

# FIVE STEPS TO AN ENTERPRISE IMAGING STRATEGY

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Merge Healthcare  
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MERGE

# Today's Agenda

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**1 DISCUSS**  
Enterprise imaging and why it should be a part of your financial plan

**2 UNCOVER**  
the five steps to enterprise imaging

**3 PROVIDE**  
a quick overview of Merge

**4 ANSWER**  
your questions

Why Enterprise Imaging  
should be a part of  
**Your Financial Plan**

# This is Why Enterprise Imaging Matters...



images are  
**growing – storing**  
images is increasingly expensive



your **resources** are being  
reduced. you need to do  
**MORE** with **LESS**



**regulations**  
are dictating how your entire  
enterprise manages images & data



**system consolidation**  
requires management of  
disparate systems

# What is Each of Your Archives Costing You?

- Software fees
- Maintenance fees
- Hardware costs / lifecycle management
- Archiving
- Disaster recovery
- Staff expertise / administration

Per  
PACS  
Platform!



The average cost of storing a study without business continuity/redundancy and excluding labor costs is **\$1.15**.  
Add in redundancy and labor costs...much more.

# And Yet...We Still Have These Challenges



## Patient records are incomplete

- Images are not easily available at the point of care
- Multiple DICOM viewers are needed for your referring physicians



## Duplicate testing is common

- Too much unnecessary radiation exposure
- Providers not being reimbursed for duplicate tests



## Care is being delayed

- Lengthy treatment times due to missing images / incompatible formats
- Images are still being delivered on CDs/DVDs!

# THIS is When to Roll Out an Enterprise Strategy...

- You don't have the luxury of “ripping and replacing” your existing imaging infrastructure / investment
- **There is a natural refresh” cycle today for hardware**
- How do you maximize the investment you have, yet move to a simpler, more efficient (and less expensive) enterprise relationship?



# Five Steps to an Enterprise Imaging Strategy



# Five Steps to an Enterprise Data Strategy

## YOUR HEALTH SYSTEM

## YOUR REFERRAL NETWORK



STEP  
**1**

Centralize  
storage:  
VNA



STEP  
**2**

Share images:  
Internet  
Gateway



STEP  
**3**

Provide  
access to  
images:  
Universal  
Viewer



STEP  
**4**

Store & view  
images in the  
cloud:  
Cloud Storage  
& Access



STEP  
**5**

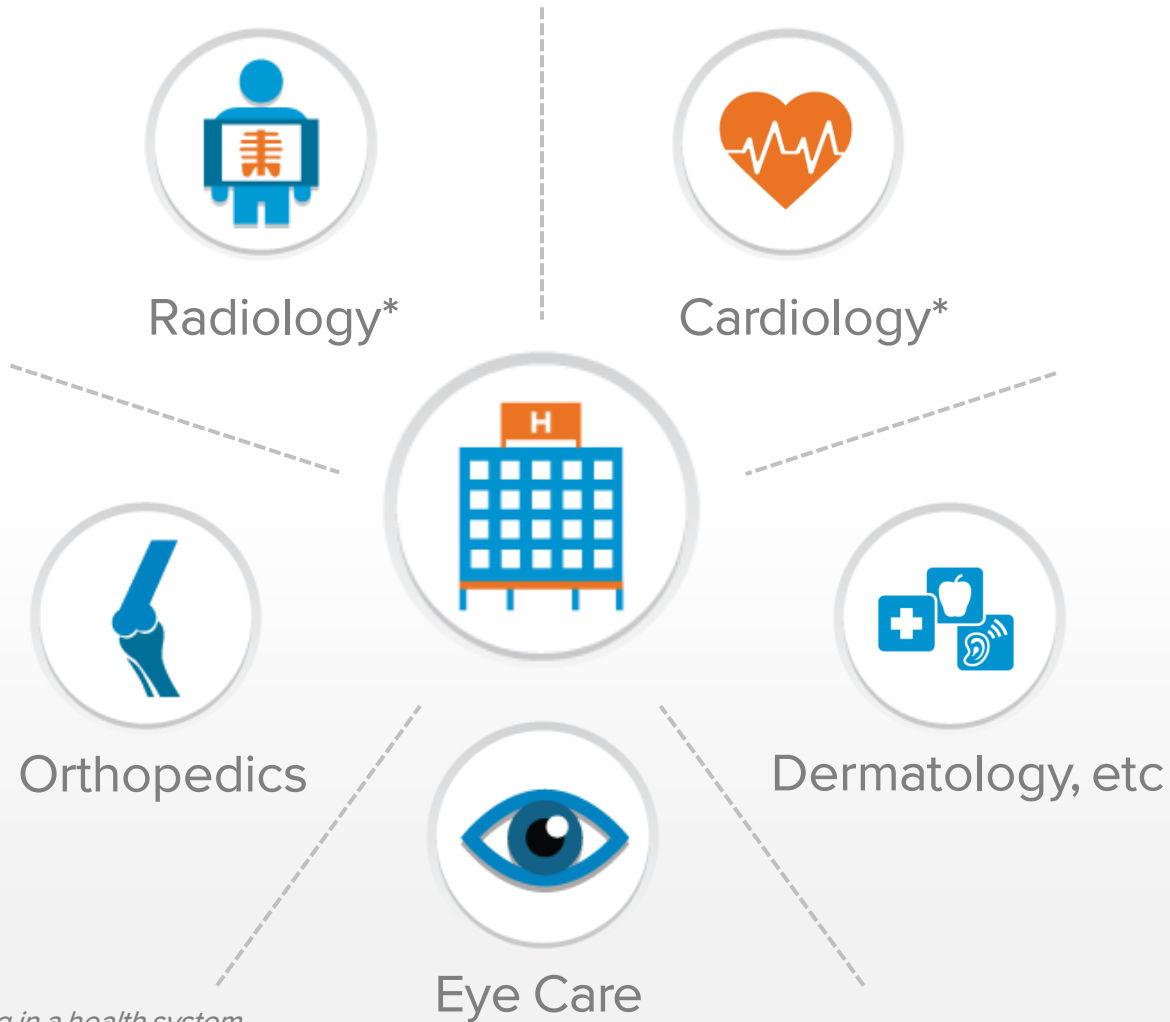
Connect into  
HIE, EHR &  
other  
networks:  
Electronic  
Image  
Network



STEP 1

# Centralize Storage: Vendor Neutral Archive

# Today...Isolated Departments and Image Silos



*\*Two largest sources of imaging in a health system.*

# What is a Vendor Neutral Archive (VNA)?

A VNA is the backbone for an *enterprise* imaging solution!

- Patient-centric retrieval of images and reports
- Store images in standard DICOM format from multiple PACS, sites & specialties
- Software product or hosted service



# Why Implement a VNA?

## Create a single view of the patient & improve quality of care!

- VNAs lower costs
  - Eliminate expensive data migrations
  - Provide information lifecycle management with policy-based deletion
- VNAs enable the creation of an enterprise imaging strategy
  - Multiple sites, specialties, vendors
  - Simplified integration with EHRs, portals, HIEs
  - Single archive to distribute images to referring physicians

# VNA: Policy-Based Deletion (PBD)

- Rules-based solution for true image life cycle management (from acquisition to deletion)
  - Rules to nominate exams for deletion
  - Vetoers to protect you from deleting certain exams
  - Manual deletion protection for legal situations
- HIPAA requirements
  - Exams are retained as long as necessary based on government regulations and institutional policies
  - After that, they are a LIABILITY
- PBD goals
  - Clean archive of old studies
  - Maintain a steady state thereafter
  - Manage storage costs through automated maintenance

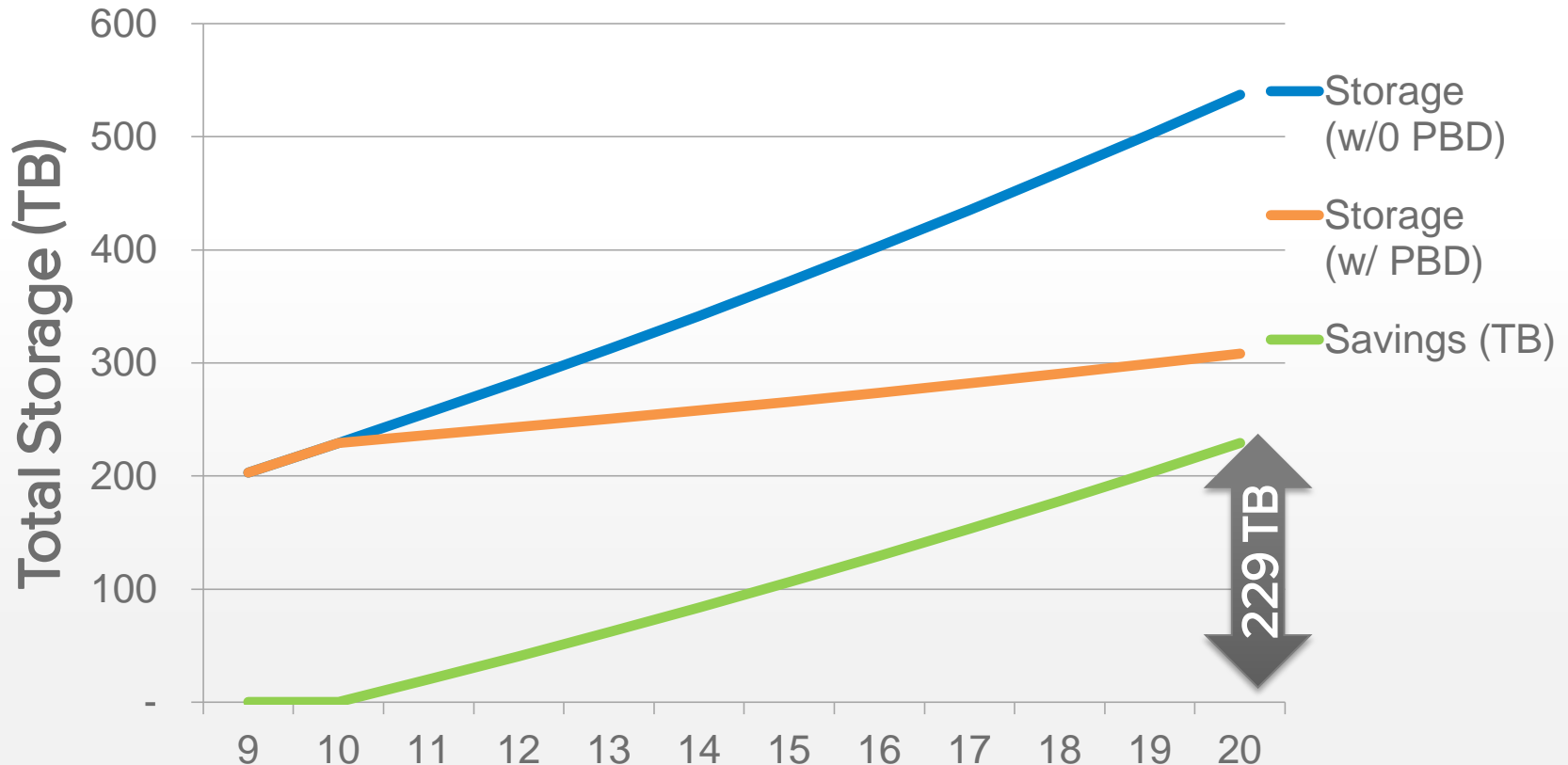


# PBD Case Study: Steady State Benefits

## Client Case Study:

- Annual volume – 250,000 exams growing at 3%
- Steady state archive is 10 years old

Reduce storage  
by 229 TB or  
43% over 10 years



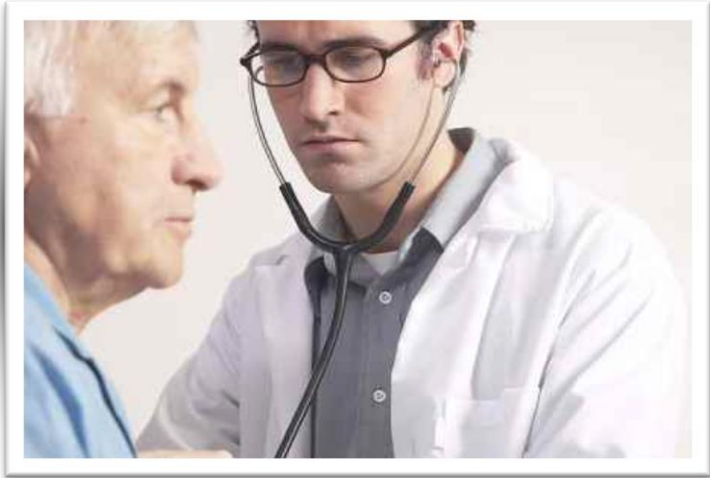


STEP 2

# Share Images: Internet Gateway



# A Real-world Scenario



## Steve, Retiree, 65 years old

Steve is undergoing cardiac care at his regional medical center, his conditions have escalated so he has to move to a larger, hospital in his network

## Problems with the current state:

- Hospital systems rely on CDs to transport costly images between departments
- Courier services are used to deliver CDs to networked hospitals = \$\$
- Potentially life-threatening delays in treatment for patients

### Suburban to urban

Steve's surgeon needs to see all of his images at the urban hospital

\$\$\$\$

### Payment reform

Requires that the organization use the images already taken

\$\$\$\$

### Courier services

Using courier services to deliver images from suburban to urban facilities is costly and slow

\$\$\$\$

# What are the Benefits of an Internet Gateway?

## Share exams with other hospitals!

- Easily move studies from hospital or department to another, regardless of originating system or data format
- Transmit via HTTPS...no VPN required
- Morph studies into native PACS format and make available to physicians
- Provide faster time between incident and patient treatment
- Reduce demand for duplicate tests by making all tests available and accessible

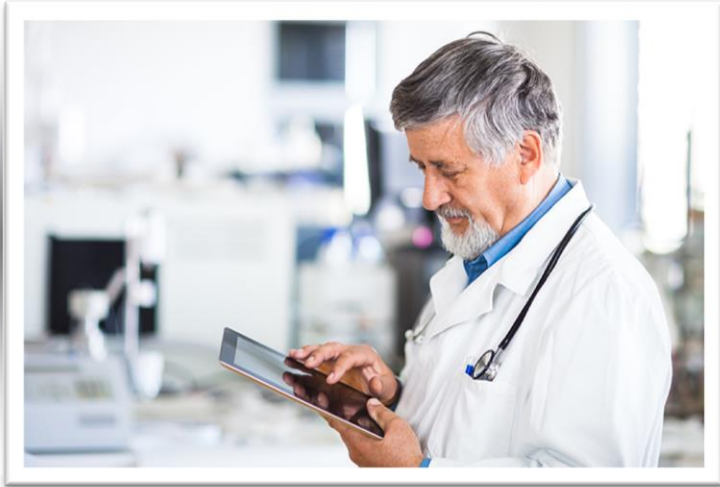




STEP 3

## Provide Access to Images: Universal Viewer

# A Real-world Scenario



Dr. Watson, 45 years old

In network Orthopedic Surgeon has a patient with multiple breaks in the leg. Initial EMR visit has images, office visit includes a second set of images

## Problems with the current state:

- Referring physicians cannot easily access images on the hospital systems
- Accessing images on the hospital network is complicated and requires software, logins, and passwords to multiple systems

### Jeff fractures leg skiing

ER takes images and tells him to see a specialist on Monday

\$\$\$\$

### Sees network specialist

Dr. Watson, an in-network orthopedic surgeon, sees him Monday morning and orders follow up images

\$\$\$\$

### Specialist performs surgery

Dr. Watson needs to see both the ER images and the images that he took to perform the surgery

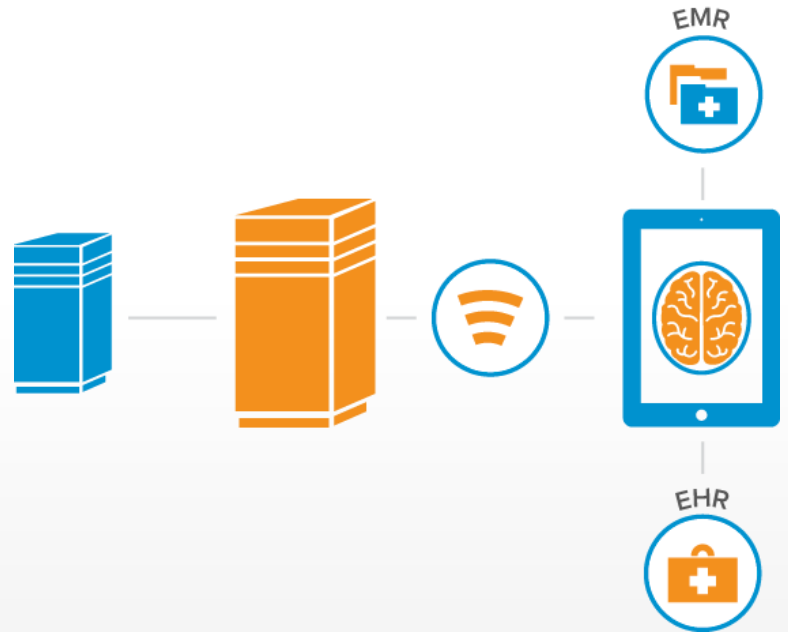
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# Why an Universal Viewer is Key to Your Strategy

## Universal viewers provide easy, enterprise-wide access to images and data!

- Make images viewable from any browser-based device
- Eliminate client-side software requirements
- Transmit lossy and loss-less images via the Internet
- Embed links within physician and provider systems
- Provide composite access to images in disparate locations



# Universal Viewer via Web Browser

The interface features a top toolbar with icons for navigation and viewing. Below the toolbar, a header bar displays the patient information: "Trash, Can (M111111111)", "JPEG(80)", and "11-1384869999, 06-Dec-2011 8:28:00 AM".

A "History" sidebar on the left shows a list of image thumbnails. The main area displays four detailed views of MRI images, each with associated metadata:

- Series 1 Image 1:** Coronal view of the cervical spine. Metadata: "R MRI CERVICAL W/O CONTRAST 00000000", "FOV: 200 x 220", "HFS 282x256", "3.5 @ -24", "WW: 9,996 WL: 5,002".
- Series 2 Image 1:** Sagittal view of the cervical spine. Metadata: "A MRI CERVICAL W/O CONTRAST 00000000", "FOV: 201 x 210", "HFS 268x256", "3.5 @ -24", "WW: 7,748 WL: 3,938".
- Series 3 Image 1:** Sagittal view of the cervical spine. Metadata: "A MRI CERVICAL W/O CONTRAST 00000000", "FOV: 201 x 210", "HFS 268x256", "3 @ -23.4", "WW: 3,957 WL: 1,813".
- Series 4 Image 1:** Sagittal view of the cervical spine. Metadata: "A MRI CERVICAL W/O CONTRAST 00000000", "FOV: 200 x 210", "HFS 302x288", "3 @ -23.4", "WW: 9,996 WL: 5,002".

Each view includes a 10 cm scale bar and the text "Huntington Hospital".



STEP 4

# Store & View Images in the Cloud: Cloud Storage & Access

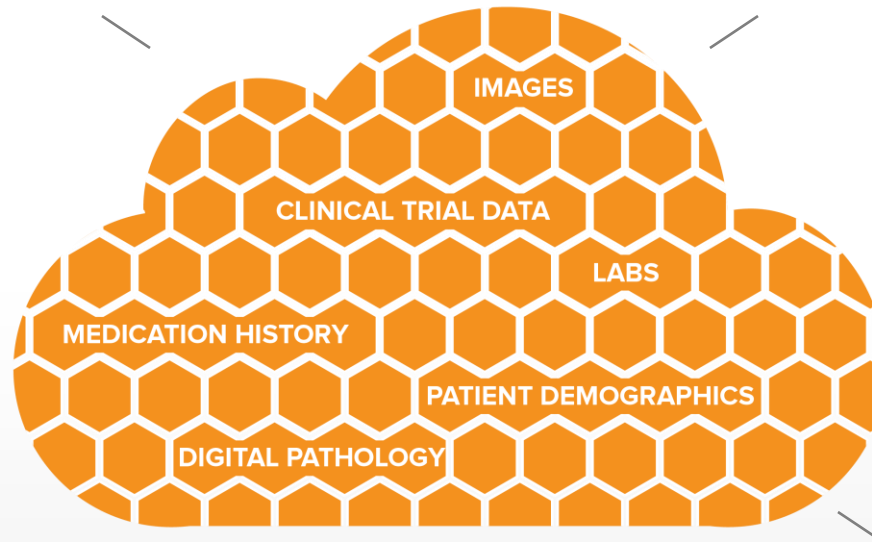
# Why Cloud Storage Works

## Reduce Costs

- Cheaper than spinning disk
- Eliminate future data migrations

## Disaster Recovery

- Data loss = out of business
- Tape fails...slow recovery!



## Business Continuity

- Immediate viewing, robust pre-fetching
- You can't view from tape

## Industry-leading Functionality

- #1 VNA in scale / scope / experience
- Product leadership award



# The Value Proposition with Cloud Storage

## Business



Cloud storage is scalable and less expensive than traditional tape solutions and provides easier access to images and data

## IT



Cloud storage allows for image enablement of EHRs in your network and outside of your network. Limit outside access to your production systems.

## Clinicians



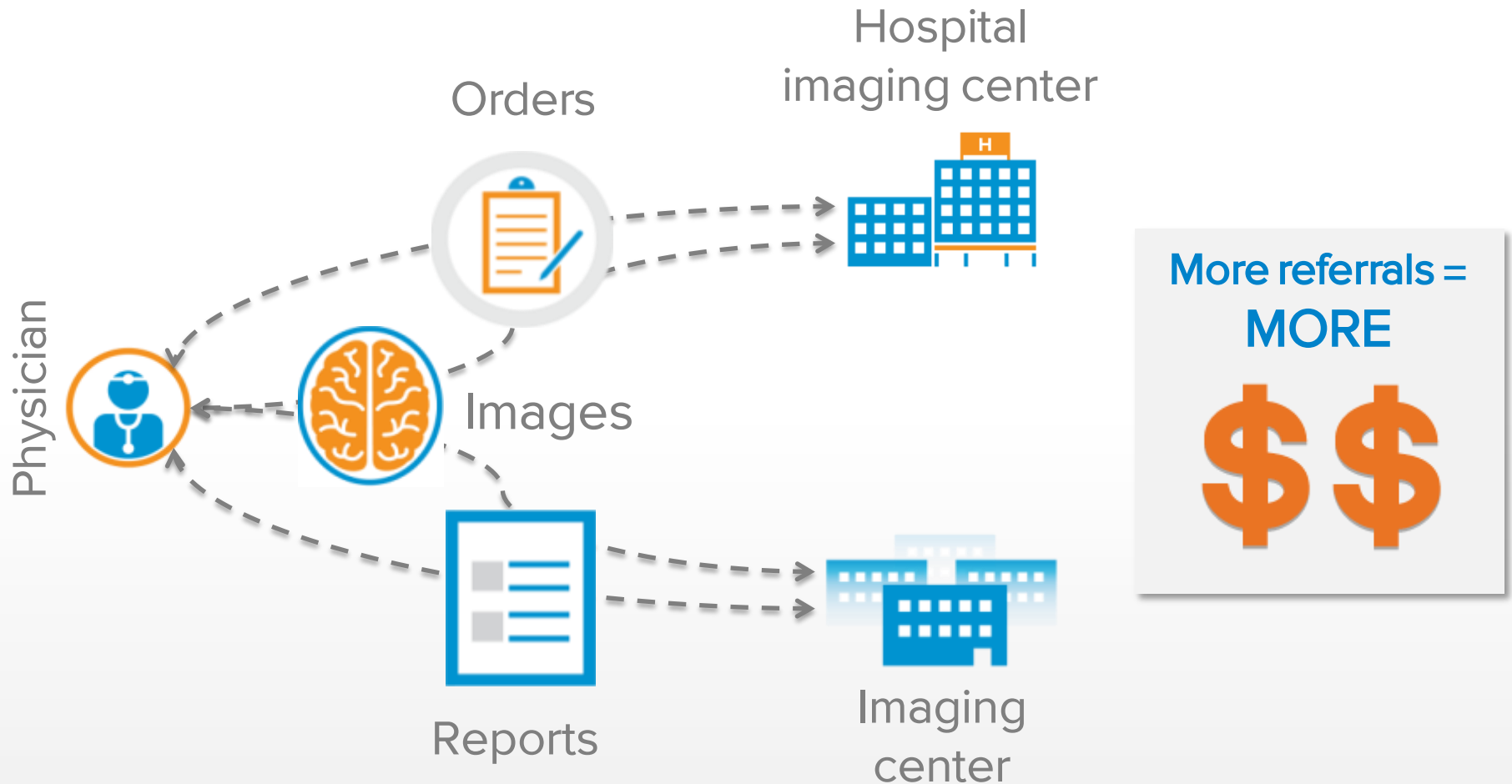
Clinicians can view images from anywhere. Images are available within existing EHRs and can be shared with patients.



## STEP 5

Connect into HIE, EHR & other networks:  
**Electronic Image Network**

# The Challenge for Hospitals: Referral Management

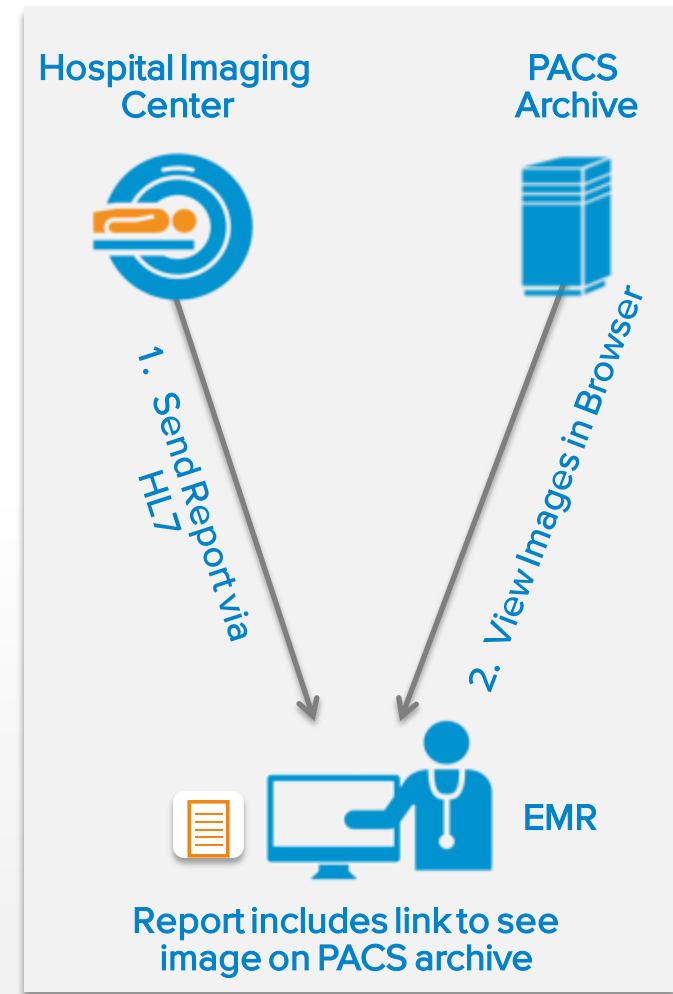


# Hospitals Work with Referring Physicians & EHRs



# Connecting EHRs and Hospitals is Complex

- EHRs are a key business driver and EHR-based workflows drive HIT investments
- Deploy and maintain costly HL7 interfaces
  - \$25K - \$40K implementation fees
  - \$20 / physician / monthly maintenance fees
  - PER interface PER referring physician practice
- Custom building unique EHR-to-PACS viewer interfaces is NOT scalable
- Requires regular maintenance
  - EHR vendors update at least every 2 years as regulations change
  - Each EHR update requires connection updates



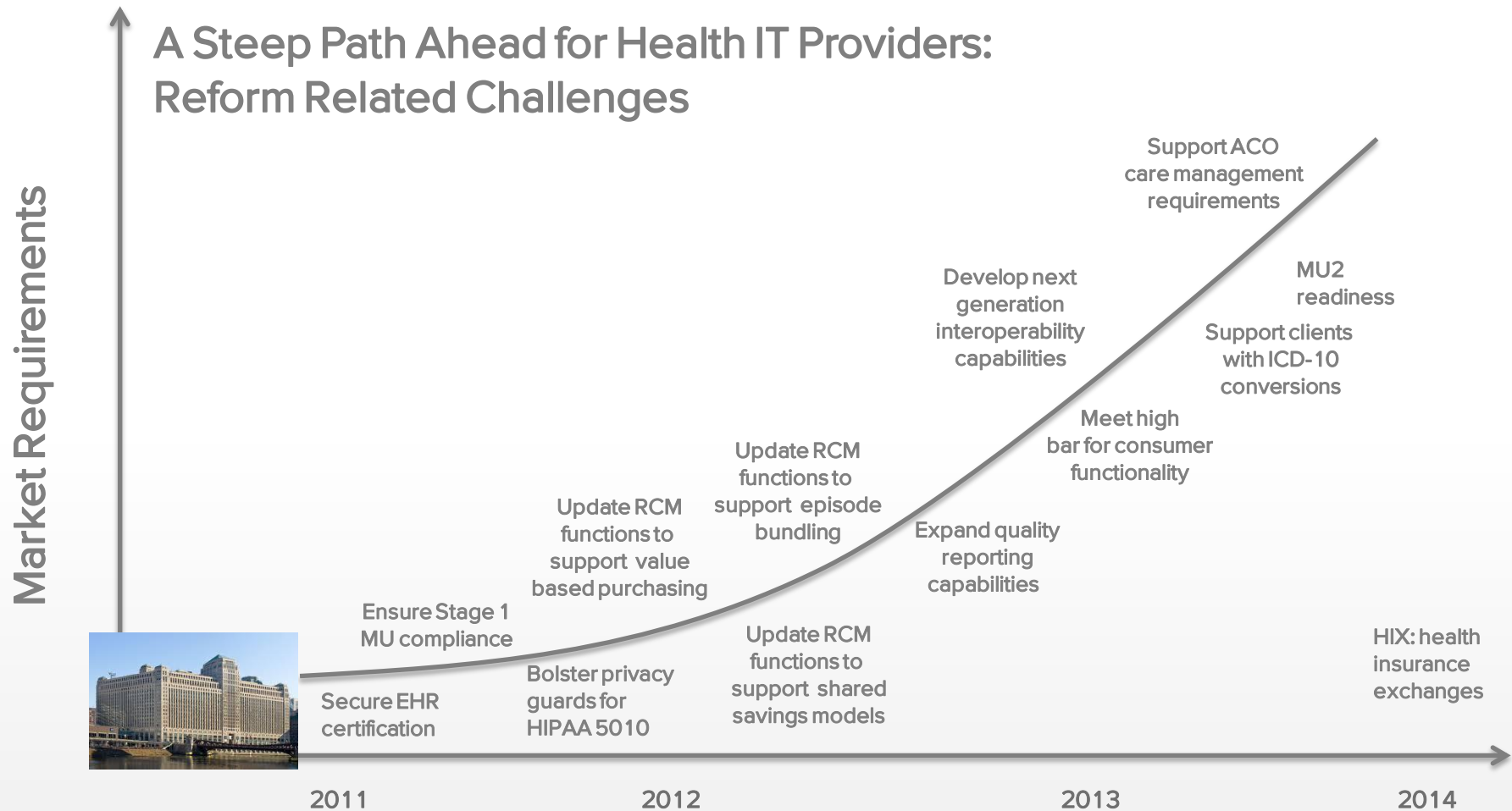
# Meaningful Use Stage 2 Accelerates Need

Core requirement: Order entry (30%) of imaging orders by the ordering physician

Menu Option: More than 10% of all tests whose result is one or more images ordered by the EP during the reporting period are available through Certified EHR Technology.

- To enable referring physicians to access 10% of their images on demand means **that 100% of images need to be available** in their EMR (we don't know which 10% they'll want to view)
- MU2 is an **unfunded mandate** for hospitals and imaging centers to make images available to referring physicians
- Meaningful use is ALL OR NOTHING for referring physicians.

# Problem of Time, Capacity and Money



Will your vendor REALLY have the capacity to build thousands of EHR interfaces?

# Five Steps to an Enterprise Imaging Strategy

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# Merge Overview



# Big News: Two Major Awards for Merge

*Best in Interoperability.*  
ACCORDING TO FROST & SULLIVAN



**iConnect**

Enterprise Clinical Platform

2013 Frost & Sullivan Product Leadership Award,  
Medical Imaging Interoperability Solutions Market

*#1 VNA in the World.*  
ACCORDING TO IHS



**iConnect**

Enterprise Archive

2013 IHS VNA Global Market Leader  
2013 IHS VNA Market Leader, Americas

# Our Company

- Leading provider of enterprise imaging and interoperability solutions
- Company history of 25+ years
- Traded on NASDAQ Exchange (MRGE)
- Over 875 employees worldwide



# Where We've Been

● Co-founder of DICOM

● **90+** Patents in imaging and HIT

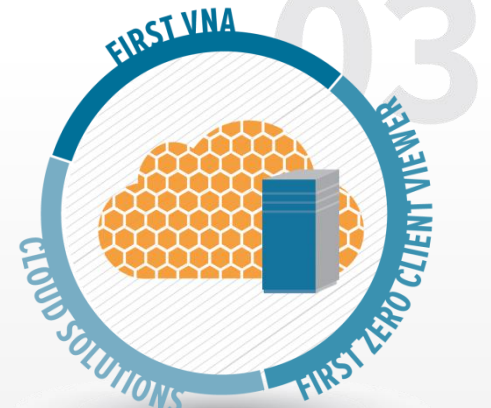
● **#1** Downloaded medical imaging application in the world



PACS for image intensive specialties



Clinical data and workflow tools



Enterprise imaging & interoperability solutions

# Our Client Base



Including many hospitals on “America’s Best Hospital Honor Roll”



1/3 of all U.S. Imaging Centers  
37% of all Ortho Groups  
2,000 of all ophthalmology sites



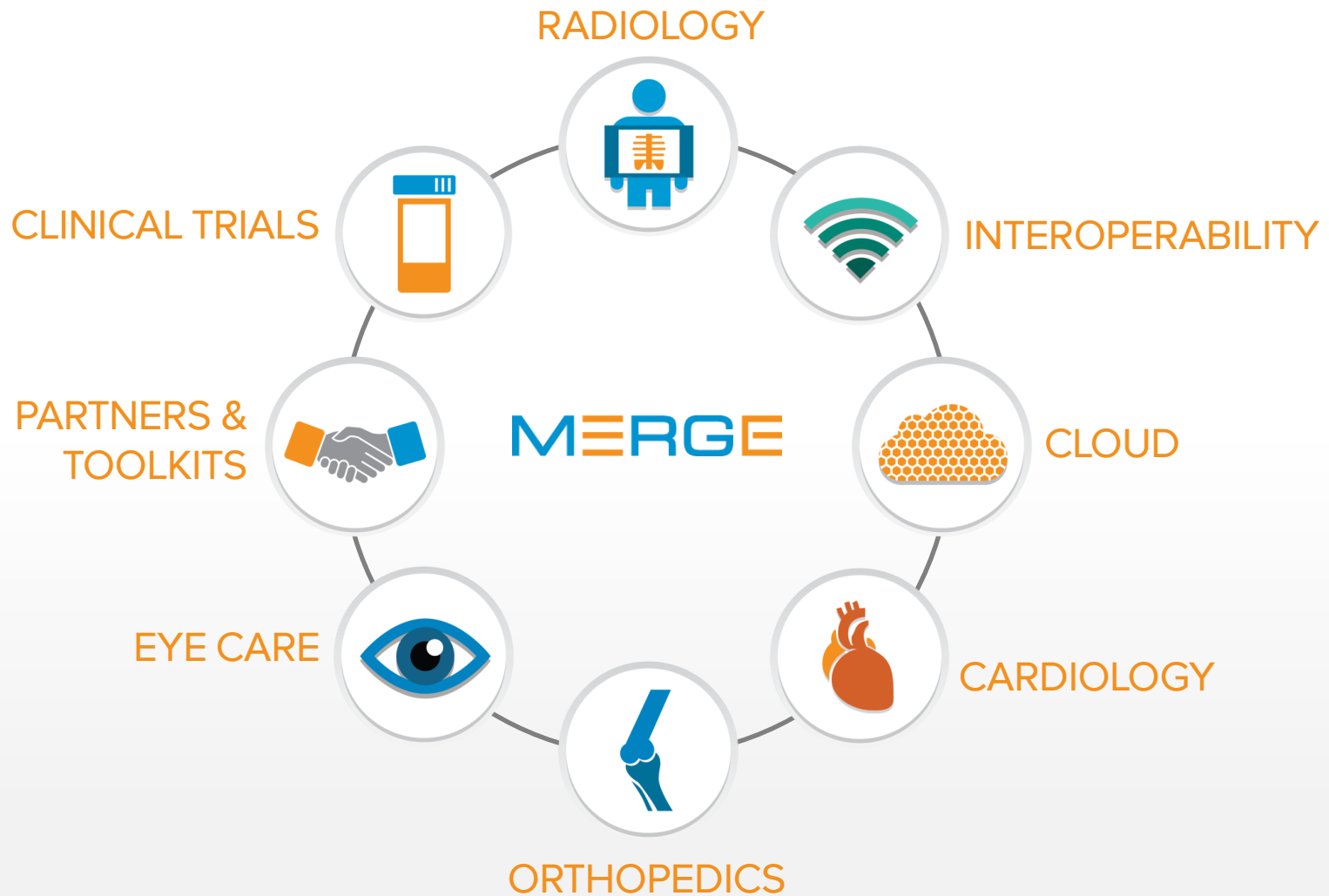
75% of all worldwide modality vendors



Top pharmaceutical companies & CRO’s use Merge to run clinical trials



# Our Solution Ecosystem



We talked about the five steps  
to an enterprise imaging strategy...

**Merge can help!**



# Five Steps to an Enterprise Imaging Strategy

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YOUR REFERRAL NETWORK



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Centralize  
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iConnect®  
Enterprise  
Archive



STEP  
**2**

Share images:  
Internet  
Gateway

iConnect  
Access &  
iConnect Share



STEP  
**3**

Provide  
access to  
images:  
Universal  
Viewer

iConnect  
Access &  
iConnect Share



STEP  
**4**

Store & view  
images in the  
cloud:  
Cloud Storage  
& Access

Merge  
Honeycomb™



STEP  
**5**

Connect into  
HIE, EHR & other  
networks:  
Electronic  
Image Network

iConnect  
Network





# Questions?

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