



FirstGateways.



Experiences Implementing Health Information Exchange



Edward Marx, CIO UH
Joseph Yelanich, AE FCG

March 29, 2007



Gratuitous Speaker Slide



Ed Marx

- Colorado State University (MS, BS)
- Past President OH & TN HIMSS Chapters
- Past Chair HIMSS Membership Services
- Various Healthcare IT Positions
- Healthcare Start; Housekeeping & EMT
- 2003 Pic, Right Before I Became CIO

We will all work collaboratively...

Where did the hair go?

I am no longer allowed to wear colored shirts
...or gold neckties

When did brown fade to gray?



Gratuitous Speaker Slide



Joe Yelanich

- Michigan State University (BA)
- Memberships HIMSS, eHI, HL7, NCPDP
- HIT Consulting background (EDS, Accenture, E&Y, Cap)
- Senior Account Executive, FCG
- Business developer for HIE product FirstGateways™
- jyelanich@fcg.com or 877.321.GATE



Agenda

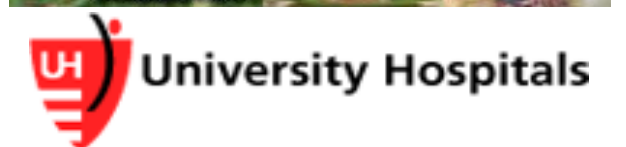


- National Front
- Regional Experiences
- Local Setting
- First Things First...
- The Next Generation



National Front

- National Health Information Network
- New York HEAL
- Cleveland
- Seattle, Knoxville, So. Cal, Waterbury
- Provincial Canada



Scottsdale Institute



“The Napster of Medical information”

Scottsdale Institute
February 2003

Regional Experiences



■ United Way Healthy Communities Initiative

■ Northeast Ohio RHIO

■ Community Hospitals

- Southwest General
- Sisters of Charity



Local Setting



- Tertiary Physicians
- Federally Qualified Health Centers
- Skilled Nursing Facilities
- Joint Venture Hospitals



First Things First...



- 8 Hospitals
- 15 Base Applications in Academic Health Center
- Disparate Clinical Applications amongst Community Hospitals
- 6 Lab Order Systems
- 5000 Physicians
- 700 Thousand Unique Patients
- 70 Million Data Elements Captured and Rising

The Time Was February 2004



The Problem

UH needed a way to improve the Information that was available to care givers at the point of care while they developed their Enterprise Wide EMR strategy.

The Final outcome would be a Nationally Recognized Physician Portal that would be chosen as a National RHIO demonstration site to develop future community data sharing Solutions AND 4,800 Happy Physicians.

Lets Take a Look!

The Perfect Storm

Rising Costs

Lower Reimbursements

Limited Capital

Legacy Systems

Limited Time & Resources

Revenue Cycle

Clinical Systems

Physician
portal

EMR

Physician Systems

What Were the Requirements?



A Solution that would enable UH to provide enormous value to their clinical community by providing:

A branded, virtual Electronic Medical Record that integrates patient-specific data from across inpatient and outpatient environments.



Create a data warehouse that can serve as the foundation for your immediate and strategic information needs.

It must include seamless sign-on and web access to these disparate systems from any location – hospital, clinic, office, or home.

Had to work well enough to extend the life of UH' existing legacy applications.

Provide enough information to improve clinical decision making at the point of care.

Solution Goals and Requirements



■ Solution Goals

– Primary goal is to help influence the extent to which physicians are aligned with the strategic goals of UHC and UH

▶ Facilitate communication

- New care paths
- Standard order sets
- Lessons learned from malpractice events
- New institutional policies

▶ Become central to physicians' day-to-day patient care activities

▶ Attract physicians to portal by providing patient care tools and information



Solution Goals and Requirements



■ Priority Requirements

- Ease of use
- Content-rich information
- Ubiquitous access to:
 - ▶ Full clinical results including transcribed notes
 - ▶ News
 - ▶ Training
 - ▶ Other information
- Highly secure, HIPAA-compliant environment



Here is What the CMO is Saying



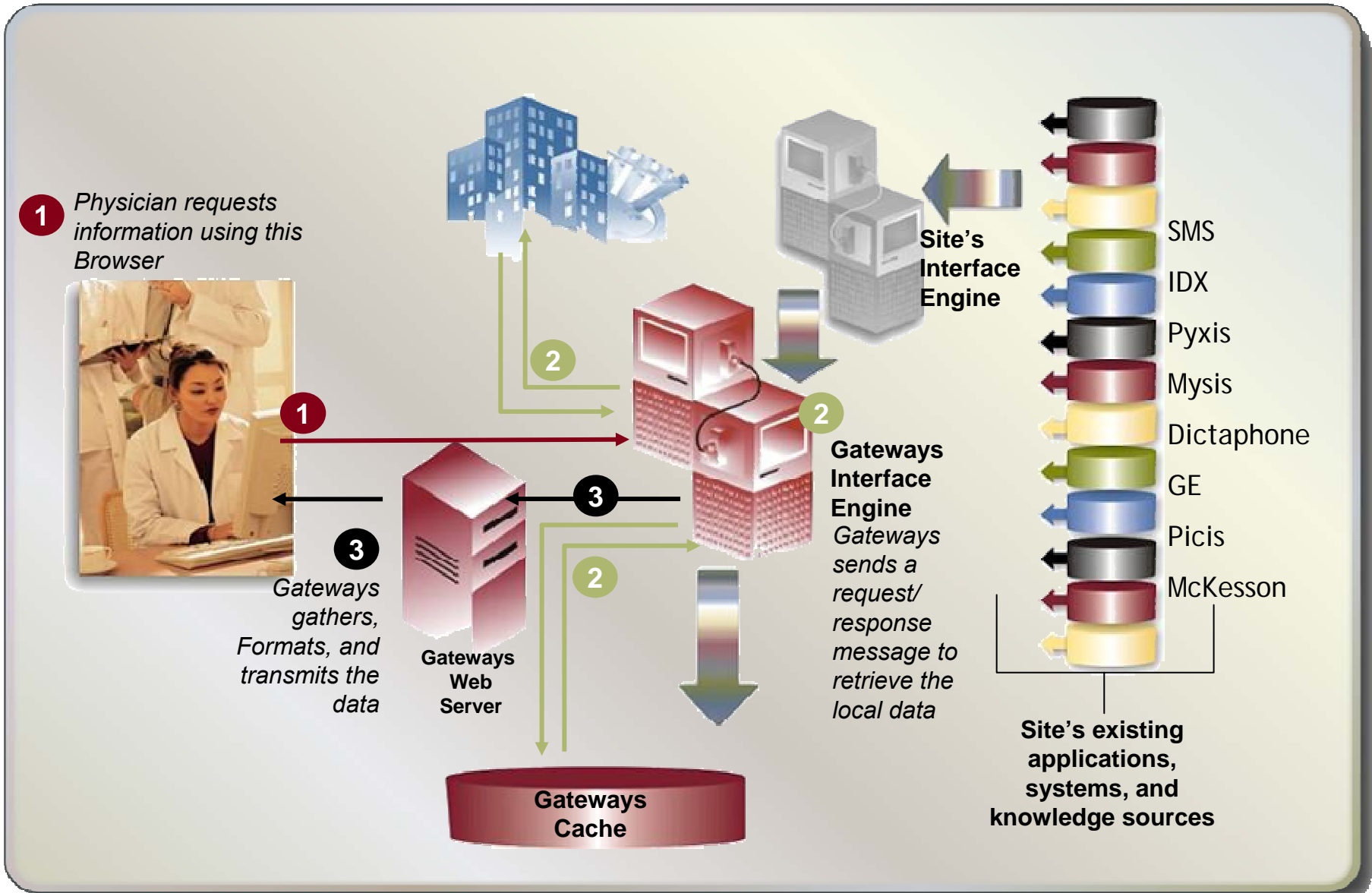
Our Portal is a valuable solution for the clinical users associated with our Academic healthcare system. This system will not only provide a consolidated view of patient data from across more than 15 clinical applications and multiple acute care facilities, it will also provide seamless access to other crucial data sources, such as medical research, clinical drug trials, and customized news and information.



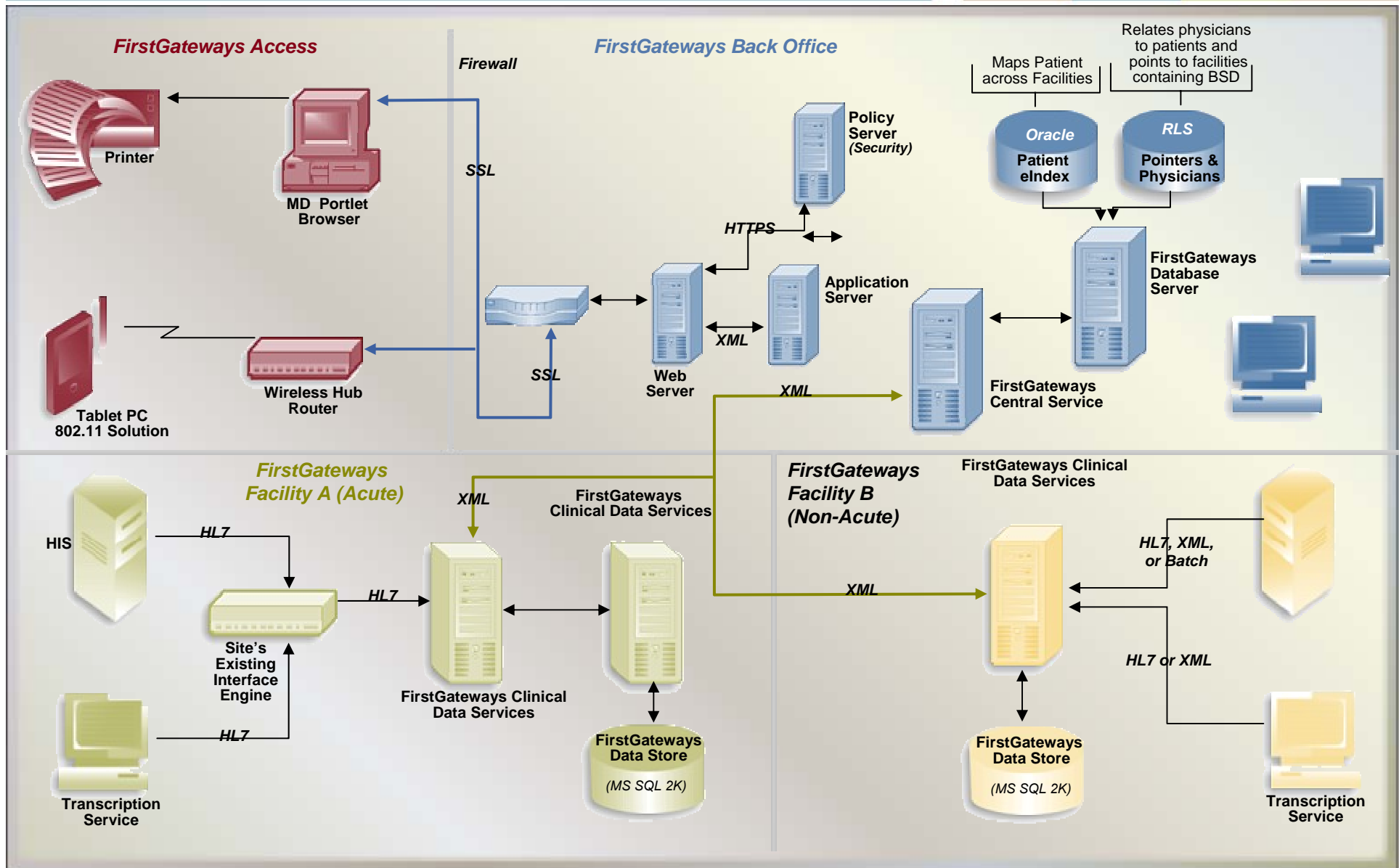
The portal is currently in use at our academic medical center, and it has been received with enthusiasm by our physicians.

— *Dr. Nathan Levitan,*
Chief Medical Officer
University Hospitals

How it Works at a High Level



How it Works, a Little More Detail



Is it a Portal, or is it a RHIO engine? Lets Examine!



- Enable secure access to clinical information at the point of care regardless of the physical location of that information
- Provide HIPAA-compliant solution for transfer of clinical information
- Focus on Clinical Data
 - Problem list/diagnosis
 - Labs, allergies,
 - Medications, immunizations
 - Transcribed notes
 - Some images
- Not administrative



Critical Success Factors



- Evaluation of data elements to match the identity of patients across facilities
- Data quality assessment
 - What elements are consistently available from message to message, facility to facility
 - Timing of communication between source facility and MPI solution
- Data staging and cleansing
 - Presentation of data to MPI in a consistent format that optimizes the chances for a match in the MPI
- Automated MPI management
 - Developing automated process to maintain MPI

Security HIPAA Ready? RHIO Ready ?



- Clinical data stored at the 'owning' hospital (no CDR)
 - Data housed inside hospital firewall
- Access policy (user rights) mirrors that of the hospital
- User authentication process mirrors that of the hospital
 - Currently User ID and Password and Challenge Phrase
 - Capable of supporting Digital Certificates and biometrics
- Virtual Private Networks (VPNs)
 - Secures data transmitted from Point_A to Point_B
- Full audit logs to recreate any transaction under question

PRIVACY – Current Functionality



- Ability to revoke authorization to use or disclose health information
 - Patient can withdraw enrollment at any time

- Obtain an accounting of disclosures or health information
 - Full logging of all requests for PHI

- Support patient requests to inspect/copy health record



Impact of Access and Sharing



- Lives saved, patient, adverse events decreased
- Estimated likely benefits
 - Duplicate tests reduced 20-50%
 - Duplication in medication & diagnostic orders reduced 30-50%
 - Clinician satisfaction with IT improved 25%
 - Patient satisfaction improved (anecdotal evidence)
 - Enhanced quality of care (anecdotal)
 - 3rd party analysis to be completed in 2007



Is There Value to Patients?



- Improves medical decision making by making otherwise difficult to obtain data available at the right time and place
- May reduce the risk of medical errors
- Allows physicians and hospitals to more easily comply with HIPAA regulations
- Medical research is expedited, especially studies of safety and effectiveness
- Addresses needed for patient information instantly available even when patient is physically unable to deliver this information



Is There Value to Patients?



- Permits patient's medical data to be viewed as authorized by the patient
- Removes social security number as the de facto unique patient identifier
- Patient data is never stored in an identified manner
- Eliminates the need for universal conversion to unique patient identifier

Is There Value to Physicians?



- Supports medical decision-making through access to community-wide patient information
- Fosters performance and productivity improvement through secure access to clinical information at the point-of-service and at the place of service
- Provides HIPAA compliant solution for transfer of clinical information
- Provides a mobile, handheld computing solution which facilitates physician productivity in multiple practice locations



Is There Value for UH?



- Creates potential for significant cost reductions and new financial benefit for hospitals
 - Lower cost from reduced errors, adverse events, redundant ordering
- Effectively addresses the concerns of the purchaser community, and specifically the recommendations of The Leapfrog Group
- Addresses HIPAA compliance requirements for mobile computing
- Satisfies growing physician desire for data at point-of-care via wireless access
- Saves lives and improves care by providing physicians with the information needed to make better medical decisions



The UH Look



First Clinical Gateways - Windows Internet Explorer

https://demo.gateways.fcg.com/portal/gateways/summary?pid=0000329000

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First Clinical Gateways Google

Tuesday November 28, 2006 [contact us](#) [personal settings](#)

WILLIAM DEMO Gender: M DOB: 1980-05-12 Age: 26
 Phone: (206)111-5678 Address: 100 TEST BLVD SEATTLE, WA 98107

CLINICAL RESULTS Patient Summary

Portal Features

- Muse
- Home
- News and Information!
- E-mail
- eSig
- UHHS Corporate Directory
- Guidelines/Carepaths
- Pharmacy
- Medical Calculations
- Support and Feedback
- Personal Settings
- Referer Test
- Logout

Clinical Data

- Patient Search

Library Links

- UHHS Core Library
- Harrison's (On-Site)
- MicroMedix (On-Site)
- MicroMedix (Off-Site)
- MD Consult
- NCBI PubMed
- OhioLink
- Ovid
- UpToDate

CME

- On-line CME Education
- Other CME Links

Policies And Procedures

- Policy Search
- UHC Policies Vol. 1

Patient MRNs

Medical Record Number	Facility
00555666	DEMO2
00111222	DEMO1

Physicians (9 of 9)

Procedures (2 of 2)

Description	Date	Facility
EMERGENCY DEPT VISIT	03/02/06	Strong Cancer Center
LUNG BIOPSY		Park Ridge

Diagnoses (10 of 28) View All

Description	Date	Facility
JOINT PAIN-SHLDER		Strong Cancer Center
CERVICALGIA		Strong Cancer Center
VON WILLEBRAND'S DISEASE		Strong Cancer Center
COR ATH UNSP VSL NTV/GRF		Strong Cancer Center
AORTOCORONARY BYPASS		Strong Cancer Center
DMII WO CMP NT ST UNCNR		Strong Cancer Center
ATRIAL PREMATURE BEATS		Strong Cancer Center
ATRIOVENT BLOCK-1ST DEGR		Strong Cancer Center
AV BLOCK-2ND DEGREE NEC		Strong Cancer Center
HYPOTENSION NOS		Strong Cancer Center

Medications (10 of 29) View All

Allergies (10 of 11) View All

Internet 100%

Results Viewer



First Clinical Gateways - Windows Internet Explorer

https://demo.gateways.fcg.com/portal/gateways/browseresults?pid=0000329000

File Edit View Favorites Tools Help Links KITE FCGRoom FCG WebMail ESPN BECU Allegra Rayos Google

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Portal Features | SUMMARY PAGE | NHIN RESULTS

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
- ▣ June 2006 (1)
 - ▣ Radiology Results (1)
 - 06/20/06 TH CHEST 1 VIEW Park Ridge
- ▣ May 2006 (2)
 - ⊕ Lab Results (2)
- ▣ April 2006 (3)
 - ⊕ Lab Results (3)
- ⊕ March 2006 (14)
- ⊕ February 2006 (33)
- ⊕ January 2006 (11)
- ▣ October 2005 (3)
 - ⊕ Outpatient Notes (2)
 - ⊕ Pathology Notes (1)
- ▣ September 2005 (31)
 - ⊕ Lab Results (31)
- ⊕ July 2005 (17)
- ⊕ April 2005 (1)
- ▣ January 2005 (3)
 - ⊕ Pathology Notes (3)
- ▣ December 2004 (1)
 - ⊕ Outpatient Notes (1)

Results Detail

TH CHEST 1 VIEW

Exam Date: 06/20/06 Report Date: 06/20/06
 Accession Number: 8444020 Ordering Provider: FAUSTUS FAUSTUS
 Medical Record Number: 00111222 Facility: Park Ridge
 Status:

AP portable chest
 Indication: Chest pain
 Findings:
 The cardiac silhouette is within normal limits with respect to
 on this AP portable radio graph. The thoracic aorta is tortu
 No focal consolidation, evidence of frank pulmonary edema, or
 evidence of pleural effusion is noted.
 Osteoarthritic changes are appreciated at both glenohumeral
 articulations.
 Impression:
 1. No evidence of active cardiopulmonary process.
 2. Tortuous thoracic aorta as described above.
 Transcribed By: Interface, User



FirstGateways – A High Level Architecture for Health Delivery



■ Federated Data Architecture

- ◆ Data Acquisition takes place at the originating facility/data source
- ◆ Security, User Access, Identity Management takes place in the Back Office application
- ◆ Highly scalable

■ Standards-based messaging

- ✚ Data is sourced from HL-7 messages generated by the originating facility
- ✚ XML Messages are used to communicate data within the application
- ✚ Can deal with any consistent electronic transmission

■ Consistent presentation of data regardless of its source

- ☞ Web based user interface
- ☞ Uses XML Style sheets

■ Multiple layers of Security

- ☞ HIPAA compliant policy-based security
- ☞ LDAP authentication

Technical Components



- Oracle
- Apache Tomcat
 - Web Server
 - JSP and servlet container
 - Currently on
- JBOSS
 - Application Server
- Microsoft SQLServer
- Sun Microsystems
 - JAVA
 - eIndex MPI
 - eGate interface engine
- XML/XSLT Style Sheets



Benefits of the Architecture



■ Highly scalable

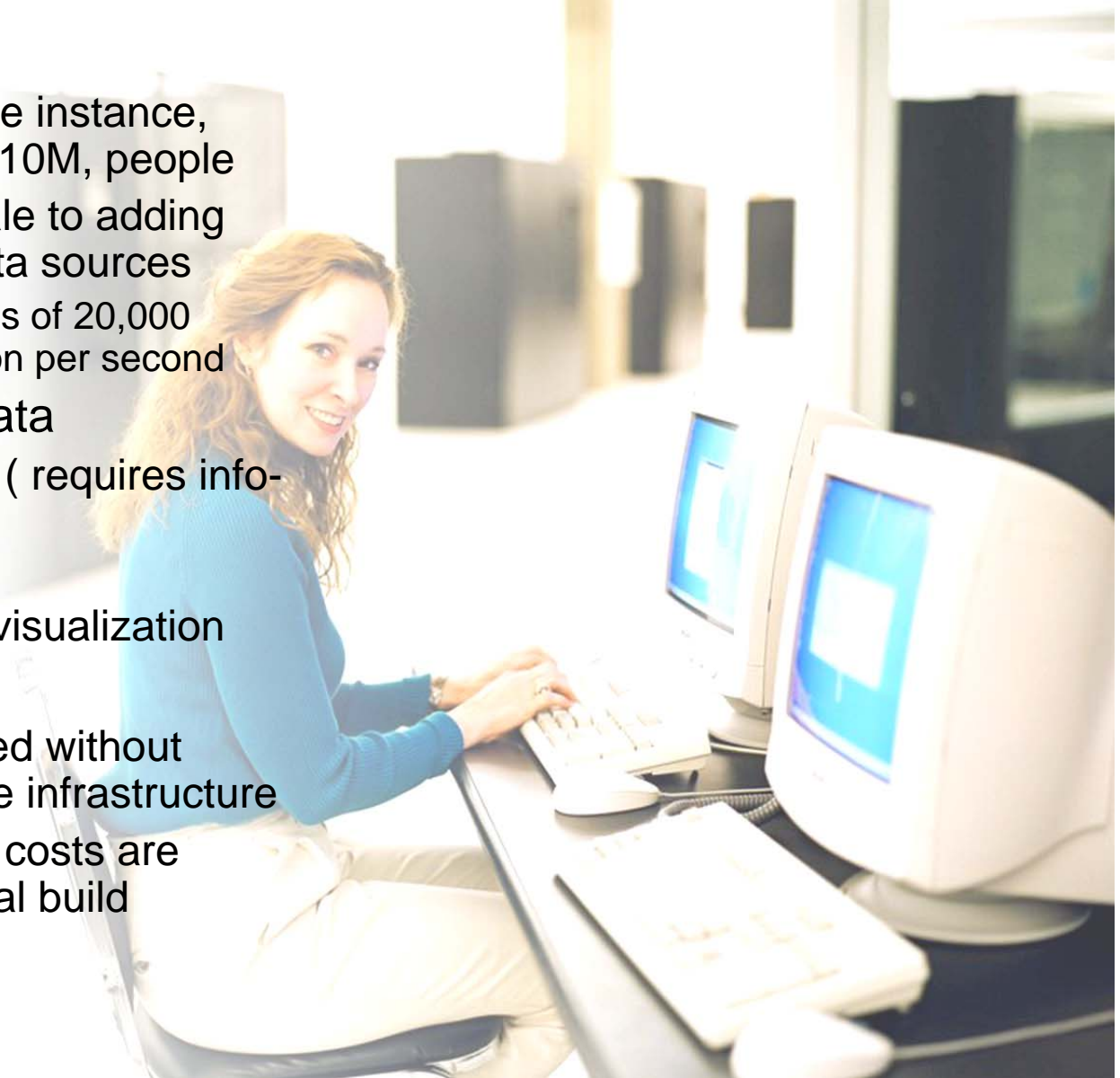
- Back office, in a single instance, can uniquely identify 10M, people
- System is able to scale to adding multiple disparate data sources
 - ▶ Processes in excess of 20,000 complete transaction per second

■ Aggregated pools of data

- Alerts and reminders (requires info-search component)
- Data warehousing/mining/visualization

■ Cost effective

- Systems can be added without reproducing the entire infrastructure
- Hardware a software costs are incremental after initial build



UH Portal 2007: The Next Generation



Clinician Portal

- Expanded Influence
- Strategic Imperative
- ePrescribing

Patient Portal

- Health Care Consumerism
- Create Active Ownership of Health
- Health Care into the Home
- ePrescribing
- Strategic Imperative