May/Jun 2003

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The Official Publication of Autodesk User Group International

Implementing Autodesk Revit in Your Design Process

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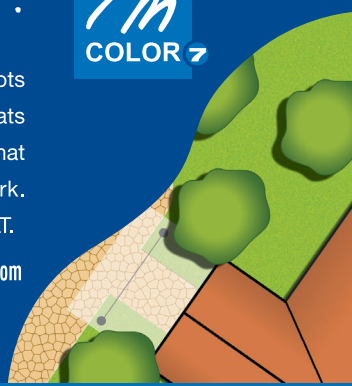

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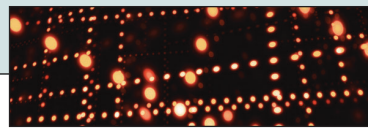

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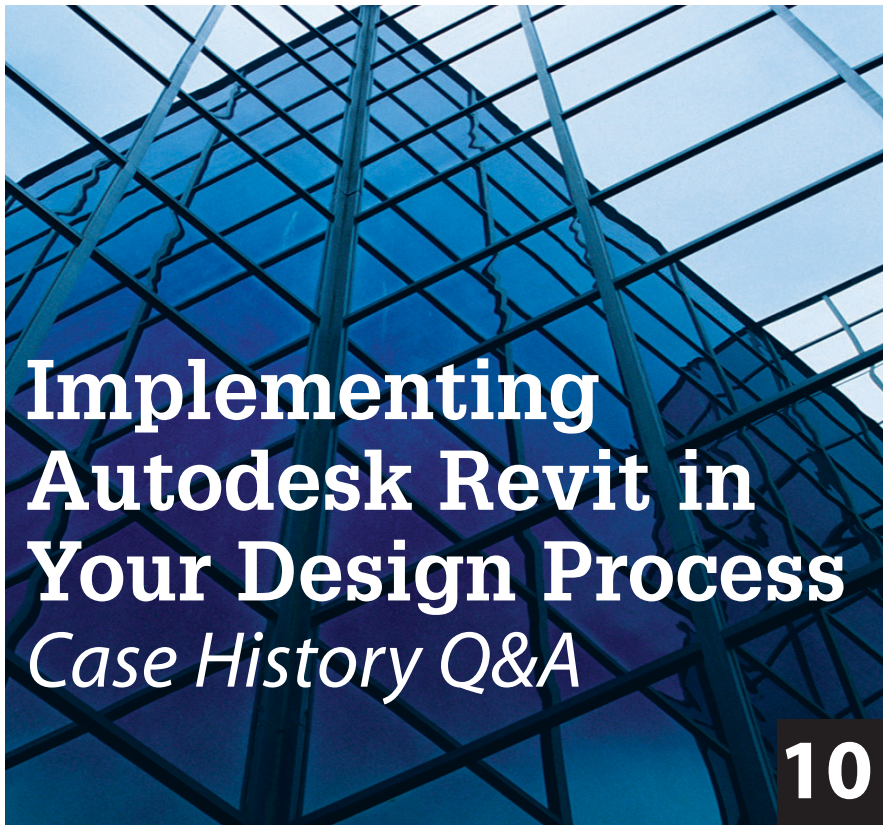

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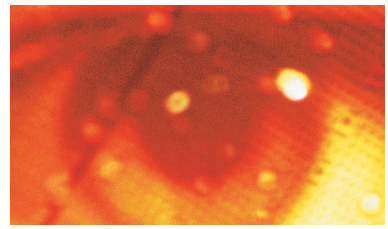

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Before defragmenting, you may wish to consider one additional accessory.

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Microsoft® Certified Professional Magazine, November 2002

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Augiworld News

AUGI Members Weigh In

The results of an online member survey conducted over the course of several weeks indicate that peer-to-peer interaction and support are vitally important to AUGI members.

The top 5 items cited by AUGI members were:

- **Downloadable depository of member-created routines, programs, and symbols.** This service – AUGI Exchange – is available to AUGI members right now. Information about this program can be obtained from www.augi.com/empower/exchange. AMD is the exclusive sponsor of the AUGI Exchange.

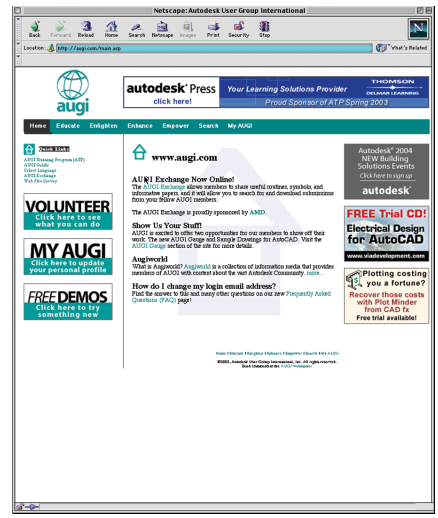
- **Online-based Peer-to-Peer Support.** This bulletin board-style searchable knowledgebase will be part of the AUGI.com redesign, which is in process (see following related news item).

- **An online "suggestion box" for improvements to Autodesk products.** AUGI's popular Wishlist, available now at AUGI.com.

- **Scheduled email-based training courses.** The AUGI Training Program (ATP) information can be found at AUGI.com.

- **Member-reviewed, third-party software and hardware products.** An online forum in which AUGI members have the opportunity to review offerings from third-party software developers.

Survey respondents also had an opinion on how they want the AUGI website to be organized, with a clear majority preferring to see only information pertinent to the Autodesk product they use, rather than organized by type of AUGI service. Both options will be offered in the new AUGI.com design.



AUGI.com Redesign Stresses Active Content

Based on the results of the online member survey as well as AUGI's continuing commitment to provide useful support services to members of the Autodesk user community, the AUGI website — found at http://www.augi.com — is undergoing a major renovation. The new site will be launched early this summer.

Yoshi Honda, senior vice president and current manager of AUGI's web team, notes that the redesign is being done in order to make the site "active," filled with dynamic information that will assist AUGI members in their day-to-day activities. "[The new] AUGI.com will be a site that you can visit daily to assist you in your production and duties at work," Honda says.

To that end, the website redesign will include many of the items deemed important by respondents to the web survey such as an online peer-to-peer support forums, an enhanced AUGI Exchange, and additional items such as searchable libraries containing editorial content and news of interest to the Autodesk user community. Honda says, "The key to the redesign is the change from static content to active content to meet the daily needs of our users."

AUGI Hot News Heats Up

Watch your email for the new AUGI Hot News, a monthly email newsletter containing informative articles, useful tips, and general AUGI announcements.

A few of the items you'll see in the premier Hot News are:

- Take Five – a five-question, Q&A style interview with Autodesk executives and others about new Autodesk releases and other topics of interest to AUGI Members.

- AUGI TIPniques – some quick tips for using Autodesk products more effectively.

- AUGI Around the World – news and information from the worldwide AUGI community.

- Special Offers and Announcements – offers from third-party software developers plus general AUGI announcements.

AUGI at NDES

For the fourth consecutive year, Autodesk provided some booth space in its pavilion at the National Design Engineering Show at McCormick place in Chicago in March. AUGI President John Clauson, board member Peter Jamtgaard, and former AUGI President John Gibb were assisted in the booth by a dozen volunteers from the Greater Chicago AutoCAD Users' Group (http://www.gcaug.com).

The group distributed more than a thousand copies of *Augiworld* and signed up a large number of new AUGI members. Visitors who had never heard of AUGI were amazed at the amount of free support available through the organization. Clauson expressed AUGI's gratitude to Autodesk and GCAUG for their generous cooperation in helping spread the AUGI message.

ATP Spring Session Begins

The ATP (AUGI Training Program) Spring session began in mid-April. There are a total of 49 classes offered this semester. Thirty-two of the courses are available in English, six in Spanish, ten in Portuguese, and one in French.

For the past eight years, AUGI has been offering its members a means by which Autodesk product users throughout the world can teach each other what they've learned and experienced regarding more productive uses of the Autodesk software they already own.

The AUGI Training Program (ATP) is not a commercial venture. It does not compete with dealership, ATC, or Autodesk training programs, and all you need to do to take full advantage of it is become an AUGI member and register for a semester once it begins.

How the ATP Works

Go to AUGI's website (http://www.augi.com) for detailed information on the ATP program. In brief, members who wish to teach classes have two months to submit proposals. At the completion of the proposals process, the proposals are posted to the website's ATP registration page for one month and AUGI

students use the initial registration form to sign up for the classes they wish to take.

At the completion of the student registration process, the ATP staff tallies all students' registrations and determines (based on budget and highest registrations) which classes will be offered for the semester. This list of classes gets posted to the ATP Bulletins page and all ATP faculty are notified of which classes were accepted. The semester then begins and lasts 10 weeks with all students automatically subscribed to their registered ATP class-dedicated mail lists.

Once the semester begins, the content of each class is made available to the students via two channels: the ATP class-dedicated mail lists and the ATP Courses files download page at the website. The content of each class is subdivided into five segments ("A" thru "E"), each segment lasting two weeks. During each segment, teachers post lecture material to their mail lists as well as supplementary course files to the ATP Courses page for students to download. These supplementary files for each segment are only made available for downloading during their dedicated two-week period. Once during each two-week segment, students must also use the ATP Registration form to 'stay registered' in the class. This bi-weekly checkback process helps the staff and sponsors track student involvement throughout the semester

The General Semester Schedule:

Jan-Feb: Spring Semester Faculty Class Proposals

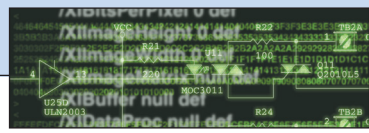
Mar: Spring Semester Student Registration

Apr-Jun: Spring Semester

Jul-Aug: Fall Semester Faculty Class Proposals

Sep: Fall Semester Student Registration

Oct-Dec: Fall Semester



Education on Video

Grab the microwave popcorn and soda, sit back, and prepare to be educated. Maybe even entertained. *Autodesk® Land Desktop R3 in a Nutshell – The Movie* has come to a computer near you

Sage CAD Applications, Albany, New York, and Electric Pelican Ink, Salisbury, New Hampshire, have teamed up to bring video training to users of Autodesk Land Desktop R3 and Autodesk Civil Design R3. Available in videocassette, CD, and DVD formats, *Autodesk® Land Desktop R3 in a Nutshell – The Movie* and *Autodesk® Civil Design R3 in a Nutshell – The Movie* are a good accompaniment to more formal classroom training or as a self-study resource, according to several users.

One such user is Terry Leedham, professor, architectural engineering technology at New Hampshire Technical Institute. The past year has been significant for New Hampshire Technical Institute with regard to its civil engineering course offerings, according to Leedham. Autodesk Land Desktop has been adopted for use in the Institute's surveying courses, which have expanded to include a highway design course this year as well as a course called Civil CAD. Within that Civil CAD course, students will have the opportunity to learn about Autodesk Land Desktop software.

Calling himself a novice user so far as Autodesk Land Desktop is concerned, Leedham is learning the software via a diverse array of materials: the software's manual, various workbooks and texts, and *Autodesk® Land Desktop R3 in a Nutshell – The Movie* on DVD.

Leedham offers praise for the DVD product. "On a one-to-ten scale, I'd give it a nine and a half," he says. "For someone trying to learn the software who doesn't have the benefit of a course being taught by an instructor, this is something to have. It's that good." For the record, Leedham isn't knocking time-tested print resources, noting that they, in concert with the DVD, provide comprehensive instruction: "If I add the workbooks, manuals, and the DVD together, I find that I'm able to use the [Autodesk] software."

In particular, Leedham likes the DVD's "messenger." Gary Rosen, president of Electric Pelican Ink. and a long-time Autodesk software user, consultant, and speaker at such events as Autodesk University, is the on-camera instructor for this video training series. "The real benefit you get from the DVD is that Gary Rosen gives you the insights and applications that often times you can't get out of a manual," says Leedham. "He presents the information in a relaxed manner, which is a good way to receive this information if you're just beginning."

Autodesk® Land Desktop R3 in a Nutshell – The Movie

DVD, Disc 1

Introduction
The Software
The Theory
The Files
The Startup
Project Management
Drawing Setups
Guided Tour
The Point Database
Import Points
Point Settings

DVD, Disc 2

Point Display Properties
Description Keys
Point Labels
Point Groups
Lines & Curves
Line & Curve Labels
Tags, Labels
Terrain Modeling Intro

DVD, Disc 3

Building Surfaces
Surface Breaklines
Surface Boundaries
Surface Editing
Surface Borders & Sections
Contours
Watersheds & Slope Analysis
Elevation Ranges
3D Visualization & Object Projection
Wrap Up

Helene Brennan, senior at Northwestern University, is another user benefiting from the use of the Land Desktop DVD. This is a self-study course for Brennan, who discovered the products through Dan Hogan, a research engineer at Northwestern. Brennan, who is certified on AutoCAD 2000, is finding her introduction to Autodesk Land Desktop assisted by this training product.

"There's no one here to teach me how to use [the Land Desktop software]. This is a self-study," explains Brennan. And her method is working. "Without knowing anything about land development or civil design, I was able to make profiles and cross-sections and alignments," she says.

Brennan's approach to using the training DVD—one she recommends to other students—was to watch the entire presentation, then to revisit portions that contained concepts she needed to more thoroughly understand. The DVDs are arranged in chapters (see inset left) so users can go directly to a particular lesson if more review is necessary.

Norman Garrick, Ph.D., Associate Professor at the University of Connecticut, also sees value in the ability to go directly to various points in the lesson. "It's definitely a good feature. The steps are all very clear, so you can go back exactly to what you're missing." Garrick used *Autodesk® Land Desktop R3 in a Nutshell – The Movie* in addition to other forms of training to prepare for a class he's teaching.

Overall, these three users are quite satisfied with the Sage CAD/Electric Pelican training videos. They commend instructor Gary Rosen for his clear, step-by-step approach to training. Of course, the inevitable downside to products of this type is that there is no opportunity for interaction between student and instructor, but users should know that going in. That aside, all of these users noted that the training presented is comprehensive and they all felt comfortable with the amount of training they received from the product.

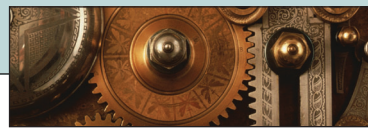
Like anything else in school, business, or life for that matter, users will get out of this what they put into it. "Users should realize that they're going to have to invest some time if they want to get the most out of the training," concludes Leedham. "But if you're in a civil engineering firm and you need to be able to meet production demands with the [Autodesk Land Desktop] software, you're going to have to spend that kind of time anyway. And this might cut out some of the more difficult ways of learning to use the software."

Okay, so maybe the Academy of Motion Picture Arts and Sciences will overlook it at Oscar time, but for eager students, *Autodesk® Land Desktop R3 in a Nutshell – The Movie* is a clear winner.

For more information about this series of videos, visit http://www.landnut.com.

Marilyn Law is managing editor of Augiworld.

The Cad Manager



John Clauson

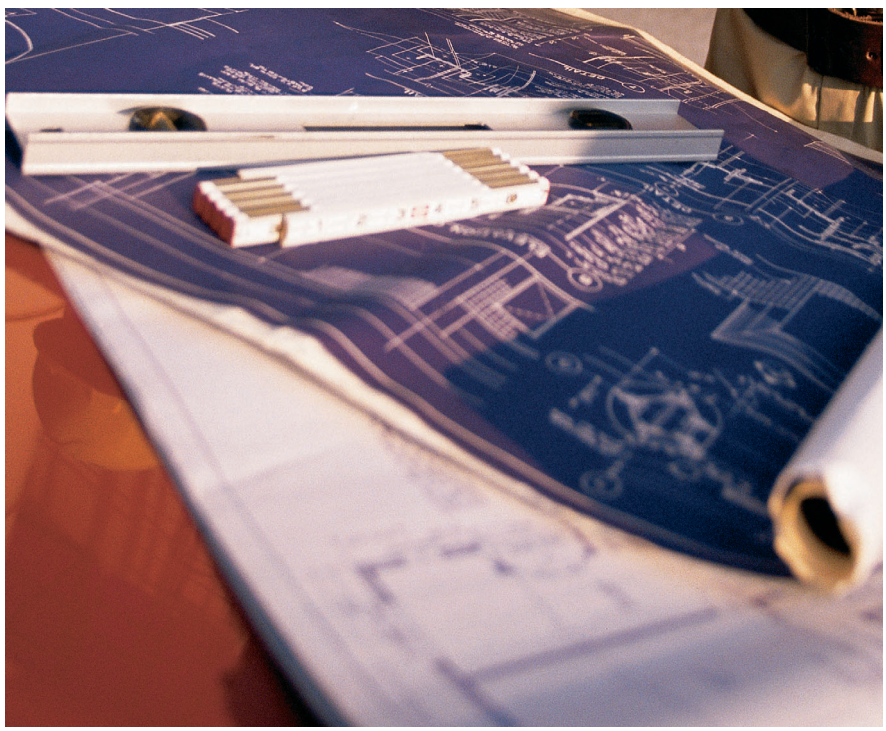
Field Trip to an Architect's World

Spring is here in North America, so I decided to take a field trip. Schools take such outings to explore the outside world, and hopefully learn from seeing other environments. I've been associated with mechanical design applied to manufacturing, so on a day off I thought I'd visit an AEC firm and see if the grass is indeed greener. I found out that while neither greener nor browner, the CAD grass is definitely different outside my little world.

I've known Yi Kuo, a fellow member of the Greater Chicago AutoCAD User's Group, for several years. He is the CAD Manager at Legat Architects in Waukegan, Illinois. A very active supporter of the user group, Yi is the newsletter publisher and has done group presentations on architectural subjects. He feels that it's important for his firm to be involved in the Autodesk user community and encourages all of Legat's CAD users to become AUGI members as well.

I accepted Yi's offer to visit his firm for several reasons. We long-time Mechanical Desktop users are faced with the eventual demise of that product as Autodesk puts most of its 3D parametric solid modeling for manufacturing eggs in the Inventor basket. I wanted to see if that progression was paralleled in the AEC world by an apparent Autodesk refocus on Revit from Autodesk Architectural Desktop, and how a large ADT user might be reacting to it. As a CAD manager, I was also interested in how Yi's challenges might be different from mine. Finally, a visit to Yi's firm would be another opportunity to explore a different company culture—a favorite topic of mine for many years.

Established more than 39 years ago, Legat is the fifth largest design firm in the Chicago area with a total of six studios in northern Illinois. Its brochure says that, "from the Pacific Rim to the Eastern Block, Legat has completed over 40 projects in 30 countries for manufacturing, laboratory, education, hospitality, health care, office and employee use."



With more than 100 CAD users in six locations as his clients, Yi says his biggest challenge has been to maintain respectable levels of productivity while making the transition to object-based modeling as smooth as possible. Each studio is at a different level and has different structural approaches to software use.

A Company Snapshot

Most companies are in constant transition in a variety of areas and Legat is no exception. Within the remodeled church building that houses its main studio, one finds every stage of technology represented, from quick paper sketches and renderings through a high-speed, wide-area network and the latest in computer graphics as well as Autodesk Architectural Desktop. The atmosphere is calm, but certainly not blasé.

These people are creative, committed to quality, and proud of their achievements. The large, open working area that visitors first enter is loaded with models of Legat projects, giving the viewer a good sense of the vast scope of the firm's work. One model of a modernization plan for the city of Waukegan is so huge that they built it vertically onto a large wall, providing a unique aerial perspective to it. You have to look up to look "down" on it.

Ted Haug, AIA, a principal in charge of design, expresses both understanding and frustration while describing his view of Legat's CAD situation. Admittedly from the "old school," he prefers the tactile world of tracing paper for raw design exercises. At the same time, he uses AutoCAD and appreciates the power of Architectural Desktop. Ted recognizes that there are generational issues that software simply cannot address. "The hardest thing is to change the mindset of adapting the design process—but not the design itself—to the technology," he says. For him it is sometimes difficult to determine whether a particular problem encountered in Architectural Desktop is caused by lack of the user's knowledge or insufficient software functionality.

Derek Dunn, the computer coordinator in the Waukegan studio, has been using Architectural Desktop for some time. He finds the learning curve too long and steep to use the software on every aspect of large projects at this point, and feels that many operations need to be simplified. The more he learns about it, the more confident he is in the technology, though. He is impressed with its productivity in generating many construction documents, but finds other aspects of the software to be quite complex. Derek thinks that if it were more streamlined productivity would jump dramatically.

Ken Allen, AIA, is an Architectural Desktop specialist who represents another part of the spectrum. He is extremely fluent in ADT, so he helps support other users and is the one in the company who pushes the envelope. Ken uses CFA, Inc., their local reseller in Chicago, as well as Internet discussion groups and the Autodesk knowledge base for support issues. For the near future, he is looking for more maturity in ADT such as better cleanups and improvements in spaces and boundaries. He wants to see more complete associativity and object orientation throughout the product.

Ken is excited about Autodesk Revit, too, especially the central model concept. If he were to start fresh today in solid modeling for AEC, he says he wouldn't hesitate going right into Revit.

IT Director Alise Steed is a former IT/CAD manager, so she has a deep understanding of how the Legat network can best facilitate the CAD operation. Each studio has a local server and they are all tied into the corporate servers in Waukegan by T1 lines. Alise is currently developing a corporate intranet, part of which will be the Legat Design Center. Based on the AutoCAD Design Center, it will be a repository for their CAD symbols library, manual, standards, and policies as well as a special CAD and IT FAQ.

Challenges to CAD Management

Though frustrated at times with the transition from regular AutoCAD, Legat is committed to the future of 3D modeling with Autodesk products and points to some significant successes already logged with them. Yi notes, for example, that ADT enabled Legat to do all the documentation in one month for permit drawings for a project in China, which could never have been done with older methods. He has learned, though, that they have to be selective on how ADT is used on various projects.

Yi is convinced that using appropriate templates is the key to success with ADT, because those that come with the software are far too generic. He believes that many who give up in frustration would have fared better had they understood the role of templates. Customization plays a large role in Legat's productivity, too. His suite of custom menus and routines is so extensive that Yi refers to the overall system as Legat CAD.

Recognizing that ADT would be challenging for most users, Legat has not scrimped on training by any means. For starters Yi put every user through a week-long program of half-day sessions conducted by their reseller. He outsourced that primary training to take advantage of the reseller's knowledge and experience.

Each studio has at least one expert user to help the others. Yi uses surveys as an assessment tool to identify areas of concern. For continuing improvement of overall skill levels he also conducts lunch-time training sessions with AIA credit. Yi frequently pursues feedback in several other forms in order to keep tabs on the pulse of his CAD operation.

ADT not only requires a substantial commitment to training, but it also has a high threshold of minimum equipment requirements. The current economic climate makes it difficult to commit the resources necessary to bring every single computer up to the level required to run ADT properly. This would not be as large an issue with Revit, which has lesser requirements.

Like many other CAD managers I've talked to over the years, Yi finds it increasingly harder to keep up with the intricacies of their CAD software as his management duties increase. Relying on people like Ken and the advanced users in their various studios takes some of the burden from him. He still maintains a high skill level so that he understands operational issues and can continually improve productivity.

So what about the ADT-to-Revit issue? Ken and Yi have kept up with Revit's progress and believe that it will be their primary system one day. Yi says that for now Revit would be great for medium-sized projects, but might not work as well for their large-scale ventures. Having experienced the discomforts of transitioning from regular AutoCAD to ADT, both he and Ken would rather see a gradual morphing of data and skill sets into Revit than an abrupt switch. Legat is not about to abandon its DWG legacy, so there are concerns about data portability among the two 3D products as well as with vanilla AutoCAD files. Just as many Mechanical Desktop users view the switch to Inventor, Yi and his colleagues feel that Revit will one day fit better into their structure than it does now, and are confident that Autodesk has that goal in mind, too.

The Legat staff impressed me with their pervasive professionalism and their realistic approach to CAD technology. There was an overall attitude of balance: pursue new technology seriously but judiciously, not letting the human element or the jobs at hand become overshadowed by it.

While later reflecting on the visit, I saw the same old cultural conflict—that of user needs versus developer needs—in a little different light. Yi Kuo and I agree that developers' needs to bring out new products do not always coincide with their customers' abilities, or even their desires, to adapt the technology to their work. Developers must sell new units and upgrades to pay the bills and attempt to satisfy their investors and employees, after all. Autodesk needs Revit and Inventor to achieve ever larger market shares. Users, while wanting to take advantage of the new technology, have other pressures that can slow or defer that growth.

As an 18-year veteran of AutoCAD and other Autodesk products, I've seen a refreshing and progressive growth of Autodesk's willingness to listen to its customers and become more familiar with how their products are actually used. This contrasts to the elitism exhibited by some of the "high-end" software vendors I also deal with in my work. "Hire smarter people," one told me when I remarked about how difficult his product was to operate.

Well, the field trip is over. Next time we'll get back to some nuts and bolts of CAD management.

John Clauson is CAD Manager at Indak Manufacturing Corporation and President of AUGI.

Implementing Autodesk Revit in Your Design Process

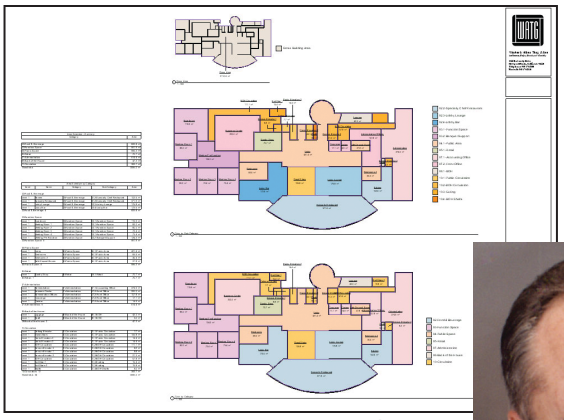
Case History Q&A

A real-world view of Autodesk Revit, from training to implementation to production

Autodesk's proclamation last year of Revit as its building modeler of the future has meant an inevitable, possibly agonizing appraisal for every design firm worldwide that has relied on AutoCAD or Autodesk Architectural Desktop to produce designs and documentation. Revit has perceived advantages and shortcomings compared to AutoCAD-based design tools and methods. When, and more critically how, to embrace this change—for those firms resolved to keep their competitive edge—may prove critical issues in the next few years.

Revit has a small (compared to Architectural Desktop) but rapidly growing user base. Nearly all those firms or designers moved from some other design application to Revit. Implementation of this new modeler is a hurdle they successfully negotiated.

Jim Balding is AUGI's Revit Product Chair and an architect with Wimberly, Allison, Tong & Goo (http://www.watg.com). Since forming in 1945, WATG has worked in more than 130 countries and territories across six continents. From its offices in Honolulu, Newport Beach, Los Angeles, Seattle, Orlando, London, and Singapore, WATG's 300 professionals are currently working on projects in 50 countries. WATG is the #1 design firm in the world in the hospitality/leisure and hotel/restaurant sectors, according to annual surveys conducted by *World Architecture and Hotel Business* magazine. Jim has spoken at several conferences, most recently Autodesk University 2002, on the topic "Implementing Revit in Your Firm." In this Q&A interview, Jim discusses his experience with Revit on various projects.



Revit creates room separations (equivalent to ADT spaces) and room tags readily, with or without walls. Room information supplies quick, customizable and smart (bidirectional editing) color fill plans and schedules.

AW: What is WATG's average size design team for a typical project, if there is such a thing?

JB: Small project teams can run from one to four members, medium size from three to eight, and larger projects can use as many as 25 people.

AW: Why Revit?

Jim Balding, AUGI's Revit Product Chair and an architect with Wimberly, Allison, Tong & Goo (http://www.watg.com).

JB: While we evaluated many other products including Autodesk Architectural Desktop, Palladio, Triforma ArchiCAD, and others, we had

not found a solution that fit our needs until we found Revit. We have been involved with Revit since October of 1999, when it was known as Charles River Software and still in a pre-release state. We have known that they had a great product since that time and we have been waiting for its maturity since then. Some of the key factors in our moving ahead with the product are the fact that we believe we can now make use of—save time and money with—Revit's coordination, communication, and ease of use. We worked out some of the issues and internal bugs on a few pilot projects and developed an implementation strategy. We are currently implementing the use of Revit firm-wide.

AW: Was anyone in your firm experienced with Revit when you first decided to use if for a team project?

JB: Nobody other than myself… at least not enough to say they were experienced users, or even "comfortable," for that matter.

AW: When you decided to use Revit for a first project, did you contact Revit/Autodesk for training and support?

JB: Yes, they supplied an implementation specialist on two occasions for one week each.

AW: How much training did the first project team or teams receive and how much of this training came from Revit/Autodesk personnel?

JB: We had a run of pilot projects. For the first five pilot projects, formal training totaled zero hours. Our current implementation strategy includes 24 hours of training at the first level and 16-24 hours at the second level.

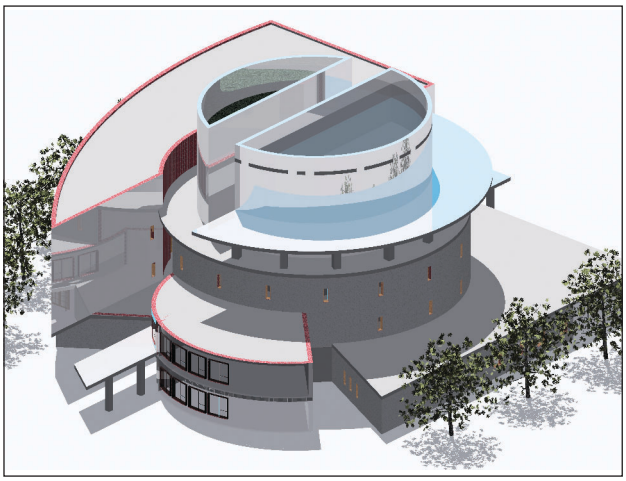
We had support on two of our pilot projects before the Autodesk acquisition, so in round numbers, training from "outside sources" totals about 10 percent.

AW: Was additional training conducted by experienced users in your firm and how much was "self-taught" through tutorials, online seminars, and the like?

JB: About 85 percent of the training was provided by fellow users and another 5 percent came from other learning and training resources.

AW: Okay. So, looking back, was this amount of training enough for a first trial project?

The model for this image of a hotel project was created in Revit and exported to Autodesk VIZ for rendering, with touch-up in PhotoShop.



Yu Hong, a designer with six years design experience and seven years CAD experience—and just three days training in Revit—produced and rendered this model in Revit as a first training project.

JB: Looking back I would say no—and we have since changed our direction. We tried to use on-the-job training as our original model. It worked well in some cases but it is not the best way to go, as we are finding out. Revit is a very comprehensive program and formal training is a must.

AW: Which areas did most of this first team struggle with when using Revit on a live project?

JB: Conceptual issues, views, realizing 3D implications, learning a new interface, the change in process and workflow from our traditional AutoCAD methods.

AW: Which areas did most of this team find easy when using Revit?

JB: Of course there were different cases for each trainee, but for the most part once they got the hang of the interface there was not too much they couldn't grasp. Walls, doors, and windows were generally a slam-dunk for most.

AW: Did the personality of team members make a difference in their ability to use Revit successfully in this first project?

JB: Interestingly enough, there was not too much difference in team members' ability to grasp the ideas and concepts. The people that had experience in 3D design in the past were certainly ahead of the game when it came to Revit.

AW: Did the CAD experience level of the first team members make a difference in their ability to use Revit successfully?

JB: This too was interesting; I was pleasantly surprised by the fact that some of the non-CAD users were picking up some of the concepts better than the full-time CAD users. I liken it to the fact that a number of the full-time CAD users were trying to translate the concepts from AutoCAD, and the non-CAD people were not. For example, when it came time to add a wall, the non-CAD people looked for the wall tool while the full-time CAD people may have been initially thinking, "draw a line and offset 5 or 6 inches."

AW: Did you have specific goals for this first team project? Were these goals met?

JB: Yes, our goals were quite high—a full 3D design development package. And for the most part, team members felt that they reached their goals on the project.

AW: Were there any specific goals they felt they failed to reach?

JB: Not exactly; when we got the ball rolling we added several new goals and some of those were not realized.

AW: Were there any specific goals that team members felt they surpassed (interim deadlines reached early, for example)?

JB: Yes, on two projects in particular there were numerous design and owner revisions and we were able to keep pace and provide all of the standard architectural views along with the 3D views.

AW: Were the team members on balance satisfied with their experience with Revit?

JB: Yes, I believe so.

AW: Were there any team members that did not want to continue using Revit, either during or after the first project?

JB: We have had one project that was converted to AutoCAD after the schematic design phase. I was not able to put my finger on any one reason; however, I will say that the designer is still encouraged and wants to continue using Revit in the future.

AW: Now let's turn to management's view of Revit. Did your company's management feel the first team reached its goals?

JB: Well, management is a large animal, but the consensus is yes.

AW: Were there any team goals that management felt the team failed to reach?

JB: Not anything in particular. I think they are just beginning to understand the implications of using Revit as a viable tool along with the designers. There have been cases where tasks might take longer to do in Revit than vanilla AutoCAD, and at the time that is a little frustrating. However, they are now enjoying the downstream benefits. In other words, they are beginning to see the return on investment.

AW: Does management feel that the team worked more efficiently on any aspects of the project as a result of using Revit?

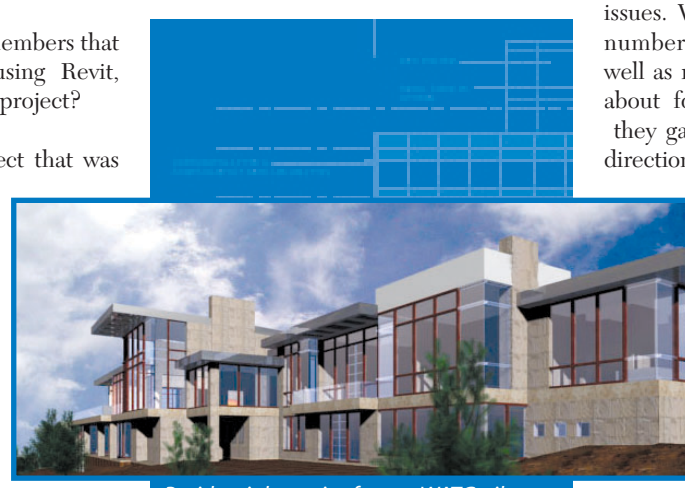
JB: Yes. Several areas have proven to be very efficient.

AW: Does management feel that the team worked less efficiently on any aspects of the project as a result of using Revit?

JB: Some. There is a trade off when you are creating a smart 3D model versus dumb 2D lines. These are investments, and like any investment, they don't all pay off. In the case of Revit, we feel a large majority of them do.

AW: Do you think that this loss of efficiency was due mostly to unfamiliarity with Revit?

JB: Initially, yes. Learning a whole new platform as comprehensive as Revit is a daunting task and naturally people are not going to be as effective initially as they will be in the future. We now understand and expect that. On the other hand, there is an investment in time to make the model smart, so even down the line we expect that there may be a "perception" of inefficiency and we will need to monitor and mitigate that.



Residential exterior from a WATG pilot Revit project.

AW: Was any part of the perceived inefficiency due to resistance on the part of the team member(s) to using new software?

JB: Some people that are very comfortable with AutoCAD commented that they could "do this twice as fast in AutoCAD." I like to point out that that this is a different process and is not necessarily single-task oriented. There are downstream efficiencies when using Revit. Of course, like any other significant change, you are going to meet resistance and have your naysayers.

AW: Was any part of the perceived inefficiency due to bugs/problems with Revit itself?

JB: Yes. There were a few occasions where this was the case.

AW: Have you spoken to Autodesk about the problems?

JB: Oh yeah, Autodesk knows about them. I have not been afraid to fire off our issues. We talked to Revit's developers a number of times preacquisition, as well as recently, and they were very good about following up. For the most part, they gave us workarounds or a different direction to take to solve the issue. On occasion, we had to wait until the next release or build for a fix, but then the problem was fixed. There has not been any direct software problem that has killed a project. I haven't seen a major difference in support after the acquisition, and that is very much appreciated.

AW: Did your office CAD manager have any input before the first Revit project?

JB: Not on the first few. He is on board with us now. Our company uses CAD "guidelines" rather than strict standards, and he is satisfied with the way Revit fits in.

AW: Did your office CAD manager like the results of this first Revit project? And what does he think about using Revit on future projects?

JB: Yes, he was satisfied with the results from the initial project. As for Revit's use on future projects, I would say he is cautious but encouraged.

AW: Have these pilot projects had any influence on your decision to make greater or lesser use of Revit?

JB: Yes, definitely. We are dedicating a great deal more resources towards our implementation goals this year.

AW: Is your firm moving forward with implementing Revit in your office on other projects? What about implementation in other offices?

JB: Yes, we are moving forward with Revit implementation in all offices.

AW: How are you handling the training requirements for new Revit users?

JB: I am handling the training at each office initially, and expect to have a "champion" in each office soon.

AW: What is the largest project—measured in approximate gross square feet—your company has designed using Revit?

JB: Our Revit projects have run 20k to 250k square feet., with varying levels of detail and completion. We are currently using Revit in a very limited role on a 700,000 square foot portion of a 3.2 million square foot building.

AW: Have you had to keep design projects in AutoCAD/Architectural Desktop/ Microstation because the model files would be too large for Revit?

JB: Yes, our average project size is 300k square feet, and we are not going to implement Revit fully on the larger projects. We do intend to use Revit, in one way or another, on 51 percent of our new projects this year.

AW: Has the use of Revit resulted in any changes in the makeup or project tasks of design teams in your office?

JB: Yes, we are still trying to get a grasp on all of the changes, but they are definitely there. Things such as division of work, worksets, concepts of 3D design, etc.

AW: Can you speak to principals or managers considering implementing Revit in their firms—citing things a company must definitely do to facilitate the implementation?

JB: I gave a lecture on this topic at Autodesk University, so I could go on for a while. First of all, training from a qualified instructor is a must. In addition to training, keep it simple and conservative, set goals and objectives that are realistic and build from that. Don't expect a home run on your first project. You didn't learn and implement AutoCAD, MicroStation, or any other CAD platform, for that matter, overnight. Be patient, yet prudent.

AW: How about things a company must definitely avoid?

JB: Fast schedules with anxious clients and complex geometry. I guess that would characterize most projects these days. Definitely avoid the temptation to do everything on the first project. Again, you need to set reasonable goals for each project. It should go without saying but I will—don't put your largest, most complex project on Revit with 15 untrained people.

This interview was conducted by Christopher Fox for Augiworld *magazine. Christopher is currently writing a book on Revit for Autodesk Press, tentatively titled* Introducing and Implementing Revit 5.1, *scheduled for release in late summer or early fall 2003. He is soliciting information from firms that have made efforts to implement Revit so he can include case history information in the book. If you would like to participate by answering a few survey questions similar to those in this article, please email him at lcfox@archimagecad.com.*

An Inside Look at AutoCad 2004

⟩⟩By the time you read this, the newest release of AutoCAD has already been used by thousands for a number of months—both in beta testing and first-customer-ship users. Should you consider adopting this next big 'R'? Well, I hope to aid you in answering that question by exposing some of the great features and a few flaws found in AutoCAD 2004

The BIG picture

A decent review of any application should contain an image of the new user interface (UI). Figure 1 does just that, showing the default screen after a new install. Except for the white background (default is black), this is what you get.

You should easily notice the toolbars in the main drawing area. Autodesk has included the star applications found in the AutoCAD Express Tools volume 1-9. After you install AutoCAD 2004 just be sure to install the Autodesk Express Tools as well. There are a few tools they left out, and a few that have been put into the core program such as REVCLOUD. But regardless, having to purchase extra tools to round out your operation should be greatly reduced.

Something else to note is the fact the most of the toolbar icons have been visually enhanced. In most cases I like the changes—the new icons are more attractive and easier to recognize. I do take issue with the MATCHPROP image. A skinny paintbrush is just not what I am programmed to recognize.

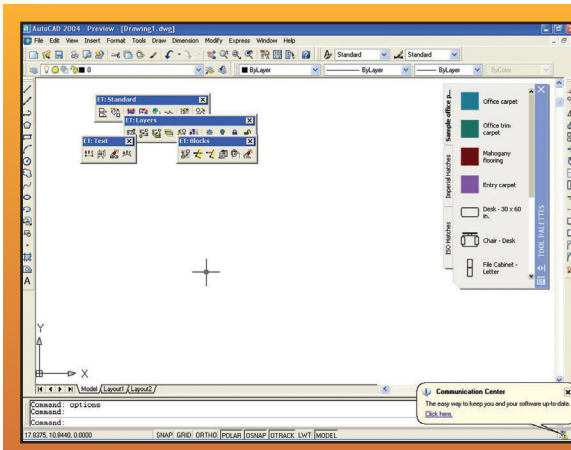


Figure 1: *The default screen after installation*

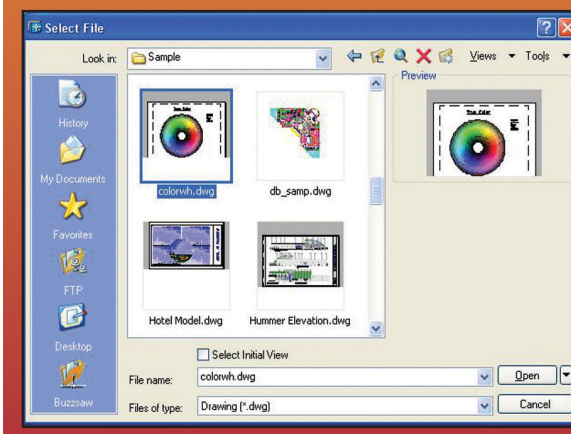


Figure 2: *The new Open dialog is clean and speedy*

Another negative that users should prepare for is that the menu files are not downward compatible. If you have a custom menu you want to share with AutoCAD 2002 you will not be able to. Of course AutoCAD 2004 will read AutoCAD 2002 menus, but once AutoCAD 2004 gets hold of it the newly compiled files are then incompatible. But I'll pair this with a plus: AutoCAD 2002 and 2004 can exist side by side on the same machine. You can ease into the upgrade as time permits rather than taking the leap all at once.

Here Today, Gone Tomorrow

A pleasant surprise most will enjoy is the banishment of the Today interface. It is gone, and in its place a clean Open dialog where you can see thumbnails of your drawings or browse around via the side bar. Refer to figure 2 for the new Open dialog. Additionally, thumbnails are available in standard Windows explorer dialogs (you need IE6)—very handy.

Paint on Your Palette

If you have heard about any new feature in AutoCAD 2004, it is undoubtedly the Palettes. Figure 3 shows this new UI. Although intriguing, I found this feature to be of little value. Autodesk did not embellish it with any programming ability. Its sole use is swatches of hatch and block insertions. Cool, yes, and way better than dealing with image dialogs in your menu, but it is limited. I would love to be able to control block scales at insertion (maybe 2006?).

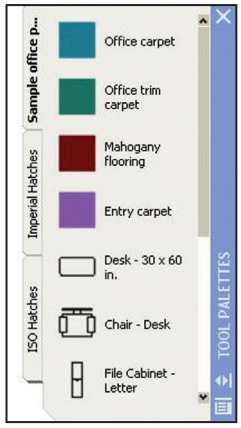


Figure 3: *The new Palette dialog allows quick and organized blocks and hatches*

A neat additional feature is the ability to control the background visibility of the palette. That way you don't have to block your drawing objects behind this floating dialog. Of course, you can dock it as well. You can also control the transparency of the command bar dialog if you make it floating. And making these palette buttons is easy—you can just drag them from DesignCenter.

You Gotta Write

The bane of many, MTEXT, gets a refreshing facelift as well as improved UI. The focus of the change is a frameless editor. Figure 4 shows this new dialog. Don't be dismayed because it really is easy to use. The editor also acts accordingly; it can mimic the actual MTEXT object behind the dialog if the size of the text is reasonable with regard to the current display. It will also show surrounding objects in the frameless editor. Another new feature is the support of Tabs and Indents! Be still my heart. Similar to other Windows applications, set up your tab stops and line up your text as needed. But wait… if you need to adjust the spacing of the paragraph you'll have to use the Properties command—that feature is no longer in the Mtext editor.

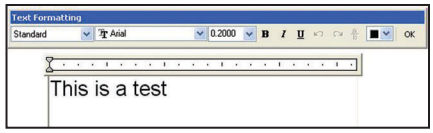


Figure 4: *The new frameless Mtext editor*

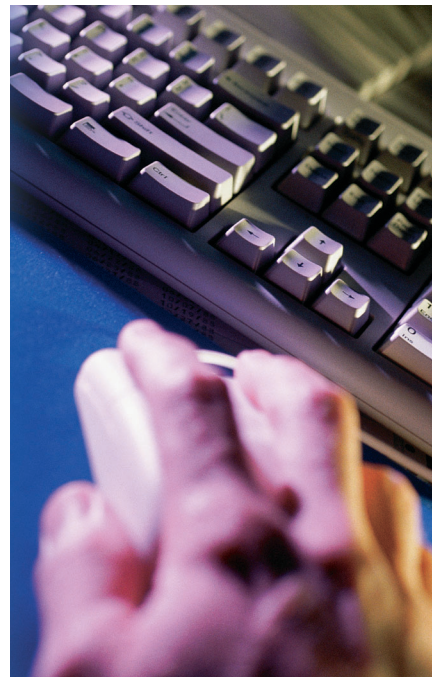
Redo That Undo

A feature most will not admit to depending on is UNDO. Well, now both UNDO and REDO commands have a history (other than frustrating). Check out Figure 5 showing multiple items that you can select in one command sequence to run at once. REDO operates the same way—fast.

Figure 5: *Undo and Redo have multiple selections*

Do You Want to Turn It Into One?

Any long-time AutoCAD user knows this prompt. PEDIT of course! Well, with the new PEDITACCEPT system variable you can kiss this goodbye. Any time you want to PEDIT a compatible non-polyline object, this prompt will not stop your train of thought.



All the Colors of the Rainbow

A number you will need to move past is 256. With AutoCAD 2004 and the HSL and RGB color selections, you can develop drawings that really pop with color. As you can see in Figure 6, you can go nuts tweaking out that perfect shade of grass. And to top it off, you can tap into professional color books if you are really that artsy!

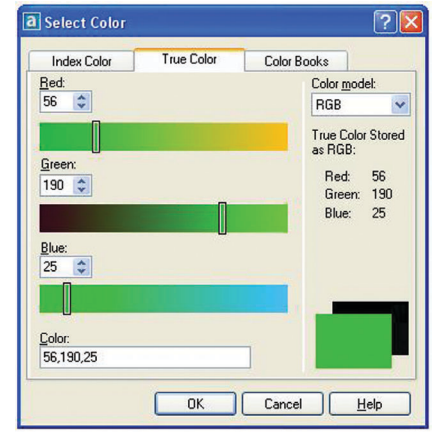


Figure 6: *The Color selection dialog is fully customizable*

Gradual Hatching

Once Autodesk gave us great color, the next desire would be for gradient hatching and that has been met wonderfully in AutoCAD 2004. Check out Figure 7 for all the crazy ways you can gradient a solid fill color for your next big presentation.

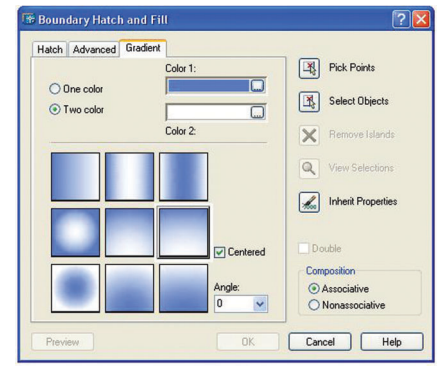


Figure 7: *The new gradient hatch option*

Pretty Plotting

After working like mad to get beautiful drawings and 3D models, with the new Shaded Viewport option in the Plot dialog you can actually plot these from within AutoCAD 2004. Now what you see in AutoCAD is what you get. Wow!

AutoCAD 2002 and 2004 can exist side by side on the same machine. You can ease into the upgrade as time permits rather than taking the leap all at once.

Speed Demon

Although it won't seem like a big deal, the new AutoCAD 2004 dwg format is around 50 percent more compact than AutoCAD 2000 and loads faster. Your drawings now are more reasonable in size, making "zipping" more of a packaging task than a disk saver tool. But I'm also calling this a negative. Folks using older AutoCAD versions will not be able to read your files, so you'll need to be careful. You can set Options to Save as 2000 and that works for general AutoCAD. But be warned—SEND, REFEDIT, WBLOCK all leave the drawing in AutoCAD 2004 format, which won't be readable.

Reference That Drawing

Those that love Xrefing drawings will be pleased to learn of a number of enhancements in this department. First off is AutoCAD's ability to notify you when an attached xref is changed. See Figure 8 for a sample. But it doesn't end there—the Xref Manager has an option to allow you to open an xref drawing as soon as you exit that dialog. Autodesk also provided this ability at the command line via the new XOPEN command.

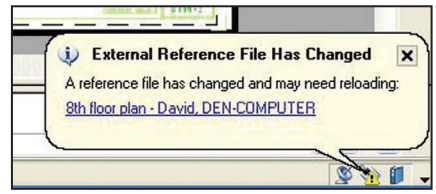


Figure 8: *The notification when an xref changes*

But there is more. Figure 9 shows a function for controlling the path stored when you xref a drawing. If you set up drawings and struggle with redefining your paths afterwards, this will help a lot.

Figure 9: *The Path control in the Xref Attach dialog*

This and That

AutoCAD 2004 has more new features and enhancements than space allotted for this article. So I'll just blast through more highlights, quick and concise. This is still not 100 percent of it.

REFEDIT: You can automatically allow editing of all xref objects or just select what you need. You also can lock objects not in your working set of objects.

PASSWORD: You can password-protect drawings. Best not forget your password though. You also can use Digital Signatures for your drawings.

COMMUNICATION CENTER: Autodesk removed Today and provided a little link in the corner (see the dish icon in figure 8) that allows live connections with Autodesk for keeping your system up to date.

CAD STANDARDS and **PUBLISH** extensions are now embedded in AutoCAD 2004. No separate load is needed.

STATUS BAR: You can now choose to turn off the buttons you don't need.

DISPLAYORDER: It now remembers and saves your changes with the drawing.

FILLET/CHAMFER: These commands will now repeat after the first use.

HIDDEN LINES: Something neat and new. You can now have your hidden lines look like dashed lines rather than just not being there. Way cool!

QNEW: A fast way to start a new drawing. Simple and easy.

NETWORK DEPLOYMENT: The AutoCAD License Manager has been updated and new tools have been provided to ease the initial setup as well as updates later on. This is paired with a License Borrow mechanism to allow short-term, off-LAN access to AutoCAD.

Final Thoughts

Hopefully this brief article has exposed what you need to know about the 18th version of AutoCAD. In aggregate, this release is chock full of great features and well worth the upgrade headaches. Although the key to any upgrade is making sure to take advantage of the new features!

David J. Harrington is an AUGI member, freelance writer, and author of Inside AutoCAD 2002. *Using AutoCAD in a production environment since 1987, David works for Walter P. Moore and Associates – Consulting Engineers in Tampa, Florida. David is the creator of REVCLOUD, a popular Express Tool. He can be reached at dharrington@walterpmoore.com.*

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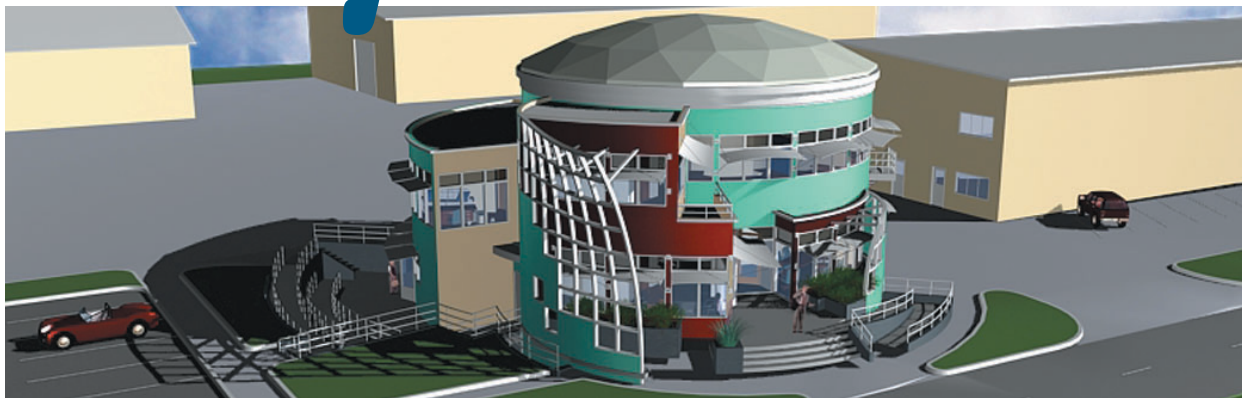

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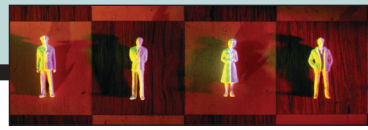


Excerpts from the Guilds, AUGI's online support forums

From the Programming Guild

Seeking Info

Q: I have a small problem that I can't seem to figure out. I have a block in an xref. Within that block, I have placed some xdata. But I can't seem to get the information that I am looking for.

A:

```
;;XREF as the name of the xref and APPID
;;Is the Application ID for the xdata.

(defun XREFXDATA (XREF APPID)
 (setq OBJ
  (vla-item
   (vla-get-blocks
    (vla-get-activedocument
     (vlax-get-acad-object)
    )
   )
   XREF
  )
 )
 (setq ENAM (vlax-vla-object->ename OBJ))
 (print (entget ENAM))
 (setq ENAM (cDr (assoc 360 (entget ENAM)))
 )
 (while (setq ENAM (entnext ENAM))
  (if (cdr (assoc -3 (entget ENAM (list APPID))))
   (progn
    (print (cdr (assoc -3 (entget ENAM (list
APPID))))))
    (getstring)
   )
  )
 )
)
```

From the GIS Guild

Rotation Issues

Q: I have a road which runs east to west but I am showing it rotated in my plan (in paper space) left to right—therefore it has been rotated 180 degrees.

The problem I am having is that my line label (with bearings and lengths for the traverse) are upside down and I need them to be shown upside down in model space so that they will be right side up in paper space (get me?). Does anyone know how I can do this and still maintain the dynamic properties of them?

A: One simple (and untested) approach would be to define a text style with upside-down text and from that define a label style.

Importing Surface Data

Q: Does anyone know if it is possible to import surface data from an aerial company into LDD 3 directly?

A1: You can generate a TIN from the contours on the aerial. This is done in the terrain model explorer under the tin data pull-down. All that you have to do then is click on the contours in the drawing, and each of the vertices (grips) on the drawn contours will be treated as survey points to build the surface. This is how I've been doing it for quite a while, and I've yet to run into any problems with it. To look at a screenshot of what I mean, visit: http://www.hanovereng.com/screenshot1.jpg

A2: Our mapper sends two dwg files—one with contours and details, the second with the dtm info—points and breaklines. Using the dtm file, I create the surface with the terrain model explorer, adding the points from AutoCAD objects (window all) and breaklines (proximity by polyline) and build from there.

A3: This is going to vary between aerial companies, but for the majority the answer will be NO, it will not import directly into LDD. You will more than likely be able to obtain all of the 3D items used for the modeling and creation of contours, but you will be on your own for a surface model. At least this has been my experience.

Pipes & Profiles

Q: In LD3, why must you have the profile in the cross-section drawing before you can draw the pipes into the cross-section? We do all of our profile in one drawing, and all of the cross-section in another drawing. All of the piping data is then done another drawing. The reason we do it this way is because of the different scales that we use. Can anyone help?

A: Open the profile drawing and at the command line type *attdisp*. The command prompt will then ask on/off/normal, type on. Zoom to the left bottom corner and find the attribute definition block. W-Block that out to a drawing, then open the cross section drawing and type insert. Once the dialog box comes up, select *browse*.. find the drawing you just w-blocked out of the profile drawing. Unselect insertion point, scale, and rotation, select *explode* and *ok*. This will allow you to do pipe works in a drawing that doesn't have the profile in it.

Flood Plain Plot

Q: I need to draw a line from a point at an elevation that will intersect the surface at the same elevation. I am trying to plot a flood plain using HEC-RAS water surface elevations. I need to draw a line from the center of my channel at the elevation HEC-RAS says the water surface is so that it will intersect at the right and left banks of the channel at the same elevation.

A: Create the centerline as a 3D polyline (with the Flood profile elevation), offset a distance farther than the widest width, and create a surface.

(FLOODING SURFACE)

Use earthworks to create a volume surface (COMPARE EXISTING TO FLOODING), and import the zero elevation contour of that comparison.

(FLOODING LIMITS)

Or I guess you could use the grading wizard to calculate it. (I haven't tried it this way yet… maybe next time.)

From the CAD Manager Guild

Why So Slow?

Q: I've wracked my brain and cannot find a solution to this problem. I have a user who has a Pentium 4 1.8gb with 512mb RAM and a 128mb graphics card. When they try to open a drawing that has the "display plot styles" page setup, it takes about three minutes to open the drawing. The drawing is only 1026kb. The system monitor shows the cpu usage at 100 percent for the three minutes. The same thing happens anytime he regens this drawing.

Here's the kicker: My measly Pentium 3 533mhz with 384mb RAM and a 32mb graphics card takes about 20 seconds to accomplish the same thing with the same drawing.

I have reinstalled AutoCAD and reinstalled the drivers for the graphics card. I'm puzzled…any suggestions?

A: I had a similar problem not too long ago and if the "DEFPOINTS" layer was frozen, the regen took forever.

Problem Resolution:

The original user submitted this follow up comment.

FYI, the solution was that a truetype font that was not installed slowed the regens down. After that font was installed, it runs fine.

From the VIZ Guild

Thrown Out of VIZ

Q:: When I try to render a view, the render window opens for a second and then I get kicked out of VIZ. I have been using VIZ for five years and this has never happened before. We currently use 3D Studio VIZ R3. Yesterday it worked; today it doesn't. I have rebooted, removed the hardware lock, and reattached it. I get no warning—it just sends me straight to my desktop.

A: Is it the same camera view that crashes? If so, try to render a different camera view. If it still crashes, try starting a fresh scene, create a box, and render. If the simple scene crashed, then there is a deeper problem with VIZ. I have had this happen once before. The solution I found (after the above mentioned troubleshooting), was to merge all the contents into a new file, and then render.

Problem Resolution:

The original user submitted this follow up comment.

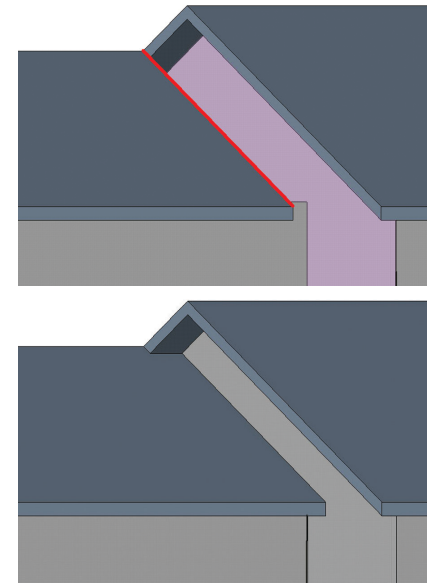
I think you are totally right. I started a brand new file, created a few shapes, it rendered just fine. I think my VIZ file is corrupt. I decided just to relink my CAD drawing to a new VIZ file and start over. I only lost about 1.5 hours of work. The merging idea is excellent, which I definitely would try if I had spent more time on my VIZ file. Thanks for the response. Nice to know that I am not alone with this problem.

From the Revit Guild

Roof Query

Q: How can I get my single roof to wrap around and under an adjacent/higher roof?

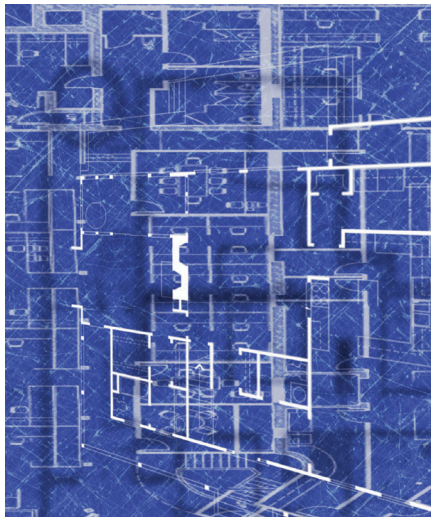
A: Many people are aware of the join roof tool, but few are aware that it also works to attach a roof to a wall. Refer to the images at right. To achieve the effect you are looking for, select the Join Roofs tool (from the toolbar or the tools pull-down menu). Next, you are going to select the roof edge you want to extend—highlighted in red. Then select the



wall you want to attach to— highlighted in purple (for clarity).

The Best of the Guilds is compiled by Beth Garrison, AUGI Board Member and newly appointed International Development Coordinator.

Autodesk Architectural Desktop Display System



Holy Displays, CADman!

Early in their careers, students are taught the traditional rules of architectural drafting. These rules govern such things as what a plan or elevation drawing represented, how to create one, and most importantly, what to include and what not to include in order to make a drawing "read."

The display system in Autodesk Architectural Desktop addresses this situation by incorporating the rules of architectural drafting directly into the software. Plans, sections, and elevations can now be generated directly from a single building model. This reduces a lot of rework and redundancy by requiring one set of objects with three different modes of display. The tools are flexible and fully customizable, so we can fully benefit from this powerful tool and still insert our own personal style into the process.

Display System Tool Set

The display system tool set in Autodesk Architectural Desktop (ADT) consists of a collection of interconnected components. It is important to understand the function of each of these components before you begin to work with the display system.

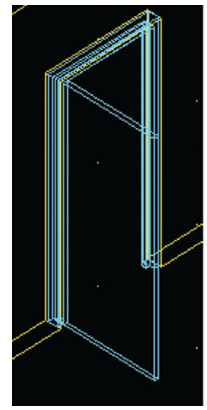
Object/Subcomponents

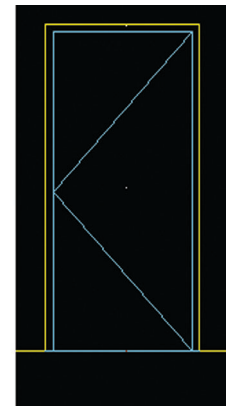
All ADT objects contain one or more subcomponents. These are simply the individual pieces of the object. A door, for example, has four Plan subcomponents: Door Panel, Swing, Stop, and Frame. The entire object will be assigned AutoCAD properties such as Layer and Lineweight, while the individual subcomponents may also receive their own individual property settings through ADT Display Properties.

Display Props

Display Props are the collection of display settings for a particular object. These include Visibility, Layer, Color, Linetype, Lineweight, LTScale, and Plot Style. These are applied as System Default, Object Style Override, or Object Override.

Every AEC object such as a door, a window, or a wall, can appear differently in different views and for different tasks. The Autodesk Architectural Desktop display system enables you to control how AEC objects appear when you are working with them at various design stages and when plotting.

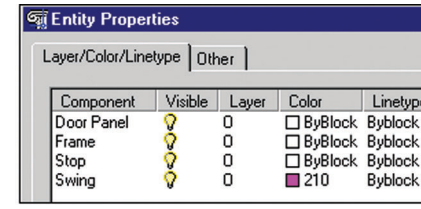


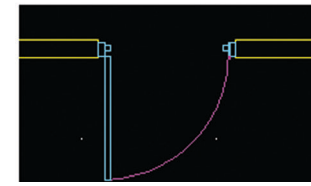


Within each display representation of each AEC object, you can modify the display properties of the object's components. You can choose to modify display properties for **all** instances of the object, for the object **style**, or for a **single instance** of the object in the drawing.

Objectives:

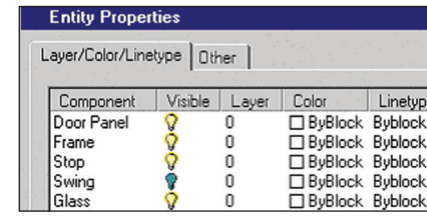
- Modify all styles of an AEC object.
- Modify all instances of one style of an AEC object.
- Modify one instance of an AEC object.



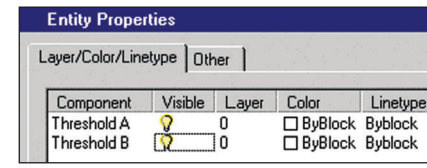


AEC Object Components

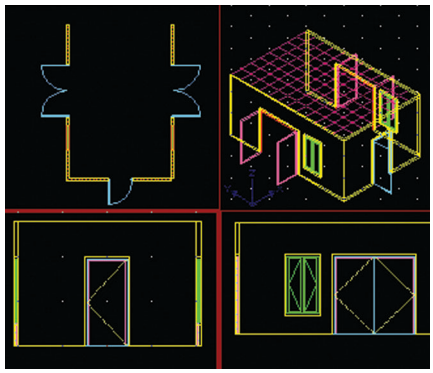
Each AEC object consists of named **components** that have specific display properties. The number of components may differ for different display representations. Door components in the Model display representation include door panel, frame, stop, swing, and glass.



Door components in the Threshold Plan display representation include only the inner and outer thresholds.



The appearance of these components can vary in different display representations of the object. You use the display system to control the appearance of an object's components in each of the object's display representations.

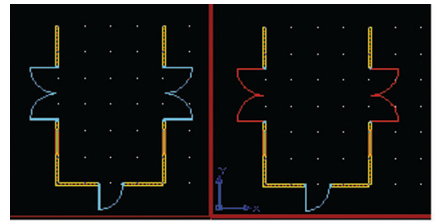


Display Properties

Display properties are the visual characteristics of the components of an AEC object. Each component has the following display properties:

- Visibility (on or off)
- Layer
- Color
- Linetype
- Lineweight
- Linetype scale

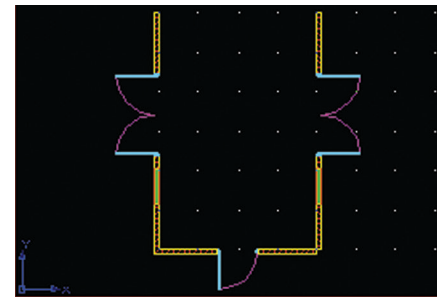
You can modify any of these properties for an AEC object in a selected display representation. Changes that you make to entity display properties for one display representation do not apply to other display representations. For example, you can change the color of door swings in the Plan display representation without affecting door swings in the Nominal display representation.



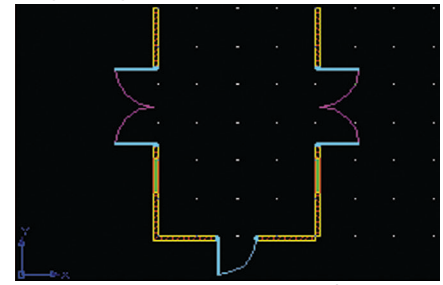
Editing Display Properties

Changes that you make to component display properties apply only to objects in the selected display representation in the current drawing. You can specify the property source for the changes to the object components:

System default: Changes apply to **all instances** within all styles of the object. For example, a change to door swings applies to door swings for all door styles in the selected display representation.



Style: Changes apply to all instances of the object style. For example, a change applies to door swings for double-hinged doors in the Plan display representation. Single-hinged doors are not affected.



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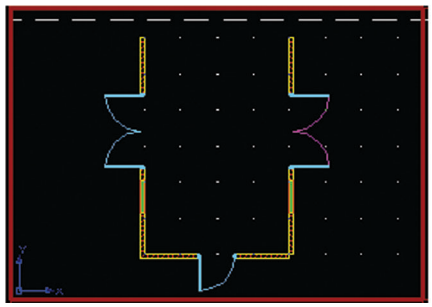
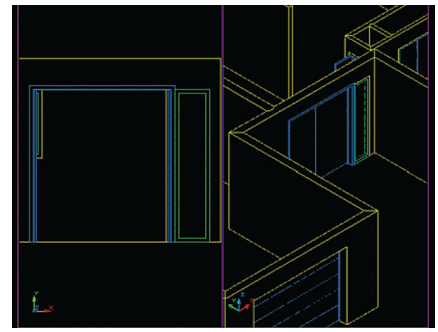
(continued from page 21)

Instance: Changes apply only to the selected object. For example, a change applies to the door swing for one double-hinged door in a drawing. No other doors, regardless of style, are affected.



Viewport and Display Representation

A good example of controlling Object Display is with viewport and display representation. In the left viewport, the display is set to the front elevation showing the front double doors open. (This is for example use only.) The right viewport is an isometric view with the double front doors shown closed.



Mastering Display Representation is key to objects that display, or "read," correctly or according to your personal preferences.

Keep the following points in mind when you modify the entity display properties of AEC objects.

- When you specify changes to an object using the system default as the property source, the changes apply to all instances within all styles of the object.
- When you use style as the property source, changes apply to all instances of one style of an object.
- When you use the object as the property source, changes apply to a single instance of an object

There is much more ground to cover in manipulating the individual display representations of the various Architectural Desktop objects. Stay tuned… Same CADTime, Same CADChannel!

Marv Muston (marv.muston@mto.infi.net) has worked for the past 28 years in the AEC arena. He is AutoCAD and Microsoft Certified. He is President of Marv Muston Consulting, President of the Sarasota Autodesk User Group, and Junior Vice-President of AUGI.

What's New in Autodesk Architectural Desktop 2004?

Fasten your seat belts…ADT 2004 takes you from Kansas into the Land of Oz with a sparkling interface that transforms architectural drafting from drudgery to delight

My favorite new features in Autodesk Architectural Desktop 2004

#1 Fully Customizable Tool Palettes — Boost Your Productivity

The first thing you will notice after you launch are the new tool palettes. These palettes are fully customizable, so you load your palette with your favorite walls, doors, and windows and the building components you use most often are always at your fingertips. Define your palette. Then simply drag and drop the desired component into your design (think the AutoCAD Design Center on steroids).

To instantly create a tool palette, open the standard Design Center. Highlight the folder with the desired components. Right click and select **Create Tool Palette**. It's as easy as that.

To add items to your palette, simply drag and drop from the Design Center or Style Manager onto your palette. To delete, simply reverse the direction of the drag and drop. You can also copy, cut, and paste objects from one palette to another.

Tool palettes use i-drop technology, so they can be posted externally—on an intranet, the Web, or the new Content Browser—and accessed via drag-and-drop functionality.

#2 New Transparency Options — Liberate Your Work Space

AutoCAD users who are still on Release 14 will turn green with envy with the new ability to apply transparency to the command line, opening up additional screen space. This has been on AUGI's wish list for vanilla AutoCAD. You can also apply transparency to your tool palettes to gain even more screen space. What's next? Transparent toolbars?

To make the command line transparent, drag it out of its docked position. Right click in the command line area and select **Transparency**.

#3 Digital Signatures — Secure Your Drawings

The bane of most AEC professionals' existence and a highly sought-after feature—the ability to add a digital signature to a drawing and then email it to a contractor. You can also add a time stamp and comment to the signature. Drawings with a digital signature display an icon in

Windows Explorer so they are easily identified. If you save a drawing with the digital signature, the signature is automatically invalidated, so there is some built-in security as well.

To add a digital signature to one or more files, simply access the program from the Start Menu (outside of ADT) or type **(DOS) AcSignApply.exe** at the command line.

The only downside is that you must obtain a digital signature from an outside source to use this new feature.

#4 Materials — Streamline the Rendering Process

OK, you probably are thinking AutoCAD has had materials for several releases now. But this is different. Now you can assign materials to components, like windows, walls, and doors. Once you define your wall style with the requisite material, you can perform a standard 3D Shade and see your model in a visually realistic manner. This really streamlines the entire design process because once you fully define your object's style with materials, you never have to use the old-fashioned Materials Library again. If you have created custom materials, they are easily ported over to the new Materials palette.

#5 VIZ Render — Rev up Your Rendering

Those users who work for the guy with cobwebs on his wallet will want to kiss their Autodesk reseller for this feature. You know the guy. He expects you to create "smoke and mirror" renderings, but he isn't willing to pop for a seat of Autodesk VIZ or 3D Studio. Well, the new VIZ Render allows you to create those wonderful renderings and save your boss the bucks. You still will need Autodesk VIZ or 3D Studio to create commercial animations, but for renderings that will knock their socks off, VIZ Render delivers. There is even a "Napkin Sketch" feature that transforms your rendering so it has a hand-drawn effect. You have to smile about a feature that takes a computer-aided design and makes it look like it was done the old-fashioned way with pen and vellum. VIZ Render comes standard with Autodesk Architectural Desktop 2004 for no additional cost.

#6 Death to Object Enablers — Export to AutoCAD

The reality is that while architects like to use Architectural Desktop, most of their consultants are still using vanilla AutoCAD. How many times have you emailed your ADT file over to the structural firm only to find that he can't read your drawing? With the new Export to AutoCAD feature, you can save your ADT drawing as a DWG file, making file exchange possible without the use of object enablers. This feature also has an option to append a user-defined prefix to each drawing for easy identification. If you use this feature, the file is compatible with AutoCAD 2000, 2000i, 2002, or 2004. You can batch process all the files connected with a project all in one shot.

If your consultant is still toiling away on Release 14, you will have to open the drawing in AutoCAD 2004 and save down to R14.

You can access this from the File Menu. Simply go to **File, Export to AutoCAD**.

#7 Thumbnail Previews in Windows Explorer — Drawings at Your Fingertips

You now can see thumbnail previews of your drawings inside of Windows Explorer. Simply browse to the desired folder and set the **View** to **Thumbnails**. Takes the guesswork out of locating your drawing files.

#8 Project Management — Manage Your Work

By default, the Project Manager is not visible, so this could easily become one of the best-kept secrets in Autodesk Architectural Desktop 2004. So let me clue you in. Type "AECPROJECTBROWSER" on your command line to launch this new tool and prepare to take control of your work.

The Project Manager allows you to enter into all the information about your project including contact information for any consultants working on the project, templates to be used, and all the files. You can even open files from the Project Manager.

If you fall in love with the Project Manager (and you will), you can set it up so it is available upon start-up. Go to the **Format** menu, and click **Options**. Then select the **AEC Project Defaults** tab. **Enable Show Project Browser at Startup.**

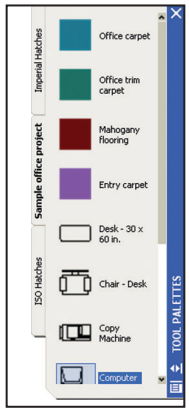
Elise Moss (elise_moss@mossdesigns.com) has worked for the past 20 years as a mechanical designer in Silicon Valley, primarily creating sheet metal designs. She has written articles for Autodesk's Toplines *magazine, AUGI's* PaperSpace*, DigitalCAD.com and Tenlinks.com. She is President of Moss Designs and an AUGI board member.*

AutoCAD 2004 – Tool Palettes

With its new features and enhancements, AutoCAD 2004 is the most productive AutoCAD ever, and the Tool Palettes window is one the fabulous new features of AutoCAD 2004. Tool Palettes—as defined in AutoCAD online help—are tabbed areas within the Tool Palettes window that provide an efficient method for organizing, sharing, and placing blocks and hatches. This article focuses on various capabilities of Tool Palettes and methods for mastering them.

Using Tool Palettes

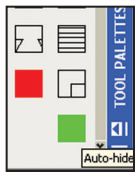
To enable Tool Palettes, invoke TOOLPALETTES command. You can enter TP in command line, press Ctrl+3, or click the new Tool Palette icon on the Standard toolbar. The Tool Palettes window will appear.



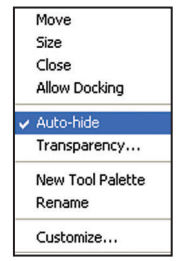
The window consists basically of three tabs. On each tab you can find a list of some hatch patterns and blocks. To insert a block, simply click the block icon on the palette and then specify the insertion point in the drawing area. You can enter r or s at command prompt to change the default rotation angle or block scale respectively.

To fill areas with hatches, click the hatch pattern icon on the tool palette and then pick a point inside the closed area. If the hatch specifications are not satisfactory, double click the created hatch and change the parameters in the Hatch Edit dialog box.

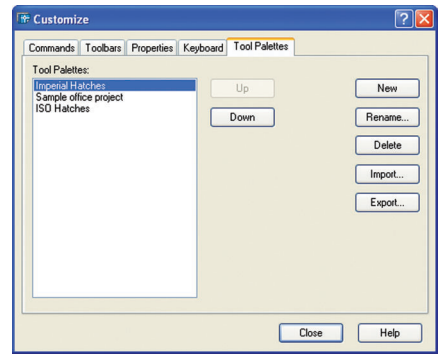
Managing Tool Palettes



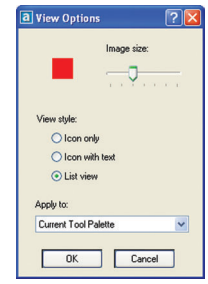
The appearance of Tool Palettes window can be controlled in different ways. With Auto-hide enabled, if you move the mouse pointer outside the Tool Palettes window area, the window minimizes to its title bar. To enable or disable this feature, click the Auto-hide icon on Tool Palettes window title bar.



Click the Properties icon, located just below the Auto-hide icon, to view the properties menu. The menu contains some useful options. For example, Transparency controls the transparency of the window. If the window is transparent, you can view the objects that are located beneath it.

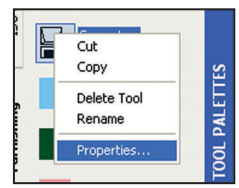


The Customize option enables the Customize dialog box. With this dialog box you can eliminate the selected palette or add new ones. The acceptable palettes are saved as XTP files and can be added to the window with Import button. To create an XTP file, select a palette name in the list and then click Export.

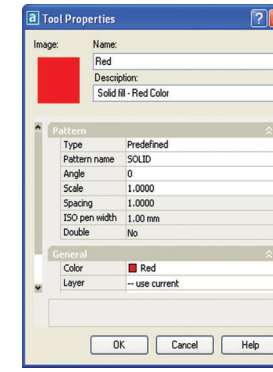


The View option uses a dialog box to control the size and arrangement of tools in the tool palettes. The dialog box can affect the current tool palette or all of them.

To control a tool, right-click on it, and select the proper option from the menu. For example, to move a tool from one palette to the other one: right-click on the tool; select Cut; enable the other palette; right-click on an empty area and select Paste.



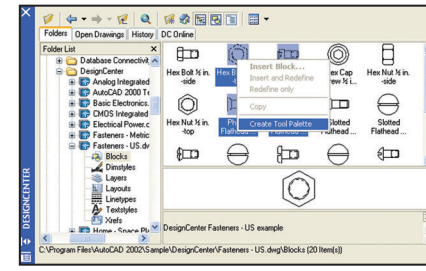
Select the Properties option to view the Tool Properties dialog box. Here, you can change some specifications of the tool, such as the color of a hatch pattern or the location of the source file for a block.



The available blocks in a Tool Palette will be extracted from the initially specified drawing files, so if you change the location of the source file the block cannot be inserted. You can use the Tool Properties dialog box to specify the new location of the drawing file.

Creating Tool Palettes

AutoCAD DesignCenter is used to create tool palettes. With DesignCenter you can locate the blocks in a drawing file. Select the proper blocks on the right pane. Right-click and select Create Tool Palette. A tool palette based on the selected block(s) will be created. Later you can assign a name to the palette.



If you drag and drop a block icon from DesignCenter to a palette, the block will be added to the palette as a new tool. You may even use the new DesignCenter Online feature to add tools to the palettes from the Internet. In this case, a drawing file will be created on your computer for later reference. You do not need to have access to the Internet for future insertions of the block. The location of the file is indicated in Tool Properties dialog box.

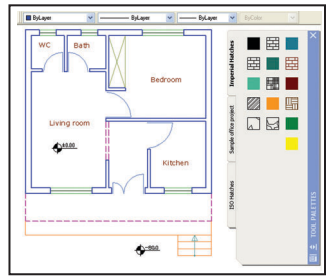
Adding Hatches

To add hatches, click on the Favorites button on the DesignCenter toolbar. You will see shortcuts to acad.pat and acadiso.pat on the right pane. Double-click on any of them and add the hatch or hatches similar to blocks. If you have your own pattern file you can locate it with DesignCenter and add the hatch.

Tutorial

Here's a quick little tutorial on tool palettes. If you have already installed AutoCAD 2004, download *tp-tutorial.zip* from the AUGI website at http://www.augi.com/education/publications/paperspace/psdownload.asp. Extract the file and follow the instructions below:

- Open Simple House Plan.dwg.
- Enable the Tool Palettes window if needed. Make sure that Allow Docking is not selected. Move the window to the right most corner of the screen.
- Click the Properties icon on the title bar or right-click on an empty palette space.
- Select Customize.
- In the Customize dialog box, click Import.
- Locate and import Furnishing.xtp. Close the dialog box.
- Right-click on block icons one by one. Select Properties. Alter the default scale to 1.5.
- Make the furniture layer current. Furnish the bedroom with the blocks. Rotate the computer set 180 degrees at the time of insertion.
- Make the wall layer current. Fill in the wall areas with light blue hatch. Select hatches. Select Display Order > Send to back from Tools menu to adjust the order of objects [Figure 10].



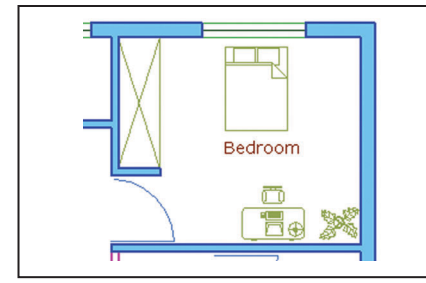


Figure 10

Alireza Parsai (alireza@khawarizmi.com) is a mechanical engineer and AutoCAD instructor. His major interest is AutoCAD customization techniques and he has used and customized every version of AutoCAD software since 1991. He has written several books and articles about AutoCAD in both Farsi and English. His English-language articles are published in PaperSpace, where he is a contributing editor.

Hint

Creating a Custom Structural Member in Autodesk Architectural Desktop—a Custom Column

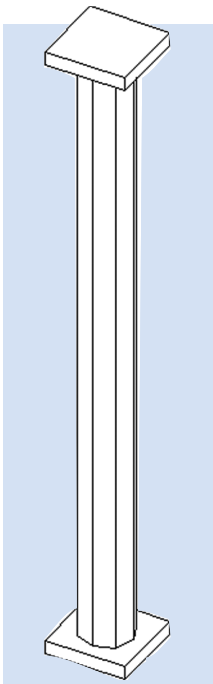


Figure 1

Our goal here is to create a custom shaped column with a different shaped base, column, and capitol. (Figure 1) It has a square base of 10" and a round column set to 8" diameter and a capitol of another 10" square.

The first things to create are the AEC member shapes to be used. If you create these shapes at a 1 unit base size, they can be used easily with a scale to make different size components. Create a 1 unit square and a circular polyline with a diameter of 1 unit. (The polyline can be created using the Arc option of the polyline command.) Then you use the command "-AecsMemberShapeDefine" to define the AEC member shape.

Command: ***-AecsMemberShapeDefine***

Shape [New/Copy/Edit/Purge/?]: ***n***

New style name or [?]: ***Square***

New style Square created.

Shape definition [Name/Description/Graphics]: ***g***

Shape [Sketch/DESign/DETail]: ***des***

Erase polyline? [Yes/No] <N>: ***y***

Select a closed polyline: ***(select square)***

Add another ring? [Yes/No] <N>: ***(enter)***

Insertion Point or <Centroid>: ***(enter)***

Shape [Sketch/DESign/DETail]: ***(enter)***

Shape definition [Name/Description/Graphics]: ***(enter)***

Shape [New/Copy/Edit/Purge/?]: ***n***

New style name or [?]: ***Circle***

New style Circle created.

Shape definition [Name/Description/Graphics]: ***g***

Shape [Sketch/DESign/DETail]: ***des***

Erase polyline? [Yes/No] <N>: ***(enter)***

Select a closed polyline: ***(select circular polyline)***

Add another ring? [Yes/No] <N>: ***(enter)***

Insertion Point or <Centroid>: ***(enter)***

Shape [Sketch/DESign/DETail]: ***(enter)***

Shape definition [Name/Description/Graphics]: ***(enter)***

Shape [New/Copy/Edit/Purge/?]: ***(Enter to exit the command)***

(continued on page 26)

(continued from page 25)

Once you have the shapes created you can use them to create a column style. Using the **Style Manager** you can go to the **Structural Member Styles** and create a new column style. Filling out the dialog box as shown in Figures 2 and 3, you can create this custom column. Figure 2 shows the column "**Start Shape**" section of the dialog box. Figure 3 will show you the "**End Shape**" and "**Priority**" selections of this column style. The thing to pay a lot of attention to is the "**Node**" settings because these will be used to help layout the column.

Now, an unusual part of this exercise is the creation a polyline that would run the center of the column. Start by rotating your UCS so that you can draw a 2DPolyline in the direction that the column would be going. To create a column with a 2" base and capitol and have a total length of 8' would mean drawing a vertical polyline with the first segment being 2" long the next segment being 7'-8" long and the last segment being 2" long. This polyline can then be converted into the column desired using the segments of the polyline to correspond with the "**Node**" settings of the column.

Under "**Design**" menu you will find "**Structural Members**" where you can slide through to get "**Convert to Column…**" where you will select the polyline. (Figure 4)

Command: ***_AecsColumnConvert***

Select lines, arcs, or open polylines to convert into members: ***(Select the polyline)*** 1 found

Select lines, arcs, or open polylines to convert into members: (enter)

Erase layout geometry? [Yes/No] <N>: ***Y***

You will then be presented with a dialog box where you can select the structural member style of column you wish to use for this column. (Figure 5)

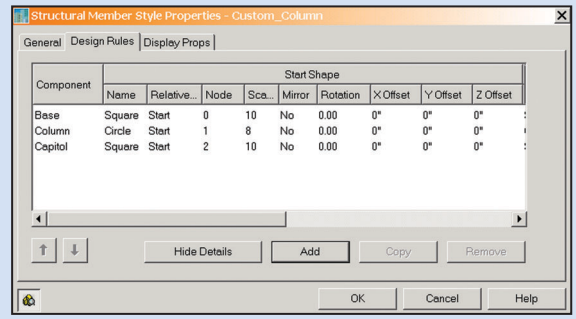


Figure 2

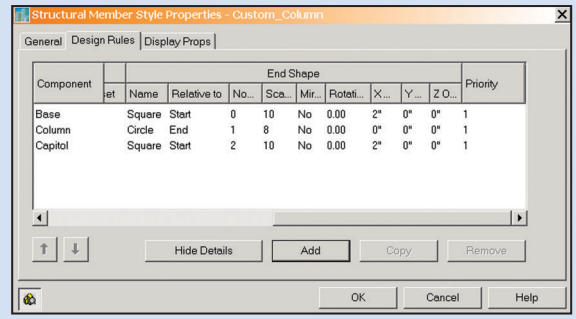


Figure 3

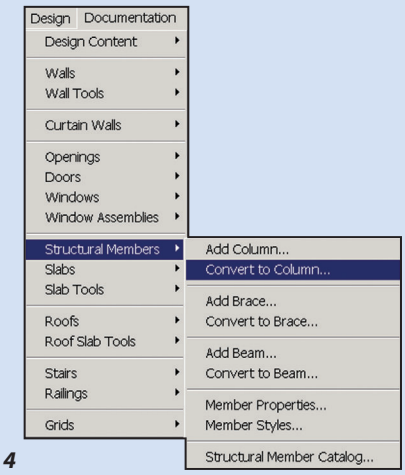


Figure 4

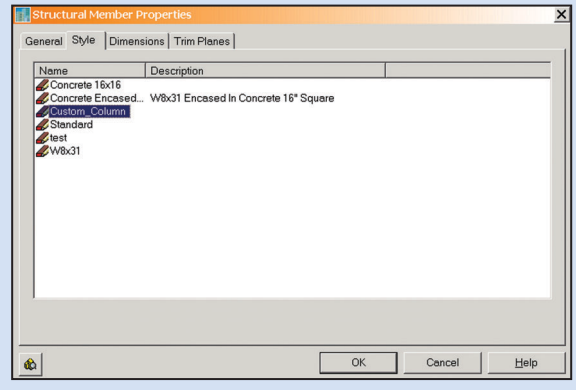


Figure 5

Let's take a look through the **Design Rules** tab to determine how you can manipulate your column. The **Component** designation can be what ever you wish it to be. Under the **Start Shape**, as well as the **End Shape,** you can set the **Name** which would be one of the AEC member shapes from the current drawing. The **Relative to** section will let you set the position of the shape relative to the start or end of the member.

The **Node** refers to the position along a member. A single segment — such as a line — would have two nodes. A multi-segment member, such as used in this exercise, has several nodes. The start node is referred to as "0" when designating nodes.

One reason for designing the AEC member shapes to have a shape of one unit — as the square — is so that the **Scale** can be designated easily here. **Mirror** and **Rotation** will manipulate the shape just as if you have used these basic AutoCAD commands.

The **X**, **Y**, and **Z Offset** will allow the AEC member shape used to be offset along the member path of the column. Hint: The X direction is along the path of the polyline drawn here.

The **Priority** setting of developing a column has to do with a miter that would be drawn between adjoining components. Components having the same priority would be mitered. So, if you have a circle that you wish to miter the shape from a square you could set them to the same priority.

You can apply these same rules to Structural Member Beams and Braces as well.

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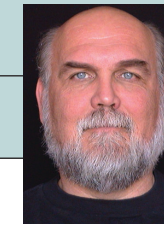

David Kingsley

War Stories

In my last column I invited everyone to contribute a story or paragraph about their own CAD history. Several of you did and I thank you. What surprised me was a common theme that ran through them about losing data in one way or another. I personally have never lost any data. I have also been very successful at selling real estate in southern Florida.

When I was "working on a mainframe" our CAD Tech's took care of backups for us. (Wasn't there a song? No, I guess that was "workin' in a coal mine"…). On a daily basis all of our data was backed up from the hard drive to nine-inch reel tapes. There were hundreds of those things hanging on rack after rack. Cataloging them was a serious responsibility because it was considered clearly unacceptable to lose data. I'm not sure what the capacity of each tape was, but it is probably laughable considering that today you can carry around a gigabyte in a space the size of your thumb.

However, our CAD operators did manage to come up with extremely innovative ways to lose data. I've covered this in an earlier column, so I won't go into too much detail. We had no established standards for naming files and more often than not there was no way to associate the name of a file with its contents. A lot of attention had been given to organizing the physical tape catalog, but almost none to the digital identity of the data. People spent days looking for archived files—often with no success.

A contribution from Denton Yoder of Roanoke, Virginia, reminded me of the old "removable disc packs," the first attempt at removable storage. Each disc pack had six platters stacked about an inch apart on one spindle, and was stored in its own sealed canister. To change them, you would open the top of the drive like a washing machine, reach in and pull out the pack. At that point you could touch the surface of the discs, but one speck of dust or oil on those platters meant disaster. Ideally, in one smooth move you would switch the packs and then reseal the drive and the canister immediately. You never left a raw platter exposed for long. Today this would be equivalent to disassembling your hard drive (by removing the shiny side plate that says "Breaking this seal voids all warranties"), removing the platter, and replacing it with another. Thankfully, we know better now.

Disc drives are still very fragile, and we'll never get away from plain old dumb moves. I was upgrading my motherboard, but keeping the old drive. The boot-up prompt said "No hard drive found" and I realized I forgot to plug in the hard drive cable. Without powering down the unit, I absently reached in to fix the problem. The instant I felt that connector seat, DOH!… it was not a hot swappable disc. I heard one big TICK and it was all over. That drive and all the data on it were permanently placed in the bit bucket.

An old friend, who shall remain nameless to protect the guilty, visited a vendor who made tiny electric motors that used samarium-cobalt magnets. You could not pry a dime-sized piece of it from a metal table with your fingernails. He tossed a sample into his briefcase along with all the floppy discs, and then mixed them up real good on the flight home. No more data on the floppies.

Another contributor, Eugene Marchetto, Morristown, New Jersey, related his experience as a novice who "accidentally" deleted some files. Here are his words.

"Due to my inquisitive nature, I wanted to learn about computers and see how things worked. I was having fun, pressing keys, and seeing file names that looked like GPS coordinates on Mars. I was feeling confident and decided to do some "computer maintenance." Within two hours, I had deleted about 300 AutoCAD drawings. As soon as I realized what I had done, I felt like my chest was caving in, and my face was flushing bright red."

I relate to his feeling of despair. Losing all of your data is not unlike learning of the death of an acquaintance. You were intimate with it, it was connected to your heart and mind, and it is now gone forever. You feel stunned and helpless, and then you get angry, usually with yourself. How many of you have screamed, "I would pay anything to get my data back!" Or "I had a CD-RW right here. Why didn't I use it?" Or "How am I going to explain this to my boss, client, co-workers, etc."?

In today's litigious society, this negligence could be grounds for legal action. Financial losses for all parties can result from it. I have signed contracts that made me responsible for my data loss. If you have ever worked for a week or a month for free just to get back to zero, you start to pay more attention to covering your assets.

Finally, a long time ago somebody said to me, "If it ain't backed up twice, it ain't backed up." This is truer today than it was then. There are numerous new forces threatening our data. It is becoming increasingly important to have multiple backups and to store them in multiple locations. I hope we all retire having never resorted to retrieving those second or third contingency backups.

David Kingsley is the creator of CADPlayer Streamed On Demand CAD Courseware (http://www.cadplayer.com) and currently serves on the AUGI Board of Directors. He can be reached at david.kingsley@augi.com.

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