



## Case Study

Grampian University Hospitals

NHS Trust



Soliton IT implements largest frontend speech recognition system in the UK at Aberdeen Royal Infirmary

### Putting radiologists in control of report creation

This is now the UK's largest deployment of frontend speech recognition, giving the 60 radiologists at the Aberdeen Royal Infirmary (ARI) full control of their medical reporting. Originally introduced to get reports to clinicians as quickly as possible, frontend speech recognition has turned out to be much more than a speed booster; it has had a positive effect on the department far beyond turnaround times.



*Aberdeen Royal Infirmary is NHS Grampian's largest hospital. It is situated on a self-contained, 125-acre site. With in excess of 1,000 beds the ARI is the main teaching hospital in Grampian. Its close link to the University of Aberdeen makes it a centre of pioneering medical research.*

This is the second speech recognition-based reporting system to be installed at the site. The previous system fell somewhat short in terms of recognition accuracy and workflow functionality, according to radiologist Dr. Olive Robb, who headed the new implementation. She believed in the technology, she says, and would not accept the limitations set by the old system. When she issued the tender for a new system, eight companies replied, of which four were short-listed. The systems powered by SpeechMagic™ from Philips were found to deliver the greatest accuracy. Out of these systems, Soliton IT's workflow solution stood out thanks to both its look and feel and its flexibility in being adapted to the requirements at the ARI, according to Dr. Robb.

### Making work flow

The ARI asked Soliton IT for a seamless integration of voice recognition with their existing Radiology Information System (RIS). "We were trying to avoid every unnecessary mouse click and make reporting as convenient and user-friendly as possible," explains Dr. Robb.

Thanks to Soliton IT's in-depth know-how and experience in developing powerful reporting workflows for healthcare organizations, the ARI has quickly seen the light at the end of the transcription backlog tunnel. Today, doctors scan the barcode from the patient record into the RIS, which automatically pulls up the corresponding patient data and adds it to the report. The patient history can be accessed from the dictation screen – an intelligent feature allowing physicians to compare and check their results against previous findings. The dictated report is immediately displayed on the screen to let users move easily back and forth within a document. For standard findings they can even use pre-defined text blocks, which are inserted by voice commands. The report is available for correction and validation the moment the doctor presses the stop button on their recording microphone.

The decision to let radiologists work in a frontend workflow, meaning that they edit the recognized text themselves, was triggered by a massive shortage of available medical transcriptionists. Experiencing backlogs of up to three weeks, the ARI wanted to push the speed of radiology reporting to the limit. Dr. Robb believes that giving physicians the choice of various workflows can slow things down as, out of convenience, some users would still use digital dictation only.

But having physicians correct reports instead of consulting patients - isn't that what really slows things down?

"At a first glance, yes", confirms Dr. Robb, "but it's the overall time gain that counts. Physicians no longer have to wait for reports to return from the Transcription department, verify them (sometimes weeks after the consultation) and in between answer phone calls about unfinished reports. This is the real time-consuming factor; compared to this the time spent editing is minimal."



## From promise to reality

For a long time, speech recognition has been 'over-promised', raising expectations far beyond what the technology was capable of. By taking into account the entire workflow of a department, Soliton IT analyses the difficulties, goals and needs of its customer and provides a customised solution that delivers on their expectations. "Soliton was very receptive to our demands. They customised screens to provide direct access to previous reports which turned out to be a great benefit for our departments, even beyond the improvements achieved through automatic speech-to-text conversion," says Dr. Robb.

With Soliton IT's workflow being powered by SpeechMagic, the most popular technology in healthcare speech recognition, the system is highly accurate, according to Dr. Robb, "in absolute terms as well as in comparison to our previous system". At the ARI the challenges for the system are high, with a wide range of accents from India, North Africa, Eastern Europe and Scandinavia. However, this does not affect the accuracy, as the system has been trained properly.

Training is quick and easy and essential. The ARI trained its 60 users within a week. They identified four key trainers within the team to spend half an hour on each user to train the voice profile and explain the system. Once that training was finished, the old system was turned off and everybody was "forced" to use the new system. "We were pleasantly surprised by the lack of difficulties," reflects Dr. Robb. Especially for those users who had previously had negative experiences, they described themselves as "absolutely surprised" by the performance of SpeechMagic.



*"We were completely surprised by the lack of difficulties with the implementation and acceptance of our new speech recognition system. The technology has reached the level which allows doctors the full responsibility of report creation."*

Dr. Olive Robb, Radiologist, Aberdeen Royal Infirmary

## A catalyst for improving quality of care

The benefits of implementing a speech recognition-based reporting workflow are numerous. The fact that all reports are now available immediately after dictation has influenced a number of other changes in the ARI's Radiology department.

Doctors are now significantly more in control of their job, no longer having to wait for dictations to be typed and verified. Checking the system the previous night, Dr. Robb found only 20 reports open for authorization, resulting from the fact that trainee doctors need authorization for their reports from other radiologists. This is a negligible amount given an average number of 820 radiology exams per day.

As the secretaries no longer need to type reports, they have been assigned to different duties, helping the hospital to realize its increasing emphasis on internal communication to exchange experience and know-how among doctors. Secretaries now prepare the clinical radiological meetings, multi-disciplinary team meetings and modality group meetings. And radiologists have been allocated an individual secretary, which further improves their working conditions.

## A learning experience

Dr. Robb would always advise other hospitals to go for frontend speech recognition, if their goal is to optimize the availability of reports to clinicians. However, a careful evaluation of the system is



required. "It surely wasn't the cheapest system we went for, but we wanted the reliability and accuracy of a professional system to make the installation a success."

Apart from accuracy, one of the key factors to success was Soliton IT's integration within the RIS system, as reporting is now done within one application – at least from a user's point of view. With reports being automatically populated with RIS data, the entire workflow is smooth and straightforward, requiring only a minimum of manual intervention from the user.

In the future Dr. Robb has plans to introduce a PACS and integrate all three systems, so that the department can switch to a digitized, paperless workflow. "With the successful implementation of speech recognition, we have proven how positively a new technology can affect our working conditions and the services we provide to patients and clinicians. This is a very positive experience we can build upon."

Bob Watson, Soliton IT's managing director, sees the installation at the ARI as a milestone in healthcare speech recognition. "The ARI have been very clear about their goals and requirements, thus enabling us to provide them with a solution that fits their needs. An out-of-the-box system is not capable of delivering on the complex requirements of healthcare facilities. Only a truly integrated workflow can do the job. We are very proud that together with the ARI we have implemented a system which shows the future direction of healthcare reporting – for the benefit of the physicians and for the benefit of the patients."

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