COMMUNICATING MORE FOR LESS:
Using Translation and Interpretation Technology to Serve Limited English Proficient Individuals

By Jessica Sperling

mpi
MIGRATION POLICY INSTITUTE

MIGRATION POLICY INSTITUTE

NATIONAL CENTER ON IMMIGRANT INTEGRATION POLICY

COMMUNICATING MORE FOR LESS:

Using Translation and Interpretation Technology to Serve Limited English Proficient Individuals

By Jessica Sperling

January 2011

Acknowledgments

This report was produced by the Migration Policy Institute's National Center on Immigrant Integration Policy (NCIIP) as part of its ongoing work to provide managers of translation and interpretation programs with information that can improve the quality and cost effectiveness of their services. More information on this area of NCIIP's work, including a searchable database that offers access to hundreds of state and local agency documents used to provide language access services, can be found at www.migrationinformation.org/integration/language_portal/.

The author would like to thank Laureen Laglagaron and NCIIP Co-Director Margie McHugh for their advice and comments during the drafting of this report.

This research was funded by the Annie E. Casey Foundation. MPI and the author thank them for their support but acknowledge that the findings and conclusions presented here are those of the author alone, and do not necessarily reflect the opinion of the Foundation or MPI.

© 2011 Migration Policy Institute.
All Rights Reserved.

Cover Design and Typesetting: Danielle Tinker, MPI

No part of this publication may be reproduced or transmitted in any form by any means, electronic or mechanical, including photocopy, or any information storage and retrieval system, without permission from the Migration Policy Institute. A full-text PDF of this document is available for free download from: www.migrationpolicy.org.

Permission for reproducing excerpts from this report should be directed to: Permissions Department, Migration Policy Institute, 1400 16th Street, NW, Suite 300, Washington, DC 20036, or by contacting communications@migrationpolicy.org.

Suggested citation: Sperling, Jessica. 2011. *Communicating More for Less: Using Translation and Interpretation Technology to Serve Limited English Proficient Individuals*. Washington, DC: Migration Policy Institute.

Table of Contents

Editor's Note 1

I. Introduction 2

II. Advances in Interpretation Technology 3

A. *Interpreter-Based Technologies* 3
   1. Remote Consecutive Interpreting Technology 4
   2. Remote Simultaneous Interpreting Technology 5
   3. Audiovisual Remote Interpreting Technology 5
   4. Interpreter Network Technology 6
   5. Multiple Listener Technology 7

B. *Automated Interpreting Technologies* 8
   1. One-Way Technology 8
   2. Limited Two-Way Technology 9
   3. Full Two-Way Technology 10

C. *Interpretation Service Vendors* 11

III. Advances in Translation Technology 12

A. *Translation Memory Software* 12

B. *Machine Translation* 13

C. *Translation Vendors* 14

IV. Using Technology for In-House Translation/Interpretation Management 14

A. *Managing Translation Services* 14
   1. Tracking the Document Translation Process 15
   2. Maintaining Translation Records 16
   3. Facilitating Translation Distribution 16

B. *Managing Interpretation Services* 17

V. Conclusion 18

Appendices 19

About the Author 25

Editor's Note

Advances in translation and interpretation technology have given language access professionals a wide range of options for breaking down the language barrier. However, with so many different types of technologies now available, selecting the right technology system can be a challenge.

This report seeks to help those in the language access field better understand some translation and interpretation technologies in use and available. Data for this report was gathered through interviews with state and local government employees and language access professionals experienced in utilizing language access technology. State and local government respondents were solicited by contacting members of an established language access practitioner network and subsequent snowball sampling. They represent a wide range of service areas, from health and child protection services to elementary and secondary education. Agencies varied in the types of language access technologies they used, from the relatively simple and inexpensive to the complex and costly. The technologies profiled were determined as a result of these interviews, with guidance from established information on language access technology.[1]

Sample technology companies highlighted in the report were identified based on interviews with state and local government employees. This report does not represent an endorsement of these particular companies, as there may be other similar companies and services available; rather these examples provide a starting point for practitioners seeking to better understand the nature and availability of technologies that can assist in meeting translation and interpretation needs.

The guide to technology products will be updated periodically in order to assist language access service managers who seek to stay current with developments in this field. Readers who wish to suggest additional technological innovations for inclusion in the guide should send suggestions to NCIIP@migrationpolicy.org.

1 See Insha Rahman, Joe Hirsh, and Susan Shah, "Overcoming Language Access Barriers in the Criminal Justice System: Can Language Assistance Technology Help?" (white paper, Vera Institute of Justice. 2007). www.migrationinformation.org/integration/language_portal/files/Overcoming%20Language%20Barriers%20Vera%202007.pdf.

I. Introduction

As the immigrant population continues to grow in the United States, an increasing number of people speak a primary language other than English. For instance, just over 21 million people in the United States were Limited English Proficient (LEP) in 2000; in only eight years, this number grew to 24.4 million LEP individuals.[2] Given this sizeable and growing population, state and local governments and service industries are now using technology to provide services to LEP individuals. They turn to technological innovations to improve efficiency of in-house translators and interpreters, reduce costs, and improve their use of translation and interpreting vendors.

Employing language access technology to facilitate translation and interpretation can be a cost-effective approach to reducing redundancy and saving resources. However, choosing the right translation or interpretation technology can be a time-consuming and confusing task for language access service managers. Language access needs vary immensely, encompassing a wide scope of organizations, businesses, and government agencies. Nurses and doctors need be able to converse with LEP patients; police officers must find ways to communicate with non-English speakers; and the full spectrum of state and local organization must be able to communicate with all community members in a public health or safety emergency. As each has specific interests and objectives, rarely do any of these groups have language translation demands that can be met the same way.

Box 1. A Note on Terminology

The following terminology is used throughout this report:

Limited English Proficient (LEP): LEP individuals are people who speak a language other than English at home and who have reported to the Census Bureau that they speak English less than "very well."

Translation: Written rendering of information from one language into another language.

Interpretation/Interpreting: The verbal rendering of information from one language into another language. There are two basic types of interpreting: consecutive and simultaneous.

Consecutive interpreting: Interpreting in which one party completes a phrase or sentence and pauses while the interpreter relays that information to a second party. Through the conversation, the two parties pause periodically for the interpreter to render the information in the other language. This type of interpreting approximately doubles the length of conversation, but it is less difficult for the interpreter and requires less skill than simultaneous interpreting.

Simultaneous interpreting: Interpreting in which the interpreter is able to listen to one party and, while listening, directly render that information into the other party's language. The individuals conversing do not need to stop periodically for the interpreter. This type of interpreting is more efficient than consecutive interpreting, but can be demanding for the interpreter and requires greater skill than consecutive interpreting.

Remote interpreting: A means of interpreting in which the interpreter is not located in the same place as either conversant.

2 US Census Bureau, "Language Use and English-Speaking Ability: 2000," US Census Brief. www.census.gov/prod/2003pubs/c2kbr-29.pdf; US Census Bureau, "Languages Spoken at Home." (Washington, DC: American Community Survey, 2008). http://factfinder.census.gov/servlet/STTable?_bm=y&-geo_id=01000US&-qr_name=ACS_2009_1YR_G00_S1601&-ds_name=ACS_2009_1YR_G00_&-_lang=en&-redoLog=false&-format=&-CONTEXT=st.

This report provides an overview of several commonly used translation and interpretation technologies. It aims to assist language access practitioners in understanding and identifying which systems would best meet their agency's language access needs. The report begins with a discussion of technologies that assist with interpretation, followed by a description of translation technologies, and ending with a discussion of information-management systems used by several agencies to manage their translation and interpretation workload. In addition to describing the capabilities of each product, the report provides examples of government agencies and other service providers that have used these technologies, considers the potential benefits and disadvantages of each product, and lists possible vendors. (Appendices A through C provide summary tables with descriptions of these technologies.)

II. Advances in Interpretation Technology

Interpretation technology can be divided into two general categories: interpreter-based technologies and automated interpreting technologies. Interpreter-based technologies do not replace trained interpreters; rather, they are technical aids that help an interpreter perform his or her job in a more efficient manner. On the other hand, automated interpreting technologies permit communication with LEP individuals without the need for an interpreter, though the most reliable forms are based on predetermined questions and answers and are not designed to interpret real-time conversation. (See Appendix D for a chart showing the different interpretation technologies.)

A. Interpreter-Based Technologies

Interpreter-based technologies enable an interpreter to work more efficiently and help reduce the need for on-site interpreters. These technologies often allow remote interpretation, permitting interpreters to work at a location different from that of the LEP individual. Conversation can be conducted using headsets, transmitters, telephones, the Internet, or other telecommunication devices.

This section reviews five types of technologies that facilitate interpreting. *Remote consecutive interpreting technology* allows consecutive interpreting while the interpreter is located in a different place than the LEP individual and government or agency employee assisting in the process. *Remote simultaneous technology* and *audiovisual interpreting technology* have similar functions, but the prior permits simultaneous interpreting rather than consecutive interpreting, and the latter includes a visual component in consecutive interpreting. Because these technologies obviate the need for on-site interpreters, and because interpreters do not need to move from place to place, this technology allows for more efficient use of interpreters' time. *Multiple listener technology* allows interpreters to serve multiple LEP individuals simultaneously in certain circumstances. Finally, *interpreter network technology* permits the sharing of interpreters between different organizations through specialized interpreter networks.

Of these technologies, remote consecutive interpreting technology alone does not require highly specialized equipment and can be employed with in-house interpreters or with telephonic vendors. For this reason, remote consecutive interpreting technology is most commonly used due to its relatively low cost and because it is the only technology that can easily be utilized with telephonic interpreting vendors. Remote simultaneous and audiovisual interpreting technology requires that interpreters have specialized equipment, so they are generally only accessed with in-house interpreters. Interpreter network technology is most practical if organizations within the network have in-house interpreters, but it can also incorporate telephonic vendors. Multiple listener technology can be used with vendors, but they must be on-site rather than working remotely.

1. Remote Consecutive Interpreting Technology

What it does: This technology permits consecutive interpreting while the interpreter is located in a different place than the LEP individual and employee.

How it works: This technology uses a regular telephone line to allow an LEP individual and employee to speak with an interpreter. There are different standard types of equipment that permit this connection without requiring a shared telephone handset. At the most basic level, a regular speakerphone function can be used. In cases in which employees need to be mobile, cell phone speakerphones are an option. Conference speakerphones, which are made primarily for remote business meeting, are of higher audio quality than regular speakerphones and are also used.

Handset splitters or dual handset phones are options as well. Handset splitters divide the telephone line so that two different telephones can plug into one phone line, thereby allowing communication with all parties without a speakerphone. Dual handset phones have the same capabilities as the handset splitter, but use a telephone with two handsets rather than a splitter and two different telephones.

Context appropriate for use: This technology is best suited for any small-scale verbal exchange (for example, between one or a few employees and an LEP individual or family). The New York City Administration for Children's Services uses this technology, for instance, to allow English-speaking caseworkers to speak with LEP parents. Speakerphones allow as many individuals as necessary to converse but limit privacy, while splitter or dual handset phones permit only a limited number of speakers but maintain privacy.

Overall benefits: These technologies are inexpensive when compared to other interpreting technologies. They are relatively easy to use and require little specialized training. Oftentimes, interpreting vendors will provide this training as no cost to organizations that purchase their services. As with all remote technologies, remote consecutive interpreting technologies can save resources by allowing interpreters to use all their time to interpret rather than spending time traveling between locations. This technology can also be used with either in-house remote interpreters or telephonic interpreting vendors.

Potential drawbacks: The greatest difficulty for users may be simply feeling comfortable with using telephonic interpreting in lieu of in-person interpreting. These technologies also require phone lines at both locations. And as with all consecutive interpreting — whether remote or in-person — the length of the conversation is approximately doubled.

Sources of equipment: This equipment is fairly basic and is often sold by companies not directly involved in interpreting technology. *Splitters* are sold at most hardware stores and can cost less than $10. *Dual handset phones* are sold by many electronics companies and can cost less than $100. Telephonic interpreting vendors may also provide dual handset phones for organizations that purchase their interpreting services; for instance, Language Line Services rents dual handset telephones for $3 a month per phone. Their phones have an automated call button that connects the caller with Language Line, but the phones can also be used to call other interpreting vendors by manually dialing their telephone numbers. *Conference speakerphones* are slightly more specialized; the company Polycom (www.polycom.com) is one company that creates this equipment. Its most basic version, which is appropriate for small rooms and conversation among fewer than five people, costs approximately $300. Other distributors may also sell Polycom's equipment at discounted prices.

Users of this technology: Remote consecutive interpreting technology has been used in courtrooms, hospitals, and social service agencies (e.g. Washington State Department of Social and Health Services and New York City Administration for Children's Services).

2. Remote Simultaneous Interpreting Technology

What it does: Permits simultaneous interpreting while the interpreter is located in a different place than the LEP individual and employee.

How it works: This interpreting technology uses voice software to connect LEP individuals and employees to a remote interpreter. The interpreter, the LEP individual, and the employee all wear specialized headsets. Using these headsets, one party speaks to the interpreter, and the interpreter near-simultaneously relays that information to the second person. Unlike with a regular telephone line, the employee and the LEP individual do not hear each other directly through this line; the interpreter alone can hear and speak with each party. Thus, with this technology, each party hears not the other person but rather the running interpreting.

Context appropriate for use: This technology is best suited for any verbal exchange in which consecutive interpreting is not practical. For instance, the Arkansas State Court system uses simultaneous interpreting to render dialogue between English-speaking attorneys, judges, and witnesses into an LEP defendant's language. This allows LEP defendants to understand the proceedings of their trials and hearings. In this case, consecutive interpreting would be impractical because court proceedings would be delayed by the need to stop for the interpreter to convey information to the LEP individual. With simultaneous interpreting, the courtroom dialogue can flow uninterrupted. This technology can also be used in situations in which consecutive interpreting would work, but simultaneous interpreting would allow for more efficient use of time. For instance, Bellevue Hospital Center in New York City uses simultaneous interpreting for LEP client visits.

Overall benefits: The length of the conversation is not doubled in time, as with consecutive interpreting. As with all remote technologies, this can also save resources by allowing interpreters to use all their time to interpret rather than spending time traveling between locations. The process is also relatively simple to use for LEP individuals, employees, and interpreters.

Potential drawbacks: The equipment for this technology is more specialized than that for remote consecutive interpreting, and therefore is more expensive and requires more training for in-house interpreters. Because the interpreter needs access to specialized equipment, this technology generally cannot be used with telephonic interpreting vendors,.

Source of equipment: SimulTel (www.simultel.com) creates remote simultaneous interpreting equipment. The cost can vary depending on an organization's specific needs. In an example provided by SimulTel, an organization can rent simultaneous interpreting equipment for ten interpreters at a cost of $9,000 to $10,000 per month for a minimum two-year commitment. This includes all software, remote hosting, a customized voice-menu, interpreter headphones, and a central telephone access number that users can call to reach the interpreters. SimulTel only provides this equipment, but not the actual interpreters; the interpreters are hired by the organization itself.

Users of this technology: Remote simultaneous interpreting technology has been used by courts (e.g. the Arkansas State Court system) and hospitals (e.g. Bellevue Hospital Center, in New York).

3. Audiovisual Remote Interpreting Technology

What it does: This technology permits consecutive interpreting while the interpreter is located in a different place than the LEP individual and employee. A video screen allows the LEP individual/employee and the interpreter to hear and see each other.

How it works: This is used much in the same way as remote consecutive interpreting, except the LEP individual and employee have audio and video connections. The LEP individual and employee have one

audiovisual unit, and an interpreter has another audiovisual unit to see and hear the other party. To reduce costs but still provide access to all locations where interpreting may be needed, an organization can mount the LEP/employee portion of this equipment on mobile stands and transport them to specific locations as necessary.

Context appropriate for use: This technology is best suited for any dialogue in which the visual presence of an interpreter is valuable. For instance, the Harborview Medical Center in Seattle uses this technology for communication between doctors and patients. The medical center has found that the visual presence of an interpreter creates a greater sense of comfort among patients and increases general satisfaction in language access for both patients and providers.

Overall benefits: Audiovisual remote interpreting technology can be used for sign language interpreting as well as spoken language interpreting. Moreover, it is useful if the interpreter's virtual presence might add to the LEP individual's comfort. Officials at the Harborview Medical Center note that the technology allows for better communication in certain Asian languages than with telephone-based consecutive interpreting, because its digital audio component captures the tonal qualities of language better than a regular telephone line. As with other remote technologies, this can save resources by allowing interpreters to use all their time to interpret rather than spending time traveling between locations.

Potential drawbacks: Systems are generally more costly than consecutive audio equipment. As with all consecutive interpreting — whether remote or in-person — the length of the conversation is approximately doubled.

Sources of equipment: Polycom creates audiovisual remote interpreting equipment for approximately $3,500 for the most basic video unit. Other distributors may sell Polycom's equipment at discounted prices. Costs could be potentially reduced by using Skype, a free program that permits Internet-based audiovisual communication between computers. Skype can be used with any computer that has an Internet connection, a microphone and audio output, and a camera. The downloadable software, user accounts, and communication between two Skype account holders are free. Thus, if an organization has in-house interpreters with ready access to a computer or laptop with Internet connection, and employees interacting with clients have access to a computer with Internet connection, they could communicate with sound and visuals for free. Skype would be a less viable option for use with interpreting vendors, as these vendors' systems are generally not set up to allow Skype-based communication on the interpreters' end. Though no organizations interviewed use Skype for audiovisual consecutive interpreting, this may present a low-cost alternative to this specialized equipment.

Users of this technology: Audiovisual remote interpreting technology has been used by hospitals (e.g. Harborview Medical Center, in Seattle).

4. Interpreter Network Technology

What it does: This technology lets employees at one organization easily access other organizations' interpreters.

How it works: When an employee tries to access an interpreter using an interpreter sharing network, the request first go to interpreters within his or her organization. If no one is available for that language within the organization (either because that language's interpreter is busy or because no one is hired to cover that language), the call is transferred to another hospital with available interpreters in the requested language. If no interpreter is available in the entire network, the call is automatically transferred to a telephonic interpreting vendor. Each organization pays its own interpreters directly,

and the operating system records the requests sent to other organizations and telephonic vendors. Each organization pays a predetermined rate for use of another's interpreters, and each organization pays for its own telephonic interpreting vendor use. Organizations without their own staff interpreters can also be added to these systems (these organizations will simply skip the first step of searching for in-house interpreters), and calls are instead first directed to other organizations' interpreters and then to vendors.

Context appropriate for use: This technology would prove beneficial in a number of different contexts, since almost any organization could benefit from having access to a larger number and wider variety of interpreters. However, given the cost, this technology may be more practical for established networks with many member organizations and more feasible for organizations with relatively large budgets.

Overall benefits: This sharing of resources can allow agencies to access a larger number of interpreters for often-requested languages, as well as a wider range of interpreters for less frequently used languages, than would be possible if each organization separately hired its own interpreters. Because this system is fully automated, it's easy to use, as the person requesting interpreting only needs to make one call to access all resources (in-house interpreters, other organizations' interpreters, or interpreting vendors).

Potential drawbacks: This resource-sharing system can be relatively expensive, so it is most practical when implemented on a larger scale.

Source of equipment: Paras and Associates Interpreter Systems (http://parasandassociates.net) offers this network infrastructure and manages the off-site maintenance of the system. This company also handles the initial purchasing of all necessary interpreting equipment. The cost for such a system varies widely depending on the degree of database and bandwidth connection already shared by organizations within the network, but a baseline estimate runs approximately $40,000 per year (for the entire network, not per individual institution) to run the system.

Users of this technology: This technology has been used by hospital networks in multiple regions, such as California's Health Care Interpreter Network, which encompasses nine public hospitals across the state.

5. Multiple Listener Technology

What it does: This technology allows numerous LEP individuals to hear simultaneous interpreting of a speaker without having to sit next to an interpreter.

How it works: To use this equipment, all LEP individuals in an audience are given special receiver headsets. An on-site interpreter then interprets (generally simultaneously) into a transmitter, which is connected to the receiver headsets, allowing LEP individuals to hear the interpreting. Because transmitters and receivers can generally connect to multiple radio frequencies, this equipment can be used for interpreting in multiple languages within the same presentation. For example, if the receivers have eight channels, eight interpreters can work at one time — LEP individuals simply turn the dial to the channel for their language.

Context appropriate for use: This technology is best suited for when a number of LEP individuals need to understand a speaker. For instance, the New York City Department of Education uses it at educational events for parents, including information sessions regarding New York City's high school application process.

Overall benefits: This technology keeps the interpreting from disrupting the presentation for

English-speaking individuals, and only one or two interpreters per language[3] are needed to serve up to hundreds of LEP individuals sharing that language. It is also relatively easy to use for both the interpreter and the LEP individuals.

Potential drawbacks: Interpreters are not required to be stationed alongside LEP individuals, but the interpreters must be in the same room, and they must be positioned so they can clearly hear the presenter. Depending on the number of languages needed and the number of LEP individuals present, this technology may also be relatively expensive. Because this is a one-way technology (i.e., it can help one party understand what the other says, but it does not work in reverse), it is not helpful for interpreting back-and-forth conversation.

Source of equipment: Williams Sound (www.williamssound.com) creates multiple listener equipment. They charge approximately $2,000 for one eight-channel transmitter, one headset/microphone for transmitter, ten receivers, ten headphones for the receivers, batteries for all equipment, and a carrying case. Other distributors may also sell Williams Sounds equipment at discounted prices.

Users of this technology: This interpreting equipment has been used by government entities that make presentations to the public (e.g. the New York City Department of Education).

B. *Automated Interpreting Technologies*

Automated interpreting technologies permit limited communication with LEP individuals without the need for an interpreter. These tools may be either be "one-way," in which only one party can speak to the other, or "two-way," in which communication can flow between both parties. *One-way interpreting technology* eliminates the need for an interpreter when relaying basic information, and *limited two-way interpreting technology* allows for basic question-and-answer dialogue between an employee and an LEP individual based on predetermined phrases. *Full two-way interpreting technology* eliminates the need for an interpreter altogether in basic conversation and allows for communication outside of predetermined phrases. Automated interpreting tools are less commonly used than interpreter-based tools due to their higher initial cost and relatively limited application. However, they can be cost effective because this technology does not increase in price if demand for interpreting increases.

1. One-Way Technology

What it does: One-way interpreting technology allows employees to relay basic information to LEP individuals by using multilingual prerecorded phrases.

How it works: This technology uses devices with prerecorded phrases in multiple languages. An employee can select, through touch-screen or voice activation, certain prerecorded phrases to be "spoken" by the device in a chosen language. While companies making this equipment generally include prerecorded phrases geared to the military or police-oriented fields, other types of organizations using this equipment record their own. Moreover, some companies are willing to work with buyers and preinsert phrases geared toward a specific field.

Context appropriate for use: This system is best suited for situations in which an employee provides instructions or information that does not require a response. For instance, the Howard County Department of Corrections in Maryland uses this technology when issuing basic directives in criminal situations, such as "get on the floor" or "show me your hands." The Howard County Department of

3 Although only one interpreter is theoretically needed, hiring two interpreters per language for simultaneous interpreting during lengthy presentations is normally required. Because interpreting, and particularly simultaneous interpreting, is extremely tiring, these two interpreters will switch off with one another to provide each with periodic breaks.

Corrections also uses this technology in situations in which a basic response, such as "yes" or "no", is elicited for instance, in basic interrogation questions such as "Could you identify the assaulter based on a photograph?" Because Spanish is the most common non-English language encountered, most employees have been taught relevant Spanish words and can therefore understand basic responses. However, the automated questions could also be changed to directives that elicit physical responses rather than verbal ones. For example, instead of saying "Could you identify the assaulter based on a photograph?"(which implies a verbal response), the device could say "If you could identify the assaulter based on a photograph, please nod your head up and down."[4]

Overall benefits: This permits employees to disseminate basic information and ask simple questions without an interpreter. In contrast to using on-site or telephonic interpreting vendors, this technology does not increase in cost if demand for interpreting increases. It also uses mobile hardware which allows for it to be used in settings other than office environments.

Potential drawbacks: The technology cannot help the employee understand a non-English response. This technology is therefore not helpful if the employee and LEP individual need to engage in conversation or if instructions provided by the employee require any kind of verbal response beyond the employee's linguistic capabilities. In these cases, the involvement of an actual interpreter will be needed.

Source of equipment: Integrated Wave Technologies is one creator of this one-way interpreting equipment. This company charges $3,200 per unit, which includes accessories such as a megaphone and a carrying pouch.

Users of this technology: One-way interpreting technology has been used by corrections offices (e.g., Howard County Department of Corrections in Maryland), law enforcement (e.g. Shenandoah County Sheriff's Office in Virginia), and the US military.

2. Limited Two-Way Technology

What it does: This technology allows employees to communicate with LEP individuals by using multilingual predetermined phrases and questions. It also, to a limited degree, allows employees to understand LEP responses to predetermined questions.

How it works: This technology operates on computers with Internet connections. It is based upon a prepared library of directives, questions, and possible answers. These questions and their non-English equivalents are prepared by the companies creating the technology. Employees operate the program on the computer and choose the appropriate question or directive from the program's library. The computer then "speaks" this question/directive in the requested non-English language. Most questions are structured to elicit "yes" or "no" responses, which are written on the screen and can be viewed in both English and the non-English language. The LEP individual can then indicate his or her answer to the question. For those that elicit other types of responses, the computer screen will show a written list of possible responses or response prompts in the non-English language (along with English translations). The LEP individual can use the translations available on the screen to indicate responses.

Context appropriate for use: This technology is best suited for limited and basic verbal exchanges between an employee and an LEP individual. For instance, the Alabama Department of Public Health has found the program useful for initial intake and other situations that require a routine exchange of information. This department has also employed other uses of this technology, such as printing multilingual drug and discharge information.

4 The Howard County Department of Corrections uses telephonic interpreting when more complex communication is needed.

Overall benefits: The system permits basic communication without the aid of an interpreter and is relatively simple to use. Moreover, in contrast to using on-site or telephonic interpreting vendors, this technology does not increase in cost if demand for interpreting increases. Because employees and, for example, patients at a hospital need not wait for an in-person interpreter, using this technology can be an efficient mechanism for LEP individuals to receive efficient services.

Potential drawbacks: This technology does not permit full, real-time conversation. An interpreter is still necessary if the LEP individual or the employee needs to provide information that is outside of the software's question format. This technology is also only in available in languages already supported by companies creating the software, so it may not be available in all needed languages. This software (specifically the version developed by Polyglot Systems, see below) has primarily been used by hospitals, so many of the preset questions are geared toward a medical setting. Finally, this technology can be complicated for untrained users or users who are generally uncomfortable with technology. Therefore, employees must undergo significant training in order to be able to use the system.

Source of equipment: ProLingua, created by Polyglot Systems (www.pgsi.com/Products/ProLingua.aspx), is an example of this type of equipment. An agency does not need any special infrastructure beyond an Internet connection because the software is hosted by ProLingua. Polyglot Systems charges $120 per month for each computer using their software. The cost can be reduced for organizations ordering a large number of computers, or "seats." Additional questions beyond the approximately 7,000 preloaded questions and answers included can be added to meet a client's specific needs. The cost for additional questions is determined on a case-by-case basis. This software is available in Spanish, Korean, Mandarin Chinese, Russian, and Vietnamese, although Polyglot Systems has plans to develop more languages.

Users of this technology: This simple two-way technology has primarily been used by hospitals (e.g. the Regional Medical Center at Memphis; Heartland Hospital, in St. Joseph, Missouri), though it has been used by some public health departments as well (e.g. Alabama Department of Public Health).

3. Full Two-Way Technology[5]

What it does: Permits interpreting without the assistance of an interpreter. Unlike limited two-way technology, full two-way technology can do more than handle predetermined phrases. This technology uses its stored memory of vocabulary and related language technology to convey any information spoken from the employee to the LEP individual and vice versa.

How it works: One person speaks into a microphone and the technology's software processes this source speech into the target language. The software can work on a variety of hardware, ranging from computers to specialized headsets.

Context appropriate for use: This technology is best suited for situations in which communication is relatively straightforward and low-stake, because the technology cannot handle nuanced or very complex information accurately. Because it can be used with battery-operated hardware, it is also mobile.

Overall benefits: This allows employees to exchange information with LEP individuals without having to send for or remotely contact an interpreter. In contrast to using on-site or telephonic interpreting vendors, this technology does not increase in cost if demand for interpreting increases. Moreover, this software can be used with lightweight and mobile hardware. It can therefore be used in settings other than office environments, such as a war zone.

5 No respondents consulted for this report used this technology. It is nevertheless presented as an additional technology to aid language access provision.

Potential drawbacks: This technology has been developed primarily for military use, and although it has a variety of general-use vocabulary, in its current form it may not have specialized vocabulary for other fields. Because it was developed for the military, it currently only handles languages of particular interest to the military — specifically, Iraqi Arabic, Farsi, Dari (the Afghan dialect of Farsi), Pashto, and Malay. It also cannot necessarily process nuanced or very complex information accurately. Moreover, there is no clear way to discern the boundaries of where language becomes too complex for this technology, because there is no way to know if it interprets incorrectly without an interpreter confirming the program's interpreting.

Source of equipment: SRI International has developed this technology through funding from the US military. Though it is specialized for military use, SRI International is willing to customize it to any organizations' specific needs. They have not set prices on their software.

Users of this technology: This technology was not used by any contacts consulted for this report. Its development was funded by the US military, and thus far the US military appears to be its primary user.

C. Interpretation Service Vendors

If an organization is not currently able to hire in-house interpreters, or if it cannot hire interpreters for all languages needed, it may need to hire a company that provides interpreters. There are two types of interpreting vendors: telephonic and on-site.

Telephonic interpreting vendors are companies that connect employees to an interpreter via telephone. These vendors are typically more cost effective than on-site interpreters and usually charge per minute of interpreting. The costs can vary depending on the language and generally range from $1 to $3 per minute. In order to access their services, an employee calls a general number for the vendor and states the needed language. The vendor then connects this employee via phone to the appropriate interpreter, so the employee is now speaking over the phone with just the interpreter. To use this interpreter to converse with the LEP individual, the employee can pass the telephone handset back and forth between him/her and the LEP individual. Alternatively, the employee can use remote consecutive interpreting technology (such as a dual handset or a speakerphone) to more easily permit communication between the three parties.

Telephonic interpreting vendors that other government entities use include Language Line Services[6] (www.languageline.com), Language Services Associates (www.lsaweb.com), CTS Language Link (www.ctslanguagelink.com), and Pacific Interpreters[7] (www.pacificinterpreters.com).

On-site interpreting vendors send interpreters directly to the location where interpreting is needed. They are useful for situations in which physical presence is vital. For instance, an interpreter must be physically present at any event in which multiple listener technology is used. On-site interpreting vendors may be more cost effective than telephonic vendors if interpreting is needed for a lengthy matter. For instance, if an interpreter was needed for two hours, a telephonic vendor that charged $1.50 per minute would cost $180. An on-site interpreter, depending on their pricing, may charge a flat rate in lieu of a per-minute rate. Moreover, on-site interpreters charge by lengthier increments, such as hour or half-hour, and often require a time minimum, such as two hours. Because these companies vary widely depending upon location, examples are not included in this report.

6 Based on an informal review of government entities use of telephonic interpreting vendors, LanguageLine was by far the most commonly used.

7 This company specializes in medical interpreting.

III. Advances in Translation Technology

Translation technologies generally fall into two categories: technologies that increase a translator's efficiency, and those that aim to replace the translator. Within the first category, the principal technology used for translation is *translation memory* (TM) software. This tool is widely used by translation companies. Within the second category, the principal technology used is *machine translation*. Machine translation was generally reported by the practitioners interviewed for this report as unreliable in quality.

It is important to note that the employee must be able to identify the LEP individual's language before using translation or interpretation technology. This can be done by using an "I Speak" card[8] (See Appendix E) or any other language-identifying technique.

A. *Translation Memory Software*

What it does: This technology uses a stored memory system to reuse pretranslated phrases in subsequent translations.

How it works: This technology allows translators to match source language phrases (e.g., English phrases) to corresponding target language phrases (e.g. phrases in Spanish, Korean, etc.) when translating a document. If these phrases appear again in future material, the Translation Memory (TM) software will automatically draw upon memory from previous documents, and will allow translators to insert the already translated version of that phrase. Organizations must have foreign language fonts already installed on their computers to use this TM software.

Context appropriate for use: TM technology is appropriate in an organization that has staff translators and translates documents at a reasonably high volume. For instance, the New York City Department of Education has an office that houses internal translators that use TM technology. This office translates a wide variety of documents for the entire Department of Education, ranging from department-wide policy documents to individual school fliers. It handled over 3,000 translation requests from schools and Department of Education central offices during the 2008-09 fiscal year.

Overall benefits: TM technology allows for more efficient use of translators' time by precluding the need to re-translate material. It is also extremely beneficial in ensuring consistency when translating multiple documents that reference very specific terminology or program names. For instance, it is possible that certain terminology or a program name could be translated in a number of different ways. With translation memory technology, the software will remember the original translation and help ensure that translators do not use other alternative translations in subsequent documents.

Potential drawbacks: This equipment can be costly if an organization has many staff interpreters, because each desktop license can cost thousands of dollars. Memory is built based on input from an organization's translators; therefore, it will have no stored memory when the equipment is first purchased. It may take some time to build a useful amount of memory before an organization can reap the benefits of the technology. Because translation memory is specialized software, some organizations' IT departments may not be able to support it. For instance, the New York City Department of Education's IT department did not support TM software, which created incompatibility issues when the department upgraded from Microsoft Word 2003 to Microsoft Word 2007.

8 An "I Speak" card allows English speakers to identify the language spoken by non-English speakers. They are multilingual cards that match the name of a language, written in English, to a phrase, such as "I speak [language]," written in the foreign language. The LEP individuals can point to the phrase in their language, and an English speaker will be able to note the corresponding language name and then contact an interpreter for that language.

Source of equipment: SDL Trados (www.sdl.com/en/products/translation-memory) is one company that creates TM software. One professional license, which allows a single desktop computer to create and use stored translation memory, costs approximately $3,000. However, a discount may be applied for organizations ordering a large number of licenses.

Users of this technology: TM software has been used by government entities that produce a significant number of documents and have in-house translators, such as the New York City Department of Education. TM is also widely used by private translation companies (e.g. Language Line Services, Erkison Translation, LinguaLinx).

B. Machine Translation[9]

What it does: This Internet-based technology automatically translates written material from one language to another without the involvement of a translator.

How it works: This technology uses a store of preset translations to automatically convert text from one language Machine Translation (MT) to another. To begin, an employee opens the webpage for the translation tool and enters the text into the designated space. The user then selects the language of the source text, the desired language of translation, and pushes a button instructing it to translate the text. The translated text then appears on the screen.

Context appropriate for use: As the quality of MT's translations is unreliable, it is best used in cases where mistranslation will not be a problem (e.g., if a user just wants to understand the general meaning of a text) or if there is absolutely no other means of translation.

Overall benefits: This technology is offered for free on the Internet and translation is instantaneous.

Potential drawbacks: The quality of MT translations is unreliable because there is no certified or trained translator overseeing each translation. Translators and language access service managers interviewed for this report generally found machine translation inadequate for circumstances where high-quality translation is needed. The American Translators Association (ATA) states that, "it is simply not suitable: your run the risk of looking inarticulate … even stupid."[10] Tests of MT technology using "roundtrip" translation (translating a phrase from English to another language and then back to English) show how the meaning of a phrase can become muddled or changed altogether. For instance, in the Babelfish MT program translation from English to Chinese the phrase "Please fill out the top part of this form," is changed to "Please fill in this form the crown."

Source of equipment: Babelfish, (http://babelfish.yahoo.com) is one of the most commonly free MT tools used. Google Translate (http://translate.google.com/#) is a newer, free product that is similar to Babelfish; it is promoted as producing higher-quality translations due to its internally developed statistical machine translation methodology. IBM has developed its own version, called n.Fluent, but this tool is currently only available internally within IBM.

Current users of this technology: No respondent consulted for this publication reported using this technology.

9 No respondents consulted reported using this technology. It is nevertheless included in this report, for it is a technology that could over time prove increasingly relevant in language access provision.

10 See "Translation: Getting It Right," 12. American Translators Association. 2003. The entire document, which provides general suggestions for translation, is available at www.atanet.org/docs/Getting_it_right.pdf.

C. Translation Vendors

If an organization is not able to hire in-house translators, or if it can only hire translators for a select number of languages, it may turn to a translation vendor, a company that translates written material. Translation vendors are commonly used in lieu of in-house translators, since many organizations do not process enough translations to merit hiring a devoted internal translation staff.

Although they are not a form of new translation technology, information on translation vendors is included here since they are often utilized to meet an agency's translation needs. With a translation vendor, an agency can simply e-mail a document in need of translation to the vendor and specify the languages needed. The vendor will then translate the document into the needed languages.

Listed is a variety of translation vendors that serve government entities interviewed for this report:

- Lingualinx (www.lingualinx.com)
- Language Line (www.languageline.com)
- Eriksen Translation (www.eriksen.com)
- aLanguageBank (www.alanguagebank.com)
- Transperfect (www.transperfect.com)
- Schreiber Translations (www.schreibernet.com)
- Dynamic Language Center (www.dynamiclanguage.com)

IV. Using Technology for In-House Translation/ Interpretation Management

Translation and interpretation programs have developed in-house systems to allow them to more effectively manage requests for their services and to track resource needs and allocation.

A. Managing Translation Services

Translation databases are specifically used to help manage any aspect of document translation. Such databases have been used for three main purposes: tracking the document translation process, maintaining records of translated documents, and distributing translated documents. This section highlights examples of each of these three uses. Some aspects of these database examples may not align with all organizations' capabilities or needs, but they can nevertheless provide useful models.

For tracking the translation process and maintaining translation records the following section highlights the New York City Department of Education's Translation and Interpretation Unit. This Translation and Interpretation Unit serves as the central repository for translation for the New York City Department of Education, including both the Department of Education offices and schools. Although the New York City Department of Education's system is reviewed, other agencies, such as Los Angeles County's Department of Public Social Services, also use databases for translation tracking and translation record-keeping.

For the third purpose — distributing translated documents — this section highlights Washington

State's Department of Social and Health Services' Economic Services Administration. Although Washington State's system is reviewed, other social service agencies, such as San Francisco's Department of Human Services, use similar distribution systems.

1. Tracking the Document Translation Process

Having a system that tracks the translation process has two related benefits. First, it helps those managing translations keep track of their translation projects and deadlines, thereby reducing human error. Second, it allows supervisors to look at any project and know exactly where it is in the translation process (i.e., being translated, being proofread, or completed). Though these management functions are particularly beneficial in an office that completes a high number of translations, they can be helpful for any office that does translation.

The New York City Department of Education's Translation and Interpretation Unit provides a valuable example of a translation database and serves as a central source of translation for the entire New York City Department of Education. In contrast to some other organizations that do translation, this unit does not create any of its own documents to be translated. Rather, it only translates documents requested by city schools and educational offices. Because it is the department's central translation source, it handles a high volume of translation requests — more than 3,000 translation requests alone in fiscal year 2008-09.

This Translation and Interpretation Unit maintains a well-developed Microsoft Access-based database, developed specifically for the unit's needs by an internal employee. The database is based around the unit's personnel structure, which employs project managers (who handle the administrative and managerial side of translation projects) and in-house linguists. On occasion, the unit also uses translation vendors when its in-house linguists are overbooked. The database is structured according to the unit's two-step translation process. Documents are first translated by one linguist and then proofread by another linguist. (Screenshots of this database are included in Appendix F.)

When a project manager first receives a document in need of translation (hereafter referred to as a translation project, or a project), he or she opens the main translation database and clicks on a button indicating that a new translation project is being entered. This automatically assigns the project an identifying number and opens a blank page for this new project. On this page, the manager lists identifying information for the project. This information includes project title (generally a description of the document); project manager (automatically entered based on who had logged in); word count; document category (i.e., whether a letter to parents, school flier, administrative guideline, etc.); subject of document (i.e., whether admissions, school policy, parental involvement, health and safety, etc.); contact information for the person submitting the translation; languages needed; date the translation project was begun; and date it is expected to be completed (including internal deadlines).

The manager then assigns the translation and proofreading of this project to either an in-house translator or, if translators are overbooked, to a vendor. Once this information is entered in the system, the manager sends the translation and proofreading assignment to the linguists. These tasks are sent by pressing a button on the database project page; this button is linked to Microsoft Outlook, so the linguist receives the task via e-mail. If a vendor is used, the manager simply e-mails the vendor contact with relevant project information —project number, word count, languages needed, and desired deadline, etc. — and attaches the documents.

When a project has been completed by the translator and proofreader, the manager marks these steps as complete in the database. When all needed languages are complete and the project manager has done a final quality-control review of the documents, the manager marks the entire project as "complete" in the database. This moves the project from an "active" status to a "completed" status.

If a vendor is used for a project, the manager can also rate the vendor. Two rating metrics are used: "management" (i.e., responsiveness to project manager) and "deadlines" (i.e., timeliness in returning translations). Rating for each vendor can be combined from different projects over time and used to assess the overall quality of a vendor.

2. Maintaining Translation Records

The New York City Department of Education's tracking database also serves a record-keeping function. The database allows employees to access information about already completed translation projects because it is searchable by project number, translation requestor, and project name. Thus, if someone wants to update a completed project, a manager can find that project through multiple searches. The manager can see which projects the requestor, or the requestor's office or school, had submitted in the past. The manager can also search the key words in the name of the new project to see if it matches the name of any previous projects. If the requestor has the project number for their previous translation, the manager can simply look up that project number.[11] These tools help managers to find completed projects when needed.

The record-keeping aspect of this system also builds institutional memory and allows managers to assess past work. For instance, these records can be used to see the translation word count needed for particular languages. This allows for a broad view of the most-needed languages over specific periods of time. Managers can also gather similar summary statistics for any other field in the database, such as type of document submitted or the amount of work a particular linguist does, to get a better sense of the overall workflow.

3. Facilitating Translation Distribution

Distribution of translated documents is an integral component of language access because their utility is dependent on whether the translated document makes it into the hands of an LEP individual. Distribution can be complicated: it requires knowing what language each LEP individual needs, knowing where the appropriate translation of the appropriate document is located, and being able to access that document readily. Thus, automation of the distribution process can prove helpful. Washington State's Department of Social and Health Services' Economic Services Administration provides an example of a major agency that took advantage of its preexisting client database to facilitate translated document distribution.

This organization maintains a general client database (originally purchased from Connecticut's Department of Social Services) that records basic information about clients, including the client's preferred language. This database is also used for automatically printing standard letters relevant to a client's case, such as benefit eligibility letters. Originally, these standard letters existed only in English, but the administration translated the letter into eight other commonly needed languages (Chinese, Khmer, Korean, Lao, Russian, Somali, Spanish, and Vietnamese). The agency then merged these translations into the existing database, alongside the English versions.

As a result, when an employee requests a document to be printed though the system, it is automatically printed in a client's preferred language.[12] This means of distributing translations is managed in parallel with English-language document distribution, eliminating prior logistical difficulties in separately distributing documents to LEP individuals. Beyond the initial cost of translating the documents and integrating them into the database, no additional costs are incurred.

11 As part of the initial translation process, the project manager put the translation record number in the footer of every document translated.

12 If the individual does not speak one of the nine designated languages, the letter is individually translated.

B. *Managing Interpretation Services*

Technology can also prove useful in tracking the use of interpreters. For example, this can help an organization to decide whether it is more cost effective to hire a vendor or an in-house interpreter or multilingual staff. This information can be tracked by either the vendors providing the services or by the organization itself. The Washington State Department of Social and Health Services' Economic Services Administration relies on its vendors to track interpreter usage. Every month, it receives reports from its interpreting vendors that track number of requests made for each language. These reports can track languages requested at each of the more than 90 field offices, each with a different client base. An administrator can therefore see which languages are most commonly needed at each location.

Washington State's vendor-based data collection system is advantageous because it does not take up employees' time and requires no internal database infrastructure. It can also track spending for vendor services in specific languages and can therefore help determine if an in-house interpreter may be more cost-effective. However, the system only tracks interpreting provided by that particular vendor; it cannot track interpreting provided by in-house staff or by other vendors. The organization must also be sure that it can trust the vendor to provide reliable data. This tracking is therefore most logically used with an established, respected, and reliable vendor.

The New York City Department of Education's Translation and Interpretation Unit also tracks interpreter usage. However, it does so through internal database tracking rather than using vendor-produced reports. From this data, reports can be created to track a range of information on the provided interpreting services. The New York City Department of Education's internal data collection system has the advantage of being able to track specific information of interest to the organization; for example, the types of events or situations that most often need interpreters. If an organization

Box 2. Real-World Tip: Merging Translation and Interpreting Use

Unlike interpreting, which can be done instantaneously, accurate translation can be more time consuming. Thus, if an LEP individual immediately needs to understand information on a document that is not available in his or her language, translation may provide little help. In these cases, organizations may need to be resourceful and creative in disseminating the needed information.

The New York City Administration of Children's Services (ACS) has encountered this issue, specifically when an LEP individual does not speak any of ACS's nine pretranslated languages but urgently needs to understand material written on an ACS document. As a solution, this organization has used telephonic interpreting to resolve this translation concern. When a client urgently needs to know information from a document that is not available in his or her language, the ACS employee calls a telephonic interpreter. The employee reads the document to the interpreter line by line, and the interpreter conveys that information, line by line, to the LEP individual in the needed language. To help employees handle these situations effectively, ACS had created training videos to show employees how this transfer of information works. While this is only practical for certain types of documents, and while pretranslated documents are generally preferable, this translation/interpreting solution may present a practical alternative to a challenging situation.

In another instance of the overlap between translation and interpretation in an agency, ACS has considered recording a verbal rendering of written documents (both the English and translated versions) onto MP3s and making them available to clients on office-owned MP3 players. This example of a technical collaboration between translators and interpreters would be especially helpful to low-literate/illiterate LEP individuals and low-literate/illiterate English speakers, both of whom cannot understand written documents regardless of the language.

uses a mix of in-house interpreters and interpreting vendors, internal tracking can take into account all interpreting offered, rather than only interpreting offered by vendors.

V. Conclusion

Given the growth and dispersion of immigrants in both historic and new destinations across the United States, public and private agencies are actively seeking ways to communicate effectively with LEP individuals. While agencies most commonly use translators, interpreters, and multilingual employees to communicate with LEP individuals, technologies now play a vital role in meeting language access needs. Health care providers are more efficiently using interpreter resources with remote on-site interpretation, schools districts and schools are providing simultaneous interpretation of important meetings in multiple languages, and child protection field workers are quickly accessing translation and interpretation support to function effectively in their profession.

Yet still, many service providers remain uncertain about the functionality and value of these technologies or lack the time necessary to research their purposes, costs, and benefits. This report has sought to answer some of these questions so that these roadblocks can be removed and language access professionals can more confidently seek out the technology assistant to fill their needs.

Of course, not every technology will be useful to every agency. Individual agencies require language access solutions tailored to the unique features of their service delivery system — for example, the volume of clients to be served, the languages they speak, and the nature, length, and frequency of exchanges with them. This report should thus be seen as a catalogue of possibilities, with service providers deciding what best meets their particular needs.

Since growth and innovation of these technologies can be expected to continue, as well as the number of vendors providing these products, information on language access technologies and products will be updated from time to time by MPI's National Center on Immigration Integration Policy.

Appendices

Appendix A. Interpreting Technologies: Interpreter-Based Technologies

Technology Type	What it Does	Benefits	Drawbacks	Example of Users
Remote Consecutive	Permits remote consecutive interpreting; allows LEP individual/ employee and interpreter to communicate through telephone line.	Relatively inexpensive; requires little specialized training; can be used with telephonic interpreting vendors.	Requires phone lines at the interpreter's location and the location where the interpreting is needed.	Queens Health Network, NY; Washington State Department of Social and Health Services; New York City Administration for Children's Services.
Remote Simultaneous	Permits remote simultaneous interpreting.	Increases the length of the conversation only minimally.	More expensive equipment than consecutive interpreting technology; cannot be used with telephonic interpreting vendors.	Arkansas State Courts; Bellevue Hospital, NY.
Remote Audiovisual	Permits remote consecutive interpreting; allows the LEP individual/ employee and the interpreter to both see and hear each other.	Can be used for sign language interpreting and spoken language interpreting; allows for better communication in certain Asian languages; useful if interpreter's visual presence is important.	More costly than consecutive audio-only equipment; cannot be used with telephonic interpreting vendors.	University of Washington Medical Center, WA; San Joaquin General Hospital, CA.
Multiple Listener	Permits remote simultaneous interpreting; allows many LEP individuals to easily hear interpreting of a speaker or presentation.	Keeps interpreting from disrupting the presentation for English-speaking individuals; allows only one or two interpreters to serve any number of LEP individuals sharing a language; is relatively easy to use.	Interpreters must be positioned so they can clearly hear the presenter; can be expensive depending on the number of languages needed and the number of LEP individuals present.	New York City Department of Education.

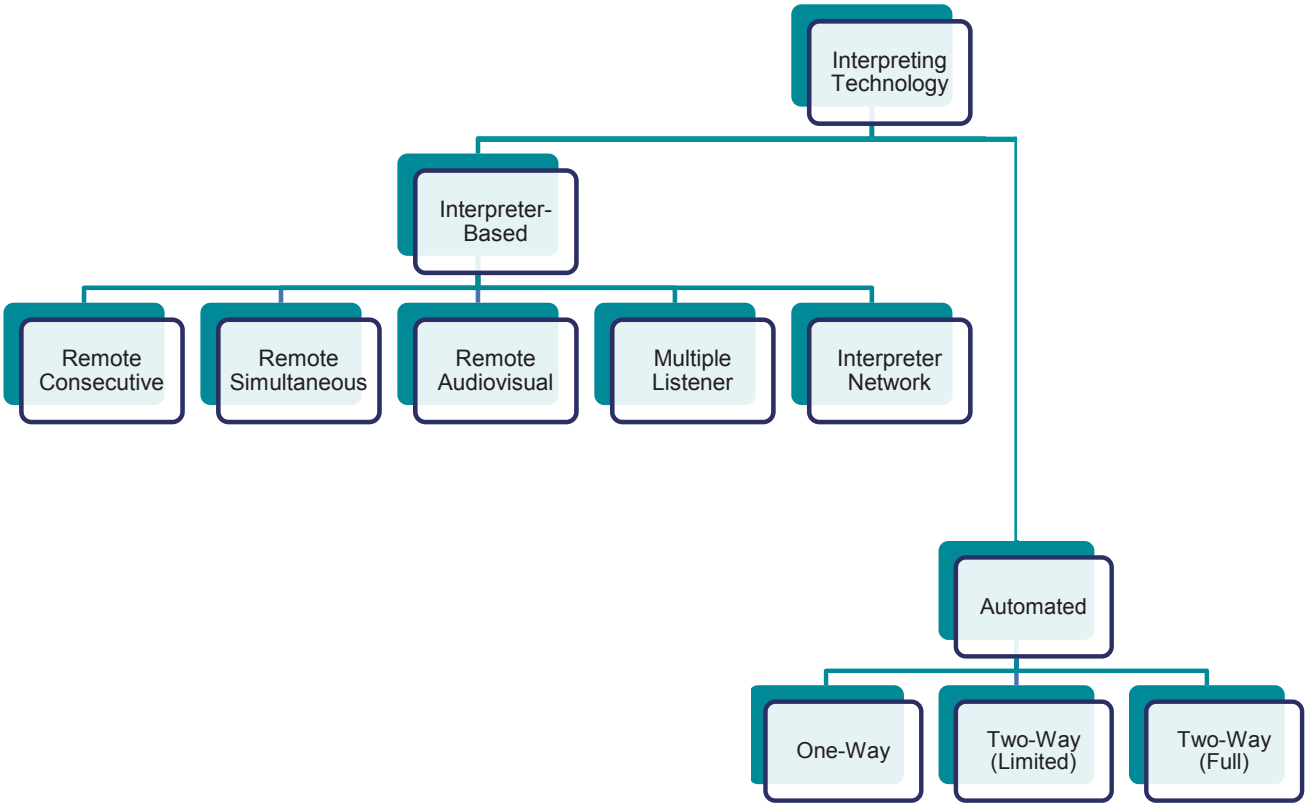
Appendix B. Interpreting Technologies: Automated Technologies

Technology Type	What it Does	Benefits	Drawbacks	Example of Users
One-Way	Allows employees to relay basic information and instructions to LEP individuals through multilingual prerecorded phrases.	Permits the dissemination of information without requiring an interpreter; does not increase in cost if multilingual demand increases; can be used with lightweight and mobile hardware.	Cannot help employees understand LEP individuals' responses.	Howard County Department of Corrections, MD; Shenandoah County Sheriff's Office, VA.
Limited Two-Way	Allows employees to speak to LEP individuals using predetermined phrases and questions; provides LEP individuals with response options.	Permits basic communication without having to use an interpreter; does not increase in cost if multilingual demand increases.	Only allows communication based on predetermined questioned and answer options; only available in limited languages.	Regional Medical Center at Memphis, TN; Heartland Hospital in St. Joseph, MO; Alabama Department of Public Health.
Standard Two-Way	Allows for relatively full verbal exchange between an employee and LEP individual without the assistance of an interpreter.	Permits fuller verbal exchange without the need for an interpreter; does not increase in cost if demand for interpreting increases; can be used with lightweight and mobile hardware.	Currently specialized for military vocabulary; cannot necessarily process nuanced or very complex information accurately; is no clear way to discern the boundaries of where language becomes too complex for this technology.	US military.

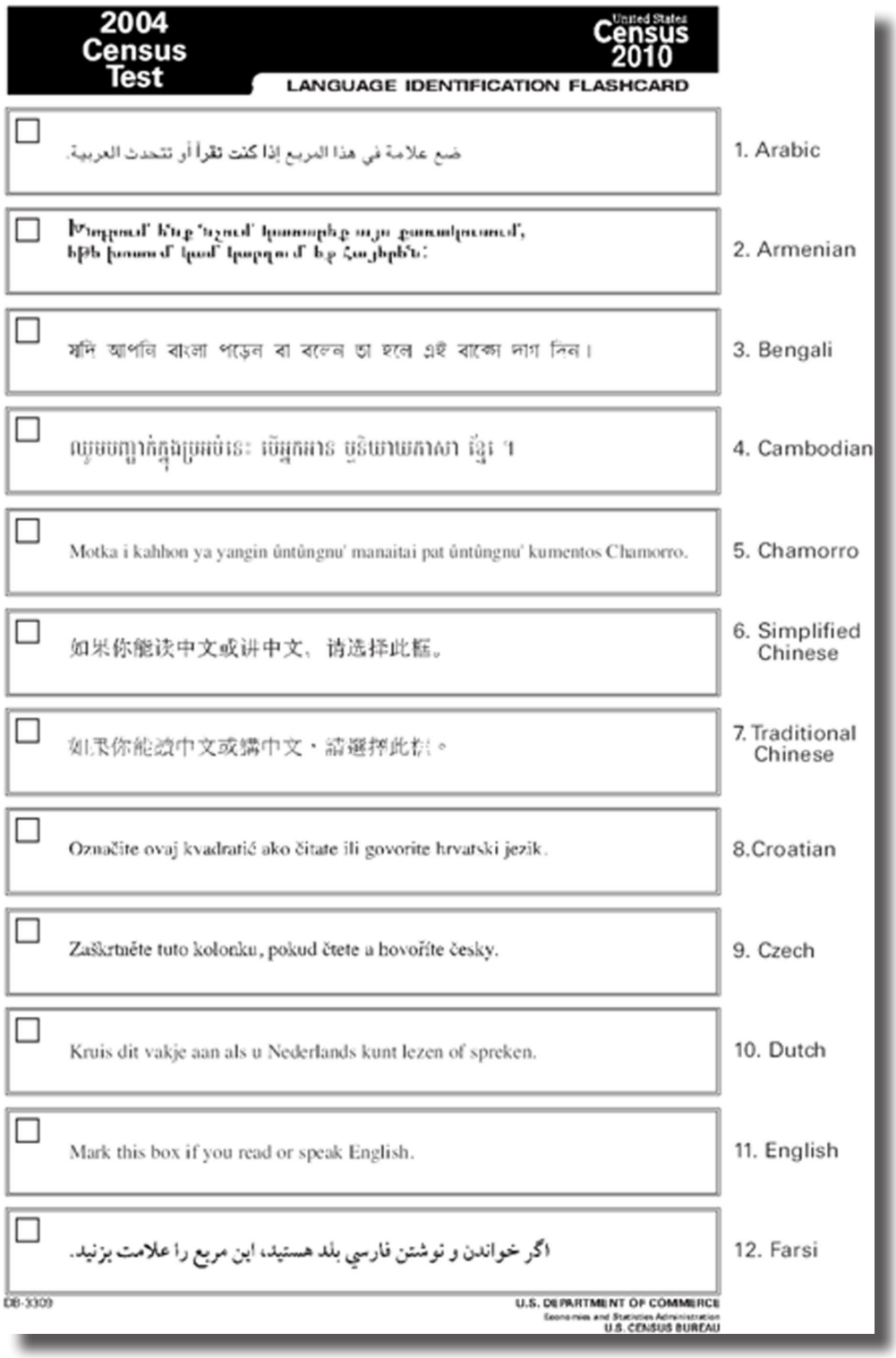
Appendix C. Translation Technologies

Technology Type	What it Does	Benefits	Drawbacks	Example of Users
Translation Memory (TM)	Uses a stored memory system to use already translated phrases in subsequent translations.	Obviates the need to retranslate phrases; ensures consistency in translating specific terminology.	Not helpful to organizations with low translation volume.	New York City Department of Education.
Machine Translation (MT)	Automatically translates written material from one language to another without the involvement of a translator.	Free on the Internet; translation is instantaneous.	Quality of translation is unreliable, so translators and language access professionals generally strongly advise against using MT.	No respondents consulted reported using this technology.

Appendix D. Organization of Interpretation Technologies



Appendix E. Sample Portion of 'I Speak' Card



2004 Census Test

United States Census 2010

LANGUAGE IDENTIFICATION FLASHCARD

ضع علامة في هذا المربع إذا كنت تقرأ أو تتحدث العربية.	1. Arabic
Մոդրամ՝ Եթե դուք կարողանում եք գրել կամ կարդալ հայերեն:	2. Armenian
যদি আপনি বাংলা পড়েন বা বলেন তা হলে এই বাক্সে দাগ দিন।	3. Bengali
ណ្ឌមបញ្ជាក់ក្នុងប្រអប់នេះ បើអ្នកអាន ឬនិយាយភាសា ខ្មែរ ។	4. Cambodian
Motka i kahhon ya yangin ûntûngnu' manaitai pat ûntûngnu' kumentos Chamorro.	5. Chamorro
如果你能读中文或讲中文，请选择此框。	6. Simplified Chinese
如果你能讀中文或講中文，請選擇此框。	7. Traditional Chinese
Označite ovaj kvadratić ako čitate ili govorite hrvatski jezik.	8.Croatian
Zaškrtněte tuto kolonku, pokud čtete a hovoříte česky.	9. Czech
Kruis dit vakje aan als u Nederlands kunt lezen of spreken.	10. Dutch
Mark this box if you read or speak English.	11. English
اگر خواندن و نوشتن فارسی بلد هستید، این مربع را علامت بزنید.	12. Farsi

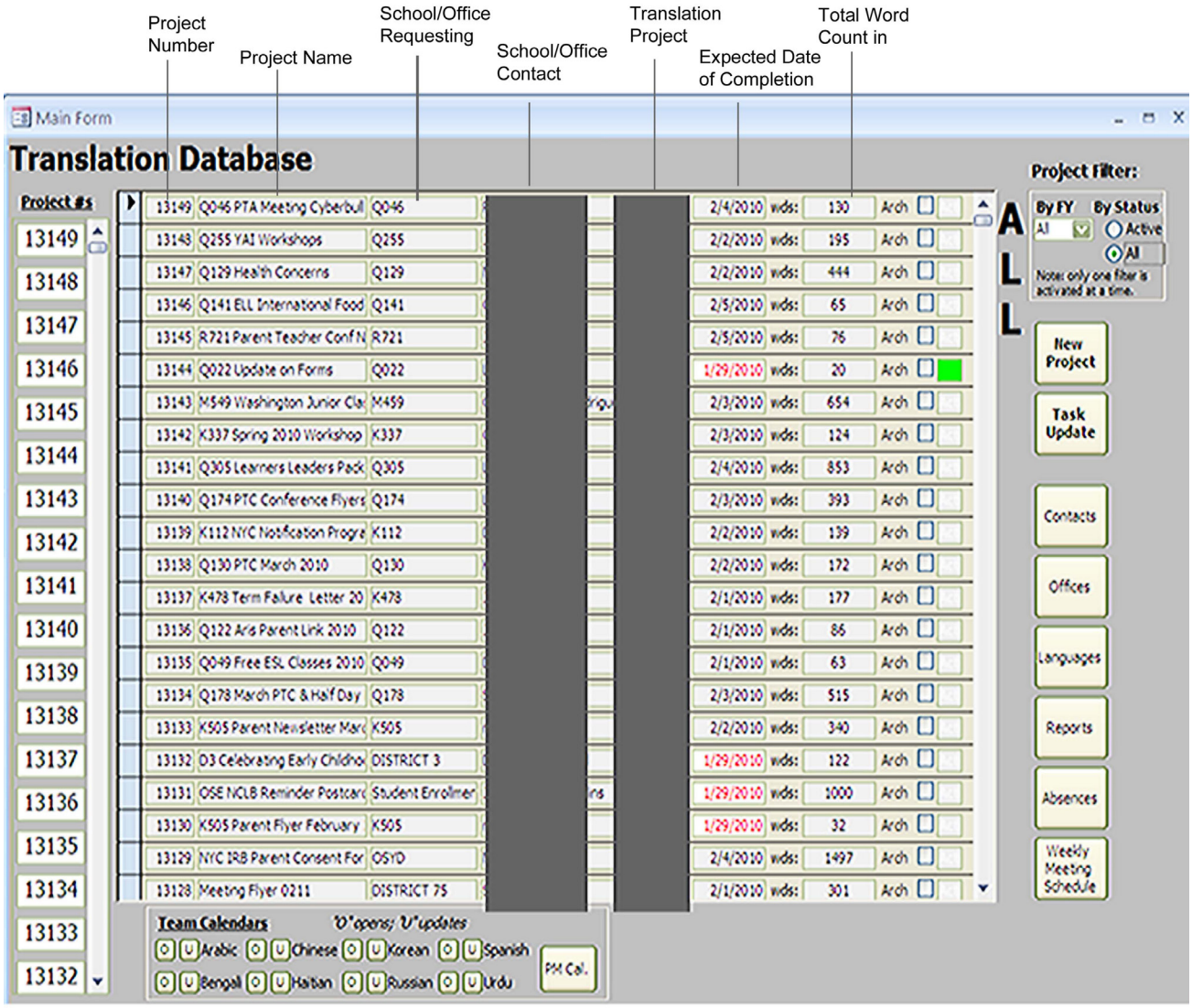
DB-3309

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Note: A complete 'I Speak' card can be downloaded at www.lep.gov/ISpeakCards2004.pdf.

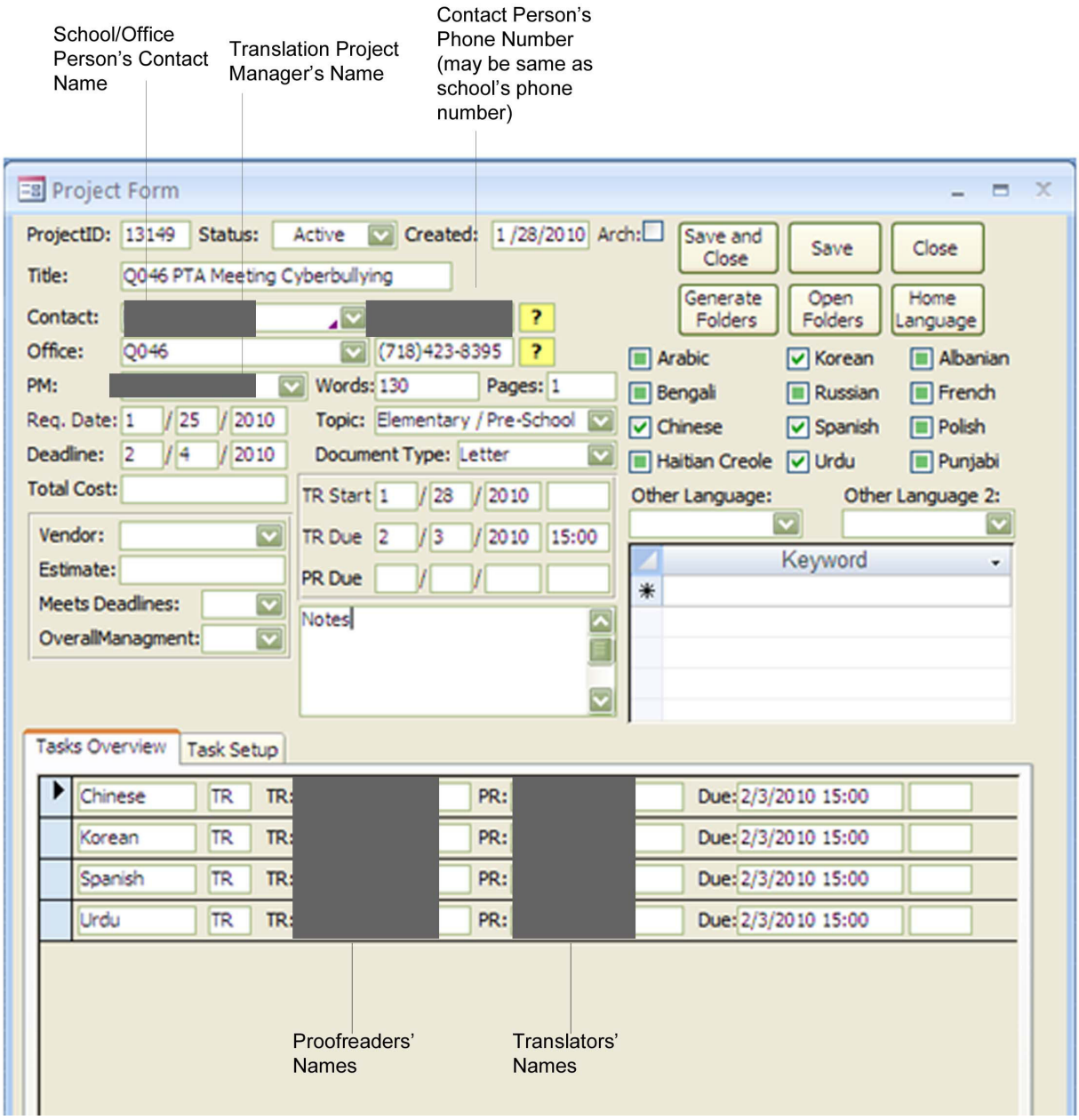
Appendix F. New York City Department of Translation Database Screenshots

1. Main Translation Database Page (showing all translation projects)



Note: Actual names are obscured to protect the privacy of New York City Department of Education employees.

2. One Translation Project's Page



Note: Actual names and phone numbers are obscured to protect the privacy of New York City Department of Education employees.

About the Author

Jessica Sperling is a doctoral candidate in Sociology at the Graduate Center of City University of New York (CUNY), where she works on issues of immigration and comparative integration processes. She holds a B.A. with honors in Anthropology from Washington University in St. Louis and an M.A. in Sociology from Queens College, CUNY. Ms. Sperling has worked with language access implementation for the New York City Department of Education and the New York City public hospital system, and she has served as a consultant on language access issues for the New York City Mayor's Office of Immigrant Affairs and at the Migration Policy Institute.

NATIONAL CENTER ON
IMMIGRANT INTEGRATION POLICY

The Migration Policy Institute is a nonprofit, nonpartisan think tank dedicated to the study of the movement of people worldwide. MPI provides analysis, development, and evaluation of migration and refugee policies at the local, national, and international levels. It aims to meet the rising demand for pragmatic and thoughtful responses to the challenges and opportunities that large-scale migration, whether voluntary or forced, presents to communities and institutions in an increasingly integrated world.

www.migrationpolicy.org

1400 16th Street NW
Suite 300
Washington, DC 20036

Tel: 001 202-266-1940
Fax: 001 202-266-1900