

# **‘Open Source’ Health IT Systems in West Virginia**



*4/15/2010*

# Peter J. Groen

## Currently

- Board of Directors, WV Health Information Network (WVHIN)
- Board of Directors, Medical Alliances & iConecto.Com

## Formerly

- Deputy ACIO, Veterans Health Administration (VHA)
- National Director, Health IT Sharing Program
- National Director, VHA Telecommunication Services
- National Director, Hybrid Open Solutions & Technology
- National Director, Medical Information Security Services
- National Project Manager, Veterans Health Administration(VHA),  
e.g. CPRS Implementation, GCPR/FHIE, etc.
- CIO, VA Medical Center, Columbia, S.C.
- CIO, VA Medical Center, Atlanta, GA
- VP for Government Liaison, WorldVista Organization
- Assoc. Director, Shepherd University Research Corporation (SURC)
- Adjunct Faculty, Computer & Information Systems, Shepherd University

Vista\_Imaging\_System

File Options View Reports Help Testing

Patient: MADTL,F F 4 Images


1924 500505000 NON-VETERAN (OTHER)

MADTL,F F: 4 Images found.


Image listing :MADTL,F F

#	PROC. DATE	PROCEDURE	SHORT DESC
1	1998 - 03/24	COL	SIGMOID COLON DIVERTICULA
2	1997 - 07/28	GEN. MED.	X-RAY CHEST SINGLE VIEW 7/28/97
3	1997 - 07/28	COL	COLON 7/28/97
4	1992 - 12/24	GEN. MED.	BLEEDING SCAN FOR POSSIBLE GI BLEED 12/24/92


Abstracts : MADTL,...



1 SIGMOID COLON DIVERT  
COL 1336 - 03/24 -Group



2 X-RAY CHEST SINGLE  
GEN. MED. 1337 - 07/28



3 COLON 7/28/97  
COL 1337 - 07/28

Vista CPRS in use by: Clerk\_Pharm (LOCALHOST)

File Edit View Tools Help

MADTL,F F 500-50-5000 .1924 (74) Visit Not Selected Provider: CLERK,PHARM Primary Care Team Unassigned

Lab Results Laboratory Results - Worksheet - All Results

Table Format:  Horizontal  Vertical

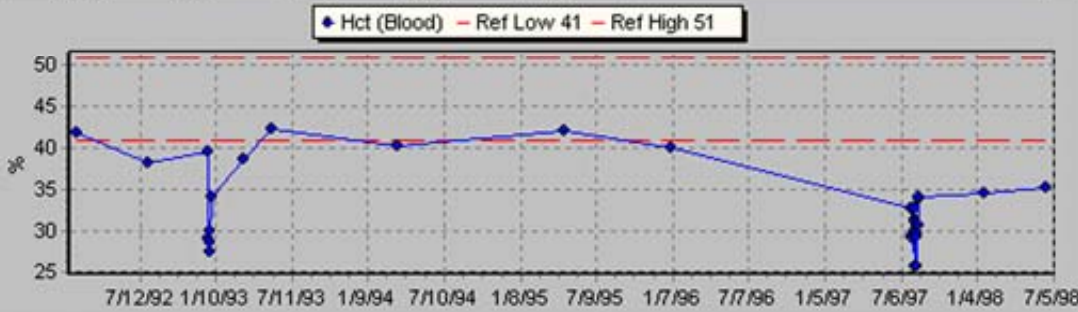
Other Formats:  Comments  Graph

Abnormal Results Only  3D  Values

Date/Time	Specimen	HCT	HGB	MCV	PLT	WBC
06/18/98 00:00	Blood	35.3 L	11.4 L		276	7.1
01/21/98 00:00	Blood	34.6 L	11.6 L	90.4	276	8.1
01/21/98 00:00	Blood	34.6 L	11.6 L	90.4	282	8.1
08/17/97 00:00	Blood	34.1 L	11.3 L	90	549 H	13.7 H
08/16/97 00:00	Blood	33.9 L	11.4 L	89.2	605 H*	15.2 H
08/15/97 00:00	Blood	30.8 L	10.4 L	89	559 H	14.5 H
08/14/97 00:00	Blood	30.7 L	10.2 L	90.7	544 H	18 H
08/13/97 20:36	Blood	30.7 L	10.3 L	89.1	538 H	21.5 H
08/13/97 04:06	Blood	25.7 L*	8.4 L	90	559 H	20.1 H
08/12/97 04:44	Blood	29.4 L	10 L	88.7	596 H	21.6 H

Other Tests: Hct (Blood), Hgb (hb) (Blood), Mcv (Blood), Plt (Blood), Wbc (Blood)

Date Range: Today, One Week, Two Weeks, One Month, Six Months, One Year, Two Years, All Results



KEY: 'L' = Abnormal Low, 'H' = Abnormal High, '\*' = Critical Value, ''\*' = Comments on Specimen

Cover Sheet / Problems / Meds / Orders / Notes / Consults / D/C Summ / Labs / Reports



My Health eVet Home Page

- VA Admin Data**
- Demographics
- Appointments
- VA Patient Record**
- Admissions
- Allergies
- Prescriptions
- Problem List
- Progress Notes
- Discharge Summaries
- Vitals
- Lab Chemistry
- Lab Pathology
- Lab Cytology
- Radiology

- Self-Entered Information**
- Personal Info
- Medical Events
- Medications
- Allergies
- Test Results
- Locations of Treatment

# MY HEALTH eVET

Your Personal Health Journal

[HELP](#)

[Health Ed Library](#) | [My Health eVet](#) | [Feedback](#) | [Search](#) | [Facilities Locator](#) | [FAQs](#) | [Log Off](#)

## Appointments

Date	Appointment Type	Clinic	Status	Site Number
2001-8-20T12:30	REGULAR	BLDG 23-DENTAL CL WILLIFORD H	INPATIENT APPOINTMENT	99999
2001-7-31T08:00	REGULAR	BLDG 23-DENTAL CL WILLIFORD H	INPATIENT APPOINTMENT	99999
2001-1-22T10:30	REGULAR	3B-165 UROLOGY WEINSTEIN	INPATIENT APPOINTMENT	99999
2001-1-8T13:30	REGULAR	OUTPATIENT LAB MOD E	INPATIENT APPOINTMENT	99999
2001-1-8T12:30	REGULAR	BLDG 100-2ND FL ULTRASOUND 1	INPATIENT APPOINTMENT	99999
2000-9-7T09:00	REGULAR	3B-WOUND CLINIC	INPATIENT APPOINTMENT	99999
2000-8-31T13:00	REGULAR	3B-139 NON INVASIVE VAS LAB	INPATIENT APPOINTMENT	99999
2000-5-18T09:00	REGULAR	3B-WOUND CLINIC	INPATIENT APPOINTMENT	99999
2000-5-2T13:20	REGULAR	4D-CARDIO BIALOW CONS	INPATIENT APPOINTMENT	99999
2000-5-2T13:00	REGULAR	4C-EKG CLINIC WARD	INPATIENT APPOINTMENT	99999

# VistA – Architecture & Capabilities

- Client / Server Technology
- OpenVMS / Windows Operating System
- ANSI 'M' Computer Language
- VistA Kernel & Fileman DBMS
- 100+ Integrated VistA Applications – Admin / Clinical  
... EHR, PHR, MPI, CDR, HIE ...
- Standard APIs & Interface Engine
- GUI Front End – Windows & Web
- LAN – GigaEthernet; Fiber Backbone & Cat 5+
- WAN – ATM; 'Bandwidth on Demand'

# VistA & Health IT Standards

*- Heavily Standards Based -*

- Technical Standards
- Data Standards
- Messaging Standards
- Terminology Standards
- Imaging Standards
- Telecommunications Standards
- Standards Code Sets (ICD, CPT, LOINC, SNOMED)

# VA VistA – Historic Commitment to Continuous Improvement

- Continuous incremental enhancements to existing functionality
- Strengthening VistA® in the following ways:
  - Move to a more person focused system
  - Move to standardized, fully sharable health data
  - Increase flexibility to respond to future health needs
  - Lower operational and maintenance costs
  - Modernize & replace older modules , e.g. Lab, Scheduling, etc.
  - Move to modern technologies & architecture
  - Add new modules / capabilities, e.g. PHR, HDR, BHIE, Mobile Health Apps, Genomic Information, etc.

# **VistA Implementations**

*Over 2000 healthcare facilities around the world*

- **VA**
- **IHS (RPMS)**
- **DoD (CHCS)**
- **HHS / CMS**
- **State Veterans Homes**
- **Egypt**
- **Samoa**
- **Germany**
- **India**
- **Nigeria**
- **Jordan**
- **Mexico**
- **Oklahoma**
- **West Virginia**
- **Louisiana**
- **Texas**
- **California**
- **Hawaii**
- **New York**
- **Wyoming**
- **Florida**
- **etc.**

نظام العيادات الخارجية  
O U T P A T I E N T   S Y S T E M

---

Load/Edit Patient Data	ادخال/تعديل بيانات المريض	1
Patient Inquiry	عرض بيانات المريض موجزا	2
View Registration Data	عرض بيانات المريض تفصيليا	3
Make Appointment	تسجيل ميعاد المريض	4
Multiple Appointment Booking	تسجيل مواعيد مجمعه لمريض	5
Display Appointments	استعراض مواعيد مريض	6
Cancel Appointment	الغاء ميعاد/مواعيد المريض	7
Find Next Available Appointment	ايجاد الميعاد التالي المتاح	8
Appointment List	عرض مواعيد العياده	9
Patient Visit	تسجيل تردد المريض	10

الاختيار :

**West Virginia  
“Open for Business”**

**to**

**VistA, RPMS and Other  
Open Source Healthcare Solutions**

# West Virginia Health IT Priorities

**#1 - Availability and widespread use of  
Electronic Health Record (EHR) Systems,  
*... COTS & FOSS***

**#2 – Followed by the implementation of secure  
Health Information Exchange (HIE) networks.**

**#3 – Real transformation occurs when widespread use  
of Personal Health Records (PHR) take hold.**

# **West Virginia – Other HIT Priorities**

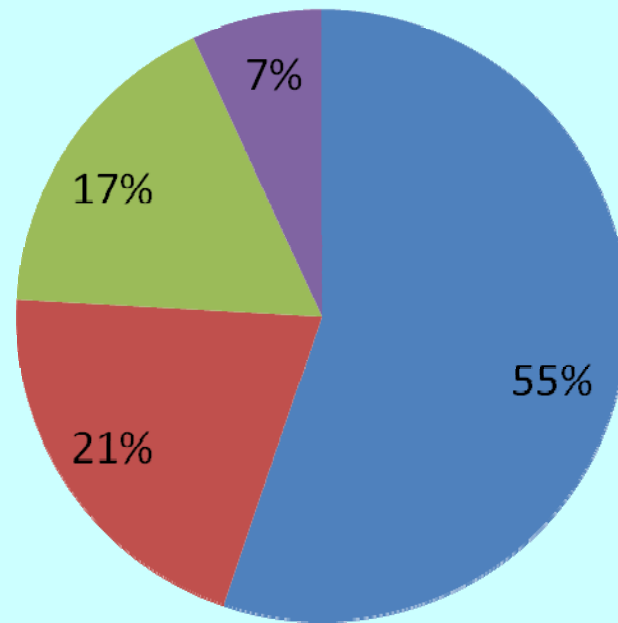
*Similar to Most Other States*

- **HIT Architecture & Standards**
- **ePrescribing (eRx) System**
- **TeleHealth/TeleMedicine**
- **Public Health & BioSurveillance**
- **Online Health Information Resources**
- **Health IT Education & Training**
- **Special Purpose HIT Systems**
- **Mmgt Information & Business Intelligence**
- **HIT Privacy & Security**

# Current status of Health IT/Electronic Medical Record (EMR) systems in WV Hospitals

## HIT/EMR Systems

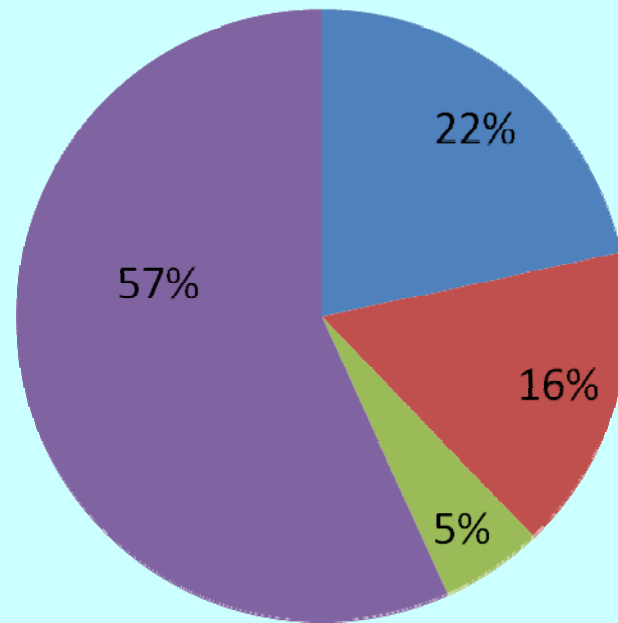
■ Implemented ■ Underway ■ Planned ■ No Plans



# Current status of Health IT/Electronic Medical Record (EMR) systems in WV Clinics & County Health Depts

## HIT/EMR Systems

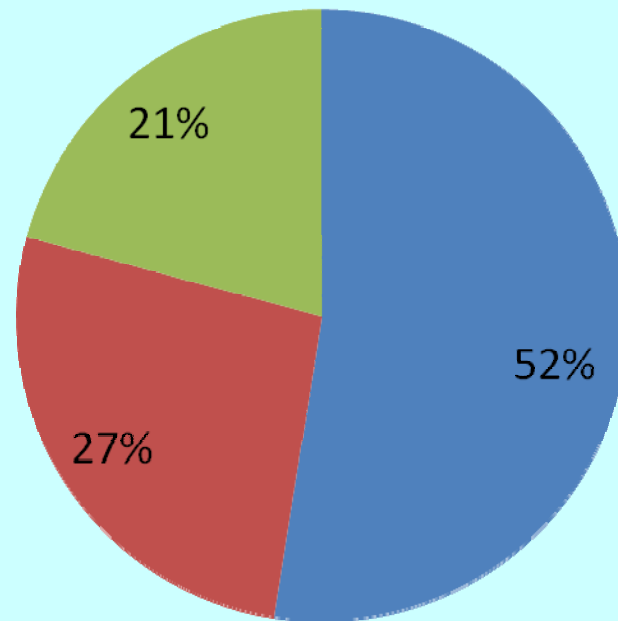
■ Implemented ■ Underway ■ Planned ■ No Plans



# Type of medical record is used in your private practice?

## Medical Record

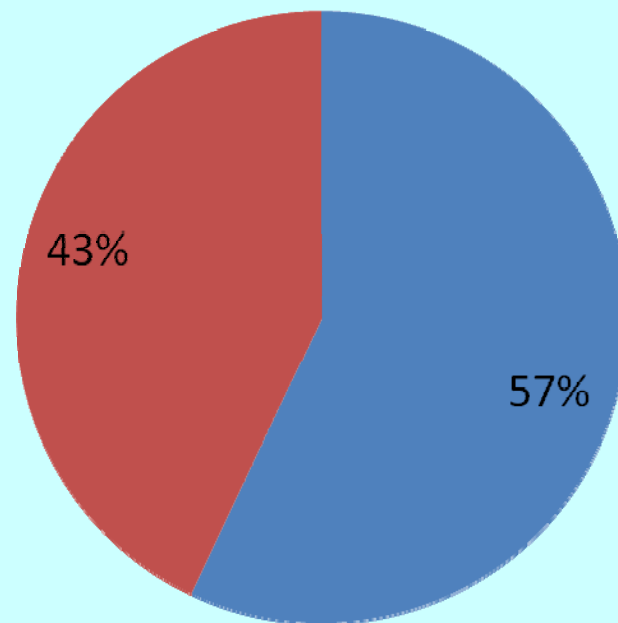
■ Paper ■ Electronic ■ Hybrid



# Do you use a Practice Management (PM) system?

## PM Software

■ Yes ■ No



# VistA & RPMS in West Virginia

- **VistA** is the most widely deployed EHR System in West Virginia Hospitals
- **RPMS** is the most widely deployed EHR System in Major Ambulatory Clinics, e.g. FQHC Clinics

# VistA & RPMS in West Virginia

## Existing Organizations & Activities

- RPMS & Community Health Network of West Virginia
  - 40 Community Clinic Sites
- VistA & WV State Hospitals
  - 7 State Hospitals
- VistA & VA Medical Centers
  - 4 Hospitals
  - 8 Outpatient Clinics
  - 4 Nursing Homes
- VistA & State Veterans Homes
- VistA & RPMS at Universities
  - Shepherd University Nursing School
  - Shepherd Student Health Center
  - WV School of Osteopathic Medicine
- VistA/RPMS & WV Health IT Corporations
  - KRM Associates Inc.
  - Shepherd University Research Corporation (SURC)
  - Community Health Network of West Virginia (CHN WV)
  - West Virginia Medical Institute (WVMI)

# VistA & RPMS in West Virginia

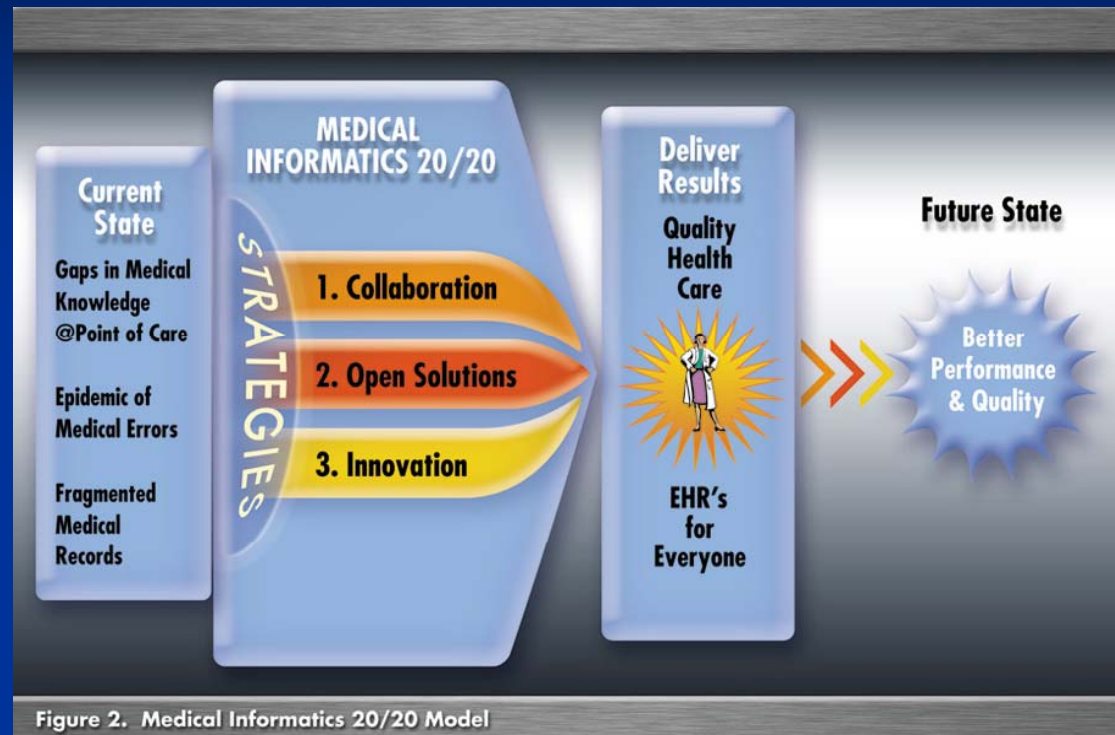
## *The Promise Medical Informatics Holds for West Virginia*

- **Creating jobs and building the workforce of the 21<sup>st</sup> century for West Virginia**
- **Attracting new businesses to West Virginia, i.e. Medical Informatics organizations**
- **Implementing a low cost, interoperable ‘Open’ Electronic Health Record (EHR) systems in West Virginia**

*VistA and/or RPMS have proven to be the most cost /beneficial solution available for hospitals and clinics – site examples*

- **Implementing a ‘Open’ Personal Health Record (PHR) system for West Virginia citizens**
- **Implementing an ‘Open’ Health Information Exchange (HIE) Network for West Virginia**
- **Creating Medical Informatics education and training programs to build a more skilled workforce in the state**

# Collaboration, Open Solutions, & Innovation (COSI)



**Key Strategies to help make the future we imagine into a reality.**

## **COSI & VistA – General Observations**

- **'Winning' organizations today have open porous boundaries and must collaborate in order to compete successfully - reaching out to harness external knowledge, resources, and capabilities.**
- **Collaborating with others in the open source community will speed an organizations ability to innovate while also off-loading tremendous costs, just as IBM and others have done.**
- **The bigger the ecosystem the better for all participants. A growing customer base is attracting ever more participants to the 'open' VistA/RPMS platform, e.g. users, vendors, developers, etc.**
- **Need to continue to build the critical mass needed to attract more and more people to the VistA / RPMS ecosystem.**
- **Once an 'open platform' gains traction, there is less and less incentive for people to defect to other platforms.**

## COSI & VistA – Mmgt Observations

- Leadership is one of the keys to success for the community
- Decentralization vs Centralization of management is always an issue. *Minimum central control* is the preferred model
- Need to continuously redefine current and future roles of people and organizations that make up the VistA/RPMS ecosystem
- Great care must be exercised in developing the governance structure, a minimum set of rules, selection of open source licensing, etc.
- Conflict will emerge. We must create a conflict resolution process for the good of the community.
- Revenue sharing agreements are needed that will enable many new participants and business to flourish in the ecosystem
- We must continuously strive to develop ‘trust’ between people and organizations within the community. *It doesn’t just happen.*

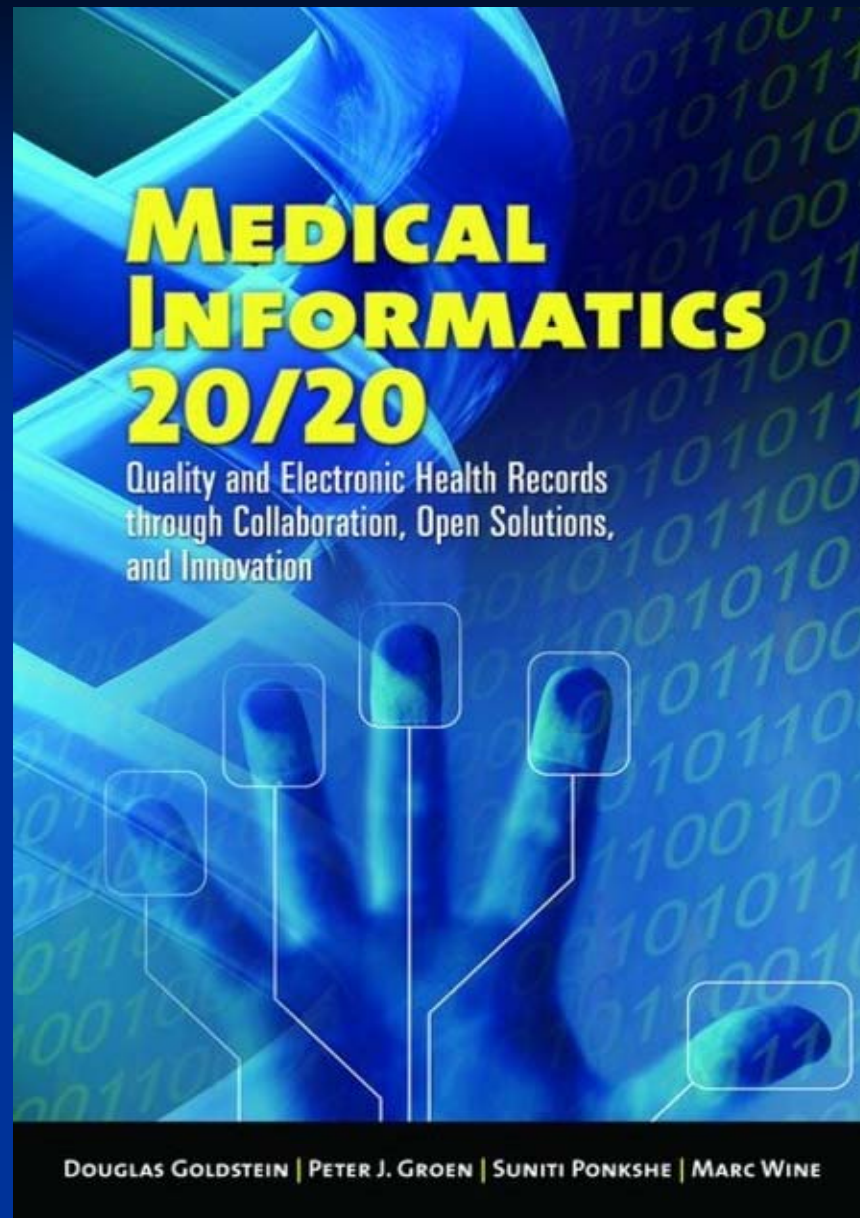
## **COSI & VistA – Technical Observations**

- **Need an easy-to-use set of tools for people to help further build out VistA, add new modules, enhance the system, etc.**
- **A ‘bottom up’ rapid application development (RAD) process characterizes the open development community**
- **Accept all software contributions, but have a process for weeding out 'weak' contributions**
- **Adherence to key health IT standards is an important consideration**
- **Continual refinement and improvement of the product should be a key goal of the community**
- **HardHats Wiki is a key communications tool for the ‘open source’ community; similar to VA use of MailMan and Forum**
- **A code repository and patch management process is essential to the success of any open source product**

# COSI & VistA – Other Observations & Recommendations

- Communication is essential to the creation and ongoing maintenance of an open source community, i.e. a news web site, training, conferences
- The community and its major players should Identify and partner with selected Universities, e.g. University of Hawaii, Shepherd University, Robert Morris University, etc.
- Community leaders should consider reading the following books - Wikinomics, Medical Informatics 20/20, and The World is Flat
- An official statement of 'values' for the community might prove helpful – e.g. desire for creativity, social connectivity, freedom, speed, sharing, openness, etc.
- In the end, pure open source solutions will likely morph into **hybrid open solutions** – fusing COTS and FOSS products together

**Jones & Bartlett  
2007**



**‘Collaboration,  
Open Solutions,  
and  
Innovation’**

# Q&A ?!?

Visit [www.shepherd.edu/surc/cosi](http://www.shepherd.edu/surc/cosi)  
to learn more about 'open' health  
IT systems