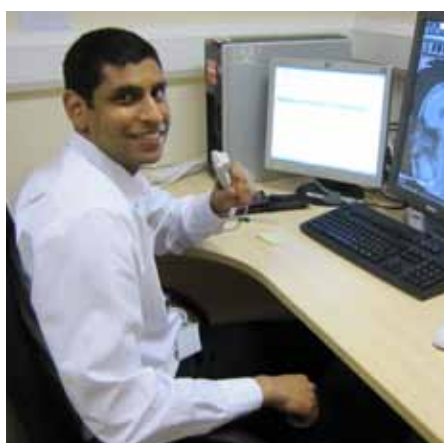


Implementing voice recognition in radiology at Leeds Teaching Hospitals NHS Trust

The PACS programme has been working to establish which radiology departments across England have implemented voice recognition (VR).

During this exercise it became apparent that one of the prime barriers to the successful deployment of VR is the cultural transformation required, rather than the technical change alone: not only do staff need to learn how to use a new piece of software, they also need to change their working practices. Furthermore, some radiologists believe the adoption of VR will lead to redundancies, particularly amongst administrative and secretarial staff who currently transcribe dictated reports.

In light of this, the PACS programme talked to Lynne Gathercole, Radiology IT Systems Manager, and Simon Hughes, Radiology System Support Manager, from Leeds Teaching Hospitals NHS Trust where VR is being used across five hospital sites, with more than 200 users.



Dr Manil Subesinghe, one of 200 VR users at Leeds

Leeds Factfile

Users

200 users across five sites

VR product

Soliton, Philips Speech Magic 6.1, Soliton SpeechConsole

RIS

CRIS 6.12n

PACS

AGFA

VR effect on radiology reporting turnaround time

From 7.5 days to 1.5 days

Costs

- Set-up and 1st year £210,000 (for 200 users)
- Recurrent annual costs £22,325

Implementation period

February 2009 to May 2010

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How we implemented VR at Leeds

Interview with Lynn Gathercole and Simon Hughes

Who drove the initiative to deploy VR within the Leeds radiology department?

The trust had previously looked at implementing VR across the whole hospital, but this was deemed too big a task and therefore wasn't progressed.

However, the Lead Superintendent Radiographer took this initiative forward and supported the use of VR across our radiology department, the overall aim being to improve patient care by reducing reporting times.

Was the use of VR 'mandated'?

Although it wasn't mandated as such, there was an expectation that the whole radiology department would use VR for reporting, otherwise the



Lynne Gathercole demonstrates the Leeds VR system

anticipated benefit of reduced reporting times wouldn't be realised.

The radiology department does not operate at 100% utilisation because a handful of staff were given permission not to use VR. The reasons for this were that

two members of staff were due to retire soon while three others only work within Leeds radiology a few hours a week; it didn't seem an efficient use of their time to learn how to operate a new system. However, any new staff joining the team are expected to use it.

Before and after	March 2008 Prior to VR	March 2010 Post VR
% of radiology reports issued the same day as reported by the radiologist	33.7%	84%
% of inpatient & A&E reports issued the same day as the radiology scan performed	5.2%	37%
% of outpatient reports issued by end of next working day after scan performed	32.3%	70%
Average time between exam and report verification (days)	7.5	1.5

How did you choose your VR system?

The trust underwent a procurement exercise in December 2008. Approximately eleven bids were received. Six suppliers were selected and invited to the trust to provide demonstrations, prove connectivity and enable staff to test the system.

Top tips...

- Consult your staff when selecting a VR solution for your site. They are the people who are going to be using it.
- Make sure that your computer systems have enough RAM to run the VR software smoothly. Although it wasn't recommended by our supplier, we decided to invest in additional RAM. To maintain system performance levels we would recommend a minimum of 4GB of RAM on those desktops being used for reporting.
- Be aware of licences – check that the number of licences you purchase allows sufficient concurrent users (the number of users who can access the system at the same time). We have 200 concurrent licences, so in effect every user could report at the same time.

A panel of radiology staff scored each supplier as they tested their solution. Soliton were selected based on the high score they were awarded. One of the main criteria was user friendliness: the Soliton system uses the existing Philips speech microphones, which users were accustomed to from digital dictation. So this element at least was familiar to staff.

Who led the VR implementation project?

The radiology IT department led the implementation. We are lucky to have a dedicated radiology IT department at Leeds

as it means we are closer to the staff and can understand their requirements better.

One aspect which was overlooked initially was the time it takes to add new words to the medical dictionary. The IT department anticipated that users would do this, but it is a time-consuming task and takes one person at least three hours a week to update the dictionary.

In retrospect, a better approach would have been to have retrained one of the secretaries to provide administration support, to set up and maintain the dictionary, as they have the

knowledge of medical terms and expressions. As this is left to the IT department, it takes longer as the team needs to check words and phrases and they are often not familiar with them.

Potential adopters of VR should be aware the system remembers all words, including those which are spelt incorrectly, so these words need to be corrected frequently.

What training approach was used?

We decided to implement a 'super user' approach to training. Twelve volunteers

USER VIEW William Ramsden – Consultant Radiologist

“I was initially a luddite about VR, but there was a strong push from management at the trust and now – a year later – I now do all my reporting using the VR system,” says William.

Initially reluctant to use the software, it took the consultant radiologist two training sessions and several months to become familiar with VR. Despite the huge benefits, there are still problems such as certain medical terms that it is unable to recognise and the software leaving out important words or pre-fixes.

But one of the biggest is how reliant the user becomes on the system, says William. “The VR software itself has to be bullet-proof, because if it goes down and is unavailable it would be difficult to get anything done. Going back to digital dictation at this stage would feel like a backward step.”

So what ultimately changed William’s mind about VR?

“The biggest benefit is the change in turnaround times,” he says. “Specifically, the ability to get reports of abnormal X-Rays to A&E in a timely fashion, was a major factor in persuading me to use VR. This is a benefit that could potentially save lives.”

Top tips...

- *We should have had more trainers to start with, so it was quite intensive for the trainers in the beginning. And make sure you enlist enthusiastic super users to champion the VR solution.*
- *Don't allow staff to use the VR solution until they have had the appropriate training and support. One bad experience could mean they will abandon the software altogether.*
- *Stick with it. The first two weeks using the software are the hardest. After this it gets easier.*



Leeds Teaching Hospitals NHS Trust

undertook initial training provided by Soliton. The trainers consisted of consultant radiologists, specialist registrars, reporting radiographers and ultrasonographers. Two secretaries who had written training manuals for CRIS were also trained as, although they wouldn't be reporting using the VR solution, they would understand how the Soliton software interacted with CRIS.

Each of the 12 trainers were given a list of staff to train. Once those were trained they were given another list of staff – and so on, until everybody had been trained. We decided upon this approach to ensure the training wasn't 'watered down'. It was a

decision made by the Radiology IT Systems Manager to enable only super users only to train other staff.

Did this training approach work well?

Yes. However, due to the number of users, in hindsight we should have selected more trainers to start with as it became quite onerous and hard work for the trainers.

Was the transition to VR difficult?

We didn't encounter any major problems from a technical perspective as the reporting functionality is easy to use. Initial training takes half a day, with

further support being provided by the super users.

However, users must be aware that the first two weeks can be frustrating. It takes time for the system to recognise the user's voice and build up the dictionary. But stick with it and after a few weeks it becomes much easier and quicker. With all new software there is a learning curve, so it takes longer at first - which can initially put off users.

Top tips...

- *Someone should be responsible for overseeing the project before, during and after implementation.*
- *We monitor VR usage to ensure the system is being utilised, and those who require additional support can be given it. We pull monthly reports from CRIS and will continue to monitor utilisation. Nominate a member of staff to take responsibility for this.*
- *Don't expect 100% utilisation; there could be valid reasons why a radiologist may not need to use the software.*

What support was provided to users following the initial training?

In the first instance, staff contacted the trainers for support. Once VR was in full operation we began to pull utilisation reports from CRIS. Where these reports indicated a member a staff wasn't using VR or not using it much, we contacted them on an individual basis to establish the reason why and to offer support and/or additional training.

Have you lost any support staff through redundancy as a result of the VR deployment?

As we are a large trust we used a number of agency staff whom are no longer required, so this brought about significant savings. We lost some secretaries through natural wastage, so we didn't refill these posts.

The remaining secretaries have been retrained and still work within radiology. For example, some support and attend multidisciplinary team meetings while one of the secretaries provides support to IT and has been retrained to use and support CRIS.

USER VIEW Gillian Bliss - Office Manager, MRI dept

“I don't know how we found the time to do all our work before VR; if digital dictation was re-introduced I have no idea how we would fit all the work in,” says Gillian.

Despite initial concerns over potential job losses, Gillian believes the introduction of VR has had a positive effect on the work of secretaries and administration staff in the radiology department.

“Before VR, we did not realise we had a problem, but the workload that has disappeared as a result has freed us up for other duties and allows us to increase the quality of the work we already do,” she says.

Comparing VR to the leap from typewriters to computers, Gillian tells horror stories of the pre-VR days where staff had so many reports to transcribe they would often have to stay at work late into the night to get it all done.

Indeed, compared to today's dictation count of 77 (which she estimates will take about 30 minutes to transcribe), the number of reports waiting to be typed up pre-VR used to hover around the 3,000 mark.

“One night a group of us stayed late and managed to get the list down from 3,000 to around 1,000,” she says. “When I came into work the next day it was already back up to over 3,000 again.”

As well as substantially reducing the workload of the secretaries, Gillian believes that VR has generally improved the efficiency of the radiology department at Leeds, despite concerns about how it might affect secretarial and administrative jobs.

“There are worries about job losses but this is as much wrapped up in the current economic climate as anything else. If you speak to most admin staff you'll find that nine out of ten would not want to return to a world without VR.”

Top tips...

- Consider who will have responsibility for maintaining and updating the medical dictionary.
- We are considering producing a guide to creating reports using VR. For example, some reporters would use the terms 'see above' or 'see below' in their reports; unfortunately the report text is not always displayed as per the original layout, so we would not recommend using such terms. The reordering of the report sections is a consequence of the radiology information system used rather than the VR.
- Invest in effective communication, including between the radiology department and the IT staff deploying the VR software. We set up a 'VR user group' and send regular communications via e-mail; we also continue to provide update bulletins to share knowledge and best practice.

USER VIEW Jeremy Macmullen-Price – Consultant Neuroradiologist

As one of the super users responsible for training other reporting staff at Leeds, Jeremy understands all too well some of the difficulties that users encounter when first tackling the VR system.

“It takes about two weeks to get used to VR, during which time you are very unproductive. So it is easy to get frustrated and negative about the system, but once you are through the first pain barrier it gets significantly easier,” he says.

As a trainer, Jeremy spent two hours with each of the trainees and left them with an open offer to get in touch if they had any problems.



Jeremy Macmullen-Price: “Once you are through the pain barrier it gets significantly easier.”

“I don’t get many people contacting me for help anymore, probably one person in the last two months. And the radiology IT staff are excellent at responding to any technical problems quickly and efficiently, so users do not have to wait too long for queries to be dealt with.”

When asked why he thinks the implementation at Leeds has been so successful, Jeremy highlights that the product itself is key. At Leeds the potential users of the system were involved in the selection process and he is adamant that sites must select the product that best suits their working practices.

He says: “If other trusts are having problems with VR then they have bought the wrong product or support package.”

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