



### Business challenge

Keen to strengthen long-term planning within its manufacturing efforts, Lumileds Holding B.V. was looking to supplement its planning systems.

### Transformation

Using IBM® Decision Optimization Center software, Lumileds shifted its focus from meeting just-in-time manufacturing demands to better optimizing its business with facts-driven decisions. From a central planning platform, the company can project the impact of process and supply changes against immediate production runs and long-term goals as well.

### Results

#### 50% shorter runtimes

to generate sales and operations plans

#### Cuts delivery timelines

by better optimizing resource planning and use

#### Keeps costs low

with centralized inventory management and just-in-time manufacturing

## Lumileds Holding B.V. Long-term strategy, short-term efficiency

Lumileds (external link) is recognized across the globe as a leader in lighting solutions. Focusing on the automotive, mobile and Internet of Things (IoT) markets, the business operates in more than 30 countries worldwide, employing roughly 7,000 staff to develop, manufacture and distribute its LED, light bulb and specialty lighting offerings.

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—Kalyana Namburi, Senior Manager, Supply Team Excellence, Lumileds Singapore

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## Wrestling with the infinite

Customization is a beautiful thing. To be able to order exactly what you want—what you need—and have it readily available is one of the hallmarks of modern society. From pizzas to cloud solutions to lighting arrays, businesses are providing consumers with more comprehensive and nuanced choices to find the offering or service that is unique to their expectations.

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And as more choices are added, the possible combinations grow exponentially, nearing the infinite. Unfortunately, infinity can be a hard thing to deliver, which is roughly the challenge that lighting system manufacturer Lumileds regularly faces.

“The complexity of our supply chains comes from our highly configurable products,” explains Kalyana Namburi,

Senior Manager of Supply Team Excellence at Lumileds Singapore. “We receive orders from customers that might have combinations of 4,000-plus product performance characteristics—luminous flux or color combinations. As an example, that could correspond to any number of our 5,000-plus assembly part numbers. And we have to look for these parts across over 40,000 different bins in multiple global factories and warehouses—Penang, China, Singapore, San Jose.”

Adding a further complication, the materials for these orders need to be located and processed quickly, as Lumileds maintains a commitment to confirm and schedule product runs within 48 hours of ordering. And for years, the business has relied on IBM ILOG® CPLEX® Optimization Studio software to help coordinate and manage this daunting task.

However, more recently, Lumileds wished to become more strategic in its overall planning efforts. Namburi clarifies: “Each of our sites had their own unique way of running manufacturing, and we were dealing with subcontractors, so we had challenges in getting the global picture. If we were looking at growth, it was hard to tell if we needed more machine capacities or more manpower. We could operate efficiently today, but it was hard to identify what we should plan for next week or next month or next year.”

## Build for today, plan for tomorrow

To accommodate this strategic initiative, Lumileds now uses IBM Decision Optimization Center software—recently upgrading to version 3.9—to oversee its global demand supply chain matching efforts. With the solution in place, company staff can make data-driven decisions regarding which kinds of production runs should be performed across the group’s global factories, focusing on the balance between inventory optimization and just-in-time manufacturing runs.

“We can now see how much each factory is producing,” notes Namburi. “But what’s most important is the scenario analysis that we can do. Our planners can project what would happen to our production and fulfillment timelines if we change certain capacities or shift resources.”

For example, when filling a large order, the system might initially indicate that Lumileds will need over three weeks to produce the needed LED lighting arrays. But planners can begin to analyze potential scenarios to see if that timeline can be shortened by shifting production runs across sites or rearranging schedules.

“We can look at a backorder and quickly determine what the issue is,” continues Namburi. “Is it a mission

constraint? Are we missing inventory data? When we have the whole supply chain sorted out, the solution lets us churn out a more optimal plan quickly.”

In addition, Lumileds continues to rely on the ILOG CPLEX Optimization Studio software for shipment support. “Once we have the inventory nicely binned, CPLEX lets us know the best way to organize it,” adds Namburi. “It lets us quickly generate the confirmation of part numbers that we need to meet our customers’ requirement and our 48-hour commitment.”

## The right choice, again and again

Thanks to the IBM software, Lumileds is able to better drive long-term efficiency across its production cycles and streamline reporting and planning efforts. “We have seen major improvements with Decision Optimization Center,” notes Namburi. “Compared to what we could do before, we’ve sliced away at least 50% of the runtime that we needed to generate a weekly or an SNOP [sales and operations] plan.”

And with fact-based supply and capacity checking across its global factories and warehouses, Lumileds has improved the consistency and reliability of its delivery projections.

“Our customers don’t want to hear ‘maybe,’” adds Namburi. “We know what is going on in our supply chains. We know what we have for resources when we make our delivery commitments, so we are able to exactly meet the week, the date, the time that we tell them.” And by consistently meeting its planning and delivery deadlines, Lumileds can instill a higher level of confidence and satisfaction among its customers.

Furthermore, with just-in-time manufacturing policies, the business can keep its inventory management and warehousing costs low.

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## Solution components

- IBM® Decision Optimization Center
- IBM ILOG® CPLEX® Optimization Studio

### Take the next step

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