

White Paper

3D Design Demands Professional-Grade Tools

Abstract:

Today, almost all professionals are faced with ever-increasing productivity expectations and competition while having to do more with less. Nowhere is this issue more pressing and apparent than in design engineering. It wasn't all that long ago that engineers had draftsmen, and CAD just meant 2D drafting and drawings. Fast-forward to today, where CAD means 3D design and design engineers are expected to deal with an ever-increasing number of issues and tasks—design, simulation, visualization, collaboration, presentation, sustainability, manufacturability and beyond.

The products that many engineers are designing are also growing increasingly complex. As most design engineers know (and experience), a very small percentage of mechanical products are purely mechanical. Instead, many products have become mechatronic—requiring integration of mechanical, electrical, electronic and software components that must work flawlessly together.

This increasing level of product design complexity, coupled with the associated increased workload on design engineers, demands professional-grade CAD software, computers and graphics cards that are up to these tasks and more in an increasingly competitive marketplace. Today, some of the best solutions for meeting these challenges are made possible with design software from Dassault Systèmes SolidWorks Corp. (DS SolidWorks), hardware with Dell Precision™ workstations and ATI FirePro™ professional graphics cards.

Multitasking Requires Professional-Grade Tools

Yesterday's product designers had niche job functions—concept design, drafting, detailing, checking, filing, etc. Some engineers even had draftsmen to actually execute drawings of designs, and CAD meant computer-assisted drafting—all in 2D.

Today's design engineers do more than ever and are true multitaskers, as they perform solution-led design engineering, especially at

small- and medium-sized businesses (SMBs). Design engineers have a new level of demands, expectations, responsibilities and tasks that require new software and hardware tools capable of handling complex 3D designs. The design data they generate is also expected to be multi-functional as their 3D data deliverables are utilized to assist sales, marketing, support, customer satisfaction, etc.

While the DS SolidWorks community is extremely diverse, historically and even today there are two major vertical markets that use SolidWorks software to their advantage. First, industrial machinery and heavy equipment (from construction to packaging to robotic machinery) manufacturers leverage DS SolidWorks integrated modeling, simulation, visualization and communication tools to design better products faster and at lower cost.

Second, design and engineering services companies involved in projects require skills in analysis, design, project management and operations (firms generally sell knowledge and often hire subcontractors/consultants).

These types of companies typically specialize in equipment design, structural, HVAC and piping projects and use SolidWorks design, simulation and documentation solutions to deliver innovative, cost-effective designs.

Professional-grade tools address customers' critical business issues, such as:

- Efficiency/time saving
- Communication/visualization/collaboration/data sharing
- Performance
- Reliability
- Total cost and control of ownership (TCO)

Outdated software and hardware (two to three years old) cannot take advantage of newer technologies that are available today for maximizing productivity and profit.

Before determining what to buy, you should ask yourself a few questions. If you develop assemblies, does the 3D software solution

provide fit, tolerance and interference checking tools so you can resolve part collisions and assembly issues before making a single part? Does the 3D system include integrated analysis tools—such as structural, thermal, kinematics and computational fluid dynamics (CFD) analysis—to validate the performance of your designs? Can the 3D CAD solution create photorealistic renderings and animations for assessing product aesthetics, obtaining customer feedback or conducting market research?

Professional-Grade 3D Design Software

SolidWorks is the CAD software of choice for a generation of design engineers with a community of over 1.4 million users. SolidWorks Premium marks the 19th release of the design solution, complete with more than 200 enhancements providing greater design efficiency, enhanced support for manufacturing, and unprecedented collaboration and visualization. In addition to these new enhancements, the development team also focused on optimizing the software to efficiently utilize available hardware resources, increasing efficiency and reliability.

As designs grow in complexity and variety, so does the demand on the software and hardware. Over the last 18 months, DS SolidWorks' development team has strategically focused on improving the performance and reliability of its entire product line. SolidWorks 2011 once again raises the bar, with performance improvements for everyday tasks, as well as optimized memory



usage for more advanced tasks such as handling large assemblies, advanced simulation and photorealistic rendering. As iterations of designs are completed and models are saved and closed, SolidWorks 2011 intelligently manages memory requirements, resulting in higher performance, reliability and productivity. With improvements made in SolidWorks 2011 and professional-grade hardware, large assemblies (10,000+ parts) are easily handled.

SolidWorks® Visualization Supports Collaboration

In the past, mechanical designers showed relatively little interest in designing components with high-quality shadows and reflections inside the viewport of their CAD application, primarily because it slowed down performance in general or simply wasn't available in their so-called "mid-range," or even "high-end," modelers. Now though, aesthetic appearance and visualization have become increasingly important across more sectors.

DS SolidWorks recognizes that a designer's job does not always end when a 3D model is completed. Product information needs to be communicated inside organizations and externally to customers and suppliers. SolidWorks 2011 introduces new technologies to enable information to be shared in new and exciting ways. Photorealistic rendering has been drastically improved with the tightly integrated PhotoView 360 (now a SolidWorks add-in and accessible with a tab inside the software), which provides photorealistic images with very little effort. New walk-through capabilities provide both a new method of visualizing products and an interactive environment for a unique design presentation experience. PhotoView 360 spotlights the growing importance of general visualization as an integral part of the design process.

Lighting and shadows, one of the heaviest calculations for any system, not only adds realism, but also has a great benefit in many aspects of design. Human interaction is a typical application where lighting is important and it's not so much about where there is light, but where there isn't.

If you design highly reflective components, the environment mapping (using an image to reflect in the parts) adds to the realism as it shows the components in a real scene. Applying high-quality materials is a given today, but adding bump maps (that simulate bumps and wrinkles) gives the appearance of a surface texture. This is more efficient than modeling a surface texture, which can be very heavy in the polygon count.

All of these enhancements mean that your model more closely resembles real life. You will find that it's easier to spot mistakes if what you are looking at is as realistic as possible. The best news is that you can apply all of these effects at once—which is unique unless you're using a dedicated styling application.

PhotoView 360 provides a design and finished view, as well as a preview window, letting

design engineers create photorealistic rendering throughout the design process.

The ability to fully understand the behavior of part, assembly or product designs requires a powerful combination of integrated visualization, rendering and analysis software, as well as an advanced computing platform that can handle the work. Simulation, animation and rendering applications are computationally and graphically intensive, so you will want to investigate workstations that support fast, multi-core processors; powerful, OpenGL® graphics; and large, memory-expansion configurations. Make sure to examine how different 3D software and hardware combinations will support your particular design visualization/virtual prototyping needs.

Beyond PhotoView 360, for additional visualization, presentation and collaboration, 3DVIA Composer (a separate software product available from DS SolidWorks) brings a new dimension to technical communication with interactive storyboards. With 3DVIA Composer you can describe, present and document products in a whole new way. 3DVIA Composer will change the way you create, update and distribute rich product communications. By reusing digital product definition data including 3D design data and bills-of-material information, 3DVIA Composer revolutionizes the product documentation process for enterprises of all sizes, including SMBs.

3D Tip: Rendering photorealistic models requires real computing power, so do not attempt shortcuts or underestimate the requirements for enhanced design visualization and advanced virtual prototyping.

SolidWorks® Simulation Technology

Simulation has become a standard technology that can be performed throughout the design process to study and validate evolving changes. Continually improving central processing unit (CPU) and graphics processing unit (GPU) performance levels has had a major positive effect on the adoption of digital simulation.

SolidWorks' comprehensive linear and non-linear simulation technologies encompass structural (strength and FEA), functional (motion and multi-physics), flow analysis, and optimization applications for every design engineer involved with the product development process. The software is easy to use, yet powerful enough to tackle the most complex design issues. It helps predict the performance of a design under real-world operating conditions and to detect problems and correct them before prototyping, tooling and production.

SolidWorks Flow Simulation technologies provide a powerful computational fluid dynamics (CFD) tool that enables you to quickly and easily simulate fluid flow, heat transfer and fluid forces that are critical to the success of your design.

You can perform virtual testing and analysis of parts and assemblies with SolidWorks Simulation technologies so you can expand your virtual testing environment to evaluate the longevity of your design. It also allows you to measure complex load scenarios, as well as check a system's expected life or accumulated damage after a specified number of cycles.

3D Tip: Simulation can be a computationally intensive task that requires a powerful CPU and GPU working together for maximum results.

SolidWorks® Sustainability

SolidWorks Sustainability identifies parts in an assembly that have the largest environmental impact, and provides a means for choosing alternative materials that have less environmental impact and are more sustainable. SolidWorks Sustainability software also makes it easy to find the right material for a particular job.

SolidWorks Sustainability software measures four environmental indicators over the life cycle of a product: carbon footprint, total energy consumed, and air and water impacts. For each of these four environmental indicators, the environmental impact dashboard provides a continuous, real-time assessment of current values, as well as comparisons to your baseline design. This comprehensive view makes it easy



Dell Precision™ M6500 Mobile Workstation

to grasp the environmental impacts of your design choices and incorporate sustainability as a standard part of your design process.

Until now, designers had to wade through materials databases, limiting their ability to effectively consider alternatives. SolidWorks Sustainability can show how similar materials compare to the original in terms of environmental impacts, as well as display

standard engineering properties such as thermal conductivity and yield strength. Now you can hone in on the most environmentally preferred material that will get the job done.

SolidWorks Sustainability will give both you and your environmentally conscious company a competitive edge—and help you do your part for the planet.

3D Tip: SolidWorks Sustainability helps you choose the best material for your model and the material's environmental data stays with the model throughout its life cycle.

Professional-Grade Workstations

To take full advantage of SolidWorks' features and capabilities, you need a level of hardware that is able to keep pace with and support the software. Professional-grade engineering workstations have many advantages over commodity- and consumer-grade computers, including higher levels of performance, scalability and certified applications. Professional-grade workstations from Dell also have a suite of software and services that ensure total control of ownership (TCO), thus ensuring you have the best possible system for your needs. And that translates into a quicker return on investment (ROI). In many cases, consumer-grade systems simply don't support the requirements of professional-grade software like SolidWorks. By incorporating professional-grade graphics cards like ATI FirePro™ professional graphics cards, which offer support for professional design software, workstations meet the requirements that consumer systems often lack. A consumer system might be able to perform some of the graphics functions in SolidWorks, but other more computationally demanding functions, such as complex simulations or photorealistic rendering, might work poorly or not at all. Dell Precision™ workstations ensure that SMBs get the highest levels of both capability and affordability.

Dell Precision workstations, combined with ATI FirePro professional graphics cards, are Dell's highest-performing and most scalable systems, specifically designed for computer-intensive environments like modeling, simulation and visualization. As the world's leading workstation vendor, Dell workstations are DS SolidWorks—certified to deliver engineers and designers peace of mind without compromise.

When considering your workstation options, it is important to choose the right number of sockets and cores. Modern CPUs are composed of multiple cores. When there was only one core per chip you had the choice of a single- or dual-core processor workstation. Now things are measured in single or dual sockets and the number of processors per socket. On a single-socket workstation four cores are now common, but older chips have two cores and six-core chips have just been released. On a dual-socket board this can double the number of cores to four, eight or twelve.

Beyond providing leading-edge technology to our customers, Dell and DS SolidWorks collaborate to oversee rigorous component and driver testing programs that emulate real work environments to deliver performance and configuration validation. This process

has helped to certify the entire Dell Precision portfolio across a wide breadth of professional applications, including SolidWorks.

Dell's productivity enhancements don't end there. While ISV certification of systems for production-level use helps eliminate potential issues up front, in the event of a technical issue after your purchase, optional 24/7 Dell ProSupport provides collaborative support with DS SolidWorks. In addition to reduced business downtime, customers benefit from end-to-end support with a single point of contact that they can trust.

3D Tip: Professional-grade engineering workstations have many advantages over commodity- and consumer-grade computers, including higher levels of performance, scalability and certified applications like SolidWorks.



Dell Precision Workstation*

Screenshot images courtesy of DS SolidWorks Corp.

Dell Precision™ Fixed Workstations

Offering ISV-certified performance on a wide range of workstation applications, including SolidWorks Premium 2011, the Dell Precision fixed workstation with ATI FirePro™ professional graphics cards won't break your budget. An ideal combination of price and performance, the single-socket Dell Precision T3500 is designed to provide productivity and scalability gains well beyond the range of standard business desktop systems.

With two PCIe x16 slots as well as ample power for its supported professional graphics cards, the Dell Precision T3500 works quickly to bring your design, animation, imaging or engineering projects to life. Enjoy peak performance from high-end graphics cards: The Dell Precision T3500 can be equipped with a range of professional workstation-class graphics options from AMD. The Dell Precision T3500 offers tested, certified graphics drivers to help ensure performance and reliability.

The Dell Precision T5500 fixed workstation is a productivity machine with fast 64-bit processors, impressive graphics and exceptional memory capacity that work together in a flexible, innovative and compact chassis designed to deliver performance, scalability and life-cycle stability.

With additional DIMM slots to expand memory capacity up to 48GB and an innovative, compact chassis designed for flexibility, the Dell Precision T5500 can provide a highly scalable, cost-effective architecture with performance capabilities that can fundamentally change the way you work.

If you're looking to optimize efficiency and power usage (85% energy-efficient power supply) with a platform designed to support high-performing,

multi-core processors today and into the future, the Dell Precision T5500 is an ideal choice.

3D Tip: Dell Precision workstations provide a highly scalable, cost-effective architecture with performance capabilities that can optimize your workflow.

Dell Precision™ Mobile Workstations

The Dell Precision M6500 17" workstation delivers in terms of performance and scalability and is certified with many independent software vendor (ISV) applications. With unparalleled performance for a mobile platform, the Dell Precision M6500 comes into its own just as other mobile workstations start to fade. Offering specifications that some desktop workstations might struggle to deliver, the flagship mobile workstation from Dell makes an ideal choice for the most demanding users.

Discover virtually unlimited creative power with optional high-performance processors and Genuine Windows® 7 Professional 64-Bit, which work in harmony with 1333MHz or 1600MHz double data rate 3 (DDR3) memory and ATI FirePro professional graphics to support your talent for even the most demanding simulations or photorealistic renderings. With support for four memory DIMM slots, the Dell Precision M6500 enables memory scalability up to 32GB DDR3 memory for handling large data sets. The Dell Precision M6500 is the first and only mobile workstation in the industry to offer four DIMM slots.

Through rigorous testing, Dell also targets guaranteed compatibility and optimized performance in demanding work environments such as 3D CAD. No matter how demanding

the task, the Dell Precision M6500 offers an exceptional platform for extremely demanding workstation users who need to be mobile.

3D Tip: The Dell Precision M6500 has scalability, expandability and flexibility, providing high levels of performance, as well as the ability to manage huge amounts of data.

Dell™ Workstation Software/ Services

Dell provides a wide variety of software and services that complement its Precision fixed and mobile lines of workstations, providing you with the total control of ownership that ensures you're getting the best value for your investment. Some of Dell's software and services that enhance its workstations are:

- o Dell ControlPoint
- o Dell ControlVault
- o Dell ImageDirect Custom Factory Integration (CFI)
- o Dell ProSupport
- o TruManage

3D Tip: Professional-grade workstations from Dell, along with Dell's suite of software and services, ensure total control of ownership, which translates into a quicker return on investment.

Professional-Grade Graphics Cards

ATI FirePro professional graphics cards are critical to 3D CAD performance, working in tandem with and turbocharging a computer system's CPU with the graphics card's on-board GPU. This goes hand in hand with the increasing importance of general visualization (real-time rendering—lighting, shading, textures and shadows through GPU acceleration). ATI FirePro professional graphics cards are available for fixed desktop and mobile workstations, and are optimized and certified for many CAD applications.

As you increase your assembly size, you are effectively increasing the amount of lines and surfaces you have to display on screen, so the slower it will go. There are several ways to fix this to gain performance. You can install a high-performance graphics card, write optimized

code or write support via one of the high-level languages. With SolidWorks 2011, Vertex Buffer Objects (VBOs) have been further implemented in the OpenGL graphics engine. These allow geometry to be stored in the graphics card memory and even updated without using many CPU cycles. The more graphics memory (frame buffer) you have, the larger the models that can be manipulated without taking a performance loss. If you have massive models, then a faster card is still required. But the combination of a fast GPU big frame buffer and a graphics card that supports advanced OpenGL will allow a new level of assembly size to be edited interactively. Here, ATI FirePro professional graphics cards are the ideal choice.

ATI FirePro professional graphics cards are thoroughly tested and certified for many

major CAD/CAM/CAE applications, including SolidWorks, ensuring a level of reliability and compatibility not found in consumer graphics products.

The unified driver, which supports all ATI FirePro products, helps reduce the total cost of ownership by simplifying installation, deployment and maintenance. In addition, ATI FirePro products incorporate a unique AutoDetect technology. As you open new 3D applications, or move between them, ATI FirePro professional graphics driver settings are automatically configured for optimized performance of supported applications, no matter what your workflow demands are.



Good.
ATI FirePro V4800



Better.
ATI FirePro V5800



Best.
ATI FirePro V7800

The “good” ATI FirePro™ V4800 professional graphics card is an entry-level fixed desktop workstation solution with 1GB of GDDR5 frame buffer memory. It's ideally suited for entry-level CAD users who work with larger models for complex and large data sets. Plus it includes a 30-bit display pipeline for accurate color reproduction and superior visual quality. The ATI FirePro V4800 professional graphics card handles up to three monitors.¹

The “better” ATI FirePro™ V5800 professional graphics card for fixed desktop workstations provides the ideal balance of price and performance in a single-slot, full-height/full-length form factor. This mid-range workstation solution features AMD Eyefinity technology, 1GB of ultrahigh-speed GDDR5 memory and more than double the computational power of previous-generation products. The ATI FirePro V5800 professional graphics card handles up to three monitors.¹

The ATI FirePro V5800 features three independent outputs (two DisplayPort and one dual-link DVI) with AMD Eyefinity technology support, providing improvement to productivity at a much lower acquisition and operating cost than multi-card solutions.¹ In addition, with native multi-card support, users can see more and do more by using up to six displays being driven by two ATI FirePro V5800 professional graphics cards in the same workstation.

The “best” ATI FirePro™ V7800 professional graphics card for fixed desktop workstations offers incredible performance scalability and stunning visual quality. This high-end workstation solution features AMD Eyefinity technology, 2GB of ultrahigh-speed GDDR5 memory and more than double the computational power of previous-generation products. The ATI FirePro V7800 handles up to three monitors.¹

Based on a new-generation GPU with 1440 stream processors, the ATI FirePro V7800 professional graphics card's ultra-parallel processing architecture helps maximize throughput by automatically directing graphics horsepower where it's needed. Intelligent management of computational resources enables enhanced utilization of the GPU to enable real-time rendering of extremely complex models and scenes.

The ATI FirePro V7800 professional graphics card features three DisplayPort outputs driven

by AMD Eyefinity technology, offering an unprecedented multitude of, and flexibility for, display configurations for the professional user. With ATI FirePro professional graphics card native multi-card support, users can see more and do more by using up to six displays being driven by two ATI FirePro V7800 professional graphics cards in the same workstation.

To complement its graphics cards for SolidWorks users, AMD provides several professional-grade graphics tools and technologies. The ATI SolidWorks Triangle Count Macros allows users to obtain the total number of triangles comprising their SolidWorks parts and assemblies. Understanding the size of the geometry in a SolidWorks part or assembly can be useful when choosing a graphics card. The ATI Memory Viewer is a tool to monitor graphics memory usage. The total amount of graphics memory currently being consumed by all applications on the system is displayed in real time.

3D Tip: ATI FirePro professional graphics cards are critical to overall 3D CAD performance because working together they optimize a computer system's CPU with the graphics card's on-board GPU. This performance boost is vital to the increasing importance of general visualization (real-time rendering—lighting, shading, textures and shadows through GPU acceleration). It makes sense to buy as much CPU and GPU processing power as you can reasonably afford.

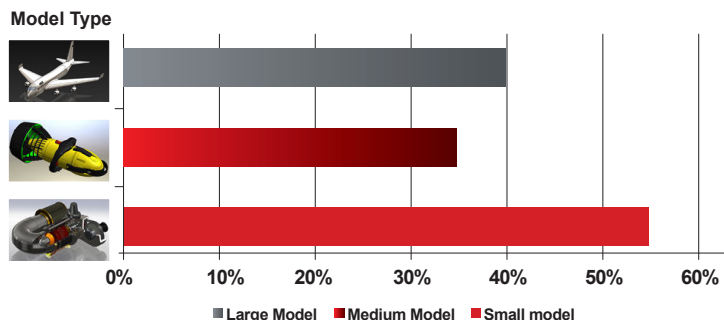
Accelerating 3D Graphics with AMD Eyefinity Technology

AMD Eyefinity technology is supported in all new ATI FirePro professional graphics cards that are designed specifically to accelerate complex 3D models in professional software applications. They all fully support OpenGL 4.0 and are fully certified to run SolidWorks, as well as a broad range of CAD/CAM/CAE applications. AMD Eyefinity technology has the ability to handle up to six monitors for creating a massive visual workspace for revealing minute details of an entire model.¹ By expanding your field of view across multiple high-resolution monitors, you can see more detail than ever, helping to increase your workflow productivity. You can manage multitasking more efficiently and view more data, applications and images at once. Multiple display outputs enable multiple 3D displays with independent display resolution, refresh rate and display rotation settings. Just imagine being able to display and evaluate different subsystems of a complex assembly, such as a complex production machine or vehicle.

Simply put, AMD Eyefinity technology helps improve accuracy and speeds up your workflow.

3D Tip: AMD Eyefinity technology is supported in all new ATI FirePro professional graphics cards that are designed specifically to accelerate complex display of 3D models in professional software applications, as well as fully support multiple monitors.

Performance Increase Over Previous Generation Real-World application usage



In tests conducted December 9, 2010 by AMD performance labs using real-world models in SolidWorks, the average performance gains between generations (V3800 vs. V3700, V4800 vs. V3750, V5800 vs. 5700, V7800 vs. V7750, and V8800 vs. 8700) was 54.59% for small model “Gen”, 34.06% for medium model “Explorer”, and 39.46% for large model “AMD Airplane Exterior.” FPWS-I4

Test systems: Dell T3500, Intel Xeon W3680 3.33GHz, 8GB DDR3, Windows 7 64-bit, ATI Graphic Driver: 8.773 WHQL; 3dsmax custom 9-29; AutoCAD custom 9-12.

Professional-Grade Operating System

Professional-grade hardware and software need a professional-grade operating system to optimize design functionality, and Genuine Windows® 7 (Professional, Enterprise or Ultimate) 64-bit editions fit the bill perfectly.

Running a 64-bit operating system allows you to break the 4GB memory barrier. While the maximum RAM limit for 32-bit Genuine Windows 7 editions is 4GB. With 64-bit Genuine Windows 7 Professional, Enterprise and Ultimate, the upper RAM limit is 192GB, so for all practical purposes, there is no memory (RAM) limitation.

If you are looking for large amounts of memory and improved performance for tasks that rely on real-number data, such as mechanical design and analysis, a 64-bit operating system is something you should consider. Generally, the major difference between 32-bit and 64-bit processing is memory support. With more memory, you can run more programs at the same time, and run more memory-intensive programs.

With large assembly models that contain tens of thousands of components, CAD users can quickly run up against the 4GB memory limit on a 32-bit platform. If you are working with assemblies of upwards of 100,000 individual components and with file sizes greater than 10GB, you will definitely want to consider a 64-bit computing platform, and 64-bit CAD software to match, so design engineers can tap increased amounts of memory and work efficiently with larger files and assemblies. The other factor to consider in your 2D to 3D transition is legacy applications or dependencies. While many 32-bit applications are designed to work on a 64-bit operating system, you need to verify that an application you plan to use with a 64-bit operating system is compatible.

A common misconception is that once you load an application into memory and then switch to another application, the first is unloaded and all the memory is channeled to your current task. Unfortunately, this is not always the case. Applications try to push some of their data into a swap file (pagefile) that is a physical store of pseudo memory but located on the hard disk. As the hard disk is 10x slower than memory, this can be a lengthy process.

For maximum flexibility, choose a 3D CAD workstation that supports 64-bit applications, operating systems, and memory scalability, and is based on ATI FirePro professional graphics cards.

Another major milestone that marks Genuine Windows 7 is its ability to handle multiple monitors. The price of extra monitors continues to fall and Genuine Windows 7 is more multi-monitor friendly than any previous edition. In fact, Genuine Windows 7 treats multi-screen setups as practically routine this time around. Setting up multiple monitors in Genuine Windows 7 can actually be easy and usually problem-free, assuming you've got a video card (like the ATI FirePro professional graphics cards) that supports multiple monitors.

These technologies enable Genuine Windows 7 to accomplish a simple, universal goal: reduce desktop support costs by making design professionals more productive.

3D Tip: Running 64-bit Genuine Windows 7 lets you to break the 4GB memory (RAM) barrier, and for all practical purposes, there is no memory limitation.

Conclusion: It's Time to Upgrade to Professional Grade!

Regardless of whether you are migrating from 2D to 3D or are experienced in the 3D design arena, as a current or prospective SolidWorks user, you can't afford to be limited by outdated hardware that may be holding you back from new levels of productivity and profits. Upgrading now to a professional-grade workstation like the Dell Precision™ workstations with ATI FirePro professional graphics cards helps ensure that you get maximum productivity, support and reliability while getting the most out of SolidWorks software. Upgrading to this comprehensive professional-grade solution set from AMD, Dell and DS SolidWorks will ensure that your hardware and software keep pace with and maximize your design engineering efforts.

For more information, visit
www.amd.com/dell-solidworks

*AMD Eyefinity technology works with applications that support non-standard aspect ratios, which is required for panning across multiple displays. To enable more than two displays, additional panels with native DisplayPort™ connectors, and/or DisplayPort™ compliant active adapters to convert your monitor's native input to your card's DisplayPort™ or Mini-DisplayPort™ connector(s), are required. AMD Eyefinity technology can support up to 6 displays using a single enabled ATI FirePro™ graphics card with Windows Vista or Windows 7 operating systems—the number of displays may vary by board design and you should confirm exact specifications with the applicable manufacturer before purchase. SLS ("Single Large Surface") functionality requires an identical display resolution on all configured displays. Monitors sold separately.

Eyefinity image courtesy of Local Motors and Dell.

Image Courtesy of Dassault Systèmes SolidWorks Corp.

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