Lucas
WORK SMARTER

THREE STEPS TO CREATING A MORE PRODUCTIVE DISTRIBUTION OPERATION

Getting The Most Out of Your DC With Voice and Warehouse Optimization

INTRODUCTION

In 1998, long before Siri and Alexa, Lucas Systems introduced Jennifer™, the brains and voice of the Lucas Solution, including the mobile applications used for picking and other warehouse tasks. Since then, voice-directed warehouse applications have become a proven solution for improving worker productivity and accuracy in tasks throughout the distribution center.

Thousands of DCs use voice today, but industry research reveals that different facilities realize vastly different productivity results with the technology. The average productivity gain amongst Lucas customers using voice-directed picking is 36%. However, customers using voice along with our process optimization solutions in our Warehouse Optimization Suite have seen gains as big as 122%. In a DC with 30 pickers, the difference in annual labor cost savings between 10 percent and 40 percent productivity improvements is more than $200,000.

Neither the average nor the range provides much help to IT, operations, or engineering professionals trying to estimate the gains they might see when using voice technology in their DC. This paper explains three different strategies - voice enablement, workflow improvements, and process optimization - to help turn distributors maximize productivity in their DCs. In addition, we also provide two sample scenarios (case picking to pallet, and piece picking to cart) to calculate the productivity gains likely in a DC.

Annual Labor Cost Savings
(DC with 30 pickers)

40% Productivity Gain

$299,985

In **Annual Savings**

10% Productivity Gain

$99,445

In **Annual Savings**

To project the cost savings in your DC, access the Lucas online savings calculator

Access the Savings Calculator Here

THREE STRATEGIES TO GET THE MOST OUT OF YOUR DC

It would be nice if we could make precise, blanket assertions about the productivity benefits of voice. But it just isn't possible to say that DCs moving from paper to voice for case picking will always see 10 percent productivity gains.

A facility's current technology and pick processes are only two factors that affect their potential productivity gains. The biggest variable is how you approach your voice implementation: as a voice-enablement technology project; a workflow improvement project; or as a process optimization project.

Companies that treat voice as a technology upgrade alone tend to see 5-10 percent productivity gains, while companies that treat voice as a part of a broader process optimization intiative often see gains ranging from 25-35 percent in case picking, and 45 percent or more in piece picking.

Picking Technologies In Use*

62% **Paper**

55% **RF**

14% **Pick to Light**

14% **Voice**

12% **Goods to Person**

11% **Automation or Robotics**

*Peerless Research Group, Warehouse Operations & Trends, October 2017, p. 18

1 VOICE-ENABLE AN EXISTING PROCESS

How It Works
Voice-enablement substitutes voice direction and speech recognition for visual displays, scans and key entry in a WMS-directed RF process.

Productivity gains result from eliminating the time spent stopping to read device screens, pausing to handle a scanner, or slowing down to key-enter data or press function keys. It is also common today to combine voice, scanning and displays in a multi-modal process which allows DCs to use the best tool at every step in a process – for example, allowing pickers to scan barcodes when that is more efficient or accurate than voice or key entry.

In general, voice-enablement focuses on improving accuracy and efficiency at the pick face, with little change in travel time or other aspects of the workflow. Typical productivity gains are in the single digits.

By The Numbers
Voice-enabling an RF application will save 1-3 seconds per pick versus a typical RF workflow. In a simple picking scenario with a current pick rate of 100 lines/hour, a two-second time saving per pick would improve the pick rate to 105.8/hr., a 5.8 percent productivity gain.

Voice Saves Time At The Pick Face

2 WORKFLOW IMPROVEMENTS

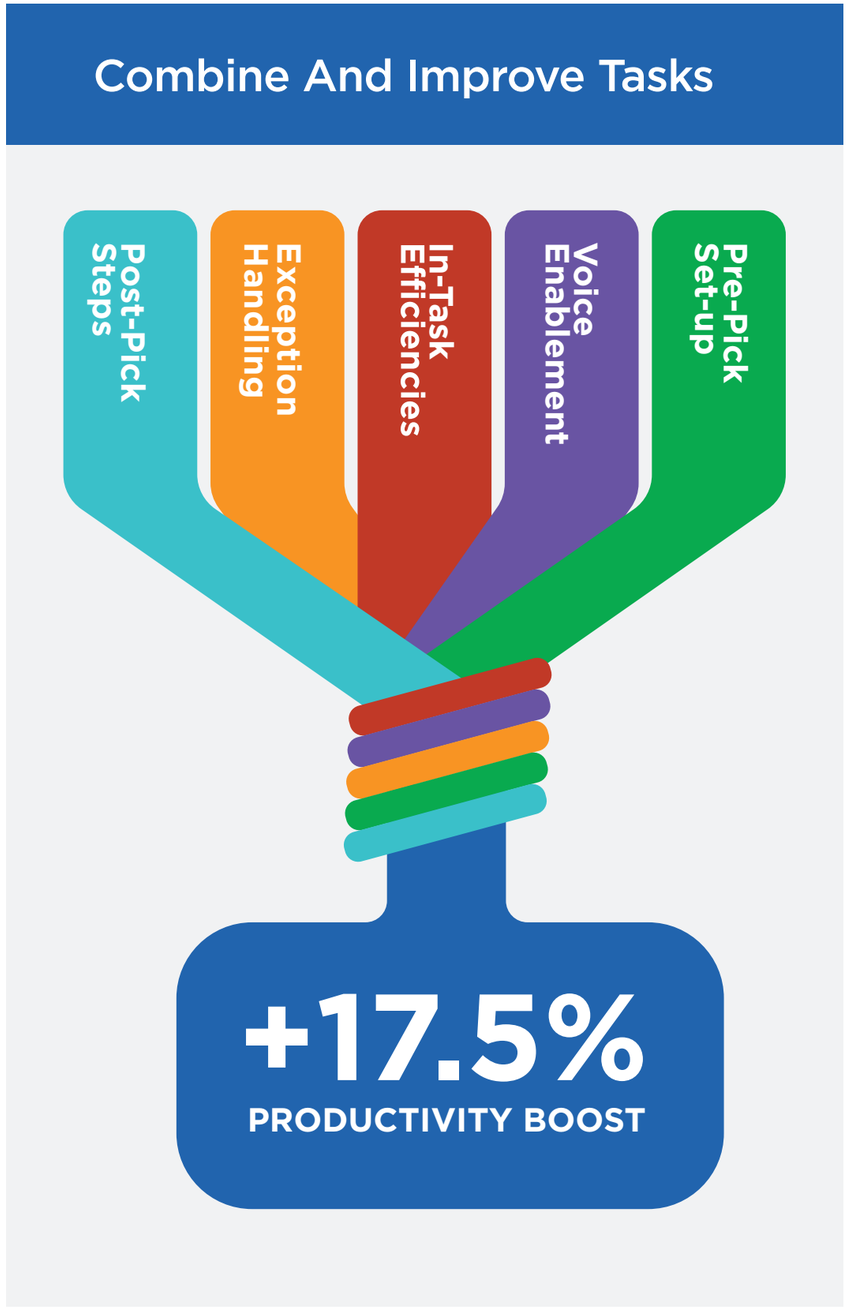
How It Works
To eke out additional productivity, DCs should look for ways to change and optimize their workflow to eliminate wasted time and unproductive steps.

In addition to substituting voice for RF (or paper) and leaving the process unchanged, you can condense or combine process steps or change other aspects of the process flow, streamline exception processes (which are extraordinarily time-consuming), and reduce the time workers spend doing tasks ancillary to the main workflow.

For example, you can shave seconds from every pick by combining multiple voice prompts and user confirmations into a single step. Next, to reduce travel time between assignments, you can allow users to start their next assignment where their previous assignment ends. Similarly, most DCs have opportunities to streamline pre-pick set-up time and post-pick staging tasks. These workflow changes can eliminate wasted minutes from every pick assignment.

It's important to note that companies using voice as part of a warehouse optimization solution can implement these types of workflow improvements without making any changes to their WMS.

By The Numbers
Dialogue and task optimizations compound the benefits of eyes and hands free activities, shaving extra seconds from every pick, with additional minutes saved in exception handling, reduced travel, and in pre- or post-assignment steps. With the same pre-voice pick rate of 100 lines/hour, a four-second time saving per pick would net a productivity boost of 12.5 percent. A three-minute savings in set up or post-pick time (assuming one assignment per hour) could add an additional 5 percent productivity boost beyond that.



3 PROCESS OPTIMIZATION

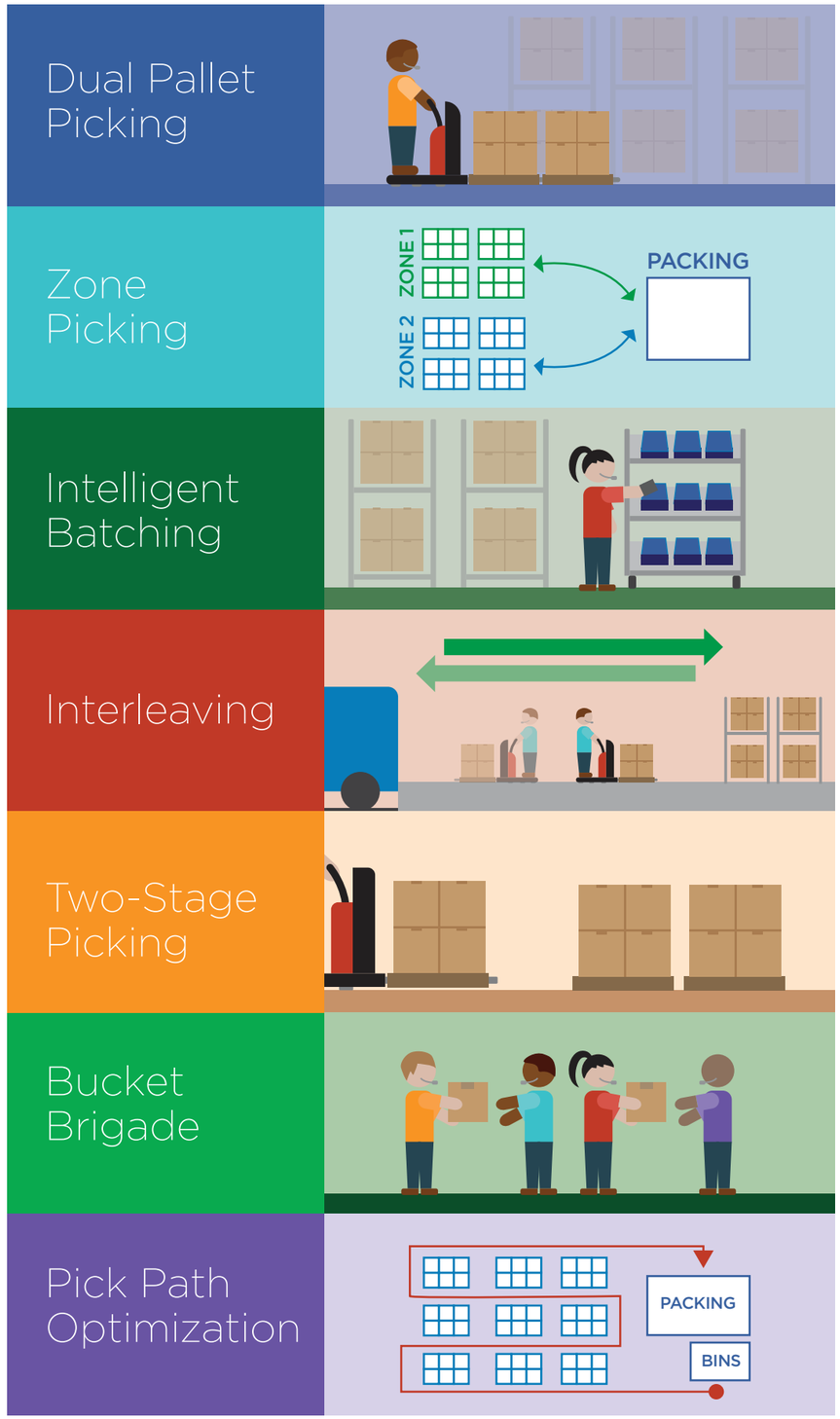
How It Works
To get really dramatic levels of efficiency, DCs can re-engineer their processes as they implement a voice-directed warehouse optimization solution.

Optimization can take the form of zone picking, dual-pallet picking instead of picking a single pallet at a time or, if you are already picking multiple orders in a batch, batching work assignments intelligently to optimize pick density and reduce travel.

Other examples include pick path optimization, task interleaving, two-stage picking for slow-moving items, or developing a bucket-brigade pick-and-pass process to evenly distribute work in a pick module.

Like workflow improvements, these transformative changes can typically be made without changing back-end systems using a warehouse optimization solution.

By The Numbers
Process optimization can result in high double-digit productivity gains, depending on a number of factors. In our 100 pick per hour scenario, moving from single-order picking to picking two orders at a time would effectively double the pick density (i.e., the number of picks per aisle, or area), cutting travel time per pick anywhere from one-quarter to one-half. Doubling the pick density and optimizing the pick workflow should generate a minimum 10 second time saving per pick for a net 38 percent productivity gain, not to mention the potential time savings from streamlining other tasks.



CALCULATING THE GAINS IN CASE AND PIECE PICKING

The following two examples illustrate how the different approaches to using voice can translate into distinctly different levels of benefit in simplified case and piece pick scenarios.

SCENARIO ONE

Case Pick To Pallet

The table below illustrates the impact of the different implementation approaches in a hypothetical DC with an average RF pick rate of 100 cases per hour. To keep things simple, we are assuming there is a single case picked per line and that workers are picking a single order at a time to a single pallet.

Voice enabling an RF application would save 1-2 seconds per pick versus a typical RF workflow (column 2). Dialogue and workflow improvements (column 3) compound the benefits of eyes and hands free activities, shaving additional seconds from every pick. The table only includes in-task workflow improvements – it does not include time saved in exception handling, reduced travel, and in pre- or post-task steps.

In the Process Optimization column (column 4), we are assuming the DC is moving from picking a single pallet to picking to two pallets at a time. This doubles the pick density, cutting travel time per pick anywhere from one-quarter to one-half. Doubling the pick density and optimizing the pick workflow would conservatively save eight seconds per pick for a net 29 percent productivity gain.

	RF	Voice Enable	Improve Workflow	Optimize Process
Process	Single Pallet	Single Pallet	Single Pallet	Dual Pallet
Case/hour	100	103-106	113-120	129
Sec./pick	36	34-35	30-32	<28
Productivity Gain	-	3-6%	13-20%	29%+

SCENARIO TWO

Piece Pick To Cart

Our second scenario is based on a piece picking process in which multiple customer orders are picked as a batch to a cart. In this example, we assume an RF pick rate of 200 lines per hour.

Similar to the previous example, voice enabling an RF application would save 1-2 seconds per pick, but given the higher number of picks per hour, the magnitude of a one-second per pick savings is far greater than in our case pick example. Likewise, there are larger opportunities for workflow improvements in a batch picking scenario, such as combining picks for multiple orders in a single transaction (pick and deal).

Adding to the productivity gains, it is also possible to improve pick density and reduce travel without changing the number of orders in a batch. For example, batching together orders that include items in the same aisles and bays can eliminate so-called “empty” travel. Likewise, applying pick-path optimization logic can reduce travel 20 percent or more overall, driving the total productivity improvements to greater than 50 percent.

	RF	Voice Enable	Improve Workflow	Optimize Process
Process	Batch Pick to Cart	Batch Pick to Cart	Batch Pick to Cart	Batch Pick to Cart
Case/hour	200	211-225	240-276	300+
Sec./pick	18	16-17	13-15	<12
Productivity Gain	-	6-13%	20-38%	50%+

HOW TO DETERMINE WHICH STRATEGY IS RIGHT FOR YOU

As illustrated in these two simplified examples, it is fairly easy to identify and quantify the time saving from voice-enabling screens and scans in an existing RF process. It is also straightforward to project the productivity benefits of streamlining or improving an existing workflow. It is more challenging to estimate the potential gains from process optimization as that requires a clear picture of what an optimal process will look like in your DC.

A good way to get started in developing a vision for that end-state and for projecting the potential efficiency benefits of a new process, is to conduct an **operations assessment**. Similar to a lean assessment as part of a six-sigma process, you will need to document how and why you are doing things today to identify specific time-saving opportunities in your existing process.

Beyond the possibilities for process optimization, the assessment exercise will typically suggest new ways to better achieve your business and operational goals – it forces you to think beyond "this is how we do things" to "this is why we do things."

To help DCs conceptualize their own optimal process – and to begin to estimate your end-state productivity gains – Lucas offers an operations assessment service. The purpose of the assessment is to identify specific process improvement opportunities in your facility.

Many of the process improvement ideas that come out of the assessment will involve the application of new mobile technologies (voice, scanning and device displays, etc.) in an improved user workflow, along with other optimization technologies (such as batch algorithms and pick-path optimization engines). In some cases, process improvements can be implemented with no change in picking technology, but voice and other new technology may compound the benefits of any process changes.

An operations assessment takes some time, but it is time well spent. The assessment allows you to consider how new optimization technologies and workflow solutions can impact productivity beyond the efficiency gains of voice at the pick face. Taking this approach can translate into hundreds of thousands of dollars in annual labor cost savings.

To Learn More And Schedule a Lucas Operations Assessment, Contact Lucas Systems at 724-940-7000 or www.lucasware.com/contact.

About Lucas Systems, Inc.

Lucas Systems helps companies transform their distribution center operations and continuously adapt to changing market dynamics. We dramatically increase worker productivity, operational agility, and accuracy and reduce the need for labor.

Lucas solutions are built on 23-plus years of deep process expertise and smart software using AI-based optimization technologies. Our solutions feature Jennifer™, the brain, voice, and orchestration engine that drives performance improvement gains. We help you make the smartest moves at the lowest cost with Jennifer™.

Lucas WORK SMARTER

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