

THREE VOICES, THREE SOLUTIONS



BY MAIDA NAPOLITANO, CONTRIBUTING EDITOR

Order picking with voice is undergoing yet another transformation. Since its pioneering days in the 1990s, voice picking consisted of predominantly proprietary hardware and software solutions, such as those by Vocollect, using mobile computers embedded with speaker-dependent speech engines.

Then in the early 2000s, vendors such as Voxware started moving away from proprietary hardware and shifted to more open architecture solutions that they embedded in commercial, off-the-shelf mobile computing devices such as those marketed by Motorola and LXE. This open hardware era saw an increase in speaker independent technologies and the rise in multi-modal functionality allowing devices to capture data multiple ways, whether via voice, scanning, or RFID.

Both “proprietary solutions” and “open hardware” approaches physically require a mobile computer when picking. But over the past three years, the proliferation of high-performance wireless networks and Voice over Internet Protocol (VoIP) phone systems has ushered in what could be a new era in voice. Coca-Cola Enterprises, partnering with Cisco (a leading provider of wireless networks) and Datria (a Lockheed Martin spin-off specializing in packaged voice-enabled enterprise mobility applications) helped to innovate this network-based approach.

“It’s the era of intelligent networks,” says Daniel Hong, lead analyst of customer interaction practice with research firm Ovum and author of the *The Guide to Voice Solutions in Warehouse Environments* (February 2009). “Voice goes through a physical router

that is also connected to a back-end server where all the speech recognition and intelligence resides,” he explains.

With this approach, there’s significant savings in hardware costs, because a company doesn’t have to buy expensive wearable computers for each of its users. Instead, pickers can use a less expensive wireless phone to call a phone number to connect to warehouse management systems (WMS) and other enterprise systems.

Steve Banker, service director of supply chain management for the ARC Advisory Group, is also watching this development very closely. “It has the potential to change the dynamics of this market, but it has not done so yet.” He notes that vendors providing proprietary solutions still dominate.

Over the next few pages, we showcase the stories of three companies that

Our warehouse/DC engineer takes a look at three distribution operations employing three unique approaches to voice picking. But no matter how different each solution may be, these operations illustrate how the benefits of picking with voice remain largely the same.

are currently working with voice providers to employ three different approaches to voice picking. But no matter how different each approach may be, these distribution operations clearly illustrate how the benefits of picking with voice remain largely the same.

COCA-COLA: INTO A NEW FRONTIER

Coca-Cola Enterprises (CCE) is the world's largest marketer, producer, and distributor of Coca-Cola products, distributing more than two billion cases in 2009 from more than 300 distribution centers.

Over the past few years, however, changing consumer tastes for flavored water, new juices, and energy drinks resulted in a four-fold increase in SKUs, many with similar packaging. This made the assembly of mixed pallets challenging, with accuracy levels dropping below the desired 99.8 percent set by Wal-Mart and other customers, even with the use of additional checkers.

"We are a lean, six-sigma company," says Michael Jacks, CCE's senior manager for logistics and transportation systems. "Additional checking is waste and we had to eliminate waste. We needed a solution that improved accuracy."

But accuracy wasn't the only issue. There was also the pressure to handle larger volumes without increasing headcount or square footage. It didn't help that warehouse picking positions were not exactly the easiest jobs. "It's hard, it's hot, and most of our picking is done at night. We are constantly hiring and retraining," notes Jacks.

In 2007, the business presented Jacks and his team with a solution: voice picking. While they agreed that voice is the way to go, navigating the different technologies to find the voice solution that best fits CCE's

vision was a completely different story. "We took a step back, did our due diligence. We looked at all the vendors in the system in addition to talking to our strategic partners."

Since 2005, the company had been working with Cisco, standardizing and upgrading wireless networks in many of its DCs. The team wanted to leverage this wireless network investment as part of its voice solution. As an SAP company, CCE's Jacks also wanted a truly enterprise solution that could voice-enable any SAP transaction—the implications of which could go beyond the warehouse.

Cisco introduced CCE to Datria in March 2007 and together they innovated a new approach using regular VoIP-based wireless phones and wireless networks. Pickers used a Cisco 7921 wireless IP phone to call into a server and in real-time receive spoken instructions on where, what, and how many cartons to pick, while speaking confirmations when tasks are correctly completed.

In June and July 2007, CCE deployed two side-by-side pilots at two separate facilities, pitting this new approach against the traditional approach of using wearable computers. They eventually selected the VoIP-based approach after the second pilot.

By October 2008, CCE had successfully deployed a ground-breaking VoIP-based voice-picking solution to 2,600 pickers in 100 of its largest facilities—each with more than 5 million cases shipped.

But, of course, there were lessons learned along the way. To effectively design the network for voice, about 40 percent more access points had to be installed. Matching the power settings of the phones to those of the access points enabled CCE to get 10-hour shifts out of standard batteries. The

team is now looking to replace corded headsets with Bluetooth devices.

But according to Jacks, it's been a gift that keeps on giving. By going with the less expensive wireless phones and off-the-shelf headsets, CCE reported savings of \$2 million to \$4 million in capital expenses. Accuracy has been at a consistent 99.9 percent with some locations reporting a 100 percent accuracy rate.

As a result, 80 percent of checkers were deemed redundant and consequently re-assigned; and being a speaker-independent system, there was no need to record voice templates—further reducing training time from days to hours.

But the best part? Last year, CCE was actually named Wal-Mart's Supplier of the Year.



By October 2008, CCE had successfully deployed a ground-breaking VoIP-based voice-picking solution to 2,600 pickers in 100 of its largest facilities—each with more than 5 million cases shipped.

**ZONDERVAN:
NEW DAY FOR ACCURACY**

Zondervan, a Christian publication and communications company, distributes books, Bibles, CDs, DVDs, and other multimedia resources from its 250,000-square-foot DC in Grand Rapids, Mich. Although mostly a full-carton pick operation, productivity and accuracy issues in its paper-based, less-than-full carton pick area drove management to consider other order fulfillment methods in the fall of 2009.



Zondervan's \$240,000 voice investment is clearly paying off. In the first 13 days that the system was up and running, accuracy improved by 56.7 percent.

In fact, an in-motion scale installed to catch discrepancies was already kicking off an average of 40 to 50 cartons of orders per day.

With the company's vice president of distribution, Keith Swann, helming the project, a team decided to check out voice, RF (used by sister company, Harper-Collins), and pick-to-light to see how those technologies could improve accuracy. "The main reason we like voice is because it isn't hard-wired or confined to a specific location such as pick-to-light," says Swann. "We also find voice to be faster than RF and not as cumbersome; but perhaps the best part was that it is hands-free and eyes-free."

The decision was made to go with Vocollect's Talkman T5 mobile computers, SR-20 headsets and software solutions. Implementation took three and a half months. And by January 2010, Zondervan had voice-enabled its broken-case picking operation and pickers were using speaker-dependent voice solutions to batch pick up to ten orders at a time in a conveyor-based, pick-and-pass configuration. To ensure that the correct product was picked, pickers had to read a few digits of the book's ISBN when they got to their pick location.

Today, the company's \$240,000 voice investment is clearly paying off. Productivity savings are up 12.6 percent,

well over the projected 10 percent. And now only 21 pickers are required to run the operation—down from 30—with extra headsets on hand for replenishers and returns personnel to jump in as pickers during peak periods.

According to Swann, in the first 13 days that the system was up and running, accuracy improved by 56.7 percent and the in-motion scale check is now kicking out only 10 cartons to 12 cartons of orders per day—mostly due to weight discrepancies in the system rather than picking errors.

Plans for expansion of voice are already underway. In fact, 10 additional voice units have been purchased to voice-enable full-carton picks and replenishment, followed by putaway and cycle counting.

"When you've got an investment that returns in 10.2 months, you actually start saving money in the same year that you spent it," says Swann. "How can you not do it?"

**PIERRE'S ICE CREAM:
ICE COLD SOLUTION**

Pierre's Ice Cream Company distributes approximately 1,000 ice cream products and frozen treats from its 40,000-square-foot, all-freezer warehouse in Cleveland, Ohio. And as one can expect, picking cartons of ice cream using paper picking tickets in tempera-

Evolution of Voice Picking Technology

Proprietary solutions

- Speaker-dependent speech recognition
- Vendors provided their own embedded speech recognition technologies
- Thick client applications requiring mobile computing devices
- Business model built on being a hardware and software provider and proprietary technologies

Open hardware

- Speaker-independent or -dependent speech recognition
- Business model based on software and off-the-shelf computing devices plus commercial (or open source) thick client speech applications emerge in the market
- New vendors enter the voice picking market driving competition
- Industry best practices emerge in application design and management

Intelligent networks

- Speaker-independent or -dependent speech recognition
- New business model based on a thin client approach emerge (software, hardware and speech technology agnostic), more intelligence placed in network
- Integration of speech recognition with other AIDC technologies is common
- Solutions no longer limited to four walls of warehouse and voice becomes enterprise-wide SOA resource for multiple forms of mobile workers

1990s

2000s

2010s

Pioneering days of voice picking

Moving away from proprietary hardware

Entry of thin clients

Source: The Guide to Voice Solutions in Warehouse Environments (Strategic Focus) February 2009, Ovum (www.ovumkc.com)

tures of -20 degrees Fahrenheit clearly presented its own set of challenges.

For example, the dexterity of the company's 15 pickers was already being compromised by the multiple layers of clothing, ski masks, and gloves they needed to wear to protect themselves from the cold.

Just how cold is it? It's so cold that carbon in regular pencils can't imprint an image on paper, while ink in pen cartridges just freezes. Pickers were using "grease" pencil—a crayon-like marker—to check off products they picked. It wasn't uncommon to misplace both the paper and pencil that they put aside to pick cartons with both hands. "It took a long time and it was open to errors," recalls Dave Cillian, Pierre's manager of operations.

With no WMS, Pierre's distribution team had been using their own RF-based inventory tracking system for receiving, putaway, and cycle counting. "Being a small company, we didn't want to tear everything down and go back to square one," says Todd Kaup-

pila, Pierre's comptroller and project manager. "We had a good shell for the infrastructure and a voice solution seemed to fit best with that." In addition, voice's paper-and-pencil-free disposition certainly made it a "weatherproof" solution.

In November 2007, both Cillian and Kauppila took the time to observe voice solutions in similar freezer environments, directly asking pickers on the floor what they liked and disliked about their systems. In March 2008, the company selected Voxware's speaker-dependent software operating on LXE's rugged, freezer-proof HX3 unit. Access points were added to beef up RF coverage, and in June 2008, voice picking at Pierre's went live.

Productivity quickly skyrocketed, reducing the need for pickers from 15 to 9. Order accuracy went from 99.7 percent to a consistent 99.96 percent and above. And training is now a piece of cake. Previously, it took workers anywhere between a week to two weeks to learn how to pick product efficiently;



Productivity quickly skyrocketed inside Pierre's all-freezer warehouse, reducing the need for pickers from 15 to 9.

today, the learning curve is down to four hours or less.

"Eventually we're looking to Voxware to put this all under one umbrella as we plan to expand the use of voice in other areas of the warehouse," adds Kauppila. □

Maida Napolitano is a Contributing Editor to Logistics Management

WARD TRANSPORT & LOGISTICS CORP., LLC

Providing superior Supply Chain Solutions to our loyal customers for more than 79 years!

SUPPLY CHAIN CHALLENGES? WARD HAS THE ANSWER

When It's Needed, Where It's Needed!

WE PROVIDE WIN-WIN SOLUTIONS

- Mid-Atlantic LTL Carrier
- Asset Based Regional Truckload
- Full Logistics Capabilities
- Expedited Services
- Asset Based Warehousing
- Dedicated Driver Services

Explore our WIN-WIN Solutions today -
One call takes care of it all!

800.458.3625 | WARDTLC.COM

WARD
TRANSPORT & LOGISTICS CORP.

INNOVATION FROM GENERATION TO GENERATION®