



SME Advisor Report and Discussion

Robert M. Cothren, PhD
Executive Director, CAHIE

18 April 2016



Progress Report

- Assessment of the CalDURSA
- Assessment of the MMPA
- Initial recommendations for the PULSE architecture and technical standards



CalDURSA Recommendations

1. Does the CalDURSA require any additional language to allow for the disaster response use case?
2. Does the CalDURSA require adjustment to allow PULSE to place queries without reciprocal response?
3. Does the CalDURSA require adjustment to allow DHV to be used for authentication and authorization?



CalDURSA Recommendations

1. Make no amendments to the CalDURSA
2. Add language to the terms of service on DHV to meet the CalDURSA requirements of Participant Users
3. To address the Participant:
 - a. ensure that the organization that operates PULSE is eligible to sign the CalDURSA, or
 - b. interpret or expand eligibility policy to make organizations enabling exchange of PHI eligible

For more information, see the CAHIE Project Wiki at <http://wiki.ca-hie.org/Data+Sharing+PULSE#CalDURSA>



CaIDURSA Recommendations

1. Does the CaIDURSA require any additional language to allow for the emergency use case?

The emergency use case is a local transaction governed by Participants Agreements, not the CaIDURSA



MMPA Recommendations

1. Does the MMPA require any additional language to allow for PUSLE?

Queries placed by Providers and Volunteers and responses provided by health systems are inter-organizational exchanges governed by the CalDURSA

For more information, see the CAHIE Project Wiki at <http://wiki.ca-hie.org/Data+Sharing+PULSE#MMPA>



MMPA Recommendations

1. Does the MMPA require any additional language to allow for the emergency use case?

The MMPA should be investigated to determine:

- a. Whether the SAFR use cases are covered within the MMPA or whether a new module is required
- b. Whether EMS stakeholders (e.g., ambulance companies, LEMSAs) are covered with the definition of participants



Next Steps

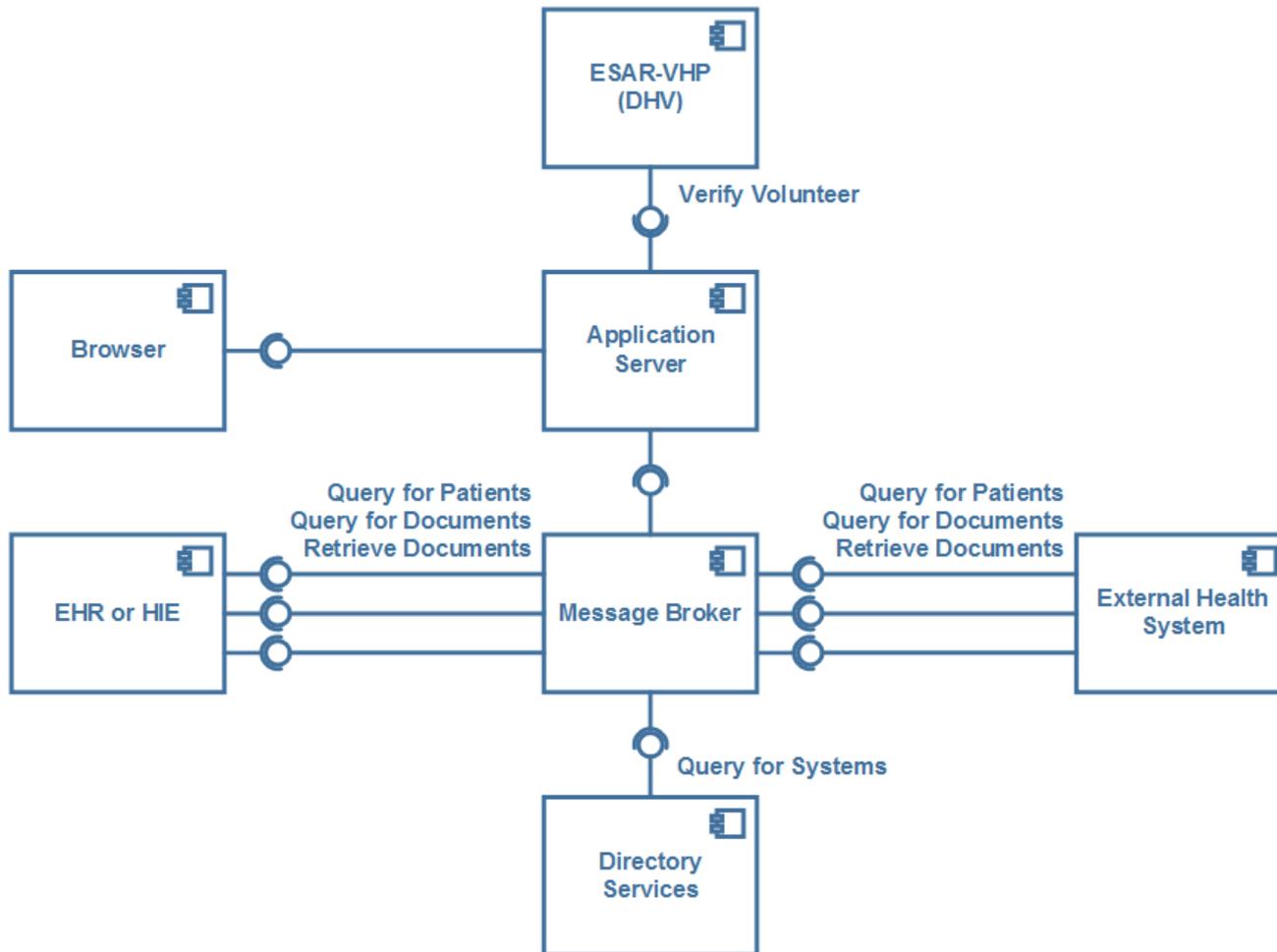
- Assessment of MMPA to support SAFR use cases and EMS stakeholders

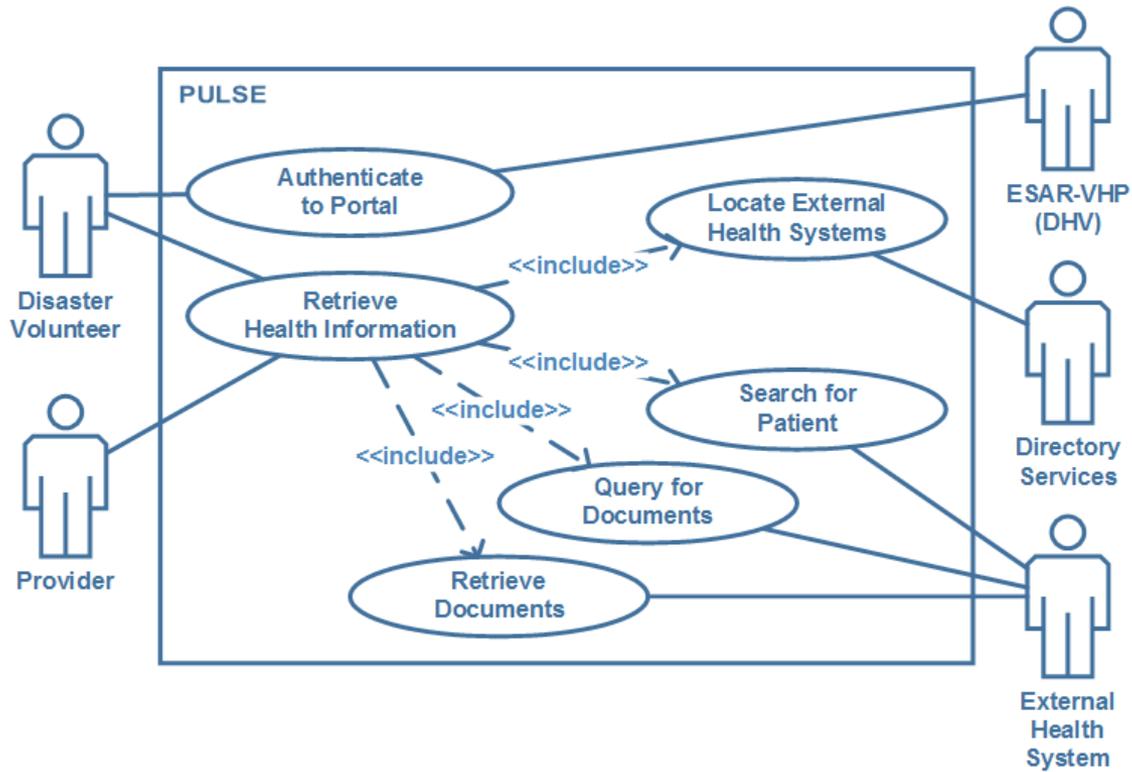


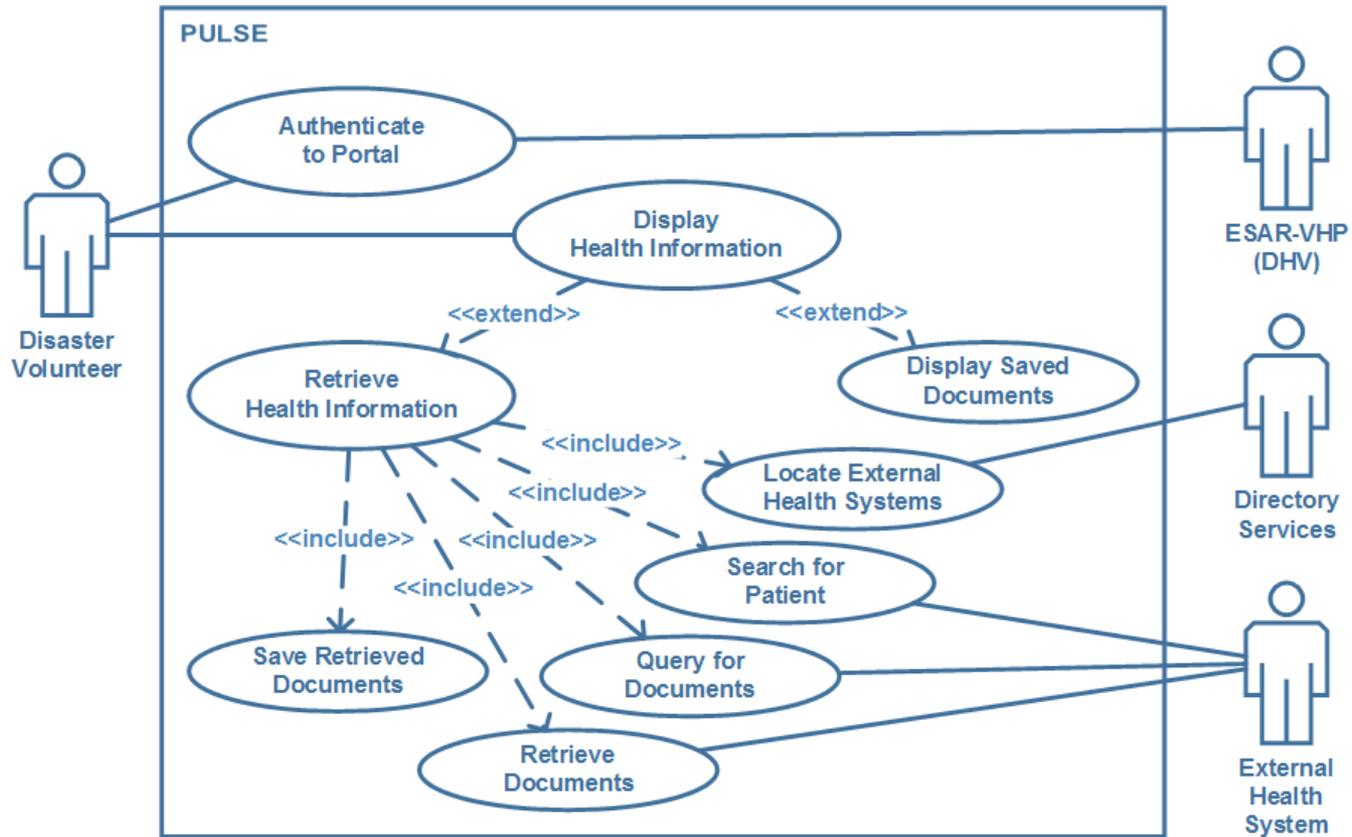
PULSE Architecture

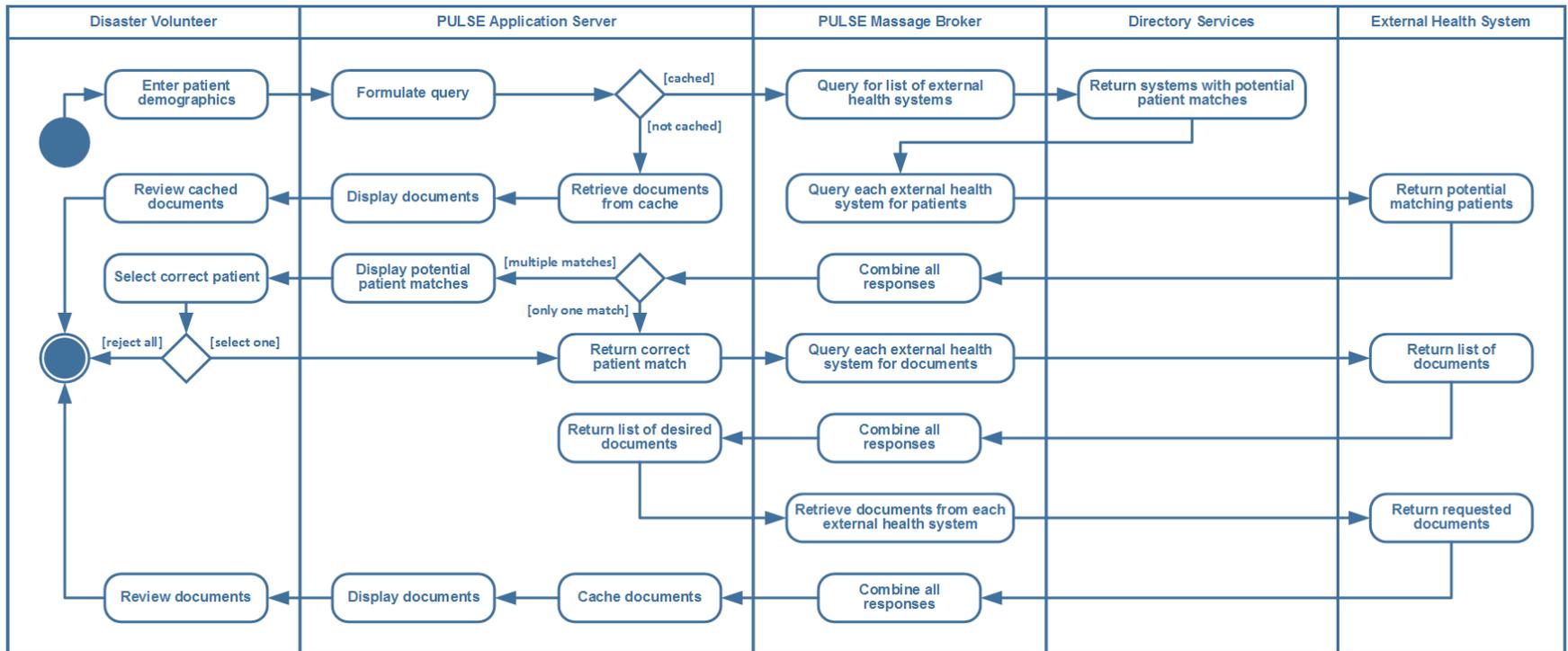
- Convened PULSE Workgroup in January
- Completed initial recommendations for:
 - Technical architecture
 - Technical standards
- Includes a presumed workflow

For more information, see the CAHIE Project Wiki at <http://wiki.ca-hie.org/PULSE>











PULSE Architecture

- Assumes a document model for exchange
- Suggests two potential sets of exchange standards
 - IHE profiles using SOAP web services
 - HL7 profiles using FHIR web services for document exchange



Next Steps

- Resuming PULSE Workgroup activity after project kick-off with the new PULSE development vendor
- Close gaps between participants in PULSE program
- Finalize recommendations on

*Need
help
here*

- 1. Workflow
- 2. Technical standards
- 3. Security model

Seeking input...



PULSE Drill

- What is a typical treatment workflow for a disaster volunteer?
- What would be the most useful way to conduct a Drill?



Seeking input...

Sustainability of PULSE



- How is a system intended for statewide use during a disaster sustained?



References

Data sharing agreement assessment

<http://wiki.ca-hie.org/Data+Sharing+PULSE>

Patient Unified Lookup System for Emergencies (PULSE)
report by Ai

<http://wiki.ca-hie.org/file/view/PULSE%20Report%204-9-2015.pdf/570610863/PULSE%20Report%204-9-2015.pdf>

PULSE Workgroup

<http://wiki.ca-hie.org/PULSE>



Contact Information

Robert M. Cothren, PhD

Executive Director

California Association of Health Information Exchanges

- p** (925) 934-2280
- e** robert.cothren@ca-hie.org
- w** <http://www.ca-hie.org>

PULSE – Kick-Off Overview

April 18, 2016



Customers We Serve



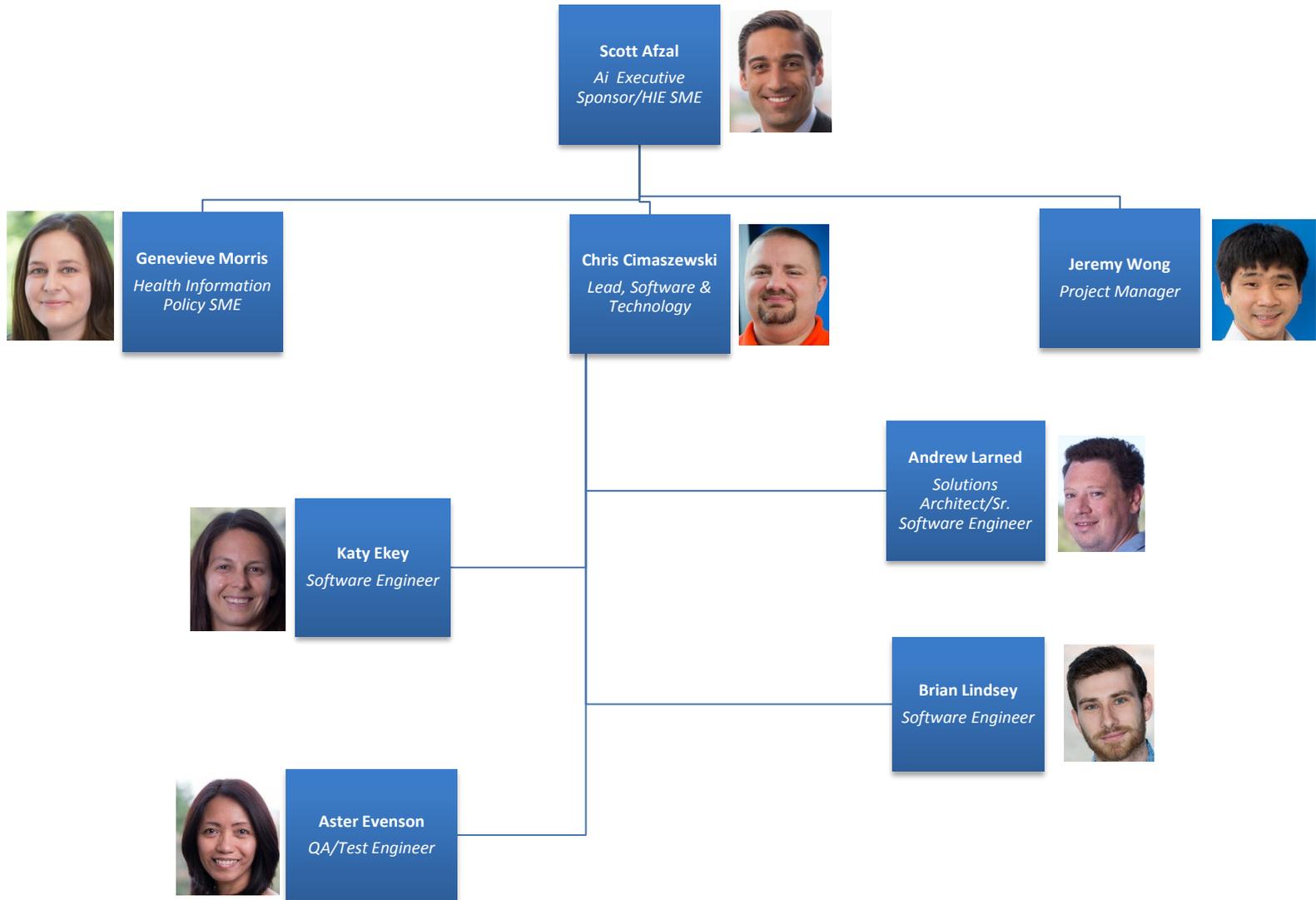
**Healthcare Systems;
Health Information
Organizations; Provider
Organizations;
and Government and Private
Payer Organizations**



PULSE History

- **2013:** CalEMSA holds its first HIE in EMS Summit
- **April 2014:** ONC Engages Ai to evaluate use of HIE infrastructure for disaster preparedness and response; *HIE Services in Support of Disaster Preparedness and Emergency Medical Response* report published
- **March 2015:** the HHS Ideas Lab funds use case and technical architecture development of PULSE; detailed *Patient Unified Lookup System for Emergencies* report published
- **July 2015:** ONC grants EMSA a grant to advance HIE statewide during a disaster and regionally in daily EMS
- **January 2016:** EMSA releases PULSE Development RFO
- **March 2016:** EMSA awards Ai the PULSE Development contract

Ai Project Team



Deliverables and Project Scope Review

Project Scope Overview

1. PULSE Web Portal

- a. DHV integration for user authentication
- b. Patient query portal capability for providers
- c. Robust audit logs

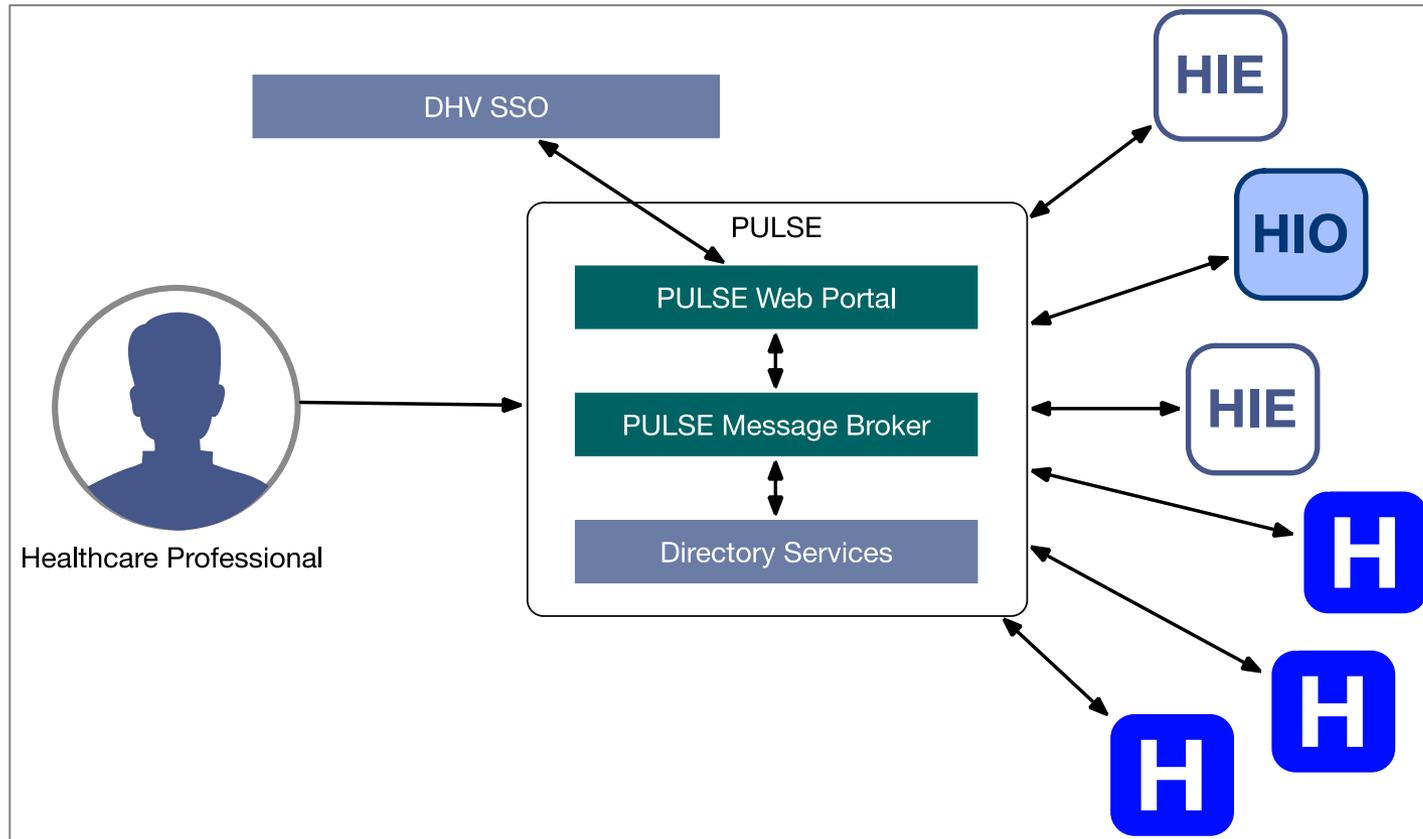
2. PULSE Message Broker

- a. Federate and aggregate requests/responses
- b. Interface between Web Portal and message adapter services*
- c. Leverage CTEN Directory Services and Connection Management Services*

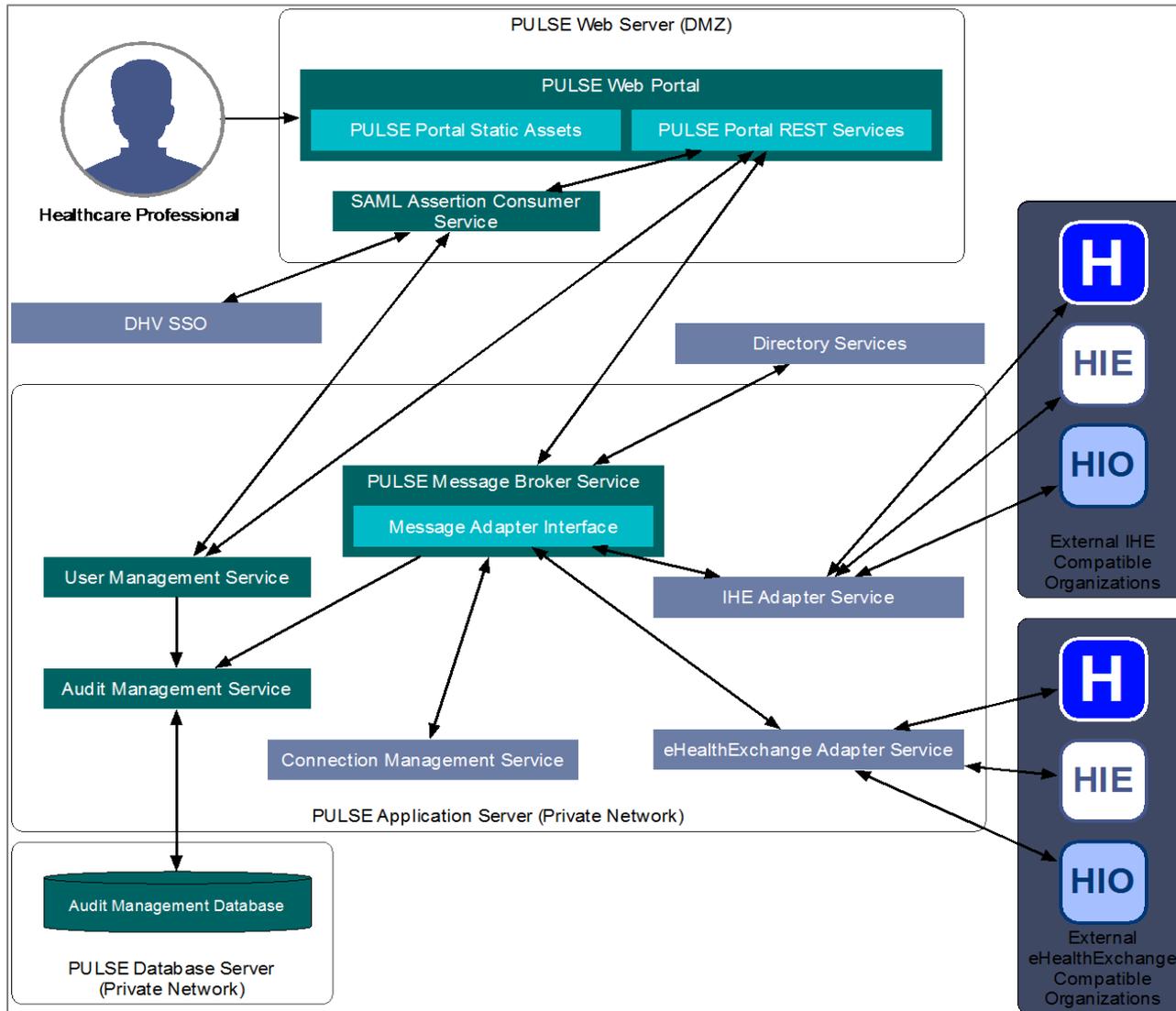
*Message Adapter Services and Connection Management Services will be developed by the interoperability contractor. Implementation of CTEN Directory Services is out-of-scope



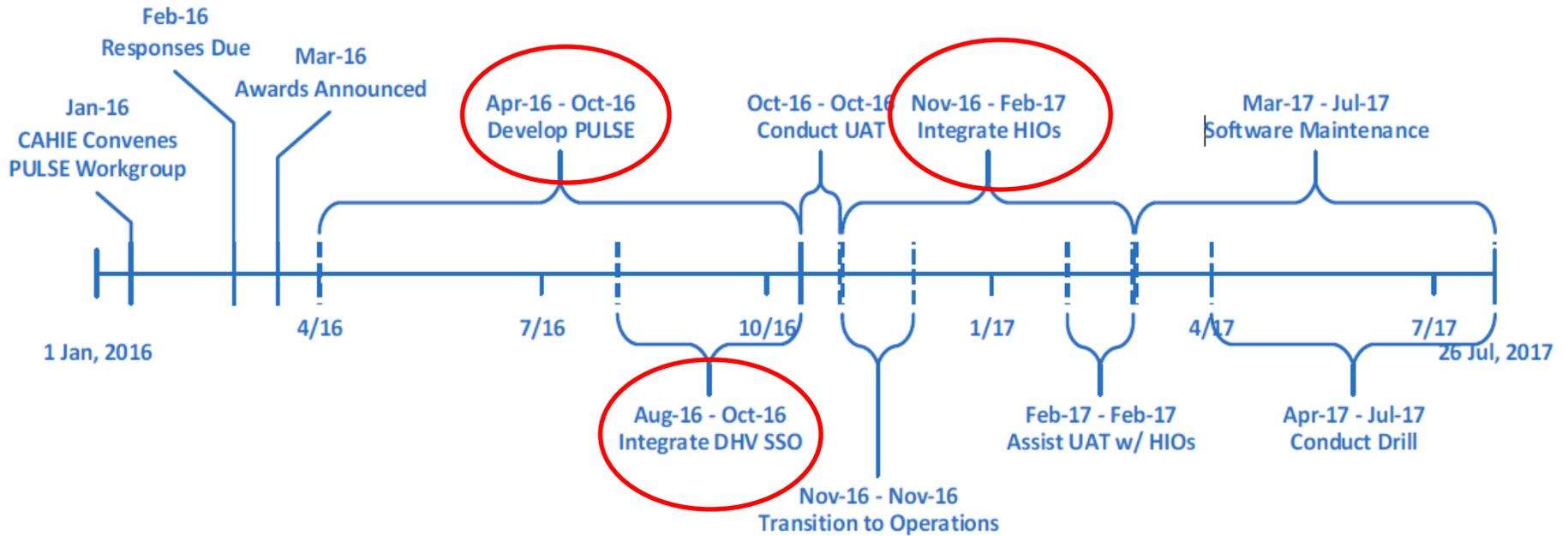
Architecture Diagram



Component Model



Overall Timeline



Key Project Deliverables

Ai Development

2016

- **April:** Project Kickoff
- **May:** *Requirements and Solution Approach* Document
- **August:** HIO Working Group Meeting, Development complete
- **September:** EMSA Technical Documentation signoff, End-to-end Integration and User Acceptance Testing complete
- **October:** Transition to Operations

2017

- **February:** Transition to System Maintenance

HIO Integration

2016

- **August :** HIO Working Group Meeting
- **October:** PULSE Desktop Drill
- **November :** HIO onboarding begins

2017

- **February:** HIO UAT begins
- **February:** System Maintenance Phase begins
- **April:** HIO PULSE Drill

Software Development Process Review

Ai Software Development Process (ASEP)

- Internally-developed, Agile processes designed to allow responsiveness to customer needs
- Built upon the standards of the Project Management Institute (PMI) and the CMMI
 - CMMI Level 3-appraised
- Allows project documents and deliverables to be tracked in a standardized way

Ai Software Development Process (ASEP)



Organizational Processes

Process Action

- Process Definition & Improvement
- Process & Product Quality Assurance

Human Capital

- Recruiting
- Resource Management
- Training

Business Development

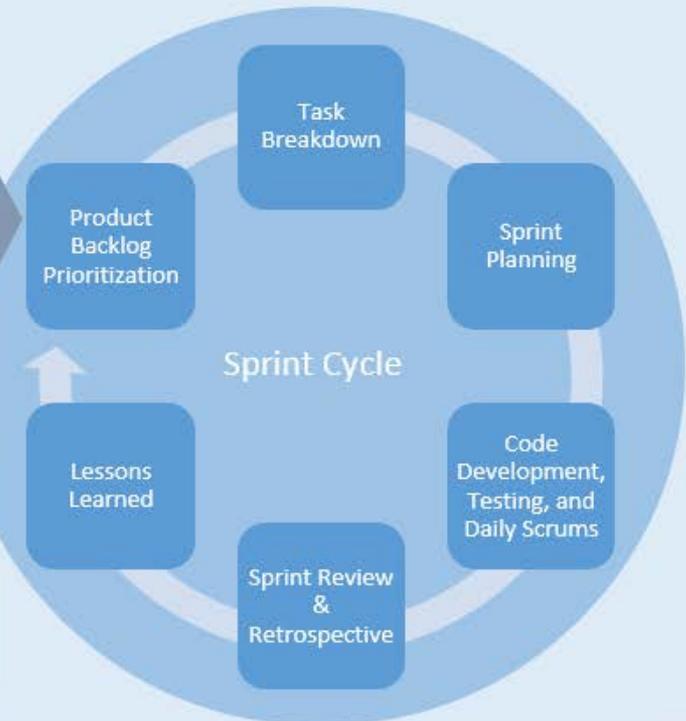
Project-Specific Processes

Project Initiation

- Architecture
- Integration Strategy
- Integration Environment
- Process Tailoring
- Scrum Planning
- Product Backlog
- Project Planning & Monitoring Setup

Project Monitoring & Control

- Measurement & Analysis
- Risk Management
- Configuration Management
- Resource Management
- Decision Analysis & Resolution



Questions?



Consumable Data Content and Transport Workgroup

Co-Chairs:

Dr. Jay Goldman, MD, FACEP, Medical Director of EMS and
Ambulance,

Kaiser Permanente NCAL

David Minch, Board Chair, CAHIE

Workgroup Mission Statement



The mission of the Consumable Data Content and Transport Workgroup is to identify the **appropriate transmittable and display / consumable data content** that coincides with California Emergency Medical Services Authority SAFR Model for EMS participation in Health Information Exchange and The Office of the National Coordinator priorities, requirements, and Interoperability Roadmap. HL7 and NEMESIS 3 standards will be utilized when possible.

Technology Recommendations



- Focused on 3 areas of technical specifications:
 - IHE Profiles (form for content and interaction)
 - Transport
 - Security
- Each of the +EMS functional areas of Search, Alert, File, and Reconcile has a set of recommendations for the demonstration projects that will be undertaken as part of the ONC +EMS grant to CalEMSA
- Work products from this workgroup are intended as guidelines for the +EMS pilots, not as hard specifications. If the pilots desire to use proprietary technology, it will be at the discretion of EMSA in their proposal and project reviews.

Transport Dataset Recommendations



- Focused on the appropriate dataset to be transported for each of the 4 +EMS functional areas of Search, Alert, File, and Reconcile. The workgroup focused on standards for the datasets which are commonly used by the sending and receiving applications.
- The ***possible*** data content for these datasets may be significantly larger than the data actually needed by the specified function, but the more important consideration is that the dataset definition is a commonly acceptable standard for the specified exchange.
- An important consideration is the proper construction of the dataset - incomplete datasets which do not have a minimum of information may not be accepted by the receiving system.

Display/Use Dataset Recommendations



- Focused on the appropriate dataset to be Displayed / Used specifically for the 4 functions.
- The workgroup focused on the actual data content needed for the function to be successfully implemented.
- An important consideration is limiting the specification to that data which is truly relevant to the patient's care and associated administrative functions.

Search Technical Specifications



Technology	Specification
IHE Profile: Patient Discovery	IHE PIX/PDQ, XCPD
IHE Profile: Query/Response	IHE XDS.b, XCA
IHE Profile: Result	CCD or consider specifically targeted SMART application using FHIR as an alternative to the Exchange profiles noted above.
Transport	SOAP for IHE Profiles; REST for FHIR - Both over the public internet using TCP/IP.
Security	SAML 2.0 Authorization with Encryption through HTTPS w/ mutual TLS or OAuth2 and OpenId Connect over HTTPS.
Comments	If the Search is successful, the patient's specific identity from the searched repository should be

Search Transport Dataset



Query: Demographics	Result Dataset
<ul style="list-style-type: none">• *First/Given Name• *Current Last/Family Name• Previous Last/Family Name• Middle/Second Given Name (includes initials)• Suffix• *Date of Birth• *Current Address (address, city, state, ZIP code)• Historical Address (address, city, state, ZIP code)• *Current Phone Number• Historical Phone Number• *Gender• Last 4 (or all) digits of the SSN• Insurance (if known) <p>*Indicates REQUIRED</p>	<p>Continuity of Care Document (CCD) – focus on content subsets:</p> <ul style="list-style-type: none">• Demographics,• Problem List,• Allergies,• Medications,• Advance Directives,• Insurance,• Language, <p>Other human-readable docs (.pdf) for needed content not included in the CCD.</p> <p>FHIR Resources list also included in the specification.</p> <p>NOTE: FHIR is new and it may be too early to make this a firm recommendation</p>

Search Dataset Considerations



The EHR perspective

- Once the patient match is made, hospitals / health plans want shared data to be the absolute minimum required to meet the evidence-based needs of field providers and their patients
- Will require collaborative discussions between EMS planners and contributors to and guardians of EHR

Search Display/Use Dataset –



Demog.

Patient Demographics

- Person ID (MPI# / Other unique link to the patient)
- Person Address
- Person Phone /Email /URL
- Person Name
- Gender
- Date of Birth
- Marital Status
- Religious Affiliation
- Race
- Ethnicity
- **Primary Language Spoken**
- Patient's PCP:
 - Provider Name
 - Provider's Organization
 - Providers Patient ID
 - National Provider ID

Patient Insurance Coverage Information -

- Group Number/Plan Number
- Insurance / Plan Name & Number
- Insurance Type
- Insurance Information Source Name
- Health Plan coverage dates
- Member/Subscriber ID
- Subscriber ID if different from patient
- Patient Relationship to Subscriber
- Financial Responsibility Party Type

Search Display/Use Dataset – Clinical



Allergy/Drug Sensitivity:

- ~~Adverse event date~~
- ~~Adverse event type (HITSP C80 Section 2.2.3.4.2)~~
- Product Free Text
- Product Code (HITSP C80 Section(s): 2.2.3.3.9, 2.2.3.3.11, 2.2.3.3.7, 2.2.3.3.)
- Reaction Free Text
- Reaction Coded (HITSP C80 Section 2.2.3.4.1)
- Severity Free Text-is this needed?
- ~~Severity Coded (HITSP C80 2.2.3.4.3) --?needed~~

Problem/Condition:

- Problem Date
- Problem Type (HITSP 2.2.3.1.2)
- Problem Name
- Problem Code (HITSP C80 Section 2.2.3.1.1 - ICD-10, SNOMED CT)
- Problem Status (CDA OID: 2.16.840.1.113883.10.20.22.2.9) (Current Only?)—
yes current only
- ~~Age (at Onset)~~
- ~~Treating Provider--
?needed~~
- ~~Treating Provider ID--
?needed~~

Search Display/Use Dataset –



Clinical cont'd

Medications: (Question: would we want only current list or past DC'd meds also - which may help if a patient were still taking a DC'd med?) **current meds only**

- ~~Free Text SIG (would want coded sig translated into text)~~
- ~~Coded SIG~~
- ~~Coded Product Name (HITSP C80 Section(s): 2.2.3.3.8, 2.2.3.3.9, 2.2.3.3.11 – NDC, RxNorm)~~
- ~~Coded Brand Name (HITSP C80 Section 2.2.3.3.7, 2.2.3.3.10)~~
- Free Text Product Name
- Free Text Brand Name
- ~~Drug Manufacturer~~
- ~~Product Concentration~~
- Type of Medication (HITSP C80 Section 2.2.3.3.5)
- ~~Status of medication (want current (active) only)~~
- ~~Indication (HITSP/C80 Section 2.2.3.1.1 Problem)~~

Advance Directives:

- Advance Directive type (CDA OID 2.16.840.1.113883.12.435)
 - Advance directive text
 - Effective Date
 - Custodian of the Document (where located/managed)
 - **Unclear if this is useful, prefer POLST**
- ## Other Pertinent Fields not Listed above:
- Attachments (e.g., POLST, CCD)? Ref SB19 - pilot for CA POLST - may want to hold on this?
 - **PDF of detailed return data (?)** for review and pt mgmt even if

Alert Technical Specifications



Technology	Specification
IHE Profile: Patient Discovery	IHE PIX/PDQ, XCPD
IHE Profile: Query/Response	IHE XDS.b, XCA
IHE Profile: Result	<p>IHE XDR or Direct messaging with the NEMESIS C-CDA attached*</p> <p>As an alternative, Where HIOs are involved in the exchange, use of existing HL7 v2.x messaging also acceptable with adequate delineation of the appropriate NEMESIS segments in a “Z” segment.</p>
Transport	SOAP for XDR; SMTP for Direct; HL7 Interfaces may use varying transports based on the EHR or HIE vendor technologies.
Security	SAML 2.0 Authorization with Encryption through



Alert Transport Dataset

Query: Demographics	Result Dataset
<p>The purpose of the Alert exchange is only to display incoming patient information on an active monitor in the ED. While the patient's identity in the ED's EHR application would be helpful if available, it is not needed and would not be Queried for</p>	<p>Since the source of the data is the ePCR application, the recommended dataset is the NEMESIS C-CDA (v3.4 or higher). Because of the variance in how this functionality could be implemented, there could also be a proprietary subset of data passed from the ePCR to an intermediary system (not the receiver's EHR). The CCD specification is NOT recommended. The goal for this functionality is simply to inform the ED of the identity of incoming patients +/- current status</p>



Alert Dataset Considerations

The ED/EHR Perspective

- Data should be limited to minimum information for ED to prepare to receive patient (patient identity in EHR, chief complaint, current status, ETA)
- Display using existing systems, explicitly avoiding in-box messaging and additional hardware that occupies limited ED real estate



Alert Display/Use Dataset

Patient

Demographics

- Person ID (MPI# / Other unique link to the patient)
- Person Name
- Gender
- Date of Birth / Age
- Primary Language Spoken

Other Information

- Primary Impression
- Chief Complaint
- Time to arrival (ETA)
- Current Status
- **Bullets below should be sufficiently covered in first two bullets above**
- ~~STEMI (is this a "yes/no" field?)~~
- ~~Stroke (field type?)~~
- ~~Cardiac Arrest (field type?)~~
- ~~Trauma (field type?)~~
- ~~Sepsis (field type?)~~
- ~~Obese needed lift assist team (field type?)~~
- ~~Behavioral or violent needing security (field type?)~~

File Technical Specifications



Technology	Specification
IHE Profile: Patient Discovery	IHE PIX/PDQ, XCPD
IHE Profile: Query/Response	IHE XDS.b, XCA
IHE Profile: Result	IHE XDR or Direct messaging with the NEMESIS C-CDA attached. As an alternative, Where HIOs are involved in the exchange, use of existing HL7 v2.x messaging also acceptable with adequate delineation of the appropriate NEMESIS segments in a "Z" segment.
Transport	SOAP for XDR; SMTP for Direct; HL7 Interfaces may use varying transports based on the EHR or HIE vendor technologies.
Security	SAML 2.0 Authorization with Encryption through HTTPS w/ mutual TLS or S/MIME w/ X.509 Certs for Direct. If an HL7 message is used, appropriate encryption and



File Transport Dataset

Query: Demographics	Result Dataset
<p>Same as Search, if needed.</p> <p>Query likely not needed since the use cases all describe situations where data is pushed to a known recipient.</p> <p>NOTE: if there has not already been an explicit link established to the patient record (e.g. MRN#, or Encounter#), then an out-of-band workflow will be needed.</p>	<p>Consolidated-Clinical Document Architecture (C-CDA) using the ePCR C-CDA specification. The recommendation is to transport a superset of the information that may be needed (specifically, the full EMSDataSet). This allows flexibility in choice of which fields may be desirable for display and discrete storage.</p> <p>If only the CCD specification is used, then specific provision will need to be made for additional ePCR fields which do not map into the CCD specification.</p>



File Dataset Considerations

Importance of clearly defining the consumer

- Avoid conflicts about data elements by focusing on target user
- Target of the File dataset is the ED clinician: documentation of pre-call events, field status, successful and unsuccessful treatment, complications, family contact information, EMS times as pertinent to continuity of care.
- To be useful in the clinical setting, this dataset should **omit** the following clinically extraneous elements which may be important in other data sets:
 - data to support assessment and care for billing, communication, and internal PI
 - system-oriented elements for system PI, contractual

File Display/Use Dataset



Switch to worksheet

Reconcile Technical Specifications



Technology	Specification
IHE Profile: Patient Discovery	none
IHE Profile: Query/Response	none
IHE Profile: Result	Assumes use of a monthly report, not a real-time transaction. May be: <ul style="list-style-type: none">• Flat file delimited unstructured (non-standard).• Flat file (HL7 v2.x) ADT^A02 and ^A03 with Z segments.• Flat File XML-encoded (NEMESIS v3)
Transport	HTTPs, SFTP
Security	No authorization required; encrypted transport required.
Comments	



Reconcile Transport Dataset

Query: Demographics	Result Dataset
None.	<p>NEMESIS C-CDA using the EMSDataSet, focus on content subsets: eOutcome, eCustomResults, dAgency.</p> <p>Other data fields from the hospital record may also be specified from data segments: Allergies, Medications, Problems (complaint), Family History, Functional Status, Discharge, Immunization, Plan of Care</p> <p>No standard record layout is specified, however, HL7 2.x and 3.x (C-CDA) should be used if appropriate. This function also lends itself to use of the ED's standard report generator functionality, and may be a structured flat file containing multiple cases.</p>



Reconcile Dataset Considerations

California Legislation Notwithstanding, HIPAA Guides Content

- AB 503 permits hospitals to disclose pertinent PHI to EMS
- HIPAA also permits disclosure to EMS of minimal PHI necessary to accomplish the stated purpose (admitted, discharged, transferred, expired)
- More robust sharing may require specific agreements

Reconcile Display/Use Dataset



Switch to worksheet

Conclusion / Comments / Questions



- Each +EMS pilot should review the recommended datasets and draw their own conclusions as to appropriateness for their implementation.
- We expect that the actual Display / Use datasets will undergo further review throughout 2016 – both within the pilot California communities and other pilots throughout the country.
- A Clinician review committee will also be evaluating the Display / Use dataset in 2016 (specifically the File and Reconcile datasets).
- This workgroup will suspend meetings while review is being done, and will reconvene in early 2017.



EMS+HIE Proposal Overview for HIE in EMS Advisory Committee

Dan Chavez
April 18, 2016

CA EMSA RFO Proposal Overview



- An HIE, hospital & emergency ambulance provider in a County - San Diego, Imperial, and Orange Counties
 - Demonstrate SAFR functionality -
 - SEARCH* – search for patient in HIE from ambulance ePCR
 - ALERT* – alert ED of patient arrival from ePCR
 - FILE* – file ePCR into ED EHR
 - RECONCILE – medical record with ePCR – SD only
 - NEMESIS compliance
 - Single, shared instance of the SDHC EMS Hub
- * 10% of all runs over a 90 day period

CA EMSA RFO Proposal Overview



- San Diego County Project
 - UCSD
 - AMR
 - WATER
 - City of San Diego
 - County of San Diego
 - San Diego Health Connect

CA EMSA RFO Proposal Overview



- Orange County Project
 - UC Irvine and/or CHOC
 - Image Trend
 - Care Ambulance Service
 - Newport Beach Fire Department
 - County of Orange
 - San Diego Health Connect
 - OCPRHIO

CA EMSA RFO Proposal Overview



- Imperial County Project
 - El Centro Regional Medical Center
 - Schaefer Ambulance Service
 - Traumasoft
 - County of Imperial
 - San Diego Health Connect

CA EMSA RFO Grant Status



- CA EMSA Kickoff Tuesday March 22
 - Questions, gaps, issues, further definitions
- Formulate firm project Teams
- Agree to schedule
- Contract received Apr 7, responses returned
Apr 11th

SAFR High Level Workflow

