

Open Health Records Exchange

Will Ross

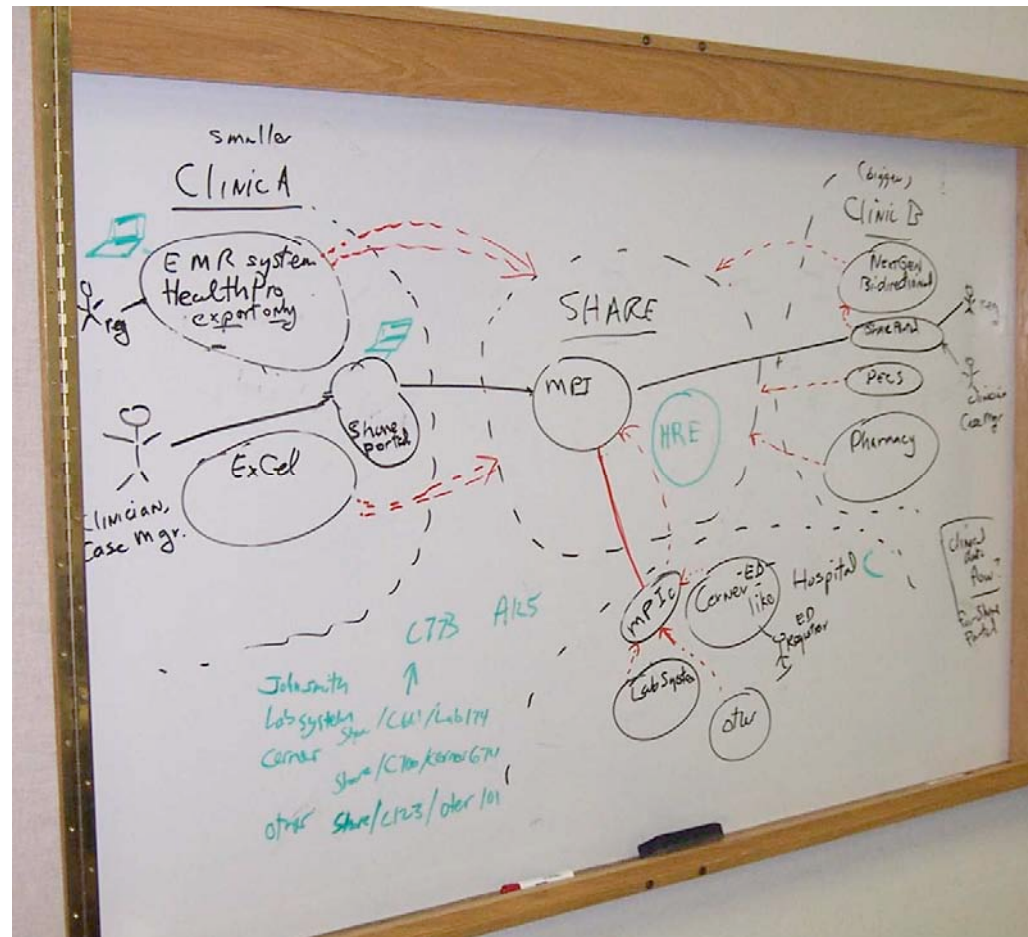
May 2005

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www.OpenHRE.org



Open Health Records Exchange

Rural Health Technology

Mendocino SHARE

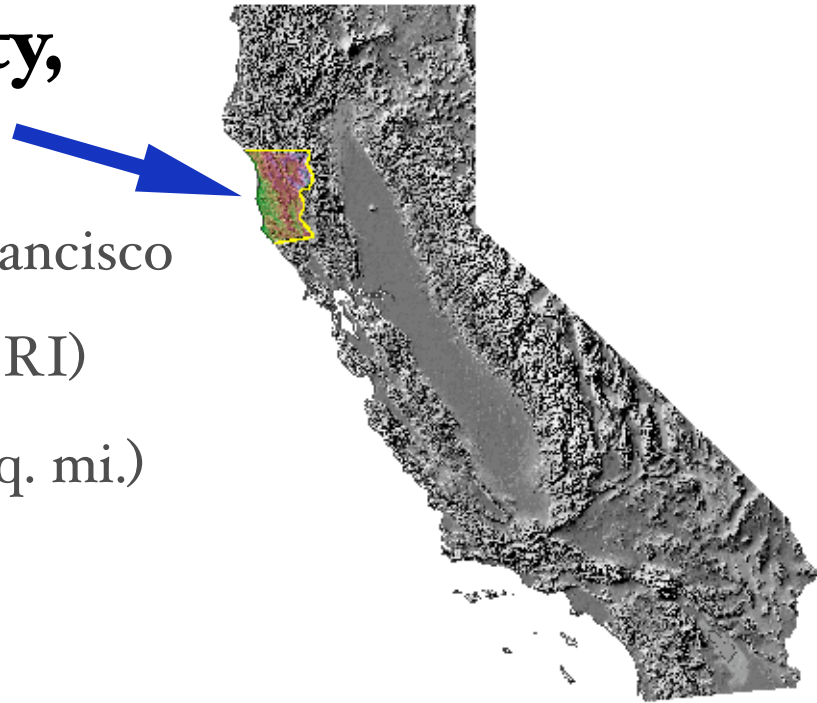
Exchanging Health Information

OpenHRE

Rural Health Technology

Mendocino County, California

- 120 miles north of San Francisco
- 3,500 square miles (DE + RI)
- Population 85,000 (24 / sq. mi.)
- Largest city 15,000
- 3 hospitals, 165 total beds
- Long distances between small towns



Rural Health Technology

Proxy for a Typical Rural County

- Low public health status indicators
(Ranks in the bottom 25% of counties in California)
- Small hospitals as satellite operations with HIT data centers hundreds of miles away
- Absence of enterprise HIT champions among ambulatory clinics
- Limited broadband availability

Rural Health Technology

How to Dismantle an ASP

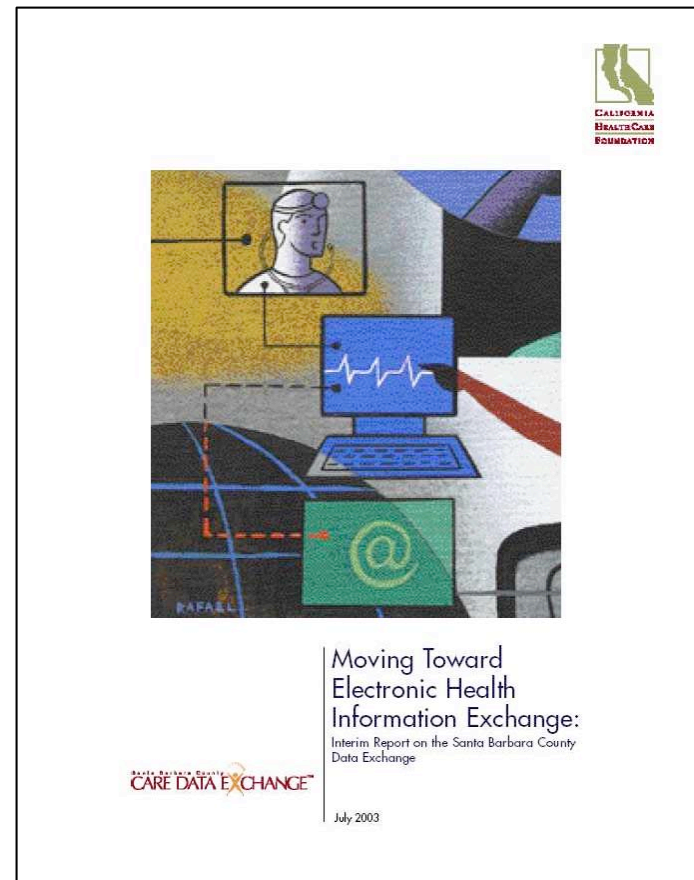
- Summer 2000: Following “best practice” advice from HIT professionals, clinics in rural Mendocino County launch ASP solution to deliver Practice Management Software (PMS) from a single data center
- Technically solid ASP design: Windows PMS app served over 56K circuits via Citrix terminal sessions
- Business Process Failure: ASP as delivered is intermittent and undependable due in part to rural broadband issues
- Summer 2002: ASP dismantled in favor of small local PMS servers at each clinic site

Rural Health Technology

July 2003

Report on the Santa
Barbara County Care
Data Exchange
(SBCCE)

Funded by the
California Healthcare
Foundation (CHCF)



<http://www.chcf.org/topics/view.cfm?itemID=21086>

Rural Health Technology

Rural Health Record Exchange

- Clone of SBCCDE
- Demonstrate functionality in a rural county
- Represent rural safety net clinics in NHII
- Develop in parallel to local adoption of EHR
- Use open standards for interoperability
- Release public domain HRE solution

Open Health Records Exchange

Rural Health Technology

Mendocino SHARE

Exchanging Health Information

OpenHRE

Mendocino SHARE

12 Local Project Partners

- Alliance for Rural Community Health (*n/a*)
- All 6 Community Clinics (*no EHR*)
- 1 Indian Health Service Clinic (*RPMS*)
- All 3 Hospitals (*Cerner, Meditech*)
- County Public Health Department (*no EHR*)

<http://www.ruralcommunityhealth.org/projects/msp.html>

Mendocino SHARE

Project Plan

Phase One -- 2004

- Proof of Concept
- Static data loaded once from three clinical sites

Phase Two -- 2005

- Pilot Test
- Live data updated daily from five clinical sites

Phase Three -- 2006

- Pilot Test
- Live data updated daily from twelve clinical sites

Mendocino SHARE

Funded by Health and Human Services

- August 2003 -- Grant proposal to HCAP
- November 2003 -- HCAP proposal funded
- February 2004 -- Software RFP published
- April 2004 -- Browsersoft selected as vendor
<http://www.browsersoft.com/>
- August 2004 -- Proof of Concept delivered

Mendocino SHARE

Proof of Concept (2004)

50,000 simulated patients in datafile

Clinical data from 40,000 encounters by 1,800 patients

Patient lookup limited to three values for demonstration purposes

ARCH Demo Application - Select Query Traits - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

https://66.55.56.134/ArchDemo5/processLo

will ross home page Squirrel Mail CAPCommunity OpenEDIX Gmail SHARE Portal

Alliance for Rural Community Health

Mendocino SHARE Prototype 0.0.5

Patient Lookup

First identify the person whose data is desired, then retrieve the history of that person.

Enter any portion of fields listed below then click **Query** to find the person matching input parameters
(It will try to find all individuals with values beginning with the information entered)

User:

Last Name	First Name	Sex
<input type="text"/>	<input type="text"/>	<input type="text"/>

powered by
OPEN Med

Done

Mendocino SHARE

Proof of Concept (2004)

Record Locator Service (RLS)

Patient query returns suggested correlations for duplicate patient identities

Sort by patient name

ARCH Demo Application - Select Patient to View - Microsoft Internet Explorer

Address: https://66.55.56.134/ArchDemo5/processDisplayRecords.do

Alliance for Rural Community Health

Mendocino SHARE Prototype 0.0.5

Select Page
Beginning with
RAMAN, CLAUDE
RAMAN, PHILIP
RAMSAY, MIRIAM

Patients Matching Search Criteria: PatientName = 'RA' Sex = ''
Click on the Patient name to view their PECS history.
Patient Records 16 thru 30 of 28

Patient Name	Group	Sex	DOB	Facility	Corr	Display Group
RAMAN, PHILIP	<input checked="" type="checkbox"/>	M	04/07/1944	MCC//		
RAMAN, PHILIP	<input checked="" type="checkbox"/>	M	04/07/1944	MCC/HPRO/	100	Show Grouped
RAMAN, PHILLIP	<input checked="" type="checkbox"/>	M	04/07/1944	MCHC//	90	
RAMAN, RAYMOND		M	12/01/1941	MCHC//		
RAMAN, ROBERT	<input checked="" type="checkbox"/>	M	07/12/1937	MCC//		
RAMAN, ROBERT	<input checked="" type="checkbox"/>	M	07/12/1937	MCC/HPRO/	100	Show Grouped
RAMAN, ROBERT	<input checked="" type="checkbox"/>	M	07/12/1937	MCHC//	100	
RAMAN, ROY		M	03/01/1941	MCHC//		
RAMAN, SHIRLEY		F	10/27/1948	MCHC//		
RAMSAY, ABIGAIL	<input checked="" type="checkbox"/>	F	07/15/1969	MCC//		Show Grouped
RAMSAY, ABIGAIL	<input checked="" type="checkbox"/>	F	07/15/1969	MCC/HPRO/	100	
RAMSAY, ALICE	<input checked="" type="checkbox"/>	F	09/01/2000	MCC//		Show Grouped
RAMSAY, ALICE	<input checked="" type="checkbox"/>	F	09/01/2000	MCC/HPRO/	100	
RAMSAY, BONNIE		F		NA		
RAMSAY, DOROTHY		F	01/12/1997	MCC/HPRO/		

Navigate within your results:

powered by

Done Internet

Mendocino SHARE

Proof of Concept (2004)

Display longitudinal patient record

Assemble on the fly from patient data available to the RLS

Sort by date of visit

The screenshot shows a web browser window titled "ARCH Demo Application - View Patient Clinical Records - Microsoft Internet Explorer". The address bar shows the URL: <https://66.55.56.134/ArchDemo5/queryRecords.do?patients=198&button=Show+Grouped&patients=208&patients=21>. The page header includes the logo for "Alliance for Rural Community Health" and the text "Mendocino SHARE Prototype 0.0.5".

On the left side, there is a "Display Result Page" section with a list of dates: 0 from 03/01/2004, 1 from 08/11/2003, 2 from 12/26/2002, 3 from 05/19/2002, and 4 from 08/13/2001.

The main content area is titled "Clinical Records 1 thru 15 of 67" and "Selected Patient: RAMAN, ROBERT". It contains a table with the following columns: Date, Facility, Provider, Weight, Height, Pulse, Resp, BP, HgbA1c, and BP<130/80. The table lists 15 records of clinical data for the patient.

Below the table, there are navigation buttons: "Prev" and "Next". At the bottom of the page, there are buttons for "Select Another Patient from List", "Return to Patient Query", "Help", and "Logout". The footer includes the text "powered by OpenMed".

Date	Facility	Provider	Weight	Height	Pulse	Resp	BP	HgbA1c	BP<130/80
03/01/2004	MCC//	Edwards	154		64	16	126/75		
02/27/2004	MCHC//	Carnevale	184		96	20	132/84		
01/29/2004	MCC//	Edwards	152		72	16	142/64		
01/05/2004	MCC//	Edwards	154		60	16	134/74		
12/29/2003	MCHC//	Carnevale	183		96	20	142/92		
12/08/2003	MCC//	Edwards	151		56	14	114/56		
11/24/2003	MCHC//	Carnevale	180	64	96	20	144/98		
11/10/2003	MCC//	Edwards	152		76	16	118/64		
10/03/2003	MCC//	Edwards	140		60	16	104/60		
09/19/2003	MCC//	Edwards	147		72	16	122/62		
09/05/2003	MCHC//	Carnevale	180		92	20	150/92		
08/29/2003	MCC//	Edwards	142	66	76	12	106/60		
08/15/2003	MCC//	Edwards	140	66			/		
07/14/2003	MCC//	Edwards	140		64	14	138/62		
06/30/2003	MCC//	Edwards	140	66	76	14	140/60		

Mendocino SHARE

Pilot Test -- August 2005

- Live data from 5 community clinics
- HIPAA agreements in place
- Expand patient lookup demographics
- Introduce access control service
- Harden MPI search options

Open Health Records Exchange

Rural Health Technology

Mendocino SHARE

Exchanging Health Information


OpenHRE

Exchanging Health Information

HIT Taxonomy

Level	Description	Examples
1	Non-electronic data	No PC or Information Technology
2	Machine-transportable data	Fax, E-mail
3	Machine-organizable data	Structured messages, non-standard content, custom data
4	Machine-interpretable data	Structured messages, standardized content, clinical data

Where We Are



Where We're Going

[Overhage, October 2004]

Exchanging Health Information

July 2004

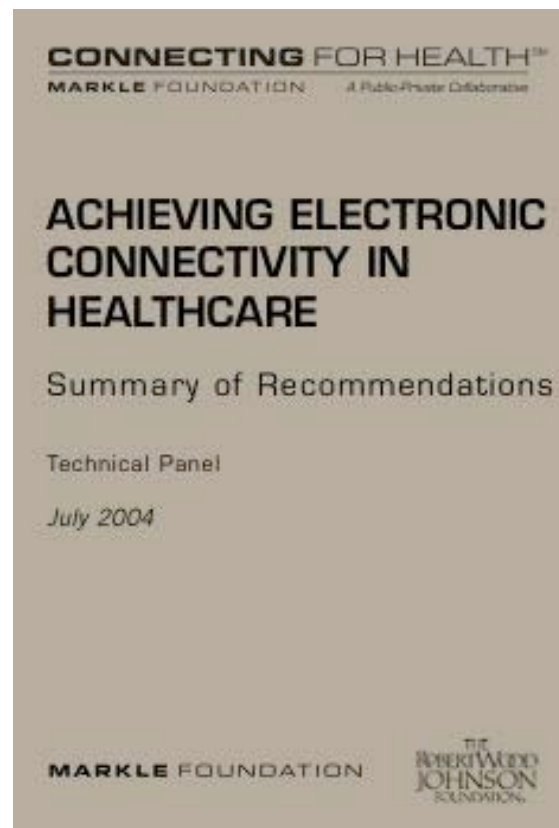
Public-Private partnership

All major stakeholders

Incremental roadmap

Practical actions

Achievable goals

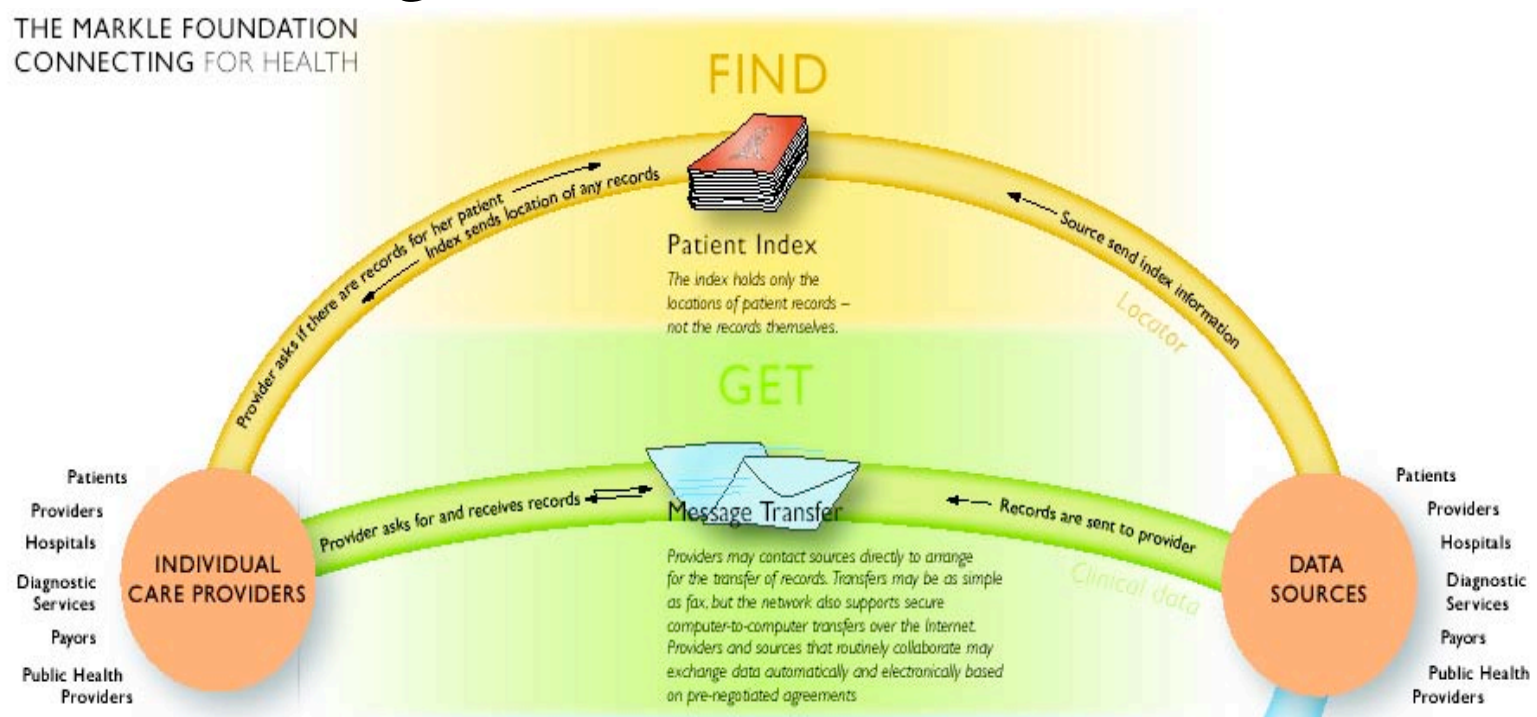


<http://www.connectingforhealth.org>

Exchanging Health Information

Connecting for Health Model

THE MARKLE FOUNDATION
CONNECTING FOR HEALTH

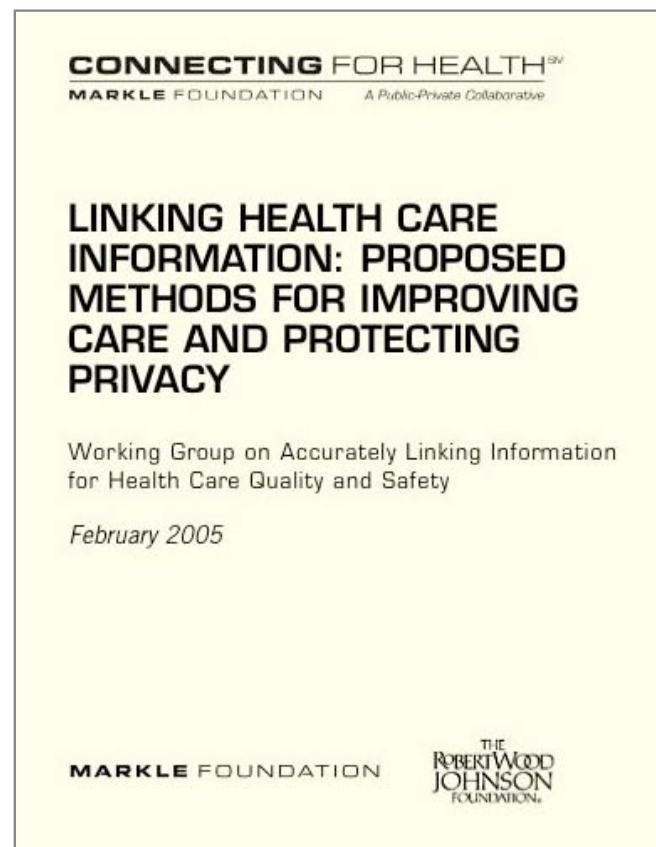


<http://www.connectingforhealth.org>

Exchanging Health Information

February 2005

Collaborative
development of a
public domain solution
for HIPAA compliant
Health Record Linking

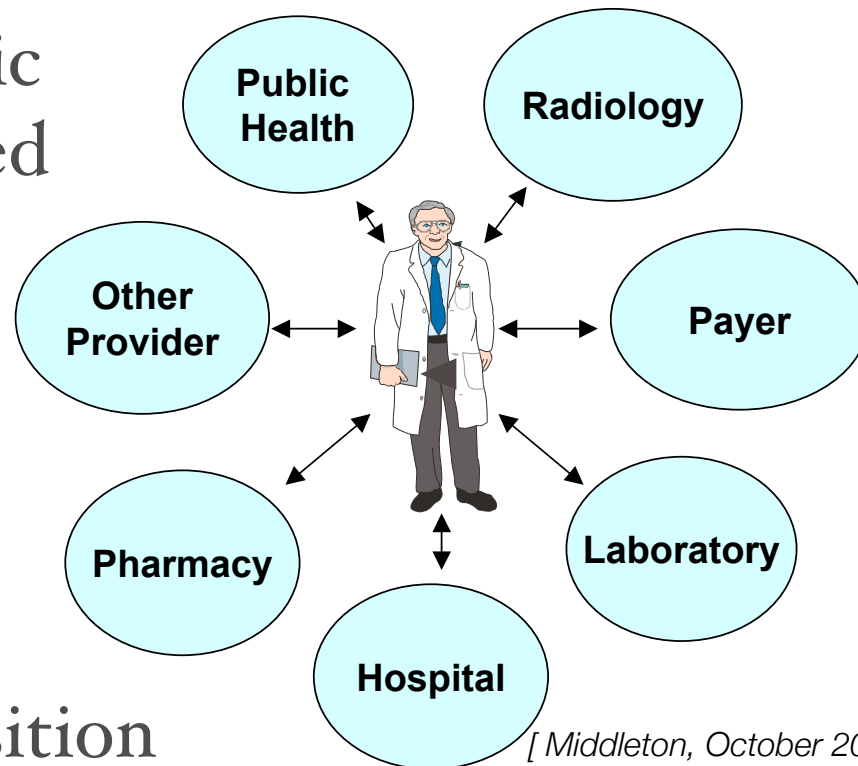


<http://www.connectingforhealth.org>

Exchanging Health Information

Clinical Workflow Unchanged

- Provider-centric encounter-based clinical information work flow
- Incremental, non-disruptive workflow transition



[Middleton, October 2004]

Open Health Records Exchange

Rural Health Technology

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Exchanging Health Information

OpenHRE

Open Health Records Exchange

OpenHRE is not an EHR.

OpenHRE is a standards-based, scalable multi-level Record Locator Service with federated records exchange and secure access control.

Open Health Records Exchange

OpenHRE Services

- Record Locator Service (RLS)
- Clinical Data Exchange Service (CDE)
- Authentication and Access Decision Service (AAD)

Open Health Records Exchange

Record Locator Service (RLS)

- Use RLS within an organization to build an enterprise Master Person Index (MPI)
- Use RLS between organizations to build a community MPI for a RHIO
- J2EE-based CORBA service
- Apache Axis based web service

Open Health Records Exchange

Clinical Data Exchange Service (CDE)

- Retrieves records from EHR systems or their proxies using federated queries
- Records cached, de-identified and formatted for presentation using the UCLA DataServer running on Apache Cocoon

<http://www.mii.ucla.edu/dataserver/>

Open Health Records Exchange

Authentication and Access Decision Service (AAD)

- Kerberos and LDAP-based user authentication, encryption and password management
- Sun's XACML access decision service
- Web-based security administration tool

Open Health Records Exchange

The OpenHRE RLS is based on Dave Forslund's OpenEMed project, originally developed at Los Alamos National Laboratory



<http://openemed.org/>

Open Health Records Exchange

Sites Working With OpenEMed

- OpenHRE
- Mayo Clinic
- City of Hope Medical Center
- Los Alamos National Laboratory
- New Mexico State Immunization Registry
- University of Maastricht, The Netherlands

Open Health Records Exchange

August 2004

OpenHRE
Portal
Launched

Use Cases

Software
Development Plan

The screenshot shows the OpenHRE.org website interface. At the top, there is a navigation bar with 'OPENHRE.ORG' on the left and 'MAY 08, 2005 - 10:55 AM' on the right. Below this is a blue banner with the 'OpenHRE™ .org' logo and the tagline 'Open Source Health Records Exchange'. To the right of the banner is a photo of four healthcare professionals. The main content area is divided into several sections:

- Main Menu:** A vertical list of links including Home, FAQ, News, Topics, Downloads, Discussions, Web Links, Search, and Recommend Us.
- Online:** A section indicating 'We have 1 guest and 0 members online' and a welcome message for guests.
- Welcome to OpenHRE™.org:** A central message encouraging users to comment on use cases and submit news. It includes a list of mission and goal statements.
- RLS versus MPI:** A news item posted by 'grodecki' on Saturday, April 16, 2005, at 11:14 PM, with 26 reads. It features the OpenHRE logo and lists three services: Record Locator Service, Records Exchange Service, and Authorization and Access Decision Service.
- Login:** A form with fields for Username and Password, a 'Remember me' checkbox, and a 'Login' button. Links for 'Log in Problems?' and 'New User? Sign Up!' are also present.
- Categories Menu:** A list of categories with their respective dates, such as 'Discussions (Sep 28, 2004)', 'Electronic Health Records (Mar 09, 2005)', 'General (Aug 03, 2004)', 'Health Records Exchange (Aug 25, 2004)', 'Master Patient Index (Aug 04, 2004)', 'National Health Information Network (Jan 19, 2005)', 'Product Reviews (Aug 20, 2004)', and 'Security (Apr 01, 2005)'.

<http://openhre.org/>

Open Health Records Exchange

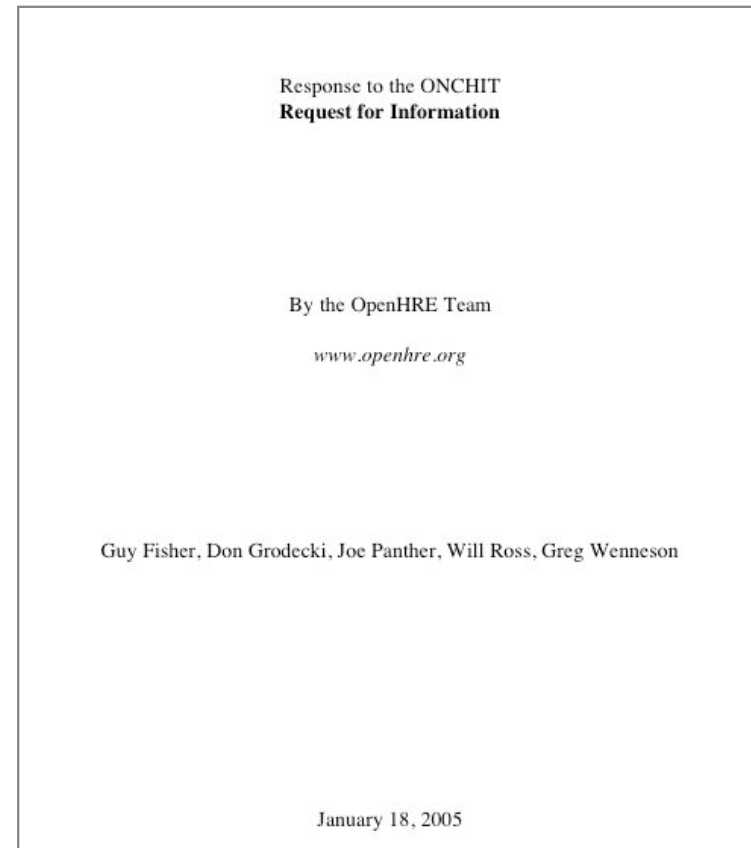
December 2004

OpenHRE invited to participate in
Connecting for Health Technical Steering
Committee

Open Health Records Exchange

January 2005

OpenHRE
publishes response
to the RFI from
ONCHIT



<http://www.os.dhhs.gov/healthit/rfi.html>

Open Health Records Exchange

OpenHRE Participants

- Mendocino SHARE
- Browsersoft, Inc.
- Center for Community-Based Health Informatics
- *your name here?*

References

1. Brailer, Augustinos, Evans & Karp, July 2004, “Moving Toward Electronic Health Information Exchange”
2. Grodecki, November 2004, “OpenHRE Software Development Plan”
3. Lumpkin, October 2004, “What Is Connecting for Health?”
4. Middleton, October 2004, “The Value of EHR and Healthcare Information Exchange”
5. Overhage, October 2004, “A Short History of the Indiana Health Information Exchange”