Korean automaker adapts business strategy to "buyers' market"

GM Daewoo lowered costs and slashed six months off the automobile development cycle by boosting productivity, collaboration and knowledge re-use with PLM

GM DAEWOO AUTO & TECHNOLOGY CO. (GM DAEWOO)

Business challenges

Adapt to rapidly fluctuating market conditions

Meet customer and regulatory (environmental) demands

Compete in "buyers' market" against domestic and international competition

Keys to success

Streamline global product development process using PLM technology for quicker adaptation to market trends

Increase productivity through digital validation, faster information access and knowledge re-use

Enable remote collaboration with parent company (GM) and other GM Daewoo facilities

Results

Supports vehicle development time reduction of up to 6 months

Engineering system costs slashed by approximately $15 million (US dollars)

Concurrent car program development increased by 50 percent

The Korean auto market is competitive, volatile and highly regulated.

Buyers' market in Korea

GM Daewoo Auto & Technology Co. (GM Daewoo) manufactures vehicles, engines and transmissions at four facilities in Korea as well as an assembly facility in Vietnam. GM Daewoo products are also assembled at GM facilities in China, Thailand, India, Colombia and Venezuela. To say the automobile market in Korea is competitive is an understatement. Between the domestic automakers and foreign competition, supply exceeds demand. On top of that, market conditions such as economic policy, material costs and labor availability fluctuate rapidly. Customer demands are fickle and environmental regulations are strict. In addition to these external challenges, GM Daewoo participates in General Motors' global network, driving the worldwide export of its vehicles and technology.

GM Daewoo management identified product lifecycle management (PLM) technology as a way of meeting these challenges. PLM technology would provide the infrastructure for transforming and streamlining the global product development process, thus enabling the company to react faster to market fluctuations. It would boost productivity in a variety of ways: by speeding access to information, by replacing part of physical prototyping and basic digital mockup with advanced digital validation and by increasing the re-use of existing product information. In addition, the collaborative solution within the PLM system would allow GM Daewoo to work more effectively within its own dispersed facilities and also with its parent company, GM.

The PLM implementation

At the end of 2003, GM Daewoo implemented a PLM solution from Siemens PLM Software based on NX™ digital product development software and Teamcenter® digital lifecycle management software. NX provided parametric and assembly design capabilities that quickly reduced the time needed to

Solutions/Services

NX
www.siemens.com/nx

Teamcenter
www.siemens.com/teamcenter

Client's primary business

GM Daewoo manufactures vehicles, engines and transmissions.
www.gmdaewoo.co.kr

Client location

Incheon
Korea

Special recognition

Grand Prize Winner of AP PLM Excellence Award 2005

"All of our first-year targets for the PLM system were achieved."

Sang Jun Sim
Senior Manager
Process Integration Team
GM Daewoo Auto & Technology Co.

modify a design by approximately 66 percent for average long lead items. Designing in 3D brought the ability to perform virtual design reviews, which reduced travel costs for this activity by half. Being able to design in context improved initial mathematical quality of the design data. GM Daewoo embedded validation functions within NX so that designers automatically comply with GM's global standards.

By providing a managed development environment for NX data, Teamcenter enabled GM Daewoo to structure and manage its product information within a Vehicle Assembly Structure (VAS). This reduced search time for existing data and facilitated its re-use. Teamcenter also provided product configuration management capabilities, which have reduced the time needed to create a virtual vehicle by an average of 90 percent. In addition, Teamcenter has facilitated data sharing among different GM Daewoo facilities. The time needed to transmit information from one site to another has dropped from up to five days to less than one. Through its workflow process and change management capabilities, Teamcenter has optimized the design process at GM Daewoo as well.

Visualization capabilities provided by Teamcenter permit digital validation of vehicle-level configurations. By doing more validation digitally, GM Daewoo is able to resolve incidents sooner. Digital validation has also played a role in reducing the time to build the first physical prototype vehicle, which is currently down by 18 percent and expected to be reduced even further to about 46 percent next year. Teamcenter's community collaboration capabilities have made real-time collaboration possible, allowing for validation with global GM and suppliers in a secure environment. These capabilities also contribute to the decreased travel costs mentioned above.

Benefits to the business

In just one year, GM Daewoo's PLM implementation generated remarkable results. The first application of the PLM solution was on a new SUV program. Using the new technology, the company executed three different projects simultaneously. This is where the VAS was established. Parts re-use was emphasized and data sharing with global GM was incorporated.

Once the PLM technology was implemented on a broader scale, its bottom-line value became very apparent. For example, engineering system costs in 2004 were approximately $15 million dollars (US) lower than in previous years. Increased knowledge re-use and faster access to product information had both direct and indirect effects on reducing vehicle development time by up to six months. Another benefit was that concurrent vehicle program development at GM Daewoo increased 50 percent after PLM was implemented. All of the first-year targets for the PLM solution were achieved, and some unexpected benefits were noticed as well. Less paper is now needed for sharing information between different teams, for example. Also, the ability to use "lightweight" versions of design data for design reviews reduced the need for some high-performance CAD stations.

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