Speech Recognition Propels Transcription Revolution

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by Rob Schwager

Speech recognition technology continues to develop. Now, with additional enhancements, the latest models offer solutions for entire enterprises. The author rounds up the latest developments.

Most healthcare organizations and clinicians today have automated some portion of their health information creation or management process using transcription services and a variety of software applications. However, creating and managing medical information is still more complicated, time consuming, and costly than it should be. And as HMO and government regulations require providers to submit more documents to justify procedures and payment, the creation, management, and analysis of this data consumes an even larger portion of healthcare providers' time and budget.

Speech recognition is an increasingly popular alternative to high-cost medical transcription, given today's stricter documentation requirements, stiffer budgets, and tighter turnaround times. In the last two years, speech recognition has evolved into enterprise-wide solutions with a flexible array of partial-to-full deployment options. In addition, speech recognition, combined with technology designed to extract and structure medical information contained in narrative text, can automate the coding process used in reimbursement.

This article looks at the latest developments that may enable these innovations to provide enterprise-wide solutions.

ASPs: Making Access Easier

Until recently, only big-budget organizations could afford the high-end technology features speech recognition supports. Now, however, application service provider (ASP) delivery - in which companies offer access to applications over the Internet - promises to enable smaller healthcare organizations, such as clinics and group/private practices, to access these new technologies for the first time on a pay-per-use basis.

Vendors are developing automated solutions for healthcare dictation, transcription, workflow management, and coding. In creating these solutions, vendors will need to incorporate existing healthcare information procedures, such as dictation and transcription, and make better use of existing healthcare information, such as interpretive reports.

The end result will be a family of offerings that use a familiar methodology and incorporate existing data, yet automate and enhance what were previously manual procedures, saving clinicians and healthcare organizations time and money.

To succeed, such a solution must mirror the methodology clinicians use today for information management. Many clinicians won't adopt more advanced automation solutions (such as speech recognition software) because they don't have time to learn a new dictation process. At last the technology seems to be stepping up to this plate and introducing innovation without trying to change physician behavior.

Taking a Cue from E-commerce

Remotely hosted clinical dictation and transcription solutions can tie into phone-based, workstation, or mobile dictation systems. Physicians retain their current practices while institutions gain access to the latest technologies without the large initial capital outlay they'd have to make if purchasing and deploying the system in-house. Physicians and hospitals gain access to new tools to harness the rich clinical and administrative data locked in dictated medical reports, turning inert records into data that can be stored, accessed, and put to use in ways impossible until now. Web-hosted applications for the first time give smaller healthcare

organizations, particularly clinics and physician group practices, the ability to easily go outside their operations' walls for services integral to patient information creation and management.

Perhaps the ASP delivery model's greatest innovation is modular healthcare information application hosting. Modular application hosting enables institutions to access only the services they need, as they need them, in the most convenient form.

Enterprise clinical dictation solutions are twofold. Voice dictation, generally phone-based, but also possibly PC- or mobile-based, is captured locally at the organization's premises. The system sends the voice files physicians create to a secure off-site data center for processing. This data center would be the same kind of facility that houses large-scale Internet commerce companies, where the threat of liability assures security and dependability. It provides a powerful virtual space for the exchange of voice, text, and data, with the security, reliability, and confidentiality essential for patient information management.

Vendors now offer enterprise-wide dictation and transcription solutions in several deployment options:

- In the most basic model, **the voice files that physicians record, whether using a phone, workstation, or portable voice recorder, are available online for transcriptionists to access.** The advantage to institutions is access to a state-of-the-art voice, text, and data management system and a complete suite of remote transcription productivity tools. As a fee-for-use alternative to the outright purchase and installation of a new voice and text management system, this configuration will hold special appeal to smaller clinics and group practices who may be unable to justify the acquisition of a dedicated system

- In the second configuration, **speech recognition provides a draft report for either a transcriptionist or physician to correct.** Continuous speech recognition technology offers the option of telephony input, where previous generations were limited to PC-based dictation. The method offers cost-effective and rapid "draft" report processing-converting voice received over a secure Internet connection into text using the data center's sophisticated continuous speech recognition engines. The resulting draft is then returned electronically to the customer's medical records department (or any other selected location) for editing and distribution. Transcriptionists can access the reports online for typing and editing, while the reports are also available for review through Internet-connected PCs. As for accuracy, today's systems are achieving very high recognition rates, making final correction much faster

- **Last, complete "one-stop-shopping" vendors handle voice, text, and data management as well as both draft and full transcription.** Complete document processing offers a total outsourced document transcription service for customers who choose to have their dictation not only recognized, but also edited, formatted, and returned complete

Know the Code? No Need

Emerging report post-processing and coding devices use natural language processing and knowledge-based coding rule sets to analyze text and assign highly accurate ICD-9/CPT reimbursement codes, without the need for human involvement. Automatic online report coding optimizes reimbursement, reduces "down coding," and improves justifications while providing an automatic quality check on manual coding procedures.

Once the codes have been created, a wealth of information lies dormant among them. In the future, we expect that Internet-capable data mining technology, including clinical language processing, will be able to use the codes to capture underutilized data contained in the hundreds of thousands of reports healthcare organizations produce each day.

Coding today is fraught with difficulties. Heightened attention to Medicare fraud and abuse, coupled with more complex evaluation and management requirements, have left many healthcare organizations seeking solutions other than professional manual coding. One answer, some experts say, is online automatic report coding, which can alleviate some of the delays and costs. Emerging solutions will soon enable hospitals to selectively designate reports for coding. These systems will use natural language processing and sophisticated software, such as knowledge-based rule sets, to produce a complete ICD-9 inpatient or CPT outpatient code review and printout. The newest solutions substantiate codes by providing links to the actual text in the report that justifies each code assignment.

Ideally, coding staff could easily access these reports for online review of code designations, while output from these coding engines would also interface with the hospital or group billing system. The system would return detailed code analysis with

each report, including all recommended codes and justification for each, highlighted for easy review. Alternately, vendors are also preparing online coding services that offer physicians interactive code analysis during the report review process. This method helps physicians ensure that the original narrative within each report conforms to coding requirements.

Making the Record Process Electronic

ASP delivery, with speech recognition servers maintained in a secure Web-hosting facility, frees healthcare organizations from purchasing their own on-site speech recognition systems. Off-site servers can rapidly process electronic and hard-copy transcriptions of dictated reports, letters, and other documents, either in batches or singly, as needed. Simply placing records online offers a safe and secure environment where reports are easily accessible throughout the creation process. Once accessible via the Web, medical records become a valuable source for information-rich clinical data.

Some of the many applications for this technology include electronic clinical charting and patient documentation, physician report viewing and electronic signature capabilities, access to information by referring physicians, and review of valuable clinical information in a structured data format created by natural language processing technology. These solutions will be of special value to smaller organizations, such as clinics and group practices, where they can create a highly cost-effective work flow solution and fully integrated information management system.

Integration with health information or data feeds for hospital information and/or practice management systems will help make the process of creating accurate patient charts more productive. Internet-based EMRs offer physician offices and groups that may not be able to justify the expense of new computerized clinical data repositories an attractive and cost-effective alternative.

Clearly, the transcription services, digital dictation, and speech processing markets are overlapping, if not converging, thanks largely to the Internet and the power of speech recognition. The combination offers several efficient and timely alternatives to healthcare organizations.

The Internet-based "enterprise" services approach enables institutions to keep up with technology while concentrating on their primary concern-patient care delivery. These are just a few of the exciting solutions now coming of age for improving clinical documentation processes and integrating information across healthcare organizations. Speech recognition vendors, long focused solely on their technology, have set their sights on improving the clinical documentation process while lowering costs and improving patient care without compromising security, ease of use, or physician acceptance.

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