

# Faster, Better and More Efficient

Integrated RIS/PACS solutions streamline workflow in radiology departments. SIENET Cosmos has been up and running at the Klinikum Ingolstadt, Germany. A visit with the hospital's head of radiology, Professor Dierk Vorwerk, M.D.

*By Dr. Hildegard Kaulen*

Chairman of Radiology, Dierk Vorwerk, M.D., of Klinikum Ingolstadt is very familiar with the radiology requirements of a hospital with more than 1000 beds. Each day up to three hundred examinations are reported in his department. "From the outset we had a very clear idea of what we wanted in terms of digitalized radiological diagnostics," explains Vorwerk. "We wanted medical and administrative processes to interact smoothly." One main goal was to integrate the hospital's PACS (Picture Archiving and Communication System) with its RIS (Radiology Information System). Professor Vorwerk and his colleagues wanted to have all relevant data readily available on a single system and to avoid searching for patients using two different systems. The goal was achieved by installing the RIS component of SIENET®.

As for the PACS, the hospital wanted an integrated, flexible and efficient system. They were after integration because they wanted to be able to display patient data, appointments and examination reports from the RIS while displaying PACS images on three monitors. Concurrently, Klinikum Ingolstadt

also wanted to enable the various image processing applications of the modalities to run from the PACS. The system had to be flexible enough to allow for future expansion of capacities and features. Efficiency was important as well, because the department's PACS had to be able to handle the large volumes of data that are generated daily by the SOMATOM Sensation 16 CT system. This efficiency was something older PACS systems could not guarantee.

Integration is also a top priority for Dr. Klaus Rummel, responsible for radiology IT: "It's very important for us to streamline our administrative processes. This means fewer mouse clicks and less redundancy when findings are keyed into the computer," Dr. Rummel explains. "In addition, it's easier to get an over-view of more complex cases in an integrated system than in two separate systems."

It was these requirements that led Professor Vorwerk to opt for SIENET Cosmos from Siemens Medical Solutions that integrates RIS and PACS into a single application. The standard HL7 interface allows for seamless



**PROFESSOR DIERK VORWERK** demonstrates the flexibility of the integrated HIS/RIS/PACS solution. The RIS is loaded via one monitor (not shown), which is used to administer data such as a patient's biographical data and insurance number. The remaining two monitors are used to display the digital images retrieved from the PACS.

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Prof. Dierk Vorwerk, M.D., Head of the Department of Diagnostic and Interventional Radiology at Klinikum Ingolstadt, Germany



### Biography of Professor Dierk Vorwerk, M.D.

Professor Vorwerk is Head of the Department of Diagnostic and Interventional Radiology at the Klinikum Ingolstadt. He received his medical training at the University of Mainz in Germany and Cape Town University in South Africa. He received his radiology training at RWTH Aachen, from which he received a post-doctoral degree in 1992. He served as senior physician of the Klinikum Ingolstadt radiology department for six years and was senior staff physician and assistant director of the hospital for two years. He has been the medical superintendent at the Klinikum Ingolstadt since 1998. Professor Vorwerk has over two hundred scientific publications (books and articles) to his credit and is a member and honorary member of numerous German and international medical societies. He served as president of the Cardiovascular and Interventional Radiological Society of Europe from 1999 to 2001 and is an editor and peer reviewer for numerous prominent professional journals. The German Radiological Society awarded Professor Vorwerk the 1993 Wilhelm Conrad Roentgen and the 1996 Holthusen Ring award.

integration with the hospital's information system and trouble-free compatibility with systems from other vendors. SIENET Cosmos displays all workflows including examination requests, image processing, reporting, distribution of images and reports, and billing.

While converting to digital imaging modalities, Professor Vorwerk also completely restructured the radiology department's workflows with the help of Siemens consultants. The hospital had no choice but to optimize its workflow due to rising healthcare costs and the goal of shortening patient stays. "If staff members have to wait for reports, the entire treatment process gets bogged down," Vorwerk notes. "That is why we need a highly efficient system and well-designed processes. The availability of relevant and recent data makes for well-founded decisions, and this in turn translates into shorter hospital stays." Professor Vorwerk concludes by noting, "We will definitely benefit from the process optimization and potential offered by this system."

### A Stitch in Time Saves Nine

The radiology department chairman Vorwerk feels very strongly that radiology workflow must be digitalized because conventional methods are simply unable to handle the vast numbers of X-rays currently being generated at his hospital. The retrieval of old and new X-rays consumes valuable time. Each X-ray is a unique artifact that is not available for concurrent use by more than one person in more than one location. Moreover, conventional X-rays do not lend themselves to teleradiology or remote consultation. Since clinical imaging modalities generate anatomical data digitally, it makes sense to archive and transmit this data digitally as well.

The other advantages of an integrated RIS/PACS solution have become readily apparent to Professor Vorwerk, his sixteen radiologists and the twenty members of his technical support team. "The most amazing difference is how much time we save in reporting," Vorwerk points out. "In the past, one of my colleagues would examine the

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X-ray and dictate the findings, which were then transcribed and corrected by another physician. Then a second and in some cases a third colleague would review the report before I signed it. This process usually took an average of about four days to complete and made it necessary to have each report signed a number of times. Today, each physician dictates his report into the computer, checks it himself and then forwards it directly to me. I validate the findings and sign the report. This entire process takes four hours, which means we have now reduced our report turnaround time from four days to four hours. This means that 98 percent of the two hundred to three hundred reports that we generate daily are signed and forwarded by 6 p.m. Most outpatients can take their reports home with them. This is a quantum leap for all parties involved.”

### A Win-Win Situation

The tremendous flexibility of the integrated RIS/PACS solution is readily apparent from even a cursory glance at any of the clinic’s seven reporting and diagnostic workstations, each of which is outfitted with three monitors. The RIS is loaded via one monitor, which is used to administer data such as a patient’s demographic data and insurance number. The remaining two monitors are used to display the digital images retrieved from the PACS. Once the findings have been recorded, they are saved in the system’s long-term memory, which means images can be loaded and used at every workstation in the hospital. Moreover, the intuitive and user-friendly

*syngo*<sup>®</sup> user interface makes it easy for less experienced users to work with digital images.

“Our experience using Siemens’ SIENET Cosmos system has been very positive. And this is a win-win situation as well. We benefit from optimized workflows, and Siemens can use our clinical expertise to make specific improvements to the system.”

When asked if the radiology department had experienced any difficulty making the changeover to digital imaging, and if the system was user friendly, Vorwerk answers, “Our team was already familiar with the RIS application. And since the PACS is integrated with the RIS, the basic PACS features are extremely easy for our staff to use. Plus we already have experience with more complex features, such as the *syngo* 3D application, from the modalities.” Vorwerk continues, “All in all, I’d say that the only viable way for us to deal with rising costs and increasing numbers of patients is to digitalize our radiology processes, which allows us to save on storage space, film and developing chemicals. The most significant time savings result from the integrated RIS/PACS and the automatic speech recognition feature.”

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