



## Nothing Lost in the Translation

**L**anguage barriers between public safety personnel and the communities they serve are a natural consequence of America's growing multicultural population. In 2000, according to the U.S. Census Bureau, 21.3 million Americans were classified as "limited English proficient," a 52 percent increase from 1990 and more than double the 1980 total. Additionally, 1 in 25 households were deemed linguistically isolated, meaning that no one in the household older than 14 could speak English.<sup>1</sup>

For law enforcement and corrections personnel, first responders, and others who work with the public, overcoming language barriers is vital to doing their jobs effectively. Until now, the only way to bridge the communication gap was through the use of human translators. But translators can be costly and sometimes unavailable.

At the request of corrections officials in San Diego County, California, the Border Research and Technology Center (BRTC), part of the National Institute of Justice's (NIJ's) National Law Enforcement and Corrections Technology Center system, conducted a workshop on language translation technologies. Representatives from State and Federal correctional agencies, the U.S. Navy, and the Bureau of Customs and Border Protection attended. The workshop offered them an opportunity to learn about a variety of on-the-market—or soon to be—language translation devices and technologies that could reduce their dependence on human translators.

### Voice Response Translator

Developed by Integrated Wave Technologies, Inc., and Eagan, McAllister Associates, Inc. (EMA), with funding from NIJ, the Voice Response Translator (VRT) is a portable electronic translation device that emits short, prerecorded phrases in several languages. The user selects a language and speaks a trigger phrase in English into the VRT. The VRT uses voice recognition technology to determine which phrase to emit in response to the spoken command.

<sup>1</sup> U.S. Census Bureau, 2000, 1990, 1980. ([http://www.census.gov/population/www/socdemo/lang\\_use.html](http://www.census.gov/population/www/socdemo/lang_use.html))

These phrases are intended to help a police officer obtain basic information from a victim or suspect and to elicit gestures such as head nods and hand motions. Sample phrases include, "Show me where you are hurt," and "Put your hands on your head." Phrases are recorded by speakers fluent in a language instead of machine-synthesized voices. The officer, however, must record the trigger phrase into the unit's memory before use.

Versions of the VRT have been field tested by a number of law enforcement agencies, including the Oakland, California, Police Department; the Nashville, Tennessee, Metropolitan Police Department; the Pinellas County, Florida, Sheriff's Department; and the U.S. Navy and Coast Guard. The latest version of the VRT supports up to 50 languages with 1,000 phrases per language, and can recognize up to 8 users. Available languages include Arabic, Farsi, Italian, Spanish, Haitian Creole, Portuguese, Cantonese, and Vietnamese.

According to Tim McCune of EMA, the VRT meets the requirements set out by police officers surveyed by NIJ, including being hands free and eyes free. The U.S. Department of Defense's Special Operations Command and the Coast Guard have placed orders for the VRT, which costs \$3,000 per unit and includes a 5-year warranty, training, and technical support. McCune says his company plans to train prison personnel to use the device and obtain feedback on how well it works in a corrections environment.

### CopTrans<sup>®</sup> and SpeechTrans<sup>™</sup>

With NIJ funding, Language Systems Inc. (LSI), has developed CopTrans, a two-way translation software that allows two users to speak, each in his or her own language, and then translates into the other language. The software can be installed on any computer that runs Windows<sup>®</sup>, or it can be used on a rugged, belt-mounted computer with a hands-free interface option. CopTrans can be run using a keyboard, or hands free using spoken commands. It also can be used with a loudspeaker from a patrol car. Depending on the setting, it requires one or two microphones for translation.

CopTrans presents a menu of dialogues for particular situations, such as booking prisoners into the jail, issuing jail clothing, or stating charges and court dates. The user selects a dialogue and speaks a phrase. The system then generates the appropriate spoken translation. The current release includes more than half a million words and phrases in Spanish and English. LSI also has developed dialogues in Korean, Chinese, and Russian, and multiple language pairs will soon be available.

“CopTrans translates from English into Spanish and then back from Spanish into English,” says LSI’s Christine Montgomery. It also uses speaker-independent continuous speech recognition technology, which, she says, “means that it doesn’t have to be trained to your voice.”

Most of the typical phrases used in a jail or police station are already loaded on the system, but the software allows agencies to add phrases. The software can be customized, and the company can provide onsite training. Under a current NIJ grant, LSI will work with the Los Angeles County Sheriff’s Department to assess the product.

The initial license will sell for \$2,999, which includes installation and training. The company is planning to offer discounts for subsequent systems and leasing agreements.

In addition to CopTrans, LSI is developing SpeechTrans, a speech-to-forms translation software that uses input from spoken interviews to fill out electronic forms automatically. SpeechTrans, which also provides for two-way translation, is expected to be commercially available within the next year.

## Phraselator™

Phraselator is a handheld, one-way, voice-to-voice translation system that translates English into one or more target languages. Using speech-recognition technology, it matches the spoken English phrase with a pre-recorded phrase in the target language that is played through a speaker on the device.

Developed by VoxTec, a division of Marine Acoustics, with funding from the Defense Advanced Research Projects Agency, Phraselator can support multiple languages and store 30,000 phrases averaging 5 to 10 words in length. Users can choose from more than 20 modules in 40 languages. In addition to several medical modules and a tourist module, modules are available for law enforcement, the military, force protection, basic maritime intercepts, and displaced persons. A typical 500-phrase custom module can be built in less than 2 weeks.

According to VoxTec’s Sheri Cranford, Phraselator has been used by the military in Afghanistan for more than 1 year and is being used by American and British Coalition Forces in Iraq. Cranford says the device can provide information such as, “The water will be here

tomorrow”; give orders or directions such as, “Lay your weapon down”; and ask simple questions with easily conveyed responses such as, “Are you hurt? If so, point to where you are hurt.” Says Cranford, “You can’t have a conversation with this tool, but you will be able to get some information back from people.”

Cranford says the device is different from other translators because it uses phonetic instead of pattern matching. It is speaker independent, meaning that it can be used by multiple users without training the device to each voice. It is designed to be weather resistant and have strong voice and audio capabilities, important in harsh weather such as sandstorms. Another feature is its ability to record. “If you are in a situation where someone gives you a lengthy response, you can record it and take it to an interpreter and have it translated,” Cranford says.

Now that Phraselator has proved useful in military operations, its applicability for law enforcement and corrections is being explored. The Corrections Division of the Oneida County, New York, Sheriff’s Department has been testing and evaluating the device in medical screening, intake suicide screening, and general communication with non-English-speaking inmates and detainees.

The company has completed a pilot program in which participating agencies used the units for 4 to 6 weeks. During that time, VoxTec worked with each agency to customize a Phraselator with 500 phrases in two or three languages. Participating agencies were asked to suggest improvements.

Cranford says the unit cost should be around \$2,000, but details about pricing, repairs, maintenance, and customer service are still being decided. Individual language modules also can be purchased. Because the modules are stored on flash cards, it is easy to change modules or languages as needed. Users can load the software onto a laptop for onsite translation needs, such as processing inmates.

## SYSTRAN Software, Inc.

Law enforcement must translate written materials as well as speech. An agency may have to read e-mails seized as evidence in a computer crime investigation or files taken in a raid of the home of a suspected terrorist—none of which are in English. Or, an agency may simply want to reach out to minority groups in its community by making its website available in each group’s native language.

Principally involved with the private sector and the Nation’s intelligence community, SYSTRAN Software offers desktop products, client/server systems, and Internet services that may be applicable to law enforcement and corrections in translating website content, documents, letters, e-mails, and other text into 36 languages.

Human translators can be used to convert textual materials from one language to another, but translation software can quickly and automatically translate a large amount of content, according to Reba Rosenbluth of SYSTRAN. "This automated process helps ensure consistency," she says. "If you took one document and gave it to three different human translators, regardless of the source and target languages, you would end up with three different translations. Although the software is not 100 percent accurate, it can be fine tuned by building user-defined dictionaries.

"Law enforcement and corrections officers could access Web-based translation tools from a computer in a reception area or a cell block and get a fast rough draft," Rosenbluth adds. The technology could also be used to translate an official statement, records, or a suspect's testimony.

Costs for SYSTRAN's translation products and Internet services vary according to the level of complexity and sophistication of the application.

## What Else Is Out There

According to BRTC Director Chris Aldridge, law enforcement and corrections agencies may also be able to use portable translators developed for tourism. These range in price from \$49 to hundreds of dollars. "They're very functional for some basic, portable translation in law enforcement and corrections as well," he says.

Although the technologies shown at the BRTC workshop will not eliminate the need for language interpreters, they offer law enforcement and corrections agencies a cost-effective way to enhance their translation capabilities. Aldridge says agencies can benefit from the versatility of these technologies. "They can be used in vehicles, in reception areas or cellblocks, for medical evaluations and examinations, for legal processing and communications, as well as for basic commands and directions."

***For more information about the workshop on language translation technologies sponsored by the Border Research and Technology Center, call 888-656-2782 or e-mail [info@brtc.nlectc.org](mailto:info@brtc.nlectc.org).***

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This article was reprinted from the Fall 2003 edition of *TechBeat*, the award-winning quarterly newsmagazine of The National Law Enforcement and Corrections Technology Center system, a program of the National Institute of Justice under Cooperative Agreement #96-MU-MU-K011, awarded by the U.S. Department of Justice.

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