Schneider Electric's supply chain is complex. It includes 240 manufacturing facilities around the world and 110 distribution centers. Products range from circuit breakers that are small enough to fit on a store shelf to transformers that are the size of a large room. Needless to say, some of these larger products can be difficult and expensive to ship, and to get their products to their final destination safely and cost-effectively, they use a wide variety of methods including ocean, air, and road.

Schneider Electric has seen substantial growth through acquisition, but they've also divested some of their brands over the years. In addition to reducing supply chain costs for existing flows, they wanted to build a model that would help them analyze potential opportunities and assimilate new business units, products, and regions more cost-effectively. Schneider Electric created a supply chain modeling team in 2013. They made a strategic decision early on to staff this team with senior level modeling specialists who understood how to use modeling tools and could work with other senior managers throughout the organization to support company objectives. They also decided to distribute their supply chain modelers throughout the regions instead of having them all centrally located at their headquarters in Rueil-Malmaison, France. Currently, they have seven modelers working at headquarters and eight regionally.

- Create a best-practice routing guide
- Optimize flows within the existing footprint
- Assess further opportunities for consolidations and de-consolidations
- Extend modeling to more granular opportunities, such as acquisitions

Our world runs on energy, and Schneider Electric is helping it run better. The global company produces energy management solutions for everything from utilities, to industry, to consumers. In addition, many of their acquired brands, such as Square D, are well recognized in the markets they serve.

- Discovered €8 million savings in transportation costs
- Routing changes would also lower CO2 emissions
- Identified three potential areas for consolidation
- Created a product flow map that could be used throughout the organization
- Created a baseline model that could serve as a foundation for more granular models to analyze specific situations such as potential acquisitions
The Journey

When Schneider Electric called on LLamasoft to help them build their first-ever model to analyze downstream flows, they had four objectives they wanted to achieve:

1. Create a best-practice routing guide
2. Assess further opportunities for consolidations and de-consolidations
3. Optimize flows within the existing footprint
4. Extend modeling to more granular opportunities, such as acquisitions and divestitures

Given the complexity of their supply chain and their experience with supply chain modeling, the Schneider Electric team knew this project was going to be quite the undertaking. They relied heavily on LLamasoft to help them troubleshoot the model, including making some back-end solver changes.

The team had two major data challenges they needed to solve. First, like a lot of companies that have grown by acquisition, global data was spread across multiple legacy ERP systems. Schneider Electric had 103 systems, but the bulk of their data resided in 27 of them. To gather the data, they built a customized extraction tool, but they still needed to vet and cleanse the data, and that took even more time. Eventually, they rolled the data up into nine regional models and then into the global model. The second major challenge that Schneider Electric faced was the gaps in their data for existing lanes. For example, they might have an ocean rate for a route but not an air rate. Or, they might have a rate for a 20-foot container but not a 40 foot. Before the model could prove useful, they had to spend a considerable amount of time collecting rate data, including partnering with some 3PLs to get rates for areas where they had no data. To simplify the task, they occasionally consolidated rates for regions or countries where rates were likely to be similar.

They decided to restrict the model to international shipments and leave in-country shipments up to the regional groups. Not only did this simplify the model, but it also gave a clearer picture of the benefits by avoiding the double counting of savings globally and regionally.

The team found other ways to streamline the model as well, such as not including last leg shipments to customers and boiling down 300,000 SKUs into 1,800 product groups based on attributes such as origin, stocking type, and product family.

“Do not underestimate the challenges involved in building a model of this size, whether it’s getting the model to actually solve or just getting the data together. That is no trivial task.”

Lee Botham, Senior Global Manager for Logistics and Network Analytics, Schneider Electric
Results

The model identified €8 million in annual savings that could be obtained by altering product flow. Most of these costs were in variable handling and inventory holding costs. Additionally, the model identified several areas for potential consolidations. Beyond the immediate cost removal possibilities, the model also uncovered some unexpected benefits such as a CO2 savings from modified transportation routes and better container utilization.

Another unexpected benefit was the creation of a useful product flow map. As Marcus LeMaster, Global Director of Logistics and Network Analytics explains, “One of the biggest benefits we found in the last four years is not necessarily the optimized model; it’s when we put up the greenfield maps, or the demand heat maps, or the baseline flow maps of how things are flowing. In many cases, it was the first time many people in the organization had seen how our products flow, and it provided a lot of new insights.”

Going forward, the model gives the team the framework they were looking for to help them build their best-practice routing guide. They have a global database of transportation rates, something they did not have before. And, they can use the model to build more granular regional, product-based, or business unit models in about a week. This will allow them to more easily analyze the impact of potential acquisitions and recommend the best routes to assimilate additional products and customers.

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