TURN ANY VEHICLE INTO A
SURVEYOR

ADDING A DASHCAM TO VEHICLES CAN HELP LOGISTICS COMPANIES CUT DELAYS BY GATHERING MAP DATA EN ROUTE. SANDRA UDDBÄCK EXPLAINS HOW

As online shopping grows and shipping promises get more and more ambitious, consumers are increasingly unforgiving when it comes to shipping delays, with 84% saying that they are unlikely to return to a retailer after just one negative delivery experience. Meanwhile, logistics companies struggle to access the map data they need to make fast and seamless deliveries, including information like drop-off location, building entrances, and routing information, causing UPS and FedEx to rack up 471,000 parking violations in New York City in 2018 alone.

Map providers have traditionally updated their maps through a slow and unscalable approach that costs billions of dollars, making it an unsustainable model that's no longer fit for purpose considering how quickly the world changes. And the world is changing very quickly – the total area covered by cities across the world is set to triple over the next 40 years. If the map is broken in one place, the driver is already running a risk of being late for their next drop-off.

Delivery fleets depend on access to accurate and up-to-date maps. Taking control of collecting their own map data means always having access to the freshest information about the latest changes that

The Mapillary Dashcam is the world's first end-to-end encrypted dashcam built specifically for mapping purposes

have been made to the streets. That's why we launched the Mapillary Dashcam, the world's first end-to-end encrypted mapping dashcam. The idea behind it is to help logistics and mobility companies find navigation problems before they slow down drivers.

To get started, the dashcam is simply fitted to the vehicle's windshield and connected to the charger outlet for its cigarette lighter. Capturing starts as soon as the vehicle starts and the images are stored on SD cards.

Drivers can capture up to 150,000 images in eight hours, with no learning curve or additional activity required, since all mapping activity is done in the background while they go about their day-to-day tasks. They are collecting important data to understand everything from where the nearest parking spot is to what building entrance to use when they drop off their parcels.

Once the vehicle returns to the depot, the images are uploaded to the Mapillary cloud via direct file transfer. End-to-end encryption ensures privacy protection from the moment of capture and is secure while transferring to the Mapillary cloud.

Once uploaded, all images are processed to apply privacy-blurring, create 3D views, and extract navigation data like traffic signs, roadwork assets, and more. The imagery is geo-positioned on the map within hours of uploading to Mapillary and processed with computer vision that automatically generates

The dashcam is easily fitted to the windscreen of any vehicle and automatically starts to capture images as soon as it's plugged into the car's cigarette lighter

map data, making it easier than ever before to get the data needed for improving the map that each individual fleet depends on.

The images and extracted data are available to anyone and everyone who needs it through subscriptions. Data can be downloaded an unlimited amount of times during the subscription period as GIS compatible files such as GeoJSON or shapefile where any corrections or edits can be made manually.

Drilling down
To achieve these results, we selected the BlackVue DR900s for our mapping dashcam after extensive research and testing of various models in the market today. It has embedded GPS, a wide field of view and an 8MP CMOS sensor, supporting the broadest cross-section of use cases from understanding navigational signage such as speed limits and turn restrictions to the curbside regulations

while a vehicle is parked. The camera is reliable throughout the full journey and throughout the full day of operation, and the system includes an auto-stop function that prevents the camera from capturing images while the vehicle is stationary.

The dashcam offers customisable frame rates, enabling fleets to decide for themselves what is most relevant for the type of data they require. With lower frame rates, longer distances can be captured, optimising the available storage and bandwidth to bring data to the cloud. Higher frame rates, on the other hand, offer the dense imagery that is required for high-definition mapping products. Positional accuracy is highest when images are captured densely and while the GPS accuracy will be affected in an area with many tall buildings, accuracy will be between 1m and 5m.

Frame rates can also be optimised for specific mapping tasks. For instance, if a

fleet is mapping an area for the first time, they may want a higher frame rate than if they are re-covering streets later on and only looking for smaller changes.

Each map data point, whether that's traffic signs or benches, is photographed several times and triangulated and positioned on the map through computer vision technology and, specifically, points clouds. The automatically generated map data includes traffic signs, turn restrictions, stopping and parking signs, access restrictions, speed limits, and much more. Mapillary's detection accuracy is among the best in the world – we benchmark our technology at international computer vision conferences such as ECCV, CVPR, and ICCV, and consistently come out at the top. However, detection is more accurate for objects that are more common and more similar in their appearance. For example, the technology can detect and position more than 90% of traffic lights and traffic cones; for utility and support poles, that figure is 80%.

Word on the street
Street-level images themselves are a useful source of information to understand what a route looks like from start to finish. Roughly 30% of traffic congestion in cities is caused by drivers looking for a place to park, but now companies can say goodbye to arriving at a drop-off point only to learn there is no parking to be found.

Regardless of whether or not a fleet has an in-house mapping team, they still rely on fresh data to keep their maps updated. Our computer vision technology brings intelligence and scalability to map data collection to keep the operations of logistics companies going.

Sandra Uddbäck is VP of data acquisition at Mapillary (www.mapillary.com)

One of the 1.1 billion images that are live on the Mapillary platform. Images are typically uploaded by people and companies that need the images and the data in the images to update and improve their own maps