

RIS/PACS developments in the north of the Netherlands

Recently a consortium of independent hospitals in the north east of the Netherlands, each with their own individual RIS/PACS systems, decided to get together and implement a new single RIS/PACS system that would enable total interchange of data yet still be compatible with the individual way of working of each hospital. The system that the East Groningen Hospital Collaboration Foundation (the organisation grouping the three hospitals) decided to implement was the eHealth PACS system from Carestream. In addition to the image management services this also provides for a remote back-up and disaster recovery system, operated for the hospitals by the company.

International Hospital (IHE) wanted to know how this ambitious project was coming along, so we spoke to Mark van den Heuvel, the project manager responsible for the implementation of the new PACS system.



Mark van den Heuvel is responsible for the installation and operation of the RIS/PACS system.

Q: Exactly what (and where) is the East Groningen Hospital Collaboration Foundation? How big are the institutions involved in the collaboration?

Known by its Dutch language acronym of SSZOG (Stichting Samenwerking Ziekenhuizen Oost Groningen), the foundation involves a collaboration between two separate hospital groups, which jointly have three different physical locations, so that they can cooperate and work together for their mutual benefits. The first hospital group, Ommelander Ziekenhuis Groep (OZG), has two sites, one at in Delfzijl, which is about 25 km north-East of the city of Groningen (itself in the far north of The Netherlands, relatively near to the German border), and the other in Winschoten, which is approximately 45 km due east of the city of Groningen. Together, these two facilities of the OZG hospital have about 420 beds. The other hospital in the collaborative group is Refaja Hospital, which is located in the town of Stadskanaal, approximately 55 km south east of Groningen. The Refaja hospital has 200 beds.

Q: What services do the hospitals offer, and what radiology facilities do they have?

All three facilities of the hospitals provide a full range of modern healthcare services. The radiology departments in the three hospitals each have an MRI scanner and a CT scanner. All departments work with DR systems, and DR mammography is also carried out by each of the three hospitals. Ultrasound and angiography examinations are also performed in all three hospitals. In short, each individual location can deliver a full range of radiology

services to patients. All three hospitals had their own individual RIS/PACS system.

Q: With all these imaging systems, how many radiology studies does that add up to in total for the three hospitals? What about these individual PACS systems that each hospital uses?

In the OZG (the hospital with the two separate sites), there are a total of 85.000 radiology exams carried out per year. As for the Refaja hospital, they do 45000 exams per year. Regarding PACS/RIS, the original system at

each site was, for historical reasons supplied by a different vendor. Thus, Refaja currently uses an AGFA RIS/PACS system whereas the Lucas site of the OZG hospital works with an AGFA RIS and a FUJI PACS system. As for the Delfzicht site of the OZG, they use an AGFA RIS and a Siemens PACS.

Q: What was the basic rationale behind the decision to implement the new RIS/PACS systems and how will it work?

One of the main driving forces behind our desire to instal the new system was the clear



Apart from the advantage of having one single RIS/PACS supplier (Carestream), who are also responsible for the provision of secure remote image archiving and access as well as disaster recovery, the new system provides many advantages for radiologists. For example, the simple fact of being able to interrupt the dictation of one patient report whenever there is a more urgent case, can result in a big saving of time overall.

advantage of being able to work with one single supplier of both RIS and PACS systems. We chose Carestream Health for this. We estimate that the new RIS and PACS systems are capable of providing several functions which, in the future, will actually reduce hospital time and costs.

As to how the new system works, the foundation representing the three hospitals bought the RIS servers and system, and decided to go for a PACS based on an Application Service Provider (ASP) model. This basically means that the PACS and the associated data storage system are paid for by the using hospitals as a function of how much we use them. For us, large investments in storage capacity and the personnel necessary to maintain an adequate level of service would be hard to sustain in the future, particularly since CT and MRI imaging modalities create huge amounts of data, which look certain to continue to increase in the future. The ASP model should therefore save us significant costs in the long term.

Under the new system, the Fryslan data centre in Leeuwarden, to the west of Groningen, will provide secure remote image archiving and access together with disaster recovery. Fryslan is one of eight separate data centres operated by Carestream in five countries throughout Europe and North America.

The new system is thus a big step forward, not only from the financial point of view of the hospitals, but it is in many respects also advantageous for the radiologists. For example, the simple fact of being able to interrupt the dictation of one patient report whenever there is a more urgent case, can result in a big saving of time overall. Likewise, if the radiologist has a question about another patient, he can open that study and dictate a report about the new patient, and then return to the first report without any additional work being required.

In the end this, of course, also results in benefits for the patients. For example in the dictation case above, this means that at the moment of dictating, the temporary report will be immediately available, and using Edifact (Electronic Data Interchange system For Administration, Commerce and Transport), the final report can be with the referring physician the same day.

Q: How difficult was the practical implementation of the new system, especially in light of the fact that different PACS systems were previously used at each of the hospitals?

Of course the conversion from three different RIS and PACS to one system was a big challenge. The fact that our hospitals were in different physical locations was in itself not a major issue since Carestream has a vast experience



Ommelandse Ziekenhuis Groep (above) is one of the two hospitals in the consortium. The particular nature of the consortium — two separate hospitals spread over three physical locations, with each site having its own RIS/PACS system — meant that customisation of the basic system supplied by Carestream was required. The “proof of the pudding” of the new system will only be assessed when the new system goes fully on stream.

of implementing systems in such cases. The real challenge came from the fact that in our consortium we had two different hospitals each with their own systems and sets of internal procedures and regulations. For example, this meant that images taken in one hospital and stored on one PACS would only be made available in a second hospital if the patient had previously agreed to such an exchange of medical information. To make things even more complex, the nuclear medicine department, which works for the foundation/consortium as a whole, is an exception to this restriction. Because the department works for the whole foundation, the clinicians must be able to see all the X-rays from all three locations.

Because of the particular aspects of our set-up we significantly customised the basic RIS 11 system from Carestream. In the modifications that we introduced, we can not only book in the patient but also include all the additional information required. Thus data such as scan, patient information and referring physician are included on one form, so it isn't necessary to use a tab page.

One other customisation we introduced was a feature to cater for the fact that, in most hospitals here in the Netherlands, patients don't need to make an appointment. To handle this, we created a “walk-in” patient option which means that we can book in the patient without having to access time and room choices. All that is needed in the “walk-in” system is to enter the patient number, the doctor and the requested exam and the scheduling for the appropriate modality pops up directly, i.e. with no need to search for a first scheduled time and then add a “patient arrived” message.

Of course all this required some work from us. This was however facilitated by the hospital agreeing to my request for a work-room to accommodate the four technicians who were

involved on a daily basis to customise the system. This was a near-perfect dedicated room of about 40 square meters containing six work stations, with each desk having two PCs: one to open the old RIS/PACS system and one to open the new one. In addition I requested five spare internet connections for the Carestream people so that every one could work at the same time.

I have several recommendations for any hospital IT personnel involved in the sort of implementation/customisation process in which we were involved. One simple, but practical, recommendation is never to forget to make sure that there is a printer installed in the work room. It's amazing how much time can be saved if you don't have to walk down a hallway to get to the first available printer. Likewise, another time-saving tip was having access to six internal mobile telephones so that we could call our colleagues and key users directly without putting the whole X-ray department on hold. Of course it is always possible to use ordinary mobile phones but calls on these can cost a lot of money. Another advantage is that the internal mobile phones will retain their usefulness when the system is in routine operation. In addition, from the personal point of view of the IT staff, it can be inconvenient to give access to external mobile phones to clinicians since when the system is in routine operation there is always the danger that the clinicians will call up even for the smallest question including at the weekend. The internal mobile phones can also be used by the clinicians as a number for when we go live.

Q: Were there any qualms about giving management of data between and within the individual hospital sites to a private company?

This wasn't an issue — Carestream is a professional organisation and it has a lot of experience in treating patient information in an appropriate and confidential manner.

Q: How about accommodating future changes e.g handling future growth ?

It was for this very reason that we plumped for the ASP model since by giving responsibility for the management and storage of the data, any requirements that future growth places on the system becomes Carestream's problem. Even if we grow 10 or even 20 % each year, for us it doesn't matter: Carestream will make it work as stipulated in the contract that binds us. Even if other hospitals want to join in our existing collaboration, that in principle shouldn't be a problem particularly since, with one exception, most of the hospitals in the region are already working with Carestream. We look forward to the moment when the whole system goes live.