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Multimodal Applications for Small Devices

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Executive Summary

With more and more access to information in today's networked world, the interaction between users and their devices has become a major focus. As devices become smaller, means of input other than keyboards or tap screens become necessary. Small handheld devices such as cell phones and PDAs serve many functions and have sufficient processing power to handle multiple tasks. These devices can benefit the most from the use of applications that employ multimodal input methods.

This paper is written for a general audience with interest in multimodal technology.

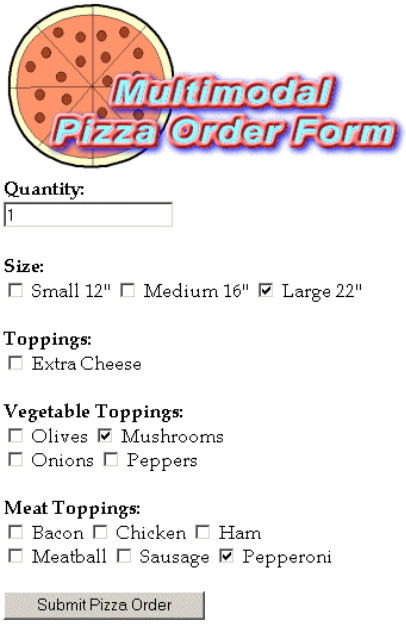


Figure 1 -- A Pizza Order Form

What is Multimodal?

Multimodal device applications give a user multiple ways to communicate. These could include a keypad, touch or tap screen, handwriting recognition, and voice recognition. Depending on the solution and device, a combination of input methods can simplify its use. For example, from a Web browser running on a PDA, a form could be completed by selecting items in a check box, tapping on the screen, or simply speaking. Once the form is completed, a summary of the information could be displayed and read back audibly.

It is possible, using voice recognition, to fill in or select multiple entries on a form with a single command, or utterance. For example, a customer completing an online pizza order form might say, "*large pizza with pepperoni and mushrooms*". The three selections of *Large pizza*, *Pepperoni*, and *Mushrooms* would be checked on the form, which is shown in *Figure 1 -- A Pizza Order Form*.

Or, this example could be designed so that each section of the form prompts the customer separately. For example, the quantity field could be completed by first tapping it with a stylus. The application would then ask for the number of pizzas. Once the customer replies, the system would automatically continue to the next section and ask for the pizza size. This process would continue until the form is completed.

Benefits of Multimodal to Small Devices

As devices become smaller, input from a keypad or tap screen alone may be impractical. With advanced embedded speech technology, speech-enabled input methods are becoming more robust, enabling more capabilities and functions on small devices. Imagine being able to request a stock quotation or the next available flight from your smart phone without having to type in the stock name or the desired travel location -- the applications are endless!

Examples of Successful Multimodal Applications

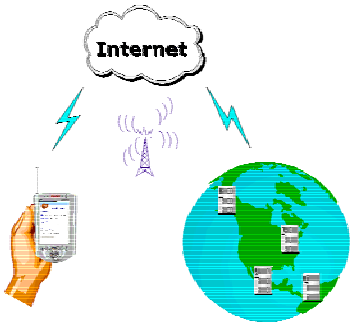
Currently, many implementations of this emerging technology are in development. Software applications that solve user interface problems are being developed and delivered to the marketplace. A few examples of current multimodal applications are the *IBM Embedded ViaVoice® Mobility Suite* and the *IBM WebSphere® Everyplace Multimodal Browser*.

The IBM Embedded ViaVoice Mobility Suite is a software application that runs on a PDA. It permits a user to access the data stored on a PDA using voice commands or more traditional methods. For example, you could request information about a particular calendar entry or e-mail message. The PDA could then display the results to the screen, or read it back in a spoken voice. Since a selection is made by voice, the use of a stylus is

eliminated. This data retrieval enhancement makes the user interface more natural and simpler.

Another innovative software application is the *IBM WebSphere Everyplace Multimodal Browser*. It permits users to interact and request information from Web pages using multimodal input and output methods. The browser utilizes the XHTML + Voice standard to enhance the user interface functionality with a new, more robust set of user interface commands.

The Future of Multimodal on Small Devices



As improvements to operating systems and browsers on small devices are implemented, more multimodal applications will become available. These applications will enable users to more effectively interact with their devices.

Companies have just begun to tap into the vast opportunities this technology provides. The small devices of the future will no longer be stylus-only or stylus-with-keyboard, but will be able to accept a user's inputs from a variety of methods, including speech.

Future small devices will have greater access to information stored on servers. Information may be stored on servers around the world but will be accessible through the Internet.

In conclusion, multimodal technology can allow small devices to be able to interact more easily with the world around them.

For more information

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IBM Corporation
Route 100
Somers, NY 10589
U.S.A.

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