



Aptean Routing & Scheduling

Mastering logistics complexity with the right technology





Introduction

If logistics is the art of finding the most efficient way of moving goods to meet service requirements, then the need for a sophisticated approach to logistics optimization has never been more critical. By harnessing all the benefits of the latest technology solutions, you can improve operational efficiency and gain a competitive edge.

We created this resource to explore how technology can turn complexity into opportunity.

The model for road transportation and distribution has changed radically. And the pace of change isn't slowing down any time soon.

There was a time when the typical journey was either point to point – a full load from a manufacturer or distributor to a factory, wholesaler or distributor – or a regular circuit of collections and drops. An experienced transportation manager or savvy driver could plan a reasonably efficient set of routes that was achievable and practical.

But the requirements that transportation operations face today are much more complex. The expectations of both businesses and consumers have evolved beyond recognition:

- › Factories and other businesses increasingly operate to lean and just-in-time principles.
- › Organizations require smaller consignments more frequently – often within very tight time windows and strict schedules.
- › Consumers expect to have orders delivered at their convenience.
- › The sheer variety of goods available, their places of origin, and their channels to market have increased significantly.

As a result, delivery schedules need to cope with pick-ups from multiple sources and delivery to multiple destinations. These may be in combinations that vary trip-by-trip, or involve both unloading deliveries and picking up 'back loads' simultaneously.

There are rules and regulations in place that affect everything from driver hours and conditions to environmental performance and restrictions on permitted times for deliveries. Add to that an increasingly congested road network, and your operational performance becomes less than predictable.

It's no longer feasible to expect even the most skilled and experienced planners to manually devise effective routes and schedules. Instead, you must look to technology to help manage the complexities of your transportation operation and expand and differentiate in the competitive market you operate in.

Learning to love change

Logistics networks have become more complex, with integrated operations combining fleets and movements to minimize fleet sizes, mileage and empty running.

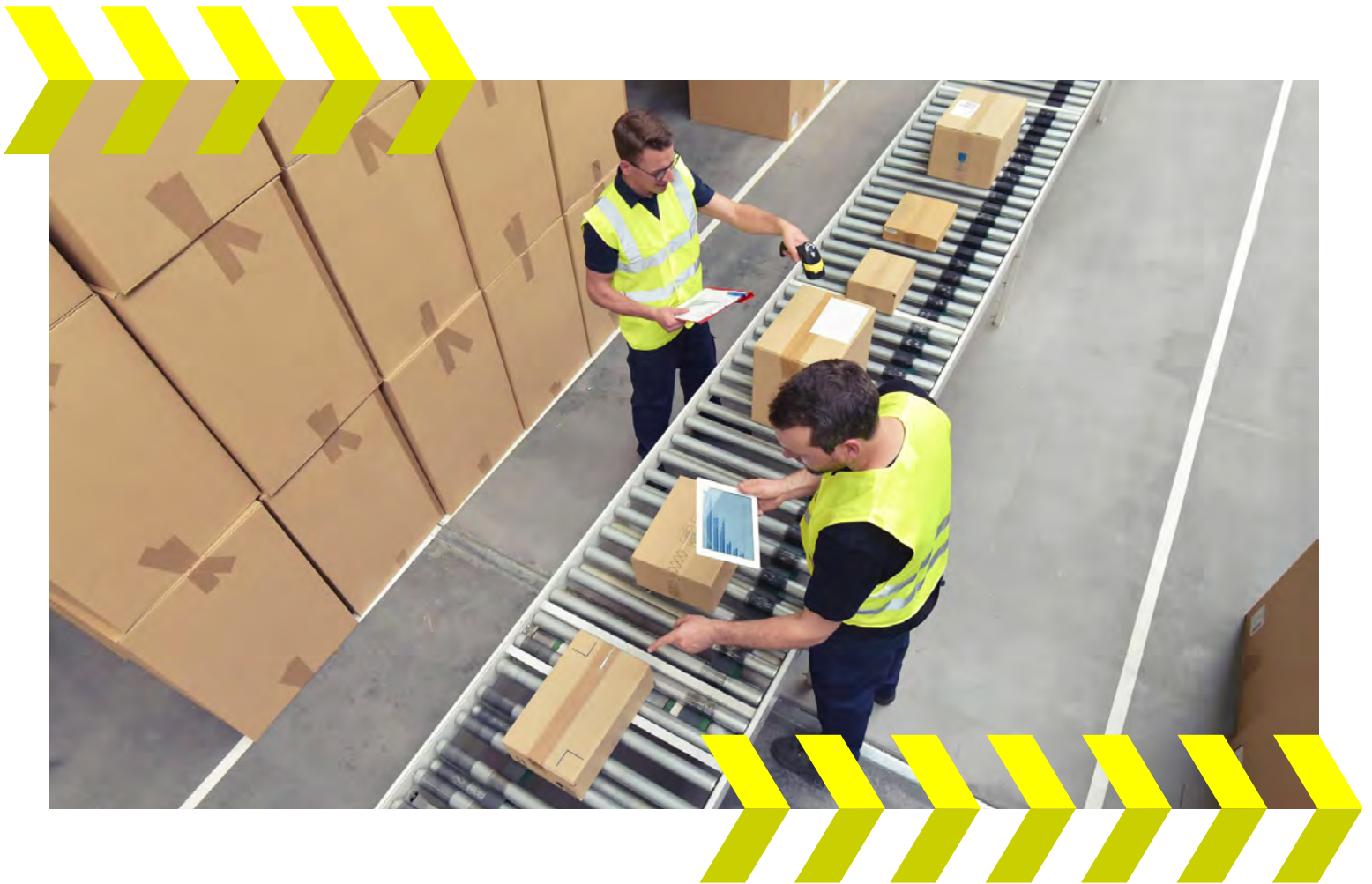
And the transportation industry's ability to embrace change and use technology to eliminate complexities has never been so important.

3PLs, for example, have introduced new ways of managing distribution and new levels of professionalism. Facilities like distribution centers and methods such as cross-docking and 'hub and spoke' have been introduced.

Competition in logistics has helped change transportation and distribution from a cost center to being a differentiator and a source of competitive advantage. Many logistics operators have invested in facilities and advanced IT software – like telematics and tracking – to manage complexity.

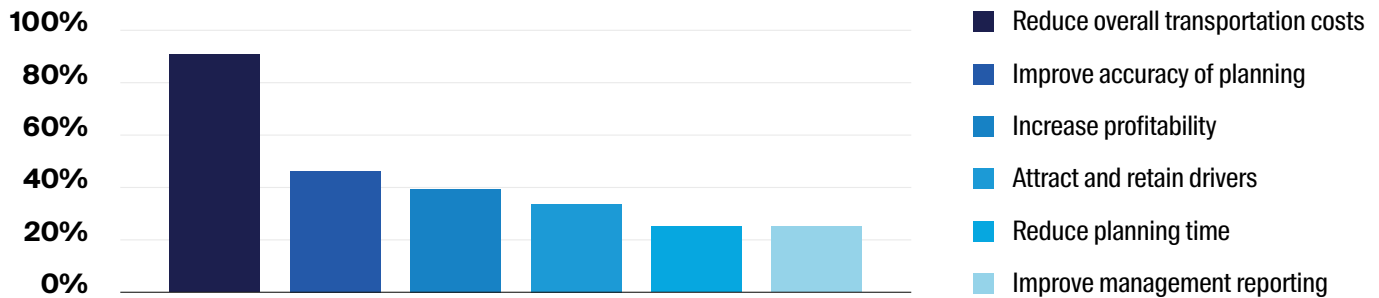
The technology you need to maximize your existing assets, drive efficiencies and save money is accessible and right at your fingertips.

Let's look at what you can expect to achieve.



1. The ability to plan better

While our desire for efficiency has seen complexity advancing relentlessly, the over-riding objectives of cost-efficient operational excellence haven't changed. Customer research shows that reducing overall transportation costs is still a major objective year-on-year.



Early route optimization systems were limited to planning radial deliveries from a single depot. But as logistics infrastructures have become more sophisticated, so too have the planning systems.

Significant advancements have seen the addition of new functionalities, including:

- › Multi-tripping
- › Overnight runs
- › Weekly scheduling
- › Routes combining deliveries
- › Collections and transfers
- › Street-level routing
- › Central planning of multi-depot operations
- › Full “integrated fleets” optimization, with its increased back-loading and reduced empty running

The functionality available today should reflect and complement any existing business operation rather than inhibit it. Rather than forcing an operator to change the way they do business before implementing the software.

Investing in advanced route planning software, allows your operation to ‘scale up’ in order to optimize route schedules for even the most complex supply chains.

From transportation offices in small regional-led operations to some of the world's leading retailers – all have achieved significant cost reductions by taking advantage of what is now considered standard functionality in route optimization software.

Whether you're moving from manual planning to an automated system or looking to invest in a more robust platform, the principle is the same. More intelligent routing and scheduling means that deliveries can be structured more efficiently, with lower total mileage, better vehicle fill and improved driver/vehicle utilization. All of which means lower costs.



2. Making the most of drivers

Drivers are a vital asset. Perhaps your most vital asset.

While it's possible to hire an extra truck at short notice, the same is not true of experienced staff. Achieving the greatest productivity from the available pool of drivers is essential, but managing drivers isn't just about maximizing the available team.

Not only do most countries now have strict legislation concerning driver hours and rest periods, in many countries there is also a growing shortage of qualified drivers.

Recruiting drivers is challenging given the hassle of congestion, roadwork, delays at border crossings or factory gates, and often tenuous hours.

To retain good drivers, routes and schedules need to be fair and reflect realistic, achievable targets.

Transportation businesses need to maximize driver activity and create a full and fair day plan that reflects likely congestion, the reality of delivery windows and the time taken for ancillary tasks.

In addition to adhering to driver regulations, it will be favorable for driver retention—and retaining good, permanent drivers is a must for operational stability and reliability.

So how do advanced route optimization systems cope with the diversity of driver-related regulations and constraints?

Fortunately for today's operators, driver hours legislation has been present in the US for a while, so the most advanced route optimization systems have implemented these types of limitations into their algorithms.

While different countries may have different rules, these will be simple data changes for today's advanced software systems. Equally, factors such as congestion are not new, and these are well catered for by the leading systems – all of which enable realistic route planning with full and predictable workloads for drivers.

3. Managing all available resources

Trucks, tractors and trailers are an equally important part of an operation. Expensive to buy and operate, this is an area of operations where route planning systems can significantly help by improving return on investment.

As mandatory regulations and legislation increase, so do vehicle-related costs. Resource management optimization is not a simple exercise. It's a necessity.

Vehicles may be multi-shifted, trailers exchanged during a tractor route, and drivers may be only trained and licensed to operate certain vehicles. Furthermore, only particular trailers or heavy-duty trucks may be suitable for specific trips, for example, if they require temperature control.

As your business evolves, the combination of vehicles and drivers may become more complicated.

For example, you may want to schedule different resource types against different time frames. A driver can only work a certain number of hours per day, while a tractor unit can, apart from maintenance, work 24/7. Meanwhile, the availability of a trailer or a heavy-duty truck depends on depot loading and unloading times.

Today's sophisticated scheduling systems can arrange for one tractor to be driven by a succession of drivers, hauling several different trailers, in a 24-hour period.

This resource managed planning technique enables the optimization of multi-shifted schedules with drivers, tractors, and trailers swapping throughout the schedule – giving you the operational efficiency and cost savings you're looking for.





4. Dealing with legal requirements, simply

The transportation industry operates under increasingly strict regulations—ranging from driver hours to emission standards, as well as restrictions on where and when certain vehicles can operate. These regulations complicate the routing and scheduling equation.

For example, in Europe, the introduction of the Euro 6 standard makes it imperative to optimize compliant vehicles. Some vehicles may need special equipment to comply with these regulations.

In the US, Tier 2 and 3 and CA LEV II & III standards for vehicles are even more restrictive, which must be considered when planning transportation routes. From London to New York and Shanghai, many urban areas operate combinations of congestion charges and outright bans on deliveries in peak daytime periods.

To complicate matters further, suburban areas may also have bans on evening deliveries, placing more restrictions on the route schedules.

The London Lorry Control Scheme dictates which roads may or may not be used during evening hours to counter noise pollution, especially during the early morning. This was previously was a peak period for supermarket deliveries.

Many US cities have their own restrictive policies about delivery times, and as cities become denser with population, these restrictions are likely to become more prevalent.

This area of time-related truck routing constraints is a headache for logistics operators and route optimization systems. As it has been for the past decade.

Why? Because it exponentially increases the number of potential journeys that need to be calculated, making the quest for an optimal manual solution in a reasonably short time frame impossible.

If a transportation operation regularly plans deliveries in dense urban areas, then trying to do this efficiently – in terms of planning time and use of drivers and trucks – will be a familiar challenge.

Route optimization software can now manage the extra dimension of time-related restrictions. This enables planners to build compliant routes. This will cut the time spent on manual planning, minimizing the impact of schemes like the London Lorry Control Scheme and major public events on routing and scheduling and lowering the risk of incurring penalty fines.

5. Combining choice, convenience and profitability

If your operation tailors to business-to-consumer (B2C) deliveries, the need to use technology to maximize resource efficiency has never been greater. The expectations for effective B2C delivery, to homes, or to other drop points, within ever more tightly defined timeslots, increase relentlessly as consumers demand ever greater convenience.

But there is another complexity at play here – the customer's demand for choice.

That is, choice not just about when to receive the delivery, but also where. It could be their home, their office, a pick-up point or a store using a click and collect service. Same-day deliveries with one-hour time slots are also fast becoming the norm with retailers like Argos in the UK with their new FastTrack service or Amazon and their one-hour delivery offerings.

How does transportation optimization dovetail with extreme customer service requirements?

While early home delivery transportation planning was always done as a batch process, today's advanced home delivery fulfillment systems have route optimization embedded within the order-taking process.

This enables the optimized route schedules to be built in real-time as orders come in, and it allows the customer to be offered narrow time windows that can be routed efficiently with other deliveries.

This means that while the consumer is placing their order, they can be offered a choice of time windows, which you can then confidently fulfill.

When greater choice is combined with customer self-service online or via SMS, and the ability to proactively update the customer throughout the order fulfillment process, it is possible to achieve the best of both worlds – efficient logistics and superb customer service.





6. Managing the future

As big cities become more congested, central government and local authorities are keen to identify new ways of cutting down on the number of vehicles converging in these densely populated areas.

In London and Singapore, for example, vehicle entry fees have been introduced, while elsewhere, authorities are suggesting deliveries should be consolidated.

This involves bringing loads into out-of-town centers where they can be combined to make the most efficient use of resources and the least environmental impact – regardless of the shipper's and recipient's identities. Understandably there is some commercial resistance to this idea.

There are several ways in which consolidation could be employed. There is a local approach. This could involve bringing goods from a peripheral base into all the shops in a major retail mall, with a single vehicle fleet working for all the retailers. Alternatively, vehicles used for home delivery during the daytime and early evening might be repurposed for late night deliveries to shops.

A core benefit of consolidation planning is reducing empty running by introducing backloads beyond those of conventional returns, warehouse carts and packaging to the depot. This means picking up other loads for varying destinations on a plausible route. That would require easy partnering commercially and integration systemically between many partners – from retailers and suppliers to transportation and logistics companies.

Where consolidation involves merging similar city-bound delivery operations, via out-of-town consolidation centers, there are substantial financial and environmental benefits to be had. Increased drop density yields greater productivity, reduced overall fleet size, reduced overall mileage and less harmful emissions.

More complexity to manage?

Once the consolidation network has been decided, the result is just another logistics operation to plan and optimize. These are generally no more complex than some of the dedicated operations already developed by the 3PLs and other industry leaders – and equally can be managed and optimized by advanced route planning technology. The difficulty, in this case, is not the technology required to drive it, but the level of cooperation needed by the different parties involved to make it work in practice.

While it is important to anticipate every legislative change, most are debated for years before they are implemented.

Aptean Routing & Scheduling customers have cited managing legislation as one of their biggest issues. Choosing routing and scheduling software with a proven track record in responding to industry and customer needs will ensure that transportation businesses, like yours, can take such changes in stride.

Are you ready to master logistics complexities?

Transportation and logistics operations are intrinsically complex. They must be to meet the changing needs and demands of their customers.

But now, you can master your logistics complexities. And in the process, gain a competitive advantage. It is not only possible to reduce costs and improve the efficiencies of operations, but also cut the time, effort and cost of planning

The transportation office is no longer a silo. It is no longer just a cost center. By making the best use of new technology, your transportation operation can be a real service differentiator to supporting and driving the business strategy.

Wherever you are on your logistics journey, you can benefit from further savings and efficiencies. Get in touch with Aptean today to discover how, now.



Are you Ready to Learn More?

Interested to see how Aptean Routing & Scheduling can help improve your transportation operation?

Contact us at **info@aptean.com** or visit **www.aptean.com**.



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