ROYAL MAIL
UNITED KINGDOM
POST & PARCEL

Royal Mail digitizes its core delivery assets to gain unprecedented visibility

Royal Mail adopts the Wiliot Physical AI Platform to speed delivery, raise quality of service, launch new products, cut carbon emissions, and meet financial goals.

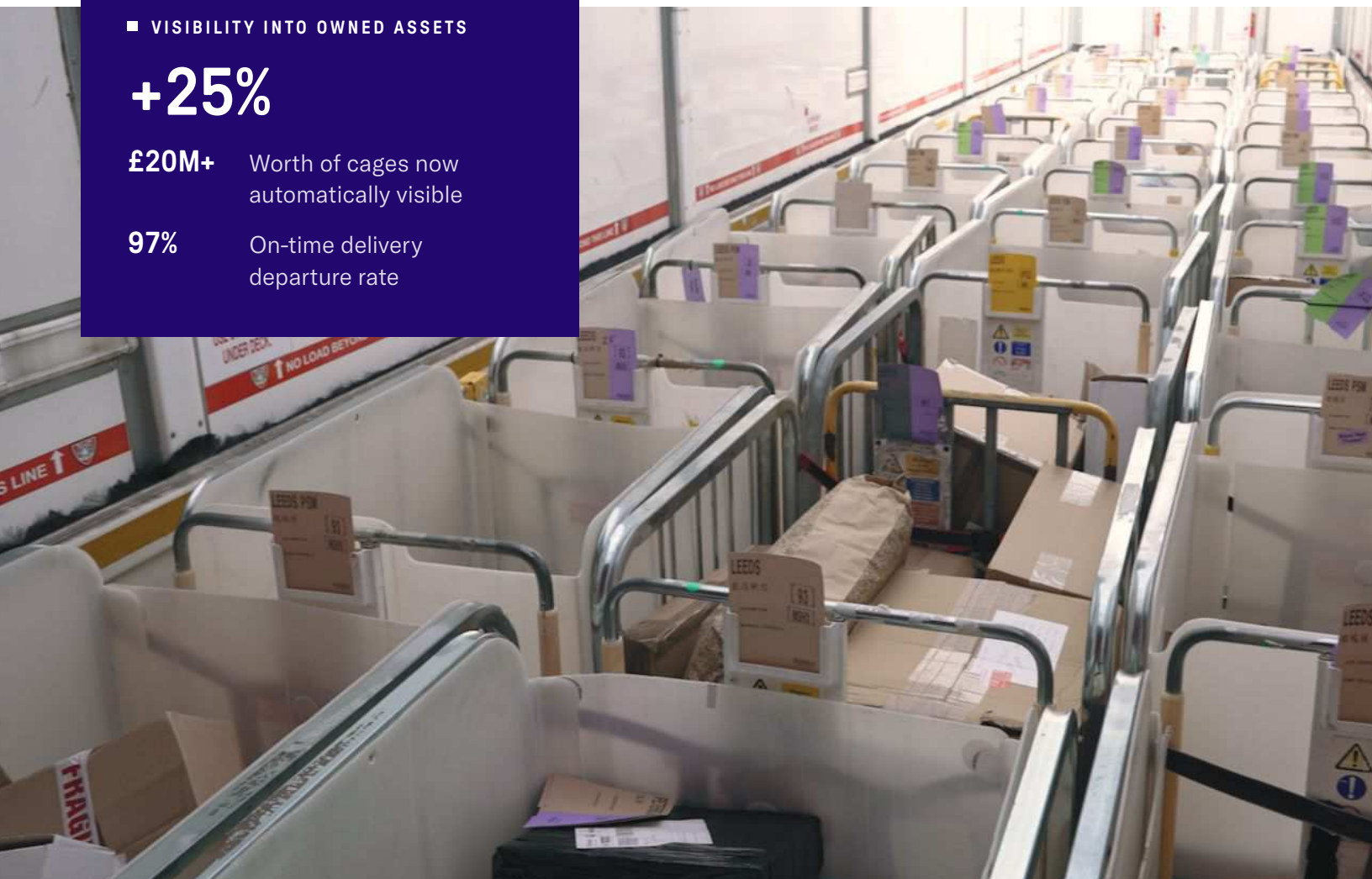
BUSINESS IMPACT AT A GLANCE

VISIBILITY INTO OWNED ASSETS

+25%

£20M+ Worth of cages now automatically visible

97% On-time delivery departure rate



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01

Continuous, item-level visibility from the cage to the doorstep

As part of its modernization plan, Royal Mail is digitizing its vehicles, facilities, and delivery routes in three phases to create end-to-end visibility across its network. It can now “see” its most important assets in real time and use that data to optimize operations.

WHERE IT ALL BEGAN

Royal Mail, the United Kingdom's national postal service, dates back more than 500 years. To compete with e-commerce shippers and others, it must keep innovating and adapting.

Royal Mail has already modernized its logistics to meet consumer demand. Now the inventor of the world's first postage stamp is adopting stamp-sized sensors to gain real-time visibility into its delivery network. With the Wiliot Physical AI Platform, Royal Mail can operate more efficiently, manage costs, lower carbon emissions, enhance quality of service, and enter new markets.

THE CHALLENGE

Royal Mail’s delivery network is vast and complex. Running it efficiently requires visibility: where assets are, when mail will reach its next destination, where bottlenecks exist, and whether trucks and facilities are performing.

With roughly 1,000 sites and thousands of vehicles handling more than one billion parcels a year, only a scalable, cost-effective, automated tracking solution would work.

~1,000	8,000	1.2B
SITES ACROSS THE NETWORK	VEHICLES	PARCELS HANDLED PER YEAR

ROYAL MAIL

“We needed to know what was happening in our network in order to run it more effectively. That is why we wanted to track assets and items.”

Nathan Preston Technology Director for Strategy, Innovation & Data, Royal Mail

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02

The first postal company to track its core assets in real time

Royal Mail is the world's first postal company to use the Wiliot Physical AI Platform to track the indoor location and geolocation of its core delivery assets in real time.

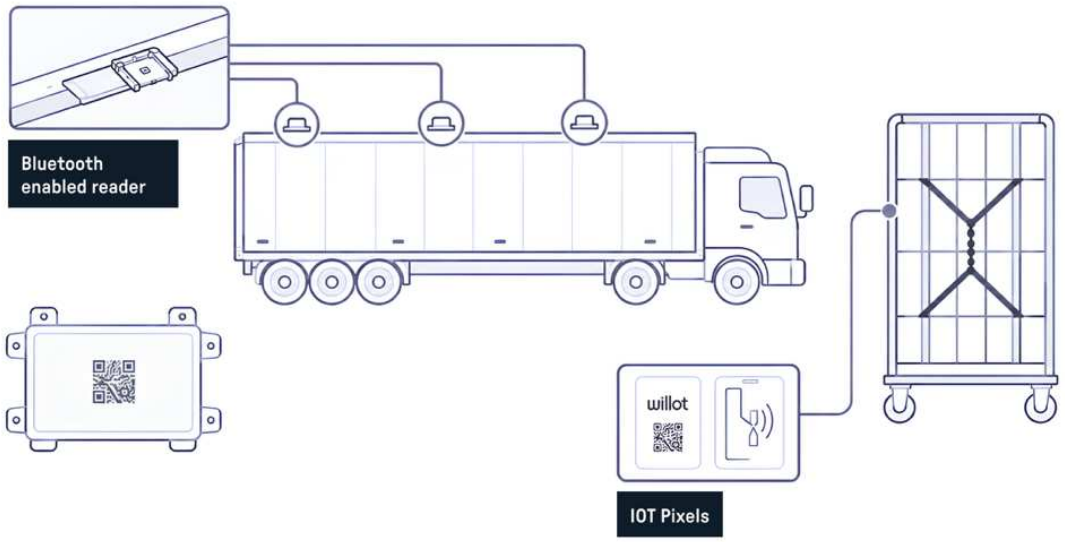
THE WILIOT PHYSICAL AI PLATFORM

It starts with stamp-sized IoT Pixels: battery-free Bluetooth sensors, powered by harvested radio-frequency energy, that continuously report an item's location and condition over standard Bluetooth to low-cost readers across the network. Purpose-built AI and ML models turn that data into real-time, automated visibility, without scanning.

HOW IT WORKS

In phase one, Royal Mail tagged about 900,000 rolling "York" mail cages in mere months. The cages move billions of items a year between sorting centers, trucks, and delivery offices. Because IoT Pixels are low-cost, Royal Mail applied three per cage for redundancy and reliability.

Each truck carries two to three Bluetooth-enabled readers depending on size, and up to six on a double-decker. The readers energize the IoT Pixels, receive their data, and forward it to the cloud, tracking each cage from loading through transit to unloading.



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900,000	3	2–6
ROLLING CAGES TAGGED	IOT PIXELS PER CAGE	READERS PER VEHICLE

ROYAL MAIL

“We’ve looked at this challenge for many, many years and until now it’s been cost-prohibitive to track at this scale when you’re talking about 8,000 vehicles and 900,000 cages. Battery-free IoT Pixels change the economics of tracking. They drastically reduce the cost of tagging each asset. They’re also scalable.

Tagging 900,000 assets is itself a challenge, but looking ahead, we handle 1.2 billion parcels per year. With Wiliot’s tags, we can start tagging individual items to produce unique, itemized tracking.”

Nathan Preston Technology Director for Strategy, Innovation & Data, Royal Mail



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03

Visibility in vehicles, then buildings, then parcels

With Wiliot's scalable, cost-effective tracking, Royal Mail is building visibility in three stages: vehicles, then buildings, then individual parcels.

PHASE 1: IN-VEHICLE VISIBILITY

Royal Mail could track its vehicles but not what was in them: the rolling cages that carry its mail. It never knew exactly how many cages it owned or where they were as they moved between Royal Mail and enterprise customer sites.

In phase one, now largely complete, Royal Mail tagged its cages and installed Bluetooth-enabled readers in roughly 8,000 vehicles. Staff can monitor cage locations across the country and act on them, for example with an alert when a cage is loaded onto the wrong trailer, before it causes a delay.

In the cloud, Royal Mail merges IoT Pixel data with other sources. Comparing each vehicle's capacity with the cages actually loaded shows distribution efficiency. Fed into fleet planning, this helps Royal Mail fill and route vehicles to avoid wasted journeys, predict availability, and allocate resources across the network.

ROYAL MAIL

"There will be no assumptions or manual checks required anymore. [We have] visibility of both individual items and the entire network flow."

Alistair Cochrane · Chief Operating Officer, Royal Mail

PHASE 2: IN-BUILDING VISIBILITY

Royal Mail extended Bluetooth-enabled readers to its distribution facilities, starting with its two largest hubs and reaching roughly 400 sites by the end of 2025. Staff can track cages as they're filled, moved through the facility, and prepared for loading. Site managers can track end-to-end processing times and get alerts for non-moving assets or sortation delays.

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In-vehicle visibility tells Royal Mail when cages arrive at or leave a facility. In-building visibility adds a granular, real-time picture of asset location and utilization, workflow efficiency, and compliance. Royal Mail can spot mislocated cages and match the cages available at a location to incoming and outgoing volume, surfacing service and quality issues.

"Everything that leaves a site, leaves in a cage, but not everything arrives in a cage," says Nitin Kamboj, Head of Strategy for Digital Supply Chain at Royal Mail. "Better resource planning 'under the roof' helps manage the inflow and outflow and avoid adverse impacts downstream."

At its two super-hubs, Royal Mail combines containerization technology with Wiliot data to see which parcels are loaded into which tagged cages. This is the start of the item-level tracking Royal Mail will offer customers across the network.



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04

Locating the cages: every asset, accounted for

Royal Mail is analyzing data from 3 million IoT Pixels on its rolling cages.

900,000+
CAGES TAGGED, VS. A MANUAL ESTIMATE OF 720,000

+25%
MORE CAGES THAN ROYAL MAIL HAD COUNTED

£20M+
ASSET VALUE UNDER AUTOMATED VISIBILITY

LOCATING THE CAGES

When tagging began, manual estimates put the cage count at about 720,000. Cages were pulled aside for tagging at several sites as they moved through the network, then returned to circulation. In roughly six months, Royal Mail tagged more than 900,000 cages, and counting. At about £200 ($260 US) per new cage, that put more than £20,000,000 of this critical asset under automated visibility.

“The most basic, important application of this platform is answering, ‘Where are the assets?’” says Preston. “We have certain spots that used to be black holes for these cages. And they’re not cheap, so having a better picture of our inventory means we aren’t buying new ones.”

During peaks such as the holidays, when enterprise customers need cages on site to load parcels, Royal Mail can deliver the right number to the right places, and make sure the correct number comes back after the surge.

“The most important win of the project so far has been making sure we’re controlling and distributing the flow of assets more effectively,” Preston says. Since then, Royal Mail has avoided millions of pounds in asset purchases.

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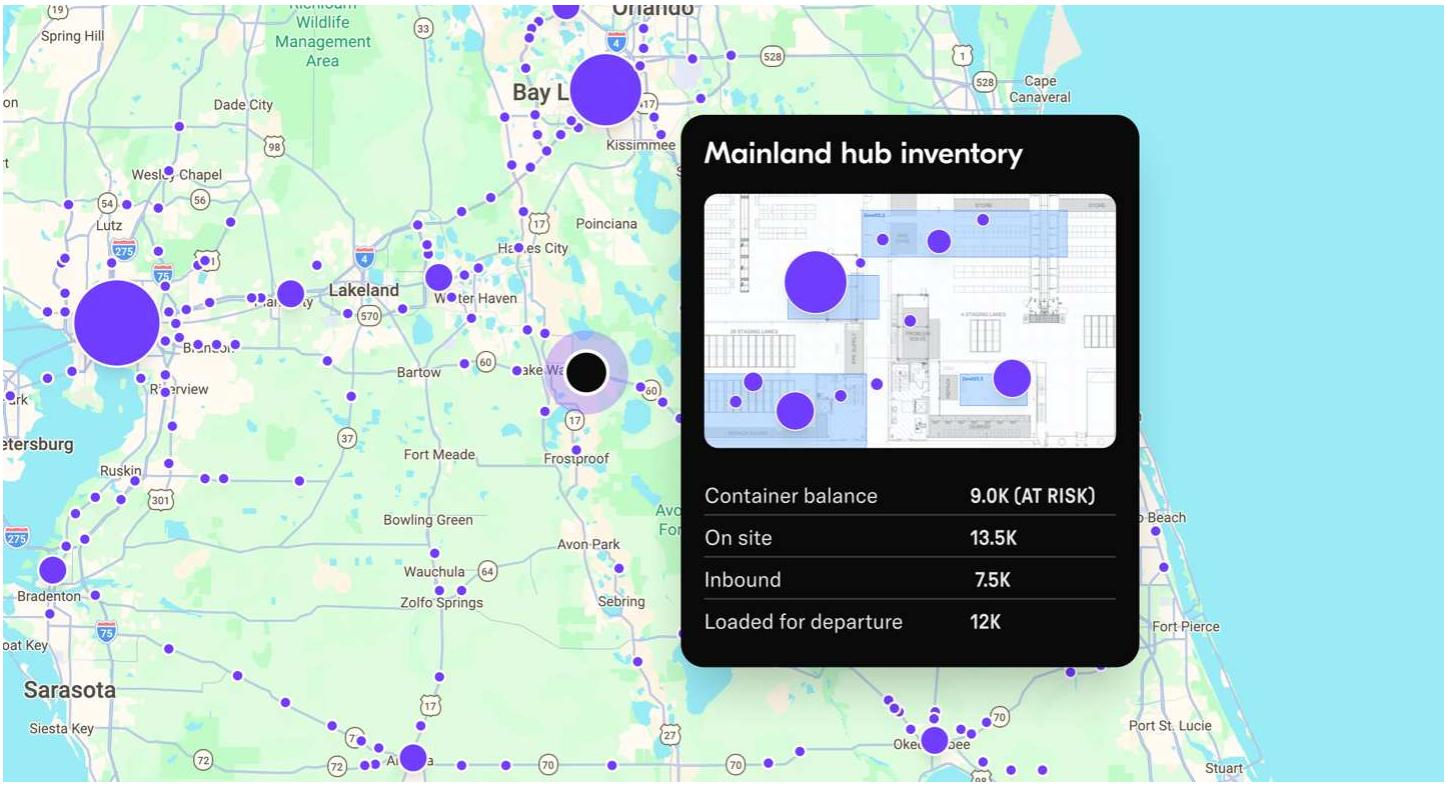
ASSET ALLOCATION

Royal Mail now has real-time cage inventory by site: how many are en route, leaving, in use, at enterprise customer sites, or in storage. Operators plan on actual rather than assumed cage counts and allocate cages dynamically based on demand.

ROYAL MAIL

“With Wiliot‘s innovation, all containers can be accounted for — the exact quantity loaded or unloaded at each stop, and back to the facilities that need them. This ensures all parcels always have a container ready for them.”

Alistair Cochrane · Chief Operating Officer, Royal Mail



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05

Fuller trucks, better-timed journeys

In-vehicle visibility shows Royal Mail what, and how much, is actually loaded onto its trucks. If a truck leaves a hub half-full, Royal Mail can see it and improve efficiency. If it returns mostly empty, meaning the hub may be low on cages, Royal Mail can plan cage collection along the return route.

TRANSPORT UTILIZATION

Combining tracking data with Royal Mail's other data, such as which parcels are in each cage or network plans, shows whether an earlier or later departure smooths capacity or affects service. A process called "duty match" checks whether planned departure and arrival times, routes, and assets delivered matched reality.

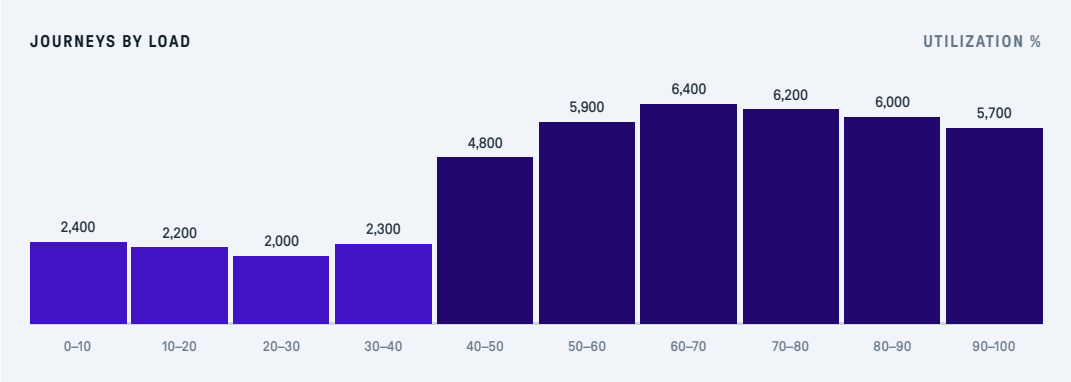
To deliver on time, a truck often must leave at a set time, whether or not its load is optimal. Royal Mail can now see whether a truck is near capacity before departure, and model alternatives that keep deliveries on time while improving utilization.

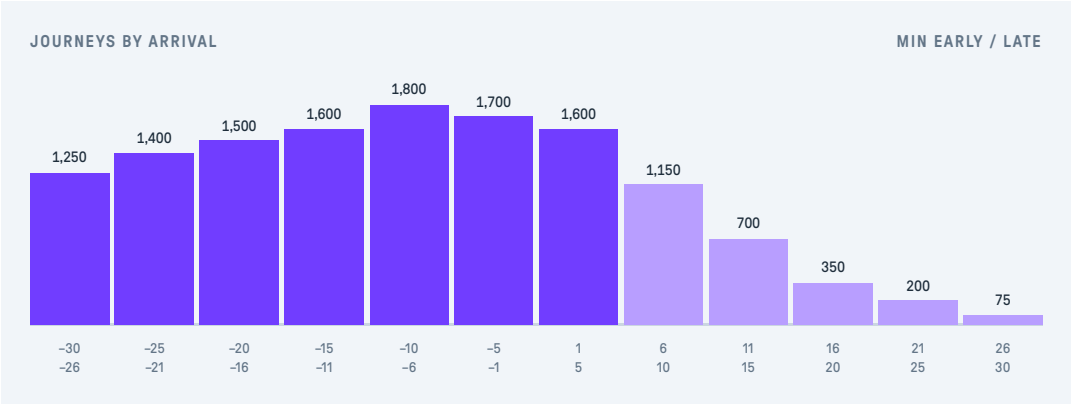
"In all, there are about 50,000 vehicle journeys a week," says Preston. "If any are running at low capacity, it's an ineffective journey. This solution allows us to optimize our fleet, including the number of vehicles. And at the sites where people are filling the trucks, it helps improve logistics efficiency."

NETWORK PERFORMANCE TODAY

72% VEHICLE UTILIZATION	**97%** DEPARTURES ON TIME	**92%** ARRIVALS ON TIME
1,000,890 TRIPS EXECUTED	**390,750,377** TOTAL CAGE MOVEMENTS	

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CARBON REDUCTION

Sending a full, smaller truck on a shorter route cuts fuel use, and one well-utilized truck doing the work of two underutilized ones demonstrably cuts carbon emissions. Royal Mail has pledged to reach “net zero” by 2040 and sees Wiliot-enabled visibility as critical to that goal. In future, it will be able to share carbon emissions per parcel, so customers understand the environmental impact of their deliveries.

ROYAL MAIL

“Understanding the emissions of a journey means knowing about the vehicles, the distance, and the amount of mail in them. With that data, we can begin to make recommendations that will reduce the carbon footprint of a journey significantly.”

Nitin Kamboj · Head of Strategy for Digital Supply Chain, Royal Mail

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06

Results that scale, from cages to parcels

The Wiliot Physical AI Platform is an important part of Royal Mail's modernization. End-to-end visibility across its delivery network reveals new opportunities for distribution efficiency.

IMMEDIATE ROI

Digitizing its 900,000-plus rolling cages delivered immediate ROI. Seeing every cage in real time let Royal Mail avoid costly replacements and position cages across the UK so distribution never lagged. Tracking loaded cages improved vehicle utilization, cutting trips with unused space, and synchronized departures with workload for more predictable delivery. Royal Mail has since reduced fuel use and its annual order of new cages, cutting costs by millions of pounds.

PHASE 3: PARCEL-LEVEL VISIBILITY

Having found the platform highly scalable, Royal Mail plans to tag individual parcels. This would improve delivery accuracy, minimize delays from misplaced or misrouted parcels, and let customers track their deliveries in real time.

"This has been a key part of our journey with Wiliot," says Kamboj. "Making it commercially viable for customers to have live visibility into deliveries."

IoT Pixels also sense temperature and humidity, capturing how a parcel is handled as well as where it is. This opens new markets such as medical supplies, perishable food, currencies, and high-value items, with proof of safe handling and chain of custody.

End-to-end visibility helps Royal Mail deliver exceptional service while progressing toward net zero. The Wiliot Physical AI Platform gives it the tools to deliver faster, safer, and more sustainable services.

ROYAL MAIL

“We can now focus on minimizing disruption and ensuring the most accurate on-time deliveries. Better for our people, and better for our customers.”

Alistair Cochrane · Chief Operating Officer, Royal Mail

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About Wiliot

Wiliot provides real-time data mining capabilities for organizations that want continuous visibility into their physical operations. Wiliot is the only multi-modal sensing technology for asset tracking that is cost-effective and scalable across any supply chain, and so much more. If you move physical assets, we have a solution for you.

Visit www.wiliot.com to learn more.

