

SUCCESS STORY



Toyota Logistics Services uses network optimization services from INFORM

Toyota Logistics Services (TLS, Plano, Texas), Toyota's North American finished vehicle logistics provider, achieves significant cost reductions, sustainability, and network performance improvements with INFORM's network planning optimization solution.

Toyota Logistics Services

1959, Toyota served the North American market as an importer moving vehicles from North American ports inland. In the mid-1980s, Toyota opened its first North American plant and since then, has been growing both regionally and nationally. TLS is now an organization with an extensive network of facilities across North America and an annual operating budget of \$1.5 billion. These facilities include production plants, ports of origin, modification and upfit centers, regional distribution centers and the dealership network. TLS uses both rail and truck carriers with an estimated 58,000 different active carrier and route possibilities with approximately 1.8 million per scenario.

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An ambitious project

Toyota Logistics Services (TLS, Plano, Texas) has a mission to, "Achieve operational excellence for quality, delivery and cost through continuous improvement and effective collaboration with its team members, North America affiliates and business partners." In order to meet this mission in times of increased complexity and challenges, TLS implemented an ambitious network optimization project. For this strategy, TLS turned to INFORM GmbH (Aachen, Germany).

Like others in the finished vehicle logistics industry, TLS was plagued by steadily rising costs. Given the wide scope of its network, carrier routes and options, all coupled with a heightened focus on cost-containment and service quality, TLS sought a better network planning solution and process to strategically analyze their network multiple times per year. In 2015, TLS issued an RFP, placing its network optimization project out to bid. The goal was to review its entire U.S. network from the ground up from a green field study perspective. After a comprehensive review process, INFORM was selected based on its proven experience in finished vehicle logistics, as well as TLS' confidence in INFORM handling the large scale of its network and related data, to help implement a successful network optimization project.

Multiple challenges on different levels

For TLS, there were several challenges to manage at multiple levels. There were contract conditions to be addressed related to carriers' rates, capacity constraints, as well as lead and dwell time key performance indicators. It was also extremely important to provide overall carrier score cards and performance reporting to take into account key metrics like on-time performance and vehicle damage percentages. In addition, there were operational complexities to manage such as minimum/maximum viable volumes for certain carriers, their regional or national footprints, as well as the number of ports or compounds to be addressed. It was critical that TLS had the tools needed to evaluate and manage its large volume of data and various key criteria. INFORM's strong academic background and emphasis on the business-related aspects of a project were particularly valuable in providing an effective network optimization solution and approach for TLS.

The network planning solution

INFORM's network planning solution for finished vehicle logistics facilitates the intelligent, strategic and wholistic planning of an organization's entire outbound



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Project Goals

- Optimization of the existing finished vehicle logistics network
- Identification of best partners and routes
- Address increasing costs through cost optimization
- Reduction in CO₂ emissions

logistics network. Information relating to locations, logistics service providers (e.g., freight forwarders) and partners (i.e., rail and truck carriers) is recorded and the data is entered into the solution, which is designed to optimize the network and achieve the lowest costs along with improved network stability and service quality. Applying INFORM's network planning tool, optimized routes and modes of transportation can be determined in conjunction with transport volumes and with consideration to various restrictions and business rules.

INFORM's optimization solution is built to allow successive scenario runs based on different criteria. Then, depending on what scenarios TLS found most favorable, additional scenarios were developed with as many as 20 different scenarios created. In creating an optimized network for TLS, the network planning strategy process began with a baseline scenario which evaluated the organization's existing network and bid rates. From there, the first scenario was created which focused on pure cost optimization and considered only a limited set of restrictions, less weight on transit times, and no limit on potential changes. It did not consider operational aspects as part of these lowest costs possible scenarios to determine the feasibility of these network possibilities. This then led to the creation of several competing business scenarios which did incorporate business requirements and restrictions with all information fully transparent in terms of costs, Service Level Agreements (SLAs) and other factors such as emissions. The project then applied various business rules, including: minimum volume, maximum volume, number of legs and distance between origin and destination, lead times, and the volume of business being allocated to any one carrier in order to balance operational and cost-related network risks.

Once this process of scenario building and discovery learning was completed, the optimum decision making could be achieved. After visualizing each of their partners/carriers' strengths and weaknesses, TLS was able to leverage strategic partnerships to ensure service improvements, increased delivery predictability, and reduced lead and dwell times. Additionally, the organization is able to balance its use of rail versus truck and realize minimum congestion. The optimized network planning solution and process has also enabled TLS to identify back-up routes for all routes with the solution able to highlight the best and second-best routes giving TLS the optimum fallback options. From a cost standpoint, TLS is better able to keep the cost competitiveness between rail and truck at a high level.

Benefits derived

As a result of the advantages derived from its initial network optimization project in 2015/2016, TLS decided to repeat it in November 2021. As part of conducting the optimization process in five-year cycles, TLS again hoped to be able to gain a wholistic view of its current network to determine optimum partnerships and routes and to achieve the best costs without compromising service quality.



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As a result of applying INFORM's network planning optimization solution and the associated optimization process, TLS has achieved a 3% cost reduction annually in both its first network optimization process and the one just completed in November 2021. Considering that TLS is seeing its costs increase annually by an estimated 2% each year, the 3% savings is enabling the organization to realize a 5% cost avoidance. For TLS, overall cost management had been challenging, however, with INFORM's network planning optimization solution, the organization can check on the accuracy of its assumptions, comparing them to the actual number of vehicles it is shipping month to month.

It is also worth noting that TLS implemented the changes resulting from the INFORM network planning optimization solution's application process with minimal disruption to day-to-day and the supply chain operations. Ultimately, the process has enabled TLS to interpret data and arrive at informed decisions as to which are its best carrier partners based on performance and cost. Using templates, TLS is now able to issue RFPs that give the company with real world competitive bid information.

Key Results

- Fully transparent network to facilitate optimal decision making
- Improved balancing of operational and cost-related risks
- Greater cost competitiveness between rail and truck carriers
- Support corporate sustainability goals

New optimization process every five years

Following its first two successful network optimization sequences, TLS plans to run the optimization process every five years. INFORM also has a tracking solution which can be used to gather operational data to track against the plan and add in additional criteria if the performance is not at the level to drive continuous improvement. The INFORM solution has also been helpful in TLS' sustainability objectives. Currently, TLS is looking at its operations' environmental impact. Recognizing that rail has lower CO₂ emissions than trucks, the organization is striving to introduce more rail ramps to shorten truck miles. It is reviewing average truck miles per unit and considering a ratio of rail to truck to determine carbon footprints. Another criteria that can be factored into the solution is whether or not a carrier has a CO₂-reduced fleet.

As for service level quality, TLS maintains a record of a carrier's historical performance (i.e., lead time, on-time performance, vehicle damage performance), and uses it as a guide before taking a closer look for the actual evaluation. For carriers which TLS does not have a prior relationship, the organization relies on independent rating resources such as the Compliance, Safety, Accountability (CSA) safety compliance and enforcement program of the Federal Motor Carrier Safety Administration (FMCSA) for trucks and rail service rating resources for rail operators.

If you would like to know more, we look forward to hearing from you:

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