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iOS/Android Apps for People with Vision Impairments

Dallas Webster – July 30, 2012

Apple devices are very interesting. Macs (with Mac OS X), iPads, iPhones and iPod Touch (with iOS) – come with a pretty good screenreader, VoiceOver, that (as expected from Apple) is well integrated with the devices. VoiceOver is especially effective in iOS, and easy to learn, because of the gestures that form the top-level interface. Novices may be able to use iOS devices almost out of the box, without the overhead of having to learn a complex framework such as a desktop screenreader, e.g., the expensive JAWS or Window-Eyes or the free NVDA, in order to access desktop applications that are broad, complex and less focused.

Android tablets and smartphone have a number of options, though their screenreaders are not as well-developed those on Windows and Apple platforms, nor as tightly integrated as those or Mac or iOS. Examples are Code Factory Mobile Accessibility (free - $99), Eyes-Free Shell (free), Google TalkBack (free) etc. Since Android devices differ between vendors, there are a variety of unexpected incompatibilities and anomalies. But a workable combination can likely be found. Typically, comparable apps, when available, are even less expensive on Android.

Between smoothness of operation, availability of so many apps, especially accessible or accessibility apps, and platform stability and security, iOS is preferred.

Below is a list of sample iOS apps that I think would be especially helpful/useful to someone with impaired vision, in accomplishing a variety of tasks. Many are helpful to others as well, and many have Android implementations or equivalents. *[Note: Almost all of the prices are a penny less than I list (as the app world is dominated by prices ending in $.99).]*

Note that this is only a tiny, but highly significant, portion of the available apps, even among those oriented to accommodate vision impairments. Moreover, there are usually competing apps in each category. The ones I mention may no longer even be best in category, in this rapidly changing world, though they are top notch. Competition is a two-edged sword: It breeds dramatic improvements and innovation, but it can mean rapid changes and temptations to switch between products and try the latest, all of which can be disruptive, especially in cases of insufficient testing or user feedback. There are about a million iOS apps (and about half as many Android apps). For the time being, anything that is as dramatically useful as these is worthwhile and a excellent training opportunity.

> *iCal* (Built-in): Allow simple and accessible scheduling of events and plans. There are many calendar and more powerful scheduling apps, but this is the place to start.

> *Ariadne GPS* ($6): Mitigate reliance on visual clues to navigate in an environment, allowing users to do things like explore a city or take a solo walk. This app that brilliantly

meets the needs of the blind in an easy to use interface. Features include talking maps that can be explored by moving a finger around the screen, signaling street crossings by vibration, announcing bus or train stops; rotating maps to keep you centered. It is hard to determine how it would mesh with some blind Orientation and Mobility barriers, such as a propensity to veer off course, whether it has the necessary fine grain and immediate feedback.

LookTel Money Reader ($10): Reduce reliance on a sighted person to determine denominations of new paper bills that are not augmented tactilely, e.g., by a special fold or other tactile technique to remember. This app uses the iPhone's camera to view and flawlessly determine denominations, even of folded bills.

LookTel Recognizer ($10): Enable users to "recognize" an object in their custom library, instantly by simply pointing their iPhone camera toward it and listening to the phone tell them what it is. Recognition occurs in real time, with no need to hold the camera still or take a photo. After images are captured, it will identify groceries, ID cards, CDs, even locations such as the entrance of a home or office and signs above store entrances or restrooms.

Dragon Dictation/Go (Free): Provides a ubiquitous infrastructure that helps users interact with iOS devices in sophisticated ways, to dictate text and issue direct computer commands by voice (without typing or mousing) -- simply speaking, adding punctuation as needed verbally. This app has a small learning curve in iOS, and often does requires pasting the text from the Clipboard.

Siri (Free/built-in): Provides a ubiquitous infrastructure that helps users interact with a iPhone (4S or later) in sophisticated ways, not only to dictate text and issue direct computer commands by voice (reducing typing , mousing or even VoiceOver-style touch), by also to generate cascades of complex actions to solve useful problems and accomplish significant results. The range/accuracy is greater that standard SR (e.g., Dragon), as its Natural Language Processing yields broader function and more context for disambiguation.

SayText (Free): Scan text within any image (such as a medical form or restaurant menu, or some work-related artifact) and reading it aloud. The photo/scan/reading process accommodates blind users.

Color ID Free (Free): Use camera and analysis to open a new world to those who cannot see (or distinguis colors), answering questions such as: Are there clouds in the sky? Is the iPod done charging? What color are the pants I just tried on? Does this tie match? Is the tomato ripe yet? Is this lip liner or eye liner? Is the sour cream moldy?

Red Panic Button (Free): Provides a level of personal security, confidence and self-reliance during periods of relative isolation. It sends an alert to a list of contacts by phone, email, SMS etc., at the press of a button. The alert can be a prerecorded text or voice message, and can include clear identifying info and GPS coordinates. The alert can be timed or delayed to go off, if you haven't turned it off by a certain time. E.g., it might be especially useful for someone who has a seizure, even if he had no warning.

Attack Panic Button Alert ($1.47): Provides a level of personal security, confidence and self-reliance during periods of relative isolation. This app is distinguished from Red Panic Button, in that it is triggered not only by manually touching a panic button, but also automatically by continuous motions (such as falling or throwing the phone – using the accelerometer) or loud sounds (such as shouts or screams). It is advertised primarily as a repellent to any attackers. But when triggered, beyond sounding an audible alarm or siren, it activates automatic phone calls and/or SMS to predefined contacts, including GPS coordinates. So it should be useful in medical

situations, such as seizures. The camera's LED helps locate a dropped phone with a bright light, as well as sound.

[Note: This app is Android-only. There are several similar apps on iOS, Accident-Alert ($3), IDown ($3) and Fall Alert ($2) These have not been updated recently and were not well reviewed, re both reliability and features. It is clearly an app to worth seeking.]

HeyTell (Free): The ultimate cross between walkie-talkies and texting. It connects to people in your contacts list and sends an email or text asking them if they want to communicate with you. Once they accept, all that you need to do is press a button and speak. Once you release the button your voice message is sent. VoiceOver friendly.

Light Detector ($1): Simply emits a sound which intensifies as a light source is found and approached. It helps find any lights left on, or locate windows and exits.

VM Alert ($2): Detect motion and warn the user with either a mellow tone or an alarm. It can also snap a photo when it detects motion. No sneaking up on the user anymore.

Alarmed ~ Reminders, Timers, Alarm Clock (Free; $3 for extensions): A VoiceOver-friendly organizational suite. Its various apps: a robust notes area with reminders and a "nag me" mode; a multi-feature timer, alarm clock with snooze option and a sleep alarm; a flashlight (for those with useful vision); $3 gets more sounds and interval timers.

List Recorder ($1 Lite; $8 Full): Allows users to record and organize lists using audio or text. He can replay, sort, delete or email recordings with ease using custom gestures. Lots of features. Lite limits each recording to 10 seconds. VoiceOver-friendly. Integrated with Braille displays.

oMoby (Free): Searches the Internet, using image recognition, for info on a photo taken with the iPhone or images from the iPhone photo library and supports some code scanning. VoiceOver-friendly.

VizWiz (Free): Allows the user to take a picture of any object, record a question about it, then send it to Web Worker, a human volunteer who will review and answer your question. You can also email/tweet query to contacts/followers.

Rxmindme Prescription/Medicine Reminder and Pill Taker (Free): Sends user alerts when it is time to take medication and also will keep track of what pills to take, how many are left and when to re-order. It includes a medication database. VoiceOver-friendly.

AutoRingtone Pro ($1): Helps user to personalize ring tones for each contact and announces the caller. This supports rapid identification of callers, with easy selection, creation and assignment of the audio. (I'm not sold on the utility and ease of use of this app, but it was highly recommended to me.)

TypeInBraille ($5): Allows user to effectively type Braille on an iPhone. You can enter a character through its Braille representation using a sequence of three simple gestures. Each gesture is used to enter one of the three rows of a Braille character. Apparently, a 100%-300% performance gain is feasible over using the iPhone's keyboard with VoiceOver. A Bluetooth keyboard could be faster, but not always available.

ZebraLocalizer (Prototype): Uses camera and image analysis to detect pedestrian crossings could help blind people safely cross streets more easily. This app corrects veering, among other things, though in a highly constrained environment – striped crosswalks.

PCube (Free): Uses "location awareness" app to alerting user about the proximity of friends, and vice versa. It distinguishes itself via its privacy controls, which do not necessarily acquire nor reveal fine location data.

AudioLabels ($10): Helps people with visual impairments recognize objects via audio descriptions associated to UPC or QR codes.

Blio (Free): Provides easy access to information. Works well with either VoiceOver or Zooms. Has some great features for low-vision and learning disabled readers as well. High quality voices are an in-app purchase, so you can have Blio read out loud without even needing VoiceOver. Has a built-in bookstore and supports many smaller publishers with interesting offerings. Supports books with visually rich content, and a variety of views for best experiencing the book.

Feeddler RSS Reader Pro ($5): Provides easy access to information. It is a feature-rich RSS reader. It caches articles for off line reading and allows you to star, un-star, mark all as read and much more. You can add notes and post to Facebook. It even works with Evernote. *[Zite and Instapaper are related apps, used by people with vision issues. Safari's Reading List incorporates Instapaper.]*

Voice Brief ($3; free lite version): Provides easy access to information. With a touch of a button, this app reads your email, Twitter feed, weather, stock prices, RSS and Facebook feeds. Fully configurable, works flawlessly, natural and clear voices.

Evernote (Free): Stores voice notes, photographs and text so that they can be accessed from multiple devices. Photographs are scanned for text which can then be searched. VoiceOver-friendly.

In addition to all the apps that are specialized or adaptive software for people with vision impairments or as ramp-ups for a clients vocational goals, there are all the standard programs, including web browsers, word processors, spreadsheets. These may not have any "visible" features that accommodate vision problems, but under the hood, they may be screenreader-friendly -- in the case of iOS devices, VoiceOver-friendly. Since VoiceOver is a high profile component of Apple OSes and Apple has clear development guidelines for its controlled platforms, a lot of apps are designed to be VoiceOver-friendly. A few iOS productivity apps are noteworthy here: Apple's Safari web-browser, and Apple's own productivity apps, Pages and Numbers, are VoiceOver-accessible.

Safari (Free): A full-fledged browser (vs. other browsers which are watered down for mobile usage). The desktop is on the user's device, even a tiny iPhone or iPod Touch. This leads to a myriad of internal tools, including email, chat, Facebook, Twitter, blogs, news and web sites (particularly in disability and self-improvement areas)

Pages ($10): A word processing app.Enablers users to create effective (even beautiful) letters, reports, flyers and documents.

Numbers ($10): Enables users to design spreadsheets and plan, organize, or analyze just about anything: Plan an event; Save for retirement; Track daily activities and progress. With a few minutes, a few figures, and a few taps, it's surprisingly easy to make spreadsheets, and even easier to keep track of your life. iCloud keeps the spreadsheets up to date across all Apple devices. Using Numbers can either be in lieu of or in preparation for Excel.

Bottom-line:

iOS is recommended: iPad, iPhone or iPod Touch, starting with the ubiquitous *VoiceOver* and *Siri/Dragon* and the following 10 apps: *Safari; ICal; Ariadne; LookTel Money Reader; LookTel Recognizer; Color ID; Red Panic Button; List Recorder; TypeInBraille and AudioLabels*. All 12 of these apps cost $42-49 combined! $20 more if we pull in Pages and Numbers.

Android could be a suitable platform, an effective, cost effective alternative. There are so many devices and OS versions on Android that incompatibilities are too common. Open source makes for potential for lots of innovation but also "chaos". E.g., VoiceOver dominates iOS, while there are at least a half a dozen competing screenreaders on Android. Software that is designed specifically for people with visual impairments may be particularly susceptible to unpredictability, as the audience and development/test teams are smaller. That may relegate Android devices to proof-of-concept platforms, to justify that it is worth investing in iOS, MacOS and Windows. *[Surprise: As a 28-year Mac user and evangelist, I have found Android easier to use than iOS!]*

Among the iOS options, iPhone is most attractive. It is portable (=> always with its user), has broader connectivity and has a cell phone at its base. The small display is not a visual concern (I've long said that cell phone screens have effectively made everyone visually impaired.), though there might be fine motor issues. It is nice that it is integrated with a standard device that most people already know and carry with them – a cell phone – a good launch point . iPad and iPod Touch support phone calls via VoIP (such as Skype), which is cheap but depends on WIFi (vs. cellular wireless, 3G, 4G etc.). Full spectrum wireless is important, since it allows people with certain disabilities almost universal access (and concomitant freedom), in all but the most remote of circumstances (which they avoid anyway – They will avoid a lot fewer places than they do currently.). This can be particularly valuable to someone who is more dependent on others. E.g., a user would not only be one call away from others, but could notify or alert others or allow others to monitor his location or state of well-being. A full-spectrum connection allows him almost full freedom of going to or being in places on his own, by himself.

The iPhone 4S (and anticipated 5) are certainly most appropriate. But the other iPhones incorporate almost all of the needed features. The bottom of the line iPhone 3GS has almost as much function, mainly missing Siri, some processing power and the retinal display (mainly wasted in the world of vision impairment).

Is there an acceptable, fundable means to support an iOS recommendation? The monthly contract on the IPhone (and many smartphones), especially the *data plan* requirement, appears to be a *deal killer* for government bureaucracies. The iPod Touch averts that issue, because it lacks cellular wireless and 3G. But it also lacks the important GPS and Siri, and the not-so-important retinal display. It has a WiFi location service, which lacks accuracy and robustness, But it also has longer battery life, which enhances daily use, especially in situations where the user might really be relying on the device. *[Aside: Users need back-up plans or processes in anticipation of such situations.]* iPads have no contract requirements, but lack "pocketability" and cellular wireless. However, iPads actually have a (very) few apps that don't work on iPhone. But I think those typically make use to the higher res display, i.e. are visual.