ONLINE RETAIL

Online retailer enhances supply chain efficiency and reduces costs with the Wiliot Physical AI platform

Handling millions of packages each year, a major online retailer gained continuous, automated tracking from warehouse to delivery — with IoT Pixels integrated into shipping labels.

KEY BENEFITS

TOTAL DECREASE IN LOST, DAMAGED, AND DELAYED PACKAGES

60%

80% Of missing packages brought to visibility

$58.8M Saved in missing package value (based on 10M annual packages)



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Every delayed package was worth 6x the cost of the package itself

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RESULTS AT A GLANCE

60%
FEWER LOST, DAMAGED, AND DELAYED PACKAGES

80%
MISSING PACKAGES BROUGHT TO VISIBILITY

$58.8M
SAVED IN MISSING PACKAGE VALUE

3%
OF PACKAGES FAILED TO ARRIVE AS PROMISED

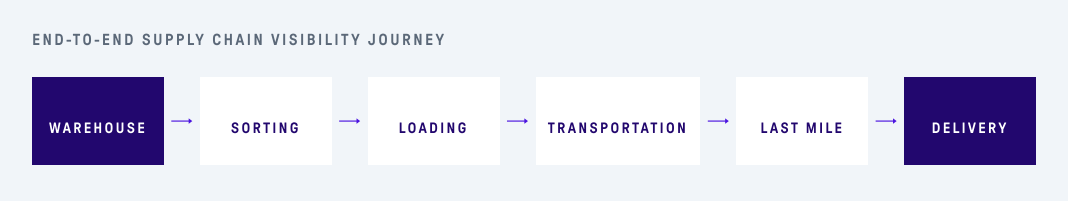
6x
COST OF A DELAYED PACKAGE VS. THE PACKAGE

$2.17M
TCO OF IMPLEMENTING WILIOT

01

Executive summary

Handling millions of packages each year, a major online retailer faced significant challenges with delivering orders accurately and on time. Despite rigorous procedures, 3% of packages failed to reach customers as promised, resulting in decreased customer satisfaction and increased operational costs. The value of each delayed package was estimated at 6x the cost of the package itself when considering lost customer trust, replacement expenses, and operational overhead. By implementing the Wiliot Physical AI platform with IoT Pixels integrated into shipping labels, the retailer gained continuous, automated tracking capabilities throughout the entire supply chain, from warehouse to delivery.



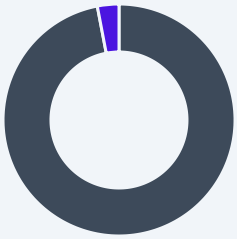
02

The challenge

Prior to working with Wiliot, this online retailer struggled with a tough challenge of guaranteeing precise and prompt package delivery to meet and exceed customer expectations.

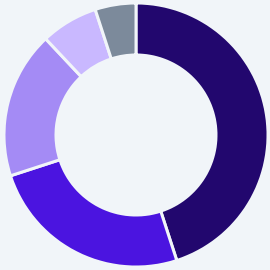
Despite their concerted efforts to meet the surging demand for swift shipping, mishaps persist. Every year, at least 3% of their packages don't reach their customer on time. Wiliot determined that the main reasons for this was because packages were: placed into the wrong transit vehicle, in the warehouse and were then unable to be located, stolen, damaged and reported, or damaged and unreported.

Package delivery status



- 97% On time
- 3% Lost, damaged, or delayed

Breakdown of lost, damaged, and delayed packages



- 45% In the wrong truck
- 25% In the warehouse but unable to be located
- 18% Damaged and unreported
- 7% Damaged and reported
- 5% Stolen

6× **For this retailer, the value of a delayed package is worth 6× the cost of the package itself.**

For this retailer, the value of a delayed package is worth 6x the cost of the package itself: factoring in loss of customer trust, cost of replacement, and operational overhead involved. These errors not only inconvenience customers but also disrupt the entire supply chain, negatively impacting the overall customer experience. Accurate and on-time delivery is now paramount. Misloads of products into the wrong shipping container are all too common and have over-sized consequences, not only resulting in packages being sent on convoluted journeys, with delivery date promises being broken, but also raise the threat of package loss and damage, incurring replacement expenses.

Despite all the advances in technology, people still load most packages onto the trucks that deliver them. Even with clear processes, careful training, high motivation, adequate staffing, and use of hand-held scanners, human error is at the center of the misloading issue.

When the scanning that is supposed to catch human errors is conducted by hand by the same humans that cause the errors, there is an inherent problem, that can only be solved by eliminating the manual scanning process.

In the digital age, in this world of online shopping, the consequences of misloads are magnified. Thus, the booming e-commerce industry faces an urgent need to focus on addressing misloads through advanced technologies and strategies to mitigate their adverse effects.

03

The solution

The Wiliot Physical AI platform emerges as a cost-effective and highly automated, low-labor, no-labor solution to tackle misload challenges in the industry.

Unlike other methods that are complex, high-cost, and rely on human intervention, the Wiliot Physical AI platform processes signals from battery-free Bluetooth sensors (IoT Pixels) in the Wiliot Cloud using purpose-built AI and ML models. This technology curtails the need for manual scanning, virtually eradicating human errors throughout shipping and delivery operations.

Ambient IoT Pixels communicate a continuous record of where a package is in the facility through existing infrastructure like commercial, off-the-shelf networking equipment in warehouses, distribution centers, and delivery trucks. Any additional tag readers that are required would cost tens of dollars, not thousands of dollars. Rather than a manual snapshot of the location, which is prone to human error, the path of the package is continuously monitored and understood with no human effort or error.

By doing this, the Wiliot Physical AI platform offers continuous, end-to-end visibility into potential mis-sort issues, pre-empting them. Shippers can monitor the contents of a truck in real-time, from first association to loading at the distribution center, to its journey across the country, even through the last mile to its destination. This live view of information empowers shippers to promptly detect and rectify misloaded packages, ensuring smoother and error-free logistics.

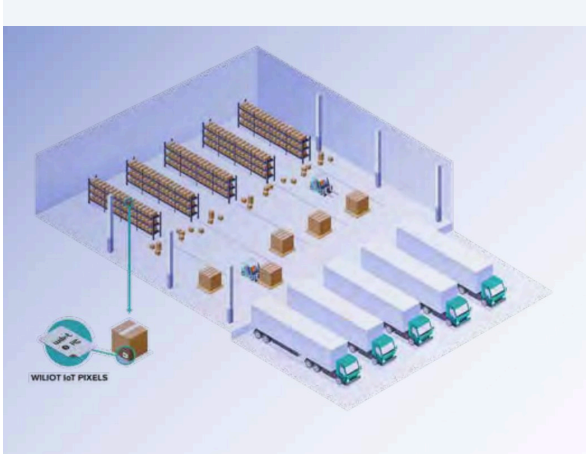


04

How it works

Previously this retailer's packages were processed in the inventory warehouse using hand scanners for sorting, packing, and routing. Despite clear procedures for every step, the product was all too often still misloaded, misplaced, or left behind.

This retailer approached Wiliot for a more automated process to track products after they've been ordered online: from when a shipping label was created, to when it was loaded into the truck, to when it finally arrived at the customer's door. Wiliot IoT Pixels were integrated into the retailer's shipping boxes, seamlessly incorporated within the standard shipping labels. This allowed critical events in this process to be continuously tracked, and if any event was missed, fixes could be dispatched immediately.



80%

The percent of missing packages that Wiliot brought visibility to

Wiliot was able to detect problems between scan points, alerting staff so problems could be resolved when they happened, instead of letting them dwell. This is unique to Wiliot's continuous visibility approach.

05

The outcome

Wiliot's ambient IoT Pixels have been successfully integrated into multiple warehouses across the United States, and further deployments are in the pipeline.

Warehouses equipped with Wiliot have achieved a substantial reduction in misload errors without the need for extra labor, all while providing significantly improved insights into their supply chain. On average, Wiliot brought visibility to 80% of missing packages, substantially decreasing most categories where packages get lost, damaged, or misplaced. Furthermore, when compared to the retailer's conventional scan-based process, Wiliot uncovered instances where problems occurred between scan points. For example, packages were scanned into the trailer, when thereafter they were either not placed in the trailer or moved out for some reason. Wiliot's Physical AI platform was able to alert associates when these discrepancies happened, allowing the issues to be resolved seamlessly and immediately. This is a functionality unique to Wiliot's continuous visibility approach. In all, these improvements in the product journey have empowered the retailer to optimize warehouse operations, leading to increased efficiency and monetary savings, and a decision to scale up the deployment further.

06

The benefits

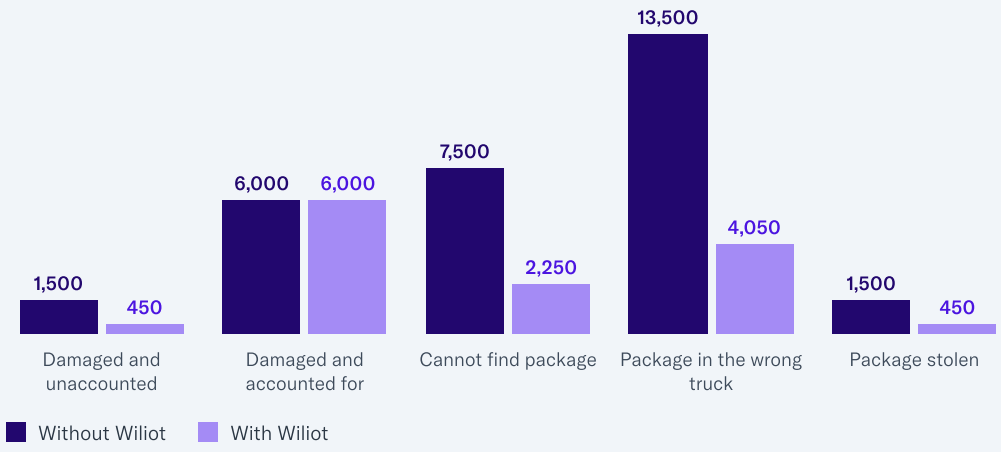
The Wiliot Physical AI platform offers the following insights to online retailers aiming to enhance their inventory visibility:

Real time asset journey insights

- Location
- Dwell time
- Validation from origin to last mile
- Automatic alerts of missorted, misloaded, and mis-shipped product
- Automatic alerts of delivery confirmations or failures

These insights allowed the retailer to experience a 60% total decrease in lost, damaged, and delayed packages.

Number of damaged, missed, or lost packages per million



Additional benefits include

- Increased customer satisfaction and trust when right packages arrive on-time
- Increased efficiency in supply chain processes (shipping time, cost)
- Decreased human error in stocking and loading
- Decreased product replacement cost
- Decreased labor in scanning and searching for missing packages

07

Online retailers use case

Based on this project and industry averages, here is an example of a use case for an online retailer handling 10 million packages annually.

$105M	$2.17M	$58.8M	60%
TOTAL VALUE OF MISSING PACKAGES	TCO OF IMPLEMENTING WILIOT	SAVED IN MISSING PACKAGE VALUE	DECREASE IN MISSING PACKAGES

VALUE OF MISSING PACKAGES	
Total number of assets	**10M**
% of missing assets	**3%**
Number of missing assets	**300,000**
Average COGS of an item	**$50**
Lost customer trust value	**$300**
Total value per missing item	**$350**
TOTAL COST OF OWNERSHIP	
Fixed cost — amortized over 3 years	**$0.47M**
Total variable cost	**$1.7M**
Annual tag cost	**$1M**
Annual platform charge	**$0.7M**
IMPACT	
% decrease in missing package problem using Wiliot	**56%**
Total value of missing packages	**$105M**

ABOUT WILIOT

Wiliot is a Physical AI company that gives organizations continuous, scan-free visibility into the location and condition of every item in their supply chain. Battery-free Bluetooth sensors, called IoT Pixels, capture the data, and the Wiliot Physical AI platform refines it into actionable insights — predicting problems like shrink, mis-ships, and spoilage, and recommending the next move. Trusted by many of the world's largest retailers, carriers, and consumer brands, Wiliot has tagged more than 1 billion assets worldwide. For further insights into the Wiliot Physical AI platform and how it can benefit you, visit wiliot.com.