Innovate and Optimize to Beat Last-Mile Delivery Challenges

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THE PANDEMIC FAST-FORWARDED GLOBAL ONLINE RETAIL BY 5 YEARS

The COVID-19 pandemic has accelerated online retail worldwide by 5 years. This means growing online market share and revenue for both traditional retailers and native e-commerce providers, including Business-to-Consumer (B2C), Direct-to-Consumer (DTC) brands, and Business-to-Busines (B2B). The percentage of global retail revenue attributed to e-commerce has increased from 10% in 2017 and is projected to double by 2022 to 20% as the pandemic accelerates this trend, originally anticipated to take another 5 years.

This compressed transition has placed more pressure on transport operators worldwide, including last-mile providers. These fleets have to accommodate surging demand, along with increasing customer expectations for service. Concurrently, internal pressures remain to contain costs and streamline their operations. Globally, the local delivery telematics market is expected to grow by 17% from 2020 to 2025, according to ABI Research. However, too many businesses continue to use outdated systems and broken processes, lacking a seamless information flow.

LAST-MILE DELIVERY CHALLENGES

1. **Diminishing Delivery Times**
   Amazon and retailers like Walmart and Ahold Delhaize continue to ramp up online sales exponentially and reduce delivery windows rapidly from days to same day to within hours, forever altering expectations. The impact of these shrinking delivery windows extends to smaller businesses, as well as B2B shipments. The condensed delivery times require enhanced accuracy, flexibility, and integration. Regulations continue to increase for Hours of Service (HOS), environmental restrictions, and food and pharmaceutical considerations. Driver and distribution center staffing shortages have intensified in North America and Western Europe, as companies attempt to ramp up to support growing e-commerce and contactless delivery needs.

   Both businesses and consumers are increasingly seeking a more granular and accurate time of arrival, along with relevant status updates. Simply stated, secure, reliable, and easily accessible platforms are now table stakes. Pertinent data insights range from a dock assignment to a doorstop location. Expectations have evolved from "Where's my stuff" to near-real-time transit updates to advance notice of any delays and flexible drop-off selection. Deliveries in urban centers are historically complicated by traffic congestion, requiring additional flexibility and updates to both drivers and end customers.

2. **Fulfillment Complexity**
   There has been a reckoning in 2020 for the need to track delivery status and adjust job schedules in near-real-time. Omnichannel retail continues to add significant complexity to the supply chain as companies must integrate the digital with the physical, with inventory across sites to fill orders and a continued challenge of stockouts, within a shrinking response time frame. Many retailers are augmenting their distribution through micro-fulfillment centers in urban and suburban areas, further compounding supply chain complexity. Further, multiple last-mile solutions focus on routing, often as a static offering. They also do not integrate with other third-party solutions, such as Fleet Management Systems (FMS), Transportation Management Systems (TMS), and Warehouse Management Systems (WMS). There is an increased need for re-routing from automated plans to the need for integration and notification between shipper, carrier/driver, and customer, as well as predictive alerts.

3. **Profitability Pressures**
   Delivering goods directly to a customer's door is a high-cost endeavor, as convenience can cost a company an average of US$10 per order according to OnFleet.* It is estimated that nearly half of total shipping costs result from last-mile deliveries, impacting profitability. Residential and small business direct deliveries result in more stops, idle time, fuel costs, and out-of-route miles. Any real scale for individual orders is lacking, as they require more resources, but those resources are finite, including drivers, vehicles, and time. The incremental charges to deliver, for many retailers, do not cover costs by an approximate 20%. Some retailers did not make changes prior to 2020, despite the ongoing evolution of online retail. Ongoing closures of non-essential businesses and capacity limitations forced the adoption. Some firms have hesitated to invest sufficiently in last-mile delivery for a variety of reasons, including profitability and low margins, lack of organizational expertise, digitization efforts, and staffing, as well as a lack of trust in handing off critical customer-facing tasks.

4. **Consumer's Lack of Scale**
   One resulting challenge for consumer delivery, at least in urban and suburban areas, has been the increasing density of stops by last-mile providers. The converse also presents an issue, with rural and lower density deliveries, which consume more time, staff, and fuel. Even Amazon, with all its resources and vast footprint encouraged consumers to retrieve holiday packages from retail locations/hubs. BPost also diverted parcels for post office pick-up and via temporary collection points. As expansion strategies extend into emerging markets and Tier Three-plus cities and towns, additional complications arise from a lack of formal addresses and challenges to mapping and staffing.

5. **Modal Selection**
   The broad range of delivery solutions today, while not necessarily new technologies, have moved from individual proofs of concept and limited pilots into broader use, supported by government exemptions, cost considerations, low-contact or contact needs, lower cost implementations, and a growing ability to scale. Delivery form factors range from vans, box trucks, and cars to fully autonomous pods and robotics, drones, and lockers. Business models have expanded from peer-to-peer delivery sites to gig workers to employees and contractors/third-party solutions. Multiple vehicle types (traditional and autonomous) and people are now sharing sidewalks, bike lanes, and streets.

6. **Last-Yard Delivery Determination**
   Some of the myriad challenges of last-mile and last-yard completion include location determination challenges in corporate, medical and college campuses, multi-family housing, mobile locations, navigation, and final hand-off (front door, in-home, garage, office, etc.).

7. **Environmental Concerns**
   Daily challenges in any given year can include extreme weather conditions and natural disasters, public unrest, aging infrastructure issues, and changing traffic patterns. The level of granularity, localization and optimization for conditions from weather to road disruptions remains limited.

LAST-MILE DELIVERY SOLUTIONS: BEST FEATURES

1. **Advanced Route Optimization**
   Route optimization is a means to improve delivery capacity and to reduce miles, idle time, and inefficient miles. The reduced time and fuel will improve shipping costs, completed deliveries, and customer satisfaction. Dynamic route optimization capabilities can account for travel time, fuel costs, and toll road expenses, providing dispatchers and drivers with precise and accurate Estimated Times of Arrival (ETAs) that use powerful datasets and solutions that are capable of calculating up to 100 million routes in less than 30 seconds, even with multiple stops. Routing instructions should be available in multiple languages and for different modes of travel.

   A route optimization tool evaluates routes and the associated number of vehicles in operation to provide the lowest-cost, most efficient plan. A traffic-aware tool can address multiple time windows and multi-stop jobs, as well as specific vehicle and job constraints, while allowing fleets to add new trips in real time, while the route is underway. Solutions should include customizable geofencing and multi-modal routing options, through matrix routing and waypoint sequencing. Service time can be specified for each waypoint to allow for time to complete the delivery itself.

The ability to calculate the ETA of all available drivers to the pick-up location is enabled through the use of reverse isoline routing, through route match extensions. These solutions also provide real-time insights into the location(s) of assets. Further customization can be facilitated through native apps via mobile Software Development Kits (SDKs) to customize deliveries with precision and adaptations.

A robust solution will solve complex use cases without additional coding, including Electric Vehicle (EV) routing. EV routing is a critical component for addressing range, which may be impacted by various factors, ranging from extreme weather conditions to traffic, all of which are increasingly relevant to fleet managers from delivery vans to garbage trucks and buses. Additionally, emerging autonomous capabilities can be enabled in conjunction with industry-leading partnerships across the industry.

2. **Open Systems**
   Open Application Programming Interfaces (APIs) and SDKs are important factors across transportation and fulfillment. Yet, few companies had enabled this prior to now, which led to numerous delays. Solutions integrated with fleet telematics using advanced algorithms can track transit times and routes to better optimize a fleet's performance, including real-time feedback on road conditions, highly accurate traffic data, route suggestions, and desired arrival times. Precise location data translate addresses into geographical coordinates, with customizable search infrastructure. A robust solution should promote direct dispatch to fleet communications, further enabling efficiencies.

3. **Advanced Location Intelligence**
   Advanced location intelligence providers can support custom location extensions to adapt to specific Points of Interest (POIs) and area content. Accurate ETAs are critical to maximizing the number of deliveries performed. Additionally, data exchanges can be enabled through a location platform, incorporating strategic partners to optimize a fleet's ecosystem integration. Other key feature sets should include geofencing capabilities that track whether or not mobile assets are located within a specified geographic area. Features can limit close access to specific areas, at certain times, alert warehouses before an asset arrives, and alert a consumer or business prior to a package's arrival.

4. **A Singular Platform**
   A one-stop, neutral, and secure platform encourages the development, acquisition, and enhanced location-centric data and services. Compelling APIs address the complex and ever-evolving location-based challenges through ready-to-implement enterprise and customized solutions. A cross-industry set of partnerships, with multi-regional offerings is optimal. Data security and access control is an integral advantage in this age of cybersecurity threats. Aggregation of diverse datasets with uniform integration is another benefit. When selecting a last-mile solution, experience, capabilities, and reputation matter.

CONCLUSIONS

The challenges of last-mile delivery include shrinking delivery timelines, profitability concerns, scaling issues, and numerous evolving delivery options. It is critical that businesses fully optimize the final leg of the transportation journey, to not only materially reduce the estimated 50% total cost of delivery, but also to offer a consistent end customer experience, through visibility into accurate ETAs and clear communication and options for the customer. These at times disparate objectives can be addressed as businesses empower their drivers with digital tools that keep them safe, productive, and in compliance. The ability to leverage machine learning and Big Data in near-real-time inhibits the practicality of build-your-own-solutions, which are often not able to scale, integrate, and provide frequent software updates. Third-party solutions must be carefully vetted for security, stability, integration, and scalability.

About HERE Technologies

HERE, a location data and technology platform, moves people, businesses, and cities forward by harnessing the power of location. By leveraging our open platform, we empower our customers to achieve better outcomes, from helping a city manage its infrastructure or a business optimize its assets to guiding drivers to their destination safely. Explore how HERE's fleet management solutions are helping businesses optimize deliveries from the first to last mile: https://www.here.com/solutions/fleet-utilization

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