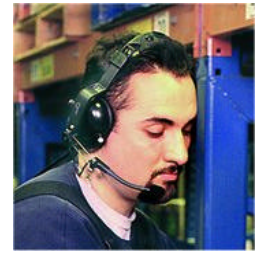
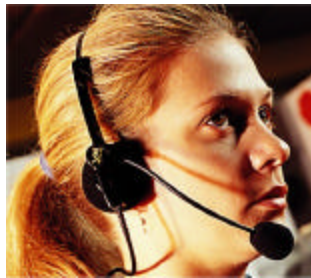


What is *Voice Directed Picking*?

Voice Directed Picking (VDP) is a method of performing order selection in a warehouse or distribution center using verbal commands, which are given to and received from a human order selector. The order selector normally wears a headset/microphone combination, which is attached to a small control unit worn around the waist. The control unit is responsible for communicating *Voice* commands to the picker and then receiving spoken responses from the picker. All *Voice* communication is transmitted to and from a server or host computer via radio waves or RF (short for Radio Frequency transmission). Please note that there are many other applications, which can be performed using *Voice* in the warehouse other than order selection, and these will be discussed in a subsequent section. Functionally, *VDP* is extremely similar to traditional RF Scanner Picking, although the precise methods in which prompts are provided and responses are received are different. Software provided with the *Voice* system normally accomplishes this difference transparently, without affecting the host system.



Frozen Food Picking – SyVox



**Headset and
Voice Belt Unit –
Vocollect**



**Grocery Picking –
Vocollect**



Non-Food Picking - Voxware



Top 10 List: Reasons why the DC Manager Won't Consider VDP

Below are the top 10 reasons why DC Manager's won't consider VDP for their distribution operations. For each point, an industry response is given. Note that you will need to check with individual vendors on each point to make sure that their specific solution meets all of your company's specific requirements. *Differences between vendors do exist*, and you need to *do your homework!*

10. Headsets will create safety issues in the warehouse since pickers will not be able to hear fork trucks as well.

Voice headsets are worn on only one ear or are acoustically transparent, permitting the selector to hear all safety-related noise. *Voice* systems do comply with OSHA requirements.

9. My Pickers won't like talking to a Computer

While there may be some cultural resistance initially, once a selector gives the system a chance, they invariably love it. In terms of simplifying the picker's job and reducing fatigue, the benefits become readily apparent to the folks doing the work.

8. I like RF systems because they can display information about the product being picked and then permit exceptions to be entered via a keyboard.

Voice systems *can* provide all of the capabilities of RF Scanner based systems. The difference is in the user interface. Things like product description, UPC, and inner pack size can all be communicated via *Voice*.

7. I have a large Spanish speaking work force. The product has to be able to be used for them.

Voice systems can provide interfaces in many different languages at the same time (even regional dialects). The operator only needs to identify himself to the system.

6. *Voice* will be too expensive for my operation since I'm not a billion dollar distribution center.

The cost of *Voice* has decreased dramatically in the past couple of years. If you can afford an RF based scanner system, you will probably be able to afford a voice system. More important than the price is the savings you will realize by using the system. Paybacks of a year or less are very common.

5. I already have a WMS system, and I don't want to have two inventory/order systems in my facility.

Voice systems are designed to complement your existing inventory system, not to take over from your host system. *Voice* systems can add value in that they can rearrange or sort order information for more efficient picking, but they do not attempt to replace your host or WMS system.

4. We'll have errors because my picker won't hear or remember what they've been told properly, or they will just pick from the wrong place.

Voice systems have robust services available which allow a picker to ask the last command or action to be repeated. *Voice* systems can require the order selector to read a random check string to confirm that they have picked from the proper location.

3. There is no way that *Voice* can be as fast as paper or RF.

There are some specific situations where *Voice* may not be as fast: for example when each picking the 100 fastest movers from a couple of bays of flow rack. Another example would be when dealing with data intensive applications, such as the inputting of long serial numbers. In general, *Voice* is as fast or faster than either paper or RF because *Voice* frees up both the hands and the eyes, permitting the operator to get from location to location faster, and to permitting them to select the item faster. *Voice* allows pickers to focus on picking, rather than on terminal displays or lists.

2. I have a lot of background noise, fork trucks, conveyors, buzzers, and overhead pages. This will mess up the productivity of my pickers.

Voice technology has come a long way in the last few years. Noise canceling microphones are much better than in the past and software has been designed to be sensitive to both "noise bursts" and "background noise". The speech recognition software itself has become much more capable than in the early days. First time recognition rates are in excess of 99%.

1. *Voice* is a "bleeding edge" technology. I'll wait until its actually being used by several distribution operations before I look at it.

Voice has been used in distribution now for almost 10 years. Companies like Wal-Mart, Nabisco, Corporate Express, Nautica, and Haggar are all using it today. Both scanner companies (like Teklogix) and pick-to-light companies (like Real Time Solutions and Rapistan) have begun to take this technology seriously.

What are the Advantages of VDP over Other Technologies?

The list given in this section outlines some advantages of VDP systems. Note that just because VDP is capable of a particular feature does not mean that a specific vendor supports that feature. For this reason, it is very important to create a feature list and ask the vendor specific questions about the applications that they support.

Hands-free, Eyes-free – Less Fatigue

The *single most unique advantage* of VDP over other technologies is that it keeps both of the order selector's hands free as he completes his tasks. It permits the order selector to focus his eyes on his travel, stock locations, and material movement tasks rather than on a display or keyboard. Because the picker does not have to constantly shift focus from a display to a product and back, there is less visual fatigue. With both hands free, the order selector is able to complete tasks more quickly and is able to handle a large variety of product more easily. The fact that *Voice* eliminates paper and electronic displays permits the order selector to have more focus.

Elimination of Paper, Printers, and Exception Entry

Voice, like RF based systems, eliminate the hassle of printing and distributing pick lists. The cost of the paper and printer supplies as well as the labor to distribute the paper each day is eliminated. In addition, exceptions are communicated using Voice at the time of the pick, eliminating clerical data entry.

System Cost is Related to the Number of Users not the Number of SKUs or Locations

Like RF Scanners, *Voice* has a major advantage over technologies such as pick-to-light or AS/RS (automated storage/retrieval) systems. The cost of *Voice* is based on the number of operators required to do the work in the distribution center, not the number of inventory slots or storage locations. This makes *Voice* particularly well suited for facilities that have large numbers of slow moving stock items, or with centers that have large floor areas with fast moving stock.

Highly Accurate – Confirmation of Pick

Like RF Scanners, *Voice* permits the order selector to confirm either the location or the product itself at the time of pick. The order selector either reads a facility-defined check string printed on the location label, or he reads a product ID on the product itself (such as a UPC code). Since the confirmation can be done at the time the product is being touched and retrieved, *Voice* systems may actually have a slight advantage

over RF systems where the picker must scan first, and then reach for the product once the scanner is put away.

Individual Productivity Tracking

Like RF Scanners, and some other automated picking systems, *Voice* can track the productivity of each order selector individually. Such tracking permits the establishment of work standards and the ability to review and counsel those order selectors who are not meeting the minimum requirements.

Scalable for Peak Activity

Voice, like traditional RF scanner systems, can be scaled easily during busy periods. As long as enough terminals and server horsepower are available it is easy to throw labor at the busy periods. Such scalability is not always true for some types of automated systems (such as AS/RS systems, conveyor based picking environments, and sorters).

Ability to Batch Multiple Orders Together on a Single Selection Run

Check this capability with individual vendors.

This ability is one of the most powerful available for low order line picking environments commonly found in E-commerce or mail order. Such functionality is sometimes called "clustering" or "waving" of orders. Using this functionality, a large number of orders (usually 8 or more) are batched together and picked as if the batch of orders were a single order. Some type of cart with labeled "order cubby holes" is most commonly used as the transport device. The picker travels through the stock locations in location sequence first selecting the item(s) from their storage location and then distributing the item(s) to one or more orders on a cart. The *Voice* system tells how many to pick, and then tells which order(s) get the items just picked. For example the system may say "Pick 3, distribute 1 to order A, distribute 2 to order D". Since walking is almost always the biggest time component in small order picking environments, this batching capability can dramatically reduce labor.

Extremely Flexible Deployment and Reconfiguration

A very significant advantage of *Voice* over stationary hard-wired hardware devices is that it can be used for many different types of applications without the need to change hardware. For example, an operator might perform receiving or replenishment with a *Voice* unit in the morning, and then perform order selection with the same unit in the afternoon.

A second advantage is that *Voice* systems, like RF scanners, work with radio waves. There are no wires or tethers constraining the *Voice* terminal. This means that the terminal can be used anywhere that there is a suitable RF signal. For example, *Voice* might first be deployed in a high velocity area in the distribution center. There is nothing prohibiting it from

being used in a slow moving area (other than perhaps the reconfiguration of software to operate in a manner which is better suited to the slow pick environment). It can even be used outdoors or in freezers!

Finally, *Voice* permits the easy application of dynamic slotting, where products are temporarily slotted in a dynamic area. Only the database needs to be updated, and then the *Voice* system can immediately direct picking without the need for installing or reconfiguring hardware.

Computer Paced Work Environment

Another advantage of VDP is that the computer effectively paces the picker through the *Voice* commands. The order selector gets used to a certain pace, which is established by the *Voice* system, and this helps to improve productivity over methods where no system prompting is provided (or where the prompting is easy to ignore). Since *Voice* is literally attached to the picker's ear, it is pretty hard to ignore.

Better in Facilities with Less than Ideal Lighting

Unlike either RF displays or paper, *Voice* relies on hearing, not on vision to execute commands. The system will work just as well in total darkness (assuming you can find the stock location). This poses a distinct advantage in poorly lit rack or shelving areas.

Other Advantages Similar to RF Scanner Based Systems

Voice and RF Scanner based systems are functionally very similar in their capabilities. So just about any feature that is present in an RF Scanner based system can be implemented in a *Voice* system. Some examples are cycle counting, real-time identification of shorts, product lookup, database queries for information such as inner pack or description. All of these things are done via the *Voice* headset/terminal rather than via a keypad and display. Obviously, the *Voice* system must have a corresponding software application for each of the features just described – check with your selected vendor.

What are the Differences between VDP and RF Based Order Selection Systems?

In the previous sections, it was stated that VDP is functionally identical to RF Based systems. It is true that any application that can be implemented in an RF Scanner based environment can also be implemented in *Voice*. There are two important exceptions to be made here, however:

- 1) Scanner-based systems may be more efficient in situations where the confirmation of a pick is done through a long string. For example, in a situation where a 15 alphanumeric serial number needed to be returned, RF Scanners could capture the information in about 2 seconds where *Voice* might be 5 or 6 seconds, and the *Voice* response may be prone to error, where the scanner response is 99.9% accurate. Many *Voice* systems permit the attachment of a scanner to the *Voice* terminal to accommodate this.
- 2) *Voice* systems have a different user interface from RF Scanner based systems. This means that there is not a direct mapping of RF Scanner based prompts to *Voice* prompts. Anyone who has tried to create an interactive dialogue for the telephone will understand this. Things that sound completely proper in a written piece sound forced or awkward when spoken. Good *Voice* applications will take this difference into account, and transparently take care of the necessary changes. Again, this is a point you should check with your vendor.

Who is Already using VDP – What Industries?

- 1) **Food Industry** – *Voice* got its birth in grocery. Because grocers tend to be regional rather than national, they tend to share information a lot more freely than some other categories of retailers. Once *Voice* was proven at the first grocery installation, other grocery chains embraced it. From this base, other food service industries began to look at *Voice*, and today, *Voice* is widely used in the Food Industry. Note that selection tends to be full cases and complete pallets, picked from rack and floor locations, as well as some each picked items.

Examples:

Nabisco, Kroger, Wegmans, Giant Eagle, Henry's Foods, U. S. Foodservice

- 2) **Freezer Environments** -*Voice* is also particularly well suited in very cold freezer environments since the hardware holds up better in a cold condensing environment. *Voice* frees up both hands for picking and the picker never has to remove their gloves or fiddle with little buttons on a terminal.

Examples:

Atlas Cold Storage, U. S. Cold Storage, Perishable Distributors of Iowa, Butler Refrigerated Meats

- 3) **Traditional Non-Food Pick** – *Voice* has been slower to be accepted in traditional each pick distribution environments, but is exceptionally well suited for them. *Voice* should begin to replace traditional RF Scanners and a substantial portion of the Pick-to-Light market in these types of environments because of its lower cost per SKU, its comparable or faster picking speed, and its high accuracy.

Examples:

Wal-Mart (grocery and non-grocery)
Corporate Express (office supplies),
Nautica (apparel),
Haggar (apparel)
Lifeway Christian Resources (religious goods),
French Champagne Manufacturer

What other Applications are there for *Voice* in the Distribution Center?

Voice systems are not limited just to a picking environment. They can perform pretty much any of the applications that a RF Scanner based system can perform. The difference is in the way the information is communicated to and from the worker – using spoken phrases, letters and numbers, rather than a screen and a keypad. While most other applications don't have the same labor savings potential as order picking, it is nice to be able to flexibly reuse the *Voice* hardware for different purposes at different times during the day. The actual applications supported by different vendors vary, so you need to ask questions and see installations. Some applications that are commonly supported are:

- Replenishment of Inventory
- Real-Time Emergency Replenishment and Picking
- Cycle Counting
- Inventory Quality Assurance Functions
- Receiving
- Put Systems

The list is really endless since any application that can be written for RF Scanners or Terminals can be modified to work for *Voice*.

A rapidly growing new area for *Voice* is in put systems. These are systems where SKUs are distributed to a common set of stores, one at a time. Put systems have been in use with pick-to-light, carousels, and manual systems for some time, but voice brings both high accuracy and low cost to this technique.

Why Don't I See More VDP Installed if it Already Works?

VDP is a relatively new technology in distribution. It first became deployed in the early 90's and like any new technology was not without a few glitches in the early days. In addition, the quality of *Voice* recognition has come a long way since then. At the present time there are three major competitors in the *Voice* market: Vocollect, Voxware, and Syvox. Until recently, these companies have been pretty busy scrambling to put their basic technologies together and establish their core markets. All three of them have been focused on the original food industry marketplace since there is ample opportunity there and the barrier to acceptance was lower for these industries. There are 10's of thousands of terminals in use today!

Recently, these companies are beginning to see the opportunities in other markets. From an order selection functionality point of view, there is no difference between picking a box of frozen carrots and picking an oil filter. As you can see from the previous section, *Voice* is now becoming accepted in the mainstream distribution industries. Those in traditional (non-food) distribution picking, in particular in each picking environments, should take a close look at the benefits provided by *Voice* systems.

Other companies such as Teklogix and even the pick-to-light companies Real Time Solutions and Siemens (Rapistan) are seriously looking at and in some cases investing in *Voice*. The reason for their interest is because *Voice* has a clear future in the area of distribution order selection, and these forward looking companies don't want to get left out. Clearly when a market leader like Wal-Mart begins to roll out the technology, you know that they've done their homework.

Where Would VDP not be as Well Suited as other Methods?

Very High Velocity Each Picking Environment – In applications where there is a high concentration of very fast movers selected as individual items, neither *Voice* or RF scanner based systems are as efficient as systems such as pick-to-light, or in some cases, paper. If the number of very fast moving SKUs is small (say 50 to 150 SKUs picked from a few bays of flow rack, for example, a good picker can outperform most automated systems using paper, and an average picker can outperform them using pick-to-light. This is because the area to be considered is physically small limiting walk time and the picker can focus their attention on this very small area or even a subset of it where multiple pickers work zones within the area.

Letter and Number Intensive Applications – any application requiring identification of long strings of letters and numbers is better suited to a scanning based environment. Scanners can read long strings much faster than they can be spoken. An example would be where lengthy serial numbers must be continually input to a system. Please note that with some *Voice* systems, a scanner may be plugged in as an auxiliary input, permitting *Voice* to be combined with and used for everything except the data intensive applications.

Additional Labeling Required – *Voice* systems do not print labels (at least at present), and portable label printers have had a bad reputation for a long time. If labeling of product is required at the time of picking, it is best handled with a paper environment (where labels are pre-printed) or with a fixed printers (which may be hard wired or RF based). Note that in several existing Voice picking environments, pickers do apply labels as they pick using Voice. The labeling requirement may to reduce the labor saving advantages of picking with *Voice*.

Open Industry Debates in VDP

Speaker Dependence – Probably the biggest single debate in VDP is that of “Speaker Dependent” vs. “Speaker Independent” voice recognition.

Speaker Dependent System – In a “Speaker Dependent” system, the system is “trained” to understand the voice of a particular speaker or person. In this way, their unique accent and dialect is trained into the system and used to match their future commands. Training takes 10 to 20 minutes.

Most cell phones with voice capability use a type of speaker dependent technology. You will record the names and numbers of people you want to call and then later can call them simply by saying “Call Bill Schwartz”. If your wife tries the same command, she often gets an “I don’t understand you” back from the little computer in the phone.

A difference is that with commercial *Voice* systems, the recognizer is much more sophisticated, and is highly accurate at recognizing the trained voice.

Speaker Independent System – A speaker independent system is trained to understand a variety of voices, accents, and dialects by taking a sampling and focusing on those speakers in the 95% most common area of the “bell curve”. For those individuals whose language pattern falls within this area, the system will generally understand the speaker without any training. For those outliers (with unusual accents or dialects) even a speaker independent system must be trained.

Which is Most Desirable?

Here, we tread on an area of vendor religion. Those making speaker dependent systems will tell you that it is crazy to have a system which is speaker independent, because speaker independent systems are prone to recognition errors. Speaker independent vendors will tell you that it is a waste of time to have to train the system for each and every new speaker, when 95% of the speakers can use a speaker independent system with no training whatsoever. Like any other lively debate, the answer lies is determining the facts.

The truth is that each method has some advantages, but the real measure is in whether the systems perform accurately over the long haul. Speaker independent systems do have facilities for training unique speaking nuances into the system, but they don’t require that the training be done right away. The potential cost of a speaker independent system is that there may be a higher error rate for those folks close to the outlier’s area on the bell curve (until speaker specific training is done).

Without hard statistics (which no one has) it would be hard for me to make a judgment as to which method is best. Furthermore, there are convenience issues involved, not just picking accuracy. Finally, the number and types of languages required will have an effect on the decision. For this reason, each potential buyer must make their own evaluation of their unique needs, and site visits and follow up are very important in the purchase of a *Voice* system.

Who are the Major VDP Players in the United States?

Vocollect (412) 829-8145
Pittsburgh, PA www.vocollect.com

Voxware (609) 514-4100
Princeton, NJ www.voxware.com

Syvox (303) 938-1110
Denver, CO www.syvox.com

Who else sells Voice directed systems?

PsionTeklogix (800) 322-3437
Erlanger, KY www.psionteklogix.com
PsionTeklogix is primarily a hardware company who integrates SyVox voice systems with their hardware.

Selected Quotes from the Vendors

Regarding the Accuracy of Current *Voice* Technology – Ken Finkel – Voxware

“To give you idea of how robust it is in noise discrimination, the same recognizer that we use in the warehouse is the one that is being used in the Apache Helicopter and the Abrams tank, and people in the military would have very little tolerance for a recognizer that mistook the word “fire” for “tire”.

In a DC environment, the challenge is not just background noise, but variable noise. In other words, you have things like pallets slapping around on the floors and you have conveyors turning on and off. You have a PA system and you don't want the words on the PA system to be recognized. If you think about it, the way that the recognizer works is – first of all we have the ability – there is actually a *Voice* command that says “sample noise”. You just say “sample noise” and the system will go out and build a profile of what the background noise is and will use that to filter out the relevant input from just the noise. It is a very sophisticated technology.”

Contrasting *Voice* to Pick-to-Light – Ken Kolenik - Vocollect

“The flexibility that we provide over pick-to-light systems is that – say that you are filling a tote and that you want to completely fill that tote. You are probably limiting that person with a pick to light system to a single aisle or a single location, and then you will have to pass or stage it. With *Voice* that's not the case – you can do any part of any aisle anywhere with the same order selector. If you want someone to own that tote complete until it filled you can do that. If you want to do pick and pass you can do that, so you don't run into the same limitations.

Voice can also support a batch order picking cart without the need for heavy batteries, a portable laptop computer and expensive displays wired on the cart. All that is needed is a cart, which has clearly labeled with order locations. Using it, the order selector can make one trip through the storage area and complete as many orders as can be fit on the cart – usually 8 to 20 by picking and then putting to order as directed.

Once a person is familiar with it, which only takes a few hours, they can speed up the voice and they can actually – we have order selectors who are familiar enough with the locations and the products well enough, that they just talk ahead so that they are just picking and talking – they are only waiting for the one quantity command that they are on.”

Regarding the Maturing of *Voice* Technology – Tim Zimmerman – SyVox

"It's taken a couple of things. Foremost, it's taken user awareness of the technology, which has been assisted by commercial voice applications such as stock quotes and airline schedule updates. Technology awareness is moving along with advances in hardware, which is allowing price points for these solutions to drop 50% since last year. The audio circuitry and processors are becoming capable of supporting speech recognition even on PDA platforms. Before last year, you were talking about special purpose platforms, which were \$4-5K plus software. Today we are riding the technology curve with solutions that provide better recognition capability and a lower price point, about \$2K plus software, which is giving customers a faster return on investment."

Regarding the Future of *Voice* – Joe Iaoracci - PsionTeklogix

“It's now becoming that mature technology. The hands-free eyes-free is important. I think that is it also important that the size of the packages that are offered are coming down. The headset designs are becoming more sophisticated, so there is better recognition. There is better filtering techniques that Syvox has done a good job at that allow for noises in the warehouse, that makes the system more robust. We love it, we're investing in it now, we want to push even more investment into it, because we see it becoming more viable not just in the warehouse, but in things like port facilities. You could have a service person, hands-free at the telephone pole or doing maintenance work, reading his trouble shooting techniques into the PC or into the device and having it answer back to him on steps. It opens up dramatically what you can do with this recognition. There is no need for a screen any more. Head's up displays can be incorporated into the system.

It's not there yet, but we see this as a future application. You should be able to interrogate a database by speech.

On the retail side, queue busting is a big thing. If there is a long queue, for example with fast food, a person with a portable headset can take orders and bust the queue.”

How Do I go About Selecting the Best Company?

Like any complex system purchase, a Voice purchase is not one to be taken for granted. It is crucial to have a clear idea of your application requirements first. As with most things, you will probably find that some vendors are better suited to meet those requirements than others. If the order sizes and transaction rates at your company are similar to those at another company (even a company in a different business) chances are that the basic system should work for you. Obviously, it is helpful to also find a similar application, but keep in mind that since voice is a relatively new technology, there will not always be a match to your industry as there would be with some older technologies. A consultant can help draft a plan for evaluating vendors, a question script, and in some cases a full-blown Request For Proposal (RFP).

Is an RFP Required?

Before going the RFP route, make sure that it is really in your company's best interest. RFPs generally take a while due to the coordination of multiple responses from multiple vendors. Another problem with RFPs, and I can tell you this from experience, is that vendors often tell you that they can do "everything on your RFP specification very well today" whether they really can or not. I find that it is often better to pursue the "show me" approach of seeing what the vendors have already done in the field, rather than what they are willing to sign up for on a piece of paper. Another danger of the RFP path is that you may end up specifying a requirement so exactly, that every vendor adds an extra \$50k into their response to cover the cost of customization, when, in fact, working with those same vendors, you could have identified solutions that would work equally as well using the vendor's existing functionality. With all that said, RFPs sometimes can result in lower costs due to competitive pressures between vendors. Bottom Line – every situation is different – an experienced consultant can help you find the best path for your particular situation.

The Quality of the Distribution Software Application is Very Important

Voice systems by themselves are nothing more than sophisticated speech recognition engines. Such systems are completely useless without a well-designed distribution application to make use of their input and output. A good application should be very Voice-friendly in that the prompts spoken to the user are easy to follow and easy to understand. You will find that different companies will support different levels of distribution expertise.

It is important that you find a company that has or is able to provide all of the core features that your company requires for your distribution operation. After all it is your distribution operation, not the voice recognition software that is critical to your company's future success.

[Author's Note - regarding voice customer interviews]

I made several phone calls to existing customers to find out about their experiences in *Voice*. This was a bit frustrating because for several, it was not possible to get hold of them and others said that they could not speak without approval from their legal departments. Therefore, at present, I have only one *Voice* customer interview. In the interest of fairness to all *Voice* vendors, I asked the customer to speak to his experience with *Voice* technology directly and not to his specific experience selecting a vendor. I will update this paper online as I obtain additional information, so check back later on-line.

Interview with Craig W. Ethridge – Director of Distribution and Logistics Systems - Corporate Express, Denver, Co.

[Sam] How long have you been using voice at how many different facilities?

[Craig] We piloted our first voice application in the warehouse in May of 2001, and we've since deployed it to 2 divisions. Our pilot was in a low volume division, and our second was in a moderate to high volume division.

[Sam] So, you've had reasonably good success?

[Craig] Yes, we have plans to roll it out to 5 other divisions this year – so it's been one of those home run hits as far as return on investment.

[Sam] Could you give me an idea of a common order size?

[Craig] We do a lot of each picks. A common order size is 4 lines.

[Sam] My intuition, and it is strictly intuition, is that voice would be great for low line orders, bin shelving, and walking distances between picks, because it can do batching, and you have plenty of time to respond and understand what the next pick is. For some reason, the voice vendors have been going after the food warehouse market - moving frozen food pallets and full cases -- I guess because it is an easy sell for them. They haven't attacked the each pick market, and that made me nervous. Is there something difficult about each pick with voice that I don't know about? What is your experience with each picking with voice?

[Craig] We ran into that as well when we were going through the selection – in that none of the vendors had a real each pick application so we knew that no matter who we ended up going with for our initial pilot that we would have to work with them a lot to develop the initial solution for us.

[Sam] So, you are truly a brave person?

[Craig] Well, I don't know about brave but -- the nut of the nut is that when you compare this to competing technologies like pick-to-light it was not brave, it was a no brainer to conduct the pilot – because even if it failed miserably you hadn't spent a quarter of what you would have spent on pick-to-light for one division.

The pilot was a situation where if it failed, it wasn't a big deal. It was worth the effort, and it looked reasonable that it would succeed. ... If I was a pick to light vendor, I'd be looking at who I was going to buy or partner with.

[Sam] I think that the pick-to-light companies are not aware that the cost per SKU, the efficiency, and the accuracy is all there with *Voice*. The only thing I question, and maybe you can give me some of your experience here. ... My gut is that out of 18,000 SKUs you can take the top 200 and put Pick-to-light on them, and use *Voice* for everything else.

[Craig] Actually we do that with our top 1,000 fastest moving items.

[Sam] And you're feeling that the pick to light for the top 1,000 is a little faster?

[Craig] Well, here's the game – we've averaged in a good facility close to or just over about 225 pic ks (grabs) per man hour.

Basically what we figured is that we didn't have to match that with pick to voice to be a success, because of the cost differential, so we figured that if we got up to about 160 lines per hour with voice and compared that to 225, that the lost efficiency would be a break even point. That was our going in position.

What we're seeing is two things – one is that our pickers are picking probably as fast as they do with pick to light. It's hard for us to say apples to apples because we still don't have pick-to-voice in as high a volume facility as our best pick-to-light, and the lack of volume probably contributes more to the lack of efficiency as anything else.

Second thing we're seeing is that we can take someone off the street and get them to above average picking performance within a matter of days. With pick to light it takes a few weeks to a month and a half. The training is just so fast in voice.

[Sam] Are you picking very slow moving items in your facility with voice?

[Craig] We are using it in what we call our static racking – that would include slower moving. Basically our footprint is that we have our top 1,000 fastest moving items in our flow; we have our next 4-5000 SKUs in static racking which are selected with pick to voice; and then we have our case pick module that we are picking with bulk labels.

[Sam] A couple voice vendors have suggested that in the case pick area *Voice* will get you to the location faster, and then you can just bring the labels along and slap them. Would it be economical to do that?

Well, once you have the infrastructure in use, it probably doesn't cost you that much more. I think there are other areas that we would go after first. I think we would use voice for loading or breakdown and receiving rather than going after our case pick module?

[Craig] I have a meeting I need to get to – can I give you my short list:

[Sam] Sure, go ahead.

[Craig] We can get people picking faster quicker -- much much quicker than we can with anything else. They start off better than with paper or pick-to-light, they get better faster, and they are immediately more accurate. That is one thing that has slowed us down in the past, despite picking by quantity and location, there was still enough product knowledge involved that the pickers still made mistakes. We had to develop systems to double-check them before we had *Voice*.

[Sam] Are they verifying location with *Voice*?

[Craig] Yes. With *Voice* they are immediately 99+% accurate. I know that looking at the accuracy numbers and hearing the feedback from the field that it is nothing like it used to be.

[Sam] Does a picker have a cart?

[Craig] That is what is great about the flexibility of *Voice*. Most of our orders are not batched like that, but a user, at any given point can batch an order. So we are looking at a pick-to-cart application. We are currently doing it in-line – a user batches up 2-6 orders at a time, but we don't think we need to change anything to do it with carts.

Also, pick-to-light vendors claim that you can change zones depending upon workload, but it is a lot of work to do this. With voice it's just voice commands – when you log in, you log into whatever zones you want to and you are logged into one zone or three zones depending upon what your supervisor tells you to do.

[Sam] Tell me about any issues or concerns or things a potential voice customer should be aware of?

[Craig] Overall this has been the best-implemented technology project that we've piloted, so that the issues we've had have really been minimal. What issues we have struggled with have been interference with other wireless devices especially 2.4 GHZ phones. If you are using an 11MB wireless backbone, then the frequency of those 2.4GHZ phones are close enough to cause a lot of problems that were hard to figure out. You turn off those 2.4GHZ phones and your RF network is clean.

--- END OF INTERVIEW ---
A VERY SPECIAL THANK YOU CRAIG!

Voice is Still a New Technology – Be Thorough and Careful!

I believe that you never can be too careful, but this is particularly true when you are dealing with an industry that is dynamically changing and improving. For example, if you buy pallet rack, you have a pretty good idea of what you want and how the product will perform. Software based systems are not nearly as easily to qualify or quantify. Make sure that you ask lots of questions about capabilities

Be certain that you get a detailed product demo – one where you can kick the tires yourself, and do it in a way that you are comfortable. You should also visit at least one working site to learn about the “dark side” which is present for even the very best systems in any marketplace. You should visit or at the very least contact at least two other companies using the same system and ask the same questions. Make sure that you ask leading questions about the negative as well as the positive. For example, “What part of the system’s startup caused you the most difficulty?” and “What is your most common maintenance problem, and how hard is it to fix?”

Contributors and Credits

Thanks again Craig! I also want to offer a special “thank-you” to all of the vendor contributors to this newsletter. These guys are the ones who live the world of *Voice* every day, and their combined knowledge is the source of much of the information you have just read:

Ken Finkel, VP Sales & Business Development,
Voxware, Inc. (262) 549-9077

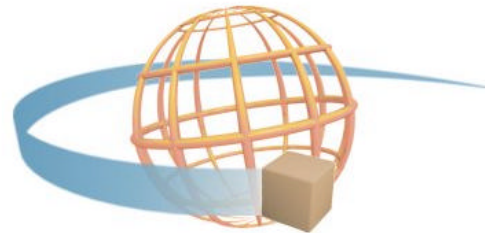
Ken Kolenik, Product Marketing Manager,
Vocollect (412) 829-8145

Tim Zimmerman, VP Sales and Marketing for North America,
Syvox (704) 843-3826

Joe Iarocci, Director of Speech Systems,
Psion Teklogix, (905) 813-9900

About the Author:

Sam Flanders is President of **Warehouse Management Consultants**. In the past Mr. Flanders has worked for Kingway Material Handling (Pick-to-Light), White Systems (Carousels AS/RS) and St Onge Company (Consulting). He is a national authority in the area of broken case or “each pick” order selection. Mr. Flanders has 15 years of experience in distribution. He also has a degree in Computer Science and is an expert at applying computer driven systems in the warehouse



Warehouse Management Consultants is a firm that provides simple, practical, cost-saving solutions to our clients. We deliver high quality results quickly. We focus on distribution operations, in particular, on order-picking both in traditional distribution environments and manufacturing operations. Our methodology is designed to provide immediate money-saving recommendations and avoid spending time on areas that are not of interest to a client. We stress team participation and education in our efforts, so that your key people can be involved in the creation of a new vision for your company. Find out more about how WMC can help your business:

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