Automate Your Radiology Workflows for Deeper Insights Faster

Abstract: Innovations in artificial intelligence (AI) and machine learning make it possible to automate time-consuming, manual processes, and are emerging as powerful assistants that enable unprecedented leaps in clinical productivity and diagnostic confidence for human specialists. In radiology workflows, which often involve repetitive tasks to set up and facilitate the reading, automation innovations present a major opportunity to help radiologists reach narrower and more definitive diagnoses faster. This paper explores current challenges in the radiology diagnostic workflow and details five areas in which GE Healthcare's Centricity™ Universal Viewer integrates automation to improve productivity and enhance patient care.
The power of Automation - Deeper Insights Faster

The move toward a value-based reimbursement (VBR) model is putting pressure on healthcare organizations to modernize IT systems so they can more effectively measure and improve the quality and productivity of their care. The long-term goal is clear: organizational integration of devices, applications, and data so clinicians and administrators can have the right information at the right time. This can help enable optimized patient care with the best possible outcomes at the lowest possible cost.

Because they involve repetitive processes, radiology workflows provide the opportunity to streamline productivity and enhance patient outcomes. By automating key points in the workflow, intelligent solutions can reduce or eliminate manual and redundant tasks that slow down exam interpretation and reporting. Incorporating AI and data integration into the workflow also provide opportunities to potentially get deeper insights with less effort.
Five Steps to Increased Productivity

Automating radiology workflow to support faster and more accurate diagnosis.

Step 1: Exam Assignments

Routing the right study to the right radiologist, based on availability, subspecialty, and credentials, can be a challenge, especially across multi-site, multi-PACS, and multi-vendor environments. Centricity Universal Viewer helps to solve this challenge with its Intelligent Worklist with Autoserve.

Autoserve provides smart exam allocation using rules to fit to diagnostics, business, and patient care priorities, with the ability to redirect exams when a radiologist is not available. Filtering and sorting with full-screen visuals and patient context for each exam allows easy and quick identification and work prioritization. Autoserve's rules-based automation algorithms drive efficient workload balancing that is sensitive to variables including modality, body part, location, procedure type, and service level agreements (SLAs). The bottom line? Autoserve helps ensure the right study goes to the right diagnostician - at the right time.

When used with the AutoNext feature, Intelligent Worklist also supports further productivity via a "head's down" mode. In this setting, radiologists are automatically presented with the next most important exam to read upon saving, dictating, or finalizing on the dictation system. Priority cases automatically jump to the top of the queue, eliminating and reducing the risk of missing an urgent exam.

By improving workflow and reading productivity, Intelligent Worklist lowers the risk of negative clinical consequences associated with delays in reading, interpreting, and reporting. It also empowers care teams to accelerate clinical decision making for an improved patient experience and outcome. In short? Exam assignments are keenly important. But it starts with the right tools in the right hands of the right people.
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**The key benefits for us are time savings and enhanced collaboration. We’re able to prepare images 50% faster than we could previously.”**

Wojciech Rogala

Head of Diagnostic Centre; Żory, Poland, Helimed Diagnostic Imaging

“**In our previous PACS viewer, it required 25 clicks. The radiologist often got interrupted in one patient and then went to locate a second patient in another vault before coming back to the first patient. With Centricity Universal Viewer Interrupted Workflow feature, it only now takes four clicks!”**

Harold Barrett

Product Analyst Lead; University of Pittsburgh Medical Center

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Interrupted workflow design has been shown at one customer site to reduce time spent switching exam context by 85%
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"[Centricity Universal Viewer] Advanced Visualization has allowed us to improve the efficiency of our patient care, and our productivity."

Dr. Jean-Marc Treutenaire
Radiologist, SELARU du Nedon, Istres, France
Step 4: Interpretation

After analyzing an image, radiologists must interpret the exam in context for the patient. The single imaging study, however, may not be enough: radiologists often need more background on patient medical history to make a narrower and more definitive diagnosis. Radiologists also often want to compare the current images against previously diagnosed and published cases, which may require a time-consuming search of textbooks, professional literature, and the internet.

Diagnostic workflow automation can support radiologists by serving them key clinical context automatically, eliminating the need to manually search patient records such as the EHR as well as normative comparison databases for more difficult or abnormal cases. By providing a more complete picture of the patient's condition and care within the reading workflow, these tools support a more rapid and confident diagnosis.

Imaging Related Clinical Context (IRCC), a feature of Centricity Universal Viewer, delivers this patient clinical content in context by linking to EMR data such as surgical notes, pathology reports, and clinical notes, while presenting these in the patient's exam jacket.

"There's always another film to be read, another patient to be seen, another phone call to be answered. So that extra time is filled doing what we really are meant to do, which is practice medicine, not navigate through an EMR."

Matthew A. Barish, MD, FACR
Vice-Chair, Operations, Management & Informatics, Division Co-Chief, Abdominal Imaging; Stony Brook Medicine, New York

Integration of EHR notes in the reading workflow has been shown to reduce access time to critical patient data by 90%5
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Increase diagnostic confidence by up
to 10% through care collaboration®
Conclusion: AI brings radiology into a new era of the automation of time-consuming, manual processes. The repetitive nature of many radiology tasks makes the radiology workflow a prime target for optimization with AI-powered automation. That means that even before a radiologist opens a case, automation can operate behind the scenes to make the most of the radiologist's time, supporting the process of assigning, viewing, analyzing, and interpreting exams, not to mention helping care teams coordinate more effectively. At each of these five key stages of the workflow, GE Healthcare's Centricity Universal Viewer and Centricity 360 Suite include intelligent tools that support radiologists and result in increased productivity and narrower, more definitive differential diagnoses. Given the pressure on radiology departments and the move toward value-based reimbursement (VBR) models, enhancing these key points in the workflow with automation can help care teams deliver a faster and more definitive diagnoses.
What's next?

Today, AI is already showing promise and is poised to revolutionize radiology just as dramatically as digitization did decades ago. As soon as a physician orders a test, workflow AI may be able to optimize the test parameters, equipment, and scheduling. After a test is complete, next-generation AI may be capable of generating thousands of different algorithms that could potentially detect concerning features in images from multiple modalities. With every patient and every scan, these algorithms may learn and improve, becoming more agile and more capable. This new layer of intelligence is set to fundamentally change the radiologists' role in patient care, allowing radiologists to spend less time performing manual tasks and more time interacting with other members of the care team, as well as with patients.

As a medical imaging leader with more than one million machines installed across the world and more than 16,000 scans produced per minute, GE Healthcare’s 100-year history in healthcare provides deep clinical and operational expertise as well as the trust of both doctors and hospitals worldwide. GE builds on this history, healthcare footprint, and trust to enable health delivery organizations like yours to provide faster, more effective care to your patients.

Partnerships leverage the software expertise of GE Healthcare Digital, the high-volume computing power of GE Health Cloud, and the clinical knowledge and expertise of leading academic institutions and health systems. At GE Healthcare, we are working together to target key disease states, inefficient processes and care areas to build enhanced productivity and diagnostic tools which will power subsequent releases of radiology solutions.

To learn more about how GE Healthcare is leveraging the brightest minds in the healthcare industry to create and disseminate machine learning tools for radiology, please contact your GE Healthcare representative or call (866) 281-7545.
About GE Healthcare

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Integration of EHR notes in the reading workflow has been shown to reduce access time to critical patient data by 90%. "Impact of PACS-EMR Integration on Radiologist Usage of the EMR," John Mongan and David Avrin, Journal of Digital Imaging, Society for Imaging Informatics in Medicine 2018.

5 Multidisciplinary Team Redesigns Care Processes and Systems, Leading to Significantly Improved Performance on Core Measures in Four Clinical Areas, Phyllis Justus, RN, MSN, NE-BC Director of Nursing, professional Practice & Rose Brandau, RN, MSN Vice President/Chief Nurse Executive Carolinas Medical Center-University

6 Technology in development that represents ongoing research and development efforts. These technologies are not products and may never become products. Not for sale. Not cleared or approved by the U.S. FDA or any other global regulator for commercial availability.

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