## Benchmark Testing:  Upgrading for Higher ROI

***An Architectural Visualization Consultant Gains Traction in Slippery Economic Times***

*"We're a small firm doing very large projects on a very tight deadline, and using the latest HP Quad Core computers' has allowed us to tackle these projects with a small team, and deliver on time with enhanced profitability."  (Robert Lucero – Founder of Dimension3D Services – CG visualization and animation.)*



**Robert Lucero in His Element**

**T**he power of today's latest computers provide cost-saving benefits to large and small businesses alike, especially in this time of economic instability. Colorado based Dimension3D Services is a perfect example.  With more than twenty-years of experience in this field, Robert has migrated to HP's Quad Core computing, and is reaping its benefits in this tight economy.

Robert Lucero's journey into 3D visualization and animation began soon after the industry's inception:  1989 – UC Santa Barbara – CAD Design and "a little DOS program called 3D Studio (now 3ds Max)".  Moonlighting on industrial and residential projects Robert relied on 3D Studio for its versatility and high quality results.



**Frank Gehry's Anaheim Ice Center**

After graduating, the fledgling CAD industry provided Robert a phenomenal job opportunity: to establish a CAD driven imagery and animation department in the LA office of legendary architectural firm Langdon Wilson. At LW Robert worked alongside the iconic Frank Gehry on projects ranging from the Anaheim Ice Center to Team Disney, "his designs included wacky elements like curved walls and what-not and it was a fascinating and challenging experience.  I had no idea at the time what a huge opportunity and how uniquely interesting it was to do CAD drawings in AutoCAD for this famous architect".

Robert rounded out his experience by jumping at the opportunity to use his AutoCAD and 3D Studio expertise to work on the Tokyo Disney Seas project (Adjacent to Disney World in Tokyo), which included work on California Adventure, and the Indiana Jones project .  His



**Tokyo Disney Seas**

Tokyo experience, working on the most elaborate Disney Theme Park in the world, was a major career step where he expanded his skills by doing animated visualizations on 3ds MAX to show how the rides would work, including their timing, and how many vehicles would work best in each ride.

In 1999 his wife was offered an 'amazing job opportunity in Colorado' and after moving and getting settled in, he 'ran into The Neenan Company in Fort Collins, Colorado' and worked with them on a wide variety of architectural projects before founding Dimension3D Services in 2008.

While at Neenan Robert and his team worked on Dell precision 670 dual Intel Xeon 3.2GHz single core processors.   But, when HP introduced its XW4600 workstation Robert scoped out the specs, did some testing and made the jump to the fast lane.  Robert said that, "These Intel® Core™ 2 Duo machines were more than 2x faster at rendering designs, and cost us much less than $2,000.

Now, Robert's consulting firm specializes in creating photo realistic stills and fly-throughs that clearly communicate architectural visions and concepts to be realized.  Robert and his team works with computer intensive software like Audodesk 3ds Max to create, render, and animate their visualizations and need the highest performing computers to get the job done on time and on budget.

**Upgrading to the latest computer technology**

Throughout the interview Robert focused on small architectural firms.  "With the budgets they have to work within, they don't always upgrade their computers quickly … for example, not everybody went out and got dual-core when they first came out, and very few have arrived at quad-core yet."

"If money were no object then buying a rack of blade render nodes is the way I would go.  However being a small firm I can't afford to upgrade equipment every time a new chip comes out.   I had also never purchased the fastest/most expensive chip on the market when upgrading because I didn't see or quite understand the value of a little faster clock speed.  I had done this for years, and while each upgrade provided significant render time improvements when I jumped to quad core I was rewarded, finally, with the biggest time gain I had ever seen. "
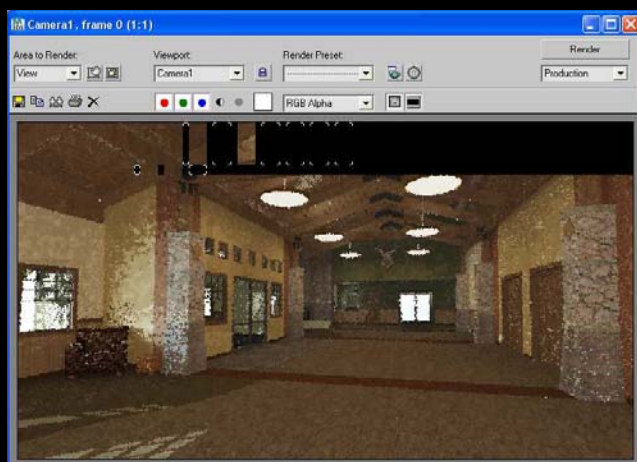


*Eight Render 'Buckets' at Top of Illustration*

**Bucket Rendering**

When Robert 's team made the move from the older technology Dell precision 670's to HP computing with their first HP XW4600 and then to the more powerful HP XW6400 he saw "huge jumps in time-saving performance, especially in reduced rendering time. "   Robert told me that Mental Ray, the 3ds Max rendering engine uses a bucket system … where instead of

an entire frame being rendered in its whole, little rendering boxes appear on the screen that are each rendered individually based on how many cores are available – "The Dell hyper threaded dual-processors would show four little boxes, and now that I'm using dual quad cores eight boxes pop up while I'm rendering which equals a tremendous reduction in time."

**Bench Mark Testing and Proof**

To prove the value of upgrading I duplicated one of Robert's smaller render jobs.  This one was a visualization of a conceptual hunting lodge that we both rendered directly from Autodesk 3ds Max.

Robert measured the time it took to render the hunting lodge scene using his Dell Xeon and HP XW6600 workstations. I then ran the exact same test using the identical software on HP's latest XW8600 workstation and charted the results below. (Full Computer Specs follow this article.)
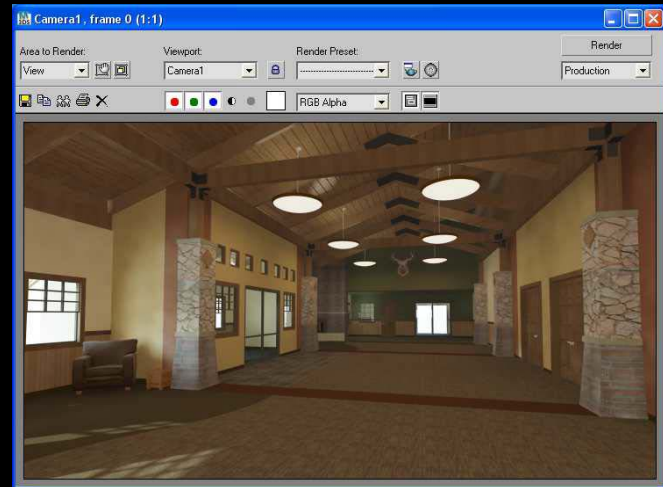

*Hunting Lodge Final Render*
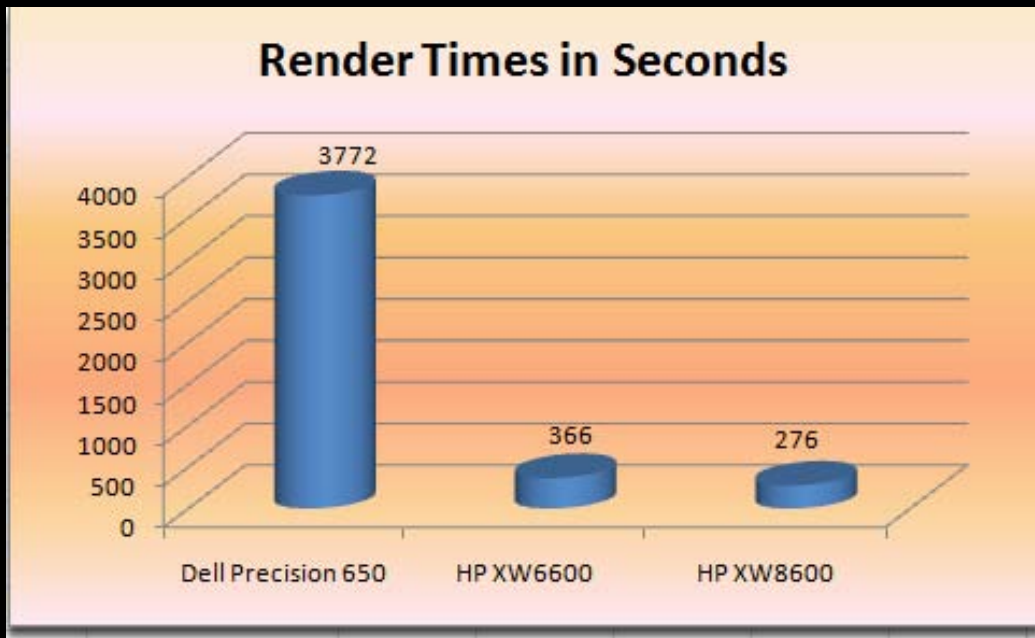


**Render times in hours and minutes:**

- **Dell Precision 650**:  1 hour, 2 minutes and 52 seconds.
- **HP XW6600**: 6 minutes and 6 seconds.
- **HP XW8600**: 4 minutes and 36 seconds

Granted, the Dell computer was an 'older' technology that does not incorporate quad core computing, but that's just the point:  it really pays to upgrade!  Robert not only renders small visualizations like the one performed for this test, but also renders very heavy weight animations.  By upgrading to HP XW6600 quad core computing he's been able to reduce rendering time by a whopping 90.3% and the increased performance of the XW8600 adds even more time savings to the mix.

**Upgrading really pays off**

Robert has taken the time and money saving computer lessons he learned from his diverse experience and made them a key element of his consulting firm.  To this end, Robert has upgraded to HP's XW6600 Quad Core computers and as his business continues to grow he plans to upgrade to HP's latest XW8600.  "Performance is my consulting firm's highest priority.  I've got to continually find creative ways to maximize efficiency and use of time to stay ahead of, and beat the competition as I grow my business."


**Computer Specifications:**

**Dell Precision 650**

MS Windows XP
Professional x64 Edition
Version 2003
Service Pack 2
Intel(R) Xeon(TM) CPU 3.20GHz
3.19 GHZ, 2.00 GB of RAM

**HP XW6600 Workstation**

MS Windows XP
Professional x64 Edition
Version 2003
Service Pack 2
Intel(R) Xeon(TM) CPU
E5450 @ 3.00 GHz
3.00 GHZ, 16.0 GB of RAM

**HP XW8600 Workstation**

MS Windows XP
Professional X64 Edition
Version 2003
Service Pack 2
Intel(R) Xeon(TM) CPU
X5482 @ 3.20GHz
2.4GHZ, 3.25GB RAM

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