



Marine Lance Cpl. Joshua Noble uses an interpretation device in an Iraqi home. Companies have made thousands of such devices for overseas troops.

First Ears, Then Hearts and Minds

Facing Shortage of Arabic Interpreters, Pentagon Seeks a Technological Solution

By RENAE MERLE
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For science-fiction buffs, it's probably a common-sense solution. Two months after arriving in Iraq, a second lieutenant with the 16th Military Police Brigade was handed the Phraselator, a handheld device that promised to digest his English phrases and produce a prerecorded Arabic translation with an Iraqi accent.

But after a brief test last year, the soldier gave up the gadget, deciding that, while helpful in some instances, it wasn't useful in his unit, which conducted raids and provided convoy security. He had even tried to teach himself Arabic using the device but decided that it was no match for the complex language. Even such simple phrases as "What is your name?" are spoken differently in Fallujah than in Baghdad, he found. "This may

have been the reason why many of the Iraqis... did not appear to understand the Arabic phrases & words" stored in the device, according to a report prepared for the Army. An Annapolis firm, VoxTec International Inc., developed the device and said it has steadily made improvements. But the goal of having a machine replace a human interpreter remains elusive, and the military is mounting a mul-

timillion-dollar campaign to find a more capable successor, one that can translate both sides of a conversation, from English to Arabic and vice versa. "What people would really like is that 'Star Trek' universal communicator, but it doesn't exist yet," said Lynne McCann, former chief of the Army Foreign Language Proficiency Office. "That would

ONE-WAY TRANSLATION



Integrated Wave Technologies and VoxTec International developed translation devices, about the size of a PDA, which are pre-programmed with Arabic phrases and sentences that are recalled when the soldier speaks the English equivalent.

Integrated Wave Technologies

TWO-WAY TRANSLATION



SRI International, IBM and Carnegie Mellon University developed systems that use mathematical algorithms to translate speech into Arabic and the Arabic response back into English. After a second or two, a synthesized male voice produces a response.

SRI International

A Connecticut jury yesterday convicted former Cendant Corp. chairman Walter A. Forbes of conspiracy and filing false financial reports, bringing to a close one of the government's longest-running fraud investigations after eight years and three trials.

Forbes, 63, faces more than 10 years in prison on the charges, which stem from a \$250 million earnings manipulation at CUC International Inc., which through a merger became the travel and real estate conglomerate known as Cendant.

Two previous juries had failed to reach a unanimous verdict. Prosecutors this time cut the number of charges against Forbes and streamlined the presentation of their evidence, a strategy that made the case easier for jurors to digest, legal analysts said.

Cendant's disclosure of accounting tricks eight years ago slashed the stock price in half and crased \$14 billion in shareholder value, ultimately leading the company to hand over a \$3.2 billion settlement to investors, which was a record at the time.

The verdict closed the book on the Cendant case, which, at the time, before scandal-infused bankruptcies at Enron Corp. and WorldCom Inc., was considered the largest accounting fraud of the past decade. It also marked the third time in recent years that jurors rejected a top executive's claim that he failed to detect accounting tricks because he only breezily reviewed financial reports and delegated the details to subordinates who deceived him.

Two other businessmen who advanced that defense, WorldCom founder Bernard J. Ebbers and Enron founder Kenneth L. Lay, were convicted of all criminal charges against them. Ebbers

See CENDANT, D2, Col. 1



BY STEVEN LEE MILLER — BLOOMBERG NEWS

Walter A. Forbes, former chairman of Cendant, could be sentenced to more than 10 years in prison.

Military Searches for A Pocket Interpreter

INTERPRET, From D1

solve everything."

The stakes are high for the military, which suffers from such a shortage of interpreters that it has had to rely increasingly on contractors — 6,500 in Iraq and 1,500 in Afghanistan. It can be a dangerous job. Of the 648 contractors killed in Iraq since the war began in March 2003, 153 worked for the division of L-3 Communications Corp. that currently holds the linguist contract, according to Labor Department figures.

Battlefields often turn into impromptu laboratories for new technologies — with mixed results. During the Persian Gulf War in 1991, the Patriot anti-missile system was rushed into combat to intercept Iraqi scuds, but afterward, investigators questioned its effectiveness. The Predator, an unmanned drone, dropped Hellfire missiles after the Sept. 11, 2001, terrorist attacks, after a quick development process.

In the same way, VoxTec, which was a unit within Marine Acoustics Inc., was asked to rush production of its Phraselator, then a single prototype, shortly after the attacks on New York's World Trade Center and the Pentagon, said Ace Sarich, the company's vice president of development. The device is about the size of a large personal digital assistant and is programmed with about 700 Arabic phrases that can be recalled after it "hears" the equivalent English phrase or a soldier chooses a sentence from a text list on the device.

The company shipped 20 to Afghanistan within a few months, but the prototypes had bugs, including buttons that were hard to push and faulty batteries. "It was supposed to be a weatherproof design, and it leaked like a sieve," Sarich said. Those issues have all been addressed, he added.

While VoxTec continued to improve the device, the military began testing a device made by a California company, Integrated Wave Technologies Inc. It had developed a similar hands-free version of a translation machine that fit into an ammunition pouch, allowing soldiers to say key phrases that are then turned into full Arabic sentences.

"You say 'house search' and then it will say in Arabic: 'We're here to search your house. Please stay in this room. Do you have any weapons?'" said Tim McCumme, the company's president.

Over the past few years, Integrated Wave Technologies has produced 1,300 of its machines and VoxTec has made 5,000 devices. They cost about \$2,500 to \$3,000 apiece, a mini-boom for two companies that have fewer than 20 employees each.

Neither product, however, proved robust enough to replace human interpreters. What soldiers really needed, the military decided, was to have a conversation with the people they encounter, not just give orders.

"In years past, there wasn't a great need for the individual soldier to speak a foreign language to do his mission," said Wayne Richards, branch chief for technology implementation at U.S. Joint Forces Command. But in Iraq and Afghanistan, soldiers are increasingly interacting with Iraqi civilians, giving advice at checkpoints or guidance during home searches, he said.

"During those door-to-door searches, the soldiers need to be able to calm them down and reassure them," Richards said. "We're fighting for hearts and minds. But if I can't tell her, 'Ma'am, please calm down,' ... that wouldn't be assuring."

So the Pentagon turned to the Defense Advanced Research Projects Agency (DARPA), which helped develop the Internet, to enlist some technology powerhouses, setting aside \$20.8 million this year for translation technologies. Military officials said they do not expect the automated devices to completely replace hu-



A service member wears SRI International's interpreting device, which can go from English to Arabic and back. The system was developed as part of a Pentagon program.



Pfc. Adam Pitts of the Army's 10th Mountain Division uses a hand-held interpreter at Fort Drum, N.Y.

man interpreters but to augment them. DARPA was a natural fit to lead the project because it has spent the past two years creating a database of thousands of hours of Iraqi conversations to study the voices, speech patterns and commonly used phrases to help with speech-recognition software.

The agency selected SRI International, a nonprofit research group, International Business Machines Corp., and Carnegie Mellon University in Pittsburgh to help put that database to work.

Each of the three has developed systems that use mathematical algorithms to interpret speech, even if it is slurred, accented or muffled, into Arabic and the Arabic response into English. After a second or two, a synthesized male voice produces a response. The systems usually require speakers to limit their conversations to one sentence at a time to avoid confusion.

IBM announced this month that 35 units of its system had been shipped to Iraq, saying it would "facilitate quick" communication. The military is not quite as optimistic.

The systems are being tested only in offices or benign situations with limited background noise, military officials said.

The technology is "just not ready for wide deployment," said Mari Maeda, program manager in DARPA's Information Processing Technology Office. "The translation system is not good enough; the recognition software is not strong enough."

The systems are also not accurate enough, she said. IBM estimates that its system has an accuracy rate of 85 to 90 percent, and that out of 30 phrases, a person may need to repeat four or five. SRI and Carnegie Mellon officials said they couldn't provide comparable figures. But "soldiers are looking for things that work 95 percent of the time," Maeda said.

In the meantime, companies are also experimenting with lower-tech solutions. VoxTec, for instance, is testing a call-translator system in Baghdad that allows soldiers to call in from the field so they can put an Iraqi on the phone with one of two Arabic translators on duty who can act as an intermediary.

Integrated Wave Technologies says it may have another interim solution. It is developing a system, which DARPA says it may send to Iraq next year, that will enable limited two-way conversations by "listening" for key words, said McCumme, the company's president. But even that, he acknowledges, has problems.

"If you ask, 'What color was the car?' it will be looking for something like blue or red," he said. But if the person responds by asking which car or says he didn't see a car, the system will not be able to translate, McCumme said. "It's a fairly limited type of communication," he added.

ONLINE DEMONSTRATION To hear SRI International's translation system, go to washingtonpost.com/technology.