What is our actual cost-to-serve for each product to each customer?
Different customers, products, service levels and distribution channels contribute different margins; by identifying the unprofitable and low-margin product/customer combinations and high-cost processes, you can develop action plans for each in order to improve your business’ profitability, or determine where to send products in periods of shortage and excess. Cost-to-serve optimization analyzes and quantifies all the activities and costs incurred to fulfill customer demand for a product through the end-to-end supply chain. It evaluates the thousands of activity-based costing options to identify the optimal network design, structure and flow to achieve the lowest total cost-to-serve based on all end-to-end trade-offs.

How can we optimize for tax and duties?
For chemical companies, taxes and duties expenses can meet or even exceed total transportation cost. LLamasoft can help companies incorporate tax and duty as cost factors along with the traditional transportation, facility, labor and inventory costs, enabling true global network optimization. This will include calculating tax and duties based on the selected make site, zone and ownership of the product, as well as the transfer price and taxable income.

Should we start delivering certain customers factory-direct?
LLamasoft supply chain design solutions such as network optimization can help identify strategies for improving sourcing and transportation strategy based on required service constraints. Understand how to manage channels such as retail, wholesale distribution, e-commerce, OEM and third-party channels in order to minimize overall costs while meeting unique demands in each channel. In addition, supply chain inventory optimization can provide a full inventory plan that includes optimal safety stock, cycle stock and pre-build inventory.

How should we flow each product through the network?
The process of moving products from supply through production and eventually distributing them out to customers or stores presents myriad choices. The collective set of these choices make up a product’s flow-path through the supply chain. Using Supply Chain Guru, companies can model these flows to identify total landed cost or total cost-to-serve for each product, and then model all the alternative flow options using smart algorithms to determine the best choice.
To meet seasonal demand, what products do we pre-build?
Long-term capacity planning can help companies manage seasonality, economic fluctuations and other influences on product demand that place stress on production schedules and overall capacity. Using production modeling, companies can regularly review demand forecasts as the information becomes available so that they can best balance limited production capacity with demand volumes that often exceed this capacity. This requires production strategies such as pre-building of goods or pre-positioning of inventory for certain products so that capacity remains available for the most critical items.

How do we balance production lines?
Even if a company has a manufacturing strategy in place, including location and quantity for each product produced, there are still many tactical decisions that can drive significant cost savings and operational improvements. Detailed models of the entire production capacity as a function of the end-to-end supply chain can help a business determine the production location, timing and quantity of each product throughout the network to best utilize capacity at the lowest total cost. Modeling results can also determine lot sizing, labor shift allocation, working hours or best utilization of changeovers.

Production capacity case example:
A LLamasoft customer uncovered $50 million in cost savings in just one year, without any changes to the physical production footprint, by utilizing capacity modeling to simply balance variables and capacity.

Where should we position inventory to achieve desired service levels?
By leveraging inventory modeling and policy design technology, companies can analyze and properly categorize demand, factor all aspects of inventory for both existing and new supply chain structures and simulate real-world behavior to enable true what-if capabilities. The result is a prescription for the right levels of working capital across continuously-changing businesses.

Inventory optimization case example:
A LLamasoft customer used these technologies to reveal the company’s current safety stock methods were generating significant excess inventory or missing their service metrics for most products. They network-wide view of cycle stock, WIP, in-transit and safety stock inventories built identified a $2 million potential opportunity for inventory reduction.

How do we minimize costs for unplanned shutdowns and transportation asset shortages?
Supply chain risk management and contingency planning is a key application of supply chain design. LLamasoft modeling technology enables companies to create living models of the end-to-end supply chain to mitigate risks by visualizing current inefficiencies, analyze the impact of changes to the supply chain through scenario analysis, and be able to react quickly and intelligently to unplanned events such as fires or floods. LLamasoft also offers a variety of global risk indices to help companies understand and predict the likelihood of supply chain disturbances.

Risk management case example:
When a catastrophic flood occurred, a LLamasoft customer’s primary supplier was crippled, eliminating capacity for weeks. Utilizing current supply chain models, they quickly ran scenarios to determine, given lead time, when they would stock out and which alternative methods of servicing customers would be optimal. The company was able to rapidly provide these alternatives, with associated costs, to customers, thereby avoiding uncertainty and protracted delivery delays.
How do we rationalize our supply chain as a result of a merger or acquisition? Mergers and acquisitions (M&A) introduce an incomparable number of options for the design of new organization’s future supply chain. Expanded and sometimes redundant facilities, assets, suppliers, customers and products make the analysis “pre” or “post” merger difficult. Companies must utilize models that include all of the inter-related operations and incorporate time and variability to determine the best strategy for combining multiple organizations.

**M&A case example:** A LLamasoft customer had just acquired a major competitor’s product line. Supply Chain Guru modeling technology showed the company that its planned post-acquisition facility expansion date was not the optimal one. By viewing detailed output graphics of the total landed costs, the company identified a potential savings of $7 million in labor and transport savings by opening facilities earlier than originally planned.

**What Makes LLamasoft the Most Complete Design Solution?**
LLamasoft occupies a unique place in the market as the only commercial software vendor dedicated solely to supply chain “design.” Some of LLamasoft’s key strengths are:

- **Product Development:** LLamasoft invests greater than 30 percent of annual revenue in research and has the largest dedicated development staff of both software developers and operations research scientists in the industry.

- **Data Integration and SAP Connector:** Strong data integration, editing and error checking capabilities; along with our Data Guru SAP Connector that enables easy access to supply chain modeling information from SAP—with no coding.

- **Mixed Mode Solving:** The only network design application that integrates network, transportation, inventory and simulation algorithms into a single tool, with a unified database and user-interface for a powerful, efficient user experience.

- **Mapping and Visualization:** Geographic Information System (GIS) mapping allows users to view, edit and analyze key inputs and outputs visually for geocoding, routing or solving for distance. Built-in supply chain visualization reports and mapping overlays such as service area and risk metrics can reduce the time it takes to understand complex information.

- **Automatic Scenario Generation:** Powerful multiple scenario analysis within a single model database offers the ability to adjust any combination of key cost or model elements to do sensitivity analysis, simulate impact on the supply chain over time, and make the optimal decisions.

- **Cloud Solving:** Providing our customers with a remote solving option to offload large and complex solving problems and generate faster results with less overhead.