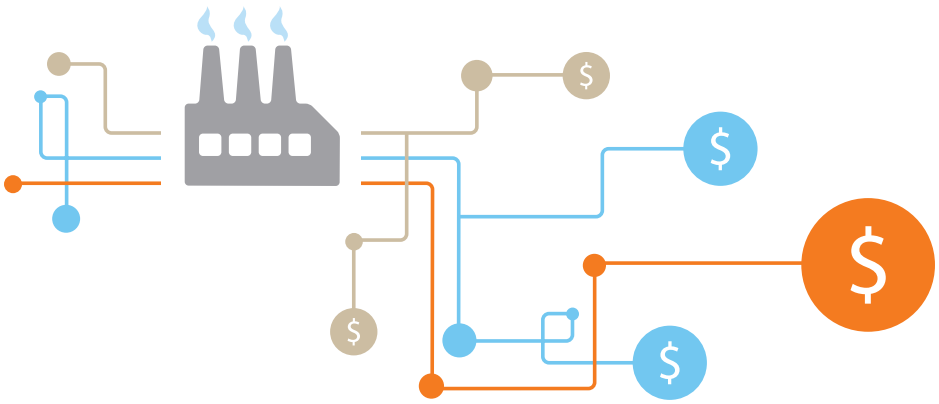
Supply Chains

Where to Find the Biggest, Fastest Transportation Savings

WHITE PAPER



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In brief

This paper examines the types of optimization that could apply to any company that spends at least $1 million in transportation annually. It looks at why companies might take certain approaches and provides a range for estimated savings received by taking these steps.



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You will have to do some amount of work to find savings in the supply chain. The question is, where should you focus your efforts first, second, and third to reap the biggest savings for the effort you'll expend?

Are continuous moves and tours the place to start, or are they the hardest things to do with the lowest potential benefit? Are there easier improvements to the supply chain that you can make for bigger, faster rewards? As you move toward an optimized supply chain, you have multiple options to save money, and your company will have its own ideal hierarchy of tasks and corresponding savings. Which task to pursue first, and the resulting savings, depends on what you ship (commodities, volumes, and frequencies), how you ship (the mode or modes), and whether your company is growing by acquisition or not growing at all.

The options are broken into three categories: (1) Easy, (2) More Work, and (3) Difficult, compared to the savings to be realized (see the Hierarchy of Savings matrix, below). To achieve the highest efficiencies and the fastest ROI, most of these methods require reporting from a transportation management system (TMS), whether managed in-house or outsourced.

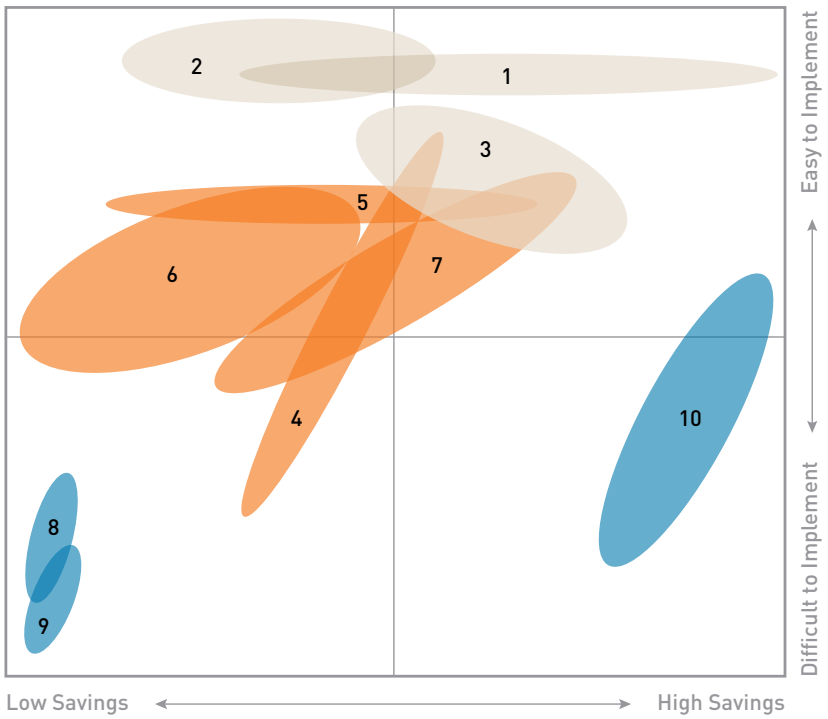
Hierarchy of Savings

The following chart shows ten different areas in a supply chain where savings can be realized. The grid compares the relative ease of implementation of each option, as well as the range of cost savings.

For example, Network Modeling is difficult to implement but yields high savings. Continuous Moves and Tours tend to be difficult to implement for very little savings.

Key

1. Truckload Weight and Cube Benchmark
2. Truckload Benchmarking
3. Constraint Based Truckload Bids
4. Routing Guide Enforcement, Order Optimization, and Mode Optimization
5. Simple Consolidation
6. Pool Points or Crossdocking
7. Multi-Stop Truckload
8. Continuous Moves
9. Tours
10. Network Modeling



Easy

To see progress in optimizing your supply chain, you will need to be able to measure the improvements. All of the options in this Easiest To Implement category help establish a baseline that shows what you have saved, as well as a benchmark to see where you can save money, and how much.

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The first step in identifying the potential for savings is when you renegotiate with carriers.

Truckload benchmarking

- **What it is:** Uses basic shipping data to show how your historical truckload costs compare to industry standards. Also offers a baseline (a comparison of historical and future costs).
- **Who benefits most:** Companies with a significant amount of truckload expenditures.
- **How long it takes:** Depending on the quality of the data and the size of the company, this can take between two days and one month; most take less than two weeks if the data is relatively clean and accessible.

In many ways, truckload benchmarking is the most important task to perform. It involves capturing basic shipping data, including origin, destination, mode, and what was spent, broken into linehaul and accessorial fees, and comparing this data to industry standards to see savings opportunities. Truckload benchmarking is difficult to do without a good freight payment system or TMS to capture data, but companies that collect this data find benchmarking a fairly easy process. Other key indicators, like the average cost on a rate per mile for truckload, and cost per hundredweight (CWT) and average shipment size for LTL shipments, can be used to perform trend analysis for the next step: constraint based truckload bids.

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Typically less than 10% of total truckload spend. You should have a good idea of what is possible based on your truckload benchmark.

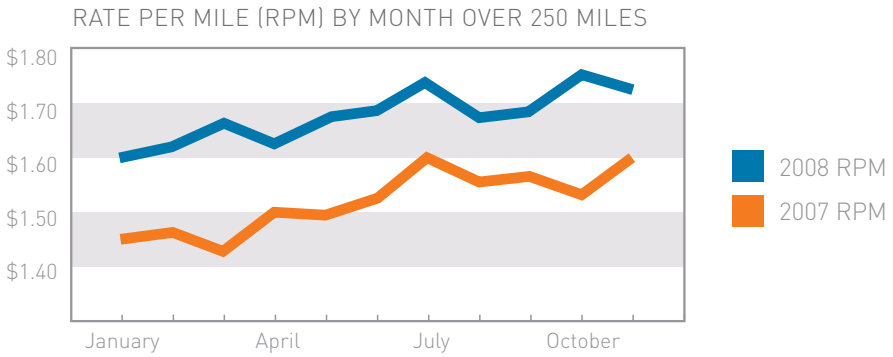
Constraint based truckload bids

- **What it is:** Constraint based bid tools use math to allow you to optimize on price, to constrain carriers in different ways, and to penalize or reward them when their actions cost or save you money. Constraint based truckload bids provide cost savings and set the stage for managing longer-term carrier relationships vs. managing carriers in a large, disparate network.
- **Who benefits most:** Companies that spend at least $10 million in truckload transportation and want to become more strategic transportation buyers.
- **How long it takes:** Depends on the size of the company. Typically takes six to eight weeks, once the carriers that will be involved have been chosen and a future demand file has been created. This file can be built from the same data used in a benchmarking exercise.

If a carrier doesn't perform certain tasks—if they don't deliver on time, accept loads, provide EDI shipment status, or provide drop trailers—it costs your company money in other areas. Constraints placed on carriers can include maximum volume for a lane, maximum volume for an origin or destination, maximum volume for a carrier, and minimum or maximum number of carriers servicing a facility. When carrier capabilities and performance cost you money, the costs can be quantified and added back into the equation in the form of a penalty.

Penalties can be imposed for not being able to provide services such as EDI and drop trailers or for having a poor on time percentage. Using these constraint based penalties allows you to minimize your total logistics cost, not just transportation costs.

Constraint based bids can turn tactical buyers of transportation into strategic buyers. Tactical buyers typically assume that their rates are not increasing if they have a routing guide. In fact, benchmarking and constraint based bids often reveal that the lowest cost carriers in the routing guide do less and less over time; this information can be obtained from TMS reporting. As substitutions are made, the cost of transportation goes up. A strategic buyer of transportation can use trend analysis information collected from a TMS during the truckload benchmarking process to see that their rates are rising, even between bids. This information can be used to determine when it might be appropriate to re-optimize your network by running a constraint based bid, which allows both you and your carriers to rebalance networks and potentially lower costs. Over time, most companies that conduct constraint based bids see a smaller increase in rates, even in an up market.



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It is not uncommon to see the potential to put 10% to 40% more product in a truck, which reduces your cost by an equivalent amount. Generally speaking, you will not find that kind of savings using any other method presented here.

Truckload weight and cube benchmark

- **What it is:** Analyzing how much product you can fit into a trailer before hitting the legal limit for weight, or before the product cubes out on a trailer. Study this task early in the process of optimizing the supply chain; it's one that is most often overlooked, and savings can be significant.
- **Who benefits most:** All companies shipping by truck.
- **How long it takes:** The analysis is easy; it can be completed in about a week, as long as good shipment level mode, weight, and cube data is available. Implementing changes based on the analysis is much harder.

A truckload weight and cube benchmark looks at how much product you can fit into a trailer before hitting the legal weight limit, or before the product cubes out. For optimization of the equipment, the objective is to utilize as much of the space and weight capacity of the trailer as possible each time. For example, a truck may be capable of shipping 44,000 pounds of freight, but your company may average closer to 30,000 pounds on a shipment. In addition to the savings, by putting more weight or cube on a truck, you reduce the number of trucks you need to hire—a real benefit during peak shipping seasons.

Making a change from 30,000 to 40,000 or 44,000 pounds requires cross-functional collaboration. It requires input from warehousing or distribution center management regarding pallet configuration of hi and tye [how many layers high (hi), how many cartons per layer (tye)] and load configuration. It requires input from sales and customer service as changes are made to minimum order quantities and enforcement. It takes talent to make all of these process changes happen, but it is a huge win, and you'll see the results right away in your data.

More work

By paying attention to the mode utilized, enforcing the routing guide, and optimizing orders in a variety of ways, you can recognize savings in the supply chain. All of the following options for optimizing the supply chain require a TMS to be executed efficiently, effectively, and consistently. The TMS will capture basic order data: origin, destination, when the product ships/arrives, the weight, and the cube. Most companies have this information on their orders and shipping documentation.

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0% to 10% of the entire transportation budget, depending on how much routing guide leakage you have.

Routing guide enforcement

- **What it is:** Monitoring carrier load acceptance compared to the routing guide and its corresponding effects on costs.
- **Who benefits most:** Any company with a routing guide.
- **How long it takes:** Ongoing.

Running a bid to develop a routing guide doesn't ensure savings. Unless you monitor carrier load acceptance compared to the routing guide and its corresponding effects on costs, you're likely to suffer "routing guide leakage," or a shift toward carrier substitution and a rise in rates. There are good reasons for carrier substitution, such as when a carrier isn't doing a good job.

In other cases, leakage is caused because someone is not following the routing guide, or because there's no automated way to properly go through the routing guide, or because Joe brings doughnuts every day for the loading crew, so they always call Joe first. The reasons for noncompliance aren't important; what's important is that it costs you money.

A good TMS will help you measure your carrier compliance rate and work the situation out with carriers who are not following through on their commitments. If, for instance, a carrier agreed to $1.10 in a specific lane and said they could handle 30% of the volume, the TMS can track whether or not the carrier is accepting the number of tendered loads you expected, and if not, a discussion can ensue to find out why. Hint: It's not enough to have a TMS that gives you historical reports. You need actionable, near real-time reporting and dashboards.

Order optimization

Certain TMS software or a staffed TMS solution can optimize orders into shipments. The following methods are typically used: simple consolidation, multi-stop truckload, pool points or crossdocking (if volume and density of orders is appropriate). For most companies, mode optimization, simple consolidation, and multi-stop truckload optimization deliver the majority of order optimization opportunities. For some customers, pool points and crossdocks also play a significant role. Note that optimization is not a one time fix, but a continuous, ongoing process to achieve the maximum savings.

Savings on consolidated orders can be very high (from 5% to 50% or more). A sample week of order data should lead to an expected level of savings, but achieving those savings depends on successful behavioral change by multiple groups. Each of the optimization types that follow should offer additional savings, as well.

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There can be a 5% to 10% savings on the total budget when you use the right mode vs. the wrong, and a 1% to over 100% savings on individual shipments. Companies with rule based solutions that don't work well would be more likely to see the higher end savings.

a. Mode optimization

- **What it is:** A TMS uses a routing guide and other data to automatically choose the most cost efficient mode every time for the freight and lane.
- **Who benefits most:** Customers with a wide variety of products at different classes that have different break points between modes.
- **How long it takes:** In most cases, setting up the TMS with rates for mode optimization takes less than a week. The actual savings are process oriented, and will require ongoing work.

The most difficult problem to solve with rule based routing guides occurs when the customer has a wide variety of products at different classes that have different break points between modes. In one situation, moving 8,000 pounds from point A to point B might be the break point between using truck vs. LTL; in another case, with a different type of freight, the break point in that same lane might be 20,000 pounds. With the data loaded properly, the TMS automatically can decide every time whether the shipment should move via small parcel, LTL, or truckload.

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From 1% to 10% of the total budget; individual shipment savings can be as high as 100%, in the case of two minimum charge shipments that are still a minimum after being combined.

b. Simple consolidation

- **What it is:** Shipments from the same origin to the same destination are combined when they have overlapping shipping and delivery windows.
- **Who benefits most:** Those who service the same customers on a regular basis and primarily ship LTL and small parcel, have multiple divisions that ship to the same customer, or have many minimum charge shipments.
- **How long it takes:** This is an ongoing process that your TMS or hosted TMS does for you.

When orders are consolidated, the result is larger average shipment sizes and in some cases, modal shifting.

ESTIMATED SAVINGS >

From 5% to 90% per shipment.

c. Multi-stop truckload

- **What it is:** Multi-stop truckloads use either static (standing milk runs) or dynamic optimization (order by order, typically run at least once a day with a TMS, and sometimes more often).
- **Who benefits most:** Companies with a significant amount of large LTL (from 5,000 to 20,000 pounds, or between one-quarter and three-quarters of a load for those that cube out) benefit most from multi-stop truckloads.
- **How long it takes:** This is an ongoing process, requiring the same initial set-up time for the TMS that exists for other types of optimization.

Multi-stop truckload is another method of increasing the amount of weight on a given truckload movement. The key is to have enough shipment density so there's a chance of making a significant number of multi-stop truckloads. Typically, daily volume should be in excess of 50 shipments a day in or out of a location, between one-quarter and three-quarters of a truckload, before significant savings can be achieved. Distance and weight are important, too; extra miles can lower the savings. On a single truck running with two shipments, each one-third of a truck, from Minneapolis to Chicago, it might be possible to pay a minimal fee for an extra stop and obtain big savings. But if that same load goes from Minneapolis with a stop in St. Louis and another stop in Houston, the extra miles for the trip could result in lower savings, unless there's a significant amount of weight on the last leg of the trip.

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Depends on the size of the average order.

d. Pool points or crossdocking

- **What it is:** Bringing product to a central location, where it is broken into separate orders and shipped to multiple locations.
- **Who benefits most:** Companies with a high volume of shipments weighing between 2,000 and 5,000 pounds; shipments coming or going to a relatively small geographical area.
- **How long it takes:** Analysis to pick pool points typically takes a week or so, followed by setting up the actual operation and maintaining the ongoing process of assigning orders to pool point through a TMS.

When a high volume of shipments weighing between 2,000 and 5,000 pounds comes or goes to a relatively small geographical area, pooling and crossdocking allows you to bypass a relatively expensive long haul LTL network and replace it with truckload shipments and cheaper regional LTL movements. The weight should be sufficient so the load is more than a minimum, but too little to effectively make into a truckload shipment. As for density, you must be able to fill up a full truckload daily going into a region, whether there are three orders on that truck or thirty, or combine a pool point with other stops on a multi-stop truckload, or be willing to accept transit times slower than traditional LTL.

Difficult

Continuous moves and tours play a much smaller role in order optimization savings, and are usually approached when all other optimization opportunities have been exhausted. The most difficult task to implement, one that requires more work, more time, and more money, is network modeling. For certain companies, network modeling is likely to offer good savings potential.

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Total savings will probably be less than 1% of the transportation budget.

Continuous moves

- **What it is:** Combining full truckload orders into a string so you can leverage rates from a low cost area into longer moves.
- **Who benefits most:** Those who have implemented all other methods of optimization.
- **How long it takes:** Ongoing process for TMS. The big issue is the timing of pickups and deliveries.

When full truckload orders can be combined into a string so you can leverage rates from a low cost area into longer moves, you've created a continuous move. For example, at one point in time in 2005, a load from Miami, FL, to Atlanta, GA, cost roughly $585, and a move from Atlanta, GA, to Chicago, IL, $870. But a combined load from Miami to Chicago with an Atlanta stop at that same time cost $1,355—a savings of $100. In the case above, where the savings on a load was 7%, more than 14% of the truckload shipments would have to be turned into continuous moves to make the savings happen. This would be 28% of the truckload shipments, since it takes two shipments to make a continuous move.

The biggest problem with continuous moves is timing. Unless you can pick up the second load right after you deliver the first, the economics don't work. Even when both pickup and delivery happen at the same facility, inbound and outbound are typically controlled and scheduled by different individuals and departments; usually, each of these individuals is trying to minimize the labor costs in their own receiving or shipping departments, not reduce transportation costs. Even with good systems and good tools, the cost of managing a continuous move can quickly become cost prohibitive.

ESTIMATED SAVINGS >

From 1% to 30% at the load level, with a total savings potential of less than 1% of the total transportation budget, in most cases.

Tours

- **What it is:** A company and carrier work together to achieve continuous moves and to reduce deadhead miles, on the theory that the carrier will share the resulting savings and want to do more business with the company.
- **Who benefits most:** Works best for short haul freight.
- **How long it takes:** Typically found in an ongoing manner by using a TMS. If collaborating with other customers, you will have to reach out with data; overhead from these efforts can significantly cut into any savings on the rate side.

Tours, and collaborating with other companies to create tours, is the hot trend in the industry, something everyone aspires to do. Tours require a modeling tool that looks for highly repeatable movements to string together, creating cost-effective round trip tours. There can be a high risk if your network changes and there is no longer a need for contracted, dedicated assets.

Tours have some built in flaws that you should know about before you attempt them. They are based on the assumption that if you take deadhead out of a carrier's network, the carrier's going to want to share the money with you instead of keeping it for themselves. In a seller's market where there is a shortage of equipment and plenty of freight to be had, there's very little incentive for the carrier to share the savings. In a buyer's market, where there is more equipment than freight, an interesting phenomenon occurs. In a buyer's market, carriers that are not well capitalized have the least ability to weather the storm. These carriers are the quickest to lower their rates below market level to keep cash flowing so they don't go out of business. Since this sub-group of carriers is already willing to give you below market rates, it becomes difficult to create a tour that is below market. And finally, even if the carrier shares some of the savings with you, you have to figure out how to keep as much of it as possible after taking into account what you paid to administer the tour.

On average, how much money per load is there to split with the carrier on a tour that proves successful? Consider an average move of $700, with an average rate per mile of $1.65 and 15% deadhead; total deadhead costs are less than $100. If, by creating a tour, you could reduce the deadhead to 5%, you would have less than $70. Your take, after splitting with the carrier, is less than $35, which must cover all the administrative costs for your optimization effort.

YOUR "TAKE" AFTER A SAMPLE TOUR

	Cost	Deadhead	Deadhead Lost	Total Savings	Split Savings	Tour Overhead	Your "Take"
Normal Move	$700	15%	$100	$0	$0	—	—
Tour	$633	5%	$33	$67	$33.50	$20*	$13.50

* Even with a good TMS, these types of moves have high administrative overhead—in the range of $15 to $20 per tour—since there is a higher incidence of difficulty once two or three shipments are strung together.

ESTIMATED SAVINGS >

Savings can be very large (20% to 30% is not uncommon) if the company improves its in-stocks and if inventory can be eliminated with network changes.

Network modeling

- **What it is:** Network modeling compares transportation costs, but also considers inventory and manufacturing costs when optimizing a network. A model needs to be built at the item, family, or department level, depending on the company and mix of products. Cross functional teams are required to build and validate findings.
- **Who benefits most:** Larger companies with multiple distribution points that are looking for the next level of growth, or those that have acquired companies recently and haven't looked at how the distribution networks overlap. Also valuable for companies that are reengineering networks and making strategic tradeoffs between inventory, transportation, and service.
- **How long it takes:** Depending on the company's size, it can take three to six months to gather the data required to build and baseline a network model; costs easily run $100,000 or more. Maximizing the investment in network modeling requires ongoing management so that potential changes in the network can be constantly evaluated.

Network modeling is the key tool for strategic savings, since it makes a comprehensive assessment of current transportation, inventory, and manufacturing costs and develops strategic models for optimizing the entire supply chain. The strategic models created during the network modeling process are not a precision tool. They bring you into the vicinity of where you need to be. They won't tell you whether to put a distribution center (DC) in Long Beach or in the Southern California desert. They will tell you that Southern California makes more sense for the DC than Sparks, Nevada.

The biggest difficulty with network modeling is collecting the baseline data. It is not an insignificant effort to collect shipment history and rates and to understand the capacity of various DCs. It becomes very complex if an organization has acquired two or three other companies, each with its own challenges. When multiple entities are involved, different data sources and different methodologies for accounting for costs can be at play, adding to the problems. Logistics consultants can usually find a way to get to the needed data, if they look long and hard enough.

But if collecting all the required data has its difficulties, it is also one of the biggest advantages of doing network modeling. Without common data, there will be competing data and assumptions, some more aggressive than others, within a company. Developing a network model creates a shared understanding of how the network works, and a shared set of assumptions and data to be used by all teams considering changes.

Savings can be very large (20% to 30% is not uncommon) if the company improves its in-stocks and if inventory can be eliminated with network changes. This is huge and meaningful, not just to transportation and distribution, but to the company's bottom line.

Savings and the speed of change

As you work toward optimizing your supply chain, savings are the light at the end of the tunnel. But just as each company has a hierarchy of tasks that will lead toward optimization, each organization will also have its own tolerance level for changes that are necessary to produce those savings. When multiple divisions and business units must agree on and implement process changes, achieving the highest possible level of savings may take longer. Buy-in and support from the highest levels of management can help facilitate the process of change. So can skilled logistics consultants, who regularly use all of the optimization tools and know how to get the most value out of them.

Using a particular method of optimization for one purpose can sometimes become a catalyst for further change in another area. Consider, for instance, that when a TMS is implemented, it forces discipline onto the order shipment process cycle. Quite often, the enforced discipline will expose irrationalities in the current process. For example, manufacturers without process controls will sometimes allow customers to change their orders right up until the shipment arrives, and certain customers tend to get into the habit of making changes of this sort. As the TMS captures the data, the company will learn exactly how much it costs to make these last minute changes and how it negatively impacts the bottom line. The company can use the information to make more changes that will lead to savings and improve overall profits.

About us

Founded in 1905, C.H. Robinson Worldwide, Inc. is one of the largest third party logistics companies in the world, providing freight services, logistics outsource solutions, fresh produce sourcing, and information services to more than 37,000 customers globally, ranging from Fortune 500 companies to small businesses in a variety of industries.

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