GE Healthcare Pioneers Photon Counting CT with Prismatic Sensors Acquisition

GE Healthcare invests in a unique approach to cutting-edge CT technology and acquires Prismatic Sensors AB, a leader in Deep Silicon detector technology for photon counting computed tomography (PCCT)

CHICAGO, November 19, 2020 – GE Healthcare today announced its acquisition of Prismatic Sensors AB, a Swedish start-up specializing in photon counting detectors, signifying the company's continued investment in photon counting CT technology. This technology has the potential to establish a new standard of care in oncology, cardiology, neurology, and many other clinical CT applications.

PCCT has the promise to further expand the clinical capabilities of traditional CT, including the visualization of minute details of organ structures, improved tissue characterization, more accurate material density measurement (or quantification) and lower radiation dose. Prismatic Sensors has overcome many challenges working with silicon and patented a novel way to position the silicon sensors "edge on" so the detector is deep enough to absorb very high energy photons and fast enough to count hundreds of millions of CT photons per second. The company was founded in 2012 as a spin-off from KTH Royal Institute of Technology in Stockholm, Sweden.

"**We believe this technology has the potential to be a substantial step forward for CT imaging** to establish a new standard of care and eventually improve clinical outcomes for millions of patients worldwide," said Kieran Murphy, President & CEO, GE Healthcare. "From the first x-ray machines to the first photon counting CT prototype, GE Healthcare is committed to pioneering next generation technologies to achieve precision health and improve lives. We are excited about this cutting-edge approach with Deep Silicon and its clinical potential."

"**Our research shows Deep Silicon is the best solution for photon counting CT to meet clinical requirements**," says Mats Danielsson, PhD, CEO of Prismatic Sensors, "Silicon is by far the purest material produced for use in detectors. Alternative materials, including cadmium-based, will be limited as x-ray detector materials due to their imperfect crystal structure and contaminations. Silicon-based detectors will enable superior spectral resolution without compromising on count rate or spatial resolution. Our collaboration with GE Healthcare has been very productive and together, we have made rapid progress. Now, we look forward to the next chapter as we come together as one team working towards bringing photon counting CT with Deep Silicon detectors to the market."

For nearly 50 years, CT has proven to be a vital imaging tool used to detect cancer, heart disorders, and other diseases large and small. CT's clinical use and diagnostic power have rapidly increased with the introduction of volumetric imaging, faster rotation speed, iterative and AI-based image reconstruction, as well as dual energy. Last year, the United States reported an all-time high in CT procedure volume with an

estimated 91.4 million scans[1]. Now, photon counting CT technology may have the potential to define the next 50 years of CT innovation.

"It has been evident for decades that CT (and x-ray imaging) would benefit greatly from energy-discriminating photon counting detectors," explains Norbert Pelc, Sc.D., Professor of Radiology, Emeritus at Stanford University. "The challenge has been developing detectors that can handle the very high photon flux from high-power x-ray tubes while delivering good energy resolution and maintaining or improving spatial resolution. Of course, the detectors also have to be manufacturable at reasonable cost. It is a huge testament to the scientists and engineers at Prismatic Sensors that they have achieved this. I expect the impact on the CT field will be large, for example, improved dose efficiency, particularly for low dose acquisitions and for applications that benefit from tissue specificity. **To put the higher spatial resolution of this Deep Silicon detector in perspective, we have not seen an improvement of this magnitude in decades, and every other time that spatial resolution was improved significantly the utility of CT also advanced.** This is very exciting."

GE researchers began studying PCCT in 1993 and introduced the world's first PCCT prototype using cadmium-based detectors in 2006. The company has been an industry leader in this technology for Nuclear Medicine for a decade, providing excellent results to clinicians and patients. Now, using Deep Silicon detectors, GE has identified a better solution for CT to accommodate the much higher count-rate demands of CT imaging, thereby providing much more information to clinicians.

"Clinicians rely on the information they receive from medical images – like those we receive from a CT – to help correctly diagnose patients, monitor cases, and make treatment decisions," explains Staffan Holmin, MD, Professor in Clinical Neuroimaging, Karolinska Institutet and Senior Consultant at Karolinska University Hospital in Sweden. "What's so exciting about photon counting CT is that it brings higher spatial resolution and contrast. This can help us to image small blood vessels, vascular pathologies, and to see malignant changes at an earlier stage when treatment can be more effective. The potential for substantially reduced radiation is also important, particularly for pediatric patients. **Photon counting will likely become the standard of care for all clinical applications where CT is used today.**"

GE Healthcare will close the Prismatic Sensors acquisition by January 2021, after holding a minority position in the company since 2017. GE Healthcare and Prismatic Sensors will work together to deliver a clinical system in the near future[2]. Terms of the transaction are not disclosed.

For more information on GE Healthcare and this cutting-edge CT technology visit the company's virtual [RSNA booth](#) or [gehealthcare.com](#).

To learn more about Prismatic Sensors, visit [prismatic.se](#).

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About GE Healthcare:

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[1] 2019 CT Market Outlook Report by IMV Medical Information Division.

[2] Technology in development. Not for sale. Not cleared or approved by the U.S. FDA or any other global regulator for commercial availability.

GE Healthcare is the $16.7 billion healthcare business of GE (NYSE: GE). As a leading global medical technology and digital solutions innovator, GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world.

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About Prismatic Sensors AB:
Prismatic Sensors AB is a spin-off company from research at KTH Royal Institute of Technology and Linköping Institute of Technology. The company is focused on research and development of photon counting detectors for CT, providing improved contrast and spatial resolution at reduced radiation dose. Prismatic has many granted patents as well as pending patent applications. Ramsbury Invest was an initial investor along with company employees. Prismatic has offices in Stockholm and Linköping, Sweden. It has cutting edge competency in the design of integrated circuits, high precision mechanical solutions, physics, software, algorithms, as well as mathematics for image reconstruction.

Media Contact:
Margaret Steinhafel
Margaret.Steinhafel@ge.com
+1 608 381 8829