Turn on a Dime
Warehouse Optimization with Robots

Melonee Wise
CEO
Fetch Robotics
State of the state…

- Annual workforce turnover in the warehousing and distribution industry is estimated to be 25%.\(^1\)
- Total national logistics costs increased by approximately 3.2% in 2012 in keeping with growth of GDP.\(^1\)
- The time to pick, pack and ship is no longer measured in days or hours but in minutes.\(^1\)
- 600,000 positions nationally go unfilled for lack of qualified workers.\(^2\)

= **Warehousing and logistics evolving/need to evolve**

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How did we all get here?

Consumers consuming differently...

Before Amazon Prime (BAP)
- high volume areas near packing areas
- Larger orders, lower volumes
- Greater predictability

After Amazon Prime (AAP)
- high frequency ordering
- lower volume ordering

Year 1
Amazon Prime (AAP)
introduced
The dynamic warehouse

Continuous movement re-shifting of inventory to address dynamic, “trendless” picking
Where are we headed?

The new logistics robot economy...

Once upon a time...
- Million$ to get started
- Months of scoping and setup
- Complete warehouse operations overhaul
- Significant work with IT

Now...
- Thousand$ to get started
- Normal warehouse operations
- IT integration available, not necessary

Year 1
Amazon Prime introduced
The dream
The reality
So what’s achievable? Where CAN we OPTIMIZE?

Customer X: “Forklift prisoner”
Customer Y: “Indoor Commuter”
Customer Z: “Trigger (un)happy”

3 different customers with different problems…
Putting robots to work…

How fast can you get deployed and does it really work?
Customer X: “Forklift prisoner”

Area of inefficiency:
• Many forklift cages in operation
• Operators constantly “freeing” themselves from safety harness to exit cages
Customer X: “Forklift prisoner”

Optimization with robots:

- Forklift operators transfer material to robots without exiting forklift cages
Customer Y: “The Indoor Commuter”

Area of inefficiency:
• Tremendous distance between pick and pack areas
• “Stuck in traffic” at pack out area during even small peaks
Customer Y: “The Indoor Commuter”

Optimization with robots:
• Robots do the traveling
• Robots do the waiting and are capable of queuing
Customer Z: “Trigger (un)happy”

Area of inefficiency:
• Scanning with RFID hand scanners is slow
• Typically poor and inconsistent capture results
Customer Z: “Trigger (un)happy”

Optimization with robots:
- Robots scanning 24/7 at fixed rates and in fixed paths
- Can be equipped with many accurately positioned readers, achieving nearly 100% capture
So robots can help, now what?

Evaluating mobile robots, some things to consider:

- **Mapping**: Needs to scale, easy enough to do with little to no training
- **Safety**: Dealing with all kinds of obstacles, including fast moving vehicles
- **HRI or HMI**: Are people comfortable around them?
- **Connectivity**: Coping with bad or spotty WiFi
So robots can help, now what?

500,000 sqft
So robots can help, now what?

Pallet Jack in 2D Laser Scanner View

Pallet Jack in 2D Laser Scanner View & 3D Sensor View
So robots can help, now what?
So robots can help, now what?

Person in 2D Laser Scanner View

Person in 2D Laser Scanner View & 3D Sensor View
So robots can help, now what?

Forklift in 2D Laser Scanner View

Forklift in 2D Laser Scanner View
So robots can help, now what?
3 Distinct Opportunities to OPTIMIZE…

ONE Fetch platform
Reach out to us to learn more!

Melonee Wise
CEO

Fetch Robotics
1961 Concourse Drive
San Jose, CA 95131

Telephone: (408) 300-9056
Email: info@fetchrobotics.com

www.fetchrobotics.com
Thank you!