

# CAD/CAM USERS HAVE DESIGNS ON ISDN

By George Brostoff  
CEA, Symplex Communications

(The first part of George Brostoff's discussion of ISDN appeared in the September issue of KeySolutions.)

ISDN continues to evolve into a full-fledged networking phenomenon as more and more applications are developed around its robust data transmission capacity. CAD designers, with their high-density graphics files, are among the users most likely to benefit from ISDN's high-speed file transfer capability.

Last month, we took a look at the basics of ISDN technology, including its history, the key components, basic costs and specific benefits to users. This month, we'll give an executive summary of "ISDN 101" and examine the specific benefits that ISDN can bring to the CAD/CAM arena, as well as provide some guidelines for implementing ISDN in a CAD/CAM environment.

## ISDN 101 Revisited

ISDN lines are high-speed digital communication lines that integrate voice, video, audio and data services over the same network with-

out sacrificing any quality. Important to CAD/CAM users are some of ISDN's special capabilities, including on-demand networking, automatic bandwidth and on-the-fly connectivity. However, most important to ISDN's suitability for CAD/CAM is that digital files can be sent straight across ISDN connections without being converted to analog tones. Using devices such as bridges or routers, ISDN users can output their files directly to the network, resulting in higher speed connections to workstations and servers on the other end, with faster file transfer times.

See ISDN, page 17

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# KEYSOLUTIONS

THE PROFESSION

ERS • VOLUME 4 NUMBER 8 • OCTOBER 1995



This murder scene was recreated using CADKEY and DataCAD.

A burst of gunfire explodes the peaceful quiet of a residential neighborhood. Several bullets slam through a house, narrowly missing the occupants and leaving only splintered holes in the walls as evidence. Police respond quickly to the scene, but the armed suspects are long gone into the night.

One of those first officers on the scene also is armed—not with a gun, but with a hand-held computer, a weapon that is becoming nearly as effective as a firearm in fighting increasingly brazen and sophisticated criminals.

Law enforcement agencies across the country are discovering the value of high-tech crime-fighting. Computers are being used for everything from records access for the officer on the street to electronic control of jails and prisons.

Increasingly, computers and CAD software are being put to work recreating crime scenes and traffic accidents, allowing investigators and even jurors an opportunity to visit sites and examine evidence in a way never before possible.

One police officer who is helping his department take advantage of the evolving technology is Paul Breuninger, a 25-year veteran with the Cook County (Ill.) Police Department.

In addition to his regularly assigned duties as an investigator in the detective division, Breuninger has become the department's resident CAD expert, becoming highly skilled in recreating crime scenes and producing them

## DATA CAD WORK

using CADKEY and DataCAD.

He even was certified this summer as a DataCAD instructor and now teaches other evidence technicians in the department his highly skilled methods of re-creating crime scenes.

Breuninger considers the use of computer-aided evidence gathering "another tool in the search for truth."

He began his career at Cook County as a patrolman. When he moved to the department's detective division, he began attending crime scenes to recreate them using CADKEY.

"It's a very useful investigative tool," he says, noting a case in California in which evidence taken from the scene and transformed into a computer animation solidly disproved a suspect's claim of self-defense.

Breuninger purchased his first computer primarily for CAD use. However, he couldn't afford the CAD software, so he wrote his own programs to draw two-dimensional designs.

"Basically, it was programming to tell the plotter what to do," he says.

His first "real" CAD software was a program used to create two-dimensional designs. He is a self-taught CAD user and says he "locked himself in a room with a computer" to learn the process. Breuninger was introduced to CADKEY about 10 years ago and

started using it for personal projects around the house and basic departmental projects, such as creating maps and plotting traffic accidents.

Breuninger now uses a Hewlett-Packard hand-held 200 LXx palmtop computer to record evidence information at a crime scene. In deciding on a CAD program, Breuninger had three factors to consider: First, the software had to have true 3D capabilities; second, it could not require a math coprocessor; and third, it had to require fewer than 6MB of memory, the space available on the flash disk card used by the 200 LX. His search led him to Cadkey, where he discovered that CADKEY version 4.06 was just right for the job. Of the 6MB available on the flash disk card, 3.3MB are used by CADKEY and 2.7MB remain for the 3D models.

This system allows for creation of very large 3D files, he says. As an example of the size of model files, Breuninger points out that a three-dimensional model of the Alfred P. Murrah Federal Building in Oklahoma City, destroyed in an April bombing, was close to 2MB in size. This 3D computer animation realistically depicts the detonation that destroyed the building.

At the scene of a crime, he records all per-

See CRIME, page 9

See you  
at  
AUTOFACT '95!  
Meet  
Bob  
Martin,  
publisher of  
KeySolutions, at  
AUTOFACT '95  
Nov. 14-16 in Chicago.  
Come visit with Bob at  
Cadkey's booth No. 716.

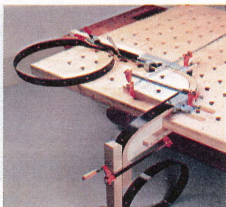
## CADKEY Analysis Straightens Out Steam Bending Jig Problems

By Lloyd Sevak

Michael Fortune, one of the more renowned furniture designers in Canada, was not the first to understand the need for supporting the outside of a piece of steamed wood with a steel strap while bending, but he is one of its biggest advocates. He has promoted this technique for years throughout North America, giving seminars on the subject and writing articles. Using bent wood in furniture has become his trademark. Recently, Michael approached our company, Veritas Tools Inc., to develop and manufacture a steam bending jig based on an article he wrote in 1981 in *Fine Woodworking*. His input and suggestions, as well as many live tests, helped us to arrive at the final design.

Our first attempt at prototyping the Adjustable End Stop (which is used in all types of bends) was made from a solid chunk of steel (shown in Figure 1 and Figure 2). When we did some test bends, much to our amazement we found that the thinnest machined section, still a hefty 3/4 inch by 2 inches, bent! Before going any further, we attached strain gauges onto the supporting strap and repeated some bending tests. We found that the loads on the strap when bending the largest piece of wood the jig was designed to accommodate (2 inches by 2 inches) could be over 8,000 pounds. The maximum observed was 8,448 pounds. Engineering calculations revealed that given our solid steel block design with its moment load of 8,448 pounds, the outermost fibers of the 3/4-inch by 2-inch section experienced 73,000 psi tensile load and 62,000 psi compressive load. Both of these are greater than the 36,000 psi yield point of mild steel. This supported the permanent deformation that we observed. We realized that to come up with a design for this component (and others) capable of withstanding such high

See FURNITURE, page 9



Veritas' steam bending jig



# CADKEY Communiqué

## CADKEY IN THE NEWS

### Strategic Partners Program

Dale Arsenault will manage CADKEY's Strategic Partners program, in which Cadkey works with developers of third-party software. Dale will concentrate on expanding Cadkey Strategic Partner offerings. Dale has worked at CADKEY since 1985 in various capacities. Software developers are encouraged to contact Dale by fax or e-mail with a product name, description, price and ordering information. He also is seeking suggestions on companies with programs that are not currently available for Cadkey, but should be. Dale can be reached at 203/298-6425.

### New Marketing Department Staff

Steve Pouliot has joined the Cadkey marketing department as marketing coordinator. Steve works with users groups, training centers and assists in product and press announcements.

### Cadkey Ready for Fall Trade Shows

Cadkey will attend two fall trade shows. DataCAD will be exhibited at The Remodeler's Show in Atlanta, Ga., on Nov. 3-5. The Remodeler's Show will be on the Navy Pier. CADKEY will be featured at AUTOFACT '95 at McCormick Place in Chicago, Ill., on Nov. 14-16. Cadkey's booth is No. 716.

### Cadkey in the Media

Look for stories on Cadkey in the following magazines:

- Computer Aided Engineering (August) - Comparison of Windows CAD programs including CADKEY, Microstation, and AutoCAD 13.
- Product Design & Development (August) - Kline Bicycle
- Managing Automation (August) - "Leaders in Automation" by Gary Magoon
- Windows Magazine (September) - CADKEY Windows Review

### Training Center Updates

Southern College Phone Number Correction - The phone number for Southern College, Collegedale, Tenn., was incorrect in the August issue. You can call John Durichke regarding CADKEY and DataCAD training at 615/238-286 or 615/238-2962.

New Fresno Training Center - A new CADKEY and DataCAD training center has started in Fresno, Calif. For more information, contact Mark Arnett at CAD Graphics 209/275-8579.

### CADKEY Supports NYSTEN Project

Over a three-year period, the New York State Technology Education Network (NYSTEN) Project will prepare a staff development network of 120 New York State Technology Education mentors with enhanced technological, pedagogical and leadership skills.

Twenty-four teams of five mentors each have been formed to provide regional services throughout the state to an estimated 2400 New York State secondary school technology education teachers.

Additionally, the mentors will present awareness workshops to other members of the school and local community, estimated at 1,000 people, in order to broaden the base of support for program improvement.

The integration of mathematics, science and technology education will be the focus of the project.

A needs assessment conducted by the New York State Education Department determined computer-aided design (CAD), biotechnology, computer controls and electronics to be the four emerging areas of technology education. Cadkey Inc., in conjunction with Cadkey educational representative Shortess-Rawson & Associates, has contributed over \$2.7 million worth of CADKEY and DataCAD software. Cadkey is the only CAD company to donate software to the NYSTEN Project.

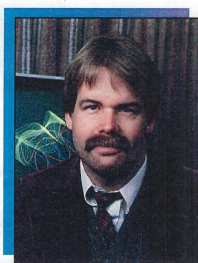
For more information on the NYSTEN Project, contact Ira Schwartz, NYSTEN Project coordinator, by phone at 516/360-7335 or via Internet at [ischwartz@nysten1.mysed.gov](mailto:ischwartz@nysten1.mysed.gov).

## Corrections

A story in the September issue of KeySolutions about Cheapware contained an incorrect address for the company.

Readers may contact Cheapware at Shu Associates, 120 Trenton St., Melrose, MA 02176-3714 or phone/fax 617/662-0020.

A story in the August issue of KeySolutions contained an incorrect phone number for Microcomputer Education Systems Inc. Readers may contact the company at 614/793-2730 or fax 614/761-0489.



CADKEY for Windows is a remarkable product and, with the long-awaited release of Windows 95, CADKEY is now a Windows 95 product with an award-winning graphical user interface and the look and feel of Windows 95! And you do not need to use a special version of CADKEY to work with Windows 95. CADKEY automatically takes advantage of Windows 95 features such as extended file naming, reduced mouse clicks on menu selection, and automatic starting on selection of a CADKEY part file. CADKEY for Windows already has won two respected CAD/CAM industry awards. It was named "Editor's Choice" by Machine Design Magazine and was described in a multi-product comparison by CAE Magazine as "way ahead of the pack." CADKEY's major strength has always been its ease of use and its productivity value. CADKEY for Windows is fundamentally a productivity tool.

I am inspired every time I attend a users group meeting or speak with customers about how they use CADKEY. CADKEY helps real people do real work, and it remains available at a price which makes enterprise-wide

## Warning!

We have word from PKWARE that someone on the Internet is distributing files under the pretext of being an upgrade to the PKZIP/PKUNZIP file compression program. The bogus file names are: PKZ300B.exe and PKZ300.zip. This is NOT a version of PKZIP and it will try to erase your hard drive if you use it. If you encounter these files, IGNORE them. The most recent version of PKZIP is 2.04g.

Patrick Shoates  
SCR Associates

I'm not sure where, but I picked up a virus on my computer recently. With EMM386.EXE loading in the configs, I would get the following error message while entering Windows: "EMM386: Unremovable privileged operation error #00." This seems to happen while any program goes to access the upper memory on your system. Removing out EMM386.EXE was a temporary fix, but this virus sits in memory at about 512K and attaches itself to just about every file you use or read, including all your DOS system files. The name of the virus was NATAS. McAfee's Viruscan 2.2.5 was able to detect and clean it with no problems.

Nick Korosi

## PRESIDENT'S PERSPECTIVE

BY LIVINGSTON DAVIES • PRESIDENT, CADKEY

## The CADKEY Workhorse

Affordable. Alpha Mold of Dayton, Ohio, provides an outstanding example of a successful enterprise-wide CADKEY implementation. Alpha Mold designs and makes molds under contract from a variety of plastics injection molding companies. Alpha first acquired CADKEY years ago after hearing about CADKEY's capabilities and user friendliness and after evaluating AutoCAD and several other packages. Word of mouth from satisfied customers provides CADKEY's greatest marketing.

Alpha Mold uses whatever tools are needed to get the job done. In fact, the company uses ProEngineer and Unigraphics in addition to CADKEY. But with roughly 65 employees, the placement of ProEngineer or Unigraphics throughout the shop would be an intolerable cost burden. Unigraphics is used primarily to produce numerical control machine tools paths, while ProEngineer is used primarily as an input device for product geometry. Alpha frequently receives ProEngineer part files from clients. It utilizes IGES to translate wireframe and surfacing into CADKEY where Alpha and its outsource designers design the mold around the product 3D geometry.

Once the design is complete, the 3D digital CADKEY part file is sent to manufacturing via the company's Ethernet network. Each moldmaker and machinist has access to CADKEY on the shop floor and uses it to fully understand what is to be manufactured.

By examining the 3D design, dimensions that do not appear on the prints can be verified quickly. The moldmaker also works with the 3D design file to create electrodes and small components while the design is being completed.

In fact, because of the rapid turnaround required by Alpha's customers, there are occasions when the design/detailing are completed after the majority of the tool is complete. Alpha Mold is an ISO 9001 registered company.

This requires good business practices and a considerable amount of engineering documentation.

Scott Young, vice president of engineering at Alpha Mold, is responsible for CAD/manufacturing for both design and manufacturing at this dual-site mid-sized tool and die manufacturer. With further local customization, Scott feels that a paperless environment which would maintain all necessary documentation is possible with CADKEY.

Cadkey has always followed the philosophy of making products with 80 percent of the functionality at 20 percent of the cost of the high-priced spread. With enhancements in products like CADKEY for Windows, and with capabilities that automatically come with Windows 95, we have come close to meeting 100 percent of the everyday needs of many customers. Keep that ProEngineer or Unigraphics seat (or contract out the work) for special applications. Use CADKEY as your everyday workhorse.

## CADKEY INC. PRICE LIST EFFECTIVE THROUGH NOV. 30

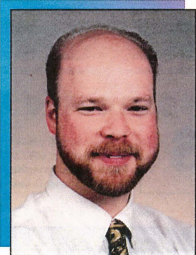
U.S. / Canada Master Price List (U.S. Dollars)  
To order, contact your local authorized CADKEY/DataCAD dealer

Product Name	Suggested Retail Price
<b>CADKEY 7 FOR WINDOWS</b>	
CADKEY / Windows (3-1/2" or CD ROM) - SRP	\$ 795.00
<b>CADKEY</b>	
CADKEY Professional 7 (3-1/2")	\$ 1595.00
CADKEY 7 DOS (3-1/2")	\$ 795.00
CADKEY Light 7	\$ 99.95
Advanced Modeler (Windows/DOS)	\$ 495.00
<b>SOFTWARE FOR EDUCATION</b>	
EduCAD America Program - DataCAD & CADKEY	
Call for Program Details/Costs	
(Contact: Pete Mancini, Cadkey Education Dept., 203-298-6420 or FAX 203-298-6590) Call for Quote	
<b>Product Name</b>	<b>Suggested Retail Price</b>
<b>CADKEY UPGRADE CONTRACTS - (12 MO.)</b>	
CADKEY Professional (Upgrades for CADKEY and Analysis, Advanced Modeler)	\$ 350.00
CADKEY 7 DOS & WINDOWS	\$ 250.00
<b>DataCAD &amp; DataCAD UPGRADES</b>	
DataCAD 6 Professional (3-1/2" or CD ROM)	\$ 149.95
Upgrades from DataCAD 5	\$ 69.95
Estimator	\$ 99.00
TOUCH-UP Macro	\$ 49.95
BLOCKER Macro	\$ 49.95

# AEC TEAM PERSPECTIVE

By MARK MADURA • VICE PRESIDENT, AEC PRODUCT GROUP

## Macro release launches DataCAD enhancements



Thanks to all who took the time to send in your thoughts for product improvements. We appreciate your input. Keep those ideas coming. Some of your expressed concerns regarding our future plans with DataCAD vs. Cadkey Architect. Since 1991, we have been developing a core CAD technology based on MS-Windows NT. This project has been referred to by different internal code names over the years. The first being "Parthenon," and the most recent being "Cadkey Architect."

To clarify: Cadkey Architect is our internal code name for DataCAD for Win-

dows. We have not been using the title DataCAD for Windows because the technology we have developed represents a complete rewrite of source code, quite apart from DataCAD for DOS. In other words, DataCAD for Windows is not a direct extension of DataCAD for DOS. DataCAD for Windows will address and retain many concepts developed for DataCAD. However, it will not look or feel exactly like DataCAD for DOS. For example, with some functions such as keyboard input, you will not need to hit the space bar to enter a distance. Instead, you will type a desired value during an operation. Cadkey Architect automatically understands the appropriate time for distance input. This particular change represents a more efficient method. In other cases, such as keyboard interrupts, we have maintained as many DataCAD features as possible. We are trying to offer the best methods that the Windows environment offers, while maintaining the essence of DataCAD.

On to other fronts! By the time you read this, four new macros developed by Bill D'Amico of UniQue Software will have been released. The new macros, which I'm very excited about, are 3D Power Tools, DC Sprint, Template Library, and WAVY. 3D Power Tools is an inte-

grated set of eight 3D modeling aids. Sweep, the most significant of the of eight, lets you create just about any three-dimensional object by extruding a polygon shape along any user-defined path. DC Sprint incorporates 17 missing functions related to production drawing. One unique feature of DC Sprint is the ability to create and explode symbols which retain their layer structure. Template Library is invaluable for firms that want to document their symbol libraries. WAVY is a special macro that Bill developed years ago as a favor to me. I needed a tool which would randomize the spacing and overshoot values of the Wiggle line type. This has allowed me to produce preliminary "sketch" drawings that lack the sterile nature of CAD line work. For more information, contact us at 800/671-3952.

This macro offering is just the beginning of the DataCAD enhancement campaigns I have planned. I am currently talking with other developers about additional enhancements for DataCAD. As a matter of fact, I am currently negotiating with Evan Shu of Cheap Tricks to produce the first Cheapware CD-ROM. It will include 150 of my top picks, all for only \$99. This idea stems from some of your suggestions. I thank Evan and the Cheapware authors for entertaining us on this possibility. I'll continue to work on offerings like this in order to bring you more value with DataCAD.

We continue to hammer away on the release of DataCAD 7. I will leave the announcement of any new features that I

have not yet mentioned previously to our roll-out later this fall. We will be at AEC Systems Fall Show Oct. 3-5 in Chicago. We also will be at The Remodelers Show Nov. 5-8 in Atlanta. We hope to see you there.

I encourage all of you to visit us on our home page via the World Wide Web. (<http://www.cadkey.com>). Another significant resource for DataCAD can be found on the Internet by subscribing to datacad-debug. Just send an e-mail message to [majordomo@world.std.com](mailto:majordomo@world.std.com) and, in the body of your message write, *subscribe datacad-debug*. Soon afterward, you will begin to receive messages from other DataCAD users who are participating. There is no fee to participate, just your normal on-line charges. You also can periodically check out our library on the Cadkey BBS (203/298-6405). You also can upload files that may be of interest to us.

We are always looking for DataCAD work that we can use in our promotional literature, direct mail campaigns and packaging. All images you send in will be used with full credit.

We also are working on a DataCAD third-party product and support catalog. It will include a listing of DataCAD add-ons, training centers, user groups and support centers. Please send us any information that you may have so we can be sure to include it in the next listing.

Here's talking to you. Please communicate with you can, but e-mail is the best route: [madura@cadkey.com](mailto:madura@cadkey.com).

### KEYMAIL

I do not like your newspaper format. The magazine form was better for archival purposes. Also it survived the mail better. By the way, I do not plan to change my CADKEY platform to Windows unless I decide to buy FastSURF's Fast SOLIDS. They say they'll have a DOS version.

James Gross  
China Lake, California

My job, developing assembly drawing for customers, requires me to send a great number of drawings by conventional fax. Can I fax a drawing developed in CADKEY using a modem?

Mark Hogate  
North Stonington, Connecticut

*Editor's note: Faxing all kinds of files directly from Windows is easy. You can either use CADKEY for Windows or, in the DOS version of CADKEY, create a GIF file of the drawing and then take it into a Windows application for faxing.*

There are areas of discussion much more important than laserjet drivers, etc. How about some of these topics for us frustrated architects discussed from the psychological side: frustration of which CAD system to switch to; anxiety over looking at ads in the paper where they want CAD experience of 4 years or more; fear of getting too old to work with no retirement plan; fear of having no work and having to work at McD's; frustration about the type of design we are often forced to do.

John Heim

I enjoyed the CADKEY tech tip about editing the STXTUS:TXT file in the July issue. It's been one of my pet peeves having to go through the "MORE" command every time I want to change one of the variables. I would like to add a column along the right side of the display for the immediate mode commands so they could be picked at random via the mouse. This would cut down on the carpal tunnel fatigue which is causing me so much trouble. Any ideas?

Bertan Copp  
Monmouth, Oregon

Welcome to the magical world of computers where you can do ten times as much stuff with one third the effort and blow it away with one mouse click.

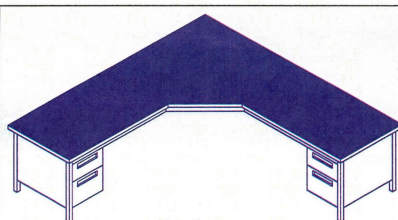
Walt Silva  
Conceptual Product Development  
West Orange, New Jersey

It is not really a big deal to learn more than one CAD package. I started on VersaCAD and operate at least four regularly. It is for this reason I have trouble understanding why certain parties seem so angry with Cadkey because it hasn't progressed as quickly as they had hoped. They make statements like "ABC CAD now runs on Windows. Why doesn't DataCAD?" If you want a different program, then go buy it. First and foremost, I want to do 3D rendering and modeling. To achieve what I wanted, I didn't sit around and bitch that DataCAD wasn't adequate in that direction, I simply use DataCAD to its capacity and when I need to do other things, I use an appropriate program.

M.McLeod

### CADesk

The latest in desktop design, ergonomically fitting your engineering office attractive yet tough enough for any environment. CADesk is for the CAD-CAM professional



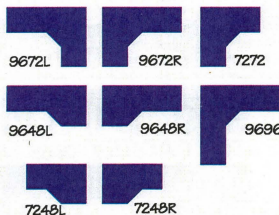
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- Unistructure design (patents pending) no legs in front
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CG12 grommet thru hole 2.25in	\$9.80
CG34 grommet thru hole 3/16	\$6.60
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## CADKEY WINDOWS

### HOW WILL WINDOWS 95 AFFECT YOU?

By Claudia Martin

The hype surrounding the release of Microsoft Windows 95, the operating system designed to replace Windows 3.1, Windows for Workgroups and DOS, has been incredible. In fact, there seem to be as many opinions about Windows 95 as there are users. The major computer publications have covered the topic extensively, but the interests and concerns of those using a DOS-based CAD program often are a little different. The DataCAD Internet DBUG forum has been buzzing for months. Some of the comments on running DataCAD under Windows 3.x and 95 are included in this issue. The McNeel News, a newsletter for AutoCAD users, opines that, in general, they have found Windows 95 better than Windows 3.1 in many areas. If you haven't taken the plunge yet, you may still have many unanswered questions. I hope the following brief overview helps.

#### User Interface Changes

- Long file names: 255-character file names work only with 32-bit applications that support the feature. CADKEY for Windows supports this feature with one anomaly. The Windows 95 file names allow spaces; using CADKEY, spaces do not work and you must include a character such as an underscore or hyphen.
- Undo file operations (delete, copy and move): Undo works only on Windows disk drives; if you delete a file on a Novell server, you cannot undo it in Windows 95.
- Easier to learn: Windows 95 is easy to learn for new users of computers or of Windows. Existing Windows users need to budget a few hours to get familiar. If you prefer the Windows 3.1 Program Manager and File Manager, they are included in 95, although File Manager does not support long file names.

#### Speed

- Faster Printing: New 32-bit drivers for many printers are built-in. Applications that use their own drivers may not

print faster. CADKEY for Windows uses Windows-supplied printer drivers.

- Faster display: Applications that use standard Windows display drivers will benefit, but applications that use their own driver may not benefit. CADKEY for Windows uses Windows graphics drivers.
- Faster disk read/write: Most applications, including old DOS and Windows applications, benefit from this feature.
- Better use of added RAM: Windows 95 benefits from added RAM more than Windows 3.1.

#### Hardware and system setup

- Support for older hardware: Windows 95 will run on any system that currently runs Windows.
- Plug and Play: Windows 95 detects many newer devices (printers, modems, etc.) and automatically configures the system. Older devices or older devices plugged into older computers are not always detected and must be manually configured.

#### Resource use and crash protection

- Expanded system resources: You can run more applications before running out of memory than you could in Windows 3.1. And Windows 95 cleans up after applications that don't give up resources after exiting.
- Protection from ill-behaved applications: When a 32-bit application crashes, it less likely to crash other applications. Older 16-bit applications may still crash other 16-bit applications.
- Better reliability: Fewer General Protection Faults.

#### Built-in networking

- Cards and cables: To use Windows 95's built-in network features, you'll need network cards and cables for your systems. Windows 95 also networks to Windows NT.
- Computability: Support for Novell, Windows NT Servers, TCP/IP, PPP, SLIP and others.

#### Hardware Requirements

The rock bottom requirements for upgrading a general office system to Windows 95 are: a 386DX or higher processor; a mouse, 4MB of RAM, and 10-40MB free disk space depending on your current operating system (see chart below). However, for an efficient CAD system, at least a 486 and much more RAM is recommended. In fact, Cadkey recommends a configuration of a 486 CPU with 16MB of RAM for optimal operation of CADKEY for Windows.

Windows 95 does not require a permanent swap file. CADKEY will need to plan for a dynamic swap file. The exact optimal size is still being determined, but CADKEY now assumes users will need 20MB free disk space for the dynamic swap file.

#### Disk space required for Windows 95

Upgrade from	Disk space required
DOS	30-40 MB
Windows 3.1	20-30 MB
Workgroups	10-20 MB

#### CADKEY for Windows and 95

CADKEY for Windows was designed to be compatible with Windows 95, but it doesn't yet do multi-threading or other Win 95-only stuff. A few glitches in the first release have been resolved in the second release of CADKEY for Windows, which shipped last month. Look for continual improvements.

#### What you should do next

Before you install Windows 95, back up everything on your system. Users and managers should read the book "Introducing Microsoft Windows 95" from Microsoft Press (\$12.95). Computer support people should get the "Windows 95 Resource Kit" from Microsoft Press (\$49.95) and review the implementation plan in the front.

Free information is on the Internet at <http://www.microsoft.com/windows/techsup.htm>.

### CADKEY PRODUCTS AN UPDATE

#### CADKEY For Windows - Release 2

CADKEY for Windows is quickly maturing into 3D CAD tool of great strength. Release 2, now on the streets (and surely on lots of computers), contains many, many functions and enhancements not available just a few short months ago in Release 1. For starters, FastLITE, a basic surfacing program, is included. Also available is Advanced Drafting Module, the enhanced detailing CDE from Baystate Technologies and the CKL\_Sp CDE, a LISP interpreter from Bitwise.

A few of the other enhancements are the ability for users to assign functions to the mouse buttons (up to 8 additional functions for a three-button mouse); the ability to close CDEs that are not in use to free up RAM; the filling of True Type fonts for both display and printing; and the ability to install and run CADKEY for Windows over a network.

#### CADKEY 7.05 DOS

The latest version of CADKEY for DOS contains several enhancements not available for the original version. A complete list is included in README.705 file on the CD. A partial list of changes for 7.05 includes data loading speed enhancement for parts containing Advanced Modeler or FastSURF entities; polygon selection fix for lines, polylines and polygons; update of arrows and witness lines for auto-centered dimensions; box moving of out-of-plane entities which use the construction plane matrix specified; and selecting only drawing instance entities when you update a layout scale.

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### EDITORIAL SUGGESTIONS?

We'd like to know what's on your mind. Why not fax us (at 509/928-4937) any questions you'd like to have answered or topics you'd like to read more about in KeySolutions?

THANK YOU!

# Customize your CADKEY DOS icons for multiple projects

By Larry Maldarelli, Editor  
CALCAD Newsletter of the  
SouthernCalifornia CADKEY  
Users Group

There is no way to go back once you have become accustomed to working with the Vibrant Driver Icon System. This system represents the single most significant improvement that CADkey has ever made.

The latest modification I have made to the icon system allows you to have a generic set of customizable buttons that can be used on project after project. I have made some arbitrary assumptions that should satisfy most users. They are:

- Each solid is on a separate level (an item in your assembly may be composed of more than one solid).
- Subassemblies will be composed of 10 levels.

With these assumptions in mind, I have generated a set of buttons as follows: There are 48 buttons, 1 through 24 and N1 through N24. Button 1 turns on levels 11-20; button N1 turns them off. Button 2 turns on levels 21-30; button N2 turns them off, and so on. Levels 1-10 and 251-255 are left uncontrolled so you have a place to put layouts and stuff that you want to stay on (or off) whilst you turn the various parts of your assembly on and off.

These buttons work just like the first set — they are all CADL files that turn on or off the required levels — so you need these files as well. In the interest of time, I am going to assume you can generate the required buttons.

First, generate the buttons 1-24 and N1-N24. Now make your Assembly Panel and give it a three- or four-digit name that relates to your assembly. Copy into this panel as many sets of buttons as the number of parts expected in your assembly. A neat way to arrange this panel is to put in the "On" buttons first and stretch it horizontally until there is only one row. Then add the "Off" buttons, and if you are careful and mess around a bit, you can get them to form a second row with the "Off" buttons directly below the corresponding "On" buttons.

I have found the upper right-hand corner of the drawing area to be the least-used area, so that is where I put my working panels.

Now follow this next part carefully; it's the key to the whole thing. When you have the panel arranged to suit yourself, export it using the Export panel in the Icon Grabbing. Use the Default.RES name and immediately Import the same.RES file. This adds another set of icons with the same keyfaces to the Icon Grabbing. This second set is related to your working panel and you now can change their names to descriptors of the parts in your

assembly without the names of the generic set changing as well.

Remember that the icons in the Grabbag are funny: You can have two buttons with different keyfaces that perform the same function and you can have two buttons with the same keyface that perform different functions. So, be careful.

Now you can start working on your assembly. As you add parts to each block of levels, rename

the keyface to something you recognize as the subassembly. If a particular subassembly won't fit in 10 levels, just assign two groups to the same subassembly. If you have the buttons arranged so the "Off" buttons are all immediately below their corresponding "On" buttons, there is no need to rename the "Off" buttons.

Yes, your Icon Grabbag gets full of trash, but who cares? This system combined with a cus-

tomized workspace allows you to dance through your assembly with the greatest of ease. If you are lucky enough to have a Spaceball as well, you have an extraordinary combination — far more powerful than what we have seen from the Windows version of CADKEY so far and probably very far into the future.

All of these files, plus my customized workspace files and a demo

assembly, are available for \$10. Personal checks only please. Write to:

CALCAD Publishing  
Customization Files  
13171 Silver Birch Drive,  
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This article first appeared in  
CALCAD August 1995, the  
newsletter of the Southern California  
CADKEY Users Group.

## Xi: 1995 Fastest AutoCAD Pentium!

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\*As reviewed in CADAnalyst, May 1992, 1993, 1994, June 1995, Autodesk, Inhouse. \*Xi MTower DP comes standard with one CPU. \*Monitor Upgrades from 17" All prices and specifications subject to change without notice. Prices do not include shipping. For more information on our products or services call or write to Xi Computer, Xi is not responsible for photographic and typographical errors. Xi Logo, Workstationer, NTower MTower and Workstationer are registered trademarks of Computer Corp. 2540 & 2545 Workstationer computers by Xi PWS, 2548-0200 & 2548-0200. Xi MTower & NTower systems and PCI case & keyboard for professional use only. Intel, IBM, Pentium and the Intel Intel Logo are registered trademarks of Intel Corporation. All other trademarks of their respective companies. Copyright © 1995 Xi Computer Corporation. All Rights Reserved.

### DIALWIN EASES TRANSITION

If you use the DOS version of CADKEY and plan to add or change to CADKEY Windows, you may face a potentially big problem. Many existing CADL and CDE programs don't run properly under CADKEY Windows. Specifically at issue are the dialog boxes and icons, common graphical elements in many CADL and CDE programs. The functionality of most CADLs and CDEs in the DOS version of CADKEY is not supported in CADKEY Windows. This makes it impossible to use these programs under CADKEY Windows. Many valuable software tools cannot be used at this time under CADKEY Windows.

These CADL and CDE programs can be made to run under CADKEY Windows, but several things must be done. CADL programs must be rewritten, line by line to C language. Then they must be compiled with VISUAL C++ into a CDE. The new CDE must be tested with the various environments: Windows 3.1, Windows 95 and Windows NT. This requires much effort and time even for smaller applications. Complex CDEs also must be completely rewritten. However, the most time-consuming aspect of all can be creating the dialog boxes for the newly rewritten CADL and CDE programs.

DIALWIN is a dialog box simulator for CADKEY Windows which lets you work around some of the above procedures and minimize customization efforts. DIALWIN creates the missing dialog boxes automatically in CADKEY Windows after a CADL program is compiled with the CADKEY Windows CADL compiler. For CDEs, the DIALWIN SDK must be used. It is a part of DIALWIN especially for CDEs. It provides the link to CDE functions similar to the DOS version. After compiling with VISUAL C++, the new CDE can be used.

This makes DIALWIN a valuable and cost-effective tool for all CADKEY users who want to use the Windows version, but do not want to give up the help which CADL and CDE programs provide. DIALWIN costs \$69 per CAD. For developers who want to ship DIALWIN with their application, the one-time cost for each application is \$499.

DIALWIN is produced by AGS GmbH in Leonberg, Germany. Orders and payments can be handled by MasterCard, VISA or American Express. Information, ordering and support can be handled via e-mail: CIS info@10032.2270; Internet info@ags.de; BBS 49 7152 977141; fax 49 7152 74166.

## THE SHELL GAME

### Can you pick the right one for your desktop?

By Sherry Dahl-Montee

If you're like me, your Windows desktop is probably a mess. I have loaded countless colors and bitmaps in an effort to "design" a personalized look for my desktop, but I usually end up going back to a green rivets background and my "same old" groups. I wanted something that would perk up my senses and simplify my computing life, so I checked out some of the latest desktop utilities. I didn't realize how many shells and utilities existed until they started to pile up on my desk! I diligently loaded each one, used it and assessed its value to me based on the following simple tests: Was it intuitive; did it really do the job; did it "mess" with my system? I chose one of the following applications for its simplicity. Can you guess which one? (Check the answer at the bottom of the story.)

#### Dashboard 3.0 from Starfish Software

This program seems to be designed for a very specific market, which doesn't include me. I work with a LOT of applications and files, and I seem to have 10 things going on at once. Dashboard kept my desktop clean, with QuickLaunch panels, nine different screen setups, instant reminders, Taskbar, Resource Gauge, Toolbar buttons, Dashboard Run feature for running DOS commands, and Sticky Apps. But, it also became tedious to look at after about 15 minutes.

I think Dashboard made the mistake of trying to offer the user everything up-front, literally. To keep this short and sweet, kudos to Starfish for the interesting idea and good programming, but the design needs some serious work.

For more information call 408/461-5800.

#### Drag and File 2.0 from Canyon Software

Drag and File looks like just another File Manager, but once you load this utility, you may never use File Manager again. Drag and File is actually a bundle of three tools for serious file management.

Drag and File options: copy, move, view, zip, and drag-and-drop files from multiple computers in a single

operation, tag directories and files across drives, view file lists from any combination of drives or directories in more than 40 file formats, copy any view to the clipboard and print it.

Drag and View Gold options: view almost any file or document without owning or opening the application, accesses up to 100 files at a time with unlimited windowing, copy or print any selection of any view, multiple windows for comparing files, text searches or HEX or ASCII, and built-in accessory launcher.

Drag and Zip options: Drag and Zip is the convenient way to turn File Manager into a zip file manager. Just drag your files to the zipper icon, give the path and name, hit enter and your file is zipped; you can extract files just as easily — drag the zipped file to the zipper icon and a viewer window pops up showing all the files in the zip file, where you can extract, delete, view, or launch any of the files. Also included are links to the World Wide Web for downloading GZ and ZIP files, and built-in Integrity Master virus checker. I consider this application a must-have for any Windows user who works with zipped files.

For more information call 800/280-3691 or 415/453-9779.

#### Plug-In for Windows 2.5 from Planner Crafters Inc.

Attention all Windows users — go out immediately and get this product! Plug-In passes all of my criteria: intuitive, easy on the "system," performs great with a wonderful variety of options. Plug-In operates "behind the scenes" but is always available; it doesn't make Windows different, only better. Plug-In is composed of various smaller utilities, which either enhance or add functionality. It even can be used as an addition to a third-party shell. I was delighted with all the options and enhancements and, to my amazement, it used next to nothing of my system resources. Some of the features are: Control Center graphical front-end, custom cursors, nested groups, resource alerts, quick run menu, fully configurable title bar displays, alarms, scheduler (rates a "10"), event sounds, Talking Clock and Chimes, pre-

See SHELL, page 10

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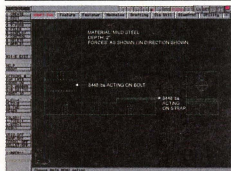


Figure 1

loads, we would be required to perform many engineering calculations and decided to use CADKEY Analysis. We modeled the same piece in Analysis, and after several false starts (this being our first experience with Analysis), came up with stress loads similar to those found by manual calculations. Figure 3 shows that the maximum compressive stresses are 58,000-63,000 psi (versus 62,000 psi by manual engineering calculation).

Rather than simply increasing the solid steel cross section, which would have added weight and cost to the part in a very simplistic and "uneconomic" way, we redesigned the Adjustable End Stop completely. This new design sandwiched the steel supporting strap between a shorter and thinner upper solid steel piece, 1/2-inch thick by 2-inches wide, and a longer and thicker, but lighter piece of welded structural square tubing. This design is shown in Figure 4. Before doing any live tests,



Figure 2

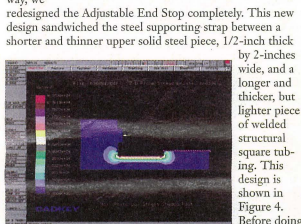


Figure 3

**CRIME** from Page 1

tient information. For example, he recently worked on the case in which a house was shot at, but little physical evidence was available. At the scene, Breuninger used his palmtop computer to record the basic dimensions of the residence and the entry and exit points of the gunshots. From those points, he drew vectors to determine the angle and trajectory of the shots.

Back at the office, he transferred the information from the palmtop to his PC, which is loaded with CADKEY Windows version 7. The transfer can take place by cable, modem, flash disk card or by infrared. The information gathered at the crime scene is converted from the early version of CADKEY to version 7, where it can be "dressed up" with refined points and vectors. This final draft is converted to a DXF file and moved into DataCAD 6.

In DataCAD, Breuninger "furnishes" the model with furniture and human forms. The completed model now can be set up for walk- or fly-throughs, taking the viewer into the scene from any angle.

"You can 'walk' inside a model and look in a (bullet) hole right down the vectors," he says. "With a mystery, that's great."

Breuninger cited a case in which seven people were murdered at a Chicago-area fast food restaurant. From his DataCAD model of the crime scene, Breuninger was able to determine the trajectory of the bullets and, from that, the suspect's height—a valuable piece of information in a case with few clues.

To further refine his models, Breuninger moves them from DataCAD to Renderize from Visual Reality. From there, the animations can be transferred to videotape. Just such a process was used to animate a computer model of the two murders in the high-profile O.J. Simpson case.

Animated computer models have been accepted for use in courtrooms across the country, provided they are based on accepted factual evidence in the case. Breuninger said they are particularly helpful in presenting complex information that could confuse a jury.

"Instead of a dry recitation of an evidence technician's report, you can see it in a three-dimensional model," he says.

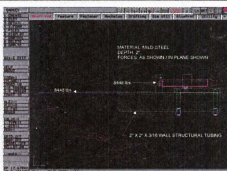


Figure 4

solid cross section instead. Analysis came up with a solid of sufficient size to withstand the required loads (allowing for a safety factor) without exceeding the yield point and resultant permanent deformation. The stress plots of this final required cross section are modeled in Figure 5 (for maximum tensile stress) and Figure 6 (for maximum compressive stress). CADKEY was then used to obtain the moment of inertia of this solid cross section and, from this, a tube/solid composite assembly was designed with the equivalent moment of inertia through its new central. In bending a steamed piece of maple, this design performed flawlessly.

Veritas is writing a comprehensive manual on the general subject of steam bending and how this relates to the product.

Other components that make up the Adjustable End Stop were similarly modeled, as were the other components that allow the more complicated S-bends and Change of Plane Bends.

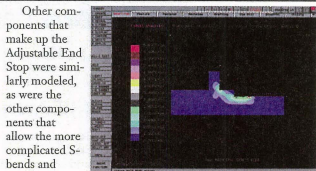


Figure 5

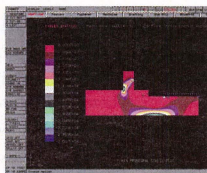


Figure 6

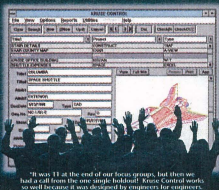
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## A Case Study

### ELECTRONIC DATA MANAGEMENT AND THE BOTTOM LINE

By Barry H. Ward  
Vice President of Engineering  
AVO International

AVO International is one of the oldest and largest providers of test equipment and measuring instruments for applications associated with the transmission of electricity. The company has designed, manufactured, sold and serviced equipment and systems for more than 100 years. (AVO stands for Amps Volts Ohms.)

The electronic industry is among the most complex and rapidly changing industries of modern times. The difference between our core technology 100 years ago and that of today is like the difference between an abacus and a computer. The way we conduct our business also is rapidly different. Computer-aided engineering and electronic data technology have created some interesting new challenges and opportunities. Our draftsmen and engineers now produce 100 percent of our new drawings in CADKEY. In addition, we have converted nearly 40,000 aperture cards into electronic raster files.

When we changed to creating and storing our documents electronically, we realized immediate productivity dividends, particularly in the drawing and editing of designs. However, we needed to keep control of our ever-expanding electronic library. We wanted a management tool for all the drawings that would allow us to keep the files organized, maintain their integrity, and facilitate the sharing of engineering information with other company departments. Recently, we implemented such a tool. The program, Kruse Control™ for Windows, has allowed us to

accomplish our goals in a very short time.

The primary benefit of Kruse Control for our engineering and design departments is its check-in/check-out system which keeps control document access, protect approved drawings and eliminate wasted time associated with misfiled documents (both electronic and hard copy revisions). Like any company with many people handling many drawings, we had our share of problems with lost documents, same-generation revisions coming from multiple sources, and the like. Kruse Control takes care of these situations automatically. Its intuitive methodology meant our draftsmen and designers could use it right away.

The engineering department was responsible for the implementation of Kruse Control and we worried about the resources required to enter 40,000 aperture cards and nearly 2,000 CADKEY drawings into the system. Our concern was not only the time it would take, but the degree of technical knowledge required. Fortunately, Kruse Control shortcuts allowed non-technical, clerical staff to perform all data entry.

Hollerith data from the aperture cards was captured automatically and entered into Kruse Control during the scanning process. (The software manufacturer, Kruse Inc., an engineering services firm, also performed the electronic conversion for us.) This automated process took care of the majority of our data entry. For our existing CADKEY drawings, one of our draftsmen identified the name of the file and document path (i.e., where the document is located on our network), we simply called the document up on the Kruse Control viewer and

typed in the remaining information (project, draftsman, location, etc.) directly from the title block on the drawing. All we had to give our clerical staff was a list of documents and their locations. With this information, they found that they could enter up to 50 documents an hour. We were up and running on Kruse Control in less than two weeks.

Engineering information is the lifeblood of our company and like blood, information needs to flow everywhere. Currently, our purchasing, manufacturing, quality control, inspection and repair departments also are using Kruse Control to access the information they need. They also have realized significant improvements in productivity.

Purchasing uses Kruse Control in bidding projects to suppliers. All purchasing personnel have search, viewing and printing privileges. They can search for a document by part number, drawing number, assembly number or any other field criteria. Field names in Kruse Control are easily customizable so we didn't have to change our naming convention. A real advantage is that other departments do not need CADKEY on their computers. They can print right from the Kruse Control viewer to any printer on our Windows-based PC network.

Kruse Control is not a fail-safe security system, but it does allow us to give various access privileges to different people and departments. One outside the engineering department can check a drawing out for revision, and only those with system administrator privileges can delete files. Built-in reporting tracks all checked-out drawings

by user, giving us much better control of drawings.

On the shop floor, the supervisor of each group has Kruse Control on his or her terminal to answer any questions that may arise. If the assembly group has a question about how two components fit together, Kruse Control lets them do the appropriate engineering drawing, view it on-screen or print a hard copy to find the answer. We have saved countless hours of wasted time by giving them instantaneous access to this information rather than forcing them to locate the original document (which may have been misfiled) or interrupting someone from engineering. Similarly, our quality control, inspection and repair departments use Kruse Control to quickly view or print drawings.

All departments have expressed a similar response to Kruse Control. They have found it unobtrusive and easy to use, yet very powerful in its document search, editing and management capabilities. We are investing expanded use of Kruse Control to include some of the other types of documents it supports (word processing, spreadsheet, PICT/TIFF, etc.), using it in other departments and doing some customization to accommodate our ISO 9001 implementation. At AVO, we believe that managing our documents electronically with Kruse Control provides a competitive advantage because it allows us to share information quickly and accurately. And at less than \$100 a seat, we have resolved our document management issues at a very reasonable cost.

For information, call Kruse Control at 800/272-5639 or fax 610/269-1004.

SHELL from Page 8

viewing "readme" docs, installing applications, international settings, screen saver enhancements, restrictions settings, exclude dialogs, History List, and Jump To lists. Planet Crafters offers Plug-In as shareware, with a registration fee of only \$20. Considering the price and functionality of software today, you can't possibly miss with Plug In.

For more information call 800/651-1000 or 404/998-8664.

#### PRAXIM™ Command Shell for Windows

Know someone addicted to the DOS command prompt and uncomfortable using Windows? Then start using a test drive with PRAXIM. This shell is designed for the techie who refuses to change his or her computing ways. PRAXIM will make their Windows life much easier, because they can still use all of their favorite DOS commands directly in Windows and also reap the benefits of the graphical interface. PRAXIM lets you start using Windows or DOS application using name fragments, review previous commands, define aliases and create batch files, run several commands at once, reuse names as input to the next command, customize hot keys, mouse clicks, and desktop clicks, redirect command output, drag-and-drop files, and configure your toolboxes and desktop. When you start PRAXIM, a desktop toolbox called Favorite Tools pops up, which can be configured to hold your favorite or most important applications or files. This shell is one of the more robust of all the shells I reviewed and I give this one "thumbs up." I recommend this shell for anyone who regularly bounces between DOS and Windows applications.

For more information call 800/634-9808.

#### SpinWizard from Tanisys Technology

The SpinWizard desktop is designed like a color carousel, with 96 available buttons sorted into eight color rows. It didn't take long for me to set up my icons on the carousel, with the most time being spent on clearing buttons that defaulted on setup. I ran into a problem with the size of the application — it can be adjusted somewhat, but the adjustments are very limited. Since I use small fonts on my system, and I couldn't size the carousel large enough, I was forced to view teeny-tiny text on teeny-tiny buttons! Other than the small-font sizing problem, I found this to be a very good application — it can be adjusted somewhat, and saved (just in case you delete a button and want it back), all commands can be reached using mouse or keyboard or hot keys, drag-and-drop button management for fast defini-

See SHELL, page 23 ➤

## Finally -

A book to help you decrease your time to market and increase development productivity using CADKEY techniques  
"Effective Product Development"

By Walter Silva

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# IGES

## System-to-System Data Transfer Remains Key to Manufacturing Success

By Ken Erman • Cadkey

Transfer of design and engineering data has been a challenge for centuries. In earlier times, designers had to be present during the manufacturing process to ensure that their product was made correctly, and to be ready to deal with any changes required to make manufacturing possible. The Industrial Revolution intensified this problem when products went from being manufactured by hand in small quantities by the designer himself, to huge factories where products were mass produced by machines and individuals who were separated from the actual design process both physically and educationally. Designers' sketches became engineering drawings, where critical data was transferred from the designer's head to paper. The drawings became the means of product creation. CAD technology greatly increased the ability to produce these drawings quickly. The technology inherent in 3D, CAD and CAM has the need and opportunity to exchange more than engineering data on paper. What if users of different CAD/CAM systems could exchange data between themselves? Wouldn't this make product manufacturing easier, quicker, more accurate, more dependable and profitable?

### What is IGES?

IGES is an acronym for "Initial Graphics Exchange Specification." IGES was created in 1980 by a collection of industry and government representatives with the goal of being able to transfer electronic CAD data from one system to another. One of the goals of IGES is to eliminate the need to re-create data when two different CAD systems are used in a project. In the past, CAD data was plotted and passed on from one contractor to another, who then had to re-create the data in their CAD system. Since 1980, IGES has been upgraded several times. The current version is IGES 5.3. Each version has improved the specification by adding new entity support and refining existing definitions to improve translation capabilities. Despite problems encountered with early versions of the specification and translators implemented from it, IGES has now become an accepted and widely used mechanism for the transmission of CAD/CAM data.

### CADKEY and IGES

CADKEY has been an active participant in the creation and refinement of the IGES specification since 1984, and has had a commercially available IGES translator since 1985. The first IGES translator written for CADKEY 2.0 supported version 2.0 of IGES. Since then, CADKEY has continually improved its IGES translator. Today, CADKEY is known for having a clean, robust translator that closely adheres to the IGES specification. The current CADKEY IGES translator supports IGES version 5.1.

### Identifying IGES Benefits to the Customer

IGES make it possible for users to exchange part files with other CAD systems. This is advantageous because CADKEY users can get data from suppliers and clients, (regardless of the CAD program of origin), modify it in CADKEY and return it to them, all without having to purchase a different CAD system for each customer. IGES should be pursued as an option for every company that is involved in the transfer of product information. If a supplier can send a file with CAD data instead of a blueprint, the user is that much further ahead in the manufacturing process.

If you are considering IGES, you need to sit down with the customer and examine their current practices to determine if IGES will offer productivity gains. Will it enable them to get a head start on designs? Will it give them a competitive advantage with future projects?

Every potential and existing customer should be questioned regarding the origin and ultimate destination of the

data they produce. If, at any point, another company or CAD/CAM system is involved, IGES becomes a potential solution.

### Proving the IGES Solution

IGES is not a magical black box. It cannot make miracles occur, no matter what a vendor claims. To prove that IGES works, and then to use it as a sales tool, requires work by both the sales staff and the customer themselves. The goal is to give the customer the correct information to enable them to evaluate IGES as a realistic solution. The following steps can be

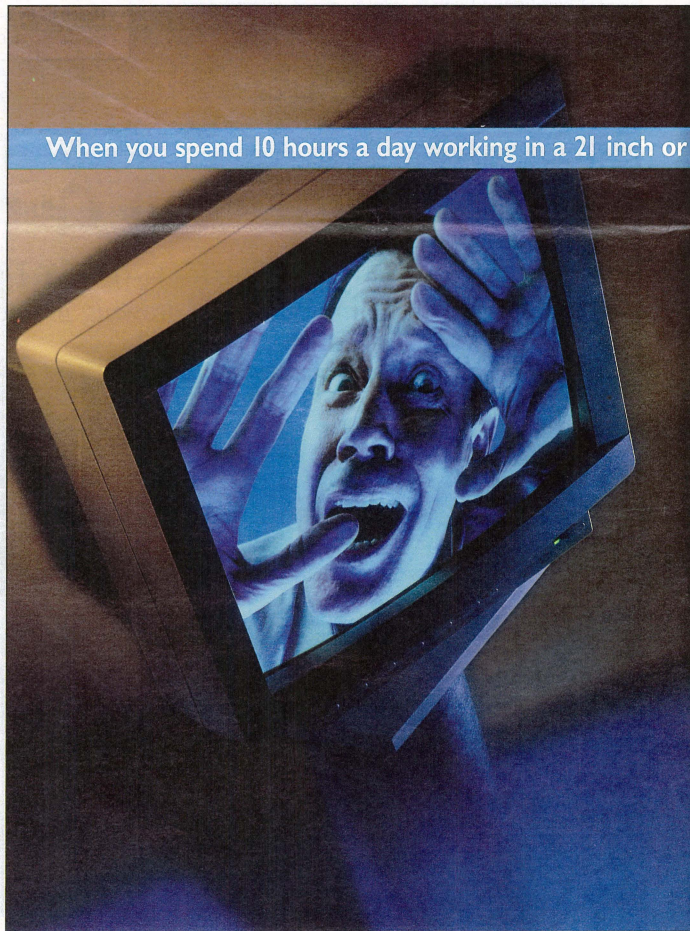
used as guidelines in this process

1. Establish what the customer wants to gain from a translation.

This is a critical step in selling IGES as a solution. No matter how good the translator is, if it doesn't meet customer's expectations, it is a failure. To establish the customer requirements, consider the following: Do they want 2D drawing data, 3D model data, or both? Many users are going to manufacture parts and are interested only in the 3D model, so 2D drawings are not important. Each customer's needs will be different.

2. Identify the CAD systems they will use to translate data.

When you spend 10 hours a day working in a 21 inch or



# What if users of different systems could exchange directly? Wouldn't this make manufacturing easier, quicker, more accurate, more dependable and profitable?

3. Determine if the IGES data will be used uni-directionally or bi-directionally. In other words, will data be transferred from system "A" to system "B" only, or will it be required that the IGES data be sent back system "B" to system "A"?

4. Get entity mappings from all of the IGES translators involved. Entity mappings do nothing more than explain what a translator does with an entity. This is necessary because different CAD systems do not always support the same IGES entities.

Because the IGES specification is so broad (covering everything from 2D wire frame, to electrical design, to Finite Element Analysis), it is possible for two excellent translators to be unable to exchange data because no translator supports the entire specification. By establishing the entity mappings, you will be able to determine the commonly supported areas of the specification and the way entities are mapped from one system to another. As an example of a mapping, a line in CADKEY is mapped to IGES as a line, and an IGES line entity is mapped into CADKEY as a line. This may sound simplistic, but this information is vital to determining translation capabilities. Entity maps are useful in determining how drawings will be created. CADKEY distributes its entity map-

pings in the back of the manual.

After gathering the above information, a series of tests can show the users involved exactly what to expect when IGES becomes a part of their production environment. The types of tests that are useful include simple loop tests, unidirectional tests and bi-directional tests.

A simple loop test involves nothing more than starting with a normal working file, similar to what will be translated between the two systems involved, and translating it out to IGES. This file is then translated back into the original CAD system. After completing this test, the user looks at the file to determine what happened during the translation process. This can help to determine what may happen when another system is involved. Do not be alarmed if there is not 100 percent success; note the problems and proceed further.

A unidirectional test is a one-way trip from one system to another. This is accomplished by starting with a file that is representative of the files to be translated. System "A" translates the file to IGES, system "B" then translates the file into its part file format. System "B" then is used to test the integrity of the file passed. These tests are dependent on what the user has deemed important to the operation. Many times, it is helpful to send a plot of the file produced by system "A"

## IGES Seminar Set for November

International TechneGroup Incorporated (ITI), a leading supplier of product data integration solutions, will host an IGES (Initial Graphics Exchange Specification) data exchange seminar on Nov. 28-29 at its corporate headquarters in Milford, Ohio.

"Successful Data Exchange Using IGES" is a two-day seminar that will provide in-depth information on the features, function, and applications of the standard and enable attendees to become more proficient and successful in exchanging data between dissimilar CAD/CAM/CAE systems.

Topics to be covered include: common data exchange problems and how to solve them, IGES overview, IGES file structure, entity attributes and relationships, the future of IGES, STEP (Standard for the Exchange of Product Model Data), and much more.

To register or for more information, contact Kristin Saunders at ITI 800/783-9199.

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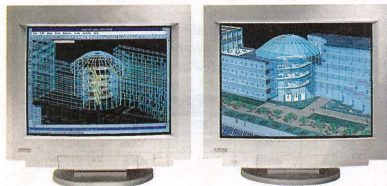
The Diamond Pro 21TX also incorporates a new evolution in CRT technology trademarked DIAMONDTRON<sup>™</sup>, which is the newest, most advanced technology available today.

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to help in testing the results.

A bi-directional test is a two-way test from one system to another, then back. This test begins the same as a uni-directional test and ends up passing the original data back from system "B" to system "A."

### Evaluating test results.

It is highly unlikely that any test will achieve 100 percent success because of the nature of different CAD systems and the translators themselves. It also is affected by the IGES specification itself. For example, CADKEY has very powerful ordinate dimensions. When modified, they update their values automatically. But take those ordinate dimensions through IGES in a loop test and that ability is lost because the IGES specification does not have a defined method of translating this information.

It is critical to help the customer evaluate the test results objectively. Always keep the customer's goals in mind during the evaluation process. List what translated successfully, what did not translate at all, and what translated but was in a form not desired by the customer.

First, consider the entities that did not translate. How important are they? Are they critical to the translation or only minor inconveniences? For example, if a Rational B-spline doesn't translate, that would be considered critical.

The user then should speak to the user of the original system and see if the B-spline can be mapped to a Cubic Parametric spline within that system. This would then allow translation to be successful. There are certain entities in IGES known as Property Types. These entities are used mainly for communicating non-graphical attribute information. If these entities aren't translated, then it could be considered no problem.

Next, consider the entities that translate, but are not in a form that is desirable to the user. For example, system "A" may send out entities that end up as a CADKEY polyline. If the user wants to modify this entity, they will have problems because of the nature of CADKEY polylines. But the user of system "A" may be able to map those entities to a simple line. Once they are translated into CADKEY, they are fully compatible with the user's requirements.

After all the test results have been evaluated, the customer should be able to decide what percentage of the required information was translated. That percentage, as well as the time it would take to re-create the missing information, should be combined to determine what gain would be achieved by using IGES. For example, after translation it is determined that 80 percent of the desired information is received by system "B." The customer then decides it would take 40 man hours to recreate the lost information in his CAD system. At \$50 per hour, this would cost \$2,000. But, to recreate the entire job from scratch would cost five times that in time and money. At this point, IGES looks like a good option. First, it gets the customer in a position to get more work, and second, it gets that work done faster and with less investment.

Ken Erman is product manager for MEC at Cadkey Inc. Cadkey has been an active participant in the creation and refinement of the IGES specification since 1984. This article first appeared the "Product Development Forum Report," a newsletter of PDI, a network of product development professionals.

## SOFTWARE



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Infinite Disk Professional is \$129, and upgrades from Infinite Disk Home or Advanced are \$69.95.

Contact Chili Pepper Software at 800/395-1812 or fax 404/513-7411.

#### Cadman View ULTRA for Windows

AutoMate Corp. recently released its newest version of Cadman View ULTRA for Windows. Updated features for Cadman View ULTRA include directory and database lookup, extended redline and markup functions. Access 2.0 data base configured with full Query by Example (QBE) for enhanced document retrieval, optional extended format module with over 150 formats, and full DLL configurability. ULTRA is available for Windows, Windows 95, and NT. Price is \$399.

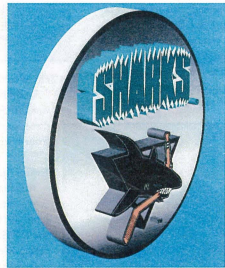
Contact AutoMate Corp. at 708/676-4636 or fax 708/676-4699.

#### LANshadow Mirroring Software

LANshadow v4.0 prevents lost data and network downtime resulting from LAN file server failures by "mirroring" (copying) the

information stored on a server to a back-up server. Version 4.0 features a Windows interface, allowing the user to view multiple windows and manage multiple server modules. Mirroring options include continuous, variable start and stop, full back-ups or selected directories and files, full back-up or one or more servers simultaneously, or mirror two servers in tandem, making them destination servers for each other. Files can be mirrored whether they are open or closed, and mirroring of volumes can be scheduled individually. Priced on a per-server basis, LANshadow is priced at \$995 for the first server pairing (one source and one destination server).

Contact Horizon Technology Inc. at 714/556-1313 or fax 714/556-1216.



Sports logo created in AddDepth

#### addDepth™ for Windows

addDepth for Windows assists non-professional graphics users incorporate graphics into their work. addDepth allows users to transform existing flat, 2D type and graphics into true 3D artwork by adding depth, bevels, perspective, lighting, shading, and other effects to Type 1 and TrueType™ (ATM) fonts, imported clip art, illustrations created in other programs, or objects drawn directly in addDepth. Features include the addDepth Wizard, a graphics assistant that automates the creation of 3D graphics and moves users step-by-step through the design process; Interruptible Full-Color Preview allows users to adjust and edit their objects without waiting for the screen to redraw; compatible with all major graphics applications, page layout programs, presentation packages, and word

processors; and addDepth for Windows is 100 percent compatible with the Macintosh version. Retail price is about \$100.

Contact Ray Dream Inc. at 415/960-0768 or fax 415/960-1198.

## HARDWARE

### Datasonix Pereros

Datasonix Corp. offers the Pereros 1GB portable drive for mobile computer users who want to take all their data with them. Each Pereros drive weighs only 10 ounces and is about the size of a bar of soap, runs on two AA alkaline batteries for approximately 300 minutes (actual tape motion), plugs into any PC parallel port and needs no adapter or internal hardware. Pereros includes software tools for managing, tracking, finding, protecting, and using your data and applications; offloading and unloading infrequently used files; transferring and synchronizing between desktop and notebook PCs; and complete backup and restore capabilities. System requirements include DOS 5.0+, Windows 3.1, Intel compatible 386 or above, and 12MB free disk space. Suggested retail price is \$499, with 1GB cartridges available for \$28.95.

Contact Datasonix Corporation at 800/528-2779 or 303/945-9300.



### SuperScan Digital Monitor

#### SuperScan Digital Monitor

Nissei Sangyo America announces the release of a family of 21-inch monitors with flat CRT, Invar shadow mask, AR coating, horizontal scanning frequency range of 30-107kHz and vertical scanning frequency range of 50-160Hz, resolutions up to 1600x1200 at 85 Hz, 0.26mm-mask pitch, controls for power, color, balance, contrast, screen position and size, pin cushion, trapezoid, rotation, parallelogram, degauss, memory store, Easy Menu™ on-screen programming, and moisture reduction. SuperScan monitors are compliant with MPR II emissions standards and Energy Star guidelines. Sug-

gested retail price begins at \$1895.

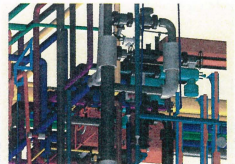
Contact NSX Hitachi at 617/461-8300 or fax 617/461-8664.

### StudioPad™

Hitachi Digital Graphics has introduced the StudioPad 4x5 Graphics tablet, which features a 15-key function menu bar and an overlay drawing surface. The menu bar eliminates the necessity of returning to the keyboard to make changes. The 405J StudioPad is available in Macintosh and PC versions, including Windows 95. It features 256 levels of pressure, 0.01 inch accuracy, and 205 pps maximum speed capability for the PC. Suggested retail price for both the PC and the Macintosh version is \$199.99.

Contact Hitachi Digital Graphics at 408/774-0777.

## ENGINEERING



FotoG-FMS

### FotoG-FMS™

Vexcel Corporation of Boulder, Colo., announces the release of FotoG-FMS, an advanced industrial photogrammetry application. FotoG-FMS allows users to produce accurate 3D models of congested plant environments or obtain 3D coordinates at critical locations by taking photographs and then processing them with the software. Photogrammetry can reduce the need for time-consuming and costly on-site visits by engineering or other technical personnel, allowing the majority of the "as-built" process to be performed in an office environment.

Contact Ron McCoy at Vexcel Cop. at 303/444-0094 or fax 303/444-0470.

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8. Select Get map from RenderStar Dir.
9. Select Wood1.gif and select Okay.
10. Set these features:
 

Sun:	100
Mul:	0
Map Size:	64X64
Map Scale:	15
Randomize Lock:	On
Shade Offset:	96
Use CMF Color:	On
Specular:	On
Spot Size:	8

**The Roof Color and Texture**

1. Click on the number beside the label roof and click on the Edit of the corresponding number.
  2. Set the Hue at 0 and the Saturation at 50. Select Okay.
  3. Click on the Material Reference field button that represents the roof.
  4. Select Add Copy here from the submenu and select the number that was given for the barn.
  5. The same features from the last bitmap will pop-up. You then can change them.
  6. Click on the button below Bitmap used for texture (which is labeled empty).
  7. Select Get map from RenderStar Dir.
  9. Edit the features to these settings:
 

Sun:	100
Mul:	0
Map Scale:	10
Randomize Lock:	On
Shade Offset:	96
Use CMF Color:	on
Spot Size:	8
- The map scale will automatically adjust.

**The Silo Color and Texture**

1. Click on the number beside the label silo and click on the Edit of the corresponding number.
2. Set the Hue at 350 and the Saturation at 90. Select Okay.
3. Click on the Material Reference field button that represents the silo.
4. Select Add New Here from the submenu.
5. Click on the button beside type (which is labeled None).
6. Select bitmap from the submenu.
7. Click on the button below Bitmap used for texture (which is labeled empty).
8. Select Get map from RenderStar Dir.
9. Select Brick-4a.tga and select Okay.
10. Set these features:
 

Sun:	100
Mul:	0
Map Size:	90X64
Map Scale:	12
Shade Offset:	100
Specular:	On
Spot size:	8

**Add the Background**

1. Click on the Material Reference field button that represents the background.
3. Select Add New Here from the submenu.
3. Click on the button beside type (which is labeled None).
4. Select Colored-bitmap from the submenu.
5. Click on the button below Bitmap used for texture (which is labeled empty).
6. Select Get map from RenderStar Dir.
7. Select Forrest2 and select Okay.
8. Set these features:
 

Sun:	120
Mul:	0
Map Size:	640X480
Map Scale:	25
Modulation:	100
Bump amount:	60
Specular:	On
Spot size:	9

**Add the Foreground**

1. Click on the Material Reference field button that represents the foreground.
2. Select Add New Here from the submenu.
3. Click on the button beside type (which is labeled None).

4. Select Colored-bitmap from the submenu.
5. Click on the button below Bitmap used for texture (which is labeled empty).
6. Select Get map from RenderStar Dir.
7. Select Lawn-4c and select Okay.
8. Set these features:
 

Sun:	100
Mul:	0
Map Scale:	10
Modulation:	100
Bump Amount:	60
Specular:	On
Spot Size:	10

This simple example is just a beginning. There are many more methods and applications to learn. For example, there is another way to add a background scene and procedural textures that add a different look to a drawing, lighting effects and animations.

A major tip for using RenderStar is to change only one item at a time and then view the rendering. This will not only help you analyze how the software works, but will save you major headaches in the long run. Also, when experimenting, write down your results and what you learn, because one thing done differently next time will bring different results.

Key factors in the choice of an ISDN solution are the bandwidth requirements of your CAD/CAM applications, and what size files your organization wants to send across the network. Basic Rate Interface (BRI) lines, with two 64 Kbps B channels are typically enough to satisfy the needs of most CAD/CAM operations, while Primary Rate Interface (PRI) lines, with 23 B channels, will satisfy the needs of an enormous design and manufacturing organization that wants to transfer large files. In addition to the B channel, both BRI and PRI use a single D (Delta) channel that makes up the remainder of the line, and is used for communication between the phone switch and the ISDN device.

**Implementing ISDN**

The first step in implementing an ISDN solution for CAD/CAM is to determine if you need BRI or PRI ISDN lines. Network managers and MIS specialists should look at the size of the files, the number of people on the network, and the length of time it takes to transmit. If transmission rate is effective at 1 megabyte per second (mbps) or less, BRI is the most cost-effective option, while a rate of over 1 mbps may demand the additional robustness

of PRI. The smart network manager also will compare the cost of other solutions available for file transfer, including high-speed modems, leased lines, as well as explore the total cost of other methods of file transfer, such as overnight express shipments of data disks.

Another consideration for the organization investigating ISDN is the number of remote sites to be supported. Whether via leased lines, modems, or "snakebones," file transfer can be costly, and the larger firms would be wise to really examine the true cost of these activities. They may find that ISDN represents a significant cost savings. When one balances the high performance of ISDN with the cost savings over a leased line, ISDN clearly jumps ahead.

In a typical CAD/CAM environment, getting started sending files across the corporate network using ISDN is a very straightforward task. Most design and manufacturing environments consist of some of the hottest computing hardware around: networked Sun, Silicon graphics, HP and Pentium-based workstations, and UNIX or PC servers running various applications. This hot hardware represents the perfect match for ISDN: high-performance nature and ability to move lots of data fast.

See ISDN, page 23 <



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## A DATA CAD WINDOW ONTO THE NET

### Upgrading to Windows 95

"If your Windows applications are minimal, and DataCAD in DOS 6.2x is your main software, I don't see a great urgency in upgrading to Windows 95. In fact, there is a strong argument to hold off upgrading as long as possible—until all the 'bugs' are worked out completely, i.e. tweaked, and b) the software you love most is written specifically as a Win32 application. Win16 (16-bit) applications (as most for Windows 3.1x are) actually run a bit slower under Windows 95 (from a recent article in PC World). So, to get that marginal speed upgrade, you have to consider software upgrading as well. On the positive side, RAM is still cheap (@ \$40-\$45/MG) and Windows 95 does do as it claims: multitasking without running out of base memory— as Win3.1/DOS often did. Also, the graphics are faster because Windows 95 takes advantage of the 32-bit PCI boards— speeding up screen operations, etc. And, finally, we have eliminated the 8.3 file naming thing of DOS (as long as you have a Win32 application). The advantages of upgrading early are that you get more time to tweak your system, and many articles to help this process will be forthcoming in the early introductory months of Windows 95."

Ed Wolfstein, AIA  
edwolf@together.net

### DataCAD and DOS

"With the release date of Windows 95, the question on a lot of minds is 'Should I upgrade?' or 'How will my DOS (i.e. DataCAD) software run?' Hopefully, I can shed some light on this subject."

"My name is Brian Galm (bgalm@aol.com). Some may recognize the name from Cheap Tricks. I am the developer of all software released under BGR Software. I have been using Windows 95 since late '92 (Baud 220) and have done some extensive testing since. DataCAD does not take any extensive configuring to run under 95, but to optimize it, you need to create special desktop icons. My complete package, DataCAD Desktop For 95, is available through Cheap Tricks."

"Also, in the 32-bit comparison between Windows 95 and OS/2 Crap (excuse me, Warp), regarding DataCAD, Windows 95 is a definite winner. There is added stability, extended support for all 16-bit drivers, and something we all want, more page frames. DataCAD under Windows 95, using the above desktop icons, and an optimized RUN32C.BAT file is reporting 72+ page frames. Period."

"But, alas, there is also something better, right? And no it's not Windows 96 or 97; it's plain old DOS. No need to upgrade if all you do is DataCAD and you need 100-percent assurance that it will run. Our friends at Cadkey have done a tremendous job at putting together a stable product, no need to jeopardize (where's the spell checker) that for the latest and greatest. Keep 'em posted, and keep cool (Alaska is a cool 40 degrees)."

Brian Galm  
bgalm@aol.com

### 'If It Ain't Broke ...'

"I must argue that, while Windows 95 can offer the possibility of more page frames, from what I hear, it also offers a lot of instability and inexplicable hang-ups and dumps for any software not 'native' to its code. I will stick with tried-and-true reliability as opposed to an unstable but 'manageable' improvement." As my grandfather used to say, "If it ain't broke, don't fix it."

Rebecca Lynn Cooper  
lrvendat@wright.ultranet.com

### DataCAD Needs Older Drivers

"I use DataCAD in Windows, but must use some older, basic drivers. The Vesa 16 driver works, as does ATI Wonder driver. Many of the newer drivers with higher resolutions do not work very well, creating problems when you ALT-TAB out of DataCAD to another program, and then back. Screen sync doesn't seem to

work at that point. There are other problems. You can't get more than 1024K of EMM which has its limitations. And I would not advise using QShader or display list under Windows; it just makes the setup more prone to problems, although I have had DataCAD running with both at the same time (with the right driver)."

Rick Gleason, AIA

### Light in the Tunnel

"Rebooting from Windows 3.x to DataCAD can be a real pain, even when you have DOS 6 with multiple configurations. I have tried to load DataCAD 6 under Windows without much success, because when I eventually get it to run I'm plagued with other problems, and the sacrifice in speed is considerable. We have a few beta releases of Windows 95 at my work and, although I haven't tried loading DataCAD under 95, some other fellas have tried some other processor-hogging DOS programs, and also some processor-intensive DOS games. If there is

anything Windows 3.11 hated, it was DOS games. I have seen a game called 'Heretic,' which is similar to 'Doom,' run in a small window with no speed sacrifice at all. So maybe there's light at the end of the tunnel."

Leo Zandonata

### Like Oil and Water?

"DataCAD and Windows don't always mix. The real important thing is to be sure you have at least 530K of conventional memory when Windows is loaded. True, high resolutions don't work very well but it is possible to get more than 1024K of extended memory. You need to specify the amount you need in your PIF file, which lets you specify the minimum and maximum amount of memory you want to reserve. It is a little difficult to get Expanded memory and Windows running with DataCAD though. Expanded memory uses too much Upper memory for page framing. If you want to do this, then don't count on having any network, CD-ROM, sound card, etc. drivers loaded at the

same time if you use the QShader or Display list in windows. RenderStar definitely will not run in Windows. You will get 'Unable to Allocate File Buffer' when you try to start it. I haven't found a way around it yet."

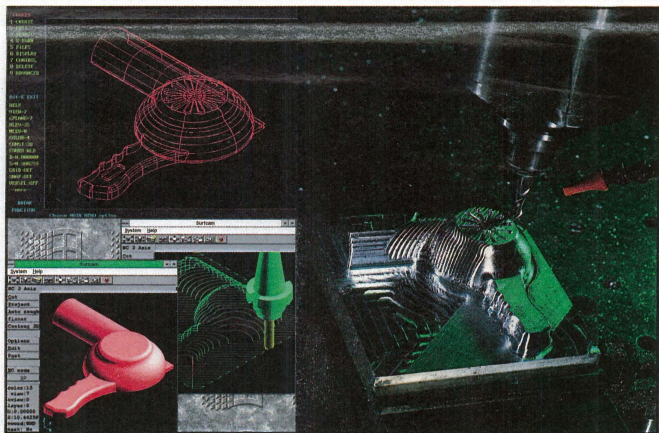
Nick Korosi

### Run DataCAD Using PIF File

"We have been able to run DataCAD under Windows 3.11 using the PIF file downloaded from this forum library. We also are running DataCAD under Windows 95— both by launching from within Windows, and also from the DOS shell. In all cases, the driver used is the VESA 16. We don't use any special settings in Config.sys or Autoexec.bat. Generally, if Windows runs, DataCAD should run. DataCAD is fast under Windows 95, (not as fast as true DOS), but if they would just make a 32-bit version of DataCAD, we could take full advantage of the 32-bit controller and hard drive and motherboard."

Brian de Coster

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## Rendering in DataCAD 6

By Barbara Price Clinger

The most important steps for rendering a drawing in RenderStar are planning and preparation. They can save time and headaches. For one thing, you should draw every entity with a different color. Try to use colors different from the ones used by the template symbol files. Or you can change the color of the symbols before converting the drawing with RenderStar. This is important because every entity is assigned a color and a number in the color-material linkage window of RenderStar. If two entities are the same color, they will both be rendered in the texture that you assign unless you change each color separately. For this tutorial, I drew a barn and corn silo and produced a rendering of the structures in a country setting. The following steps walk you through the process.

### Add a Foreground and Background

The first thing we need to do is to add a slab for the ground and then add a wall for the background, so that we can add a scenery bit map texture. The reason for this is simply to control the perspective of the barn and the silo with the background and foreground.

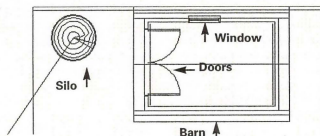
1. Press K until the color brown is displayed.
2. Press Alt+U and select Slab, Horizntz, and Base+ght.
3. Select Thickness and enter 0.2.
4. Press the Z to change the z-base to 0.0 and the z-height to 0.0 (you want the background scenery to be higher than the roof of the barn).
5. Draw a slab that is X=2'-0" and Y=17'-0".
6. Select Exit.
7. Press A and make sure that Walls, Sides,

and Cap is active.

8. Press K until the color blue is displayed.
9. Press the Z to change the z-base to 0.0 and the z-height to 20.0 (you want the background scenery to be higher than the roof of the barn).
10. Draw the wall right above the slab, making sure that they are the same length. Click the right mouse button to disconnect and select Exit.

### Add the Barn Polygons and Rectangle.

1. Press Z to change the z-base to 0.0 and



- z-height to 8.0. Press K until red is displayed.
2. Make a rectangle that measures X=12'-0" and Y=8'-0" on the right hand side of the slab. Click to locate and then click inside the rectangle to define the other wall.
3. Select Exit and press K until it red is displayed.
4. Press A and then select Window.
5. Add a window to the side of the barn facing the slab then Exit out and select Doorswing.
6. Select Double and add a door to the left-hand side of the barn.
7. Press Shift M and select Roofit.
8. Press K until green is displayed.
9. Select Gable and trace the first two sides of the barn.

### Add the Silo

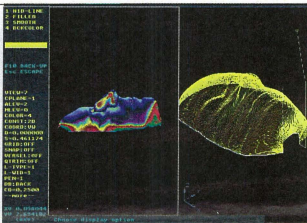
1. Press K until yellow is displayed.
  2. Press Alt-U.
  3. Select Resurf and click on the Front in the navigation pad.
  4. Move the cursor over to the screen just above the double lines of the slab. You want the silo to be close to the barn. Click the first point and then extend the cursor to the right until X=2'-0". Click the left mouse button.
  5. Move the cursor up until Y=11'-0" and click the left mouse button.
  6. Select 2Pt Arc and move the cursor to the left until X=2'-0". Click the left mouse button and then make a semi-circle on the screen. Click the left mouse button to locate the arc and then click the right mouse button twice.
  7. Draw the axis through the first point and the last point.
  8. You will need to move the silo to the ground. Make sure you are out of the Orthomode (press O in the navigation pad).
  9. Select Exit and press J to bring you to the 3D Edit menu.
- Note: All Revolved and geometry surfaces have to be exploded to polygons before RenderStar can convert them.
10. Select Explode, Area, and to Poly. Cover the silo with the cursor-box and click the left mouse button. The status line should tell you how many entities were exploded.
  11. Select Exit.

### Conversion in RenderStar

1. Select Render and Convert.
  2. Select Palette and Standard. (If you have everything on layers, use the Layer option, which will automatically fill in the description names.)
  3. Select Begin. Enter the name of the file to be converted. Press Enter. The screen will flip a dark color and then flip back to that same screen.
  4. Select RenderStar and click on the name of the file. The program will "shell-out" to the RenderStar window. In RenderStar, there are three major windows: the RCL, the CME, and the 3D Viewer Mode window.
- The RCL window contains commands related to the effects of the rendering process and lets you change several options:

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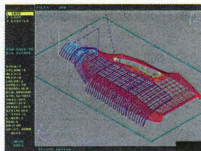


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### GETTING THE MOST FROM YOUR DATA CAD PLOT

By Carol Buehrens

Different line thickness in drawings helps certain lines stand out from the rest in the final blueprint. For example, in floor plans, wall lines are thicker than dimension lines, and an even thicker line may be used for a sheet border or to underline titles. To accomplish this, DataCAD uses a combination of color to define a physical pen and line weight.

Color is associated to a pen number in the SetPens option found in the Plotter menu. Pen numbers usually can be used for both plotters and printers to define heavier pen sizes. The color for your items can be set in DataCAD by using the [K] (Kolor) key, or by using the Color option found in the Line-Type, Layer, or Change menu.

However, sometimes even the largest pen available isn't thick enough for the line you desired, as may be the case in a sheet border or underline. This is when you'll want to

employ a "line weight." The line weight can be set in DataCAD by using the fast key [W] ([W] increases the weight, [ShiftW] decreases), or by using the LineWgt option found in the Line-Type or Change menus. The weight control for text is found in the Text menu or in the Change, Text menu.

When you use line weights, you should be aware of three things:

1. The display of line weights is turned on and off by picking the ShowWgt option in the Display menu found in Utility. The L will be capital in the SWOTHLUD status line when the display of line weights is on. If the display of line weights is off, lines with added weight will appear as a regular line on both the screen and in the final plot.

2. An assigned weight instructs the plotter to retrace a line that particular amount on both sides. This means that if you assign a line weight of 4, the line will be stroked once for the original line, then four additional

times on each side, for a total of nine lines. 3. When the line is restroked, the pen is slightly offset for each stroke so the line becomes thicker. You can control this offset amount using the Width option in the Plotter menu. This is very important, since you will want each stroke to overlap very little in order to achieve a clean look without adding too many strokes or leaving a gap between strokes.

Obviously, if you're going to create a thick line for that extra "punch," you'll want to use your thickness pen and restroke as little as possible. Every restroke adds time to the plot, for both the plotter and the printer. (This is especially true in text!)

The following material helps the beginning user better understand how this all works together.

#### Setting a new line weight

You can use the quick key for this example.

1. Make sure the Caps Lock on your keyboard is OFF.

2. Press the [W] key once, until the message reads: "Line weight is now 2." If it says anything else, such as "Line weight is now 18," then you've been drawing in a line weight already (in this case 17). Hold down the [Shift] key and press [W] until the message reads: "Line Weight is now 2."

3. Check the L in the SWOTHLUD status line. It should be capital. If it is lowercase, line weights won't be displayed on the screen as you draw and they won't plot. If the L is lowercase, go to the Utility menu, pick Display, then pick ShowWgt to turn it ON. This will cause any line drawn with a weight to show up as fatter on the screen. With luck, you'll not be unpleasantly surprised at this point with unwanted line weights. (You can change existing items using the Weight option in Change.) Press the right-hand mouse button 3 to exit the Display menu.

4. With weight 2 set, try drawing a few lines. Can you see the difference? As explained earlier, the pen weight of 2 actually strokes the line three times on both the display and in the final plot, although there is really only one databased line in your draw-

ing workflow. 5. The [Pen W] again set the line weight to 3 or more. Draw another line. If you plotted this line, you'd see the pen stroke the line once for the original line, then twice the amount of the weight.

#### Setting Pen Widths

The Pen Width amount is a plotter increment based on the plotter or printer you're using. This, a setting that works in someone else's office still should be tested on your plotter before assuming it works. If you use a plotting service, you should take this into consideration and try to come to a balance that works on your own plotter and at the service. Just remember, pen widths work in conjunction with the physical pen size. You'll want the pen to physically move as far over as possible from the first stroke to lay down the second stroke without leaving a gap between the two strokes.

1. Go to the Utility menu, then pick the Plotter option, or pick the Plotter icon from the tool bar.
2. Pick the PenWidth option.
3. Type in and Enter a new value to indicate the offset you want for restroking, such as 15.
4. Pick SetPens (ChPlot) may be on for this option. This means for Color Plot. Pick the color you used for your lines, setting it to an appropriate value for your fattest pen.
5. Test the PenWidth setting by plotting the lines you drew. Reset the PenWidth value in steps of 5 (10, 15, 20) until gaps appear in the thickened lines in the final plot. Then, adjust the pen width down until the result is a nice, clean line.

#### Poched Walls

If you have a pen plotter or a color printer, you can use a heavy-weight line drawn in the center of your wall for poché. Assign that line color to a .70mm green-ink pen in a plotter or green color. The final blueprint will show the wall filled in with light blue. If you use a large format laser plotter, such as the type many plotting services use, you might be able to assign the line a "screened" pattern for a really clean finish.

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### RENDER from Page 20

#### Output section:

1. Click on Type and select from the pull-down window 24-bit/gf mode.
2. Click on Resolution and select (or the appropriate selection for your machine) 640 X 480.

Note: You need to rename the palette and material a different name or your active palette and materials will overwrite the original. This also allows you to pick a texture from the working directory that might be used on your next project without every changing the settings.

#### Effect section:

- Materials and Effects: click on the on button.
- Lights: click on the on button.

#### Toggle section:

- Anti-Alias: click on the on button.
- The 3D Viewer Mode window is where you load and view the converted drawing. The drawing must be loaded before changing anything in the CMF Window.
1. Click on Load and your drawing will appear in the small screen on the right.
  2. Click on Next until the drawing is in perspective view.
  3. Click on Delete and select from the pull down menu, Delete all but current.

The CMF window is the color-material linkage window. This contains the commands related to the color material. It also links the color between DataCAD indices to the materials in the RenderStar. This process is one

that is time-consuming but important. The first thing that needs to be done is to identify the entities. This will be done using both the CMF window and the 3D Viewer window.

#### Identify and Label the Entities

1. Click on/Off the first entity while looking at the drawing in the 3D viewer window to see what item it is.
2. Click in the description box and type a name for the entity. Continue to do this to all the entities. You might need to click on the raised button in the 3D Viewer Mode window to bring a full screen, so you can use the menus to adjust the drawing. Use the side menu scale, perspective, Move eye, Observer, and Target to adjust your view to the angle of the view. Now go back to the three window screen click on the other button (beside the raised one).

- The Barn Color and Texture
1. Click on the number beside the label barn and click on the Edit of the corresponding number.
  2. Set the Htu of 10 and the Saturation at 60. Select Okay.
  3. Click on the Material Reference field button that represents the barn.
  4. Select Add New Here from the submenu.
  5. Click on the button beside type (which is labeled Name).
  6. Select Bitmap from the submenu.
  7. Click on the button below Bitmap used for texture (which is labeled Entity).
  8. Select Get map from RenderStar Dir.

See RENDER, page 17 >



nition, indicator lights on active buttons provide monitoring, an icon browser is available for changing icons, and tasks can be recorded and assigned to a button (as in a macro). The manual for SpinWizard is small, but you really don't need much more. SpinWizard is a well-designed and effective shell with just a little fun programmed in. I recommend SpinWizard for all groups of Windows users at any level of proficiency.

For more information call 512/263-1700. BBS 512/919-5261.

#### TabWorks from Xsoft

When this little package came, my first response was "That's all!" Little did I know that's all I needed. TabWorks passed with flying colors. Designed to look and feel like a day-planner, TabWorks uses a simple tabbed notebook to categorize and index applications. It even has a Table of Contents and an Index tab, just in case you forgot where you put that application. Its options include: drag-and-drop, placement of frequently used applications on a Button Strip, file tracking, launching applications with a TaskSwitcher, and using your own icons. Everything is user-definable, including the tab color and the tab color. Newly installed applications are added to TabWorks, unless you choose otherwise. TabWorks performs well with Windows and won't give you any configuration or uninstalling headaches. This program would be excellent for new Windows users, as well as for some hard-core Windows users who need to get back to simplicity.

For more information call 800/909-4446.

#### TaskManager for Windows 2.0 from METZ Software

This application is a good example of how software should be designed and programmed. Don't be fooled by its size — you'll be amazed at how much you find in TaskManager's small application window. Features include: Run Box for entering commands at the DOS prompt and recalling them quickly later on; Task/Group List, so that you can keep all your open applications or important groups in view so that you can launch them quickly; Launch Pad keeps your most used applications at hand; Launch Menu puts your applications you use most in a task list so they're always easy to get to; Quick Utilities for file management, system status, and date/time; Desktop Arrangement buttons to arrange a group of tasks or the entire desktop; Launch allows you to create your own customized menus and parameters for the Launch Pad; and the Scheduler offers everything from simple reminders to scheduled backups or absent downloads. TaskManager was very easy to work with and very easy to set up; it more than does the job it's intended to do and I applaud the crew that put this one together. This shell/utility should cover the needs of everyone from the novice to the expert!

For more information call 206/641-4525.

#### WinMaster from PC-KWIK Corporation

WinMaster is a perfect shell and task manager with just about everything a serious Windows user needs. It took up some resources, but wasn't a hog and it gave me a better

view of what was happening with my system at any given time. The WinMaster Toolbox replaces the Windows shell and can contain up to 50 fully definable buttons. Toolboxes can be nested, so you can create many toolboxes as you like. The only drawback to the buttons are the single-click calls, which can be frustrating for Windows users who are used to double-clicks. I found myself opening and closing applications at a ridiculous rate — old habits die hard! KwikFind is a robust "find" utility with options for deleting, viewing, archiving, attributes, print, run or associate, copy, and time stamp. The KwikInfo button bar displays system information, such as memory, display, drives, printer, system tasks, and fonts. All information can be displayed on the desktop with graphic meters/gauges that can be paused or updated. PowerScope is included with KwikInfo to assist with your disk mapping and defragmenting. PowerDisk is a flexible disk optimizing tool that can be used in conjunction with the Scheduler, which allows you to perform absent disk reorganization and defragmenting. KwikVault compresses and stores archived files in a special directory while preserving their original paths. This allows you to easily retrieve any files that you have archived in KwikVault. The vault can be locked with a password. I recommend WinMaster for serious users who need quality information and tools. This one will be hard to beat.

For more information call 800/395-5945 or 503/644-5644.

Answer for it simply, the winner is TabWorks from Xsoft.

#### ISDN from Page 17

Often the biggest problem facing CAD/CAM users in terms of transfer is the physical size of each file. As designers create more and more sophistication and features into a project, the file size can mushroom past several megabytes. Add into this the sophistication of today's range of CAD programs and manufacturing applications, which rightfully encourage complexity of this type, solutions such as leased lines become severely limited in performance and get bogged down when sending files to other locations and departments. Low-performance inter-networking solutions can frustrate and users with delays and transmission errors, and the cost factors associated with maintaining an old solution can continue to be a problem, exacerbated for the MIS manager by user complaints about performance issues.

As we suggested earlier, the best course of action for the network manager in a CAD/CAM environment is to evaluate the performance factors of various inter-networking methods. It may be useful to solicit the help of your systems integrator or consultant, who may be able to better judge which equipment will function best with your workstations, file servers and overall network architecture. Whether you go with BRI or PRI equipment to harness the power of ISDN, routers and other inter-networking devices should be chosen for their performance ability to "aggregate bandwidth" for sending large files across the network, and capability to dynamically establish connections between devices and reduce connect time. Network manager also would be wise to look for straightforward "plug-and-play" installation and implementation, as well as solid product support from the manufacturer. Finally, companies should examine the built-in functionality of the management software that comes with each unit, as well as software upgrades and compatible equipment from the manufacturer that can expand as the networks grow.

Installation of ISDN devices should be relatively short and painless, and CAD/CAM users choosing ISDN can expect to reap immediate benefits. Wait time for file transfers should be reduced, and end users in all connected departments should notice the performance improvement, especially with extra-large files. If problems persist, MIS specialists should work with both the vendor and ISDN service provider to smooth out any glitches in the process.

In addition to the immediate performance gains that end users will enjoy by implementing ISDN, financial gains for CAD/CAM organizations should be on the horizon as well. Eliminating the cost of overnight delivery, for example, can more than offset the cost of inter-networking equipment and services, usually in less than one year. Some ISDN service providers provide progressively deeper discounts as more ISDN lines are used, and companies can leverage these economies of scale as additional routers and equipment are added to the system.

By carefully examining your inter-networking needs before implementation, and taking the process slowly, the use of ISDN technology in the CAD/CAM arena can deliver major benefits. Companies using ISDN can gain an important strategic advantage over the competition, with the ability to turn designs around faster, expedite the change/update process and get projects finished much more quickly. CAD/CAM enterprises are then empowered to meet customer service goals and outdistance the competition. In the CAD/CAM arena, ISDN truly is the high-performance solution.

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