

# CATERPILLAR:

A woman with long dark hair, wearing a black blazer over a white collared shirt, is smiling and leaning against a large yellow Caterpillar engine. The engine is complex with various pipes, hoses, and components. The background is a solid blue color.

Fawn Briggerman, PMP, sits in 'the heart of Cat.'

# Manufacturing Success in a Competitive Global Market

Enterprise project management provides a unified view of product development – and the ability to comply with changing business demand.

**T**he big yellow machines are everywhere, and they're unmistakable. On wheeled and track-type tractors, heavy-duty construction and mining equipment, power generators, and engines, the bright canary color of one of the world's largest manufacturers practically shouts "Caterpillar."

A diverse global company with 2005 sales of \$36.34 billion, Caterpillar Inc. is an organization with a vast reach. Headquartered in Peoria, Ill., Caterpillar is a technology leader and the world's top manufacturer of construction and mining equipment, diesel and natural gas engines and industrial gas turbines. Ranked Number 57 on the Fortune 500, Cat makes more than 300 products at plants worldwide, which are sold by more than 200 dealers in some 3,200 locations.

## LESS THAN THE SUM OF ITS PARTS

Yet Caterpillar's corporate strategy is focused not on expansion, but on pursuing excellence. One of the company's missions is to provide the best value in machines, engines, and support services for its customers. But with 30 divisions – most of which represent product groups – Caterpillar's main challenge may be to effectively manage a complex and extensive array of corporate resources within its facilities around the world.

Take product design and development. The hundreds of Cat products are designed by engineers in the development groups of various divisions. Depending on the product, multiple divisions may have a hand in its design, development and manufacture. Each unit typically has its own project plans for the product, but until recently, these plans were not shared, integrated or synchronized with the plans of the other business units.

"Each business unit had its own project management strengths," says Fawn M. Briggerman, PMP, project management leader at Caterpillar. "But with limited communication or sharing of the plans, we had little visibility into product design and development across the organization."

As a result of this siloed approach, resource management became increasingly difficult – engineers, for instance, could be assigned to multiple projects, and without visibility into the critical path for each manufacturing process, had no way of knowing which project had the highest priority.

## CHANGE IN THE HEART OF CAT

If Caterpillar was to keep pace with an increasingly competitive manufacturing market, it would have to elevate project management to a core competence. In 2001, the company created the Project Management Synergy Team, which included project management professionals from various parts of the organization.

“Initially, the team met to share best practices, lever-

its overall project management skills.”

Briggerman, an engineer by profession, leads the project management office in Cat’s Large Power Systems Division (LPSD). Because this group produces engines for all of the company’s products, it is often considered “the heart of Cat” – and Briggerman seems to operate at the center of the organization’s project management universe. She is an energetic woman who calmly and deliberately balances a huge realm of corporate responsibilities that would send a lesser person reaching for the antacids. With 15 years at the company – the last five in project management – she enjoys the constant change and the exposure to different company programs. But after a few years working with the Project Management Synergy Team, Briggerman saw that Caterpillar needed a new way to organize and execute its program management efforts.

“In order to remain competitive as a company, we needed to support real-time collaboration and communication among the program management teams,” she says. “The program plans needed to be shared across the enterprise and integrated, so that we had a unified view of our product development efforts. Without embracing this approach, we could never create the visibility or product development efficiencies Cat needed to succeed in our market.”

Briggerman wanted to create an enterprise project management system that would enable project managers to share product development resources across the organization. With this approach, managers and employees could prioritize projects in support of corporate business goals. Resource reports and analysis capabilities would spotlight the resources available for any given task, so that jobs could be assigned based on availability and expertise – avoiding staff overload and enhancing employee satisfaction and productivity.

## LAUNCHING ENTERPRISE PROJECT MANAGEMENT

Briggerman and a team of project management professionals from multiple divisions began by creating a

age strengths, and share experiences among different business units with different levels of project management maturity,” says Briggerman. “However, it seemed that over time, the meetings came to be showcases for what each organization had done in its own silo, with little attention to helping the enterprise as a whole enhance



**The Caterpillar team** (l-r): Tommy Arbuckle, Cat Electronics; Dave McLoughlin, DCS; Briggerman; Tim Bueter, Global IT; Alex Steinmann, Aurora, a unit that serves as an advisor to Cat’s Primavera Enterprise Governance Committee; and Tim Delaney, T&SD.

three-pronged plan for change. Their first step was to develop common project management processes that could be used across the enterprise. Then they approached the Global IT group, requesting the technology support needed to create a unified database and technology environment as well as support for enterprise project management tools.

However, getting the support and funding needed to acquire needed IT assets and to help management understand the value of enterprise project management required additional work. The team created a series of project management programs to address such issues as IT assessments of relevant technology, security assessments and job training issues. They also addressed the expected cultural challenges: resistance from workers who didn't want to change how they tracked resources, and departments and divisions that were reluctant to share their data with other Cat organizations.

With these hurdles cleared and funding received, Briggerman turned her attention to project management within her own division. After using Primavera departmentally within LPSD, she decided to migrate to an enterprise Primavera solution. "Considering the size of our project management programs and the number of project management people we have, Primavera met the challenge and provided the support we needed," she says. "With its multi-user access to the system, integration capabilities, powerful performance, sophisticated analytical capabilities, and availability of resource loading, we knew Primavera was the best choice for Cat."

Cat decided to run Primavera on a hosted solution (see No Need to Do it Yourself) not only for LPSD, but also for the Technology & Solutions Division (T&SD), Cat Electronics, the Dealer Channel Systems (DCS), and the Global IT organization that supports channel operations.

## No Need to Do it Yourself

When Caterpillar Inc. decided to implement an enterprise project management solution from Primavera, the company considered running the application within its own IT network. "Yet there was a significant amount of work involved for Cat to purchase servers, train our IT personnel to use the solution, and create an infrastructure and architecture to support the initial pilot," says Fawn M. Briggerman, PMP, project management leader.

Instead, the company decided to use a hosted solution, choosing application service provider (ASP) LoadSpring Solutions, Inc., of Lawrence, Mass., a Primavera partner that provides intelligent hosting, collaboration, and application management solutions.

"LoadSpring had the environment already set up and the infrastructure in place," says Briggerman. "It provided an outsourcing environment that is quicker, more stable and more affordable for us."

### A team of experts

In addition to working with LoadSpring, Caterpillar was supported by third-party systems integrators and consultants: PM Alliance, Stone Mountain, Ga., which continues to help Cat develop processes around Primavera; and Primavera Authorized Representatives and Solutions Providers Project Management Centre (PMC), Ottawa, Canada, and Catalyst, Inc., Indianapolis, Ind.

and we wanted to get their buy-in from the beginning. We saw no point in developing the solution for one division, then getting input from other groups and having to retrofit the system to meet everyone's needs."

Briggerman then began working with a team of third-party systems implementers and consultants to analyze the company's business, develop an implementation plan, handle system administration and provide training.

With all the preparatory work complete, the new solution went live for LPSD, T&SD, Cat Electronics and DCS in October, 2005. The team first moved all project plans from the departmental

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**– Fawn Briggerman, PMP, project management leader**

"We wanted to introduce this initiative as a global implementation," says Briggerman. "We developed processes to support these discrete project management groups,

Primavera solution and merged them into the new enterprise system. With this merger and the resulting elimination of redundant entries, the total 26,000 tasks in the discrete planning systems for LPSD, T&SD, Cat Electronics and DCS was reduced to fewer than 20,000 tasks. Today, Cat's project management system includes approximately 500 projects, with as many as 200 operating concurrently. To manage those projects, some 1,200 team members – 600 from the LPSD organization – use Primavera.

## A NEW VIEW ON SUCCESS

Although it is too early to define quantifiable benefits, enterprisewide project management quickly stream-

**With each success, the more mature project management organizations within the company will be able to adopt and mentor other groups in their project management.**

lined Cat's processes. "As we began to automate numerous manual project management functions – resource loading and integrating application-specific project plans, for example – there were rapid efficiency gains through the automation of project plans," says Briggerman.

"In the past, resource loading efforts failed or were one-time efforts that weren't maintained," she continues. "And engine development plans were very core-focused. We weren't able to integrate aspects of application-specific requirements for marine or electric power, for example.

"Primavera appears to have the right bells and whistles in place to make resource loading more manageable and easy to maintain. And with the new streamlined project management process, we are now able to dedicate resources to managing these application-specific plans," she adds.

The resource loading effort will help assure that Cat has skilled people and appropriate resources in place when required to support the projects. By adding resources to each activity in Primavera, the company will be able to forecast when it will need to shift resources from one project (or skillset) to another, or

secure more resources for the future. And, says Briggerman, "Caterpillar's products are getting more and more complex with each emissions cycle, so it's critical to stay ahead of the resource pendulum."

Briggerman's vision is that the organization will have well-trained employees lined up at the start of the project rather than scrambling to identify the team three to six months into a project. "Now, we will be able to analyze trends and patterns in our resource usage. Under the old system, the company's program plans typically focused exclusively on engineering activities. With the new solution, Cat can involve different teams in project management – such as component-specific designers, performance analysts, software developers, releasers, etc. This collaboration helps everyone communicate efficiently and effectively. And that benefits the company by supporting rapid and targeted product design and development."

Soon Cat will roll out Primavera web-based project management resource reporting capabilities to 100 managers. "Our managers are looking forward to having access to resource overload reports through the Web, as well as visibility into trends such as utilization and availability," says Briggerman. "Many managers also hope to use the resource loading and project management capabilities to gain line-of-sight visibility into project priorities."

As the company becomes more experienced using enterprise project management, it will begin documenting processes and establishing best practices. With each success, the more mature project management organizations within the company will be able to adopt and mentor other groups in their project management.

And not a moment too soon. According to Briggerman, Caterpillar must comply with the next round of U.S. emissions regulations, with a number of deadlines between 2010 and 2014. "We are in the initiation phase of the next round of programs," she says. "Now is the time for us to begin forecasting resource needs to support these initiatives, and we just can't do it without enterprise project management." •

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