

Tablet Applications

Technology Tools for SH&E Professionals

By David L. Fender and Clinton T. Wolfley

IN BRIEF

- Portable electronic devices such as tablets and smartphones can be useful for safety professionals.
- The right apps can improve efficiency and tablets can pay for themselves quickly.
- Suggested uses for tablets are explored and recommendations for useful apps are offered.

Safety professionals are constantly on the go. As a result, portable devices are becoming essential work tools that provide users with a competitive edge. Many types of portable devices are available, but tablets show much promise for daily use in safety as new technology has allowed for more intuitive interfaces that allow users to streamline processes through time efficiencies, cost reduction and improved communication.

What is different about tablets? They come in many sizes and types, but all have a touch screen interface. Screen sizes range from 7 to 10 in. (measured diagonally), although one tablet available measures 14 in. In some respects, a tablet is nothing more than a smartphone (without calling abilities) with a larger screen. However, it is the larger screen that greatly enhances its usefulness. A tablet is smaller than a laptop and highly portable. Some small models fit in a large pocket, such as those common on outdoor clothing.

Tablets are instant-on devices and have no external keyboard, mouse or other devices. Most tablets are equipped with Wi-Fi or wireless capabilities, and some models might use a cellular connec-

tion to transfer data. Most tablets also have a camera and audio recording ability. A person's finger is the input and selection device, or a stylus can be used (as it may be more precise than a finger). In addition, portable Bluetooth keyboards can be purchased and used.

The usefulness of a tablet is not limited to the hardware. Available software or apps are another benefit. The three main operating systems for tablets are Apple iOS, Android and Microsoft Windows 8. Microsoft Windows 8 is new with a limited number of safety applications at this time, although it can use regular PC-based software. The large number of Android devices available is too broad to cover in this article, but the devices are improving quickly and more apps are being developed.

At this time, based on the authors' research and use, the iOS iPad and iPad mini are the best choices. The hardware is solid and reliable, and many safety-useful apps are available. Therefore, this article focuses primarily on use of an iPad and appropriate apps, many of which can also be used on an iPhone. Some cited apps have an Android equivalent and a search of the Android app library will reveal additional options. Apps are updated and added constantly so this is a fluid area.

What's an SH&E Professional To Do With a Tablet?

Beyond common tasks of sending e-mails and text messages, and accessing the Internet from anywhere, SH&E professionals can perform many other safety-related functions. Here's just a sampling of potential uses:

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- audit/surveillance and inspections;
 - document/storage and office tasks;
 - medical references;
 - safety and health field functions;
 - photos/measurement;
 - topic-specific tasks in areas such as excavation/trenching and shoring, fire protection, electrical safety, and hoisting and rigging;
 - industrial hygiene uses such as dosimetry, calculations, chemical management, respiratory protection, heat stress and ergonomics;
 - certifications.

Apps

This discussion focuses on specific apps that the authors have found useful in the field as SH&E professionals. Some apps are free while others carry a modest cost. All apps listed are for the iPad (with Android availability noted in parentheses if applicable). In many cases, more than one app is available for a particular task, but for simplicity this article generally discusses only one for each purpose. The authors have no financial interest in any product listed and their inclusion is based solely on the authors' experience. New apps appear daily so by the time this article is published, more apps or possibly new tablets that the authors have not used will likely be available.

Audits/Surveillance & Inspections

iAuditor (Android) is a flexible tool an SH&E professional can use to create daily reports and perform audits and inspections. The user can take photos with the tablet and embed them in the report. This app is also effective for incident investigations; for example, witness statements can be captured using a tablet's audio recording features. Final reports can be sent wirelessly to other systems for storage and printing. Safety Audit Pro is a similar app.

Document/Storage & Office Applications

Several apps allow an SH&E professional to move documents, such as word processing files, spreadsheets and presentations, to a tablet for viewing. Some even enable file editing. Examples include Documents-to-Go (Android) and Dakota's EHS Pocket Guide (Android), which contains OSHA regulations and other regulatory and informational data. Such an app allows the user to store all needed written documents, including Microsoft Office documents, for ready access.

Medical References

iTriage (Android) is a reference app that has several functions. An SH&E professional can input symptoms and receive information on the

All apps listed are for the iPad (with Android availability noted in parentheses if applicable).



most likely cause and suggested treatment. Entering a medication name will return basic information about and cautions regarding that medication. This app also indicates the location of the nearest doctor or emergency room, which is useful information to have when traveling.

Fire Protection

NFPA (Android) apps can be used to access the group's fire protection standards and other documents such as the Life Safety Code and industry best practices.

Electrical Safety

Electrical Pro performs calculations for arc flash protection. Many other electrical-oriented apps are currently available, including those that perform electrical and voltage calculations, and many other functions.

Hoisting & Rigging

The Sling Calculator (Android) app has more than 15 calculators and utilities that aid in determining sling tensions, calculating a load's center of gravity, and computing a load's volume and weight.

Sound Levels

The SoundMeter app measures dB levels. Although it is not a calibrated measurement, it tends to be close to the actual levels in the authors' experience. This app can be used to quickly determine whether a full assessment with proper instruments is needed. Several Android apps that measure sound are also available.

Calculators

Calculator for iPad is one of the many calculator apps available, and many more apps are available for Android devices as well. This app features a basic calculator and a scientific calculator. Other calculation apps include HSE Buddy, which contains many formulas used in safety and health.



Photos/Measurement

As noted, most tablets have a camera so digital photos can be taken as necessary. Many devices can also capture screen shots from the device, a function that can be used to document a reading such as an angle measurement. DMD Panorama allows a user to take panoramic photos (360°), which can be useful for incident investigations and safety inspections.

Excavation/Trenching & Shoring

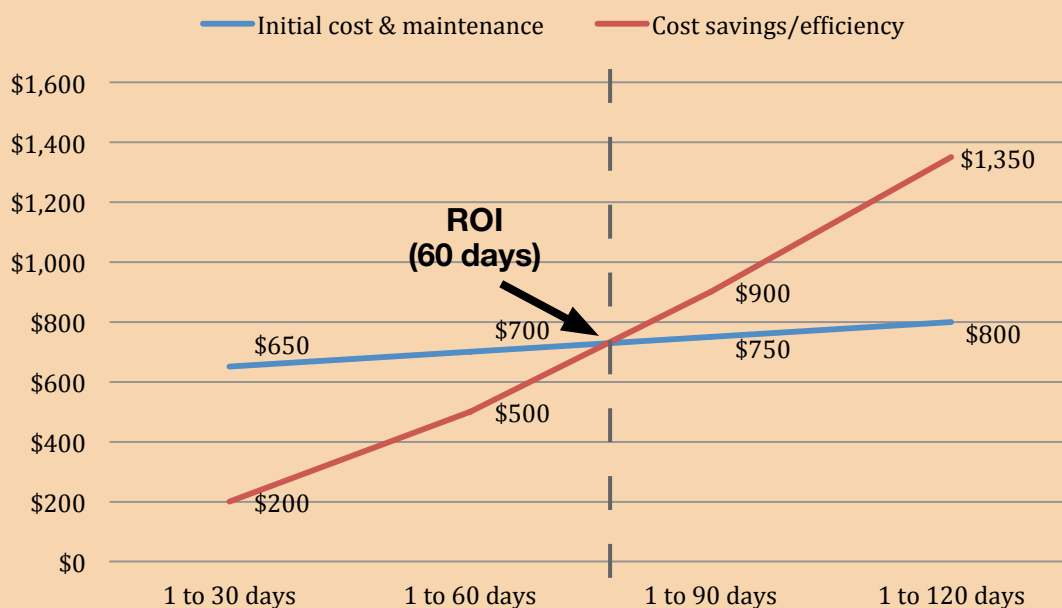
The Clinometer HD (Android) app provides two tools: 1) a level that features both a bubble and degree readings; and 2) a clinometer for measuring angles of slope. This app can be used to measure slope for trenching.

(Top): Mobile apps can be used in excavation, trenching and shoring to measure key angles of slope and check for level.

(Bottom): Calculating heat index can help identify risks and implement protective measures.

Between the 30- and 60-day timeframe, users realized an immediate efficiency gain compared to peers not using tablets.

Figure 1
iPad Return on Investment





Chemical Management

MSDS Mobile (Android) contains a database of MSDS. A user need simply input the chemical and indicate whether interested in product name or manufacturer, and a list of MSDS is returned. At this point, one can view basic product information or the complete MSDS and send it via e-mail, fax or Twitter.

Using the Chemical Safety Data Sheets app, one inputs the chemical of concern by name or CAS, and the app provides information from the International Chemical Safety Cards produced by the U.N. Environment Program and others.

Heat Stress

With OSHA's Heat Safety Tool (Android) app, a user can calculate the heat index for a given work site, and receive information on the related risk level to outdoor workers. The app can also provide reminders about protective measures (e.g., drink fluids, schedule rest breaks, plan for and know what to do in an emergency, acclimation, monitor for signs and symptoms of heat-related illness).

PPE

The iOSHA 3151 Personal Protective Equipment app allows the safety professional to access OSHA PPE requirements. The app syncs to OSHA's RSS feed so that updates and letters of interpretation are readily available.

Ergonomics

The HT NIOSH Lift Calculator app performs the calculations necessary to use the lifting equation. It can provide both metric and standard measurements and can be useful in identifying jobs that require ergonomic intervention.

Certification

With the CSP and CIH Certification Quiz (Android) apps, an SH&E professional can study for certification exams. Each app generates sample questions with multiple-choice answers. In the author's experience, this is a convenient way to review while traveling.

Accessories

Because sun glare can make the screen difficult to view, several manufacturers offer glare-reducing screen protectors. Another recommended accessory is a carrying case to protect the unit from foreign matter and light impacts. Many options are

available, and each user should determine the key protective qualities needed when selecting a case.

Return On Investment

Over the past year, tablets were field tested at construction sites and manufacturing facilities. These tests were designed to assess the advantages of incorporating mobile technology into daily tasks and to document cost savings, time efficiencies and improved safety performance.

These tests revealed that the return on the initial investment (i.e., total cost of the tablet, accessories and basic applications) was realized within 60 days (Figure 1). The initial 30 days included time for users to become familiar with a tablet's functionality and perform basic functions (e.g., take photos, use e-mail, conduct web conferencing). Between the 30- and 60-day timeframe, users realized an immediate efficiency gain compared to peers not using tablets. Here's a sampling of efficiencies identified and gained:

- Travel time was greatly reduced due to web conferencing capabilities and instantaneous access to e-mail.
- Time spent in the office performing administrative tasks was reduced because tablet users performed those same tasks in the field.
- The amount of paper and office supplies used was reduced as forms, reports and documents were transitioned to digital form.

Conclusion

Safety professionals are constantly on the go and tablet devices are becoming essential work tools. Safety professionals and organizations that incorporate tablet devices into their work practices can realize cost savings and increased safety performance. As tasks such as paper-based audits and inspections are conducted with tablet devices, users can focus more time on higher priority activities. **PS**

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Visit www.asse.org/psextra to read "Safety Inspections Continuous Improvement, Effectiveness & Efficiency," a PS article from July 2013 that explains how one university is using apps to improve its processes.

Join the Conversation

Use of tablets/cell phones in SH&E is still relatively new. This is a perfect opportunity for SH&E professionals to share what they are doing with devices and applications. Join the conversation and share what you are using, how and any lessons learned. Take our poll at ehsworks1.blogspot.com or on ASSE's Facebook page at <https://a.pgfb.me/Mn4nJ1>.