

Open Health Records Exchange

Will Ross

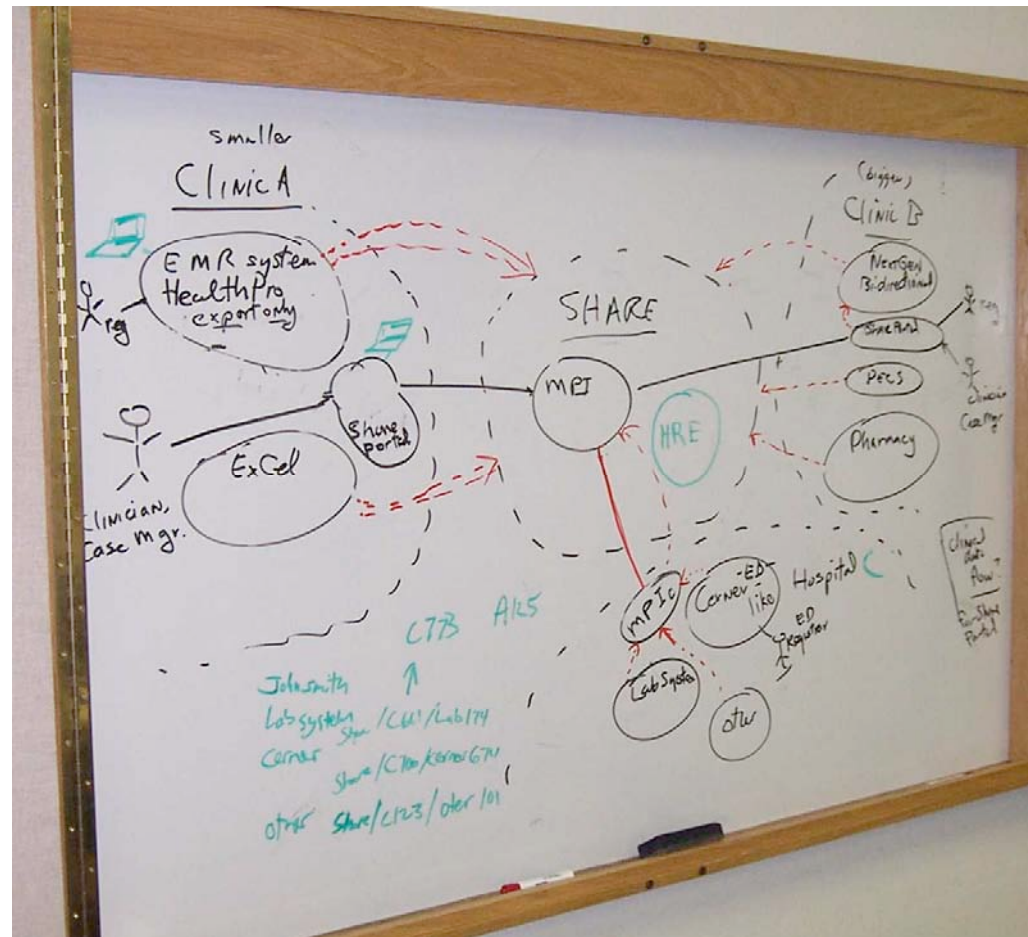
May 2005

wross@openhre.org

[9]



www.OpenHRE.org



Open Health Records Exchange

Rural Health Technology

Mendocino SHARE

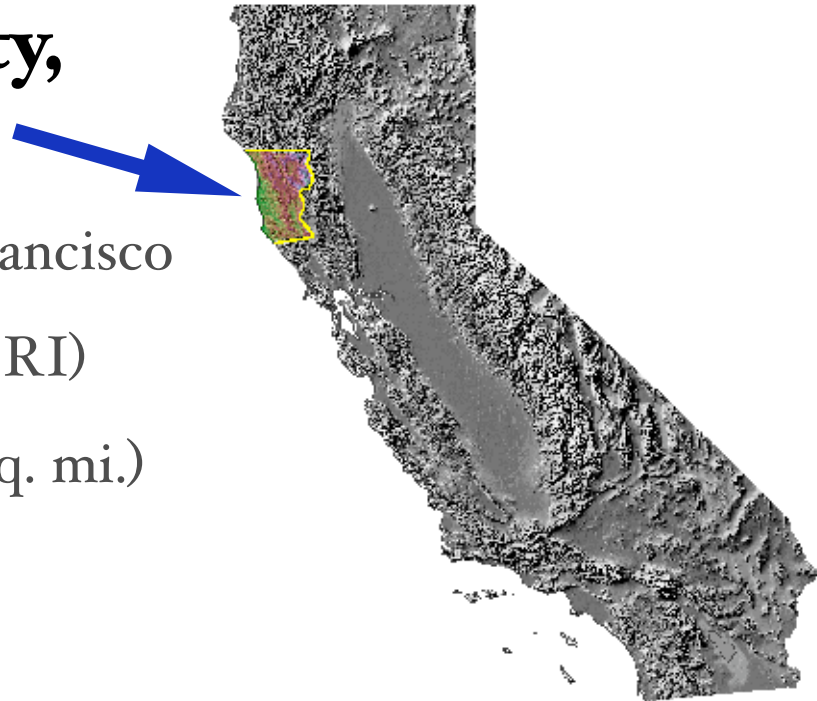
Exchanging Health Information

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

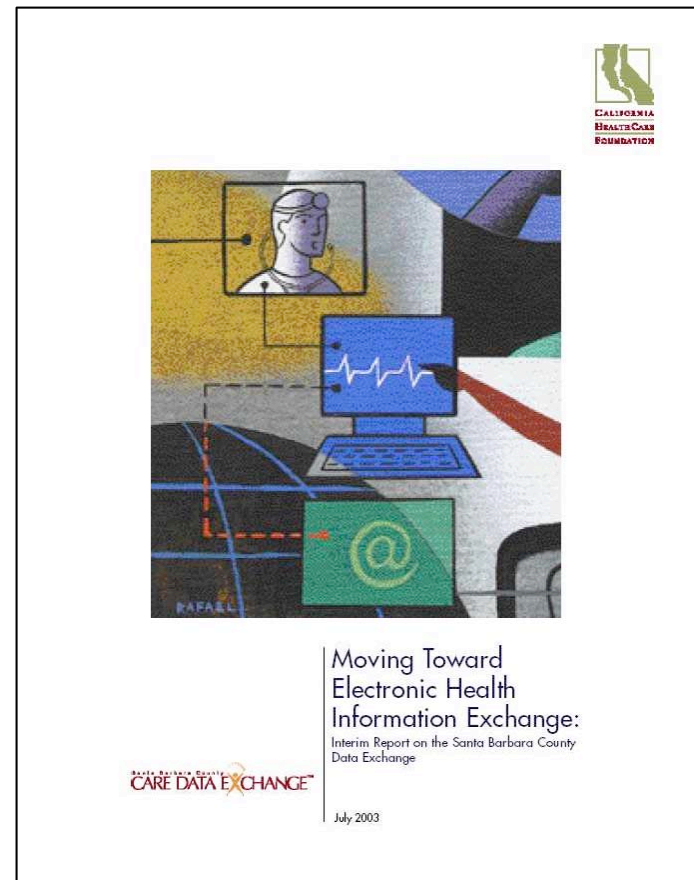
- Summer 2000: Following “best practice” advice from HIT professionals, clinics in rural Mendocino County launch ASP solution to deliver Practice Management Software (PMS) from a single data center
- Technically solid ASP design: Windows PMS app served over 56K circuits via Citrix terminal sessions
- 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

The screenshot shows a web browser window displaying the Mendocino SHARE Prototype 0.0.5 interface. The page title is "Alliance for Rural Community Health" and the subtitle is "Mendocino SHARE Prototype 0.0.5". The search criteria are "PatientName = 'RA' Sex = ''". The results show 16 patient records, with the first 16 records displayed. The table has columns for Patient Name, Group, Sex, DOB, Facility, Corr, and Display Group. The records are sorted by patient name.

| 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/ | | |

Navigation: [Prev](#) [Next](#)

Buttons: [Make Another Query](#) [Help](#) [Logout](#)

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 contains 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: "Navigate within your results: Prev Next". At the bottom, 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

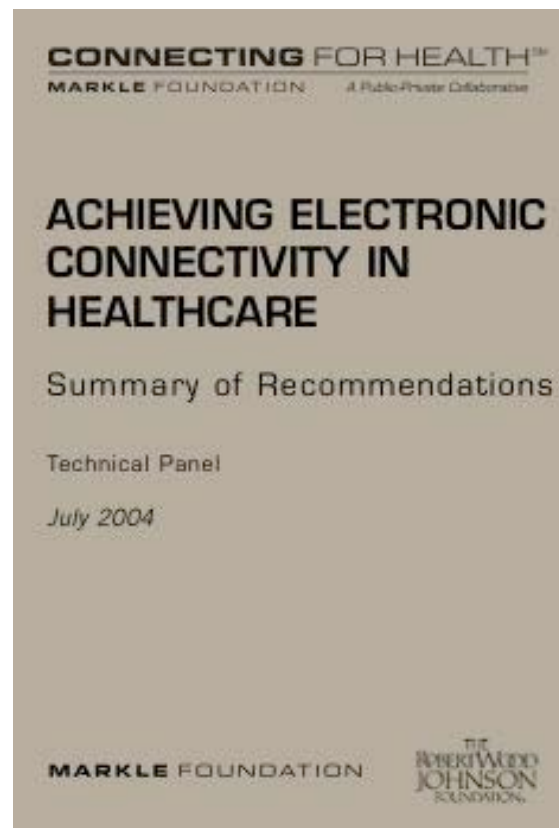
Public-Private partnership

All major stakeholders

Incremental roadmap

Practical actions

Achievable goals

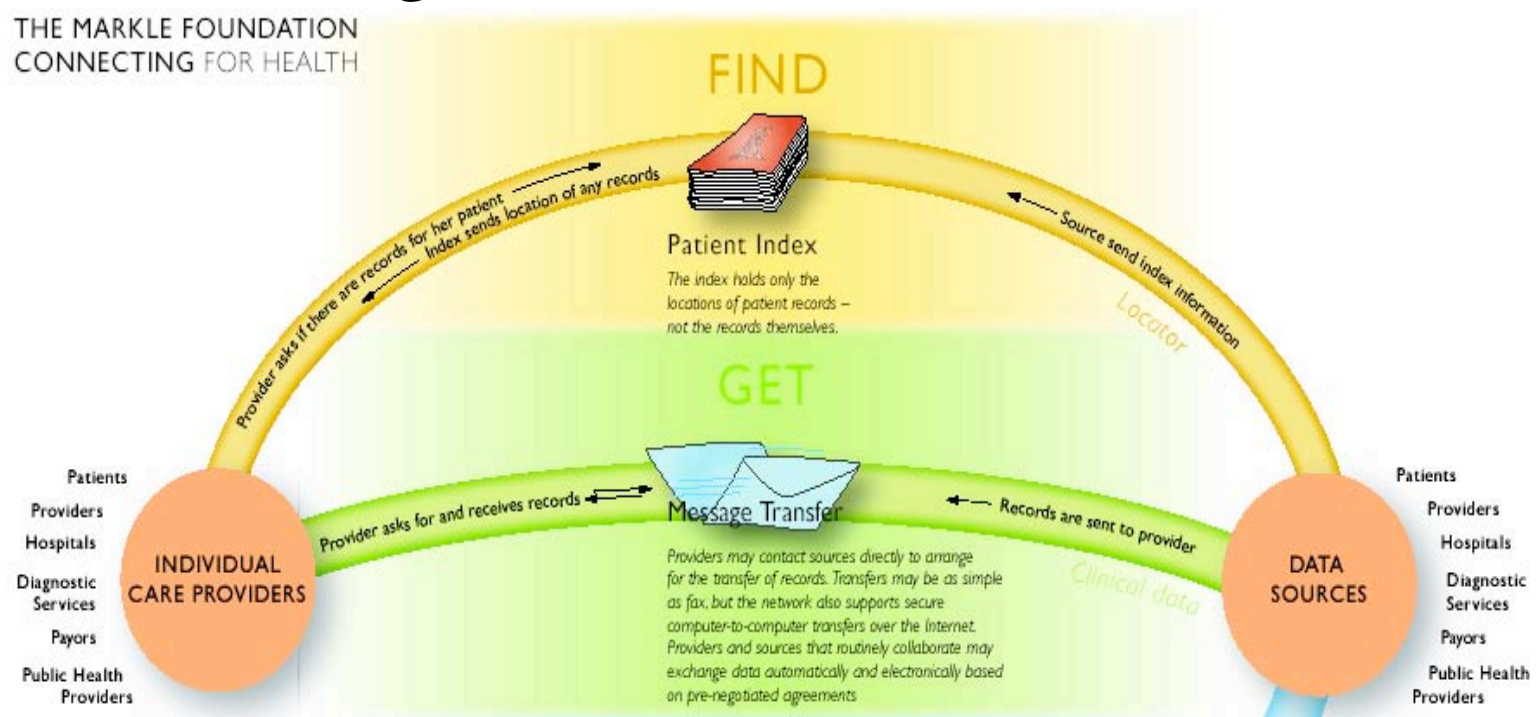


<http://www.connectingforhealth.org>

Exchanging Health Information

Connecting for Health Model

THE MARKLE FOUNDATION
CONNECTING FOR HEALTH

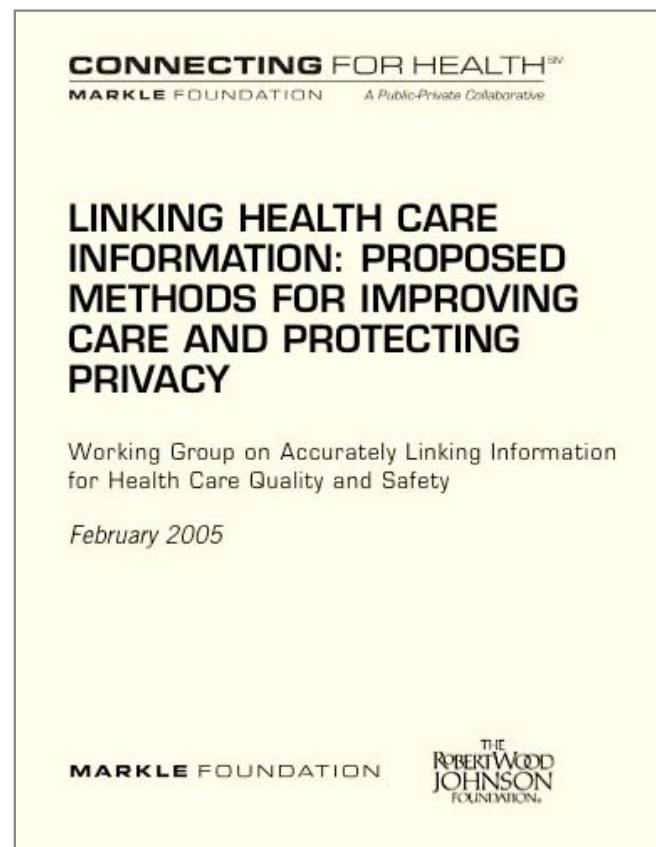


<http://www.connectingforhealth.org>

Exchanging Health Information

February 2005

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

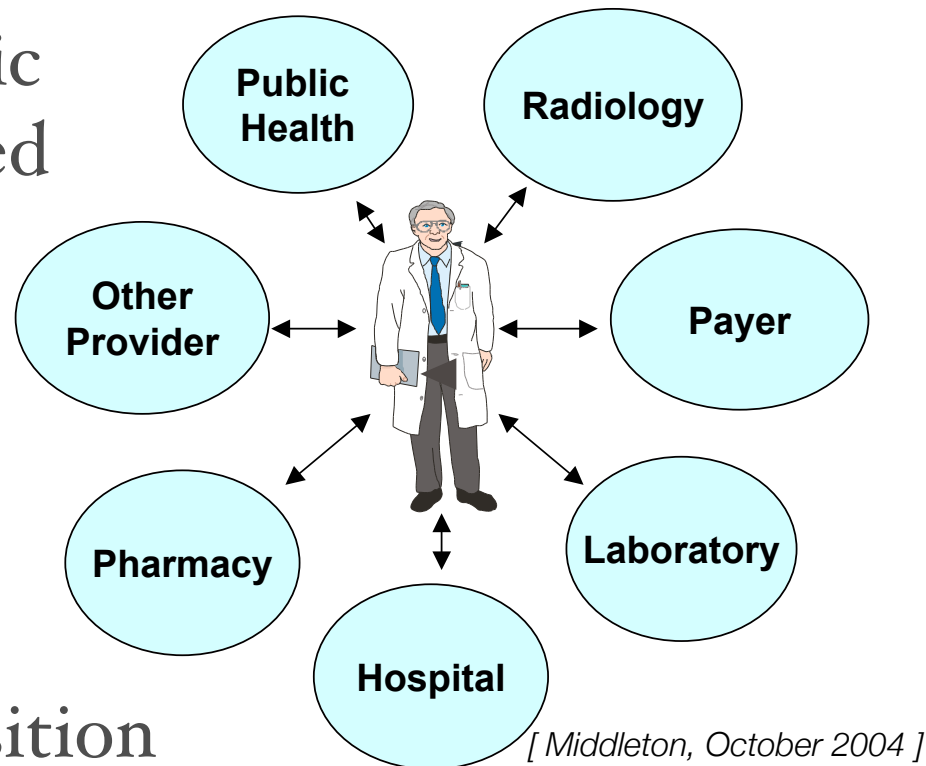


<http://www.connectingforhealth.org>

Exchanging Health Information

Clinical Workflow Unchanged

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



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 large blue banner with the 'OpenHRE™ .org' logo and the tagline 'Open Source Health Records Exchange'. To the right of the banner is a photograph of four healthcare professionals. The main content area is divided into several sections:

- Main Menu:** A vertical sidebar on the left containing links for Home, FAQ, News, Topics, Downloads, Discussions, Web Links, Search, and Recommend Us.
- Welcome to OpenHRE™.org:** A central message encouraging users to comment on use cases and submit news. It includes a mission statement and a goal.
- Online:** A section indicating 'We have 1 guest and 0 members online' and a prompt for guests to become members.
- 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 on the right for user authentication, including 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 vertical list on the right side of the page with links to various categories such as Discussions, Electronic Health Records, General, Health Records Exchange, Master Patient Index, National Health Information Network, Product Reviews, and Security.

<http://openhre.org/>

Open Health Records Exchange

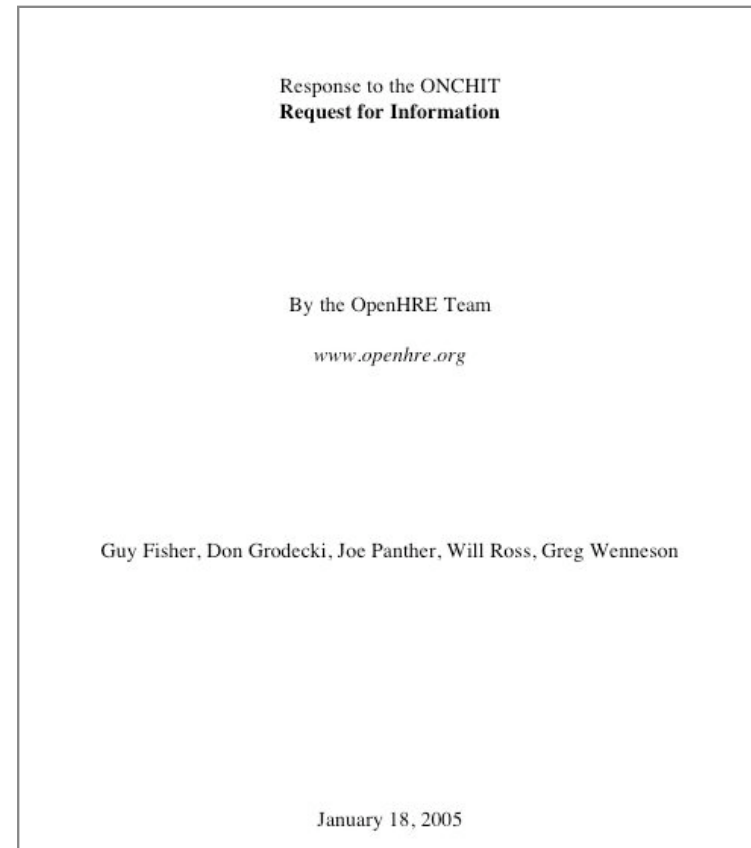
December 2004

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”