CAD Interoperability
Fact or Fiction?
The business side of why systems do – and don't – communicate

Making AutoCAD Scream

Creating Autodesk Revit Families

On the Back Page
New Name, Same Old Geezer

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The Cad Manager

David Harrington

The Changing Face

Hopefully you have noticed a changed face, probably due to hair follicles, for the writer of this fine column. The former author, John Clauson, has moved on and I have energetically accepted his role as Technical Editor of **AUGI***World*. I have also assumed the task of writing this column (or at least something) on a bi-monthly basis. Please forgive me if my first stab seems less "managerial" and more user based.

I first began using AutoCAD in 1987 with version 2.6 (R8) on an ITT 8088 processor computer. It had some version of DOS and I seem to remember the screen being primarily amber-green in color.

Now I use a Dell Precision 530 with dual Xeon 1.7GHz processors and 2GB of RAM. I'm on AutoCAD 2004, Architectural Desktop 2004, and 3ds max 6. We have come a long way, baby! An interesting side note is that this transition has been done within the same company! More than 16 years have passed and I'm still going strong. It should be said that the key to this has been the work—it keeps me interested everyday. Programs are like pencils—they help you do your work or they are your work. But you define which approach to take.

As an old timer (before CADD), I am always amazed at how terms of the past come around again. And only we pre-CADD users sense the irony in that.

Templates

Templates; you think of these as funky dialogs that you can turn off and on where you place elements of your industry drawing types. Or they can mean sample drawings where you have predefined your settings and layering scheme. I can remember when they were sheets of green plastic with cutouts of toilets and such. You would simply lay them over your drawing (the real kind of dwg) and trace the outline, hence saving tons of layout time. You got instant standardization just by buying enough for all your staff!

Hatching

Your hatching is so much more complicated than it used to be. You have to define the pattern to use, the layer to put it in, perhaps the color, maybe the line type, and then of course that pesky scale and rotation!

I used to open a folder (the type placed in a drawer) and flip through dozens of CHARTPAK or ZIP-A-TONE adhesive
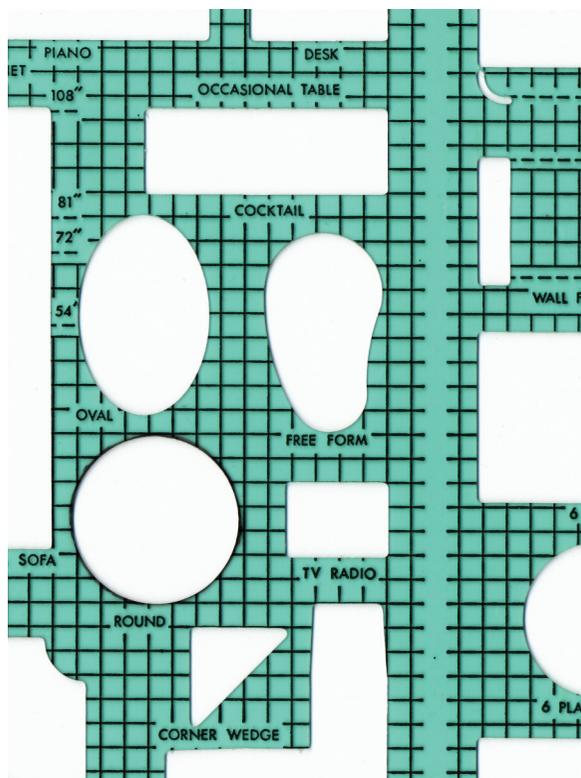
film until I found one that fit my needs. Cut out a section and place it on the back of the paper. Then trim it up with a sharp X-ACTO knife. No scaling needed. If I wanted rotation I would spin the film before pressing it down. Now editing it, that was tough. Had to get the razor out and lift a corner then rip that baby off. This was followed sometimes with rubber cement thinner to remove the glue.

Pen Weights

This used be such an easy thing. You first would understand the thing you were drawing. Then you would determine what level of importance was warranted for it. Then you just matched the KOH-I-NOOR pen to what effect you needed. The options were somewhat limited. Pens came in various sizes ranging from 0.13mm (6xO) to a 2.0mm (7) and had black India ink in them.

Have things improved? I'm not sure, because now you have infinite levels of adjustment in width. I have seen many drawings with tons of lines that look the same—but technically are different. The line work is supposed to help the reader understand the drawing. It is not necessarily supposed be an exact top view representation. Gone is the concept of NTS (not to scale) for the sake of presentation.

Scales

"Do you have a scale?" If I asked you that would you respond with, "Of course. I set it to 96." or say you had to look for it. I am referring to those foot-long plastic sticks with three sides etched with marks indicating real-world distance factored in small increments. You would actually use these tools to measure a paper document to determine the length of something that was not annotated. But of course, we understood that blue prints stretched a bit when made. That didn't matter—as long as the values added up, it was all good.

Shading

There was a point in time where "shading" really wasn't an option, at least not as it is done now. Since the color of ink for your pen was black, attaining some level of grey was nearly impossible. I do remember watering down the ink on occasion but that never really produced results. Did we have

cles after spending hours removing line work from my drawing. Changing things was not easy and it was not fun. It took skill to erase something next to something you needed to keep. And you needed to be careful to not burn through the paper or remove the tooth of the mylar. Mylar had teeth? Yep, the surface was slightly rough so it would receive ink readily. If you removed the tooth, well then you had trouble. You might be able to use a scum bag to get enough surface back for the ink to stick. If that didn't work you could try using some pounce dust. And if that failed, break out the X-ACTO knife and remove a section of mylar. Then tape a new piece in its place with super clear tape. What a pain.

Not Going Back

After reading this story you may get the idea I don't like AutoCAD. Hardly! It has been a wonderful addition to my career and the work I do. I wouldn't change back for anything. What I do miss is the demise of the skill, the art if you will, of drafting. We rely so heavily on the technology today that we don't challenge it enough. Did your graphic standards change when you moved to a digital world? They probably did, but why? What about a CADD system doesn't allow you to produce drawing "art"?

The Challenge

I invite you to email me a PDF or DWF file of your best-looking single detail. I say detail because I would like to print it in a future article and plans are too big! The rule is it must be 100 percent AutoCAD—no hand drafting or image manipulation outside of the AutoCAD environment.

There will be three categories: Architectural, Engineering, and Mechanical. The authors of **AUGI**World will then rate the details and determine the best looking. Are you proud of your work? Then send it in!

David Harrington works for Walter P. Moore and Associates in Tampa, Florida, USA. He specializes in Structural Engineering and uses AutoCAD 2004. He can be reached at DHarrington@walterpmoore.com.

shading? Heck yeah, but it was different. It consisted of taking a pencil, usually a red one, and lightly coloring the backside of a mylar drawing. Mylar (film) was the preferred media of the day—very durable and you could erase many times without going through!

Dimensioning

Annotation of any type was always tedious; after all you had to use your fingers to put word to paper. Some of us used stencils and simply traced the letters while others were steady enough to write freehand. I was terrible and still am today. But dimensions have not changed much. They dictated a distance between two points just as they do today. Of course, you had to figure out that distance and write it, but in some ways they were more powerful. If you needed a different level of accuracy you just erased the text and rewrote. If you needed the dimension lines to not overlap something, you just picked up your pen and hopped over it. Try doing that with AutoCAD! And if you needed a different type of arrowhead you just drew it; there are no blocks to create and remember!

External References

Hey, we had Xrefs, too! There was a new technology that came out called the Pin Bar System. Basically your mylar had a series of holes punched along the top edge. Then there was this metal strip with pins that you would use to align multiple sheets of mylar. Create your grid drawing first and then lay it underneath your floor drawing. Just replace the top drawing with a new sheet as you create your plans. Then send it off to the reproduction house with instructions. They typically would send you back sepias of the various plans merged together. It was sweet!

Erasing

Okay, I have to admit, AutoCAD has improved this process immensely. I can remember being covered in eraser parti-

CAD Interoperability – Fact or Fiction?

Will there ever be a day where we can model intelligent buildings, constrain mechanical assemblies or encode topologies then freely exchange our data with other CAD systems without so much as a glitch or mistranslated entity? Might this CAD utopia be realized soon or will we have to wander the digital desert for a generation before the promised land is found?

D uring my trip to COFES 2003, I spoke with many CAD users, programmers, and analysts who espoused the CAD promised land view of CAD interoperability. That being a world that would allow us to move data between dissimilar CAD systems with effortless ease. These data-centric evangelists argue that while we may use Autodesk software to create our DWG, IPT, or IAM files that the data is ours and we should have an inalienable right to manipulate that data without worry that format changes could lock us into any specific software vendor's product lines. On the other, more vendor-centric side of the debate is the argument that for software companies to give us continually improving tools, file formats have to evolve and that evolution, inevitably, will introduce data interoperability problems as software companies fight to "out-innovate" each other.

Editor's Note: To read more about COFES, please see http://www.augi.com/ publications/augiworld/NovDec2003.lowr es.pdf (page 10).

What Is Interoperability?

Great question! And one that requires some context to answer effectively. I believe that CAD interoperability is presently defined by three key metrics, those being:

Metric One: The conversion of geometric data so that CAD systems can exchange data with dimensional accuracy. An example of this case might be converting a 2D architectural AutoCAD file to a MicroStation DGN file so that feet and inches are correctly interpreted as master units and sub-units to match the intent of the AutoCAD DWG (NOT a given in my experience!).

Metric Two: The ability to utilize existing CAD files directly in other software tools with no translation required. An example might be reading an Autodesk Inventor or Mechanical Desktop file directly into a computer aided manufacturing (CAM) program to generate CNC programming code for the shop floor.

Metric Three: The conversion of extended 3D data, which can include solids, surfaces and, in parametric systems, constraints and external database connections. The possibilities here are endless as high-end systems use spreadsheets, hyperlinked external files, and any number of

proprietary internal data structures that describe assembly type relationships.

How Are We Doing?

At present I view the CAD industry as being more or less compliant with Metric One, establishing clear momentum towards Metric Two and chronically lacking on Metric Three. My justification for these conclusions is as follows.

Metric One: Basic CAD data transfer has been facilitated by a well-defined DXF interchange protocol (authored by Autodesk) that has been widely supported for years now. Some CAD systems (like the MicroStation example I cited) have even tackled DWG translation problems by writing interpreter routines that read AutoCAD data directly into their programs. As a matter of financial necessity, most software companies have seen that they need to import/export data to/from AutoCAD and have thus made the software tools available to do so.

Metric Two: Add-on software manufacturers (think CAM applications or rendering utilities) have realized that they could sell a lot more software if they make it easy for customers to use their systems. What better way to make life easy than to read the customer's CAD data library directly without any translations required? I believe direct file portability is what customers want (no hassle) and what software vendors want (they program only what they need), thus the momentum towards this type of interoperability solution.

Metric Three: Be honest, can you ever envision highly complex parametric modeling packages being fully compliant down to the last constraint or rule of intent? Can you imagine transferring multi-element assemblies from Solid Works to Inventor to Solid Edge without a hitch? The sheer complexity of these tasks makes total interoperability of high-end 3D packages prohibitively complex. While solids and surfaces can be translated, I see very little possibility that total interoperability will ever be fully recognized.

Financial Realities

While we, as users and CAD managers, might like all CAD information to flow freely between systems it is important to understand that writing translation drivers and supporting multiple data exchange standards costs CAD vendors a lot of money. Why then would companies like Autodesk go out of their way to provide a translation protocol that would allow you to leave their CAD tools and migrate your data to another program? The simple answer is that they won't unless they recover financially by selling these tools as product lines.

However, if another vendor provides interoperable migration tools to accept data into their software it can make finan-

> # The idea of an interoperability Nirvana where all programs interact with each other at a 100 percent translation efficiency simply won't happen…

cial sense for them because they can remove a key financial barrier for customers who may be considering their software. So what it really comes down to is that smaller software companies will provide tools to import popular CAD data formats into their systems so they can sell more software to companies changing software platforms. Those software companies who already enjoy a market-leading position have little financial incentive to provide interoperability tools and are not likely to provide them.

Understanding, and accepting, this financial model of interoperability will lead you to the certain conclusion that interoperability between software packages only happens when there is a compelling profit motive for software companies to make it happen. The idea of an interoperability Nirvana where all programs interact with each other at a 100 percent translation efficiency simply won't happen because nobody can force all the companies involved to unite behind a single standard (even if one existed) because nobody can provide the financial incentive to do so.

So What's Cooking?

There have been several aborted attempts to establish a global CAD inter-operability standard, much like ANSI or AIA standards for 2D CAD, over the years. These efforts are laudable but, in my opinion, not practical. Even if a perfect data interoperation standard were agreed to today, how long would it take for non-synchronized product upgrades to change the picture from one of harmonious operation to disparate products that won't interoperate? Furthermore, would your company be willing to accept less advancement in your preferred CAD software tools to facilitate better interoperability with software systems you don't own? Can anyone for a moment believe that software companies that compete with each other in vicious one-year upgrade cycles will sit by and stall their development cycles while non-profit organizations argue about how software products should inter-relate?

I believe the answers to these questions will be an almost universal "no" in the marketplace because nobody—customer or vendor—will want to pay the tab for interacting with other software vendors' tools. I simply can't see this scenario coming to pass in any way under any circumstances. It would literally take a customer-driven revolt that stopped sales of software subscription arrangements for something like this to occur.

Summing Up

The main thing I've come to understand about CAD interoperability in my years using varying CAD systems is that CAD systems interoperate only at a certain "common denominator" level. That is, capabilities that are common to most CAD systems will interoperate while newer, more advanced capabilities will not. The secondary thing I've learned is that the interoperability puzzle is always getting simultaneously worse and better as new products gain features and older products are less able to receive data generated by new products.

My hope is that this look at CAD system interoperability has given you a business-focused approach to why systems do and don't communicate. I've found that viewing CAD interoperability through the lens of finance has yielded a much clearer picture than a technology lens ever has.

Robert Green is an industry consultant, author, and speaker located in Atlanta. He can be reached at robert_green@mind-spring.com.
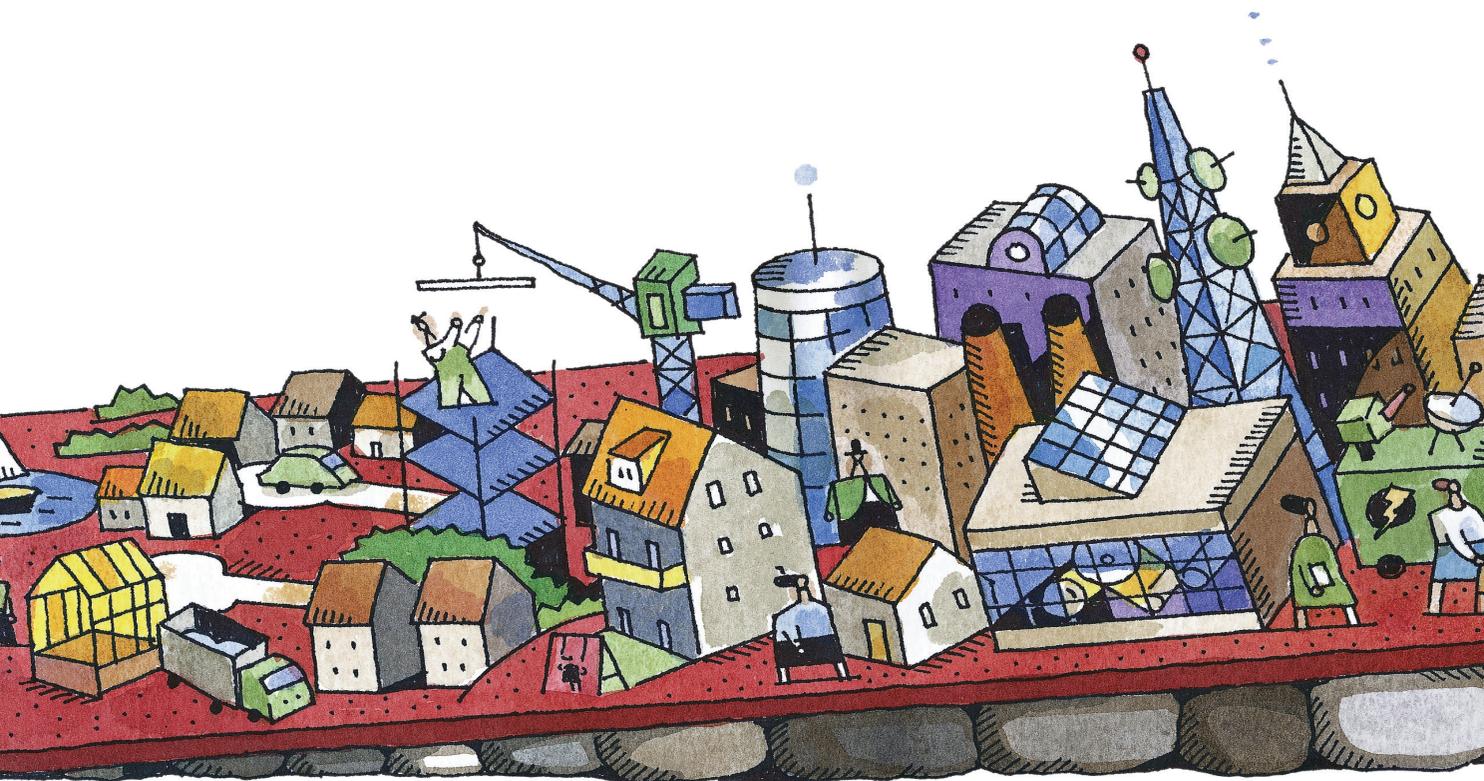
Autodesk Manufacturing Solutions: The Whole Is Greater Than the Sum of the Parts

Q&A

With Andrew Anagnost, Senior Director of Product and Solutions Management for Autodesk's Manufacturing Solutions Division
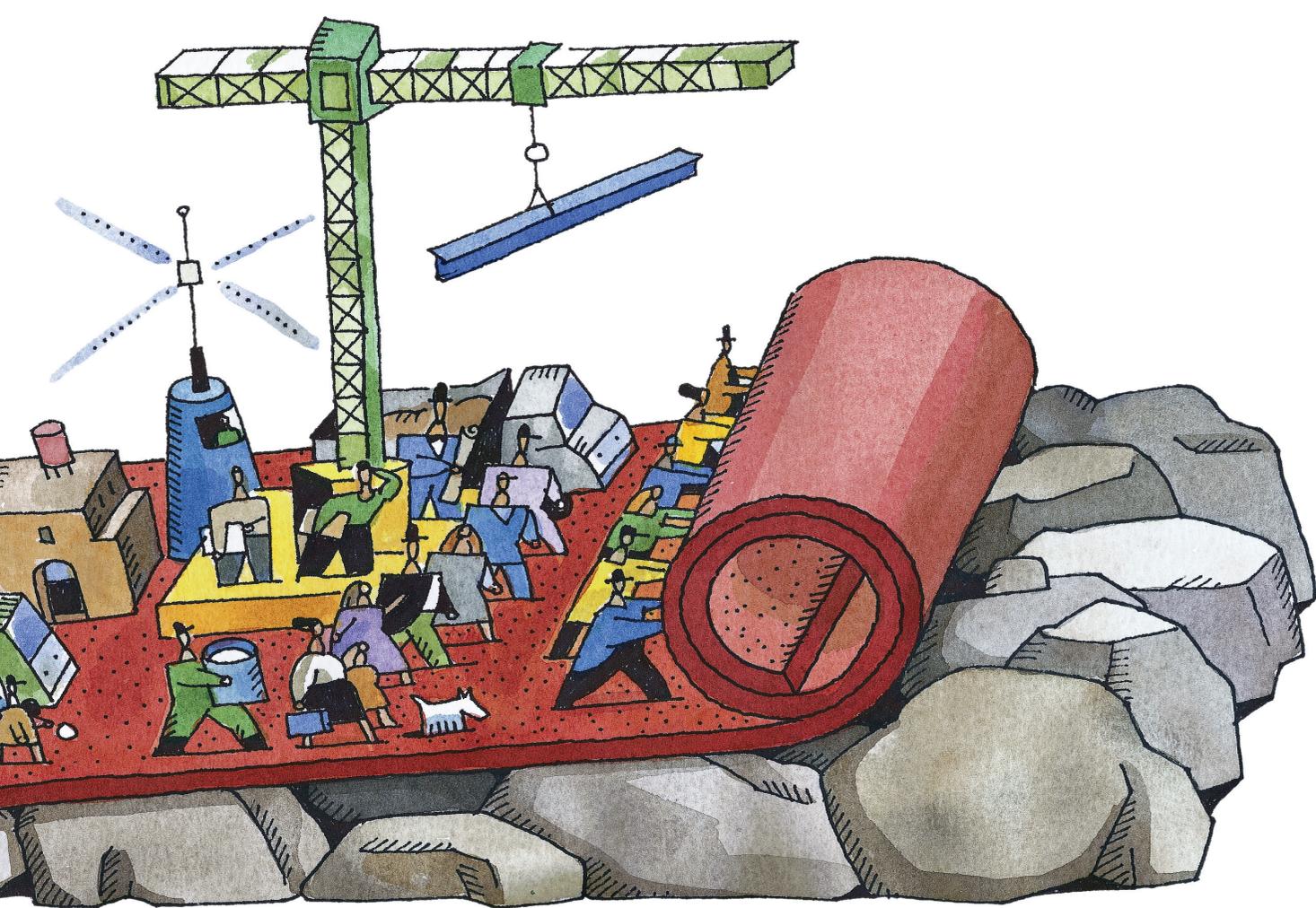
AW: What are some of the trends driving change in the manufacturing industry right now?

Anagnost: There are two primary factors driving change in the manufacturing industry. The first is the trend toward mass customization, or more specifically, the expectation that each product will be customized to meet specific customer requirements before being manufactured. The second trend is the globalization of manufacturing. Today, for example, a product can be designed in multiple offices in Europe and the United States, manufactured in Asia, assembled in Latin America, and then shipped to locations around the world.

AW: What is the impact of these trends?

Anagnost: Mass customization and globalization are forcing manufacturers to gain more control over their design data, managing and using it more effectively throughout the entire product lifecycle from concept through retirement. Today's

manufacturers require a comprehensive set of solutions that allow them to create, manage, and share their design data to maximize their efficiencies and gain a competitive edge by delivering better products to market faster and at lower cost.

AW: What's keeping manufacturers up at night?

Anagnost: Manufacturers know the next big leap in productivity and profitability won't come by individually addressing each stage of the product development process. Most have realized that shaving five percent off the cost of design is not enough to continue to grow their business. They have to find new ways to remove five percent of the cost from the entire product development process. This challenge is keeping them up at night, while they try to figure out how to leverage their existing technology investments while creating a consolidated environment where everyone involved in the manufacturing process can access and share the right information. Additionally, they need solutions that are

easy to implement, offer a fast return on investment, and since each manufacturing environment is unique, they need solutions that are easily customizable for their particular business needs.

> Manufacturers know the next big leap in productivity and profitability won't come by individually addressing each stage of the product development process

AW: What kinds of solutions are available to manufacturers that enable them to address the entire manufacturing process?

Anagnost: Large manufacturers are implementing large-scale product lifecycle management (PLM) systems and are realizing, as a result, some productivity gains. However, these traditional PLM implementations are costly and, frankly, daunting, taking up to several years to deploy and costing millions of dollars because of their complexity. The time and money to implement traditional PLM solutions often offsets the productivity improvements they may provide and are certainly not an option for mainstream manufacturers. These small- to medium-sized companies require the flexibility to leverage technology in which they are currently invested or can acquire at a reasonable cost. They need to link their current systems together to form one comprehensive solution that allows them to efficiently create, manage, and share their design information throughout their enterprise.

For example, WMH Tool Group, a leading manufacturer of power tools, reported increasing productivity by 10 percent using Autodesk's design and management capabilities to collaborate with off-shore suppliers and manufacturers. They expect to achieve a 20 percent productivity increase when their solution is fully implemented.

Lightolier, the largest brand under global lighting manufacturer Genlyte Thomas, reported a productivity improvement of 35 percent in the first 10 months they implemented Autodesk's software that allowed them to create and share their design information. In addition, the parent company expects to cut costs by 25 percent, reduce time to market by 70 percent, and maintain security for proprietary information through further implementations.

Neither of these productivity gains would have been possible using a traditional approach to PLM.

AW: What alternatives are available for companies that don't have millions of dollars and need a solution right now?

Anagnost: Autodesk Manufacturing Solutions Division offers mainstream manufacturers the most comprehensive set of 2D and 3D design and data management solutions. Unlike other offerings on the market today, Autodesk's design and data management solutions help thousands of small- to medium-sized manufacturers, especially those that cannot tolerate large-scale product lifecycle management

installations, innovate, increase productivity, optimize processes, and bring higher quality products to market faster for less cost. Autodesk's design and data management solutions are flexible, easy to install and use, and provide fast results without complex, costly installations.

Autodesk recently released its new generation of design and management solutions providing customers with significant improvements in the way of efficiency and productivity. These solutions, when linked together, give customers the ability to design, manage, and share their design data throughout their enterprise from product definition to retirement. These solutions allow customers to take advantage of their existing software investment and significantly improve their product development process. Autodesk's newest releases include AutoCAD Mechanical 2004 DX software, Autodesk Inventor Series 8 and Autodesk Inventor Professional 8,
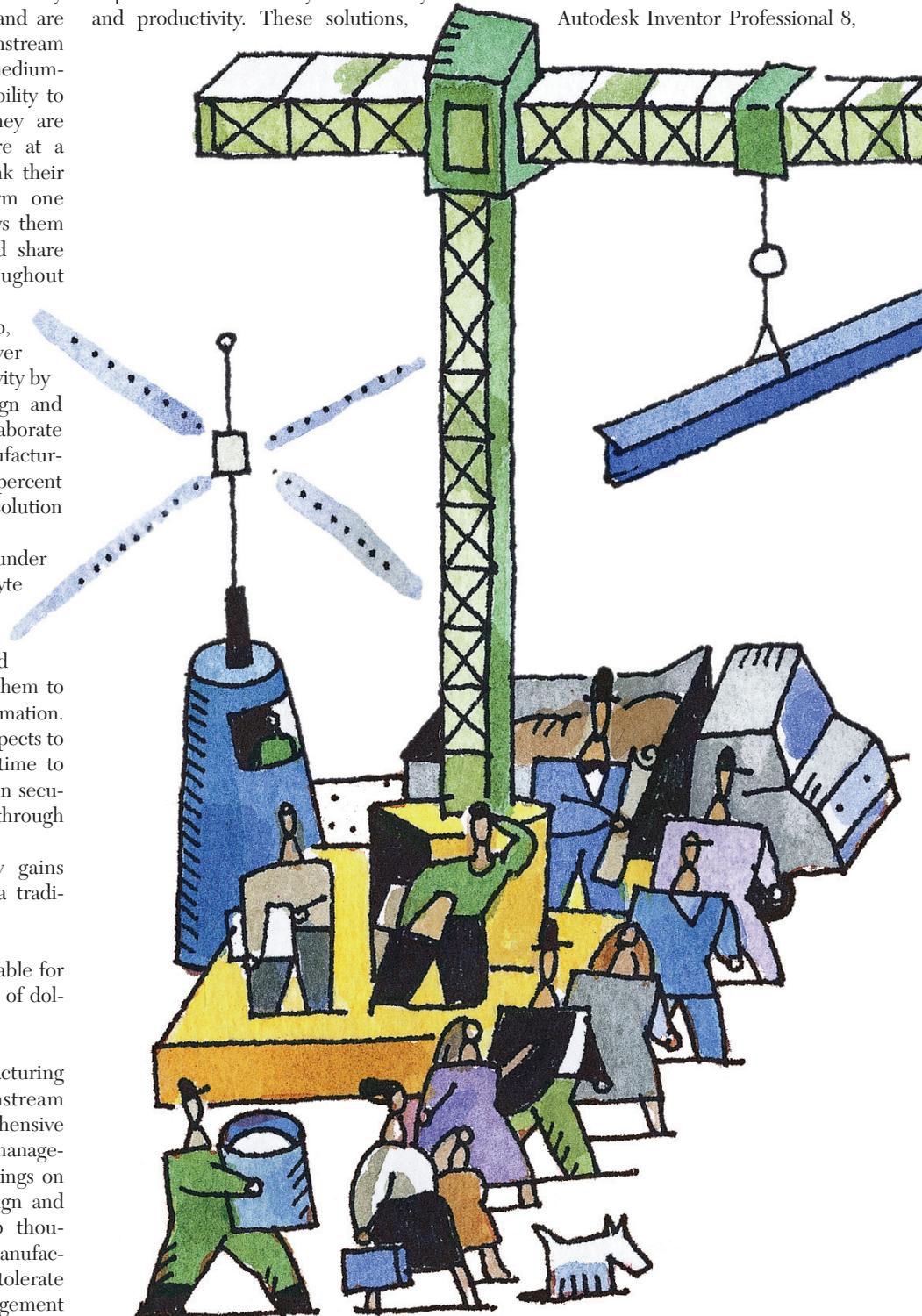
both of which are integrated with the new Autodesk Vault functionality, and the Autodesk Streamline 5.3 collaboration service.

As with each new release of our software, customers can also take advantage of new releases of widely available third-party certified applications that enhance Autodesk software. And customers can utilize Autodesk Professional Services to garner greater value from their software. Linked together, this comprehensive solution allows manufacturers to adapt to the challenges created by mass customization and globalization.

AW: What is the main focus of this new Autodesk software?

Anagnost: With its most current round of releases, Autodesk is determined to give customers exactly what they want most. In terms of creation, users wanted a faster drawing environment. Autodesk engineers made the performance of certain tasks as much as 15 times faster in Autodesk Inventor 8, the cornerstone for the Autodesk Inventor Series 8 and Autodesk Inventor Professional 8 software. Users requested help managing files to get more control over their data. We've incorporated Autodesk Vault, the company's data management solution, into the Series 8 and Professional 8 at no extra charge. Users can check in and check out files, do versioning, and improve engineering productivity by synchronizing workgroup efforts of individual designers. Users wanted a cable and wire-harnessing feature; now one can create 3D models of wires and cables as well as rigid tubing and piping with the new Autodesk Inventor Professional 8. Users requested an associative link between 2D and 3D design. They've got it with the release of AutoCAD Mechanical 2004 DX. Now engineers can take an Autodesk Inventor 3D model and create a drawing. Also customers can share part models from Autodesk Inventor with AutoCAD-based software users throughout the company without any added programming. A user links to an Autodesk Inventor part design within a new AutoCAD Mechanical file type called an Autodesk Inventor Companion file. Finally, control system customers wanted an industry-specific electrical CAD program. Autodesk

Andrew Anagnost is the Senior Director of Product and Solutions Management for Autodesk's Manufacturing Solutions Division. In this role he is responsible for division product strategy and management, partner programs, global marketing programs, and customer solutions. He has worked for Autodesk for the past six years. Prior to joining Autodesk he held positions in research, development, sales, and marketing at several companies and agencies in the CAD/CAM/CAE industry, including NASA, Stanford University, EXA Corporation, and Lockheed Aeronautical Systems. Andrew holds a BS in Mechanical Engineering from the California State University, and an MS in Engineering Science and a PhD in Aeronautical Engineering and Computer Science from Stanford University.

released AutoCAD Electrical 2004, uniting AutoCAD and the Wiring Diagram product, which the company acquired from VIA Development earlier this year.

By listening to what customers want, we're able to deliver solutions that solves the problem today's manufacturers are facing: deliver products to market faster and at a lower cost.

> Autodesk's comprehensive design and data management solutions are simple to use and deploy...

AW: Does Autodesk have any examples of customers that have benefits from its integrated design and management solutions?

Anagnost: The underground mining machinery division of Joy Global Inc., a worldwide mining machinery and services company, standardized on Autodesk Inventor for the design and manufacture of its mining equipment. Joy Global had been using five different CAD systems among four continents. Moving to a single design system, Joy Mining Machinery expects significant improvements in productivity and its ability to share design data across the division.

In addition to appreciating Autodesk Inventor software's design advantages, Joy is realizing increased collaboration between its internal teams and outside vendors. Because the majority of the machining, casting, and forging companies that Joy works with also use Autodesk software, Joy can easily exchange designs for faster turnaround and better communication. The company will be able to better communicate with its vendors to help ensure that the right part is created the first time and money is not being wasted.

Taking collaboration to the next level, Joy is evaluating the Autodesk Streamline online project collaboration service to facilitate product configuration on site for customers. This will enable sales representatives to build a model of a mining machine on their laptops with Autodesk Inventor software and quote an immediate price for the customer.

AW: Is there anything else you'd like to say in closing?

Anagnost: Today's manufacturers need an easy-to-implement, affordable and customizable solution that will allow them to realize significant benefits across their entire product development cycle. Autodesk's comprehensive design and data management solutions are simple to use and deploy, and provide increased levels of productivity for customers without costly implementations. By focusing on the entire manufacturing process rather than each individual stage, customers will benefit from a solution that delivers greater value than the sum of the parts. And in addition to increasing revenue and profitability, this will allow them to sleep at night. 🌐

"She Can't Take Warp 9 Forever!"
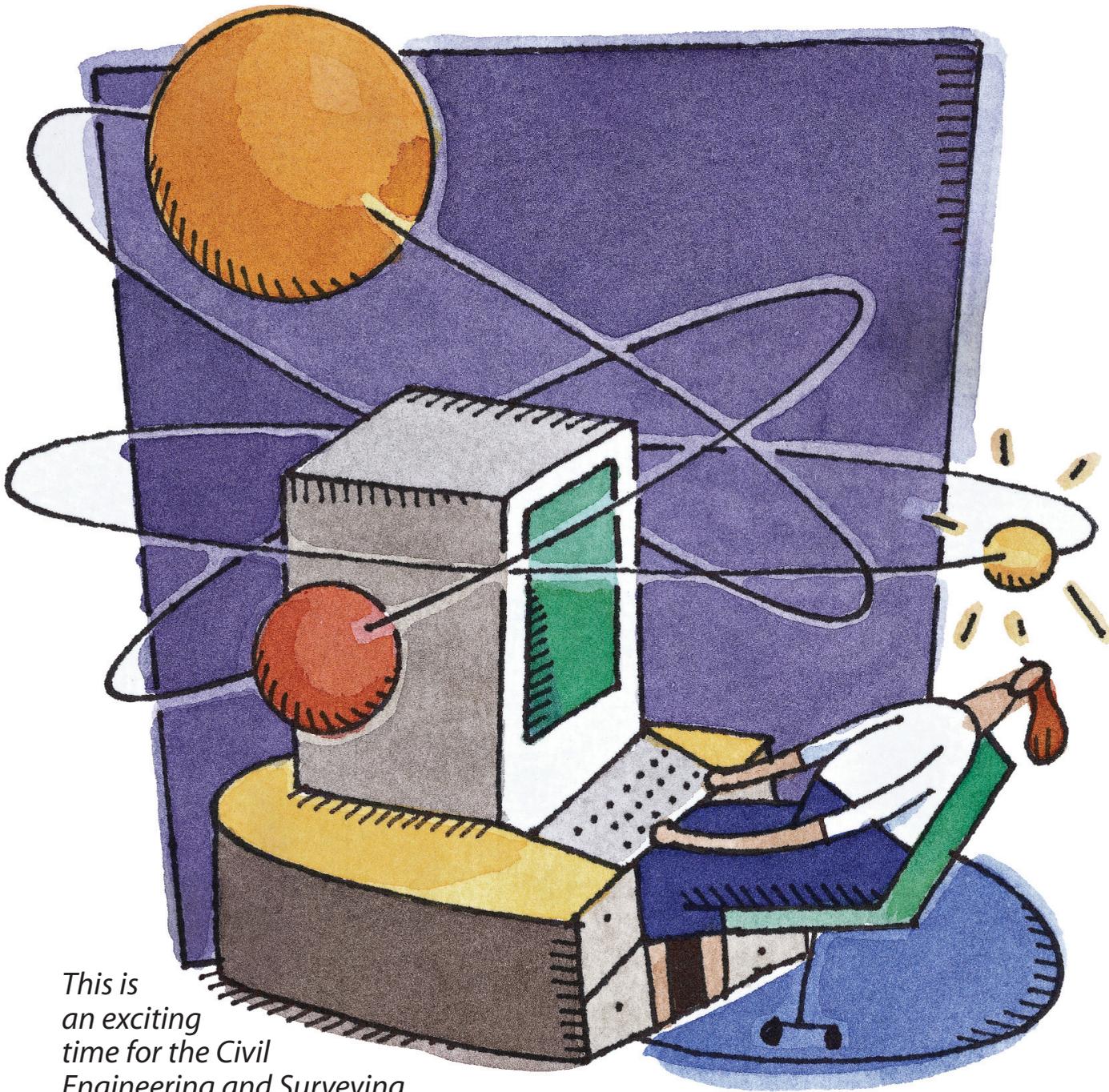
This is an exciting time for the Civil Engineering and Surveying industries. Coming from a rich and colorful history dating back many thousands of years, the present is amazing, and the not-too-distant future is nothing short of stunning

When I was in the field in 1982, the firm I was working for had just acquired the state-of-the-art technology, a total station that essentially combined a theodolite and a distance meter into one instrument. The party chief had a hand-held HP calculator that could do an incredible new task—perform inversing calculations in the field. The survey manager sat inside and calculated traverse closures on a Monroe desktop calculator with a big handle on the side. We plotted the survey points on paper with a circular compass, and a scale, then we interpolated contours with a plastic strip marked with little equally spaced lines and drew them on the plan by hand.

I note these details not as a history lesson, just as a place to start the discussion. This was only 20 short years ago. It is as if we have been shot through a technology warp drive to find ourselves in a strange new world. As soon as we figure out how to put all the new pieces together, the potential is truly remarkable.

Data Collection

It all starts in the field, and the art and science of collecting field data is truly a new world. A wide range of options now exists to address a variety of different applications. For some the right fit is a powerful total station with an attached Windows CE based hand-held data collector, now even available with a graphic display that shows the plotted data as it is being collected. For others, it's a robotic instrument that swivels like a little R2D2 and follows the rodman around the site as the data is collected. Some sites lend themselves to new reflectorless technology, an instrument that can bounce a signal off of any surface, eliminating the need for the traditional prism to send the signal back to the instrument.

And then we step into the surreal world of laser scanning. There are ground-based machines, set on a tripod, that generate a "point cloud" of a million data points that are stored and used to build a digital model. And there is aerial laser scanning, or Lidar (light detection and ranging), a technology whereby a laser beam is fired at the ground from an airplane to gather digital elevation model (DEM) data.

And of course there is also GPS, Global Positioning Systems, that can now pinpoint a location on the ground by communicating with a vast array of machines circling the planet like a man-made electron cloud. What an amazing and exciting time to be "in the field."

Civil Design with Object-based Reactor Technology

Once the data collection is done and a model of the existing conditions is built, civil design takes over. The evolution emerging here is a dynamic environment in which models of proposed designs are built with intelligent objects controlled by rules and styles. Examples are a roadway that must adhere to minimum and maximum grades, or parcels that must maintain minimum frontage and areas. The software aids in the design, and the entire model reacts to changes in real time, hence the term reactor technology. As design changes are made, they ripple through all aspects of the project and update working drawings automatically.

The complexity of a system this robust is staggering, but it is in progress and developing quickly. Keep your ears and eyes open. There is a lot going on here and you don't want to be left behind.

As soon as we figure out how to put all the new pieces together, the potential is truly remarkable

Land XML

The idea of sharing civil data between applications has been a dream for many years, and LandXML is increasingly becoming the answer to that need. LandXML files provide a format for storing points, surfaces,

alignments, parcels, pipe runs, and roadway models. Any civil/survey software developer can now develop the code to read and write these files, thereby easily sharing these types of data.

I recently took a roadway alignment developed in one application, exported it to LandXML, and then imported with another application to produce an uploadable file for a specific data collector. The roadway appeared on the data collector screen, ready to take in the field for stakeout. The developers of the two applications, as well as the manufacturer of the data collector, may never have anticipated this specific chain of events to occur between their products, but LandXML opened the door for seamless communication anyway. As the industry continues to grow and mature, this capability is a subtle but remarkably key ingredient.

Machine Control

Now we go to construction. Stake out the design with survey markers and grade stakes so the graders can prepare the site? Not necessarily. A new option is to provide a digital terrain model of the proposed design, save it to disc, upload it to a base station at the site, and control the grader through a GPS unit attached to the blade. This is called machine control, and while growing in popularity in some regions while still near science fiction in others, it is the inevitable future, and it is arriving quickly.

GIS

Ah, GIS. This is where it all comes together. Geographic Information Systems. I mean, come on, it just sounds cool. Geographic…geography, maps, maps of countries, cities, campuses, planets… Information…what else is there? Information about infrastructure, resources, people, assets, values, planets… And systems…everything put together to form a cohesive, inclusive, dynamic, robust, and vibrant…system…the Matrix…all the natural world, all the designed world, all the knowledge of the human experience combined into a network of Geographic…Information… Systems…it is indeed an exciting time to be alive. Especially for surveyors and civil engineers!

Gary Rosen, aka Professor Landnut, owns and operates Electric Pelican Ink CADD Consulting Services, Salisbury, New Hampshire. He can be reached at grosen@ electricpelicanink.com.

> This is called machine control, and while growing in popularity in some regions while still near science fiction in others, it is the inevitable future, and it is arriving quickly

Creating Your First Drawing Using "Good Practices" Approach

Can you do it? Here is a small teaser before you start reading the article. The task is to draw a two-segment pline in a new drawing. The first segment consists of a line of length 2000 (the direction does not matter). The crux of the matter is to display the first line fully on the screen before completing the command. Try it!

Remember how excited you felt when you were about to start your first AutoCAD assignment? The drama has been enacted repeatedly through the ages since then. Everyone who has finished AutoCAD training goes through the same emotional upheaval. The user receives that initial assignment then rushes to the CAD station, eager to get started. This article explains a "Good Practice"—the steps that you need to follow to avoid a few pitfalls before you open your AutoCAD.

Three Commandments of AutoCAD

Let us first prepare some solid ground by reviewing a few basics before we discuss the procedure in detail. In the AutoCAD class I teach, I always recommend the students to assiduously follow the 'Three Commandments of AutoCAD." Here are they for your perusal.

1. Always draw in full (1:1) scale: In days gone by, probably until AutoCAD Release 10, it was necessary to decide the size of the drawing (A4 / A3) before you actually started it. It necessitated the decision about the scale at which the objects in the drawing should be drawn so that the whole

of the drawing fits inside the size decided.

This is no longer required. The plotting technology and the support for it within AutoCAD has advanced to such an extent that you can defer the decision until the last moment—when you finally want to plot the drawing. You can thus create the geometry at 1:1 scale without the overhead of calculating the scaled dimensions or scaling each and every object to the required scale. This also gives you flexibility to plot the same drawing to different sizes.

2. Always draw in first quadrant. The logic behind this may be a little difficult to justify, but it has to do with a few limitations of AutoCAD. Some of the commands (such as 'Area') may give erroneous results, especially if the object is a polyline. This is a preventive measure at best.

3. AutoCAD has no units so it's your responsibility to maintain the consistency of units. This is one concept that causes a considerable amount of confusion in the minds of new AutoCAD users. They get suspicious when they see commands like 'units' and the mention of inches/mm in a few options. It takes a lot of convincing to make them realize that these are just 'cosmetic' conversions and do not absolve the user of ensuring the consistency of units, or that AutoCAD really does not understand any units. Thus, if you start inputting

the values in inches, it is your responsibility to ensure that you always input the data in inches throughout.

With this little background, let us now turn our attention to the step-by-step procedure to create a new drawing.

A 'Good Practice' Procedure To Create A New Drawing

Here is the procedure to start a new drawing that will make your baptism in AutoCAD smoother. You must follow it religiously henceforth every time (and not only the first time) you create a new drawing.

1. *Plan your drawing.* As the cliché goes, the more time you spend in planning the more of it you save in the long run. First and foremost, check to see if all the data you need is available. Take time to strategize about how you are going to draw various objects, how you are going to organize layers, and so on. Decide if you need to use, or even create, a template.

> # By sharing our Good Practices, we can contribute toward overall improvement of the AutoCAD culture

The list goes on. You may need to change your strategy subsequently, but having one in place initially always helps.

2) *Decide the maximum limits of the drawing.* Decide the maximum possible size of your drawing (Remember Commandment #1?). Consider the space required for various views, notes, details, and spaces between views. Be liberal and be on the safer side. The drawing space is not at a premium—not at this stage, at least.

3) *Open a new drawing.*

4) *Set the limits.* Set the limits of the drawing using the 'limits' command. The lower limits must obviously be 0,0 (Commandment #2). Set the top right limits to the value decided in Step 2 above.

5) *Zoom all.* This is the key step. Use the 'zoom all' command.

6) *Save.* 'Save' the drawing in the proper location giving a short but meaningful name. New users have a tendency to name drawings (or computer files) using their initials. After their tenth drawing, they don't remember which file contains what. Use names that give you sufficient hints about the contents of each file.

Now you are all ready! Get ready, get set, and go—create your drawing.

Repeat the exercise found in the teaser at the beginning of this article using the above procedure. Did something different happen? Why?

This article proposes a 'Good Practice' evolved over the years. By following the practice, a new user can avoid a few potential pitfalls that, subsequently, could hamper productivity. By sharing our Good Practices, we can contribute toward overall improvement of the AutoCAD culture.

I'll leave you with this tale. Two people were waiting for a train on a lonely village railway station. One of them was a highly educated young chap while the other one was a poor, illiterate old man. The young one, just to start some conversation, asked the oldie if he could read and write. He was taken aback when the oldie fired back, "I can write, but not read!" The young man had come across people who could read but not write—but this was a rare species.

The young man handed the oldie a piece of paper and a pen and requested he write something on it. The oldie scribbled back some free-hand and showed it to the young one. The young one requested the oldie to read out what he had written. The oldie retorted, "I told you, I cannot read!"

People who don't give meaningful names to files aren't any different from the oldie.

Sanjay Kulkarni is an AutoLISP programmer and AutoCAD trainer. He can be reached at SanganakSakha@freelance-worker.com

Making AutoCAD Scream

More tips & tricks for optimizing AutoCAD

Do you want to make AutoCAD scream? Punch at the potential of keyboard. Bring that potency up more than just a notch. Dig into the operating systems options. Delve into AutoCAD's shortcuts and acceleration. Seek the quality of truly capable system keyboard enhancements.

Many options are available, worthy, and waiting for your new ideas.

We usually have a mouse or digitizer. Maximizing that potential makes sense. We often yearn for more buttons. We are enthused when the newer versions extend what that mouse will do. We write menus that glorify the restrictions into far-reaching domains.

We have a keyboard, and strengthening that opportunity is a clear-cut avenue to potent AutoCAD. For some less fortunate, it becomes the portal to the world and an embellished career. Knowing the readily available tactics and creating new ones can quickly spark one into making AutoCAD scream.

First, understand the difference between a SHORTCUT (usually a key sequence requiring an ENTER afterwards), which is often confused with a HOTKEY, such as F3, Ctrl+1, or Alt+Shft+S. Hotkeys become valuable tools in the practiced hand. Play AutoCAD enough, and you will beg for bigger secrets like these. Read on.

I had unique occasion to work with a man who was a gifted musical keyboardist. His day job was restaurant design in AutoCAD, and by night he would arouse and enthuse audiences with incredibly nimble fingers. He declared no need for shortcuts or hotkeys. Having witnessed his single-handed skill, we knew he spoke truth. Not all of us can be so blessed.

There is no more potent way to enhance AutoCAD, in the face of capable systems, than to thoroughly maximize your artillery of keystrokes.

In the days of DOS, some of us wrote to a file called ANSI.SYS. Though limited, it was the only way to enhance the keyboard, and it offered a new world of speed. The "keystroke queue" allowed us to be 16 keystrokes ahead (note: it counted combinations of keys as a single stroke). Over time, we learned "Windows Specific" mouse and keyboard strokes, as well as those assigned within programs. Still, building one's own library can be essential to a well-stocked arsenal of quality AutoCAD.

Do you know the standard hotkeys to your operating system? Do you have a never-used Windows key on your keyboard? Surely, you know F8 in AutoCAD!

The scope of this message is not to offer extensive lists of shortcuts already offered. One needs only to search the help files for "keyboard shortcuts" for Windows, Explorer, Outlook, or virtually any substantial application to discover the myriad available. Almost always, the value of such cannot be fully grasped unless practiced a few times. Even then, they can only wait without value until you discover them. Take the time to learn the secrets within. They are of no use until you do.

AutoCAD comes with wonderful opportunities, and until recently, the options have been somewhat less than fulfilling. Customizing HOTKEYS tends to draw serious dynamics from your machine. They should be easy, flexible, and broad-ranging.

Prior to AutoCAD 2004, versions have offered "Accelerators."

If you are using an earlier version with this capability, the help file will offer syntax into how edit your MNU file to add and modify hotkeys available in this method. There are also rules regarding finding and saving an MNU file, and how to reload one, which would be based upon your AutoCAD version. There are limitations to accelerators, yet it has been often more of an opportunity than without, once learned. If you have yet to upgrade to AutoCAD 2004, read on for additional options.

Some of us reminisce of writing to ANSI.SYS:

_[0;23;"int";13p
_[0;24;"OF";13p
_[0;25;"per";13p
_[0;30;"A";13p
_[0;31;"ins";13p
_[0;32;"endp";13p
_[0;33;"F";13p
_[0;34;"snapang";13p

The above is an excerpt of a "golden opportunity" in defining keyboard functionality back in the '80s; tight and potent.
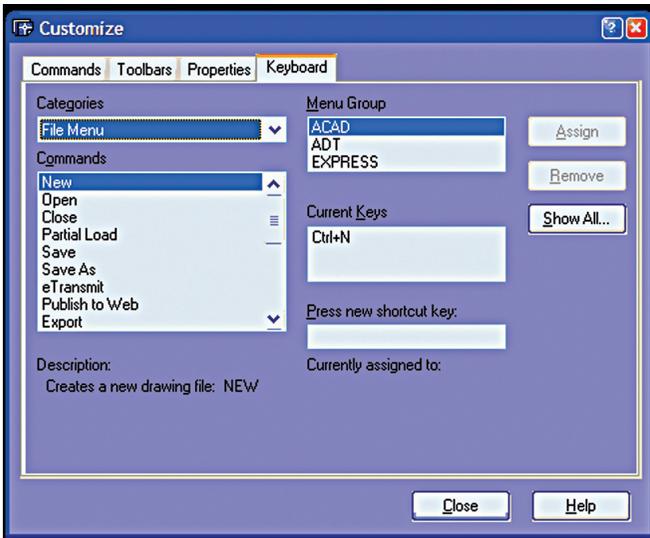
AutoCAD 2004 offers the excellence in HOTKEY interface options. You may glide through loaded menu commands selecting from standard menus and apply virtually unlimited keystroke combos to menu selects. You may access these through the menu "Tools/Customize/Keyboard." This is a wonderful interface, and perhaps all you may ever need. Enjoy.

Dig Under the Hood

Yearning for the days of unrestricted keyboard maneuvering, I have sought

higher planes of keyboard enhancement. Utilities are available that transcend what any individual software can do, and indeed complement that software remarkably. AutoCAD's interface can be incredibly fortified, and you are about to learn true power toys.

Macro Express by Insight Software Solutions (www.macros.com) is genuine keyboard power. Please understand that I have no personal gain in sharing information about this incredible utility, but no keyboard should be without it. Through this fine utility, any device, any control, anything that you access anywhere in your system can be automated to YOUR personal assignment.

Read that last line again. We will get back to it.

So...what does one do with this new-fangled power?

May I suggest you map OSNAP overrides? This utility has a fine way of allowing you to easily design ALT+M into 'mid+enter. Have you seen how pesky some OSNAPs can be, and if you like right-clicking to override menu, some of us will be waiting for you to get done. Still, we are scratching the surface, so let's get to some cool stuff.

(setq ss1 (ssget)) ;;;Create a named selection set...call you later.

You could "icon" this or hide it in a menu, levels deep, or you could assign it to ALT+1 through a macro editor such as Macro Express. Later, perhaps, assign to ALT+2 (command ss1). Your favorite Express Tools could begin anew in this fabulous way, and those undocumented hot toys such as PSELECT could be given proper front seat at ALT+F1.
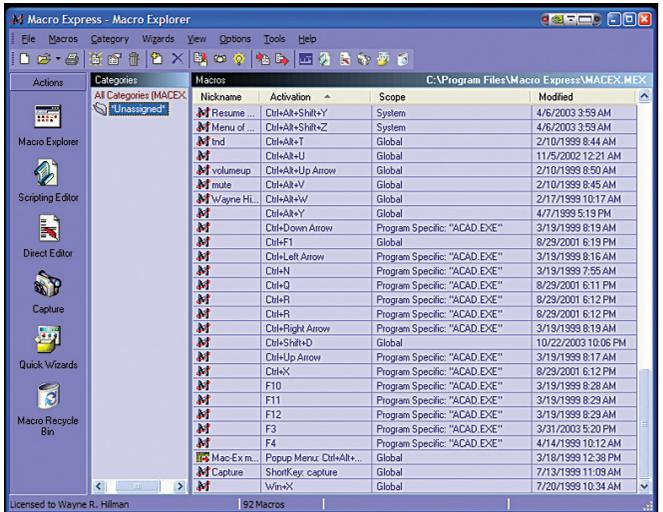
Macro Express, more than an excellent AutoCAD enhancement, can be system-wide in scope. The interface is easy, allows tailoring to specific applications, and can control any part of your system. There are wizards that can drive your audio, Outlook overrides, passwords—it is only limited by creativity. It is indeed a worthy venture to seek out a utility such as this and learn the tremendous power it offers.

Personally, I have learned to truly exploit the possibilities here. I have taken effort to substantially reduce the need for "Enter" keys in my daily routine. For example, not only is R the shortcut for ROTATE, but ALT+R includes the Enter keystroke. Having taken this step, many of my AutoLISP commands, in turn, are named specifically to exploit this "Enter key removal" making "two-stroke commands" plentiful.

While many of you will still insist on icons and menus to drive your daily tasks, know that my keyboard buffer is bouncing far ahead, and it is not only my AutoCAD that is making fine use of these ideas, but also the many supporting tasks needed.

Hopefully you will see the power here to help you make AutoCAD scream.

Wayne Hillman is AutoCAD Administrator for Medallion Homes. He has experience in architecture and electrical, structural, mechanical, and civil engineering and is a long-time AutoCAD and AutoLISP user. He can be reached at argutuq@yahoo.com.

Solving Simple Deformation of Sheet Metal

» Using Fold in Autodesk Inventor to Solve Sheet Metal Deformation
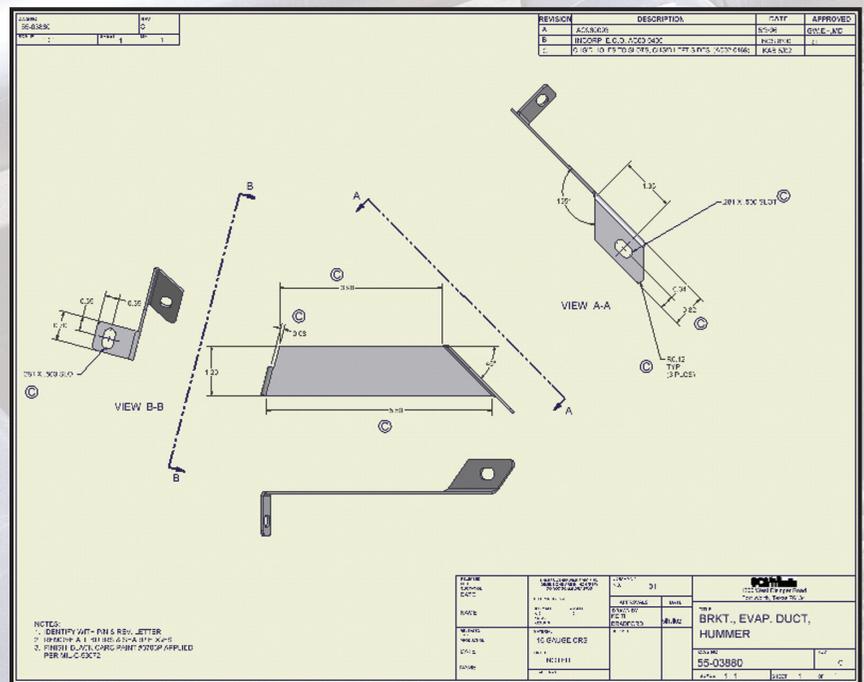
Figure 1

Bending is one of the most common metalworking operations. Bending is the plastic deformation of metals about a linear axis called the bending axis, with little or no change in the surface area. The bending process is used not only to form parts such as angle sections, flanges, seams, and cor-

rugations, but also to stiffen the part.

"The Flat Pattern tool calculates the material and layout required to flatten a 3D sheet metal model and displays it in a separate graphics window"- Autodesk Inventor Help

The tooling used in bending operations results in the metal being deformed in localized areas. It helps when creating sheet metal parts in Inventor to visualize

the required manufacturing process. The sheet metal module in Inventor functions in a similar fashion. This article is based upon Autodesk Inventor 5.3 SP2.

We will use the Fold command to solve three problems related to modeling the 45° flange on the right side of our part, but first let us see why. Figure 1 shows our correct completed sheet metal part.
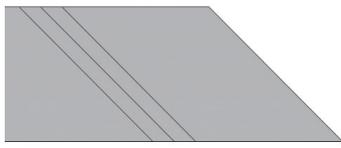
Figure 2
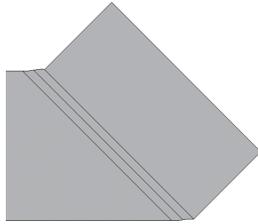
Figure 3
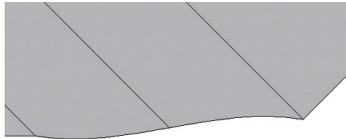
*Figure 4:
Detailed version of 3*

First, let us create this part using the Flange command. Exact dimensions are not critical to show this solution.

1. Start a New Sheet Metal Part and create the main face body using a similar sketch.
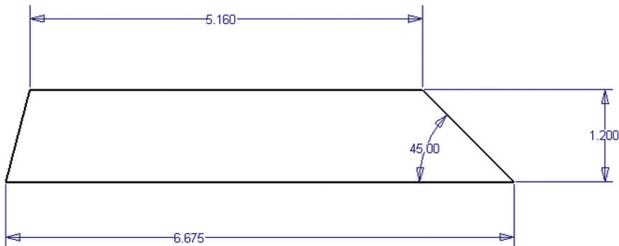
Figure 5

2. Create the Face.

3. Issue the Flange command and select the 45° edge.
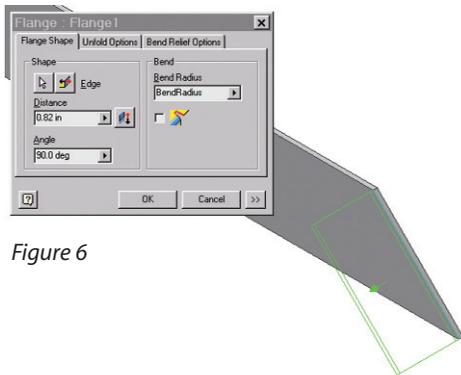
Figure 6

4. Create the Flat Pattern. (See Figures 3 and 4 for results)

The localized stresses occur only in the bend radius. The metal on the inside is compressed while the outside stretches. This location cannot be "unstretched" correctly by flatting the part. Viewing this result from the right side we notice our third problem, there is not an angle

as shown in View A-A of Figure 1. Trying to model this feature would prove to be unproductive.

Solution

Starting from the blank and then forming the part, just as it would be done in manufacturing, will be our solution. Using this method will also seamlessly create our left flange, shown in View B-B of Figure 1. The majority of 3D modeling should be approached first by visualizing how one would actually build this part and then model using this same thought process.

Figure 7

1. Sketch the flat pattern profile.
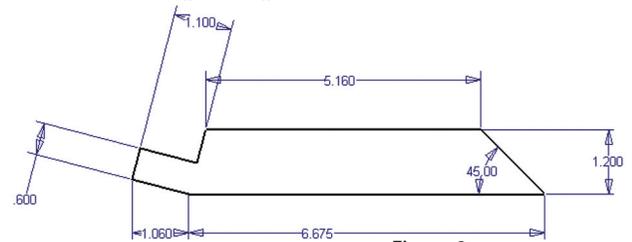
Figure 8

2. Create the Face.

3. Select the Face and then click the right mouse button. Now click New Sketch.
4. Draw the Fold line as shown in figure 9.
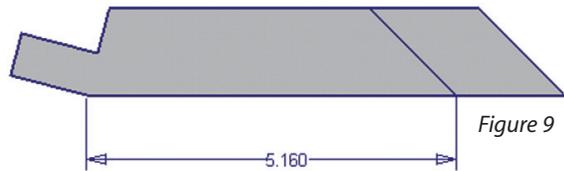
Figure 9

5. Right mouse button and click Finish Sketch
6. Issue the Fold command; select the fold line drawn and Click OK.

Notice the difference from the face created with the Flange command. (See Figures 7 and 10)

7. Select Flat Pattern.

 (See Figure 2)

8. Repeat the previous Solution steps and create the left flange.

Figure 10

"Features that require material deformation, such as louvers or dimples, cannot be flattened. If these features are placed as design elements onto sheet metal faces, they are accurately represented as 3D features on the flat pattern. Sketched and placed features can have unpredictable results, so use iFeatures to add these shapes to your sheet metal part." – Autodesk Inventor Help
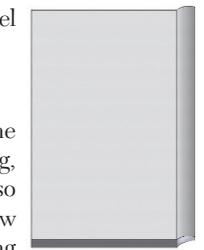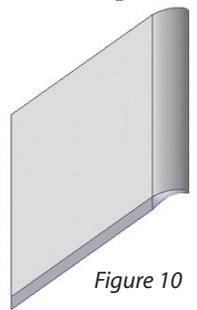
Keith Bradford works for SCS/Frigette in Fort Worth, Texas, USA. He specializes in mechanical product design and uses Autodesk Inventor and Mechanical Desktop. He can be reached at kbradford@scsfrigette.com.

Creating Autodesk Revit Families

〉〉 *Families are the building blocks of any Autodesk Revit project. Here's how to create them*

AutoCAD users think of Revit families as "block libraries." In fact, they are much more. Revit's walls, floors, roofs, etc. are "system" families. Even annotations, views, and grids are families. For the purpose of this article, we will focus on building component families and outline a rational process for creating them.

While Revit comes with many built-in building components, the first real-world project is certain to require components that are not available. Because of this, Revit provides a "Family Editor" and a variety of helpful templates. (See Figure 1)

Revit Family Templates

- Casework
- Doors
- Windows
- Furniture
- Electrical Fixtures
- Lighting Fixtures
- Plumbing Fixtures
- Columns
- Structural Components
- Mechanical Equipment
- Site Components

Figure 1

The decision about which template to use is easy. If none of the template categories are right, then use the "Generic Model" template. The next decision is to choose between a "standard component" or an "in-place" family. Standard components are similar to an AutoCAD block library. They can be used in multiple projects. In-place families are project specific and cannot be used elsewhere.

Design Considerations

Before creating a family, there are important design considerations.

What should the family look like in different views? A project may need only a schematic representation for plan and elevation views, not a full 3D representation. Revit provides all the power of parametric modeling with either (or both) 2D and 3D views.

Create Materials → Create Subcategories → Set-up Reference Planes → Set "Is-Reference" Values → Add Labeled Dimensions → Add Geometry → Flex Reference Planes → Set Display Characteristics → Add External Parameters → Save Additional types
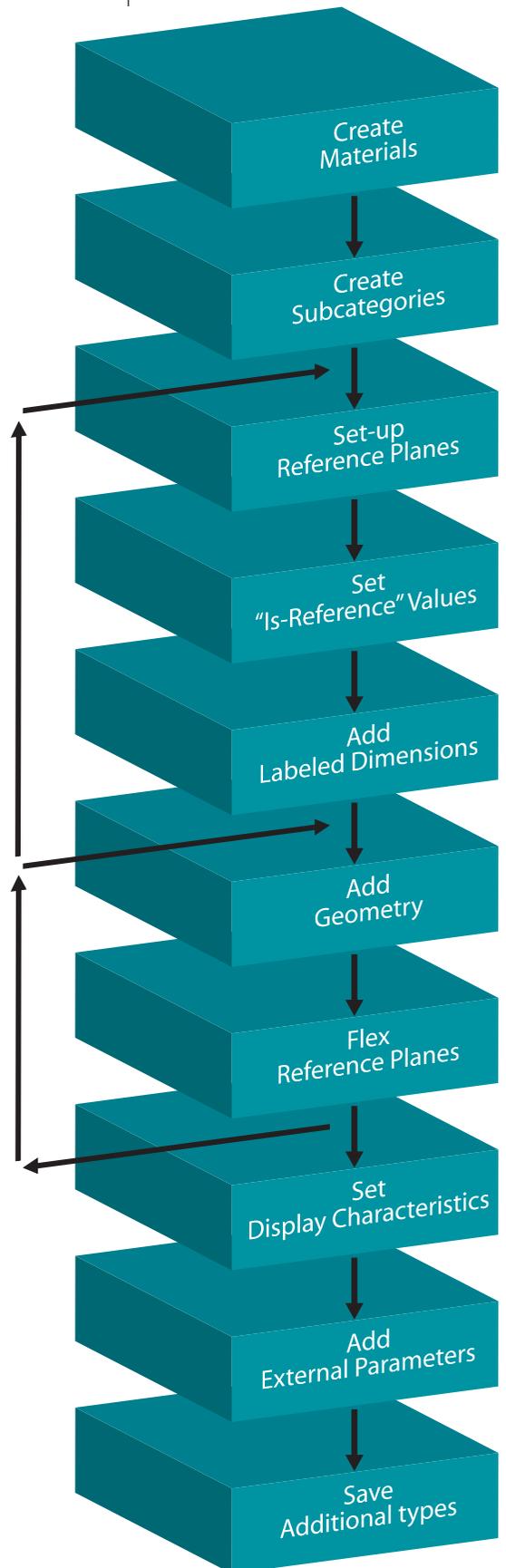
Family Creation Process

Figure 2

How much detail is needed? For typical building 3D views, the hardware on doors or windows is not visible. Adding too much detail increases file size and slows down system performance, particularly for components that have many occurrences in the project.

Are there additional standard sizes? It is easy to create multiple standard sizes in Revit, if the reference planes and dimensions have been set up properly.

How will the family be placed in the model? This is a question of "insertion point." The family needs to be created with the "origin" at the desired insertion point.

What parts of the family need to be dimensioned in the project? Reference planes need to be created and set up properly so that the component is properly aligned with project dimensions.

Family Creation Process

Many Revit users have created their own families. And many have found that their custom families do not always work as expected. Following a structured process will minimize most unusual behavior. Discipline in following the sequence is required, because it is different from what an experienced model builder would use in AutoCAD, Autodesk Architectural Desktop, Autodesk VIZ, or 3ds max.

Varying from this sequence may still work, but following the sequence will increase the reliability of the model's behavior.

Create materials – For components to be shaded in other than default gray, materials must be assigned. If the component will be included in renderings, set up AccuRender materials as well.

Create subcategories – Subcategories define line weight, color, and pattern. For example, a window may need different subcategories for glazing and frame.

Set up reference planes – Lay out reference planes for each important part of the model's geometry. If extrusions or sweeps are to be created, it works best to create them on a reference plane. To avoid later confusion, attach labels to each plane. For a complex component, start with a small number of planes and cycle back through the process adding more complex geometry. (See Figure 2)

Set "Is Reference" values – Reference planes can be strong or weak or "not a reference." They can also be front/back, left/right, top/bottom, and the center for each of those directions. The "Is Reference" values control the family behavior when inserted into a project.

Add labeled dimensions – Automatic dimensions are created by Revit to help control design intent. To hold some geometry fixed, add specific, locked dimensions. If the family will have multiple standard sizes, label the dimensions. Labels are necessary for creating type or instance parameters for the geometry.

Add geometry – Using the reference planes, add some basic geometry to define a simple model. Start with symbolic lines before attempting 3D solids.

Flex the reference planes – Test parametric modification by changing dimensions and observing results. Make sure reference planes behave properly before adding more. If the model is complex, go back to add more reference planes, dimensions, and geometry. (See Figure 2)

Set display characteristics – Choose sub-categories and set-up entity visibility settings for your geometry. This step sets line types, line weight, and visibility in different views and different detail levels (coarse, medium, fine).

Add external parameters – Any parameters to be scheduled will need a parameter in the family. For example, to see a "hardware group" for the door schedule, the doors will need to have a "hardware group" parameter.

Apply materials – Apply the pre-assigned materials to each part of the geometry. AccuRender materials will automatically set shading colors.

Save Types – For each standard size, create a different "Type." When the family is loaded, the Type drop-down list will show all the Types created.

Tips and Tricks

Experienced family builders have developed a few "tricks" that are used to make family creation less stressful.

Work with four views open at the same time. This helps visualize the changes, particularly when flexing the model.

In flexing the model, choose both smaller and larger dimensions.

> …developing family-creation skills is an important part of leveraging the power of Revit for productivity and better design

Try out the family in a simple test project to make sure it works in the project context. This is the only place to find out if insertion point, orientation, and dimensioning are working as intended.

There is more

This article has given only a quick, general overview of the family creation process. There is more to learn about how to create different building components, title blocks, details, and profiles.

Naming conventions need to be established for families, subcategories, materials, and parameters. Visibility settings have many options that need to be understood and consistently applied. We could go on. Let the **AUGI***World* editor know what topics are of interest for future articles.

Families are all-important to Revit. And developing family-creation skills is an important part of leveraging the power of Revit for productivity and better design.

Bruce Madsen is a project leader at aecContent (www.aecContent.com). He can be reached at 415-321-1117.

Autodesk Revit: Phasing Schedules

The Phasing feature in Autodesk Revit provides a powerful tool for viewing a project during various stages of its development. We show you how to use this feature

The Phasing feature in Autodesk Revit can be used in renovation projects and also to describe the various stages in developing large projects. Each modeling component has two phase properties: phase created and phase demolished. In addition, each view has a phase and phase filter. By assigning phases to different stages of the project or construction process, the building model objects can

define how the project appears during various stages.

Many projects start with existing buildings that are to be remodeled or have additions in conjunction with remodeling. For example, building an addition on a pre-existing building provides for displaying the building model geometry and schedule information in three phases: existing construction and existing work to be demolished; new remodeled space; and the addition to the existing building. Phases could also be used to describe the stages for con-

structing a large building with multiple uses and multiple attached structures. Another phasing program could be to describe the initial construction of a high-rise office building's shell and core as one phase and organize the tenant development into many other phases as the construction progresses.

There are many ways to set up and assign phasing. It extends the way building model objects can be visually represented as a construction process or as time durations. In this article we will explore

Phasing Schedules to show how the door schedule can be set up to show the doors in the demolished phase and a separate schedule to show new doors.

Set up the Project: Walls, Door, and Schedules

Duplicate Level 1 and rename the copy to Level 1 Existing.

Open the View Properties dialog box and set the Phase parameter to Existing.
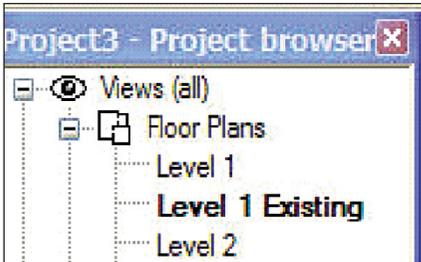
Figure 1

On Level 1 Existing, draw four walls to define a 50'x30' enclosed building.

Insert four 3'x7' doors, one each of the four walls.

Using the Demolish tool from the Tools menu or Tool bar, select the door in the south wall. The door should display with a hidden line Pattern. The demolished door does not appear in the Level 1 view.
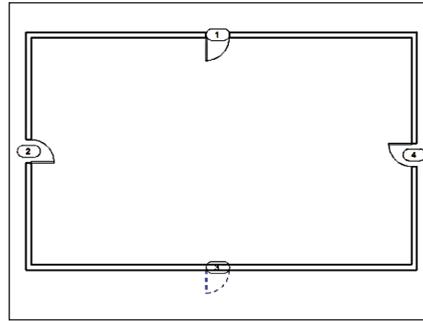
Figure 2

Setting up Phasing: Project Phases, Phase Filters, and Graphic Overrides

Open the Phasing dialog box (make sure the Existing phase row is highlighted) and select the Insert After button from the Project Phase tab to add a new phase (default Phase 1). Rename the new Phase 1 to Existing Demo.

Important Note: Phases cannot be reordered once created and the numeric order in which phases are arranged determines their hierarchy in Phasing.
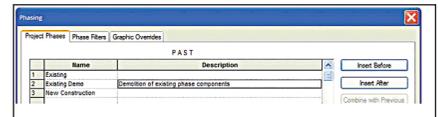
Figure 3

This sets up the phase for displaying in a schedule only the doors demolished in the Existing phase.

Under the Phase Filter tab select the New button to create a phase filter, change the default name Filter 1 to Show Existing Demo Only and change the New, Existing and Temporary columns to Not Displayed, leaving the Demolished column value to Overridden.

You could also change the Graphic Overrides object style settings for the Phase Status of Demolished components. This provides additional controls similar to Object Styles for overriding displayed component during phasings and works in conjunction with the phase filter setting Overridden.

Create a Door Schedule to Show Demolished Doors for the Existing Phase

Open the View menu, New and select Schedules/Quantities to setup our Existing phase demolished door schedule. In the New Schedule dialog box under Category: select Doors and rename the default named Door Schedule to Existing Door for Demo Schedule.

In the Schedule Properties dialog box under the Fields tab – Available Fields: add Mark, Width, Height and Thickness to the Schedule fields (in order column).

Select the Sorting/Grouping tab in Sort by: select the Mark for sorting this schedule. The new Existing Door Demo Schedule will display all existing doors, except the one we demolished. To change this schedule to show only demolished doors in the Existing phase we will change the demolished door's Phasing Filter and Phasing properties for this schedule.

In the Level 1 Existing floor plan, select the demolished door, select the Element Properties button and change its Phase Demolished parameter to Existing Demo.

In the Element Properties dialog box for the Existing Door for Demo Schedule change the Phase Filter parameter to Show Existing Demo Only.

Existing Door for Demo Schedule			
Mark	Width	Height	Thickness
3	3' - 0"	7' - 0"	0' - 2"

Figure 4

This restricts the Existing Door for Demo Schedule to display only the demolished door in the schedule.

Adding a New Door and Setting Up the New Door Schedule Phase

Open the Level 1 floor plan, load the double glass 1.rfa door family and add a new Double Glass 1: 72"x84" door in the building where the existing door was demolished.

Notice the existing demolished door does not show in the Level 1 floor plan view and the walls are displayed as gray to indicate they are existing in the current view.

Set up a new door schedule for the New Construction phase. Select the View menu, New and select the Schedules/Quantities to create a new schedule.

Select Doors from the Category: column and rename the Schedule name: to New Door Schedule.

Under the Fields tab add Mark, Width, Height and Thickness as in the Existing Doors for Demo Schedule and in the Sorting/Grouping tab set the Sort by: to Mark. This will create a schedule with both existing and new construction doors listed.

Now we will limit this schedule to list only new doors using phasing.

We need to create another Phase Filter to list only new doors in our schedule under the Phasing dialog box. Open the Phases… dialog box from the Settings menu and select the Phase Filters tab.

In the Phase Filters create a New filter and rename it from Filter 1 to Show New Only. Change the Existing, Demolished and Temporary column values to Not Displayed and New to Overridden.

In the New Door Schedule view change the View Properties to Show New Only. The result is only new doors will be listed in this schedule now.

New Door Schedule			
Mark	Width	Height	Thickness
5	6' - 0"	7' - 0"	0' - 2"

Figure 5

Mel Persin has taught all levels of AutoCAD in Authorized Training Centers and for corporate clients. He is currently exploring Autodesk Revit and preparing training programs for Revit users.

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Advertising Index

On The Back Page

David Kingsley

New name, same old geezer

In this issue we have revised the name of this column from "Back In The Day" to "On The Back Page." The first title worked well for a while. The history part was fun and will still be included from time to time, but basing an entire column on it became too limiting. Besides, I can't remember any more… uhhh… what did they call that television drafting thing?

Spam. It's not just for breakfast anymore!

If you have noticed your inbox being more full of *(expletives deleted, theirs not ours)* in the last few months, you're not alone. In my opinion spam is becoming an issue of national security. We have rapidly become dependent on email in the workplace. To have our commerce pipelines clogged with the frivolity of enlarging various body parts while driving using your hands-free cell phone to arrange a low interest home equity loan while under the influence of Vicodin, Paxil, and Prozac, has got to be having a serious effect on national productivity, not to mention auto insurance rates. I've seen so many variations on the spelling of these things that I'm not sure I would know what to look for if I did want them.

As a result, everyone has their force fields raised to full alert. Corporate and personal firewalls abound, thus mandating us to learn and master another genre of software. I must admit that it took me a while to get a handle on my Internet Security system. Sometimes it felt as if it was going to make everything I did on the Internet require four times the number of clicks that it did before. If you

are experiencing that, you need to read your manual a little more, because it is not necessary.

Let us in, please, please, pretty please?

Most of you have firewalls, and if you don't you should. Some are personal which (theoretically) you have control of. Others are corporate, which are usually controlled by the IT department. Either way, they can be set to allow recognized email and IP addresses to pass through. We have tried to explain this in the AUGI Forums and its help pages, but some people have referred to it as a "security breach," which is inaccurate. It is more like opening your front door to let in a friend.

It is not difficult to make these settings, and you should not hesitate to ask your IT people to do so. Remember that their job is to protect the integrity of the company's data infrastructure, and it can be an ugly job sometimes. You may want to get your supervisor's support ahead of time as an ace up your sleeve. If you meet resistance,

politely remind them that AUGI is a professional support organization that you rely on daily to help you do your job. We are fully sanctioned by Autodesk, which is the fourth largest software company in the world (bet you didn't know that!). Our web developers are the same ones who developed and maintain large portions of some Autodesk sites.

OK, OK… I have their attention, now what do I tell them?

All AUGI communications will follow these rules.
From:
- AUGI Connection
- AUGI Bulletin
- AUGI (wildcard) Forum
- AUGI Membership Services

with an e-mail address of:
- announcements@augi.com
- atpmanager@augi.com (only if you are signed up for an ATP course)
- hotnews@augi.com
- subscriptions@augi.com
- members@augi.com
- IP address 66.223.50.194

We have Eggs with Spam, Hotcakes with Spam, Spam with Spam…

By this time, those of you who attended AU will probably still chuckle when you think of John Cleese's appearance. Word has it that he was really impressed with the coconuts, and that he stayed a full hour later than his agreed-upon time.

You should think of AUGI as one of your spam filters. By being an AUGI member and completing your professional profile, you give us the tools to filter the technical information we send you through the AUGI Bulletin and HotNews to meet your specific professional needs. Working together in this way, we can work around the problem of spam.

David Kingsley is a member of the AUGI Board of Directors and can be reached at david.kingsley@augi.com.

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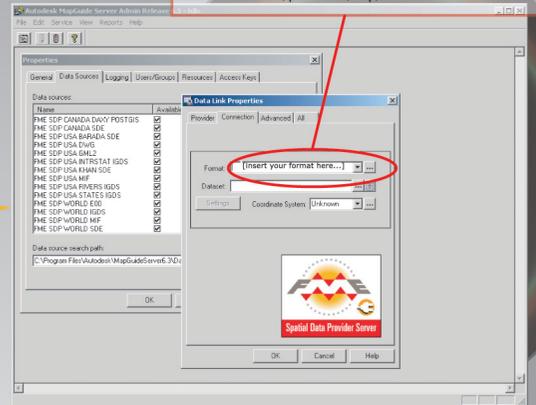
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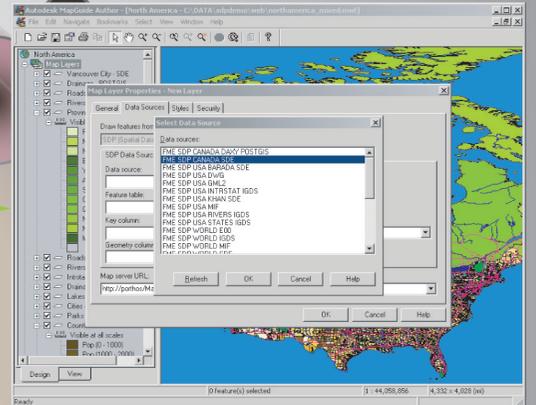
Publish maps served by the FME Spatial Data Provider Server to the Internet.
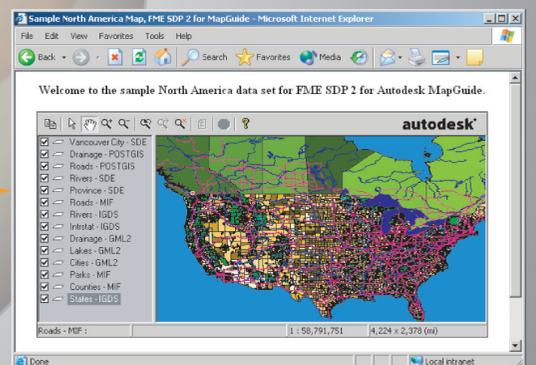
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