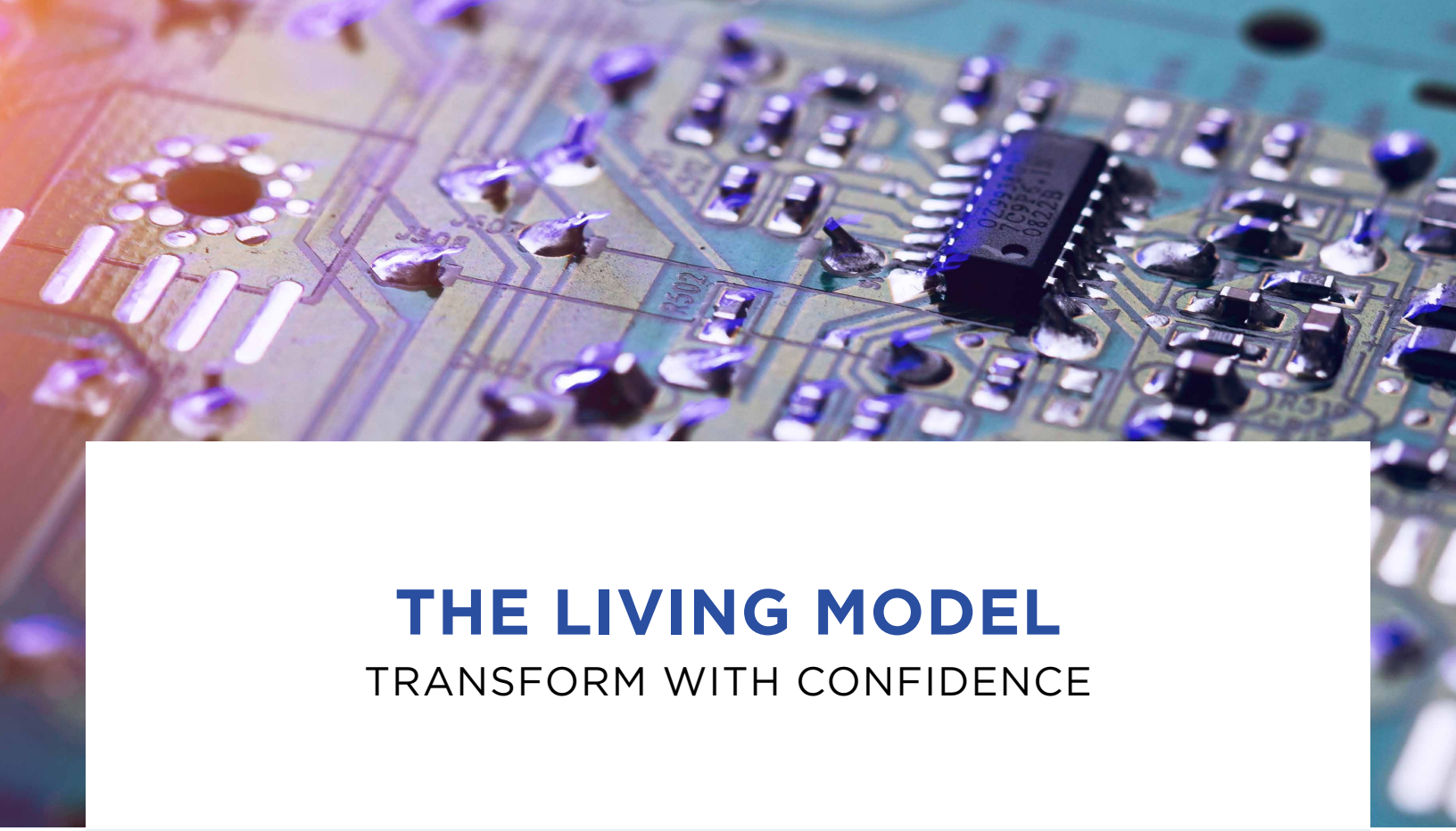

THE LIVING MODEL

TRANSFORM WITH CONFIDENCE

OVERVIEW

Companies with top-performing supply chains understand that in order to realize the full promise of visibility, it's not enough just to see what is happening now, but moreover what is likely to happen in the future. And while some organizations are leveraging sophisticated software to enable future state modeling, they are largely focused on speed over repeatability and accuracy. This makes it difficult to keep studies "fresh" for the amount of time it typically takes to implement (since the data is aging) and to prove that predicted results were achieved after implementation. In today's constantly changing environment, leveraging digital twin technology to create a "Living Model" of the supply chain can mean the difference between moving ahead and falling behind.

OPPORTUNITY

A multinational computer hardware and software company was utilizing a routing model that moved all freight through regional gateways based on demand location. While this reduced outbound from gateway costs, it also fragmented critical mass on the inbound leg, resulting in many customs entries, high MPF (Merchandise Processing Fee, a US Customs charge), and frequent minimum charge shipments.

SupplyChain Solutions

OUR SOLUTION

Leveraging technology to identify the correct supply chain design for each type of product a company moves can often yield significant improvements: segment demand, build a supply chain to profitably service each segment, and then optimize each supply chain. A hypothesis was proposed that changing the port of entry strategy for US build-to-order product would reduce the cost of the finished goods supply chain.

The company had already invested the time and resources to have Expeditors build a persistent modeling environment, a digital twin with a continually validated baseline. Therefore, the work consisted of altering the existing model to optimize gateway use based on demand characteristics instead of demand location. In a typical modeling environment, new baselines are built for each study, often including future iterations of the same study. In this case that was not necessary, since the same baseline had been used for many previous studies, saving time and increasing confidence in the model.

RESULTS

The most cost effective model for this product routed Asia supply through a single US gateway, reducing costs by 34% with an average 1-2 days increase in transit time. Service levels were adjusted (the origin leg accelerated for east coast demand) and the final results predicted a 17% reduction in transportation costs, a 16% reduction in MPF exposure, and a 52% reduction in customs entries
– with no increase in lead time. The company decided to move forward with implementation.

This is where most supply chain studies end; however, since the company had a digital twin, a “Living Model” of the supply chain, it was easy to revisit the study after implementation in order to prove that expected benefits were in fact achieved. At the end of the first month, current transactional data was run through the model, and this time the alternate used for comparison was the original state: i.e. what would have happened had the change not been made? Model results confirmed the projected savings were indeed being realized.

The model was run again at the end of each month for three months, and then again at the end of the next quarter in order to provide six months of evidence that the results of the change were as expected. Interestingly, during the second month of the second quarter, savings eroded significantly. An examination of the demand during that period uncovered a series of very large shipments. Since this was a minimums mitigation design, larger than normal shipments deteriorated savings. These shipments were raw materials meant to go directly to the manufacturing base. They had instead routed them through a finished goods, minimums mitigation design, and doing so impacted savings. It also highlighted the fact that if demand characteristics were to change significantly, like an increase in average weight per shipment, then the design would need to be revisited.

In fact that is exactly what happened, when the company experienced over capacity in a US plant that serviced US demand. They wanted to shift that production to Asia, which would change the average weight per shipment coming into the US from Asia, since this plant manufactured product that was significantly heavier than product currently produced in Asia for US demand. A new study was initiated that pointed to a two-cross-dock model, with a deceleration of the origin leg and a further 7% reduction in cost versus what would have been the case had the design not been revisited.

As is frequently the case with supply chains, the situation continued to evolve. When the trade wars ensued and they began pulling assembly out of China, extensive modeling of alternate sources and routing strategies ensured that they maintained the optimal network design as conditions changed.

The client has since used their network model to examine many “what if” scenarios, each sharing a high degree of relational accuracy, since all studies are based on the same digital twin of the supply chain that is continually validated. Returning to previous studies with new rules, rates, or transactions is also easily accommodated, allowing for ongoing validation that studies, once implemented, do in fact achieve the results that were predicted.