

How One Hospital Automated the Aggregation of Imaging Dose Data Across Their Enterprise

Background



A hospital that serves more than 3,000 patients daily and with more than 22 radiation emitting diagnostic imaging modalities, chose to implement the Philips DoseWise Portal as part of a comprehensive dose management program. The program's goal was to track and reduce radiation dose exposure in order to improve patient safety and clinical outcomes.

Comprehensive dose management and tracking programs are increasingly common across healthcare organizations; driven in large part by federal law requiring healthcare providers to comply with the National Electrical Manufacturers Association (NEMA) XR-29 standard in order to receive full Medicare reimbursement. Dose management strategies have since spread beyond CT to encompass all radiation modalities across the medical imaging enterprise.

Challenges

Implementation of dose management programs is typically centered on the adoption of a system that facilitates the collection, analysis, reporting, and benchmarking of accurate dose data. These systems require information from the studies that are generated at each imaging modality, which could be contained within

the DICOM header or as a separate DICOM Dose Structured Report (Dose SR) object.

Unfortunately, many PACS systems are not capable of extracting and forwarding relevant dose information, in which case the entire DICOM study must be routed to the dose management platform. This presents some significant challenges for hospital IT and administration.

First, it requires the dose management system to be added to each modality as a second DICOM destination. This frequently requires involvement from the modality vendors and can take weeks, if not months, to implement across a large imaging network. It also costs the organization money. Additionally, sending multiple copies of complete DICOM studies can significantly increase network traffic, resulting in throughput and performance challenges—especially for larger image sets like mammography and CT.

Optimize Dose Collection Workflow

This site implemented two Compass™ Routing Workflow Managers from Laurel Bridge Software: One to manage communication between all imaging modalities and their enterprise PACS infrastructure and another to automatically identify and extract the Dose SR and forward it to the Philips DoseWise Portal for analysis and tracking.



Orchestrating Medical Imaging Workflow

By providing a single destination with intelligent workflow orchestration, Compass eliminated the need to add and manage multiple send destinations across the organization's 22 radiation emitting diagnostic imaging modalities. Modalities are detached from DoseWise, thus preventing service-related disruptions. Any future IP changes can easily be implemented without requiring updates to each individual modality. This also separates their mission critical reading workflow from dose reporting activities, ensuring that changes made to the DoseWise DICOM SR workflow won't negatively impact PACS workflow performance.

Compass further optimizes system performance and network utilization by automatically identifying, extracting, and forwarding Dose SRs from within DICOM studies to DoseWise. By providing the flexibility to filter and transform data in real-time, and by removing the images prior to sending the SR information to DoseWise, Compass significantly reduces the network payload that would otherwise be associated with sending entire studies and enables DoseWise to work more efficiently. As an automated and centralized solution, dose information from new or updated modalities is automatically collected upon deployment, without requiring additional planning or intervention from vendor or hospital staff.

Their imaging system administrator in radiology informatics, notes that, "Because it was so easy to implement, we were able to avoid complex integrations and accelerate the launch of our dose management program for the benefit of our patients."

"Compass makes troubleshooting dose-related issues so much easier. Where I would normally have to call my PACS vendor to help me find and extract historic dose information, I can now quickly and easily pull this information from Compass."

Imaging System Administrator
Radiology Informatics

Simplified Troubleshooting of Dose Information

When DoseWise flags a potential issue with radiation exposure, the organization has a responsibility to investigate and diagnose the problem. This requires a review of relevant and historic dose objects. Prior to Compass, it was a resource-heavy process that required manual review of DICOM header information, re-sending of entire studies across the network to DoseWise, and occasionally involvement from PACS vendor support where database access is required.

Now, Compass can maintain a cache of Dose SR objects. Administrators and medical physicists at the hospital are able to forward them quickly and easily to DoseWise for re-processing, without having to send the entire DICOM study or series. By providing immediate, self-service access, Compass not only enables faster troubleshooting, but also simplifies testing by providing easily controlled mechanisms to push Dose SR objects to DoseWise.

Finally, Compass helps to improve the accuracy of dose reporting findings because original Dose SR objects, not copies, can be easily reviewed. This simplifies access to dose information for future analysis and reporting.

About Laurel Bridge Software

Laurel Bridge Software provides enterprise imaging workflow solutions that solve complex, mission-critical imaging workflows that often arise when multiple business entities and their disparate clinical imaging systems must be unified. Our solutions reliably ensure new and historical DICOM imaging studies, HL7 messages, and non-DICOM objects are available to the clinical staff, at the point-of-care.

Laurel Bridge's imaging workflow solutions are implemented at thousands of healthcare facilities, teleradiology service providers, and radiology group practices in more than 35 countries, directly and through integration partners.

More Information: info@laurelbridge.com