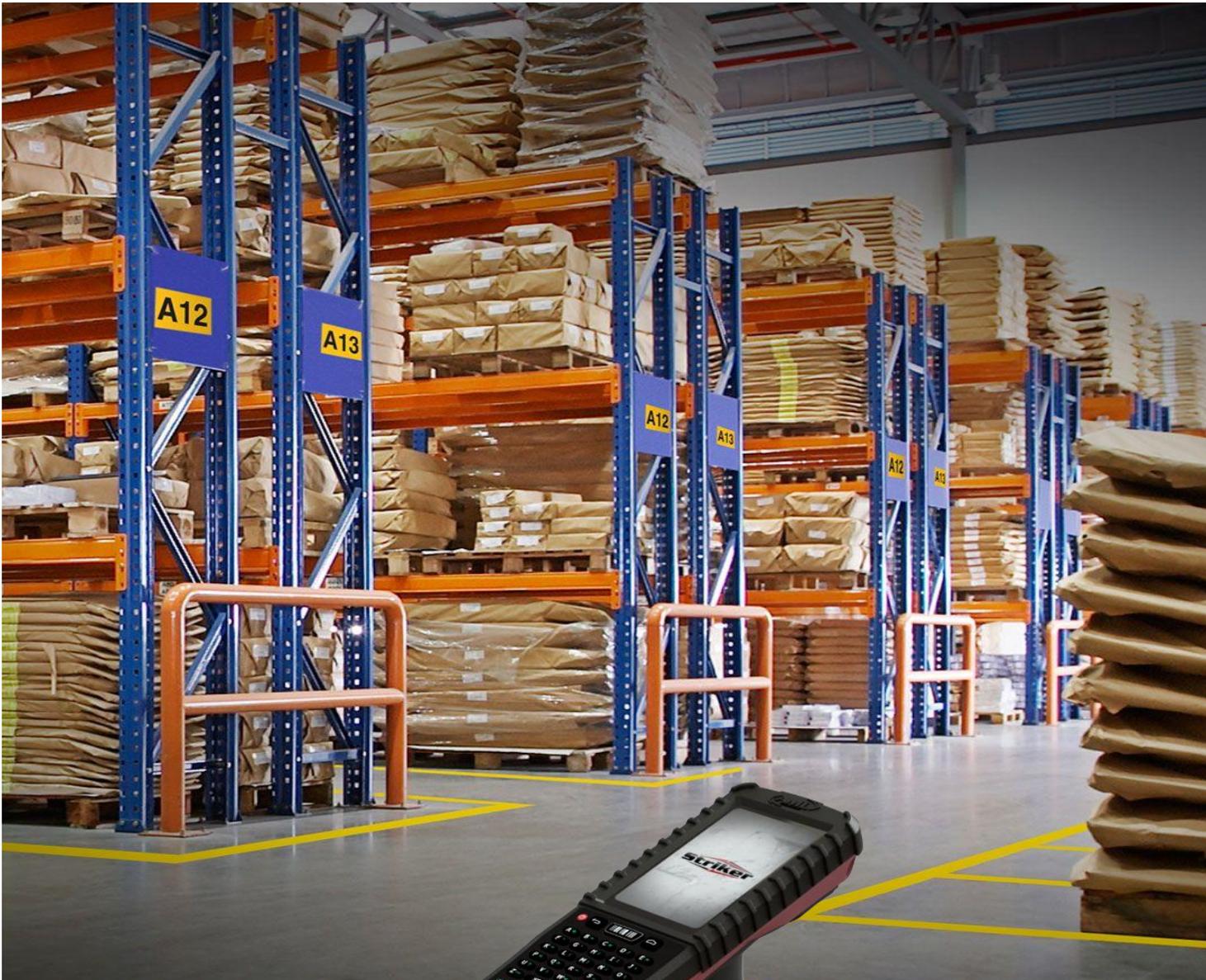# 6 Things you need to know when buying industrial mobile computers

6 Things You Need to Know When Buying Industrial Mobile Computers

If your company has tasked you with the responsibility of sourcing new barcode-scanning mobile computers, and you would consider your work environment to be "industrial", there is a short list of things you need to know to make your job a little easier and will help you make the right decision.

1 Choose rugged devices over consumer-grade, every time.

Don't overlook the significance of the word "industrial". If you work in a warehouse, distribution center, a manufacturing plant, or any place with a concrete floor for that matter, there's a good chance it would be considered "industrial". You need a device that can withstand the rigors of that environment, not the least of which will be dropping that device onto the concrete floor. In addition, it will likely be used almost constantly, and in some cases across multiple shifts.

Tip No. 1 - Look for devices that at the very least publish a "drop rating" of 6 feet (1.8 meters) or higher. You may end up with a device that's a little heavier and bulkier than you had hoped, but these devices represent a financial investment on your part so durability and survive-ability of these devices are crucially important.

Tip No. 2 - Don't walk, but run away from the idea of using "consumer-grade" devices such as smartphones or tablets. Sure, you can buy a heavy-duty case, or "sled" to put them in, and some even come with add-on batteries and barcode scanners. However, that doesn't take away from the fact that at the heart of that "franken-phone" you just created, is still a consumer-grade device made with consumer-grade components. Consumer-grade Wi-Fi radios are not intended to be used on enterprise networks and the devices themselves have little or no thermal management. They were simply never designed to be used all day, every day. When they fail, and they will fail, there is only a limited amount of service that can be done so often times they are simply thrown away. The batteries can't be "hot-swapped" so when the battery dies it has to go back on the charger nullifying its use as a multi-shift device. Also, the models of consumer-grade

devices change so quickly that, chances are, the devices you bought last year won't be available next year. It's simply a bad idea from the outset. That enticing price tag and short-term savings on the front end will be erased many times over during the life of the device, albeit a short one. Learn from the mistakes of others and just don't go down that road.

2 Keypad or Touchscreen?

There is a push to move towards "keypad-less" devices that depend on capacitive touchscreens to manually enter data such as quantities, item numbers, locations, etc. Unfortunately, the idea that data entry on a touchscreen is faster and more reliable than a conventional tactile keypad is a huge misconception. In fact, the opposite is true. Touchscreens don't allow the user to feel the separation between the keys and there is no tactile feedback that a key was pressed. Touchscreens are, in fact, more error-prone, and having to make frequent stops to backspace, correct errors, and carefully review data, is time-consuming to say the least.

The fact that "auto-correct" software was developed for smartphones and tablets is a testament to the reality that touchscreens are more susceptible to errors.

If touchscreens were better, why would this software even be necessary? The problem is that auto-correct software depends on a predictable vocabulary, which does not include part numbers and quantities. In addition, capacitive touchscreens won't work with conventional gloves and those gloves with capacitive "fingertips" typically don't come in designs suitable for industrial environments. Regardless, any glove's fingertip will generally be too bulky and awkward to work reliably on a touchscreen.

Environments that require a fair amount of keyed data require mobile devices with tactile keypads to ensure maximum efficiency and minimum errors.

3 Making sense of battery specifications.

The life of the battery is crucial when it comes to keeping a mobile device in operation. Having to stop and swap a battery takes time and oftentimes occurs at the most inopportune moment. Battery life is a question that should be near the top of the list when shopping for mobile devices. But here's the problem. Every salesperson will always tell you the battery will last 8 hours. It's a canned answer. It's what they are trained to do and it's what it says right there on the data sheet. But the reality is no one knows exactly

how long a battery will last. Every user environment is different and battery life is dictated by the "duty cycle", or the frequency the device is being used. When the mobile device is turned on, but not being used, it consumes the least amount of power from the battery. When the user is actively keying data and the radio is on and transmitting, the device consumes a little more power. Even more power is consumed when you pull the trigger or push the scan button to turn on the barcode scanner.

How often the device gets used, or its duty cycle, is what ultimately determines how long the battery will last. Other factors will affect the battery life as well. The age of the battery for example. Li-Ion batteries lose capacity over time. Operating the device or storing its batteries in extreme temperatures, hot or cold, will also cause the capacity of the batteries to degrade.

So, what to do? When sourcing a mobile device, consider the battery capacity specifications as an important factor. But again, be careful because it's easy to misinterpret the battery information presented by device manufacturers. Without getting too technical, batteries are commonly presented with two different ratings, voltage and current, or more specifically "volts" and "milliamp hours". You may hear one vendor say their battery is 7.4 volts while their competitors use a 3.7-volt battery...so vendor number 1 wins, right? Well, not necessarily. You also have to consider the current rating, or "milliamp

hours". So, if vendor 2 says their battery is rated at 4,000 milliamp hours, and vendor 1 says their battery is rated at 2,800 milliamp hours, then vendor 2 wins, right? Again, not necessarily. The truth is you have to consider BOTH parameters, which is the overall power measured in "watts" or "watt-hours", in order to determine which battery has the highest capacity, To do this, multiply the voltage times the milliamp hours. Then divide that by 1,000 to get "watt-hours". For example:

```
Vendor #1
           2800  milliamps (mA)
         x  7.4  volts (V)
         20,720 divided by 1,000 = 20.72 watt hours

Vendor #2
           4000  milliamps (mA)
         x  3.7  volts (V)
         14,800 divided by 1,000 = 14.8 watt hours
```

Vendor 1 wins. Their battery provides the most total power. So assuming the two competing devices are comparably equipped, their battery will last longer before needing a recharge.

The takeaway from all this is, that no vendor can tell you how long their battery will last because they don't know what duty cycle you will put their battery through. Therefore, the only true measurement to consider when comparing batteries is "watt-hours". If the vendor can't provide it, now you can do the math yourself.

4 Choosing the right mobile operating system.

For years, Microsoft operating systems have been the core of most industrial computers,

utilizing various iterations of Windows Mobile® and Windows CE®. However, Microsoft has taken the decision to cease the availability of these traditional operating systems, forcing OEMs to look elsewhere for the firmware that will power their devices. Some of the Microsoft embedded operating systems are already off the market, while the rest are being phased out over the coming years. But rest assured, in a matter of time they will all be gone. What does that mean for the company that currently owns a fleet of Windows®-based products? Well, unless they are looking to replace the entire fleet any time soon, they don't need to worry. The devices they have aren't going to just stop working "en mass" one day. This is not Y2K. And those devices that fail during the normal course of business, can still be serviced or repaired with no worries. Even if the firmware is corrupted and the OS has to be reinstalled, the original Microsoft license is still valid so that device can be recommissioned with its operating system and original license.

However, if a company is looking to buy new products, it would make sense to at least consider devices with something other than a Windows® operating system, and in almost all cases, that would be an Android™ device. Android is an open-source operating system that can be installed on a mobile device without the burden of a license cost which will ultimately lower the investment cost to the buyer. And since Android is open-source, meaning the code isn't "locked", developers can use the Android code as a starting point, and then make additions or enhancements to fit their specific applications. It gives them lower-level control over the device which in the end makes their applications more efficient, giving the user a better overall experience.

But there is another important reason that makes Android the ideal operating system for mobile computers, one that sometimes gets overlooked. Android was always intended, from conception, to be a mobile operating system. Windows® operating systems were originally intended for desktops, then trimmed down and limited in order to run on mobile devices. Android was conceived, designed, and optimized to run on mobile device platforms from day one. Consequently, it is more efficient, more flexible, and will only grow in popularity as more and more software developers embrace it. New versions with added enhancements are released each year and there is no operating system more "developer-friendly" than Android.

Considering all the benefits of being a mobile operating system from birth, no licensing costs, and open-source code accessible to developers, it's no wonder that Android is on a fast track to dominate the rugged mobile computer space.

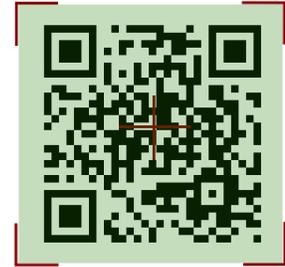# 5 Selecting the right barcode scanning technology.

An industrial mobile computer without a barcode scanner wouldn't be very practical in a warehouse. Scanning barcodes is the fastest and most efficient way to enter data. There's a lot to consider when selecting the right barcode-scanning mobile computer to make sure that it will not only work for you today, but into the future as well.

There are essentially two different types of technology deployed in today's industrial mobile devices: Laser technology and Imaging technology. Laser technology emits a beam of laser light which is rapidly moved from side to side, across the barcode. This creates a visible line called a raster, which is what "scans" the barcode. Because the raster cuts across the barcode in only one position, it can only read what are called "1D" barcodes, the most recognizable example of which would be UPC or EAN barcodes that we see on consumer products.

The raster has to cut across ALL of the bars of the barcode so in order for it to scan, it has to be in proper alignment with the barcode. Laser technology is fast and can scan from very far distances under the right circumstances.

The alternative technology is called "imaging". These imaging barcode scanners differ in that they essentially take a picture of the barcode and then process the image to decode the barcode. What the user sees is light emitting from the scanner illuminating the barcode. Some imaging scanners have "light dots" or "crosshairs" that allow the user to aim the device. This type of technology was developed to scan what are called "2D Barcodes", a good example being a QR code. One of the many advantages of imaging technology is that it does not require the user to orient the scan pattern in any particular reference to the barcode. Because it is capturing the entire image of the barcode, orientation is irrelevant. In addition, it can not only read 2D barcodes, but it can read 1D barcodes as well.

Improvements in imaging technology have brought the cost of these devices down and the performance up. Early on, imaging technology could only scan very short distances, maybe just a few inches. Today, some imaging-based scanners can scan 30-40 feet or more. The other advantage that imaging technology offers is that it has no moving parts, as opposed to laser scanners which utilize an internal motor to rapidly move its mirror back and forth, producing its raster effect.

6 Extended Warranty?

Every mobile device manufacturer offers, at the very least, a factory warranty that will cover the parts and labor for the device, typically for a period of one year. On the surface that may seem like adequate coverage, but in reality, it simply isn't. You have to remember that what you are purchasing is a "mobile" device, which means it's going to get carried, which means it's going to get dropped. And kicked. And wedged in a door. Let's face it, your mobile device is more likely to get treated like a box knife than a computer, and despite the best efforts of the manufacturer, it's simply impossible to ensure that a device will never succumb to the rigors of use and abuse. Someday it will break and will need to be repaired.

The factory warranty that covers parts and labor won't cover catastrophic failures resulting from use or abuse. Most manufacturers have a flat-rate they charge for repairs. However, these manufacturers also offer warranties that go beyond just parts and labor. Some will cover "wear and tear" and abuse regardless of how it came to be damaged. In most cases, the cost of one of these "comprehensive" warranties is less than the cost of the flat rate repair fee. Manufacturers are banking on the probability that if a facility has ten devices under a comprehensive warranty, not all of them will need to be repaired during the warranty period. Therefore, they can take a chance and make the warranty cost lower than the flat-rate repair. It's a risk that sometimes pays off and sometimes backfires on the manufacturer. But for the device owner, it is almost always more advantageous to place a comprehensive warranty on the device because, in addition to locking in your repair costs, these comprehensive warranties often include other "perks" such as faster turnaround time and free shipping. All things considered, the comprehensive coverage is a good value for mobile devices.

Conclusion

While there are certainly other questions that might need to be raised for your specific application requirements, these six questions are fairly universal for mobile devices that will be deployed in installations where they will be exposed to heavy use and environments that are challenging for electronic devices. In addition to buying the appropriate device with adequate warranty protection, user education is paramount to ensuring that your company's investment in technology is both reliable and effective. Picking the "right tool for the job" is an old adage, but one that is highly appropriate still today.

Windows® is a registered trademark of Microsoft Corporation.

Android is a trademark of Google LLC.

About AML

AML was founded in 1983 and for more than 35 years we have been developing and producing barcode-centric products for data collection applications across a wide array of industries. We engineer and manufacture our products in Dallas, Texas which means our knowledge base is here, not halfway around the world.

Our 35+ years of experience has culminated in the development of our flagship product, the **Striker Mobile Computer**. Born as an Android device, the Striker features a 4" display in addition to a tactile keypad. It offers a variety of barcode scanning options which means it can be tailored to specific application requirements. The Striker's feature list includes Wi-Fi/Bluetooth capability, audio output, integrated flashlight, a 24.8 watt-hour battery, and an optional 13MP camera with flash. The Striker was specifically designed for challenging environments without sacrificing ergonomic comfort. Its performance and versatility is matched only by its durability and reliability.

- **Powered by Android 8.1**
- **1.8 GHz Octa-Core processor**
- **4" LCD with capacitive touchscreen**
- **Alphanumeric keypad**
- **Multiple barcode scan engine options**
- **802.11 abgnac radio**
- **Integrated flashlight**
- **Optional camera with flash**
- **24.8 watt-hour battery**

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