

Should Your Business Be Taking Advantage of Vehicle Mounted Tablets?



Executive Summary

The widespread use of tablets in the consumer market has created a demand for their use in business environments.

One way organizations have implemented tablets is by utilizing them to collect data in a vehicle. These vehicles range from automobiles, forklifts, motorcycles, and more. Due to the harsh conditions in many of these environments, it is important to select a tablet that can withstand shocks, vibrations, and other hazards.

The following white paper illustrates the numerous considerations that organizations need to take into account before selecting the technology for their in-vehicle solution.

Definition of a Tablet Computer

A tablet computer is a wireless, portable computer designed with mobility in mind. A tablet computer's screen is typically between 7 and 12 inches, making the device smaller than a laptop computer, but larger than a smartphone. Although tablet computers have increased in popularity due to consumer grade devices such as the iPad, the original tablet computers date back to as early as 2001.

Although tablets are just wireless computers, they offer many enhanced features that differ from traditional computers:

- » Touch screen or pen input
- » Network connectivity
- » Wireless LAN
- » Wide Area Network

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Why are Organizations Considering Mounted Tablet Solutions?

Historically, organizations have utilized Fork Mount Computers for in-vehicle solutions. Although these machines have a high performance level, they do not provide users with the flexibility of being able to remove the device from the mount in order to perform critical tasks on the warehouse floor. Rugged Tablets are strong enough to be mounted and withstand the harsh bumps and shakes that happen in this type of environment. Furthermore, most rugged tablets are MIL-810-G rated, and can withstand drops of 6 feet or higher, giving the end users a sense of comfort. Many hardware companies manufacture tablets that have performed at top levels in these types of environments, such as Panasonic, Motion Computing, and Mobile Demand. A systems integrator, like Lowry Solutions, can help you determine which of the rugged tablet computers will work in your solution environment.

Mounting/Docking Options

The very first question someone should ask when getting ready to implement an in-vehicle tablet solution is, "Where and how will the tablet be mounted when the vehicle is in use?" This is a very important consideration because it strongly impacts the workflow of the solution.

There are a variety of different mounts that are available for docking solutions:

- » **Key Locked Docks:** A key locked mount is a mounting solution where the tablet can be removed from the dock if the end user has the key to the mount. These are ideal for semi-mobile applications where the level of mobility needs to be restricted. The location of these docks cannot be changed.
- » **Fully Mounted Solutions:** A fully mounted solution is where both the tablet and the mount are completely locked into the location. No alterations can be made once the tablet has been mounted.
- » **Mobile Docks:** A mobile dock is where the tablet, as well as the dock, can be moved freely. This is a great solution when the location of the tablet needs to change on a consistent basis. The only down side to this type of dock is that it is not securely mounted anywhere.
- » **Seat Mounts:** This is where the tablet mount is attached to the passenger seat of a car. This is a transportable solution that is easy to set up.
- » **Docking Solutions with Power:** Many docking solutions are set up to be able to charge a tablet computer when the tablet is securely in the docking station. This is extremely useful to end users because they do not have to worry about the tablet running out of power and causing downtime during a shift. The battery can charge while the tablet is on the dock due to the dock being connected to a power source.

Tablet Ruggedness

Commercial drop specifications are sometimes difficult to measure and compare. Vendors might say a tablet can survive “multiple four-foot drops onto concrete.” This leads to many questions about how the test was conducted. How many is considered “multiple” drops? Was the device dropped on all sides?

The most common standard used for testing shock resistance is the U.S Military standard for shock: MIL-STD-810G METHOD 516.6.1.

Tablets that have been tested to this MIL Standard will continue to operate when the device is exposed to most of the shocks it may encounter.

» **Vibration and Shock:** Shock and vibration resistance are core requirements for all vehicle-mounted computers because of the environment in which they are required to perform in.

The shock resistance, IP ratings and other certifications published on computer spec sheets indicate how the device performed in laboratory testing, but do not necessarily predict how it will perform when mounted to a forklift. One of the most common measures of ruggedness today is MIL-STD, a series of military standards that indicate the compliant device has successfully resisted shock and vibration in testing. When choosing a tablet for this environment, make sure to consider both the MIL-STD rating as well as the IP Rating.

Data Collection Options

» **Integrated Scanning:** Barcode is the most common form of data collection. A barcode is a group of patterned bars and spaces that is designed to be scanned and read in order to obtain information about the object the barcode is placed on. A variety of manufactures offer tablets that have a barcode scanning engine directly integrated into the tablet. This type of scanning application is design for solutions that have a low frequency of scans and/or a short distance in which the barcode needs to be read.

» **Tethered Scanning Options:** When an application is going to be either scan intensive and/or reading barcodes from a far distance, integrated scanning solutions are not ideal. Luckily, traditional handheld scanners can have direct communication with a tablet computer via USB or Bluetooth.

With USB scanning, a scanner transmits the information that is on the barcode via a cord that is connected to the scanner. This cord is a USB adaptor that can be plugged into the docking station or the tablet. With Bluetooth scanning, the handheld scanner and the tablet communicate wirelessly over a short distance. Many end users prefer this method for scan intensive applications because it does not require an additional cord to be connected to the tablet. Additionally, the end user can walk away from the tablet to scan an item and still be able to have real time communication with the scanner.

» **RFID:** Radio-Frequency Identification (RFID) is a wireless form of data collection in which radio-frequency electromagnetic fields are used to transfer information about the objects that are attached to RFID tags or labels. Similar to using barcodes in tablet-based forms, RFID is frequently used to pre-populate forms with general information about people, locations, or objects.

Host Connectivity Options (Networking)

All devices need connectivity to the business system at some point. Typically, the network connectivity requirements are dependent upon where the tablet will be used. When the device is going to be used inside the four walls of your facility, more than likely an 802.11a/b/g/n wireless network adapter will work for you.

The primary location many vehicle-mounted tablets are utilized in is a warehouse. When a tablet is implemented in this environment, you are able to use the Wi-Fi capabilities that are included with the tablet. These Wi-Fi capabilities work identical to how you would utilize the Wi-Fi on your laptop computer. Although we are all used to using Wi-Fi, it is often difficult to establish a wireless connection in the warehouse environment. Before investing in a solution, check with your systems integrator to conduct a wireless site assessment. These assessments identify if your wireless network is sized properly to support the additional bandwidth or additional coverage requirements that the new application may require. This is essential in order for your solution to have top level performance.

Tablets are also often put to use in vehicles. When utilizing a tablet in the vehicle, you can never guarantee if you will be able to access the internet. Due to this factor, it is important to consider purchasing a tablet with wide area network (WAN) capabilities. A tablet must have a cellular provider card in order to take advantage of WAN Capabilities. These cards are available in both 3G and 4G, and are similar to the cards that are found in your cellphone. Many tablet manufactures offer products that are carrier agnostic, while others have specific SKU's for each cellular carrier. Before purchasing a tablet, you will want to confirm that the carrier you choose has coverage at all of the locations you will be using it.

» **Operating System:** Tablets are available in different operating systems. The three most common are Microsoft Windows, Apple iOS and Android. Windows has a strong foothold in business platforms and productivity. Apple's iOS is primarily a consumer market operating system, but it has some acceptance in the healthcare and retail industries. The Android operating system also has strong roots in the consumer market, but it is beginning to gain business market share.

It's impossible to say any one operating system is "best" for tablet computers. Some of the considerations for selecting an operating system are:

1. Are there corporate standards for an operating system?
2. Does the operating system support the application for which the tablet computers are being purchased?
3. Can I support the device with my existing network /mobile device management software?
4. Can I secure the device to meet company and compliance security mandates?
5. How many applications will I be running?

Additional Device Features to Consider

» **Global Positioning System (GPS):** GPS gives you the ability to collect the location of the field worker without the user having to input any data. This feature also makes it simple to confirm driving directions. A Global Positioning System has much more advanced features than something like Google Maps.

Additionally, a tablet with an integrated GPS can provide you with geo-fencing capabilities. This feature allows organizations to know where your drivers have gone, providing enhanced and real-time visibility. Knowing the location of employees at all times can greatly cut down on inefficient processes.

» **Accelerometer:** A growing concern among many end users looking to implement an in-vehicle solution is the ability to ensure employee safety, as well as compliance to distracted driving laws. In-vehicle tablets can ensure both because they can disable themselves when the vehicle is in motion. This is accomplished by built-in motion sensors, which can limit the use of computer displays when motion is detected. In cases where a passenger is in the vehicle, the tablet will stay functional only when the tablet and mount are rotated to face the passenger seat. This complies with distractive driving laws because the driver is shut off from using - or even looking at - the tablet.

These types of solutions are provided by either the tablet manufacturer or third party accessory organizations.

» **Smart Card Reader:** An additional security feature that is available on many tablets is an integrated smart card reader. A smart card reader is a type of ID card that is used to identify a user and his/her information, as well as accessible programs on the tablet. This feature is often used in order to enhance the networks and/or application security by only allowing certain individuals to access certain things.

A smart card resembles a credit card in size and shape, but works completely differently. The inside of a smart card typically contains an embedded microprocessor. The microprocessor is under a gold contact pad on one side of the card. Think of the microprocessor as replacing the usual magnetic stripe on a credit card or debit card. The microprocessor is what processes the information for the tablet in order to grant the user access. These types of solutions are found most often in government and healthcare solutions, but are seen in all vertical markets.

» **Paperless Forms/Signature Capture:** When utilizing a tablet for an in-vehicle solution, the mobility of the applications can greatly increase efficiency. A key solution we see a lot with field inspection is implementing a paperless form application, which requires signature capture. This signature capture is real-time proof that the job has been completed. When utilizing electronic signature capture, there is zero downtime between the paperwork being filled out and that paperwork being implemented into key business systems. This decreases the time between the completion of a project and billing and provides a true time stamp on every project.

» **Camera:** Tablet computer vendors offer cameras facing the front and/or the rear of the device. The importance of this option is application dependent. You may be deploying a maintenance application where the front camera can be used for video communication to a support desk. You may be a package delivery company that wants to use the rear camera for taking pictures of packages for damage reporting.

» **Touch Screen:** A major advantage of tablet computers is that they are touch screen. End users are starting to become more accustomed to touchscreens in their daily life, therefore making the transition easy in the workplace. There are two different types of touch screens available on tablets: resistive touch and capacitive touch.

Resistive touchscreens rely on pressure on the screen to change the resistance at a specific location. The pressure can come from almost any object and will work for gloved hands.

Capacitive touchscreens rely on the change of capacitance at a specific location when the screen is touched with the human finger. A capacitive touch system probably won't work with gloved hands or other objects. There are styli designed specifically for use with capacitive displays that work as well.

Projective Capacitive works with a change in capacitance, but the actual touch screen can be covered with a protective layer to increase the life of the touch screen. Projective touch devices will work with a gloved hand. Capacitive and Projective Capacitive touch screens are sensitive to moisture on the screen.

Gorilla® Glass is a product made by Corning that helps to protect the display of many tablet computers. Learn more about Gorilla® Glass at www.corninggorillaglass.com.

» **Identical Device Management as Laptop Computers:** Rugged tablet computers typically run on the Windows operating system, with either an i5 or an i7 processor (making them virtually identical to your laptop computer). Since these tablets are run on a full version of windows, they have the identical device management to them. This makes the lives of the IT department easier because they can confirm data security, as well as manage the device with the rest of the company's products.

Closing

Selecting the correct technology for your vehicle tablet solution is crucial. If you make sure to incorporate the above considerations when selecting your technology, you will be more likely to have a seamless implementation. To learn more about vehicle tablet solutions, contact your systems integrator to learn more.

About Lowry

Since 1974, Lowry Solutions, Inc. (formerly Lowry Computer Products) has helped its customers make informed business decisions and become more competitive in the marketplace. The company provides the most innovative barcode, RFID, biometrics, enterprise mobility, asset management and inventory control solutions that reduce operational costs, heighten productivity, and improve process efficiency in an array of vertical markets. Its enterprise mobility solutions empower the mobile worker through real-time communication and data access solutions. See more at www.lowrysolutions.com.



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