Changsha Zoomlion

Building a unified PLM system across a group of independent organizations

Teamcenter and NX employed to bridge information across multiple business units; product data standardization fuels insight and innovation and enables knowledge-driven expansion.

Leveraging PLM for sustainable development

Changsha Zoomlion Heavy Industry Science & Technology Development Co., Ltd. (Zoomlion) was founded in 1992. Zhan Chunxin, then deputy director of Changsha Construction Machinery Research Institute, and seven other founding members started a brand new exploration for market-based reform of research institutes. Eighteen years later, Zoomlion became a multinational enterprise with more than 20,000 employees and total assets of RMB* 43 billion. Zoomlion is now listed among the top 10 engineering machinery enterprises in the world.

* RMB: The renminbi or the Chinese yuan (sign: ¥; code: CNY) is the currency of the People's Republic of China (PRC), with the exception of Hong Kong and Macau.
Following its previous stage of rapid development, Zoomlion now enjoys an annual growth rate of 50 to 60 percent. Moreover, with plans for continuous rapid expansion, Zoomlion focused on how to better utilize technology to support sustainable development.

Zoomlion is a group company consisting of 17 business units. Under the guidance of the company’s development strategy, “fission + fusion = globalization,” the business units operate relatively independently. The company wanted oversight supervisory controls and standardized processes in place across the business units. That is, maintaining sufficient broad-based supervision, while ensuring that each organization operates according to its own best business drivers.

To ensure this approach, to put teeth in its policy, management felt the company needed a highly effective and sufficiently transparent information-based method to manage each unit’s business transaction data. This was considered especially important to minimize the risk of losing control as a result of rapid development. Zoomlion’s internationalization process is aggressive and includes multiple regional and transnational mergers and acquisitions, including the restructuring and acquisition of Puyuan Group and Italy’s CIFA.

Two key elements critical to rapid expansion success
Wang Yukun, Zoomlion’s CEO, notes, “The key to integrating an acquired company into one’s own corporate system is the unification of the management and organizational culture. In the past, we would send personnel to participate in training or directly dispatch management personnel to manage the acquired or merged enterprises to realize the integration of the two. With the increased scale of the enterprises now involved, such integration is likely to reach a critical point. For example, as we integrate ever larger enterprises, the business model becomes increasingly complex and the development of the company may inevitably be confronted with barriers that no longer make it possible to meet the efficient integration requirements simply by injecting more manpower. We anticipate major management bottlenecks in the future without more effective methods to simplify, optimize, and integrate the acquired enterprises.”

“With Teamcenter, the business units of Zoomlion now have very strong R&D and development execution capacity, made possible by turning vast amounts of distinct and disconnected data into an organized portfolio of decision-making criteria.”

Wang Yukun
CIO
Zoomlion

Results
Significantly improved product data sharing enterprise-wide
Unified the product and BOM data of the design and process departments
Standardized product specifications, establishing a complete material coding system
Completed data importing and sorting, setting a foundation for project implementation
Established a sound data preparation process for implementing PDM across the group
Yukun notes, “An essential aspect of unifying management and organizational culture is having an effective IT (information technology) platform. So it is culture and technology that must interplay effectively to enable our rapid expansion.”

In fact, management was quite concerned that inadequate information sharing could stall its progress. As a company that manufactures multiple types of products, but in small batches, Zoomlion viewed the implementation of its product lifecycle management (PLM) system and enterprise resource planning (ERP) system as the IT underpinning for successful collaboration and growth.

In August 2008, Zoomlion finalized its PLM project implementation plan, choosing Teamcenter® software from Siemens PLM Software.

**Teamcenter yields empowerment**

“We chose Teamcenter in large part due to its many successes in the discrete manufacturing industry,” says Yukun. “In addition, the integration approach of Teamcenter is clearly different than other systems. With Teamcenter, it is possible to integrate product data and product process management into one unified platform, which is significantly beneficial for coordinated development of product R&D, design and manufacturing.”

**Making the pilot project count**

Zoomlion selected its two most important business units: the mobile crane branch and the concrete machinery branch, as pilot units for the implementation project. The strategy behind their selection was purposeful and long-range.

First, the two business units represent the most complex operations of the 17. The results of their implementations would likely serve as a learning opportunity, if not template, for rolling out Teamcenter across the other units.

Second, the two business units have 70 percent of the total sales of the company. Thus, the effects of a successful implementation would deliver high-yield results.

Third, the two business units have had some exposure to PLM technology and possess a relatively sound electronic base of product data, so the implementation process would likely be very efficient, if not shorter compared to the other units.

In October 2008, Zoomlion implemented Teamcenter.

**Preparing and standardizing data**

In executing its PLM solution, Zoomlion noted that the upfront need for product data sorting, entry and checking would be arduous, but management also saw its completion as a significant stepping stone to breakthrough organizational and enterprise efficiency. The two business units were both experiencing information-sharing challenges. Specifically, data generated by the research institute and manufacturing department were not interconnected, even though both departments had some experience with digital
product data management (PDM) and bill of materials (BOM) applications via Excel® spreadsheets.

“While the workload of data sorting is enormous,” says Yukun, “within four months the mobile crane branch had entered approximately 100,000 data sets into the PLM system, and the concrete machinery branch approximately 80,000.” He notes, “What is more difficult than entering the data is standardizing it. Like many other group operating companies, our business units operate independently; hence, the material codes and names of the parts and components vary widely among the units. After sorting, we began unifying our data encoding specifications across the entire group company and executed at both our mobile crane and concrete machinery branches.”

The mobile crane branch was the first to complete data preparations and bring the PLM system online. At the end of 2008, after three months of trial operation, adjustment and optimization, the system was working quite smoothly.

Other business units of Zoomlion, i.e., the environmental and sanitation branch, hoisting machinery branch and road machinery branch, began preparations for implementing Teamcenter. “The business units are working relatively autonomously, yet leveraging shared processes and knowledge from our two key business units,” says Yukun. “Moreover, at the group level we are now able to oversee complete enterprise operations through a unified IT platform. This is all in accordance with our original strategy and goals made by the management.”

The CAD factor
Computer-aided design (CAD) was also an important part of the PLM implementation. However, Zoomlion headquarters did not require its individual organizations to choose the same CAD technology. Nevertheless, NX™ software, also from Siemens PLM Software, was adopted and used widely throughout the business units for product design and simulation analysis.

In June 2009, Zoomlion Environmental Hygiene Machinery implemented NX in a comprehensive manner and in late 2009, Zoomlion Construction Crane Branch adopted it as well. “Without question, powerful design and simulation analysis capabilities are the two main reasons the business units chose NX,” says Yukun. “In addition, one cannot overlook the advantages of the seamless integration between NX and Teamcenter, facilitating a

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Zoomlion is a leading enterprise in the engineering machinery and equipment manufacture sector in China, and one of the first groups of innovation enterprises in China. The company specializes in the research, development and manufacture of major, new high-tech equipment necessary for important state infrastructure construction projects in the fields of construction, energy and transportation, among others. The company has more than 20,000 employees.

www.zoomlion.en.ecplaza.net

Customer’s primary business

By the end of 2009, Zoomlion Group was using 400 Teamcenter licenses and approximately 50 NX software licenses.

The right choice

Yukun concludes, “For large manufacturing enterprises such as ours, effective data management not only ensures flexibility during the process of R&D, but also clarifies the business requirements for each project. Of course, it takes commitment to transform a business to a completely digitally driven enterprise. While we gave our business units a free hand during the PLM implementation, we also established reward mechanisms to facilitate speed and buy-in. I smile when I say there were also consequences for not assimilating. Our incentive program definitely delivered a stable and effective implementation process. With Teamcenter, the business units of Zoomlion now have very strong R&D and development execution capacity, made possible by turning vast amounts of distinct and disconnected data into an organized portfolio of decision-making criteria. For us, the standardization of data and process enabled by Teamcenter gives us the knowledge to drive successful growth.”

Customer location

Hunan, Shaanxi provinces, Beijing and Shanghai, China
Milan, Italy