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St. Luke's Radiology Group Accelerates Reporting With Speech Recognition Technology

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Summary Analysis

- **Problem** – St. Luke's Health System wanted to eliminate manual transcription and significantly shorten its medical imaging process.
- **Solution** – *RadWhere* from Nuance Healthcare, which included automated speech recognition, report templates for radiology and a workflow engine.
- **Results** – Saved $450,000 per year in transcription costs. Turnaround time for radiology reports fell from 7 hours to 30 minutes. Patients receive a much faster diagnosis from radiology department.
- **Observations** – Speech recognition technology is ready for prime time. Enthusiastic user participation in an IT project has an enormous, positive impact on its success. Human factors are as important as technological factors.

As part of a new consolidated PACS installation for archiving digital images, St. Luke's Health System wanted to implement a speech recognition technology for its radiology group to accelerate reporting and facilitate more responsive patient care. At the time, the turnaround time for manually transcribing a radiologist's dictation averaged seven hours. This added to the amount of time patients had to wait to receive the results of an x-ray or other medical image. "The goal of speech recognition was to eliminate transcription and shorten this process," said Adrienne Edens, Chief Information Officer for St. Luke's.

St. Luke's Health System is an Idaho-based, not-for-profit health care provider for southern and central Idaho, northern Nevada and eastern Oregon. It operates medical centers in Boise, Meridian, Magic Valley, McCall and Wood River as well as more than 70 clinics. St. Luke's Boise Medical Center is Idaho's largest hospital, and St. Luke's Children's Hospital is the only children's hospital in the state.

St. Luke's medical imaging process involved several steps. When a physician ordered a medical image, a technician performed the scan and sent the image to a radiologist for diagnosis. The radiologist dictated an audio report that was forwarded to the transcriptionists. After the text version came back, the radiologist approved it and the official report and diagnosis went to the referring physician and became part of the patient's medical record.

Manual transcription was the most time-consuming step in this process. If automated speech recognition could mitigate or even eliminate the need for it, the overall time to deliver a diagnosis could be reduced dramatically.

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Speech Recognition Development

Speech recognition technology has been in development for decades. It is a complex and challenging task to program a computer to recognize and decipher human speech. The accuracy rate for speech recognition has improved substantially over time. Today, the technology has advanced to a point where it is a viable for particular applications. "Even in the last couple of years the technology has come a long way," said Dan Talley, IT Service Team Leader for St. Luke's.

Collaborative Approach

St. Luke's took a collaborative approach for reviewing options and approving a speech recognition system. All stakeholders had a seat at the table: the IT group who would manage it, the hospital administrators who oversaw budgeting and compliance, and the radiologists who would ultimately use the system as part of their jobs. They also enlisted Santa Rosa Consulting, an IT and management consulting firm for the healthcare industry, to provide guidance and expertise in this area.

> *"As the IT group, you can do a good job with the technology, but it is the cultural change, the enthusiastic adoption by doctors and staff, that really makes it a success."*
>
> - Adrienne Edens, Chief Information Officer, St. Luke's Health System

From the beginning, the radiologists were active proponents of a speech recognition system. "It was not administration saying we needed the system, or even IT. The radiologists were the most enthusiastic advocates," said Edens.

RadWhere from Nuance Healthcare

After considering several speech recognition solutions, the project team chose *RadWhere* from Nuance Healthcare. RadWhere is a speech recognition solution with reporting and workflow management designed specifically for radiology. The software transcribes a radiologist's dictation in real-time, thereby speeding up report writing. It includes templates and macros based on procedure codes for structuring the reports. RadWhere's workflow engine also automatically routes documents through the creation, review and delivery process.

To roll out the system, the IT group installed software on the radiologists' workstations and the primary RadWhere application on a host server that is replicated to a remote site for disaster recovery. If a failure occurs at the local site, the system will fail over and continue to provide service to the radiology group. Furthermore, each user had to "train" the system to understand his or her voice by speaking scripts into the computer.

The radiologists were quick to incorporate the new system into their routine. "Normally these types of projects are phased in slowly, but in this case, radiology no longer needed transcriptionists after only two weeks," said Talley.

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More Responsive Patient Care For Less

As a result of the fast adoption, the benefits to St. Luke's and its patients accrued quickly. The average turnaround time for radiology reports dropped from 7 hours to about 30 minutes. St. Luke's is saving $450,000 per year in radiology transcription costs for the Treasure Valley alone (Boise, Meridian and surrounding areas). Most significantly, patients receive faster and more responsive care.

"It felt great to experience such an improvement, especially after being a part of this project."

- Dan Talley, IT Service Team Leader, St. Luke's Health System

Talley gave a personal example. His elderly mother had fallen down occasionally in the past, and Talley would take her to the hospital for an x-ray. Typically they had to wait hours for the results, but the last time this happened, after the speech recognition system was in place, the x-ray and diagnosis came back in only 20 minutes. "It felt great to experience such an improvement, especially after being a part of this project," he said.

Edens added, "We are thrilled and wish all of our IT projects went this well. We give the radiologists credit for the success. As the IT group, you can do a good job with the technology, but it is the cultural change, the enthusiastic adoption by doctors and staff, that really makes it a success."

Based on the success of the RadWhere system, St. Luke's is looking at standardizing on Nuance technology for all of its medical speech recognition applications.

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