Route4Me

The Definitive Guide To Last Mile Route Optimization

Drive Business Excellence, Efficiency and Sustainability In Last Mile Transportation

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Why You Should Care About Last Mile Route Optimization

Last Mile Excellence Is Key To Achieving C-Suite Priorities

The last mile accounts for 41% of total supply chain costs[1], up to half of a company's CO2 emissions[2] and a huge component of customer satisfaction[3]. So it's no surprise that CxOs are increasingly looking to elevate the performance of their last mile operations to support diverse business goals.

CEOs

Want to **drive growth** and **exceed customer expectations** by replicating Amazon's last mile execution.

CIOs

Want to enable **simple, secure business processes** by seamlessly integrating last mile systems into enterprise technology stacks.

CFOs

Want to enable **improve profitability** by lowering costs, increasing efficiency and maximizing utilization.

CCOs

Must ensure driver **safety** and meet **compliance and sustainability** requirements to satisfy regulators.

1. *"Navigating the Complex Web of Last-Mile Deliveries," Capgemini*
2. *"Revealing the Secret Emissions of E-Commerce," Clean Mobility Collective*
3. *"3 Logistics Transformations for Better Last-Mile Delivery," Gartner*

Last Mile Failure Drives Business Failure

Last mile service and delivery teams can't achieve C-suite goals when they rely on tribal knowledge and manual workflows to plan and manage last mile operations. These ad hoc methods simply don't scale beyond a handful of drivers and vehicles.

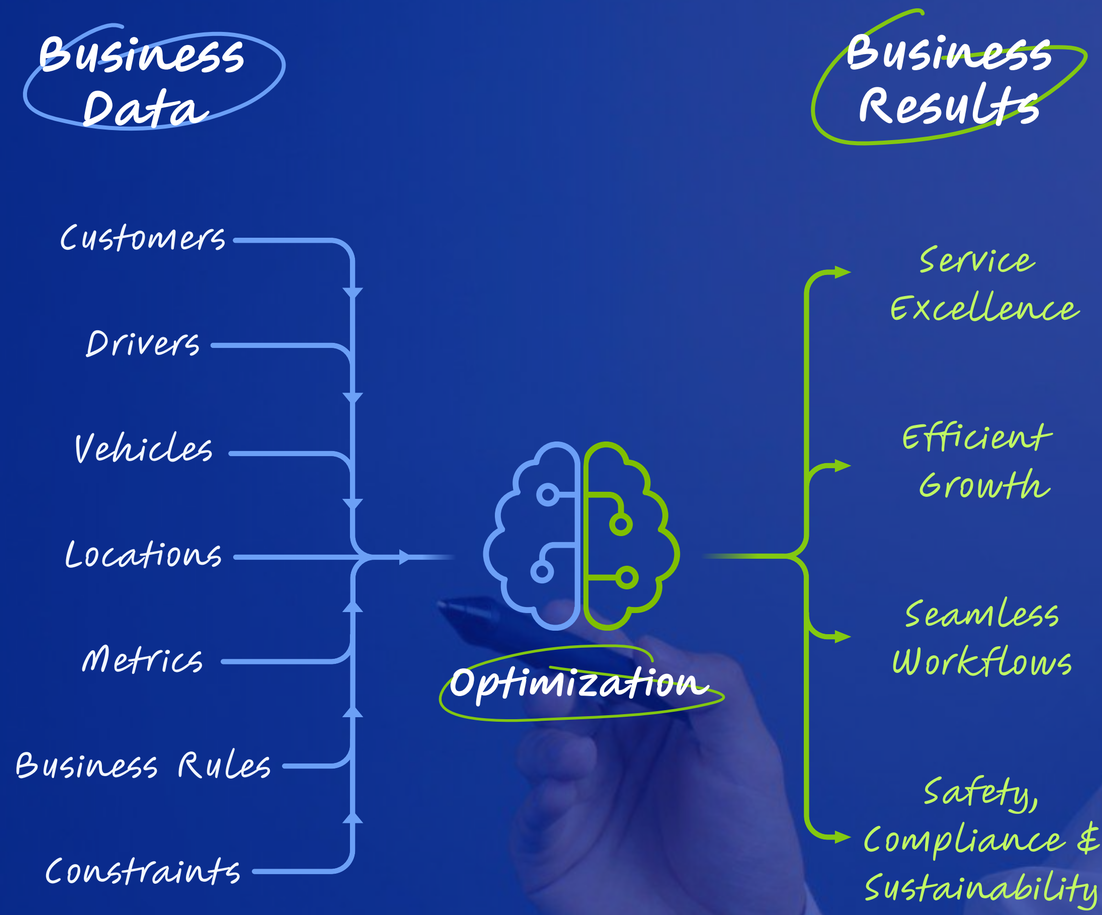
Poor optimization produces poor results. Missed expectations create unhappy customers. Inefficient execution leads to higher fuel and labor costs, more drive time increases safety risks and CO2 emissions, and technology islands imply broken, manual business processes.

Last Mile Optimization Enables Last Mile Excellence

Last mile optimization replaces tribal knowledge with sophisticated mathematical algorithms that simulate complex last mile operations to arrive at optimized business results. Route plans consider a wide array of metrics, business rules and operational constraints, such as customer requests, driver skills, vehicle types, capacity limits, service times, fuel consumption and traffic conditions.

Proactive planning allows you to set and then exceed customer expectations. Optimized plans save time and money, increase the accuracy of execution and improve safety and sustainability. Optimized results provide benchmarks for what-if analysis to drive continuous improvement.

Last mile optimization also creates a nexus of integration to automate seamless workflows that optimize upstream and downstream business processes. At the end of the day, fewer miles get driven per customer stop, so you can sustainably grow your business.



Last mile optimization incorporates all your business requirements and constraints into a logical plan that enables both service excellence and operational efficiency.

Last Mile Excellence At Matthews Funeral Solutions

Big And Bulky Delivery

Families Count On Matthews For Timely Delivery In Hour of Need

Extremely time-sensitive orders create an on-demand environment with no room for missed deliveries. An analysis revealed that manual route planning processes at Matthews were resulting in wasted man-hours, higher fuel costs and shorter vehicle maintenance intervals.

- **On-time delivery of time-sensitive orders**
- **7% reduction in mileage and fuel usage**
- **Planning time reduced from hours to minutes**

A Unique Last Mile Strategy To Save Time, Reduce Miles

Matthews implemented a last mile transportation platform that includes automated route optimization, telematics integration and fleet import capabilities. They engaged with their platform provider as a strategic partner to be actively involved throughout the implementation, providing comprehensive onboarding and ongoing support.

Optimization Eliminates Planning Time, Cuts Mileage

Against a goal of 4% reduction in mileage and fuel usage, Matthews actually achieved 7% reductions. Additionally, time spent on weekly route planning decreased significantly, dropping from hours to minutes.

02

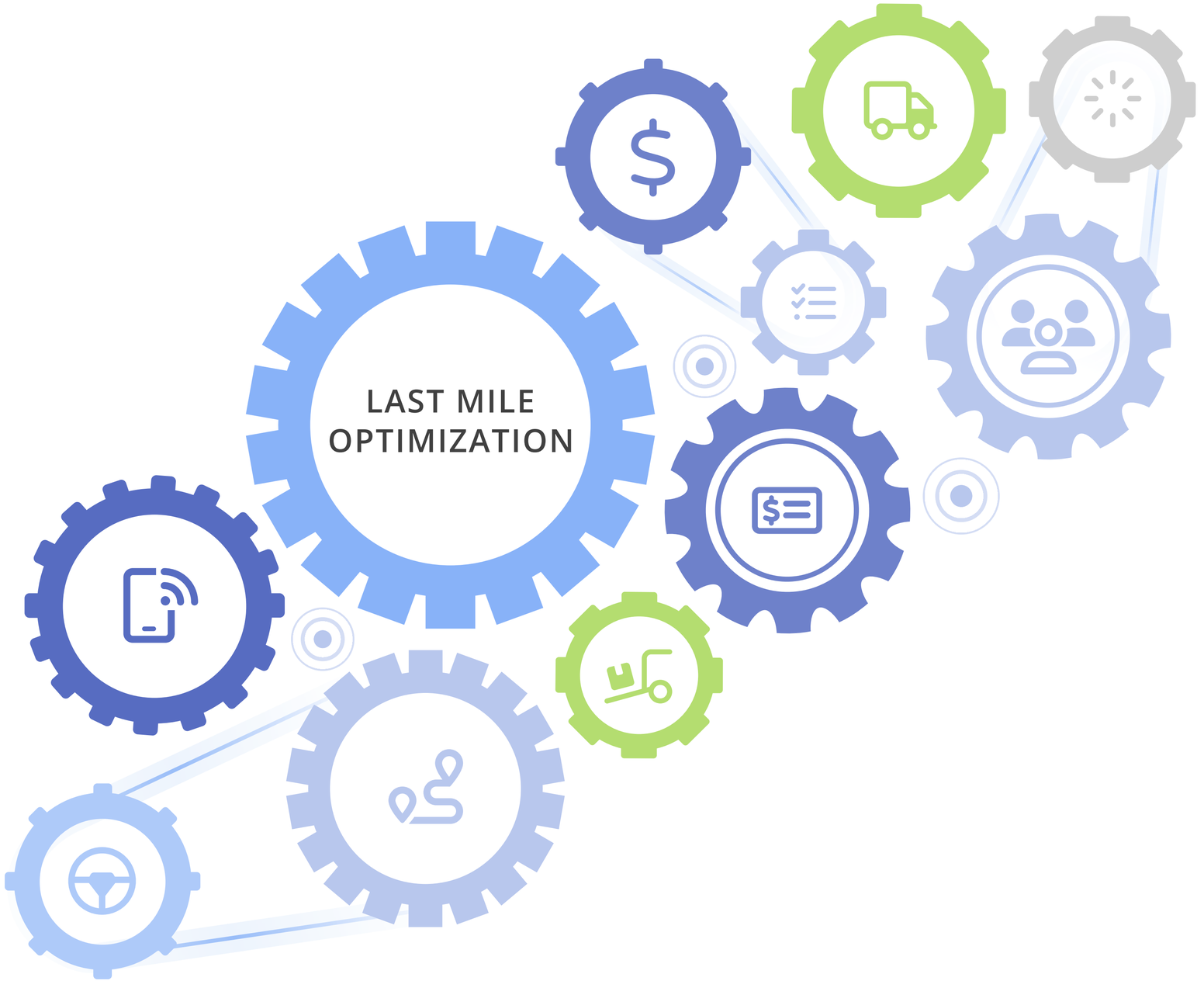
Understanding Last Mile Route Optimization

It's Not The Route, It's The Optimization!

When most people think of route optimization, they think of getting from point A to point B by the most efficient route possible. While technically true, that is just table stakes.

Businesses deliver a service to a customer at each destination on a route: delivery, collection, assembly, inspection, maintenance, etc. This puts routing at the center of a much larger fulfillment process that begins with a customer need and doesn't end until that customer need is satisfied and business is transacted.

Last mile optimization extends beyond the route to improve execution across your business. Upstream activities, such as orders, loading and dispatch, are linked at each destination to downstream activities, such as field service, billing and compliance. Optimization improves efficiency across your entire operation, while ensuring customer service excellence at every destination.



Last Mile Optimization Drives Business Optimization

Optimization integrates last mile activities with upstream and downstream business processes to improve execution across an entire business operation. As a result, last mile optimization drives broader business optimization in direct support of C-suite business goals.

Customer Service Excellence

- Quality, on-time service
- Real-time communications
- High customer satisfaction

Efficient Growth

- Optimized fleet size
- High vehicle utilization
- Low maintenance costs

High Productivity

- Optimized staffing levels
- Low labor costs
- Driver safety and retention

Seamless Automation

- End-to-end fulfillment
- Fast revenue recognition
- Complete, high quality audit trail

Compliance And Sustainability

- Regulatory compliance (e.g., HIPAA)
- Support for sustainability goals
- Increased brand equity

Last Mile Optimization Is Complex

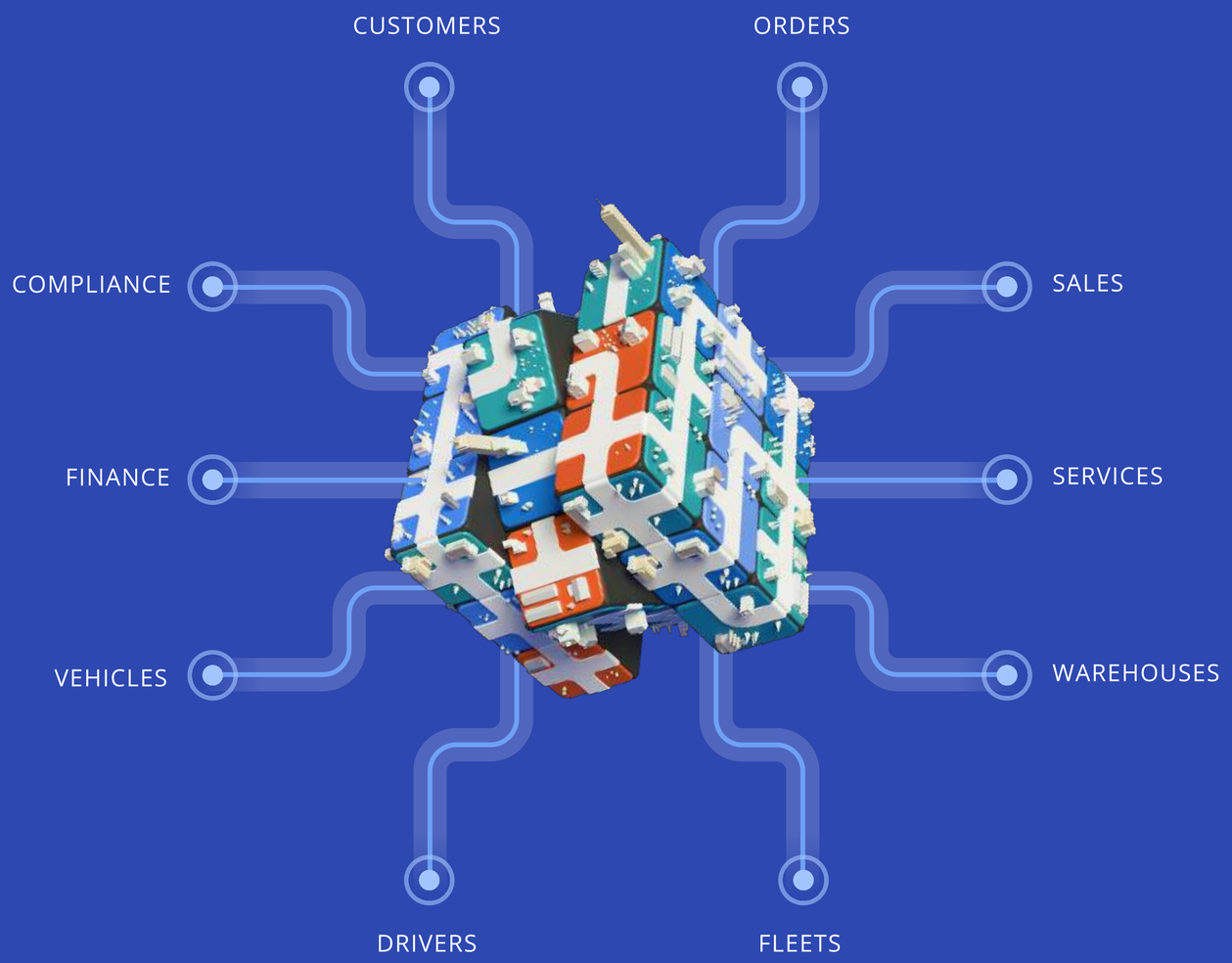
Last mile optimization is like solving a Rubik's Cube. As the number of customers, drivers, vehicles, destinations, constraints and business rules increases, the number of potential routing scenarios becomes incomprehensibly large.

A simple Rubik's Cube with its six colors and nine squares per side has more than 43 quintillion combinations. The mathematics behind last mile optimization is significantly more complex. It is simply impossible to arrive at an optimal solution using tribal knowledge and spreadsheets. Poor planning leads to poor execution and poor business results.

Last Mile Optimization Is Connected

Last mile optimization sits at the center of a larger fulfillment process that includes business activities before, during and after each destination, such as orders, loading, dispatch, driving, delivery, services, billing and compliance. Each activity comes with a set of business rules and constraints that can be included in the optimization to drive better business results.

Upstream and downstream systems (such as order management and fleet management) feed critical business data into last mile optimization. In turn, last mile optimization provides a nexus of integration and helps optimize upstream and downstream business processes. The more critical business information you feed into the optimization, the greater the business impact.



Your Optimization Challenges Are Unique To Your Business

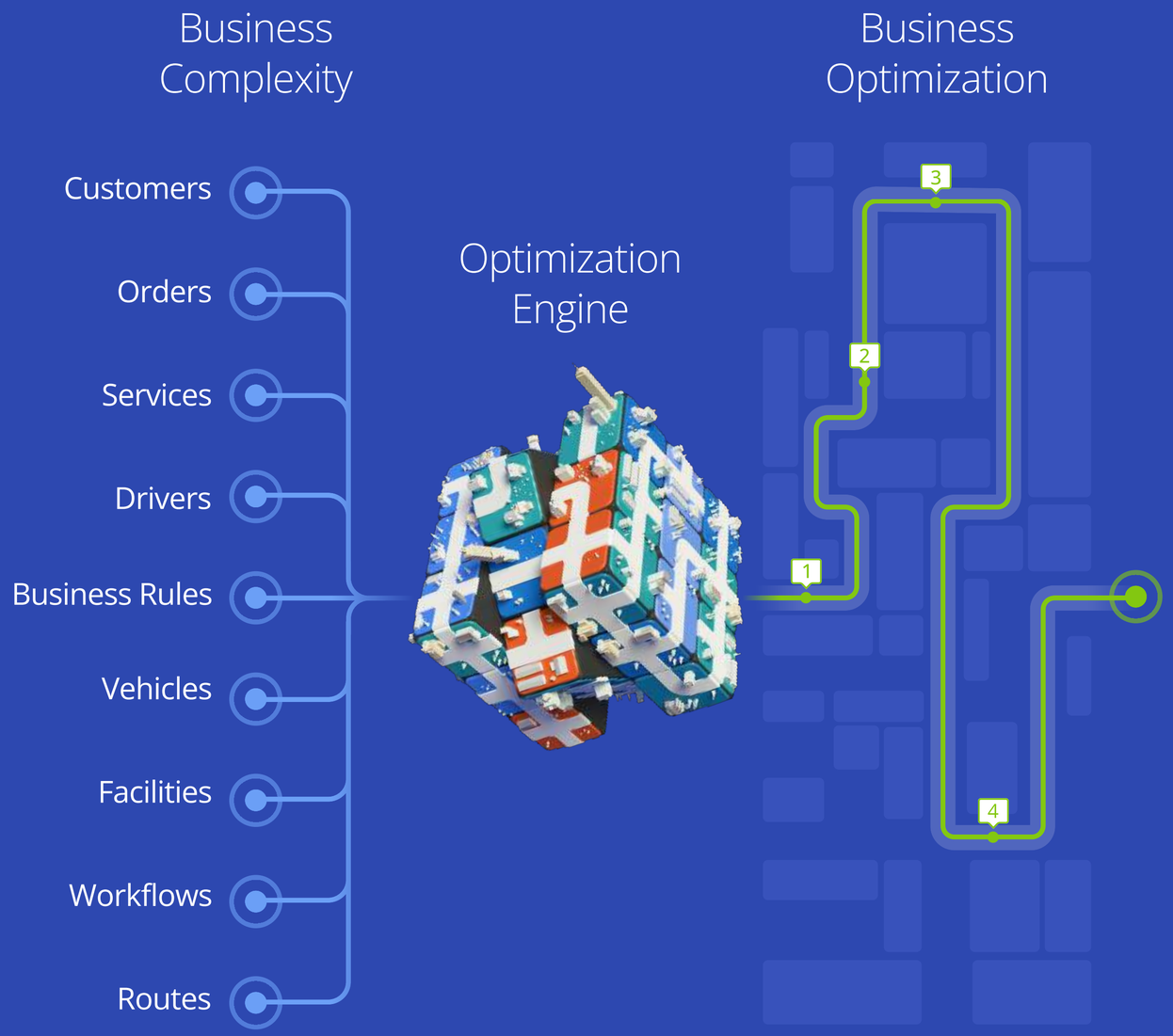
Are you delivering furniture to your customers, or are you performing utility inspections for a government agency? Is your fleet composed of cargo vans, commercial trucks or a mix of different vehicles? Do your drivers have unique technical skills? Is your cargo perishable? Are you picking up, dropping off, both or neither? Do your drivers stop at each destination or just drive by?

Each business sector has its own unique last mile complexities.

Advanced Optimization Engines Simplify The Complex

Once your operation exceeds a handful of customers, vehicles and drivers, last mile route optimization becomes unmanageably complex. Modern last mile transportation platforms include advanced optimization engines that eliminate complexity by enabling managers to quickly calculate optimized plans that meet your business goals.

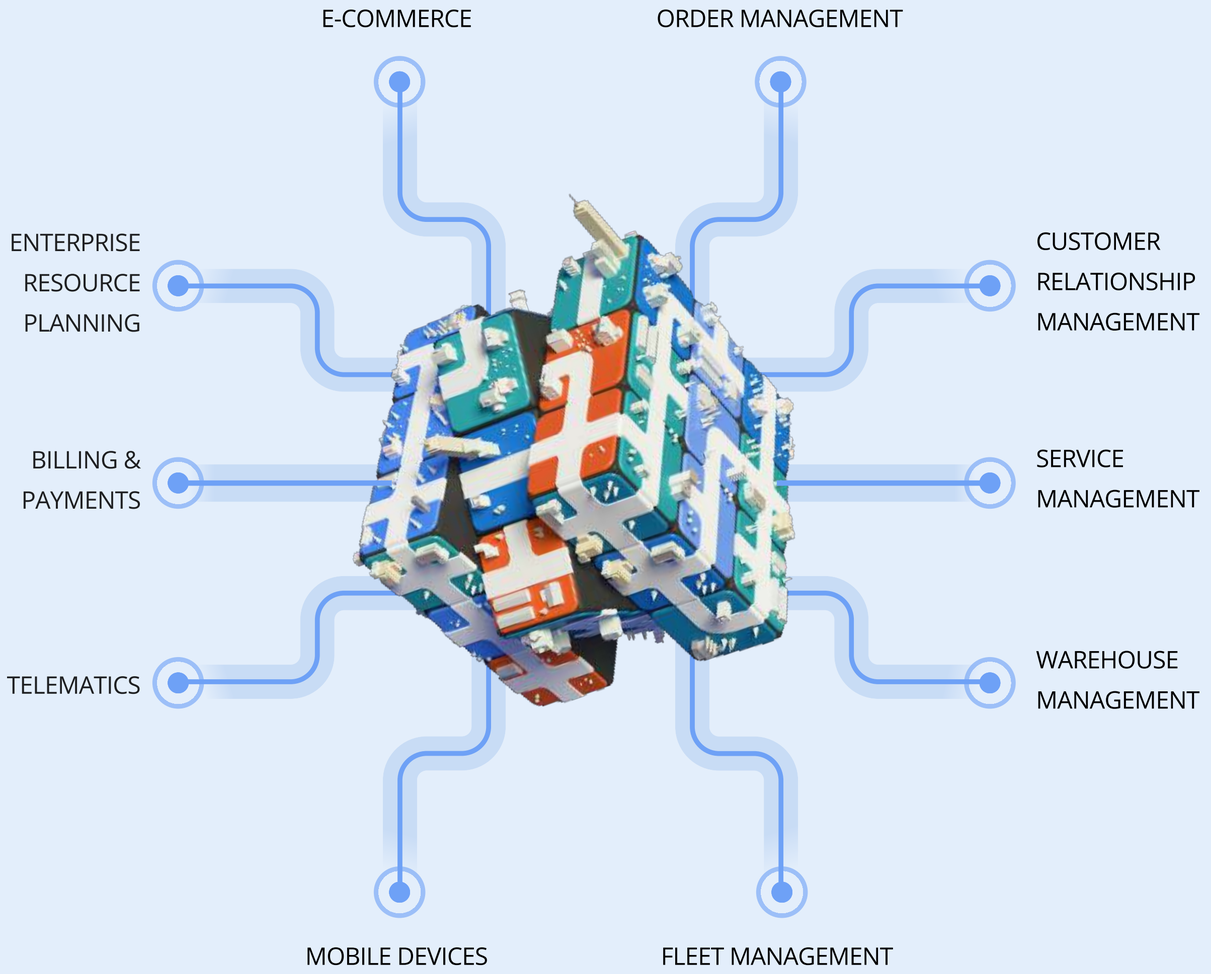
Optimized plans are then consumed by business applications that automate last mile workflows, including dispatch, navigation, fleet management, field service, customer service, billing, compliance and so forth. The experience for non-technical users should be as clean and simple as any consumer mobile app.



Advanced Optimization Engines Connect Beyond The Last Mile

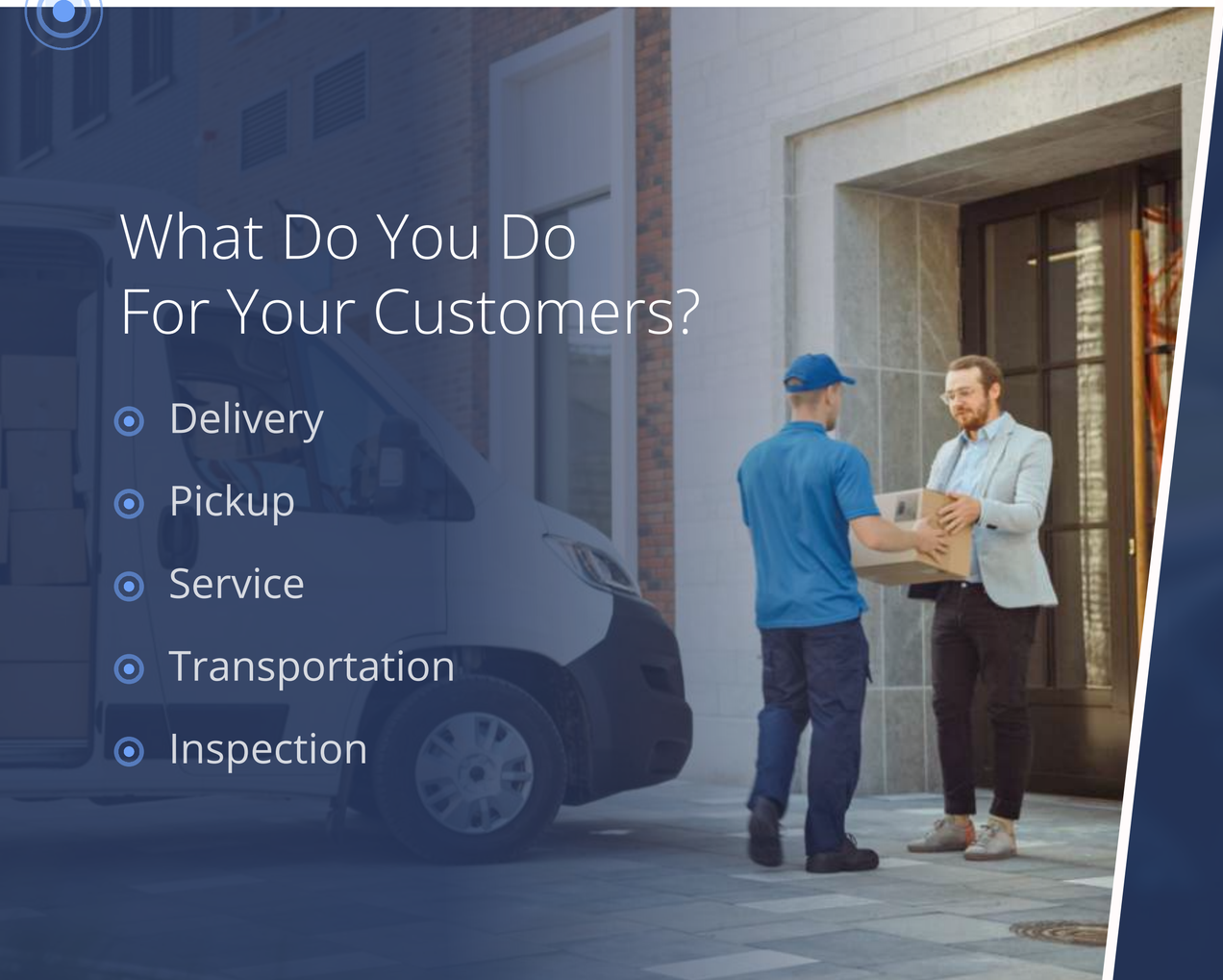
The optimization engine at the center of a modern last mile transportation platform requires access to critical business information to perform calculations and automate workflows, including data about customers, drivers, vehicles, orders, inventory, etc. In turn, the results must be fed back into host systems to optimize upstream and downstream business processes.

Therefore, the more you integrate your last mile transportation platform with upstream and downstream business systems, the greater the impact beyond the last mile.



Last Mile Transportation Platforms Adapt To Your Business

Different businesses come with different last mile challenges based on what they do for their customers and how they visit their customers. Since there is no one-size-fits-all solution, modern last mile transportation platforms must provide a broad selection of capabilities to address a variety of specific business requirements and routing scenarios.



What Do You Do For Your Customers?

- Delivery
- Pickup
- Service
- Transportation
- Inspection

How Do You Visit Your Customers?

- Orders Routing
- Scheduled Routing
- Commercial Truck Routing
- Territory Routing
- Arc Routing

Last Mile Optimization Is A Journey, Not A Destination

While today's last mile transportation platforms automate the science of optimization, best practice results require artful decision making. The output of an optimization engine will only be as good as the inputs you provide it. Managers must decide which metrics matter and which metrics don't. Which business rules drive results and which business rules create unnecessary complexity. There is no substitute for human intelligence and expertise.

Last mile optimization is a journey, not a destination. Daily route planning is just the beginning. Each innovation offers up opportunities for future innovation. Less drive time enables more destinations per route. Workflow automation reduces service time and improves compliance, freeing up resources and reducing risk.

Historical data can be used to establish benchmarks across your operation to drive continuous improvement. What-if analyses based on hard operational data can be used for financial analysis of fleet size and composition, staffing requirements and facilities planning to produce results that go straight to the bottom line.

03

Driving Last Mile Excellence: Transformational Examples

Who Needs Last Mile Optimization?

Last mile optimization will benefit any business coordinating more than a handful of vehicles and drivers for delivery or service calls. The following pages include diverse examples of organizations using a modern last mile transportation platform to deliver service excellence, drive profitable expansion, seamlessly integrate order-to-cash processes and ensure safe, sustainable growth.

Click below or browse the following pages to read how organizations are achieving last mile excellence.

Pharmacy home delivery service achieves service excellence with automated **customer alerts**

Facilities cleaning service increases customer satisfaction by adhering to **service windows**

Regional food distributor fuels profitable growth with strategic **fleet planning**

Courier service improves operations with increased driver retention and better **performance management**

Sanitary supplies distributor enhances delivery operations by analyzing **planned vs actual** last mile performance

Leading furniture distributor enables real-time revenue recognition with closed-loop **order-to-cash integration**

Recycling business improves visibility to driver and vehicle performance with **telematics integration**

Logistics provider in construction ensures safe and efficient routing for **commercial truck navigation**

Major county utility service meets sustainability targets with documented **C02 reductions**

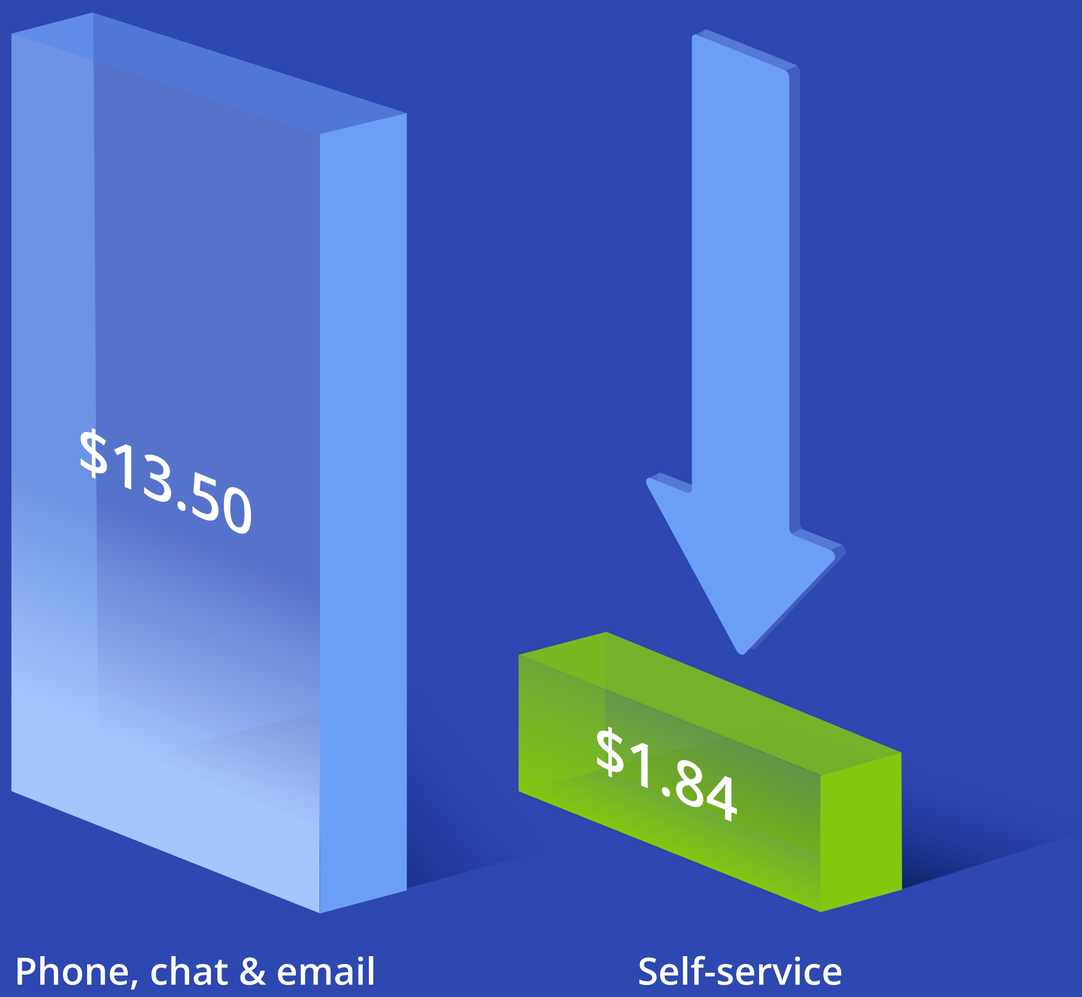
Achieve Service Excellence With Automated Customer Alerts

Pharmacy Home Delivery

Customer service managers at a pharmacy home delivery service saw lower costs and significant improvements in customer satisfaction after the company's logistics team implemented a modern last mile transportation platform that provides real-time automated updates to clients via SMS and email.

Previously the CSR team struggled with high volumes of calls regarding delivery status, causing customer frustration and excessive call center costs. Now their last mile transportation platform automatically notifies customers of delivery status, expected arrival times and any potential delays in their orders.

This proactive approach to customer communications reduced inbound customer service calls by more than 55%, while also lowering call center costs and sharply improving customer satisfaction. By adopting a HIPAA-compliant platform, the service ensured adherence to the law's data protection, security and audit requirements.



Automating delivery notifications reduces the cost per contact for customer service while improving customer satisfaction.

Source: "Benchmarks to Assess Your Customer Service Costs," Gartner

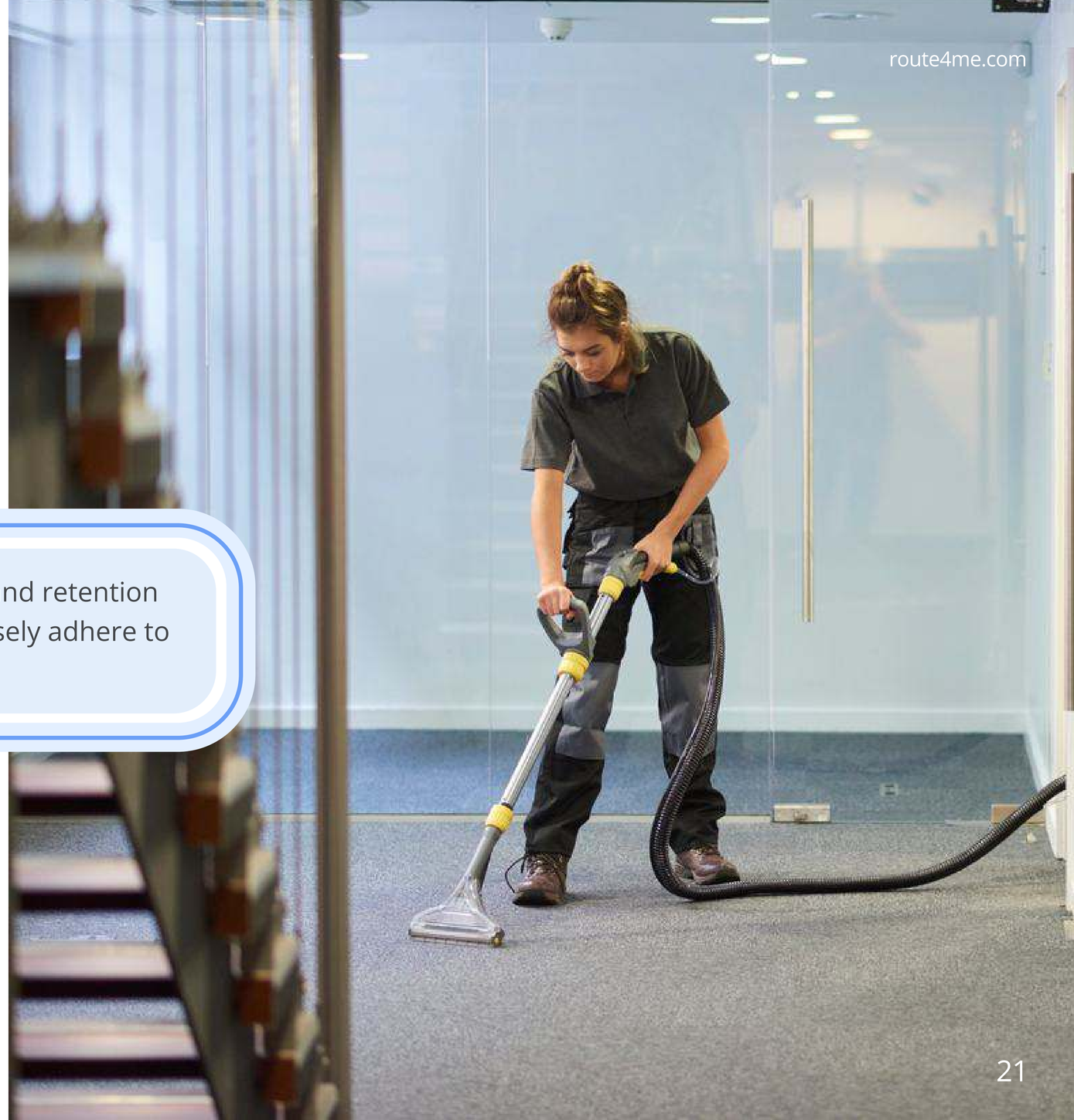
Increase Customer Satisfaction By Adhering To Service Windows

Facilities Cleaning Service

Schedulers and route planners frequently need to accommodate customer time windows for service or deliveries, whether that's off-peak hours for retail or after hours for office buildings. Missed time windows (too early or too late) result in lost revenue and unhappy customers.

This facilities cleaning service increased customer satisfaction and retention by implementing last mile optimization that lets schedulers closely adhere to each client's requested service window.

Optimization reduces operational costs by minimizing unnecessary travel between job sites, wait times at customers and failed stops outside customers' requested service windows. The optimization engine also provides the flexibility to handle last-minute changes and urgent requests without disrupting pre-planned schedules.



Fuel Profitable Growth With Strategic Fleet Planning

Food & Beverage

A regional food distributor reduced its fleet by 10% while maintaining high service levels after implementing a modern last mile transportation platform that provides key insights into the company's operations. The distributor, which delivers perishable goods to supermarkets and restaurants, faced challenges with over-deployment and under-deployment of vehicles across its different territories to meet fluctuating demand, leading to increased costs and unmet delivery schedules.

The director of transportation deployed a last mile transportation platform that provides detailed data and analytics on delivery patterns, customer demand and vehicle performance. The director and her team use this data to make informed decisions about fleet deployment across the distributor's network. With the right number of vehicles available in the right territories at any given time, the company has reduced its fleet while maintaining high service levels and meeting customer demand in the highly competitive market.

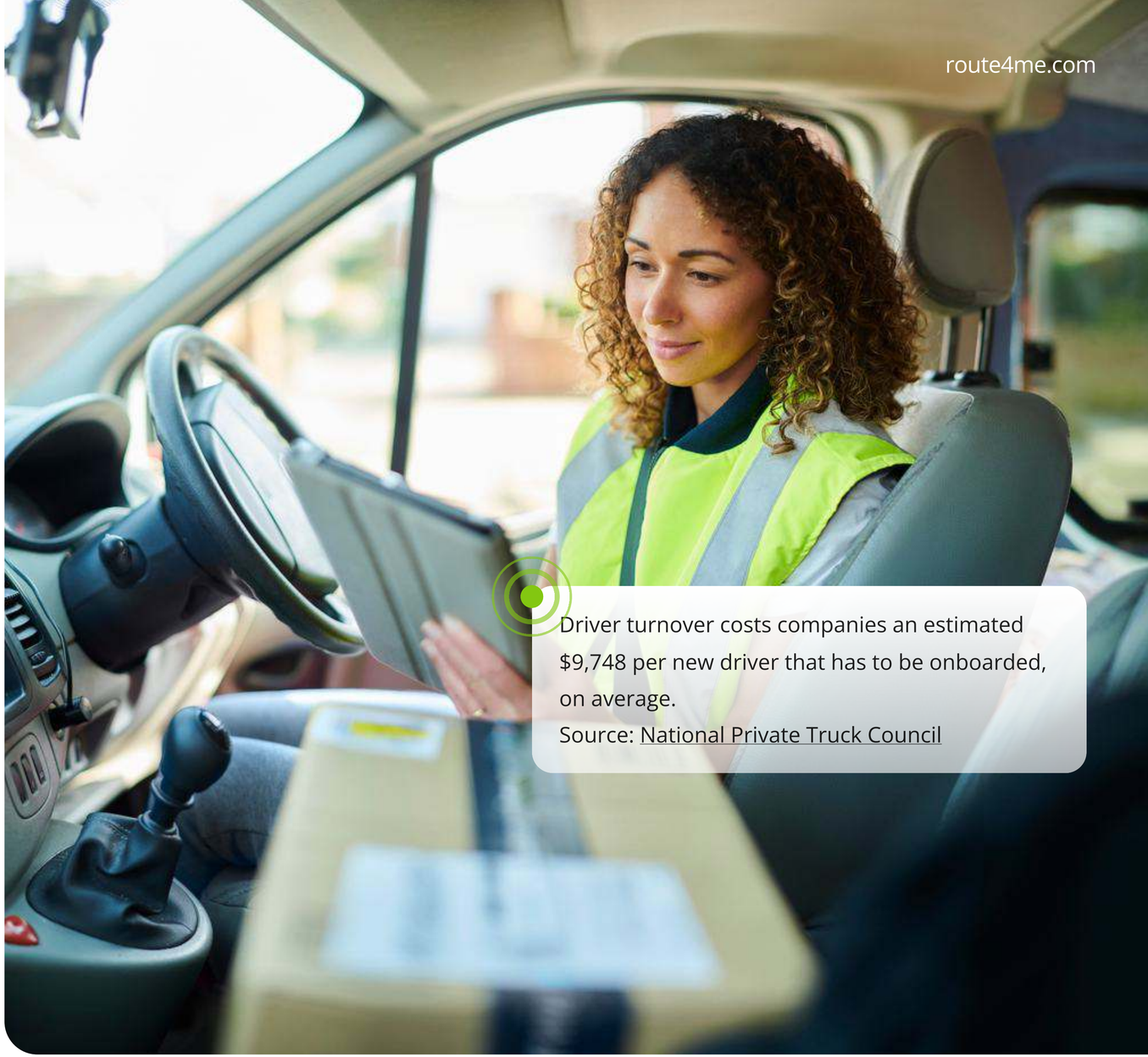
Improve Last Mile Operations With Increased Driver Retention And Better Performance Management

Parcel Delivery & Courier

Inconsistent and unpredictable delivery schedules lead to excess idle time, low fleet utilization and high driver turnover. By implementing a last mile transportation platform, this regional courier service reduced driver turnover by 25% within six months. Higher driver retention led to lower recruiting and training costs, as well as improved customer service.

The courier's planners use last mile optimization to create balanced workloads and efficient routes that minimize idle time and driver overtime, resulting in drivers reporting higher job satisfaction. Planners also use optimization to minimize left turns, creating more fuel-efficient and less accident-prone routes.

Logistics managers use detailed performance data from the platform to identify top performers based on metrics like on-time deliveries, route compliance and customer feedback. The logistics team used this data to implement training programs for underperforming drivers and a reward system that promotes excellence and accountability among all drivers.



Driver turnover costs companies an estimated $9,748 per new driver that has to be onboarded, on average.
Source: National Private Truck Council

Enhance Delivery Operations By Analyzing Planned Vs Actual Last Mile Performance

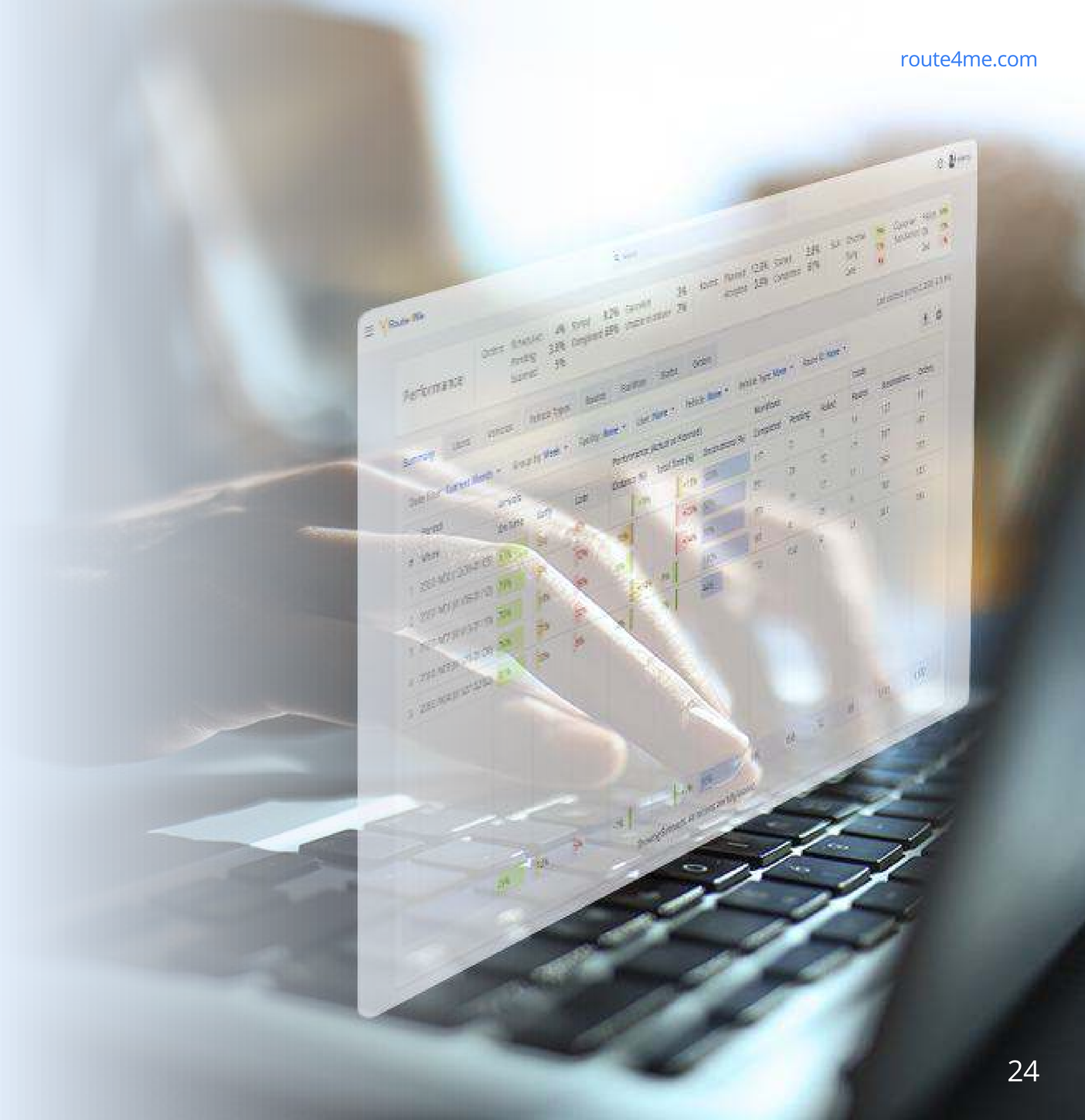
Wholesale Distribution

Companies that integrate their last mile transportation platform with telematics can track planned versus actual delivery performance to identify opportunities for operational improvements.

> *"The combination of last mile optimization and telematics has allowed us to compare planned versus actual performance across our network and to identify and fix issues we didn't even know existed."*

The planners at this sanitary supplies distributor use this powerful combination to pinpoint route compliance issues that result in delivery delays and excess fuel consumption. When they find consistent deviations, they reoptimize the underperforming routes and promote efficient driving practices to those specific driver teams.

These initiatives have resulted in an 8% reduction in average delivery times, a 12% drop in fuel consumption and an improvement in on-time delivery rates to above 95%. The planning team established a culture of continuous improvement by regularly reviewing key performance indicators to uncover new opportunities to enhance operations.

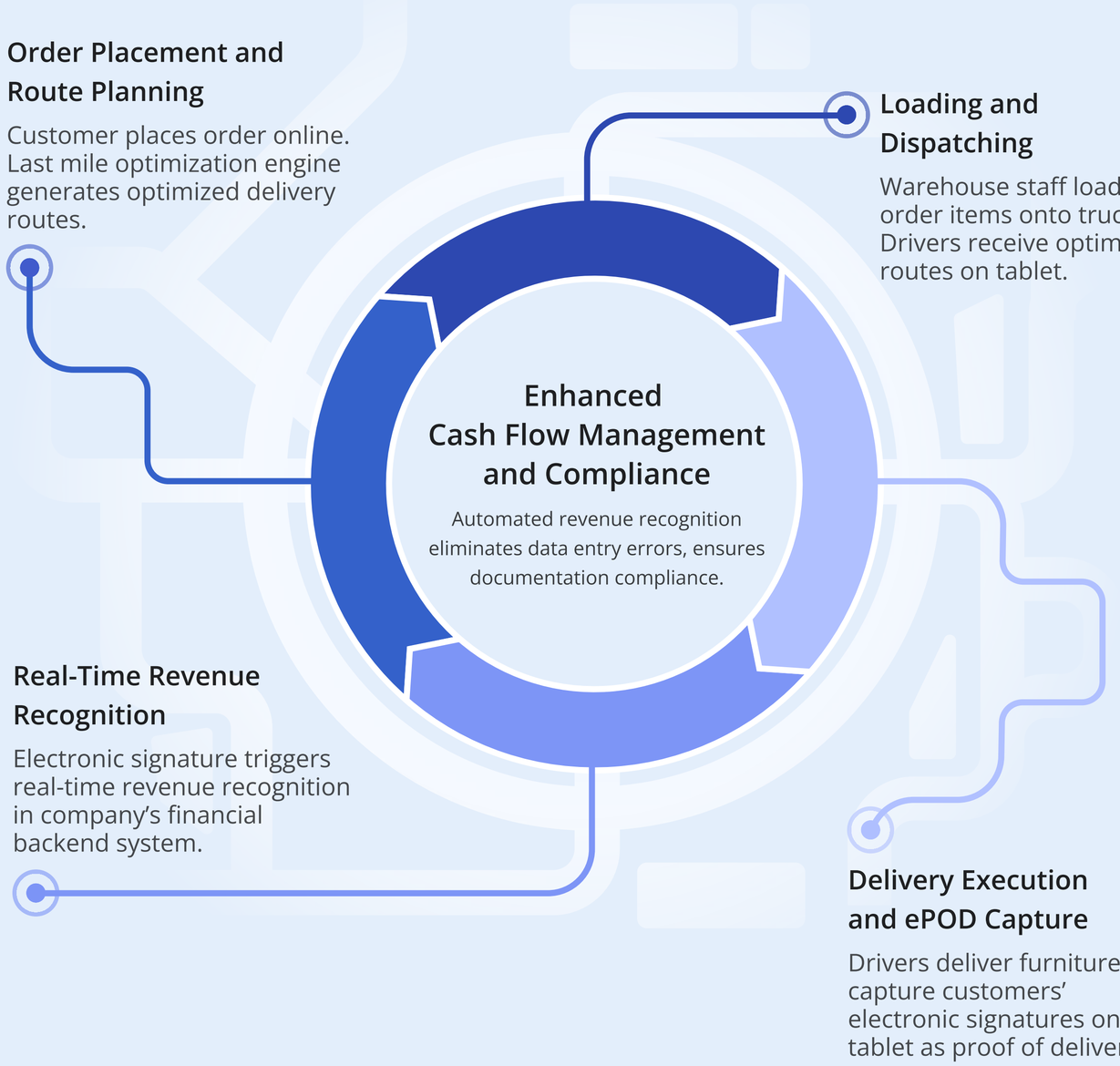


Enable Real-Time Revenue Recognition With Closed-Loop Order-To-Cash Integration

Big & Bulky Delivery

A leading furniture distributor uses a last mile transportation platform to capture each customer's signature on a tablet as electronic proof of delivery (ePOD), so that the company can recognize the revenue associated with that order in real time in its financial backend system. With ePOD, you eliminate errors from manual data entry, reduce delays in revenue reporting and enhance cash flow management.

Digital records create an easily accessible audit trail, which is essential for regulatory compliance and in the event of an audit. With clear proof of delivery, you minimize disputes with customers regarding whether and when a delivery was made, resulting in fewer customer service issues and potential revenue loss.



Improve Visibility To Driver And Vehicle Performance By Integrating With Mobile Technology and Telematics

Waste Management & Recycling

A modern last mile transportation platform integrates with the latest mobile technologies and incorporates a gateway to connect with your telematics. A recycling business adopted this kind of integrated platform to improve visibility into the performance of its drivers and vehicles in the field, as illustrated below.

Dispatchers

- Plan and dispatch daily routes to driver devices
- Monitor route progress and compliance
- Manage exceptions when drivers miss destinations
- Compare plan to actual for continuous improvement

Last Mile Transportation Platform

- Connects dispatchers to field in real time
- Integrates and transforms data with unified dashboard
- Provides single view of driver and fleet performance
- Enables effective data retention for compliance

Telematics Gateway

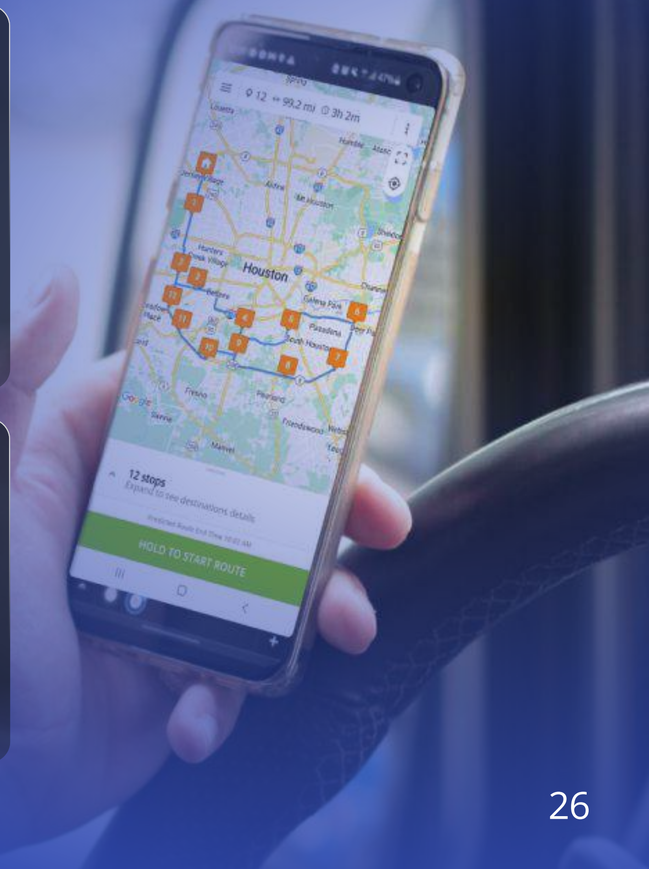
- Connects with disparate telematics devices
- Normalizes all telematics data to uniform format
- Enables bi-directional, near real-time data synch between telematics and last mile transportation platform

Vehicle Telematics

- Collect key vehicle data (location,speed, engine diagnostics)
- Support in-cab video for safety and behavior monitoring

Driver Devices

- Guide driver with turn-by-turn navigation
- Track driver location and activities for real-time visibility



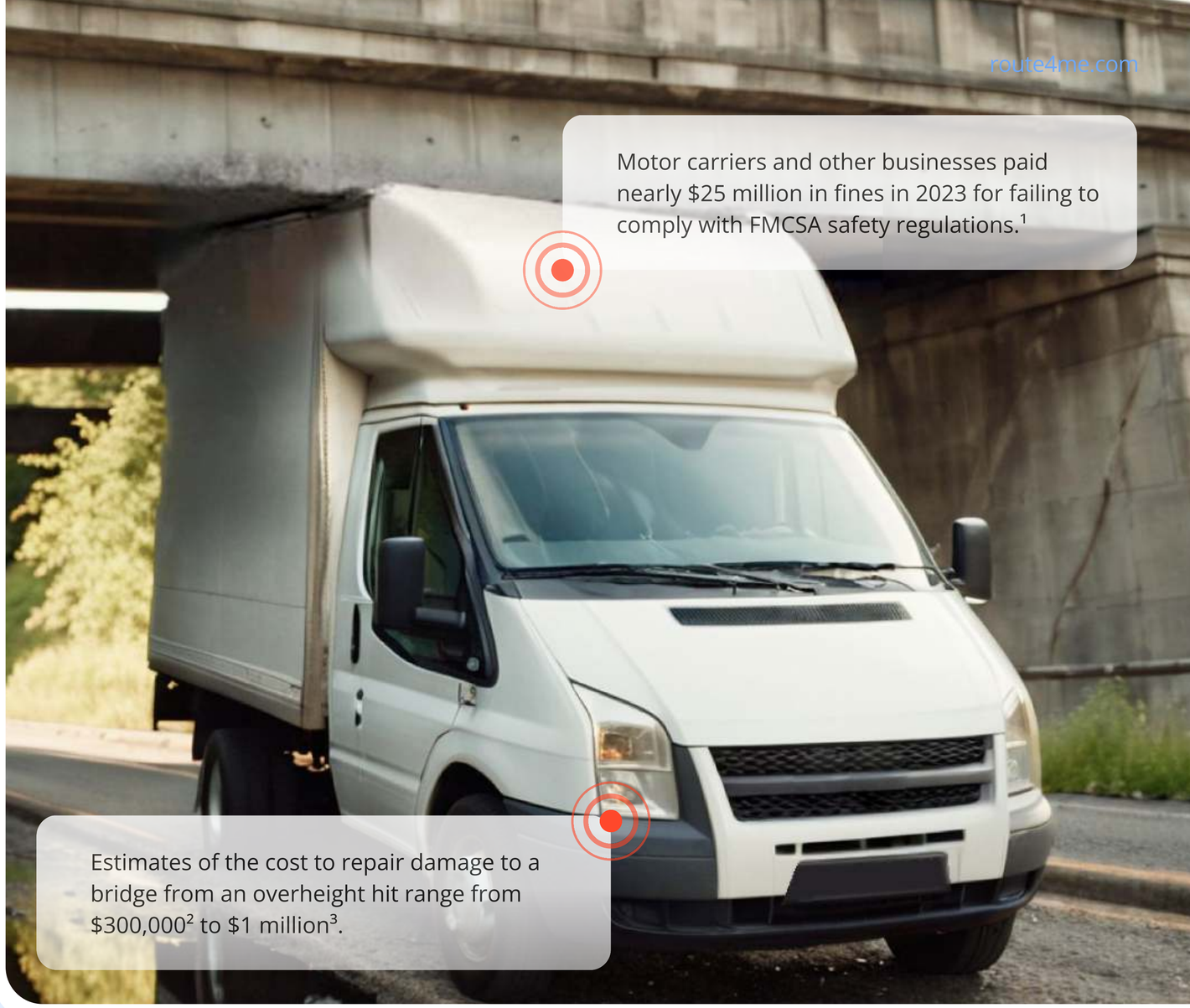
Ensure Safe And Efficient Routing For Commercial Truck Navigation

Construction Services & Supplies

Route planning processes that fail to account for commercial truck driving restrictions result in unsafe driving directions, inaccurate travel times and substantial fines. Consumer driving apps, for example, don't account for truck Class 1-8 height and weight limits, cargo HAZMAT regulations and other vehicle restrictions.

Planners at this logistics provider in the construction industry use a last mile transportation platform with commercial truck routing and navigation capabilities to ensure that its drivers comply with vehicle restrictions across its different service territories. The platform's advanced optimization engine considers vehicle-specific constraints and road prohibitions, allowing for precise and compliant route planning.

The optimized routes avoid restricted areas, minimize the risk of fines and ensure driver safety. And the optimization engine provides accurate travel time estimates based on compliant routing, enabling better management of delivery schedules and improved project timelines.



Motor carriers and other businesses paid nearly $25 million in fines in 2023 for failing to comply with FMCSA safety regulations.[1]

Estimates of the cost to repair damage to a bridge from an overheight hit range from $300,000[2] to $1 million[3].

1. *JJ Keller Compliance Network*
2. *Evergreen Safety Council*
3. *Tennessee Department of Transportation*

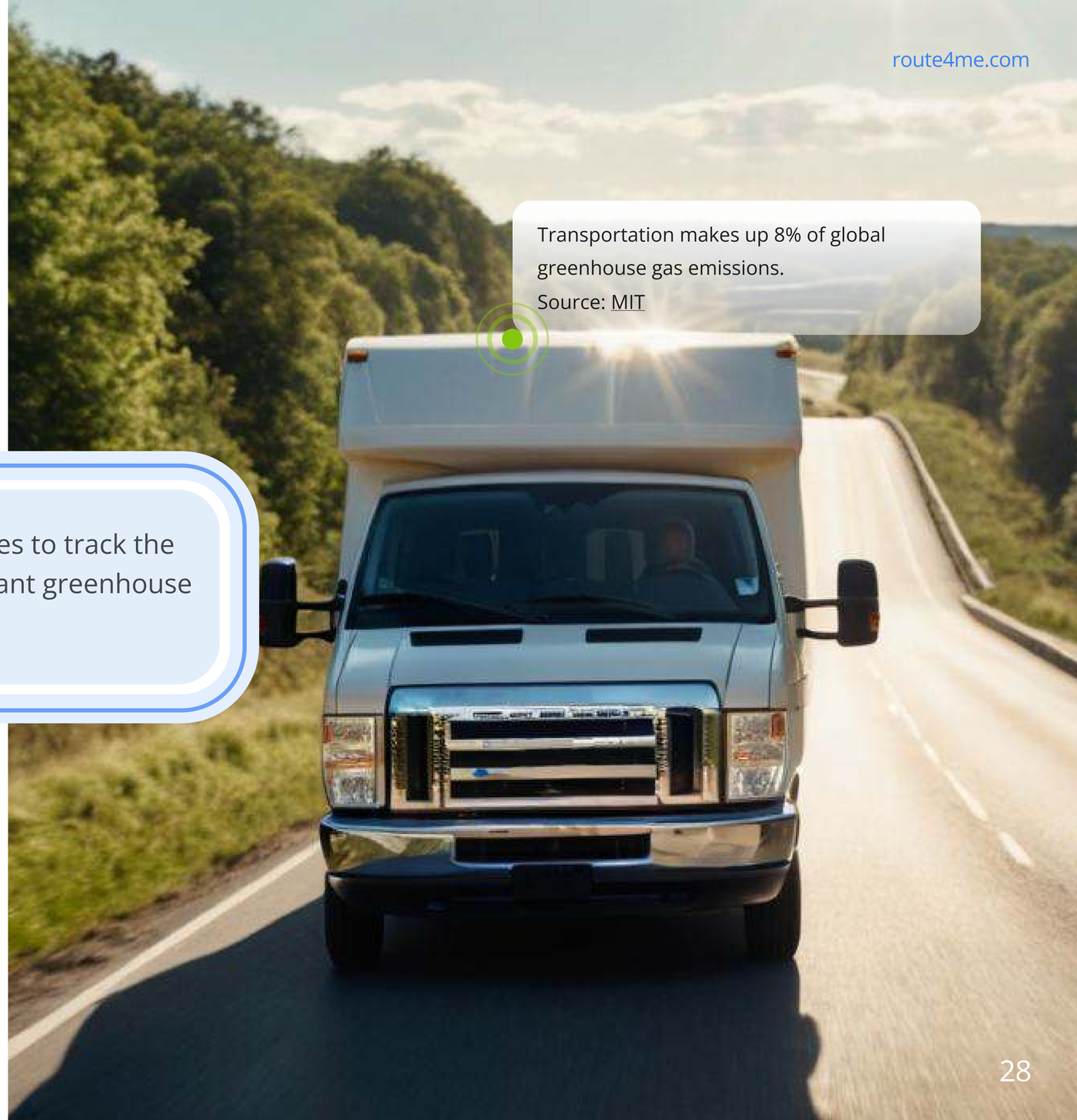
Meet Sustainability Targets With Documented C02 Reductions

Utilities Services

A major county utility service used last mile optimization to reduce its fleet's weekly mileage more than 30% by planning more efficient routes, resulting in a similar cut in fuel consumption.

The utility's last mile transportation platform includes capabilities to track the fleet's CO2 emissions, allowing the service to document significant greenhouse gas reductions based on its lower fuel usage.

The cut in CO2 emissions has supported the utility's ambitious sustainability initiative, enhanced the service's reputation and strengthened its relationship with the community. The organization has also reduced its fuel and vehicle maintenance costs thanks to greater routing efficiency.

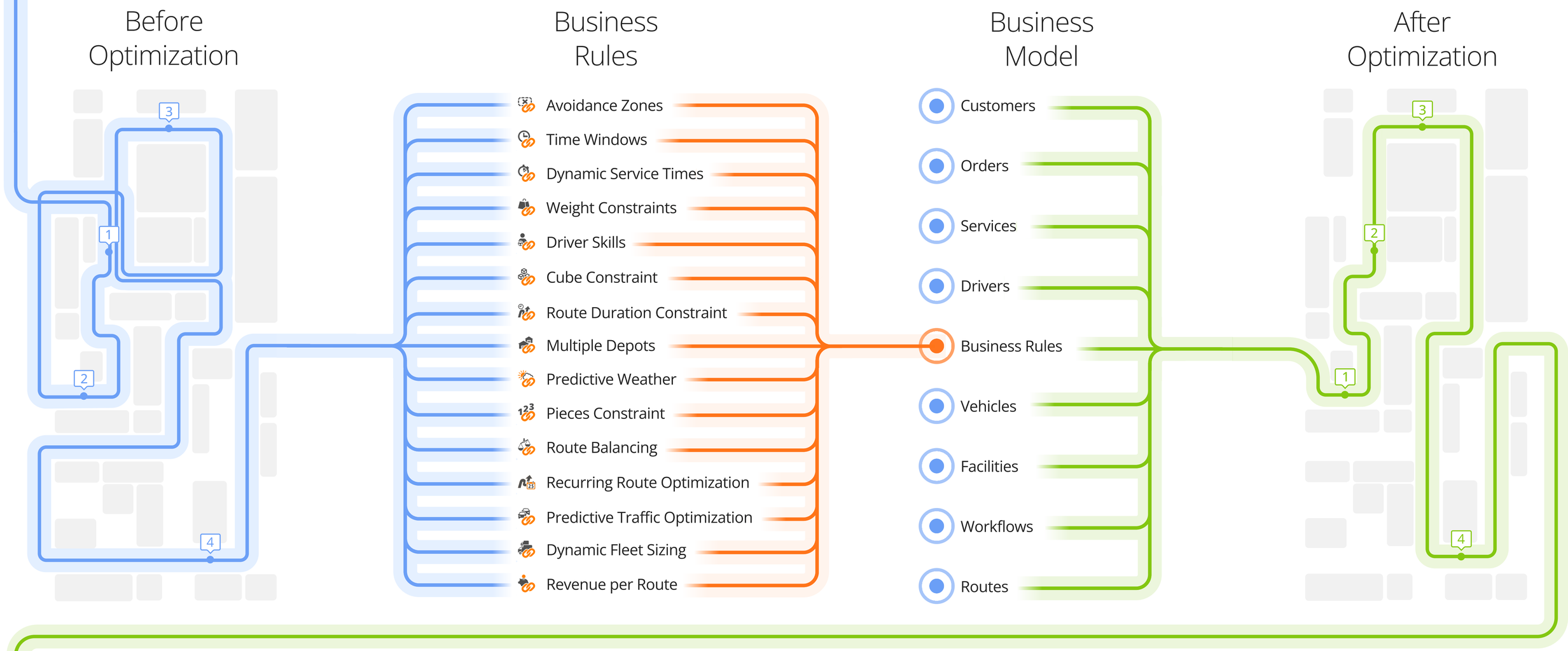


Transportation makes up 8% of global greenhouse gas emissions.
Source: MIT

04

Calculating ROI For Last Mile Optimization

Last Mile ROI 101



In theory, calculating last mile optimization ROI is straightforward. You simply compare the profitability of your current routes to the profitability of optimized routes. In practice, you need to choose the business rules that are best for your operation and you need access to the detailed data required for the calculation.

A Simple ROI Model For Last Mile Optimization

Unlike many technology investments, last mile optimization lends itself to very concrete ROI calculations. Operational metrics, such as number of orders processed and number of miles driven, connect directly to financial metrics through the unit economic factors that reflect your unique business, such as revenue per order and fuel cost per mile.

Operational Metrics

Routes
Orders
Miles
Drive Time
Service Time
Planning Time

×

Unit Economics

Revenue/Order
Fuel/Mile
Maintenance/Mile
Labor/Hour

=

Financial Metrics

Service Revenue
Labor Costs
Fuel Costs
Maintenance Costs

Basic Cost Savings ROI

In this example, a multi-regional food delivery operation that handles 1,000 orders per day across eight facilities requires 66 routes driving 6,771 miles per day before optimization. By applying business rules that fit its operation to an advanced last mile optimization engine, new routes were calculated that required only 51 routes. The resulting reductions in fuel, labor and maintenance costs add up to over half a million dollars per year in savings. This analysis does not include the savings achieved by selling or redeploying the excess 15 vehicles from the eliminated routes.

	Daily			Annual		
	Before	After	Savings	Before	After	Savings
Fuel Cost	**$1,693**	**$1,372**	**($321)**	**$440,101**	**$356,598**	**($83,503)**
Maintenance Cost	**$1,354**	**$1,097**	**($257)**	**$352,081**	**$285,279**	**($66,802)**
Labor Cost	**$8,644**	**$7,175**	**($1,468)**	**$2,247,343**	**$1,865,615**	**($381,728)**
Total Cost	**$11,690**	**$9,644**	**($2,046)**	**$3,039,525**	**$2,507,492**	**($532,033)**
Orders	**1,053**	**1,053**	**0**	**273,780**	**273,780**	**0**
Routes	**66**	**51**	**(15)**	**17,287**	**13,326**	**(3,961)**
Miles	**6,771**	**5,486**	**(1,285)**	**1,760,405**	**1,426,394**	**(334,012)**
Drive Time (Hours)	**387**	**313**	**(73)**	**100,595**	**81,508**	**(19,086)**

Reduce Costs With Improved Asset Utilization And Better Maintenance Planning

Parcel Delivery & Courier

A mid-sized third-party delivery company with about 50 vehicles used a last mile transportation platform integrated with its telematics to increase vehicle capacity utilization from below 65% to above 90% by optimizing load planning, consolidating deliveries and creating more efficient routes.

"Integrating telematics with our last mile transportation platform has allowed better tracking of vehicle service hours and more effective maintenance scheduling, improving vehicle uptime and avoiding costly service disruptions."

Optimized routes and better asset utilization allowed the company to meet existing customer demand with only 35 vehicles, significantly lowering maintenance and insurance costs. The optimized routes reduced overall travel distance by more than 20%, further cutting fuel expenses and operational costs.

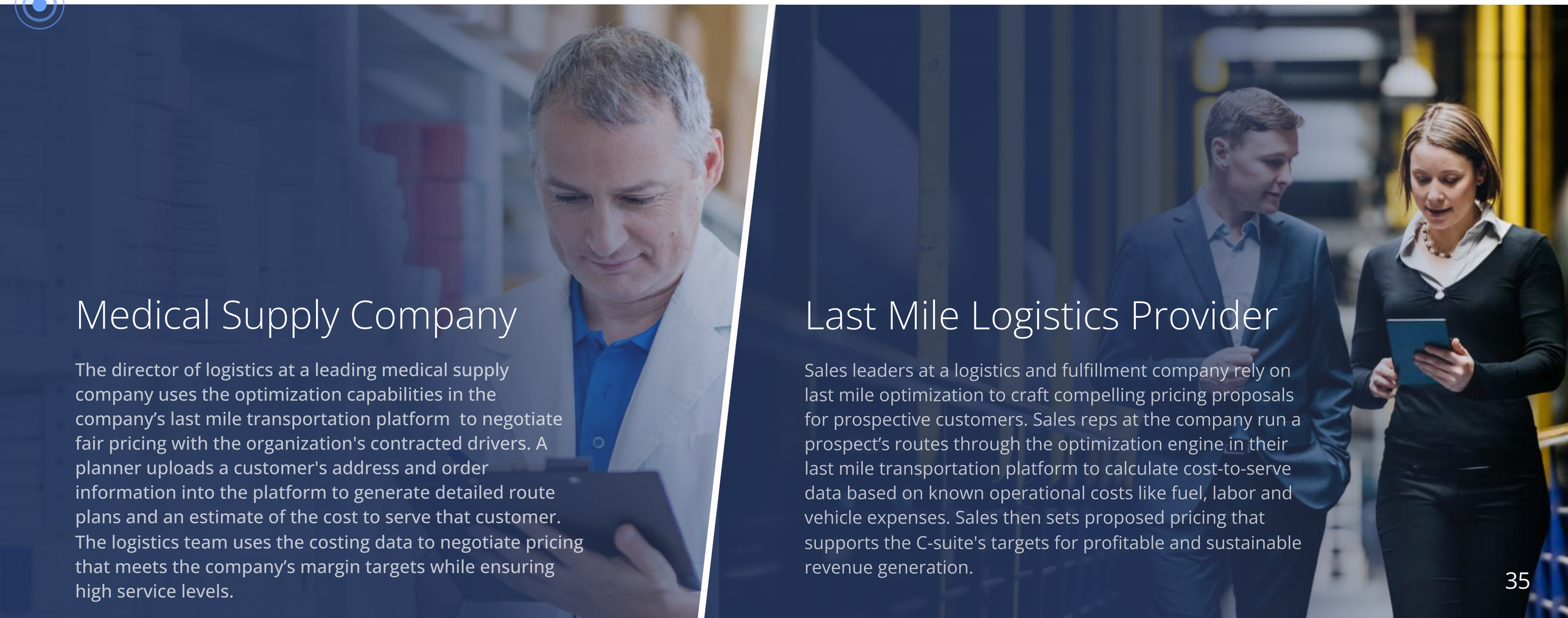
Business Growth Based ROI

If your business is growing, saved resources can be redeployed to scale your operation. In this example, the 15 vehicles saved in the previous analysis (see pg. 32) are redeployed to a new expansion facility with capacity for an additional 1.6M in revenue and 1.4M in operating profit.

	Daily			Annual		
	Before	After	Change	Before	After	Change
Revenue	$21,060	$27,321	$6,261	$5,475,600	$7,103,357	$1,627,757
Fuel Cost	$1,693	$1,779	$87	$440,101	$462,606	$22,505
Maintenance Cost	$1,354	$1,423	$69	352,081	$370,085	$18,004
Labor Cost	$8,644	$9,309	$665	$2,247,343	$2,420,215	$172,873
Total Cost	$11,690	$12,511	$820	$3,039,525	$3,252,906	$213,381
Operating Profit	$9,370	$14,809	$5,440	$2,436,075	$3,850,451	$1,414,376
Orders	1,053	1,366	313	273,780	355,168	81,388
Routes	66	66	0	17,287	17,287	0
Miles	6,771	7,117	346	1,760,405	1,850,424	90,019
Drive Time (Hours)	387	407	20	100,595	105,739	5,144
Service Time (Hours)	45	59	13	11,773	15,272	3,500
Total Time (Hours)	432	465	33	112,367	121,011	8,644

Enable Profitable Growth With Last Mile Optimization

Harness the power of last mile optimization to drive profitable growth. Understand the exact cost of serving prospective customers and move beyond intuition and rough estimates. Here's how two companies achieved success.



Medical Supply Company

The director of logistics at a leading medical supply company uses the optimization capabilities in the company's last mile transportation platform to negotiate fair pricing with the organization's contracted drivers. A planner uploads a customer's address and order information into the platform to generate detailed route plans and an estimate of the cost to serve that customer. The logistics team uses the costing data to negotiate pricing that meets the company's margin targets while ensuring high service levels.

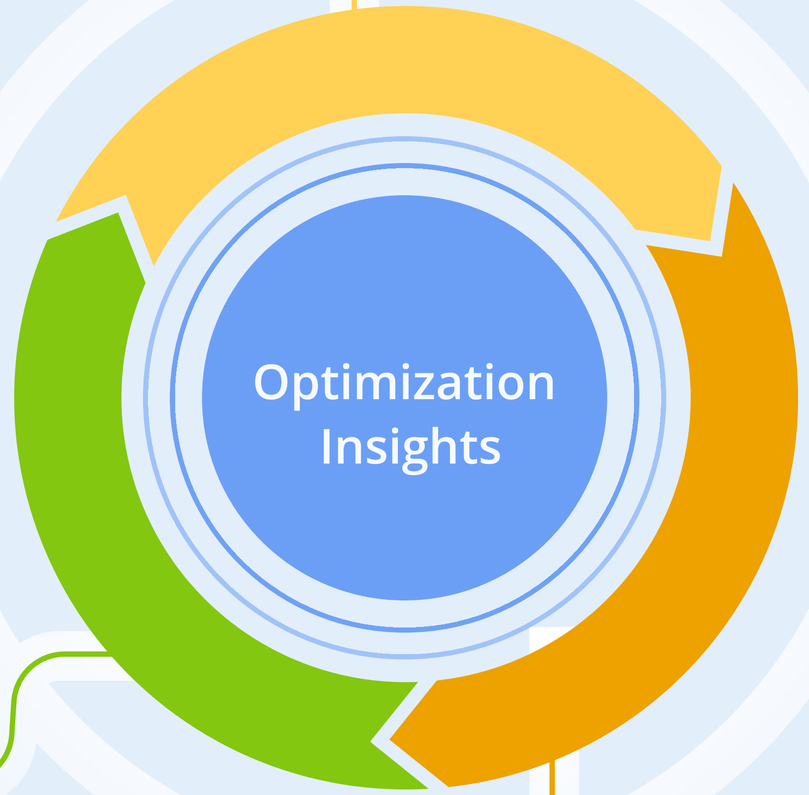
Last Mile Logistics Provider

Sales leaders at a logistics and fulfillment company rely on last mile optimization to craft compelling pricing proposals for prospective customers. Sales reps at the company run a prospect's routes through the optimization engine in their last mile transportation platform to calculate cost-to-serve data based on known operational costs like fuel, labor and vehicle expenses. Sales then sets proposed pricing that supports the C-suite's targets for profitable and sustainable revenue generation.

Optimization Insights Drive Continuous Improvement

ROI calculation is just one example of how optimization insights can drive continuous improvement at every level of your business.

Before and after analysis can be used to model the financial impact of proposed operational changes for business planning and strategic decision making, while real-time data enables better performance and compliance in day-to-day execution.



Real-Time

Improve service, ensure compliance and adapt to issues in real-time.

Strategy

Scale capacity, reduce costs and continuously improve by comparing actual to plan.

Operational

Reduce planning time and increase productivity across the entire last mile operation.

Expert Tip: Telematics Gives You A Head Start

Your current systems must capture historical data sufficient to calculate operational activity metrics and unit economic factors to prepare a “Before” analysis. Moreover, you must also have access to detailed operational data, such as orders, routes, vehicle types, driver skills, etc., to complete an “After” analysis using last mile optimization. For a large operation, collecting this information can be a daunting task.

If you have already implemented telematics with an associated fleet management system, then you have an enormous head start. Most of the data required for the before analysis and the inputs for a last mile transportation platform can be exported from your current system.

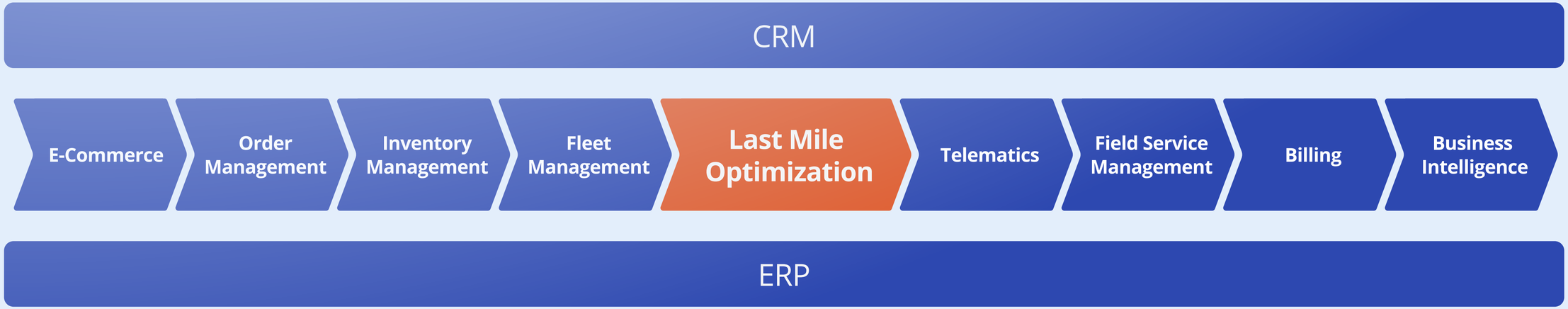
05

How Last Mile Optimization Fits Into Your Tech Stack

Last Mile Optimization Sits In The Middle Of Your Tech Stack

Last mile optimization doesn't operate in isolation. Companies rely on a complex ecosystem of software systems to manage everything from e-commerce to customer relationships to service and delivery management to accounting. Organizations that integrate last mile optimization with other critical systems amplify the impact of optimization across the business.

Integration creates end-to-end visibility throughout the fulfillment cycle and aligns last mile service and delivery with other business processes, such as customer service, order processing, warehouse management, payments, and accounting. Integration also eliminates data silos that slow down decision-making, reduce efficiency and increase costs.



Compare Planned Vs. Actual With Vehicle Telematics Integration

Telematics systems provide GPS tracking, on-board vehicle diagnostics and wireless communication services. Integrating telematics with last mile optimization gives a complete picture of planned vs. actual performance in the final mile.

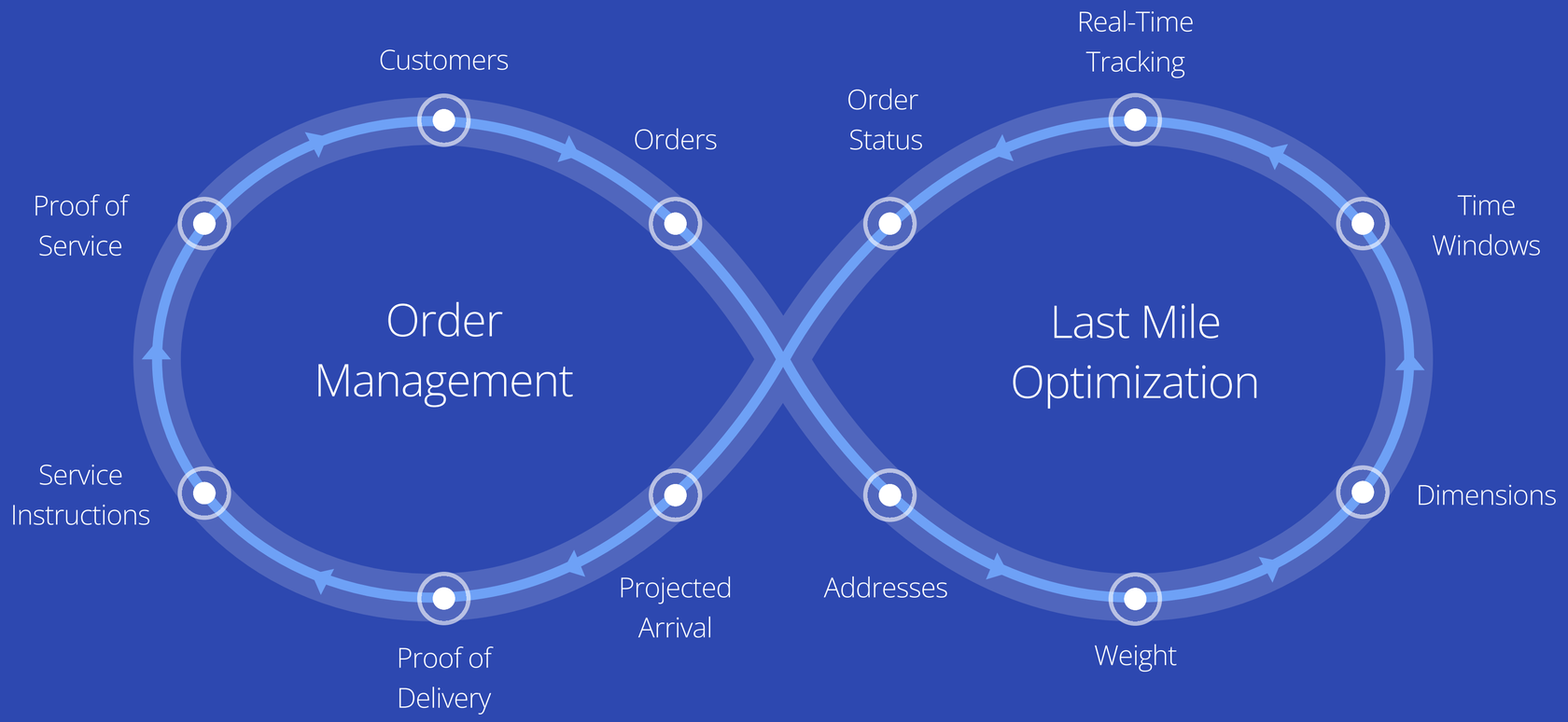
Telematics integration provides a system of record for vehicle data – an essential input for last mile optimization. Vehicle counts, models, locations and commercial truck classes are all critical optimization constraints. Telematics GPS data can also be combined with mobile device GPS data to calculate more accurate vehicle and driver locations.

Companies that integrate last mile optimization with their telematics driver app can dispatch planned routes to the field for a more unified user experience.

Integrate Order Management For Seamless Last Mile Workflows

Order management systems (OMS) provide critical inputs for last mile optimization, including order line items, customer addresses, time windows, service requirements and special instructions. In turn, route plans and progress can be fed back upstream to update order status and provide visibility for real-time order tracking.

Tight OMS integration creates seamless last mile workflows. Order label scanning and sorting streamline loading. Real-time route visibility and accurate arrival time estimates improve customer satisfaction and loyalty. OMS last mile integration also allows you to match capacity to demand for higher fleet utilization and lower costs by allocating vehicles and drivers based on actual order volume.



Delight Customers With Real-Time CRM Integration

When sales and support teams don't have visibility to the last mile, they can't resolve customer issues encountered in the field, resulting in poor service and unhappy customers. Syncing arrival time, order status, signatures, proof of delivery, service notes and on-site images to your CRM in real-time ensures a consistent, high quality customer experience.

Your CRM can use last mile information to automate notifications and tracking web pages that keep customers informed every step of the way, reducing support costs while improving customer service. If your CRM maintains detailed customer profiles, these can be sent to last mile drivers and technicians, so they are completely informed about unique customer requirements.

Opportunities Abound With Enterprise Resource Planning

Enterprise Resource Planning (ERP) platforms come in many shapes and sizes, so last mile integration benefits increase in proportion to the business processes your ERP automates.

If your ERP includes an order management system (OMS) or a customer relationship management (CRM) module, then integration will enable seamless last mile fulfillment and customer service, as described earlier. If your ERP system also handles warehouse management, it can be integrated to simplify sorting and loading.

Financial management is an essential component for all ERP platforms. If you use a last mile transportation platform with a driver app that includes electronic signatures and proof of delivery or service, then you can trigger invoicing and revenue recognition in the financial system in real time, completing the order-to-cash cycle.

Use Open APIs To Integrate Unique Industry Solutions

Many companies use systems-of-record designed for the specific needs of their respective industries. Off-the-shelf OMS, CRM and ERP systems just don't work for them. However, with modern API standards, all of the preceding benefits can be realized with custom integrations. If this sounds like your business, then make sure enterprise quality APIs that meet your specific business needs are at the top of your last mile transportation platform requirements list.

Business Requirements

- General last mile data: routes, destinations, addresses, vehicles, drivers, etc.
- Specific business data: customers, orders, schedules, workflows, compliance and custom data
- Business rules that fit your business, such as time windows, driver skills, driver breaks, vehicle capacity, mixed fleets, territories and commercial truck routing
- Dynamic routing, continuous route re-optimization, full-text searching and a service-oriented architecture for handling computationally intense API calls quickly and efficiently

Enterprise-Grade Platform & APIs

- Security: authentication, encryption, management and metering
- Scalability: high availability, reliability, monitoring and logging
- Performance: low latency, searching, filtering and caching
- Interoperability: Restful standards, web and mobile SDKs, and standard JSON data formats
- Usability: Consistent design, versioning and high quality documentation

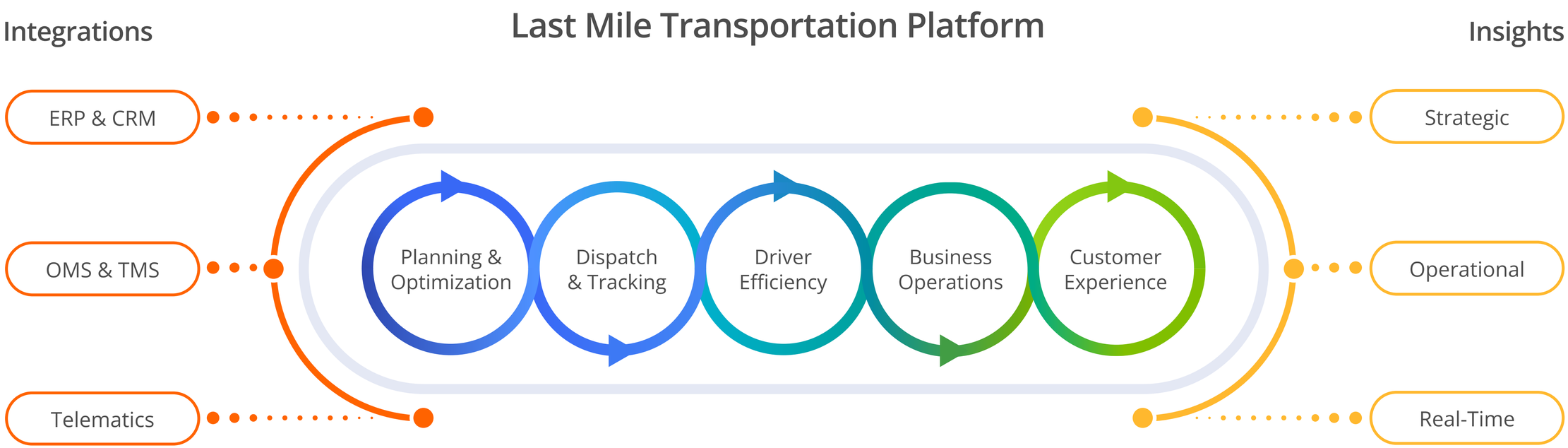
Integrating last mile optimization with your existing systems and processes streamlines data flows, enables automation and machine learning, and unlocks the full potential of this technology.

06

Key Requirements Of Modern Last Mile Transportation Platforms

Last Mile Transportation Platform Components

A modern last mile transportation platform automates and integrates mission-critical last mile workflows, empowering route planners, dispatchers, drivers and managers to take your business to the next level. In this section, we'll explore the key capabilities that you should consider as you review options for your business.



Key Requirements Of Modern Last Mile Transportation Platforms

Modern last mile transportation platforms offer a range of capabilities considered essential to successfully plan, execute and manage last mile operations. These features also are essential for moving beyond basic route optimization to achieve broader business improvements across the enterprise.

Route Planning	Routes Map and Editor	Plan, create, edit, visualize and manage optimized routes. Track teams in real time as they execute their routes.
	Address Book and Map	Store and manage addresses, service stops and customer locations centrally. Visualize locations and create routes on a map.
	Territory Management	Divide service areas into optimally sized territories. Assign delivery drivers, sales reps or service technicians accordingly.
	Route Simulation	Simulate planned routes before field employees leave the office, helpful for training new drivers.
	Recurring Routing	Create any type of recurring schedule for your unique business requirements
	Driver Breaks	Insert breaks into optimized routes to reduce fatigue and comply with regulations.
	Curbside Routing	Drop off or pick up goods at specific locations for each customer.
	Import Routes and Destinations	Import route planning data from cloud services like Google Drive, Dropbox or Box.net.
	Ultra High Resolution Mapping	Export high-resolution map images of optimized routes for training, facility use or emergencies.
Route Optimization	Single Driver Optimization	Plan and optimize multi-stop routes for one driver.
	Optimize Across Drivers	Plan equally sized, optimized routes for multiple drivers from a single set of addresses.
	Optimize Across Facilities	Plan multiple routes from different depots with predefined addresses.
	Mixed Vehicles Routing	Plan routes for fleets with varying loading and carrying capacities.
	Driver Skills	Assign routes based on customer needs and driver skills.
	Address Clustering	Split a large number of addresses into optimal clusters and optimize routes within them.
	Destinations Bundling	Group route destinations in the same geographic area.
	Time Windows	Sequence stops to be visited within specific time windows.
	Customer Priorities	Prioritize certain customers or insert last-minute orders.
	Business Rules and Constraints	Configure rules and constraints to support business processes, like maximum route destinations or specific turn avoidance.

Key Requirements Of Modern Last Mile Transportation Platforms

Dispatch and Tracking	Assign Drivers and Vehicles	Assign routes to drivers or vehicles based on skills, availability or vehicle parameters.
	Dispatch and Share Routes	Manage a network of managers, route planners, dispatchers and drivers. Delegate routes accordingly.
	Update and Reoptimize Routes	Update route status and make quick adjustments as needed.
	Route Manifests	Customize and view detailed route metrics, order details and progress.
	Real-Time Alerts	Get alerts to track team members' actions and productivity levels.
	Real-Time GPS Tracking	Track drivers' locations and routing activities in real-time.
	Advanced Team Management	Manage a network of team members with custom permissions and access.
	Export Routes and Maps	Share optimized routes and data with your team and use for reports, analysis and audits.
Driver Efficiency	Turn by Turn Directions	Provide step-by-step guidance for drivers, considering real-time traffic and conditions.
	Real-time Navigation and Maps	Offer a user-friendly navigation experience on mobile devices.
	Route Compliant Navigation	Ensure driver compliance and prevent costly and unsafe deviations with navigation that enforces your planned routes.
	E-Signatures, Videos, Images, Notes	Allow drivers to attach electronic proof of delivery and status updates to route stops.
Business Operations	Order Management	Import, manage and optimize routes with real-time order status updates.
	Order Label Scanning	Use barcode scanning for order management.
	Load and Unload Orders	Scan and manage orders for routes, including proof of delivery.
	Order Detail Export	Export order details for reporting and analysis.
	Proof of Delivery and Service	Allow drivers to add notes or multimedia status updates and attach electronic proof of delivery (POD), visit (POV) or service (POS).
	Service and Delivery Workflows	Create custom workflows for drivers to complete at each stop.
	Custom Data	Attach specific details and data to route stops and orders.
	HIPAA Compliance	Ensure data encryption and secure access for compliance.

Key Requirements Of Modern Last Mile Transportation Platforms

Customer Experience	Text and Email Notifications	Set up automated notifications for shipment milestones.
	Notifications History	Track and export customer notification logs.
	Online Order Tracking	Allow customers to track shipments and delivery updates.
	Customer Satisfaction	Collect service quality feedback with customized surveys.
Business Analytics	Route Reporting Dashboard	Visualize actionable intelligence in a centralized control panel.
	Planned vs. Actual	Compare planned KPIs with actual performance for continuous improvement.
	Route Operations Matrix	Track route progress with color-coded metrics.
	Route Compliance Tracking	Track how drivers follow planned route and detect deviations and detours.
	CO2 Emissions Statistics	Track fleet emissions for regulatory compliance and sustainability initiatives.
	Activity and Audit Log	Analyze team performance and detect fraudulent activities.
	Route Export	Export route data for analysis and navigation devices.
	Advanced Data Retention	Preserve data for recordkeeping and performance analysis.
Platform Integrations	APIs & SDKs	Access routing optimization APIs and SDKs.
	Telematics Platforms	Integrate with your telematics vendors for tracking and communication.
	Ecommerce Platforms	Integrate with platforms like Shopify and Magento.
	ERP and CRM Platforms	Integrate with ERP and CRM systems.
	SFTP Data Sync	Secure FTP (SFTP) for data synchronization.
Mobile Apps	iOS, Android, Zebra	Empower teams with mobile apps for route assignments and tracking.

07

Steps To Ensure A Successful Last Mile Optimization Implementation

Select An Experienced Partner

Your choice of implementation partner will be crucial for the success of your last mile optimization initiative. A partner with deep experience in your industry will understand your sector's unique challenges and provide solutions tailored to your operational environment.

An experienced partner also brings a cross-industry perspective on best practices and can offer innovative strategies and methodologies proven effective in different contexts.

Your ideal partner will provide comprehensive support before, during and after rollout, ensuring a smooth transition and continued success. Engage with your partner’s professional services team to unlock the full potential of your last mile operations.

Finally, look for a partner who not only delivers immediate results, but also invests in the future. Your partner's ongoing commitment to advance its capabilities to meet emerging needs will keep your business competitive in a dynamic market.

Don’t Take On Everything All At Once

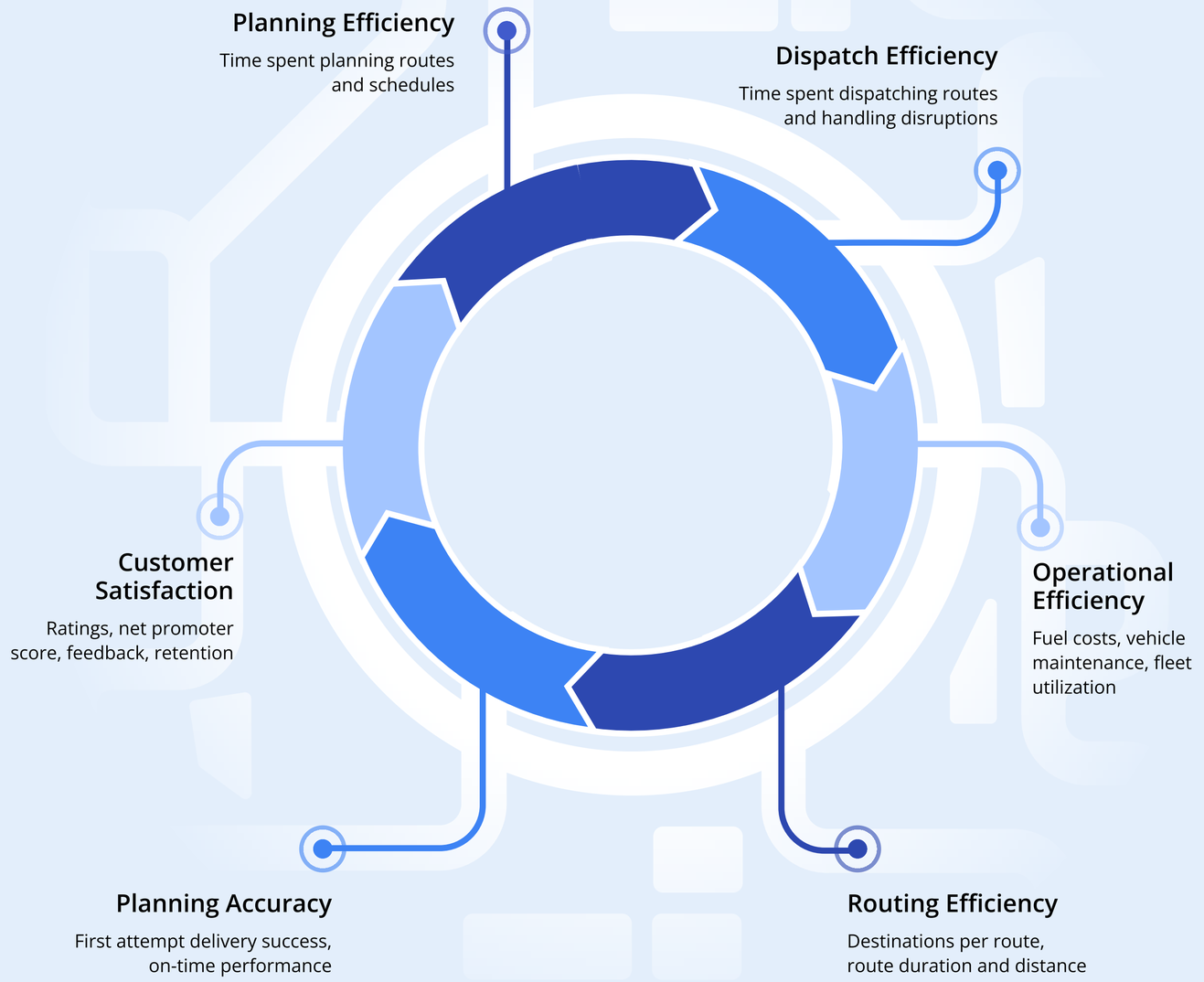
The potential gains of last mile optimization are often so attractive that it’s tempting to pack more and more into your initial implementation. However, more capabilities mean more work, more change and more delays. Plus, what you think is the perfect solution in theory may change once you get things up and running in practice.

Manage the work and the risk by breaking up your rollout into well-defined phases with a focus on agile implementation and continuous improvement over time. Note that an experienced implementation partner can provide valuable guidance throughout this phased approach. With your partner’s support, you can optimize each stage for success and address challenges as they arise.

Identify And Benchmark Key Performance Metrics

You can’t manage what you can’t measure, so it’s critical to identify and benchmark the key performance indicators (KPIs) you want to impact with your last mile optimization project. Establish baselines for those metrics before your implementation, and then monitor them as your rollout progresses to continuously improve.

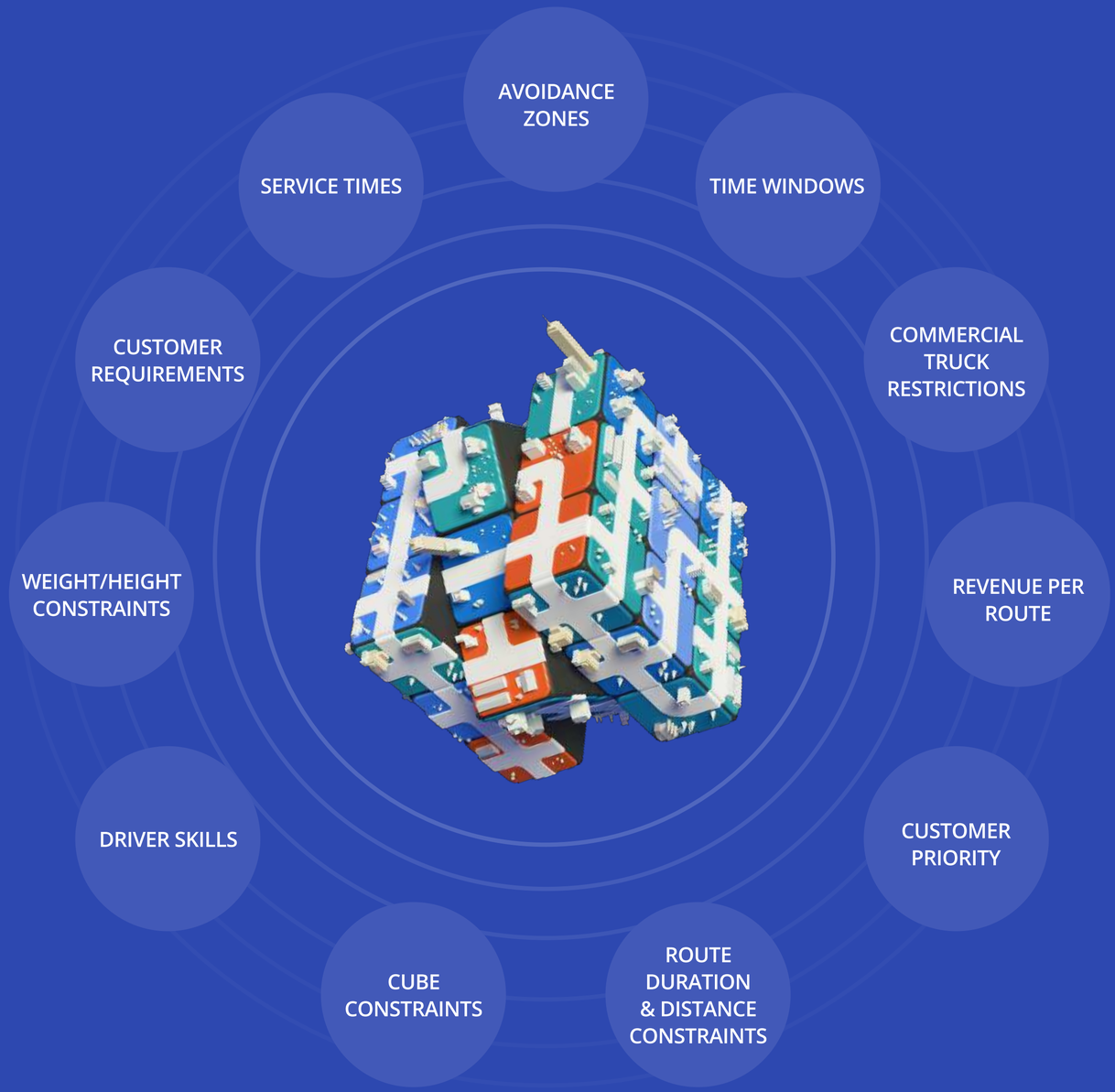
Certain KPIs are indicated directly by your ROI model discussed earlier in this guide. Most importantly, all of your ROI activity metrics and unit cost metrics should be included in your KPIs in order to calculate the ROI of your implementation.



Identify Business Rules And Constraints

Your last mile optimization must incorporate all the business rules and constraints that govern your operation. Otherwise, you will wind up no better off than you were before you began your last mile journey.

Collaborate with the relevant stakeholders to create a detailed list of rules and constraints, categorizing them by type, priority and impact on operations. Update the list regularly to reflect any changes in your business environment.



Organize Your Data

Data fuels last mile optimization, and clean, well-structured data prevents errors during the implementation and use of last mile optimization.

At a minimum, you need to gather and normalize the following information:

- **Drivers**:
  Name, contact info, availability, skills
- **Vehicles**:
  Name, class, capacity, dimensions, mpg
- **Depots**:
  Addresses, constraints (e.g., operating hours)
- **Office Staff**:
  Name, contact info, role
- **Orders**:
  Item count, weight, dimensions
- **Customers**:
  Addresses, service windows, equipment requirements

Pro Tips For Getting The Most Out Of Your Last Mile Data

- ✓ Standardize your data before implementing last mile optimization to reduce errors, facilitate integrations and ensure reliable routes.
- ✓ Enter driver, depot and vehicle information into your last mile transportation platform during initial setup so you can assign destinations to vehicles and drivers with the necessary attributes.
- ✓ Plan how you will enter orders or destinations into the platform, whether via spreadsheet upload or integration to existing systems like order management or delivery management.

Build And Test Integrations In Advance

Integration between a last mile transportation platform and other enterprise systems amplifies the impact of optimization. But the linkages and data flows between systems must be secure and seamless to deliver on the full promise of optimization.

Follow these steps for integration success:

- Work with the functional stakeholders to define how integration will support their workflows. Set goals and requirements for each system to be integrated.
- Document the integration architecture and develop a detailed implementation plan with milestones, roles and responsibilities.
- Select appropriate integration tools and technologies. Prioritize data security and integrity to protect sensitive information and ensure data consistency.
- Test integrations to ensure they meet your requirements. Involve end-users to gather feedback and identify usability issues.
- Monitor and maintain the integrations post-deployment to address unexpected issues and adapt to changes in your systems or processes.

Use Role-Based Training To Prepare Your Team

Your implementation partner should provide role-based training for key users who will be working with last mile optimization on daily basis, including your planners, dispatchers and drivers. Leverage your partner's onboarding process for virtual and in person training sessions, and make sure your team can access online, role-based guides and tutorials for self-paced learning and ongoing reinforcement. Establish a support system to assist users with issues that arise, gather feedback to identify training gaps, and ensure that your team knows how to access your partner's support resources.

Planners

Planners learn to manage the automated process of creating optimized route plans and analyzing planned vs actual data to improve overall performance.

Dispatchers

Train dispatchers to monitor route progress in real time and communicate with drivers as necessary to manage unexpected changes, delays or deviations.

Drivers

Drivers learn how to follow optimized routes, document the outcome of destinations and collaborate with dispatchers in the event of delays.

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