

GADGETS

The Mossberg Solution / By *Walter S. Mossberg and Katherine Boehret*

Portable Gadget Reads Text Aloud to the Blind

Device Takes Digital Photo Of a Variety of Documents; A High Price Tag: \$3,500

FOR THE BLIND AND VISUALLY impaired, technology has been helpful in many ways. Software can dictate the text on a computer screen, and advancements in voice recognition have made it possible to navigate a computer more easily.

But, for reading printed documents, like magazines, menus and mail, many blind and visually impaired people must still rely on other people to read to them, or must use large, deskbound reading machines that do nothing to allow reading while on the go. These dependencies are affecting more and more people, as aging Boomers confront diseases like macular degeneration and the effects of diabetes on eyesight.

Starting this month, there's a new portable gadget for the blind that permits them to "read" printed documents anywhere, at home or away, without the aid of sighted people. This gadget takes a digital picture of a page of text, and then reads it aloud to the blind person, either through a speaker or through earphones. It's called the Kurzweil-National Federation of the Blind Reader, and we've been testing it.

We aren't blind or visually impaired, so we can't presume to speak for people who are. But we do know gadgets, and we were able to test the new Reader on different printed documents to see how well it did.

Our verdict: The K-NFB Reader was remarkably effective on a wide variety of documents, and would be a real boon to anyone who is blind or has seriously failing eyesight. It isn't perfect—it can get confused by highly stylized text, or by illustrations embedded in text, for instance. It's a bit bulky. And, at \$3,495, it's quite expensive. But it works.

The Kurzweil-National Federation of the Blind Reader was released on July 1. It is the result of a collaboration between the Kurzweil Foundation and the NFB, and it might be the closest a blind person can get to reading without using Braille.

The K-NFB Reader consists of two digital devices, connected electronically and surrounded by a synthetic case, plus special software that performs the scanning and reading aloud.

It is made up of a personal digital



The \$3,495 Kurzweil-National Federation of the Blind Reader takes digital pictures of text and reads them out loud.
www.knfbreader.com.

assistant, or PDA, stuck to a digital camera. The camera captures the image of a document, then sends that image to the PDA, which uses software to translate and read aloud the document in just 30 seconds.

We tested this device with magazine and newspaper articles, printed Microsoft Word documents, bills, junk mail and books. The results were impressive, and with a little patience and practice, we think the K-NFB Reader can be truly liberating for the blind. But it definitely takes some getting used to.

It's obvious that this reader can get even smaller and better in the coming years. The foundation and the federation are already looking into whether the reader's functionality can be replicated on a cellphone with a built-in camera.

The digital camera used in this first version of the reader is a Canon SD20, which goes for about \$200 online; the PDA is a lesser known product here in the U.S.—the Fujitsu-Siemens LOOX N560, priced at around \$600 on the Web. But the total cost for the K-NFB Reader is a stunning \$3,495.

The companies explain that this is the list price and that the software makes up a huge chunk of the cost. We certainly can't put a price on a blind person's new ability to "read," but this seemed a little steep to us.

The PDA and camera are directly

connected electronically (no cable is needed) and its casing covers the slots for your camera battery and PDA SD card. Altogether, the Reader only weighs about 12 ounces, making it portable for everyday use.

The included 1-gigabyte memory card stays in the PDA, not the camera, and is estimated to hold about 900 pages of documents. The camera battery and PDA battery must each be charged; the NFB estimates the camera battery will last for about 100 images and the PDA battery for about six hours of normal use.

The PDA has a large, 3.5-inch screen, which, logically, never displays anything as you use the device. Below the screen, four buttons surround four directional up, down, left and right buttons; these surround one center select button. The Reader's directions instructed us to treat the four outer buttons as F1, F2, F3 and F4, though they aren't labeled as such.

To turn on the device, you press F1 and then F2. Pressing the F2 button lets you scroll through three modes: User Settings, Shooting Mode and Document Reader, each with its own menus. The device speaks the name of each function and menu as you select them, so a blind person knows what he or she is doing. The device also comes with directions in Braille and regular print, and they were pretty straightforward.

The Reader can be set in one of two modes for reading: books, articles and



labels; or bills and memos. We kept ours in the former category for most of our testing.

We started off testing the Reader with a simple Word document. We followed instructions, holding the device up near our eyes. Pressing the up arrow gave us a "field of view report," or an audible description of what the camera saw on the table in front of us, like "Left, right and bottom edges visible." The best view description is announced as, "Portrait view" or "Landscape view," and you'll want to press the down arrow to capture your image as soon as you hear this.

It takes a few tries to get a hang of how to position the Reader. But thanks to the detailed description, you can usually figure out which way to move the Reader to view the document at the best angle.

When we pressed the down arrow to take a picture, a voice announced "Taking picture," "Preprocessing picture," and then "Processing image." If the device is idle for more than three minutes (by default), it will announce, "Auto shutdown is turning the system off, goodbye."

After 30 seconds of processing, the device's voice started reading the text from our Word document without a problem. However, it had trouble reading articles that started with an extra-large, graphical first letter, a style found in many magazines and newspapers (like this column). For example, if the first word in a story was "Walt,"

the Reader would say, "W" and "alt," pronouncing the "W" and "alt" as two separate words. Sometimes it would skip the large first letter.

Articles that were written in column form were handled without much problem; when the Reader got to the bottom of one column, it started at the top of the next. But illustrations positioned in the center of a block of text posed a problem; in one case, the Reader read a cartoon illustrator's signature, in another, it interpreted squiggles in the drawing as apostrophes or dashes or even letters.

When used for a page in a hard-cover book, our Reader did a good job, though we doubt anyone would use this for hundreds of pages.

Katie tried the reader on a box of over-the-counter pills to see if it might accurately identify its contents, and the directions, for a blind person. The gadget was able to read smaller print, such as the "Just one tablet per dose" warning. But the largest text on the box—the product's name—wasn't recognized, nor was the name of its manufacturer. Both words were written in more stylized text, which we guess gave the Reader trouble.

One downside of this first version is that the reader's voice is robotic and flat, with little or no inflection, but the Kurzweil Foundation notes that many blind people are used to this robotic voice because it has been used on other products in the past. Even when the reader captured all of the words, it sometimes pronounced them strangely, or incorrectly, such as pronouncing "reading" as "redding" and "cool" as "see all."

On Tuesday, a new version of the software will allow users to choose a more human-sounding playback voice. We tested this, but didn't find it to be a big improvement. It's still pretty robotic.

Documents can be saved on your Reader according to the current date, and special audio files called Voice Notes can be used to tag each document. We tried this and easily recorded a Voice Note describing one of our documents, later linking the note to our document by pressing F3.

If you take the time to learn how to use the Kurzweil-National Federation of the Blind Reader, we think you'll be very pleased with the results. This gadget, though expensive, is simple to use and works quickly. It also does a good job of explaining its processes to the user, so he or she knows what is happening on the gadget at all times.

For someone who can't see, the K-NFB Reader might offer a huge lifestyle change.

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