

Using Voice Applications in Route/Stop Delivery Operations



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LUCAS
SYSTEMS, INC.



Agenda

- Introduction & Background
- Basics of Voice in the Warehouse
- Voice Application Overview and Benefits
- ROI – The bottom Line
- Q & A

Introduction and Background

- Lucas Systems
 - “End to End” Solution Provider
 - Specialists in Voice Applications –
 - Lucas has developed and deployed more Industrial Voice Recognition based applications than any other Software Firm in the US
 - Focus on Solving the Business Problem

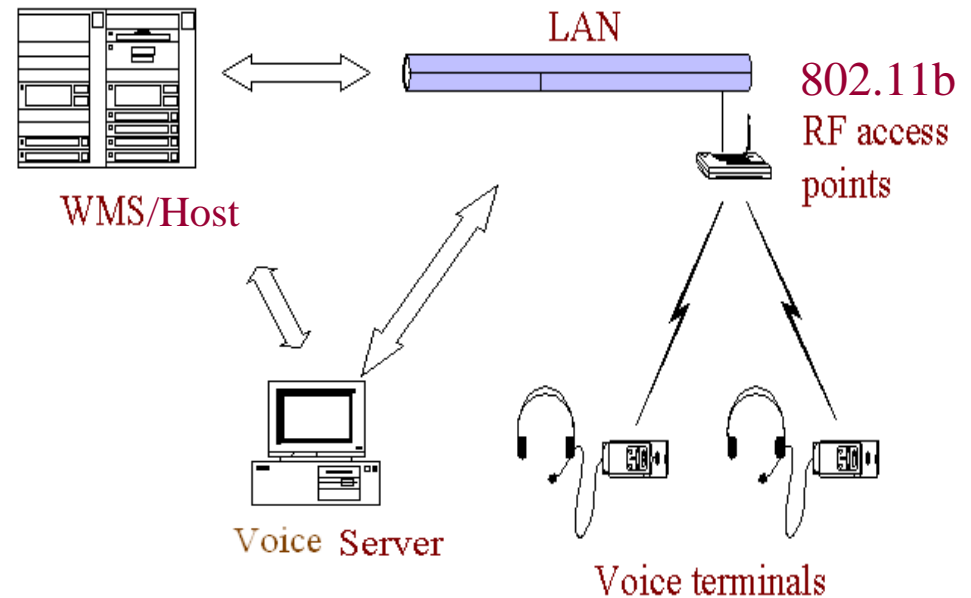
“Jennifer” serves Thousands of Users Every Day



Voice-Directed Applications

How do they work?

- Voice Recognition and Voice Prompting Software loaded on Portable Terminal
- Application running on Portable Terminal and on Voice Application Server
- Server communicates with Host Application (WMS or Order Processing System)



Modular Platform and Technology

- Solutions running on Multi-Modal Terminals (Symbol, Intermec, LXE) as well as Voice-Specific Terminals
- Scan, Speak, and/or Key on Same Device
- Open Standards permits Interchangeable Technology
 - Voice recognition Engine
 - Text-to-Speech Engine
 - 3rd Party Software



Voice Prompting

- **Text-to-Speech**

- Automatic direct conversion
- Limitless vocabulary

TTS

TTS (Fast)

- **Digitized Voice**

- Recorded human voice
- Easier to listen to
- Wider range of speeds
- Customized dialogue

Jennifer

Jennifer (Fast)

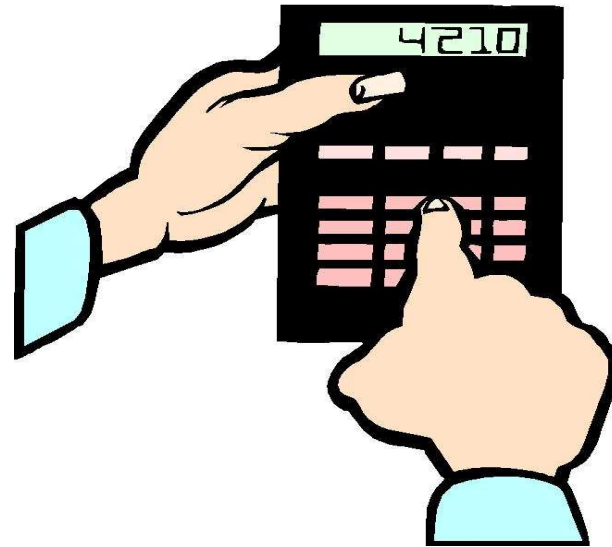
When to Use Voice

- You need both hands to do your job



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When to Use Voice

- You need both hands to do your job
- You need to record additional information - Voice is faster and more accurate than keying by non-keyers
- You work in less than optimal conditions
- The ergonomics of the task makes scanning slow or inaccurate



Good Voice Applications

- Order Selection (Picking)
- Truck Loading
- Returns
- Inspection



Additional Voice Applications

If you are not already using Scanning

- Receiving
- Putaway
- Replenishment
- Cycle Count



Voice Directed Order Selection

- # 1 Voice application – tens of thousands of voice terminals in use – growing at huge % annually
- Case pick to pallet or belt
- Each pick to pallet, carton, tote, or belt
- Batch Order Pick to totes or cartons on Cart
- Pick & Put (Pack)
 - Retail DC store distribution
 - Catalog and e-commerce multi order pick

Voice Directed Order Selection at Work

- Portable voice unit receives pick list
- “*Jennifer*” directs selector to slot
- Selector verifies location using “check string”
- “*Jennifer*” instructs pick
- Selector verifies pick quantity & placement
- Server is updated with completed pick information



Voice Order Picking Dialog

System Prompt – Jennifer

A242 Top

1 Alpha

A311 Bottom

Wrong Check string

A311 Bottom

3 Bravo

Is the product being picked short?

New Aisle, B371 Bottom

User Response

752 Top

1 Alpha

293 Bottom

Where Am I

742 Bottom

2 Bravo

Yes

Voice Directed Order Selection - Flexibility in the Process – A Sampling of Options

- Selector may receive special instructions
- Selective item code number and/or UPC validation
- Catch weight and Date Code entry and validation
- Order merging and splitting
- Selector levels of experience (learning mode, expert mode)
- Short handling and replenishment requests
- Multiple unit of measure validation



Voice Order Selection - *Live*

Voice Order Selection Benefits

- Up to 90% reduction of errors
 - Product picked
 - Quantity
 - Recorded data such as catch-weight, lot #, or exp. date
 - Pick-to destination such as pallet, tote, bin, or cart location

Voice Order Selection Benefits

- Up to 90% reduction of errors
- Significant increases in productivity (Depending on Process)
 - Elimination of writing by selector
 - Possible elimination of paper or labels saves printing cost and system overhead
 - Complete hands free environment
 - All directions to selector and data collection/confirmation from selector is FREE – no impact on task being performed
 - Elimination of all post-pick backroom key entry for exceptions – shorts, adjustments, lot numbers, etc.
 - Opportunity to reduce trips through warehouse (Batching, merging, etc.)

Voice Order Selection Benefits

- Up to 90% reduction of errors
- Significant increases in productivity
- Up to 50% reduction of training time for new employees
 - “Jennifer” teaches employee how to perform task
 - Interactive, task-sensitive voice help
 - Multi-Lingual capability

Voice Order Selection Benefits

- Up to 90% reduction of errors
- Significant increases in productivity
- Up to 50% reduction of training time for new employees
- Improved inventory accuracy
 - Real-time updates to system means faster response to exceptions
 - Ability to interleave cycle counts

Voice Order Selection Benefits

- Up to 90% reduction of errors
- Significant increases in productivity
- Up to 50% reduction of training time for new employees
- Improved inventory accuracy
- Better customer service
 - Increased order fill rates
 - Customers get what they ordered when they ordered it!
 - Invoice accuracy

Pallet Tag and Truck Load Map

Rte: 273	10/21/2003	PalletID: 0971
CLR-02		
Stop 1/ 22 pc Stop 2/ 11 pc Stop 3/ 4 pc Stop 4/ 18 pc		
1-4		
Truck: 3605		

PALLET MAP BY TRUCK FOR 170/3606

Truck #	Door#	Selector
3606	6	7193

F01 003-008	F03 001-002
F02 002-003	
-----END OF COMPARTMENT-----	
C01 007-009	C02 005-006
C03 004-005	C04 004-004
D01 003-009	C05 003-004
D02 003-003	C06 002-003
D03 001-003	C07 001-002
C08 001-001	C09 001-001
-----END OF COMPARTMENT-----	

Additional Benefits

- Improved Loads
 - More Driver Friendly – Truck Map
 - Can't put wrong pallet on truck
 - Can't close truck until all pallets are loaded
- Improved Pallet Jack Inspection Process
 - OSHA Compliant
 - Paperless
- Statistical and Tracking Benefits
 - Snapshot anytime of what's completed & what remains to be picked and loaded
 - Ability to see who's working and at what pace
 - Ability to track idle time
 - Ability to research who picked what and when

Administrative/Supervisor Utilities

- System Parameter and Controls Setup
- Route Manager
- Productivity Stats
- Pick Research

The screenshot displays the 'Administrative Utility' software interface. At the top, there are filters for 'Load', 'Assignment', 'Team', 'Selector', 'Status', and 'Dispatch Date'. Below these filters is a large table listing assignments with columns for Load, Stop, Assgmt, RunID, Team, Selector, Date Time Open, Complete, ET, Ord, Pick, CPH, and Status. The table contains numerous rows of data, with some rows highlighted in blue. To the right of the table are several buttons: 'Change Assignment Status', 'Change Catchweights', 'Change Pick', 'Change Pallet ID's', 'Manually Close Load', 'Reopen Scratches', and 'Refresh Assignment List'. Below the main table is a 'Drops Table' with columns for Load, Stop, Assgmt, RunID, Team, Door, Invoice, Slot, Item Code, QtyOrd, QtyPick, SelectorID, and Selector. This table also contains several rows of data. At the bottom of the interface, there is a 'Loads Queued for Tx' section with an 'Admin ID' field and a 'Change Admin ID' button. To the right of this section are several checkboxes and buttons: 'Check-String Bypass Log', 'User Level', 'Product Code Log', 'Level Configuration', 'Change Slot Check-String', 'OSHA Check-List', 'Staged Item Mapping', and 'Exit'. The Lucasware logo is visible in the bottom left corner of the interface.

Development & Implementation Plan

- Software vendor performs engineering study of operation with Operations and IT staff to see and completely understand the current process.
- Operations Management, Supervisors, and workers work with Software Vendor to design a new solution which:
 - Meets Management Objectives
 - Accommodates unique operational processes
 - Makes everyone's job easier
- Software Vendor Builds the solution
 - Utilizes Pre-Existing "Building Blocks"
 - Tailored for specific customer requirements

Savings per Year - Errors

Error rate before voice	X/1000 (.x%)
*	
Reduction of Errors	80%
*	
Cost per error (\$7 - \$40)	\$ 15
*	
# units picked per year	xxxxx
=	
Annual Savings – Error reduction	\$\$\$\$\$

Savings per Year - Productivity

Labor cost / year (Loaded)	\$\$\$\$
*	
# of pickers (include all shifts)	xxxxx
*	
Productivity increase	15%
=	
Annual Savings – Productivity	\$\$\$\$\$\$

System Cost

# of Simultaneous Pickers	XXXX
*	
\$3,500 - \$4,500 -Terminal, headset, battery, pouch, and License (price depends on quantity)	\$4,000
+	
Design, Engineering, Integration, Installation, Training (avg.)	\$65,000
=	
Total Cost	\$\$\$\$\$

Cost Savings and ROI Examples

	Small	Medium	Large
# Pickers (simultaneous)	15	50	100
Units picked per year per shift	3M	10M	20M
Annual Savings*	\$140K	\$465K	\$930K
System Cost	\$135K	\$265K	\$440K
Payback period – 1 shift	12 mths	7 mths	6 mths
Payback period - 2 shifts	10 mths	5 mths	4 mths

*Assumes Annual Labor cost of \$30,000, and Current error rate of .2%

Results – from Customers



Managers



Warehouse Workers

Q & A

Thank You

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