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## Virtual Architecture



Images of the food court at Richmond Town Square in Richmond Heights, Ohio, created with the AutoCAD system and 3D Studio VIZ.

New technologies in software are helping architects communicate their visions more clearly to shopping center developers.

*Chris Garrison, Derek Oyen and David Marcovitz*

With technological and software advances whizzing by at lightning speed, it sometimes isn't easy for architecture firms to stay on the cutting edge both in what they design and in the design tools they use. But the benefits of new software and computer programs can offer innovative and exciting design possibilities. Let's take a peek over a few architects' shoulders for a look at the software taking developers into the future.

### THE SOFTWARE

Various types of software can help architects turn conceptions into a virtual reality. Such programs as a foundation of AutoCAD Release 14 or AutoCAD Architectural Desktop (a version of AutoCAD R14 geared specifically to the architectural and building design industry), AutoCAD add-ons and compatible software programs can convert design ideas into an interactive journey through a yet-to-be-constructed building

AutoCAD Release 14 is the most recent version of what has become the industry's computer-aided drafting standard. Autodesk, makers of AutoCAD software, did not just update or revise Release 13, they have revamped the program. Enhancements include smarter drawing tools, improved presentation features and timesaving reference, raster and Internet file-sharing capabilities.

Yes, AutoCAD meets the World Wide Web. With the assistance of AutoCAD Internet Utilities, a free add-on, program users can generate DWF (drawing Web format) files. This less cumbersome, read-only file format makes it possible for AutoCAD users to share drawings with nonusers secure in the knowledge that the drawings cannot be altered. Because this lightweight vector-formatted file is compressed, the precision of the original DWG file is preserved while improving the speed at which it may be transferred.

Transmission of these files is possible by diskette, electronic mail or over the Internet. Nonusers of AutoCAD can access the drawings and view them in a standard Web browser or off-line using a downloadable freeware product from Autodesk called Whip! Viewer. Should the nonuser need the ability to mark up the drawing files, Autodesk goes a step further with Whip! and Autodesk View. This purchasable add-on allows the user to view, red-line, measure, compare and print DWG, DWF and DXF files.

Another add-on program for AutoCAD 14, AutoCAD AEC (formally Softdesk), assists with the 2D and 3D side with automated routines to place walls, doors, windows, stairs, toilet rooms, roofs and other architectural elements.

Completely compatible and used in conjunction with AutoCAD, designers can use 3D Studio VIZ by Kinetix, the multimedia division of Autodesk, to give life to the 3D models produced



New software programs can produce an architect's renderings in a three-dimensional form.

with AutoCAD 14 and AutoCAD Architectural Desktop. 3D Studio VIZ provides real-time 3D modeling, rendering and animation on a desktop platform; it enables the designer to follow ideas from the conceptual phase through design development.

The software packages already mentioned are used to create and animate 3D models of buildings or landscapes. Premiere from Adobe (producers of well-known artistic programs such as Photoshop and Illustrator) takes the designer another step forward. Premiere software adds many "movie" elements to an animated architectural model. With features that allow for professional, theatrical-style transitions, filters or masks, audio synchronization and text rolls and crawls to create titles or credits, the command "make a movie" can be carried out.

Walking yet another step further into the virtual world of animated videos is a package called SmoothMove. SmoothMove takes the idea of the animated movie made using 3D Studio VIZ and Adobe Premiere to the next dimension — the panoramic dimension — while adding an interactive feature. Animated movies thus far are passively viewed as they play out as a directed tour with the 360-degree view around and past objects. Panoramic SmoothMove movies al-

low for 360-degree views of the model in any direction and at the discretion of the viewer, who utilizes a computer mouse to navigate the viewing direction or to move forward, backward and throughout the entire animated environment.

The list of software packages, plugins and add-ons available today is nearly limitless for adding life-like realism to graphic images, 3D models and video simulations of as-yet-unbuilt buildings. Beyond the design software, a vast array of stock graphic images and objects for 3D design, lighting effects packages and stock environments, which can add sky and earth, are readily available. Those mentioned here are a solid foundation on which to begin production of the most complete, comprehensive end product in the building design industry.

#### THE END PRODUCT

When these software packages are brought together with the architect's knowledge, skill and experience, the end product is a virtual environment that dramatically demonstrates to project owners and their potential clients or tenants a clear vision of their buildings.

Features within the AutoCAD and 3D Studio VIZ combination of products produce realism and accuracy

down to the appropriate direct and indirect lighting for the geographical location of the project, including seasonal variations. Designers can add or change materials, textures and color schemes as well as architectural elements like columns, furniture, fixtures and floor and graphic patterns. Standard computer commands vary these components, manipulating their number, shape, color or other characteristics as needed, giving the client a true glimpse into the future of their building.

#### THE RESULTS

As with all products, there are advantages and disadvantages; many of the advantages of these technologies are immediately apparent. They allow a "see-before-you-buy" element to an industry that has long been based on faith, with owners trusting that they have communicated their vision to architects and architects hoping that they have interpreted those ideas correctly and that owners understand the concepts and design hidden within 2D blue-line drawings. Today, much of the guesswork is gone. Owners are getting more information in a more reliable format with greater variations of style, placement and materials shown than ever before. Feedback from the owners and revisions by the designers are more easily conveyed and more immediately available.

Owners can pass that clairvoyance on to their clients as well. CBL & Associates has been doing just that. CBL is using these custom-designed 3D models and digitally generated virtual movies as a leasing tool to attract potential tenants. With virtual walk-throughs of the project site, tenants can gauge their exposure, evaluate potential patron traffic, see — not just imagine — how their storefront and signage will look. Information about location can be demonstrated, not just explained.

Another advantage to 3D animation is the ability of the architects to observe and anticipate prospective difficulties with the project and to cor-

rect them before any construction begins, which can save both money and time in the long run.

Some of the very factors that are advantages in utilizing today's computer technologies for architectural design are also their disadvantages. Although uncommon, some clients and even designers can be put off by the immaculately composed 3D model, saying that it stifles or hinders further creativity or looks "too finished"

to change. Again, technology comes forward to intercede with additional software that takes the now photo-realistic concept and transforms it into a stylized, pencil-like drawing. And with these packages, "rendered drawings" taken from 3D models will be more accurate.

While designers can now provide more accurate concepts to their clients with an array of options in a variety of formats and perspectives, many of

those same designers and architects have not yet begun to back the cost of producing all these works into their fees. This issue of increased productivity and time in production without adjusting the cost can be a disadvantage for architectural firms.

Designers are able to produce drawings, renderings and models more quickly than ever before; however, they are also generating a much greater amount of data, meaning that while they are utilizing their time more efficiently, they are also spending more time overall because of the increased options available. What this also means is that more resources — computer hardware and software — are necessary to generate and store that data. More memory and speed must be added to existing computer systems to handle these operations and data production. Computer networks must be expanded to allow more designers to share project data and connect to output devices. More sophisticated output devices must be used to reproduce the information available on the screen. Periodic — sometimes even nightly — back-ups of project files can place a greater burden on computer systems. And greater resources must be dedicated to storage and security of these systems, project files and end products and presentations.

In an industry that has been paper-driven for so long, it is sometimes difficult to show expenses associated with these types of intangibles to the individual client in order to justify the fees for these services. Thus far some firms offer them as part of the project package as a courtesy to long-time customers.

Computer and software manufacturers offer a variety of tools to today's building industry, but rest assured the tool used is only as good or useful as the artist who manipulates it. **SCB**

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