



Simulation and Analysis Investments Help Drive PLM Market Growth

The need to **improve designs** and **reduce the cost** of prototyping is fueling **increased investments** in **simulation and analysis** tools. *by Ken Amann*

Even in the face of an economic slump, financial uncertainty and a harsh business climate, product lifecycle management (PLM) investments continued to grow in 2008. According to recent statistics compiled by CIMdata, an independent global consulting firm, the comprehensive PLM market experienced an 8% growth in 2008, with all sectors showing increases.

Only in the last quarter did the market slow appreciably, which will undoubtedly continue in 2009 until the economy turns around significantly. PLM, which forms the product information backbone for a company and its extended enterprise, may be one of the major deciding factors in determining which companies will be in the best competitive position when global markets rebound.

In this economic climate, many companies are focused on the bottom-line benefits of PLM for controlling costs and improving operational efficiencies. A key contributor to achieving these benefits is the use of simulation and analysis (S&A) to shorten the product development lifecycle, ensure that products meet all safety and regulatory requirements, and reduce the dependence on physical prototyping.

Value of Simulation and Analysis

S&A is becoming increasingly important to manufacturing enterprises of all sizes. It is generally the only practical way to spot and fix potential problems early in development, evaluate alternatives, optimize performance and study product characteristics in greater speed and detail than is otherwise possible.

S&A has gained visibility recently as industrial companies have begun to focus more attention on it as a means of improving product development activities, and as they have increasingly focused on better ways of capturing knowledge about analysis processes and practices in order to improve their own approaches. The need to utilize S&A tools and methodologies more effectively in the product development process in order to improve designs and reduce the cost of prototyping is fueling increased investments in this area.

Analysis results and the processes that go into simulation-based product development are part of a company's intellectual capital and are valuable corporate assets. Information such as software used, modeling details, problem set-up, iterations performed, decisions made, approvals, workflow and responsible

parties are critical and contribute to improved ongoing decision-making. To leverage this critical information most effectively, it should be carefully managed to document the project, enable subsequent reuse and possibly form the basis

for establishing consistent and time-saving best practices.

An evolving initiative being developed to address this industry situation and enable companies to more fully leverage the company-wide value of S&A is enterprise simulation management (ESM). This broad focus of ESM isn't provided by technology but from harmonization and integration of S&A activities more broadly across and integrated into the overall product development processes.

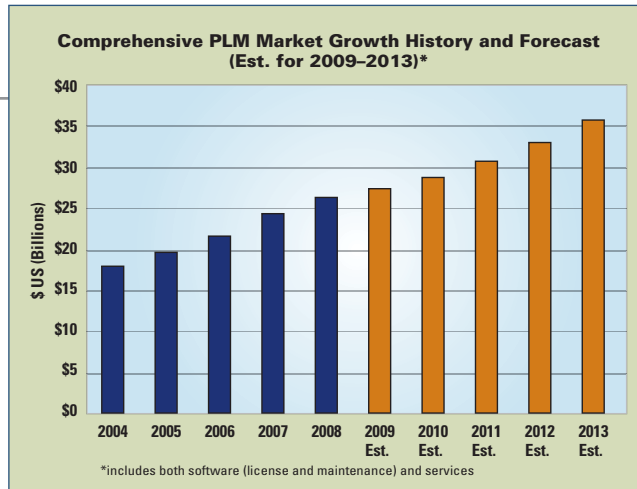
The major objective of ESM is to transform simulation from a specialty operation to an enterprise product development enabler. ESM includes two primary components: (1) capture and replication of simulation-based process knowledge to be shared, reused, continuously improved and utilized by a range of individuals across the enterprise; and (2) managing simulation information and processes, and integrating the area with the rest of the enterprise. The domain of ESM spans many segments of the product lifecycle, from conceptual design to design engineering, analysis and validation, and a growing number of aspects of manufacturing engineering.

The most profound impact of ESM is that the approach can be an enabler for simulation-driven design, in which analysis becomes a fundamental part of product development from early conceptual stages to performance optimization and detailed design. This elevates simulation from that of a design validation tool to a decision-support solution in developing innovative product designs that may not otherwise be intuitively obvious or practical to study any other way.

PLM Market Grows

CIMdata defines comprehensive PLM as covering the full product definition over the entire product lifecycle and across all industries. This includes mechanical, electronic and software components, as well as both discrete and process industries.

The increase in comprehensive PLM did not meet



initial forecasts for the second half of 2008, primarily as a result of a slowdown in new license sales. However, services provided strength as companies continued to sustain ongoing programs.

PLM investments are forecasted to continue growing over the next five years; however, 2009 and 2010 growth will be much slower than that in previous years. CIMdata forecasts comprehensive PLM growth to increase at a compound annual growth rate (CAGR) of approximately 6.3% and expanding the market size to nearly \$36 billion by 2013. Much of the growth in 2009 and early 2010 will be driven by services. (See figure above.)

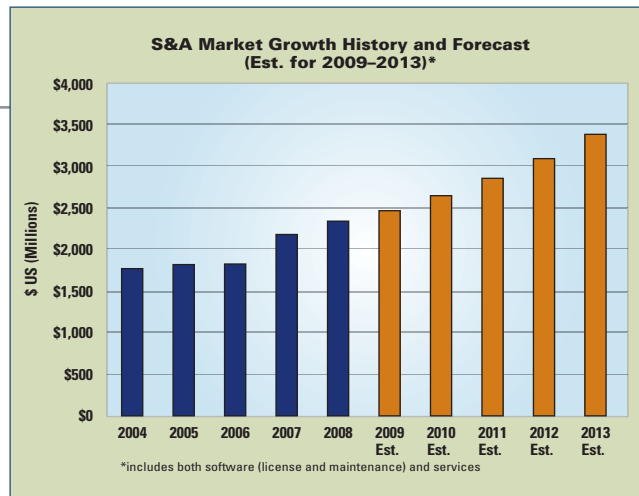
CIMdata segments the overall PLM market into three major sub-sectors:

- PLM Tools
- Collaborative Product Definition management (cPDM)
- Digital Manufacturing systems

Industry investments in tools were above forecasts in 2008, although they were heavily influenced by growth in a few subsectors, including S&A. According to CIMdata, \$17.3 billion was spent in 2008 by companies worldwide on PLM tools such as MCAD, CAM, S&A, EDA, AEC, technical publishing and others. The tools portion of the PLM market is forecasted to grow at a CAGR of 5.1% over the next five years to reach \$22.1 billion by 2013.

cPDM covers technologies and approaches such as PDM, collaboration and visualization, data exchange, portfolio management, compliance management, strategic sourcing, enterprise application integration, workflow, functional applications such as configuration management and solutions for specific businesses. CIMdata research indicates that the cPDM portion of the PLM market fell short of forecasted growth for 2008 but still reached \$8.2 billion, representing an increase of approximately 8.9% over 2007. Although slower growth is expected in 2009, the cPDM segment is expected to continue its strong growth to exceed \$12 billion by 2013 for a CAGR of 8.6%.

The digital manufacturing segment of PLM



increased more than 9% for a total of \$530 million in 2008, according to CIMdata statistics, and met previous growth expectations. This segment is expected to have an 8.3% CAGR over the next five years (5% growth forecasted for 2009) and exceed \$750 million by 2013. Digital manufacturing is a key point of integration between PLM and factory automation equipment such as PLCs and transfer lines.

S&A Investments to Increase

The S&A market was one of the strongest tools subsectors in 2008 with an 8% growth over 2007. S&A will remain an important investment area for companies as they continue to improve their ability to more effectively analyze designs and validate that their products meet all applicable standards.

CIMdata expects that S&A will be one of the rapidly growing segments within the tools sector of PLM over the next five years, forecasting that this sector will exceed \$3.4 billion in 2013, approximately 7.7% CAGR. S&A growth will be fueled by companies expanding the breadth and depth of product analysis and by adoption of ESM initiatives to better manage

and integrate S&A throughout the product lifecycle.

Despite a global downturn in the economy, the PLM market remains robust. Although CIMdata's estimates for PLM market growth in 2009 are quite modest, it is expected to have considerable growth over the next five years as companies recover from the current recession and continue to invest in solutions that can provide them with sustainable business advantage and profitability.

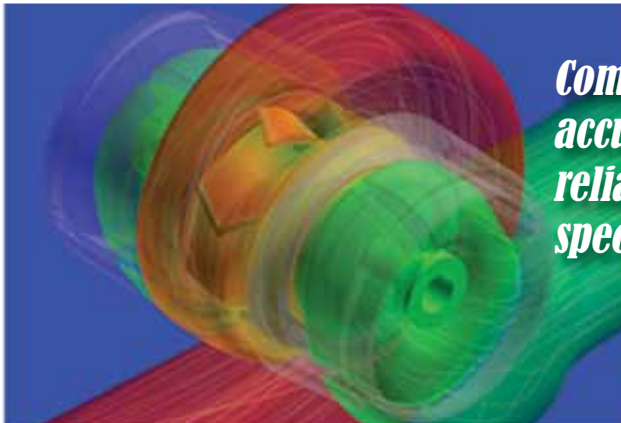


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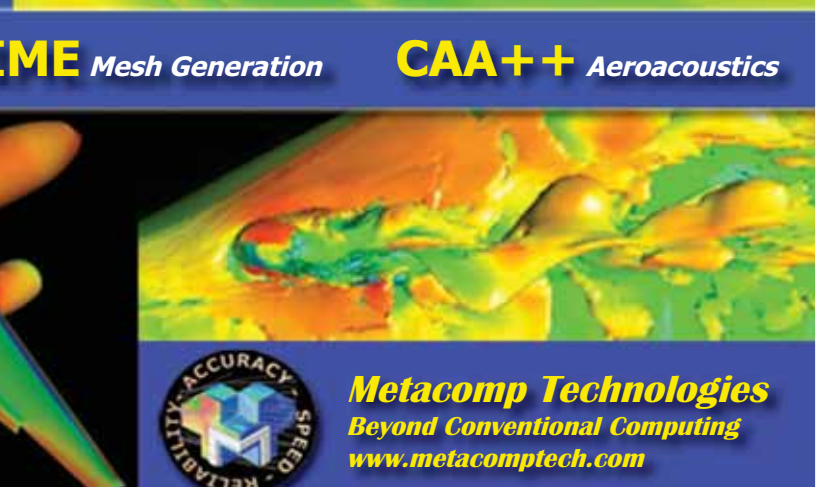
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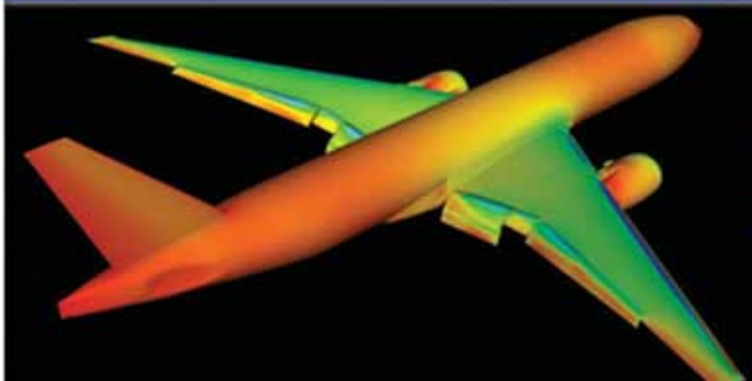
MIME Mesh Generation




CAA++ Aeroacoustics



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