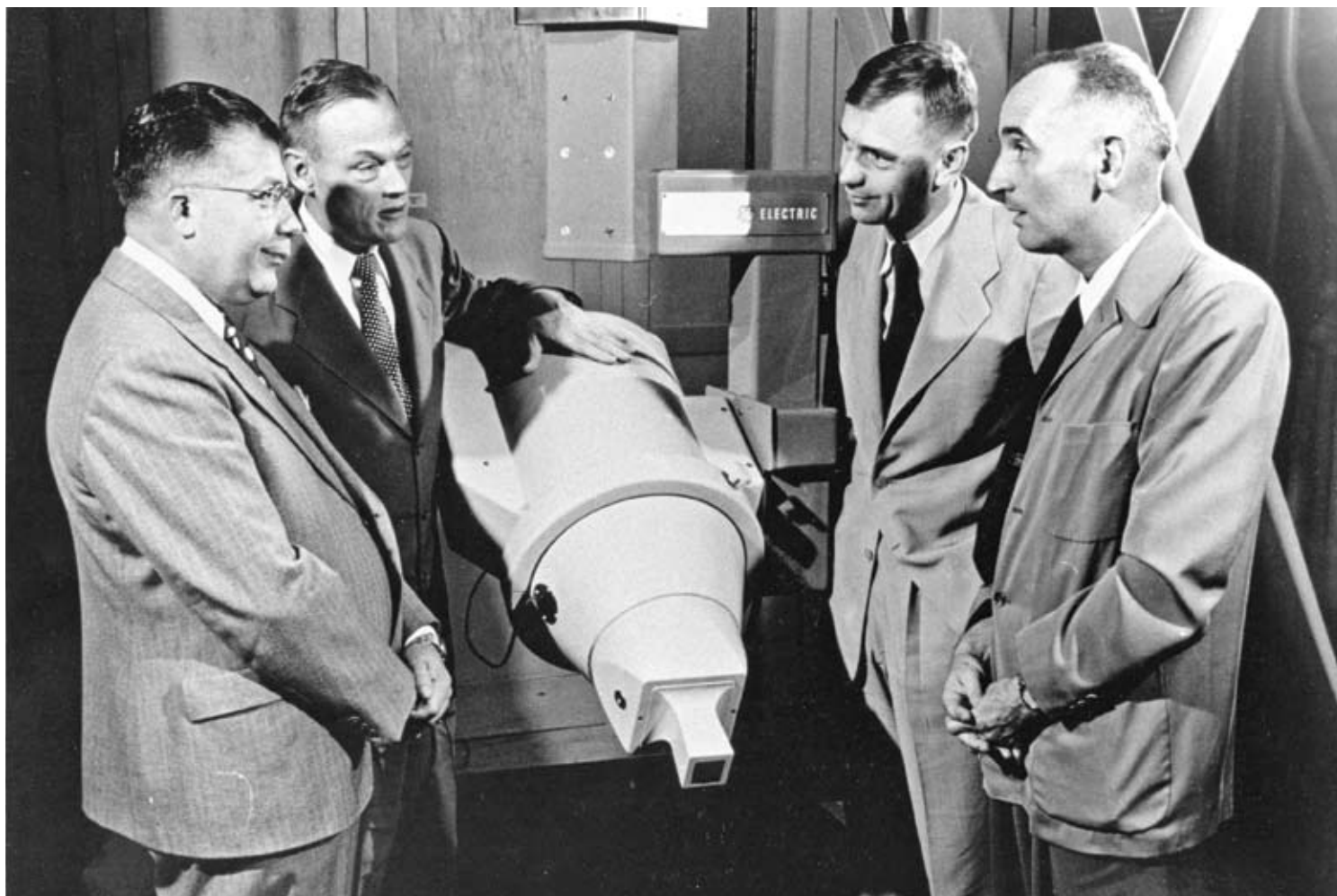


Special Feature

50 YEARS OF IMAGING



Dale Trout (left), longtime General Electric consultant, discusses MD Anderson's GE cobalt-60 unit in 1951 with (left to right) William G. Pollard, Ph.D., executive director of ORINS; Marshall Brucer and Gilbert H. Fletcher. Photo courtesy of ASTRO

Medical Imaging from a 50-Year Perspective

Industry vendors share their thoughts about the most significant developments

By Jeanne-Marie Philips, President, HealthFlash Marketing

A lot has happened in medical imaging during the past 50 years, and many of the vendor firms that play a leading role in the imaging industry today have witnessed and helped shape the evolution of the field to attain its place of prominence. As *ITN* marks its 50th anniversary, we asked a group of industry leaders to look

back and provide their perspective on the seminal events and trends during the past half-century.

Q. What do you consider the most significant development in your area of medical imaging overall during that time?

Diana L. Nole, president, digital medical solutions, Carestream Health:

The development of sophisticated radiology information systems/picture archiving and communications systems (RIS/PACS) platforms that enable digital imaging studies to be efficiently read, stored and shared with onsite or remote clinicians and specialists



anytime, anywhere has been a critical factor in helping medical professionals improve the level of patient care they provide.

Robert Cooke, senior vice president, Fujifilm Medical Systems:

When computed radiography (CR) was brought to the market, it helped ignite the PACS market. Fujifilm was very involved with those efforts. At the time, more than 70 percent of all exams taken involved film. Without CR and the digital storage and transmission of projection radiography, the PACS market would not have emerged at that time.

Ram Krishnan, general manager, GE Healthcare IT: For healthcare IT, it was the global adoption of PACS and RIS and their impact on digitizing and advancing radiology and diagnostics in healthcare.

Radiology has become 70 percent more productive over the past 15 years, and this is largely due to the efficiencies gained in digital workflows created by our main technology products PACS and RIS. The end benefits for all of us, as patients of global healthcare systems, have been faster diagnosis times, better quality results and tighter linkage between the physician community.

In the world of hospital and physician office electronic medical record (EMR) adoption, we often forget what a tremendous success PACS deployments around the world have been and the impact they have been having over the past decade.

Diego Olego, chief technology officer, Philips Healthcare: Over the past 50 years, we have seen the clinical practice revolutionized through the advent of modalities like magnetic resonance (MR), computed tomography (CT), ultrasound and tailored hybrid imaging systems, such as positron emission tomography (PET)/CT, and now PET/MR. Supported by advances in information technology, microelectronics and contrast agents, these new modalities have opened the door to move from purely anatomical imaging toward the combination of functional and anatomical imaging with increased temporal and spatial resolution.

In addition, modern technology enables radiologists to better collaborate with their referring physicians. By sharing images and cases with colleagues – whether they are in the same hospital, a different state or even

in another continent – increased collaboration enables multidisciplinary teams to provide much better patient experience, safety and care.

Michael Wendt, senior VP, imaging and therapy Systems, U.S. and Canada, Siemens Healthcare:

The most significant development in medical imaging has been the benefit of what imaging can do for patients. Imaging has evolved from looking at anatomy to now seeing microscopic structures and visualizing the biological effects of disease at a molecular level. This precision has all but eliminated the need for exploratory surgeries and drastically reduced the number of unnecessary procedures, putting the patient on the most effective and efficient treatment path.

Q. What do you consider your company's most significant achievement during the past half-century?

Note: Carestream Health's greatest single success is developing the industry's first cassette-size, wireless digital radiography (DR) detector. The DRX-1 detector has had a dramatic impact on both imaging productivity and patient care. Images are available in seconds, and the thin, compact detector can perform any type of imaging exam. This detector also enables cost-effective conversion from film or CR imaging systems without replacing X-ray systems or renovating exam rooms. It also can be integrated with popular mobile imaging systems to improve care for trauma, ICU, surgery and general radiology patients.

Cooke: Fujifilm transitioned from a regional pioneer in the production of imaging films to a global leader in the field of medical informatics. We pioneered products ranging from CR to Web-based PACS, including recent strides in imaging processing and X-ray detector technology, which hold promise to dramatically reduce patient radiation exposure without compromise to

diagnostic quality.

Krishnan: From the 1962 engineering of a superconducting magnet that would clear the way for MRI to the 1976 discovery of CT, the last 50 years have been monumental for the industry and for the scientists at GE.

Olego: Philips has been able to help advance imaging as a tool to improve diagnosis and therapy and drive towards minimally invasive treatments that improve patient care. Over the past half-century, by focusing on the unmet needs of clinicians and patients, Philips has offered imaging contributions such as the world's first commercial DR system, the world's first multi-



Photos from GE Healthcare's archives include computed tomography in 1976 and a "magnetic breakthrough" in 1962.

slice CT, many breakthrough innovations in cardiovascular X-ray, and advancements in hybrid imaging, including the world's first commercially-available PET/MR system.

It is impossible to pick *the* innovation in a market that had low-resolution, 2-D X-ray 50 years ago and has high-resolution, real-time 4-D navigation today.

Wendt: Siemens Healthcare cherishes its role as a pioneer in medical imaging, working with our clinical partners to push the envelope of what is technically feasible for the benefit of patients. Our innovation has included robotic angio systems, spiral CT, radiation dose reduction, 70 cm bore and TIM workflow technology in MR, and now, the Biograph mMR, the first integrated MR/PET.

Q. Who do you believe has been the most influential figure in medical imaging during this time period and why?

Cooke: The many individuals who have dedicated their work towards the

development of the DICOM standard have been most influential to our industry. The work to develop this standard represents an amazing collaboration of industry and radiology professionals who paved the way for the digital revolution in medicine that is unfolding before our eyes.

Krishnan: The World Health Organization, due to its efforts to increase access to diagnostic imaging equipment, reports that about 75 percent of the world's population is without access to ultrasounds, X-rays, magnetic resonance images and other medical imaging technologies that can detect tumors, diagnose tuberculosis infections and monitor pregnant women.

Wendt: Before joining Siemens Healthcare, I worked at a children's hospital cancer center. Every day when I came to work, I got to see young children fighting disease. These patients and their hope in imaging has, by far, been the most influential on me personally and on many of my colleagues. There have been many inventors and pioneers, but all of us share a common desire to improve the lives of patients.

Note: Over the past 50 years, there have been hundreds of luminaries who have advanced both the science and practice of radiology services across the globe. It would be impossible for me to name just one.

Q. Briefly summarize the most inter-

esting changes your company has seen in the Radiological Society of North America (RSNA) annual meeting since your firm first became an exhibitor.

Note: The impressive growth in both attendees and exhibitors at RSNA reflects the critical role of radiology services in high-quality healthcare. Medical imaging exams remain one of the primary tools used for diagnosis and treatment of a wide range of diseases and conditions. The last 50 years have seen the development of innovative diagnostic tools and dynamic new imaging modalities, so radiologists now have much more data available for review, as well as the means to manage this data effectively. This enables them to deliver responsive, accurate reporting that helps enhance patient care.

Cooke: RSNA has become a global platform for learning and technology innovation, with representatives from all markets today, in comparison to its beginnings. The show has increased in attendance, booth space and quality of lectures in that time.


The sheer evolution of McCormick Place is a testament to this scale. RSNA was once held in the space now known as the "Lakeside Center." It is amazing to see how the interaction between attendees has evolved at the exhibition. The "cell phone" evolved from a luxury to the required "handheld computer." It is ironic that there are often so many of these devices in use at one time

that the network is rendered nearly useless. A trip to the RSNA is often now a critical milestone in the vendor selection process for many healthcare providers.

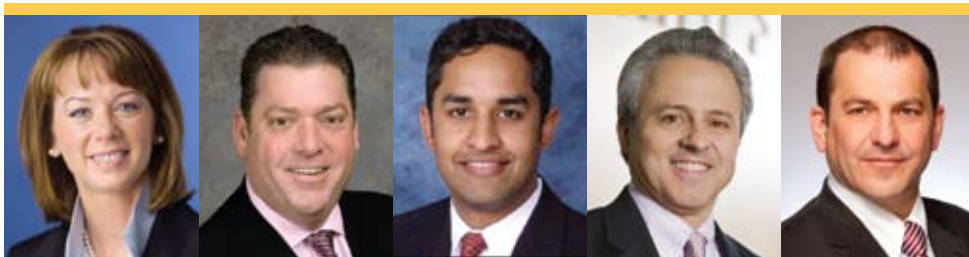
Correspondingly, Fujifilm and its attendance have grown significantly in the last 25 years, and accordingly the range of products and scale has increased to the point that RSNA is a focal point for product planning and sales of the company on a global basis.

Krishnan: RSNA has grown every year in size, scale and scope. Vendors have come and gone, fads have come and gone, but the thing that amazes me each year is how much the show has evolved into one that focuses as much on information technology and workflow as it does on "heavy iron." Although it's not an IT conference, the problems discussed, themes that have evolved and the places people spend the most amount of time always revolve around information technology.

Olego: We've seen the show grow from a local product-focused exhibition to a showcase and forum addressing global challenges facing radiologists, associated caregivers and healthcare administrators. RSNA has kept its relevance by adapting well to evolving technological, clinical and economic trends. The show also has become the meeting point for all products and services in support of radiology delivery.

Wendt: The most significant change to RSNA has clearly been the growth, both in size and scope, of the meeting. From humble beginnings in a hotel to now being the largest international gathering in our field and completely filling McCormick Place, the growth of RSNA underscores the importance imaging has achieved in the medical community. 

Jeanne-Marie Phillips is president of HealthFlash Marketing Communications, a public relations firm specializing in healthcare. Contact: jphillips@healthflashmarketing.com, 203.977.5555, healthflashmarketing.com.



Industry leaders left to right:

Diana L. Nole, president, digital medical solutions, Carestream Health, Rochester, N.Y.

Robert Cooke, senior vice president, Fujifilm Medical Systems U.S.A. Inc., Stamford, Conn.

Ram Krishnan, general manager, GE Healthcare IT, Barrington, Ill.

Diego Olego, chief technology officer, Philips Healthcare, Andover, Mass.

Michael Wendt, Ph.D., senior vice president for imaging and therapy systems division, U.S. and Canada, Siemens Healthcare, Malvern, Penn.