

Data Management:

An Enabler for Best-in-Class Manufacturing

Pressures Facing Manufacturers Today

Driven by customers and competitors, manufacturers are under tremendous pressure to develop more products, with more complicated features, and bring them to market in less time than ever. The strategic actions taken by manufactures in response to these pressures are to strive for increased innovation and greater operational efficiencies, both by leveraging technology and improving processes. While there are many competitive pressures besides these often referenced, Aberdeen Group found that among a group of more than 200 leading manufactures a staggering 91% reported “shorter product development schedules” as the most pressing issue to be solved in their product development and launch process¹. In fact, the average Time to Market for new products fell from 18.1 months in 1998 to 12.8 months in 2007².

Technology Solutions Implemented

Modern CAD systems excel at helping users produce life-like electronic models, or Digital Prototypes, of parts and assemblies that accelerate the product development process. Not only are these systems used to develop the geometry and graphics, but other important data such as bills of materials, exploded views, and even logical relationships (a nut must be the right diameter for a bolt, drilled holes must be a minimum distance from an edge, etc.) Today’s 3D CAD tools are a cornerstone in most manufacturers’ strategic actions for increased competitiveness, with a very clear reduction in design cycle times realized when they are properly implemented and used. The down side, according to an Aberdeen Group survey, is that modern 3D CAD tools generate complex data and relationships that must somehow be managed³.

Data Management

While CAD makes geometry, Data Management, in turn, focuses on a different aspect of product development: managing all the information that organizations create and automating the processes that they use to conceptualize, design, engineer, document, manufacture, and service their products. Most industrial products generate thousands of documents in addition to the design drawings, all of which must be kept in synch. This is a monumentally difficult challenge, a point driven home by AMR Research who found that “...CAD models and Bill of Materials (BOM) files are in disagreement 90% of the time.”⁴ Unfortunately, and unlike 3D CAD, the implementation of Data Management is not always straightforward and the resulting benefits are not always as clear, so only 8% of global manufacturers have made Data Management a critical part of their technology plan⁵.

Still, it is clear that some approach to consolidation and control of product information is essential to better and faster product innovation. The answer is Data Management. Computer-based Data Management systems have existed for a number of years and are known by a bewildering variety of names including Product Data Management (PDM,) Electronic Data Management Systems (EDMS,) Collaborative Product Data Management (CPDM,) Product Information Management (PIM,) and many others. Even Product Lifecycle Management has at its core a solid Data Management foundation and most, 85%, companies involved in PLM initiatives started with Data Management⁶. For our purposes we can simply refer to all these technologies as Data Management.

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Data Management Defined

Just as there are many names for the general concept of Data Management, there are many definitions for what capabilities make up a Data Management system. DRM Associates published the *Product Data Management Workshop* series of papers⁷, in which they listed the most common Data Management capabilities and functions as:

- Access Control and Security
- Component / Material Classification
- Support for Product Structure
- Engineering Change Management
- Process Management and Workflow
- Collaboration

Obviously each of these terms is also open to some interpretation but, in general, most Data Management systems have these core capabilities.

Data Management's ROI

Return on Investment (ROI) for Data Management is often described as a "soft" benefit: users know the value of collaboration is there, but it's difficult to quantify. How, after all, does one calculate the value of a file that wasn't lost? While that question may seem facetious, it is often asked by companies considering a Data Management solution. Calculating the ROI justifications for Data Management requires a much wider vision and deeper understanding of your business, but it can yield much more dramatic results. For example, a 2005 survey by Deloitte Consulting found that companies successful in uniting their information systems and processes are on average 81% more profitable⁸. Several specific benefits of Data Management cited in a recent AMR Research study included shortened time to market, improved product quality, and reduced overall costs⁹.

Another university study (Adler et al. 1995 and 2000) even found that reduced design cycle times and reduced errors or defects had a significant impact on customer satisfaction. Data Management typically focuses on NPD, but access to a central repository of clean, rationalized product information can help Customer Service and Purchasing departments just as dramatically.

Lastly, an unexpected benefit of Data Management is that it forces a complete and proper implementation of CAD. The two must go hand in hand, as "the use of 3D CAD makes better Data Management more necessary due to the complexity of the file structures and interrelationships."¹⁰

CONCLUSION

Together, CAD and Data Management are a formidable force for best-in-class, next-generation manufacturing. The combined powers of the applications boost collaboration, accuracy, and provide direct access to the right information for the right people at the right time. They maximize cost-effective design reuse and give you the tools to respond to market demand more quickly. All of these factors combine to increase customer satisfaction, lower costs, improve quality, and shorten Time-to-Market. Need more proof of the necessity for Data Management? Ninety-three percent (93%) of the Best-in-Class store and access product information from a central repository.¹¹

ABOUT THE AUTHOR

Mark Hechel is MasterGraphics' Professional Services Manager, with over eighteen years of experience in the CAD consulting and implementation field. During these years Mark had many roles that provide a broad range of experience in everything from CAD training to process assessments and business planning. Mark can provide unique insights into ways to streamline product development technology and practices, not only in the design and engineering departments but into the broader enterprise. Similarly, Mark's technical background enables him to understand technology and its optimum implementation in a way unlike many general business consultants.

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MasterGraphics helps businesses focus on innovation by enhancing their design and post-design processes to reap bottom-line benefits via increased productivity, cost effectiveness, superior quality control and enhanced operational efficiency. We help you innovate by taking your design data further: We make it work.

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- ¹ Aberdeen Group, "Complementary Digital and Physical Prototyping Strategies" 2008
- ² Deloitte Research, "Global Report – Vision in Manufacturing" 2007
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- ¹¹ Aberdeen Group, "Integrating the PLM Ecosystem" 2008