

INVENTORY MANAGEMENT

R • E • P • O • R • T

Improving Logistics and Supply Chain Management

ISSUE 04-03

www.ioma.com

APRIL 2003

Voice Recognition Technology **What Does This Cost & Will It Suit Your Warehouse Needs?**

Inventory management and other supply chain professionals, when viewing their warehouse environments are challenged to increase labor productivity, reduce inventory handling errors and slash overall distribution costs. To achieve these objectives, according to IMR surveys, respondents are increasingly looking to automate processes with new technologies. One of the newer technologies that could emerge as the "next hottest" is voice recognition technology.

"In most applications, voice systems allow real-time transmission of inventory information," noted warehouse authority Kenneth B. Ackerman, president, The K.B. Ackerman Company (Columbus, Ohio; kenackerman@ameritech.net) offers. Just as soon as product is moved, inventory records can be adjusted. "This feature is particularly valuable in high volume operations where the timing of replenishment is closely synchronized with order picking," he explains

What is Voice Recognition Technology?

Briefly, voice recognition technology is a method of performing order selection and other warehouse tasks by using verbal commands that are given to or received from a human. A worker wears a head set with a microphone, and a small control unit around the waist. Voice communication is transmitted to and from a host computer via radio frequency (RF) transmission.

One advantage of voice technology is that it allows warehouse/DC operators to operate in a hands-free and eyes-free environment as they perform their tasks. For example, operators receive "voice" commands and move from task to task without shifting their focus from a display to a product or location

and back. Voice technology proponents cite increased labor productivity as a major benefit as operators can complete tasks more quickly while handling a larger variety of tasks more easily.

Applications most suited for voice technology.

Many warehouses and supply chain operations are ideal for voice technology. The characteristics of these tasks, as defined in the white paper Voice Technology Primer (Microlise, Eastwood, Nottingham, U.K.; www.microlise.com) are:

- Repetitive tasks where operators are directed by a host system;
- Data collection tasks that follow a regular process flow;
- Operation in environments where keyboard operation is not easily accomplished (cold storage or refrigerated areas);
- Tasks with intensive manual handling; and
- Tasks requiring user interaction while onboard moving vehicles, or where controlling a vehicle is part of the task.

Therefore, functional applications may include:

- Case and item picking,
- Bulk picking by vehicle;
- Putaway and replenishment;
- Perpetual inventory and stock checking;
- Marshalling, assembly and vehicle loading;
- Goods receipt; and
- Crossdocking.

Other specific applications, as listed by Marc Wulfraat, partner, KOM International, Inc. (Montreal, Quebec, Canada; www.komintl.com) in the white paper, Voice Technology in the Distribution Center, include:

- Full-case order picking;
- Split-case order picking;
- Flat garment order picking;
- Manufacturing quality assurance processes;
- Pallet receiving and breakdown operations;
- Putaway and replenishment forklift operations
- Cycle counting; and

- Package sortation operations that require human intervention for non-labeled packages.

Bringing voice technology to warehouse operations:

"In most, but not all warehousing situations, voice technology is relatively easy to integrate with existing WMS (warehouse management systems) solutions supporting radio frequency tasks," Ackerman shares. At the same time, he warns, some WMS suppliers may claim an alliance partnership that does not really exist.

Therefore, ample homework is recommended, using computer simulation to take a "test drive" of the integration capability, he offers. The key question, Ackerman insists, is whether or not the WMS solution can take full advantage of all the features of voice technology.

For example, will it provide real-time information transfer on each pick transaction? If so, will the timing of replenishment be synchronized with the order picking operation? How will a short pick be dealt with? When a picker it indicates a shortage situation, the system should do three things: (1) replenish the pick location; (2) order a new pick task; and (3) direct a cycle count to discover why the discrepancy occurred.

Voice-enabled applications can rapidly get "unmanageably complex" when applied to tasks for which they are ill-suited, says the Microlise white paper. Application features that are not suitable for voice interfaces are listed as:

- Data collection tasks requiring a large specialized vocabulary;
- Tasks requiring complex or lengthy instructions;
- Tasks with complex flow options.

What a voice recognition solution costs.

KOM's Wulfraat observes that the capital investment to deploy voice technology is slowly dropping but "remains at the price point where many firms have difficulty accepting the turnkey solution costs."

For accurate budget numbers, he advises working with suppliers to obtain requests for proposals. Currently there are two primary providers of voice technology: Vocollect (Pittsburgh, Penn; www.vocollect.com); and Voxware, Inc. (Princeton, N.J.; www.voxware.com).

However, for a general guide, Wulfraat provides the following "high-level" estimate for a speech technology solution:

- Cost for a wireless computer with headset,

two batteries, charger and client software license fee is approximately \$5,000 to \$6,000 per unit. The price per unit typically drops as a function of the quantity of terminals being purchased, he offers.

"The quantity of terminals to be purchased is based on the maximum number of concurrent users on a shift as their mobile terminals can be shared across multiple shifts," he explains. For budgeting purposes, spare units should be purchased as lead times on new equipment can be up to six weeks.

- Middleware and software interface to the ERP or WMS should be assumed at a conservative investment of \$30,000.
- 2.4GHz RF network is dependent on the size of the building. "Assume a fixed cost for site survey, installation, project management, and related costs, at \$20,000 plus approximately \$3,000 per every 40,000 square feet for access points, wiring and associated costs," he details. To be safe, he recommends obtaining an estimate from a supplier of RF equipment.
- Assume \$30,000 to \$100,000 for training, implementation and software modifications as required.

Wulfraat warns, "It is dangerous to generalize, but the intent is to demonstrate to the newcomer how to approximate the ballpark budget requirement for this type of solution. Honing in on the exact figures can be done if there is subsequent interest," he notes.

Voice technology in action: 300% improvement in picking accuracy

By implementing PkMS supply execution system (Manhattan Associates, Inc. Atlanta; www.manh.com) with the Talkman voice system (Vocollect, Pittsburgh; www.vocollect.com), Maines Paper & Food Service, Inc., has made it easier for its employees to do their jobs more efficiently, leading to increased productivity.

In moving from traditional scanners to a voice-directed system, Maines' employees now communicate every aspect of every pick made. In fact, the combined solution has enabled the food service distributor to triple its picking accuracy, with a tenfold increase as its goal.

"Together, PkMS and the Talkman system have enhanced our ability to operate on a real-time basis and improve our overall performance dramatically." Bill Kimler, director, systems and inventory control, Maines Paper & Food Service, Inc. declares. "We have gained broader and more detailed visibility across the entire DC, giving us the ability to manage inventory more efficiently and accurately."