



Focus
ON SUCCESS



"This system gives us the option of comparing images on a chronological axis. The images, which preserve anatomical structures, are synchronised in juxtaposition. This really supports our everyday work."

Dr. Johannes Hezel

RIS/PACS PRÜNER GANG

Germany

HIGHLIGHTS

ONE CLICK SOLUTION

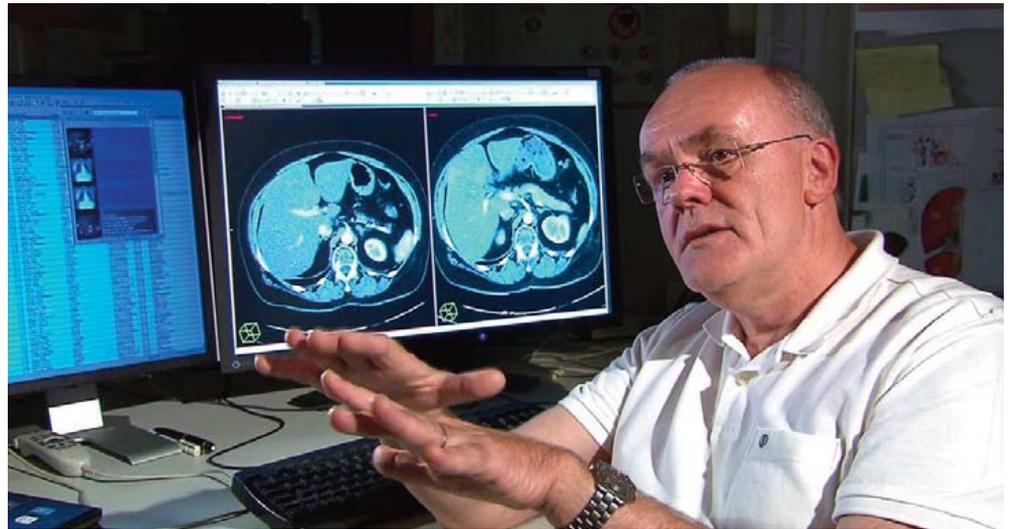
Multiplanar reconstruction, vascular representation and volume rendering with one mouse click

FOUR SITE FACILITY

Prüner Gang operates successfully over four locations in Kiel, Germany

INTEGRATED PACS SOLUTION

Utilising latest generation PACS with integrated PowerViewer



Challenge

Prüner Gang Hospital in Kiel, Germany was looking for an intelligent digital solution to improve workflow, communication and turnaround times across its multi-site facility. It was important to incorporate cross-discipline functionality, eradicating the need for multiple workstations and repeated uploads of large image files to enable consultants to complete a single diagnosis.

Solution

The latest generation CARESTREAM PACS with integrated PowerViewer. This solution speeds interpretation, allows multiplanar reconstruction, vascular representation and volume rendering with one click of the mouse. The new version takes the traditional development of PACS another definite step towards the future. In addition to the already extensive post-processing tools, the new system facilitates a more reliable and user-friendly comparability between current cross-sectional examinations (CT, MRI, PET/CT) and relevant previous digital examinations for both internal and external DICOM data. By comparing anatomical landmarks, the system is able to co-register volumes, allowing an interactive comparison of volumes from different examinations.

Benefits

The PACS ensures that post-processing functionalities are fully integrated into the radiologist's working environment. Arduous and time-consuming interim steps such as changing workstations to specific computers and multiple uploading of extensive imaging data into various post-processing programmes are completely dispensed with. Existing post-processing potential can be capitalised on thanks to this user-friendly solution. Dr Hezel explains: "With one mouse click, we can juggle between very different functionalities such as multiplanar reconstruction or vascular representation or volume rendering, so that it becomes completely routine to actively use these different post-processing options. Virtually no post-processing takes place in the image-producing modalities, these are available purely for the patient examination and data acquisition and the entire image data set is then sent unfiltered to the PACS.

"The advantages gained in examination capacity and quality far outweigh the necessary storage costs. I feel this is a very intelligent and hands-on solution for our work processes, one that simultaneously permits a high degree of standardisation but also individuality when it comes to examinations."

Dr. Johannes Hezel

Success in Scotland

“It’s excellent, it works really well and has changed our way of working considerably.” **Dr Raj Burgul**

Dr Raj Burgul, Consultant Radiologist,
Stirling Royal Infirmary



Challenge

Dr Raj Burgul, Consultant Radiologist at Stirling Royal Infirmary, Scotland describes the challenge in detail. “We had a department with film bags everywhere. It was a daily task to get them from the wards, get images reported, and then get them back to the wards so that people could see them. Because we are a hospital on two sites we had to continually transport huge volumes of film bags between both sites. It was logistically challenging. We wanted to run the two departments as one, with a seamless communication across both.”

Solution

Carestream Health saw immediately that CARESTREAM PACS presented the ideal solution to this challenge. Its common user interface means that all users have access to the same features and functionality. Virtually all types of multi-media can be managed in patient files, including radiology images, laboratory results, video files and other non-dicom data, and this information is instantly accessible, even remotely thanks to VPN links put in place. Naturally the transfer to a PACS system involves a change in working methods, something reflected in the architecture of CARESTREAM PACS. It is designed to be easy to use; its key feature being that it enhances the diagnostic experience for the user and patient alike.

Benefits

By enabling the seamless acquisition, storage, retrieval and display of digital patient images within and between clinical sites from Scotland’s National Archive, CARESTREAM PACS immediately eradicated the logistical problems, improving communication links between the two sites and ending the need for film based diagnosis. Robust training plans meant that everyone in the chain of care was very quickly brought up to speed and able to enjoy the benefits of the new system. The impact on workflow and turnaround times is tremendous, leading to improvements in patient care and a long-term and sustainable reduction in waiting times.

SCOTLAND

“The Carestream PACS is very easy to use, so training clinicians was easy. It has some really powerful features which are transforming medical care both locally and nationally.” **Dr Raj Burgul**

HIGHLIGHTS

PIONEERING INNOVATION

An early example of a truly integrated, national system

39 HOSPITAL SITES

Working across 15 health boards serving a diffused population of five million

STIRLING ROYAL INFIRMARY, SCOTLAND

175,000 exams annually across two sites

Carestream Health worked with NHS National Services Scotland as part of the eHealth programme to install CARESTREAM PACS across 39 hospitals in Scotland's fifteen Health Boards, with integrated CARESTREAM RIS in many locations. The result is one of the first examples of a truly national PACS system.

Scotland's diffused population of some five million is spread across a mixture of dense urban areas such as Glasgow and Edinburgh and remote rural communities. This nationwide solution provides vital links to all types and size of hospital as well as acting as a back-up for local PACS servers in each hospital. Managed storage is expected to reach 2 Petabytes to support this reach. The national benefits mean that patient data can be accessed from anywhere across the region, creating a genuine national healthcare community, that has already reached out globally. The future of patient care is here.

Stirling Royal Infirmary is part of NHS Forth Valley, serving a population of 300,000. Linked with Falkirk and District Royal Infirmary, the Radiology Department carries out 175,000 examinations annually across a full range of modalities.

“The consensus is that it's a brilliant product.”

Norma Wilson, Area Imaging Services Manager,
Forth Valley Health Board





United States

“We achieved our goal of automating our process and enhancing productivity while simultaneously improving service to referring physicians and enhancing the quality of care delivered to our patients.”

HIGHLIGHTS

CARESTREAM SUPERPACS

Enterprise-wide access to patient imaging exams and information

COMPETITION LED INNOVATION

Operating in New York City, amidst strong competition. Top-notch delivery is key

SERVING 8 MILLION PEOPLE

38 imaging centers in and around New York City, providing 950,000 imaging exams per year

In New York City, there is intense competition for imaging orders from referring physicians, due largely to the numerous prestigious hospitals that provide outpatient imaging services. This private chain of imaging centres has to deliver top-notch imaging technology, experienced radiologists, rapid reporting and excellent service to referring physicians in order to sustain their business.

The Diagnostic Imaging Group LLC carries out 950,000 imaging exams a year across a range of modalities including MRI, CT, Ultrasound, PET, PET/CT, Nuclear Cardiology, Nuclear Medicine, Echocardiography, General Radiography, Digital Mammography and DEXA Bone Densitometry.

SUPERPACS ARCHITECTURE AT DOSHI, NEW YORK, USA

Challenge

The group approached Carestream Health with the challenge to create a more productive workflow offering rapid delivery of radiology reports to referring physicians. The organisation also wanted to reduce costs by eliminating time-consuming manual processes and enhancing radiologists' reading efficiency. Crucially, the staff wanted to establish a process to route exams to radiologists according to their specialties, regardless of their physical location and subsequently enhance patient care.

Solution

CARESTREAM SuperPACS™ links existing multi-vendor, multi-site PACS in an efficient enterprise solution. The technology gives healthcare professionals a more effective way to streamline workflow, using PACS resources already in place. SuperPACS™ Architecture provides radiologists with a common user interface and single set of applications, including advanced clinical tools, at a single desktop, negating any need to learn or use multiple interfaces. Images and reports can be automatically sent back to the original PACS or RIS system for local storage and distribution.

Benefits

The Diagnostic Imaging Group LLC's referring physicians appreciate both the enhanced speed of reporting and convenient web-based access that SuperPACS™ is able to provide. SuperPACS™ enables the sharing of patient images and information through

a common global worklist that balances exam reading amongst onsite and off-site radiologists. For The Diagnostic Imaging Group LLC it means being able to easily manage disparate radiology solutions at multiple locations without the need to replace existing RIS/PACS systems, resulting in major improvements in the ability to balance costs and patient care, with simultaneous gains in productivity and overall resource utilisation. Using SuperPACS™ exam orders, relevant prior reports, patient information and prior exams are available along with the current exam. User interface and reading tools, along with hanging protocols, follow radiologists whether they are at an imaging centre or a home office. This has meant a significant reduction in the need for radiologists to travel to specific imaging centres - onsite presence is only required for interventional exams.

Turnaround and productivity times have been radically improved, with radiology reports being produced in just 4-16 hours, compared with up to 30 previously. SuperPACS™ makes for a more comfortable working environment, enabling radiologists to read examinations within their speciality as well as providing the ability to read mammography exams from all modalities (FFDM, breast MR, ultrasound and others) and general radiology exams on a single workstation.



HIGHLIGHTS

EUROPEAN LAUNCH POINT

Groene Hart Ziekenhuis, Netherlands was the first European user of CARESTREAM Cardiology PACS

4 MAIN SITES

A multi-site facility housing 441 beds

MASSIVE WORKFLOW CONTRACTION

A 27-step workflow has been contracted down to just 8 steps

Ralph Wagter, *Resident ICT Consultant,*
Groene Hart Ziekenhuis, Netherlands.

Challenge

The Cardiology department, working in conjunction with the ICT department at Groene Hart were looking to implement a digitised workflow. Ralph Wagter, resident ICT consultant describes the scope of the project in Cardiology: "The plan was to digitise ultrasound and cath lab, previously stored in analogue form on VHS and CD. We have a large archive of VHS tapes that necessitated lots of time spent searching through for patient records; obviously a manual process that was both time-consuming and carried the potential for error."

Solution

Launched in 2009, the CARESTREAM Cardiology PACS offers a single integrated platform for diagnosis, reporting, storage and review, creating a closed-loop information cycle that greatly improves efficiencies, completely removing the potential for errors caused by multiple data entry points. Working in synchrony with the Hospital Information System the Cardiology PACS PACS system takes patient information from a central database and duplicates it across every record or entry made about that patient - no more lost records, broken videotapes or corrupted CDs.

Benefits

The experience at Groene Hart is a perfect example of what can be achieved using CARESTREAM Cardiology PACS. A 27-step workflow has been contracted to just 8 steps through intelligent combinations made by combining different systems, something that was not possible without the Cardiology PACS. The correlations between a contracted workflow, financial economy and greater accuracy - streamlining the potential for error, are obvious. In terms of its impact on patient care, the Cardiology PACS enables much more intuitive reviewing and reporting; comments that a patient makes during a consultation can be discussed and immediately assessed using the live data taken from the scan. Patients also have the option to take home a copy of their CD and, in the absence of a national imaging network, another hospital can request and receive a CD with a significantly faster turnaround - all huge positives steps in terms of improving communication and maintaining high standards of patient care.

"We've seen what Carestream Health can do for us in Radiology which, although a very different type of set-up, relies on the same basic tenets that we wanted to translate to Cardiology - digital imaging, processing, report and review." **Ralph Wagter**



Nestled in a particularly beautiful area of the West Netherlands, the historical city of Gouda, is home to the Groene Hart Ziekenhuis (Green Heart Hospital). Spanning four main sites, the Groene Hart is a medium-sized general hospital providing care to a local population of 450,000 people. Housing 441 beds the hospital employs some 150 doctors and, as an established user of Carestream products, it was the ideal European launch point for the new Cardiology PACS.

“PACS could be adapted for use with any documents or streams of information, basically anywhere that is imaging and storing information could benefit and the wider that this technology spreads itself, the more successful it will become.” **Ralph Wagter**



Netherlands



“Mammography is no longer separated from other radiographic work, allowing better integration and collaboration across disciplines.”

Nikolaj Borg Mogensen

Nikolaj Borg Mogensen, Senior Consultant
at Ringsted Sygehus, Sjælland Region, Denmark.

Challenge

With a planned move to digital mammography, Ringsted Sygehus, Denmark needed a system that was intuitive, flexible and optimised workflow. It was important to replace manual input with an automated process. Nikolaj Borg Mogensen, Senior Consultant at Ringsted Hospital, Sjælland Region explains: “One of the great global challenges is the shortage of skilled labour. The shift to digital technology can solve this problem, geographical distance no longer plays a role with digital screening.”

The project’s aims offered a unique opportunity for collaboration across regional boundaries. “We’ve had the opportunity to develop the system with help and input from many sides, all working together towards a common goal,” comments Nikolaj Borg Mogensen. The result of this is a project with the potential to be eventually rolled out across all five of Denmark’s regions.

Solution

Carestream Health, in collaboration with radiology physicians, specialists and administrative staff throughout Denmark, developed a new RIS module for mammography screening that optimises workflow, meets high demands for quality and enables easier, more flexible appointment scheduling.

Development of the module took into account the lack of a uniform structure for screening across the regions. In Sjælland mammography mobiles are located across the region to conduct screenings, whereas Hovedstaden and Midtjylland undertake procedures at the hospital. Solutions to these, and other differences in procedure, were incorporated during development of the module, with the overall aim of a scalable system with global implementation potential.

Benefits

The module is currently used in 66% of all mammography screenings of Danish women, amounting to over 240,000 women annually. The system handles large amounts of data with the Hovedstaden region alone uploading more than 1,000 screenings daily. Denmark was the first country to successfully digitise mammography screening. The close cooperation between Carestream Health and the three regions has meant that Denmark is now seen as a textbook example of digital mammography, fuelling interest from other countries including Iceland who are using the module for a nationwide screening programme.

The CARESTREAM RIS mammography module replaces manual input with automated processes for better workflow. “It heightens the efficiency in terms of saving resources and making administration easier,” explains Lillian Kofod, RIS/PACS System Administrator for the Sjælland region. Carestream Health experts in Denmark and Canada worked with the three regions to specifically develop a system that can handle the demand for high quality, optimise workflow and meet EU requirements, such as double-blind reading.

Denmark

Ringsted Sygehus

HIGHLIGHTS

FIRST FOR DIGITAL MAMMOGRAPHY SCREENING

Denmark was the first country to successfully digitise mammography screening

DEDICATED CARESTREAM RIS MODULE

Workflow optimisation combining cross-discipline integration and collaboration

USED FOR 240,000 MAMMOGRAPHY SCREENINGS

Ability to select and book 200 women in one minute

Continuing Development

The mammography module from Carestream Health is now fully implemented across the three regions and work is continuing to develop new features and functions. "The next phase of the project has just been launched," explains Nikolaj Borg Mogensen.

"A Web portal has been incorporated into the system through which woman can log in and makes alterations to their appointments." This change will effect obvious administrative savings. "Furthermore, it will reduce the number of women who do not show up for their consultation, which in turn leads to increased efficiency."



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