

# SpeechGuard

## HANDHELD LANGUAGE TRANSLATION



In 2003, the Department of Defense approached Ectaco, a New York-based electronic translation company known for its electronic dictionaries, and asked it for something unique. “They wanted us to develop a device that would allow soldiers to speak Arabic,” Tim Houston, Ectaco, Director of Business Development said about the first meeting. Over the years, different government agencies had requested customized solutions and off-the-shelf language products. So when the military asked for a device the soldiers could use in Iraq, it wasn’t out of the ordinary. What made the process even easier was that the military officials knew exactly what they wanted the devices to do and what they wanted the soldiers to be able to say. Houston said, “They gave us the specifications regarding the hard-

ware. The units had to be durable to the extent that they needed to be water resistant, sand and wind resistant and could withstand exposure to extreme cold and heat. We developed the first SpeechGuard™ for them.” Having the engineering, manufacturing and translation resources at their disposal, Ectaco representatives were able to react to the request with remarkable agility. The initial inquiry to the units being deployed in Iraq took only nine months. “They gave us all the content, and all the things they would need a soldier to say out in the field,” Houston said. “The original SpeechGuard enabled an English speaker to speak any one of 6,000 different phrases. They would speak into it, in English,

and the output would be in Arabic.” When word of the translations devices began to reach the states through embedded media reporters and soldiers’ e-mails home, the public began to see and hear stories about a device that allowed a kid from Nebraska to speak Arabic. While the communication on the streets of Iraq was less than some reporters would lead their readers to believe, the interest of U.S. police officers was piqued. Being tasked with policing immigrant populations (both legal and illegal), where language barriers are the norm, officers saw the potential benefits right away. Ectaco initially guided the requests from law enforcement to existing off-the-shelf products, electronic dictionaries and other consumer-based products. But a device that



would assist a couple taking a trip to Paris or software that was designed to help a business traveler in Japan was not well-suited for third shift in an average U.S. police department. At that time, the company didn't have the field knowledge to develop a mission-specific device for public safety personnel; the designers simply didn't know what cops would need on the street.

### Police Experience Required

To remedy the situation in 2004, Ectaco officials asked the largest 250 U.S. agencies to help them help the law enforcement community by evaluating the software and devices developed for the military. In a statement that underlines the perceived need of law enforcement agencies to have a practical translation device, 62 departments agreed to participate in the program.

The departments provided feedback on both the interface, the functionality of the device and, most important, the content: the commands, phrases and questions they wanted in the translator. Additionally, the beta testing agencies provided Ectaco with a "wish list" of languages they wanted to see in a law enforcement version. Nine languages eventually made it to the streets including: Arabic, Russian, Spanish, Polish, Chinese (Mandarin), Vietnamese, Korean, Japanese, and Farsi. The device created after the law enforcement beta testing was called the SpeechGuard PD-4 (the military version was renamed the GI-4), with the first units being sold in August 2004.

Currently, there are more than 300 agencies worldwide deploying the law enforcement versions of SpeechGuard. Several of the initial beta testing agencies made purchases, including some of the largest: Miami, Los Angeles and Chicago. But larger law enforce-

ment agencies often have additional translation resources within their municipality. Also, larger agencies often have personnel within their own ranks who can perform translation services. Currently, most of the devices are being purchased by medium and smaller agencies that lack the economy of scale to generate court-sponsored translation services or multilingual officers.

### Can't Do? Can Do?

In understanding what the PD-4 and the current PD-5 can do, it's important to understand what they cannot do. First, they do not translate everything you say into a different language. If you held a device in your hand and asked for "the best coffee shop in town" hoping to hear it spoken in one of the installed languages, you are likely to be disappointed by the results. Second, it does not provide two-way communication between people who speak different languages. The devices are designed to interpret English phonetics only. As such, they can assist an English-speaking person produce audible phrases in other languages, but they cannot produce instantaneous audible communication back and forth like devices in a science fiction movie.

In the most basic terms, the translations devices are designed to "listen" to what a person says, compare that with a database and then provide the closest matching phrase. If

the user accepts that phrase, then an audible file of that phrase is played in the desired language. For example, if an English-speaking officer was trying to determine the age of a Spanish speaking witness he might ask, "How old are you?" The PD-4 would "listen" to this statement and possibly return a phrase match of "How old are you?" If the officer selects this match, the PD-4 might play an audible file asking the witness in Spanish, "¿Cuántos años tiene?"

Similarly if the officer had instead said, "Tell me your age," the PD-4 might still have returned the same of match of "How old are you?" By analyzing the English statement, the device makes a suggestion based on key words it has identified, such as "old" or "age" and matches those with phrases from its database. Thousands of context-specific phrases are available in the current version. And most important, SpeechGuard is speaker independent, meaning that it will work for anybody who speaks English.

The law enforcement version of SpeechGuard has a menu with six categories: Detention, Search, Identification, Investigation, Patrol, and Communication Control. Under each of these categories are sub-categories. For example, Patrol has six sub-categories: Stop, Booking for Information, Citations, and three for DWI. Under each of these are common phrases that can be

selected manually and heard in a given language.

### PD-4 vs. PD-5

The first model designed for the police, the PD-4, was built on the frame and design of the original military SpeechGuard, and as such, it was a highly developed phrasebook capable of speaking in another language. The latest version, the PD-5, incorporates additional features, which take its capabilities well beyond its predecessor.

The PD-5 is capable of learning and adjusting itself to up to 30 specific users, when properly trained, the device can become speaker dependent, responding to verbal statements from specific individuals. For example, a first-shift patrol officer trains his PD-5 to "read" the Miranda Warning in Spanish whenever he says, "Miranda Spanish." When that same device is handed over to a second-shift supervisor, it responds by "reading" the same Miranda Warning in Spanish whenever he says, "Miranda Warning." Incidentally, the PD-5 is sensitive enough to discriminate between the two voices in this example and would not respond to the verbal commands of others.

The PD-5 integrates several other features, including a tactical command mode, which allows it to be used hands and eye free. A multi-hour recorder is also built into the device, which allows it to record both the output of the SpeechGuard

itself and nearby sounds. This feature also includes a time and date stamp, allowing the recording to later be used in court. Recently a pen scanner has been added, which allows the user to scan foreign text and receive an instant English translation. Ectaco is the only company that makes such a device in a handheld platform. Other features include an MP3 player and an announcement mode, which can repeat phrases or commands over portable speakers or loud speakers effective for crowd control operations.

Before the government contracts, Ectaco provided consumers with electronic dictionaries they could use to learn other languages. This underlying feature has become apparent with the SpeechGuard PD-5, which includes the award-winning software, Language Teacher, which automatically and visually assists non-native speakers to perfect their pronunciation and use of their new language. But even without using these specific learning tools, officers have reduced their need for the device through repetition and passive learning.

After using SpeechGuard for several months, personnel were asked if they liked the product, they said, "Yes." Asked if they would recommend it to other agencies, they said, "Yes." But when they asked how often they were using the device, several responded with "infrequently." Tim Houston referenced this



confusing set of facts when potential agencies were deciding if they wanted to buy the device. “OK, you said that you like it, and you’d recommend it for my agency, but you hardly use it? It doesn’t make any sense.”

But the reduction in frequency of use was not due to negative performance issues with SpeechGuard, rather it was the officer’s repetitive use of the device and increased acquisition of language that reduced the officer’s reliance on the device in the first place. Houston said, “SpeechGuard users who came across the same scenarios on a regular basis started to hear it before the SpeechGuard said it. The output becomes committed to memory.” If you speak the language, you don’t need the translator; and officers who use SpeechGuard regularly learn the language.



tions and universities are currently working on language translation devices. Ectaco has spent 20 years on the process. IBM has invested more than 40 years and hundreds of engineers to solve the riddle of human language translation, all without what the average consumer would consider “success.” While we wait for the Universal Translator, Ectaco offers a 30-day trial, money back guarantee on the SpeechGuard PD-5. Tim Houston can provide your agency with a list of nearby agencies that currently use the device and a few officers who no longer need to.

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## The Universal Translator

SpeechGuard PD-5 clearly provides communication opportunities for law enforcement and public safety personnel, which were wholly unavailable only a few years ago. But what about the future? When will we have a device that allows seamless communication between two people speaking different languages, a la the Universal Translator on Star Trek? That day may never come. Even with only one language, i.e., English, there are many different ways to ask a sim-

ple question and just as many possible answers.

When a second language is added to the mix, the variations don’t merely double, they grow exponentially. Computers and software, as they are currently understood, are not powerful enough to create a device capable of managing the countless languages possibilities created by combinations of two languages, let alone the thousands of language variants spoken on Earth.

Hundreds of companies, organiza-