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# Six Sigma Symphony



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its fundamental business  
processes by extending  
Six Sigma to the supply chain



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A photograph of a musical score with a baton resting on it, serving as a background for the title.

# Six Sigma Symphony

**DuPont is transforming its fundamental business processes by extending Six Sigma to the supply chain.**

**Michael Sharkey reports.**

**K**eith Holliday is a maestro leading a different type of orchestra. As the director of supply chain excellence for DuPont, Holliday is responsible for coordinating the \$28 billion company's effort to cut \$1 billion in working capital and \$600 million in costs from its global supply chain within three years.

"We're trying to pull together a lot of people—people who are playing very different instruments—to make music," Holliday said. "And in the beginning, the music didn't sound very sweet. Each of our business segments was doing things differently, playing their own tune."

But by employing Six Sigma and lean methodologies across the end-to-end supply chain, DuPont is beginning to make music. The worldwide manufacturer currently has more than 1,500 active Six Sigma projects taking place in the supply chain, and the estimated results based on completion rates projected out for the year include more than \$200 million in cost savings.

"We're now starting to see the fruits of our labor," Holliday said. "We're really starting to come together and work well. A number of our business leaders are singing the praises of what







can happen with the right processes in place, and that's building some powerful momentum to help us achieve our three-year goal."

### End to end

In 1999, DuPont made the strategic decision to deploy Six Sigma as its improvement process across the company's five business segments: Electronics & Communications Technologies, Safety & Protection, Performance Materials, Agriculture & Nutrition, and Coatings & Color Technologies.

Traditionally, DuPont allowed its numerous business segments a great deal of autonomy because of the amount of diversity in the various industries they took part in. Moving the entire 60,000-employee organization to a set of common processes became a massive project.

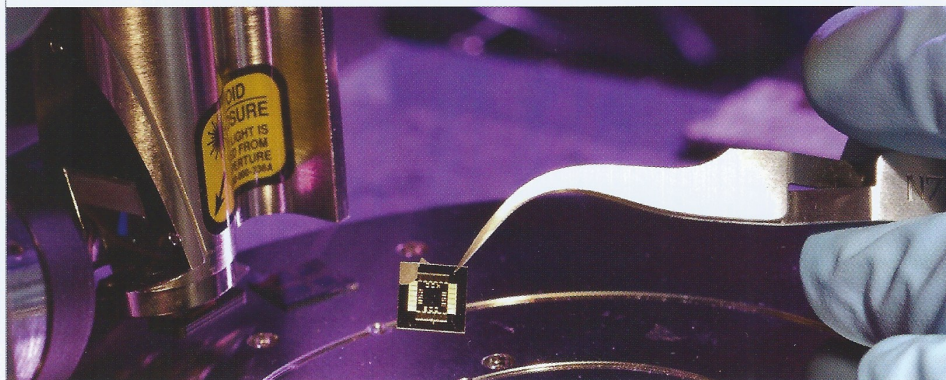
DuPont appointed vice president Don Linsenmann as Six Sigma corporate champion and named champions in each of its major business units. Holliday became the champion of a Performance Materials business and traveled with the new Six Sigma team to Arizona to learn the Six Sigma ropes from Mikel Harry, the man who pioneered the methodology with Bill Smith at Motorola in 1986.

Seven years and thousands of Six Sigma projects later, DuPont has cut hundreds of millions of dollars in cost, and in April, Linsenmann and Harry published the details of the success story in a book entitled, *The Six Sigma Fieldbook: How DuPont Successfully Implemented the Six Sigma Breakthrough Management Strategy*. But by that time, Holliday was already well engrossed in an even more complex Six Sigma project. In 2003, DuPont decided to apply the Six Sigma methodologies it had learned across the end-to-end supply chain, and Holliday was named director of supply chain excellence.

"We'd brought in millions of dollars in benefits through traditional Six Sigma applications, but we didn't know if those projects fundamentally changed our capabilities," Holliday said. "My role was to take responsibility for the end-to-end supply chain and figure out how we would use Six Sigma to improve end-to-end business processes. At the end of the day, that's what we were after."

### No going back

Extending Six Sigma to the supply chain isn't just a pet project at DuPont; it's an initiative that corporate leadership is counting on to generate substantial results. At an investor meeting in





November, COO Richard Goodman made the organization's goals public: cut \$1 billion in working capital and \$600 million in cost from the supply chain within three years.

"We've told the whole world," Holliday said. "There's no going back now. But I'm happy we did that. It means we've got the entire organization committed to this project. We picked a target that was aggressive, but doable, and we're going to do it."

Extensive preparations for the project helped position DuPont for success. The company created new operations positions to oversee the end-to-end supply chain performance in each business, formed a supply chain competency center to provide cross-functional support, and appointed Six Sigma champions to lead the improvement projects in each platform.

The company then adapted supply chain standard process definitions (MRP2) as practiced by Oliver Wight to create standard practices and metrics across its supply chains. Using the metrics, the organization was able to compare its performance against the competition and find the gaps where process improvement was needed.

As DuPont began to create Six Sigma projects to fill the gaps, it also began to consider truly transformational ideas. Said Holliday, "It's not good enough to just become competitive in the world we're in. Everything is moving too fast. We wanted to transform our supply chains beyond just being competitive to becoming among the best."

Once Six Sigma projects began to optimize plant capabilities, DuPont brought in the philosophies of lean manufacturing to help shorten cycle times, become more responsive to customer needs, and remove waste. "We brought it in as part of our Six Sigma process, not as a distinct methodology," Holliday said. "You need the foundation of Six Sigma discipline to bring about lasting change. Then you can bring in elements of lean to help meet customer demands and tailor your manufacturing capability to the requirements of your customers."

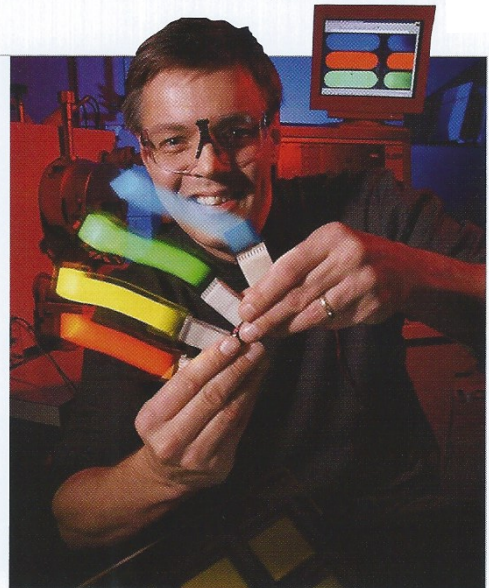
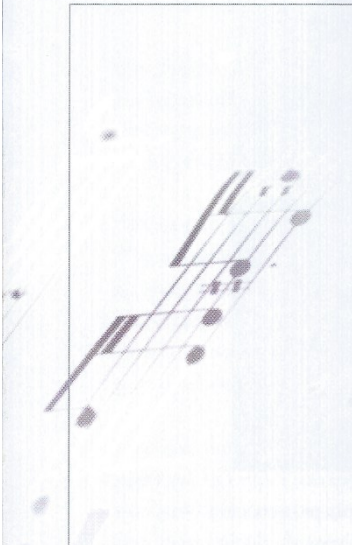
As part of the lean process, DuPont trained more than 250 employees in lean practices to become lean practitioners and create value



**CORPORATE  
SPOTLIGHT**







stream maps for each of its supply chains. Management used the value stream maps to pinpoint opportunities for improvement and presented those opportunities to front-line employees at more than 300 kaizen events in 2005 alone. To help train its people in lean Six Sigma tools and provide implementation support, DuPont used the AIT Group.

“At a kaizen event, you bring the people together who know the nuts and bolts of the problem,” Holliday said. “You bring them together in a concentrated event to analyze the process, analyze the data, and figure out a way to solve problems and take out the waste.”

After mining employee input, 30-day project lists were created to see what could be accomplished, and DuPont began to see measurable results.

#### More than ripping out costs

DuPont’s injection of Six Sigma and lean into the end-to-end supply chain over the past year has produced a growing number of success stories. At a DuPont plant in France where crop protection chemicals are produced, Six Sigma and lean projects led to a 70% reduction in inventory coupled with a 15% cut in manufacturing costs in one unit.

A coatings and color technologies plant in Brazil has become significantly more efficient than any other plant in the industry, and at a plant in Canada, cycle time in the lab (which was a significant portion of total manufacturing time) shrunk by more than 30%, increasing plant capacity.

“We’re only part way into this three-year journey,” Holliday said. “The first year, 2004, was about restructuring, 2005 was about laying the groundwork for transformation, and 2006 is our first delivery year toward the \$1 billion savings in working capital and \$600 million in cost. We’ve had some early success stories, and we’re very confident we’ll be able to hit our target.”

Change management across a company as vast and complex as DuPont requires strong leadership. Holliday attributed the early success of the project to the company’s dedicated employees and specifically its change leaders, including operations Six Sigma champions Gayle Gibson (Electronics & Communications Technologies), John Trachok (Safety & Protection), Chris Koelsch (Performance Materials), Yih-Fen Maa (Agriculture & Nutrition), and Bruce Simmons (Coatings & Color Technologies).

And while the change leaders have driven early cost savings, Holliday noted, DuPont’s Six Sigma supply chain initiative is about much more than ripping out costs—it’s about benefiting customers.

“There are places where improved capabilities may not result in improved working capital, but they will positively impact the customer,” he said. “At the end of the day, if we don’t make the customer experience better, we’ve failed. We want our customers to be able to rely and depend on us like never before. If we can accomplish that, we’ll see the internal benefits like lower working capital and better fixed cost, and our business will continue to grow.” ■

