

Pre-Implementation Considerations for Speech Input Technologies

Outline

As a diversified technology consultancy we work with a number of core technologies, but have consistently maintained a primary focus on the Dragon[®] speech input technologies, since the inception of their medical product line. While other speech input technologies do exist, it is our experience that few offer the capabilities, accuracy, and ease-of-use of Dragon Medical.

In the article below I have attempted to provide an overview of some of the issues to be considered prior to attempting a pilot implementation of speech input technology within a healthcare organization. Each of these issues should be addressed in a technology plan that has taken all aspects of the program into account. Experience has shown that organizations that conduct proper piloting of technology implementation tend to have better ultimate results, and avoid missteps and frustrations by “bringing forward” potential problems with a small selected user group using the technology in a real-world production environment. Selecting appropriate candidates for the pilot program can be a critical step, and at this juncture we recommend to our clients that all pilot program participants be selected for their technical savvy and technical tolerance (i.e., they understand that piloting technology is about ‘trying to break it’ and then providing feedback to improve efficiencies of the anticipated large-scale deployment. Though the primary focus of our comments below are intended to be for the Dragon Medical 10 product line it can be assumed that they are also applicable to other available speech input technologies.

I. Reasons To Consider Implementing Speech

Input Technology

There are many reasons why speech recognition technology is considered for implementation within healthcare organizations. The most compelling may be the adoption of an electronic medical record (EMR). There is little doubt that a properly configured electronic medical record software application can improve the quality of patient documentation, reduce associated costs, and hopefully increase reimbursements. However, since many clinicians are poor typists, the EMR may present obstacles as well as the hoped-for benefits. State-of-the-art speech recognition technology offers a practical solution for rapid input of text and possibly integrated command and control-dependence on the construction of the EMR. In addition, many organizations find that the quality of notes improve, the time to completion is reduced (particularly with properly constructed text macros), and physician satisfaction increases.

At the outset it is important to be realistic about what to expect from speech input technology. The transcription of clinical dictation can be done with high accuracy, but rarely with perfection. Speech recognition technology is operating on an algorithm, not cognition, and therefore even state-of-the-art technologies have their limitations. Successful adoption of speech input technologies is not one of perfection (or lack thereof), but rather high initial accuracy, simple editing capabilities-whether by keyboard and mouse or voice, and the ability for the software to become “smarter” in the long run.

II Hardware Platform

While there are many factors that lead to successful implementations of speech input technology, the starting point includes properly selected hardware, input technology, and pre-deployment testing.

In order to optimize physician satisfaction with speech input technologies, it is important to select hardware with adequate processors, memory, system cache, and sound processing equipment. For our clients we recommend Intel Core 2 Duo, Centrino 2, Quad Core and Pentium M technologies.

Certainly other Intel processors may support speech recognition, as well as AMD processors. Generally, “faster is better”. System memory should not be compromised, and we would recommend a minimum of 1 GB for Windows XP Pro, and 2 GB for Windows Vista operating systems. Different motherboards support different system cache and we believe that a minimum of 2 MB of onboard system cache is beneficial (our latest desktop design takes advantage of the new motherboards supporting 6 MB of onboard cache). In today’s world the performance of the sound chip/sound device can be managed/mitigated by using a digital input microphone (generally USB, or supported wireless protocol).

We do not believe that it is better to go with a desktop versus a laptop versus a tablet computer. The various PC modalities when properly selected can provide an adequate platform for state-of-the-art speech input technology coupled with a broad range of electronic medical record technologies.

III Configuration Options Locally Deployed Versus Roaming

The Dragon Medical 10 technology supports both locally deployed and “roaming” profile configurations. Most organizations with server-side computing opt for a roaming configuration whereby a user’s profile ‘finds them’ at login to the Dragon Medical application. The roaming configuration uses a mirrored approach with a master and local cache profile. This allows for efficient use of network resources, and the security of ongoing backups-not tied to client hard drives. This is a technical aspect that should be discussed with the technology Consultant prior to implementation of the pilot program.

IV Input Technology

It has been our experience that by limiting variables at implementation a generally positive user experience will be maintained which helps build momentum for the technology moving forward; and being able to build on initial positive user experiences leads to high levels of adoption and user satisfaction.

We generally recommend use of a wired headset microphone with excellent ambient noise canceling technologies. This is not to say that our clients do not use handheld microphones like the Nuance Communications Power Mic II, proprietary wireless like the revolabs x-Tag, Bluetooth, and other types of input microphones. Rather, at the outset we believe that by starting users with the right equipment for a beginner and then providing them with other input modalities after they have gained a good level of user satisfaction and success that everyone benefits in the long run. We believe that this issue cannot be overstressed in the critical success and adoption of speech input technology.

V End User Training

A large portion of our current service work in the healthcare space results from clients who’ve attempted implementation on their own and were unable to gain ‘traction’ amongst their practitioners; or who felt that the technology while viable still eluded many of their users. When all is said and done, most organizations will do better by conferring with a consulting firm capable of providing on-site end user training at a level adequate to provide beginner, intermediate, and advanced training. While the ROI figures present a compelling argument for adoption of speech input technology, helping users get up to speed quickly and productively will provide the best returns-not only from a financial standpoint but from a user satisfaction standpoint.

However as the training takes place it is essential that users realize that speech input technology for healthcare dictation does not need to stand on its own, nor should it. The command-and-control functionality of speech input utilities is very helpful, but most new users of speech input technology adopt a “click and talk” approach. By flattening the learning curve, users can develop a productive use of speech input technology even when first getting started. By becoming productive quickly they “buy the time” to fill in their knowledge gaps moving forward (we often say that you “don’t know what you need to know until you need to know it”).

VI Ongoing Support

Most organizations have some ongoing IST/IT support capabilities. However, the speech input application may be a challenge for these in-house support capabilities and our purpose is to provide both end user and IS/IT support. We have identified two types of support issues: those that are technical in nature, and those that pertain to the use of the application (what we call “how do I” questions). From a practical standpoint, many of our clients take on the issue of technical problems with their in-house IS/IT support team in conjunction with our services or those of the manufacturer. However, most of our clients have us provide the “how do I” support service for the clinical staff. This presents a number of advantages, and if properly structured can loop the IS team back in so that they develop an in-house knowledge base without delaying transmission of valuable information to the clinical staff doing productive work with speech input technology.

VII A Few Final Words

It is naïve to anticipate that all users will embrace any technology at their first exposure and/or have all users reach the same level of competence. However, we now work with the technology that we had always hoped for, and it is not unusual for us to receive correspondence from a clinician after their initial training indicating that by adopting speech input technology, they are able to reduce their practice day by an hour or more (particularly when an EMR is in place). With that as the potential outcome of the plain speech technology, it is certainly worthy of significant consideration by any organization looking for rapid ROI, improved documentation, and improved clinician satisfaction.



About the Author

Edward S. Rosenthal is President and CEO of Next Generation Technologies, Inc. This Lynnwood, Washington based technology consultancy has specialized in deployment of speech input technologies in the healthcare space since 1993. NGT, Inc. consults on a national basis, and Mr. Rosenthal has spoken before a number of national organizations and conferences about speech input technology. In addition to a broad range of certifications and area expertise, they maintain the Gold Certified Partner status with Nuance Communications Dictaphone/Dragon Medical healthcare products, have developed a proprietary line of computer hardware and support for speech input technologies, and received the Nuance Communications Western Strategic Partner of the year award. Additional information about NGT, Inc. can be found at: <http://www.ngtmedical.com> .