steps

Figure 2 provides the tentative Phase I EDXL-TEP schedule. The TEP effort was originally called "EPT" – Emergency Patient Tracking, followed by STEP, and later paired to "TEP" to avoid confusion with the NIMS-STEP program, which provides vendor test and evaluation support to EDXL. TEP underwent a research phase resulting in a Research Report completed in January 2009. The report sought to re-use present and past effort information, ensure that the standard development process does not "reinvent the wheel", and identify coordination points and potential stakeholders.

The current effort is working with the "Standards Working Group" (SWG) and extended stakeholder groups refining practitioner objectives, scope, and information needs, while developing straw-man use cases to drive and define the TEP Requirements and draft Messaging Specification.

Although scope refinement activities coupled with preparation for the OASIS Summit required more time than anticipated, the project team continues to target practitioner approval and OASIS submission the end of first quarter 2010..

Milestones	Delivery Targets
TEP Research Report	**January 2009**
TEP Initial identification of Stakeholder Groups	**March 2009**
TEP Steering Committee / HHS Summit – Dallas	**April 2009**
TEP Draft Project Initiation Document (PID) (TEP Steering Committee)	**June 2009**
TEP Stakeholder and SWG Engaged	**July 2009**
TEP PID Finalized	**September 2009**
Interoperability Demonstrations (current EDXL etc.)	**October 2009**
Scenarios, Use Cases, Initial Messaging Design.	**October - November 2009**
Requirements & draft Messaging Specification	**November – December 2009**
Review Cycles & Webinars: - **TEP Steering Committee** - **TEP Stakeholders and Vendors** - **PSG and SWG**	**Jan. – March 2010**
Approvals and Packaging	**March 2010**
Submit Package to EIC / OASIS **Initiate TEV Planning**	**End March / Beginning April 2010**

Table 1 - Tentative TEP Schedule

1.4 Additional Information

EDXL-TEP Project Details

Project Name	EDXL Tracking of Emergency Patients (TEP)		
Sponsor/ DHS Lead	DHS-S&T-OIC, Denis Gusty **denis.gusty@dhs.gov**		
Practitioner Lead	Kevin McGinnis (see below)		
Project Staff Lead	Tim Grapes *Evolution Technologies, Inc.* Office: (703) 654-6075 Mobile: (703) 304-4829 **tgrapes@evotecinc.com**		
Project Work Group / Steering Committee Members	(SEE BELOW)		
Stakeholder Community	SEE APPENDIX A		
Start Date:	Research Phase: Q4, 2008 Project Start: January, 2009	Completion Date:	Target Standards Development Organization (SDO) submission Q4, 2009

TEP Project Working Group / Steering Committee Members

LN	*FN*	*Organization Represented*
Mann	Clay, Dr.	NASEMSD, National EMS Information System (NEMSIS)
Mears	Greg, Dr.	UNC Chapel Hill EMS Medical Director
Donohue	John	Maryland Institute for EMS Systems (MIEMSS)
Sexton	Jeff	Tennessee DOH Office of Information Technology Services, HITSP
Moreland	Joe	Kansas Board of EMS
Whitney	Jolene	Bureau of EMS State of Utah
McGinnis	Kevin	Vice Chair-OIC PSG, National Association of State EMS Officials –NASEMSO, Joint National EMS Leadership Conference (JNEMSLC)

2   EDXL-TEP Project Organization and Communication Plan

Section 7 of this document provides a complete overview of the Emergency Data Exchange Language (EDXL) background, program, process and current standards.

While the Figure 3 categories may be debated, the EDXL-TEP stakeholders represent the full range of emergency practitioners (inner circle) such as 9-1-1, fire, law enforcement, emergency management, EMS, public health, hospitals, and various health associations. The PSG (Practitioner Steering Group) and SWG (Standards Working Group) for TEP represent an expansion in order to broaden subject matter expertise and advocacy from Healthcare and medical-domain stakeholders such as HHS-AHRQ. Vetting and input is further expanded to applicable vendors and industries as practitioner requirements are solidified. Full stakeholder list is contained in the appendices.
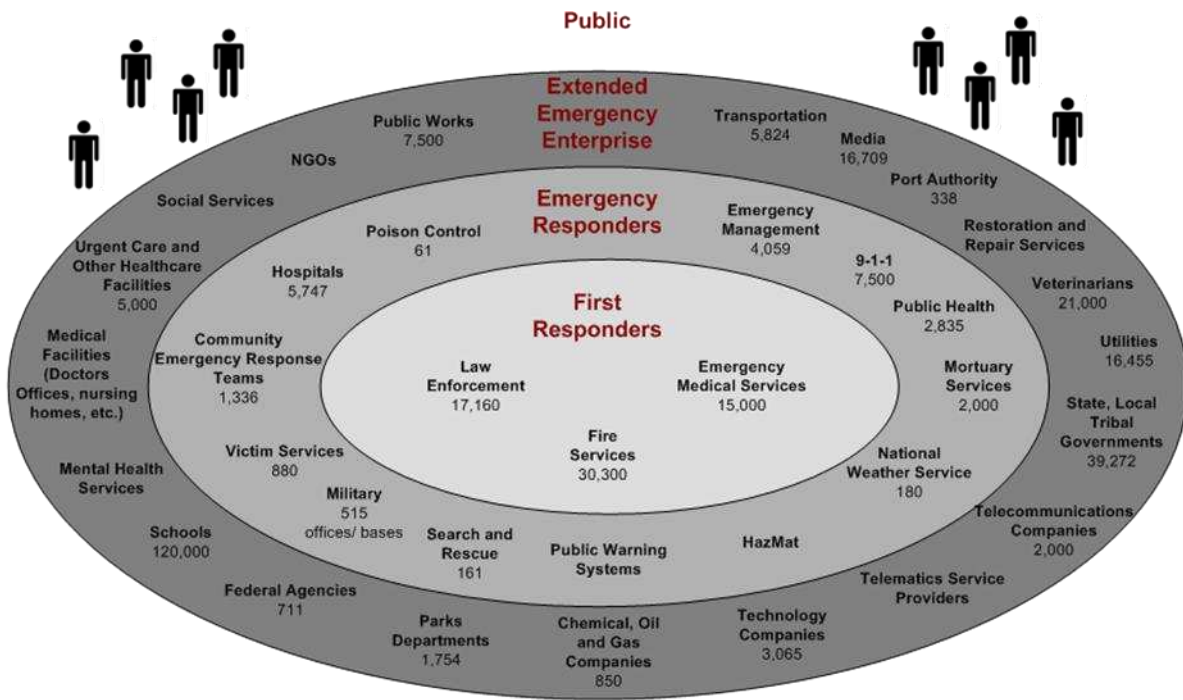
Figure 2 - The "Emergency" Enterprise

The project organization (Figure 4 below) for the EDXL-TEP project maps to the standard EDXL structure described in Section 7, except for the addition of the TEP Steering Committee.

Boxes in **Red** (DHS-OIC and its project team) provide project sponsorship, facilitation, consensus-building, requirements analysis, documentation and design support to the TEP Steering Committee in the development of draft deliverables and issue resolution for PSG priorities. It coordinates with the Stakeholder/SWG and vendors as appropriate for review and input to those deliverables. Though not

depicted in Figure 4, the project team (also OASIS members) continues participating in the OASIS process by supporting and representing the needs of the stakeholders and facilitating collaboration.

The **Orange** Box (TEP Steering Committee) represents a small group of leaders and experts in the domain of TEP requirements. The committee was formed to specifically propose scope and approach for this effort, so that the broad stakeholder groups could "shoot at" this proposal rather than start from a "blank whiteboard" with hundreds of participants. This Steering Committee with input from research efforts drives proposed scope, requirements, issues resolution and specific expertise for emergency patient tracking needs. Specifics are documented and proposed to the broad stakeholder group for input and buy-in to each stage.

> Typically requirements for EDXL standards are driven from the outset through a rigorous and sometimes lengthy scenario and use case stage within the overall process. Though the overall purpose and objective of a standard is typically known, this process was geared to identification and definition of initial scope, objectives and requirements.

> By contrast, needs for TEP have been analyzed a great deal through other efforts and organizations, but the results of these efforts vary in focus, objectives, scope and approach. This PID combines knowledge gained from research of past efforts - but scoped to address key, attainable requirements of the TEP project steering committee.

Boxes in **Blue** (PSG / SWG) represent the practitioners and expanded stakeholder groups which provide direction, subject matter expertise, review and input of all standard artifacts once the steering committee publishes a draft. This group works with the steering committee to resolve issues and build consensus. Stakeholder input and buy-in is critical to this effort to ensure broad interoperability needs are addressed and coordinated, and eventually adopted and implemented.

Boxes in **Green** provide industry input and early-adoption, and joint submission of the practitioner requirements to the public SDO, OASIS. OASIS performs an open and public process including public reviews for final creation of a technically implementable public standard.

The communication plan for the TEP effort will be managed through email distribution lists, open web site and direct outreach, with a Sharepoint portal used to manage all research and development artifacts. Outreach, marketing and additional communications will be managed through web sites, publications, conferences and newsletters managed by DHS S&T with the Practitioner Steering Group, the Emergency Interoperability Consortium (EIC), the emForum Special Interest Group, and OASIS.

As Phase II (EDXL-TEV) is engaged, the project steering committee and stakeholder groups will be adjusted to couple Phase I continuity with expertise and buy-in required for Phase II. Outreach will be performed to further supplement stakeholders as necessary.
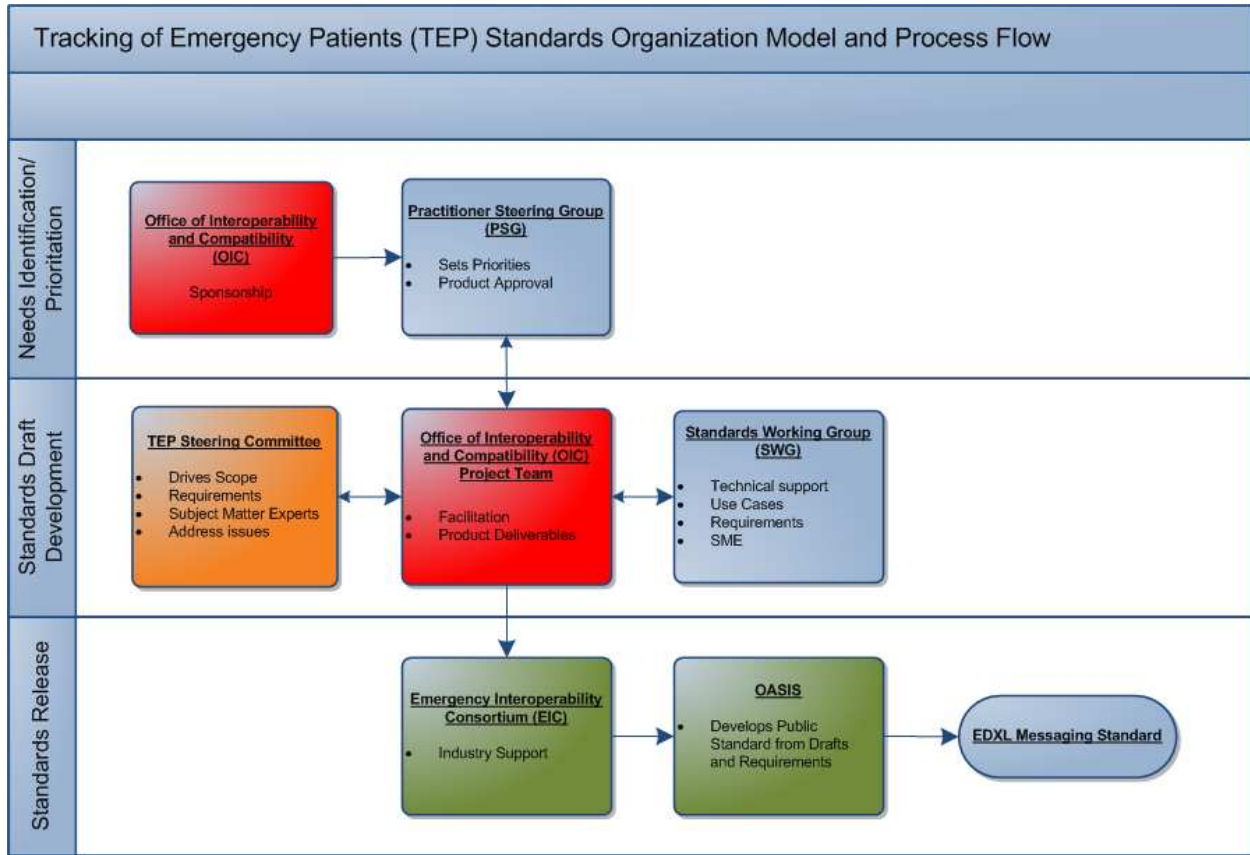
Figure 3 - TEP Standards Organization Model and Process Flow

3 Phase I – EDXL Tracking of Emergency Patients (EDXL-TEP) Overview

3.1 Background

In response to the threat of mass casualty incidents, members of the emergency response and medical communities are performing studies, making recommendations, and adopting systems to address the need for tracking of patients during emergencies and disasters. Effective patient tracking systems serve as a means to improve emergency response and preparedness capabilities by electronically capturing and distributing patient information.

However, systems and customization are only part of the answer. The National Association of State EMS Officials (NASEMSO) with many other agencies and organizations have expressed frustration with lack of standardized approach to "Patient Tracking", as many different patient tracking software systems do not share information. The TEP standard is intended to provide a standardized way for any existing or planned system to seamlessly share patient tracking information, fully realizing the potential of these numerous systems. It leverages a repeatable "build once/use many paradigm providing a low-cost solution without the need to change everyone's system to "speak the same electronic language".

The NASEMSO looked to the Department of Homeland Security - Office of Science and Technology (DHS-S&T) Office for Interoperability and Compatibility EDXL standards process, which has demonstrated success facilitating standards through Federally-sponsored cross-profession efforts in partnership with public Standards Development Organizations (SDO) and private industry. The process is practitioner and emergency responder-driven through an open and inclusive Practitioner Steering Group (PSG) and Standards Working Group (SWG). NASEMSO introduced this effort early in 2008, but project initiation was postponed and committed to in late 2008.

TEP was initiated by the PSG as the next EDXL priority after EDXL-Situation Reporting. In-depth research resulting in a Research Report was completed in January 2009 to identify re-use opportunities of existing efforts and to avoid duplication of effort. The TEP Steering Group published a proposed Project Initiation Document (PID) for presentation and review of objectives, scope and information needs by an expanded stakeholder group in May 2009, adding healthcare and medical-domain stakeholder representation. The review process produced 157 comments and negotiated an agreement to formally expand the overall project scope but define practitioner requirements in two phases. This version of the PID presents the 2-phased approach and addresses those comments.

3.2 Purpose and Scope Summary

This section is intended to provide a general overview of the Phase I EDXL-TEP standard purpose and scope. Later sections provide a specific statement of objectives, and detailed statements which govern scope of the effort.

The identification and tracking of clients (patients) from a mass casualty incident pose significant challenges and difficulties. The AHRQ "*Recommendations for a National Mass Patient and Evacuee Movement, Regulating, and Tracking System" released on 02/25/09* makes the following general statements:

- "Casualties do not necessarily remain at a disaster scene. If they are capable of ambulating, most clients will not await the arrival of public safety agencies, including EMS, but rather will seek

alternative transport modalities to obtain medical care…" "This includes such locations as the incident scene, receiving hospitals (both near and distant) and points in-between, as patients who attempt to get to a hospital, but are unable to do so, enter the EMS or healthcare delivery system at locations remote from the actual disaster scene."

- "…for any patient identification and tracking system to work effectively, it must either be extremely easy and intuitive to use or it must be used on a routine basis… "…any standards and protocols in the National System should be compatible with the Emergency Data Exchange Language (EDXL) protocol overseen by OASIS…"

Although others in the EDXL suite of messaging standards will be evaluated against certain goals and requirements, the EDXL Tracking of Emergency Patients (EDXL-TEP) standard is being developed to support specific requirements for patient tracking during emergencies and disasters. TEP facilitates standards-based information-sharing between any disparate systems that track patients at the local, state, tribal, and federal levels. It is intended for use in all-hazard mass causality situations but is also intended for use on a routine basis, supporting local, day to day incidents, utilizing current software products.

  The TEP standard embraces overall effort objectives, but is aimed at increased effectiveness of emergency medical management, patient tracking and continued patient care capabilities during emergency care. TEP provides a standard XML interoperability format to exchange patient information:

- Across the EMS Patient emergency medical care continuum, starting with emergency responder dispatch or EMS patient encounter, standardizing relevant information exchange until the patientis released, admitted to the hospital, transferred to intermediate care facilities for management of medical care, or transferred to the morgue.
- During hospital evacuations and patient transfers from the hospital - where "EMS care-providers" perform the processes and/or validate information to be shared. An "EMS care provider" (or simply "EMS") holds a State-Certified EMS license to practice (see 4.1 – Statement of Scope, statement #3).
- To receiving facilities and other emergency practitioners in the chain of care and transport in real-time at any point needed. Information may be exchanged between emergency responders, support organizations, and care facilities such as 9-1-1, law enforcement, EMS, fire, emergency management, search & rescue, public health, hospitals, and other entities.
- TEP facilitates effective use of assets (getting patients to the right provider in the field and in the right type of transport), early preparation of receiving facilities, and family re-unification (patient information in Phase I).

TEP may be used for standardized information sharing at any point in the process carrying:

1. Basic emergency responder dispatch information (Incident, location, patient)

2. Care-provider and transport demographics for the patient (e.g. Search & Rescue, EMS)

3. Unique identification of the patient

4. Tracking of patient physical movement and transition between care providers

5. Patient information allowing applications to link to existing patient health records to assist with patient care and/or to facilitate later updating of the patient health care record.

6. Basic patient emergency evaluation, and care information and disposition of the patient at any time.

TEP will become a public messaging standard defining standard tags and message structure, used by implementers to build standards-based information exchanges. Though requirements and inputs to this

standard will be driven out through U.S.-based cross-profession emergency support practitioners, the intent of this effort is to publish a public, international XML-based standard. Everyday systems with this standard interface understand these structures and thus the underlying data. They may then seamlessly send, receive, display, and process data in their native environment supporting their routine business processes and escalated needs. This format is intended to be used collaboratively with other EDXL standards over any data transmission system, including but not limited to the SOAP HTTP binding.

EDXL-TEP will be designed as a "payload", meaning a standard structure to carry the data, but without a built-in routing capability. EDXL-TEP is designed to be routed using the EDXL Distribution Element (DE) – description in the EDXL overview section). EDXL-DE provides a flexible routing mechanism for EDXL or any other well-structured XML payloads or non-XML objects such as a file or photo. However, use of the EDXL-DE is not absolutely required if other routing mechanisms provide appropriate metadata in a form consistent with the DE, or if the sender specifies specific recipients of the message.

This effort will not result in development of an automated system; nor will it develop a data standard (standardized data vocabulary) or standard code lists. It will, however, provide mapping and re-use of appropriate data standards such as NIEM and NEMSIS (which is working the pre-hospital data standard and alignment between pre-hospital and Emergency Department).

It is important to again note that the scope of the Phase I standard is not intended to address:

- Tracking of clients without emergency medical needs.
- Full 9-1-1 / dispatch processes, which typically do not individually track clients.
- Any processes "within hospital walls", except to allow hospitals and emergency management organizations to receive patient tracking information.

The TEP Phase I scope depiction in Figure 5 is meant to assist understanding of the scope and to depict initial conceptual components in terms of data / information-sharing. In-scope considerations are represented inside the gray circle and by lines running in and out of the gray circle. Objects outside of the gray circle are considered out of scope of the messaging standard. See also Section 5 scope statements.
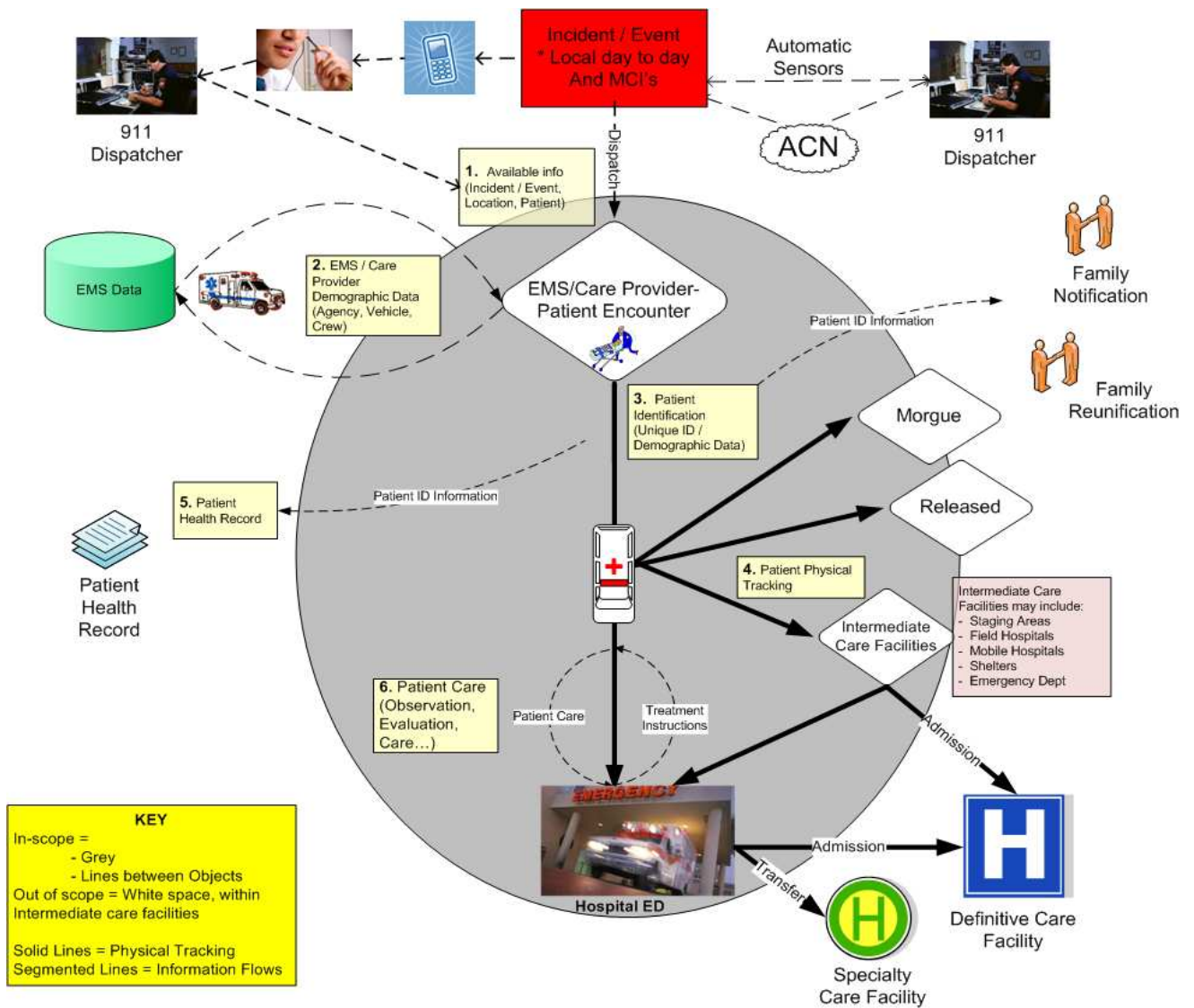
Figure 4 – Phase I EDXL-TEP Scope

4 TEP Phase I Objectives

This section describes objectives of the TEP *project*, as well as the eventual TEP *standard*. Subsequent sections below describe proposed scope boundaries, high-level requirements, and list candidate data elements under consideration to meet the requirements of this standard.

4.1 Terminology

Though detailed requirements will be defined during the subsequent phase, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119] **–** "Key words for use in Requests For Comments to Indicate Requirement Levels" – Harvard University**.**

The term "Conditional" as used in this specification is to be interpreted that a message *element* MUST be used, according to specified rules (elements MUST be one of "Required," "Optional" or "Conditional").

RFC 2119 specifies:

1. MUST   This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

2. MUST NOT   This phrase, or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification

3. SHOULD   this word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

4. SHOULD NOT   This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

5. MAY   this word, or the adjective "OPTIONAL", mean that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

4.2 Definitions

A glossary is provided as an appendix to this document. The following definitions are focused on the key subject matter of this standard.

Client – For the purposes of TEP, the term client may be used interchangeably with the term "Patient". The Phase II effort expands the generic term "client" to address tracking everyone that requires emergency service or assistance as a result of a mass casualty incident (e.g. persons displaced, evacuated, sheltering in place, expired, and/or requiring medical attention).

Patient - A person requiring medical oversight or attention, being medically evaluated, or a fatality. For the purposes of TEP, the term patient may be used interchangeable with the term client.
Evacuee - A person that has been evacuated from an unsafe area which may include healthy general population and patients. Evacuees may choose to evacuate or to remain in place, but must still be tracked.

Displaced person – A person that has been forced to leave his or her home due to an emergency or disaster.

Emergency Responders –Agencies and personnel with governmentally recognized responsibility for responding to emergencies and disasters of any scale. Examples include: Fire, law enforcement, EMS, 9-1-1, emergency management, search and rescue, and public health.

4.3 Objectives of the TEP Phase I *PROJECT*

This section describes objectives which provide focus for the TEP *project.* Section 4.4 describes objectives of the TEP standard.

1. In accordance with TEP project objectives below, drive standards process, messaging standardization, and input to applicable data standardization processes to facilitate tracking of emergency clients (patients) during emergencies, disasters, and routine day to day incidents.

    a. The goal of data standardization is to facilitate common vocabularies, taxonomies and definitions across disparate organizations and systems; i.e. agree upon a "common language".

    b. The goal of messaging standardization is to facilitate seamless information sharing across disparate organizations and systems regardless of existing levels of data standardization.

2. Thoroughly research and analyze existing approaches to patient tracking and locating, in both the public and private sectors providing input to avoid duplication of effort. Such analysis will help to identify objectives, requirements, key system features, assess mechanisms and information needs for data exchange among disparate systems.

3. Foster data exchange across systems by utilizing generic interface and existing data standards whenever possible, and providing sufficient documentation to drive development of public standards (published by an SDO) in areas where gaps are identified.

4. Perform detailed scope definition and data identification to balance value vs. scope, in order to ensure no "false starts" and minimize development time.   A critical success factor of this effort is in the definition and management of detailed scope to balance reasonable time to market with value proposition, leaving open the possibility of subsequent phases, standards, or standard enhancements.

5. Ensure standards are scalable, extensible and flexible, to address both "basic" data requirements (e.g. "lite payloads" or very specific purpose) and "maximum" information needs to support stated objectives, considering varied levels of state and local capabilities, functional requirements, and constraints presented by varied incidents such as incident size and causalities, resource

availability, technology available, etc.

6. Support re use and input to existing data standardization processes by mapping TEP requirements to existing taxonomies which are undergoing or have completed SDO processes,

7. Support select objectives of the AHRQ "*Recommendations for a National Mass Patient and Evacuee Movement, Regulating, and Tracking System*" *(specifics contained in section 4.2).*

Though the TEP Phase I effort will remain patient centric and driven by the objectives in this document, an objective of the project shall be to evaluate and consider support for AHRQ messaging requirements through inclusion of the core data elements identified to meet documented information-sharing objectives. Consideration shall be given to the core 8 elements identified within AHRQ "phase I", as well as the additional 8 elements (total of 16) identified to support the AHRQ report vision for AHRQ "phase II".

The TEP Phase I project will not endeavor to meet all the needs of the AHRQ effort due to differences in effort scope and level of detail specified in the AHRQ report. These requirements will be explored during Phase II – TEC.

    a. NOTE that the final AHRQ "*Recommendations for a National Mass Patient and Evacuee Movement, Regulating, and Tracking System" released on 02/25/09* recommends developing a coordinated multi-jurisdictional evacuation system that builds on existing resources and procedures available at the state, local, and federal level, and does reference the "EDXL Protocol".

    The following is extracted directly from that document:

    "Fourth, *for the feeder system concept to work standards are needed for communicating with the National System*. Early in Phase I detailed protocols and procedures need to be developed that specify how data are transmitted between feeder systems and the National System. Broad acceptance of these requirements is critical to the success of the project, as is adherence to existing standards and related initiatives. In particular, any **standards and protocols in the National System should be compatible with the Emergency Data Exchange Language (EDXL) protocol** overseen by the Organization for the Advancement of Structured Information Standards (OASIS), as well as the initiatives of the Office of the National Coordinator for Health Information Technology."

4.4 Objectives of the TEP Phase I *STANDARD*

NOTE 1: Sub-headings of objective #19 were taken from the *AHRQ presentation "Public Health Emergency Preparedness: Planning and practicing for a Disaster - Monday, February 9th, 2009 (*Supporting HSPD-21)*.

NOTE 2: Additional goals and objectives from the AHRQ presentation are presented below and reference this note.

1. Guide the standardization of information exchanges during emergencies and disasters to support the tracking of clients(patients) from emergency responder dispatch or EMS client (patient)-encounter (including Emergency Department as part of EMS system) until the patient is either released admitted into a fixed medical facility for ongoing care, or transfer to a morgue, with minimal interference with client (patient)-care; and ultimately to provide the correct level and best

treatment and care.

2. Facilitate more effective emergency medical management,

3. Facilitate the immediate sharing of emergency patient and patient tracking information made available at any point throughout the continuum of emergency care until a patient is either released, or admitted into a fixed medical facility or morgue.

4. Facilitate more effective use of emergency assets providing distribution guidance and decision support to persons and organizations with responsibility for patient movement. Standard information-sharing should support routing of the patient to the proper facility to address ongoing care requirements.

5. Facilitate more effective physical tracking of patient movement between locations and between various care providers.

6. Facilitate early preparation of receiving facilities and more effective continued patient care through notification to receiving centers (Intermediate treatment centers, ER/hospitals, clinics, off site treatment centers) that clients (patients) are in route to them, and providing patient care visibility and decision support (condition and treatment received) to persons and organizations with responsibility for patient continued care.

7. Facilitate sharing of patient and patient location information supporting family reunification processes by those "outside" of the emergency or incident (clients (patients) only in Phase I).

8. Facilitate sharing of patient and patient care information which may provide input for applications to access patient health records, and facilitate automated update of patient health records by receiving applications.

9. Facilitate sharing of patient information which may support input to statistics on number of clients (patients) processed or treated by each facility, providing input to care facility metrics and possible funding in support of incidents.

10. Help close gaps identified by the HITSP (Health IT Standards Panel) ER-HER, IS04
.
11. Identify and define through expert practitioner consensus the indispensable data elements and messages that are needed to fulfill the purpose and objectives of this standard. This will include basic emergency responder dispatch information, care-provider and transport demographics, Unique patient identification which may also assist with other application access to patient health records or update of patient health records, tracking of physical movement, patient transition of care responsibility between providers, and basic patientemergency evaluation, care and disposition information.

12. Support scalability from routine, local emergencies up to mass causality incidents. The most effective systems are used routinely in day to day incidents and then ramped up for MCI's (Mass Casualty Incidents, or Disasters); not activated just in the case of a MCI.

13. Support all types of hazards, including those without a defined "origination point" (such as Pandemic Influenza).

14. Facilitate interoperability in a way that utilizes existing, disparate systems at the national, local, state, federal, and tribal levels as well as private industry.

15. Work collaboratively with the Common Alerting Protocol (CAP) and all applicable EDXL standards to support the broad interoperability and information-sharing needs of the Emergency Response and Disaster Management practitioner communities.

16. (NOTE 2 - AHRQ) Where appropriate with the incident type, size etc., usage and implementation of the resultant standard shall comply with the Health Information Portability and Accountability Act of 1996 (HIPAA) (**http://www.hhs.gov/ocr/hipaa/finalreg.html**), ensure patient confidentiality (Patient Identification Information (PII)), and adhere to all Federal privacy regulations such as the Health Insurance Portability and Accountability Act.
(Note: taken from AHRQ document, but this link does not work…)

17. (NOTE 2 - AHRQ) Provide practitioners with the data they need to make decisions about patient tracking systems for their respective communities, and to do so in ways that enhance overall emergency data communications and interoperability.

18. (NOTE 2 - AHRQ) Evaluate and consider support for AHRQ messaging requirements through inclusion of the core data elements identified to meet their information-sharing objectives. Consideration shall be given to the core 8 elements identified with AHRQ "phase 1", as well as the additional 8 elements (total of 16) identified to support the AHRQ report vision for AHRQ "phase II". However, the TEP project will not endeavor to meet all the needs of the AHRQ effort due to differences in effort scope, and due to current level and clarity of requirements specified in the AHRQ report.

19. In support of HSPD-21: Public Health and Medical Preparedness, TEP data and/or messaging standards will help improve ~~general population evacuee and~~ patient movement to be:

    a. (1) **Rapid**, through XML standards-based information exchange and common data definition

    b. (2) **Flexible**, to address both "minimum" and "maximum" data / messaging needs to support stated objectives, through standardized information exchange between existing disparate systems (not a "new" system). Standards will support:

        i. Varied levels of state and local capabilities in the field (now as well as future capabilities)

        ii. The need to start with minimal data / messages, and update or build up information capture and sharing over the EMS Patient emergency medical care continuum as it becomes available.

    c. (3) **Scalable**, to support local day to day up to mass casualty incidents through scalable message structures, and through phased implementation of information exchanges over time as local capabilities and resources evolve.

    d. (4) **Sustainable,** allowing for phased approaches to information exchange, and a standardized path to information exchange as core automated systems are developed, purchased, changed and maintained.

e.   (5) **Exhaustive** (drawing upon all national, state, tribal, local, and private industry resources), again utilizing existing databases and systems

f.   (6) **Comprehensive** (e.g. addresses needs of mental health and special needs populations), by facilitating tracking of any type of patient with any type of aliment, issue or injury.

g.   (7) **integrated** and coordinated, through national and international standards implementation with local control

h.   (8) **Appropriate** (correct treatment in the most ethical manner with available capabilities).

20. Support telehealth concepts and situational awareness requirements of the Pandemic and All Hazards Preparedness Act 2006; Title II - Public Health Security Preparedness; Section 202

4.5 Other Drivers

This effort also supports and is driven by the Homeland Security Interagency Security Planning Effort as well as HSPD-21: Public Health and Medical Preparedness objectives.
(From the National Mass Patient and Evacuee Movement, Regulating, and Tracking Initiative - AHRQ presentation "Public Health Emergency Preparedness: Planning and Practicing for a Disaster - Monday, February 9th, 2009):

■ Proposed by the DOD (2004); Noted as DHS Priority (2004): Secretary Ridge's Homeland Security Interagency Security Planning Effort

   –   Included patient mobilization planning for catastrophic events as a long-term initiative and identifies this effort as a high-priority (Reference: Secretary, Department of Homeland Security letter to Secretary, Department of Defense, September 22, 2004).

■ Supports HSPD-21: Public Health and Medical Preparedness

   –   Integrate all vertical and horizontal levels of government and community components, achieving a much greater capability than we currently have.

   –   Response "…deployed in a coordinated manner … guided by a constant and timely flow of relevant information during an event and rapid public health and medical response that marshals all available national capabilities and capacities in a rapid and coordinated manner."

   –   Help ensure *(general population evacuee)* and patient movement is "(1) rapid, (2) flexible, (3) scalable, (4) sustainable, (5) exhaustive (drawing upon all national resources), (6) comprehensive (e.g. addresses needs of mental health and special needs populations), (7) integrated and coordinated, and (8) appropriate (correct treatment in the most ethical manner with available capabilities)."

5 TEP Phase I Scope Boundaries

This section of the PID describes project scope using in-scope and out-of-scope statements. Please also re-visit the graphical representation of scope in Section 3, Figure 5 of this document. The project steering committee, EMS and other communities have experienced frustration with lack of progress with some past efforts due to "scope creep" resulting in false starts and lack of tangible results. A critical success factor of this effort is in the definition and management of scope in order to balance reasonable time to market with value proposition, leaving the door open to subsequent phases, standards, or standard enhancements.

The "Statement of Scope – IN Scope" section below provides clarifying statements and description of each of the information needs / element type requirements. This is followed by "Statement of Scope – OUT of Scope" to clarify topics and information that will not be addressed within TEP phase I. Appendix E lists candidate information elements required to meet project objectives, as candidate elements in the draft design and definition of the messaging specification.

5.1 Statement of Scope – Requirements IN Phase I Scope

It is important to note that Statements below apply only to the Phase I TEP effort and processes supported "outside hospital walls", and refers only to development of messaging standards to be used in building application data exchanges between entities involved in the patient care continuum. This does not preclude applications use of exchanged data for any purpose applicable to a particular system, process or business need.

1. Standards-based information exchange - This effort focuses on open, standards-based information sharing during emergencies and disasters of any scale, between all disparate devices, applications, systems and databases that support patient information and tracking as described herein. The TEP standard will facilitate the immediate sharing of emergency patient and patient tracking information at any point throughout the continuum of emergency care.

2. Messaging and Data Standards - Messaging standardization is the focus of this effort, pursued through the documented EDXL development process.   However, the effort will also perform re-use and provide input into applicable data standardization efforts such as NEMSIS. Required elements for TEP will be mapped to NEMSIS and NIEM as candidates for re-use.

3. EMS-driven process & patient-centric - This Phase I effort focuses primarily on EMS Patient emergency medical care processes and tracking, performed and/or validated by "*EMS care-providers*" during patient encounters. For purposes of this effort, an "EMS care-provider" (also referred to simply as "EMS" in this document) hold a State-Certified EMS license to practice. They provide patient evaluation, transport, and care, and have authority to share official information. EMS care-providers may be assigned within the jurisdiction of an incident or may include extended resources from other jurisdictions. They may work for various organizations such as EMS, Search and Rescue or Fire, as long as they hold a State-Certified EMS license to practice.

4. Process / Life-cycle scope – TEP Phase I process scope remains outside of hospital walls / processes while facilitating standard information flow across the continuum of emergency care and into ER/hospital and other processes. The EMS process initially performs triage (medical

evaluation) to identify clients who are healthy vs. those classified as patients requiring medical care. TEP process scope begins with emergency responder dispatch or the EMS patient encounter, and standardizes relevant information exchange until the patient is released, admitted to the hospital, transferred to intermediate or other care facilities for management of medical care, or transferred to a morgue.

In addition to the core continuum of emergency care, the TEP standard scope supports hospital patient evacuation tracking and routine patient transfers (such as from hospital to nursing home or rehabilitation facility); wherever EMS care providers engage the process.

5. Intermediate care facilities – TEP messaging will share patient tracking information created, updated or received as stated above. This includes tracking to / from such locations as the incident scene, receiving hospitals and "intermediate" care locations. These "intermediate" care facilities may for example include triage areas, staging areas, field & mobile hospitals, shelters etc. operated by DoD, NDMS, or National Guard.

   Patients who attempt to get to a hospital, but are unable to do so, may also enter the EMS or healthcare delivery system at locations remote from the actual disaster scene. In addition, a hospital Emergency Department (ED) is also considered an intermediate facility if the patient is transferred to another care facility, rather than being released or admitted.

6. "Self-Presenting" Patients - Patients that 'self present' at any point in the emergency care continuum, including ED's are considered in-scope.
   a. A significant number of patients arrive at healthcare delivery sites and ED's without EMS assistance
   b. The Hospital ED is considered to be part of the emergency care continuum / EMS system.

7. Patient vs. Client – In context of an emergency, a triage process is initially performed (medical evaluation) to identify clients who are healthy vs. those classified as patients requiring medical care. At EMS encounter, information may be collected and shared using the TEP standard including disposition and next destination (see "Out of scope" section regarding this topic).

8. Fatalities - Fatalities are considered "Patients" in the scope of this effort.

9. Morgues – In addition to patient release or admission into a fixed medical facility, transfer to a morgue is also considered to be a tracking end point for purposes of this effort.

10. Method of Conveyance – Because patients and self-presenting patients may arrive at intermediate, fixed or deployed facilities by various means, methods of transport other than EMS may be tracked. Methods of transport could include (for example) EMS units, All-Terrain Vehicles, private automobiles, Buses, helicopter, fixed-wing aircraft, marine vehicle, self-propelled (walking) etc.

11. Situation, Incident, Event Information – The TEP standard will carry basic information about the incident associated with the patient, including the assigned name, type, unique ID location and date/time. See Appendix E for candidate elements. Implementations may re-use and verify data from other processes such as emergency dispatch if available, or may initiate the information as appropriate.

12. Information Needs & Element Types – The Subject Matter Expert consensus process will determine the optimal data elements required to support project objectives, scope and messaging requirements. The following lists general information and examples of the types of information to be addressed by the TEP standards effort, which map to the TEP Scope Diagram numbered boxes. Refer to Appendix E for the list of detailed candidate data elements required to meet these information needs.

    a. **Emergency Responder Dispatch Information –** The objective is to associate basic incident, incident location and possibly dispatch information with the patient (e.g. Incident, location, patient)

    b. **EMS care-provider and transport demographics** – The objective is to associate each care-giver and means of transport with the patient being tracked (e.g. Search & Rescue, EMS)

    c. **Unique Patient identification** - The objective is to carry information used to identify the patient for tracking purposes through the EMS patient life-cycle. It is recognized that different localities will use various methods of Patient Identification and that the TEP standard must capture multiple data types such as a unique ID such as from RFID, Barcodes or Triage Tags, System generated ID's, and other available information such as name, gender, estimated age, DOB, license #, SSN, photo, ethnicity, fingerprints.

    Note that access to patient information entry may occur through many different methods (for example):

        i. NIMS compliant patient tracking form

        ii. Any of the currently utilized patient care reporting applications

    d. **Patient & care provider physical tracking -** The objective is to track the patient and their movement, and track each care provider as the patient transfers from one to another, starting with dispatch information and/or EMS patient encounter. The patient is associated and tracked with the transport vehicle, current and destination location and care-provider team until released or admitted.

        i. Patient Identification, Care Provider and transport information (above)

        ii. Patient Location tracking (Geopolitical and or Geospatial Data) including:

    e. **Linkage to health records -** A requirement exists to provide information or identifier(s) that facilitates the capability for systems to use patient information to find existing patient health records, to assist with patient care and/or to facilitate updating of the patient health care record. The actual health care record and processes for access or update is considered out of scope for this project,

    f. **Patient Evaluation and Care –** Patient care & treatment will be recorded throughout the Continuum of emergency care. The amount of patient care data available will be scalable depending upon capability and situation. The objective is to provide information about the actual patient care, treatment, medications or procedures being administered to assist the fixed facility with early preparation for patient care upon receipt.

5.2 Statement of Scope – OUT of Phase I Scope

NOTE: Some statements contained here were taken from the *AHRQ presentation "Public Health Emergency Preparedness: Planning and practicing for a Disaster - Monday, February 9th, 2009 (*Supporting HSPD-21), in order to help clarify the scope of the TEP effort within that context.

1. Patient Tracking Systems – This effort will not result in design or development of an automated system for Patient Tracking or specific data standards.

2. Situation, Incident, Event Information – The TEP standard will not address information about the actual emergency, event or disaster that has occurred other than specified herein.

3. Dispatch Processes – Resultant standards will not address dispatch processes or information, except to accept and use applicable emergency responder dispatch information if available. This effort does not attempt to standardize information sharing for automated sensor / ACN information, PSAP-911, and CAD / dispatch information other than specified herein.

4. Patient vs. Client – In context of an emergency, a triage process is initially performed (medical evaluation) to determine general population who are healthy vs. those classified as patients requiring care. At first contact with EMS care providers, information may be collected and shared using the TEP standard. Following patient medical evaluation, individuals who do not require medical care will not be tracked further within the scope of Phase I.

5. Person validation process – The process of validating a person/patient identity is out of scope. This process (typically performed by Law enforcement) may involve License, VIN information etc. to submit a request for Patient ID, and return a message with confirmed Patient ID information.

6. Patient Health Record – The processes of requesting, receiving and updating external Patient Health Records is out of scope. However, applications may use patient information received via TEP to support these purposes.

7. Family reunification - Processes of family reunification and confirmation are out of scope of Phase I (addressed in Phase II), aside from sharing of patient data as input to those processes.

8. Notification of death - Processes of notification of death / next-of-kin notification is out of scope, aside from sharing of patient data as input to those processes.

9. AHRQ "Regulating" – The AHRQ-referenced process of matching transport needs to a receiving location is out of scope in Phase I (addressed in Phase II), although the information standardized from this effort may assist in decision-making processes.

10. AHRQ "Movement" – This effort will standardize information required to track patient location and transport (e.g. an EMS unit or a bus). The AHRQ definition and requirements to support the process of "movement" (Availability, reservation, use, and release of transportation resources) is out of scope (addressed in Phase II & evaluating EDXL-RM), although some standardization from this phase may assist these processes.

11. AHRQ Goal "Central IT Platform" – The AHRQ goal to use a central IT platform or other technology to share data among existing systems; and build and insert modules that are needed is out of scope. TEP and TEV effort will provide a common standard for exchange of information between these systems.
NOTE: This however may be accomplished through usage of existing SOA platforms such as OPEN, DAIP OR UICDS.

12. Urgent Care facilities - Urgent Care facilities are out of scope of this process because they technically are not a part of the EMS-to-hospital care continuum. However, there is nothing to specifically preclude an *implementation* from partnering with Urgent Care facilities to provide TEP information.

5.3 Outstanding Scope Decisions and Potential Issues

The following issues have either been addressed or process put in place to address the need or reduce risk. Although the effort has required more time than initially anticipated, the project team is targeting practitioner approval by year end followed by OASIS submission in January 2010.

1. ***AHRQ Effort Collaboration***
Coordination points and representation has been established between the EDXL-TEP effort and AHRQ.   This project will closely coordinate with AHRQ and DoD to determine requirements which will be incorporated into this standard to facilitate information exchange between "feeder systems" and the planned "national database".

2. ***Client Tracking***
Though preliminary analysis indicates that requirements and information needs could potentially be similar, this scope issue introduces complexities of additional scenarios, use cases and actors which have not been explored. Agreement to define EDXL-TEV requirements during Phase II is documented in the "Memorandum for Record – EDXL-TEP Feedback & Direction – July 2009"

3. ***Stakeholder Representation***
The broadened size of the Standards Working Group / Stakeholders for this effort introduced additional effort in terms of outreach, communication, education, collaboration, and consensus-building. The scope refinement phase required more time than anticipated, which may carry over to subsequent review of detailed requirements and messaging design.

   This effort desires to pursue an open and inclusive process with open communication and full participation. Broad outreach efforts are ongoing with requests to identify other appropriate stakeholders. Request recommendations are provided to the project team at **edxlswg@evotecinc.com** to assist in this goal.

4. ***EDXL Marketing and Outreach***

   Significant opportunities for marketing and education, and to encourage adoption of EDXL standards are presented at the OASIS Summit / NIEM Training event in September, but require some priority shifts to prepare and coordinate panels and demonstrations.

6 TEP Phase I Initial Analysis Results

6.1 Past "Patient Tracking" Efforts & Research

The Research Task of the Tracking of Emergency Patients Standards Project used a systematic process for collecting and analyzing information about previous and ongoing patient information tracking efforts in order to increase understanding of the current landscape. The primary goal was to create insight that is not just reliable, but actionable throughout the standards development process in the adoption and re-use of requirements and information needs.

Refer to Appendix D "References" for a complete list of researched patient tracking efforts

6.2 TEP Phase I STATEMENT OF REQUIREMENTS

Structured and traceable requirements statements are an essential and driving component of the eventual Requirements and draft Messaging Specification. Development of requirements statements is in progress with development of use cases and draft message definition.

6.3 TEP Phase I Information Needs

A preliminary landscape of information needs has been gathered during sessions with the TEP steering group with input from researched efforts. A preliminary cross-initiative data analysis was developed along with an initial list of data requirements / candidate elements. These tools will provide input into the scenario and use case process, the identification of data collection points along the EMS care continuum, and the definition of standard message(s) for data exchange.

6.3.1 TEP Phase I cross-initiative Data Analysis

A detailed analysis of key data elements extracted from researched "Patient Tracking" efforts was performed and subsequently documented in the TEP Data Analysis document. The intent of this document is to drive candidate data elements, perform cross effort data analysis, and serve as an TEP data reference. Information needs were extracted and analyzed from four key patient / evacuee tracking efforts and a mapping was performed of the data across those efforts, as well as mapping against key data standardization efforts. The following efforts were analyzed during this process and included in the TEP Data Analysis Document mapping:

❖ HHS AHRQ Patient Tracking and Locating System
❖ HHS AHRQ Evacuee Movement
❖ Tennessee Mass Casualty Incident – Patient Tracking Requirements
❖ HITSP ER-EHR
❖ Comcare Integrated Patient Tracking Initiative
❖ NEMSIS v2.2.1
❖ DEEDS v1.0

6.3.2 TEP Phase I Data Requirements / Candidate Information Needs

Using the TEP Data Analysis Document (which was developed from analysis of previous patient tracking efforts), and direction from the TEP Steering Committee, a preliminary list of candidate data elements was developed which may be required to meet project objectives. The document identifies key data categories consistent with TEP project scope. Element names are presented using the NEMSIS taxonomy where applicable.

The preliminary list of candidate elements is contained in Appendix E.

7 EDXL Overview

7.1 EDXL Messaging Standards Background

The genesis of the EDXL (Emergency Data Exchange Language) Standards Program comes from the known fact that responders often cannot talk within their own agencies—let alone other agencies — or across cities, counties, and states. Ineffective data communications risk the lives of responders in the field, and for those awaiting help. There is no one "Silver Bullet" to solve interoperability challenges. The interoperability landscape consists of tens of thousands of state and local public safety agencies, federal agencies and other stakeholders; which mean tens of thousands of different sets of procurement regulations, budgets, equipment lifecycles and solution decisions.

The challenge for the Department of Homeland Security (DHS) is to provide ALL stakeholders (Federal, state and local), with the right mix of policies, tools, methodologies and guidance to enable improved communications interoperability at all levels. Jurisdictions all over the country and the world are working on mechanisms, processes and technologies to capture relevant patient and other client information; whether by hand-held devices in the field or dictating to manual data entry. The key is capturing and sharing that data in a standard, seamless and agreed-upon format which may be sent and received in a way that any system can understand. Recipients can then determine how to display and process the information within their specific processes and applications.

The EDXL goal is to provide for the widest possible sharing capability for sensitive but unclassified (SBU) emergency management information, including network-to-network dissemination regardless of infrastructure and technologies used:

- Lower entry barriers employing broadly-used technology (XML) and interoperability standards for commercial applications of all kinds
- Network of systems infrastructure - a non-proprietary operational interoperability backbones that can share information
- Acts as a "level playing field" to allow disparate third-party applications, systems, networks and devices to share information in a non- proprietary, open, standards based format
- Supports the delivery of real-time data and situational awareness to emergency responders in the field, at operation centers and across all levels of response management.
- Serves as a test bed to facilitate the development of open non- proprietary standards to support interoperable information sharing for the emergency responder community.

The program focuses on definition of messaging standards supporting systems interoperability between organizations and systems that respond to all-hazard emergencies, disasters, and day to day incidents. While other efforts focus on "voice" interoperability, this suite of standards ("EDXL" – Emergency Data Exchange Language) allow all types of systems to seamlessly share information regardless of vendor or underlying technology.

The goal of the EDXL family of interoperability standards is to facilitate emergency information sharing and data exchange across the local, state, tribal, national and non-governmental organizations of different professions that provide emergency response and management services. EDXL will accomplish this goal by focusing on the standardization of specific messages (messaging interfaces) to facilitate emergency communication and coordination particularly when more than one profession or governmental jurisdiction is involved. Any system may send and receive information applying these standards through open

Application Programming Interfaces (API), and then display and process the data within the native system in a user-friendly format.

The standards are XML-based but are not a "new XML language", and not "data standards". Requirements for these messaging standards are practitioner-driven through the Practitioner Steering Group (PSG) and Standards Working Group (SWG); an open and inclusive process (see Section 2.1 and 2.2). They are then vetted and governed by a public standards development organization, and then are open and free to use, with available test and evaluation services ensuring conformance.

7.2 EDXL Messaging Standards Program and Process

In addition to voice interoperability initiatives, the Department of Homeland Security's Office for Interoperability and Compatibility (OIC) (Science and Technology Directorate) sponsors a practitioner-driven Messaging Standards Initiative, lead by a cross-profession Practitioner Steering Group (PSG) and Standards Working Group (SWG). This initiative is a public-private partnership to create information-sharing capabilities between disparate emergency response software applications and systems.

Following the Common Alerting Protocol (CAP) process sponsored by the Partnership for Public Warning, this process was formalized in partnership with the Organization for the Advancement of Structured Information Standards (OASIS). The EDXL process has developed emergency support standards for reporting of hospital status and availability (HAVE), sharing emergency resources, equipment and supplies (RM), and providing a common routing framework (DE). It is now developing a standard for overall situation reporting (SitReps) as well as TEP.

Figure 6 below depicts the EDXL standards development process overlaid with the NIEM IEPD development process. PSG priorities are further defined and specified by the OIC EDXL Standards Working Group (SWG), comprised of PSG representatives, their designees, and subject matter and technical experts in the particular domain of the standard. Through an iterative process the SWG turns the detailed requirements into a draft specification which is approved by the PSG and submitted in coordination with vendor representation through the Emergency Interoperability Consortium (EIC) to an international standards body (OASIS). OASIS then conducts its Emergency Management Technical Committee process for establishment as an international, public standard.

Adoption of standards is supported through the National Incident Management System Support Center (NIMS SC) testing and certification process, pilots and demonstrations, grant language, and RFP templates to assist state and local practitioners.
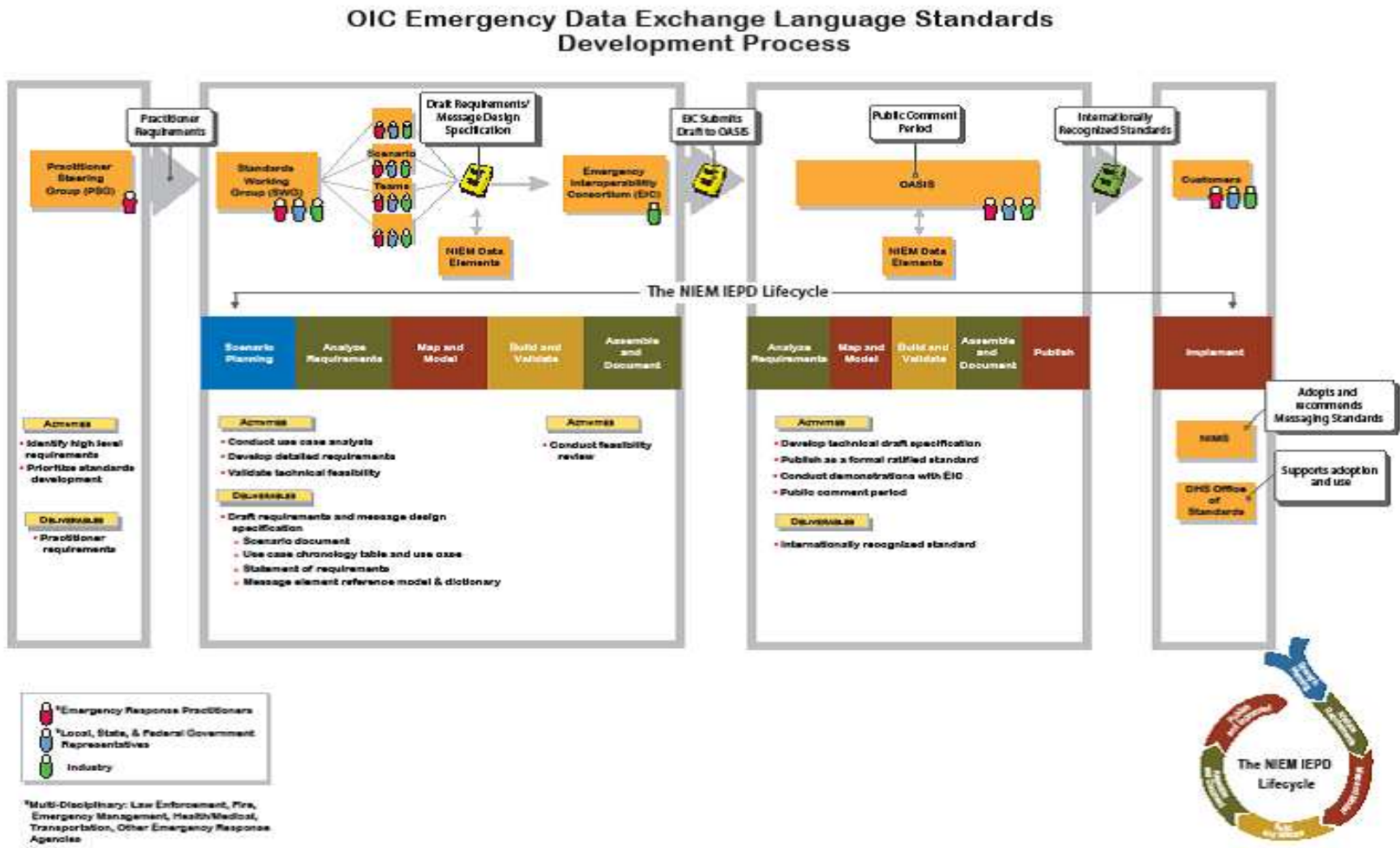
Figure 5 - EDXL Standards Development Process

7.3 EDXL & TEP Interoperability

Like the EDXL standards, TEP will focus on addressing a specific functional need for emergency response and management, but be designed to leverage interoperability with other EDXL standards to meet additional and broader needs. As a standard format for XML patient tracking messages, the TEP standard will guide standard messages. These messages are actually structured "payloads" of information requiring a standard way to route them. The EDXL Distribution Element (DE – see below) provides a flexible routing mechanism for EDXL or any other well-structured XML payloads or objects. However, use of the DE is not absolutely required where other routing mechanisms provide appropriate metadata in a consistent form, or if the sender specifies specific recipients of the message.

7.4 Current EDXL Standards

EDXL and related standards to date include the following:

- **Common Alerting Protocol (CAP) Version 1.1** – CAP was the original standard which modeled this public-private partnership. Although technically not an EDXL standard because it came first, CAP is planned for formal inclusion in the EDXL family.
  CAP v1.1 was adopted as a standard in FY 2005, providing the ability to exchange all-hazard emergency alerts, notifications, and public warnings, which can be disseminated simultaneously over many different warning systems (e.g., computer systems, wireless, alarms, television, and radio).

- **Distribution Element (DE)** – DE 1.0 was adopted as a standard in FY 2006. DE provides a flexible message-distribution framework for data sharing by emergency information systems. Messages may be distributed by specific recipients, by a geographic area, or by other codes such as agency type (e.g. police, fire, and Emergency Medical Services).

- **Hospital AVailability Exchange (HAVE)** – HAVE was adopted as a standard in early FY 2009. HAVE enables the exchange of hospital status, capacity, and resource availability/utilization between medical and health organizations and emergency information systems. HAVE allows dispatchers and emergency managers to make sound logistical decisions, such as where to route victims based on up-to-date information on which hospitals are able to provide the particular service needed by the victim.

- **Resource Messaging (RM)** – RM was adopted as a standard in early FY 2009. RM enables the seamless exchange of resource information, such as requests for personnel or equipment, needed to support emergency and incident preparedness, response, and recovery.

- **Situation Reporting Standard (SitRep)** – Situation Reporting addresses information gathered from a variety of sources, which provides a basis for incident management decision making. It provides information on the current situation, the operational picture, and current response and resources in an actionable form. Adoption of the Situation Reporting standard is expected in late FY 2009/early FY 2010 pending the public standards review process.

- **Tracking of Emergency Patients (TEP) & Clients (TEC):**
  (See "Executive Summary" and the remainder of this document)

8   APPENDIX A – EDXL-TEP Stakeholders

This is a working list of individuals and organizations that comprise the EDXL Tracking of Emergency Patients Stakeholder Group. This list expands the current PSG (Practitioner Steering Group) and SWG (Standards Working Group) below, in order to broaden TEP subject matter expertise and advocacy from Healthcare and medical-domain stakeholders such as HHS-AHRQ

Last Name	First Name	Organization
Andress	Knox	LA R- 7 Hospital Disaster Preparedness/Emergency Nurses Association-ENA
Bass	Dr. Bob	Chair of Preparedness Committee- National EMS Advisory Committee, MIEMSS Exec Director
Bell	Beverly	Council of State Governments
Berryman	Mark	
Bianchi	Maria	American Ambulance Association -AAA - Exec VP
Biddinger	Paul	Harvard School of Public Health Center for Public Health Preparedness
Bischoff	John	Federal Emergency Management Administration -FEMA
Booth	Jim	
Briggs	Bill	National Academies for Emergency Dispatch - NAED
Bydume	Glenn	Fairfax County Fire and Rescue
Caldwell	Alan	International Association of Fire Chiefs - IAFC
Cantrill	Steve, Dr.	Associate Director, Emergency Medical Services Denver Health Medical Center
Christoph	Paul	Dept of Veterans Affairs
Clawson	Jeff	National Academies for Emergency Dispatch - NAED
Cohen	Pamela	National Association of Emergency Medical Technicians -NAEMT
Collins	David	The Healthcare Information and Management Systems Society (HIMSS)
Connelly	Mary	
Contestabile	John	JHU Applied Physics Lab
Corbin	John	National Traffic Incident Management Coalition - NTIMC
Daugherty	Stephanie	NASEMSO Data Committee Chair Elect
Dawson	Drew	Director, EMS Division, National Highway Traffic Safety Administration, USDOT
Dixon	Marry	Defense Manpower Data Center, Director
Dobbs MD	Capt. Allen	Assistant Secretary for Preparedness and Response - ASPR
Donohue	John	Maryland Institute for EMS Systems (MIEMSS)
Edmond	Ron	

Eyestone	Scott, Dr. O.D.	Battelle, past military Patient tracking experience, Pre-TRAC2ES
Fike	Randy	Stanislaus County Health Services Agency
Glickman	Mike	HITSP
Goldstein	Mark	Emergency Nurses Association-ENA
Griskewicz	Mary	The Healthcare Information and Management Systems Society (HIMSS)
Gusty	Dennis	DHS Office for Interoperability and Compatibility Science and Technology
Halley	Patrick	National Emergency Number Association -NENA
Havron	Doug	SE Texas Regional Advisory Council
Henkel	David	City of Long Beach
Hixson	Roger	National Emergency Number Association -NENA
Hufnagel	Stephen Dr.	HITSP Provider Perspective Technical Committee co-chair
Hultquist	Chip	
Hunt MD	Rick	CDC - Division of Injury Response - Director
Jones	Rick	National Emergency Number Association -NENA
Jones	J.J	Office of Emergency Management, City of Fort Worth, TX
Kalin	Bill	DHS OIC S&T
Kane	Catherine	Red Cross
Kavanaugh	Dan	Health Resources and Services Administration -HRSA
Kaye	Robert	The Healthcare Information and Management Systems Society (HIMSS)
Kearns	Chuck 'C.T.'	National Association of Emergency Medical Technicians (NAEMT)
Kind	Jerry Lynn	National Association of EMS Physicians -NAEMSP
Kirschner	Cory	USTRANSCOM/TCAQ-M
Kramer	John	DHS Office of Health Affairs
Kury	Joseph	Akron Fire Department, Safety Communications
Lamana	Joseph	Response Operations HHS/ASPR/OPEO
Lent	Bill	International Association of Emergency Managers - IAEM
Lonchena	Terry	
Lynch	Lana	
Magoscy	Mary	
Manley	Dan	Mid American Regional Council
Mann	Clay, Dr.	NASEMSD, National EMS Information System (NEMSIS), HITSP
Manning	Michael	International Association of Fire Fighters - IAFF
McGinnis	Kevin	JNEMSLC, NASEMSO, Chair-OIC PSG National Association of State EMS Officers -NASEMSO
McHenry	Susan	National Highway Traffic Safety Administration -NHTSA
McMahon	Kathy	Association of Public-Safety Communications Officials

Mears	Greg, Dr.	UNC Chapel Hill EMS Medical Director
Moore	Lori	International Association of Fire Fighters - IAFF -VP
Moreland	Joe	Kansas Board of EMS
Morris	Tommy	DoD OASD (Health Affairs) , VA Military Services
Murray	Rick	American College of Emergency Physicians -ACEP - EMS Manager
Music	Capt. F. Christy	DoD OASD(Homeland Defense and Americas' Security Affairs)
Norlen	Robert	NASEMSO Data Committee Chair
Norville	Robert	
Parker	Scott	IJIS Institute
Payne	James	Dept of Veterans Affairs
Petrie	Michael	
Phillips	Sally	AHRQ
Pickard	Stephen, Dr.	
PSG-SWG	PSG-SWG	OIC-sponsored EDXL Practitioner Steering Group (PSG) and Standards Working Group (SWG)
Pullen	Charles, Capt	Fairfax County Fire and Rescue
Pye	Robert	Arlington County Fire Department
Roberts	Larry	National EMS Management Association - NEMSMA, formerly NAEMSQP
Rosen	Brian	National Emergency Number Association -NENA
Sexton	Jeff	Tennessee DOH Office of Information Technology Services, HITSP
Shoup	Scott	Federal Emergency Management Administration -FEMA
Smith	Robert	Association of Public-Safety Communications Officials
Snyder	John	Arlington County Fire Department
Spivey	Lisa	Southeast Texas Trauma Regional Advisory Council
Thornburg	Barb	National Emergency Number Association -NENA
Whitney	Jolene	Bureau of EMS State of Utah
Wiedrich	Tim	North Dakota Department of Health; Association of State and Territorial Health Officials - ASTHO
Williams	Laura	Boston EMS
Wingrove	Gary	National EMS Management Association - NEMSMA, formerly NAEMSQP
Wisely	Steve	Association of Public-Safety Communications Officials
Yancie	Monroe	St. Louis Fire-EMS
		American College of Surgeons: Committee on Trauma -ACS-COT
		American Heart Association -AHA
		American Hospital Association - AHA
		American Public Health Association - APHA
		EMSC National Resource Center -NRC

Health Level 7 - HL7
HRSA's Office of Rural Health Policy -ORHP
National Associate of Search and Rescue - NASAR
Urban Search and Rescue - USAR

9   APPENDIX B – DHS Office for Interoperability and Compatibility (OIC) Practitioner Steering Group (PSG)

- Ron Haraseth
    - Association of Public Safety Communications Officials (APCO)
- Paul S. Embley
    - International Association of Chiefs of Police (IACP)
- Reuben Varghese. MD, MPH
    - National Association of County and City Health Officials (NACCHO)
- Kevin K. McGinnis, MPS, EMT-P
    - National Association of State EMS Officials (NASEMSO)
    - Joint National Emergency Medical Services Leadership Conference (JNEMSLC)
- Timothy Loewenstein
    - National Association of Counties (NACo)
- Tim Baughman
    - National Emergency Management Association (NEMA)
- Juan Otero
    - National Governors' Association (NGA)
- Joseph Trella
    - National Governors' Association (NGA)
- Mayor Vicki Barnett
    - National League of Cities (NLC)
- John Thompson
    - National Sheriffs Association (NSA)
- Tim Wiedrich
    - Association of State and Territorial Health Officials (ASTHO)
- Bill Lent, CEM
    - International Association of Emergency Managers (IAEM)
- Ed Somers (Invited)
    - The U.S. Conference of Mayors (USCM)
- John Contestabile
    - American Association of State Highway and Transportation Officials (AASHTO)
- Tim Butters
    - International Association of Fire Chiefs (IAFC) Tim Butters (invited)
- Reuben Varghese
    - National Association of County and City Health Officials (NACCHO

- Robert Holden

  National Congress of American Indians (NCAI)

10 APPENDIX C – DHS Office for Interoperability and Compatibility (OIC) Standards Working Group (SWG)

Last Name	First Name	Organization
Anderson	Kiersten	
Armitage	Ed	State of CA
Armstrong	Elizabeth	International Association of Emergency Managers (IAEM) Executive Director
Arnold	Delaine	NENA
Atkinson	DJ	US Dep of Commerce NTIA, NIST
Atri	Kamran	
Aylward	David	ComCARE
Baker	Ashley	
Baker	George	OnStar (removed Feb. 07)
Baker	Bobby	NSPA/WVEMS
Ball	Bill	OnStar (removed Feb. 07)
Ball	William	
Ballentine	Greg	APCO
Barnett	Vicki	National League of Cities (NLC). Mayor - City of Farmington Hills, Michigan
Barthell	Ed	EM System
Baughman	Tim	National Emergency Management Association (NEMA)
Bitner	Claudia	MyStateUSA
Blatt	Alan	General Dynamics
Bliss	Scott	Blue292
Bluhm	Patty	NENA
Boehly	Bill	NAED
Borne	Raymond	
Botterell	Art	Incident.com
Bowers	Don	Captain - Fairfax County Fire & Rescue Department Public Safety CAD/RMS Project Team
Bowles	John	E Team
Brickner	Darcie	
Brown	Mike	
Brown	RoxAnn	Nashville 9-1-1
Burnett	Vanessa	FEMA/IMSI
Byrd	Amanda	

Byun	Hyuk	DOJ
Cade	Bill	APCO
Callsen	Christian	Austin-Travis County EMS
Campbell	Megan	ATIS
Chanachote	Grant	DOI Enterprise Data Architecture Team (for S.Acar)
Christian	Elliot	Interior, USGS.
Churchill	Bruce	National Engineering Technology Corporation
Colwell	Dave	EMSystem, LLC
Conrad	Jim	Buffalo Computer Graphics
Contestabile	John	MDOT
Cook	Jim	Atlanta-Fulton County EMA & IAEM
Copeland	Tommy	EMS
Coppens	Julie	Dice Corporation
Correll	Steve	NLETS
Couper	Chris	IBM
Crosby	Judy	NWCG
Dash	Bryna	IBM
Davis	Dan	EastBanc Technologies
Dawson	Drew	NHTSA
Deane	Michelle	
Degan	Kerry	Lakes Region EMS
Deitz	Allen	NIFC – National Interagency Fire Center / NWCG (National Wildfire Coordinating Group) Data Architect
Delaine	Arnold	NENA
Desjardins	Pierre	Positron
Detwiler	Steve	Orange County Fire and Rescue
Dickerson	Audrey	HIMSS
Dissek	Josh	Buffalo Computer Graphics
Donnan	Elizabeth	
Doss	Ernie	Lincoln County Department of Public Safety
Druger	Kirby	
Dubrueler	Amy	ComCARE
Dwarkanath	Sukhomar	ComCARE
Eastlee	Christopher	AAMS
Eisen	Alan	
Ellis	David	Sandia, DOD: DITRA, Northcom, and Project Guardian
Embley	Paul	G&H, Global Justice / NIEM
Etie	Stephen	Versant

Fargano	Mike	Qwest
Faulkner	Otis	
Fekety	John	NREMT-P
Felton	Matt	CGIS Towson Univ.
Ferrentino	T	Battelle, Fire Chief
Ferrentino	Tom	
Fischer	Chris	(APCO)
Flaherty	Laurie	NHTSA / DOT
Forbush	Bill	Garden City Fire Department
Foster-Bradley	Pat	GA-3 DMAT
Fox	Jack	
Fox	Jeff	Mobile Foundations
Fraser	Michael	National Association of County and City Health officials: (NACCHO), Executive Director
Frederick	Thomas	Unisys
Fullerton	Gordon	Disaster Management
Funke	Doug	General Dynamics
Gareri	Robert	Ex-Chief, Birmingham Alabama Fire and Rescue, SAIC, & NIMS Support Center (NIMS SC)
GDM	GDM	
Gikas	Xenophon	
Gill	Ken	DOJ/BJA
Gillen	Dave	Mobile Foundations
Gillum	Danny	
Glazer	Melinda	National League of Cities
Graham	Lani	State of Maine Public Health
Grapes	Tim	
Graver	Carmen	
Greeves	Bob	DOJ/BJA
Guillot	Stephen	
Gusty	Denis	
Hall	Ed	ATIS
Halley	Patrick	NENA
Ham	Gary	
Hansen	Jenny	APCO, Montana Public Safety
Haraseth	Ron	PSG member (Association of Public Safety Communications Officials- International, Inc. (APCO)). Director, Automated Frequency Coordination

Hardy, MD	George	Association of State and Territorial Health Officials (ASTHO), Executive Director
Haslip	Mike	Law Enforcement Information Technology Standards Council (LEITSC)/International Association of Chiefs of Police (IACP), Chief - City of Blaine
Hatfield	Dale	IEEE
Higgins	Kathleen	NIST
Hill	Rebecca	
Hines	Chip	Disaster Management Program
Hixson	Roger	NENA
Hogan	Edward	Unisys
Holden	Robert	National Congress of American Indians (NCAI)
Houser	Nyla	G&H International
Hoyt	Sue	ComCARE/ENA
Hufnagel	Steve	
Hughes	Amy	
Hughes	Tom	ATS
Hulme	Mike	IJIS Institute
Hunt	John	OnStar
Insignares	Manny	NTCIP Center-to-Center Communications Working Group
Irby	Robert	
Jacobs	Tom	CapWin
Jagow	James	EMS Regulatory Board
Jamieson	Gil	
Jijina	Jasmin	OnStar
Johnson	Merrie	NPS
Johnson	Tom	NIFC- Forest Service
Jones	David	NENA, Spartanburg County, SC 9-1-1
Jones	Elysa	OASIS
Jones	Rick	NENA
Joynson	Robert	CSC
Justus	Ralph	
Kalin	Bill	
Kane	Tony	American Association of State Highway and Transportation Officials (AASHTO), Director of Engineering and Technical Services
Kanwal	Mini	SAIC/MCOE
Kelley	David	DOT/IEEE 1512

Kincaid	Chris	TouchStone
Kitey	Alan	ComCARE
Kolias	Stacy	Dartmouth College
Korow-Diksa	Karen	
Lafayette	Janine	
Lawton	Jim	Proxicom
Lebudde	Mike	EM System (alternate)
Lee	Erin	
Lehr	Raymond	Director, Public Safety and Homeland Security CSC Networks and Telecommunication Integrated Solutions Division
Leigh	Kim	Qwest
Lent	Bill	International Association of Emergency Managers (IAEM) Executive Director
Lewis	Earl	Assistant Secretary - MDOT/MD Interoperability Initiative
Locke	Bonnie	NLETS
Loewenstein	Tim	National Association of Counties (NACo)
Loonsk	John	Centers for Disease Control and Prevention (CDC), Director for Informatics
Lorscheider	Ann	IEEE 1512, AASHTO, North Carolina DOT
Loverude	J	ATS
Luke	Barry	APCO, Orange County Fire Rescue
MacDonald	Curt	ESI
MacDonald	Greg	National Sheriffs' Association (NSA)
Mancuso	Dawn	AAMS
Mann	Clay	
Marquess	Alvin	
Marsters	Robert	Geodecisions
McAfee	Scott	DHS/FEMA GIS Symbology
McCarley	Wanda	APCO International
McCormick	Cathy	On-star
McCreary	Patrick	DOJ/GLOBAL
McEwen	Harlin	IACP/GLOBAL
McGinnis	Kevin	PSG Vice-Chair (Joint National Emergency Medical Services Leadership Conference (JNEMSLC)/National Association of State EMS Officials (NASEMSO))
McGinnis	Kevin(Already In)	Joint National Emergency Medical Services Leadership Conference (JNEMSLC)
McHenry	Susan	NHTSA

McIntyre	Rob	Disaster Management Program
McLamb	John	UNC Emergency Medicine
McMurray	Bill	NENA, President
Mears	Greg	NASEMSD, UNC Chapel Hill
Menkes	Alex	
Merkle	Tom	CapWIN
Mince	Frank	NLETS
Miner	Ron	Northrop Grumman
Mitchell	Rene	Medtronic
Mittelman	Kirk	Center for Emergency Programs Health Promotion and Education
Morgan	John	Towson University Center for GIS
Moses	Enoch	
Muehleisen	Tom	Nuovox
Munnikhuysen	Dick	Battelle
Murphy	Ken	Oregon EM director & NEMA
Neal	John	Versant
Nielsen	Kirstjen	White House
O'Brien	Jim	
O'Brien	Michael	
Odell	John	ESI
Oenning	Bob	NENA, Washington State 9-1-1
Oldham	Gary	CSC
Orr	Dereck	NIST
O'Shea	Kevin	Dartmouth University
Pack	Michael	University of Maryland
Pearce	Vince	FHWA/USDOT
Peard	Laura	
Peebles	Tim	Hall County Fire Services
Perkins	Kris	State of Maine Public Health
Pickard	Steven	
Pietrasiewicz	Val	NIST
Poldy	Greg	Northrop Grumman
Pollock	Nancy	Minneapolis 9-1-1, APCO
Porter	Randy	
Porter	Scott	CAPSIT
Potter	Jack	Valley Health System
Pyott	Charles	ATIS
Ramadan	Walid	Blue292, Inc.

Reece	Sonja	National League of Cities (NLC). Mayor Pro Tem, Town of Normal, IL &Dir. of Government Affairs and Property Management BroMenn Healthcare
Reingold	Sue	
Retamoza	Ami	
Rickey	Catherine	
Roberts	Jeff	Towson University Center for GIS
Robinson	DR	Open Road Consulting
Robinson	Kathy	
Roe	Cheri	Public Safety Coordinator Office of State and Local Government Coordination U.S. Department of Homeland Security Office: (202) 282-9814
Rogers	Shawn	
Rosen	Brian	NENA (National Emergency Number Association)
Ryan	Tracy	Oracle
Schilling	Roger	
Sebring	Amy	
Sexton	Jeff	
Sheets	Trina	National Emergency Management Association (NEMA), Executive Director
Sherry	Robert	Intrado Inc.
Shows	Josh	Emergency Services integrators
Silhol	Kate	NLETS
Sisk	Ted	Northrop Grumman Public Safety
Skeels	Jon	USDA Forest Service
Smey	Mike	
Smith	Robert,	APCO International Director of Comm Center & 9-1-1 Services
Smotritsky	Mike	CAPSIT
Snyder	Matt	IACP
Somers	Ed	United States Conference of Mayors (USCM)
Souder	Steve	Montgomery County ECC (APCO)
Stokes	Shawn	Assistant to the Executive Director International Association of Fire Chiefs PSG rep for the International Association of Fire Chiefs (IAFC).
Stout	Tom	DOT FHWA
Sullivan	Elizabeth	
Suter	John	American College of Emergency Physicians (ACEP)
Thackery	Ron	AMR Corporation

Thomas	Donald	
Thompson	John	National Sheriffs' Association (NSA)
Thornburg	Barb	NENA
Tincher	Lee	
Traver	Christopher	US DOJ
Trella	Joe	National Governors Association (NGA)
Vandame	Rich	FEMA/IMSI
Varghese	Reuben	Virginia Public Health Department
Vislocky	Mike	NENA/Net Orange
Wallace	Gary	ATX Technologies
Walton	Matt	Emergency Interoperabilty Consortium
Wandelt	John	Georgia Tech Research Institute
Werner	Charles	IAFC, Charlottesville, VA Fire Rescue, International Association of Fire Chiefs (IAFC)
Westpfahl	Brad	IBM
White	Bob	NENA, Maine GIS
Whittenburg	LuAnn	DOD Health Infomatics/HIMMS
Wiedrich	Tim	The Association of State and Territorial Health Officials (ASTHO)
Wilk	Mark	St. Ignace, Michigan
Willett	Henry	ATS
Williams	Larry	
Williams	Brent	EMS and Trauma Systems Section Michigan Dept of Community Health
Wollack	Leslie	
Wood	Mark	
Woodhall	Judith	
Yancey	Arthur	Fulton County Department of Health & Wellness
Zeunik	Jennifer	Law Enforcement Information Technology Standards Council

11 APPENDIX D – References

The following lists current and previous efforts researched during the course of the TEP effort. A final research report has been published under separate cover detailing the results of this research.

PROGRAM	PROJECT CONTRIBUTION
NON PROFIT	
COMCARE/HIMSS[1] Integrated Emergency Medical Response Initiative (IEMRI)	• Proof-of-concept demo diagram indicating the technology components needing to share information throughout the continuum of care. • Advisory Board and Task Force members as potential members of Stakeholder Work Group (SWG).
COMCARE Integrated Patient Tracking Initiative (IPTI)	• Information needs and data elements derived for a broad range of stakeholder groups. • Extensive list of Subject Matter Experts (SMEs) as potential members of SWG
Coordinated Assistance Network (CAN)	• An excellent example of a system used by disaster services groups like the American Red Cross or United Way. • The CAN Portal is a secure web site acting as a repository of citizen data collected by local and national agencies that could act as both a sender/receiver of victim information and the services they are

PROGRAM	PROJECT CONTRIBUTION
	receiving.
FEDERAL	
HHS AHRQ Evacuee Movement	• Expands tracking to include evacuee movement during mass casualty incidents (MCIs) • Contacts as potential members of SWG.
HHS AHRQ Patient Tracking Locator (PTL)	• List of potential data elements for both patient and evacuee tracking across systems which were also mapped to DEEDS[2] and NEMSIS[3] • SMEs as potential candidates for SWG
DoD Systems • TRAC2ES • AHLTA Mobile (aka BMIST) • JPTA • TacMedCS	• JPTA is an example of integrated systems for tracking patients from theater to and through hospital care • TRAC2ES An example of integrated systems for tracking patients from theater to and through hospital care • Custom interfaces across systems could provide valuable input to standards efforts, especially since systems have been used for non-military events such as Hurricane Katrina/Rita. • Potential users of standard.
FCC JAC	• Justification for standards

PROGRAM	PROJECT CONTRIBUTION
	• Contacts as potential members of SWG
WebMedis	• DHS requested the system which is a potential user of this standard. • Claims to meet all of IPTI's Phase I requirements • Plans to integrate with HAVE and WebEOC
STANDARDS	
ASTM Continuity of Care Record (CCR)	• Standard for provider-to-provider exchange of patient health information in summary form
HITSP EREHR	• Recommended standards for the AHIC Emergency Responder Electronic Health Record Use Case • Defined process for patient information tracking from an emergency medical perspective, but no real standards recommended for tracking per se.
HL7 Continuity of Care Document (CCD)	• Recommended standard for patient information exchange and the documentation of each emergency encounter throughout the chain of response.
Public Health Information Network (PHIN) Messaging Standards	• PHIN messaging standards used by some deployments such as the ones in Boston and New York State.
Vehicular Emergency Data Set (VEDS)	• Contains data elements needed for patients of car crashes
Data Elements for Emergency Department Systems (DEEDS)	• Contains data element recommendations for Emergency Departments
STATE AND LOCAL	
Boston PTS for Public Health	• Tracks patients across EMS, hospitals, public health and volunteer services using XML interfaces
Christiana Care Health System, Newark, DE	• Example of in hospital patient tracking • Uses ED tracker • Potential recipient of patient information from EMS

PROGRAM	PROJECT CONTRIBUTION
HERDS - NYS	• An integrated architecture supporting a wide array of health information exchange applications.
NCR	• Although not implemented, the RFP is a resource for Patient Tracking requirements.
San Francisco	• Uses EMTracker and EMResource products from EMSystem to track patients and map them to available resources (beds, transport, etc.) • Defined data elements for both day-to-day and mass casualty incidents.
STARRS – St. Louis, MO	• Interfaces patient tracking across 8 counties in 2 states, 18 hospitals, 10 EMS agencies and EOC's across the region • Potential user of standard.

VENDOR PRODUCTS	
PRE-HOSPITAL	
Disaster Management Solutions	• Focuses on patient, equipment, and supplies tracking. • Several major deployments • http://www.dmssolutions.com/
EMSystem	• EMTracker has largest market share for pre-hospital patient tracking • Developed custom interfaces between EMS and EDs, Public Health agencies, EOCs, etc. • http://corp2.emsystem.com/?home
Raytheon	• Custom interfaces with EMS, EOCs, Hospitals, and Red Cross • Focuses on MCIs • Has very similar features to DMS and EMSystem. • http://www.raytheon.com/capabilities/products/epts/
Salamander	• Leading vendor for tracking solutions in all phases of emergency response. • It was used to track evacuees from Houston during Hurricane Ike. • Regularly partners with other solutions like Raytheon and EMSystem to enhance functionality in a given region. • http://www.salamandertechnologies.com/Brix?pageID=1
Sydion	• All hazards emergency management solution • http://www.sydion.net/
Zoll Data Systems	• More of a Fire/Ems solution than patient tracking, but could potentially a user of a patient tracking messaging standard. • http://www.zolldata.com/index.aspx

PROGRAM	PROJECT CONTRIBUTION
IN HOSPITAL	
Emergisoft	• Solid experience in all types of emergency department information systems (EDIS). • Vendor should be included in the SWG and or invited in to present to the group. • http://www.emergisoft.com/Solutions.aspx?id=Hosted
Intermec	• http://www.intermec.com/solutions/healthcare/patient_tracking_admin.aspx
Patient Care Technology Systems	• Its Amelior EDTracker product is used by Christiana Health Care System, Wilmington Delaware • http://www.pcts.com/
PatienTrak	• A simple managed service patient tracking solution that can be used throughout a hospital. • http://www.patienttrak.net/
Picis	• Solid experience in ED systems. • Used at Washington Hospital DC. • Another good potential participant on the SWG • http://www.picis.com/
Statcom	• Focus is on hospital wide patient tracking and logistics. • http://www.statcom.com/
Versus	• RFID tracking solution • http://www.versustech.com/

12 APPENDIX E – EDXL-TEP Phase I Candidate Elements

The following lists draft data requirements & candidate data elements which may be required to meet project objectives. Element names are presented using the NEMSIS taxonomy where applicable.

Note: The following list of data elements represent an initial identification of information needs for the effort. Detailed design and updated data elements are contained in the *EDXL-TEP Requirements and draft Messaging Specification.*

All candidate data elements have been classified into one of five basic data type categories (numbers refer to the earlier scope diagram). Please note that this document is conceptual tool to facilitate project scope rather than design. "Buckets" presented to date are relevant for initial scoping discussions. However, these "buckets" will be refined into a logical draft message design (Element Reference Model) during the design stage.

- ❖ Incident Information
- ❖ EMS-Care Provider Demographic
- ❖ Patient ID-Information
- ❖ Patient Physical Tracking-Location Info
- ❖ Core Patient Evaluation & Care

12.1 Incident Information

TEP Requirement	TEP Element-Incident Information	Source Element Name
Incident Name	Incident Name	TN-MCI
Incident Location	Incident Location	TN-MCI
Incident Location	- GPSLocation	NEMSIS v2.2.1
Incident Location	- StreetAddress	NEMSIS v2.2.1
Incident Location	- City	NEMSIS v2.2.1
Incident Location	- State	NEMSIS v2.2.1
Incident Location	- Zip	NEMSIS v2.2.1
Incident Location	- Country	NEMSIS v2.2.1
Incident Location	- Other Geospatial Data	EDXL SitRep Requirements
Incident Location	- Legal Description	EDXL SitRep Requirements
Incident Identification	Incident ID	TN-MCI
Incident Type	Incident Type	TN-MCI
Date of Incident	Date/Time	
Incident Identification	Related Disaster-Incident ID	

12.2 EMS Care Provider Demographic

TEP Requirement	TEP Element-EMS-Care Provider Demographic Data	Source Element Name
Agency ID	AgencyNumber	NEMSIS v2.2.1
Agency ID	AgencyName	NEMSIS v2.2.1
Agency ID	Agency State	
Agency ID	Service Type	
Vehicle ID	UnitNumber	NEMSIS v2.2.1
Vehicle ID	Vehicle Type	NEMSIS v2.2.1
Vehicle ID	Vehicle Agency	
Vehicle ID	Vehicle State	
Care Provider ID	PersonnelsAgencyIDNumber	NEMSIS v2.2.1
Care Provider ID	ProviderState	
Care Provider ID	Medical Organization Affiliation	
Care Provider Certification	DemographicStateCertificationLicensureLevels	NEMSIS v2.2.1
Source of Data	Source of Data (System ID - Person entering)	

12.3 Patient Identification Information

TEP Requirement	TEP Element-Patient Identification	Source Element Name
Patient Unique ID	Patient Unique Identification Number	Comcare IPTI-TN MCI-- AHRQ Patient/Evacuee Movement
Patient Demographic Data	LastName	NEMSIS V2.2.1 - AHRQ Patient/Evacuee Movement
Patient Demographic Data	FirstName	NEMSIS V2.2.1 - AHRQ Patient/Evacuee Movement
Patient Demographic Data	MiddleInitial	NEMSIS V2.2.1 - AHRQ Patient/Evacuee Movement
Patient Demographic Data	Patient Address-	
Patient Demographic Data	· StreetAddress	NEMSIS V2.2.1
Patient Demographic Data	· City	NEMSIS V2.2.1
Patient Demographic Data	· State	NEMSIS V2.2.1
Patient Demographic Data	· Zip	NEMSIS V2.2.1
Patient Demographic Data	· County	
Patient Demographic Data	· Country	NEMSIS V2.2.1
Patient Demographic Data	TelephoneNumber	NEMSIS V2.2.1
Patient Demographic Data	Cell Phone Number	
Patient Demographic Data	Email Address	Comcare IPTI
Patient Demographic Data	Gender	NEMSIS V2.2.1
Patient Demographic Data	Race	NEMSIS V2.2.1
Patient Demographic Data	Ethnicity	NEMSIS V2.2.1
Patient Demographic Data	Age	NEMSIS V2.2.1
Patient Demographic Data	AgeUnits	NEMSIS V2.2.1
Patient Demographic Data	Age Range	AHRQ Evacuee Movement
Patient Demographic Data	DateOfBirth	NEMSIS V2.2.1
Patient Demographic Data	StateDriversLicenseNumber	NEMSIS V2.2.1
Patient Demographic Data	SocialSecurityNumber	NEMSIS V2.2.1
Patient Demographic Data	Hair color	Comcare IPTI-TN MCI
Patient Demographic Data	Eye color	Comcare IPTI-TN MCI
Patient Demographic Data	Distinguishing Marks	Comcare IPTI-TN MCI
Patient Demographic Data	Photograph	Comcare IPTI-TN MCI
Patient Demographic Data	Fingerprint	Comcare IPTI-TN MCI
Patient Demographic Data	Closest Relative/Guardian	NEMSIS V2.2.1
Patient Demographic Data	· LastName	NEMSIS V2.2.1
Patient Demographic Data	· FirstName	NEMSIS V2.2.1
Patient Demographic Data	· StreetAddress	NEMSIS V2.2.1

Patient Demographic Data	· City	NEMSIS V2.2.1
Patient Demographic Data	· State	NEMSIS V2.2.1
Patient Demographic Data	· Zip	NEMSIS V2.2.1
Patient Demographic Data	· County	
Patient Demographic Data	· Country	NEMSIS V2.2.1
Patient Demographic Data	· TelephoneNumber	NEMSIS V2.2.1
Patient Demographic Data	State Issuing Driver's License	NEMSIS V2.2.1
Patient Demographic Data	Attachments-Generic (Photo, Fingerprint, Health Record, etc)	
Patient Demographic Data	Special transportation needs	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Special medical needs	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Contamination/radiation/contagion status	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Security/supervision needs/status	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Family unification code	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Special communication needs	AHRQ -Patient/Evacuee Movement
Patient Demographic Data	Medical Facility Evacuation Status	AHRQ -Patient/Evacuee Movement

12.4 Patient Physical Tracking – Location Information

TEP Requirement	TEP Element-Physical Tracking	Source Element Name
Patient Identification	* Refer to Patient ID data	
Transporting Agency/Unit Info	* Refer to EMS-Care Provider Demographic data	
Patient Location	Patient Location	AHRQ Patient/Evacuee Movement
Patient Location	- GPSLocation	NEMSIS v2.2.1
Patient Location	- StreetAddress	NEMSIS v2.2.1
Patient Location	- City	NEMSIS v2.2.1
Patient Location	- State	NEMSIS v2.2.1
Patient Location	- Zip	NEMSIS v2.2.1
Patient Location	- Country	NEMSIS v2.2.1
Patient Location	- Other Geospatial Data	EDXL SitRep Requirements
Patient Location	- Legal Description	EDXL SitRep Requirements
Patient Location	- Local Name	TN-MCI
Patient Location	DestinationTransferredToID	NEMSIS V2.2.1
Transporting Agency/Unit Info	* Refer to EMS-Care Provider Demographic data	
Patient Location	Location Type	
Patient Care Provider Encounter Date/Time	Patient Care Provider Encounter D/T	
Destination Transferred to ETA	Destination Transferred to ETA	
Pat Care Provider Release D/T	Patient Care Provider Release D/T	
Actual Patient Location Arrival D/T	Actual Patient Location Arrival D/T	
Actual Patient Location Departure D/T	Actual Patient Location Departure D/T	

12.5 Core Patient Evaluation & Care

TEP Requirement	TEP Element-Patient Care Data	Source Element Name
EMS Evaluation	Chief Complaint (Problem verbalized by the patient)	NEMSIS v2.2.1
EMS Evaluation	Date/Time of Vital Signs	NEMSIS v2.2.1
EMS Evaluation	Systolic Blood Pressure	NEMSIS v2.2.1
EMS Evaluation	Diastolic Blood Pressure	NEMSIS v2.2.1
EMS Evaluation	Pulse Rate	NEMSIS v2.2.1
EMS Evaluation	Respiratory Rate	NEMSIS v2.2.1
EMS Evaluation	Cardiac Monitor Rhythm and/or 12 Lead ECG Interpretation (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Pulse Oximetry (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	CO2 Level (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Blood Glucose Level (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Temperature (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Total GCS (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Stroke Screen (if pertinent)	NEMSIS v2.2.1
EMS Evaluation	Thrombolytic Checklist (if pertinent)	NEMSIS v2.2.1
Treatment Instructions	TreatmentInstruction	
Treatment Administered	Medications Administered	NEMSIS v2.2.1
Treatment Administered	Procedures Performed	NEMSIS v2.2.1
EMS Evaluation	EMS/Care Provider Providers Primary Impression (Medical Condition treated by EMS)	NEMSIS v2.2.1
Care Provider ID** See EMS Care Provider Demographic	EMS/Care ProviderProfessional who provided Patient Care	NEMSIS v2.2.1
Patient Diagnosis	Triage Status	
Patient Status	PatientCurrent Dispostion	
Patient Status	PatientCurrent Dispostion Date/Time	
EMS Evaluation	ACS/CDC Field Trauma Criteria	

13 APPENDIX F - Glossary / List of Acronyms

ACEP	American College of Emergency Physicians
AHRQ	Agency for Healthcare Research and Quality
ASTHO	Association of State and Territorial Health Officials
CAN	Coordinated Assistance Network
CAP	Common Alert Protocol
CCR	Continuity of Care Record
CCD	Continuity of Care Document
CDC	Centers for Disease Control
DAIP	Disaster Assistance Improvement Plan
DE	Distribution Element
DEEDS	Data Element s for Emergency Department Systems
DHS	Department of Homeland Security
DOB	Date of Birth
DOD	Department of Defense
EAS	Emergency Alert System
ED	Emergency Department
EDXL	Emergency Data Exchange Language
EIC	Emergency Interoperability Consortium
EMS	Emergency Medical Services
EO	Executive Order
EM-TC	Emergency Management Technical Committee
FEMA	Federal Emergency Management Agency
FIPS	Federal Information Processing Standards
HAVE	Hospital Availability Exchange
HIPAA	Health Insurance Portability and Accountability Act
HITSP	Healthcare Information Technology Standards Panel
HSPD-21	Homeland Security Presidential Directives
HTTP	Hypertext Transfer Protocol
IAW	In Accordance With
IEMRI	Integrated Emergency Medical Response Initiative
IEPD	Information Exchange Package Documentation

IPTI	Integrated Patient Tracking Initiative
IT	Information Technology
MCI	Mass Casualty Incident
NAEMSP	National Association of EMS Physicians
NAEMT	National Association of Emergency Medical Technicians
NASEMSO	National Association of State EMS Officials
NEMA	National Emergency Medicine Association
NEMSIS	National EMS Information System
NEMSMA	National EMS Management Association
NIEM	National Information Exchange Model
NIMS	National Incident Management System
OASIS	Organization for the Advancement of Structured Information Standards
OIC	Office for Interoperability and Compatibility
OPEN	Open Source Software
PID	Project Initiation Document
PMO	Project Management Office
PSG	Practitioner Steering Group
RM	Resource Messaging
SDO	Standards Development Organization
SitRep	Situation Reporting
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SOP	Standard Operating Procedure
SSN	Social Security Number
TEP	Tracking of Emergency Patients (standard)
SWG	Standards Working Group
UICDS	Unified Incident Command and Decision Support
XML	Extensible Markup Language