Voice Innovation Speaks 'Language of Business'

BY PAUL CIOTTA

Murray Hill, N.J. — Automating customer services for businesses and telephone service providers is now as easy as saying "a-b-c," thanks to a speech recognition development from AT&T Bell Laboratories.

For the first time, AT&T's FlexWord™ automatic speech recognition software puts patented Bell Labs advanced speech recognition capabilities in the hands of business customers. The FlexWord software package — which supports the INTUITY™ CONVERSANT® 5.0 interactive response system — recognizes customers' commands in various pronunciations and dialects. It also allows businesses to customize their systems by creating vocabularies of up to 2,000 words and phrases unique to their business specialty.

FlexWord is the result of several years of work done by the Voice Transaction Systems Department, AT&T Global Business Communications Services at Columbus, Ohio, and the Speech Research Department here.

"This revolutionary development takes business customers to the next level of speech recognition services. It gives businesses a simple way to start handling customer calls more quickly and efficiently without spending a lot of time 'training' their telephone systems to listen for certain words," says Larry Rabiner, director of the Information Principles Research Laboratory here, which coordinates Bell Labs voice recognition research. "With FlexWord's ability to interpret different sounds that form words, a business can provide customized, high-quality voice recognition customer services practically in seconds, instead of spending months programming a machine to respond to thousands of accents and pronunciations."

FlexWord's expanded vocabulary capability complements the CONVERSANT System's standard 13-word vocabulary. Rabiner says the FlexWord package focuses on customers' needs by building a system's vocabulary through an easy-to-use computer program. FlexWord uses phonemes — the smallest sound unit in a language capable of conveying a distinct meaning, such as the "b" in "bit" — and a lexicon of word pronunciations based on these sounds. The process of using phonemes to develop recognition vocabularies was developed and patented by Bell Labs.

This technology also speeds customer calls. For example, customers calling a bank could save time when they want to access account information. By using the system, they could say "checking" or "savings" to review their accounts, rather than listen to a list of options before making a selection.

"With these advances, FlexWord provides a key competitive advantage for regional Bell operating companies and other telephone providers, as well as for customer service businesses," says Bishnu Atal, head of the Speech Research Department. "After all, why would anyone want to use the keypad on the telephone or talk to an operator, when you could just tell a machine what you wanted?"

FlexWord is the latest in a series of significant advances in Bell Labs voice recognition technology since the early 1970s. According to Atal, earlier speech recognition systems could only recognize a few words from a single speaker. A breakthrough came in the late 1980s, when software was developed by Bell Labs to recognize continuous speech. Atal says, "For the first time, a system could understand whole phrases and sentences."

According to Rabiner, the process of programming this type of voice recognition system was extremely time-consuming and expensive for businesses, because every phrase and word variation has to be recorded and stored in the machine.

After years of work, Columbus engineers Roy Grubbe, DMTS, George Erhart and David Lutz, both MTS, completed the FlexWord development, which was released in September 1993.

"Now voice recognition research has finally reached the real world in a big way," says Rabiner. AT&T voice recognition products compete against offerings from small firms looking to corner the speech response market and systems developed by large established electronics companies like IBM and Texas Instruments.

"We can expect more unique uses for AT&T's voice recognition technology, including personal computers and services for the visually impaired," adds Rabiner. ■