

Bucket Brigade with Pick-to-Light & Voice Picking

Presented by:

Jim Butler

Brian C. Lindenmeyer



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About Blue Horseshoe | Strategy Division

- **Blue Horseshoe (BHS) is a privately held solution services firm**
 - Over 300 customers across over 50+ industries
 - 140+ US-based employees (all W-2 based)
- **Strategy Division**
 - Serves as an independent management and industrial engineering consulting firm with a focus on:
 - Strategic planning & operations
 - Network analysis & design
 - Facility design & layout
 - Systems evaluations, selections and implementations
 - Program & project management
 - Over 220 combined years of experience
 - Each team member has over 10+ years experience
 - Including multiple years outside of consulting



Agenda

1. Bucket Brigade Picking
2. Cross-Aisle Picking
3. Pick-to-Light Technology
4. Voice Directed Work
5. Challenges Merging Methodology with Technology
6. Success Stories / Results



Research

- Foremost Experts on Bucket Brigade Picking:

John H. Bartholdi, III

Georgia Tech

Donald D. Eisenstein

University of Chicago

Dave Wolfe

TransTech Consulting



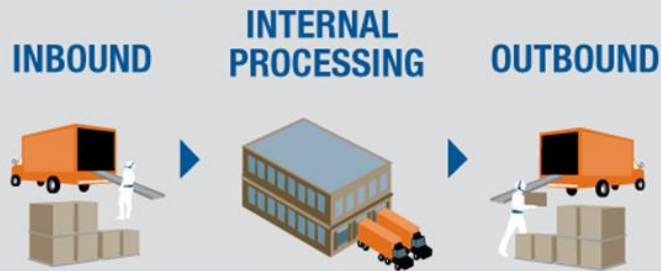
Business Pressures

Improving Productivity

- How can I improve the speed of warehouse operations?
- How do I integrate operations to reduce order processing time?
- How can I reduce manual processes?

Accuracy and Customer Service

- How can I improve overall order accuracy?
- How does it help improve Customer Satisfaction?



Mass Customization/Value-Add

- How can I manage my SKU proliferation and continuing SKU churn?
- How do I ensure regulatory and customer labeling compliance?
- How do I support more customer specific value-added services?

Lowest Total Operating Cost

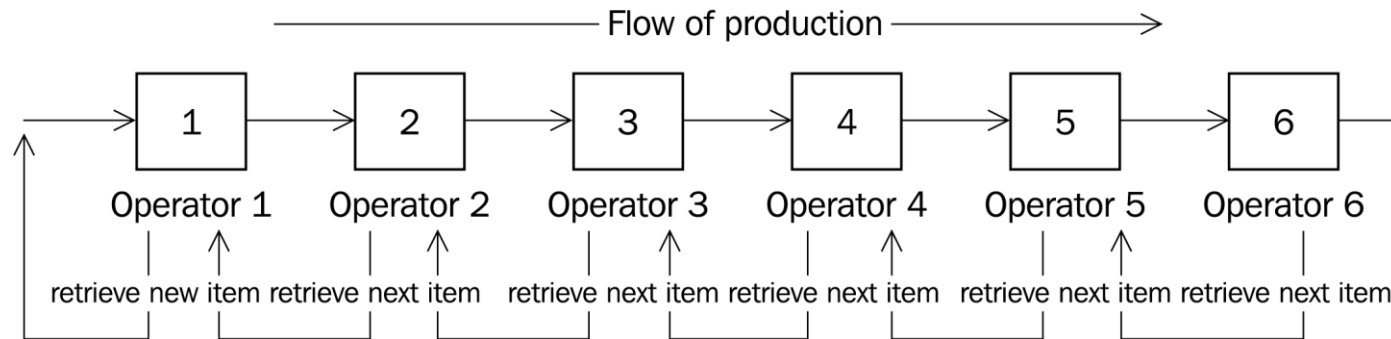
- Where can I reduce inventory while maintaining high service/fill rates?
- How do I improve resource efficiency?
- How do I ensure infrastructure and staffing flexibility?
- How do I better leverage existing "IT systems investments?"

Traditional Split Case Picking

- Issues with Fixed Work Zones
 - Attempt to give each associate the same amount of work in total across a set time period (wave, shift, day)
 - Doesn't balance work from order to order
 - Demand variability within zones throughout day creates bottlenecks
 - Differences in pick difficulty creates imbalances
 - Weight of items
 - Height of pick location
 - Workers naturally perform at different speeds
 - Zones limits the entire group to lowest associate productivity
 - Associates productivity varies throughout the day

Bucket Brigade Picking

- Coordinate associates to progressively perform operations in a defined circuit
- Each associate processes work moving toward the end
- Associates complete picks along a line until the next associate downstream assumes the work
- Associate dropping work moves upstream until assuming work from preceding associate in line, etc.



Bucket Brigade Picking

- Self Balancing Work System
 - Eliminates work zones
 - Recognize the differences in individual productivity
 - Automatically compensates for disruptions to picking activities
 - Adjusts for variability of work content
 - 25% productivity improvement over traditional zone picking “typical”



Bucket Brigade Picking

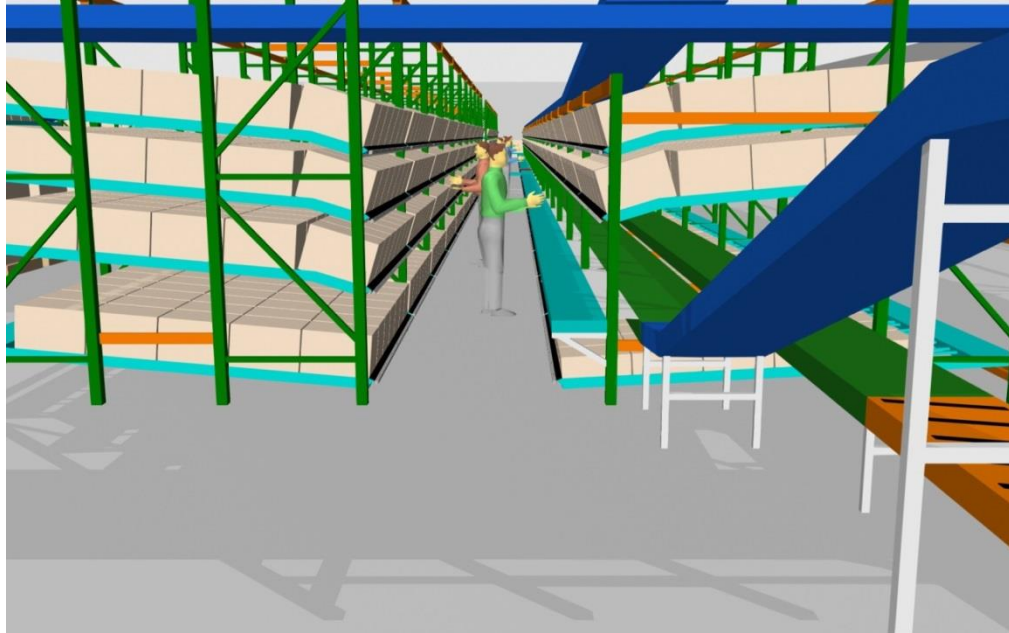


- Embraced by Strategy Division since 1991
- Virtually every client performing piece picking runs bucket brigade
- Initially implemented in pick-to-order environments using pick tickets
 - Difficult to determine individual productivity
 - Optimally would calculate team productivity
 - When individual performance required, associates would initial each pick and management summarized productivity

Bucket Brigade Picking

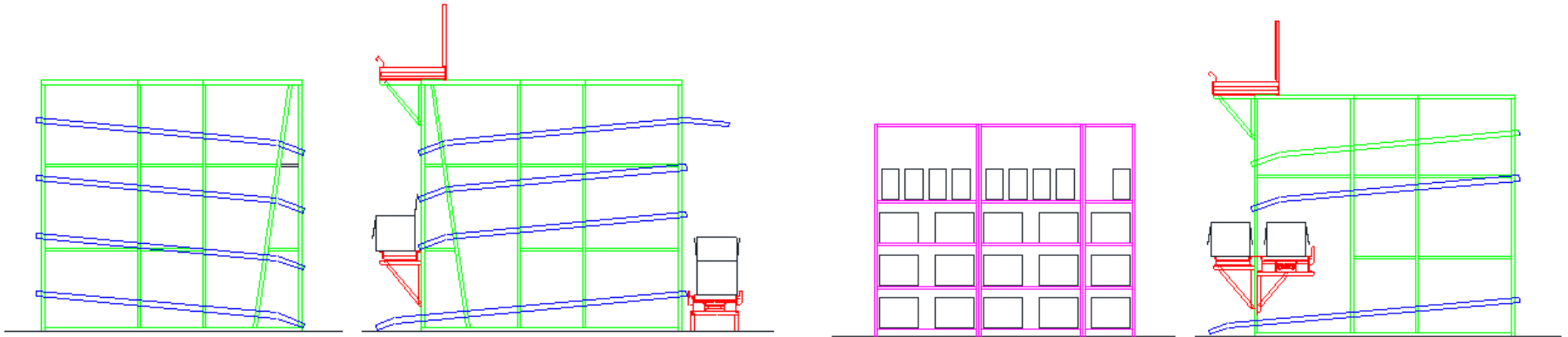
- Success Factors
 - Pick density
 - Handoff of orders (transfer) must be quick
 - Team philosophy
 - Peer Pressure
 - Slowest-to-Fastest in line

Cross-Aisle Picking



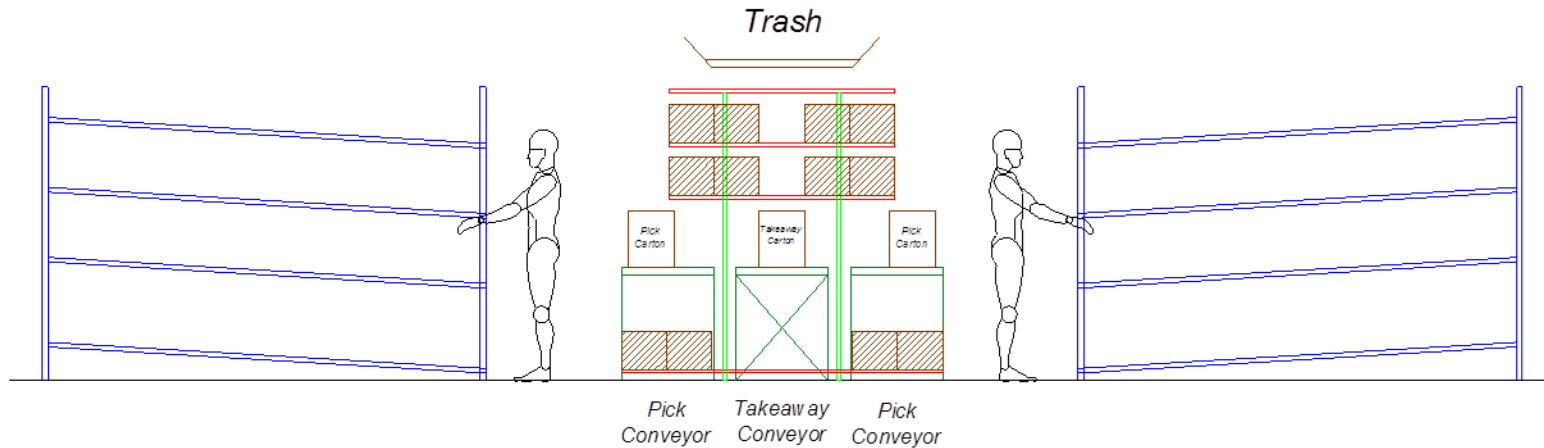
- Aisle widths between 36" – 42"
- Increases pick density
- Doubles the number of pick faces in same travel distance
- Locates the fastest moving items directly in front of picker

Cross-Aisle Picking



- Initial designs had carton flow rack on both sides of aisle
- Recently implementing short shelving aisles (3 – 5 bays deep) on one side of picking aisle
 - Cengage, McGraw Hill, Random House, Simon Schuster, Roche Diagnostics, PartyLite

Cross-Aisle Picking



- Existing pick modules can be altered with shelving installed around gravity pick & takeaway conveyors
- Minimizes rework to existing material handling infrastructure

Pick-to-Light



- A warehouse order picking scheme that uses lights and LED readouts for each inventory location
- Display the locations and quantities to be picked
- Requirements based on data from the warehouse management or ERP system
- Carton Flow Rack and Carousels are good applications
- High SKU count and density of pick are required to justify
- Recently implemented with carts for mobile batch picking

Voice Picking

- WMS transmits work assignments to user worn voice terminal
- Voice terminal translates assignment data into audible commands
- User provides spoken responses to confirm actions taken
- Responses translated to data
- Host system updated
- Application is very similar to RF scans



Voice Picking

- Key Benefits
 - Accuracy
 - Productivity
 - Training / Learning Curve
 - Multi-Lingual
 - Flexibility / Expandability
 - Scalable
 - Value Add Functionality
 - WMS Support



Bucket Brigade Integration

- Challenges

- Most systems include “zone balancing”
- Have to add equipment or process to coordinate takeover with PTL
- Passing batched orders between workers

- Solutions

- “Trains”
- Clusters
- Ring scanners or small portable scanners allow simple take-over

- Improved Productivity with combined process and technology



Bucket Brigade & Voice

- Lucas Systems & Bucket Brigade
 - Celebrating a decade of Bucket Brigade Voice Picking
 - BHS worked to develop train concept with Lucas at Cengage
 - Productivity more than doubled on some projects



“Good example of how creative process engineering can drive additional, incremental productivity gains for customers”

- Jeff Slevin, COO Lucas Systems

Bucket Brigade & Voice

- Simon & Schuster & Bucket Brigade
 - Voxware & AL Systems solution
 - BHS managed the system design and implementation
 - Increased productivity & accuracy
 - ROI Achieved in less than 1 year
 - Eliminated need for temporary staffing



“We’ve more than doubled our efficiency and productivity in the picking area.”

- Dave Schaeffer, VP, Distributions and Fulfillment



Bucket Brigade & PTL

- Regis

- Initially implemented PTL & Bucket Brigade picking at Regis in 1998
- Required each picker to use an RF device to scan the order batch to assume system control

- PartyLite

- Most recent implementation of Bucket Brigade with Lightning Pick system
- Associates use light-weight scanners
- Used zone picking and pick-to-order at start-up
- Only after implementing bucket brigade did they exceed productivity projections



REGIS



Key Takeaways

- Bucket Brigade works with or without Technology
 - Diligence
 - Regular reporting and review with associates
 - Involve associates in the process
 - Drive team concept
 - Expect results
- Can integrate methodology with existing systems

For more information

Blue Horseshoe Solutions

Speaker emails:

jbutler@bhsolutions.com
blindenmeyer@bhsolutions.com

website: www.bhsolutions.com

Please visit us @ MODEX 2014 Booth 4718

