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Member Product Review

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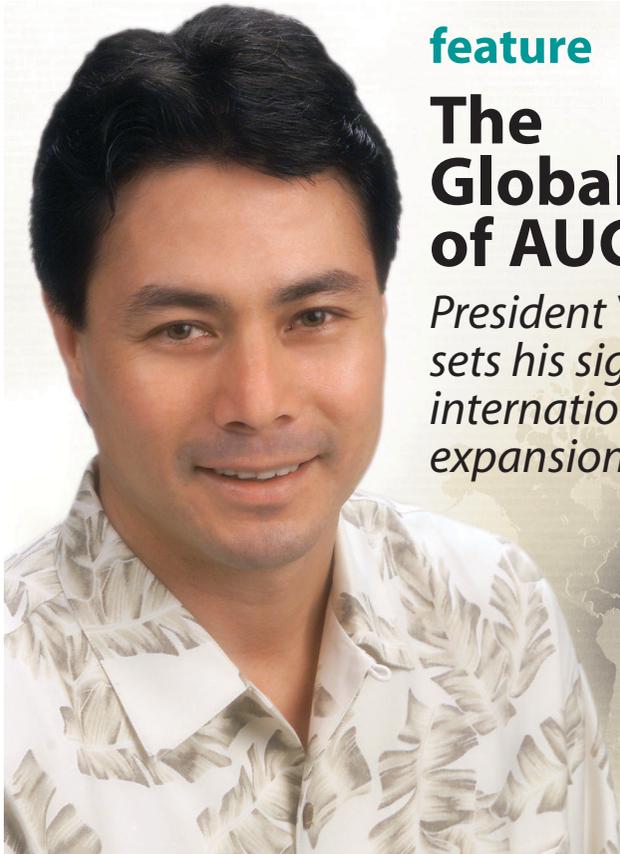
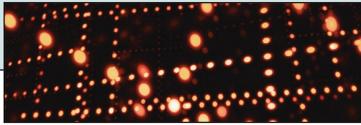
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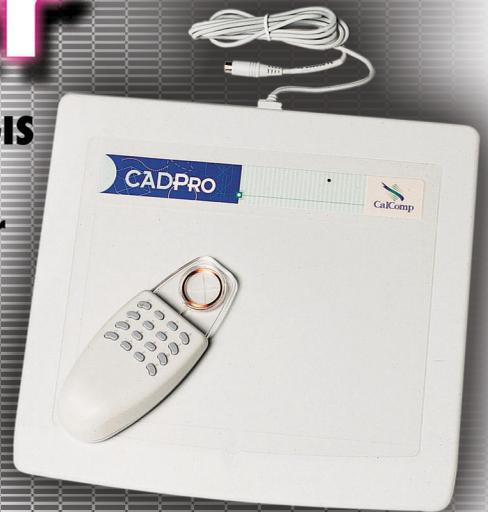
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# Augiworld News



## Autodesk University

**WHAT:** Autodesk University  
User Conference

**WHEN:** December 3 - 6, 2002

**WHERE:** Las Vegas MGM Grand  
Conference Center

AU is the premiere learning and networking event for design professionals. It's also Autodesk's largest annual tradeshow and it's specifically focused on your needs and interests.

### **Highlights include:**

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- \* The AU party is back! (Visit the AU website for details)

Whatever your skill level, you'll be re-energized by the vital new knowledge and progressive business strategies you'll gain. Since Autodesk University's first conference 10 years ago, attendees have consistently reported gaining new skills and contacts, valuable insights, and sound action plans for advancing their businesses and careers. At AU, you'll discover solutions that you can implement right away. You'll return to your business with answers to technical problems, techniques for improving productivity, and tools that will positively impact your creativity and success. The show is also a terrific networking opportunity — reconnect with old friends and make new ones, speak with instructors and other experts, and meet leading Autodesk insiders.

Plan now to join us in Las Vegas this December. Learn all about the conference, details of classes and instructors, travel and accommodations, and much more, by visiting [www.autodesk.com/augiau](http://www.autodesk.com/augiau) or call 888-371-1722.

## Seeking Candidates

Every year AUGI elects several new members to the Board of Directors. AUGI became a non-profit corporation early in 2000 and, as a result, the operation of the group changed as well. AUGI members now elect the Board of Directors; positions such as President, Mechanical SIG Chair, and Education and Training SIG Chair are appointed by the Board.

The AUGI Board is a working board, meaning that Board members spend a significant amount of time doing AUGI work. We meet for three days twice a year in January and June at Autodesk headquarters in San Rafael, California. There we meet with top-level Autodesk executives such as Carol Bartz, who attends our executive luncheon. In addition, Board members are expected to attend Autodesk University. All travel expenses are paid by AUGI, including AU registration.

If you are interested in running for a seat on the board, please let us know as soon as possible so that we may consider you for our slate. If you attend AU, you also have the option of becoming a "walk-on" candidate at that time. You must be a current AUGI member with a minimum of one year continuous membership. We're seeking candidates with strong leadership skills and experience in project, personnel, and financial management. Web development experience is a plus.

Interested candidates should submit a 100 to 200 word statement telling us about your AutoCAD experience, accomplishments within AUGI, and reasons for wanting to join the Board. Please also send a photo of yourself, preferably .jpg or .gif. This information will be posted on the AUGI site to help members make their voting decisions.

Questions, comments, and candidate statements should be directed to Beth Garrison, AUGI 2003 Election Committee Chair: [beth.garrison@augi.com](mailto:beth.garrison@augi.com).

## AUGI EVENTS CALENDAR

### **Autodesk University**

December 3-6, 2002  
Las Vegas, NV  
[www.autodesk.com/augiau](http://www.autodesk.com/augiau)

### **AUGI Board of Directors Election**

December 5-20  
[www.augi.com/enhance/membership/voting.asp](http://www.augi.com/enhance/membership/voting.asp)

### **ATP, Spring Semester Faculty Registration**

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### **ATP, Spring Semester Student Registration**

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## Join the Augiworld Team

Do you enjoy helping your peers by sharing your experiences (good and bad) and your advice? Welcome to *Augiworld* magazine, a new forum designed to foster peer-to-peer communication among CAD users worldwide.

### **We need you!**

*Augiworld* will thrive only with help from its readership. We welcome all editorial contributions. Maybe you have an interesting user story to share. Did you oversee an intricate technology implementation that others would benefit from hearing about? Technical tips & tricks and product reviews are always helpful. In short, *Augiworld* welcomes any information that will be beneficial to your fellow CAD users.

### **Okay, who do I contact?**

Contact Marilyn Law, managing editor, at [marilyn.law@augiworld.com](mailto:marilyn.law@augiworld.com) with ideas or submissions. PaperSpace content should be directed to John Clauson, technical editor, at [john.clauson@augi.com](mailto:john.clauson@augi.com).

## Coming in January CAD Salary Survey!

*Augiworld* is gathering information for a salary survey that will be presented in the January/February 2003 issue. Please take 10 and take our survey posted at: [www.augi.com/educate/surveys](http://www.augi.com/educate/surveys).



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# The Cad Manager



John Clauson

## » Degauss Those Error Magnets

You and I never make mistakes, of course, but other people might. Even the most conscientious of them can commit an error from time to time. Things happen; we shouldn't be too hard on them.

Once in a while we encounter sets of conditions or circumstances that greatly increase the chances, or almost guarantee, that mistakes will be made. I label such situations "error magnets." Some of them are obvious, but many are like a submerged alligator, barely visible but capable of swallowing you whole in an instant. Error magnets vary in strength, but they all have the same effect: they are costly in time and money.

Now that we have a working definition, we can discuss a few examples of error magnets. We'll confine our coverage to some of those that a CAD manager might encounter. If possible, we'll try to present solutions, though sometimes just simple recognition of an error magnet can reduce its pull.

One of the oldest error magnets has been redrawing, but people still do it for a variety of reasons. Maybe they have paper drawings that must be created in AutoCAD, or have plotted CAD drawings without the original files. Rather than investigate the process of converting drawings from one CAD system to another, we've heard of people redrawing CAD files because they "have to get the work done." Even the most conscientious

among us are bound to make mistakes when drawing things over and over. In fairness, we must also point out that a skilled operator can be ahead of the game by redrawing a CAD file that was created by someone with lesser attention to proper standards and practices.

Not drawing mechanical designs at 1:1 scale can lead to some interesting situa-



tions, especially in assemblies or when using parts libraries. Granted, this practice is increasingly rare as time goes on, but its existence creates a definite error magnet.

Autodesk began to make associative dimensioning easier by introducing dimension styles as far back as Release 11, but failure to use associative dimensions is still a powerful and common error magnet. Many of my colleagues will simply not trust a drawing with DIMASO, or the

more recent DIMASSOC, turned off. One of my CAD manager friends has written a fine AutoLISP routine that searches drawings for dimensions with modified text and other conditions that could lead to false communication of design data.

In my opinion, one of the strongest and longest lasting error magnets in the engineering world has been the practice of

projecting views in two dimensions, either on paper or with CAD. No matter how skilled or attentive the worker, or how much checking is done, complex, multiple-view 2D drawings are prone to displaying some disparity between the representation of the same features in different views. These differences may not appear at first, but become more likely as drawings increase in complexity, especially if more than one person works on them.

Another massive error magnet—approaching black hole magnitude—is translating files, 3D models in particular. I can think of few things that take more of my time as a CAD manager and add less value to my company's product than translating our carefully crafted

Mechanical Desktop or Inventor files into IGES or STEP format. We cannot purchase and operate every CAD system that our customers want us to use, so translation is a necessary part of our business. However, I've yet to see a file improve during that process.

In my opinion, one of the most elusive and powerful error magnets is the push for expediency: getting the job done NOW. We can argue ad nauseum about meeting





deadlines, but most will agree that it usually takes more time to correct errors than to avoid them in the first place.

The point of this discussion of error magnets is to become aware of them so that we can either avoid or eliminate them. Each engineering discipline and manufacturing niche will have its own particular set of error magnets, some of which may be unique. Many may be easily degaussed by paying attention to standards and adopting the best practices of our industries. Others might have no true solution but may be minimized with careful analysis and appropriate strategies.

## » Avoid or Degauss Your Error Magnets

A CAD manager in the manufacturing environment can eliminate the first three error magnets mentioned here by adopting what most of us regard as minimal acceptable practices. We build our models at full scale. When checking them, we correct the geometry, so that our associative dimensions will correct themselves. We do not edit dimension text; we use the proper dimension variables to properly display them.

To avoid redrawing, we make sure that those who need our design data can use it in its native format whenever possible. Non-engineering departments can view and plot files with Volo View Express and various third-party viewers. Suppliers might be able to purchase AutoCAD LT to deal with the files we created in regular AutoCAD software.

View projection errors may be all but eliminated by using the paper space functionality that was also introduced in Release 11. Yes, it is quite a bit more difficult than staying in Tilemode 1 forever. Consider, though, that molds for plastic parts commonly cost tens or hundreds of

thousands of dollars, so the extra effort may prevent disastrous effects of this error magnet. Paper space is virtually a no-brainer in Mechanical Desktop, and Inventor deals with the drawing file in a different way, so now we have two tools that do away with this magnet.

Unfortunately, file translation remains one of the error magnets without a good degaussing solution. The best way to eliminate this magnet would be to have all CAD manufacturers use the same file format. They would become little more than interface designers in this scenario, so don't look for it to happen soon, if ever.

Combining education, training, and practice appears to be the best strategy against being overcome by the file translation error magnet. Maybe some of the direct translators will become good enough to be reliable and transparent one day, but you'll have to rely for now on your own expertise.

Are there easy ways to avoid error magnets? No. Your best protection against their effects is your own diligence in identifying and avoiding or degaussing them.

*John Clauson is CAD Manager at Indak Manufacturing and Junior Vice President on the AUGI Board of Directors.*

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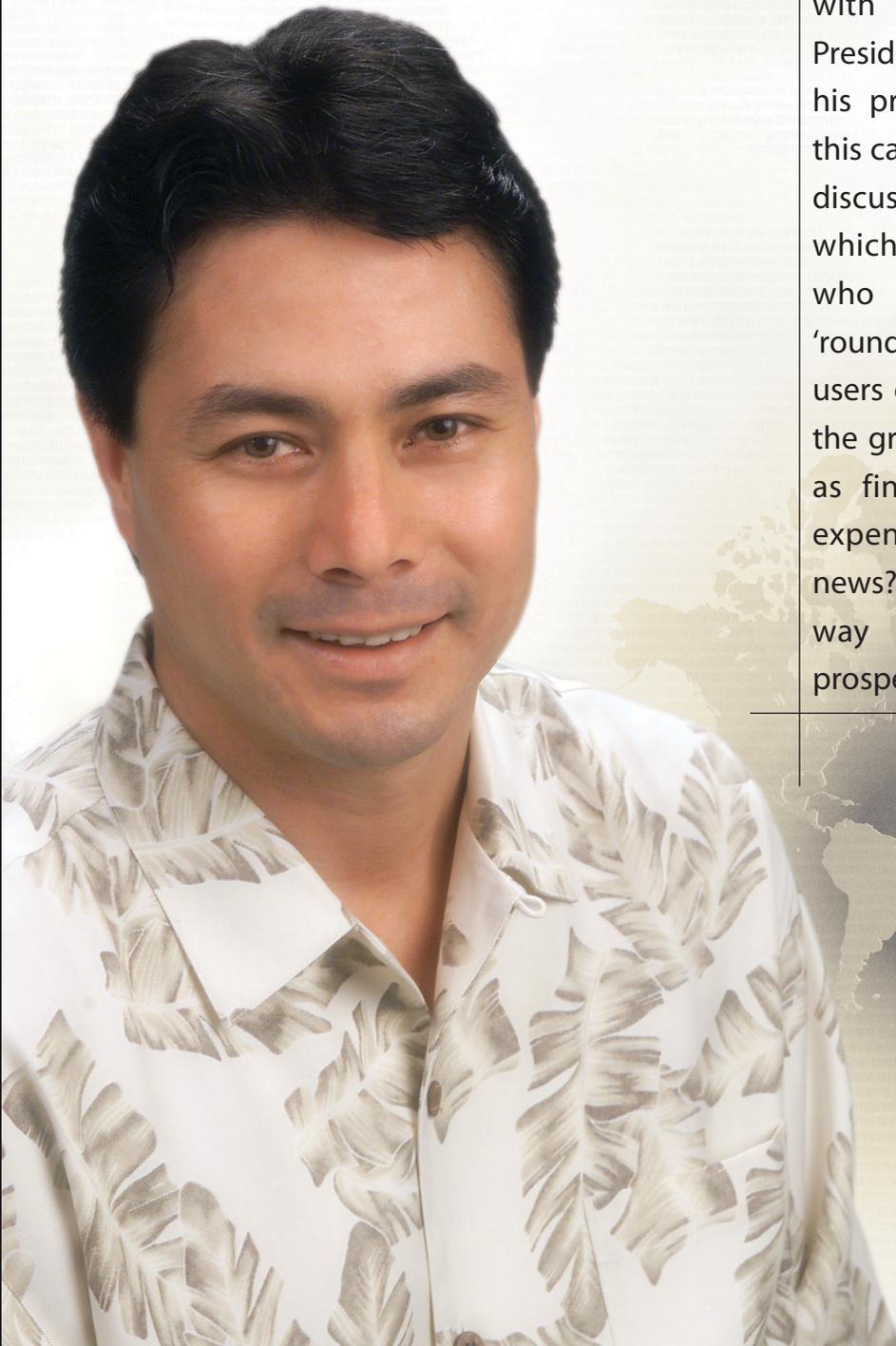


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# A Conversation With Yoshi Honda



In July, *Augiworld* sat down with Yoshi Honda, AUGI President for 2002, to discuss his presidential agenda. In this candid interview, Honda discusses AUGI's strengths, which include volunteers who make the world go 'round for Autodesk product users everywhere, as well as the group's challenges, such as finding ways to cover expenses. The real good news? AUGI membership is way up and so are its prospects for the future



**AW:** What do you hope to accomplish as AUGI president?

**YH:** Each president has an agenda. Mine is to expand AUGI's international exposure, to increase membership through the international exposure, and to create a five-year budget plan. We'd never had more than a yearly budget plan, and longer term planning will allow the organization to continue to grow at a rapid pace.

**AW:** Okay, let's talk about the financial end of it. Is AUGI subsidized by Autodesk?

**YH:** Originally, the group was 100 percent subsidized by Autodesk. About four years ago, we broke off to become our own non-profit organization. We are now AUGI, Inc. We do get an annual check from Autodesk as a sponsor of the group. That doesn't cover all of our expenses anymore because the group is growing so fast, but it does cover a good chunk of our operating cost.

**AW:** I imagine administrative costs are pretty high given the number of AUGI members, or does the Internet help offset the cost?

**YH:** Currently, we have 30,000 members. And, by the way, if you go back to a year ago, we had zero members. That's when we went from a paid membership to a non-paid membership. We wiped out our whole database and started over.

But, yes, the Web has made an impact on all businesses and AUGI is no different. It has given us the ability to have things like the AUGI Guilds running 24/7/365. It has also given us the ability to get our message and services out there, even though Web maintenance costs money. But it gives us a chance to reach a lot more people than if we had an old-fashioned mailing list and were mailing out material to people. It also gives people who might not have been on our mailing list for one reason or another — such as members outside North America — the opportunity to find our the AUGI website and use our programs.

**AW:** You mention that AUGI went from paid to free membership a year ago. Was that a past president's agenda?

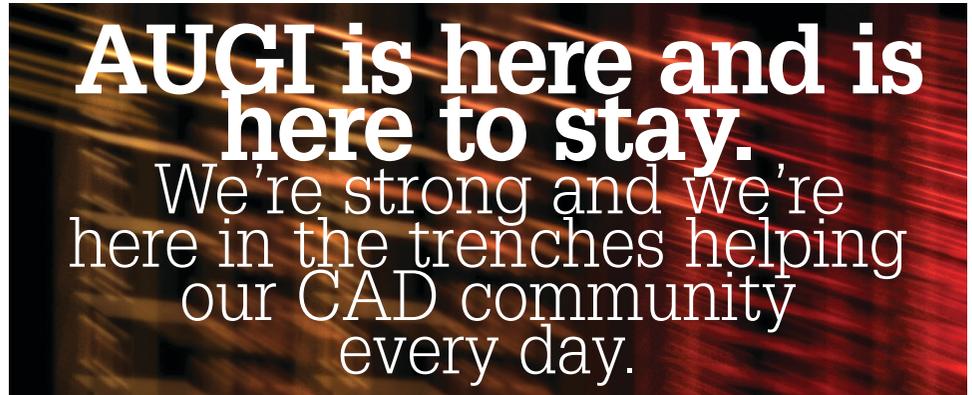
**YH:** That was a previous board's agenda, yes. Prior to my becoming a board member, the desire was to move away from Autodesk and go to a non-paid membership.

**AW:** If you can answer for your predecessor, what was the reason for wanting to be more independent? I mean, AUGI is an Autodesk user group and will remain one. What was there about freedom that appealed to the organization?

**YH:** For one thing, being independent gives us the freedom to go out and reach deeper down into the Autodesk community and provide the programs that a true

Autodesk and work with them on getting marketing material out to those locations. As you know, Autodesk has a marketing group for the Americas, one for Asia/Pacific, and so on. We'll try to coordinate some things through them to reach people in those areas.

Also, I've had some individual contacts with people in Japan and Spain and we're going to try to do some things there. So we'll attempt to increase our international awareness from both ends: the grass roots



grass-roots organization can provide, without the constraints a corporation like Autodesk might have with end users.

**AW:** Okay, let's talk about your other goals then and what you are doing specifically on each one. Begin with increasing international awareness and membership.

**YH:** First of all, we have introduced foreign language translations of our website in four different languages: English, Spanish, Portuguese, and French. We are now working on German and Japanese. And we've opened up five new AUGI Guilds for those languages: German, Japanese, Portuguese, French, and Spanish. So we're trying to get international presence and awareness through that.

**W**e are also looking at translating our ATP (AUGI Training Program) courses into foreign languages as well. It's a tough task because we are a volunteer organization, and volunteers are a very important in all aspects of AUGI, Inc. We depend on volunteers — we are users helping and educating other users.

**AW:** What are you doing specifically to increase international membership?

**YH:** Now that we have the web translation available, we're going to go back to

end, which is what this organization is all about and that's where the individual users from Asia and Europe come in, and also from the top down, which is where corporate Autodesk comes in to play.



**AW:** Talk about some of the challenges you and other board members face in trying to achieve the goals you've set forth.

**YH:** Generating revenue has to be the first. That's the biggest challenge for any non-profit organization with a free membership base — finding revenue to fund programs that will benefit the AUGI community.

**AW:** And what are you doing?

**YH:** Well, that's one reason why we're doing this magazine! Exposure is the key. We first need to increase membership



our website into the different languages, for example. Amazing character is possessed by these people in our organization. Take our Guilds, for example. You can ask a question at two o'clock in the morning and you'll get twenty answers in two minutes from people all around the world. Or we'll send out our Hot News email blast and ask for volunteers for specific tasks and, in general, we find that people are more than willing to help.

**T**his community is made up of volunteers who want to help people because they remember where they came from. A lot of us at the upper level

numbers. When our membership base increases and stays active, we will then have the ability to show third-party vendors, for example, that we have a lot of traffic on our website, which will help us in trying to secure a consistent revenue stream.

**AW:** You're talking about advertising revenue?

**YH:** Right. And another challenge we face is basic awareness. We are beginning a year-long campaign promoting AUGI. Hey, there are some people even at Autodesk who don't know who and what AUGI is.

**AW:** Sounds like that PR campaign is a formidable task. What kind of group is working on that?

**YH:** We have a marketing team that consists of board members. They get together and try to figure

out the best way to target or address particular groups. This magazine and the Augiworld village, if you will, is part of a year-long campaign to make people aware that AUGI is here and is here to stay. We're strong and we're here in the trenches helping our CAD community every day.

**AW:** Are the people on your marketing team marketers by profession?

**YH:** No, they're CAD people. That's really our whole board... our board is made up of volunteers from our industry who are basically trying to create a better community for all Autodesk users.

**AW:** Okay, let's talk more about the volunteer aspect of AUGI and how the board members and others in AUGI help the organization reach its goals.

**YH:** Our advantage is we have a worldwide network of volunteers who want to help people. They are helping us translate

now want to help the people below us because we were at the lower level at one time. It's tough needing help, because maybe you are isolated by location or your employer doesn't allow you much freedom or support in education, and that's where AUGI comes into play — it allows you to see all the different things that are available. The volunteers have been there before and they want to help people avoid suffering through some of the things they themselves had to suffer through.

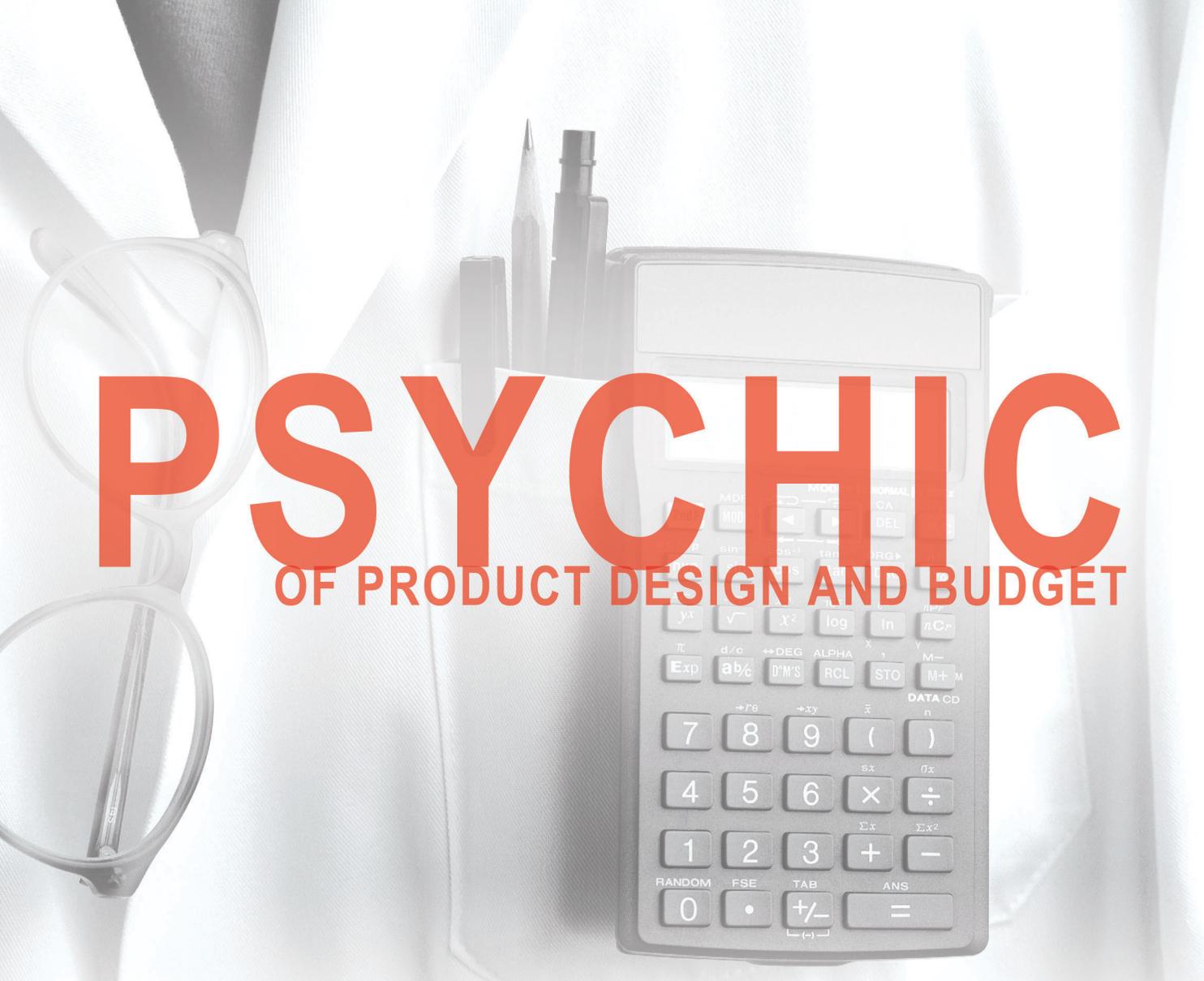
**AW:** Do any other obstacles stand in the way of meeting your goals, or do any other challenges come to mind?

**YH:** Just basic growing pains of a new organization. Documenting the projects we do, finding volunteers to help do certain tasks and just the huge challenge to continue providing services to our community and do it in a smart and organized way that doesn't cost a lot of money.

**AW:** I assume that AUGI is no different than any other volunteer organization in trying to get the message out to people that they can contribute in even small ways.

**YH:** Yes. We've been very fortunate in that we've had great volunteers who are will-





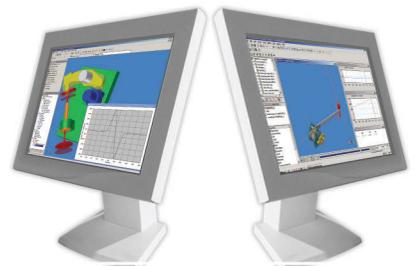
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ing to dedicate hours and hours to the rest of the community without any kind of compensation at all. It just goes to show you how strong this community is and how people are willing to help each other in this community.

**AW:** What high points come to mind when you think about AUGI and its history?

**YH:** Well, one that instantly comes to mind is, from last year, being able to survive without the “endless revenue sup-

**YH:** Well, in any organization there will be peaks and valleys and, yes, there are times when you don't know if you'll make it. I think for AUGI it was when Autodesk pulled some of its funding. Basically, Autodesk had five to seven employees running AUGI, doing the marketing, direct mail pieces, making sure AUGI information was put in every box of AutoCAD shipped. And all of a sudden, we lost that. At that point it became very scary, but we made it.

**AW:** Okay, let's talk about AUGI's relationship to Autodesk today. How would you characterize it?

**YH:** The relationship we have with Autodesk is phenomenal. John Sanders and Carol Bartz have been big supporters of ours. They see the grass-roots organization, they see our knowledge base, they see the information we can provide to them to make their products better for users. And we have a lot of internal champions and cheerleaders at Autodesk, which include a lot of product managers. These internal people help make upper management realize how important this organization is to the end users.

**W**e meet at Autodesk twice a year and when we meet there we always have a luncheon with the Autodesk executives, then we have a presentation and let them know what we've accomplished in the last year, what we'd like to accomplish

# AUGI has a long history of educating, enlightening, enhancing, and empowering its members over the past twelve years.

**AW:** But is there a payoff for the board members' employers? By that I mean, does AUGI affiliation allow board members to better serve their companies in some way?

**YH:** Yes. Many of us have bosses who realize that AUGI involvement is for the betterment of the company. If you have people at the board level, say, discovering information about products and services, that benefits everyone down the line at their companies. Most of the companies with a good number of Autodesk seats find that it's beneficial for them to be associated with a group like this, not only for the education and awareness, but also to keep an eye on which way technology is going.

port” from Autodesk. I think another one will be creating an awareness in the international marketplace. Prior to these, I don't know if most people realize that NAAUG started the original Autodesk University. Those types of things are the high points for AUGI: starting a meeting place where peers can see and talk to each other; to achieve financial stability once we got our non-profit status in place; and to reach 30,000 members when we've never had more than 6,000 members at any time in the past eleven years. Now we have 30,000 and we'd like to reach 100,000 by the year 2007.

**AW:** Was there ever a time since you've been affiliated with AUGI or NAAUG before it where you questioned its ability to survive?



## About Yoshi Honda – AUGI President, 2002

Yoshi Honda is president and owner of Pacific CADD Services, Inc., a CAD production service company based in Hawaii. In addition to commercial CAD production, Pacific CADD Services performs CAD management for clients, fosters CAD awareness, and conducts seminars in the United States and internationally.

An AutoCAD user since 1990, Honda is a long-time member of AUGI or, as it

was known when his affiliation with the group began, NAAUG (the North American Autodesk User Group). He has held various AUGI board positions including Education & Training Chair and Junior Vice President as well as President.

Honda remains active in the Aloha State AutoCAD User Group, which he founded in 1996.



in the future, and highlight areas where we can help each other. It usually ends up being an open forum and a lot of ideas come out of that. They see they can use us to get information on where they stand with their customers and we see that we can provide them with that type of information. It's a win-win situation because we're the ones that want things changed or added to the software. I think our relationship with Autodesk is stronger than it has ever been. I think it's much more friendly and professional than it's ever been.

**AW:** Is AUGI's relationship with Autodesk formal or informal?

**YH:** It went from informal to very formal now. I think Autodesk has new respect for us. They see us now as a viable organization where three to four years ago, they just thought we were a bunch of CAD users... kind of like a club. We have worked hard over the past year to change that perception.

**AW:** You're a powerful block, though, right? For Autodesk to solicit a wish list from you, that's proof that they take you seriously.

**YH:** Sure. I think in AutoCAD 2000, we saw seven of our ten top wishes in that release. So, yes, I think Autodesk takes what we have to say to heart. And now we've created some mechanisms where members can submit a wish list at any



time. Autodesk product managers can see the top twenty-five current wishes at any time. So every quarter or whenever they're planning a new release or extension, they know what their user base wants. They have instant access to that information — and that's good, viable data.

**AW:** In closing, what would you like to impart to AUGI members, perhaps some of whom are brand new to this organization?

**YH:** AUGI has a long history of educating, enlightening, enhancing, and empowering its members over the past twelve years. As president, I have taken great pride in establishing more benefits for more users worldwide. The future of this organization is very bright. We have a completely revamped website that is filled with resources, education, and awareness for the entire Autodesk community of end users. We have a new magazine that will reach deep into this industry and create a viable means of communication.

This organization has many strong programs such as the ATP, the AUGI Guilds, and coming very soon the AUGI Virtual CD (a vault of routines, programs, and symbols — by AUGI members for AUGI members). We are currently translating all of our information into five different languages, and are looking at servicing even more in the next few years. AUGI is a grass roots group of CAD users assisting other CAD users, and we will continue to play that important role in the Autodesk community. 

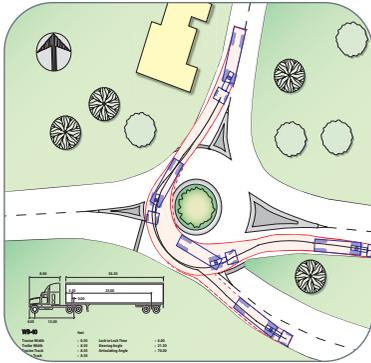


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# The Best of the Guilds



» The AUGI Guilds are one of the most popular elements on Augi.com. The Guilds are peer-to-peer support forums that assist novices and veteran users alike. In this and subsequent issues of *Augiworld* magazine, we will present FAQs and other noteworthy items taken from the AUGI Guilds.

## MDT: Rearranging Browser

**Q:** Is there a way to rearrange parts in the Desktop Browser? I would like to get the part names arranged alphabetically.

**A:** The browser is more than a listing of the parts in an assembly. The first part in the browser is the grounded (non-moving) part, regardless of its name. Alphabetically rearranging parts in the browser would adversely affect the way they explode in a scene. To explode correctly, parts should follow a logical hierarchy relative to the base part. Imagine your base part is a block with a threaded hole in it. Fixed to this, with a screw and washer, is a plate. Assume everything is assembled using insert constraints. To explode correctly (by correctly, I mean with an explosion factor, NOT tweaks!) the parts would have to appear in this order in the browser: block, plate, washer, screw.

## LISP: Opening a .dwg

**Q:** Can I open a .dwg in read-only mode?

**A:** Using ActiveX, here's how:

```
;;; This method is only available while SDI
is set to 0.
(setvar "sdi" 0)
(setq fn "c:\\AcadCustom\\coord.dwg");set
the filename here
;;; load ActiveX extensions
(vl-load-com)
;;; must use the documents collection if
SDI=0
(setq *docs* (vla-get-documents (vlax-get-
acad-object)))
```



```
;;; open read-only
(setq *workingdoc* (vla-open *docs* fn
:vla-true))
;;;do some work
;;;close the dwg without saving changes
(vla-close *workingdoc* fn :vla-false)
```

## VBA: Drawing Editor

**Q:** Can I work on a drawing without opening it in the drawing editor?

**A:** Yes you can, using ObjectDBX. ObjectDBX is an undocumented library that ships with AutoCAD (axdb15.tlb) and can be used to access drawings without visually seeing them in the drawing editor. With ObjectDBX, the drawing is being processed in a separate space from the AutoCAD environment. The AutoCAD ActiveX interface automatically creates an interface to ObjectDBX. The object model is mostly the same as the AutoCAD VBA object model, except for a few minor differences. ObjectDBX can process only

one drawing (no templates unfortunately) at a time since it does not have a documents collection. You do this by opening an AxDbDocument object. You have to have AutoCAD running, first to create an AutoCAD object, and then run its GetObjectInterface method. Since there is no graphical interface, many methods are not available, such as the GetXXX methods. Also, selection sets are not available. And saving a AxDbDocument will cause the drawing to lose its preview bitmap.

In order to use ObjectDBX, ObjectDBX must be registered on each user's machine. This needs to be done only once at each machine. If you are using VB instead of VBA, you will also need to set a reference to "ObjectDBX 1.0 Type library". In your AutoCAD folder, locate the file AxDb15.tlb. Open a DOS window and, from the DOS command line, change directories to where your acad.exe is and then run regsrv32.

### Type:

```
C:> cd Program Files\Autodesk\Autocad
C:\Program Files\Autodesk\Autocad>
RegSvr32.exe AxDb15.dll
```

Now you can create and use an ObjectDBX document.

```
Dim strFilePath As String
```

```
Dim dbxdoc As Object 'AxDbDocument,
early binding is only available if you set
a reference.
```

```
strFilePath = "C:\temp\myDrawing.dwg"
```

```
Set dbxdoc =
```

```
AcadApplication.GetObject("Obj
ectDBX.AxDbDocument")
```

```
dbxdoc.Open strFilePath
```

## AutoCAD: Networking Issue

**Q:** We're in the process of upgrading our server and when rerouting the network printer ports to the new server location, ACAD 2002 will not recognize my .pc3 and .pmp files for this printer. Our systems administrator and I are trying to reconstruct the HP 8000N plotter device in ACAD 2002, but the add-a-plotter wizard



wants a .hif (heidi information file). No such file exists on our ACAD 2002 CD, or the knowledge base, or HP's website.

We tried reinstalling the HP 8000 drivers (which worked fine until this morning) to a local workstation; the HP install software does not recognize ACAD 2002.cfg or ACAD 2002.exe. It seems that there are NO drivers for this device after ACAD r14.

When setting up the device as a windows system printer (for a stop-gap measure), we get an error about having a page size not supported by the printer every time the HP8000 printer is selected by the user. This is not a long-term solution, but will work until the problem is solved.

**A:** Is the printer a network device? If not... make it one such via net I/O card or print server box (slow vs. card!). If so... install it on the server with HP's latest .pcl drivers for Windows 2000 from the HP website at <http://www.hp.com>. Then share the device as HP8000N (or what you prefer, though keep simple name with no spaces!). Next go to PC workstation and printers folder. Delete any previous printers for 8000. Now start the Add Printer wizard... say it is network device and use the directory to find the net device, then install it. Now you have a HP8000N Windows System Network Printer.

**N**ext make sure for AutoCAD 2002 you have installed SPI and initialized the software. Then start up AutoCAD's Add a Plotter wizard and select "system printer"... pick the HP8000N and name it something like 1HP8000N (puts the sort order, so that the printer is at the top), finish setup. Note: With HP devices... always preferred to utilize "system printers" (you can use AutoCAD's internal setup, but you really do not want to). Next open the .pc3 and .cfg options you want (especially papers... purge out ones not needed; lines overwrite option, plus default paper, etc.). Save .pc3 and associated .pmp. Open AutoCAD and go to options... select plotting and set 1HP8000N as default device. You should be all set to go!

## AutoCAD: Pen Setting (Plotting)

**Q:** What is it that makes .ctb files go missing? We have a drawing from a client

that we tried to plot but the list of available pen settings had only the file that the client used (which was labeled missing), but no other files. I checked the path, which was set to look in the plotters folders where our .ctb files live. I made sure that "use color dependent plot styles" was checked in the Options/Plotting tab. No luck.

I finally wblocked the drawing into a new file and, lo and behold, all our .ctb files were there in the list. There must be some setting I don't know about...?

**A1:** If the drawing has been changed from a .ctb to an .stb drawing, then .ctbs won't show up. Use "CONVERTPSTYLES" to change the drawing back.

**A2:** The same issue came up in our office a couple of weeks ago (we are using A2Ki with Express Tools). We also did not have Migration Assistance installed on our computers and also stumbled into our wblock approach (solution "Method #2" in ACAD Help file) as a quick-fix.

After researching this (as you did), I learned how much more quickly the CONVERTPSTYLES command fixed the same

problem (solution "Method #1" in ACAD Help file). Migration Assistance is now available to all CAD users. Even though we don't see this problem a lot, it does come up from time to time.

So the point of this reply is to put in a plug for Migration Assistance/CONVERTPSTYLES (it's on the ACAD installation CD), even if you have no use for the other utilities (although some Guild members have spoken highly of ScriptPro).

## AutoCAD: paper space

**Q:** Is there a way to convert a regular rectangular mview into a polygon mview? We need to "reshape" quite a few mviews to accommodate additional notes and details on paper space and it would be a pain to rescale and reattach symbols, text and notes and layer states to each existing mview.

**A:** Draw a pline then use the VPCLIP command to clip the viewport with the pline.

*Best of the Guilds content is compiled by Beth Garrison ([beth.garrison@augi.com](mailto:beth.garrison@augi.com)). Multiple responses to a question are labeled A1, A2, and so on.*

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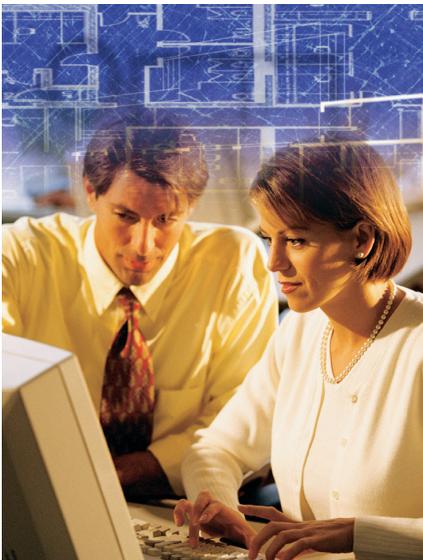
# Product Review



## » REVITATION

Working with Revit 4.5, Autodesk's new architectural modeler

Earlier this year, Autodesk made what I believe will prove to be an extremely wise decision — the purchase of Revit Technology and, with it, the rights to a product called Revit. The latest version, Revit Release 4.5, represents the future of architectural CAD for all but die-hard line drafters, and I think it will become a preferred tool for busy architects and progressive Architectural Desktop users.



Why? Revit is powerful, simple, and complete. It ships with AccuRender (from Robert McNeel & Associates) and the R. S. Means Cost Estimating system as part of the program. The Revit Corporation's pre-Autodesk advertising referred to existing 20-year-old CAD programs as "legacy software," and there is more than a grain of truth in that claim. The engine in Revit does indeed leapfrog many of the constraints that AutoCAD-based technology runs up against when trying to model and represent complicated architectural systems. While a number of programs, some quite inexpensive, are available for architectural modeling and documentation, Revit is no lightweight application and shows the promise of

becoming as much of an international standard as good old workhorse AutoCAD. Autodesk bought the product and company, after all, and not just to kill a competitor. If Revit spreads to technical schools and collegiate architectural programs the way Inventor is now proliferating, building designers a few years from now may never need to know the function of a UCS icon.

Revit is entirely a parametric architectural modeler utilizing objects, not a drafting program adapted or extended for architectural modeling. Revit bears much the same relation to Architectural Desktop that Inventor does to Mechanical Desktop. There is no AutoCAD engine inside — much that AutoCAD users would find familiar is absent. Revit can import and export dwg files, but does not use the dwg format; it uses no layers, no command line, few colors, and next-to-no linework. There are no user-configurable toolbars, no programming language available, no Cartesian coordinate system, and no external references.

An entire building is considered and constructed as one model, with ways to share different components or classes of components (per floor level, for instance) among a dispersed design team while maintaining central file integrity. Documentation and schedule information automatically updates as the design develops — hence the product name, Revit, for "revise it" in architect-speak.

For instance, as sheets are added to a project design file, all other pages, view labels (for plans, elevations, sections, details) on those pages, and all associated callouts in all other views

renumber themselves accordingly. No drafting program, nor even Architectural Desktop, can approach that level of bidirectional efficiency.

The Revit interface is Microsoft-compliant, naturally enough, with a menu bar, a toolbar area below it, and below that an option bar similar to the AutoCAD Object Properties toolbar (see Figure 1). There is a design bar on the left side with tabs that contain commands and tools, a project browser to control views, and the viewing window,

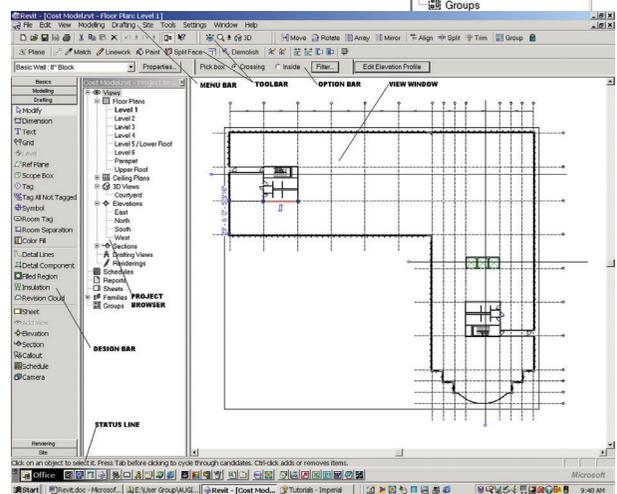
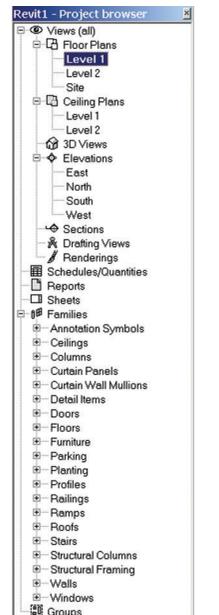


Figure 1

which can show one or many views. There is a status line at the bottom, to provide one-way command line type feedback about command progress or object properties.



Revit provides wireframe, hidden line and shaded display modes as one-click options (see Figure 2). The four isometric views are easy to reach, and there is a 3D viewer control to allow for orbit-type inspection. Wheel mouse pan and zoom is supported.

A new file in Revit opens to a Floor Plan view of Level 1, at a default height setting of 0'-0". Revit creates two Levels by default in an empty file, and provides a Site Plan view, Floor Plans, and Ceiling Plans for the two levels, and four Elevation views. Additional levels are easy to create and alter. These model views can be copied, renamed, or deleted. Adding a Section Line element to a Plan view automatically creates a Section view. Drafting views (details), Renderings, Schedules/Quantities, Reports and Sheets are all implicit Views as well—available but not created in a new file by default.

For an AutoCAD user working in Revit, perhaps the single most comprehensive (i.e., confusing) change will be the lack of layers to use for controlling the visibility of

objects. Architectural Desktop users will be familiar with changing the properties of AEC Objects such as walls and windows that control both the structure and visibility of the objects. The process in Revit is exactly the same, although the necessary dialogues will be in unfamiliar places—if you change a wall from CMU to brick on metal stud the appearance of the wall in plan and elevation will change.

Instead of the Layer Manager, users will spend time in the View Properties dialogue. This dialogue controls the model object and annotation categories that are visible or not in any given view, and their display characteristics. Revit contains a view properties field called Detail Level—coarse, medium and fine are the options—

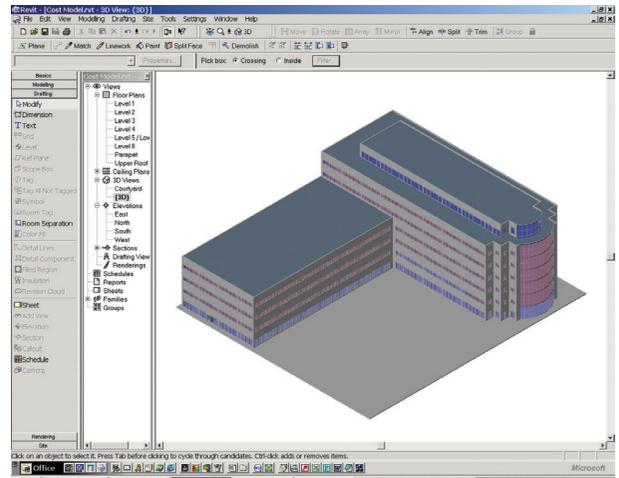


Figure 2

that controls the apparent weight of lines on the screen. This works in conjunction with the View Scale control, as views are set up at default architectural scales.

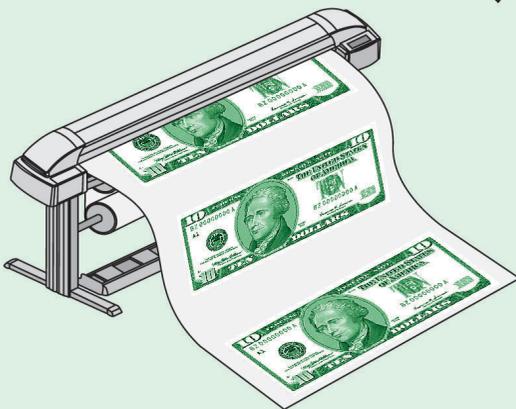
Since Revit is a modeler, drafting commands have been de-emphasized compared to a drafting program such as AutoCAD. There is no Draw menu. You

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# Product Review

can create lines (splines, arcs, circles, rectangles) for sketching in any view, although for elevations and sections you will have to define a reconfigurable Work Plane so that Revit knows where to place the linework. This setup replaces User Coordinate Systems for AutoCAD users. Linework created as Lines uses a display category reserved for detail/profile sketching. You can also create lines in (or change the viewing characteristic of object edges to) linetypes Centerline, Hidden, Overhead, Medium, Thin or Wide, among others, or create your own.

Most of the controls for Revit are found in the Design Bar tabs (see Figures 3 and 4): Basics, View, Modeling, Drafting, Rendering, Site, Massing, Area Analysis, Structural, and Construction. View, Modeling, Drafting, and Site are also menu items, and most of the commands are duplicated. Additional Revit menu items are Tools (which duplicates certain lower Toolbar icons) and Settings, where one works with Styles, Units, Project Information, and the like. The Editing commands Move, Copy, Rotate, Array, Mirror, Group Objects, Lock Objects and Place Similar are kept on a Toolbar and appear nowhere else.

Revit ships with a fair amount of precreated design content called Components (furniture, equipment, appliances, etc.). It contains structural elements—columns, structural walls, beams and braces, and provides site elements such as 3D Toposurfaces, Grading Regions, Property lines (which can be generated from a table of distances and bearings, or sketched), Pads, Parking Spaces (as units), and 3D vegetation.

Massing elements in Revit will be familiar to anyone with Architectural Desktop

experience. Revit masses do not need to be eliminated in order to create walls, so they are available to edit throughout a design project. There is a Show Mass/Show Shell toggle as a visualization aid while working with masses, which also allows you to convert the shell elements directly to walls and roofs of any type.

Revit contains Area Analysis tools for space planning use. Room and area tags feed directly into room schedules, which are updated as designs change. There is a color fill control for generating space allocation plans. Construction tools control Phasing, Schedules, and Quantity take-offs for estimates. I mentioned the R. S. Means Cost Estimator module in passing at the beginning of this article. Revit's Phase control allows users to create a project history of any complexity and a phase filter setup to match. You can show pre-existing conditions, demolition, and phased new work all in one model—in any view you determine the visibility of existing, demolished, and new elements using the element properties rather than layers.

Revit, as noted, contains an AccuRender rendering module, so at any stage of your project you can render interior or exterior views and capture the renderings to place on a sheet for plotting. The AccuRender controls include Raytrace and Radiosity (for interiors), with sun lighting, interior lighting, materials, and environment such as sky, clouds, and background images.

Revit uses Families to keep track of model detail and annotation components—comparable to the AutoCAD Design Center. Components or component families that are not loaded into a

new drawing can be loaded from resource files or created by the user. Revit ships with extensive family components and has a Web library available as well. Ketiv's Modern Medium Library components have been converted into Revit families and are also available at the Revit Content Distribution Center. You can also create In-Place Families within a project; they are limited to unique items and cannot be exported to other projects.

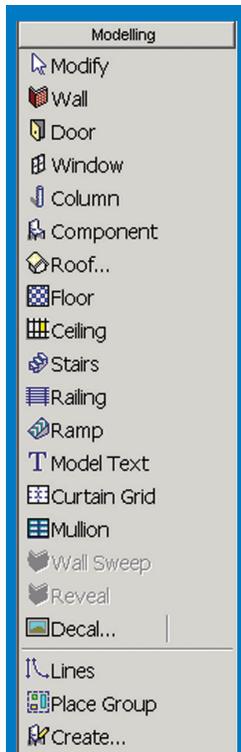
For team collaboration on a Revit project, because a building model is meant to be contained in one file, Revit uses a concept called Worksets, which are collections of object categories. For instance, Phase 2 interior walls, doors, plumbing fixtures, and ceilings on level 3 can be a Workset, and the office furniture for the same phase on the same floor another Workset. A Workset exists to be checked out of and synchronized back into a master file. Thus, design teams can divide a project in ways that make sense to their workflow.

So what do you work with in Revit? Walls, doors, windows, curtain walls, floors, roofs, stairs, railings, ramps, columns, ceilings, grids, dimensions, text, symbols—everything one would expect in a full-featured architectural modeler. The program is available for free from [www.revit.com](http://www.revit.com) in demo mode, which is fully functioning except that it will not save work. I encourage those who are interested to download a copy if you have high-speed Internet access, or to order a CD otherwise. To turn a demo copy into a working license involves setting up a subscription account. Revit needs CAD station type system resources to run properly, so check the minimum requirements before you install.

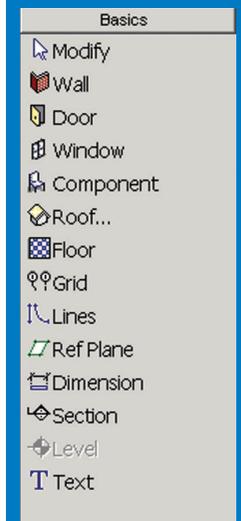


*Christopher Fox (lcf@archimagecad.com) is a freelance architectural drafter, educator, author, and frequent contributor to PaperSpace. Fox is current president of the Rochester Area AutoCAD*

*Users Group and an adjunct professor at Rochester Institute of Technology. Fox co-authored Architectural Desktop 3.3 Fundamentals: Building a Sound Foundation with Elise Moss and the soon-to-be-published intermediate-level ADT text, Architectural Desktop R3.3 Intermediate: Through the Roof.*



**Figure 3**



**Figure 4**



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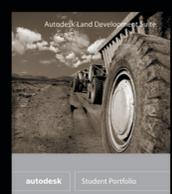
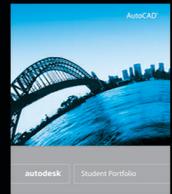
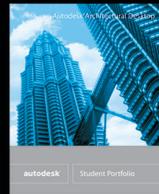
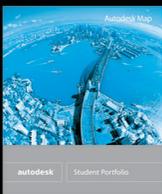
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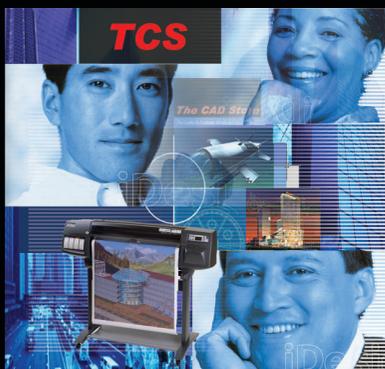
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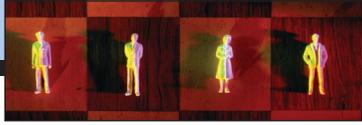


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## A New Home for PaperSpace

PaperSpace was started in 1995 by David Harrington as a cooperative newsletter for local AutoCAD user groups (LUGs) that could not produce their own newsletters, but would support a group effort by submitting articles.

Over the last two and a half years, we've morphed PaperSpace into a purely technical resource. Its mission has become one of providing free peer-to-peer product support for AUGI members. Its content is provided by Autodesk product users who share their knowledge so that their peers can do their jobs with better quality and higher efficiency.

One of the more frustrating factors I've dealt with in my time as senior editor was the difficulty in getting PaperSpace into the hands of more Autodesk product users. We estimate that in recent months,

PaperSpace was seen by two to three thousand people per month, which is less than 10 percent of AUGI's membership.

The good news is that this distribution challenge will be lessened dramatically with a new partnership formed with Solidvapor, Inc., publisher of *Augiworld*. By publishing PaperSpace within the pages of *Augiworld*, we meet our goal of ensuring that more product users have the opportunity to reap the benefits of its technical support and advice.

*Augiworld*, published every two months, is distributed at no charge to AUGI members around the world. Members in the United States and Canada receive their copy of *Augiworld* by mail. Members outside the United States and Canada may download either a high-resolution or low-resolution version of the

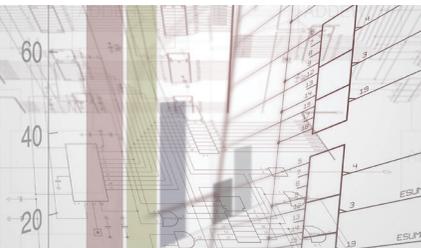
magazine. AUGI members outside the United States and Canada can receive a PDF version of *Augiworld* via e-mail.

The print version of *Augiworld* will also be made available to local user groups outside the United States and Canada for the cost of shipping. For more information, contact Mike Johnson at [mike.johnson@solidvapor.com](mailto:mike.johnson@solidvapor.com) or 317-984-8578. North American Autodesk Resellers, Autodesk Corporate offices, and other important special interest groups will also receive copies of *Augiworld*.

I welcome questions or comments about PaperSpace articles and also invite authors interested in contributing PaperSpace content to contact me directly: [john.clauson@augi.com](mailto:john.clauson@augi.com).

**John Clauson, Editor, PaperSpace**

## VBA Foundations



Welcome to this month's edition of "VBA Foundations" in its new home as part of *Augiworld* magazine. The four to five pages of in-depth VBA instruction for beginners is, of necessity, going to be shortened to three pages here. However, the format that you have become accustomed to is still available for download at

[www.augi.com/educate/publications/paperspace/psdownload.asp](http://www.augi.com/educate/publications/paperspace/psdownload.asp), and will include additional code examples and more in-depth coverage and explanations of the concepts covered.

In this issue we will explore VBA's forms and see how easy it is to create a graphically rich and professional looking program.

How often in your work have you wished to pop up a message or a fancy dialog box while your program was running? Have you ever tried this in other programming languages? AutoLISP comes to mind and just as quickly exits stage left. One of the primary reasons most people wish to learn VBA is to be able to create a graphically rich program without writing pages

and pages of code to display the forms. Let's take this opportunity to revisit the quote from Bill Gates that appeared in the first issue of this series. "...Imagine designing the visual components of an application graphically—merely by placing controls on a form. All programs would be designed, created, and run within the Windows environment. Taking the ease of use that is common to both BASIC and Windows, the result would be a visual, productive, and interoperable tool for creating applications in the environment that is currently the most popular for personal computers." (Bill Gates, Chief Software Architect, Microsoft, Inc. in *BasicPro Magazine*, 1991) Yes, let that sink in



because that is exactly how we are going to create our visual forms and dialogs for our programs by utilizing VBA.

According to the help file that is installed with the VBA editor in AutoCAD 2002, the definition of a form is as follows: Form – A window or dialog box. Forms are containers for controls. If you have been following this article series in PaperSpace, then you know that the first bit of code we explored utilized one of VBA's built-in forms called the Message box. In that issue I showed how easy it was to invoke a form directly from the command line in AutoCAD without ever opening the VBA editor.

That is the reason why the thought of AutoLISP makes my blood run cold. Actually, it is the thought of writing all that DCL code to display a form for use with AutoLISP that does it. But I digress... command line generated forms are fine for displaying standard forms, but what if you want to create your own user interface or just make your programs more professional and "Windows" like? Then pay attention here because we are going to explore the

use of Forms in VBA. If you have the VBA editor opened with a project loaded then you can add a form by simply mousing over to the project window, right click on the name of your project, and select "Insert -> UserForm." If you don't have the editor open, now is as good a time as any to begin exploring.

**U**ser forms have properties, events, and methods that determine their appearance such as position, size, and color; they control aspects of their behavior both by themselves and in response to events. The size and location of a form is defined by manipulating the following properties of forms: Top, Left, Width, Height. You can locate a form in AutoCAD's active window by setting the value of Top and Left to the actual screen location. These placement properties are defined as the distance between a form and the left or top edge of the form or window that contains it. Note that this is typically a number between -32,767 and +32,767 on most Windows systems. The

values for Width and Height are simply added to Top and Left to define the bottom and right side of the form.

You, the programmer, can also affect the Borderstyle, BorderColor, BackColor, and Forecolor of the form. Forms can have a standard font associated with them and are typically displayed with a Caption Bar or Window Title bar at the top of the form. This bar also contains a changeable "caption" property in addition to the exit button (an x inside of a square button at the upper right most corner) that is useful for exiting your routine when complete. Other features of the UserForm include five different styles of special effects for the form: Flat, Raised, Sunken, Etched, and Bump. Additionally, you can change the mouse cursor as it appears to the user when they have moved the mouse within the borders of your form. To access these properties at design time, simply activate your form and look at the properties window for all the properties listed and a few esoteric ones that I'll leave to your watchful eye. You can also access these properties at runtime

*continued on page 22*

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# English and Metric Units in AutoCAD



## Introduction

AutoCAD as an international application should be able to support different standards. AutoCAD users, who reside in more than 160 countries, create their drawings with different methods and different standards. Two major measurement systems that are used worldwide are Metric and English units. Fortunately, AutoCAD supports both of them.

English units are based on feet and inches and Metric units are based on millimeters. AutoCAD settings for Metric and English units are different. The major differences are explained below.

## Linetypes and hatch patterns

If you are using Metric units, the ACADISO.PAT and ACADISO.LIN files define hatch patterns and linetypes respectively. Equivalent files for English units are ACAD.PAT and ACAD.LIN. It seems there is no apparent difference between the contents of the files. For instance, all hatch patterns available in ACAD.PAT are also available in ACADISO.PAT. Actually the internal settings of files are different. For example, each segment of CENTER lincetype in ACAD.LIN equals 2 units while in ACADISO.LIN is equal to 50.8 units. Such differences affect the proper lincetype and hatch pattern scales for drawing files.

To change the default hatch and line-

type settings of your drawing file, you can use the MEASUREMENT system variable. Set MEASUREMENT to 1 to use Metric settings and 0 for English settings.

## Default text height

If you do not define the text height within Text Style dialog box, AutoCAD will use the value of TEXTSIZE system variable as default text height. The default height for English units is 0.2 and for Metric units 2.5.

Each default height defines a range. The height range for English units is 0.05 to 1.6 and for Metric units 0.625 to 20 (i.e. 1/4 to 8 times of the default height). If you try to



Figure 1

exceed this range in Multiline Text Editor dialog box, an error message appears on

*continued on page 24*

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screen (see Figure 1). Although later you can select characters within the dialog box and change their height, it is better to choose a proper default text height to avoid such a message.

TEXTSIZE accepts any non-zero real number and has no effect on text styles that define a fixed text height. Negative entries are replaced with their absolute values.

### Drawing limits

There are two system variables to define drawing limits. LIMMIN specifies the lower left corner and LIMMAX upper right corner of the drawing limits. LIMMIN equals to 0,0 for both units. LIMMAX is set to 12,9 for English and 420,297 for Metric units.

### Multiline scale

The default multiline scale for English units is 1. This value is equal to 20 for Metric drawings. The multiline scale is saved within CMLSCALE system variable. The variable contents can be changed directly or by use of MLINE command.

### Fillet radius

The FILLETRAD system variable keeps the value of current fillet radius. The default fillet radius is 0.5 and 10 for English and Metric units respectively. You can change the default value of FILLETRAD directly or within FILLET command.

### Dimension style

Different dimension styles are used for different types of Metric-based or English-based drawing files. There are four major dimension styles: Standard (based on ANSI standard), ISO-25, DIN, and JIS. The first one is based on English units and the rest are Metric-based.

If you do not have access to your desired dimension style, you can import it from an existing file with the help of the AutoCAD DesignCenter feature.

### How to select the proper units

Although you can select Metric or English units when you start a drawing from



Figure 2

scratch, a better method might be to use a template file. There are different predefined template files available in AutoCAD, based on Metric or English units settings. For example ANSI, Architectural, and Generic template files follow the English units settings. Predefined Metric templates are DIN, ISO, and JIS files.

### A free conversion program

Sometimes you might need to change some of the settings of the current drawing file from Metric to English or vice versa. I have developed a program to fulfill this need. The program defines a command called METRIC\_ENGLISH. The dialog box of the command (see Figure 2) is capable of changing settings one by one or all together. If some settings are neither Metric nor English, the radio buttons will remain empty. To get a free copy of the program, contact me via alireza@khawarizmi.com or download it from [www.augi.com/educate/publications/paperspace/psdownload.asp](http://www.augi.com/educate/publications/paperspace/psdownload.asp).



**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.

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# Command Spotlight



## In this issue: DWGPROPS

Tracking drawings and projects can be a real pain for a CAD operator. There are ways of organizing drawings that can make things easier but it takes some up-front management. Try out the command *DWGPROPS*. It will present a dialog box that will allow the user to put in some information about that particular drawing. (See Figure #1.)

The information under the *Summary* tab will allow defining searchable fields. The *Title* could be the title of the drawing. The *Subject* could be a particular floor, section, layout, etc. The *Author* could be the CAD operator or designer. The

*Keywords* could be a project number or customer name.

It does take some discipline to do this management to every single drawing for some projects but it can make things easier to locate drawings.

Other things that can be obtained from the *DWGPROPS* can relate to the size, last time it was modified, last time it was accessed. Under the *General* tab (See Figure #2.) the file attributes can also be found.

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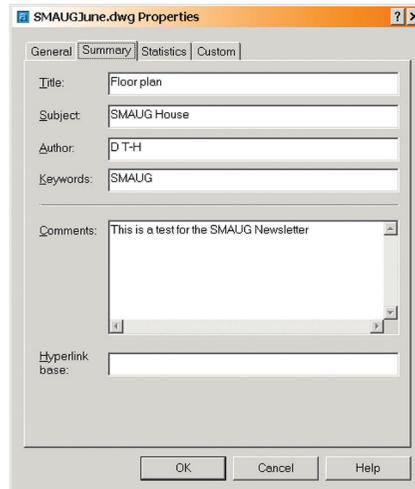


Figure 1

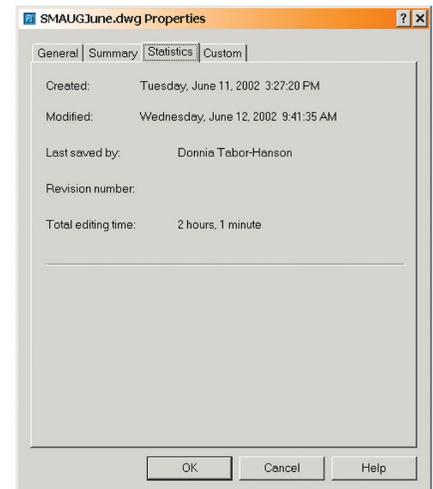
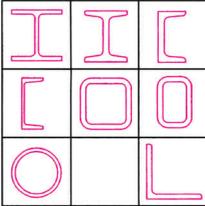
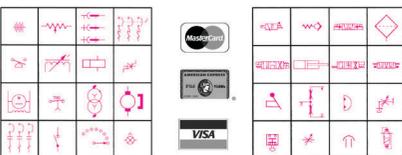


Figure 2

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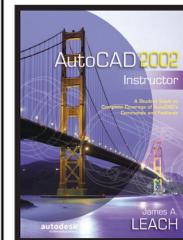
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Sometimes the person who worked on a drawing last is important. That can be found with the information of when it was created, modified, the revision number, and total editing time under the *Statistics* tab. (See Figure #3.)

The *Custom* tab allows creation of some in-house fields. These could be related to the project, operator, customer, and so on. (See Figure #4.)

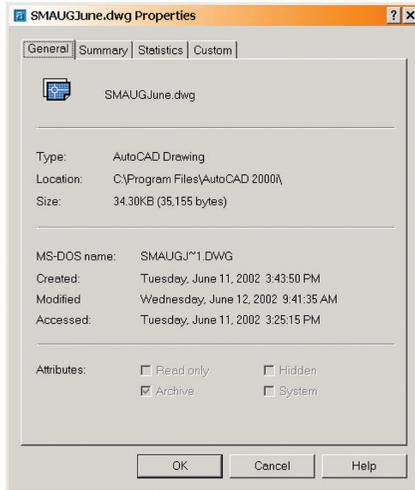


Figure 3

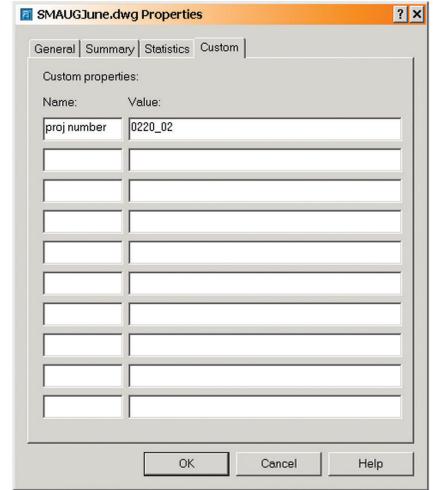


Figure 4

## Hint

### DesignCenter's Find Option

Using AutoCAD Design Center's *Find* option will allow searching for some of the information found within the drawing properties defined in the *DWGPROPS* dialog box. The *Drawings* tab has *Search for the word(s)* that would be something that had been input by the CAD operator. The *In the field(s)* space would be a

selection from items *DWGPROPS - Summary* tab set.

Other things that could be in the *Look for* pull-down would be blocks, dim styles, hatch pattern, layouts, layers, text styles, etc. The *Look for* option selected will determine how much information is asked for in the *Drawings* tab. For example, if looking for a layer then the only field to search for would be *Search for the name* field. If a selection other than *Drawings* is chosen in the *Look for* option, the *Date Modified* and *Advanced* tabs will not appear.

The *Date Modified* tab will do a search based on parameters of creation or modification dates or a search for dates during a time period. (See Figure #6.)

The *Advanced* tab will allow certain block, attribute, or drawing information to be searched based on textual information. (See Figure #7.) The *Containing* option gives a list of the limitations used in this tab. (See Figure #8.) Once that option has been selected, the textual information to be searched for would be placed in the *Containing text* box.

The last option for this search could be the *Size is* option. This would be limited to *At least* or *At most* in the first *Size is* option. Then the drawing size limit to be searched for would be placed in the next box.

Happy Searching!

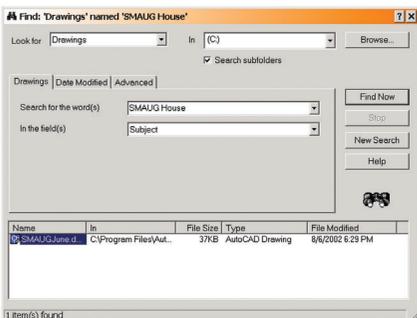


Figure 5

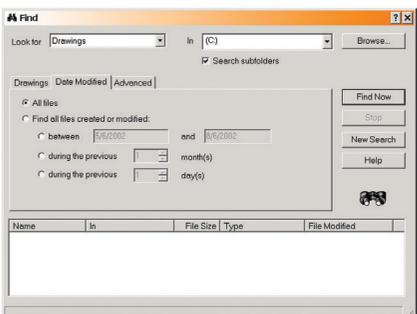


Figure 6

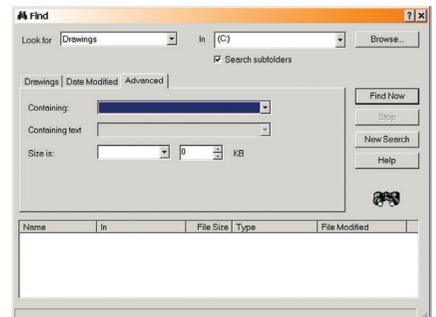


Figure 7

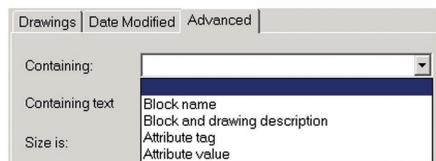


Figure 8



*Donnia Tabor-Hanson, a past president of Autodesk User Group International, is currently AUGI's treasurer and Logistics Liaison. She is also an Autodesk Authorized Consultant*

*and works for MossCreek, a log home design group in Knoxville, Tennessee. The Command and Hint segments, reprinted from her Smoky Mountain AutoCAD User Group (SMAUG) newsletter, have appeared in PaperSpace for the past two and a half years.*



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solid door. There were several components inside—one about the size of a refrigerator and a couple more about the size of a kitchen range. The walls were racked with reels and reels of tape, each a bit bigger than a dinner plate. As we watched, the technician inside mounted a reel on the side of the refrigerator, sat down at the keyboard and typed a few letters, and the tape started to spin.

The kitchen range-sized boxes, we were told, were the disc drives. Each one of them held an “incredible 60 megabytes of data.” Our primitive little PC (pre-computer) brains had no idea what that meant. For years the standard question was “how many E size sheets is that?” Sales engineer after sales engineer would valiantly try to explain it to us. The answer was never the same.

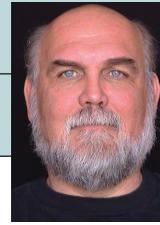
We joked about how much they must be paying these folks to work until 9:00 at night, but a couple years later the joke would be on us. As it turned out, CAD was SO expensive that only the aerospace and automotive industries could afford it. The auto industry was already familiar with the benefits of running three shifts. It was necessary to generate as much revenue as possible to offset the cost of the CAD system. I thought my being in the aerospace business protected me from that kind of treatment, but no... my first CAD assignment was a graveyard shift. I had unwittingly become a servant to a device that was designed to serve mankind.

### The Empire ruled, for a while...

There was a long and dark period when Luke was still a boy and the rebels were developing their plan. The title “sales engineer” didn’t fool us for long. We soon discovered that many of them didn’t know what a megabyte was either. There were Cadillac (read big ticket) salesmen who were migrating to CAD salesmen. They had heard that there was a big future in, and I quote, “TV Drafting.” A typical slogan: “It’s so easy, you can train your secretary to be a drafter!” That is yet another flashback to the bad old days. I will now make one last blanket apology for the misogyny of the era. Let’s move on.

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

# Back In The Day



David Kingsley

## The History of CAD

To my knowledge, a column on the history of CAD is unique in the realm of CAD trade journals. Is CAD old enough to *have* a history? I meet many young CAD users who were not yet born when I started pushing my first electrons, so I consider my first experiences to be history to them. And, as you know, history repeats itself.

In this column you will read about things good, bad, and ugly that happened 15 to 20 or more years ago and still ring true. Sometimes that truth will be because something just plain still works, and sometimes it will be because people still can't get it right. I will also proffer my perspective on the general spirit of the technological community at key times over the years—the things that rocked my, and everybody else's, world.

I was born in 1951, which makes me a full-blown “baby-boomer” (officially those born from 1946 through 1964). We boomers possess some unique qualities with regard to the information age. We were the first generation to grow up with a television in almost every home, and thus the first to be comfortable with getting information from a screen very early on. We were the first generation to be affluent and savvy enough to buy personal computers when they hit the market. Our first useful home computer was the Commodore 64, circa 1981. Our careers span the era from the Beatles to Britney Spears, from building interstate highways to building the information highway, and from drafting boards to a fiercely competitive CAD market.

I'm going to climb out on a skinny branch hanging over some thin ice right away. I can do that because I'm older and have more insurance. A very small percentage of the population bought Commodores in the early '80s, and a small percentage of those people were successful at completing simple tasks with them. There were few opportunities to get your hands on a real CAD system then. I had a few years of design

experience when I first encountered the opportunity to learn CAD, and I was still malleable enough to change the way I worked. Many people my age and up were not. Even if they were willing of heart, many failed in their attempts to learn. A small percentage succeeded.

## What's your point?

Remember the ad that ran in the CAD magazines this year? It pictured an old, squinting, toothless guy saying, “In my day, we transcribed our paper drawings into CAD by hand!” Nobody that old knows how to use CAD, but there are some

ically that same building still serves as Auto-Trol's world headquarters.

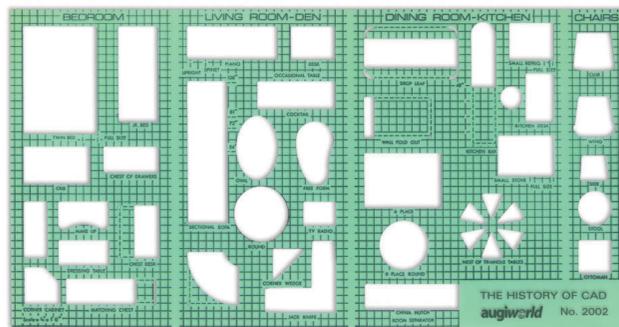
Today, everybody has a computer at their desk, but “back in the day”, the CAD center was a multimillion dollar facility that you scheduled time in and showed up for. It was much like surgery, but required less recovery time. I'm sure many of you remember the first time you walked into a CAD center. If you were like me, you realized instantly that this is where you were meant to be, that the room had somehow been designed to appeal to all of your senses at once. Dark and cool, smooth desktops and fabric walls in muted colors, brimming with technology that no mere human could afford to purchase, and quiet, very quiet.

There were eight stations in the room, all were occupied by well-dressed men. No, there weren't any women, remember these are sometimes the bad old days. Everybody had a huge monitor. Some were amber in color, some were green, but all were monochrome. That's right folks, literally two bit graphics,

the pixel was either on or off. If I remember correctly, the resolution was about 400 x 300. VGA wasn't even a standard yet (does anybody still run VGA?). Each screen also had a flat platform in front of it about the size of an open newspaper that they called the “digitizer.” They slid a thing over it that looked like a mouse (once again, there was no such thing as a mouse yet) and clicked the “puck” in various places. As I looked over a shoulder I saw a drawing taped over the digitizer. The operator would click on a picture of a bolt, and in a split second it would appear on the screen. Wow! My knees wobbled. They all worked away without interruption as our guide looped us through the room.

Adjacent to this room was the “computer room.” It was brightly lit and clearly visible from all the CAD stations through several large windows, but one soon noticed the combination lock built into the closed

*continued on page 27*



boomers who do. What I'm trying to say is that picture was digitally altered. They never asked my permission to use it. I still have all my teeth. :-)

## CAD in the '70s

I started my mechanical design career in 1970 in the automotive industry around Detroit. I spent about eight years bending over a drafting board before ever seeing a CAD system in operation. For most of the '70s, my world consisted of green plastic templates, stainless steel straight edges, scales, and big sheets of clean white vellum. The most high-tech engineering tool I possessed was an HP-65 programmable calculator, which I used primarily for trigonometry, the second language of all good mechanical designers. That all changed direction in 1978 at an SME (Society of Mechanical Engineers) meeting at Auto-Trol in Denver. There was no Autodesk, no Microsoft, and no DOS (because there were no PCs yet), but iron-

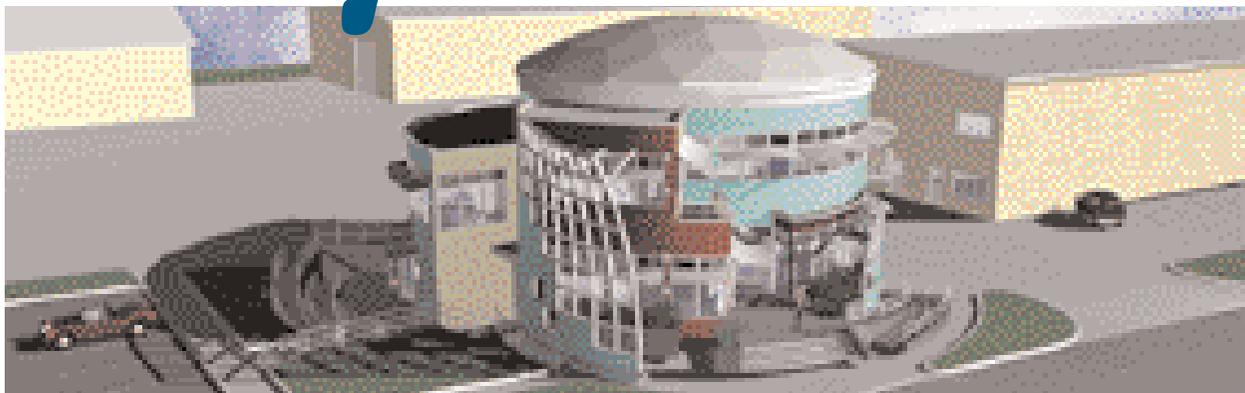


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