

Market Approaches to Integration Challenges in Imaging



The current imaging market is riddled with the challenges of integrating multiple IT systems, often resulting in roadblocks to obtaining a complete “picture” of the patient information. The initial focus of this integration dilemma tends to lean towards how the data can be compiled and delivered so that it is available. The next crucial and often over looked step is how to present this information to the appropriate end user.



In order to understand and appreciate the different approaches being offered to address the integration and workflow question, the following key IT touch points must be considered:

1. Orders
2. Images
3. “Other” pertinent information – HL-7 or propriety formats
4. Results



To further complicate the imaging integration challenge, each of the above disciplines has its own integration hurdles.

At the current time the market has chosen three methods for addressing disparate IT systems in imaging. To simplify we will call them the following:

- PACS on PACS – worklist with an image focus
- RIS Driven Single worklist - worklist with an order focus
- Interoperability Middleware Solution– worklist with a comprehensive focus on all IT disciplines

PACS on PACS

The PACS on PACS approach presents a centralized archive concept as the spotlight. This single archive is the hub and all studies are routed to, and housed in, this location. The worklist displays all images that are contained within the over-bridging “central archive”. Studies that are sent or manually requested are available to be viewed on a central worklist. The viewing technology required in this approach is that of the related centralized PACS archive. The key focus of the PACS on PACS solution is maintenance of images in a central location.

Offering

- Maintain integrity of the host PACS archive
- Availability to view images that are routed, sent or manually retrieved
- Single worklist
- Single dictation system integrated with the single system viewer



Challenges

- Costly replacement of existing storage
- Requirement of single PACS viewer
- Challenges presented by outside PACS in local environment
- Political disputes over data ownership
- Multiple versus enterprise reporting solution—self-edit, multiple transcription entities

RIS Driven - Single Worklist

Studies that are to be read are presented on a single worklist generated by the awareness of an order (or manual order generation process). The interpreter has limited exposure to studies in outside environments and no automated capability to retrieve them for side-by-side display. The focus of the RIS-driven worklist approach is the patient list. The need for productivity and the access and exposure to complete data sets is not addressed.

Offering

- Complete list of studies to read throughout the enterprise
- Basic functionality of sorting studies by facility, modality, time and date
- Best suited for single reporting system
- Potential for Multiple viewer solution- single or multiple PC's may be required
- Can be passed as a RIS solution due to the approach to order presentation

Challenges

- Overlooks market's key requirement for full access to all patient data
- Requires significant manual intervention
- Requires multiple viewers and transition to multiple viewing environments
- Presents multiple patient ID roadblocks
- No automatic study routing
- No ability to workload balance
- Synchronization of PACS viewer and worklist is unavailable
- Automated presentation of outside priors is difficult
- Cannot be utilized with "thick" client viewers

Interoperability Middleware Solution

Interoperability middleware solutions superimpose all of the disparate IT systems applicable in imaging and negotiate, map, and communicate the right data to the right end-user at the right time.

Interoperable solutions act as nucleus for all patient data and provide both integration and workflow resolution. They can be customized using programmable processes to meet the variable needs within the different workflow environments. True interoperability solutions can be configured to address all or a combination of the imaging IT touch points, such as orders or lack thereof, images, prior reports and

studies, results and other pertinent patient information. This method of addressing the IT integration challenges provides a complete solution focused on improved patient care presenting complete data sets and optimized productivity.

Offering

- Addresses integration and workflow requirements for all IT systems in imaging
- Focuses on all disparate systems across the enterprise
- Actively supports availability and presentation of complete data sets across multiple IT systems and facilities
- Focuses on automation for efficiency and accuracy through programmable intelligence
- System study intellect promotes subspecialty routing
- Supports resident viewer display/hanging protocols or a single viewer requirement
- Provides a solution for multiple dictation system strategies
- Addresses electronic and analog hard copy data formats
- Provides customized workflow solutions
- Affords the ability to workload balance
- Optimizes order, image and results presentation for efficiency
- Availability of all prior studies and corresponding reports
- Single sign-off of reports from multiple dictation systems
- Availability of key significant data points of images, orders, and results for data-mining and reporting

Challenges

- Requires temporary storage of images on other PACS systems
- Mixing of patient ID's requires patient demographic matching expertise
- Procedure types must be mapped to optimize viewer hanging protocols
- Complex workflow solution and implementation require sophisticated integration and a workflow engine capable of addressing DICOM and HL-7 rather than standard data formats

The sophistication of the imaging environment and the complex IT system offerings will continue to make integration of IT systems in imaging a challenge. A complete approach with flexible software is the best method to address the short- and long-term requirements of this complex and dynamic imaging market.