Introduction to DICOM

How to teach yourself this skill

About the Presenter

- Biomed since 1996
- Worked in Imaging support since 96
- First Implemented Merge systems / DICOM 2.0
- Instructed DICOM for College credit – 2 schools
- Currently Working in the field of Imaging - VA Imaging BESS
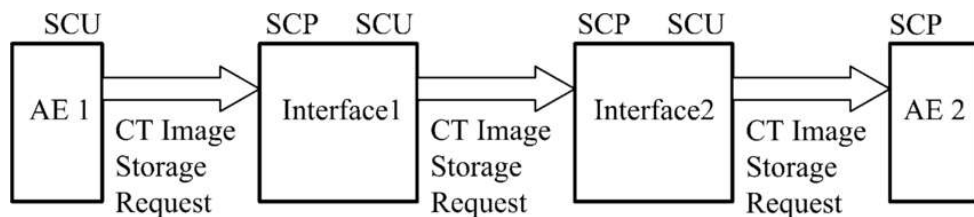
What is DICOM?

- Digital Image and Communications in Medicine. (DICOM)

- Public Use, Open-Source Communication Protocol

- A technique for transmitting, storing, and displaying medical images

- Expanded to processing, overlaying, and reporting changes

- Creates a unique folder and file that does not have name conflicts if transferred anywhere.

- Allows for Private data – OEM "Trade Secrets"

- Continually added to and updated.

How Does DICOM work?

- Server , Workstation, Modality
- **AE title, IP address, Port**
- Requirements found in a Conformance Statement
- Users vs Provider Roles (SCU vs SCP)
- Accession Numbers
- A Header and an Image

What Does a DICOM Network look like?
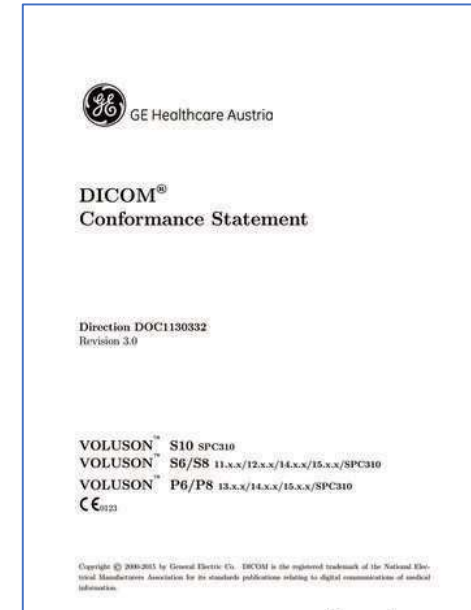
- A modality takes an image (SCU)

- It stores the image on a server (SCU / SCP)

- A workstation finds and copies the image (SCU / SCP)

- A radiologist "reads" the image

CT Modality

C-Store

C-Find

X-ray Modality

C-Store

PACS Server

C-Move

Acquire

Store

View
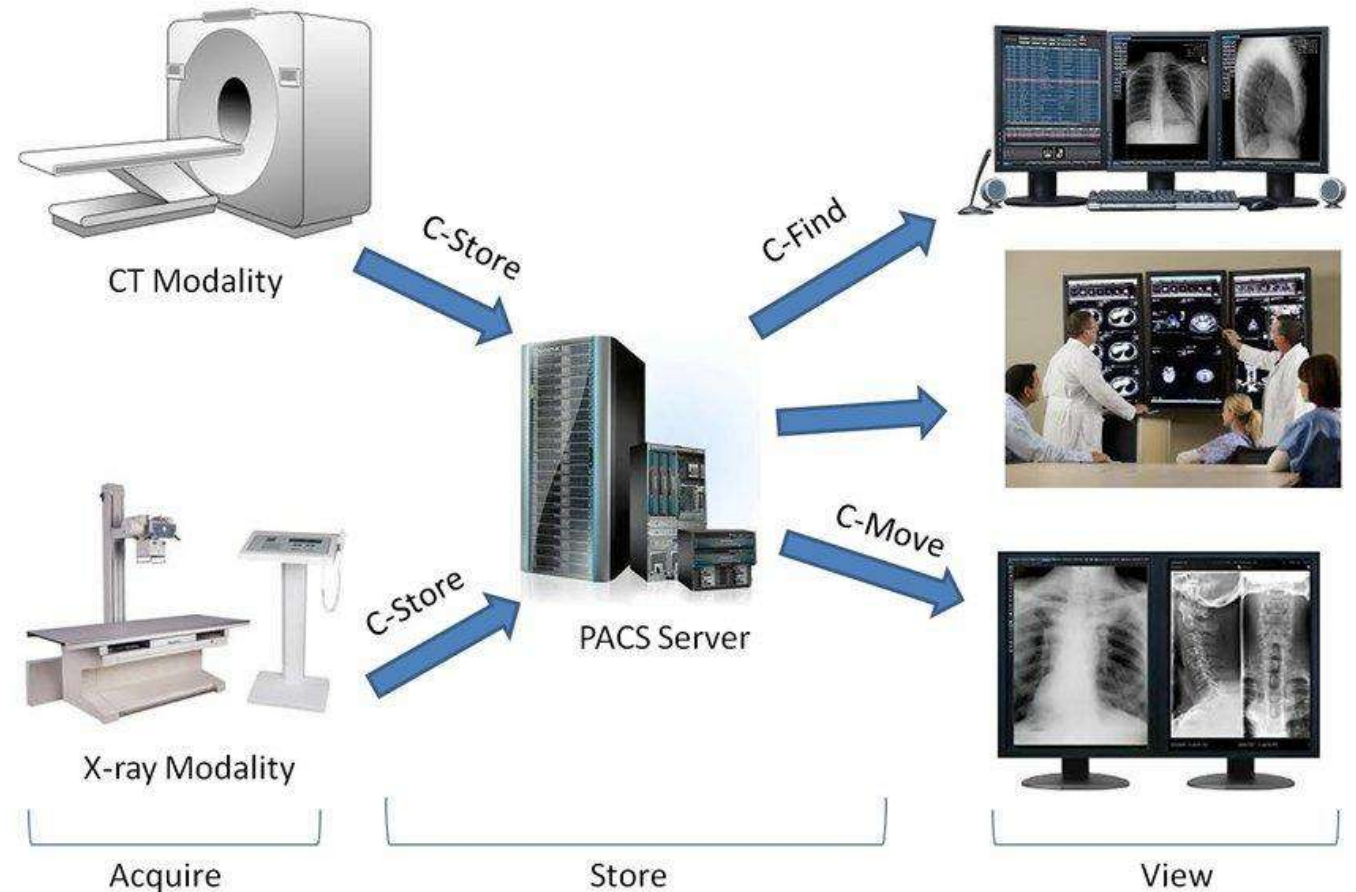
What are we going to do today?

Let's build a DICOM network

   On one Laptop….
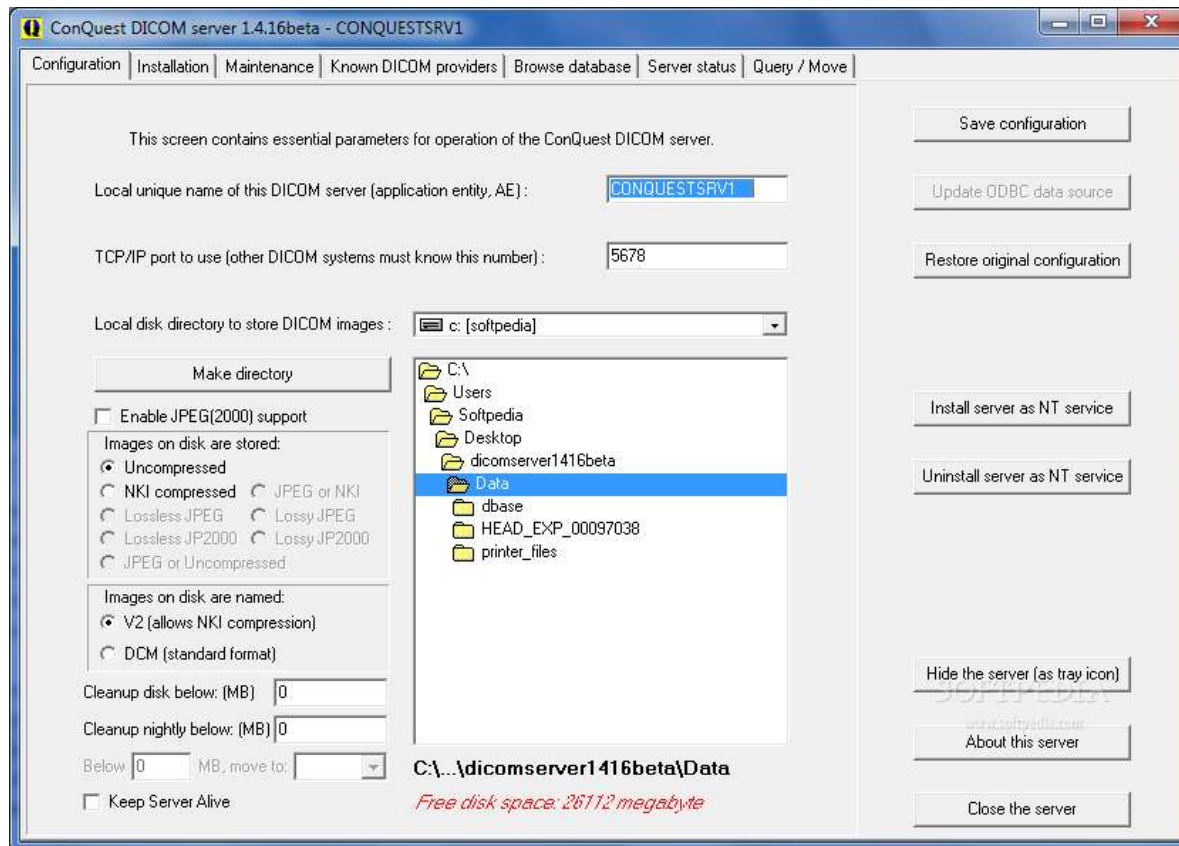
     Using the same login….

       With the software
already installed…

         Ok.. We are just
walking through the
setup…

           Deep breath…
let's dive in!
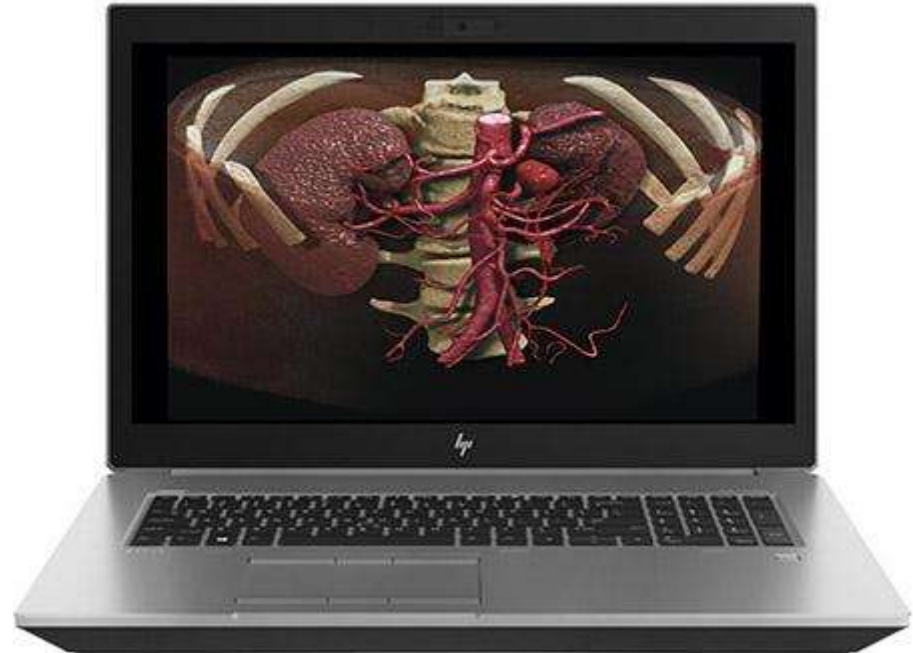
Setting up a test DICOM server – Use ConQuest
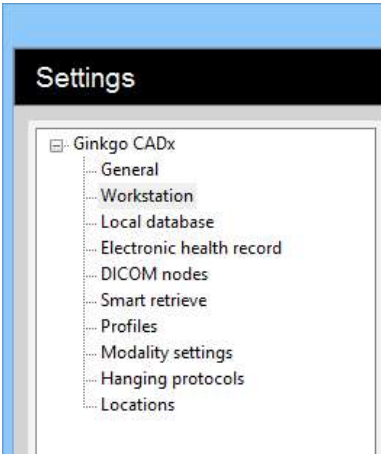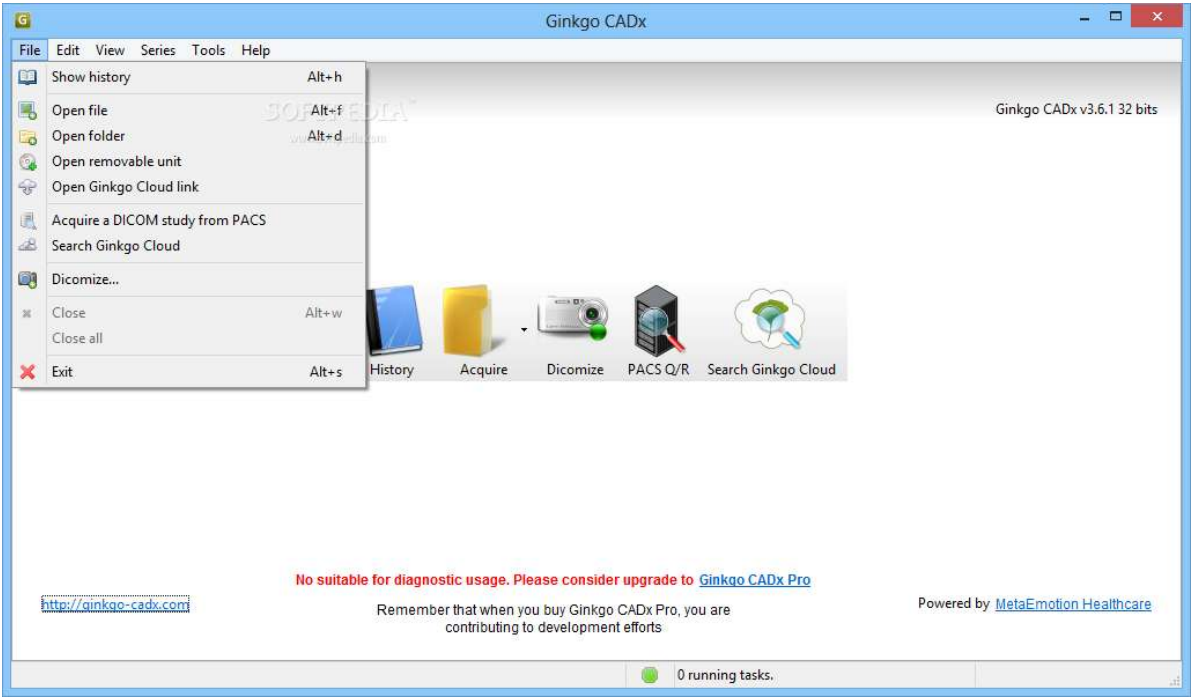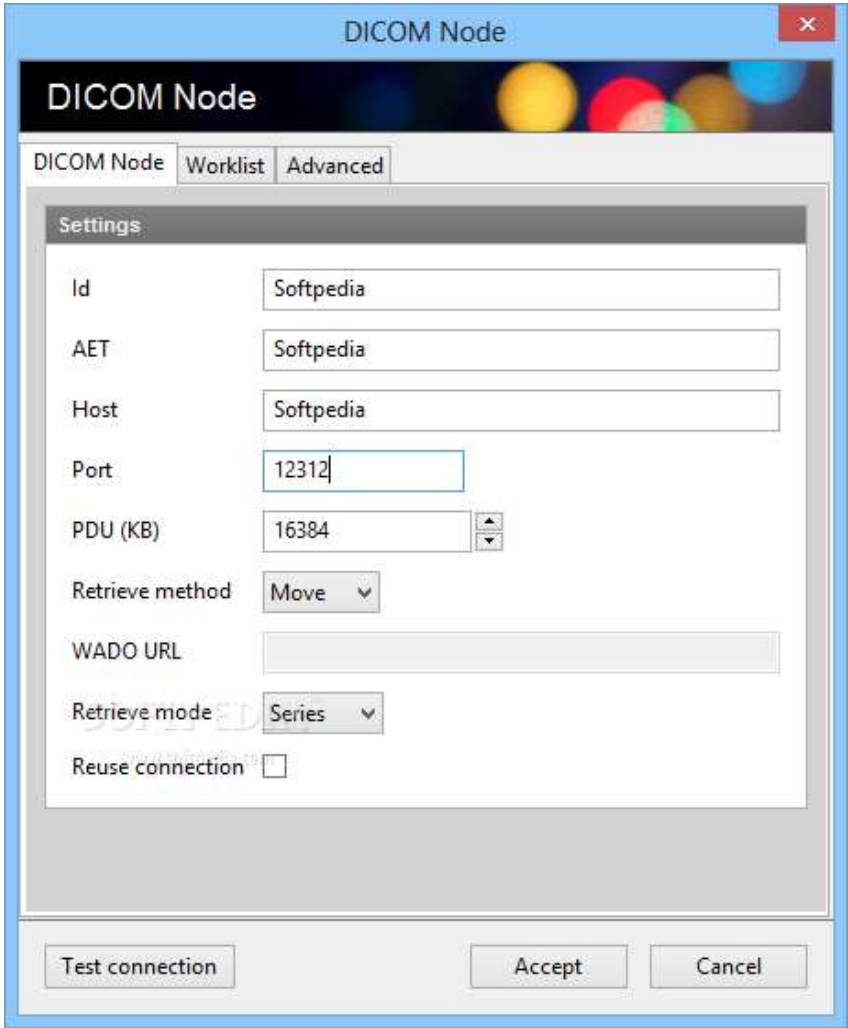

https://image-systems.biz/products/free-dicom-pacs-tools/conquest/
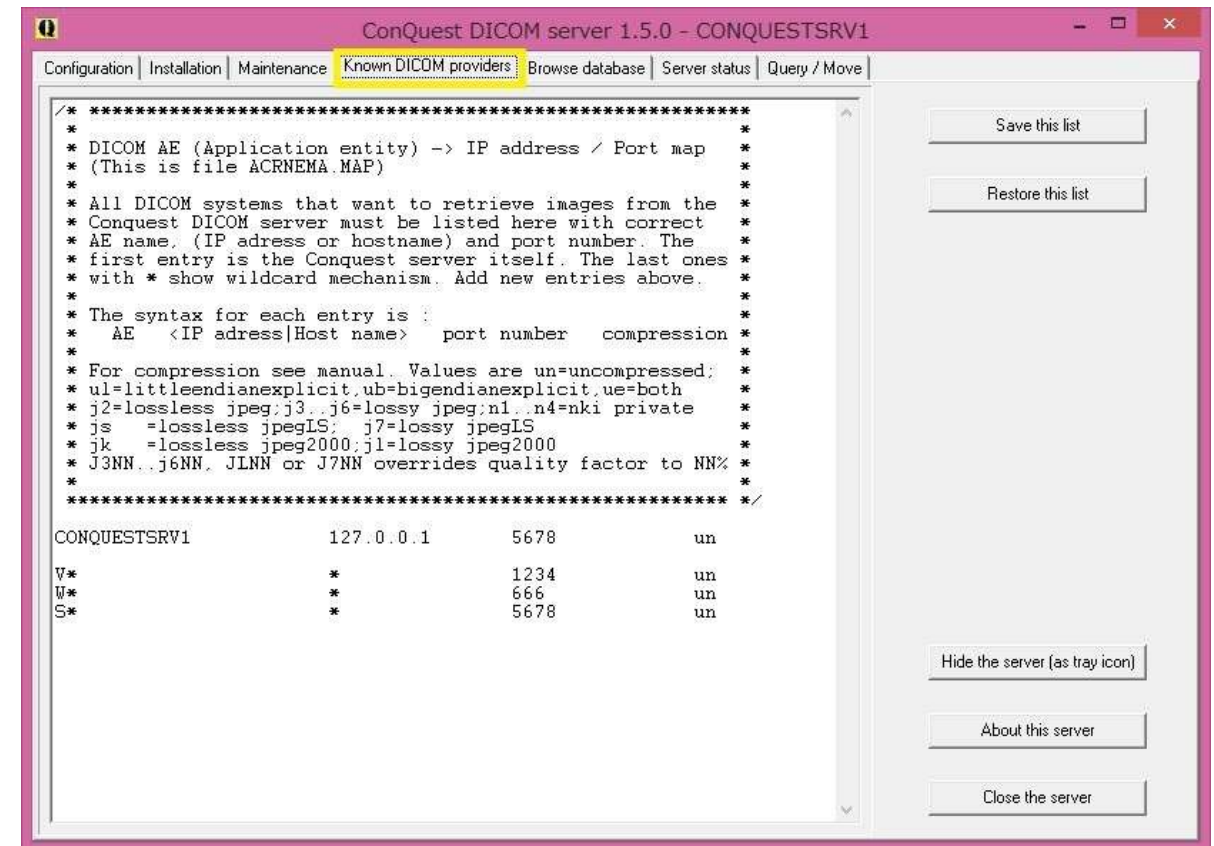
Warning : Install this DICOM software in a folder on the root of your hard drive (c:\)

In "Known Providers" – Always Use the keyboard Tab and Enter Keys

Setting Up a test DICOM Workstation – GinkGo CAD

General tab and DICOM Nodes are most important

https://ginkgo-cadx.com/en/

Set AE title, IP and Port for the Workstation into the server "Known Providers" tab and server AE title, IP and Port into the workstation "DICOM Node".

Adding a Modality – Usually in the field

- Set up like a Workstation
- Usually works just as an SCU
- May have special requirements – check the Conformance Statements
- May do a storage, or other functions like Storage Commitment (STC), Worklist (most common), printing, and Modality Performed Procedure Step (MPPS).

Troubleshooting DICOM

- TCP/IP Ping
- DICOM Echo
- Server Status in ConQuest
- Debug Logs
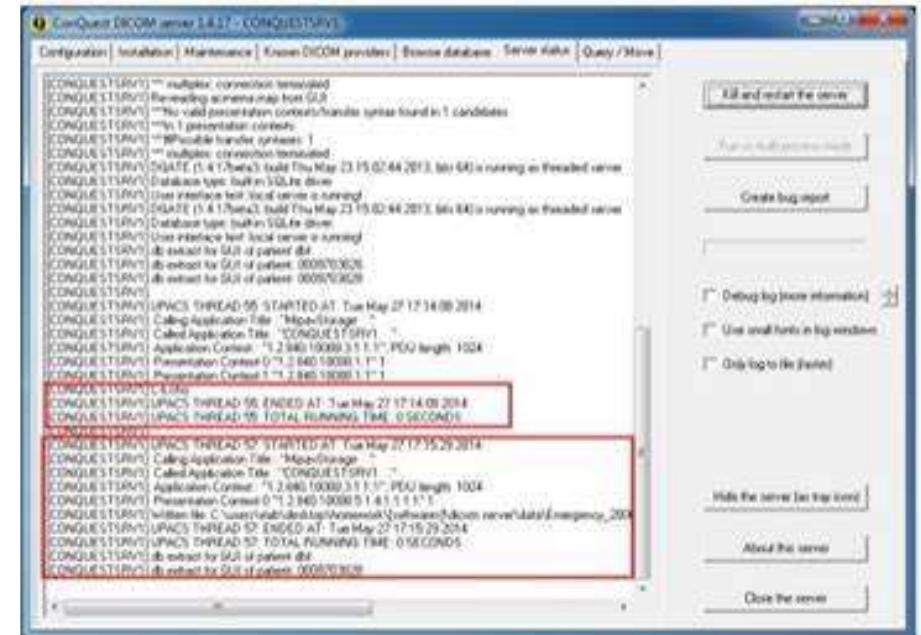- DVTk Network Analyzer
- WireShark
- Conformance Statements

https://www.dvtk.org/downloads/

What does a full DICOM network really look like?
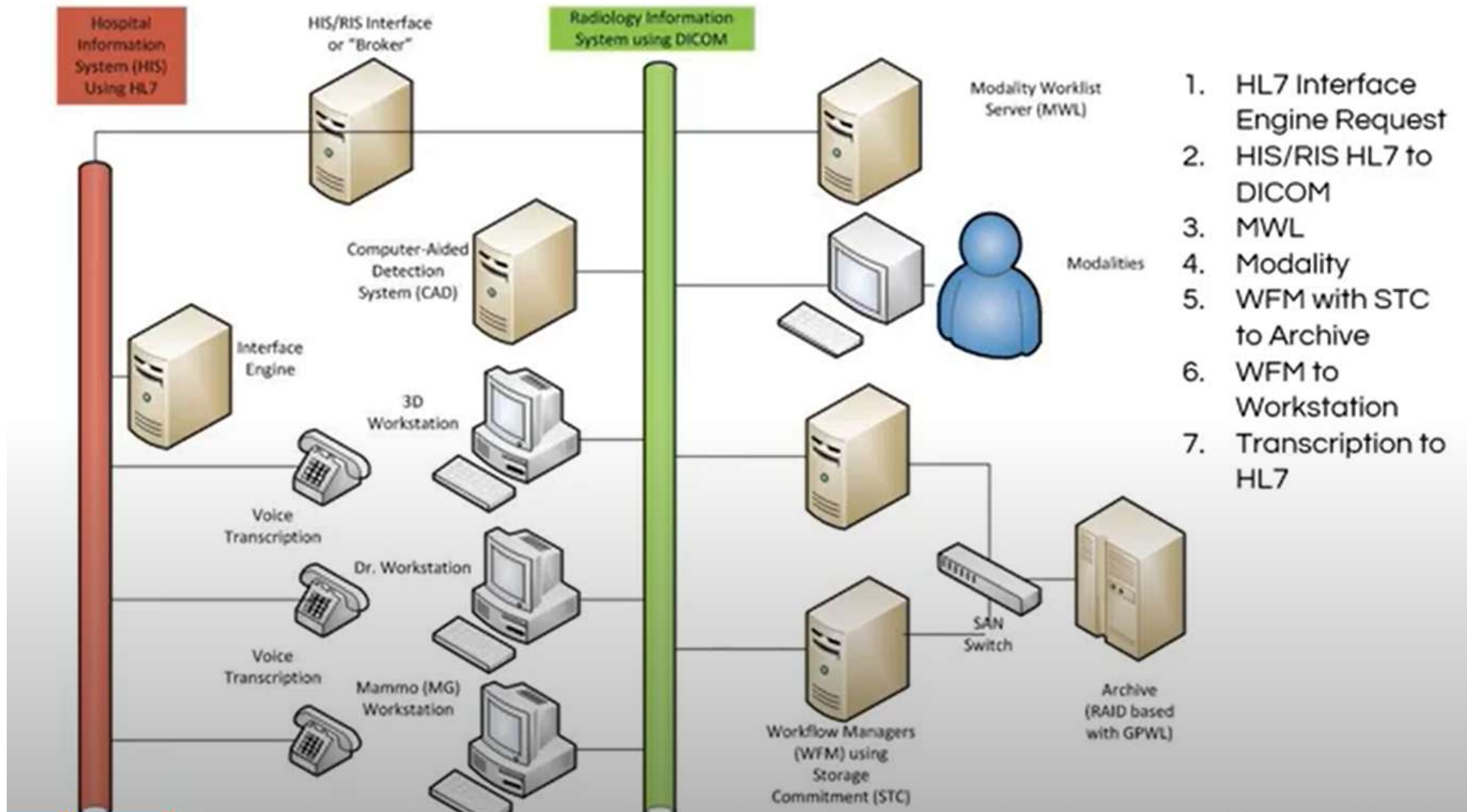
Additional Functions:
- HIS/RIS Integration
- Worklist
- STC
- Transcription
- MPPS
- Cloud / Teleradiology
- CAD
- SR
- Printing
- Video

Who Doesn't Have Questions?