

Jan 30, 2018

# **PULSE: HIE Connectivity for Disaster Response**

*Patient Unified Lookup System  
for Emergencies*



AUDACIOUS INQUIRY

**BOLD SOLUTIONS FOR  
CONNECTED HEALTHCARE**

# PULSE Background

# History

**2013:** California Emergency Medical Services Authority (EMSA) holds its first HIE in EMS Summit

**March 2015:** the HHS Ideas Lab funds use case and technical architecture development of PULSE; detailed

**January 2016:** EMSA releases PULSE Development RFO

**January 2017:** HHS IDEA Lab blog publishes [PULSE post](#)



*Patient Unified Lookup System for Emergencies* report published

**July 2017:** PULSE Go-live

**April 2014:** ONC Engages Ai to evaluate use of HIE infrastructure for disaster preparedness and response;

**July 2015:** ONC awards EMSA a grant to advance HIE statewide during a disaster and regionally in daily EMS

**March 2016:** EMSA awards Ai the PULSE Development contract

**February 2017:** EMSA awards Ai the PULSE Operator contract

*HIE Services in Support of Disaster Preparedness and Emergency Medical Response* report published

# Recent Accomplishments



## June 2017 - PULSE Tabletop Drill successfully completed

- DHV users (EMS providers) were able to login to PULSE, query patients, and view clinical documents

## July 2017 - PULSE Operator contract completed

- Ai is hosting PULSE through July 2018 for – to be activated for declared disasters by Cal EMSA

## October 2017 - PULSE was activated to support disaster response for the Northern California wildfires

## November 2017 - WIRED Magazine features PULSE as a solution for accessing medical records during emergencies.

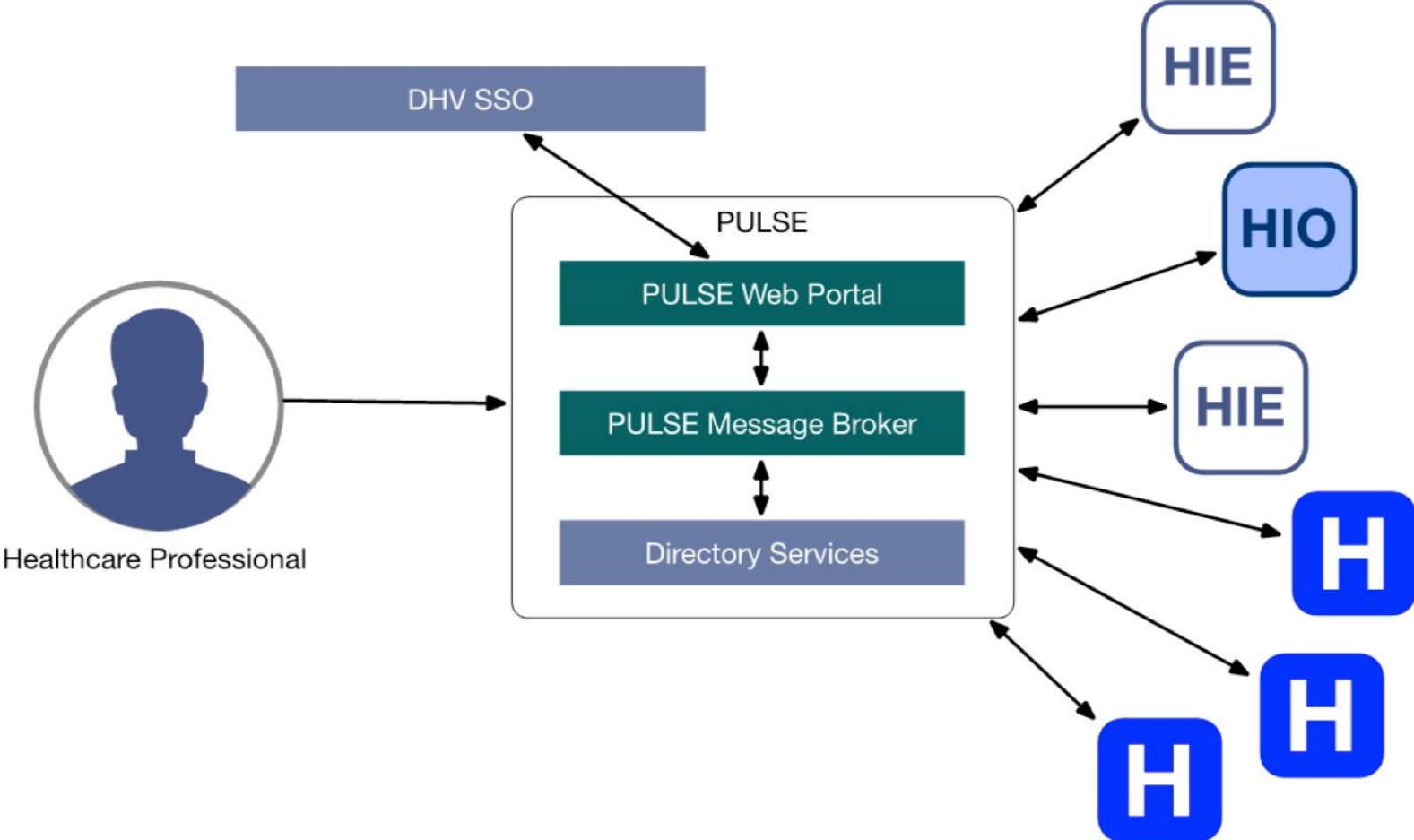
- “In the decade since Katrina, federal health officials have thought long and hard about how to take those walls down in the event of a national emergency. And earlier this summer, they actually finished the first big test of such a technology. Called PULSE, for Patient Unified Lookup System for Emergencies, it would ***allow disaster workers to find and view patient documents—prescriptions, recent test results—for anyone that walked into an emergency room, pop-up field hospital, or evacuation shelter.*** - <https://www.wired.com/story/harvey-evacuees-leave-their-belongings-and-health-records-behind/>

## December 2017- PULSE was activated to support disaster response for the Southern California wildfires

- Within one week, five organizations were rapidly onboarded to eHealth Exchange and connected to PULSE (Kaiser, Dignity, Sutter, CVS, Cottage, Providence)

- **PULSE** is designed to provide interconnectivity to enable provider organizations (including HIOs) and healthcare professionals to query for and view patient documents during disasters
- **Specifically, PULSE:**
  - Authenticates Disaster Healthcare Volunteer (DHV/ESAR-VHP) providers to the PULSE Web Portal
  - Allows disaster workers to query and view patient documents (e.g., C-CDAs)
  - Federates queries and patient document requests to all connected HIOs

# Technical Architecture



# Development Overview



- **PULSE Web Portal**

- DHV integration for user authentication
- Patient query portal capability for providers
- Robust audit logs

- **PULSE Message Gateway**

- Federates and aggregates requests/responses
- Interfaces between Web Portal and message adapter services
- Leverages CTEN Directory Services and Connection Management Services

# PULSE Demo










# PULSE Expansion Considerations

# Scale PULSE using eHealth Exchange & Carequality



## eHealth Exchange

All 50 states			50,000 medical groups
Four federal agencies (DoD, VA, CMS, SSA)			3,400+ dialysis centers
			8,300 pharmacies
65% of U.S. hospitals			Supporting more than 100 million patients

## Carequality



# PULSE Deployment Activities (1 of 2)



1. **Align with The Sequoia Project's national PULSE governance model**
2. **Establish local PULSE governance policies (e.g., activation, onboarding, and testing procedures)**
3. **Fund provider organizations' connectivity to national networks (i.e., eHealth Exchange and Carequality)**
  - This will allow querying and viewing of these organizations' clinical data by PULSE users
4. **Single sign-on system(s) integration**
  - *From which system will PULSE users single sign-on from?*

# PULSE Deployment Activities (2 of 2)

## 5. Alignment with existing disaster response workflows

- This may require custom development

## 6. User training

- *How will PULSE users be regularly trained to ensure effective use during a declared disaster?*

## 7. Disaster response IT infrastructure

- *Does proper infrastructure exist to ensure that PULSE users have internet connectivity and devices to use PULSE during a declared disaster?*

## 8. Tabletop Drills

- These should be designed to fine-tune procedures and improve user training and IT infrastructure



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## Contact Us

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# Appendix PULSE Screenshots



# Select ACF



Patient Unified Lookup System for Emergencies

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## Select an Alternate Care Facility (ACF)

### Select an ACF

Orange

07 Evacuation Zone

Submit

### About PULSE

ONC has funded the development of the Patient Unified Lookup System for Emergencies (PULSE) to ensure vital health information can be shared and used during disasters. California Emergency Medical Services Authority (EMSA) and Audacious Inquiry (AI) developed PULSE to prepare for disasters and connect healthcare across California.

[Access Developer Resources](#)

The Office of the National Coordinator for  
Health Information Technology





# Patient Query



Patient Unified Lookup System for Emergencies

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Search

Review

## Patient Query

**First Name \***

Steve

**Last Name \***

Hardy

**Gender \***

Male

**Date of Birth \***

April

1

1963

**SSN**

XXX-XX-XXXX

Search Q

Queries (0)

## Queried Patient Information

No current queries

# Patient Query Continued



Patient Unified Lookup System for Emergencies

Peter Fisher ▶

Search

Review

## Patient Query

**First Name \***

First Name

**Last Name \***

Last Name

**Gender \***

Choose from the selection

**Date of Birth \***

Month

Day

yyyy

**SSN**

XXX-XX-XXXX

Search Q

## Queries (1)

### Queried Patient Information

Name	Date of Birth	Gender	▼ Last Updated	Status	Action
Steve Hardy	04/01/1963	M	Mar 14, 2017 5:00:11 PM	7 records found	+ ↺

# Patient Staging








## Patient Staging

gencie

### Queried Patient Information

Name	Gender	Date of Birth
Steve Hardy	M	04/01/1963

### Possible Patient Records


Location	Name	Gender	Date of Birth	SSN	View Details	Select
Mock Clinic Facility 1	Steve James Hardy	Male	04/01/1963	999-88-6345		<input checked="" type="checkbox"/>
Mock Hospital Facility 1	Steve James Hardy-Smith	Male	04/01/1963	999-88-6345		<input checked="" type="checkbox"/>
	Steve Jim Hardy	Male	04/01/1963	999-89-3300		<input type="checkbox"/>
Mock Hospital Facility 2	Steve James Hardy	Male	04/01/1963	999-88-6345		<input checked="" type="checkbox"/>
	Jim Steve Hardy	Male	04/01/1963	999-89-3300		<input type="checkbox"/>
Mock IDN Facility 1	James Steve Hardy-Smith	Male	04/01/1963	999-88-6345		<input checked="" type="checkbox"/>
Mock IDN Facility 2	James Steve Hardy-Smith	Male	04/01/1963	999-88-6345		<input checked="" type="checkbox"/>

### Combined PULSE Patient

of the P  
d used  
develop

<b>Full Name *</b>	<input type="text" value="Steve Hardy"/>	<b>Friendly Name</b>	<input type="text"/>
<b>Gender *</b>	<input type="text" value="Male"/>	<b>SSN</b>	<input type="text"/>
<b>Date of Birth *</b>	<input type="text" value="April"/>	<input type="text" value="1"/>	<input type="text" value="1963"/>

7 rec



# Document List



Patient Unified Lookup System for Emergencies

Contra Costa-01

Peter Fisher

Log Out

Show Location Status

Search

Review

Patient: John Smith



## John Smith

Edit

Discharge

Deactivate




Gender

M

Date of Birth

Jun 5, 1966

SSN

Status	Title	Class Name	Confidentiality	Creation Date	Size	Location
	Hospital Admission	ALLERGY NOTE	High	May 15, 2008	34.6 kB	St. Sebastian's Hospital
	Hospital Admission	ALLERGY NOTE	High	May 15, 2008	34.6 kB	Santa Rosa Mental Health Institute
	Physical Test	SUMMARIZATION OF EPISODE NOTE	Normal	May 15, 2008	24.6 kB	St. Sebastian's Hospital

# Clinical Document Review



Patient Unified Lookup System for Emergencies

Contra Costa-01

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Log Out

Show Location Status

Document Review: ALLERGY NOTE



Showing  document information

## 2014 Consolidated CDA

<b>Patient</b>	Isabella Jones
<b>Language</b>	(eng)
<b>Date of birth</b>	February 1, 1988
<b>Sex</b>	Female
<b>Race</b>	WHITE
<b>Ethnicity</b>	NOT HISPANIC
<b>Contact info</b>	Work Place: SMALLSYS INC 795 E DRAGRAM TUCSON 72223, USA

# Clinical Document Review



Contra Costa-01

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Log Out

Show Location Status

## ALLERGIES, ADVERSE REACTIONS, ALERTS

Type	Substance	Reaction	Status
ALLERGIES	morphine	rash	Active
ALLERGIES	amoxicillin	anaphylaxis	Active
ALLERGIES	metronidazole	difficulty breathing	Active
ALLERGIES	Macrolide Antibiotics Group	nausea	Active

## MEDICATIONS

Medication	Start Date	Route	Dose	Status
Abilify, „[RxNorm:352309]	20150102000000			Active
Crestor, „[RxNorm:859749]	20150101000000			Active
Sucraid, „[RxNorm:213337]	20150217000000			Active
Dilantin, „[RxNorm:855871]	20150216000000			Active

## PROBLEMS

1 Alteration in Mood[Status-Active]