



## ECR Baltic

Opportunities in Warehouse Process  
Development after Pick-by-Voice  
Implementation

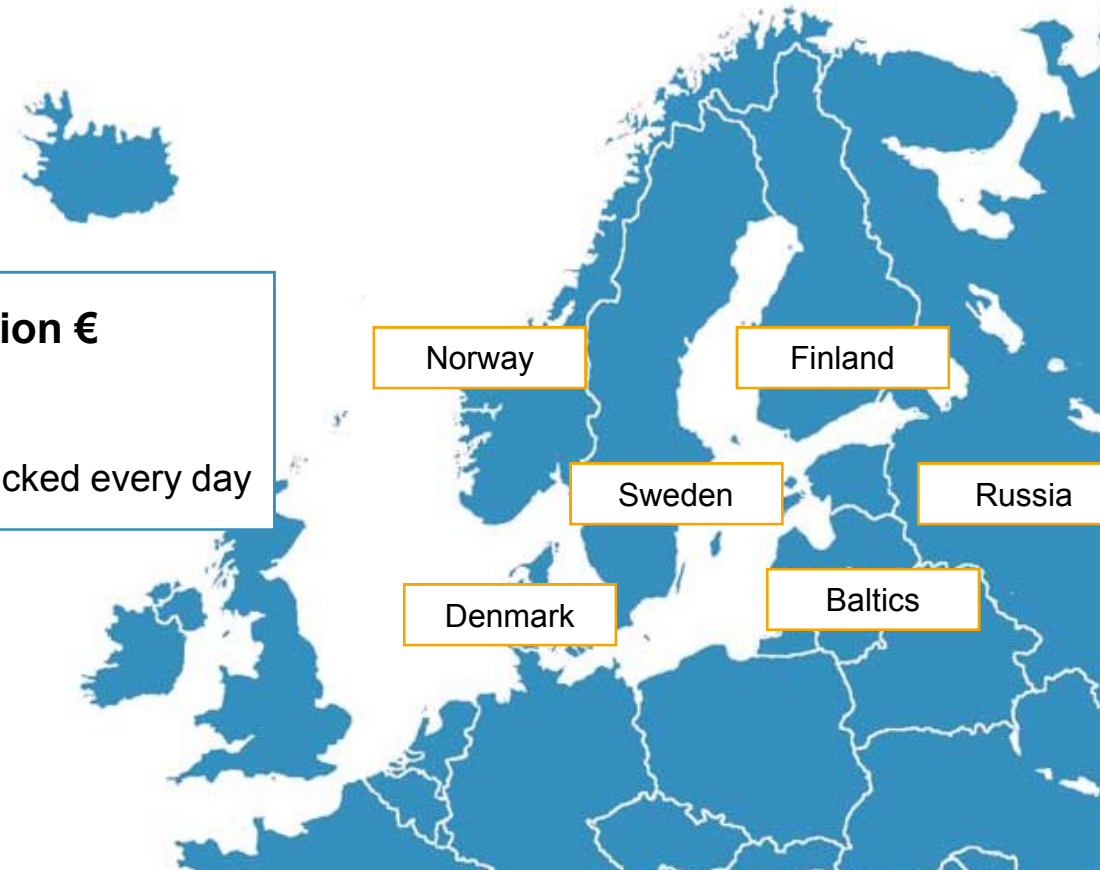
Kimmo Yli-Kokko



# Optiscan Market Area

**Turnover** 12 million €  
**Personnel** 50

1 500 000 order lines picked every day



**“Optiscan has improved our business”** (95% of customers, Customer Survey 2007)



# How does Voice work?

- “Pick list” downloaded through WLAN to Talkman

Talkman: (Go to) Aisle 11  
 Picker: Ready  
 Talkman: (Go to location) 101 level 1  
 Picker: 2 - 3  
 Talkman: (Take) 5  
 Picker: 5



- Very short “communications” with the Talkman
- Talkman uses built-in Speech Recognition software and Text-to-Speech Engine
- Talkman TASK = Application that guides picker through the work process



# Benefits of Voice Directed Work

Accuracy increased to 99,98+% (all of our customers has improved accuracy more than 75%)

- Less errors – saved time can be used for other jobs...
- Check Digit handling > eyes free operation
- Picker look at the product all the way when picked

Productivity increased by 15 – 35%

- Start and end of picking cycle
- Hands free / eyes free work
- Batch picking (multiple orders at the same time)
- Picking location replenishment requests
- Easy to use and learn > Shorter employee introduction period



# Benefits of Voice Directed Work

## Increased work safety / ergonomics

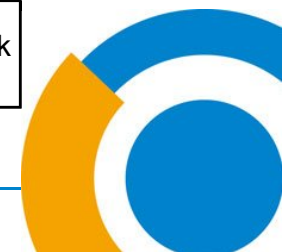
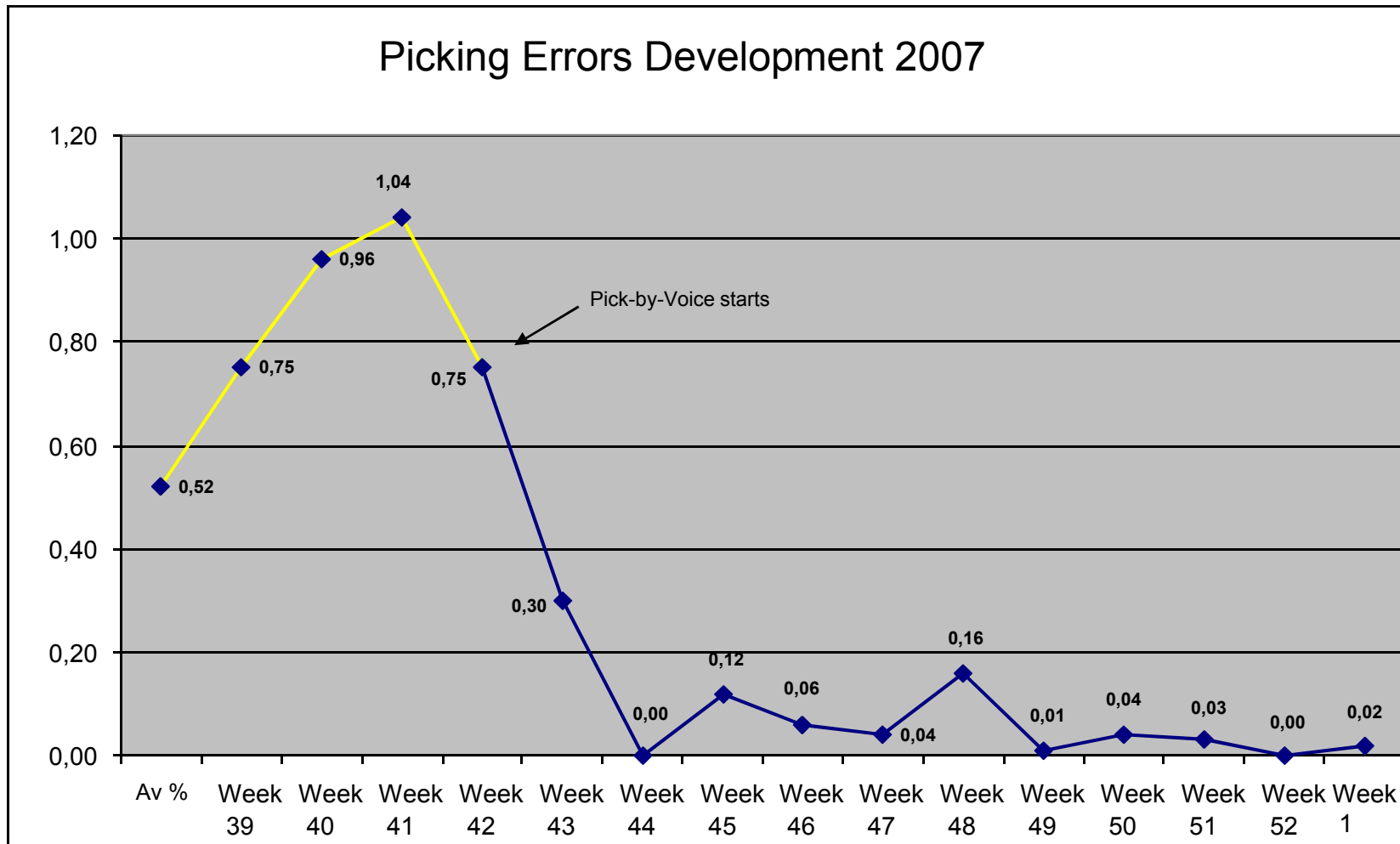
- Picker moves along a planned route
- Eyes free – picker concentrates on action, not on reading
- Hands free lifting is ergonomic – less work related injuries
  - No extra equipment weight in hands, no one-hand operations
  - Less broken goods – using two hands is more secure

## Real-time operations management

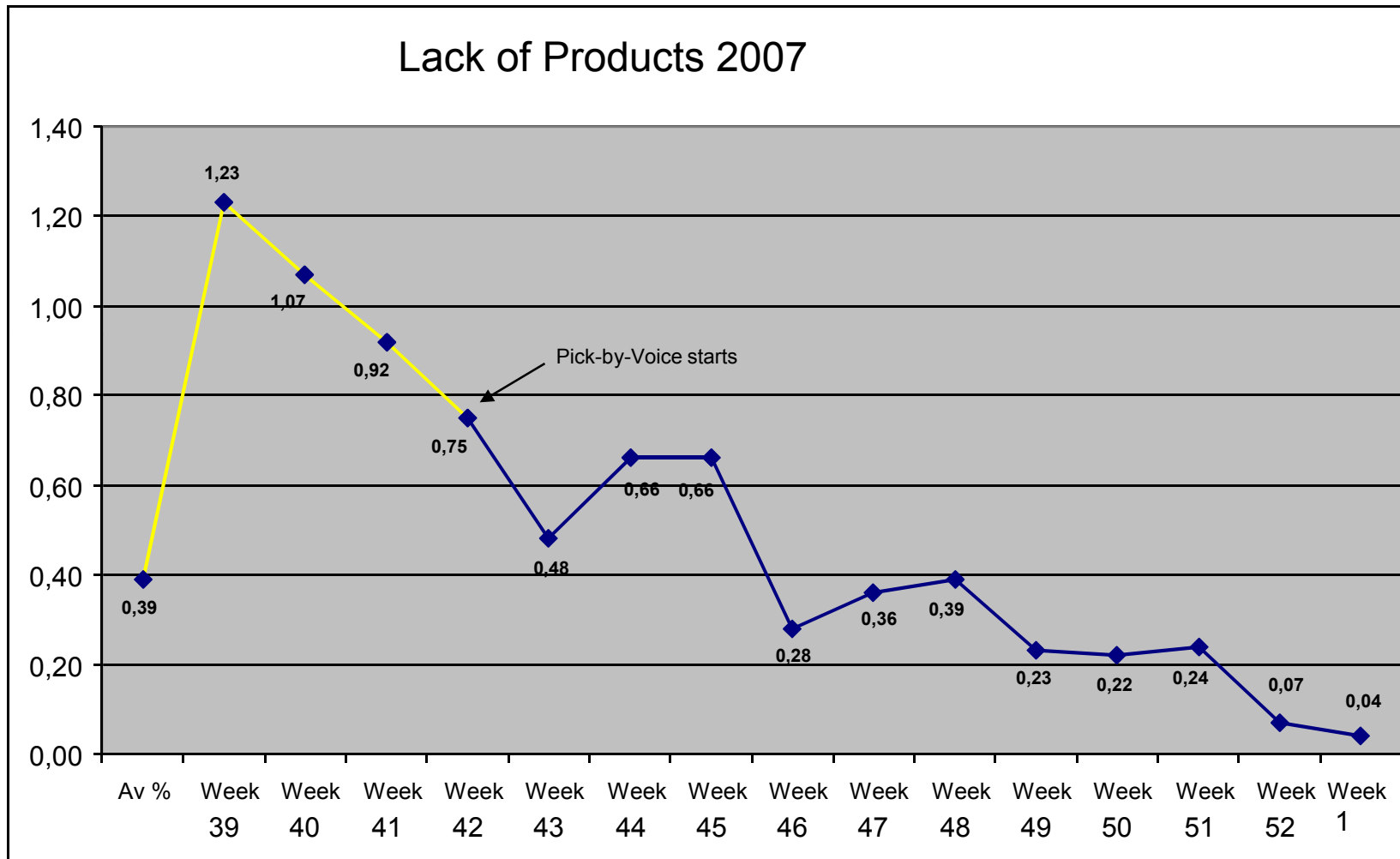
- Real-time picking control > prediction “are we on time today”
- Automatic performance reporting
  - During the day
  - Long term



# Customer's reported Picking Errors



# Customer's reported Lack of Products



# Developments...

- More transparent operation
  - Supervisors can see actual online situation in warehouse
  - Supervisors can lead the process on time
  - Problems can be found during the day from one screen
  - Replenishment in advance and more...
- Data is collected from pickers action
  - Time stamp when picker “mark” row picked
  - This opens big possibility to find process to do faster and better
    - In process side
    - In workers side
- Automated picking process control
  - Picker can not do what they want to
  - They need to do how the system ask them to do





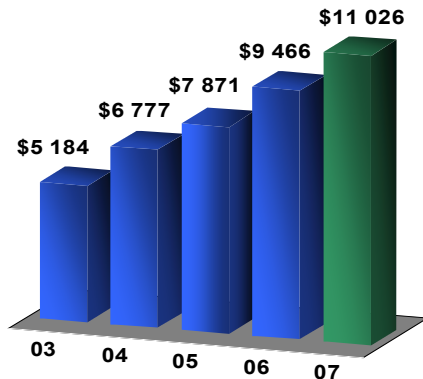
# ECR Baltic

## Benefits of Automated Warehouse Trucks at Semiautomatic Warehouses

Anders Olsson



**D** **DANAHER**  
MOTION  
*Helping you build a better machine, faster.*



- \$13Bn global business
- Founded 1985
- NYSE ticker: DHR
- Motion business: \$1Bn

Technology Focused Business



# AGV and Lift Truck Systems

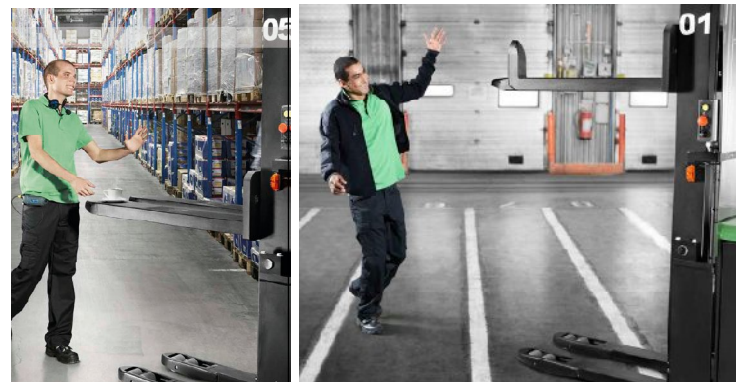
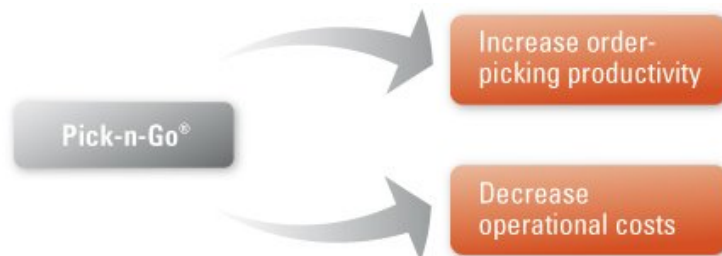
- > Sales – AGV: \$25M and LT: \$100M
- > #1 share leader at 35% of global AGV controls market
  - Installed base: 15.000 vehicles total
  - Shipping: 1.000 vehicle control systems / year
  - Global channel, through value added partner, strategy
- > 35 Years of Automated Vehicle Controls Expertise
  - >1000 systems installed – on all continents
  - AGV Pioneer – created worlds first AGV for Volvo
- > 25 integration partners with segment specific expertise
  - Danaher provide AGV control system and tools
  - AGV / Truck suppliers builds and installs the vehicles
- > **Support for all major warehouse truck brands**
  - BT/Toyota, Jungheinrich, Linde, Still, Crown, Yale/Hyster, Rocla, and more



# Pick-n-Go<sup>®</sup> initiative

## Boost productivity in order-picking

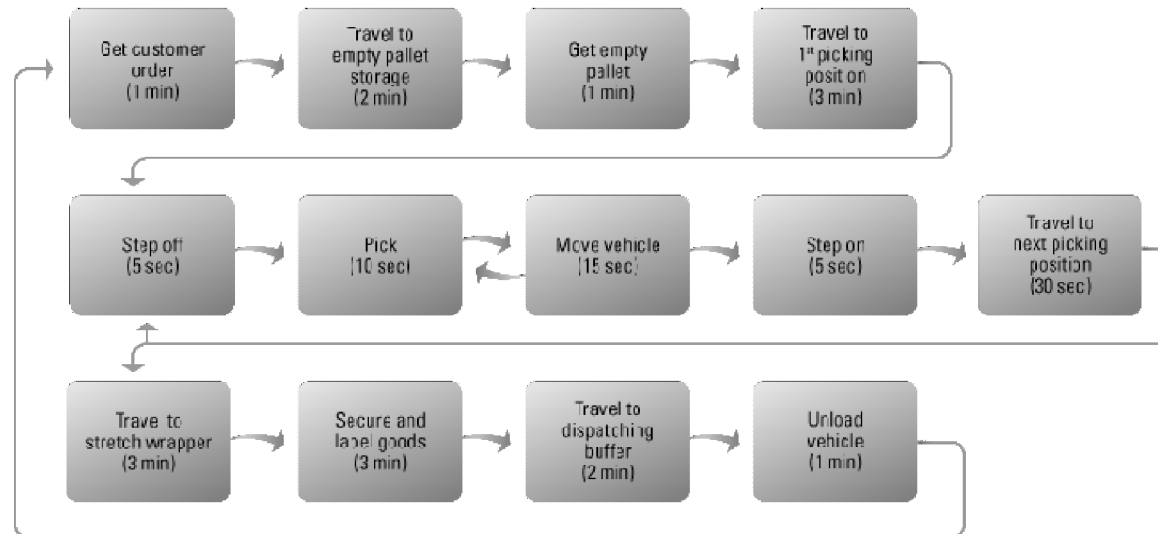
- Increase picker productivity by 50-100%
- Driverless trucks escort the pickers
  - Give the picker a **more efficient tool**
    - Automated pick-up of empty roller container / pallet
    - No Step On/Off vehicle
    - Automated dispatch of fulfilled customer order
- Perfect combination: 1 + 1 = 3 !!
  - AGV technology combined with Pick-by-Voice
- In existing environment
  - Same Infrastructure
  - Same Process and IT solution



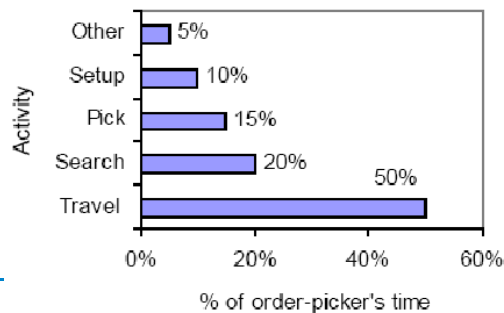
# Concept – eliminate driving

## Boost productivity in order-picking, time studies told us:

- Eliminate non-productive steps – LEAN!
- Pickers walk – automated pallet pick-up and dispatch



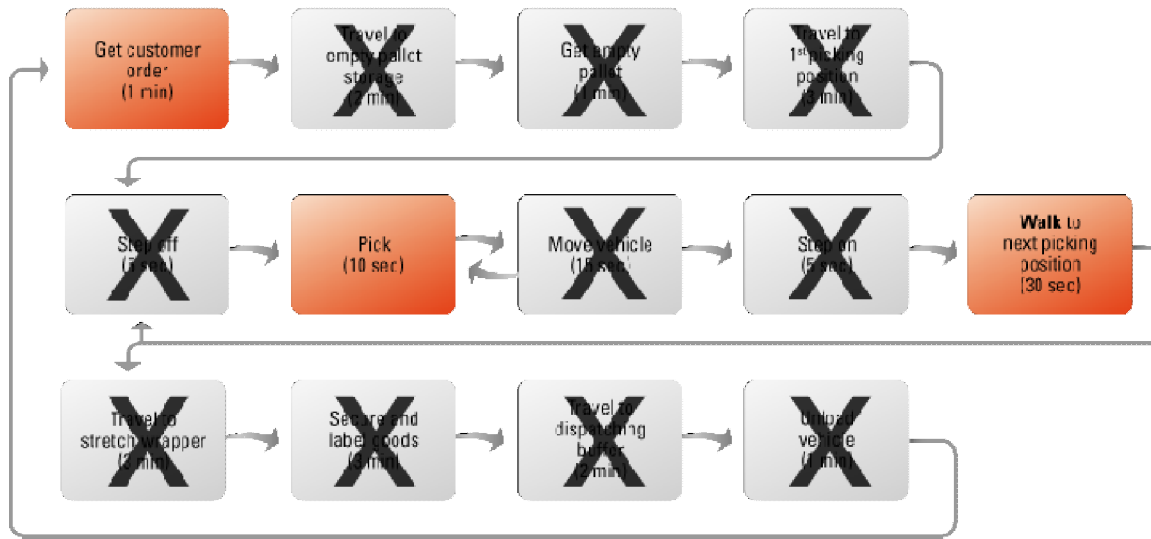
Manual Pick Process



# Concept – eliminate driving

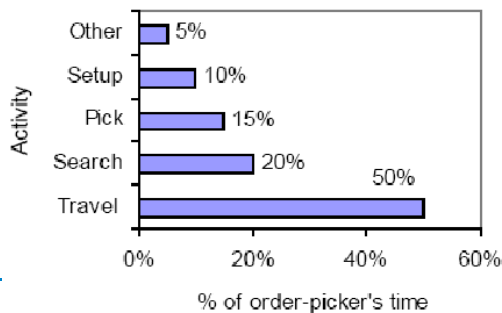
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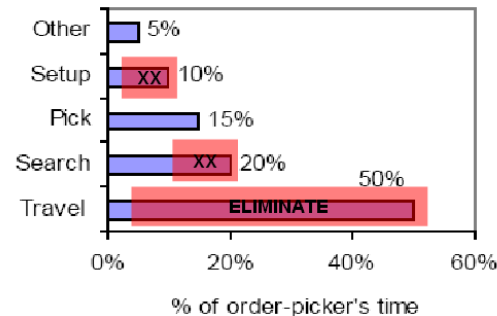


Manual Pick Process

Pick-n-Go™ Process



Eliminate Waste



# Simple Solution

## Generic ROI model – example:



- Today pickers spend 30 min on a pick run

- Preparation for pick run (6 min)
  - Order administration
  - Empty pallet pick-up
  - Travel to 1<sup>st</sup> pick location
- Picking first to last pick (17 min)
- Dispatching the goods (7 min)
  - Travel to stretch wrapper
  - Secure and label goods
  - Travel to and Drop at correct dock

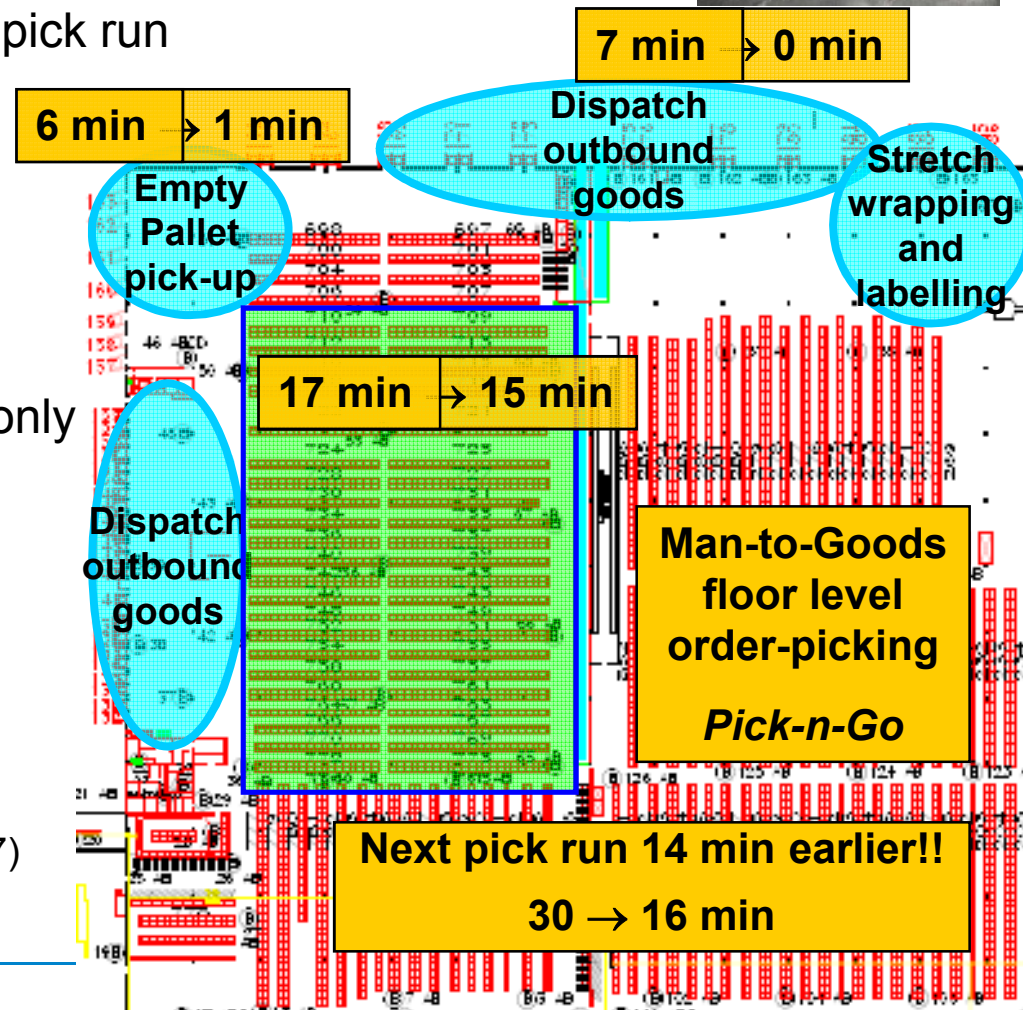
- Pickers supported by *Pick-n-Go* only spend 16 min on same pick run

- Preparation for pick run (1 min)
  - Walk to 1<sup>st</sup> pick location
- Picking first to last pick (15 min)
  - No step on / off truck
- Dispatching the goods (0 min)

- Gain:

- $30 - 16 = 14$  min
- $14 / 30 = 46,7\%$  cut time → **Productivity gain: 87,5%**  $1/(1-0,467)$

- Each picker produce 87,5% more

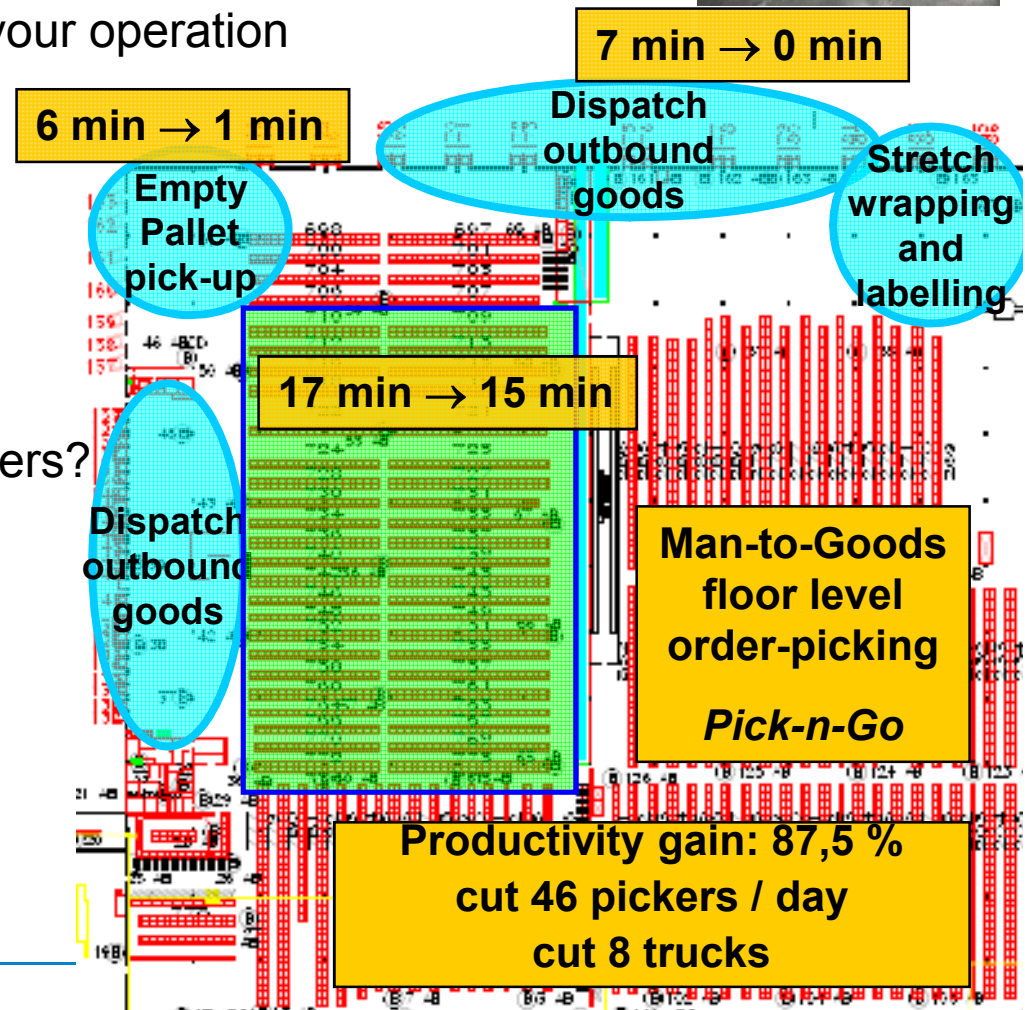


# Measurable Result

## Generic ROI model – example:



- Apply 87,5% productivity gain to your operation
  - Replace 50 pickers with 27 pickers, each shift:  $50 / 1,875 = 26,7$
- Reduce operating cost by
  - 23 pickers in two shift (50-27)
  - $23 * 2 * €40.000 / \text{year} =$   
**€1,8M / year**
- How many **Pick-n-Go trucks** are needed to support my 27 pickers?
  - AGVs spend 25 min per pick run
    - 4 min preparation
    - 15 min picking
    - 6 min dispatching
  - Pickers spend 16 min per pick run
  - $25 / 16 = 1,56$  trucks / picker
  - 27 pickers need 42 trucks
  - 50 traditional trucks replaced by 42 Pick-n-Go trucks
- **ROI: < 18 months**



# Marktkauf Logistik GmbH

## The birth of Pick-n-Go:

- First two plants started operation Q1 2006
  - Laichingen
    - 17 automated order-pickers (Jungheinrich EKS)
    - 10 automated stackers (Jungheinrich ERC)
  - Bielefeld
    - 23 automated order-pickers (Jungheinrich EKS)
    - 17 automated stackers (Jungheinrich ERC)
- Logistics Manager (Torsten Winter):
  - 2005 time studies – opportunity to increase Net Picking Time (NPT): 3,30 h/day → 6,07 h/day
    - Improve productivity 80% or
    - 213 kolli/h → 385 kolli/h
  - 2007 time studies – **productivity increased 100%**
    - Result: 420 kolli/h in average (top pickers: 700-800 kolli/h)
  - **“Best practice in picking”**



# Pick-n-Go at Coop

## Coop, 2nd largest retailer in Sweden

- Main distribution terminal, near Stockholm
  - Largest DC in northern Europe
    - 130.000 m<sup>2</sup>, 900 employees, 550 warehouse trucks
    - Serving 700 in-house outlets + 500 “contract stores”
- 32 automated warehouse trucks, served by 20 pickers in three shifts
  - Trucks from Toyota Material Handling (BT)
  - Mixed operation (manual and automated trucks)  
32 AGV and 200 manual order-picker trucks
- Commercial operation started May 2008
- Integrated to existing Pick-by-Voice system in existing environment and processes
- Pre-study in Q3 2007 to verify initial idea  
Concept proven on real data, by simulation
- Result: **Increased picker productivity by 100% !!**







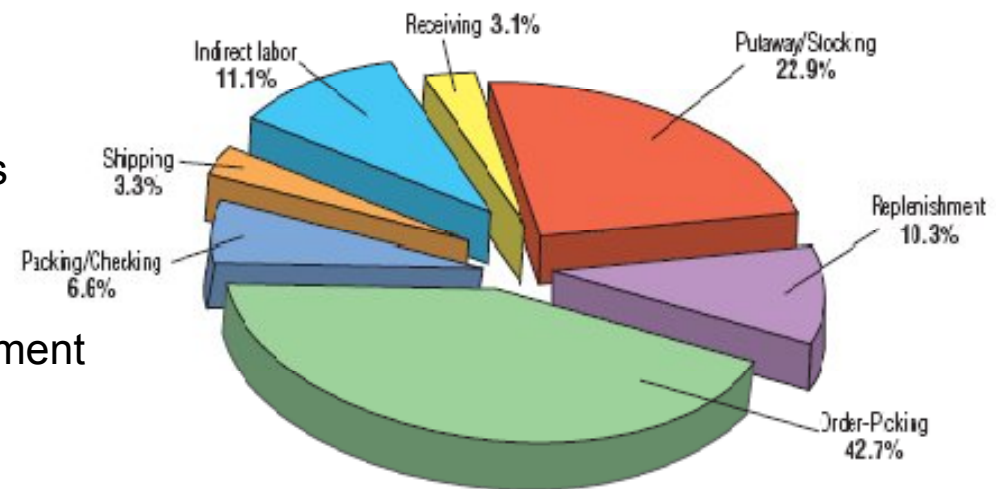
# Customer Values

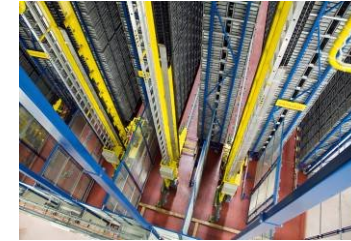
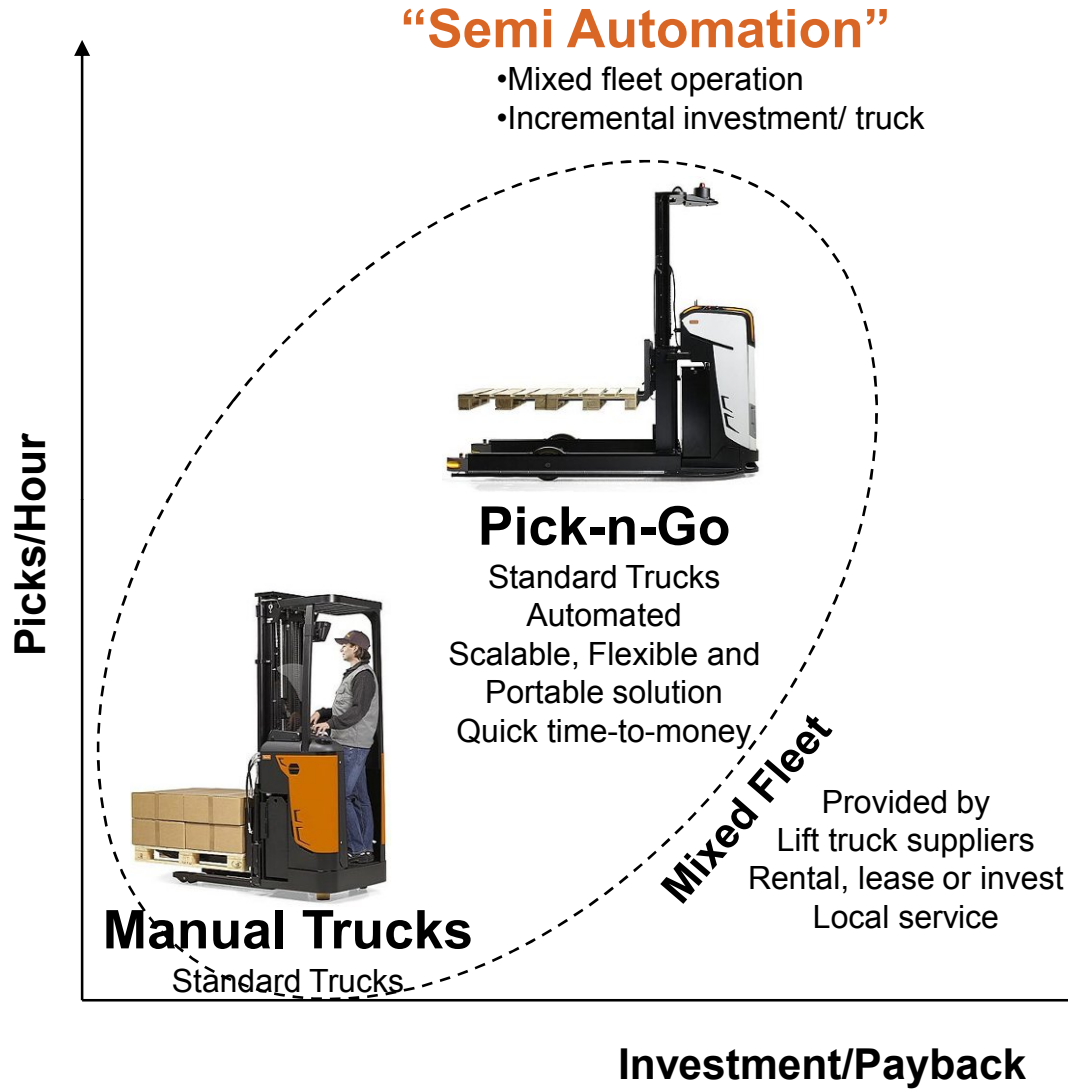
## Business case – Picking process

- Operational costs, mainly cost of labor
  - Productivity gains by 50-125%
  - Reduce total operating costs by 20-50%
- Warehouse trucks
  - Reduced number of trucks by 10-20%
  - Increased life time by 50-100%
  - Increased utilization
- Working environment
  - No collisions – No damaged trucks
  - No damaged goods or goods carriers
  - Better ergonomics
- **Increased capacity**
  - Expand operation in existing environment
- **Existing plant**



Figure 1. Typical DC Labor Cost Allocation

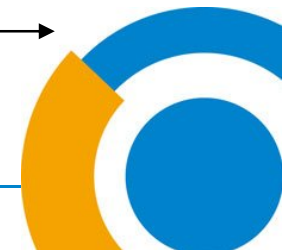




**Fixed Automation**

**(AS/RS)**

- Mechanized
- Not portable
- Less flexible
- Long lead-times



# Best practices integrated



## Intelligent Software Warehouse management



- Material flow
- Tracking goods
- Voice Management
- Warehouse Control



## Integrated Hardware and Controls solution



# Time to Pick-n-Go !!

## Measurable results

- Proven technologies, robust results
- Applicable to any environments including cold storage
- **Best practice in order-picking**

## Productivity gains up to 100%

- Dramatic cut of operating costs
- Increased capacity

## Danaher Motion uniquely positioned

- Serve 80% of all Lift truck OEMs with Motors, Drives, Controls and Software solutions
- Pioneer and share leader in AGV



[www.Pick-n-Go.com](http://www.Pick-n-Go.com)



 OPTISCAN

  
**DANAHER**

Building businesses.





**ECR** *Baltic*  
Efficient Consumer Responce

**Efficient Distribution and Transportation**

