



*Mobile Enterprise Solutions*

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W H I T E P A P E R

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## **Turbo Charge Your Inventory Moves with Wearable Computers:**

*13 Key Considerations for Evaluating Wearables*

*This whitepaper was written by LXE, Inc.  
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## ***Turbo Charge Your Inventory Moves with Wearable Computers: 13 Key Considerations for Evaluating Wearables***

### **Warehouse Realities**

Bar code scanning has made data collection fast and accurate but sometimes operators aren't provided the right tools for the job -- and that can reduce productivity gains that might otherwise be realized. Many warehouse tasks require an operator to physically handle products. A hand-held computer isn't always the best choice in these situations. Wearable computers, on the other hand, can improve productivity in any operation that requires that the operator's hands and eyes be dedicated to the task at hand. But providing the worker with the right form factor is only one issue. The other important factors are ruggedness and ease of use. Without these two additional factors, reliability and usability suffer -- and so does productivity.

### **Wearable Computer Benefits**

There are a variety of tasks within the warehouse that require the operator's full attention -- shipping or receiving parcels, performing put-away, picking carton to pallet, and picking to pack. A WiFi-enabled wearable computer leaves operators' hands free to do the job while still enabling him or her to scan bar codes, enter data or receive instructions in real time.



For bar code reading, wearables can be equipped with light-weight, slim ring scanners. Ring scanners make scanning a simple point-and-press operation. Where symbol orientation or placement makes aligning the reader to the symbol difficult or undesirable, a 2D imager puts everything in the right perspective. Imagers make reading both linear and 2D symbols a snap and are required for reading matrix symbols that are becoming more prevalent in some item-marking applications.

Admittedly, not every operation is as simple as scanning a bar code. The display must be able to provide operators with directions, validate entries, or perform a wide range of other tasks. A bright, easy-to-read display is critical. Displays that can be seen from any angle -- that is, don't have to be viewed straight-on -- make it easy for operators to view and respond to screen prompts. Ease of viewing make its use more intuitive, less tiring, and less time consuming.

A touch screen can further simplify tasks by offering larger, colorful, easy-to-see "buttons" (such as "Yes" and "No") and provide custom input or response screens for every task or even every step in a task. Screens can be customized to the task rather than the task being customized to available keyboard options.



Some wearable computers are also voice-enabled or voice ready to provide new efficiencies or prepare you for future technologies. Voice-directed operations and the option to have voice-over-IP (VoIP) and push-to-talk (PTT) at an operator's fingertips can make a big difference

in productivity and accuracy. The significant advantage to voice is that operator's eyes and hands are free from virtually all data collection chores.



Eyes-free operation is not necessarily limited to voice-enabled wearables. An intelligently-designed keyboard layout with programmable keys can offer eyes-free operation for many tasks. Key color and key shapes can differentiate the most commonly-used functions and can be quickly learned by most operators.

For manual entry tasks, keyboard design can also be optimized to require minimal operator attention. Key color, shape, placement and programmability can all be used to simplify data entry tasks.



### 13 Key Considerations for Evaluating Wearables

No matter what advantages wearables offer, if they don't match your operational requirements, they're not going to provide the productivity you want. Here's what you need to consider when evaluating a wearable computer.

1. *Durability:* Is it designed for an industrial environment or is it a "ruggedized" version of a non-industrial device? Are connectors and cables protected by the unit itself to keep them safe from possible bumps and disconnections or do connectors protrude from the ends of the unit where they can snag or be damaged?
2. *Battery life:* Is the battery capable of providing full shift operation under peak use conditions such as the holiday season or even intense host-to-wearable communications during a specific shift? Can it go two shifts? More? Is there an extended battery option? Do all WiFi options support full shift operation or do some drain the battery faster?
3. *Flexibility:* Does it offer touch screens as well as keys to offer multiple, easy-to-use configurations and user interfaces? How configurable are voice or Bluetooth options? How many keys are user-programmable? What is the ease of programming or configuring? Will it accommodate future programming needs and emerging standards? Can its voice unit handle your operators' language requirements?
4. *Conformance:* Does it use industry-standard software? Does it conform to industry-standard protocols such as Cisco CCX? Does it offer a real-time clock (RTC) required for upcoming protocols?
5. *Expandability:* Can it grow and change with you? Can it be upgraded to meet changing situations? What is the base memory; expanded memory? Can it be upgraded at a later date?

6. *Wireless Coverage:* Does it have an advanced pattern diversity antenna for expanded coverage?
7. *Scanner:* What are the options (laser or 2D imager)? Can you get full shift operation with both types? How large is the ring scanner?
8. *Display:* How bright is it? Will it be easily viewable under all lighting conditions? Can the operator view it from any angle without having to bring it front-and-center to his line of sight? Is it touch screen capable? Is it designed for industrial use?
9. *Keyboard:* Is it thoughtfully designed? Are keys easy to recognize and use? How many keys are programmable? One touch or two touch?
10. *Mounting Options:* Can it be worn in multiple configurations to suit different applications or user requirements?
11. *Voice:* Does it offer the most recent Bluetooth (2.0+EDR) for expanded bandwidth? Does it offer high quality microphone and headphone connectors?
12. *Safety:* Are the connectors thoughtfully placed to prevent snagging during use? Are connectors designed to break away if caught on an obstruction?
13. *Reputation:* Does the manufacturer have a reputation for ruggedness, reliability and service?

## Conclusion

This paper provides only a brief overview of the advantages of wearable computers. It is intended to provide a basic understanding to allow you to evaluate how wearables might benefit your operations because, after all, the ultimate authority on the kinds of efficiencies they can provide in your operations is -- you.

Your LXE representative would be more than happy to help you review your applications and further discuss how wearable mobile computers could help improve productivity and efficiency in your operation.

For more information on wearable mobile computer solutions, call us at 1-800-664-4593.

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