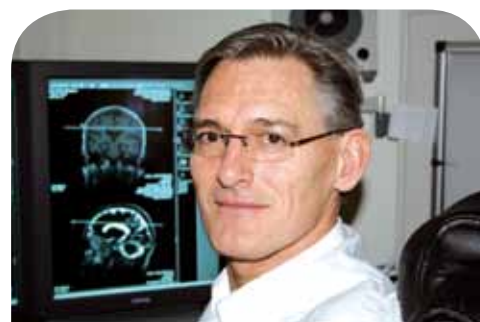## User Report

PACS Helps Reduce Workload of Physicians and Nurses, Increases Patient Throughput

Catholic Hospital Association Weser-Egge in Germany Digitizes Four Sites with Solution from VISUS

Today, radiologists are required to provide more and more X-ray services while time slots are shortened and requirements go up continuously. This req uires effective and smooth workflows. Hospitals have to cut down, e.g., on patient stays in order to be economically viable. In this respect, more often than not the radiology department turns out to be the bottleneck in treatment. "Due to the fact that we can only examine our patients consecutively, we depend on quick and smooth processes in order to meet the tall – and legitimate – requirements. For this purpose, all the information has to beavailable campus-wide at any time", is how Dr. Martin Traupe, Director of the Institute of Radiology of the Catholic Hospital Association (KHWE) Weser-Egge – a group of Catholic hospitals in Germany – explains what his challenges are in everyday routine.

It was exactly for this reason that a digital image management system (PACS) was introduced in his hospital. "In addition, we are able to save the cost of conventional X-ray film development", adds IT Manager Thorsten Krian. Last but not least, however, a very practical aspect played a key role: "The region of East Westphalia-Lippe has a weak economy and infrastructure, which is why radiologists are hard to recruit and tie to our hospitals. Modern technology is to serve as an additional USP." according to Krian.

The major focus, however, was the optimization of the workflow, in particular in the communication across sites. The Catholic Hospital Association Weser-Egge resulted, in 2005, from the merger of the four acute care hospitals St. Ansgar Hospital Höxter, St. Josef Hospital Bad Driburg, St. Rochus-Hospital Steinheim, and St. Vincenz Hospital Brakel into one not-for-profit company, a "gGmbH". Each of the hospitals operates its own X-ray diagnostics department, with

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St. Ansgar Krankenhaus Höxter
▸ **Regional provider of health services**
▸ **375 patient beds**
▸ **Approx. 16,000 inpatients p. a.**
▸ **Close to 20,000 outpatients p. a.**
▸ **Close to 35,000 X-ray services p. a.**

the central Institute of Radiology being located at the Höxter site. That institute is managed by Dr. Traupe who, in parallel, operates his own practice at that site.

Realizing communication across sites

The overall project planned, besides the PACS, for the parallel introduction of a radiology information system (RIS) and an imaging plate solution in all four hospitals. The PACS vendor was to act as a general contractor. "We regard the PACS as a central system as it manages all of the image logistics as well as the workflow", Krian explains this decision.

Thorsten Krian
IT Manager

In cooperation with an engineering firm, the hospital group – in agreement with the radiologists and further specialized physicians – put together the requirements and the actual facts on site in a list of specifications. The central archive was to be set up at the St. Vincenz Hospital, with communication between the hospitals needing to be realized via comparatively weak connections. Resilience and easy administration were further requirements from the IT department. "From a clinical standpoint, the integration of all modalities – including nuclear medicine – was essential in order to realize an end-to-end image management in the group", adds Dr. Traupe.

In the course of a multi-phase selection process, the decision was finally taken for the Enterprise PACS JiveX of the IT vendor VISUS from Bochum in Germany. It is supplemented by the RIS from iSOFT as well as by imaging plate systems.

The overall solution has been in routine operation since September 2009. "JiveX was, for the radiologists, the most powerful solution. It is fast, clearly laid out, easy to handle, and functionally mature. In addition, it is at a high state of technological development and integrates very flexibly into the existing infrastructure with the SAN from DataCore", says Krian. Besides the central archiving, each of the four hospitals works in its own PACS cluster, the X-ray images and reports are exchanged between them. The hospitals have put their trust into ERGO as their hardware supplier.

Four hospitals, four days

The rollout of the system presented all participants in the project with a tough challenge. "We had decided to roll out the system on four consecutive days at all four hospitals. Intensive pre-introduction trainings and a very good support by VISUS have helped realize the changeover in an effective manner", according to the IT manager.

There were minor problems which Head Radiology Technologist Kim Kramer-Loof witnessed in the handling of the PACS and the imaging plates: "These media were completely new to us, with workflows we were not used to. These led, in particular in staff of the higher age bracket, to certain barriers. In this respect, we would aim to create acceptance through even more intense trainings in the future, also with regard to the technical processes". In general, however, she very much appreciates the particular user friendliness of the PACS.

Dr. Traupe, too, speaks about a major turning point regarding established workflows, requiring sensitivity in the rollout phase. "We were aware that we would need to invest additional working hours during the introduction phase of the system, which, however, leads to a significant increase in effectiveness after a brief induction phase. In total, it means an enormous step forward."

Radiologist involved in reporting

Benefits realized fast

But before this understanding became broadly accepted, there was a certain skepticism. The physicians did not want to give up their established workflows regarding X-ray images. "Long since, the PACS has ceased to be a toy of the radiologists; instead, it offers benefits to all faculties. Therefore, the introduction is a project at an enterprise-wide scale. We had to convince the users of the benefits and win them over", says the Head Radiologist.

After only a brief induction period, the clinicians realized the advantages and came to appreciate them. This way, images are available for reporting directly after the exam, with the reporting process finalized, typically, on the same day. Individualized hanging protocols make reporting significantly faster and more effective through standardization in the process. Image processing options, such as

zooming and enlargements, are further supporting functions. Previous digital images can be consulted quickly and easily for the purpose of comparisons. "We supply conventional previous reports from the X-ray film archive, as we have decided against a costly secondary digitization. This may appear to be not very practical, but it can be realized quickly and easily. Our manual archive on site encompasses all images from the preceding two years, which is easily sufficient", explains Dr. Traupe.

Plans are to extend the PACS at short term, and to integrate images from endoscopy as well as ECG waveforms into the clinical workflow as a next step.

Improvements in time spent, and quality

While quality and speed of reporting increase, waiting times for patients are reduced. With staff levels remaining the same, the number of patient cases can be augmented sustainably through improved and faster processes. The preparation of the clinical demonstrations can be done more conveniently now, too; this takes place – as it were – together with the reporting. During the demonstrations, new cases can be discussed spontaneously without images needing to be procured first. This way, interdisciplinary issues can also be clarified ad hoc.

"Today, nobody would wish to work without the PACS any longer", outlines Dr. Traupe. "No more conventional X-rays, ever again", is the general consent. "There is no longer a need to go look for images and reports; physicians in their wards can provide information to their patients faster, and also integrate modules of the reports directly into the physician's letter. This increases efficiency in daily routine."

For the radiology technologists, patients are re-entering into the focus of their work – in lieu of the X-ray exam as such. "We simply save a lot of time. Digital processes serve to eliminate time-consuming processes such as X-ray film development, or the searching and procuring of previous images. Due to the fact that we work in more of a relaxed manner, and can dedicate more time to care for our patients, in due course our satisfaction with our work incr ases", says Kim Kramer-Loof.

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