

# Transforming Global Intralogistics with Wearable AI

Kuehne+Nagel Success Story: Achieving 100% Hands-Free Traceability and Operational Excellence

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# 01 INTRODUCTION

## KUEHNE+NAGEL SUCCESS STORY



### The Foundation

Founded in 1890, operating as an undisputed leader in global 3PL and 4PL supply chain management.



### The Scale

Active in 65+ countries, managing over 75 million square meters of fulfillment space globally.



### The Core Imperative

In an era of exponential e-commerce growth, success demands **"just-in-sequence" precision**. K+N required a solution to **elevate their infrastructure to Industry 4.0 standards**, seamlessly merging human intelligence with digital tracking.



# 02 THE HIDDEN COSTS OF OPERATIONAL INEFFICIENCY

## KUEHNE+NAGEL SUCCESS STORY

	Legacy Handheld Systems		End-State Industry 4.0
<b>Physical Execution</b>	Sequential cycle (pick up → scan → drop → lift). Forces one-handed limitations.	➔	<b>100% Hands-free operations enabling continuous, two-handed movement.</b>
<b>Cognitive Load</b>	Visual focus constantly shifts to small screens. "Eyes off task" creates mis-picks.	➔	<b>"Eyes-on-task" maintained; continuous spatial awareness preserved.</b>
<b>Ergonomic Strain</b>	Carrying clunky devices limits natural anatomical movement, driving fatigue.	➔	<b>Technology integrated flawlessly into natural human physiology.</b>
<b>Data Visibility</b>	Task-based, delayed tracking and manual synchronization.	➔	<b>Real-time heatmaps and continuous digital twin tracking.</b>

# 03 FROM MANUAL OPERATIONS TO INTELLIGENT AUTOMATION

## HARDWARE: THE VEGA X SMART GLOVE



### Hands-Free Autonomy

Featherweight design using conductive thread eliminates the "pick-up/put-down" cycle, unlocking continuous two-handed lifting and packing.

### Uninterrupted Workflow

Features a 12-meter high-performance scan range and a hot-swappable removable battery architecture to guarantee zero-downtime, 24/7 operations.

### Proactive Mistake-Proofing

Replaces reactive screens with multi-sensory feedback. Emits haptic (vibration), optic (light), and acoustic (sound) alerts the millisecond an incorrect item is approached.

# 04 FROM MANUAL OPERATIONS TO INTELLIGENT AUTOMATION

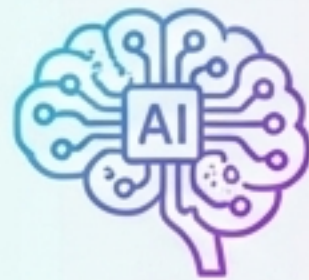
## SOFTWARE: CONWO AI ANALYTICS

### 1. Edge Data Capture (Vega X)



Captures continuous telemetric, location, and scan data directly at the point of action.

### 2. Dynamic Warehouse Optimization (CONWO)



AI engine processes data to create a live digital twin. Deploys real-time location tracking and heatmap generation to autonomously eliminate traffic bottlenecks.

### 3. Picking with Image (OCR)



Deep-learning Optical Character Recognition visually verifies product quantities and assembly accuracy, stripping away manual quality control.

### 4. Enterprise Integration



Plug-and-play, zero-downtime integration directly into Kuehne+Nagel's existing SAP and WMS systems.

# 05 FLAWLESS INTRALOGISTICS & MEASURABLE IMPACT

KUEHNE+NAGEL SUCCESS STORY

## +50%

### Speed & Throughput

Hands-free ergonomics eliminated micro-interruptions, unlocking up to a 50% potential increase in picking and logistics velocity.

## 66%

### Faster Onboarding

Intuitive, game-like haptic feedback flattened the learning curve, compressing new employee training time from 3 weeks down to just 1 week.

## -74%

### Risky Movements

Proactive, multi-sensory alerts fundamentally reduced mis-picks, with clinical potential to reduce risky operational movements by 74%.

## 100%

### Workforce Well-being

Absolute two-handed freedom removed the physical burden and cognitive stress of legacy devices, fundamentally elevating occupational health and safety.



# 06 A STRATEGIC STEP TOWARDS INDUSTRY 5.0

## THE FUTURE OF HYBRID AUTOMATION

### Hybrid Automation



### Hybrid Automation

Kuehne+Nagel proved the future is not merely “humanless” robotics, but seamlessly augmenting the human worker with AI and wearable technology.

### Absolute Traceability



### Absolute Traceability

By digitizing every physical movement without introducing friction, K+N secured 100% end-to-end transparency, solidifying leadership in 3PL and 4PL services.

### Living ESG Integration



### Living ESG Integration

Safeguarding the ultimate asset: the human workforce. By prioritizing cognitive health and physical ergonomics, K+N actively advances its goal of remaining the “ideal business to work for.”

## THREAD IN MOTION



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