

DESCARTES™

**BUYER'S GUIDE**

# How to Choose the Right Route Planning Solution

A comprehensive guide to help you select the right solution and achieve your business goals.





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## Introduction

Delivery performance can be the competitive advantage companies seek, but fleets are expensive to operate. Getting the greatest productivity and creating the best customer experience are paramount for successful fleet operations.

Route planning solutions are at the core of fleet performance and have revolutionized the way fleet operators make strategic business decisions and efficiently and effectively organize deliveries every day. Route planning systems has been around for many years and many companies are now looking to enhance their route planning process with technology solutions or upgrade from legacy solutions that require a lot of manual intervention.

But which solution on the market is right for your business and its needs? The web will serve up a plethora of options, each with different features, benefits, user reviews, and of course, price tags. Navigating all this information and correctly evaluating the pros and cons can be daunting.

At Descartes, we want to help with the heavy lifting and make the journey a bit smoother. No matter the size of the fleet or scope of planning challenges, this guide will help equip you with the knowledge and insights needed to analyze the offerings in the market and, ultimately, make an informed buying decision that gives you the results you intended.

**So, let's go.** The road to discovering what makes for the best fleet route planning solution for your organization is a page-turn away.



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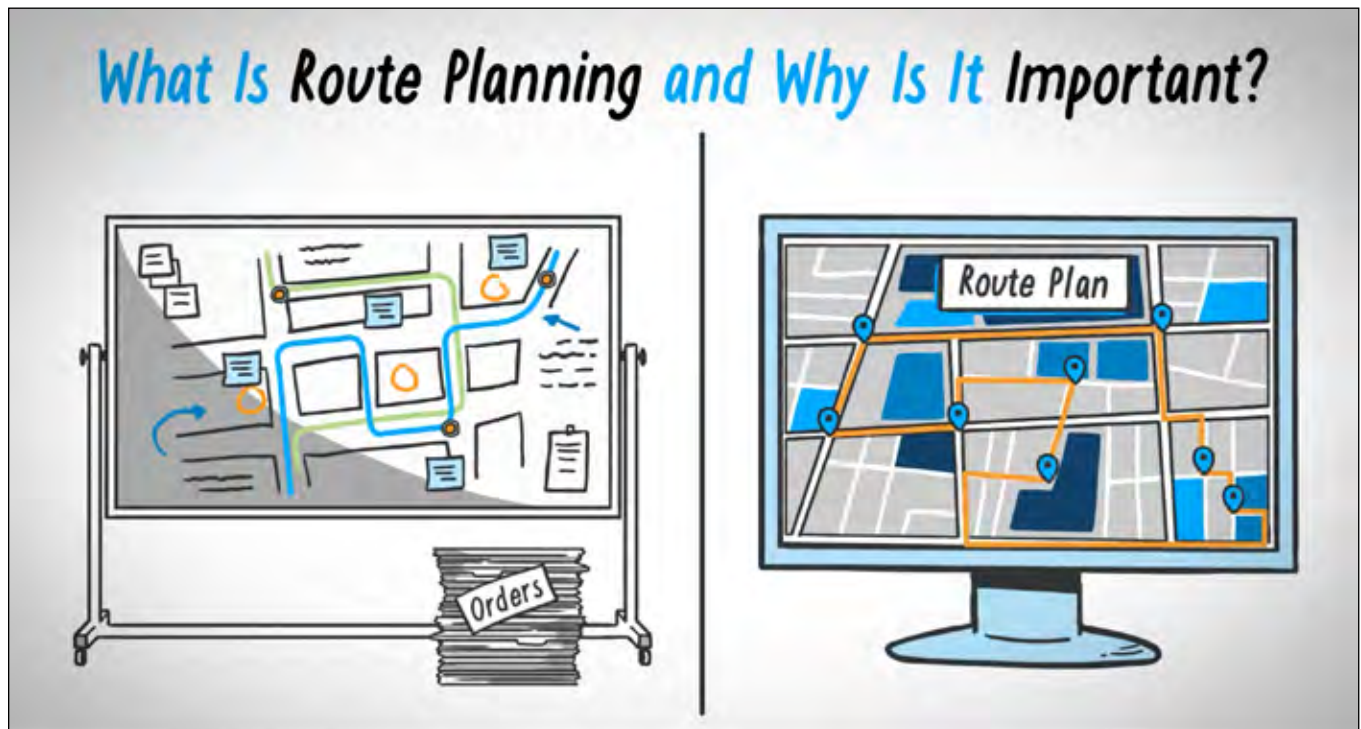
# Route Planning 101

At a basic level, route planning enables companies to create route plans that meet customer service level requirements while minimizing delivery costs. There are other benefits a route planning solution can provide such as making the route planning process more efficient, reducing planning time and resources, and balancing workload across drivers. In addition, route planning can be used to organize distribution operations in advance of demand and create territories and master routes (called strategic route planning) or optimize existing orders to be delivered today, tomorrow, or in the near future (called operational planning).

To produce results, route planning solutions combine the ability to model the operational constraints, business rules, physical resources, and road network and apply some form of optimization technology to determine the best combination of routes, delivery sequences, and resources. There have been notable advances in route planning technologies to include real-time optimization, artificial intelligence (AI), and in particular a branch of AI called machine learning (ML) to improve the accuracy and efficiency of route plans.

The challenge that route planning solution buyers face is there is no standard way to plan and optimize and every vendor has their unique approach. Not only are there great variations, but all approaches only solve a range of route planning problems. Determining the right vendor can be a confusing exercise, so it is important to focus on the results that can be delivered for today's business challenges and understanding how the solution can address a broader array of opportunities in the future.

Learn more about route planning basics in this [explainer video](#).





## Clearly Define Your Route Planning Needs Before Starting the Evaluation

Success with your route planning system is directly related to the work you do ahead of starting an evaluation process. Being able to concisely explain what you are trying to achieve with a new route planning solution helps the vendors understand your goals, requirements, and overall situation to best demonstrate how their solution can meet your needs today and in the future.

There are six areas where companies need to do their homework:

**Set business goals:** It's extremely important to be able to articulate the business goals and results that the route planning solution needs to achieve. For example, the solution needs to reduce the number of vehicles by 10% and improve on-time delivery by 15%. The reason to be explicit here is that route planning vendors may take different approaches to reaching your goals and also need a tangible "measuring stick" for you and them to evaluate their capability. It's also important to look beyond your current business goals and identify future goals and business capabilities to help ensure the vendor will be able to support your business going forward.

**Identify key constraints:** Your operations have specific restrictions, operating policies, and customer service requirements that must be considered in the planning process. These restrictions could be delivery windows, vehicle specifications, weight limits, and unique handling needs for specific items. Most companies have numerous constraints however, not all are "key" and minimizing the list of "must-have" constraints reduces the complexity of the evaluation process.

**Define operational process:** Route planning is typically one step in the distribution and delivery process that starts with orders and ends with routes in execution. For most companies, this is a multi-step process that is time dependent for the flow of data and delivery of plan results. It is equally important to articulate data volume and its timing as part of the process.

**Clean data set:** Vendors' planning capabilities vary widely and many times the only way to know which vendor produces the best results for your business is to have them take a data set and run it in their planning system. Unfortunately, the quality of the results is directly related to the quality of the data provided. Companies that manually plan or use legacy planning solutions are extremely likely to have incomplete or inaccurate data (e.g., customer addresses, product dimensions, and time windows) that needs to be scrubbed and enhanced before asking vendors to perform data runs.

Fortunately, most vendors offer data templates that can help determine what data is required and help identify any gaps. For companies using telematics and mobile delivery applications, the data from those solutions can also help cleanse planning data.

**Determine the level of integration with route execution and mobile applications.** Route planning doesn't exist in a vacuum and the current state of the art for integration is to tightly couple route planning with route execution to streamline the flow of routes to dispatchers, drivers, and the warehouse. Many vendors provide these capabilities as well as planning, but their capabilities can vary widely which can limit the value of their route planning solution. In addition, data returning from route execution and mobile solutions are important for "plan versus actual" performance evaluation and leveraging machine learning to improve plan performance.

For companies taking orders in real-time and executing them same-day, real-time delivery performance data is critical to accurately determine which resources on the road are best suited to take those orders.

**Identify systems integration requirements:** As previously stated, planning is part of a complex order fulfillment or distribution process. Depending upon the complexity and timeliness of that process and the integration capabilities of the existing order management or distribution solutions, integration can be complicated. Too often this gets overlooked in the evaluation process and unfortunately limitations in integration capabilities by some vendors can dramatically impact the results a route planning system can deliver. Defining the integration requirements and cleaning up bad and excess data and poor data delivery timing requirements can help reduce implementation costs and timeframes.

Your ability to assess prospective route planning solutions will be greatly improved by having a thorough understanding of your route planning requirements.



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## Create a Financial Plan Prior to Starting the Evaluation Process

It is critical to have a financial plan before starting the vendor evaluation process. This plan should be a combination of expected benefits and costs. It's also important to understand that this financial plan may change during the evaluation process as the vendor may be able to identify incremental savings based upon their experience with other companies or produce better-than-expected results.

Equally, while controlling scope is important to manage costs, it is also possible that scope may grow due to the incremental benefits that are identified or recognition that more capabilities are required than previously understood. By establishing a financial plan prior to the evaluation, you will have a measuring stick to compare differences in benefits and costs by vendor.

Vendor costs can also vary widely due to the capabilities of the product, the vendor's reputation in the market for delivering results, implementation complexity, support available, and duration and ongoing product investment. Vendor costs can also be driven by your requirements, so it is important to work closely with them to optimize overall project costs. Vendor costs are primarily driven by solution access model and implementation approach.

There are several different solution access models:

**Recurring:** This software-as-a-service (SaaS) model is typically a monthly or yearly fee based on some metric such as number of vehicles or users. The cost is "all in" as the vendor provides access to the solution and hosts and maintains the solution as part of the service. Many vendors also offer incentives for commitments to minimum numbers and length of agreement.

**Transaction:** This SaaS model is typically a monthly or yearly fee based on some activity metric such as number of stops executed or orders delivered. Similar to recurring, the pricing is "all in" because the vendor hosts and maintains the solution as part of the service, as well as offers access to it. Incentives are frequently provided by vendors in exchange for minimum order commitments and agreement length.

**Perpetual license:** In this case, you are purchasing the right to use the solution in perpetuity, typically for a certain metric such as number of vehicles or users. Perpetual licenses typically also require an ongoing maintenance and support fee, typically paid annually. Usually, perpetual licenses also require you to host and operate the solution so getting the system sizing requirement and understanding the types of resources and time required to maintain the system are critical to determining the overall costs associated with a perpetual license. Some vendors will provide hosting and operating services for an additional fee.

**Term license:** A term license is very similar to a perpetual license, except that it is effective for a defined period, typically measured in years.





**Implementation costs:** The cost of implementing a solution can also vary greatly, but in many cases those costs are driven by the user, not the vendor. Here are significant factors influencing implementation costs:

- The difference between the desired business outcomes and organization change versus the current operating situation
- The complexity of the planning process, consideration of constraints, and integration
- The size of the organization, number of locations, and differences in operating practices across the organization
- The role the vendor is expected to play in the implementation

The degree the organization can take on implementation roles and tasks can help minimize implementation costs. For example, using a train-the-trainer approach can lower rollout costs. While it is tempting to minimize the role of the vendor to keep costs down, the vendor should be heavily involved in the overall solution design, route planning solution configuration, and results evaluation as their expertise is critical to ensure the overall results are delivered.

Having a financial plan, working with the vendors on capturing all the benefits, and understanding the cost models and implementation approaches can maximize the ROI of your route planning project.



*By establishing a financial plan prior to the evaluation, you will have a measuring stick to compare differences in benefits and costs by vendor.*

## Understand the Key Capabilities Effective Route Planning Solutions Must Contain

Here are six essential areas you should consider when evaluating fleet route planning solution options. They are the backbone of any robust solution and are crucial for optimizing your logistics operation.

**Optimization engine.** The sophistication of the optimization engine can make a significant difference in the results and business value received. However, there is a tremendous difference in optimization capabilities of vendors and the optimization problem they were designed to solve. This is why it is critical to understand the optimization approach and test its capabilities to determine which one will produce the greatest value for your operation.

Because there are different types of route planning requirements (strategic versus operational planning), the route planning vendor must have multiple optimization engines to correctly model the planning problem and produce the best results. The optimization engine should also have flexible configuration capabilities to allow planners to uniquely tailor the algorithm—without requiring custom coding—to meet the overall business goals without requiring significant manual adjustment after the optimization process is completed.

**Business, logistics operations, and road network modeling.** The ability to consider real-world business policies, operational, resource and customer restrictions, and characteristics and road network attributes is critical to producing the best and most feasible route plan. Failure to accurately model the business environment can result in not only suboptimal performance but missed customer commitments and loss of confidence by planners and drivers using the solution.

Modeling is closely tied to optimization engine capabilities. The ability to accurately model the planning environment combined with optimization that understands the business and operating environment and can evaluate a broad range of trade-offs produces a plan with the greatest ROI for the business and experience for the customers.

**Advanced planning capabilities.** Route planning can be a complex process and planning time may be one of the most critical aspects in delivery operations. For many companies, the planning process is not as simple as pushing the “optimize button” and getting an answer. In fact, the best planners have multi-step processes and want visibility into the planning process to produce the best results.

Capabilities such as continuous optimization allow planning to operate “24/7” and give planners a view of the results over the planning horizon to make proactive adjustments, such as driving resources, to ensure there are no unassigned customer deliveries or underutilized resources. Planning automation can take the process the best planners use and encapsulate and run the planning process reducing the time and resources required to plan while improving the overall planning results.

**Control tower user interface.** Route planning can be a daunting task without an intuitive user interface that provides a single view into the planning process, tracks key performance metrics, and allows for scenario planning. Graphical representation of customers, orders, resources, and routes is essential for a planner to easily grasp plan results and plan versus actual performance.

An intuitive control tower user interface can reduce the amount of time required to train planners and improve their effectiveness with the solution and results they produce. The same user interface should provide an easy way for planners to view and change the configuration of various planning scenarios and see the different results they produce. Users should be able to customize their view and the organization should be able to limit access to data and user capabilities based upon the role of the user.

**Analytics and AI.** Analytics and AI are becoming powerful tools for enhancing route planning performance. Analytics help planners evaluate plan versus actual performance across broader timeframes, look for trends, and gain deep insights into delivery performance, allowing drill down to individual drivers and customers. AI in the form of machine learning helps improve the accuracy of planning data and parameter settings.

By using the data derived from GPS tracking of fleet operations, machine learning can more accurately predict stop locations, drive times, service and stop times, and even develop productivity factors for individual drivers. The result is more accurate route plans, less slack built into the plan, and better plan productivity.

**Integration with real-time route execution and GPS-based mobile delivery solutions.** Planning doesn't exist in a vacuum and two-way interaction with route execution and mobile solutions extends the power of route planning solutions. Integration with route execution allows seamless publishing of route plans for execution and consistent master data. Changes in route plans and updates to plan progress can occur in real-time.

The data from GPS-based mobile data solutions can provide feedback on actual field performance to evaluate plan effectiveness and identify performance outliers such as drivers following delivery sequences, customer locations and stop times, etc.

## 6 Essential Areas to Consider When Evaluating Fleet Route Planning Solution Options



Optimization engine



Business, logistics operations, and road network modelling



Advanced planning capabilities



Control tower user interface



Analytics and AI



Integration with real-time route execution and GPS-based mobile delivery solutions

## Technological Capabilities Matter Even if the Solution is Cloud-Based

Route planning has become a mission critical solution as part of today's more dynamic distribution and delivery operations. Understanding the underlying technology is essential to help ensure that the route planning solution can scale to meet your business requirements today and in the future while being safe and secure.

**Solution deployment:** The most common solution delivery method today for route planning is cloud-based and multi-tenant. There is significant value to leverage a shared cloud-based environment. However, depending on your company's business and security needs, multi-tenant or even cloud-based may not suit. The ability to segregate the solution in a private cloud or even be deployed on-premises might be a requirement so solution deployment flexibility can be quite important.

**Cyber security:** Organizations are constantly facing cyberattacks and the security robustness of the planning solution is important to fending off ransomware attacks and theft of customer or other important data. Through test results and other methods, the route planning vendor should be able to demonstrate the degree of security built into the system.

**Enterprise level role-based access:** Route planning systems have evolved beyond desktop solutions and are now accessed across the operation from warehouses to customer service and managers. However, that does not mean all users should have access to all data and solution capabilities. The route planning solution needs to have role-based access to allow it to be configured to share information and capabilities based upon the organizations and jobs of the users.

**Integration sophistication:** The breadth and depth of integration capabilities are important as many companies have systems that vary from decades old to the latest generation. The ability to handle a wide range of integration requirements from batch-based file uploads to real-time REST APIs is essential to minimize the integration efforts and complexity. In addition, the bread of interfaces is also critical to automate the flow of data into and out of the route planning systems. This could include orders, resources, configuration parameters, etc.

**Scalability:** Route planning solutions need to be designed to scale and putting them in the cloud without that work won't solve a scalability problem. Route planning solutions can be confusing because the sophistication of the planning and optimization capabilities does not necessarily translate into a system that can scale to a business requirement. Instead, techniques such as horizontal scaling, robotic process automation, and elastic optimization are used to solve large-scale planning problems quickly and with robust results. The scalability is also required when there are dozens to even hundreds of users accessing the system simultaneously and running multiple optimizations.



## Implementation Competency is Critical to Maximizing Business Results

Besides product capability, the implementation capability of the vendor is the second most important factor in determining how much value will be derived from the solution and its ongoing success. There are several points to consider when evaluating the vendor's ability to help your organization successfully implement a route planning solution.

**Domain expertise.** The degree that the vendor's implementation resources know the solution and have experience with your route planning situation directly relates to the value you will receive from it. The implementation solution consultant should be able to take your requirements and translate them into a system configuration that matches your goals and do it in a way you understand.

Also, they should provide feedback and advice on the proposed solution during the solution design process to provide recommendations on the best approach, alternatives to solve problems, and even ideas that might have not been considered previously but could deliver even better business results.

**Defined implementation process.** Experienced route planning vendors will have implemented their solutions many times and have learned the best approach for their customers. They should have an end-to-end process that collaboratively develops a solution design, configures the solution based upon the design, uses your data to validate the results with you, and build a training program based upon your resources, timing, and budget. The implementation process should define the integration requirements and have recommended approaches based upon your existing systems.

**Project management.** Again, experienced route planning vendors will have a defined project management approach that is closely tied to the implementation process. The project manager should be knowledgeable of the product and be able to communicate the status of the implementation versus a mutually agreed upon project plan and budget. The project manager should be able to articulate any conflicts and have a defined way to address scope and product changes.

As part of the initial project kick-off, the project manager should tailor the program to address any unique needs and communicate their impact to the project's timing and budget. Most importantly, the project manager should establish a strong working relationship with their counterpart in your organization and have regular formal communications.

**Training.** The route planning vendor should have a recommended training approach that when completed operationalizes the new planning solution and gives your organization the capabilities to adapt the system to meet your changing needs. The vendor should have multiple training methods, onsite and e-learning, standardized classes for different skill levels, and the ability to tailor it uniquely to your business needs.

**Defined hand-off process to support and customer success.** There should be a formal process for the vendor to train their support and customer success organizations so that when the project is completed, the support team can take over from the implementation team without any degradation in product support.



*The vendor should have multiple training methods, onsite and e-learning, standardized classes for different skill levels, and the ability to tailor it uniquely to your business needs.*



## Post Go-Live Processes and Team Are Critical to Long-Term Success

A robust organization dedicated to your success post go-live not only helps ensure your route planning solution delivers results every day, but helps you get even more value from it.

### **A Strong Support Organization Will Keep Your Solution On Track**

There should be a formal organization that is separate from the implementation team that assists your organization and can provide an expedient response to questions about the solution, its performance, and be able to assist if the solution is not performing adequately.

**Defined contact and problem tracking process and supporting systems.** The vendor should have a technology-enabled support solution that offers multiple ways to contact them about issues and track the progress against that issue until its successful resolution and closure.

**Escalation path.** If an issue or question requires additional resources to solve it, the support team should have defined access to second and third level resources such as the original implementers, the operations team, and product management/development.



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### **Customer Success Team Proactive Outreach Will Help You Maximize the Solution's Value**

As part of the overall customer engagement program, that vendor should have a customer success organization that is focused on helping the customer post go live to get the most from their solution.

**Proactive outreach.** Rather than wait for issues to surface, struggling to understand the value of the route planning solution or not knowing the future direction of the solution, the customer success team proactively engages with customers on a regular interval to help the customer address these points and ensure that there is alignment between the customer goals and the vendor. The customer success team also determines if additional resources from the implementation and product management team are required to answer questions the customer may have about the ongoing use of the system or address any product issues.

### **An Enhancement Request Process Helps You Get Changes You Need for Even More Value**

While route planning solutions can be quite comprehensive, customers do identify areas for improvement or correction that require changes to the product. Given that leading route planning solutions have many customers, enhancements cannot be handled on an ad-hoc basis and need a process to ensure there is visibility to enhancement requests made by the customer.

**Supporting technology.** Besides an enhancement process, the route planning solution vendor must have a self-service solution for customers to place enhancement requests and track their progress. The solution should not only provide visibility to the customer's enhancement requests, but to be able to see the request of other customers and vote on enhancement requests to give the vendor a better perspective of overall priority of enhancements across the customer base.



*Given that leading route planning solutions have many customers, enhancements need a process to ensure there is visibility to requests made by the customer.*



## Conclusion

Leading route planning solutions will unlock your fleet's performance and make a meaningful impact to the business's overall performance. However, picking the right route planning solution and vendor is not straightforward. That is why we created the route planning buyer's guide to help you understand what matters most in a route planning solution, how to get organized before starting a vendor evaluation process, and what to expect from a competent route planning solution vendor.

All the subjects above come from our experience working with numerous companies around the globe that have successfully implemented route planning solutions and achieved amazing business results. We believe that if you understand and follow them, your organization will too.

Looking to elevate your fleet performance through better route planning? Connect with a Descartes solutions expert today to ask your burning questions and discover why our routing solution may be the perfect one for your planning and delivery challenges. Your path to a more efficient and effective fleet begins with a simple conversation.

To learn more, go to our [website](#) or [speak](#) to one of our experienced solutions experts.



## About Descartes Systems Group

Descartes (Nasdaq:DSGX) (TSX:DSG) is the global leader in providing on-demand, software-as-a-service solutions focused on improving the productivity, security, and sustainability of logistics-intensive businesses. Customers use our modular, software-as-a-service solutions to route, track and help improve the safety, performance, and compliance of delivery resources; plan, allocate and execute shipments; rate, audit and pay transportation invoices; access global trade data; file customs and security documents for imports and exports; and complete numerous other logistics processes by participating in the world's largest, collaborative multimodal logistics community. Our headquarters are in Waterloo, Ontario, Canada and we have offices and partners around the world.

Learn more at [www.descartes.com](http://www.descartes.com) and connect with us on [LinkedIn](#) and [X](#).

**Uniting the People & Technology That Move the World.**