

# AEC Leaders Find **Professional Workstations Are Key to Success** in Today's Demanding Market

by Heather Livingston *and* Nancy Spurling Johnson

Moving away from conventional PCs, progressive firms reap rewards of increased power and productivity, hardware reliability, user and client satisfaction, and overall ROI.

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**T**he ever-quicken- ing pace of technology can make keeping your firm's hardware and software up-to-date feel like a Herculean task. Gone are the days of relying solely on 2D rendering for delivering project information, and with it the minimal computer processing and memory requirements.

Today's clients expect and even demand 3D modeling and photo-realistic rendering — and today's AEC



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— Gedeon Trias  
Larson & Darby

firms can't afford the risks of staff downtime and delayed project delivery that are often the result of inadequate computer hardware. As such, firms are realizing the need to upgrade standard PCs to professional-grade workstations capable of handling sophisticated computing requirements.

This article will lay bare the benefits of investing in a professional workstation from the perspectives of three architectural designers who have led their firms in the transition from conventional PCs that were hindering project progress and profitability. Their stories illustrate how the workstation investment pays off immediately in terms of increased computing power and user productivity as well as long term through improved hardware reliability, user satisfaction, return on investment, and competitive edge.

#### **LARSON & DARBY: HIGH-TECH FROM THE BEGINNING**

In a time when many design entities are just beginning to understand the benefits of using professional-grade workstations for AutoCAD®, Larson & Darby Group has a decade of experience under its belt.

Based in Rockford, Illinois, the full-service architecture, engineering, interiors, and technology design firm was one of the first in its region to use computer-aided design, beginning in

the early '80s with AutoCAD® v1.8. Gedeon Trias, associate director of design, recalls running the software on IBM AT and XT PCs. “Some of our veteran staff joke about how it took half an hour for commands in AutoCAD® to run on those old machines.

“From there, we used PCs of various types — various flavors of Compaqs and Dells — until the late '90s–early 2000s. The PCs did their jobs well for most tasks, but they did have a tendency to be finicky depending on what they were asked to do. We were still doing a lot of drafting, but I was doing 3D, and the PCs couldn't handle it. We were also using Alias Studio Tools [now Autodesk 3ds Max Design®], and a rendering had to run overnight. Some serious issues arose as we more fully integrated 3D work into our design process; it was really taxing those machines. It wasn't quite 30 minutes in between 3D commands, but the lag was noticeable — and all the more infuriating when a deadline was looming.”

That's when the firm made the transition to workstation-class machines, Trias says. “The switch was in part an effort to standardize equipment as well as part of a major software upgrade. The group opted for midlevel HP xw4100s and HP xw6200s, “plus a few xw8000s thrown in there,” Trias says, and it has relied on HP work-

stations ever since. Today, approximately 25 workstation users are running a mix of HP Z220s, Z230s, Z620s, and Z800s to support CAD work with AutoCAD®, building information modeling (BIM) with Autodesk Revit®, and design visualization with Autodesk 3ds Max Design®.

Even more so than the increased power offered by workstations compared to PCs, Trias says he values the reliability. Hardware reliability should not be something any user has to contend with as he or she strives to finish a job, Trias explains. “Most users just want the software they’re running on their machines to work and to allow them to do the things they want to do. Workstations are designed and purpose built for reliability and performance for the tasks that we require — from working quickly with large BIM or CAD files to working as part of a render farm for animations. PCs might get you where you want to go, but what else do you need to do to get the level of reliability or power that you’d get out of a workstation?”

Trias continues, “We’ve gotten plenty of lifetime out of our workstations without any major problems, and the computing power has managed to keep up with what we were asking the machines to do. This certainly becomes more of an issue

and more essential as we’ve made the transition to BIM.”

Does the firm ever second-guess the extra investment in workstation-caliber computers vs. standard PCs? Absolutely not, according to Trias. Whether using AutoCAD or more computer-intensive BIM and design visualization, the more you push your software, the more you need a workstation, he says. “What we’re doing is too important to leave [hardware reliability] to chance, and I think our clients would agree. Clients certainly aren’t interested in our hardware issues. They want to know when their project is going to be done. If using workstation-class machines can allow us to do that work more efficiently, why wouldn’t we make that investment? The extra investment isn’t all that great when you consider what’s at stake.”

#### **ED VANCE & ASSOCIATES ARCHITECTS: PICKING UP THE PACE**

Simply surviving the massive economic downturn of the past decade has been challenging for many architectural firms. Keeping up with software advances was so costly that hardware upgrades were sent to the back burner for years. Now that business is picking up again, firms such as Ed Vance & Associates Architects (EV&A) are



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— Kevin Welch

Ed Vance & Associates Architects

recognizing that industry and client demands require a more robust workstation equipped to handle computer-intensive software.

Based in Las Vegas, EV&A provides architectural, planning, and interior design services to the hospitality, commercial, and healthcare markets. Kevin Welch, design director, recalls that before investing in professional workstations, the firm was using older versions of Autodesk software on 32-bit machines running Microsoft Windows

XP. “As our business increased and our staff began to grow, we needed to upgrade to new Autodesk software licenses that were not available for our older 32-bit machines,” Welch says.

“In addition to this, we also began to implement changes to our firm’s standards of documentation. Instead of using AutoCAD® for our documentation, we now use Revit® for documentation and 3ds Max® with V-Ray [a rendering toolkit from Chaos Group] for 3D modeling and render-

ing. The hardware and operating systems of our old PCs and workstations were either not capable or inefficient at running these programs,” explains Welch.

EV&A determined the potential return on investment (ROI) of new workstations by adding up the estimated lost hours per week waiting for files to open, process, and so forth, Welch says, then calculating the financial loss associated with the lost man hours over the course of a year. The resulting figure was astoundingly greater than the cost of a new workstation, Welch says.

Upper management was initially reluctant to purchase the more costly workstations, Welch recalls, but once managers understood how much time staff members were losing due to the slower PCs and projected the savings that could be realized by using the more robust workstations, they quickly got on board.

EV&A opted for two primary workstation builds. The first, the designer workstation build, was a 3DBOXX 8920 from BOXX Technologies configured with dual ten-core 2.8-GHz Intel® Xeon® 25-MB cache, 8.00-QPI processors; 1,250-watt power supply; 32-MB DDR3-1866 memory; NVIDIA Quadro K4000 3-GB graphics card; and a 240-GB SSD SATA 6-Gb/s hard drive. The second, a production

workstation build, was a BOXX 4150 XTREME with an Intel® Core™ i7 3.5-GHz processor, 550-watt power supply, 16-GB DDR3-1,600 memory, NVIDIA Quadro K2000D 2-GB graphics card, and 240-GB SSD SATA 6-Gb/s hard drive.

The payoffs have extended beyond the financial, Welch reports, and he, his co-workers, and management are thrilled with the results. “Investing in new workstations resulted in increased speed, flexibility, expandability, and technical capability that enabled us to become more efficient with our time. This helped reduce our staff’s frustration and subsequent stress, which in-turn fosters a healthier working environment that ultimately saves our clients money as well as reduces our overhead.”

Welch says that with the 3DBOXX 8920, users now can render scenes in four minutes that previously took more than six hours to complete! “Our ability to test, complete, and post edit our renderings so efficiently has allowed us to get completed work back to our clients in record time and has already generated a complete ROI after finishing just a handful of billable renderings.” What’s more, Welch says, the new workstations were painless to install and now are working so well that EV&A hasn’t needed assistance

from IT staff or consultants to address computer issues.

At Ed Vance & Associates Architects, “getting by” with IT-configured PCs is a thing of the past.

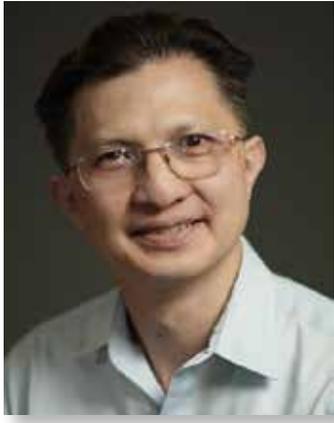
### **ALTOON PARTNERS: TURNING UP THE HEAT**

Headquartered in Los Angeles with offices in Amsterdam and Shanghai, Altoon Partners is a global architecture firm that specializes in mixed-use, adaptive reuse, and retail design. For more than 13 years, the firm relied on in-house staff to build and deploy its customized PCs. Then, in 2004, Generation IX Technologies, a computer consulting firm, recommended the purchase of professional-grade workstations, citing how the upgrade would more suitably support the intense computing and rendering requirements inherent to the AEC field.

According to Senior Associate Paul Li, the former PCs presented two distinct problems. “One was with the software,” he explains. “As the software upgraded and added more bells and whistles, the demand for more CPU power and RAM increased dramatically. The second was in the file sizes. As we added more intelligent data in the files, we also added more 2D and 3D detail, which increased the file sizes exponentially.”

The firm’s partners recognized that the old PC processing capabilities were not meeting the demand, but they still had to be convinced to make the workstation investment, Li recalls. “The major issue with the move was really with the higher initial costs. It was a lot cheaper for our IT staff at the time to build the PCs rather than to purchase them from a brand name manufacturer such as Hewlett-Packard. But the partners also realized that the risk of having the consumer-grade PCs fail, causing us to not meet our deadlines, would be a greater loss than we could afford,” says Li.

With a keen eye to the bottom line, Altoon Partners utilized HP Financial Services to obtain the best rates for the term of its lease, lessening the need to draw down critical cash reserves. The initial purchase was five HP Z600/620 series Energy Star workstations running Windows 7 Pro 64-bit with two Intel® Xeon® E5-2640 2.50-GHz, 16-MB 1333 6C processors; an NVIDIA Quadro 2000 1-GB graphics card; 12-GB DDR3-1600 (6 x 2 GB) unbuffered RAM; 265-GB SATA solid-state hard drive; 16X Super-Multi DVD+RW drive; a Broadcom BCM5761 Gigabit Ethernet (GbE) media-access controller; and a three-year warranty covering parts, labor, and on-site service. After six months,



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Altoon Partners

the firm purchased another five HP Z620s.

The major benefit of the professional-grade workstations, according to Li, is that they negate the fear of component failure and the subsequent inability to get replacement parts. Now, he says, “If a component were to fail, right away an on-site visit from the manufacturer’s technician would occur to get the parts replaced and get the workstations back up and running once again.”

Li adds, “We [are seeing] really healthy returns, especially from the very satisfied staff who received the professional workstation upgrades. Right away their productivity would go up dramatically. Instead of walking away to get a cup of coffee waiting for the older computers to even turn on, the newer [workstations] start up almost immediately. They speed up rendering times by more than three-fold.”

What’s more, when Altoon Partners needs to deliver a large number of computer-intensive renderings, the firm is able to group five workstations, much like a rendering farm, to complete the task. “It’s hard to imagine such robust workhorses are actually really light in weight, [but] it’s very easy to move these lighter workstations around the office,” Li says.

And finally, instead of having to spend countless hours troubleshooting old PCs and tracking down and switching out malfunctioning parts — essentially putting a Band-Aid on a bleeding computer — now Li can invest his time in dealing with other more urgent matters — and that makes Li very happy.

## CONCLUSION

Compared with the purchase price of a professional workstation, the lower initial cost of a conventional PC certainly can have a strong allure for AEC firms, as the bottom line is always on the mind of principals. But that PC purchase can be short sighted, preventing firms from experiencing the long-term benefits of increased productivity, hardware reliability, user satisfaction, and overall ROI afforded by professional workstations.

Li concludes: “Though I don’t want to give up the edge we now have over our AEC competitors, I do have to

highly recommend the use of these professional-grade [workstations] as the solution of choice. In order to be on the bleeding edge of technology, you don’t want to have to deal with consumer-grade PCs. [Workstations] will help you meet the intense deadlines all AEC firms face, giving you the needed advantage. ... Trust me. We have very satisfied customers here.” ♦

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