



Image courtesy of BioWare Corp

The power to get real.

Enhance Your Creativity and Workflows by Working Smarter

There is a trend afoot. Do more with less. Well, perhaps not so much a trend

anymore as reality. Few understand this concept better than the professionals who bring us the latest visual innovations—Animators.



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These unique individuals who design 3D animations for next-generation games, blockbuster movies, or high-end commercials are always trying to push an inspired envelope in pursuit of greater photorealism, seamless effects, and immersive virtual worlds. Viewers expect to be dazzled. Clients want their expectations surpassed. Artistic minds demand the freedom to express, and their management demands the products they produce under compressed timelines.

With only so many hours in a day something's got to give. Or does it? What if you could change the rules of the game? Do more with more, but

It Takes a Solution

To take full advantage of 64-bit computing you need three key components. A computer that supports a 64-bit operating system like Windows[®] XP Professional x64 Edition or Windows Vista[™] x64 Edition, an advanced application that is written specifically to take advantage of more cores, or a series of applications that can run simultaneously by load-balancing the work across multiple cores and finally 64-bit capable processing technology like the Intel family of dual-core and quad-core processors. Dell Precision[™] workstations, for example, offer advanced 64bit OS and processing factory installed, and are tuned,



Image courtesy of The Codemasters Software Company Limited

at parallel costs with greater efficiency? A real-time answer may be closer than you think.

A Powerful Partnership

Industry leading technology companies like Dell, Intel and Autodesk have long been working together to help bring better joint solutions to their customers. Now, compared to predecessor 32-bit single core systems, the processing technology found in the latest 64-bit multi-core workstations helps eliminate past barriers restricting the quality and volume of 3D animation produced in a given time frame.

By coupling 64-bit multi-core processing with advanced workstation technologies like high-end OpenGL graphics (GPU's) and scalable memory architecture, a new era of performance and productivity has begun. But embracing this change and a new way of working smarter requires understanding a few key technology concepts first.

optimized and certified to run with the industry's leading 64-bit animation applications.

64-bit computing allows the use of large amounts (beyond 3 GB) of RAM, improving workflow dramatically by lowering the number of passes needed to render and composite complex elements that make up a scene. And it scales. The latest Precision 690 workstation from Dell has the capacity to hold an incredible 64GB of memory. This means that extremely complex datasets—rich with textures, lighting and image effects—can be efficiently managed and manipulated even at high-definition and film resolutions.

The More Cores the Better

Leading design applications like Autodesk 3ds Max, Maya or Motion Builder also take advantage of this latest processing technology. The fact that rendering a complex scene or image requires about as much processing power as



you can find is not new, but now by harnessing the power of Intel's next-generation multi-core processors, it's possible for two, four, or more processing cores to work in parallel - like several single processor machines working in tandem to render with even greater speeds. This parallel processing by multiple cores is known as "multi-threading", and the entire process is generally referred to as "multi-core" processing.

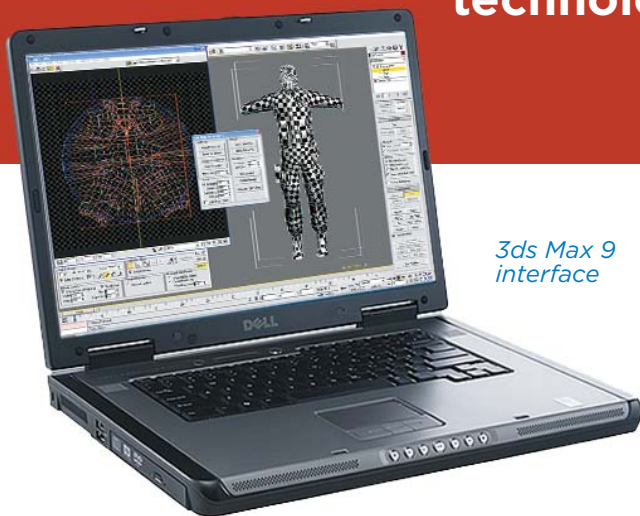
Cores can also function independently, or be assigned completely different tasks to perform. As an example, artists can use some cores to continue to tweak and tune effects and geometry while still generating high-quality

Processor 5100 series and the Quad Core Intel® Xeon® Processor 5300 series, both of which help deliver breakthrough performance on individual application and software suites. And for those artists who work on the road, Dell's mobile workstations, like the Dell Precision M65 or M90 are also designed to support Windows® 64-bit operating systems and Intel® Core™ 2 Duo Processors to maximize the same processing potential with digital creation applications.

Quantum Leap in Photo-Realism

For 3D artists, the biggest benefit to 64 bit multi-core processing is not just speed. It's the

Dell Precision™ workstations, for example, offer advanced 64bit OS and processing technologies factory installed.



3ds Max 9 interface

fully-rendered previews. This new way of working with technology means real time savings and richer results. Imagine reviewing a real-time render in the office and making changes on the fly or producing greater visual FX levels during client attended review and approval sessions.

The Dell Precision line of multi-core workstations, the 490 and 690, offer next-generation 64-bit processors, including the Dual Core Intel® Xeon®

ability to load in very large datasets in their entirety and manipulate them in one sitting, on one system. Until now, artists working on a 32-bit single processor workstation might find themselves having to be as creative in working these large datasets as they are in their craft. They have to spend time looking for ways to break up complex content into smaller chunks to fit the 3-4GB memory limits; work in compressed or lower resolutions; or off-load even a single frame for rendering.

But today, users of Autodesk 3ds Max and Maya are finding that the 64-bit versions of these industry-leading applications now have incredible new memory ceilings with which to create. As a result, they can push for greater photorealism and quality than ever before.

This was the case for GMJ Design, a London- and Paris-based visualization firm that used 3ds Max to create a 3600-square kilometer, 1:500

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scale digital model of central London as part of its World City Models project—an enormously complex, challenging 3D animation project. GMJ's 3D City of London is a highly accurate topographical roof model that includes all visible elements greater than one meter in size, including high-resolution aerial photography combined with a ground-level survey.

Since the work began on 32-bit systems, before the advent of 64 bit technology, GMJ had to write custom tools to help them manage and load their huge datasets into 3ds Max. While they always accomplished the task, they could never see the entire model at once, let alone

textures, reflections, glints, glows, animated motion, and other data available at once in working memory. And processes that were extremely difficult to do on a 32-bit single processor workstation, such as 3D animated fur, hair, cloth, water, and snow—which require extremely complex calculations to be performed—can now be achieved on a 64-bit workstation rather than being offloaded for processing elsewhere.

3D animators can realize incredible levels of productivity based on rendering time alone. Test renders can be done right at the 64-bit workstation while the animator continues

Now, with the 64-bit version of 3ds Max, the project can be viewed in one 3ds Max scene.

manipulate it. Midway through the project, GMJ moved the work to a 64-bit 3ds Max workstation and immediately realized tremendous creative and technical benefits.

At SIGGRAPH 2006 before a crowd of top 3D artists from high-profile animation houses, Autodesk loaded GMJ's entire London model into 3ds Max running on a Dell Precision workstation. The uncompressed, film resolution imagery with 12.5 million polygons consumed over 4GBs of physical memory. While the crowd was impressed to see that massive dataset load, they were completely stunned when it started to spin.

Fueling Creative Momentum

All of the elements comprising that 64-bit solution—the software, hardware, and graphics cards—have come together to enable an unprecedented level in creative control, productivity, and efficiency.

Greater processing power and memory mean that animators can have all their characters,

working. There's no longer a need for animators to have several workstations running at their desks. And there's no longer a delay while your one-frame test render waits in a queue behind a half dozen others on the rendering farm.

Weeks can be shaved off of a production schedule. And more ambitious 3D animation tasks involving 10 to 20 million polygon datasets can be easily manipulated and managed. As Autodesk 3ds Max and Maya 64 bit software evolve, 3D animators will find it easier to manage and manipulate 100 million polygon models, and beyond.

This incredible potential may be less about a shift in technology, and more about shift in how people think about the work day. Do more with more. Now that you are armed with this information, use your knowledge of 64-bit and multi-core processing to eliminate the frustration of bandwidth and give way to creative momentum. It's your turn to make the rules.



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