



GE HealthCare Expands Its Effortless Recon DL Portfolio, Bringing Advanced Deep Learning Image Reconstruction to Clinicians Worldwide

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- More than 80 percent of all health system visits include an imaging exam,ⁱ making radiology an essential part of diagnostics and healthcare and image quality a cornerstone of medicine.
- GE HealthCare is at the forefront of leveraging deep learning, a subset of artificial intelligence (AI), to benefit clinicians and patients with the latest technologies and solutions.

CHICAGO--(BUSINESS WIRE)--Dec. 5, 2024-- GE HealthCare (Nasdaq: GEHC) unveiled three new advanced deep learning image processing and reconstruction solutions as a part of its Effortless Recon DL portfolio at the Radiological Society of North America (RSNA) 2024 Annual Meeting, in Chicago, IL. Understanding the need to improve operational efficiencies within radiology departments and the ongoing challenge of burnout experienced by clinicians, GE HealthCare developed the technologies to deliver exceptional image quality, reduce scan times, and support improved patient outcomes.

The quality of clinical images plays a crucial role in providing accurate diagnoses and optimizing patient care. As technology continues to evolve – deep learning – a subset of artificial intelligence (AI), has emerged as a powerful tool for clinicians. It can positively impact diagnostic accuracy and improve disease detection, which can help improve patient outcomes across clinical specialties.

"Blurry images can compromise clinicians' ability to diagnose with confidence and speed," said Roland Rott, President and CEO, Imaging, GE HealthCare. "At GE HealthCare, we're ushering in a new era of image resolution with deep learning-powered imaging reconstruction. These AI-powered solutions not only enhance image quality but also streamline workflows, enabling radiologists to work more efficiently and cost-effectively. It also has the potential to provide patients' more timely access to imaging and consequentially may enable earlier diagnosis and treatment. By leveraging AI and deep learning technologies, we remain committed to delivering advancements that help empower clinicians to make more confident diagnoses and improve outcomes for patients worldwide."

New Effortless Recon DL solutions address pain points across care pathways

Across healthcare, there is a need for improved image quality to help early diagnosis and treatment for patients. The need is particularly acute in chronic illnesses, such as neurological conditions, cancer, and cardiovascular disease, where incidence rates are increasing globally due to population growth and aging.ⁱⁱ In fact, 2024 is the first time the U.S. is expected to report more than two million new cancer cases in a year – equaling almost 5,500 cancer diagnoses each day.ⁱⁱⁱ

Imaging is a critical component to addressing these conditions, ensuring early and accurate diagnosis, as well as ongoing management. More than 80% of hospital visits include early diagnostic imaging across over 23,000 conditions,ⁱ underscoring the sheer volume of images. While their work is essential, many radiologists suffer from burnout. According to a survey of more than 8,000 radiology professionals included in a 2024 report from the American Society of Radiologic Technologists (ASRT), more than half (54%) reported feeling emotionally exhausted, and 57% felt underappreciated on the job.^{iv}

Unveiled at RSNA 2024, Sonic DL for 3D^v is a deep learning innovation designed to reduce MRI scan times by up to 86%. Following the launch of Sonic DL for cardiac imaging, this extension to 3D is expected to offer enhanced resolution for brain, spine, orthopedic, and body imaging – while retaining the same impressive scanning speed of up to 12 times acceleration. For neurology, **Sonic DL for 3D** is designed to enable high-resolution imaging of complex brain structures, allowing for quicker, clearer insights into neurological conditions.

To assist clinicians in oncology, GE HealthCare's **Clarify DL**^{vi} nuclear medicine solution is designed to enhance bone SPECT image quality, an important factor in increasing diagnostic confidence.^{vii} In a clinical evaluation, Clarify DL's image resolution was rated as better in 98% of the exams.^{viii} The AI-powered solution is designed to deliver clear, accurate, and effortless imaging – a stark contrast to today's noise reduction techniques, that can lower noise at the expense of contrast and resolution. Clarify DL is designed for use with GE HealthCare's StarGuide SPECT/CT system.

For the growing practice of cardiac CT, GE HealthCare offers **TrueFidelity DL with the cardiac kernel**, enabling outstanding detail at low doses, with improved visual sharpness for confident reporting and accepted image texture. The value of this AI-powered tool is fully realized when combined with the company's Revolution Apex platform – which boasts a 0.23 second rotation time for one-beat cardiac imaging – and ECG-less Cardiac solution to acquire cardiac images without the aid of the patients' ECG signal/trace.

Increasing global access to AI-powered technologies

Sonic DL for 3D, Clarify DL, and TrueFidelity DL each leverage a dedicated Deep Neural Network (DNN), which allows for image reconstruction that produces significantly improved images with better detail and quality. The solutions will now join the company's extended Effortless Recon DL portfolio, which is bringing critical deep learning advancements to clinicians around the world and includes:

- **True Enhance DL (CT)** – recently FDA cleared – generates deep learning-based images that can estimate monochromatic 50keV images from single-energy X-ray, to increase contrast and support confident diagnoses. The AI-based solution provides clinicians a simple workflow and incredible image quality. True Enhance DL is now available to new and existing

Smart Subscription customers.

- **TrueFidelity DL** (CT) offers impressive image quality performance^{ix}, and preferred image sharpness and noise texture,^x without compromising dose performance. As a result, the technology – which also includes kernels for lung and bone imaging – can improve reading confidence across a wide range of clinical applications such as head, whole body and cardiovascular, for patients of all ages. New this year, TrueFidelity DL is now available on Revolution Ascend platform, Revolution Maxima and to new and existing Smart Subscription customers.

"The sharpness of the images is a breakthrough development in image reconstruction algorithms. We see details that we have never seen before. Abdominal, lung and cardiac imaging benefits most from this technology. I am mainly interested in cardiac and cardiovascular imaging. We found much better image quality, depiction of details, and image sharpness for cardiac valves, sclerotic and soft plaque in cardiac and extracardiac vessels, as well as fewer artifacts around stents and stent-grafts. DECT for pulmonary embolism easily convinced everybody in our department." — Prof Klaus Hergan, University Hospital Salzburg, Austria Department of Radiology of the 1200-bed University Hospital Salzburg^{xi}

- **Precision DL** (PET/CT) enhances image quality in PET/CT scans, providing clinicians with a powerful solution to aid in precise diagnoses, treatment planning and monitoring with the image quality performance benefits typically associated with hardware-based Time-of-Flight (ToF) reconstruction, without compromising sensitivity, including improved contrast-to-noise ratio, contrast recovery,^{xii} and quantitative accuracy.^{xiii}
- **AIR Recon DL** (MR and PET/MR) helps improve image sharpness and enables reduced exam times by up to 50% without compromising image quality.^{xiv} These features help to enhance workflow efficiency and productivity for healthcare professionals, reduce the need for repeat scans, enable faster diagnoses, and enhance patient experience. With expansion from 2D to 3D and PROPELLER imaging sequences, AIR Recon DL expands to nearly all MRI clinical procedures, covering all anatomies.

"The image quality. The scan times, again, probably the biggest revolution we've seen in the MRI field in a long time, and I've been doing this a long time." —Tom Schrack, BS, ARMRT, CS Manager of MR Education and Technical Development Fairfield Radiological Consultants, USA^{ix}

- **Sonic DL** (MR), available since 2023, enables cardiac imaging within a single heartbeat, scanning up to 12 times faster compared to conventional methods,^{xv} enabling rapid cardiac MR functional imaging to match the speed of MRI to the speed of physiology. This minimizes or removes the need for repetitive patient breath holds, simplifying procedures and expanding the pool of patients eligible for cardiac MRI to include arrhythmic patients and those with difficulty holding their breath. At RSNA 2024, GE HealthCare unveiled Sonic DL for 3D^y that will broaden its applicability beyond cardiac.
- **Helix Advanced Image Processing** (X-ray) revolutionizes diagnostic imaging quality by consistently delivering images with appropriate detail, contrast, and latitude to enable radiologist to visualize key clinical details.

"Particularly in children in the ICU, who are sensitive to ionizing radiation... we were able to reduce the exposure required to achieve a diagnostic quality image... We were able to see through the mediastinum, to still see the bony details of the spine, which indicated that we had sufficient penetration but yet not burn out the details of the lung parenchyma and pulmonary vascular markings, and that really is an indication of a high-quality image." — Dr. Nghia (Jack) N. Vo, MD Diagnostician-in-chief, Children's Wisconsin; Chief of Pediatric Radiology, Medical College of Wisconsin^{ix}

Altogether, GE HealthCare's Effortless Recon DL represents a collection of innovative deep learning-powered imaging reconstruction solutions available across Imaging modalities. It is designed to elevate imaging quality by optimizing contrast, signal-to-noise ratio, sharpness, and minimizing noise and artifacts to produce exceptionally clear images for improved clinical insights and decision-making.

For more information on GE HealthCare's [Effortless Recon DL portfolio](#) and other impressive technologies and solutions, visit booth 7330 or the [RSNA 2024 event center](#).

About GE HealthCare Technologies Inc.

GE HealthCare is a leading global medical technology, pharmaceutical diagnostics, and digital solutions innovator, dedicated to providing integrated solutions, services, and data analytics to make hospitals more efficient, clinicians more effective, therapies more precise, and patients healthier and happier. Serving patients and providers for more than 125 years, GE HealthCare is advancing personalized, connected, and compassionate care, while simplifying the patient's journey across the care pathway. Together our Imaging, Ultrasound, Patient Care Solutions, and Pharmaceutical Diagnostics businesses help improve patient care from diagnosis, to therapy, to monitoring. We are a \$19.6 billion business with approximately 51,000 colleagues working to create a world where healthcare has no limits.

Follow us on [LinkedIn](#), [X](#), [Facebook](#), [Instagram](#), and [Insights](#) for the latest news, or visit our website <https://www.gehealthcare.com/> for more information.

ⁱ Durlach, P. *Stat*. "Almost Every Patient Story Starts with an Image." February 14, 2022. <https://www.statnews.com/sponsor/2022/02/14/almost-every-patient-story-starts-with-an-image/>.

ⁱⁱ Feigin VL, Vos T, Nichols E, et al. The global burden of neurological disorders: translating evidence into policy. *Lancet Neurol*. 2020;19(3):255-265. doi:10.1016/S1474-4422(19)30411-9.

iii Collins S.2024-first year the US expects more than 2M new cases of cancer. American Cancer Society. Published January 17, 2024. Accessed November 24, 2024. <https://www.cancer.org/research/acs-research-news/facts-and-figures-2024.html>.

iv American Society of Radiological Technologists. "White Paper From the 2024 Consensus Committee on the Future of Medical Imaging and Radiation Therapy." 2024. https://www.asrt.org/docs/default-source/research/whitepapers/2024-consensus-committee-on-the-future-of-medical-imaging-and-radiation-therapy.pdf?sfvrsn=1f869819_14.

v Sonic DL for 3D is 510(k) pending at the US FDA. Not yet CE Marked. Not available for sale in the U.S.

vi Clarify DL is CE marked as part of Xeleris V. 510(k) pending at the US FDA. Not available for sale in the United States.

vii Clarify DL improves dual head cameras' image quality performance measured by Structures Similarity (SSIM) – up to 8% improvement, Mean Squared Error (MSE) up to 76% improvement, and Peak Signal-to-Noise Ratio (PSNR) - up to 18% improvement, as compared to GE bone SPECT factory reconstruction presets.* *Demonstrated using digital phantom simulations with inserted lesions of known size, location, and contrast, for AC and NC images.

viii As demonstrated in clinical evaluation in which 127 exams were rated by total of 9 physicians. Each exam was reconstructed with both Clarify DL and the existing factory reconstruction preset and evaluated by 3 of the physicians.

ix Image quality comparisons between DLIR and ASiR-V, were evaluated by phantom tests of MTF, SSP, axial NPS, standard deviation of image noise, CT Number accuracy, CNR, and artefact analysis. Additionally, LCD was demonstrated in phantom testing using a model observer with the head and body MITA CT IQ Phantoms (CT191, CT189 The Phantom Laboratory). DLIR and ASiR-V reconstructions were performed using the same raw data.

x As demonstrated in a clinical evaluation consisting of 60 cases and 9 physicians, where each case was reconstructed with both DLIR and ASiR-V and evaluated by 3 of the physicians. In 100% of the reads, DLIR's image sharpness was rated the same as or better than ASiR -V's. In 91% of the reads, DLIR's noise texture was rated better than ASiR -V's. This rating was based on each individual reader's preference.

xi The views and opinions expressed are those of the speakers and do not necessarily reflect the official policy or position of GE HealthCare.

xii Precision DL with Omni Legend 32cm data improves Contrast Recovery (CR) by 11% on average and Contrast-to-Noise Ratio (CNR) by average of 23% as compared to non-ToF reconstruction. CR and CNR demonstrated using clinical data with inserted lesions of known size, location, and contrast. Using data from Omni Legend 32 cm, CR and CNR were measured using High Precision DL and QCHD.

xiii Precision DL with Omni Legend 32cm improves feature quantitation accuracy by 14% as compared to Discovery MI with ToF reconstruction, at comparable noise level. Quantitation accuracy demonstrated using clinical data with inserted lesions of known size, location, and contrast (ground truth). Feature SUVmean from Omni Legend 32 cm with High Precision DL compared to SUVmean from Discovery MI 25 cm with QCFX.

xiv GE HealthCare data on file.

xv GE HealthCare data on file.

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GE HealthCare Media Contact:

Margaret Steinhafel

M +1 608 381 8829

margaret.steinhafel@gehealthcare.com

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